CITY OF COSTA MESA
PUBLIC WORKS AGREEMENT FOR
CITY PROJECT NO. 24-12

THIS PUBLIC WORKS AGREEMENT ("Agreement"), dated September 2nd, 2025 ("Effective Date"), is made by the CITY OF COSTA MESA, a political subdivision of the State of California ("CITY"), and HOUALLA ENTERPRISES, LTD, dba METRO BUILDERS & ENGINEERS GROUP, LTD., a California corporation ("CONTRACTOR").

WHEREAS, CITY desires to construct the public improvements described below under Paragraph 1, Scope of Work (the "Project"); and

WHEREAS, CITY has determined that CONTRACTOR is the lowest responsible bidder; and

WHEREAS, CITY now desires to contract with CONTRACTOR to furnish construction and related services for the Project; and

WHEREAS, CITY and CONTRACTOR desire to set forth their rights, duties and liabilities in connection with the services to be performed.

NOW, THEREFORE, for and in consideration of the covenants and conditions contained herein, the parties hereby agree as follows:

1. SCOPE OF WORK.

The scope of work generally consists of all labor, permitting, parts, tools, materials, equipment, deliveries, setup, mobilization, etc., to fully repair and rehabilitate the lakes at TeWinkle Park (the "Work").

The Work is further described in the "Contract Documents" referred to below.

The Project is known as the TeWinkle Park Lakes Repair and Rehabilitation Project, City Project No. 24-12 (the "Project").

2. CONTRACT DOCUMENTS.

The complete Agreement consists of the following documents relating to the Project:

(a) This Agreement;

(b) CONTRACTOR's bid, attached hereto as Exhibit A and incorporated herein;

(c) Bid package, including, but not limited to, addenda to bid package, notice

inviting bids, State of California – Natural Resources Agency Department of Parks and Recreation Grant Contract, complete plans, profiles, detailed drawings and specifications, general provisions and special provisions. The bid package is attached hereto as Exhibit B and incorporated herein;

(d) Faithful Performance Bond and Labor and Material Bond, including agent's Power of Attorney for each bond, attached hereto as Exhibit C;

(e) Drug-Free Workplace Policy, attached hereto as Exhibit D and incorporated herein; and

(f) Provisions of the most current edition of The Greenbook: Standard Specifications for Public Works Construction ("The Greenbook"). Provisions of The Greenbook are incorporated by this reference as if fully set forth herein.

The documents comprising the complete Agreement will be referred to as the "Contract Documents."

All of the Contract Documents are intended to complement one another, so that any Work called for in one and not mentioned in another is to be performed as if mentioned in all documents.

In the event of an inconsistency in the Contract Documents, the terms of this Agreement shall prevail over all other Contract Documents. The order of precedence between the remaining Contract Documents shall be as set forth in The Greenbook.

The Contract Documents constitute the entire agreement between the parties and supersede any and all other writings and oral negotiations.

3. CITY'S REPRESENTATIVE.

The CITY's Representative is Seung Yang, referred to herein as the Project Manager ("Project Manager").

4. CONTRACTOR'S PROJECT MANAGER; PERSONNEL.

(a) Project Manager. CONTRACTOR's Project Manager must be approved by City. Such approval shall be at CITY's sole discretion.

(b) Personnel. CITY has the right to review and approve any personnel who are assigned to perform work under this Agreement. CONTRACTOR shall remove personnel from performing work under this Agreement if requested to do so by CITY.

This Paragraph 4 is a material provision of the Agreement.

5. SCHEDULE.

All Work shall be performed in accordance with the schedule approved on behalf of CITY by the Project Manager, and in accordance with the time of performance set forth in Paragraph 11 (Time of Performance).

6. EQUIPMENT - PERFORMANCE OF WORK.

CONTRACTOR shall furnish all tools, equipment, apparatus, facilities, labor and materials necessary to perform and complete the Work in a good and workmanlike manner in strict conformity with the Contract Documents.

The equipment, apparatus, facilities, labor and material shall be furnished and such Work performed and completed as required in the plans and specifications to the satisfaction of the Project Manager or his or her designee, and subject to his or her approval.

7. COMPENSATION.

CITY shall pay CONTRACTOR in accordance with the fee schedule set forth in CONTRACTOR's bid. CONTRACTOR's total compensation shall not exceed Two Million Four Hundred Fifty-Nine Thousand Seven Hundred Seventy-Seven Dollars and Zero Cents ($2,459,777.00).

8. ADDITIONAL SERVICES.

CONTRACTOR shall not receive compensation for any services provided outside the scope of the Contract Documents unless such additional services, including change orders, are approved in writing by CITY prior to CONTRACTOR performing the additional services.

It is specifically understood that oral requests or approvals of such additional services, change orders or additional compensation and any approvals from CITY shall be barred and are unenforceable.

9. PAYMENTS TO CONTRACTOR.

On or before the last Monday of each and every month during the performance of the Work, CONTRACTOR shall meet with the Project Manager or his or her designee to determine the quantity of pay items incorporated into the improvement during that month. A "Progress Payment Order" will then be jointly prepared, approved, and signed by the Project Manager and the CONTRACTOR setting forth the amount to be paid and providing for a five percent (5%) retention. Upon approval of the progress payment order by the Project Manager, or his or her designee, it shall be submitted to CITY's Finance Department and processed for payment by obtaining approval from the City Council to issue a warrant.

Within three (3) days following City Council's approval to issue a warrant, CITY shall mail to CONTRACTOR a warrant for the amount specified in the progress payment order as the amount to be paid. The retained five percent (5%) shall be paid to CONTRACTOR thirty-five (35) days after the recording of the Notice of Completion of the Work by the CITY with the Orange County Clerk-Recorder and after CONTRACTOR has furnished releases of all claims against CITY by persons who furnished labor or materials for the Work, if required by CITY.

Upon the request of CONTRACTOR and at its expense, securities equivalent to the amount withheld pursuant to the foregoing provisions may be presented to CITY for substitution for the retained funds. If CITY approves the form and amount of the offered securities it will release the retained funds and will hold the securities in lieu thereof. CONTRACTOR shall be entitled to any interest earned on the securities.

In the event that claims for property damage or bodily injury are presented to CITY arising out of CONTRACTOR's or any subcontractor's work under this Agreement, CITY shall give notice thereof to CONTRACTOR, and CONTRACTOR shall have thirty-five (35) days from the mailing of any such notice to evaluate the claim and to settle it by whole or partial payment, or to reject it, and to give notice of settlement or rejection to CITY. If CITY does not receive notice within the above-mentioned 35-day period that the claim has been settled, and if the Project Manager, after consultation with the City Attorney, determines that the claim is meritorious, CITY may pay the claim or a portion of it in exchange for an appropriate release from the claimant, and may deduct the amount of the payment from the retained funds that would otherwise be paid to CONTRACTOR upon completion of the Work; provided, however, that the maximum amount paid for any one claim pursuant to this provision shall be One Thousand Dollars ($1,000.00), and the maximum amount for all such claims in the aggregate paid pursuant to this provision shall be Five Thousand Dollars ($5,000.00).

10. PROMPT PAYMENT OF SUBCONTRACTORS.

CONTRACTOR agrees to pay each subcontractor under this Agreement for satisfactory performance of its contract no later than seven (7) days from the receipt of each payment the CONTRACTOR receives from CITY.

CONTRACTOR agrees further to release retainage payments to each subcontractor within thirty (30) days after the subcontractor's work is satisfactorily completed.

Any delay or postponement of payment from the above referenced time frame may occur only for good cause following written approval of the CITY.

11. TIME OF PERFORMANCE.

CONTRACTOR shall commence Work by the date specified in CITY's Notice to Proceed, unless a later date is agreed upon in writing by the parties. The Work shall be

completed within One Hundred Eighty-Five (185) working days from the first day of commencement of the Work.

12. TERMINATION.

(a) Termination for Convenience. CITY may terminate this Agreement at any time, with or without cause, by providing thirty (30) days' written notice to CONTRACTOR.

(b) Termination for Breach of Contract.

(i) If CONTRACTOR refuses or fails to prosecute the Work or any severable part of it with such diligence as will ensure its timely completion, or if CONTRACTOR fails to complete the Work on time, or if CONTRACTOR, or any subcontractor, violates any of the provisions of the Contract Documents, the Project Manager may give written notice to CONTRACTOR and CONTRACTOR's sureties of the CITY's intention to terminate this Agreement; and, unless within five (5) days after the serving of that notice, such conduct shall cease and arrangements for the correction thereof be made to the satisfaction of the CITY, this Agreement may be terminated at the option of CITY effective upon CONTRACTOR's receipt of a second notice sent by the CITY indicating that the CITY has exercised its option to terminate.

(ii) If CONTRACTOR is adjudged bankrupt or files for any relief under the Federal Bankruptcy Code or State insolvency laws, this Agreement shall automatically terminate without any further action or notice by CITY.

(iii) If CONTRACTOR is in breach of any material provision of this Agreement, CITY may immediately terminate this Agreement by providing written notice to CONTRACTOR of same.

13. LIQUIDATED DAMAGES.

In the event the Work is not completed, for any reason, within the time required including any approved extensions of time, and to the satisfaction of the Project Manager, CITY may, in addition to any other remedies, equitable and legal, including remedies authorized by Paragraph 12 (Termination) of this Agreement, charge to CONTRACTOR or its sureties, or deduct from payments or credits due CONTRACTOR, a sum equal to Two Hundred Fifty Dollars ($250.00) as liquidated damages for each calendar day beyond the date provided for the completion of such work.

The parties hereto agree that the amount set forth above, as liquidated damages constitutes a fair and reasonable estimate of the costs the CITY would suffer for each day that the CONTRACTOR fails to meet the performance schedule. The parties hereby

agree and acknowledge that the delays in the performance schedule will cause CITY to incur costs and expenses not contemplated by this Agreement.

14. PERFORMANCE BY SURETIES.

In the event CONTRACTOR fails or refuses to perform the Work, CITY may provide CONTRACTOR with a notice of intent to terminate as provided in Paragraph 12 (Termination), of this Agreement. CITY shall immediately give written notice of such intent to terminate to CONTRACTOR and CONTRACTOR's surety or sureties, and the sureties shall have the right to take over and perform this Agreement; provided, however, that the sureties must, within five (5) days after CITY's giving notice of termination, (a) give the CITY written notice of their intention to take over the performance of this Agreement; (b) provide adequate assurances, to the satisfaction of the CITY, that the Work shall be performed diligently and in a timely manner; and (c) must commence performance thereof within five (5) days after providing notice to the CITY of their intention to take over the Work. Upon the failure of the sureties to comply with the provisions set forth above, CITY may take over the Work and complete it, at the expense of CONTRACTOR, and the CONTRACTOR and the sureties shall be liable to CITY for any excess costs or damages including those referred to in Paragraph 13 (Liquidated Damages), incurred by CITY. In such event, CITY may, without liability for so doing, take possession of such materials, equipment, tools, appliances, Contract Documents and other property belonging to CONTRACTOR as may be on the site of the Work and reasonably necessary therefor and may use them to complete the Work.

15. DISPUTES PERTAINING TO PAYMENT FOR WORK.

Should any dispute arise respecting whether any delay is excusable, or its duration, or the value of the Work done, or of any Work omitted, or of any extra Work which CONTRACTOR may be required to do, or respecting any payment to CONTRACTOR during the performance of this Agreement, such dispute shall be decided by the Project Manager, and his or her decisions shall be final and binding upon CONTRACTOR and its sureties.

16. SUPERINTENDENCE BY CONTRACTOR.

At all times during performance of the Work, CONTRACTOR shall give personal superintendence or have a competent foreman or superintendent on the worksite, with authority to act for CONTRACTOR.

17. INSPECTION BY CITY.

CONTRACTOR shall at all times maintain proper facilities and provide safe access for inspection by CITY to all parts of the Work and to all shops on or off-site where the Work or portions of the Work, are in preparation. CITY shall have the right of access to the premises for inspection at all times. However, CITY shall, at all times, comply with CONTRACTOR's safety requirements on the job site.

18. CARE OF THE WORK AND OFF-SITE AUTHORIZATION.

CONTRACTOR warrants that it has examined the site of the Work and is familiar with its topography and condition, location of property lines, easements, building lines and other physical factors and limitations affecting the performance of this Agreement. CONTRACTOR, at CONTRACTOR's sole cost and expense, shall obtain any permission, and all approvals, licenses, or easements necessary for any operations conducted off the premises owned or controlled by CITY. CONTRACTOR shall be responsible for the proper care and protection of all materials delivered to the site or stored off-site and for the Work performed until completion and final inspection and acceptance by CITY. The risk, damage or destruction of materials delivered to the site or to Work performed shall be borne by CONTRACTOR.

19. CONTRACT SECURITY AND GUARANTEE.

CONTRACTOR shall furnish, concurrently with the execution of this Agreement, the following: (1) a surety bond in an amount equal to one hundred percent (100%) of the contract price as security for the faithful performance of this Agreement, and (2) a separate surety bond in an amount equal to at least one hundred percent (100%) of the contract price as security for the payment of all persons furnishing labor or materials in connection with the Work under this Agreement. Sureties for each of the bonds and the forms thereof shall be satisfactory to CITY. In addition, such sureties must be authorized to issue bonds in California; sureties must be listed on the latest revision to the U.S. Department of the Treasury Circular 570; and must be shown to have sufficient bonding capacity to provide the bonds required by the Contract Documents.

CONTRACTOR shall provide a certified copy of the certificate of authority of the surety issued by the Insurance Commissioner; a certificate from the clerk of the county in which the court or officer is located that the certificate of authority of the surety has not been surrendered, revoked, canceled, annulled, or suspended or, in the event that it has, that renewed authority has been granted; and copies of the surety's most recent annual statement and quarterly statement filed with the Department of Insurance pursuant to Article 10 (commencing with Section 900) of Chapter 1 of Part 2 of Division 1 of the Insurance Code.

CONTRACTOR guarantees that all materials used in the Work and all labor performed shall be in conformity with the Contract Documents including, but not limited to, the standards and specifications set forth in the most current edition of The Greenbook. CONTRACTOR shall, at its own expense, make any and all repairs and replacements that shall become necessary as the result of any failure of the Work to conform to the aforementioned Contract Documents, and/or standard specifications; provided, however, that CONTRACTOR shall be obligated under this provision only to the extent of those failures or defects of which CONTRACTOR is given notice within a period of twelve (12) months from the date that the Notice of Completion is recorded.

The rights and remedies available to CITY pursuant to this provision shall be cumulative with all rights and remedies available to CITY pursuant to statutory and common law, which rights and remedies are hereby expressly reserved, and neither the foregoing guarantee by CONTRACTOR nor its furnishing of the bonds, nor acceptance thereof by CITY, shall constitute a waiver of any rights or remedies available to CITY against CONTRACTOR.

20. INDEMNIFICATION.

CONTRACTOR agrees to protect, defend, indemnify and hold harmless CITY and State of California Department of Parks and Recreation ("STATE") and their elected and appointed boards, officers, agents, and employees from any and all claims, liabilities, expenses, or damages of any nature, including attorneys' fees, for injury to or death of any person, and for injury or damage to any property, including consequential damages of any nature resulting therefrom, arising out of or in any way connected with the performance of this Agreement. The defense obligation provided for hereunder shall apply without any advance showing of negligence or wrongdoing by the CONTRACTOR, its employees, and/or authorized subcontractors, but shall be required whenever any claim, action, complaint, or suit asserts as its basis the negligence, errors, omissions or misconduct of the CONTRACTOR, its employees, and/or authorized subcontractors, and/or whenever any claim, action, complaint or suit asserts liability against the CITY and STATE, its elected officials, officers, agents and employees based upon the work performed by the CONTRACTOR, its employees, and/or authorized subcontractors under this Agreement, whether or not the CONTRACTOR, its employees, and/or authorized subcontractors are specifically named or otherwise asserted to be liable. Notwithstanding the foregoing, the CONTRACTOR shall not be liable for the defense or indemnification of the CITY and STATE for claims, actions, complaints or suits arising out of the sole active negligence or willful misconduct of the CITY and STATE. This provision shall supersede and replace all other indemnity provisions contained either in the CITY's specifications or CONTRACTOR's proposal, which shall be of no force and effect.

CONTRACTOR shall comply with all of the provisions of the Workers' Compensation insurance laws and Safety in Employment laws of the State of California, including the applicable provisions of Divisions 4 and 5 of the California Labor Code and all amendments thereto and regulations promulgated pursuant thereto, and all similar State, Federal or local laws applicable; and CONTRACTOR shall indemnify and hold harmless CITY and STATE from and against all claims, liabilities, expenses, damages, suits, actions, proceedings and judgments, of every nature and description, including attorney fees, that may be presented, brought or recovered against CITY and STATE for or on account of any liability under or failure to comply with any of said laws which may be incurred by reason of any Work performed under this Agreement by CONTRACTOR or any subcontractor or others performing on behalf of CONTRACTOR.

CITY and STATE do not, and shall not, waive any rights against CONTRACTOR which it may have by reason of the above hold harmless agreements, because of the acceptance by CITY and STATE or the deposit with CITY and STATE by CONTRACTOR

of any or all of the insurance policies described in Paragraph 21 (Insurance) of this Agreement.

The hold harmless agreements by CONTRACTOR shall apply to all liabilities, expenses, claims, and damages of every kind (including but not limited to attorneys' fees) incurred or alleged to have been incurred, by reason of the operations of CONTRACTOR or any subcontractor or others performing on behalf of CONTRACTOR, whether or not such insurance policies are applicable. CONTRACTOR shall require any and all tiers of subcontractors to afford the same degree of indemnification to the CITY and STATE and their elected and appointed boards, officers, agents, and employees that is required of CONTRACTOR and shall incorporate identical indemnity provisions in all contracts between CONTRACTOR and all tiers of its subcontractors.

In the event that CONTRACTOR and CITY and STATE are sued by a third party for damages caused or allegedly caused by negligent or other wrongful conduct of CONTRACTOR, or by a dangerous condition of CITY's and STATE's property created by CONTRACTOR or existing while the property was under the control of CONTRACTOR, CONTRACTOR shall not be relieved of its indemnity obligation to CITY and STATE by any settlement with any such third party unless that settlement includes a full release and dismissal of all claims by the third party against the CITY and STATE.

21. INSURANCE.

(a) Minimum Scope and Limits of Insurance. CONTRACTOR shall not commence work under this Agreement until it has obtained all insurance required under this Paragraph 21 and CITY has approved the insurance as to form, amount, and carrier, nor shall CONTRACTOR allow any subcontractor to commence any Work until all similar insurance required of the subcontractor has been obtained and approved.

CONTRACTOR shall obtain, maintain, and keep in full force and effect during the life of this Agreement all of the following minimum scope of insurance coverages with an insurance company admitted to do business in California, rated "A," Class X, or better in the most recent Best's Key Insurance Rating Guide, and approved by CITY:

(i) Commercial general liability, including premises-operations, products/completed operations, broad form property damage, blanket contractual liability, independent contractors, personal injury or bodily injury with a policy limit of not less than One Million Dollars ($1,000,000.00) per occurrence. If such insurance contains a general aggregate limit, it shall apply separately to this Agreement or shall be twice the required occurrence limit.

(ii) Business automobile liability for owned vehicles, hired, and non-owned vehicles, with a policy limit of not less than One Million Dollars ($1,000,000.00) combined single limit per accident for bodily injury and property damage.

(iii) Workers' compensation insurance as required by the State of California, with Statutory Limits, and Employer's Liability insurance with a limit of no less than One Million Dollars ($1,000,000.00) per accident for bodily injury or disease. CONTRACTOR agrees to waive, and to obtain endorsements from its workers' compensation insurer waiving subrogation rights under its workers' compensation insurance policy against the CITY and STATE, its officers, agents, employees, and volunteers arising from work performed by CONTRACTOR for the CITY and STATE and to require each of its subcontractors, if any, to do likewise under their workers' compensation insurance policies.

(iv) Umbrella or excess liability insurance that will provide bodily injury, personal injury and property damage liability coverage at least as broad as the primary coverages set forth above, including commercial general liability, automobile liability, and employer's liability. Such policy or policies shall include the following terms and conditions:

(1) A drop down feature requiring the policy to respond in the event that any primary insurance that would otherwise have applied proves to be uncollectable in whole or in part for any reason;
(2) Pay on behalf of wording as opposed to reimbursement;
(3) Concurrency of effective dates with primary policies;
(4) Policies shall "follow form" to underlying primary policies; and
(5) Insureds under primary policies shall also be insureds under the umbrella or excess policies.

(b) Endorsements. The commercial general liability insurance policy and business automobile liability policy shall contain or be endorsed to contain the following provisions:

(i) Additional insureds: The City of Costa Mesa and State of California Department of Parks and Recreation and their elected and appointed boards, officers, officials, agents, employees, and volunteers are additional insureds with respect to: liability arising out of activities performed by or on behalf of the CONTRACTOR pursuant to its contract with the City; products and completed operations of the CONTRACTOR; premises owned, occupied or used by the CONTRACTOR; automobiles owned, leased, hired, or borrowed by the CONTRACTOR."

(ii) Notice: "Said policy shall not terminate, nor shall it be canceled nor the coverage reduced, until thirty (30) days after written notice is

given to CITY."

(iii) Other Insurance: "CONTRACTOR's insurance coverage shall be primary insurance as respects the City of Costa Mesa, its officers, officials, agents, employees, and volunteers. Any other insurance maintained by the City of Costa Mesa shall be excess and not contributing with the insurance provided by this policy."

(c) Reporting Provisions. Any failure of CONTRACTOR to comply with the reporting provisions of the policies shall not affect coverage provided to the City of Costa Mesa, its officers, officials, agents, employees, and volunteers.

(d) Insurance Applies Separately. CONTRACTOR's insurance shall apply separately to each insured against whom claim is made or suit is brought, except with respect to the limits of the insurer's liability.

(e) Deductible or Self-Insured Retention. If any of such policies provide for a deductible or self-insured retention to provide such coverage, the amount of such deductible or self-insured retention shall be approved in advance by CITY. No policy of insurance issued as to which the CITY is an additional insured shall contain a provision which requires that no insured except the named insured can satisfy any such deductible or self-insured retention.

(f) Proof of Insurance. Prior to commencement of the Work, CONTRACTOR shall furnish CITY, through the Project Manager, proof of compliance with the above insurance requirements in a form satisfactory to City's Risk Management.

(g) Non-Limiting. Nothing in this Paragraph 21 shall be construed as limiting in any way, the indemnification provision contained in this Agreement, or the extent to which Consultant may be held responsible for payments of damages to persons or property.

22. PREVAILING WAGE REQUIREMENTS.

(a) Prevailing Wage Laws. CONTRACTOR is aware of the requirements of Chapter 1 (beginning at Section 1720 et seq.) of Part 7 of Division 2 of the California Labor Code, as well as Title 8, Section 16000 et seq. of the California Code of Regulations ("Prevailing Wage Laws"), which require the payment of prevailing wage rates and the performance of other requirements on "public works" and "maintenance" projects. This Project is a "public works" project and requires compliance with the Prevailing Wage Laws. CONTRACTOR shall defend, indemnify and hold the CITY, its elected officials, officers, employees and agents free and harmless from any claim or liability arising out of any failure or alleged failure to comply with the Prevailing Wage Laws.

(b) Payment of Prevailing Wages. CONTRACTOR shall pay the prevailing wage rates for all work performed under this Agreement. When any craft or classification is omitted from the general prevailing wage determinations, CONTRACTOR shall pay the

wage rate of the craft or classification most closely related to the omitted classification. A copy of the general prevailing wage rate determination is on file in the Office of the City Clerk and is incorporated into this Agreement as if fully set forth herein. CONTRACTOR shall post a copy of such wage rates at all times at the project site(s).

(c) Legal Working Day. In accordance with the provisions of Labor Code Section 1810 et seq., eight (8) hours is the legal working day. CONTRACTOR and any subcontractor(s) of CONTRACTOR shall comply with the provisions of the Labor Code regarding eight (8)-hour work day and 40-hour work week requirements, and overtime, Saturday, Sunday, and holiday work. Work performed by CONTRACTOR's or any subcontractor's employees in excess of eight (8) hours per day, and 40 hours during any one week, must include compensation for all hours worked in excess of eight (8) hours per day, or 40 hours during any one week, at not less than one and one-half times the basic rate of pay. CONTRACTOR shall forfeit as a penalty to CITY Twenty-Five Dollars ($25.00), or any greater penalty set forth in the Labor Code, for each worker employed in the execution of the Work by CONTRACTOR or by any subcontractor(s) of CONTRACTOR, for each calendar day during which such worker is required or permitted to the work more than eight (8) hours in one calendar day or more than 40 hours in any one calendar week in violation of the Labor Code.

(d) Apprentices. CONTRACTOR shall comply with the provisions of Labor Code Section 1777.5 concerning the employment of apprentices on public works projects. CONTRACTOR shall be responsible for ensuring compliance by its subcontractors with Labor Code Section 1777.5.

(e) Payroll Records. Pursuant to Labor Code Section 1776, CONTRACTOR and any subcontractor(s) shall keep accurate payroll records, showing the name, address, social security number, work classification, straight time and overtime hours worked each day and week, and the actual per diem wages paid to each journeyman, apprentice, worker, or other employee employed by CONTRACTOR or any subcontractor in connection with this Agreement. Each payroll record shall contain or be verified by a written declaration that it is made under penalty of perjury, stating both of the following: (1) The information contained in the payroll record is true and correct; and (2) The employer has complied with the requirements of Sections 1771, 1881, and 1815 of the Labor Code for any work performed by his or her employees on this Project. The payroll records shall be certified and shall be available for inspection at all reasonable hours in accordance with the requirements of Labor Code Section 1776. CONTRACTOR shall also furnish each week to CITY's Project Administration Division a statement with respect to the wages of each of its employees during the preceding weekly payroll period.

(f) Registration with DIR. CONTRACTOR and any subcontractor(s) of CONTRACTOR shall comply with the provisions of Labor Code Section 1771 and Labor Code Section 1725.5 requiring registration with the DIR.

23. COMPLIANCE WITH ALL LAWS.

CONTRACTOR shall, at its own cost and expense, comply with all applicable local, state, and federal laws, regulations, and requirements in the performance of this Agreement, including but not limited to laws regarding health and safety, labor and employment, and wage and hours.

24. ADDITIONAL CONTRACT PROVISIONS – State. Contractor shall comply with all of the terms and conditions of the documents included in Exhibit "A", specifically, State of California – Natural Resources Agency Department of Parks and Recreation Grant Contract, attached hereto and incorporated herein by this reference as though set forth in full.

25. DRUG-FREE WORKPLACE POLICY.

CONTRACTOR, upon notification of the award of this Agreement, shall establish a Drug-Free Awareness Program to inform employees of the dangers of drug abuse in the workplace, the penalties that may be imposed upon employees for drug abuse violations occurring in the workplace, and the employee assistance programs available to employees. Each employee engaged in the performance of a CITY contract must be notified of this Drug-Free Awareness Program, and must abide by its terms. CONTRACTOR shall conform to all the requirements of CITY's Policy No. 100-5, attached hereto. Failure to establish a program, notify employees, or inform the CITY of a drug-related workplace conviction will constitute a material breach of contract and cause for immediate termination of the contract by the CITY.

26. NON–DISCRIMINATION.

In performing this Agreement, CONTRACTOR will not engage in, nor permit its agents to engage in, discrimination in employment of persons because of their race, religion, color, national origin, ancestry, physical handicap, medical condition, marital status or sex, or sexual orientation, except as permitted pursuant to Section 12940 of the Government Code. Violation of this provision may result in the imposition of penalties referred to in Section 1735 of the California Labor Code.

27. PROVISIONS CUMULATIVE.

The provisions of this Agreement are cumulative and in addition to, and not in limitation of, any other rights or remedies available to CITY.

28. NOTICES.

It shall be the duty and responsibility of CONTRACTOR to notify all tiers of subcontractors and material men of the following special notice provision; namely, all preliminary 20-day notices or stop notices shall be directed only to the City Clerk and to no other department, and shall be either personally delivered or sent by certified mail, postage prepaid.

All other notices shall be in writing and delivered in person or sent by certified mail,

postage prepaid. Notices required to be given to CITY pursuant to this Agreement shall be addressed as follows:

City of Costa Mesa
77 Fair Drive
Costa Mesa, CA 92626
Attn: Seung Yang

Notices required to be given to CONTRACTOR shall be addressed as follows:

Houalla Enterprises, Ltd. Dba Metro Builders & Engineers Group, Ltd.
2610 Avon Street
Newport Beach, CA 92663
Attn: Fouad Houalla, President

Notices required to be given to CONTRACTOR's sureties shall be addressed as follows:

Markel Insurance Company
2710 Gateway Oaks Drive, Suite 150N
Sacramento, CA 95833-3506
Attn: Melis DeKoven, Agent for Service

29. INDEPENDENT CONTRACTOR.

The parties hereto acknowledge and agree that the relationship between CITY and CONTRACTOR is one of principal and independent contractor and no other. All personnel to be utilized by CONTRACTOR in the performance of this Agreement shall be employees of CONTRACTOR and not employees of the CITY. CONTRACTOR shall pay all salaries and wages, employer's social security taxes, unemployment insurance and similar taxes relating to employees and shall be responsible for all applicable withholding taxes. Nothing contained in this Agreement shall create or be construed as creating a partnership, joint venture, employment relations, or any other relationship except as set forth between the parties. The parties specifically acknowledge and agree that CONTRACTOR is not a partner with CITY, whether general or limited, and no activities of CITY or CONTRACTOR or statements made by CITY or CONTRACTOR shall be interpreted by any of the parties hereto as establishing any type of business relationship other than an independent contractor relationship.

30. PERS ELIGIBILITY INDEMNIFICATION.

In the event that CONTRACTOR or any employee, agent, or subcontractor of CONTRACTOR providing services under this Agreement claims or is determined by a court of competent jurisdiction or the California Public Employees' Retirement System (PERS) to be eligible for enrollment in PERS as an employee of the CITY, CONTRACTOR shall indemnify, defend, and hold harmless CITY for the payment of any employee and/or employer contributions for PERS benefits on behalf of CONTRACTOR

or its employees, agents, or subcontractors, as well as for the payment of any penalties and interest on such contributions, which would otherwise be the responsibility of CITY.

Notwithstanding any other agency, state or federal policy, rule, regulation, law or ordinance to the contrary, CONTRACTOR and any of its employees, agents, and subcontractors providing service under this Agreement shall not qualify for or become entitled to, and hereby agree to waive any claims to, any compensation, benefit, or any incident of employment by CITY, including but not limited to eligibility to enroll in PERS as an employee of CITY and entitlement to any contribution to be paid by CITY for employer contribution and/or employee contributions for PERS benefits.

31. VALIDITY.

The invalidity in whole or in part of any provision of this Agreement shall not void or affect the validity of any of the other provisions of this Agreement.

32. GOVERNING LAW.

This Agreement shall be governed by and construed in accordance with the laws of the State of California. Any legal action relating to or arising out of this Agreement shall be subject to the jurisdiction of the County of Orange, California.

33. NO THIRD PARTY BENEFICIARY RIGHTS.

This Agreement is entered into for the sole benefit of the CITY and CONTRACTOR and no other parties are intended to be direct or incidental beneficiaries of this Agreement and no third party shall have any right in, under or to this Agreement.

34. ASSIGNABILITY.

This Agreement may not be transferred or assigned by either party, or by operation of law, to any other person or persons or business entity, without the other party's written permission. Any such transfer or assignment, or attempted transfer or assignment, without written permission, may be deemed by the other party to constitute a voluntary termination of this Agreement and this Agreement shall thereafter be deemed terminated and void.

35. WAIVER.

No waiver of any provision of this Agreement shall be effective unless in writing and signed by a duly authorized representative of the party against whom enforcement of a waiver is sought referring expressly to this Paragraph. The waiver of any right or remedy in respect to any occurrence or event shall not be deemed a waiver of any right or remedy in respect to any other occurrence or event, nor shall any waiver constitute a continuing waiver.

36. HEADINGS.

Section and subsection headings are not to be considered part of this Agreement, are included solely for convenience, and are not intended to modify or explain or to be a full or accurate description of the content thereof.

37. CONSTRUCTION.

The parties have participated jointly in the negotiation and drafting of this Agreement and have had an adequate opportunity to review each and every provision of the Agreement and submit the same to counsel or other consultants for review and comment. In the event an ambiguity or question of intent or interpretation arises with respect to this Agreement, this Agreement shall be construed as if drafted jointly by the parties and in accordance with its fair meaning. There shall be no presumption or burden of proof favoring or disfavoring any party by virtue of the authorship of any of the provisions of this Agreement.

38. COUNTERPARTS.

This Agreement may be executed in one or more counterparts by the parties hereto. All counterparts shall be construed together and shall constitute one Agreement.

39. CORPORATE AUTHORITY.

The persons executing this Agreement on behalf of the parties hereto warrant that they are duly authorized to execute this Agreement on behalf of said parties and that by doing so, the parties hereto are formally bound to the provisions of this Agreement.

40. EXECUTIVE ORDER N-6-22 RUSSIA SANCTIONS.

On March 4, 2022, Governor Gavin Newsom issued Executive Order N-6-22 (the EO) regarding Economic Sanctions against Russia and Russian entities and individuals. "Economic Sanctions" refers to sanctions imposed by the U.S. government in response to Russia's actions in Ukraine, as well as any sanctions imposed under state law. The EO directs state agencies to terminate contracts with, and to refrain from entering any new contracts with, individuals or entities that are determined to be a target of Economic Sanctions. This Executive Order extends to recipients of any State Grants (Grantee). Grantees include those who have contracted or will contract to receive State grants funds. Accordingly, should the State determine that a Grantee is a target of Economic Sanctions or is conducting prohibited transactions with sanctioned individuals or entities, that shall be grounds for termination of this agreement. The State shall provide the Grantee advance written notice of such termination, allowing the Grantee at least 30 calendar days to provide a written response. Termination of any contract found to be in violation of this Executive Order shall be at the sole discretion of the State.

[Signature page follows.]

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed by and through their respective authorized officers, as of the date first above written.

CITY OF COSTA MESA
A municipal corporation

_____ Date: _____
Cecilia Gallardo-Daly
Interim City Manager

CONTRACTOR

_____ Date: _____
Signature

_____
Fouad Houalla, President

ATTEST:

_____ Date: _____
Brenda Green
City Clerk

APPROVED AS TO FORM:

_____ Date: _____
Kimberly Hall Barlow
City Attorney

APPROVED AS TO INSURANCE:

_____ Date: _____
Ruth Wang
Risk Management

APPROVED AS TO PURCHASING:

_____ Date: _____
Carol Molina
Finance Director

DEPARTMENTAL APPROVAL:

_____ Date: _____
Raja Sethuraman
Public Works Director

_____ Date: _____
Seung Yang
Project Manager

EXHIBIT A

CONTRACTOR’S BID

SECTION C

PROPOSAL

FOR THE

TEWINKLE PARK LAKES REPAIR AND REHABILITATION PROJECT, CITY PROJECT NO. 24-12

The Honorable City Council
City of Costa Mesa
77 Fair Drive
Costa Mesa, CA 92626

Dear Council Members:

In compliance with the NOTICE INVITING BIDS FOR THE **TEWINKLE PARK LAKES REPAIR AND REHABILITATION PROJECT, CITY PROJECT NO. 24-12,** a copy which is hereto attached, the undersigned has carefully examined the location of the proposed Work, the Plans, Specifications and other Contract Documents and is therefore satisfied as to the conditions to be encountered, as to the character, quality and quantity of work to be performed and materials to be furnished and as to the requirements of the specifications and the Contract. It is mutually agreed that the submission of a proposal shall be considered prima facie evidence that the BIDDER has made such examination.

If awarded the Contract, the undersigned agrees to commence the Work under the Contract **WITHIN TEN (10) WORKING DAYS AFTER DATE OF CONTRACT, AND COMPLETE SAID WORK WITHIN ONE-HUNDRED (100) WORKING DAYS** from the first day of commencement of such work unless legal extension is granted in accordance with the terms set forth in the specifications, and to perform and complete the Work as shown on the Plans and in accordance with the Specifications and other Contract Documents, and to furnish all labor, materials, tools and equipment necessary to complete the Work in-place therefor, in the manner and time herein prescribed at the following prices, to wit:

BID SECURITY: Each bidder must submit an **ORIGINAL** certified check, cashier's check, or a bid bond, made payable to or in favor of the City of Costa Mesa, in an amount equal to at least ten percent (10%) of the total amount of the bid, to the Costa Mesa City Clerk ***AT LEAST ONE HOUR PRIOR*** to the bid submission deadline. No bid will be considered unless such certified check, cashier's check, or bid bond was received by the City Clerk prior to the bid submission deadline. ***NO electronic bid securities through e-mail or other electronic means will be accepted.***

PH

Bidder's Initials

BID SCHEDULE PROPOSAL					
ITEM #	**BID ITEM DECRIPTION**	**EST. QTY.**	**UNIT**	**UNIT PRICE (in figures)**	**ITEMS TOTAL (in figures)**
TEWINKLE PARK LAKES REPAIR AND REHABILITATION BASE BID *(COMPLETE PROJECT)*:					
1	All Work, Labor, Permitting, Parts, Materials, Equipment, Deliveries, etc. to Repair and Rehabilitate the TeWinkle Park Lakes, as Directed by these Bid Documents and Specifications and / or Directed by the Engineer. This includes ALL ponds and streams. **See TeWinkle Park Lake Renovation Bid Document Plans in Section "G" – Appendix "B" for details.** Contractor is responsible to apply for and be issued required Permits from *(but NOT limited to)* Costa Mesa Sanitary District and OC Public Works for sewer wastewater disposal. General Construction Activity Permit / SWPPP REQUIRED from the Santa Ana Regional Water Quality Control Board [see Section 3-12.6 (Page GP-12) in the General Provisions]	1	L.S.	$	$
2	Additional Work Items as Directed by the Engineer (via Force Account)	1	F.A.	$ 100,000	$ 100,000
	TOTAL BID PROPOSAL FIGURES:			$	

TOTAL BID PROPOSAL (Words):

_____

_____

***NOTES**:

The lowest responsible bid shall be based on the lowest base bid, *notwithstanding* any of the deductive bid items.

OPTIONAL PRE-BID MEETING OR JOB WALK:
Wednesday, October 30, 2024 at 10:30 A.M. at TeWinkle Park, 970 Arlington Drive, Costa Mesa, CA 92626 in the parking lot. Attendance is ***HIGHLY*** recommended.

PA

Bidder's Initials

BID SCHEDULE PROPOSAL					
ITEM #	**BID ITEM DECRIPTION**	**EST. QTY.**	**UNIT**	**UNIT PRICE (in figures)**	**ITEMS TOTAL (in figures)**
TEWINKLE PARK LAKES REPAIR AND REHABILITATION [POND AND STREAM 1] *(DEDUCTIVE BID NO. 1)*:					
D1	All Work, Labor, Permitting, Parts, Materials, Equipment, Deliveries, etc. to Repair and Rehabilitate **POND AND STREAM 1** ONLY of the TeWinkle Park Lakes, as Directed by these Bid Documents and Specifications and / or Directed by the Engineer. **See TeWinkle Park Lake Renovation Bid Document Plans in Section "G" – Appendix "B" for details.** *All other requirements apply:* Contractor is responsible to apply for and be issued required Permits from *(but NOT limited to)* Costa Mesa Sanitary District and OC Public Works for sewer wastewater disposal. General Construction Activity Permit / SWPPP REQUIRED from the Santa Ana Regional Water Quality Control Board [see Section 3-12.6 (Page GP-12) in the General Provisions]	1	L.S.	$	$
	DEDUCTIVE BID NO. 1 FIGURE:			$	

DEDUCTIVE BID NO. 1 (Words):

_____

_____

***NOTES:**

The lowest responsible bid shall be based on the lowest base bid, *notwithstanding* any of the deductive bid items.

The City reserves the right to deduct any bid item as it sees fit. If the City so chooses to elect to deduct one or more bid items, then the final award amount will be the base bid minus one or more deductive bid items.

PH

Bidder's Initials

BID SCHEDULE PROPOSAL					
ITEM #	**BID ITEM DECRIPTION**	**EST. QTY.**	**UNIT**	**UNIT PRICE (in figures)**	**ITEMS TOTAL (in figures)**
TEWINKLE PARK LAKES REPAIR AND REHABILITATION [POND AND STREAM 2] *(DEDUCTIVE BID NO. 2):*					
D2	All Work, Labor, Permitting, Parts, Materials, Equipment, Deliveries, etc. to Repair and Rehabilitate **POND AND STREAM 2** ONLY of the TeWinkle Park Lakes, as Directed by these Bid Documents and Specifications and / or Directed by the Engineer. **See TeWinkle Park Lake Renovation Bid Document Plans in Section "G" – Appendix "B" for details.** *All other requirements apply:* Contractor is responsible to apply for and be issued required Permits from *(but NOT limited to)* Costa Mesa Sanitary District and OC Public Works for sewer wastewater disposal. General Construction Activity Permit / SWPPP REQUIRED from the Santa Ana Regional Water Quality Control Board [see Section 3-12.6 (Page GP-12) in the General Provisions]	1	L.S.	$	$
	DEDUCTIVE BID NO. 2 FIGURE:			$	

DEDUCTIVE BID NO. 2 (Words):

_____

_____

***NOTES:**

The lowest responsible bid shall be based on the lowest base bid, *notwithstanding* any of the deductive bid items.

The City reserves the right to deduct any bid item as it sees fit. If the City so chooses to elect to deduct one or more bid items, then the final award amount will be the base bid minus one or more deductive bid items.

PA

Bidder's Initials

PROPOSAL BID SCHEDULE
(CONTINUED)

NOTES:

1. The accuracy of estimate quantities as shown is not guaranteed; the Bidder shall make his/her own estimate from the drawings and field review for verification. If the unit price and the total amount are different, the unit price will control the bid. Payment shall be based on actual work done and/or actual quantities used.

2. The lowest responsible bid shall be based on the lowest base bid, *notwithstanding* any of the deductive bid items.

3. The City reserves the right to delete one or more bid items and/or to increase or decrease bid items' quantities, at no additional cost to the City. The City also reserves the right to deduct any bid item as it sees fit. If the City so chooses to elect to deduct one or more bid items, then the final award amount will be the base bid minus one or more deductive bid items.

4. FA designates force account. Payment shall be made on a time and materials basis, only if directed by the ENGINEER.

5. (F) Designates Final Pay Item. When an item of work is designated as "FINAL PAY ITEM" in the Specifications, the estimated quantity for that item of work shall be the final pay quantity, unless the dimensions of any portion of that item are revised by the Engineer, or the item or any portion of the item is eliminated. If the dimensions of any portion of the item are revised, and the revisions result in an increase or decrease in the estimated quantity of that item of work, the final pay quantity for the item will be revised in the amount represented by the changes in the dimensions. If a final pay item is eliminated, the estimated quantity for the item will be eliminated. If a portion of a final pay item is eliminated, the final pay quantity will be revised in the amount represented by the eliminated portion of the item of work.

   The estimated quantity for each item of work designated as "FINAL PAY ITEM" in the Specifications, shall be considered as approximate only, and no guarantee is made that the quantity which can be determined by computations, based on the details and dimensions shown on the plans, will equal the estimated quantity. No allowance will be made in the event that the quantity based on computations does not equal the estimated quantity.

   In case of discrepancy between the quantity shown in the Engineer's Estimate for a final pay item and the quantity or summation of quantities for the same item shown on the plans, payment will be based on the quantity shown in the Engineer's Estimate.

6. Bidder declares that it has read and understands Items 14 & 15 of Information for Bidders (Page B-2 and B-3).

7. Bidder agrees to initial or notarize (if applicable) all pages on P-1a through P-1e and uploaded onto *PlanetBids*.

FH

Bidder's Initials

PROPOSAL SCHEDULE
(CONTINUED)

(Please Type or Print)

Total Amount for Base Bid (in written words) _____

_____ ($_____)
in figures

Contractor's Lawful Name: Houalla Enterprises Ltd. dba. Metro Builders & Engineers Group, Ltd.

Bidder's Name: Fouad Houalla Bidder's Initials: FH

Contractor's License No. 597589 Expiration: 07/31/2026

Contractor's Taxpayer I.D. Number: 33-0284748

Contractor's DIR Registration Number: 1000002925

Signature: [redacted] Date: 11/21/2024

Contractor's Address: 2610 Avon St., Newport Beach, CA 92663

Telephone Number: (949) 515-4350 Mobile No.: (949) 463-8451

Fax Number: (949) 515-4351 E-mail: estimating@metrobuilders.com

24-Hour Emergency Contacts:

Shelly Irvine
Name
Telephone Number: (949) 463-8451
Mobile No.: ( )

Name
Telephone No.: ( )
Mobile No.: ( )

Name
Telephone No.: ( )
Mobile No.: ( )

FH
Bidder's Initials

PROPOSAL SCHEDULE
(CONTINUED)

The Contractor agrees that the City will not be held responsible if any of the approximate quantities shown in the foregoing proposal shall be found incorrect, and he shall not make any claim for damages or for loss of profits because of a difference between the quantities of the various classes of work as estimated and the work actually done. If any error, omission or misstatements shall be discovered in the estimated quantities, it shall not invalidate this contract or release the Contractor from the execution and completion of the whole or part of the work herein specified, in accordance with the specifications and the plans herein mentioned and the prices herein agreed upon and fixed therefore, or excuse him from any of the obligations or liabilities hereunder, or entitle him to any damages or compensation otherwise than as provided for in this contract.

The Contractor agrees that the City shall have the right to increase or decrease the quantity of any bid item or portion of the work or to omit portions of the work as may be deemed necessary or expedient, and that the payment for incidental items or work, not separately provided in the proposal shall be considered included in the price bid for other various items or work.

Accompanying this proposal is "Cash," "Certified Check," or "Bidder's Bond" (circle one) in the amount of _____10% of total bid amount_____ ($_____) equal to at least ten (10%) percent of the total bid price, payable to the City of Costa Mesa, to guarantee that within fourteen (14) days after written notice is deposited in the mail, or the bidder has received notice by telephone, the bidder will furnish proper Certificates of Insurance, and required bonds satisfactory to the City and execute a contract in accordance with the proposal and in the manner and form required by the contract documents.

The undersigned deposits the above-named security as a proposal guarantee and agrees that it shall be forfeited to the City of Costa Mesa as Liquidated Damages if the above requirements are not complied with.

FH
_____
Bidder's Initials

Respectfully Submitted,

Houalla Enterprises Ltd. dba. Metro Builders & Engineers Group, Ltd.	Fouad Houalla President
Contractor's Business Name	Contractor [redacted] Title President
2610 Avon Street	
Business Address: Street	Signed By Title
Newport Beach, CA 92663	597589; A.B/C10/C51 07/31/2026
City State Zip	Contractor's License No. and Classification Exp. Date
(949) 515-4350	11/21/2024
Business Phone Number	Date
Fouad Houalla President	2610 Avon Street
Name Title	Residence: Street
Newport Beach, CA 92663	(949) 515-4350
City State Zip	Residence phone Number

If the bid is by a corporation, state the names of the officers who can sign an agreement on behalf of the corporation and whether more than one officer must sign.

[X] Corporation Taxpayer I.D. Number: 33-0284748

	Can Sign	Must Sign
Name Fouad Houalla, President	[ ]	[X]
Name Fouad Houalla, Secretary	[X]	[ ]
Name	[ ]	[ ]

If the bid is by a partnership or a joint venture, state the names and addresses of all general partners and joint ventures.

[ ] Partnership or Joint Ventures Taxpayer I.D. Number: _____

Name N/A

Address N/A

Name N/A

Address N/A

If the bidder is a sole proprietorship or another entity that does business under a fictitious name, the bid shall be in the real name of the bidder with a designation following showing "DBA (the fictitious name)"; provided, however, no fictitious name shall be used unless there is a current registration with the Orange County Recorder.

The full names and residences of all persons and parties interested in the foregoing proposal, as principals, are as follows:

NOTE: Give first and last names in full; in case of corporation, give names of President, Secretary, Treasurer and Manager, and affix corporate seal; in case of partnerships and joint ventures, give names of all the individual members.

Fouad Houalla; President

Fouad Houalla; Secretary

Shelly Irvine; Chief Financial Officer

FH
Bidder's Initials

Bidder shall signify receipt of all Addenda here, if any:

Addendum No.	Date Received	Bidder's Signature
None		

CONSTRUCTION PROJECT REFERENCES

In order to more fully evaluate your firm's background and experience for the project herein proposed, it is requested that you submit a list of Public Works and/or similar construction projects completed, or in progress, within the last 24 months. This information will be used to evaluate whether the bid is responsive and or responsible to the call for bids.

Date Project Awarded	Awarding Agency	Agency's Contract Administrator Contact Information
See Attached Project Reference List		

FH

Bidder's Initials

DESIGNATION OF SUBCONTRACTORS

In compliance with the "Subletting and Subcontracting Fair Practices Act" being Sections 4100-4113 of the Public Contract Code of the State of California, and any amendments thereto, each bidder shall set forth below the name and location of the place of business of each subcontractor who will perform work or labor or render service to the prime contractor in or about the construction of the work or improvement in an amount in excess of one-half (½) of one percent (1%) of the prime contractor's total bid or in the case of bids for the construction of streets or highways, including bridges, in excess of one-half (½) of one percent (1%) of the prime contractor's total bid or ten thousand ($10,000) dollars, whichever is greater. Bidder shall further set forth the portion of the work, which will be done by each such subcontractor with its Department of Industrial Relations (DIR) registration number. Only one subcontractor for each such portion shall be listed.

If the contractor fails to specify a subcontractor for any portion of the work to be performed under the contract, he/she/it shall be deemed to have agreed to perform the balance of all work, which is not covered, and he/she/it shall not be permitted to subcontract that portion of the work except under the conditions hereinafter set forth.

Subletting or subcontracting of any portion of the work to which no subcontractor was designated in the original bid, shall only be permitted in cases of public emergency or necessity, and then only after a finding reduced to writing as a public record of the Legislative Body of the Owner.

All information must be filled out and typed. Please use additional pages in this format if needed.

Bid Item (s) Number	***% Portion of Work***	***Name, Address and E-mail of Subcontractor***	***State License Number***	***Class***	***DIR Registration Number***

By submission of this proposal, the Bidder certifies:

1. That (I)(we)(it) is able to and will perform the balance of all work which is not covered in the above subcontractors listing.

2. That the AGENCY will be furnished copies of all subcontracts entered into by subcontractor for this project.

PH

Bidder's Initials

BIDDER'S BOND TO ACCOMPANY PROPOSAL

(Required if the bidder desires to submit bond instead of a certified or cashier's check.)

KNOW ALL PEOPLE BY THESE PRESENTS:

That we, Houalla Enterprises, Ltd. DBA Metro Builders & Engineers Group, Ltd. as principals, and Markel Insurance Company as surety, are held and firmly bound unto the City of Costa Mesa, a municipal corporation, organized under the laws of the State of California and situated in Orange County in the sum of Ten Percent of the Total Amount Bid ($ 10%) to be paid to the City, its successors and assigns, for which payment well and truly to be made, we bind ourselves, our heirs, executors, and administrators, successors or assigns, jointly and severally firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH,

That is the certain proposal of the above bounden, Houalla Enterprises, Ltd. DBA Metro Builders & Engineers Group, Ltd., if accepted by the City of Costa Mesa, and if the above bounden, Houalla Enterprises, Ltd. DBA Metro Builders & Engineers Group, Ltd., his heirs, executors, administrators, successors and assigns, shall duly enter into and execute a contract for such construction, and shall execute and deliver the CERTIFICATE OF INSURANCE and the LABOR AND MATERIAL and the FAITHFUL PERFORMANCE BONDS described within fourteen (14) days from the date of the mailing of a notice of the above bounden, Houalla Enterprises, Ltd. DBA Metro Builders & Engineers Group, Ltd., by and from the City, that said contract is ready for execution, then this obligation shall become null and void; otherwise it shall be and remain in full force and virtue.

IN WITNESS WHEREOF:

We hereunto set our hands and seals this 15th day of November, 2024.

Houalla Enterprises, Ltd. DBA Metro Builders & Engineers Group, Ltd.	Markel Insurance Company
[redacted]	[redacted]
Fouad Houalla, President	Lisa Sayno, Attorney-In-Fact
Contractor/ Principal (Notary Acknowledgement to be attached)	Surety/Power of Attorney (Notary Acknowledgment to be attached)

MARKEL INSURANCE COMPANY CORPORATE SEAL ILLINOIS

FH

Bidder's Initials

MARKEL

September 29, 2022

Bond Obligees
Project Owners
General Contractors

RE: Digital Seal Authority and Enforceability Notice

To whom it may concern:

The use of an electronic image of the corporate seal of Markel Insurance Company or SureTec Insurance Company (the "Digital Seal"), and the attachment of the Digital Seal to any surety bond issued by Markel Insurance Company or SureTec Insurance Company is authorized by the company. Markel Insurance Company and SureTec Insurance Company acknowledge and agree that the Digital Seal may be affixed to any Surety bond and relied upon to the same extent as if a raised corporate seal was attached to the bond.

Delivery of a digital copy of this Digital Seal Authority and Enforceability Notice, executed electronically, to an Obligee or Obligee's representative, shall constitute effective execution and delivery of this notice and shall have the same legal effect as a delivery of a tangible original of the notice with my original "wet" signature.

If you require further verification you may call our Home Office Underwriting Center at 1-800-732-0999 or send a verification request to bondverification@markel.com.

In Witness Whereof, this has been executed by the Executive Vice President and Chief Underwriting Officer, Surety for each of Markel Insurance Company and SureTec Insurance Company.

[redacted]

Lindey Jennings, EVP Chief Underwriting Officer

MARKEL INSURANCE COMPANY CORPORATE SEAL ILLINOIS

SURETEC INSURANCE COMPANY TEXAS

CALIFORNIA ACKNOWLEDGMENT CIVIL CODE § 1189

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California
County of Orange

On 11/15/2025 before me, Shelly Jean Irvine,
Date *Here Insert Name and Title of the Officer*

personally appeared Fouad Hovalla
Name(s) of Signer(s)

who proved to me on the basis of satisfactory evidence to be the person(~~s~~) whose name(~~s~~) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ie~~s~~), and that by his/her/their signature(~~s~~) on the instrument the person(~~s~~), or the entity upon behalf of which the person(~~s~~) acted, executed the instrument.

SHELLY JEAN IRVINE
Notary Public - California
Orange County
Commission # 2358750
My Comm. Expires May 24, 2025

Place Notary Seal and/or Stamp Above

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature [redacted]
Signature of Notary Public

OPTIONAL

Completing this information can deter alteration of the document or fraudulent reattachment of this form to an unintended document.

Description of Attached Document

Title or Type of Document: _____

Document Date: _____ Number of Pages: _____

Signer(s) Other Than Named Above: _____

Capacity(ies) Claimed by Signer(s)

Signer's Name: _____	Signer's Name: _____
☐ Corporate Officer – Title(s): _____	☐ Corporate Officer – Title(s): _____
☐ Partner – ☐ Limited ☐ General	☐ Partner – ☐ Limited ☐ General
☐ Individual ☐ Attorney in Fact	☐ Individual ☐ Attorney in Fact
☐ Trustee ☐ Guardian or Conservator	☐ Trustee ☐ Guardian or Conservator
☐ Other: _____	☐ Other: _____
Signer is Representing: _____	Signer is Representing: _____

©2019 National Notary Association

CONTRACT ASSURANCE

The CONTRACTOR or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The CONTRACTOR shall carry out applicable requirements of 49 CFR part 26 in the award and administration of DOT-assisted contracts. Failure by the CONTRACTOR to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as recipient deems appropriate.

The CONTRACTOR will require that the above provision is included in all subcontracts.

FH

Bidder's Initials

NONCOLLUSION AFFIDAVIT

The bidders, by its officers and agents or representatives present at the time of filing this bid, being duly sworn on their oaths say, that neither they nor any of them have in any way directly or indirectly entered into any arrangement or agreement with any other bidder, or with any public officer of such CITY OF COSTA MESA whereby such affiant or affiants or either of them has paid or I s to pay to such bidder or public officer any sum of money, or has given or is to give to such other bidder or public officer anything of value whatever, or such affiant or affiants or either of them has not directly or indirectly, entered into any arrangement or agreement with any other bidder or bidders, which tends to or does lessen or destroy free competition in the letting of the contract sought for on the attached bids; that no bid has been accepted from any subcontractor or supplier through any bid depository, the By-Laws, Rules, or Regulations of which prohibit or prevent the Contractor from considering any bid from any subcontractor or supplier which is not processed through said bid depository, or which prevent any subcontractor or supplier from bidding to any Contractor who does not use the facilities or accept bids from or through such bid depository; that bidder has not bid as subcontractor to other bidders; that no inducement of any form or character other than that which appears upon the face of the bid will be suggested, offered, paid or delivered to any person of the contract, nor has this bidder any agreement or understanding of any kind whatsoever, with any person whomsoever to pay, deliver to, or share with any other person in any way or manner, any of the proceeds of the contracts sought by this bid.

Metro Builders & Engineers Group, Ltd.
Contractor Firm Name

Fouad Houalla
Name of Principal

President
Ti[redacted]

Signature

Subscribed and sworn to before me by:

_____

This ____ day of _____, 20___.

My Commission Expires: _____

_____
Notary Public

FH
Bidder's Initials

*See Attached Notary

ATTACHMENT 1

Metro Builders & Engineers Group, Ltd.

June 27, 2025

BID REDUCTION SUMMARY

Project: Tewinkle Park Lakes Repair and Rehabilitation Project - Rebid

Jobsite Location: 970 Arlington Drive, Costa Mesa, CA 92626

Hello Derek,

Please see below the breakdown for inclusions and exclusions from the scope of work included in our bid:

Inclusions:

1. Bonds and Insurance	$37,500
a. Lump Sum per plans and specs	
2. General Conditions (Project Management, Supervision)	$255,000
a. Lump Sum	
3. Temp Facilities including temp fence	$92,500
a. Per Plan W110 and specs	
4. Mobilization and Demobilization	$18,750
a. Per plans and specs	
5. Erosion Control, BMPs and other housekeeping items	$31,250
a. Per Plan W110 and specs	
6. Demolition	$115,000
a. Per plans W211, W221, W240 Detail B.	
7. Survey	$18,750
a. Per plans and specs	
8. Grading, Earth Moving, Sludge Removal	$258,750
a. Per plan W215, W224	
9. Lake work	$1,222,777

a. Per plan W100, W101, W102, W213, W215, W222, W224, W250, W251, W252, W253
b. Gabion walls replaced with concrete curb in Detail C sheet W250
c. Connection of pump house building to lake 1 & 2 only per sheet W410, W411.
d. Establish lines, grades and elevations from existing conditions and proposed benchmarks.
e. Excavate and deliver the lake fine grade to a tolerance of +\- 1/10 foot at a slope not to exceed 4:1 in any circumstance, prior to installation of liner system.
f. Excavate lakes anchor trench, finish shape on ponds, streams, planters and shoreline areas as required.
g. Furnish and install lake perimeter discharge and ponds as required.
h. Furnish and install 60lft of 14" P.I.P. PVC intake pipe at Lake 1 to existing line point of connection per plan.
i. Prepare the sub grade and fine grade the lake prior to installing the RPE liner.
j. Furnish and install 30mil RPE liner in Lake 1 & 2 and streams 1 & 2.

k. Furnish and install 3" minimum wire reinforced concrete veneer over liner in Lake 1 & 2.
l. Furnish and install 4" minimum wire reinforced concrete shoreline and 2" Minimum veneer over liner in Stream 1 & 2 per construction details on plan sheet W252 and W256.
m. Furnish and install shoreline sections for natural shoreline & boulder wall shoreline
n. Include 8"x8" keyway, per plan.
o. Furnish and install 2" minimum wire reinforced concrete veneer over liner at streams and wet set 4" to 12" dia. cobble in streams bed per construction details on plan sheet W256 detail "E".
p. Furnish and install 8" X 5' Wide shelve reinforce concrete at Waterfall footing with #4 rebar over liner per construction details on plan sheet W256 detail "B".
q. Furnish and install pin and strap liner connection at deck shoreline.
r. Furnish and install reduced size boulders and cobble as shown in shorelines, planters. Boulders to be grouted in place in areas as required.
s. We assume to reuse and place existing 250 tons of boulders on site and cobble on streams and ponds as shown in plans.
t. Furnish and install 2" PVC conduit and Junction boxes for Floating Fountain from pump room to Lakes 1 & 2.
u. Reuse and install all 6 floating fountains on Lake 1 & 2 assuming all work and in good condition.
v. Furnish and Install 3'x3' Epoxy coated Intake Screen.

10. Landscape and Irrigation $264,500
    a. Per plan W212, W216, W217, W260
    b. Planting at 3' on center
    c. Turf is included as hydroseed
    d. Stabilized DG up to 3" depth
    e. Aquatic soil at 9" depth
11. Concrete walkway $70,000
    a. Per plans W215
12. Electrical Work $75,000
    a. Per plans W500, W501, W502, W503
    b. All electrical work related to chemical system is excluded.

<u>Revised Bid Price:</u> **$2,459,777**

Allowance as mentioned in Bid Proposal Base Bid Line Item 2 – Additional Work Items As directed by the Engineer (via Force Account) **$100,000**

<u>Exclusions - Breakdown:</u>

1. Deductive Item #1 – Pond and stream 1 $168,420
    a. Per plans and specs

2. Deductive Item #2 – Pond and stream 2 $107,315
    a. Per plans and specs
3. Gabion Walls for concrete curb $184,966
    a. Per Detail C sheet W250
4. Other work $90,505
    a. Exclude Bridge and Wooden deck removal per details F & D from Sheet W240
    b. All work in pump house building except work indicated in inclusions per sheet W410 and W411
5. Chemical system and Discharge pipe $140,117
    a. Exclude Chemical and 24" discharge stand system per details B & F Sheet W253
    b. Exclude work in Sheet W400, W410, W450, W451
6. Planting spacing as indicated in contact drawings is excluded. See inclusion for change of scope. $30,000
    a. Lump Sum
7. Dewatering $100,000
    a. Lump sum
8. Wildlife Removal $42,100
    a. Per plans and specs
9. Boulder as indicated in drawings see inclusion for change of scope $24,500
    a. Lump sum
10. Landscaping and irrigation on the island $18,900
    a. Lump sum
    b. Exclude irrigations and landscaping from sheets W212, W216, W217, W260

<u>Total Savings</u> **$906,823**

Please let me know if you would like to discuss this further.

Sincerely,

Richard Quattrocchi
(949) 500-1938
richard@metrobuilders.com
Metro Builders & Engineers Group, Ltd.
CA State Contractor's License #597589 (A, B, C-10, C-51)
CA State DIR #1000002925
MWD SBE Cert 166228

State of California - Natural Resources Agency

Department of Parks and Recreation

GRANT CONTRACT

General Fund

Specified Grants

GRANTEE City of Costa Mesa

GRANT PERFORMANCE PERIOD is from July 01, 2022 through June 30, 2026

CONTRACT PERFORMANCE PERIOD is from July 01, 2022 through June 30, 2026

The GRANTEE agrees to the terms and conditions of this Contract, and the State of California, acting through its Director of Parks and Recreation, pursuant to the State of California, agrees to fund the total State grant amount indicated below. The GRANTEE agrees to complete the GRANT SCOPE(s) as defined in the GRANT SCOPE /Cost Estimate Form of the application(s) filed with the State of California.

Total State grant amount not to exceed $10,000,000.00

The General and Special Provisions attached are made a part of and incorporated into the Contract.

City of Costa Mesa
GRANTEE

By Lori Ann Farrell Harrison
[redacted]
Signature of Authorized Representative

Address 77 Fair Drive, Costa Mesa, CA 92626

Title City Manager

Date 4/4/23

STATE OF CALIFORNIA
DEPARTMENT OF PARKS AND RECREATION

By

Date

CERTIFICATION OF FUNDING
(For State Use Only)

CONTRACT NO	AMENDMENT NO	FISCAL SUPPLIER I.D.			PROJECT NO.
C5055053		0000006990			SG-30-018
AMOUNT ENCUMBERED BY THIS DOCUMENT		FUND.			
$10,000,000.00		General Fund			
PRIOR AMOUNT ENCUMBERED FOR THIS CONTRACT		ITEM	CHAPTER	STATUTE	FISCAL YEAR
		3790-101-0001	43	22	2022/23
TOTAL AMOUNT ENCUMBERED TO DATE $	Reporting Structured.	Account/Alt Account.	ACTIVITY CODE	PROJECT / WORK PHASE	
$10,000,000.00	37900091	5432000-5432000000	60067		

I. RECITALS

This CONTRACT is entered into between the California Department of Parks and Recreation (hereinafter referred to as "GRANTOR," "DEPARTMENT" or "STATE") and City of Costa Mesa (hereinafter referred to as "GRANTEE").

The DEPARTMENT hereby grants to GRANTEE a sum (also referred to as "GRANT MONIES") not to exceed $10,000,000, subject to the terms and conditions of this AGREEMENT and the 2022/23 California State Budget, Chapter 43, statutes of 2022, Item number – 3790-101-0001 (appropriation chapter and budget item number hereinafter referred to as "SPECIFIED GRANT"). These funds shall be used for completion of the GRANT SCOPE(S).

The Grant Performance Period is from July 01, 2022 to June 30, 2026.

II. GENERAL PROVISIONS

A. Definitions

As used in this CONTRACT, the following words shall have the following meanings:

1. The term "APPLICATION" means the individual project APPLICATION packet for a project pursuant to the enabling legislation and/or grant program PROCEDURAL GUIDE requirements.

2. The term "CONTRACT PERFORMANCE PERIOD" means the duration of time during which this CONTRACT is in effect.

3. The term "DEPARTMENT" or "STATE" means the California Department of Parks and Recreation.

4. The term "DEVELOPMENT" means capital improvements to real property by means of, but not limited to, construction, expansion, and/or renovation, of permanent or fixed features of the property.

5. The term "GRANTEE" means the party described as the GRANTEE in Section I of this AGREEMENT.

6. The term "GRANT PERFORMANCE PERIOD" means the period of time during which eligible costs may be incurred by the GRANTEE and paid for by the DEPARTMENT, as specified in the fully executed CONTRACT.

7. The term "GRANT PROJECT" means all real estate, leases, subleases, buildings, and other property acquired or developed with GRANT monies.

8. The term "GRANT SCOPE" means the items listed in the GRANT SCOPE/Cost Estimate Form found in each of the APPLICATIONS submitted pursuant to this grant.

9. The term "PROCEDURAL GUIDE" means the document identified as the "Procedural Guide for Jack Hammett Sports Complex, TeWinkle Athletic Complex Specified Grant." The PROCEDURAL GUIDE provides the procedures and policies controlling the administration of the grant.

B. Project Execution

1. Subject to the availability of GRANT MONIES, the STATE hereby grants to the GRANTEE a sum of money not to exceed the amount stated in Section I of this CONTRACT, in consideration of, and on condition that, the sum be expended in carrying out the purposes as set forth in the scope described in the enabling legislation and referenced in the APPLICATION, Section I of this CONTRACT, and under the terms and conditions set forth in this CONTRACT.

   The GRANTEE shall assume any obligation to furnish any additional funds that may be necessary to complete the GRANT SCOPE(S).

   During the CONTRACT PERFORMANCE PERIOD, the GRANTEE agrees to submit any proposed change or alteration from the original GRANT SCOPE(S) in writing to the STATE for prior approval. This applies to any and all proposed changes that will occur after STATE has approved the APPLICATION. Changes in the GRANT SCOPE(S) must first be approved in writing by the STATE.

2. The GRANTEE shall complete the GRANT SCOPE(S) in accordance with the time of the Performance Period set forth in Section I of this CONTRACT, and under the terms and conditions of this contract.

3. The GRANTEE shall comply with the California Environmental Quality Act (Public Resources Code, Section 21000, et seq., Title 14, California Code of Regulations, Section 15000 et seq.).

4. The GRANTEE shall comply with all applicable current laws and regulations affecting DEVELOPMENT projects, including, but not limited to, legal requirements for construction contracts, building codes, health and safety codes, and laws and codes pertaining to individuals with disabilities, including but not limited to the Americans With Disabilities Act of 1990 (42 U.S.C. §12101 et seq.) and the California Unruh Act (California Civil Code §51 et seq.)

C. Project Costs

1. GRANTEE agrees to abide by the PROCEDURAL GUIDE.

2. GRANTEE acknowledges that STATE may make reasonable changes to its procedures as set forth in the PROCEDURAL GUIDE. If STATE makes any changes to its procedures and guidelines, STATE agrees to notify GRANTEE within a reasonable time.

D. Project Administration

1. If GRANT MONIES are advanced for DEVELOPMENT projects, the advanced funds may be placed in an interest bearing account until expended. Interest earned on the advanced funds shall be used on the project as approved by the STATE. If grant monies are advanced and not expended, the unused portion of the grant and any interest earned shall be returned to the STATE within 60 days after project completion or end of the GRANT PERFORMANCE PERIOD, whichever is earlier.
2. During the GRANT PERFORMANCE PERIOD, the GRANTEE shall submit written project status reports within 30 calendar days after the STATE has made a specific request. All such project status reports shall be signed and certified as complete and accurate by the authorized representative of the GRANTEE. In any event, the GRANTEE shall provide the STATE a report showing total final project expenditures within 60 days of project completion or the end of the GRANT PERFORMANCE PERIOD, whichever is earlier. The GRANT PERFORMANCE PERIOD is identified in Section I of this CONTRACT.
3. The GRANTEE shall make property or facilities acquired and/or developed pursuant to this contract available for inspection upon request by the STATE.

E. Project Termination

1. Project Termination refers to the non-completion of a GRANT SCOPE. Any grant funds that have not been expended by the GRANTEE shall revert to the STATE.
2. The GRANTEE may unilaterally rescind this contract at any time prior to the commencement of the project. The commencement of the project means the date of the letter notifying GRANTEE of the award or when the funds are appropriated, whichever is later. After project commencement, this contract may be rescinded, modified or amended only by mutual CONTRACT in writing between the GRANTEE and the STATE, unless the provisions of this contract provide that mutual CONTRACT is not required.
3. Failure by the GRANTEE to comply with the terms of the (a) PROCEDURAL GUIDE, (b) this CONTRACT or any other grant contracts, specified or general, that GRANTEE has entered into with STATE or any other department, agency, commission or other subdivision of California State government, may be cause for suspension of all obligations of the STATE unless the STATE determines that such failure was due to no fault of the GRANTEE. In such case, STATE may reimburse GRANTEE for eligible costs properly incurred in performance of this CONTRACT despite non-performance of the GRANTEE. To qualify for such reimbursement, GRANTEE agrees to mitigate its losses to the best of its ability.
4. Any breach of any term, provision, obligation or requirement of this CONTRACT by the GRANTEE shall be a default of this CONTRACT. In the case of any default by GRANTEE, STATE shall be entitled to all remedies available under law and equity, including but not limited to: a) Specific Performance; b) Return of all GRANT MONIES; c) Payment to the STATE of the fair market value of the project property

or the actual sales price, whichever is higher; and d) Payment to the STATE of the costs of enforcement of this CONTRACT, including but not limited to court and arbitration costs, fees, expenses of litigation, and reasonable attorney fees.

5. The GRANTEE and the STATE agree that if the GRANT SCOPE includes DEVELOPMENT, final payment may not be made until the work described in the GRANT SCOPE is complete and the GRANT PROJECT is open to the public.

F. Budget Contingency Clause

If funding for any fiscal year is reduced or deleted by the budget act for purposes of this program, the STATE shall have the option to either cancel this contract with no liability occurring to the STATE, or offer a CONTRACT amendment to GRANTEE to reflect the reduced grant amount. This Paragraph shall not require the mutual CONTRACT as addressed in Paragraph E, subsection 2, of this CONTRACT

G. Hold Harmless

1. The GRANTEE shall waive all claims and recourse against the STATE including the right to contribution for loss or damage to persons or property arising from, growing out of or in any way connected with or incident to this CONTRACT except claims arising from the concurrent or sole negligence of the STATE, its officers, agents, and employees.

2. The GRANTEE shall indemnify, hold harmless and defend the STATE, its officers, agents and employees against any and all claims, demands, damages, costs, expenses or liability costs arising out of the ACQUISITION, DEVELOPMENT, construction, operation or maintenance of the property described as the project which claims, demands or causes of action arise under California Government Code Section 895.2 or otherwise except for liability arising out of the concurrent or sole negligence of the STATE, its officers, agents, or employees.

3. The GRANTEE agrees that in the event the STATE is named as codefendant under the provisions of California Government Code Section 895 et seq., the GRANTEE shall notify the STATE of such fact and shall represent the STATE in the legal action unless the STATE undertakes to represent itself as codefendant in such legal action in which event the GRANTEE agrees to pay the STATE's litigation costs, expenses, and reasonable attorney fees.

4. The GRANTEE and the STATE agree that in the event of judgment entered against the STATE and the GRANTEE because of the concurrent negligence of the STATE and the GRANTEE, their officers, agents, or employees, an apportionment of liability to pay such judgment shall be made by a court of competent jurisdiction. Neither party shall request a jury apportionment.

5. The GRANTEE shall indemnify, hold harmless and defend the STATE, its officers, agents and employees against any and all claims, demands, costs, expenses or

liability costs arising out of legal actions pursuant to items to which the GRANTEE has certified. The GRANTEE acknowledges that it is solely responsible for compliance with items to which it has certified.

H. Financial Records

1. The GRANTEE shall maintain satisfactory financial accounts, documents, including loan documents, and all other records for the project and shall make them available to the STATE for auditing at reasonable times. The GRANTEE also agrees to retain such financial accounts, documents and records for five years following project termination or final payment.

2. The GRANTEE shall keep such records as the STATE shall prescribe, including records which fully disclose (a) the disposition of the proceeds of STATE funding assistance, (b) the total cost of the project in connection with such assistance that is given or used, (c) the amount, source and nature of that portion of the project cost supplied by other sources, and (d) any other such records that will facilitate an effective audit.

3. The GRANTEE agrees that the STATE shall have the right to inspect and make copies of any books, records or reports pertaining to this contract or matters related thereto during regular office hours. The GRANTEE shall maintain and make available for inspection by the STATE accurate records of all of its costs, disbursements and receipts with respect to its activities under this CONTRACT, and shall provide copies of all such records to STATE in its certified status reports upon request by the STATE. Such accounts, documents, and records shall be retained by the GRANTEE for at least five years following final payment.

4. The GRANTEE shall use a generally accepted accounting system.

I. Use of Facilities

1. The GRANTEE agrees that the GRANTEE shall operate and maintain, and retain full control of the property acquired or developed with the GRANT MONIES, for the duration of the CONTRACT PERFORMANCE PERIOD.

2. The GRANTEE agrees that, during the CONTRACT PERFORMANCE PERIOD, the GRANTEE shall use the property acquired or developed with grant funds under this CONTRACT only for the purposes of this grant and no other use, sale, assignment, transfer, mortgage, or other disposition or change of the control or use of the property or of any interest in the property to one not consistent with the grant purpose shall be permitted except as authorized by the DEPARTMENT and the property shall be replaced with property of equivalent value and usefulness as determined by the STATE.

3. The property acquired or developed may be transferred or assigned to another entity only if the successor entity assumes the obligations imposed under this CONTRACT and only with the prior approval of STATE.

4. Any real Property (including any portion of it or any interest in it, including any leases) may not be used as security or collateral for any debt, loan or mitigation, without the prior written approval of the STATE, provided that such approval shall not be unreasonably withheld as long as the purposes for which the grant was awarded are maintained. Any such permission that is granted does not make STATE a guarantor or a surety for any debt, loan or mitigation, nor does it waive STATE's rights to enforce performance under the CONTRACT.

5. All real property (including any portion or interest in it, including any leases), or rights thereto, acquired with GRANT MONIES shall be subject to an appropriate form of restrictive title, rights, or covenants approved by the STATE. If the project property is taken by use of eminent domain, GRANTEE shall reimburse STATE an amount at least equal to the amount of grant monies received from STATE or the pro-rated full market value of the real property, including improvements, at the time of sale, whichever is higher.

6. If eminent domain proceedings are initiated against GRANTEE, GRANTEE shall notify STATE within 10 days of receiving the complaint.

J. Nondiscrimination

1. The GRANTEE shall not discriminate against any person on the basis of sex, race, color, national origin, age, religion, ancestry, sexual orientation, or disability in the use of any property or facility developed pursuant to this CONTRACT.

2. The GRANTEE shall not discriminate against any person on the basis of residence except to the extent that reasonable differences in admission or other fees may be maintained on the basis of residence and pursuant to law.

3. All facilities shall be open to members of the public generally, except as noted under the special provisions of this project contract or under provisions of the enabling legislation and/or grant program.

K. Severability

If any provision of this CONTRACT or the application thereof is held invalid, that invalidity shall not affect other provisions or applications of the CONTRACT which can be given effect without the invalid provision or application, and to this end the provisions of this CONTRACT are severable.

L. Liability

1. STATE assumes no responsibility for assuring the safety or standards of construction, site improvements or programs related to the GRANT SCOPE. The STATE'S rights under this CONTRACT to review, inspect and approve the GRANT SCOPE and any final plans of implementation shall not give rise to any warranty or representation that the GRANT SCOPE and any plans or improvements are free from hazards or defects.

2. GRANTEE shall ensure that any contractor hired has adequate liability insurance, performance bond, or other security necessary to protect the GRANTEE interest and the STATE's interest against poor workmanship, fraud, or other potential loss associated with the completion of the GRANT PROJECT.

M. Assignability

Without the written consent of the STATE, the GRANTEE'S interest in and control of any portion of the GRANT PROJECT and responsibilities under this CONTRACT shall not be assignable or transferable by the GRANTEE either in whole or in part.

N. Use of Grant Monies

GRANTEE shall not use any grant funds (including any portion thereof) for the purpose of making any leverage loan, pledge, promissory note or similar financial device or transaction, without: 1) the prior written approval of the STATE; <u>and</u> 2) any financial or legal interests created by any such leverage loan, pledge, promissory note or similar financial device or transaction in the project property shall be completely subordinated to this CONTRACT through a Subordination Agreement provided and approved by the STATE, signed by all parties involved in the transaction, and recorded in the County Records against the fee title of the project property.

O. Section Headings

The headings and captions of the various sections of this CONTRACT have been inserted only for the purpose of convenience and are not a part of this CONTRACT and shall not be deemed in any manner to modify, explain, or restrict any of the provisions of this CONTRACT

P. Waiver

Any failure by a party to enforce its rights under this CONTRACT, in the event of a breach or default, shall *not* be construed as a waiver of said rights; and the waiver of any breach or default under this CONTRACT shall *not* be construed as a waiver of any subsequent breach.

III. Special Provisions:

On March 4, 2022, Governor Gavin Newsom issued Executive Order N-6-22 (the EO) regarding Economic Sanctions against Russia and Russian entities and individuals. "Economic Sanctions" refers to sanctions imposed by the U.S. government in response to Russia's actions in Ukraine, as well as any sanctions imposed under state law. The EO directs state agencies to terminate contracts with, and to refrain from entering any new contracts with, individuals or entities that are determined to be a target of Economic Sanctions. This Executive order extends to recipients of any State Grants (Grantee). Grantees include those who have contracted or will contract to receive State grants funds. Accordingly, should the State determine that a Grantee is a target of Economic Sanctions or is conducting prohibited transactions with sanctioned individuals or entities, that shall be grounds for termination of this agreement. The State shall provide the Grantee advance written notice of such termination, allowing the Grantee at least 30 calendar days to provide a written response. Termination of any contract found to be in violation of this Executive Order shall be at the sole discretion of the State.

City of Costa Mesa
GRANTEE

By: [redacted]
Signature of Authorized Representative

Title: City Manager

Date: 4/4/23

EXHIBIT B

BID PACKAGE

CITY OF COSTA MESA

ORANGE COUNTY, CALIFORNIA

NOTICE TO BIDDERS, PROPOSAL, CONTRACT, AND
SPECIAL PROVISIONS FOR

TeWINKLE PARK LAKES REPAIR AND REHABILITATION PROJECT

CITY PROJECT NO. 24-12

Prepared Under the Direction of

Seung Yang, P.E.

City Engineer

Copy No. _____ Checked by _____

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PROPOSAL
FOR THE

TEWINKLE PARK LAKES REPAIR AND REHABILITATION PROJECT, CITY PROJECT NO. 24-12

The Honorable City Council
City of Costa Mesa
77 Fair Drive
Costa Mesa, CA 92626

Dear Council Members:

In compliance with the NOTICE INVITING BIDS FOR THE **TEWINKLE PARK LAKES REPAIR AND REHABILITATION PROJECT, CITY PROJECT NO. 24-12,** a copy which is hereto attached, the undersigned has carefully examined the location of the proposed Work, the Plans, Specifications and other Contract Documents and is therefore satisfied as to the conditions to be encountered, as to the character, quality and quantity of work to be performed and materials to be furnished and as to the requirements of the specifications and the Contract. It is mutually agreed that the submission of a proposal shall be considered prima facie evidence that the BIDDER has made such examination.

If awarded the Contract, the undersigned agrees to commence the Work under the Contract **WITHIN TEN (10) WORKING DAYS AFTER DATE OF CONTRACT, AND COMPLETE SAID WORK WITHIN ONE-HUNDRED (100) WORKING DAYS** from the first day of commencement of such work unless legal extension is granted in accordance with the terms set forth in the specifications, and to perform and complete the Work as shown on the Plans and in accordance with the Specifications and other Contract Documents, and to furnish all labor, materials, tools and equipment necessary to complete the Work in-place therefor, in the manner and time herein prescribed at the following prices, to wit:

BID SECURITY: Each bidder must submit an **ORIGINAL** certified check, cashier's check, or a bid bond, made payable to or in favor of the City of Costa Mesa, in an amount equal to at least ten percent (10%) of the total amount of the bid, to the Costa Mesa City Clerk ***AT LEAST ONE HOUR PRIOR*** to the bid submission deadline. No bid will be considered unless such certified check, cashier's check, or bid bond was received by the City Clerk prior to the bid submission deadline. ***NO electronic bid securities through e-mail or other electronic means will be accepted.***

_____
Bidder's Initials

SECTION D
GENERAL PROVISIONS

PART 1

SECTION 1 – GENERAL

1-2 GENERAL

[Add the following:].

Except as hereinafter provided, the provisions of the latest edition of the Standard Specifications for Public Works Construction (“Green Book”), and all amendments thereto, adopted by the Joint Cooperative Committee of Southern California Chapter, American Public Works Association, Southern California District and Associated Contractors of California; hereinafter referred to as Standard Specifications, are adopted as the "Standard Specifications of the City of Costa Mesa" and shall be considered as a part of these specifications. Copies of the Standard Specifications are available from the publisher:

BNi Building News

1612 S. Clementine Street

Anaheim, California 92802

(714) 517-0971

Where specified in these specifications, the latest edition of the California Building Code, based on the latest edition of the International Building Code, the latest edition of the "Standard Specifications and Standard Plans of the State of California, Department of Transportation, Division of Highways," "Standard Plans of the Orange County Environmental Management Agency," and "Los Angeles County Flood Control District, Design Manual, Standard Drawings" shall apply or unless otherwise noted in these specifications or at the direction of the ENGINEER.

Where referenced in these Specifications, the latest edition of the “City of Costa Mesa Standard Drawings” and the “Work Area Traffic Control Handbook (WATCH)” published by Building News, Inc., shall also apply.

The section numbers of these General Provisions coincide with those of the said Standard Specifications. Only those sections requiring amendment, elaboration, or specifying options, are called out.

The following modifications are made to the "Standard Specifications." If there is a conflict between the "Standard Specifications" and these modifications, these modifications shall have first precedence.

1-2 TERMS AND DEFINITIONS

[Add or redefine the following:].

(a) AGENCY	The City of Costa Mesa, California, hereinafter referred to as "CITY."
(b) BOARD	The City Council of the City of Costa Mesa, California, hereinafter referred to as "BOARD."
(c) CONTRACT DOCUMENTS	Documents including but not limited to the following: The proposal form P-1 through P-9b, Notice Inviting Bids, Standard Specifications, General Provisions, Special Provisions, Plans, Bonds, Insurance Certificates, Agreement, and all Addenda setting forth any modifications of the documents as further specified in contract agreement.
(d) ENGINEER	The administrating officer of the City of Costa Mesa or his authorized representative hereinafter referred to as ENGINEER.
(e) BIDDER	Any individual, firm, partnership, corporation, or combination thereof, submitting a bid proposal for the work contemplated in the contract documents, acting directly or through a duly authorized representative, hereinafter referred to as BIDDER.
(f) LEGAL ADDRESS OF CONTRACTOR	The legal address of the Contractor shall be the address given on the Contractor's bid and is hereby designated as the place to which all notices, letters or other communications to the Contractor shall be mailed or delivered.
(g) LABORATORY	An established laboratory approved and authorized by the ENGINEER for testing materials and work involved in the contract.

1-3 ABBREVIATIONS

CALTRANS	State of California, Department of Transportation, Division of Highways
O.C.E.M.A.	Orange County Environmental Management Agency
L.A.C.F.C.D.	Los Angeles County Flood Control District

1-6 BIDDING AND SUBMISSION OF THE BID

1-6.1 General

[Add the following:].

Proposal shall be made and submitted on proposal forms P-1a through P-11 in accordance with the Notice Inviting Bids. In addition to the required signatures in the spaces provided in the proposal forms, each BIDDER shall initial each sheet of the proposal forms at the bottom right hand corner.

No person, firm, partnership, corporation, or combination thereof shall be allowed to make or file or be interested in more than one bid for the same work, unless alternate bids are called for. A person, firm, partnership, corporation, or combination thereof who has submitted a sub-proposal to a BIDDER or who has quoted prices on materials to a BIDDER is not thereby disqualified from submitting a sub-proposal to or quoting prices to the other bidders. If, on the opening of bids, more than one bid appears in which the same person, firm, partnership, corporation or combination thereof is interested as a principal, all such bids shall be rejected.

Proposals with interlineations, alterations, or erasures shall be initialed by the BIDDER'S authorized agent. Alternative proposals, special conditions, or other limitations or provisions affecting the bid, except as such called for in the contract documents, will render the bid informal and may cause its rejection.

All proposals must give the prices bid for the various items of work and must be signed by the BIDDER, who shall give his address. Each bid shall have thereon the affidavit of the BIDDER that such bid is genuine and not sham nor collusive, nor made in the interest nor behalf of any other person not therein named and that the BIDDER has not directly nor indirectly induced or solicited any other BIDDER to put in a sham bid, nor induced nor solicited any person, firm, partnership, corporation, or combination thereof to refrain from bidding, and that the BIDDER has not in any manner sought by collusion to secure himself an advantage over any other BIDDER.

A contractor or subcontractor shall not be qualified to bid on, be listed in a bid proposal, subject to the requirements of Section 4104 of the Public Contract Code, or engage in the performance of any contract for public work, as defined in this chapter, unless currently registered and qualified to perform public work pursuant to Section 1725.5 of the Labor Code. It is not a violation of this section for an unregistered contractor to submit a bid that is authorized by Section 7029.1 of the Business and Professions Code or by Section 10164 or 20103.5 of the Public Contract Code, provided the contractor is registered to perform public work pursuant to Section 1725.5 at the time the contract is awarded.

1-6.1.1 Request for Interpretation

If any person contemplating submitting a bid is in doubt as to the meaning of any part of the Plans, Specification, or other proposed Contract Documents, or finds discrepancies in, or omissions from the drawings or specifications, (It, he, she) may make a request to the ENGINEER, in writing, for an interpretation or correction thereof pursuant to the provisions in the Information for Bidders section of these specifications. The person

submitting such a request shall be responsible for its prompt delivery. All such interpretations of the Contract Documents will be made only by addenda duly issued, and a copy of each such addendum will be mailed or delivered to each person receiving a set of Contract Documents at (its, his, her) last address of record. The CITY will not be responsible for any other explanations or interpretations of the Contract Documents.

1-6.1.2 Soil Conditions

The BIDDER shall inspect the soil conditions before submitting a bid. By submitting a bid, the BIDDER acknowledges that he is satisfied with the quality of the work area including but not restricted to the conditions affecting, handling and storage of materials, disposal of excess materials, and the soil conditions.

1-6.1.3 Return of Bid Security

Any BIDDER may withdraw its bid, either personally, or by telegraphic or written request, at any time prior to the scheduled closing time for the receipt of bids. It is the sole responsibility of the BIDDER to see that any such telegraphic or written request is delivered to the City Clerk prior to said closing time. Bid security of such BIDDERS will be returned promptly to the BIDDER.

The bid security of the BIDDER whose bid is accepted will be held by the CITY until the contract has been executed and the accompanying insurance certificates, performance bond and labor and materials bond are approved and filed, whereupon the bid security will then be returned to the BIDDER.

The bid security of the second and third lowest BIDDERS will be retained until the contract is awarded to and executed by the BIDDER whose bid is accepted, or until 45 days after the opening of bids, whichever period is shorter. The bid security of all BIDDERS other than the three lowest will be returned promptly after the opening of bids.

If a BIDDER fails or refuses promptly to execute the agreement to do the work or fails or refuses to comply with insurance and bonding requirements, the bid security shall be forfeited to the CITY and shall be collected and paid into the General Fund of the CITY.

1-6.2 Subcontractor Listing

[Add the following:].

The ENGINEER, as duly authorized officer, may consent to subcontractor substitution requested by the Contractor subject to the limitations and notices prescribed in Section 4107 of the Public Contract Code.

1-7 AWARD AND EXECUTION OF THE CONTRACT

1-7.1 General

[Add the following:].

The award of contract, if awarded, will be to the lowest responsive and responsible bidder whose proposal complies with all requirements of the Notice Inviting Bids and Section 1-6 of these specifications. The BIDDER, upon notification as the "apparent low bidder,"

shall comply with the CITY'S insurance and bonding requirements by submitting the required insurance certificates and bonds within **fourteen (14) days after the mailing of a Notice of Award to the BIDDER that the contract is ready for execution**. The contract will be awarded within thirty (30) days of receipt of properly approved insurance certificates and bonds pursuant to CITY requirements spelled out in these specifications. BIDDER must take particular note of "insurance requirements" contained in these specifications and sample agreement included within the contract documents, and should provide that information to his insurance broker in order that a properly executed certificate is submitted. The CITY, however, reserves the right to reject any or all bids and to waive any informality in the bids received.

1-7.1.1 Execution of Agreement

The Agreement shall be signed by the successful BIDDER and returned to the CITY no later than **fourteen (14) days from Notice of Award** of the Contract by the CITY. Failure to comply with insurance and bonding requirements as specified in the Agreement and in Section 1-7.1 of these General Provisions shall be considered grounds for the revocation and rejection of the bid and forfeiture of bid security. No proposal shall be considered binding upon the CITY until the execution of the agreement by the CITY. In case of conflict, the agreement shall have precedence over all other written specifications.

1-7.2 Contract Bonds

[Add the following:].

The "Faithful Performance Bond" and the "Labor and Material Bond" as specified in this section shall be for one hundred percent (100%) of the Contract price. The Labor and Material Bond shall be maintained by the Contractor in full force and effect for at least seven (7) months following the filing of the Notice of Completion. The Faithful Performance Bond shall also be kept by the Contractor in full force and effect for at least one (1) year following the filing of the Notice of Completion.

CONTRACTOR shall provide the following:

A certified copy of the certificate of authority of the surety issued by the Insurance Commissioner.

A certificate from the clerk of the county in which the court or officer is located that the certificate of authority of the surety has not been surrendered, revoked, canceled, annulled, or suspended or, in the event that it has, that renewed authority has been granted.

Copies of the surety's most recent annual statement and quarterly statement filed with the Department of Insurance pursuant to Article 10 (commencing with Section 900) of Chapter 1 of Part 2 of Division 1 of the Insurance Code.

SECTION 2 – SCOPE OF THE WORK

2-1 WORK TO BE DONE

[Replace in its entirety with the following:].

The scope of work generally consists of all labor, permitting, parts, tools, materials, equipment, deliveries, setup, mobilization, etc., to fully repair and rehabilitate the lakes at TeWinkle Park (a.k.a. TeWinkle Park Lakes). The work includes, but not limited to, the following: mobilization, site fencing, and erosion protection; drainage of the lakes including temporary discharge permit, temporary pipes and hoses for drainage operations; construction survey and layout verification of subgrades, lake outline, pipelines, and all associated facilities; capture and transfer aquatic wildlife; installing new lake liner; construction of aquatic planters; installing new pump stations and structures; aeration; electrical wiring and ancillary work to connect to control panels, pumps, and control systems; etc. The CONTRACTOR shall furnish all labor, materials, tools, equipment and incidentals necessary to perform and complete the Work as shown on the Plans and these Contract Documents, and to the satisfaction of the ENGINEER.

2-2 PERMITS

[Add the following:].

All permits and licenses shall be obtained in sufficient time to prevent delays to the work.

In the event that the CITY has obtained permits, licenses or other authorizations applicable to the work, the Contractor shall comply with the provisions of said permits, licenses and other authorizations.

- The Contractor is directed to obtain all necessary permits for this project from all pertinent agencies, including but not limited to: Costa Mesa Sanitary District (CMSD), Mesa Water District, Irvine Ranch Water District, Santa Ana Regional Water Quality Control Board, U.S. Fish and Wildlife Service, etc.

2-5 THE CONTRACTOR'S EQUIPMENT AND FACILITIES

2-5.1 General

[Add the following:].

The Contractor shall only use the proper construction equipment to protect the City streets from breaking up and deterioration. Haul trucks shall be limited to a gross vehicle weight of 10 tons or less.

2-5.2 Temporary Utility Services

[Add the following:].

The Contractor shall provide for his employees an adequate supply of clean, potable drinking water, which shall be dispensed through approved sanitary facilities.
If water is needed during construction, Contractor shall contact Mesa Consolidated Water District or the Irvine Ranch Water District to obtain necessary permits, instructions, and meters prior to commencing work. The Contractor is required to make any and all necessary installations and connections. All water shall be metered. The Contractor shall pay for all deposits and fees involved.

2-5.4 Haul Routes

[Add the following:].

In order to protect the City streets from deterioration due to hauling of materials, the Contractor shall submit to the ENGINEER (at the pre-construction meeting) for approval, a proposed route for the hauling of materials for disposal. Upon approval, the Contractor shall strictly adhere to that route only, unless written permission from the ENGINEER is obtained to change the route.

Waste Hauler Requirements

The California Green Building Standards Code, 2016 Edition, California Code of Regulations, Title 24, Part 11, impacting waste diversion as documented in the City of Costa Mesa's Municipal Code Chapter 4 of Title 8, requires that all construction and demolition related projects divert 65% of project waste generated from the landfill. Consequently, permitted building projects relating to construction and demolition, newly constructed buildings, additions, alterations, interior and exterior demolitions, etc., are required to divert a minimum of 65% of nonhazardous construction and demolition waste from the landfill by recycling, reuse, or salvage. Generally, these materials include brick, drywall, other masonry, cardboard, green waste, paper, carpet, lumber, plastic, concrete, and/or metals. Asphalt, concrete, excavated soil and land-clearing debris should be 100% diverted from disposal. The County provides a suggested list of locations that are meeting and/or exceeding the 65% diversion requirement and may be used for recycling construction and demolition material.

The City of Costa Mesa requires that all hauling activity in Costa Mesa comply with one of the waste hauling options for your construction and demolition related project:

- Use Franchise Waste Hauler
- Self-Haul Permit - https://www.costamesaca.gov/city-hall/city-departments/public-services/waste-collection-and-recycling

A Construction and Demolition Reporting Form as provided in the Miscellaneous Document Section of these Specifications must be completed and submitted by the Contractor to the CITY prior to the release of retention monies.

2-7 CHANGES INITATED BY THE AGENCY

2-7.1 GENERAL

[Add the following:].

ENGINEER shall be the duly authorized officer of the CITY who may grant the changes prescribed in this section.

2-8 EXTRA WORK

[Add the following:].

The extra work as defined in this section of the Standard Specifications and any work

done by the Contractor beyond the lines and grades shown on the plans shall only be performed when ordered in writing by the ENGINEER. In absence of such written order, any such work by the Contractor shall be considered unauthorized and will not be paid. Work so done may be ordered to be removed at the Contractor's expense.

2-9 CHANGED CONDITIONS

[Add the following:].

The Contractor shall promptly act to supply all information to the ENGINEER for proper evaluation. Failure to do so shall constitute a waiver of any payment for delays suffered by the Contractor.

SECTION 3 – CONTROL OF THE WORK

3-1 ASSIGNMENT

[Replace the 1st sentence with the following:].

No contract or portion thereof may be assigned without written consent of the BOARD.

3-4 AUTHORITY OF THE BOARD AND THE ENGINEER

[Add the following:].

When any of the various units or operations of the work have been suspended, the Contractor shall give at least 24 hours advance notice of the time when he or his subcontractor will start or resume any of such units or operations. That notice is to be given during working hours, exclusive of Saturdays, Sundays or holidays, for the purpose of permitting the ENGINEER to make necessary assignments to his representative on the work.

Any work performed in conflict with said notice, without the presence or approval of the ENGINEER, or work covered up without notice, approval or consent may be rejected or ordered to be uncovered for examination at Contractor's expense and shall be removed at Contractor's expense, if so ordered by the ENGINEER or his representative on the work. Any unauthorized or defective work, defective material or workmanship or any unfaithful or imperfect work that may be discovered before the final payment and final acceptance of work shall be corrected immediately by the Contractor without extra charge even though it may have been overlooked in previous inspections and estimates or may have been caused due to failure to inspect the work.

All authorized alterations affecting the requirements and information given on the approved plans shall be in writing. No changes shall be made on any plan or drawing by the Contractor after the same has been approved by the ENGINEER, except by direction of the ENGINEER in writing. Deviations from the approved plans, as may be required by critical conditions of construction, must be authorized in writing by the ENGINEER.

All instructions, rulings and decisions of the ENGINEER shall be in writing and are binding on all parties unless a formal protest is made as provided in the following paragraph:

If the Contractor considers any work demanded of him to be outside the requirements of the contract, or if he considers any instruction, ruling or decision of the ENGINEER or ENGINEER'S representative to be unfair, the Contractor shall, within ten (10) days after any such demand is made, or instruction, ruling or decision is given, file a written protest with the ENGINEER, stating clearly and in detail his objections and reasons therefor. Except for such protests and objections as are made of record, in the manner and within the time above stated, the Contractor shall be deemed to have waived and does hereby waive all claims for extra work, damages and extensions of time on account of demands, instructions, rulings and decisions of the ENGINEER.

Upon receipt of any such protest from the Contractor, the ENGINEER shall review the demand, instruction, ruling or decision objected to and shall promptly advise the Contractor, in writing, of his final decision, which shall be binding on all parties, unless within the ten (10) days thereafter the Contractor shall file with the BOARD a formal protest against said decision of the ENGINEER. The BOARD shall consider and render a final decision on any such protest within thirty (30) days of receipt of same. If the BOARD fails to consider and render a final decision on any such protest within thirty (30) days of receipt of the same, the protest shall be deemed denied.

3-5 INSPECTION

[Add the following:].

If the Contractor requests and receives approval from the ENGINEER to receive inspection services from the CITY outside of a normal eight (8) hour day/forty (40) hour work week or on Saturday, Sunday, or CITY holidays, the Contractor shall arrange with the CITY and ENGINEER for the special inspection services and Contractor shall pay for such special inspection services at a fee established by the ENGINEER to defray the cost for such service.

All work, which has been inspected and deemed defective in its construction or does not meet all of the requirements of the plans and/or specifications by the ENGINEER shall be remedied, or removed and replaced by the Contractor in an acceptable manner, and no compensation will be allowed for such correction.

Any work done beyond the limits of the lines and grades shown on the plans or established by the ENGINEER or extra work done without written authority will be considered as unauthorized and not be paid.

Upon failure on the part of the Contractor to comply with any order of the ENGINEER made under the provisions of this article, the ENGINEER shall have authority to cause defective work to be remedied, or removed and replaced, and unauthorized work to be removed, and to deduct the costs and thereof from any monies due or to come due the Contractor.

Payment will not be made for materials wasted or disposed of in a manner not called for under the Contract. This includes rejected material not unloaded from vehicles, material

rejected after is has been placed and material placed outside the limits of the project. No compensation will be allowed for disposing of rejected or excess material.

3-6 THE CONTRACTOR'S REPRESENTATIVE

[Add the following:].

Contractor shall file with the ENGINEER the addresses and telephone numbers where its designated representative may be reached during hours when the work is not in progress.

Instructions and information given by the ENGINEER to the Contractor's authorized representative or at the address or telephone numbers filed in accordance with this section shall be considered as having been given to the Contractor.

The Contractor shall have on the work site at all times a competent English-speaking superintendent, as his agent, capable of reading and thoroughly understanding the plans and specifications and other related documents.

3-7 CONTRACT DOCUMENTS

3-7.1 General

[Add the following:].

Contractor will obtain from the ENGINEER, free of charge, copies of plans, general provisions, special provisions and additions to the Standard Specifications that are reasonably necessary for the execution of work.

Contractor shall, at its own expense, obtain copies of the Standard Specifications and Standard Plans and Specifications of CALTRANS, for his general use.

If after the Contract is awarded it appears that the work to be done, or any matter relative thereto, is not sufficiently detailed or explained in the specifications and plans, the Contractor shall apply to the ENGINEER for such further explanations as may be necessary and shall conform to such explanation or interpretation as part of the Contract.

All scaled dimensions are approximate. Before proceeding with the work, the Contractor shall carefully check and verify all dimensions and quantities and shall immediately inform the ENGINEER or his representative of any discrepancies.

3-10 SURVEYING

[Replace with the following:].

3-10.1 General

The Contractor will perform and be responsible for the accuracy of setting all required survey stakes adequate for the construction of the project.

3-10.3 Line and Grade

Unless otherwise provided in the Special Provisions, lines and grades for construction shall be the responsibility of the Contractor, with the following provisions:

All work under this Contract shall be built in accordance with the lines and grades shown on the plans. Field survey for establishing the lines and grades and for the control of construction shall be the responsibility of the Contractor. All such surveys, including construction staking, shall be under the supervision of a California-licensed land surveyor or by a California-licensed civil engineer allowed by law. Staking shall be performed on all items ordinarily requiring grade and alignment, at intervals normally accepted by the agencies and the trade involved.

The Contractor shall provide a copy of the office calculations and grade sheets to the City Inspector. The Contractor shall be responsible for any error in the finished work and shall notify the ENGINEER within one (1) working day of any discrepancies or design errors discovered during staking.

Unless a separate bid item is provided, the payment for surveying, construction staking, professional services, office calculations, furnishing all labor, materials, equipment, tools and incidentals, and for doing all work involved shall be considered as included in the various items of work, and no additional compensation will be allowed.

3-12 WORK SITE MAINTENANCE

3-12.1 General

[Replace 2nd paragraph with the following:].

Unless the construction dictates otherwise, and unless otherwise approved by the ENGINEER, Contractor shall furnish and operate a self-loading motor sweeper with a functional water spray nozzle system at least once each working day to keep paved areas in the Work zone and along all haul routes acceptably clean whenever construction, including restoration, is incomplete.

3-12.2 Air Pollution Control

[Add the following:].

Failure of the Contractor to comply with the ENGINEER'S dust control orders may result in an order to suspend work until the condition is corrected and, after giving notice to the Contractor, the ENGINEER may order the condition corrected by others. All costs thus incurred shall be deducted from the amount to be paid to Contractor. No additional compensation will be allowed as a result of such suspension.

No separate payment will be made for any work performed nor material used to control dust resulting from Contractor's performance of the work or from public traffic, either inside or outside the right-of-way. Full compensation for such dust control will be considered to be included in the prices paid for the various items of Work involved.

3-12.4.1 General

[Add the following:].

All surplus materials shall be removed from the site of the Work within five (5) days after completion of the Work causing the surplus materials.

3-12.6 Water Pollution Control

3-12.6.1 General

[Add the following:].

Discharge of storm water from construction sites that disturb land equal to or greater than one (1) acre must be in compliance with the state General Construction Activity Permit (Construction Permit). The latest permit provisions of the Construction Permit shall apply. The Contractor is required to contact the Santa Ana Regional Water Quality Control Board (Regional Board) for all information contained in the Construction Permit. In the event project construction occurs during the transition of revised Construction Permits, the Contractor shall incorporate the necessary modifications specified by the revised Construction Permit within the time period specified in the new Construction Permit.

Project Soil Disturbance is: **MORE than 1 acre** (General Construction Permit REQUIRED)

Construction activity subject to the Construction Permit includes clearing, grading, disturbance to the ground such as stockpiling, work area, or excavation that results in soil disturbances of at least one acre of total land area. Construction activity that results in soil disturbances of less than one acre is subject to the Construction Permit if the construction activity is a part of a larger common plan of development that encompasses one or more acres of soil disturbance or if it is determined that discharges from the project pose a significant threat to water quality.

The CONTRACTOR shall have an account with the State for SMARTS (Storm Water Multiple Application and Report Tracking System). The CONTRACTOR shall contact the

CITY with their user ID so that the CITY will grant the CONTRACTOR access as a Data Submitter.

The CONTRACTOR shall complete the NOI within SMARTS https://smarts.waterboards.ca.gov/smarts/faces/SwSmartsLogin.jsp The CONTRACTOR will notify the CITY when the NOI is ready for the CITY to submit to the State. The CONTRACTOR shall pay all fees associated with the NOI process. The CONTRACTOR shall also complete all required reports within SMARTS as required by the General Permit and the Project's Storm Water Pollution Prevention Plan (SWPPP).

The CONTRACTOR shall complete the Annual Report and NOT within SMARTS. Once the CITY has been notified, the CITY will review and submit to the State for processing. A copy of the latest permit is available at:

http://www.waterboards.ca.gov/water_issues/programs/stormwater/constpermits.shtml

The CONTRACTOR is hereby directed to read the Construction Permit thoroughly and comply with the requirements as specified therein.

3-12.6.2 Best Management Practices (BMPs)

[Add the following:].

The Contractor shall install and maintain the appropriate Best Management Practices (BMPs) to protect water quality within the project limits through the duration of the Project.

The Contractor shall be responsible for any damage to any portion of the Work occasioned by failure to provide proper drainage control prior to the completion and acceptance of the Work.

Payment for furnishing, installing and maintaining BMPs inclusive of sweeping the Project site as required or directed by the ENGINEER shall be included in the other various bid items associated with the work and no additional payment will be allowed thereof.

3-12.6.3 Storm Water Pollution Prevention Plan (SWPPP)

[Add the following:].

A General Construction Permit is REQUIRED pursuant to Section 3-12.6.1 of these General Provisions; therefore, the following Storm Water Pollution Prevention Plan (SWPPP) requirements shall be adhered to:

The Contractor is responsible for the preparation and implementation of a SWPPP as required by the Construction Permit. The Contractor is responsible for completing all parts of the SWPPP including, REAPs, monitoring, sampling, rain gauge records, weather reports, submitting pictures of every third storm, non-authorized discharge reports, Ad-Hoc reports, Annual Reports, post construction BMPs and other requirements of the SWPPP.

The completed SWPPP must be signed by a QSD (Qualified SWPPP Developer). The completed SWPPP must be submitted to the resident engineer for City review and acceptance, prior to uploading to SMARTS. The Contractor will be responsible for uploading an electronic format of the SWPPP into SMARTS. The SWPPP must be signed by the City before construction begins. A copy of the SWPPP must be available at the site at all times and must be implemented and revised in accordance with the Construction Permit throughout the duration of the project.

Contractor must have QSP (Qualified SWPPP Practitioner). Contractor shall perform site inspections before and after the storm event, and once each 24-hour period during extended storm event, to identify BMP effectiveness and implement repairs or BMP modifications as soon as possible. Sampling of potential pollutant discharges shall be conducted by trained personnel and required laboratory test conducted by laboratory accredited by the California Department of Health Services Environmental Laboratory Accreditation Program.

Contractor shall be responsible for any penalties assessed against the City if the penalty assessed is due to Contractor's violation of the Construction Permit requirement, or Contractor's failure to fully implement and monitor SWPPP as required.

Erosion and Sediment Control Plans

Erosion and Sediment Control Plans shall be prepared by the Contractor as part of the SWPPP that identify adequate controls to prevent erosion and discharge of sediment off-site. Payment for the Erosion and Sediment Control Plans shall be included as part of the SWPPP.

3-12.6.4 Dewatering

[Add the following:].

Unless otherwise directed in these Special Provisions, the Contractor shall provide and maintain ample means and devices with which to promptly remove and properly dispose of water entering the excavations or other parts of the work at all times during construction. Dewatering shall be accomplished by methods which will ensure a dry excavation and preservation of the final lines and grades of the bottoms of excavations. The methods may include sump pumps, deep wells, well points, suitable rock or gravel placed below the required bedding for draining and pumping purposes, temporary pipelines, and other means.

Standby pumping equipment shall be on the job site. A minimum of one standby unit shall be available for immediate installation should any well unit fail. The design and installation of well points or deep wells shall be suitable for the accomplishment of the work. Drawings or details indicating the proposed dewatering system shall be submitted to the CITY for review.

The Contractor shall dispose of the water from the work in a suitable manner without damage to adjacent property.

Conveyance of the water shall be such as to not interfere with traffic flow or treatment facilities operations. No water shall be drained into work built or under construction without prior consent of the ENGINEER.

Water shall be disposed of in such a manner as not to be a menace to the public health and such disposal shall be performed in accordance with Environmental Protection Agency and State Water Quality Control Board standards (NPDES permit). Any testing and reports required under NPDES permit shall be performed by the Contractor and submitted to the appropriate agency for approval at no additional cost to the CITY.

3-13.3 WARRANTY

[Replace 2nd sentence of 1st paragraph with the following:].

The warranty period shall start on the date the Work is accepted by the Board.

SECTION 4 – CONTROL OF MATERIALS

4-4 TESTING

[Add the following:].

All tests of materials furnished by the Contractor shall be made in accordance with commonly recognized standards of national organizations and such special methods and tests as are prescribed in these specifications. No materials shall be used until they have been approved by the ENGINEER.

The Contractor shall at his expense furnish the CITY, in triplicate, certified copies of all required factory and mill test reports. Any materials shipped by the Contractor from a factory or mill prior to having satisfactorily passed such testing and inspection by a representative of the CITY shall not be incorporated in the work, unless the ENGINEER shall have notified the Contractor, in writing, that such testing and inspection will not be required.

At the option of the ENGINEER, the source of supply of each of the materials shall be approved by the ENGINEER before delivery is started and before such material is used in the work.

Unless otherwise provided in the Special Provisions, the CITY will complete and pay for the initial soils, compaction, and material tests. Any subsequent soil, compaction, and material tests deemed necessary due to the failure of initial tests will be at the Contractor's expense and deducted from the payment due.

SECTION 5 – LEGAL RELATIONS AND RESPOSIBILITIES

5-1 LAWS AND REGULATIONS

[Add the following:].

The Contractor shall protect and indemnify the CITY, the BOARD, the ENGINEER, and all of its or their officers, agents and servants against any claim or liability arising from or based on the violation of any existing or future State, Federal and local laws, ordinances, regulations, orders or decrees, whether by himself or his employees. If any discrepancy or inconsistency is discovered in the plans, drawings, specifications or contract for the work in relation to any such law, ordinance, regulation, order or decree, the Contractor shall forthwith report the same to the ENGINEER in writing.

5-2 SPECIAL NOTICES

[Add the following:].

In addition to the special notices requirement to be served by Personnel Delivery or Certified Mail, special notices may also be served by the utilization of FedEx or UPS express service with a confirmed delivery receipt. Service shell be effective on the date of the receipt of the delivery confirm issued by FedEx or UPS.

5-3 LABOR

5-3.3 Payroll Records

[Add the following:].

In order to verify compliance with the Labor Code, Contractor shall furnish to the ENGINEER, weekly, for the duration of the contract period, copies of his payroll statements showing wages paid to each employee during the preceding week and the employee work classification. Use of Form DH-C-347, Payroll Statement of Compliance, is an acceptable method of fulfilling the above requirement.

5-3.5 Apprentices

[Replace with the following:].

Attention is directed to the provisions of Sections 1777.5 and 1777.6 of the Labor Code concerning the employment of apprentices by the Contractor or any subcontractor under it. The Contractor and any subcontractor under it shall comply with the requirements of those Sections in the employment of apprentices.

Information relative to apprenticeship standards, wage schedules and other requirements may be obtained from the Director of Industrial Relations, Ex-officio the Administrator of Apprenticeship, San Francisco, California, or from the Division of Apprenticeship Standards and its branch offices.

5-4 INSURANCE

[Replace with the following:].

The minimum amounts and types of insurance coverages are as stated in the Agreement (sample copy attached). Prior to bid submittal the BIDDER shall keep fully informed of the latest insurance requirements of the City of Costa Mesa and shall comply with all other provisions of Section 5-4 of the Standard Specifications.

Below are approved endorsements which satisfy the basic insurance requirements contained in contracts entered into by City of Costa Mesa. These have been approved by the City Attorney's office. The terms of any specific contract with the City are controlling. Prior to the commencement of any work, the CITY requires that the ENGINEER receive Certificates of Insurance in **DUPLICATE** for liability coverage of at least $1,000,000 combined single limit, per occurrence and in the aggregate.

Each insurance policy required by the CITY of the Contractor shall contain the following endorsements:

1. Additional Insureds

"The City of Costa Mesa and its elected and appointed boards, officers, agents, and employees are additional insureds with respect to the subject project and agreement."

2. Notice

"Said policy shall not terminate, nor shall it be canceled nor the coverage reduced, until thirty (30) days after written notice is given to City."

3. Other Insurance

"Any other insurance maintained by the City of Costa Mesa shall be excess and not contributing with the insurance provided by this policy."

If any of such policies provide for a deductible or self-insured retention to provide such coverage, the amount of such deductible or self-insured retention shall be approved in advance by City. No policy of insurance issued as to which the City is an additional insured shall contain a provision which requires that no insured except the named insured can satisfy any such deductible or self-insured retention.

5-7 SAFETY

5-7.1 Work Site Safety

5-7.1.1 General

[Add the following:].

Material or other obstructions shall not be placed within fifteen feet (15') of fire hydrants. Fire hydrants shall be made readily accessible to the Fire Department at all times.

5-7.8 Steel Plate Covers

5-7.8.1 General

[Add the following:].

All steel plate covers utilized for the project must be slide resistant. A non-slip coating will be required on the side of the steel plate that that will be utilized for the driving or walking surface.

SECTION 6 – PROSECUTION AND PROGRESS OF THE WORK

6-1 CONSTRUCTION SCHEDULE AND COMMENCEMENT OF THE WORK

6-1.1 Construction Schedule

[Replace the 1st Paragraph with the following:].

The Contractor's proposed Construction Work Schedule shall be submitted to the ENGINEER for approval within ten (10) working days after the date of the BOARD's execution of the Contract Agreement. The Construction Work Schedule shall be supported by written statements from each supplier of materials or equipment indicating that all orders have been placed and acknowledged, and setting forth the dates that each item will be delivered. The Construction Work Schedule shall provide sufficient detail to delineate the main milestones start and end dates for each activity with chronological relationships of all the activities of Work showing the number of working days required to complete the entire project within the Contract Days. The schedule shall also incorporate the requirements of Section 402-5 of the Standard Specifications to complete the Work within the Contract Days. Prior to issuing the Notice to Proceed, the ENGINEER will schedule a preconstruction meeting with the Contractor to review the proposed Construction Work Schedule, delivery dates, activity milestone dates, arrange utility coordination, discuss construction methods and staging, and clarify inspection procedures.

The Contractor shall submit progress reports to the ENGINEER by the tenth day of each month. The report shall include an updated Construction Work Schedule. All revisions shall be completed within three days after review by the ENGINEER. The Contractor shall submit requests for changes in the schedule to the CITY for approval at least three (3) working days prior to performing any work. Any deviations from the original approved Construction Work Schedule shall be explained and identified in the updated Construction Work Schedule. Progress payments will be withheld pending receipt of any outstanding reports.

The Contractor shall furnish the ENGINEER with a 3-week look ahead-schedule in a tabular format at every weekly construction meeting. The 3-week look ahead schedule shall utilize the main milestones within the approved Baseline Construction Schedule with updates and include sub-activities.

[Add the following:].

6-1.3 DAILY REPORT SUBMITTAL

Contractor shall submit daily reports to the CITY at the end of each working day. All forms shall be provided by the CITY. Any cost for this item shall be included in the various items of work and no other compensation will be allowed.

6-3 TIME OF COMPLETION

6-3.1 General

[Replace the 1st Sentence with the following:].

The Contractor shall begin the Work within **ten (10) Working Days** after the date the Contract is executed by CITY unless a later start date is agreed upon by the CITY and Contractor within a written Notice-to-Proceed. The Work shall be completed within **ONE HUNDRED (100) Working Days** from the date set in the Notice-to-Proceed or the first day of commencement of Work, whichever occurs first.

6-5 USE OF IMPROVEMENT DURING CONSTRUCTION

[Add the following:].

Should it become necessary, due to developed conditions, to occupy any portion of the Work before Contract is fully completed, such occupancy shall not constitute acceptance by the CITY of work by Contractor.

6-7 TERMINATION OF THE CONTRACT FOR DEFAULT

6-7.3 Notice of Termination for Default

[Replace the 1st Paragraph with the following:].

The ENGINEER will make the determination if the Contractor had failed to commence satisfactory corrective action within 5 working days after the receipt of the notice to cure, or to diligently continue satisfactory and timely correction of the default thereafter, and will take action as allowed by the Contract Documents.

6-7.4 RESPONSIBILITIES OF SURETY

[Add the following:].

Within 3 working days of receipt of the written notice of termination for default, the Surety shall provide the services needed to maintain the project in accordance with the Contract Documents. The services shall maintain the existing traffic control in place and the maintenance of the project site until the Engineer's review and acceptance of the Surety's plan for course of action.

6-9 LIQUIDATED DAMAGES

[Replace the 1ST Paragraph with the following:].

The CONTRACTOR shall pay to the CITY the sum of **$5,200** per calendar day, for each and every calendar day's delay in finishing the Work in excess of the number of Working Days prescribed within these General Provisions and the Agreement, or per the direction of the Engineer. Liquidated damages are calculated per Chapter 12 of the latest edition of the Caltrans Local Assistance Procedures Manual (LAPM).

SECTION 7 – MEASUREMENT AND PAYMENT

7-3 PAYMENT

7-3.1 General

[Replace the 1ST Paragraph with the following:].

Payment for the various items listed on the Bid Proposal, as further specified herein, shall constitute full compensation to the Contractor for furnishing all material, tools, equipment, supplies, and manufactured articles, and for all labor, operations, and incidentals appurtenant to the items of Work and as specified and shown on the drawings, including all costs for compliance with the regulations of public agencies having jurisdiction, including Safety and Health Requirements of the California Division of Industrial Safety and the Occupational Safety and Health Administration (OSHA) of the U.S. Department of Labor. No separate payment will be made for any item that is not specifically set forth in the Bid Proposal. Costs arising from violations of regulations will be paid by the offending party to the extent that there will be no additional cost to the CITY.

When no bid item is provided for work/improvement shown or indicated on the plans and specifications, payment for such work/improvement will be considered to be included in various applicable items of work.

7-3.2 Partial and Final Payment

[Replace the 1st Paragraph in its entirety with the following:].

The closure date for the purpose of making partial progress payments will be the last day of each month. The Contractor may request, in writing, that such monthly closure date be changed. The ENGINEER may approve such request when it is compatible with the CITY's payment procedure.

[Replace the 2nd Paragraph in its entirety with the following:].

Each month, the Contractor shall meet with the Engineer, a minimum of three (3) working days prior to the submittal of the progress payment to the AGENCY, to finalize and receive approval regarding the measurement of the Work performed through the closure date and the estimated value of the progress payment based on the Contract Unit Prices or as provided for in the Standard Specifications. Any progress payment submitted without such approval will be considered incomplete and returned to the Contractor and no payment shall be considered until such approval is obtained.

[Replace the 3rd Paragraph in its entirety with the following:].

The amount retained and deducted by the BOARD shall be 5% of the progress estimates for all progress payments. No reduction in the amount of retention will be allowed. However, after 50% of the work has been completed, if the BOARD finds that satisfactory progress is being made, it may make any of the remaining progress payments in full for actual work completed. The final payment of the retention amount to the Contractor shall be made thirty-five (35) days after the date of the recording of the Notice of the Completion of the work after it is accepted by the CITY. The 5% withheld from each progress payment shall not include monies withheld for stop notices or other withholding by the CITY. The monies withheld for stop notice and other withholdings shall be in addition to the 5% withheld for retention.

[Add to end of Section the following:].

Contractor shall comply with the requirements of Division 2, Part 1, Chapter 7, Section 7107 of the California Public Contract Code.

The lead time for processing invoices for the monthly progress payments approved by the ENGINEER for inclusion on the warrant list of the CITY is governed by the rules and regulations established by the Finance Department of the CITY. Monthly payments will be processed and paid in accordance with the rules and regulations established or revised by the said Finance Department.

The Contractor shall submit all weight tickets or volumes of all materials used in the construction to the ENGINEER for checking and verification prior to any payment. Failure to do so will postpone the payment to the Contractor, until the matter is resolved satisfactorily.

The weight or volume from submitted tickets must correspond to the work done in the field; if not, the City shall reject the work without compensation to the Contractor, and/or the Contractor shall be directed to replace that work at no additional costs to the City.

After completion of the Contract, the BOARD shall, upon recommendation of the ENGINEER, accept the Work as completed and authorize the Final Payment.

The Final Payment shall be the entire sum found to be due the Contractor after deducting therefrom all previous payments and all amounts to be kept and all amounts to be retained under the provisions of the Contract. All prior partial estimates and payments shall be subject to correction in the final estimate and payment.

No certificate given or payment made under the Contract, except the final certificate or Final Payment, shall be conclusive evidence of full or substantial performance of this Contract; and no payment shall be construed to be an acceptance of any defective work or improper material.

The acceptance of Final Payment by the Contractor shall release the CITY, the BOARD, and the ENGINEER from any and all claims or liabilities on account of work performed by the Contractor under the Contract or any alterations thereof.

The Contractor shall record, on the set of contract documents maintained at the job site, deviations which have been made from the Contract Documents or approved shop drawings – including buried or concealed construction and utility features which are revealed during the course of construction. Special attention shall be given to recording the horizontal and vertical location of all buried utilities that differ from the locations indicated, or which were not indicated on the Contract Documents. Said record documents shall be supplemented by detailed sketches as necessary or directed, to indicate fully the work as actually constructed.

Requests for partial payments shall not be approved until the record documents are brought up to date. Also, request for final compensation shall not be approved until all the variations between the work as constructed and as originally shown in the Contract Documents have been properly recorded and delivered to the City, after approved by the Engineer.

[Add the following:].

7-3.2.1 Prompt Progress Payment to Subcontractors

Contractor shall comply with the requirements of Division 2, Part 1, Chapter 7, Section 7200 of the California Public Code.

The CONTRACTOR agrees to pay each subcontractor under this Agreement for satisfactory performance of its contract no later than 7 days from the receipt of each payment the CONTRACTOR receives from CITY.

The CONTRACTOR agrees further to release retainage payments to each subcontractor within 7 days after the retention payment is received by the CONTRACTOR.

Any delay or postponement of payment from the above referenced time frame may occur only for good cause following written approval of the CITY. Any violation of this provision shall subject the violating prime contractor or subcontractor to the penalties, sanctions and other remedies specified in Section 7108.5 of the Business and Professions Code. This clause applies to both DBE and non-DBE prime contractors and subcontractors.

City will be strictly monitoring the Contractor for prompt payment to all subcontractors.

[Add the following:].

7-3.2.2 Prompt Pay Monitoring and Enforcement of Progress Payments

The City of Costa Mesa will use the following monitoring and enforcement mechanisms to ensure that all subcontractors, including DBE's, are promptly paid.

A. The City will strictly monitor the prime contractor or subcontractor(s) for prompt release of progress payments for all subcontracted work as follows:

   1. The effective date of release is the date the City releases the check to the prime contractor by mailing or hand delivery at the City of Costa Mesa (has to be requested in writing ahead of time).

2. Prime contractor or subcontractor(s) to provide verification in writing that the subcontracts have been paid within 7 days or the time period agreed, from the effective date of release.

3. City may contact subcontractor(s) to confirm receipt of progress payment amount and if it was received within 7 days or the time period agreed from the effective date of release.

B. If the prime contractor or subcontractor(s) is found to be in default of Federal or State Codes concerning prompt payment to subcontractors, City will enforce the following besides the disciplinary action, sanctions and penalties imposed per the codes:

1. City will withhold 150% of the monies due to the subcontractor(s) from the prime contractor's next progress payment.

2. City may also elect to make the payment(s) directly to the subcontractor(s) without the prime contractor's approval for the remainder of the contract.

7-3.3 Delivered Materials

[Replace in its entirety with the following:].

The cost of materials and equipment delivered, but not incorporated in said work, will not be included in the progress payment estimate unless otherwise provided in these Specifications. All materials shall be nontoxic and shall not contain asbestos and hazardous substances as established by applicable laws.

Materials delivered, but not in place, will not be classed as work done, except as otherwise provided in these Specifications.

7-3.4 Mobilization

[Replace in its entirety with the following:].

Mobilization shall consist of all preparatory work and operations. It shall include, but not be limited to, the movement of personnel, equipment, materials and incidentals to the project site necessary for work on the project. The mobilization shall include all other work and operations, which must be performed.

Mobilization shall also include the time, materials, and labor to move the necessary construction equipment to and from the job site and the project administration costs during the entire contract period.

This work shall include, but not be limited to protect-in-place and/or relocation of the facility to accommodate the construction of an improvement; including resetting curb drains through new curbing.

The Contractor shall provide supervisory personnel to keep the construction site in a safe condition and all other related work as required at all times. These requirements shall also apply to all non-working days during construction period. The Contractor is responsible for securing an adequate storage site for equipment and materials.

The Contractor shall have on the work site at all times, as his agent, a competent English speaking superintendent capable of reading and thoroughly understanding the plans, specifications, and other related documents.

7-3.4.1 Travel Route for Trucking and Equipment

Plans indicating the travel route for the Contractor's equipment movement in and out of the work site must be submitted concurrently with the Haul Route Plan (Section 2-5.4) to the ENGINEER at the pre-construction meeting for approval prior to commencement of any work. The travel route plans, which meet the City's requirements, will be approved and returned to the Contractor; otherwise, further revisions are required until they are acceptable to the City. The approved travel plans shall be strictly adhered to by the Contractor during all phases of the construction.

Any deviation from these requirements is not permitted. All the Contractor's operations will be ceased at once if the Contractor violates any of these requirements. No further payments will be made to the Contractor until problems are resolved according the City's requirements.

7-3.4.2 Construction Sequence/Order of Work

In order to minimize the inconveniences to the residents and businesses, the contractor shall construct the Project and sequence the work where no two adjacent streets are closed at one time, and/or the nearest parking is no more than 300' from the intersection of the street being closed to traffic. The Contractor shall maintain adjacent streets open for ingress and egress and for parking.

7-4 PAYMENT FOR EXTRA WORK

7-4.2 Basis for Establishing Costs.

7-4.2.1 Labor

[Add the following:].

The compensation for employer's payments of payroll taxes; workers compensation insurance; liability insurance; health and welfare; pension; vacation; apprenticeship funds; other direct costs resulting from Federal, State, or local laws; and for assessments or benefits required by lawful collective bargaining agreements to be applied to the actual cost for wages shall be **23 percent** for regular time and overtime.

7-4.3 Markups

7-4.3.1 Work by the Contractor

[Replace in its entirety with the following:].

The allowance for overhead and profit to be added to the Contractor's costs shall be as follows:

Labor:	20%
Materials:	15%
Contractor Owned Equipment	15%
Equipment Rental	10%*
Other Items and Expenditures	10%

To the sum of the costs and markups provided for in this section, 1 percent shall be added as compensation for bonding.

* Equipment Rental rates shall be based on the latest applicable Caltrans Equipment Rental Rates.

7-4.3.2 Work by a Subcontractor

[Replace in its entirety with the following:].

When all or any part of the extra work is performed by a Subcontractor, the markup established in 7-4.3.1 shall be applied to the Subcontractor's actual cost of such work. A markup of five (5) percent on the first $5,000 of the subcontracted portion of the extra work and a markup of five (5) percent on work added in excess of $5,000 of the subcontracted portion of the extra work may be added by the Contractor.

No markups will be allowed for second tier or higher subcontractors.

[Add the following:].

7-6 SUMMARY OF PUBLIC CONTRACT CODE § 9204

The following procedure will apply to any claims by the Contractor on the City:

A "claim" is a separate demand on the City by a contractor on a public works project and sent by registered mail or certified mail with return receipt requested, for one or more of the following:

- A time extension, including relief from penalties for delay
- Payment by the City of money damages under the terms of the contract
- Payment of an amount that is disputed by the City

<u>Initial Review</u>

The claim must be supported by appropriate documentation. The City has 45 days within which to review the claim and provide the contractor with a written statement identifying the disputed and undisputed portions of the claim. If the City does not issue a written

statement, the claim is deemed rejected in its entirety. The City will pay any undisputed portion of the claim within 60 days of issuing the statement.

Meet & Confer

If the contractor disputes the City's written response, or if the City does not issue one, the contractor may request in writing an informal conference to meet and confer for possible settlement of the claim. The City will schedule the meet and confer conference within 30 days of this request and provide a written statement identifying the remaining disputed and undisputed portions of the claim within 10 business days of the meet and confer. The City will pay the undisputed portion within 60 days of issuing this statement.

Mediation

With respect to any disputed portion remaining after the meet and confer, the City and contractor will submit the matter to nonbinding mediation, agree to a mediator within 10 business days after issuing the written statement, and share mediation costs equally. If mediation is unsuccessful, then the terms of the public works agreement and applicable law will govern resolution of the dispute.

Miscellaneous Provisions

Amounts not paid by the City in a timely manner bear interest at 7% per annum. Subcontractors may submit claims via this procedure through the general contractor. The City and contractor may waive the requirement to mediate, but cannot otherwise waive these claim procedures.

SECTION E
SPECIAL PROVISIONS
PART 1-8

[Add the following Section:].

PART 1
GENERAL

100-1 GENERAL

Additions/Modifications to Standard Specifications

The following additions are made to the latest edition of the "Standard Specifications for Public Works Construction" (The "Greenbook"), and the General Provisions stated within the "Standard Specifications" of this Project. Should there be a conflict between any of these provisions; the Special Provisions shall have precedence.

All work shall be performed in conformance with the latest edition of the Uniform Building Code as adopted by the City of Costa Mesa. The electrical, plumbing, and fire codes, and other regulations as adopted by the City of Costa Mesa Building Official shall apply to this project.

Where referenced in these specifications, the latest edition of the "City of Costa Mesa Standard Drawings" and the "Work Area Traffic Control Handbook (WATCH)" published by Building News, Inc., shall also apply.

If the item of work is identified within the Proposal section of these Specifications, then the following bid item descriptions will provide the corresponding bid item numbering within each corresponding section of the Standard Specifications under the Subsection entitled "Measurement and Payment" or "Payment". All other sections and subsections shall conform to the Standard Specifications unless modified herein.

The unit prices and lump sum amounts to be paid for under the bid items listed in the Proposal shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals necessary for the completion of the work and for performing all work contemplated and embraced under the Contract, in accordance with the Plans and Contract Documents. This shall include the Contractor's costs involved with bonding, insurance, worker's compensation, overhead, financing, obtaining required permits and permit fees, mobilization, traffic control, public convenience and safety, protective barricading/fencing, sanitary facilities, storage of equipment and materials, security against theft and vandalism, project site maintenance, dust and runoff control, clean-up including all costs for compliance with the regulations of public agencies having jurisdiction, including Safety and Health Requirements of the California Division

of Industrial Safety and the Occupational Safety and Health Administration (OSHA) of the U.S. Department of Labor, and all other items related to the work.

Payment for compliance with the following provisions shall be included in the various bid items of work unless otherwise modified in the special provisions section. No additional compensation will be allowed.

No separate payments will be made for any items that are not specifically set forth in the Bid Proposal. Payments for any such items are included in various bid items of work.

Costs arising from violations of regulations will be paid by the offending party to the extent that there will be no additional cost to the City.

Payment for unit price work shall be made for the actual quantities of Contract Items removed, constructed, or disposed of in accordance with the Plans and these Specifications. Measurement of Unit Price work shall be specified in the Standard Specifications, Section 7-1, "Measurement of Quantities for Unit Price Work." Payment for Lump Sum work shall be paid for at the price indicated in the Bid, in accordance with the Standard Specifications, Section 7-2, "Lump Sum Work."

Payment for all work shall be included in the various bid items. No additional compensation shall be made therefore. Work associated with each bid item shall include, but not be limited, to the bid descriptions set forth herein.

100-1.1 Measurement and Payment

BID ITEM NO. 1: ***ALL WORK, LABOR, PERMITTING, PARTS, MATERIALS, EQUIPMENT, DELIVERIES, ETC. TO REPAIR AND REHABILITATE THE TEWINKLE PARK LAKES, AS DIRECTED BY THESE BID DOCUMENTS AND SPECIFICATIONS AND / OR DIRECTED BY THE ENGINEER. THIS INCLUDES ALL PONDS AND STREAMS. SEE TEWINKLE PARK LAKE RENOVATION BID DOCUMENT PLANS IN SECTION "G" – APPENDIX "B" FOR DETAILS. CONTRACTOR IS RESPONSIBLE TO APPLY FOR AND BE ISSUED REQUIRED PERMITS FROM (BUT NOT LIMITED TO) COSTA MESA SANITARY DISTRICT AND OC PUBLIC WORKS FOR SEWER WASTEWATER DISPOSAL. GENERAL CONSTRUCTION ACTIVITY PERMIT / SWPPP REQUIRED FROM THE SANTA ANA REGIONAL WATER QUALITY CONTROL BOARD [SEE SECTION 3-12.6 (PAGE GP-12) IN THE GENERAL PROVISIONS]***

At the direction of the ENGINEER, the Contractor shall provide labor, parts, materials, equipment, deliveries, etc. for the complete repair and rehabilitation of TeWinkle Park Lakes as stipulated in these project bid documents and specifications and / or per the direction of the Engineer.

Measurement and Payment shall be paid per **Lump Sum (L.S.)** for all work performed pursuant to these Specifications and shall, include all labor, equipment, materials as required to complete the work as directed by the ENGINEER.

100-2 MOBILIZATION AND DEMOBILIZATION

100-2.1 General

Mobilization shall comply with Section 7-3.4 of the General Provisions.

100-3 CONTROL OF THE WORK

100-3.1 Water Pollution Control and Best Management Practices

Contractor shall follow the water pollution control and Best Management Practices (BMPs) guidelines enumerated in Section 3-12.6 of the "Standard Specifications for Public Works Construction" (The "Greenbook"), and also Section 3-12.6 of the General Provisions stated within the "Standard Specifications" of this Project and these contract bid documents.

100-4 ADDITIONAL WORK ITEMS

100-4.1 General

This work item entails work beyond the Scope of Work established within the Plans, Specifications, and Standard Specifications as directed by the ENGINEER with a specified Contract allowance.

100-4.2 Measurement and Payment

BID ITEM NO. 2: ***ADDITIONAL WORK ITEMS AS DIRECTED BY THE ENGINEER (VIA FORCE ACCOUNT)***

At the direction of the ENGINEER, the Contractor shall provide labor, equipment, and materials for the project management beyond the Scope of Work established within the Project Plans and Specifications. Work **might** include, but not be limited to; delivery of additional newsletters; clearing and grubbing; disposal of materials; potholing; furnishing and installation of informational signs; and related work, and will only be performed if required, and approved by the ENGINEER. The Contractor acknowledges that this bid item will only be used at the discretion of the ENGINEER. The allowance for this line item is as shown within the Proposal Section of these Specifications.

Measurement and Payment for **"Additional Work Items"** shall be paid per **Force Account (F.A.)** for all work performed pursuant to Section 7-4.2 of these Specifications and shall, include all labor, equipment, materials as required to complete the work as directed by the ENGINEER.

100-5 DEDUCTIVE BID ITEMS

100-5.1 General

The lowest responsible bid shall be based on the lowest base bid, notwithstanding any of the deductive bid items.

The City reserves the right to delete one or more bid items and/or to increase or decrease bid items' quantities, at no additional cost to the City. The City also reserves the right to deduct any bid item as it sees fit. If the City so chooses to elect to deduct one or more bid items, then the final award amount will be the base bid minus one or more deductive bid items.

100-5.2 Measurement

DEDUCTIVE BID ITEM NO. 1 (D1): ***ALL WORK, LABOR, PERMITTING, PARTS, MATERIALS, EQUIPMENT, DELIVERIES, ETC. TO REPAIR AND REHABILITATE POND AND STREAM 1 ONLY OF THE TEWINKLE PARK LAKES, AS DIRECTED BY THESE BID DOCUMENTS AND SPECIFICATIONS AND / OR DIRECTED BY THE ENGINEER. SEE TEWINKLE PARK LAKE RENOVATION BID DOCUMENT PLANS IN SECTION "G" – APPENDIX "B" FOR DETAILS. ALL OTHER REQUIREMENTS APPLY: CONTRACTOR IS RESPONSIBLE TO APPLY FOR AND BE ISSUED REQUIRED PERMITS FROM (BUT NOT LIMITED TO) COSTA MESA SANITARY DISTRICT AND OC PUBLIC WORKS FOR SEWER WASTEWATER DISPOSAL. GENERAL CONSTRUCTION ACTIVITY PERMIT / SWPPP REQUIRED FROM THE SANTA ANA REGIONAL WATER QUALITY CONTROL BOARD [SEE SECTION 3-12.6 (PAGE GP-12) IN THE GENERAL PROVISIONS]***

At the direction of the ENGINEER, the Contractor shall *remove* all labor, parts, materials, equipment, deliveries, etc. for the complete repair and rehabilitation of Pond and Stream 1 of the TeWinkle Park Lakes as stipulated in these project bid documents and specifications and / or per the direction of the Engineer.

Measurement shall be based per **Lump Sum (L.S.)** for all work performed pursuant to these Specifications and shall, include all labor, equipment, materials as required to complete the work as directed by the ENGINEER.

DEDUCTIVE BID ITEM NO. 2 (D2): ***ALL WORK, LABOR, PERMITTING, PARTS, MATERIALS, EQUIPMENT, DELIVERIES, ETC. TO REPAIR AND REHABILITATE POND AND STREAM 2 ONLY OF THE TEWINKLE PARK LAKES, AS DIRECTED BY THESE BID DOCUMENTS AND SPECIFICATIONS AND / OR DIRECTED BY THE ENGINEER. SEE TEWINKLE PARK LAKE RENOVATION BID DOCUMENT PLANS IN SECTION "G" – APPENDIX "B" FOR DETAILS. ALL OTHER REQUIREMENTS APPLY: CONTRACTOR IS RESPONSIBLE TO APPLY FOR AND BE ISSUED REQUIRED PERMITS FROM (BUT NOT LIMITED TO) COSTA MESA SANITARY DISTRICT AND OC PUBLIC WORKS FOR SEWER WASTEWATER DISPOSAL. GENERAL CONSTRUCTION ACTIVITY PERMIT / SWPPP REQUIRED FROM THE SANTA ANA REGIONAL WATER QUALITY CONTROL BOARD [SEE SECTION 3-12.6 (PAGE GP-12) IN THE GENERAL PROVISIONS]***

At the direction of the ENGINEER, the Contractor shall *remove* all labor, parts, materials, equipment, deliveries, etc. for the complete repair and rehabilitation of Pond and Stream 2 of the TeWinkle Park Lakes as stipulated in these project bid documents and specifications and / or per the direction of the Engineer.

Measurement shall be based per **Lump Sum (L.S.)** for all work performed pursuant to these Specifications and shall, include all labor, equipment, materials as required to complete the work as directed by the ENGINEER.

PART 3

CONSTRUCTION METHODS

SECTION 300 – EARTHWORK

[Add the following:].

300-0 EARTHWORK IN STATE RIGHT-OF-WAY

300-0.1 General

All earthworks performed within the State of California Department of Transportation (“Caltrans”) Right-of-Way shall conform to the requirements of Section 19 of the latest edition of the "Standard Specifications and Standard Plans of the State of California, Department of Transportation, Division of Highways" with the appropriate Caltrans, City, and other applicable agency encroachment permits procured.

300-1 CLEARING AND GRUBBING

300-1.1 General

[Add or redefine the following:].

Section 300-1, "Clearing and Grubbing," of the Standard Specifications is supplemented by the following:

Contractor shall field verify existing grades and shall accept site as is, for no other grading shall be performed by the CITY.

- 300-1.3 Removal and Disposal of Materials
- 300-1.3.1 General

All materials removed shall be disposed of in a legal manner at an appropriate Disposal Site.

- 300-1.3.2 Requirements

A. Bituminous Pavement

Saw cutting of edges to be joined is required.

B. Miscellaneous

In addition to the work outlined in Section 300-1.1 of the Standard Specifications, the following items of work are included under Clearing & Grubbing unless otherwise covered by specific bid item.

1. Maintaining dust control at all times by watering during the entire time of the project, whether extended or not, including developing a water supply and furnishing and placing all water for all work done in the contract, including water used for extra work.
2. Application of soil sterilant, if applicable, or as directed by the ENGINEER.
3. Protection of utilities, structures, improvements and other facilities within the construction zone, except those specifically shown on the plans to be removed or relocated.
4. Removal and disposal of existing natural and artificial objectionable material within the limits of construction.
5. Verification of existing locations and elevations as shown on the plans or directed by the ENGINEER.
6. Replacement of disturbed traffic signs, street names, mailboxes, property owner signs, fences, landscaping, protection of temporary construction fences and all appurtenances, striping and markings as required to the satisfaction of the ENGINEER. Also, includes the installation of safe pedestrian pathway by installing orange netting or other approved method of safely directing pedestrians through a protected path.
7. This item shall also be interpreted to include the removal or relocation of any additional items in conflict with the proposed work not specifically mentioned herein or covered by specific bid item as directed in the field by the Engineer, which may be found within the work limits whether shown or not shown on the plans to be removed or relocated.
8. All surplus material three (3) inches or smaller shall be uniformly spread and compacted in the street sub grade. No material greater than three (3) inches in any dimension shall be used in the top twelve (12) inches of the sub grade. No nesting of rocks shall be allowed.
9. Unclassified fill shall consist of all fill unless separately designated. Construction of unclassified fill included preparing the area on which fill is to be placed, and the depositing, conditioning, and compaction of fill material.
10. Complete all demolition and removal work associated with the removal of AC, underlying PCC, PCC curb/gutter, as designated on the drawings for removal, unless otherwise defined.
11. Any structural or non-structural demolition work involved for the construction of the project and Contractor shall be responsible for disposing in a legal manner.
12. Determining and maintaining a straight edge in areas where AC joins existing edge of pavement.
13. No burning will be permitted.
14. No accumulation of flammable material shall remain on or adjacent to the right-of-way.

SECTION 302 – ROADWAY SURFACING

302-4 SLURRY SEAL SURFACING

[Add the following within each Subsection:].

302-4.1.1 PREPARATION OF EXISTING FOR SLURRY SEAL

Before applying slurry seal, the Contractor shall perform the following:

- Notices and No Parking postings. The contractor shall notify all the residents on any street that is impacted by the slurry seal operations by the end of the working day, on the Wednesday prior to slurry sealing the roadway. All operations for a Monday through Sunday work week shall have notices delivered by the prior Wednesday. The notice to each resident shall be on a format that is acceptable to the Engineer, with all contents of the notice being approved by the Engineer at least three weeks prior to having any slurry seal work performed. No Parking" signs are to be posted at least two working days prior to performing any slurry seal work.

- Plane all buckled pavement flush with existing adjacent pavement after the cleaning process.

- Remove all excess bitumen in bituminous pavement by burning or other method which is to be approved by Engineer.

- Clean all oil stained asphalt surfaces and apply "oil seal" produced by Industrial Asphalt or an approved equal to all oil stained surfaces prior to slurry application.

- Clean all loose materials, silt, vegetation, and other objectionable material on the existing surface by a method as specified or approved by the Engineer. The surface shall be free of water, dust, and foreign materials.

- Before construction starts, all cracks shall be sprayed with "Suppress Herbecide EC" a non-select organic weed and grass killer solution manufactured by Westbride Agricultural Products and a direct kill application (spectrocide) combination or approved equal. The contractor shall apply the organic weed and grass killer solution twice, at two (2) weeks apart from application. If a 3rd application is necessary, all cracks shall be sprayed with "Round-up", a non-select weed and grass killer solution manufactured by Monsanto Company and a direct kill application (spectrocide) combination or approved equal for no additional cost to the City. The Contractor shall remove all weeds and vegetation fourteen (14) days after the chemical application or as recommended by the manufacturer. The Contractor shall assure that vegetation and weeds are completely eliminated.
- To facilitate inspection, the chemical solution shall be mixed with purple dye before spraying. The Contractor shall be directed to spray against those cracks – without purple color appearing – at no additional cost to the City before any construction.

- The weed and grass killer solution shall be applied at a rate as recommended by manufacturer.

- Sweep the surface with a rotary broom to remove all loose material.

- Clean thoroughly by using compressed air to blow out loose material, and then brush with a wire brush to remove more stubborn material from all depressions and cracks not reached by the rotary broom.

- Wash existing pavement; it must be damp but without water standing before slurry.

- May use alternate cleaning methods only with prior approval of the Engineer.

- Remove all existing raised pavement markers (RPM) including reflective markers.

- Remove by wet sandblasting, or by hand-operated grinder, all existing and/or visual striping and pavement markings prior to the application of the slurry seal. Temporary striping marking shall be placed and maintained until the final striping and markings are placed.

- Remove by hand-operated grinder all existing and/or visual thermoplastic markings including markings, striping, and crosswalks prior to the application of the slurry seal.

- Furnish and maintain temporary markings until the final striping and markings are placed.

- Immediately ahead of the mixer for slurry seal, pre-water the pavement by a pressure water distribution system equipped with a fog-type spray bar which will completely fog the surface of the pavement. The surface should be damp but with no free water standing in front of the slurry box.

- Cover any manholes, water valve covers, and brick and concrete crosswalks with heavy removable plastic cover materials to prevent the adhesion of construction materials.

- Remove the tape covering material from manholes, water valves, and brick and concrete crosswalks as soon as the slurry application is completed remove and clean any deposited construction materials on the surface of these exiting structures as soon as possible.

- Coordinate with the City's Fire Department and obtain their approval before starting any work.

- Be responsible for maintaining location of and access to, all waterline valves during construction.

- Restore traffic delineation prior to opening street to traffic.

- Use only reflective slurry tabs; Non-reflective slurry tabs will not be allowed.

302-4.1.2 OIL SEAL

All accumulation of oil and foreign materials shall be scraped and removed from the asphalt surface prior to the application of oil seal. Any fresh petroleum deposits should be dried using heat prior to application of oil seal.
Oil seal shall be applied per manufacturer's recommendations. Severity of the petroleum stain should dictate the amount of application. Oil seal should be brushed onto the stained surface insuring the total stain is well covered.

302-4.1.3 SLURRY SEAL TYPE II

Slurry seal material and construction shall conform to Sections 203 and 302-4 of the Green Book and the following additions and revisions.

Slurry shall be quickset emulsion aggregate slurry seal cationic (CQS---1h) and shall have an additive oflatex. The latex shall be added at the emulsion plant after weighing the asphalt and before the addition of mixing water. The latex shall be added at a rate of 2.5% percent of the weight of the emulsified asphalt. The cost for the latex additive shall be included in the unit price for no additional cost to the City.

A final report for slurry mix design shall be submitted to the City for verification and all slurry mix design must be tested and approved by the specified laboratory prior to commencing work.

After mix proportions have been determined by the laboratory which has been approved by the City, the Contractor shall place one or more trial mixes either at the job site or at a location where small spreads of the slurry would not be objectionable.

The Contractor shall submit samples of aggregate, emulsion, retardant or accelerator, and the other required substances to the City to verify mix design submitted by the Contractor.

The cement mixing test will not be required for quickset cationic emulsion asphalt.
The aggregate bin shall be calibrated in 2-ton increments in order that an accurate estimate may be made of the amount of material used for each load. Prior to the beginning of slurry operations, the Contractor shall furnish, at no cost to the City, current licensed weighmaster's certificate indicating the net weight capacity of the aggregate bin.

The Contractor shall furnish calibrated vehicle weight scales at the stockpile site for use by the Agency. The portable scales will be utilized for inspection and all mixers shall be weighed prior to transit. All equipment and tools necessary for the field measurement of the emulsion and aggregate by the Agency shall be furnished and maintained by the Contractor.

The Contractor shall be responsible for the initial setup of the weigh scales at the stockpile site and all necessary relocations during slurry seal operations.

The Contractor shall apply the slurry using a minimum of two continuous mixers, one mixer to apply slurry with the other machine is in transit to and from the batch site. The Contractor shall provide a coordinator, at least one competent quickset man one competent driver for the mixer applying slurry, and one shuttle driver for the machine in route to reload. The Contractor shall also provide sufficient laborers for any hand work and clean up required to insure proper progress of work. Transit mix trucks shall not be used.

The spreader box shall be equipped with flexible material in contact with the pavement and shall be maintained so as to prevent loss of slurry outside the limits to be covered. It shall be adjustable to assure a uniform, controlled spread and shall be equipped with suitable drags that will erase ridges. It shall be mechanical or hydraulic type equipped with a steering device.

Prior to any change the Contractor shall thoroughly clean all emulsion tanks and mixing units to prevent any chemical reaction between the two emulsions.

Insofar as possible, slurry seal shall be applied to cul-de-sac areas and tress shaded areas in the early morning to allow proper curing.

Those areas that cannot be reached by regular spreading machine shall be spread by hand or by a small machine to completely cover those areas within the limitations of construction.

Sufficient water must be use to obtain a mix consistency that is smooth and homogeneous and does not segregate on standing. The water shall not exceed the content specified in the mix design.

Prior to the time of delivery of each shipment of asphalt emulsion, the Contractor shall deliver to the City certified copies of the test report for that emulsion. The test report shall indicate the name of the vendor, type and grade of asphalt emulsion delivered, date and point of delivery, quantity delivered, delivery ticket number, purchase order number, and results of the specified tests. The test report shall be signed by an authorized representative of the vendor, shall certify that the product delivered conforms to the standard specifications and is compatible with the proposed aggregate for the type and grade indicated. In addition, samples of each shipment of asphalt emulsion shall be taken upon arrival at the job site and furnished to the Engineer; a minimum of

three of those samples, more if deemed necessary, to be selected by the Engineer shall be tested for continued test reports, the testing required in connection with those reports and all additional resting shall be provided by the Contractor at no cost to the City.

No material from that shipment of asphalt emulsion shall be utilized or employed in performance of the work until the certified test reports and samples of the material have been furnished to, check by, and verified by the Engineer.

If test results do not conform to the requirements of these special provisions, the unacceptable slurry seal shall be removed and replaced at the Contractor's expense. Continued application of slurry will not be allowed until it can be shown to the Engineer's satisfaction that the mix conforms to the approved mix design. The Contractor shall, at the direction of the Engineer, repair and reseal all areas of the streets which have not been sealed properly and completely. No extension of time will be allowed for delays due to repairs, resealing, or improper mix. Any additional tests required by the Engineer prior to continued slurry application and the additional slurry required to correct the previously rejected slurry application shall be at the Contractor's expense.

The approximate rate of application coverage shall be from 1/8" to approximately 3/8" maximum with a coverage of 3/16" desired. For bidding purposes, the Contractor shall assume the application rate of slurry shall be between 1,100 and 1,400 square feet per extra long ton.

The Contractor shall verify weather condition prior to the application of slurry; however, no application shall commence before 8:00 a.m., or after 1:00 p.m. The streets to be sealed shall be closed from the time of application begins until the mixture has achieved sufficient set of 4 to 5 hours to be opened to traffic, or as directed by the Engineer. The full width of the roadway shall be open for use by public traffic no later than 5PM. No residential streets shall be closed to traffic before 8:00 a.m. or after 5:00 p.m.

If lumping, ball, or unmixed aggregate is observed, the slurry shall be removed from the pavement. It shall also be removed if coarser aggregate particles settle to the bottom of the mix. Streaks, such as those caused by oversized aggregate, shall be repaired at once with a hand squeegee.

No longitudinal or transverse streaking, bleeding (flushing), or loss of cover aggregate shall be accepted after application. Under the direction of the Engineer, Contractor shall remove all rejected areas and repair them to the acceptable degree by the Engineer. All cost for correction work shall be borne by Contractor.

The streets to be sealed with slurry shall be sealed from edge of pavement to edge of pavement.

Excessive build-up causing unsightly appearance shall not be permitted on longitudinal or transverse joints. Unless otherwise approved, the overlap at joints will not be less than 1" or greater than 3" and shall be feathered. Joints between asphalt pavement and

concrete pavement and/or concrete gutters shall be completely and neatly sealed without excessive overlap onto concrete; any unsightly and objectionable excess shall be immediately removed as required.

The start and finish of a slurry application shall be a straight line which, unless otherwise approved by the Engineer, shall be obtained by laying a strip of building paper or other material, approved by the Engineer, on the pavement surface. After application of slurry, the paper shall be removed, leaving a straight edge.

All cul-de-sacs the Contractor shall slurry seal first to allow an extended cure time for the cul-de-sacs locations. Spillage resulting from hauling operations along or across any public traveled way shall be removed immediately by the Contractor at its expense.

The finished surface of the slurry seal shall be at least as smooth as the original pavement surface. Any corrugations on the surface creating vibrations noticeable by passengers in an automobile driving over the slurry sealed surface at legal speeds will result in rejection of the slurry seal construction.

Following curing of the applied slurry, the roadway shall be uniformly black in color and shall exhibit no streaking. Where the completely slurry is not uniform in color, the slurry application will be rejected. Any overlap onto concrete gutters is unacceptable and shall be removed immediately. All curbs, gutters, sidewalks and driveways shall be maintained free of loose aggregate and shall be swept as necessary or as directed by the City Engineer. Any stains resulting from the slurry sealing or paving shall be removed to the City's satisfaction. Any slurry seal application that has been rejected will be removed by cold planning to the original pavement. A new slurry seal application shall then be placed on the pavement. Any Pavement of slurry seal rejected shall be removed and replaced with the cost borne by the Contractor.

The Contractor shall be responsible for covering all asphalt pavement surfaces with an application of slurry seal in designated areas. This will include, but not be limited to, asphalt pavement directly adjacent to edges of structures, fences, walls, planters, walkways, driveways, lawns, and porches. The Contractor shall prevent the slurry seal from being deposited on any of these facilities and/or improvements and shall remove any splattering or spillage.

The Contractor shall provide such flagmen and barricades as required to protect the uncured slurry from vehicular traffic. Any damage to the uncured slurry shall be the responsibility of the Contractor.

The Contractor shall have a sufficient number of men on the job at all times to properly protect the freshly laid material and to correct any irregularities resulting from spillage, unsatisfactory materials or any other inconsistency as the work progresses. All discrepancies encountered in the application of slurry shall be immediately corrected to the satisfaction of the Engineer.

Upon Completion of each working day, the Contractor shall clean up the street or roads including all utility covers and all ground occupied by him in connection with the work. All work performed by the Contractor shall be left in a neat and presentable condition.

At the end of each day's work and at other times when construction operations are completed or suspended, all equipment and other obstructions shall be removed from the roadway.

Any slurry seal repair work performed by the Contractor shall be reviewed and approved by the Engineer. The cost of any repair work and removal of the damaged slurry seal shall be borne by the Contractor.

302-4.1.4 CRACK SEAL

This work shall consist of sealing all transverse and longitudinal cracks, and/or combination thereof, routing grooves along random cracks; and placing sealing material in the grooves, and as directed by the Engineer.

302-4.1.4.1 Material

Grooves for transverse and longitudinal cracks, and/or combination thereof; shall be cut, to the dimensions as stated, with concrete saws equipped with diamond blades. Each groove shall be cut in one pass of the saw.

Grooves for sealing random cracks shall be routed by any method that will produce a groove of the approximate shape and dimension as stated.

Joint sealant shall conform to the requirements of ASTM Designation: D 3405 as modified herein or to the following:

> Joint Sealant shall be a mixture of paving asphalt and ground rubber. Ground rubber shall be vulcanized or a combination of vulcanized and vulcanized materials ground so that 100 percent will pass a No. 8 sieve. The mixture shall contain not less than 22 percent ground rubber, by weight. Modifiers may be used to facilitate blending.
>
> The sealant shall have a Ring and Ball softening point of 135 °F minimum, when tested in accordance with AASHTO Designation: T 53.
>
> The material shall be capable of being melted and applied to cracks and joints at temperatures below 400°F. When heated, it shall readily penetrate grooves ¼ inch wide or wider.

Section 4.2 of ASTM Designation: D3405 is modified to read:

> Penetration at 77°F. (25°C), 150g, 5s, shall not exceed 120.

Section 4.5 of ASTM Designation: D3405 is modified to read:

> Resilience – When tested at 77°F. (25°C), the recovery shall be a minimum of 50 percent.

Each lot of joint sealant shipped to the job site, whether as specified herein or conforming to ASTM Designation: D 3405, as modified herein, shall be accompanied by a Certificate of Compliance as provided in Section 6-1.07, "Certificates of Compliance," of the Standard Specifications, and shall be accompanied with storage and heating instructions and cautions.

Immediately prior to placing bond-breaker, or, in the case of random cracks, sealant, the joint, or routed crack, shall be cleaned by blast cleaning or by hand methods and then cleaned with high pressure air fets to remove all residue and foreign materials from the groove. Joint and routed crack surfaces shall be fry at the time the sealant is applied.

A bond-breaker of a shape and material recommended by the manufacturer of the sealant, or as approved by the Engineer, shall be placed in the groove of transverse of longitudinal joints, and/or combination thereof.

Joint-Sealant materials shall be heated and placed in conformance with the manufacturer's written instructions and the details shown on the plans. Joint-sealant materials shall not be placed when the pavement surface temperature is below 50°F.

The finished joint sealant shall be bonded to the faces of the joint groove. There shall be no separation or opening between the sealant and the faces of the joint groove, and there shall be no crack, separation, or other opening in the sealant.

302-4.1.4.2 Equipment

Router: Shall be so designed to follow random cracks accurately and in accordance to the requirements of the specifications and current Environmental Agency standards.

Compressor: An air compressor capable of a minimum of 85 to 150 cfm shall be used.

Asphalt-Rubber Sealant Machine: Shall have an oil jacketed pump heat transfer oil circulation system with a minimum of 200 gallons and an agitation system. There shall be a positive pumping system on the machine. The machine shall have a minimum melting capacity of 100 gallons per hour.

302-4.1.4.3 Application

Routing: Crack seal shall be applied to all cracks equal to, or greater than ¼" wide. Random cracks equal to or greater than 1/8" wide up to and including cracks 1/4" wide will be routed to a minimum width of 1/4" wide and 1/2" deep, and cracks greater than 1/4" wide up to and including cracks of 3/4" wide shall be routed to a minimum width of

3/4” wide and 3/4” deep by mechanical means. Cracks greater than 3/4” wide shall be blown with compressed air of not less than 100psi. Cracks less than 1/8” wide shall not be sealed under this work..

The Contractor shall protect all existing utility covers, survey monuments, traffic detector loops and pull boxes during the routing operation and shall repair or replace any damaged facilities to its original condition. The existing facilities shall include but not be limited to the above items.

Removing: All routed material, dirt, vegetation, and foreign debris shall be blown and/or removed from the cracks including alligatoring cracks prior to the end of each work day. All cracks shall be free from moisture, all dirt, routed material, vegetation and foreign debris.

Crack Filling: The routed and cleaned cracks shall be filled with specified sealant from the bottom up to the surface in such a manner which does not result in sealant bridging or entrapped air pockets. (With larger cracks, settlement and temperature shrinkage may occur, thus requiring a second application to bring the material up to surface). Immediately after material installation, the material shall be squeegeed as level as possible. Poorly squeegeed material and crack filled material that separates from the crack shall be rejected. Because of the nature of the material, there may be variance above or below the pavement level. Alligatoring crack areas shall also be entirely covered with crack seal material.

Sweeping: Following slurry seal operations, streets shall be swept with a power vacuum sweeper. The Contractor shall perform vacuum sweeping of all slurry sealed streets a minimum three (3) times: twenty-four (24) hours after application of the slurry (or the following Monday if applied on a Friday) and for period of two (2) weeks after application of slurry seal to remove all accumulations of loose material and maintain streets in a “ravel free” condition. The Contractor shall make complete (curb-to-curb) passes on all scheduled sweeps. Where commercial street sweeping vehicles cannot remove loose material, including but not limited to driveways, sidewalks, and curb ramps, hand sweeping or equal shall be performed. The frequency and location of sweeping will be on as needed basis as determined by the Engineer for no additional cost to the City.

Two weeks following the completion of slurry seal operations, the Contractor shall repair all power steering marks, rough seam lines, and any other defects as directed by the City Engineer.

Miscellaneous: Spillage resulting from hauling operation along or across any public traveled way shall be removed immediately by the Contractor at its expense.

The Contractor shall prevent the crack seal materials from being deposited on all existing facilities and/or improvements and shall remove any splattering or spillage.

The Contractor shall provide such flagmen and barricades as required to protect the uncured crack seal materials from vehicular traffic. Any damage to the uncured crack seal materials shall be the responsibility of the Contractor.

The Contractor shall have a sufficient number of men on the job at all times to properly protect the freshly laid material and to correct any irregularities resulting from spillage, unsatisfactory materials or any other inconsistency as the work progresses. All discrepancies encountered in the application of crack seal materials shall be immediately corrected of the satisfaction of the Engineer.

Upon completion of each working day, the Contractor shall clean up the streets or roads including all utility covers and all ground occupied by him in connection with the work. All work performed by the Contractor shall be left in a neat and presentable condition.

Temporary markings shall be placed and maintained until the final striping and markings are placed.

The Contractor shall be responsible for maintaining location of, and access to all waterline valves during construction.

At the end of each day's work and at other times when construction operations are completed or suspended, all equipment and other obstructions shall be removed from the roadway.

302-5 ASPHALT CONCRETE PAVEMENT

[Add the following within each Subsection:].

302-5.1 General

Asphalt Concrete (AC) shall conform to Section 203-6 of the Standard Specifications, with Section 92, "Asphalt" of Caltrans Standard Specifications and Special Provisions, and as modified herein.

- AC base course shall be Type III-B2-PG-64-10 (3/4" sieve size).
- AC leveling course shall be III-D-PG-64-10 (3/8" sieve size) (up to 0.08 foot thick).
- AC surface course shall be Type III-C3-PG-64-10 (1/2" sieve size) and at least 0.16 foot thick.

All areas for reconstruction and leveling shall be marked in the field by the ENGINEER.

The Contractor is not allowed to drive his/her fully loaded trucks on the new asphalt concrete mat.

Sub-grade preparation shall conform to Section 301-1 of the latest edition of the Standard Specifications for Public Works Construction.

Unless otherwise directed by the ENGINEER, the finished surface of the new leveling course shall be 2-inches thick at the center/crown of roadway, tapering to 0 inches thick approximately one foot from the edge of the gutter lip.

Finished surface of the new pavement shall be flush with the edge of the gutter, if there is a bike lane or crosswalk with curb ramps (A.D.A. path of travel). The finished surface of the new pavement shall be 3/8" higher than the edge of the gutter for all other conditions.

The Contractor shall be responsible for maintaining location of and access to, all water valves, water line gate valves and manholes during construction.

Contractor shall schedule paving operations to ensure that construction equipment does not drive over new A.C. material.

At least 24 hours of "cool off" time shall occur between A.C. lifts.

Contractor shall protect and preserve the entire existing pavement outside construction limits in the same condition as existing. Contractor shall replace and/or repair the damaged area to the satisfaction of the ENGINEER at no cost to the City.

Unless otherwise noted below, there are no special equipment requirements, the contractor shall comply with all provisions of the latest edition of the Standard Specifications for Public Works Construction.

302-5.2 Not Used

[Replace with the following:].

302-5.2 Asphalt Removal and Replacement

The Contractor shall remove the existing AC pavement section down to the elevation as depicted on the Plans. All work shall comply with the applicable sections of the Standard Specifications as required.

Sub-grade preparation shall conform to Section 301-1 of the Standard Specifications.
The Contractor shall replace and compact the aggregate base section to the required elevation as specified on the Plans. The aggregate base material shall be ¾" CMB and conform to Section 200-2.4 "Crushed Miscellaneous Base" of the Standard Specifications.
The existing AC pavement shall be saw-cut to full depth to provide a clean, neat, and straight pavement break. Then the join between the existing pavement and the new pavement shall be sealed. A layer of tack coat shall be applied to all vertical-cut faces and between subsequent HMA lifts.

All excavated material shall be hauled and disposed of by the Contractor in accordance with these Special Provision and Standard Specifications.

The Contractor can elect to bring the entire AC Base Course to the existing finished grade prior to cold milling operations.

302-5.4 Tack Coat

Prior to placing asphalt concrete, all existing surfaces shall be cleaned by blowing air, water and/or broom, and the crack seal applied as part of the cold milling operation shall be set and inspected. The surface shall be free of water, dust, and all foreign materials before any tack coat is applied.

The Tack Coat shall be applied to all exposed surfaces.

302-5.5.1 Surface Preparation

Prior to placing asphalt concrete, all existing surfaces shall be cleaned by blowing air, water and/or broom. All striping and markings shall be removed by grinding or by some other approved method before placing asphalt concrete surface course, and skin patching. The surface shall be free of water, dust, and all foreign materials before any tack coat is applied.

Prior to the application of new AC surface course, the Contractor shall locate and tie-out all manholes and valve covers before commencing work.

Asphalt concrete shall be compacted to achieve at least 95 percent of the relative compaction.

The Contractor is not allowed to drive his/her fully loaded trucks on the new asphalt concrete mat.

302-5.6 Rolling

Initial or breakdown compaction shall consist of a minimum of three coverages of a layer of asphalt concrete. A pass shall be a movement of a roller in both directions over the same path.

A coverage shall be as many passes as are necessary to cover the entire width being paved. Overlap between passes during any coverage made to insure compaction without displacement of material, in accordance with good rolling practice, shall be considered a part of the coverage being made and not a part of a subsequent coverage.

Each coverage shall be completed before subsequent coverages are started.

Pneumatic rollers shall not be used without prior approval of the Engineer. The top layer of each lane, once commenced, shall be placed without interruption. The Contractor shall roll the newly laid asphalt concrete in such a manner that will not create a joint between two passes; joints shall be flush. If such joint exists, the Contractor shall be required to replace or repair that section as directed by the Engineer at no cost to the City. Six (6) inches of newly laid asphalt concrete to be joined by an adjacent pass shall not be rolled until adjacent pass has been laid.

Subgrade preparation shall conform to Section 301-1 of the Greenbook, and shall be included in the unit price bid for “Asphalt Concrete.”

Asphalt concrete shall be placed with a paving machine equipped with a Preco attachment or an approved equal device for use in obtaining constant cross-slope and maximum joint quality.

At all locations where new asphalt concrete pavement is joining or overlaying existing asphalt pavement, the Contractor shall provide straight neat lines and transition the last twenty (20) feet of new pavement to form a smooth transition with the existing pavement.
Contractor shall protect and preserve the entire existing pavement outside construction limits in the same condition as existing. Contractor shall replace and/or repair the damaged area to the satisfaction of the Engineer at no cost to the City.

302-5.8 Not Used

[Replace with the following:].

302-5.8 FORTA-FI® Fiber-Reinforced Asphalt Cement Concrete

The following are the manufacturer’s (FORTA Corporation) specifications for the FORTA-FI® Fiber-Reinforced Asphalt Cement Concrete. Any questions should be addressed to the manufacturer as provided here in subsection 2.1. *Substitutes for this fiber-reinforced product must be equal or better and approved by the ENGINEER.*

1.1 Submittals:
- A. Submit copies of manufacturer’s literature for fibers including:
  1. Product data
  2. Brochures
  3. Written instructions to suppliers
  4. Written instructions to installers
  5. Material safety data sheets (MSDS)
- B. Submit copies of certificate prepared by asphalt material supplier, stating that the specified fibers were added to each batch of asphalt delivered to the project site. Each certificate should be accompanied by one copy of each batch delivery ticket indicating product name, manufacturer and quantity of fiber-reinforcement added to each asphalt load.

1.2 Quality Assurance:
- A. Fiber Manufacturer to provide technical assistance from design through construction for use of fiber reinforcement.

1.3 Delivery, Storage, and Handling:
- A. Deliver fiber-reinforcement in sealed, undamaged containers with labels intact and legible, indicating material name and lot number.
- B. Deliver fiber-reinforcement to location where it will be added to each batch or loaded into the mixer.
- C. Store materials covered and off the ground. For ease of handling, do not allow boxers to become wet.

2.1 Manufacturer’s Information:

FORTA Corporation
100 FORTA Drive
Grove City, PA 16127
(800) 245-0306
www.fortacorp.com
www.forta-fi.com

2.2 Materials:

A. FORTA-FI® [Hot-Mix Asphalt (HMA), Warm-Mix Asphalt (WMA), and Hot / Cold-Patch (PAT)] fiber-reinforcement with virgin polyolefins and virgin aramids.
B. Fiber-Reinforcement: FORTA-FI® fibers with the following typical physical properties:
   1. Nominal Specific Gravity (Bulk Relative Density): 0.91 and 1.44
   2. Nominal Material Types: Virgin Polyolefins and Virgin Aramid
   3. Maximum length: 0.75-inch
   4. Match fiber blend of materials to application installation types:
      i. Hot Mix Asphalt is designated blend HMA,
      ii. Warm Mix Asphalt is designated blend WMA, and
      iii. Patching is designated blend PAT

2.3 Batching and Mixing:

A. To avoid the formation of fiber balls or not mixed fibers, add sealed plastic bags of fibers into the mixer.
B. Add fiber-reinforcement at 1.0 pound per ton (lb / ton).
C. Order product for Pub Mill Mixers for minimum batch size regarding tons per batch to pounds per bag of product.
D. Order Product for Drum Type Mixers and the anticipated production rate of tons per hour (typically seconds per ton, dosage timing) regarding one-pound per bag of product.
E. Order fiber-reinforcement materials for one-pound per ton of asphalt materials and allowing for overages, production, and occasional errors based on past experience.

2.4 Pub Mill Mixers and Mixing Operations:

A. Ensure adequate start, stop, and dosage change information is easily communicated between batch control operations and fiber addition activities.
B. Add complete bags of fibers just before aggregate is discharged into the pug mill mixer.
C. Immediately before or immediately after the dried aggregate is added to the pub mill, the bags of fibers should be added and discharged into the pug mill with the aggregate.
D. Add complete bags of fibers at the general nominal batch size agreed to by operations and mixture design specifications.
E. Do NOT open the bags and add or discharge into the pub mill.
F. Dry mixing proceeds for the standard length of time as specified in the mixture design specifications.
G. The proper quantity of bitumen (asphalt cement, liquid) is added to the pub mill and wet mixing proceeds for the standard length of time as specified in the design mixture specifications.
H. The asphalt batch is accumulated and discharged normally.
I. The asphalt batch is discharged to a haul vehicle or storage.

2.5 Drum Type Mixers and Mixing Operations:

A. Ensure adequate start, stop, and rate change information is easily communicated between drum control operations and fiber addition activities.
B. Add complete bags of fiber at a point in the mixing process after fines collection and before the addition of liquid asphalt.
C. Add fibers after the fines collection to ensure the fibers do not clog filters.
D. Add fibers before the liquid asphalt addition.
E. Add complete bags of fibers at the general nominal rate agreed to by operations and mixture design specifications.
F. Do NOT open the bags at any point in the loading process.
G. Mixing should proceed for the standard length of time as specified in the mixture design specifications.
H. The proper quantity of bitumen (asphalt cement, liquid) is added to the drum and wet mixing process for the standard length of time as specified in the mixture design specifications.
I. The asphalt batch Is accumulated and discharged normally.
J. The asphalt batch is discharged to a haul vehicle or storage.

3.1 Placement:

A. Discharge fiber-reinforced asphalt cement concrete into locations as directed and in accordance with the project.
B. Place asphalt cement concrete in accordance with the provision of other sections and with additional instructions as follows.
C. Avoid over-using long tine rakes or other tools that will align fibers or disrupt the homogeneous, uniform 3-dimensional, fiber dispersion when moving asphalt cement concrete.
D. Using a lute, “come along,” or a flat tined pitch-fork (potato fork) may be useful for moving asphalt cement concrete.
E. Remove any observed fiber balls from mixture if they occur.
F. Adjust operations regarding any observed fiber balls.

3.2 Compaction:

A. Verify timing for initial and final compaction rather than just a visual determination.
B. Hand Compaction / Finishing: Use appropriate tools as required.

302-7 PAVEMENT FABRIC

302-7.1 General

[Add the following:].

302-7.2 Placement

The Contractor shall place subgrade stabilizing fabric upon the prepared subgrade. The subgrade shall be scarified and compacted prior to the placement of the fabric. Care shall be taken not to overwork the subgrade.

The subgrade fabric shall be *Mirafi 600X* or approved equal and shall be placed on entire subgrade areas before placing asphalt concrete (A.C.) base course. Overlap shall be 48-inches. The contractor shall follow the manufacturer’s recommendations for installation of the fabric.

Furnish and place engineering fabric in accordance with Section 302-7 of the Standard Specifications.

The engineering pavement fabric shall conform to Section 213-1 of the Standard Specifications.

302-9 ASPHALT RUBBER HOT MIX (ARHM)

302-9.1 General

[Add the following:].

Asphalt Rubberized Hot Mix (ARHM) shall conform to Section 203-11 of the Standard Specifications and as modified herein.

- The Asphalt Rubber Hot Mix Surface Course shall be Gap-Graded ARHM-GG-C-PG 64-16 (1/2" sieve size) and at least 0.15 foot thick

Finished surface of the new pavement shall be flush with the edge of the gutter for entire project area.

Contractor shall schedule paving operations to ensure that construction equipment does not drive over new AC material.

The Contractor is not allowed to drive his/her fully loaded trucks on the new ARHM mat.

Contractor shall protect and preserve the entire existing pavement outside construction limits in the same condition as existing. Contractor shall replace and/or repair the damaged area to the satisfaction of the ENGINEER at no cost to the City.

Unless otherwise specified herein, there are no special equipment requirements to perform the work and the contractor shall comply with all equipment specifications of the Standard Specifications.

302-9.2 Tack Coat

[Add the following:].

Prior to placing the ARHM surface course, all receiving surfaces shall be cleaned by blowing air, water and/or broom. The surface shall be free of water, dust, and all foreign materials before any tack coat is applied.

The Tack Coat shall be applied to all exposed surfaces.

302-9.3 Distribution and Spreading

[Add the following:].

At least 24 hours of “cool off” time shall occur between A.C. lifts.

All temporary striping and markings shall be removed by grinding or by some other approved method before placing asphalt concrete surface course, and skin patching.

Asphalt concrete shall be placed with a paving machine equipped with a Preco attachment or similar device for use in obtaining constant cross-slope and maximum joint quality.

302-9.6 Manholes (and Other Structures)

[Add the following:].

The Contractor shall be responsible for maintaining location of and access to, all water valves, water line gate valves and manholes during construction.

Prior to the application of new AC surface course, the Contractor shall locate and tie-out all manholes and valve covers before commencing work and comply with these Special Provisions.

The Contractor shall measure the bridge height clearance at the SR 73 north and south bridges after placement of the AC leveling course at the specified roadway location to confirm that the min. 15’-0’ clearance will be achieved after placement of final surface course. Contractor to measure the final height from same location to confirm min.15’-0” clearance after final placement and compaction of surface course. If the measurement reduces the min. 15’-0” clearance, the Contractor shall be required to grind and re-pave the non-conforming area until compliance has been achieved and accepted by the ENGINEER.

The Contractor is directed to Section 403 within these Special Provisions with respect to raising, adjusting or reconstructing utilities to grade.

302-5.6 Rolling

302-5.6.1 General

[Add the following:].

Initial or breakdown compaction shall consist of a minimum of three coverages of a layer of asphalt concrete. A pass shall be a movement of a roller in both directions over the same path.

A coverage shall be as many passes as are necessary to cover the entire width being paved. Overlap between passes during any coverage made to insure compaction without displacement of material, in accordance with good rolling practice, shall be considered a part of the coverage being made and not a part of a subsequent coverage.

Each coverage shall be completed before subsequent coverages are started.

The top layer of each lane, once commenced, shall be placed without interruption. The Contractor shall roll the newly laid asphalt concrete in such a manner that will not create a joint between two passes; joints shall be flush. If such joint exists, the Contractor shall be required to replace or repair that section as directed by the Engineer at no cost to the City. Six (6) inches of newly laid asphalt concrete to be joined by an adjacent pass shall not be rolled until adjacent pass has been laid.

Pneumatic rollers **shall not be used** without prior approval of the ENGINEER.

302-9.5 Joints

At all locations where new asphalt concrete pavement is joining or overlaying existing asphalt pavement, the Contractor shall provide straight neat lines and transition the last twenty (20) feet of new pavement to form a smooth transition with the existing pavement.

302-9.8 Measurement

[Replace the first Sentence with the following:].

ARHM shall be measured by the TON

SECTION 303 – CONCRETE AND MASONRY CONSTRUCTION

303-5 CONCRETE CURBS, WALKS, GUTTERS, CROSS GUTTERS, ALLEY INTERSECTIONS, ACCESS RAMPS, AND DRIVEWAYS

303-5.1 Requirements

303-5.1.1 General

[Replace the entire Subsection with the following:].

Concrete curbs, walks, gutters, spandrels, cross gutters, alley intersections, access ramps, and driveways shall be constructed of Portland cement concrete and comply with Section 201-1 of the Standard Specifications. The following class of concrete shall be used per each type of improvement:

- Curb and Gutter, Spandrels, Cross Gutters, Alley Intersections, and Driveways – **560-C-3250.**
- Sidewalks and Access Ramps – **520-C-2500**

The following AC type and Crushed Miscellaneous Base (CMB) shall be used with respect to each type of improvement:

- Asphalt Concrete Base Course shall conform to Section 302-5 of these Special Provisions.
- Crushed Miscellaneous Base (CMB) shall be ¾" fine and comply with Section 200-2.4 of the Standard Specifications.
- AC Sidewalk – Surface Course (Type III-C3-PG64-10 (½" sieve size)) in conformance with Section 203-6 of the Standard Specifications.

Curing compound shall be applied in accordance with the provisions of the GREENBOOK.

CITY Standard Drawings

The following CITY Standard Drawings shall apply or per the direction of the ENGINEER:

- Curb and Gutter shall conform to Nos. 312 and 314.
- Concrete Sidewalk shall conform to Nos. 411, 412, and 413, (and 414 where necessary). 4" Min PCC/4" CMB.
- Driveways shall conform to Nos. 313, 513, and 514.
- Cross-gutters shall conform to No. 415 or per Standard Plan No. 122-2 or 123-2 in the "Standard Plans for Public Works Construction," also known as the A.P.W.A. Standard Plans.

Caltrans Standard Plans

The following Caltrans Standard Plans shall apply:

- Americans with Disabilities Act (ADA) Access Ramps - Construction shall conform to Caltrans Standard Drawing No. A88A adjusted to meet the latest ADA regulations and requirements. The width of the wheel chair access ramp "W" shall be a minimum of five (5') foot wide.

303-5.1.1 a) ADA Access Ramps

The Contractor shall inspect the location of the Access Ramps to be re-constructed prior to beginning the work to determine the appropriate Caltrans Standard Plan Ramp Case to be constructed. If the work entails removing and replacement of existing concrete sidewalk outside the ramp work limit area as identified in these Specifications or as shown on the Plans, he/she shall notify the ENGINEER prior to initiating the work.

The Contractor shall construct all necessary variable height-retaining curb at the back of the curb ramp as well as other retaining curb, if required, pursuant to the appropriate Caltrans Standard Plan ADA Ramp Case as determined by the Contractor and accepted by the ENGINEER. The Contractor shall relocate all street signs effected by the ramp construction to a condition equal to or better than existing.

The detectable warning surface shall be Armor-Tile replaceable truncated domes or approved equal. Contractor shall submit a sample of the detectable warning surface to the ENGINEER for approval, prior to the start of construction. The color shall be **yellow**. The truncated dome mat shall be installed across the entire width of the bottom of the access ramp and shall be installed per the manufacturer's installation recommendations, or as directed by the ENGINEER.

The Contractor shall ensure safe passage by pedestrians during the ADA ramp construction and afford one safe crossing of the street at all times. The Contractor shall set-up all required signage and barricades within the work zone to provide safe pedestrian passage.

AC Tie-in

The Contractor shall saw cut, remove, and reconstruct a minimum of a two (2) foot width (slot patch) of adjoining structural section of the pavement to the limits of the ADA Ramp construction (BCR joint to ECR joint). The AC structural section to be replaced shall be 8” AC Base Course/8” CMB or 12” full depth AC Base Course with compaction as required by the Standard Specifications.

If there is an asphalt concrete adjoining sidewalk to be reconstructed to tie into the new concrete ramp, a one-foot (1’) adjoining pavement section shall be removed and replaced with a structural section of 4” AC Surface Course/4” CMB.

Curb and Gutter

The Contractor shall sawcut and remove existing curb and gutter, and construct either Type "C-6” curb and gutter or "C-8" curb and gutter pursuant to the existing curb and gutter condition conforming to the CITY Standard Drawing No. 312, rolled curb and gutter and/or modified curb and gutter at locations marked in the field by the ENGINEER or as designed on the Plans.

SPECIAL NOTE: In order to comply with ADA requirements cross slope of gutter plate and AC at wheelchair ramp locations shall not exceed 5% grade in the gutter pan.

SPECIAL NOTE: Curing compound shall be applied in accordance with the provisions of the GREENBOOK.

Removal of the Concrete Curb and Gutter and AC shall conform to Section 401 “Removal” of the Standard Specifications.

Existing Landscape Areas

All existing landscaping/irrigation/backfill removed, as part of the access ramp construction shall be replaced in-kind and made a part of the work in conformance with these Special Provisions and Standard Specifications at no additional cost to the CITY.

Other Existing Facilities and Obstructions

The Contractor shall protect all existing improvements within the work area not designated to be removed in-place and intact and shall replace any existing improvements damaged by his/her operations at no additional cost to the CITY.

The Contractor shall locate and protect the traffic signal home-run within the slot patch and ramp area and coordinate with the City with respect to the signal loop replacement work as shown on the plans or as required. If the Contractor damages the existing signal loop conductor/conduit or other wiring to the signal pull box, all damage to said existing improvements shall be repaired/replaced to an in-kind condition pursuant to the required specifications and the system shall be restored for full operation at no cost to the City.

The Contractor shall mark, protect, adjust, and re-set all utility boxes/vaults within the reconstructed area. Additionally, the Contractor shall replace any existing marked, labeled or stamped concrete on the face of curb of existing utilities, which include, but not limited, to water, sewer, gas, etc.

303-5.1.1 b) Curb and Gutter

Per CITY Standards, weakened plane joints are required every ten feet (10') and felt paper every forty feet (40'). Transitional curb and gutter shall be ten feet (10') from one type to the other. No construction joints will be permitted.

303-5.1.1 c) Concrete Sidewalk

The Contractor shall reconstruct existing concrete sidewalk and/or construct new concrete sidewalk around obstructions, meandering sidewalk, and other miscellaneous concrete construction conforming to these Special Provisions and as shown on the Plans. The Contractor may be directed to reconstruct concrete walkways within private properties in order to join new improvements. Prior to initiating the work outside the City rights-of-way, the City will obtain the necessary right of access documents from the private property owner.

If there is an asphalt concrete adjoining sidewalk to be reconstructed to tie into the new concrete sidewalk, a one-foot (1') adjoining pavement section shall be removed and replaced with a structural section of 4" AC Surface Course/4" CMB.
The Contractor shall inspect the location of the concrete sidewalk work area to be re-constructed prior to beginning the work. If the work entails removing and replacement of existing concrete sidewalk outside the work limit area as depicted within these Specifications or as shown on the Plans, he/she shall notify the ENGINEER prior to initiating the work.

Existing Landscape Areas

All existing landscaping/irrigation/backfill removed as part of the concrete walkway construction shall be replaced in-kind and made a part of the work in conformance with these Special Provisions, Standard Specifications, and as directed by the ENGINEER at no additional cost to the CITY.

The Contractor shall place new sod or seed and top soil to match the existing grass species in the areas adjoining the newly constructed concrete improvements that were disturbed by his/her operations. The Contractor may be directed by the ENGINEER to sod or seed other areas as necessary in conformance with these Specifications.
Top Soil shall be Modified Class "A" Topsoil and shall consist of 80% content of Class "A" Topsoil per the Standard Specifications and 20% content of processed wood product of type "I" organic soil amendment per the Standard Specifications.

The Contractor shall protect all existing improvements within the work area not designated to be removed in-place and intact and shall replace any existing improvements damaged by his/her operations. Any damage beyond the construction limit shall be repaired at the Contractor's expense per Section 400-1 of the Standard Specifications.

The Contractor shall protect and support existing irrigation lines and sprinkler heads in place and intact. The Contractor shall adjust the heads to the proper level upon completion of the new sidewalk replacement.

The Contractor shall furnish and install all new pipe sizes to match existing, but no less than ½” schedule 40, PVC pipe, to tie into existing pipes. New sprinkler heads shall be equal to or better than existing inclusive of all appurtenances. All work shall conform to the applicable sections of the Standard Specifications and as directed by the ENGINEER.

The Contractor may salvage and reuse sprinkler heads that are still in reusable and functional condition for use at locations from which they were removed.

The Contractor shall cut interfering portions of existing irrigation lines and cap all ends for future reconnection at the time that the work is started at each location. All repair and replacement of the irrigation system shall be done within five (5) days or sooner after disconnection. During disconnection period of existing irrigation systems, the Contractor shall maintain the existing grass, trees, shrubs, and other existing landscape in a live condition with a temporary irrigation system and/or shall water the landscaped areas by hand. Homeowner's water supply shall not be used without written consent from each homeowner.

The Contractor shall modify, relocate or replace and/or extend all encountered irrigation lines or sprinkler heads so as to give full coverage to landscape area.

The Contractor may be directed to extend the existing sprinkler system or place a P.V.C. sleeve under the new sidewalk improvements into the landscaped area between the curb and sidewalk and other locations as necessary as determined in the field by the ENGINEER.

Prior to accepting work, the Contractor must turn the system on, and it must work properly in the presence of and to the satisfaction of the Engineer and property owner. The Contractor shall replace any damaged and dead grass or landscaping beyond construction limits resulting from Contractor’s operation or insufficient water supplies at no cost to the CITY.

Other Existing Facilities and Obstructions

Contractor shall adjust to grade existing water meter boxes (WM) to the new grade of the sidewalk. The water meter and water line shall be protected in place. Broken water meter boxes shall be removed and replaced by the Contractor, contact Mesa Water District to obtain and pickup new WM box. WM box shall be furnished to the Contractor at no cost.

The Contractor shall protect in-place the existing mail boxes or relocate them if they do not meet U.S. Post Office standards (see the Standard Plans section, if applicable). The Contractor shall provide a new post in case the existing one cannot be saved as determined by the ENGINEER in the field.

The Contractor shall relocate any street signs, which interfere, or conflict with construction of the sidewalk. A minimum 4-foot wide path of travel shall be required.

Sidewalk obstruction flare construction shall be per City Standard Drawing No. 413 or as shown on the Plans or as depicted within these Specifications.

At certain addresses, the Contractor will be directed to remove concrete and/or other improvements in the right-of-way. Upon the completion of the removal of existing concrete improvements within the parkway, including the underlying aggregate base for which no replacement is required, the Contractor shall backfill the void with Modified Class "A" Topsoil for placing new sod or seed as directed in those respective bid items.

303-5.1.1 d) Concrete Cross-Gutter

Contractor shall sawcut and remove existing improvments and reconstruct cross-gutter conforming to City of Costa Mesa Standard Drawing No. 415 or per Standard Plan No. 122-2 or 123-2 in the “Standard Plans for Public Works Construction,” also known as the A.P.W.A. Standard Plans, and applicable sections of the Standard Specifications, as directed by the ENGINEER.

Eight (8) inches of Crushed Miscellaneous Base (CMB) shall be required under all new cross gutters.
Concrete shall be class 560-C-3250. (High early strength concrete mix)

Crushed Miscellaneous base material and construction shall conform to Subsections 200 and 301 of the The “Greenbook,” and as directed by the Engineer. The sieve size shall be ¾” (fine).

New improvements shall be constructed to grades as indicated on the plans to provide a proper flow line with the existing improvements as indicated on the plans.

303-5.1.1 e) Concrete Driveway Approach

Contractor shall sawcut and remove existing improvments and construct P.C.C. Driveway Approach per City of Costa Mesa Standard Drawing Nos. 313, 513, and 514

and also to Standard Plan No. 110-2, Type “B” in the “Standard Plans for Public Works Construction,” also known as the A.P.W.A. Standard Plans. All work shall conform to the applicable portions of Section 303-5 of the Standard Specifications. Six (6) inches of Crushed Miscellaneous Base (CMB) shall be required under all new driveways.

The Contractor shall adjust all existing utility boxes and conduit, or water meter boxes within the new driveway approach, to its new finished grade, and the adjustment shall be included in the bid price per square foot of Residential Driveway or Commercial Driveway. Removals and/or relocations necessary for driveway construction are to be paid as part of this bid item, except where a separate bid item exists for a stated removal or relocation item of work.

Concrete shall be class 560-C-3250.

Crushed Miscellaneous base material and construction shall conform to Subsections 200 and 301 of the The “Greenbook,” and as directed by the ENGINEER. The sieve size shall be ¾” (fine).

If there is existing asphalt concrete adjoining into the new concrete driveway approach, a one-foot (1’) adjoining pavement section shall be removed and replaced with a structural section of 6” AC Surface Course/6” CMB.

Asphalt concrete for slot paving shall be ¾” for base course and ½” for surface course, which is covered in Section 400-4 of Standard Specifications (latest edition).

Soils and aggregate tests shall conform to State of California test methods which may be substituted for designated ASTM test methods as noted herein. Laboratory maximum density tests shall be per Method 2 of Subsection 211-2.1. The correction for oversize materials as stated in Test Method No. California 216 shall be replaced with Note 2 of ASTM D1557.

New improvements shall be constructed to grades as indicated on the plans to match existing improvements and field condition with proper grade to form a safe and smooth riding surface.

SECTION 314 – TRAFFIC STRIPING, CURB AND PAVEMENT MARKINGS, AND PAVEMENT MARKERS

[Replace the entire Section with the following:].

314-1 GENERAL

The striping, markings and signing shall be reinstalled at existing locations in accordance the latest edition of the State of California Standard Plans and Specifications, City Details for Striping and Markings, as modified within these Special Provisions, and as specified by the ENGINEER. The Contractor shall furnish all material, services, labor and equipment necessary for the required pavement preparations, layout and completing the pavement markings.

The installed material shall be plainly visible to the motorists both day and night. Nighttime visibility shall be by a retro-reflector induced by ordinary headlights.

These special provisions set minimum requirements on material characteristics of the pavement marking products. Requirements concerning application and contractor warranties shall be maintained to secure acceptable performances.

The contractor shall record the existing Striping and Markings for the entire project limits on the Plans and provide to the Engineer prior to removal operations.
Contractor shall restore pavement traffic striping and marking damaged during construction to original condition.

314-2 REMOVAL OF TRAFFIC STRIPING AND CURB AND PAVEMENT MARKINGS

314-2.1 General

All striping must be removed by the wet sandblasting method with immediate cleanup of residue. No "blacking out" or temporary covering will be allowed. Such removal shall be by a vacuum attachment operating concurrently with the blast cleaning operations. Reflective striping tape may be used, except that it shall not be applied to final surfaces. It shall be completely removed from all surfaces prior to placement of subsequent work.

All pavement markers shall be removed without damaging the pavement.

314-3 TEMPORARY STRIPING, SIGNING, RAISED PAVEMENT MARKERS

The Contractor shall be responsible for the placement of all required temporary signing, striping, and markings and the removal of existing stripes and markings in the installation of required temporary striping.
Spotting shall be completed prior to the removal of any temporary striping of traffic control devices. Existing temporary stripes and markings shall be removed prior to painting new ones, but in no case shall any section of street be left without proper striping for more than 24 hours or over weekends or holidays.

Traffic striping and markings shall be removed before any change is made in the traffic pattern. Removal shall be coordinated with the installation of new pavement markings to provide continuous, non-conflicting guidance to public traffic.

Should temporary striping be required on the finished asphalt surface, the method and configuration must be approved by the ENGINEER for approval prior to placement.

At no time shall the street be open to traffic without delineation to separate opposing traffic. Temporary delineation type shall be at the inspector's discretion.

In general, temporary reflectorized markers are the preferred type of temporary delineation.

314-4 PERMANENT STRIPING AND PAVEMENT MARKERS

314-4.1 Surface Preparation

In order to ensure maximum possible adhesion, the pavement surface upon which the pavement markings are to be placed shall be properly cleaned from grease, oil, mud, dust, dirt, grass, loose gravel, and other deleterious material prior to the application of the thermoplastic pavement markings, and prime sealer.

314-4.2 Premarking

If the markings are not visible, the Contractor will be required to premark each installation prior to the application of the material. Where no existing markings are in place, the Contractor shall place the new pavement markings where directed by the Engineer.

314-4.3 Striping Standards

The Contractor shall conform to the following requirements:

1. All traffic lines shall conform to the Caltrans Standard Plans and Standard Specifications, (latest edition) and any amendments thereto, and these Special Provisions.

2. City standards are provided for Stop Legends, Stop Bars, Crosswalk striping within Appendix B of these Specifications.

3. The Contractor shall install traffic striping, markings, arrows and messages pursuant to the “Striping/Pavement Marking Chart” and sketch where provided. All work and materials shall conform to the requirements of Caltrans Standard Specifications (latest edition).

4. The following striping details shown in Caltrans Standard Plans A20A-D and A24A-E shall be routinely used for traffic lines.

Line	Detail	Pavement Marker Info
Yellow Centerline (Residential)	2	Type D
Double Yellow (Residential)	22	Type D
Skip White	9	Type G
Two-Way Left-Turn Lane	32	Type D
Channelizing Stripe	38B	Type G
Lane Drop Stripe	37B	Type C

5. All crosswalks, turn arrows, stop and yield bars and messages, and all other pavement legends except "Bike Lane" shall be installed in thermoplastic.

6. All yellow school crossings shall be upgraded to the Higher Visibility Crosswalk type Continental per 2018 Caltrans Standard Plans, Plan No. A24F. The crosswalks shall be 8 feet minimum using inside dimensions. The blocking shall be 24 inches wide with 24-inch min gaps or as required for alignment for wheel tracks. If the street intersects at an intersection where there is an existing Yellow Crosswalk due to the vicinity of the School, the crosswalk shall be painted and refreshed for the entire intersection. If the cross-street has a different pattern for crosswalk then the Contractor shall confer with the City staff for the direction on installing the appropriate type.

7. Bike lane stripes and messages shall be painted per Caltrans Standard Plan No. A20D, Detail 39 and 39A.

8. The first three (3) raised pavement markers for any white line at an intersection shall be Type "C" for the opposite direction of travel.

9. Two coats of paint shall be applied. The second coat shall be applied seven (7) days following the first application.

314-4.3.1 Thermoplastic Pavement Marking Material

All stop bars, crosswalks, Legends, and arrows shall be replaced using thermoplastic, and conform exactly to the City of Costa Mesa stencil types.

Thermoplastic shall be composed of Alkydloid/Maleic Thermoplastic Pavement material that is applied to a road surface in a molten state by extrusion of the designated thickness and width. The stripe shall, upon cooling, be reflectorized and be able to resist deformation by traffic.

On all dry pavement surfaces binder/sealer shall be applied to the area where hot thermoplastic pavement markings are to be placed. The binder/sealer shall be that recommended by the manufacturer of the thermoplastic material. The material shall form a continuous film which shall dry rapidly and adhere to the pavement. The material shall not discolor nor cause any noticeable change in the appearance of the pavement outside of the finished pavement markings. All solvents shall have evaporated from the binder/sealer prior to the application of the molten thermoplastic materials.

314-4.3.2 Raised Pavement Markers (RPM)

The Contractor shall remove and replace all RPMs in accordance with these project special provisions.

The Contractor shall furnish and install raised pavement markings no sooner than seven (7) days nor later than fourteen (14) days following the final installation of traffic striping, and located pursuant to the striping plans.

314-4.3.3 Blue "Fire Hydrant" Raised Pavement Markers

The Contractor shall furnish and install blue reflective raised pavement markers on new pavement at existing fire hydrant locations. The Contractor shall install the raised pavement marker within seven (7) days following the second application of traffic striping paint. The new marker location shall be in accordance with the Typical Hydrant Marker Location Standard Drawing and the following requirements:

1. Two-way Streets or Roads: Markers shall be placed six (6) inches from edge of painted centerline on the side nearest the fire hydrant. If the street has no centerline, the marker shall be placed six (6) inches from the approximate center of the roadway on the side nearest the hydrant. See Figures 1 through 3 of the above-mentioned standard.

2. Streets with Left-Turn Lane at Intersection: Markers shall be placed six (6) inches from edge of painted white channelizing line nearest the hydrant. See Figure 4 of the above-mentioned standard.

3. Streets with Continuous Two-Way Left-Turn Lane: Markers shall be placed six (6) inches from the edge of the painted yellow barrier line on the side nearest the fire hydrant. See Figure 5 of the above-mentioned standard.

The Contractor shall furnish and install traffic delineation using paint "cat tracking," temporary marking tape, temporary flexible reflective markers, or other approved media immediately as existing stripes are removed, including bicycle lanes, in existing locations or as shown on striping sketch.

The Contractor shall "cat track" for striping and markings no later than 24 hours after the application of the slurry/ACSC.

No painting shall occur until the Engineer has reviewed the cat tracking and approved the striping layout. Changes to the cat tracking shall be performed by the Contractor as directed by the Engineer at no additional cost to the City.

The Contractor shall apply the first application of paint for traffic striping and markings no later than **seven (7) days** following the application of the slurry/ACSC.

The Contractor shall apply the thermoplastic no sooner than **seven (7) days** nor later than **twelve (12) days** following the application of the slurry/ACSC.

All legends, including limit lines, shall be striped within **72 hours** after the street (if applicable) has received the final surface course.

314-4.3.3.1 Truncated Domes or Detectable Warning Surfaces

Truncated domes or detectable warning surfaces shall be installed on existing access ramp surfaces. Detectable warning surfaces shall comply with City Standards and the California Building Code Title 24, and shall consist of vitrified polymer composite, with at least 25% by weight aluminum oxide, nominally 0.20" thick, colorfast and UV stable.

Panels must be anchored to the sidewalk access ramp surface in accordance with manufacturer's recommendations. The color of the panels shall be black except for ramps adjacent to or within one block of a school. Ramps within one block of a school shall have yellow truncated domes. Contractor shall submit a sample of the detectable warning surface to the ENGINEER for approval, prior to start of construction.

Grind Ramp Lip to 0" Curb Face:
On all ramps to be retrofitted with a truncated dome, if an existing lip exists as the bottom of the ramp adjacent to the flowline, the Contractor shall grind the existing curb ramp lip to achieve a 0" curb face. The grind shall be tapered at the edge of the ramp surface, as appropriate, to avoid creating a sharp elevation drop-off and shall be 0" to ½" deep and shall be at least 6" wide in a straight-line-grade. Grades within the grind area shall also be limited to 8.33%. The price of grinding the lip shall be included in the unit price for retrofitting the existing curb ramp.

314-4.3.3.2 Green K71 Self Re-erecting Flexible Marker Posts

Green K71 self re-erecting flexible marker posts shall follow the specifications and details as shown in Appendix "C."

314-4.3.5.1 Painting Curbs

Where existing red, yellow, or other colored curb is removed and replaced, the Contractor shall paint the newly constructed curb (the curb face and top of curb) its original existing color. The paint material shall be water base and shall be Pervo Paint or approved equal. For red colored paint, it shall be Pervo Paint #3123 or approved equal. For yellow colored paint, it shall be Pervo Paint #6003 or approved equal.
All work shall comply with Section 91 of the current Caltrans Standard Specifications. The painting of the newly constructed curbing shall be completed within seventy-two hours after the new curb and gutter has been poured.
Paint residual shall not remain on the sidewalks, gutter pans, or other places beyond the limits of the curb face and the top of curb painted. The Contractor shall remove the paint beyond the limits as soon as possible after the painting is completed.

The Contractor shall notify the Engineer at least two (2) working days prior to commencement of the work. All work shall be performed to the satisfaction of the Engineer.

314-4.5 Pavement Marking Guarantee

The pavement marking material furnished and installed under this contract shall be guaranteed by the Contractor against failure due to blistering, bleeding, excessive cracking, staining, discoloration, oil content of pavement materials, smearing or spreading under heat, deterioration due to contact to oil or gasoline drippings, chipping, spoiling, poor adhesion resulting from defective materials or methods of application, loss of reflectivity, from traffic and wear.

PART 4

EXISTING IMPROVEMENTS

SECTION 400 – PROTECTION AND RESTORATION

400-1 GENERAL

400-1.1 Removal and Restoration of Existing Improvements

Contractor shall remove and restore all existing improvements including but not limited to, removing and installing mailboxes, fences, walls, driveways, bricks, pavers, relocation of existing drain pipe, removing tree roots and restoring planters, sprinklers, and landscaping and irrigation system.

Contractor shall restore or replace to a condition equal to or better than existing condition. All replacement and restoration work shall be coordinated with the City and completed to satisfaction of the City.

400-2 PERMANENT SURVEY MARKERS

[Replace with the following:].

Unless otherwise provided in the Special Provisions, the Contractor shall be responsible for protecting all existing horizontal and vertical survey controls, monuments, ties and benchmarks located within the limits of the project. If any of the above require removal, relocating or resetting, the Contractor shall, prior to any construction work and under the supervision of a California-licensed Land Surveyor or Civil Engineer licensed to practice surveying, inventory all existing survey monuments and ties and establish sufficient temporary ties and bench marks to enable the points to be reset after completion of construction by the Contractor's Surveyor or Civil Engineer licensed to practice surveying. A copy of this inventory shall be submitted to the Engineer.

Submitted documents shall include field notes and sketches which must contain existing information of centerline control points, survey monuments and swing ties to be replaced such as existing L.S. No. or R.C.E. No., Per Parcel Map No. ___, or Tract Map No. _____, and other related information; they must be sealed and signed by the civil engineer or land surveyor registered by the State of California. The monument resetting work shall comply with the Subdivision Map Act, Orange County, California State requirements, and applicable CITY Codes.

[Add the following Subsection:].

400-2.1 CITY Standard Drawings

- Standard Drawing No. 613 or 615.

Any ties, monuments and benchmarks disturbed during construction shall be reset per City standards after construction and the tie notes submitted to the City on 8½" x 11" loose leaf paper. The Contractor and its sureties shall be liable, at Contractor's expense, for any resurvey required due to its negligence in protecting existing ties, monuments, benchmarks or any such horizontal and vertical controls.

400-2.2 Survey Monuments

Reset tie monument shall have at least four (4) control points.

The Contractor shall obtain prior approval from the ENGINEER before setting new survey monuments and ties.

New survey monuments shall be set on new pavement surface with a 2.5” (minimum) P.K. nail, spike, or equal and brass washer with an R.C.E. or a L.S. tag. Four (4) new control lead and tack swing ties shall be set on top of curb for each new survey monument.

If existing notches of a monument are on the manhole ring, said notches must be ground out after a new PCC collar is constructed around the manhole. The Contractor shall provide four points (monuments) of four-foot tangent over ties. Requirements shall be per the preceding paragraph.

If the Contractor fails to reset ties and monuments and fails to set new centerline ties, the CITY will hire private professional engineers or land surveyors to perform the work and will deduct such cost from the contract. The deduction shall include the cost of the CITY personnel time involved.

The Contractor must submit a corner record for each monument to the County of Orange for approval. The Contractor shall submit all approved monuments to the CITY before final payment.

The Contractor shall also submit to the CITY field notes and sketches for all existing control ties and monuments to be protected in place. These documents must be signed and sealed by either the Professional Licensed Land Surveyor or Civil Engineer registered (pre-1982) in California.

SECTION 402 – UTILITIES

402-1 LOCATION

402-1.1 General

[Add the following:].

Locations of utilities shown on plans are approximate only and are based on a search of available records.

Attention is directed to the possibility of utility mains or laterals within the project limits. The CONTRACTOR shall have the locations of the various utility facilities within reconstruction areas marked on the surface prior to construction and protect them during the removal and reconstruction procedures. The CONTRACTOR shall contact the City Transportation Services Department to locate traffic signal conduit within the reconstruction areas.

Prior to commencing any other work, CONTRACTOR shall carefully excavate and determine precise locations and depths of all utilities, including service connections, shown on the plans and marked in the field, which may affect or be affected by Contractor's operations. This work shall be done in accordance with Section 402-1.1 of the Standard Specifications. CONTRACTOR shall not be compensated for any delays or extra work brought about by his failure to perform the above-mentioned work. CONTRACTOR shall be responsible for any damage to existing utilities shown on the plans pursuant to its location operations as required under this subsection of the Standard Specifications.

Upon completion of the Project, the CONTRACTOR shall be required to remove, to the satisfaction of the ENGINEER, all utility locator markings and utility tie-out paint markings that either the CONTRACTOR, the CITY or utility companies make during the course of the work from the surfaces of sidewalks, driveway approaches, curb and gutters, using the removal method acceptable to the ENGINEER. Any damage to the existing improvements due to CONTRACTOR'S removal operation, shall be included in the various applicable items of work, and no additional compensation will be allowed therefor.

The CONTRACTOR shall notify owners of the utility companies at least two (2) working days in advance of any work (See Subsection 402-4 of these Special Provisions for utility contact information).

402-1.2 Payment

[Replace with the following:].

Payment for utility location by the Contractor shall be included in the bid prices for the various items of work requiring utility location and no further compensation will be allowed.

402-2 PROTECTION

[Add the following:].

The Contractor shall be responsible for protecting and supporting all existing utilities and maintaining the location of and access to all gate valves during construction. When damage to existing utilities is caused by the Contractor's operations, the Contractor shall, at his expense, repair or replace damaged facilities promptly, in accordance with all applicable sections of the Standard Specifications and the standards of each affected

utility. Should the Contractor fail to perform the required repairs or replacements, the cost of performing such repairs or replacement by others shall be deducted from any monies due or to become due the Contractor.

402-2.1 Payment

Payment for utility protection by the Contractor shall be included in the bid prices for the various items of work requiring utility protection and no further compensation will be allowed.

402-4 RELOCATION

[Add the following:].

Any miscellaneous utilities to be relocated by the Contractor, as indicated on the Plans, shall be relocated in a workmanlike manner, and all such work shall be done only at such times which are acceptable to the utility owner. The Contractor shall schedule its relocation work in cooperation with the utility owner and shall be responsible for any costs resulting from the Contractor's failure to do the work at times which are acceptable to the owner. The Contractor shall notify owners of the following companies at least two (2) working days in advance of any work:

AT&T (right-of-way) Valentina Gipson 3939 E Coronado St, Rm 2030 Anaheim, CA 92807 (o) 714-618-9132 Email: vk3921@att.com	**Cost Mesa Sanitary District** Mark Esquer, District Engineer 290 Paularino Avenue Costa Mesa, CA 92626 (o) 949-645-8400, ext. 241 Email: MEsquer@cmsdca.gov
AT&T Rhonda Clary-Byers (engineer for Costa Mesa) or Doug DiPaolo 3939 E. Coronado St. Anaheim, CA 92807 (o) 714-618-9116 (o) 714-618-9125 Email: rc1315@att.com Email: dd2634@att.com	**Costa Mesa Sanitation District** Nabila Guzmán, Construction Notices 290 Paularino Avenue Costa Mesa, CA 92626 (o) 949-645-8400, ext. 230 Email: nguzman@cmsdca.gov
Mesa Water District Phil Lauri 1965 Placentia Ave. (inter-office mail okay) Costa Mesa, CA 92627 (o) 949-207-5449 (c) 949-631-1200 (24-hour) Email: phill@mesawater.org	**Orange County Water District (OCWD)** Chris Olsen P.O. Box 8300 Fountain Valley, CA 92728 (o) 714-378-3200 (c) 714-378-3240 (24-hour) Email: colsen@ocwd.com Email: utilityrequest@ocwd.com

Mpower Communications, Inc. Mark Denning 2698 White Road Irvine, CA 92614 (o) 949-864-0296 (c) 949-547-6455 Email: mdenning@telepacific.com	**CA Regional Water Quality – Santa Ana Region** Mark Smythe 3737 Main St., Suite 500 Riverside, CA 92501 (o) 951-782-4130 (c) 951-543-8523 Email: msmythe@waterboards.ca.gov
Orange County Sanitation District (OCSD) Rudy Davila P.O. Box 8127 Fountain Valley, CA 92728 (o) 714-593-7348 (c) 714-593-3301 (24-hour) Email: RDavila@ocsd.com	**Irvine Regional Water District** Kelly Lew 15600 Sand Canyon Ave. Irvine, CA 92618 (o) 949-453-5586 (p) 949-729-7300 (24-hour) Email: lew@irwd.com
Irvine Regional Water District Brad Jackson (Area Construction Inspector) 15600 Sand Canyon Ave. Irvine, CA 92618 (o) 949-632-0627 (p) 949-729-7300 (24-hour) Email: jackson@irwd.com	**SCE (Senior Compliance)** Susan Morgan (o) 909-835-7527 (c) 909-835-7527 Email: susan.morgan@sce.com **No pre-construction meeting notices BUT Susan Morgan and Mónica Balderas would like to attend all UTILITY MEETINGS and be made aware of any fee schedule changes.*
Irvine Ranch Water Dist. – Development Services* Christian Kessler, P.E. 15600 Sand Canyon Ave. Irvine, CA 92618 (o) 949-453-5300 (p) 949-453-5441 Email: kessler@irwd.com **utility requests*	**SCE (Service Planner – Orange Coast S/C)** Damon Humphrey 7333 Bolsa Ave. Westminster, CA 92683 (o) 714-895-0534 Email: damon.humphrey@sce.com
Metropolitan Water District of So. California Civil Engineering Substructures Section Shoreh Zareh P.O. Box 54153 Los Angeles, CA 90054 (o) 213-217-7474 (c) 626-844-5610 (24-hour) Email: szareh@mwdh2o.com	**SCE (Service Planner – Orange Coast S/C)** Mónica Balderas 7333 Bolsa Ave. Westminster, CA 92683 (o) 714-329-2778 Email: monica.balderas@sce.com
Metropolitan Water District of So. California Civil Engineering Substructures Section Kieran Callanan P.O. Box 54153 Los Angeles, CA 90054 (o) 213-217-7474 (c) 626-844-5610 (24-hour) Email: kcallanan@mwdh2o.com	***Reminder*** After facilities are identified on the plans, send the plans to Gail Gardner, and she will forward to SCE's planning department. Send to: gail.gardner@sce.com

SCE (Utility Notice Requests) Kasy Chapman 7333 Bolsa Ave. Westminster, CA 92683 (o) 714-895-0109 (c) 800-611-1911 (24-hour) Email: kasey.chapman@sce.com	**Southern California Gas Co.** Wilson Baldelomar P.O. Box 3334, SC8321 Anaheim, CA 92803 (o) 714-634-5091 (p) 800-603-7060 (24-hour) Email: wbaldelomar@semprautilities.com
SCE (Base Maps) Kimberly Gurule 1444 E. McFadden Ave., Bldg. "D" Santa Ana, CA 92705 (o) 714-796-9932 Email: maprequests@sce.com* **No pre-construction meeting notices to this address – map requests ONLY.*	**Southern California Gas Co.** Wilson Baldelomar P.O. Box 3334, SC8321 Anaheim, CA 92803 (o) 714-634-5091 (p) 800-603-7060 (24-hour) Email: wbaldelomar@semprautilities.com
Southern California Gas Co. (Transmission) P.O. Box 2300 Chatsworth, CA 91313-2300 (o) 818-701-4546 Email: SoCalGasTransmissionUtilityRequest@semprautilities.com	**Verizon Business Investigations** 2400 N. Glenville Dr. Richardson, TX 75082 (o) 972-729-6016 (o) 469-886-4238 Email: investigations@verizon.com *2nd Email: chuck.czumak@verizon.com Contact Verizon Business for issues involving: --- Brooks Fiber Properties, Inc. --- MCImetro Access Transmission Srvcs. --- MCI Telecommunications Srvcs --- MFS Telecom, Inc. --- SourtherNet, Inc. / WorldComNetwork Srvc. --- Intermedia Communications, Inc. --- XO Communications
Southern California Gas Co. Richard Clendineng P.O. Box 3334, SC8321 Anaheim, CA 92803 (o) 714-634-3262 Email: rclendineng@semprautilities.com	**Charter Communications** Don Simons Construction Manager, Zone 8 7142 Chapman Ave. Garden Grove, CA 92841 (o) 714-591-4871 Email: don.simons@charter.com
Southern California Gas Co. Peter Serrano P.O. Box 3334, SC8321 Anaheim, CA 92803 (o) 714-634-5067 Email: pserrano@semprautilities.com	**Charter Communications** Utility Research Requests E-mail: DL-SOCAL-CHARTER-ENGINEERING@CHARTER.COM

Spectrum Time Warner Cable José Román 12051 Industry St. Garden Grove, CA 92841 (o) 714-591-4846 (c) 657-263-3641 Email: jose.roman@charter.com	**XO Communications** Matt Bergine Engineer IV Specialist-Network Engineering & Operations (o) 949-417-7841 (c) 714-822-6207 Email: matt.bergine@verizon.com
Spectrum Time Warner Cable Main Number 7142 Chapman Ave. Garden Grove, CA 92841 (o) 714-709-3390	**XO Communications** Switchboard (o) 703-547-2000
Spectrum Time Warner Cable Jeff Cox Email: jeff.cox@twcable.com **Spectrum Time Warner Cable *utility requests*** Email: west-engineering-relo@twcable.com* **Spectrum Time Warner Cable** Ángel Vega (o) 714-591-4889 Email: angel.vega1@charter.com	**Kinder Morgan** Jordan Neuner (o) 310-628-4350 Email: jordan_neuner@kindermorgan.com Karly Payne, Administrative Assistant (o) 714-560-4604 Email: karly_payne@kindermorgan.com
Spectrum Time Warner Cable Max Sándoval, Construction Coordinator (o) 714-719-9629	**Newport-Mesa Unified School District** Víctor Garza (o) 714-424-5080 Email: vgarza@nmusd.us
OCTA – Stops & Zones Kyle Poff 550 S. Main St. Orange, CA 92863 (o) 714-560-5833 Email: kpoff@octa.net **OCTA (Detour Coordination)** Dispatch: 714-265-4330	**Newport-Mesa Unified School District** Tim Marsh, Administrative Director, Facilities Support Srvcs. (o) 714-4247527 Email: tmarsh@nmusd.us **Newport-Mesa Unified School District** Mary Gray Email: mgray@nmusd.us
OC Fair & Event Center Jerry Eldridge, Director of Facilities (o) 714-474-5983 Email: JEldgridge@ocfair.com	**DIGALERT.ORG** (24-HR) 811 2 days before digging.

Where existing utility main lines and conduits (excluding sewer main lines) and all utility service lines (excluding sewer laterals) are to be relocated or declared abandoned by the affected utility companies, the Contractor shall be responsible for contacting the respective utility representatives for coordinating the relocations and for determining the abandonments. The Contractor shall proceed with excavation in such a manner that will allow utility companies adequate and reasonable time to relocate service lines. The Contractor shall not be compensated for any delays caused by failure to coordinate the above work with utility companies.

[Replace the Section Title with the following:].

SECTION 403 – MANHOLE AND VALVE ADJUSTMENT AND RECONSTRUCTION

403-1 GENERAL

[Replace with the following:].

Contractor shall adjust existing manholes and water valves to grade conforming to all applicable sections of the latest edition of the Standard Specifications, Mesa Water District (MWD) Standards, and to the provisions of the City of Costa Mesa Standard Plans.

The Contractor shall notify affected utility owners at least 5 working days in advance of the need to commence work required prior to paving operations and again for work required after paving operations. The Contractor shall mark locations of utility vaults where utility companies specifically state adjustments shall be made after paving. If it is found to impractical for the utility owner to complete remodeling or adjustment to structures, as evaluated by the ENGINEER, then the Contractor shall be absolved of further responsibility in connection therewith, and the structure shall be adjusted to grade by the utility owner under permit or ordinance procedure established by the CITY for utility cuts in pavement.

The manhole and valve box locations and distance from curb to center shall be marked on the curb face by the Contractor.

[Replace entire Subsection with the following:].

403-3 MANHOLES AND VALVES IN ASPHALT CONCRETE PAVEMENT

[Replace with the following:].

403-3.1 Storm Drain and Sanitary Sewer Manholes

All Storm Drain (SD) and Sanitary Sewer (SS) Manholes are to be protected from debris prior to construction and shall be thoroughly cleaned of any construction debris, which may have entered the manhole due to the Contractor's operations.

Work shall include the removal or furnishing of grade rings as necessary to adjust the manhole to grade.

The method of adjusting manholes in areas for resurfacing shall be as follows:

The asphalt pavement immediately adjacent to the manhole shall be removed, the manhole shaft extended with adjustment ring(s) to proper grade, the manhole frames and covers replaced, the manhole frames set in concrete, and the pavement replaced with a minimum of 2 inches of asphalt concrete. The finished grade of the cover shall be ¼ inches below the finish grade of the asphalt pavement. The asphalt pavement material shall conform to the surrounding pavement and AC pavement requirements of these Special Provisions.

Existing SD and SS manholes shall be adjusted to new pavement grade **48 hours** after paving operation.

The Concrete for the SD and SS manholes shall be **560-C-3250.**

Contractor shall notify the Costa Mesa Public Works Department for coordination of SD manhole adjustments and Costa Mesa Sanitary District (CMSD) or Orange County Sanitation District (OCSD) for coordination of SS manhole adjustments at least two working days prior to beginning work.

403-3.1 Water Valves

Water valves shall be protected in place and shall be accessible at all times during construction.

Valve covers shall be marked as to their location by the contractor prior to the placement of the pavement. The contractor shall furnish new valve cans if existing cans are damaged during operation. Existing covers shall be adjusted to new pavement grade **48 hours** after paving operation.

Contractor shall notify the respective water district at least 2 working days prior to beginning work. All work adjusting water valve cans and covers to grade shall be inspected and approved by MWD.

Valve boxes shall be checked with a valve key for proper operation.

The Concrete for the valve covers and collars shall be **560-C-3250.**

The Contractor shall be responsible for maintaining location of, and access to, all water line gate valves during construction operations. The Contractor may salvage and utilize all existing caps or sleeves, but shall be required to furnish all sleeve extensions. Any lost caps or sleeves shall be replaced by the Contractor at his cost.

All existing broken water sleeves shall be removed and replaced by the Contractor who shall contact the respective utility to pick up new sleeves for replacement.

SECTION 404 – COLD MILLING

404-1 GENERAL

[Add the following:].

Cold milling of existing asphalt is required to remove damaged pavement and to permit new asphalt pavements to adhere to the existing surface and shall be performed per Plans and in accordance with Section 404, “Cold Milling” of the Standard Specifications, and as modified herein.

The existing asphalt concrete pavement shall be cold milled from the finished surface to a depth of two **(2)** inches from edge of gutter to edge of gutter. The final depth, width, length and shape of the cut shall be 2” below the lip of gutter as indicated on the Plans. The final cut shall result in a uniform surface conforming to the typical cross section(s) except as otherwise directed by the ENGINEER. Except as otherwise called for on the Plans, all A.C. pavement cuts shall be cut to neat, clean, and straight lines to the satisfaction of, and as directed by, the ENGINEER.

The existing asphalt concrete pavement shall be header cut at a depth of (2) inches below the existing pavement, ranging from the edge of gutter to (7) foot wide, along both sides of the street. The limits will be marked in the field by the Engineer. The work shall comply with Section 302-5 of the latest edition of the Standard Specifications for Public Works Construction.

Burning or heat planning will not be permitted. The planed pavement shall provide a maximum bond surface suitable for resurfacing.

The cold milled material shall be the responsibility of the Contractor to remove and dispose of from the Project limits in accordance with all laws and regulations.

404-1.1 Crack Sealing

Upon completion of the required cold mill depth, the Contractor shall inspect, sweep, and seal all cracks equal to or greater than ¼” wide and equal to or greater than 1” deep as follows:

Clean entire crack to a depth of up to 1” using sandblasting, brushing, and air blowing techniques as required to provide a crack free from all debris, dust, loose material and moisture. Gouging or plowing may be required to remove incompressible debris deep in the crack. The cleaned crack shall be filled with granulated tire rubber, plasticizer and filler, as manufactured by Crafco as Road Saver 203, or approved equal. All crack filler material shall be in conformance with the manufactures specifications. The crack sealant placed shall be slightly below the cold milled pavement surface to avoid over-application and wicking through the new AC surface during compaction of the AC Base and Surface Course lifts. Deep cracks greater than 1” should be filled with sand and covered with a thin layer of sealant.

The sealant product shall conform to the following specifications:

ASTM D6690, D3405, AASHTO M173 and Federal SS-S-164 and SS-S 1041C.
All holes greater than 4” in diameter that exceed the cold mill depth specified shall be cleaned of loose materials, filled with Asphalt Concrete Type III-B2-PG-64-10 (3/4” sieve size), and compacted to a smooth even surface with the adjacent existing milled pavement prior to placement of the AC Base or Leveling Course.

404-1.2 Existing Facilities

Survey Monuments

Surveyor's street and property line monuments, not scheduled for removal shall be protected in accordance with the Standard Specifications and these Special Provisions.

Utilities

The CITY has made every reasonable effort to locate and mark on the Plans all known metal roadway improvements such as sewer manhole covers, water valve covers, catch basin covers, which, if struck, could damage the cold milling cutting drum and/or carbide tipped cutting teeth and makes no guarantee that it has successfully done so, therefore, Contractor must thoroughly inspect the work site in advance of the cold milling operation to minimize the risk of striking any unseen under surface object(s) and shall include in the price bid for cold milling the removal work, additional amount sufficient to cover the cost of damage related down time and the cost of repair of damage to said cold milling cutting drum and/or carbide tipped cutting teeth.

Curb and Gutter

Care shall be exercised not to damage adjacent concrete gutters or curbs. Gutters or curbs damaged shall be replaced at the Contractor's expense.

404-8 DISPOSAL OF MILLINGS

[Add the following:].

Residue from grinding shall not be permitted to flow or travel into gutters, onto adjacent street surfaces or parkways. All residues shall be completely removed by sweeping and properly disposed. No washing of residues into drainage structures will be allowed.

404-10 PAVEMENT TRANSISTIONS

[Add the following:].

Where required, temporary asphalt concrete ramps shall be installed to meet all current ADA accessibility requirements. Additionally, temporary asphalt concrete shall be placed at all cross-street transition sections, and driveways, as required for grade change conformance tapers.

PART 6

TEMPORARY TRAFFIC CONTROL

SECTION 600 – ACCESS

600-1 GENERAL

[Add the following:].

Prior to restricting normal access from public street to adjacent properties, the Contractor shall notify each property owner or owner's agent, informing them of the nature of the access restriction and the approximate duration of the restriction. The Contractor shall make every effort possible to minimize such restrictions.

600-2 VEHICULAR ACCESS

[Add the following:].

Trenches left open overnight shall be bridged in a safe and acceptable manner at all driveways and walkways to provide safe access.

The Contractor shall provide access as required to accommodate special circumstance at any residence including access for disabled, impaired, special medical needs, etc.

The Contractor shall use temporary asphalt surfacing at his own expense as required to maintain traffic in a safe and nondisruptive manner. The Contractor shall construct temporary AC ramps to provide safe and driveable access to residents and businesses. Transitional and temporary asphalt concrete shall be removed prior to placement of new AC pavement.

600-3 PEDESTRIAN AND EMERGENCY ACCESS

[Add the following:].

A minimum of one four (4) foot wide pedestrian walkway shall be maintained and safely delineated along each public street at all times during construction.

Contractor shall provide emergency access for the fire trucks and other emergency vehicles at all times and notify the Police and Fire Departments in writing two (2) working days prior to construction.

The Contractor shall provide access as required to accommodate special circumstance at any residence including access for disabled, impaired, special medical needs, etc.

SECTION 601 – TEMPORARY TRAFFIC CONTROL FOR CONSTRUCTION AND MAINTENANCE WORK ZONES

601-1 GENERAL

[Add the following:].

Traffic control shall also conform with the provision of the latest edition of Work Area Traffic Control Handbook (WATCH) published by Building News, Inc, within the City Right-of-Way and pursuant to the Caltrans Standard Plans and Specifications within the Caltrans Right-of Way, and the Plans and Specifications.

The Contractor shall perform all work for this Project Monday through Friday, except City observed holidays, and shall be allowed to work from 7:00 a.m. to 3:30 p.m. on residential streets, and from 8:30 a.m. to 3:30 p.m. on arterial and collector streets (see City's Master Plan of Highways for reference), or unless directed otherwise by the ENGINEER. The Contractor may be allowed to work additional hours on Saturdays and Sundays pursuant to and at the discretion of the ENGINEER.

Special Conditions to Traffic Control and Limitations to Working Hours

Lane closures shall be allowed per the traffic control and working hours shown in the City approved Temporary Traffic Control Plan (TTCP). Minor deviations from the requirements concerning hours of work, which do not change the cost of the work, may be permitted by the ENGINEER upon the written request of the Contractor, provided that traffic will be better served and the work expedited. The Contractor shall obtain prior written approvals from the Engineer before adopting such deviations.

601-2 TEMPORARY TRAFFIC CONTROL PLAN (TTCP)

[Add the following:].

<u>The Contractor shall submit to the City a complete Temporary Traffic Control Plan (TTCP) in accordance with the Plans, the Standard Specifications, the Caltrans' Manual of Traffic Controls in Construction and Maintenance Zones (latest edition) within Caltrans Right-of-Way, these Special Provisions and the standards contained in the Work Area Traffic Control Handbook (WATCH) within City Right-of-Way, published by Building News, Inc. (latest edition)</u>.

NOTE: Contractor to be aware of the following restrictions to any and all work being performed within the City of Costa Mesa when developing the TTCP, unless otherwise directed by the ENGINEER:

a. Any work within a two (2) block radius of any school will be performed during a school break or on weekends. Contractor shall coordinate work schedule with ENGINEER, prior to commencing of proposed improvements.
b. Contractor is not allowed to perform any work adjacent to the Orange County Fair Grounds from Friday prior to the start of the Orange County Fair to the Monday after the Fair ends. During this time, Contractor shall coordinate with

the Engineer locations of the streets, as specified in the City's Orange County Fair Moratorium Map, prior to commencing of proposed improvements.

c. The Contractor shall not be allowed to perform any work from the Monday before Thanksgiving to the Monday after New Year's Day on Arterial streets, and during the week of any Holiday (Sunday through Saturday) on Residential streets. During this period, all work shall be completed, all travel and/or traffic lanes shall be restored to a safe condition, be fully operational, and shall be opened to vehicular traffic.

d. During elections, no work will be allowed within six hundred feet (600') from polling place including no parking of construction equipment or employee vehicles within said distance of 600 feet.

e. Prior to commencement of any work within City limits, the contractor shall coordinate with the ENGINEER so that the work performed will not interfere with any special events occurring in the City throughout the year.

f. Any night or weekend work shall be approved by the City a minimum of five (5) working days prior to the scheduled construction of the streets affected.

601-3 TEMPORARY TRAFFIC CONTROL (TTC) ZONE DEVICES

601-3.4 Operations and Maintenance

[Add the following:].

The Contractor shall keep the areas adjacent to the Project site clear of any objects that may be hazardous to pedestrians and motorists. Provisions to reroute pedestrians, including the disabled, around the work area must be clearly delineated. The Contractor shall be responsible for the project safety on a 24-hour basis each calendar day for the entire duration of the project.

The City will only provide inspection during the designated construction hours Monday through Friday and as approved by the ENGINEER for Saturday and Sunday work in accordance with the work hours defined herein. Any work done without inspection is at the Contractor's risk and subject to rejection. The replacement costs for rejected work will be borne by the Contractor.

The Contractor shall protect and preserve all the existing pavement outside construction limits in the same condition as existing. Contractor shall replace and/or repair the damaged area to the satisfaction of the ENGINEER at no cost to the CITY if damaged by the Contractor.

601-3.5 Signs and Signage

601-3.5.1 General

[Add the following:].

The Contractor shall use illuminated or reflective warning/construction signs at both ends of construction area, and at appropriate locations or as directed by the ENGINEER for the entire duration of the project. Solar powered flashing arrow boards will be required for all lane closures and may be required for other traffic control. In addition to other delineation, the Contractor shall be responsible for the project safety on a 24-hour basis. Where construction signing conflicts with existing signing, the Contractor shall cover existing signs in a manner approved by the ENGINEER.

In order to minimize interruption to the construction and the inconvenience to the motorists, the Contractor must post traffic control signs at all applicable approaches to forewarn traffic. All signs must be visible and readable to the traffic from a minimum distance of 75 feet.

The Contractor shall install C-18 ROAD CONSTRUCTION AHEAD, C-17 with APPROPRIATE SPEED LIMIT, and C-13 END CONSTRUCTION signage and as required pursuant to the Plans and Specifications.

The Contractor shall furnish, install, post and maintain in place "No Parking - Tow Away" signs of a minimum height of forty-two (42) inches (from ground finish surface to top of sign) on temporary traffic control devices (even if streets have posted "No Parking" signs), which shall be posted at least **72 hours** prior to commencement of roadwork, unless otherwise directed by the ENGINEER. On the sign, Contractor shall print the hours, day(s) and date of closure in two-inch-high letters and numbers. A sample of the completed sign shall be approved by the ENGINEER five (5) working days prior to posting. The signs shall be spaced at a maximum of 50 feet from the street intersection and/or from each adjacent sign and at 200 feet spacing within each alley. For any work to be performed on Monday morning or a morning following a holiday, the Contractor must post "No Parking - Tow Away" signs with all requirements as specified at least 48 hours prior to weekend or holiday begins.

When directed by the ENGINEER, the Contractor shall provide flagmen to direct the traffic, at no additional contract cost to the CITY.

Coordination of Traffic Control with Residents, Utilities, and other Agencies

The Contractor shall complete the following coordination efforts with residents, affected utilities, and other agencies as part of the Temporary Traffic Control work:

a. Scheduling

   The Contractor shall submit the Construction Work Schedule to the CITY for review and acceptance pursuant to Section 6-1.1 of the General Provisions. This schedule shall provide affected residents and businesses ample “on-street” parking within an 800-foot distance from their residence and/or businesses’. Requests for changes in the schedule shall be submitted by the Contractor to the CITY for approval at least three (3) working days prior to the scheduled construction of the streets affected.

b. Notification

Two (2) weeks prior to construction, the Contractor shall be responsible for all notification to the residents and the businesses, and provide project status updates to affected residences and businesses informing them of the pending Project and Scope of Work, unless otherwise directed by the ENGINEER. The Contractor shall submit a resident notification letter to the CITY for approval at least five (5) working days prior to delivery. The Contractor shall hand deliver copies of the approved notification letter and a newsletter (copies provided by the CITY) to the affected residences and businesses prior to the scheduled construction of the streets. This notification letter shall state the date and time of restricted travel on the affected streets. Failure to meet the approved schedule requires that the Contractor immediately notify residents of the cancellation for that day's work and reschedule construction of the affected area at a later date, at no cost to the CITY. Notification of rescheduled work shall follow this same procedure.

Notify the ENGINEER five (5) working days before commencing any work as stated in “a” above.

Notify the trash pick-up company “Costa Mesa Disposal” and all other trash haulers licensed to do business within the city of Costa Mesa of the schedule of work and the limitation of access. Coordinate with trash haulers and residents to ensure that regularly scheduled trash collection will occur. Contact Public Works Department at (714) 754-5307 for addresses of Costa Mesa Disposal and other trash haulers; also notify U.S. Postal Service and all other affected utilities (Edison, sewer, water, gas, telephone, etc.).

Coordinate with Orange County Transportation Authority to plan and to accommodate bus routes at least five (5) working days prior to commencement of any work, which will affect any of their facilities.

601-3.6.4 Barricades

[Add the following:].

Type I, II, and III barricades shall be used at all approaches, per standards and as directed by the Engineer. The Contractor shall employ sufficient traffic barriers to prevent traffic from entering the construction areas.

601-4 TEMPORARY TRAFFIC STRIPING AND PAVEMENT MARKINGS

The Contractor shall provide temporary delineation as depicted in the TTCP and as directed and approved by the ENGINEER. Temporary delineation shall include wet nozzle sandblasting of conflicting markings, installation and removal of temporary centerlines or lane lines, detour signing, barricading, replacement of traffic lines, and markings in their proper locations upon termination of the detour phase.
Provide temporary travel lane delineation, as required, at all times. Temporary flexible reflective stick on markers (slurry markers) may be applied.

Any locations yielding a situation that is not considered driveable by the ENGINEER shall be resolved by the Contractor at the direction of the ENGINEER. The Contractor shall not be paid for such corrective action and shall be charged for any costs incurred by the City for corrective action.

Provide temporary traffic restriping at the conclusion of any working day for any centerline or lane line, which is obliterated by construction for a distance longer than 65 feet.

601-4.3 Removal

[Replace with the following:].

Removal shall conform with Section 314-2 of these Special Provisions.

The Contractor shall provide the first coat of permanent traffic restriping in accordance with Section 314 of these Special Provisions.

601-4.4 Measurement
601-4.5 Payment

[Replace both with the following:].

601-4 4 Measurement and Payment

Measurement and Payment for Temporary Traffic Striping and Pavement Markers shall be in accordance with Section 314-2 of the Special Provisions.

601-5 TRAFFIC LANE WIDTHS AND CLEARANCES

601-5.2 Lanes Widths

[Add the following:].

The minimum lane width shall be 10 feet. There shall be a minimum of 5-foot clearance from open excavations deeper than 4-inches, and 24-inches clearance from other obstructions and any excavations less than 4-inches unless authorized by the Engineer. The clearance requirements from open excavations may be reduced if K-railing (if the contractor so chooses) with crash cushions are utilized; the specification and layout of the K-rails with crash cushions shall conform to Caltrans' standards and shall be approved by the ENGINEER; all costs for K-rails and crash cushions shall be borne by the Contractor.

PART 8
LANDSCAPING AND IRRIGATION
SECTION 801 – INSTALLATION

[Add and/or replace the following:].

801-4 PLANTING

801-4.5.1 Root Pruning and Root Barrier

Where shown on attached spreadsheets, tree roots shall be cut and removed to a minimum depth of six inch (6”) below the subgrade of proposed new construction. Root barriers shall be installed adjacent to the proposed new construction to existing trees of trunk diameters of more than six inches (6”). Installation of root barriers shall be per manufacturer’s recommendations and guidelines under the following.

Root removals and barrier installation shall be completed on only one side of the tree where reconstruction is proposed.
Notify the Engineer if an abundant amount of roots has been removed or if roots are two (2) inches or more in diameter that are to be removed.

Root Pruning

Roots shall be pruned adjacent to the edge of the sidewalk, curb and gutter or other improvements as indicated by the Engineer. Root pruning cuts adjacent to the sidewalk shall be four inches (4”) wide, twelve inches (12”) deep, and minimum of eight feet (8’) in each direction from the centerline of the tree as measured from the top of the sidewalk or other improvements. Root pruning cuts adjacent to the curb shall be four inches wide, eighteen inches (18”) deep, and a minimum of eight feet (8’) in each direction from the centerline of the tree as measured from the top of the curb or other improvements.

Root pruning equipment shall be specifically designed for this purpose with cutting teeth sharpened adequately to sever roots in a clean manner and equipped with padded tracks or rubber tires to prevent scarping or marking the sidewalk.

After the pruning cut has been completed, the Contractor shall install the appropriate amount of root pruning barrier by Deep Root Corporation, or an approved equal. All cuts shall be backfilled immediately upon completion of root pruning and barrier installation at each location. Backfill material shall consist of soil and/or mulch from root pruning and shall be free of rocks and other debris. All debris generated by these operations shall be immediately removed from the site and properly disposed of by the Contractor.

The Contractor shall repair or replace all utility service connections or sprinkler systems within the right-of-way that are damaged or removed as a result of the root pruning operation. Repairs shall be implemented immediately and completed by the end of the

same working day. Repairs and replacements shall be at least equal quality and configuration to existing improvements and shall match them in finish and dimension.

The Contractor shall be responsible for contacting Underground Service Alert (USA) or Dig Alert by dialing “811” for locating underground utilities prior to the beginning of the root pruning operation.

Root pruning shall not take place if the tree has a lean. Notify the Engineer if a tree is leaning.

Root Barriers

The contractor shall furnish and install root control barrier. The root control barrier shall have a minimum depth of eighteen inch (18”) with a minimum thickness of 0.06”. Root control barriers shall be sixteen feet (16’) long in one continuous piece (preferred). Combinations of pieces shall be one eight foot (8’) panel and two – four foot (4’) panels; eight foot (8’) panel shall be on center of each tree and as directed by the Engineer. Root barriers shall be securely fastened with adhesive at joint points. All materials must be maintained in good condition from delivery to completion of installation. If any defects are found, the defected panes must be removed and replaced at no additional cost to the City. All other details for installation are detailed in the Standard Plan No. 523-2 of the current Standard Plans for Public Works Construction. No root control barriers are needed around existing palm trees.

The Contractor shall be responsible for protecting and supporting all existing utilities. When damage to existing utilities is caused by the Constrictor’s operations, the Contractor shall, at his expense, repair or replace damaged facilities promptly, in accordance with Section 5 and 306 of the Standard Specifications and the standards of each affected utility. Should the Contractor fail to perform the required repairs or replacements, the cost of performing such repairs or replacement by others shall be deducted from any monies due or to become due to the Contractor.

Root barriers shall not be installed on the non-lean side of a tree.

SECTION 131200 – LAKE SUMMARY OF WORK

Part 1 – General

1.01 THE REQUIREMENT

A. The WORK to be performed under this Contract shall consist of furnishing parts, tools, equipment, materials, supplies and manufactured articles, and furnishing all labor, transportation and services, including fuel, power, water and essential communications, and performing all work or other operations required for the fulfillment of the Contract in strict accordance with the Contract Documents. The WORK shall be design/bid/build and require that all work, materials and services not expressly indicated or called for in the Contract Documents, which may be necessary for the complete and proper construction of the WORK in good faith shall be provided.

B. The WORK will conform to the “Green Book”

C. Contractor shall meet qualifications per section 131202 – LAKE SUBMITTAL. Article 1.07 – CONTRACTOR QUALIFICATION.

1.02 WORK COVERED BY CONTRACT DOCUMENTS

A. WORK INCLUDED:

Contractor shall provide all labor, materials, appurtenances, tools, equipment, facilities, transportation, and services necessary for and incidental to performing all construction activities and operations for the work described in this section, complete, as shown on the drawings or specified herein. The work includes but is not necessarily limited to the following:

1. Contractor shall submit bid for base bid scope (Lake 1 and Lake 2) and deductive bid items (Upper ponds, streams and waterfalls) as indicated on the bidding plans. City will have the option of including (or eliminating) deductive bid items in the construction contract depending on bidding result and available construction budget.
2. Mobilization, Site Fencing and Erosion Protection
3. Construction survey and layout verification of subgrades, lake outline, pipelines and all associated facilities.
4. Capture and Transfer Aquatic Wildlife
5. Demolition of the existing as indicated on the plan include, removing landscape/ trees, removing the trash, debris and stockpile lake sediment for repurpose.
6. Subgrade and grade modifications required for lake work. Finish grades to be as indicated on the plans.
7. Lake liner.
8. Water stop
9. Construction of aquatic planters including installation of required soils and plants.
10. Reinforced concrete veneer where indicated on plans and in stream, and aquatic planters.
11. Decorative stained and sculptured shoreline treatment, boulders inside lakes and streams, Gabion wall.
12. All piping systems including equalizer, recirculation, intake pipe and screen,

and drain pipe.

13. Pump station, chemical dosing system including storage tanks and dosing pumps, appurtenances, fabrication, and installation.
14. Electrical conduits, wiring and hook-up of the control panel, chemical dosing pumps and control systems.
15. Landscape construction includes boulders along lakes and streams, railing along the stream, walkway modification, turf/ grass modification, irrigation pipeline and sprinkler heads modification.
16. Miscellaneous construction as shown on the drawings or required by these specifications.
17. Start-up, testing, training, and operation and maintenance (O&M) manuals
18. AS-BUILTS Drawings: The lake Contractor shall provide the Owner with a red-lined print indicating any and all changes, revisions, relocations, etc. done in the field during construction. As-built drawings shall include product data sheets on all parts and equipment used in the lake mechanical system.
19. Project team definitions:

    a. Client/Owner ("City of Costa Mesa")
    b. Lake Contractor ("Contractor")
    c. Construction Manager ("Construction Manager")
    d. Lake Engineer ("PACE")

1.03 WORK BY OTHERS

A. Where two (2) or more Contracts are being performed at one time on the same Site or adjacent land in such manner that work under one (1) Contract may interfere with work under another, the sequence and order of the WORK in either or both Contracts to the agreement of both contracting entities shall be determined. When the Site of one (1) Contract is the necessary or convenient means of access for performance of work under another, the privilege of access or other reasonable privilege to the CONTRACTOR so desiring may be granted, to the extent, amount, and in manner and at a time that shall be determined. Conduct its operations so as to cause a minimum of interference with the work of such other contractors, and shall cooperate fully with such contractors to allow continued safe access to their respective portions of the Site, as required to perform work under their respective contracts.

B. Interference with Work on Utilities: Cooperate fully with all utility forces or forces of other public or private agencies engaged in the relocation, altering, or otherwise rearranging of any facilities, which interfere with the progress of the WORK, and shall schedule the WORK so as to minimize interference with said relocation, altering or other rearranging of facilities. Any delays, reduction in work efficiency or hardships incurred shall be identified and resolved to the satisfaction of both parties.

C. Draining water out of lakes shall be done by the City. Contractor shall coordinate with the City for lake draining schedule.

1.04 USE OF SITE

A. Use of the Site shall be limited to its construction operations, including on-site storage of materials, on-site fabrication facilities and field offices.

B. All or part of the existing Site may be utilized during the entire period of construction for the conduct of normal operations. Cooperate and coordinate to facilitate operations and to minimize interference with the operations at the same time. In any event, access to the site during the period of construction shall be allowed.

1.05 REQUIREMENTS OF REGULATORY AGENCIES TO BE FOLLOWED

A. The uniform building code, latest edition, where applicable.

B. Construction safety orders of the federal, state, or local government.

C. The ACI standard specifications for structural concrete, (ACI 30172, revised 1981) where applicable.

D. The national electrical code, latest edition, where applicable.

1.06 GENERAL REQUIREMENTS AND SITE CONDITIONS

A. VERIFICATIONS.

Before accepting a contract or proceeding with any work, the Contractor shall verify quantities and dimensions and immediately inform the Engineer of any discrepancies between the drawings and actual conditions. No work shall be done in any area where there is a discrepancy until approval has been given by the Engineer.

B. EXISTING UTILITY LOCATIONS.

The Contractor shall follow the local "blue stake" requirements and other state regulations as applicable regarding the field locating of existing underground utilities. In the event of a conflict, the Contractor shall take the necessary precautions, promptly notify the Contractor who will investigate the situation, take the necessary action and direct or inform the Contractor of the appropriate action to be taken. Failure of the Contractor to follow these procedures, places upon the Contractor the responsibility for making any and all repairs for damage of any kind at the Contractor's own expense.

C. EXISTING IMPROVEMENTS.

The Contractor shall provide necessary safeguards and exercise caution against injury or defacement of any site improvements and shall be responsible for any damage resulting from his operations and shall repair or replace such damage at his own expense. No trucks or vehicles of any kind shall be allowed to pass over sidewalks, curbs, etc. unless adequate protection is provided.

D. RESPONSIBILITIES.

The Contractor shall furnish and install a complete and functional piping/pump system as described in the contract documents. All work shall be in strict accordance with the plan drawings, specifications, and existing codes and regulations as applicable.

E. DISCREPANCIES.

It is the intent of these drawings and specifications that the lake system be complete and functional. It is the Contractor's responsibility to make sure that the equipment furnished is compatible and adheres to all regulations. Any discrepancies shall be noted promptly and shall be reported immediately to the Engineer and/or General Contractor for clarifications prior to installation.

F. SYSTEM CLEAN-UP.

Water for filling the lake and power for operation of the system shall be furnished by the Owner and shall be available concurrently with the completion of the lake system. Debris and foreign materials shall be removed from the construction area by the Contractor, until substantial completion and final acceptance of the entire project by the Owner has taken place.

G. RECORD DRAWINGS

Where required by the Contract Documents or where changes to the Contract Documents have been made by change order, revision to clarification drawings, or where minor changes to the Contract were required because of unforeseen conditions or as may be required by the Engineer, prepare accurate Record Drawings indicating all pertinent data and dimensions necessary to adequately describe the contract deviations to the Owner for his future use.

END OF SECTION 131200 – LAKE SUMMARY OF WORK

SECTION 131201 – LAKE START UP AND GUARANTEES

Part 1 – General

1.01 WORK INCLUDED

Provide start-up and operation instructions to Owner until the Owner takes occupancy.

1.02 STARTING OF SYSTEMS

A. Once the lake system has been completed and filled to the designated water level, all piping and mechanical/hydraulic systems have been installed and tested, all flow control structures and appurtenances have been constructed, all equipment has been properly installed and all electrical connections have been completed, the Contractor shall actuate the entire project system and be responsible for the proper operation of pumps, controls, and all other mechanical and electrical equipment included in the contract documents. Start-up commencement, timing, duration, and phasing shall be monitored and directed by the Owner and/or Engineer.

B. The Contractor shall place the newly installed equipment and facilities into operation, and test, observe and adjust all items for a minimum period of one (1) week or until such time as all the units are properly adjusted and approved by the Owner and/or Engineer. The work performed by the Contractor shall include, but not limited to, the following items:

1. Label all equipment, values, and controls including flow direction, system (for example: filtration system, recirculation system, etc.)
2. Check all electrical and electronic equipment for proper operation.
3. Make all equipment adjustments as required.

C. OPERATOR TRAINING.

The Contractor shall provide a factory employed manufacturer's representative to train Owner's staff in operation and maintenance procedures for all equipment items as specified by the Engineer during the start-up period, at no additional cost to the Owner. The representatives shall present training programs and on-site demonstrations designed to fully acquaint Owner's staff with all equipment features, routine scheduled maintenance procedures, alternative operational modes, spare parts inventories, and all other pertinent information.

1. The manufacturer's representative shall remain on-site to observe operation of the equipment and further advise Owner's staff for a minimum of one day.
2. A complete schedule of equipment, representatives, and dates for operator training shall be submitted to the Engineer for approval prior to commencement of the start-up period.
3. The Contractor shall record all equipment training sessions on high quality digital format with subjects indexed.
4. The Contractor shall provide two (2) duplicate sets of all copies to the Owner.

1.03 GUARANTEES

A. MATERIAL.

All construction materials and equipment shall have a minimum of one (1) year guarantee by the Contractor for defects in material and workmanship from the date of certified final completion and Owner acceptance of the entire project system. The membrane liner shall have a separate guarantee by the lining manufacturer as specified elsewhere in this specification.

B. GEO MEMBRANE LINING GUARANTEE

The membrane lining material and the seam materials shall be guaranteed by the manufacturer/supplier to have an effective life of at least ten (10) years, provided they remain continuously protected against exposure and mechanical damage.

C. DAMAGE

This warranty shall guarantee the complete 100% replacement cost of the defective materials deteriorating as a result of physical or chemical changes which render the lining ineffective as a waterproof membrane. Should defects or premature loss of use occur, the Contractor shall supply, repair, or replace the material on a complete basis, including all related costs of replacing or repairing the damage, refilling the lake system water to the designated water surface elevations, any required retesting of the facilities, and complete site restoration as needed. The Contractor shall also be responsible to provide whatever is necessary to maintain the ongoing operation of the lake systems, including the set-up of any temporary pumping facilities as needed. A certified guarantee document including the above mentioned requirements, in writing, shall be submitted to the Owner with copies provided in the O&M manuals.

D. WORKMANSHIP

The Contractor shall guarantee his workmanship for a period of one (1) year. The entire lake system project including but not limited to pumps, pipes, equipment, lining, concrete shoreline, aeration units, flow control structures, etc. shall exhibit no measurable water loss from leakage. Should measurable losses, in excess of the Greenbook allowable water leakage for piping systems (Greenbook 306-1.4) and the calculated evaporation losses in the lake occur, after filling of the lake system and/or during the one (1) year guarantee period, the Contractor shall be responsible for locating and eliminating the leakage, at no additional cost to the Owner. If, due to the fault of the Contractor's workmanship, the lake and/or piping system must be drained to effect repairs, the Contractor shall be responsible for all associated costs of replacing or repairing the damage, refilling the lake water to designated water surface elevations, any required retesting of the facilities, and complete site restoration as needed. The Contractor shall also be responsible to provide whatever is necessary to maintain the ongoing operation of the lake systems, including the construction of temporary dams and the set-up of any temporary pumping facilities as needed. A certified guarantee document including the above mentioned requirements, in writing, shall be submitted to the Owner with copies provided in the O&M manuals.

END OF SECTION 131201 – LAKE START UP AND GUARANTEES

SECTION 131202 – LAKE SUBMITTALS

Part 1 – General

1.01 Submit to the engineer shop drawings, product data and samples required under the various Sections of these Specifications.

1.02 Prepare and submit with Construction Schedule, a separate schedule listing dates for submission and dates reviewed shop drawings, product data and samples will be needed for each product.

1.03 Make all submittals of Shop Drawings, Samples, and requests for substitution in accordance with the provisions of these Specifications.

1.04 Contractor shall submit complete technical and product data on all construction materials and equipment. All submittals must be approved by the Engineer before any construction or installations will be allowed. The Contractor will submit a list of all construction materials and equipment to the Engineer required for submittal.

1.05 All materials and equipment that are submitted and/or used for this project must be locally available for total replacement or for parts and certified as such with the submittal documents.

1.06 OPERATING AND MAINTANENCE MANUALS

A. Contractor to provide operation and maintenance manuals with the following information: (2) complete sets of operation and maintenance (O&M procedure manuals for all materials and equipment used on the project as listed and approved by the Contractor).

B. All items shall have been submitted and approved through the submittal process as mentioned above.

C. Manuals shall be provided in PDF format.

1.07 CONTRACTOR QUALIFICATIONS

A. The Lake Contractor and his supervisor to be assigned to the job shall have the following qualifications:

1. Have successfully completed not less than five (5) lake projects, each of a scope equal to or greater than this project, within the last two (2) years.
2. Submit to the Owner, with his formal bid, a list of at least five (5) projects complete with names, addresses and telephone numbers, of the Landscape Architect/Engineer and the Owner's representative. Include a brief description of the lake facilities including size and scope of the mechanical system, list of subcontractors (if any), and the date of completion.
3. Be capable of furnishing as a separate bid, labor, material, and performance bonds.
4. The Owner will determine if the Lake Contractor is qualified to propose to work on this project and may refuse any bid.

B. The Contractor, by submitting a bid, acknowledges that he understands the nature of this specialized artistic work. Also, that he understands basic hydraulic

and flow requirements pertaining to streams and waterfalls and is ultimately responsible for the artistic result of his work.

1.08 IDENTIFICATION OF SUBMITTALS OR SUBSTITUTIONS

Completely identify each submittal and re-submittal by showing at least the following information:

A. Name and address of entity submitting information, plus name and telephone number of individual who may be contacted for further information.

B. Name of project for this Work.

C. Drawing number and Specification Section number to which the submittal applies.

D. Number of all submittals sequentially, whether this is an original submittal or a re-submittal, and if a re-submittal, what number re-submittal.

1.09 COORDINATION

Prior to submittal for Engineer's review:

A. Fully coordinate all submittals by determining and verifying all field dimensions and conditions, materials, catalog numbers, and similar data.

B. Coordinate as required with all other trades and with <u>all public agencies involved.</u>

C. Secure all necessary prior approvals and signify by stamp, or other means, that they have been secured.

D. Clearly indicate all deviations from Contract Documents.

1.10 TIMING OF SUBMITTALS

Make all submittals within thirty (30) days of the date of the award of the contract for the Work, and far enough in advance of scheduled dates of installation to provide adequate time for all required reviews, both by the Engineer and his consultants, for securing necessary approvals, for possible revision and re-submittal, and for placing of orders and securing delivery. In scheduling, allow a minimum of ten (10) full working days for the Engineer's review. Cost of delays occasioned by the tardiness of submittals will be back-charged as necessary.

1.11 ENGINEER'S REVIEW

The Engineer's review will be only for conformance with the design concept and with the information given in the Contract Documents. The Engineer's review and approval of Shop Drawings and Samples shall not relieve the Contractor of responsibility for deviation from the requirements of the Contract Documents unless the Contractor has informed the Engineer and Owner in writing of such deviation at the time of submittal and the Engineer has given written approval to the specific deviation, nor shall the Engineer's approval relieve the Contractor from responsibility for errors and omissions in the Shop Drawings and Samples. Should the Engineer be required to review any submittal more than three (3) separate times due to the inadequacy of the submittal and due to no fault of the Engineer, the Contractor shall render to the Engineer the Engineer's direct cost for review of all subsequent re-submittals.

1.12 COMPLIANCE WITH APPROVALS

Do not commence any portion of the Work requiring approval of Shop Drawings or Samples by the Landscape Architect until the submittal has been approved by the Engineer and Owner. All such portions of the Work shall be in accordance with the approved Shop Drawings and Samples.

Part 2 – Products

2.01 SCHEDULE OF SUBMITTALS

Compile a complete schedule of all submittals required for the project, complete with major division and subdivision headings and broken into individual trades. Format shall be 8-1/2" x 11". The schedule shall be in such a form as to allow for notations next to each required submittal including, but not necessarily limited to, submission dates, action taken, approvals and re-submittals. Submit such a schedule to the Engineer for his comments and approval. The approved Schedule of Submittals shall be kept current at all times and an updated copy shall be kept in the Project Field Office for review.

2.02 SHOP DRAWINGS AND PRODUCT INFORMATION SUBMITTALS

A. Unless otherwise specifically directed by the Engineer, make all Shop Drawings accurately to a scale sufficiently large to show all pertinent features of the item and its method of connection and interface to the Work.

B. Submit all Shop Drawings and Product Information in the form of Portable Document Format (PDF) of each Shop Drawing. Where contents of submitted product information include data not pertinent to the submittal, clearly indicate which portion is being submitted for review.

C. Submittals are required on all items to ensure the latest and most complete manufacturer's data is available. The Contractor assumes full responsibility for problems which could have been noted on valid submittals not furnished.

D. In the event that an item or items specified by the Engineer will not be available in time for installation during orderly progress of the Work, so notify the Engineer prior to receipt of bids. Verify that all items specified will be available. Costs of delays because of non-availability of materials will be back-charged as necessary and shall not be borne by the Owner.

2.03 SAMPLES

A. Unless otherwise specifically directed by the Engineer, all Samples shall be of the precise article proposed to be furnished.

B. Submit all Samples in the quantity which is required to be returned, plus one (1) which will be retained by the Engineer.

2.04 CALCULATIONS

Where required, structural calculations shall be performed by a licensed Civil or Structural Engineer, and shall be sufficient to show the adequacy of all members and connections to be reviewed.

2.05 COLORS

A. Unless the precise color and pattern is specifically described in the Contract Documents, whenever a choice of color or pattern is available in a specified product submit accurate color charts and pattern charts to the Engineer for his review and selection.

B. Unless all available colors and patterns have identical costs and identical wearing capabilities and are identically suitable for the installation, completely describe the relative costs and capabilities of each.

2.06 OPERATIONS & MAINTENANCE MANUALS

A. Where manuals are required to be submitted upon completion of the installation, prepare all such manuals in durable plastic binders approximately 8-1/2" x 11" in size and with at least the following features:

1. Identification readable through the outside of the cover, stating the general nature of the manual and the project to which it pertains.

2. Neatly typewritten Index near the front of the manual, furnishing immediate information as to location in the manual of all data regarding the installation.

3. Complete instruction regarding operation and maintenance of all equipment involved.

4. Complete nomenclature of all replaceable parts, their part numbers, current cost and name and address of the Vendors of the parts.

5. Copy of all guarantees and warranties issued on the installation.

6. Copy of the approved Shop Drawings with all data concerning changes made during construction.

B. Where contents of manuals include manufacturer's catalog, clearly indicate the precise items included in this installation and delete, or otherwise clearly indicate, all manufacturer's data with which this installation is not concerned.

C. Provide information regarding the proper operation of a manmade lake system including care for the liner, shorelines, and water quality.

D. Unless otherwise specifically directed by the Engineer, deliver PDF files of the manual to the Owner and to the Engineer.

2.07 SUBSTITUTIONS

A. Reference in the Contract Documents to any material, product, or process by name, make or catalog number shall be interpreted as establishing a standard of quality and design intent and not construed as prohibiting substitutions of any other such material, product, or process, provided such substitution is specifically approved by the Engineer prior to receipt of bids. Requests for substitutions shall be submitted no later than ten (10) working days prior to bid date.

B. Acceptance of substitutions will not relieve the Contractor from responsibility for complying with the Contract Documents.

C. At the discretion of the Engineer, testing of samples of materials proposed for substitutions may be required. The testing shall be done by an independent testing laboratory selected by the Owner, the costs of which shall be borne by the Contractor.

D. At the discretion of the Engineer, the Contractor may be required to furnish a written guarantee, in addition to that already required, ensuring the satisfactory performance of the proposed substitutes.

E. All additional labor and materials which may be required for the proper installation of any substitution, or required as a consequence of any substitution, will be provided at no additional cost to the Owner.

F. Bids shall be based upon the data given in the Contract Documents, or upon previously approved items or techniques as "approved equals" by the Engineer. Where calculations or shop drawings are required for approval, allowance shall be made for meeting the requirements of the Contract Documents and all applicable codes and ordinances.

G. Bidders may, in addition, submit separate bids using materials and equipment of other manufacturers, providing the difference in cost is stated for each item proposed to be substituted.

H. Provide to the Engineer all information necessary and required to evaluate proposed substitutions. Do not base bid on the assumptions that a material will be approved as equal by the Engineer unless the item has been specifically approved for this Work by the Engineer prior to the receipt of bids.

I. The Contractor assumes full responsibility that substituted items or procedures will meet the job requirements and is responsible for the cost of redesign and of modifications to this and all other parts of the work caused by substituted items.

J. Submittals will be checked for general conformance with the design concept of the project, but acceptance does not guarantee quantities shown and does not supersede requirements to properly install work. Submittals for proposed alternatives will be judged not only for the acceptability of the items themselves, but of the items as they are used under the conditions of this particular project.

END OF SECTION 131202 – LAKE SUBMITTALS

SECTION 131212 – CONCRETE VENEER

Part 1 - General

1.01 Contractor shall provide all labor, materials, appurtenances, tools, equipment, facilities, transportation, and services necessary for and incidental to performing all construction activities and operations for the work described in this section, complete, as shown on the drawings or specified herein. The work includes but is not necessarily limited to all the section below.

Part 2 - Products

2.01 MATERIAL

A. The concrete veneer shall consist of a minimum 6-sack mix, Type I or II, Portland Cement with a maximum aggregate size of 3/8”.

B. The concrete shall obtain a 28 day minimum compressive strength of 3,000 psi when prepared in accordance with ASTM C31 test method 231. Concrete failing to meet this specification shall be removed and replaced.

C. It shall be the Contractor’s responsibility to furnish a statement from the concrete supplier stating the mix proportions, the anticipated strength and a test report copy made in the last 90 days. After approval, the aggregates and cement shall remain the same throughout the job. The quantities of each may change to increase strength.

D. The concrete shall be delivered to the site with a slump of not more than 4.0 inches.

2.02 STEEL REINFORCEMENT

A. WIRE MESH. The concrete veneer reinforcement shall be 1.2 inch by 1.2 inch 20 gauge galvanized octagonal mesh wire.

B. REINFORCING BARS. ASTM A615, Grade 40.

Part 3 - Execution

3.01 GENERAL

A. A wire reinforced concrete veneer cover shall be installed over the membrane liner by the Contractor where shown on the plans.

3.02 WIRE MESH

1.2 inch by 1.2 inch by 20 gauge octagonal wire mesh shall be placed over the membrane liner in all areas to receive a concrete veneer. The wire shall be laid in a continuous layer, with adjacent edges over-lapping 8.0 inches (minimum) and secured to another by the use of hog rings or other appropriate clips which cannot puncture the liner.

3.03 CONCRETE

A. The concrete shall be placed over the wire. All wire shall be covered with concrete so that no wire is visible on the surface or edge of the concrete except where indicated on the plans. The concrete shall be rough, broom finished, and water sprayed, chemical or membrane cured to prevent excessive cracking during or after curing. All cracks 1/4” and wider shall be caulked with an approved sealant. Curing operations shall be one or both of the following methods: (1) Application of a light spray of water, three times a day for three consecutive days beginning the following a.m.; or (2) Spray application of an approved exterior curing compound. No concrete admixtures for curing will be allowed.

3.04 CONCRETE PLACEMENT METHODS

A. Placement of the concrete for the veneer shoreline may be done by conventional form work, slip form or shotcrete application methods, all in accordance witb the plans and specifications. Any method which is chosen by the Contractor shall require an "application method plan" submittal to be submitted to the Contractor for review and approval prior to construction of the shoreline. For any method chosen, the Contractor must meet the accepted industry standards for that type of concrete placement method (i.e. ASTM).

END OF SECTION 131212 – CONCRETE VENEER

SECTION 131214 – CAST IN PLACE CONCRETE

Part 1 - General

1.01 WORK INCLUDED

Contractor shall provide all labor, materials, appurtenances, tools, equipment, facilities, transportation, and services necessary for and incidental to performing all construction activities and operations for the work described in this section, complete, as shown on the drawings or specified herein. The work includes but is not necessarily limited to all the section below.

1.02 REQUIREMENTS OF REGULATORY AGENCIES TO BE FOLLOWED

A. The uniform building code, latest edition, where applicable.

B. Construction safety orders of the federal, state, or local government.

C. The ACI standard specifications for structural concrete, (ACI 30172, revised 1981) where applicable.

D. The national electrical code, latest edition, where applicable.

Part 2 - Products

A. Concrete structures shall be specified as in Section 303 of the Standard Specifications for Public Works Construction, except as herein modified. Provide concrete work, complete as indicated, specified, and required.

B. CONCRETE MATERIALS:

1. Conform to the applicable portions of Section 201 of the Standard Specifications for Public Works construction except as modified herein.
2. Concrete mixes used for the various structures shall be designed to obtain the following minimum 28 day compressive strength:

- Pump stations/catch basins 3,000 PSI

3. PORTLAND CEMENT. Use Type II modified cement.
4. AGGREGATE. Use ¾-inch maximum aggregate.
5. ADMIXTURES. Use air entraining agent conforming to ASTM C260. Use water reducing admixture conforming to ASTM C494 Type A. No other admixture shall be used.
6. CEMENT GROUT. Make cement grout from one part cement to two parts silica sand filler. Add only enough water to moisten materials so that they can be squeezed into a ball by hand. Use cement grout as noted on the drawings.

C. REINFORCEMENT:

1. Conform to the applicable portions of section 201 of the standard specifications for public works construction except as modified herein.

2. REINFORCING BARS. Use ASTM A615 grade 60 bars.
3. WELDED WIRE FABRIC. Use ASTM A185 Mesh.
4. Store all reinforcing at the site so as to prevent contact with the earth.

D. FORMWORK:

1. Construct forms to be mortar tight.
2. Adequacy of the form, bracing, and shoring shall be the sole responsibility of the Contractor. The design shall meet the requirements of ACI 347.
3. Comply with tolerances for formed surfaces required by ACI 301.

E. CONCRETE FINISHING

1. Provide concrete finishes for all concrete surfaces. All work shall be performed by skilled cement finishers.

F. All exposed surfaces, except the top surface of horizontal slabs, shall be provided with a Class 1 surface finish in accordance with Section 303-1.9.3 of the Standard Specifications for Public Works Construction.

1. EXTERIOR HORIZONTAL SLABS. The top surface of exterior horizontal slabs shall be finished in conformance with Section 302-6.4 of the Standard Specifications for Public Works, except that the final finish shall be accomplished with a drag broom in lieu of burlap bags.

   a. All exterior slab surfaces shall slope a minimum of 1% to drain surface water away to a proper location. Review elevations shown on drawings for adequate slopes before setting grades. Report any conditions that will not provide adequate slopes before processing.
   b. Edging Slabs. Tool a 3/8-inch radius on all exposed edges of slabs, machine bases, curbs, top of walls and other exposed horizontal edges. Repeat tooling with each floating or troweling operation.
   c. Provide weakened-plane joints at least 1-1/2 inch deep in all paving slabs where indicated but not more than 8 feet apart in each direction. Repeat tooling with each floating or troweling operation.
   d. Run decorative feature grooves with a 1/4-inch deep rounded tool before the final troweling in paving where shown.

Part 3 - Execution

3.01 INSTALLATIONS:

The wet well and vault shall be installed in accordance with Section 1.02 of these Technical Conditions as applicable.

3.02 CAST IN PLACE CONCRETE:

A. PLACING.

All concrete shall be handled from the mixer or transport vehicle to the place of final deposit in a continuous manner as rapidly as practicable and without segregation or loss of ingredients, until the approved unit operation is completed. Mix concrete on-site a minimum of 1 minute per cubic yard; do not add water. Concrete shall be placed by mechanical internal or external vibrating equipment. Duration of the vibration cycle shall be limited to the time necessary to produce

satisfactory consolation. Contractor shall follow Greenbook specs for the above requirements.

B. CURING.

Curing shall be used by means of water spraying, membrane, and/or chemical curing and shall be of a clear or white type, conforming to ASTM C309 58.

END OF SECTION 131214 – CAST IN PLACE CONCRETE

SECTION 131215 – PERMEON™ CONCRETE VENEER STAIN

Part 1 - General

1.01 SUBMITTAL

A. The coloring material shall be a single-step application process, an environmentally safe material that develops permanent and natural aged earth tones or desert varnish colors on the surface which it is applied. The material shall contain no caustic or alkaline chemicals and must not have a pH of 12 or above.

B. The coloring material shall be applied directly to clean and dry surfaces by an applicator certified by the manufacture. Light Brown to Black colors that develop shall be controlled and modified by custom blending of the coloring material, application technique, or a combination of these. Before application of coloring material, testing of several colors shall be performed on location and final written approval from the Project Engineer is required.

C. The rock and/or concrete coloring material shall be Permeon™ or an approved equal.

1.02 EQUIPMENT

A. Application equipment contains pump, mixing tank powered by gas motor. Pump must be a “Hypro” D-30 or D-50 powered by a Honda GX-240 Horizontal Utility Motor. Pump must have a regulator to control the flow of the product while allowing product to re-circulate back to the tank for hydraulic agitation. Mixing tank will be a 200 to 300 gallon Poly tank. Set up with proper plumbing and shut off valves to the pump and equipped with agitation. For larger increment rock cuts, a 3,000 gallon truck mounted tank, equipped with a centrifugal pump and tower application canon will be needed to reach these areas.

1.03 OTHER CONSIDERATIONS

A. Care and close attention should be taken in the application of the coloring material; do not apply coloring material if wind speed exceeds 15 MPH or stronger. The best immediate color results will occur if coloring material is applied in temperatures of 70˚ degrees Fahrenheit or higher, and if temperatures remain within a 10˚ margin for 30 days. If applying coloring material in cooler temperatures, make sure that applied surface is allowed to dry completely before surface is exposed to moisture.

B. Areas in or around irrigation systems: These areas may sustain mineral, salt, or fertilizer stains over a period of time and should be treated at the maintenance level.

C. Roller Compact Concrete, Shotcrete and Concrete: These surfaces should be moisture cured and allowed to dry for a full thirty days before application of natural desert varnish. All surfaces should be free of curing compounds or other coatings that may prevent direct contact with concrete. Any residual coating shall be removed by hydro-blasting or other methods approved by manufacture.

D. Areas that require hydro seeding and color restoration process: Coloring material shall be applied before hydro seeding and shall have adequate time to develop color before hydro seeding is performed.

E. Known manufacturer is Soil-Tech, Inc., 6420 S. Cameron Drive, Suite 207, Las Vegas, NV 89118 702-873-2023, www.permeon.com

1.04 MATERIAL SAFETY DATA SHEET

A. Approved by U S labor dept, essentially similar to form OSHA 174 Important: Read this MSDS before handling & disposing of this product. Pass this information to employees, customers & users of this product.

1.05 CHEMICAL PRODUCT & COMPANY IDENTIFICATION

PRODUCT IDENTITY: Permeon
DISTRIBUTOR NAME: Soil Tech
DISTRIBUTOR ADDRESS: 6420 Cameron Drive, Suite 207
DISTRIBUTOR CITY: Las Vegas, NV 89118
DISTRIBUTOR PHONE: 1-702-873-2023
CHEMTREC PHONE: 1-800-424-9300

1.06 INGREDIENT & REGULATORY INFORMATION

CONTAINS: Water (7732-18-5)
Minerals (Trade Secret)

1.07 HAZARDS IDENTIFICATION

A. RISK STATEMENTS:

- R22: Harmful if swallowed.
- R36: Irritating to the eyes.

B. SAFETY STATEMENTS:

- S26: In case of contact with eyes, rinse immediately with plenty of water, and seek medical advice.
- S46: If swallowed, seek medical advice immediately and show this Material Safety Data Sheet.

1.08 FIRST AID MEASURES & PROCEDURES

A. EYE CONTACT:

Immediately flush eyes with large amounts of water for two to three minutes. Remove any contact lenses and continue flushing for at least 15 minutes, lifting eyelids to ensure complete flushing of surface. Get immediate medical attention.

B. SKIN CONTACT:

Remove contaminated clothing including shoes and immediately flush skin with soap & large amounts of water for at least 15 minutes. Seek immediate medical attention. Wash contaminated clothing and shoes before reuse.

C. INHALATION:

Remove victim to fresh air. Keep warm and at rest. If breathing stops, give artificial respiration. If breathing is labored, have qualified personnel give oxygen. Seek immediate medical attention.

D. SWALLOWING:

Do not give anything by mouth to an unconscious or convulsing person. Induce vomiting by having victim put finger down throat. Seek immediate medical attention.

E. NOTE TO PHYSICIAN:

In patients not in shock or coma, induce vomiting with syrup of Ipecac if vomiting has not occurred. Follow with gastric lavage using deferoxamine, 2 g/L of water, which contains sodium bicarbonate 20 gm/L. Leave 10 grams of deferoxamine in 50 ml or 55 grams of sodium bicarbonate in the stomach. Maintain airway, blood pressure and respiration. Treat symptomatically and supportively. (Droisbach, Handbook of Poisoning, 11th edition.) Get medical attention. Treatment should be administered by qualified medical personnel only.

The decision whether the severity of poisoning requires administering of any antidotes and actual dose required should be made by qualified medical personnel.

1.09 FIRE FIGHTING MEASURES

A. EXTINGUISHING MEDIA:

Use appropriate extinguishing media for surrounding fire, such as water fog or spray, foam, dry powder, carbon dioxide (CO2).

B. SPECIAL FIRE FIGHTING PROCEDURES:

Evacuate personnel downwind of fire to avoid inhalation of irritating and/or harmful fumes and smoke. Respiratory and eye protection are required for fire fighting personnel. Full protective equipment (Bunker Gear) and self-contained breathing apparatus (SCBA) should be used for all indoor fires and any significant outdoor fires. For small outdoor fires, which may easily be extinguished with a portable fire extinguisher, use of a SCBA may not be required.

C. UNUSUAL EXPLOSION AND FIRE PROCEDURES:

Product decomposes under fire conditions to form oxides of sulfur. Containers may rupture from internal pressure if confined to fire area. Cool with water. Get nonessential persons out of area.

1.10 ACCIDENTAL RELEASE MEASURES

A. SPILL OR LEAK PROCEDURES:

Construct temporary dikes of dirt, sand, or any appropriate readily available material to prevent spreading of the material.

B. SMALL SPILL:

Wearing the appropriate personal protective equipment designated in Section 8, move the leaking container to a containment area or rotate the container so that the opening is above the liquid level. Neutralize with lime or other base, then absorb on diatomaceous earth or equivalent inert material. Shovel up and dispose of at an appropriate waste disposal facility according to current applicable laws and regulations and product characteristics at time of disposal.

C. LARGE SPILL:

Wearing the appropriate personal protective equipment designated in Section 8, close or cap valves and/or block or plughole in leaking container and transfer to another container. Contain material as described above and call the local fire or police department for immediate emergency assistance.

D. ENVIRONMENTAL PRECAUTIONS:

1. WATER SPILL: Use appropriate containment to avoid runoff or release to sewer or waterways.
2. LAND SPILL: Use appropriate containment to avoid runoff or release to ground.

E. GENERAL PROCEDURES: Remove containers of strong bases from release area.

F. RELEASE NOTES:

If spill could potentially enter any waterway, including intermittent dry creeks, contact the local authorities. If in the United States, contact the U.S. Coast Guard National Response Center (800) 424-8802. In case of accident or road spill notify:

- CHEMTREC in USA at (800) 424-9300.
- CANUTEC in Canada at (613) 996-6666.
- CHEMTREC in other countries, at (International Code) + 1 202 483 7616.

G. COMMENTS:

See Section 13 for disposal information and Section 15 for regulatory requirements. Large and small spills may have a broad definition depending on the user's handling system. Therefore, the spill category must be defined at the point of release by technically qualified personnel.

1.11 HANDLING AND STORAGE

A. HANDLING:

Use appropriate personal protective equipment as specified in Section 8. Handle in a well-ventilated area. Handle and use in a manner consistent with good industrial/manufacturing techniques and practices.

B. STORAGE:

Store in unopened containers under cool and dry conditions. Do not store with, or close to strong bases.

1.12 EXPOSURE CONTROLS/PERSONAL PROTECTION

A. EXPOSURE CONTROLS:

Good ventilation should be sufficient to control airborne levels of material.

B. VENTILATION:

Use local exhaust and general mechanical ventilation.

C. PERSONAL PROTECTIONS:

EYES AND FACE: Wear chemical splash goggles and face shield when eye and face contact is possible due to splashing or spraying of material.

1.13 PHYSICAL DATA

APPEARANCE:	Light Blue-Green Liquid
ODOR:	Negligible
BOILING RANGE: (Initial Boiling Point)	Not Applicable
LOWER FLAMMABLE LIMIT IN AIR (% by vol):	None
FLASH POINT (TEST METHOD):	None
FLAMMABILITY CLASSIFICATION:	Noncombustible
GRAVITY @ 60 F:	
SPECIFIC GRAVITY (Water=1):	1.25
POUNDS/GALLON:	10.5
VOC'S (VAPOR PRESSURE >0.44 Lbs/Sq In)(Lbs/Gal):	0.0
TOTAL VOLATILE ORGANIC COMPOUNDS (TVOC) (g/L):	0.0
NONEXEMPT VOLATILE COMPOUNDS (CVOC):	0.0
VAPOR PRESSURE (mm of Hg) @ 20 C:	10 (water)
VAPOR DENSITY (air = 1)	0.6 (water)
WATER ABSORPTION:	Complete
NEUTRALITY (pH):	3 – 7

1.14 REACTIVITY DATA

A. STABILITY: Stable.

B. CONDITIONS TO AVOID: Isolate from heat.

C. MATERIALS TO AVOID: Isolate from strong bases and active metals.

D. HAZARDOUS DECOMPOSITION PRODUCT: Sulfur, Manganese, Iron, Sodium Oxides under fire conditions.

E. HAZARDOUS POLYMERIZATION: Cannot occur.

1.15 TOXICOLOGICAL INFORMATION

MATERIAL	CAS#	TWA + (OSHA)	TLV (ACGIH)	HAP
Manganese++ Sulfate	7785-87-7	5 mg/m3 (Mn++)	5 mg/m3 (Mn++)	No
Iron++ Sulfate	7720-78-7	1 mg/m3 (Fe++)	1 mg/m3 (Fe++)	No

A. ACUTE HAZARDS

1. EYE & SKIN CONTACT: This material is very irritating to the eyes. May cause redness and burning. May be irritating to the skin, especially from prolonged exposure.
2. INHALATION: Aerosols and fumes can cause coughing and irritation to respiratory tract. Moderate irritant of the nasal mucous membranes. Avoid breathing fumes.
3. SWALLOWING: Side effects of ingestion of Iron++ salts may include heartburn, gastric discomfort, constipation or diarrhea. Symptoms of severe poisoning may occur within 30 minutes or be delayed for several hours. Severe hemorrhagic gastritis with abdominal pain, retching, violent diarrhea and vomiting may occur. Circulatory system may be affected with symptoms of shock, rapid, weak or no pulse, severe hypotension and pulmonary changes with dyspnea, and emphysema may occur.

Poisoning may affect the liver, kidneys, circulatory, cardiovascular, and central nervous systems.

B. CHRONIC HAZARDS/CONDITIONS AGGREVATED

1. CONDITIONS AGGREVATED: Persons with breathing disorders should avoid use. Interactions with medicines may cause adverse effects.
2. CARCINOGENIC, MUTAGENIC & REPRODUCTIVE EFFECTS: Reproductive effects from Iron++ salts have been reported in animals.
3. OTHER CHRONIC EFFECTS: None known.

1.16 ECOLOGICAL INFORMATION

A. MAMMALIAN TOXICITY TEST DATA:

LOWEST KNOWN ORAL LD50: 200 mg/kg (rat) (as Iron++)
LOWEST KNOWN SKIN LD50: 1000 mg/kg (guinea pig) (as Manganese++)

B. AQUATIC TOXICITY TEST DATA: May cause adverse environmental impact if material reaches waterways.

1.17 DISPOSAL CONSIDERATIONS

A. DISPOSAL METHOD: Dispose of waste at an appropriate waste disposal facility according to current applicable laws and regulations.

B. FOR LARGE SPILLS: Contain material and call local authorities for emergency assistance. In consultation with the appropriate authorities, determine the disposal method.

C. PRODUCT DISPOSAL: Neutralize with lime or other base. Collect in appropriate containers. Dispose of at an appropriate waste disposal facility in accordance with current applicable laws and regulations, and product characteristics at time of disposal.

D. EMPTY CONTAINER: Triple rinse with water and offer for recycle.

1.18 TRANSPORT INFORMATION

DOT PROPER SHIPPING NAME: None.
DOT HAZARD CLASS: None
SUBSIDIARY HAZARD: None
IATA PROPER SHIPPING NAME: None
TDG PROPER SHIPPING NAME: None
ER GUIDEBOOK NUMBER: None

1.19 REGULATORY INFORMATION

A. U.S. FEDERAL REGULATIONS (ENVIRONMENTAL PROTECTION AGENCY)

B. SARA Title III Section 313 Supplier Notification: This product contains the following chemical subject to the reporting requirements of Section 313 of the Emergency Planning & Community Right-To-Know Act of 1986 & of 40 CFR 372: Manganese compounds (9% by weight). This information must be included in all MSDSs that are copied & distributed for this material.

C. CERCLA, TSCA: All components of this product are on the TSCA List. The Reportable Quantity (RQ) of Iron++ Sulfate is exceeded if there is greater than 41667 lbs / 18939 kg of this product in one container.

D. CLEAN WATER ACT: Manganese++ Sulfate is listed as a priority pollutant under the Clean Water Act and, as such, falls under the CERCLA spill reporting requirements of 40 CFR 302.

E. EPA SARA 311:

Acute Health:	Yes
Chronic Health:	No
Fire:	No
Sudden Release of Pressure:	No
Reactive:	No

F. STATE REGULATIONS:

CALIFORNIA PROPOSITION 65: This product does not contain any chemicals known to the State of California to cause cancer or reproductive harm.

G. INTERNATIONAL REGULATIONS

The components of this product are listed on the chemical inventories of the following countries: Australia, Canada, Europe (EINECS), Japan, South Korea, United Kingdom.

1.20 OTHER INFORMATION

A. HAZARD RATINGS:

	HEALTH	FLAMMABILITY	REACTIVITY	OTHER
NFPA	2	0	0	
HMIS	2	0	0	X

This information is intended solely for the use of individuals trained in the NFPA and HMIS systems.

B. EMPLOYEE TRAINING: Employees should be made aware of all hazards of this material (as stated in this Material Safety Data Sheet) before handling it.

C. NOTICE

The supplier disclaims all expressed or implied warranties of fitness or merchantability for a specific use, with respect to the product, or the information provided herein, except for conformation to contracted specifications.

All information appearing herein is based upon data obtained from manufacturer and/or recognized technical sources. While the information is believed to be accurate, we make no representations as to its accuracy or sufficiency.

Conditions of use are beyond our control, and therefore users are responsible for verifying the data under their own operating conditions to determine whether the product is suitable for their particular purposes and they assume all risks of their use, handling, and disposal of the product. Users also assume all risks in regards to the publication or

use of, or reliance upon, information contained herein. This information relates only to the product designated herein, and does not relate to its use in combination with any other material or process.

END OF SECTION 131215 – PERMEON™ CONCRETE VENEER STAIN

SECTION 131224 – RPE LINER AND TESTING

PART 1 - GENERAL

1.1 SCOPE

A. Furnish all labor, materials, supplies, equipment, tools, and transportation, and perform all operations in connection with and reasonably incidental to the complete installation of the lake lining and guarantee/warranty as shown on the drawings, the installation details, and as specified herein.

Items of work specifically included in this section Lake Lining are:

B. Procurement of all applicable licenses, permits, and fees.

C. Formally accept subgrade. The grade shall be turned over at line and grade with a tolerance of 1/10 foot. Confirm that all wet well, lake pipe systems and bridge or retaining wall structures are installed prior to acceptance.

D. Liner Contractor responsible for this section shall inspect subgrade to ensure that the soils are suitable for work of this section and issue a written acceptance prior to any work.

E. After acceptance, maintain lake subgrade for the duration of this section work and any de-watering necessary. Damage to the lake subgrade by Lake Lining Contractors operations or rain water runoff/erosion shall be repaired by the Lake Lining Contractor until the work is officially accepted by the city.

F. Furnishing all materials and labor for the installation of a 30-mil reinforced polyethylene liner and 8-ounce loose lay geotextile liner for the entire stream/water fall feature bottom as shown on the drawings. Lake Lining Contractor is responsible for supplying appropriate quantity of liner materials based on the construction drawings.

G. Furnish all materials and labor for the anchor trench liner installation around the entire perimeter of the lake, alongside the stream/water fall feature channel and waterstop joints at all pipe penetrations through the liner.

H. Furnish all materials and labor for the installation of pipe-boots and liner water proofing requirements at all pipe penetrations into the lake.

I. In the event lake slopes exceed 4:1, immediately cease installation and bring condition to the attention of the Project Site Representative.

J. Installation of the lining system to be performed by a qualified lining contractor meeting the requirements specified herein.

K. Provision of the lining manufacturer's Technical Field Representative for at least Three (3) site visits during construction including all expenses to verify and document Quality Assurance and testing. At a minimum the Technical Field Representative shall:

1. Review and approve the liner subgrade prior to the installation of any geotextile or geomembrane material.

2. At the completion of liner seaming operations to review the nondestructive air lance test.

3. At the completion of an acceptable lake Leak Test to review and approve the completed liner installation and any repairs made as a result of the liner leak test.

L. Installation shall be performed by a contractor that has previously installed a minimum of 1,000,000 sq. ft. of this material, or by a contractor that has a Fabricator Field Service Representative in attendance during the entire installation process. Provide documentation of experience and presence at site during installation.

M. Leak testing contractor shall have qualifications and experience in conducting the propose leak detection method having tested a minimum of 5,000,000 sq. ft. of this material within the previous three years. The leak location survey shall be supervised by a professional or technician with a minimum of 3 years and 5,000,000 square feet of liner testing experience using specified test method.

1.2 DISCREPANCIES

A. It is the intent of these plans and specifications that the lake lining system be complete and workable. It is the Lake Lining Contractor's responsibility to make sure that the material furnished is compatible and adheres to all regulations. Any discrepancies should be noted immediately and should be reported to the Project Site Representative for clarification.

1.3 SUBMITTALS

A. Deliver submittals to Project Site Representative within 10 working days from date of Notice to Proceed. Index sections for different components and label with specification section number and name of component. Furnish submittals for components on material list. Indicate which items are being supplied on catalog cut sheets when multiple items are shown on one sheet. Incomplete submittals shall be returned without review.

B. Materials List: Include lake liner, extrusion rod, geotextile, waterstop. Quantities of materials need not be included.

C. Manufacturers' Data: Submit manufacturers' catalog cuts, specifications, and maintenance and operating instructions for all material supplied.

D. Qualifications of Liner Installer, Fabricator Field Service Representative, lining manufacturer's Technical Field Representative and Leak testing contractor.

1.4 RULES AND REGULATIONS

A. Work and materials shall be in accordance with liner manufactures written installation procedures and requirements.

B. When the contract documents call for materials or construction of a better quality or larger size than required by the above-mentioned rules and regulations, provide the quality and size required by the contract documents.

1.5 TESTING

A. Notify the Project Site Representative three days (72 hours) in advance of testing.

B. On completion of assembly of the lake lining, all field joints shall be tested.

C. Nondestructive seam strength testing:

1. All seams shall be visually inspected for compliance.

2. All field seams shall be Air Lance Tested (ASTM D4437) using a minimum 50 psi air supply directed through a 3/32-inch (typical) nozzle, held not more than 2-inches from the seam edge and directed at the seam edge.

3. Defective seams are located when the air jet causes the membrane to inflate, flutter, or show a disturbance not seen with properly seamed material.

D. Destructive seam strength testing:

1. One sample per 500 feet of field seam shall be provided and tested for bonded seam strength and peel adhesion values as specified.

2. The sample can either be made from excess material, or cut out from the installed lining.

1.6 CONSTRUCTION REVIEW

A. A review shall occur at the completion of the lake lining system installation and Project Record Drawing submittal.

1.7 GUARANTEE/WARRANTY AND REPLACEMENT

A. The purpose of this guarantee/warranty is to insure that the City receives materials of prime quality, installed and maintained in a thorough and careful manner.

B. For a period of one year from commencement of the formal maintenance period, guarantee/warranty liner materials and workmanship against defects. Fill and repair depressions. Restore landscape or structural features damaged by the settlement of trenches or excavations. Repair damage to the premises caused by a defective item. Make repairs within seven days of notification from the Project Site Representative.

C. Contract documents govern replacements identically as with new work. Make replacements at no additional cost to the contract price.

D. Guarantee/warranty applies to originally installed materials and equipment and replacements made during the guarantee/warranty period.

PART 2 - MATERIALS

2.1 QUALITY

Materials used in the lake construction shall be new and without flaws or defects of any type, and shall be the best of their class and kind.

2.2 SUBSTITUTIONS

A. Make complete submittals of all manufacturers' data showing compliance with the Contract Documents.

B. In making a request for a substitution, refer to Section 131202 Substitution procedures.

2.3 LAKE LINER

A. RPE sheeting shall be manufactured from a composition of ingredients suitably compounded of 100% virgin polyethylene and specifically compounded for use in hydraulic structures. Reprocessed or reground materials are not acceptable. The use of water soluble formulation ingredients is not acceptable.

B. Certification test results showing the material meets the specifications shall be supplied by the manufacturer of the roll material on request.

C. Furnish RPE 30-mil membrane lining consisting of 72-inch or greater widths of calendared sheeting fabricated into large sections by means of special factory-bonded seams into a single panel, or into the minimum number of large panels required to fit the job site.

1. Furnish RPE sheeting constructed with a biocide at a viable formulation level.

2. Furnish sheeting that is flexible, durable, and watertight, free of pinholes, blisters, holes, or other contaminants.

3. Furnish material RPE membrane uniform in color, thickness, size and surface texture.

4. Furnish material having the following minimum average physical properties as specified by ASTM:

a. Nominal Thickness: 30 mil

b. Weight (lbs per MSF): 144 lbs

d. Tensile Elongation at Break: 30%

e. Tongue Tear Strength: 115lbf

f. Grab Tensile (Scrim Break): 280 lbf

g. Standard OIT: 150 min

h. High Pressure HPOIT: 2400 min

i. Minimum Static Use Temperature: -70°F

j. Maximum Static Use Temperature: 180° F

k. Puncture resistance: 100 lbf

l. Hydraulic Conductivity: 2.20×10^{-10} cm/sec

D. Furnish products Manufactured by Raven Industries, Colorado Linings, Layfield Group or equal

2.4 GEOTEXTILE

A. Furnish 100% polypropylene, nonwoven, needle punch, geotextile. Furnish material having the minimum average roll values as specified by ASTM:

1. Fabric Weight: 8.0 ounces/sq. yard
2. Thickness: 85 mils
3. Grab Tensile Strength: 205 lbs MD.
4. Grab Elongation: 50%
5. Trapezoid Tear Strength: 80 lbs
6. CBR Puncture Strength: 500 lbs
7. Water Flow Rate: 95gpm/ft^2
8. U.V. Resistance: 70%
9. Apparent Opening Size: US Sieve 80 mm

C. Use products manufactured by SI Geosolutions, Mirafi, Inc., DuPont, Inc., Nicolon Corporation, Geotex, or Engineer approved equal.

2.5 OTHER MATERIALS

A. Provide any special tools, hardware, adhesives, boots, or any special materials necessary for the proper installation of the liner as recommended by the manufacturer.

B. Use only stainless steel: fasteners, washers, strapping, and other hardware that is required.

PART 3 - EXECUTION

3.1 INSPECTIONS AND REVIEWS

A. Site Inspections:

1. Verify site conditions and note irregularities affecting work of this section. Report irregularities to the Project Site Representative prior to beginning work.

2. Beginning work of this section implies acceptance of existing conditions.

B. Utilities: Verify locations of underground utilities, pipe penetrations etc.

3.2 EXCAVATION, TRENCHING, AND BACKFILLING

A. Earthwork shall be performed by the Park Contractor per Section xxx Lake Construction.

B. Park Contractor shall submit as constructed survey of subgrade for Project Site Representative for Lake Lining Contractors records.

C. Subgrade of lake graded by Park Contractor to a tolerance of +/- 1/10 foot shall be accepted by Project Site Representative, Engineer, and Lake Lining Contractor at a slope not to exceed 4:1 in any circumstance, prior to installation of liner system.

D. Where utilities conflict with lake excavation or anchor trenching, contact the Project Site Representative.

3.3 INSTALLATION OF NATURAL SOFT LAKE EDGES:

A. Install lake edge treatments as required by the construction documents, details, and specifications.

3.4 INSTALLATION OF GEOTEXTILE

A. Install loose lay geotextile above and below RPE liner as shown in the details and as recommended by the manufacturer.

B. Complete field seams at all overlapped joints. Heat weld or utilize manufacturer's recommended products and procedures.

C. Secure the geotextile to pipe penetrations as shown in the details by overlapping fabric over the top of the RPE liner and under the batten strip.

3.5 INSTALLATION OF LAKE LINER

A. General:

1. Installation shall be performed by a contractor that has previously installed a minimum of 1,000,000 sq. ft. of this material, or by a contractor that has a Fabricator Field Service Representative in attendance during the entire installation process. Provide documentation of experience and presence at site during installation.

3. The surface (substrate) to receive the liner shall be compacted per the liner manufacturer's specifications, smooth and free from sharp objects that could puncture the lining.

4. Remove all vegetation prior to installation of the liner.

5. Subgrade shall be accepted by lining installation contractor at a slope not to exceed 4:1in any circumstance, prior to installation of liner system.

6. Structures and piping should be installed in the lake prior to the liner installation.

7. Place the geotextile and RPE liner over the prepared surfaces corresponding to the interface test submittal and results in such a manner to assure minimum handling. Use sandbags (or similar ballast) to keep the panels in place during installation. Avoid wrinkles in the seam areas and around mechanical attachments.

8. Place liner and geotextile material in the 'U'-shaped anchor trench as shown in the detail, extended through all three sides of the trench.

9. Closely fit and seal the lining around inlets, outlets, and other projections through the lining using prefabricated fittings where possible.

10. Closely fit and seal the lining around inlets, outlets, and other projections through the lining using prefabricated fittings/pipe boots where possible.

11. Secure the liner to concrete structures as shown in the details with a continuous stainless steel batten strip (not in direct contact with the concrete) and stainless steel concrete anchor bolts.

12. Secure the RPE liner to pipe penetrations as shown in the details with a continuous stainless steel batten, washer, and stainless steel concrete anchor bolt. Apply a continuous bead of butyl caulk behind the batten strip.

13. Do not drive any vehicle over the RPE liner.

14. Perform all installation procedures, materials, workmanship, and testing in accordance with liner manufacturer's instructions and recommendations.

B. Field Joints:

1. Use lap joints to seal factory fabricated panels of RPE together in the field.

   a. Form lap joints per manufacturer's requirements.

   b. Remove all dirt, dust, and other foreign materials from the material and scrub the mating surfaces.

2. Construct all joints in a manner recommended by the manufacturer and in accordance with accepted industry practices.

C. Joints to Structures: Construct all joints in a manner recommended by the manufacturer and in accordance with accepted industry practices.

D. Repairs to RPE: Make any necessary repairs in a manner recommended by the manufacturer.

E. Quality of Workmanship:

1. Any lining surface showing injury due to scuffing, penetration by foreign objects or distress from rough subgrade shall, as directed by Project Site Representative, be replaced or covered and sealed with an additional layer of RPE of the proper size.

2. All joints upon completion of the work shall be tightly bonded.

F. Quality Assurance: Furnish a Technical Field Representative from the liner manufacturer for at least three (3) site visits during construction to observe the installation, to prepare field reports documenting site visit observations, and to insure compliance with the manufacturer's installation procedures. Submit field reports to by Project Site Representative within three (3) days offsite visit.

3.8 INSTALLATION OF OTHER COMPONENTS

A. Install other materials shown on the drawings or installation details to be part of the lake liner construction, even though such items may not have been referenced in these specifications.

3.9 PROJECT RECORD DRAWINGS

A. Record alterations. Record work that is installed differently than shown on the construction drawings.

B. Document changes to design. Maintain on-site and separate from documents used for construction, one complete set of contract documents as Project Documents. Keep documents current. Do no permanently cover work until accurate "as-built" information is recorded.

C. Record alterations on a daily basis. Record work that is installed differently than shown on construction drawings. Record accurate reference dimensions, measured from at least

two permanent reference points, of each liner penetration and note areas where liner is attached with batten strip.

D. Turn over the Project Documents to the Project Site Representative. Completion of the Project Documents shall be a prerequisite for the Review at the completion of the lake/stream water fall feature lining & edge treatment systems installation.

3.10 CLEANUP

A. Upon completion of Work, remove from the site all machinery, tools, excess materials, and rubbish.

B. Remove all debris and foreign material from the construction area and wet well.

END OF SECTION 131224 – RPE LINER AND TESTING

SECTION 131231 – AQUATIC PLANTERS

Part 1 - General

Contractor shall provide all labor, materials, appurtenances, tools, equipment, facilities, transportation, and services necessary for and incidental to performing all construction activities and operations for the work described in this section, complete, as shown on the drawings or specified herein. The work includes but is not necessarily limited to all the section below.

Part 2 - Products

2.01 PLANTER

Contractor shall construct planters per the size, shape, and location as shown on the construction plans with a minimum depth of 18 inches. Soil backfill shall be per Section 3.01 and 2.02 – Planter Soil. Planter bottom shall be concrete veneer over geomembrane liner. Vegetation shall be planted per the plans or, per Engineer's instructions.

2.02 PLANTER SOIL

In general, the planter soil shall be coarse, sandy loam, select material approved by the Engineer. Planter soil shall be free from lumps or balls of clay and shall not contain excessive amounts of calcareous or clay coatings, and shall not contain any caliches, debris, synthetic materials, deleterious or foreign substances. In addition, planter soil shall meet the following gradation criteria: no more than 50% of the material shall be fine (pass the no. 200 sieve), and the fine clay fraction shall not be more than 20%, leaving at least 30% as silt. The planter soil plasticity index (PI) shall be less than 10.

Part 3 - Execution

3.01 PLANTER SOIL

A. Planter soil for the liner and aquatic planters shall be selected from on-site borrow locations left by the mass grading Contractor (others) and approved by the Engineer.

1. Planter soil shall be placed over the lining and/or concrete veneer where shown on the plans, after liner and veneer installation, inspection and approval by the Engineer, to the grades, elevations, and depths shown on the plans. Soil containing sharp, jagged rock, clods, roots, debris or any other material which may be abrasive to, or may puncture the membrane, shall not be used as cover material. The Contractor shall satisfactorily demonstrate to the Owner and Engineer that use of the chosen material shall not have any detrimental effects on the lake.

END OF SECTION 131231 – AQUATIC PLANTER

SECTION 131250 – MECHANICAL SYSTEM

Part 1 - General

1.01 WORK INCLUDED

A. Contractor shall provide all labor, materials, appurtenances, tools, equipment, facilities, transportation, and services necessary for and incidental to performing all construction activities and operations for the work described in this section, complete, as shown on the drawings or specified herein. The work includes but is not necessarily limited to all the section below.

B. Contractor to supply plan for electrical connection from power source. General Contractor to provide construction and installation of power source

C. The system manufacturer shall submit individual pump curves for approval.

D. Pumps shall be inter-connected to level controls for high level "on" and low level shut-off.

E. Piping and fittings in pump station shall be PVC schedule 40 piping and schedule 80 fittings unless otherwise noted or Engineer approved equal.

1.02 REQUIREMENTS OF REGULATORY AGENCIES TO BE FOLLOWED

A. The uniform building code, latest edition, where applicable.

B. Construction safety orders of the federal, state, or local government.

C. The ACI standard specifications for structural concrete, (ACI 30172, revised 1981) where applicable.

D. The national electrical code, latest edition, where applicable.

Part 2 - Products

A. CHEMICAL SYSTEM:
1. Chemical feed pumps per “STENNER” model 45MHP22, rated 1.1 to 22.0 GPD at 25 psi.
2. Alum mixer per “DIRECT MIXER” model PLT100EDD-001, direct mounted plate mixer with VFD, motor 1HP TEFC, 230-460/1PH, 17520 RPM.
3. 50 GAL double wall Alum tank per “CHEMTAINER” model TC2738DC
4. 35 GAL double wall Acid tank per “CHEMTAINER” model TC2435DC
5. Contractor to provide chemical for the system:
   i. Aluminum Sulfate 48%, Liquid, Iron Free.
   ii. Hydrochloric Acid 32%, Liquid

Part 3 - Execution

3.01 INSTALLATIONS:

The pump station, monitors, controls, equipment, and all other related materials shall be installed in accordance with Section 1.02 of these Technical Conditions as applicable.

END OF SECTION 131250 – MECHANICAL SYSTEM

SECTION 131251 – LAKE PIPING AND PIPELINE TESTING

Part 1 - General

Contractor shall provide all labor, materials, appurtenances, tools, equipment, facilities, transportation, and services necessary for and incidental to performing all construction activities and operations for the work described in this section, complete, as shown on the drawings or specified herein. The work includes but is not necessarily limited to all the section below.

Part 2 - Products

2.01 PIPE AND FITTINGS

A. MATERIALS

Pipe shall be polyvinyl chloride (PVC) and plastic irrigation pipe (pip) to size and pressure class indicated on the plans.

8” Ø and smaller	Schedule 40 IPS Solvent Weld PVC
10” Ø – 12” Ø	100 PSI PVC Irrigation pipe (P.I.P.)
15” Ø – 27” Ø	80 PSI PVC Irrigation pipe (P.I.P.)
30” Ø and larger	Specified on plan

B. SCHEDULE 40 IPS Solvent Weld PVC

a. The pipe shall be listed with NSF and complies with NSF/ANSI Standard 14 and Standard 61. The Sch40 White pipe is dual marked, so it can be used both for Pressure and DWV applications. The dual marked pipe conforms to ASTM D1785 and ASTM D2665.
b. The pipe shall be installed per ASTM D2855. The joints should conform to ASTM D2672, the solvent cement to ASTM D2564 and the primer to ASTM F656.
c. Dimension: the outside diameter and wall thickness of Sch40 pipe are measured in accordance to ASTM D2122

C. PVC Irrigation Pipe (P.I.P.)

a. Pressure class for pip shall be SDR 51 for 80 psi rated and SDR 41 for 100 psi rated unless otherwise noted.
b. Dimension: Irrigation pipe shall be in accordance with Soil Conservation Service standard SCS 430-dd for sizes 6” through 15”, and ASTM D2241 Annex A1 for sizes 15” through 27”. The PVC cell classification is 12454B as defined under ASTM D1748.

D. The pipe shall be homogenous throughout, and free from visible cracks, holes, foreign inclusions or other defects.

E. Joints shall be integral bell, and spigot type with rubber gaskets, conforming to ASTM D3139. The elastomeric ring shall be in accordance with ASTM F477.

F. PVC pipe shall not be stored in the sun for any length of time and shall not be dropped or abused in a manner that can cause cracking. Discolored PVC material shall not be accepted or used.

Part 3 - Execution

3.01 TRENCHING

Trenches shall be excavated to the width necessary to permit the pipe to be laid and jointed properly and the backfill to be placed as specified. In no case shall the trench width at and below the top of the pipe be such that the clean space between the pipe barrel and the trench wall exceed 12" on each side of the pipe. The trench shall be excavated to the proper depth, and the trench bottom shall be graded to provide uniform bearing and support for pipe for its entire length. A continuous trough shall be excavated to receive the bottom quadrant of the pipe, and bell holes shall be provided at each joint to permit the jointing to be performed properly, so that the pipe will be uniformly supported. Whenever soil is encountered in the bottom of the trench that is incapable of supporting the pipe, as determined by the Owner's representative, such soils shall be removed to the depth direction and the trench backfilled and compacted to the proper grade with approved material

3.02 INSTALLATION

The pipe shall be placed to lines and grades as shown on the plans. All lines shall have 3' of cover (minimum) outside the lake perimeter and 1' minimum cover within the lake perimeter except as they emerge from the ground or as otherwise indicated on the plans. Pipes shall vary below minimum grade where existing pipes are encountered. All pipes shall be inspected for cracks or defects just prior to installation. No faulty pipe shall be incorporated into the job. A joint lubricant as recommended by supplier may be used but must be free from harmful effects. Contractor shall comply with the Los Angeles County Public Works Engineering Design Guidelines in conjunction with above requirements as applicable.

3.03 BEDDING AND BACKFILL

Backfill materials shall consist of the excavated material free of large stones (greater than 3 inch diameter) or foreign material. When the excavated material is unsuitable in the opinion of the Owner's representative, other approved material such as sand shall be provided by the Contractor to insure proper backfill and compaction. Any bracing installed to prevent cave-ins shall be withdrawn in a manner that will maintain the desired support during the backfilling operations. Contractor shall comply with the Los Angeles County Public Works Engineering Design Guidelines in conjunction with the above requirements as applicable.

Backfill material in trenches shall be compacted to 90 percent of maximum density, except under roads and structures, which shall be compacted to 95 percent of maximum density. Maximum density shall be defined by the ASTM Specification D698, otherwise known as standard proctor, and ASTM 1557 respectively. The moisture content of the backfill material shall be such that the Contractor is able to meet the specification. Trench backfill from the bottom of the trench to a point halfway up the side of the pipe shall consist of the excavated or approved material tamped to the required density in layers not exceeding 6 inches loose thickness. In lieu of the tamped material, the Contractor may use sand to the same depth. The sand shall be placed in the trench in such a manner that the pipe will not be damaged. The backfill material and/or sand shall be thoroughly worked under the sides of the pipe. Flooding or jetting of trenches will be permitted as a means of achieving compaction, but care should be taken to prohibit any lifting of the pipe due to buoyancy. Contractor shall comply with the Los Angeles County Public Works Engineering Design Guidelines in conjunction with above requirements as applicable.

3.04 PIPELINE TESTING

A. PIPELINE PRESSURE TEST.

All gravity and recirculation pipelines shall be subjected to a field hydrostatic pressure of 50 psi for a period of four hours per Greenbook 306-1.4.5. One hundred percent of the pipeline lengths shall be tested. All concrete anchor blocks shall be per Greenbook specs and shall be allowed to cure a sufficient time to develop adequate thrust resistance prior to testing and the pipeline shall not be tested until it has been filled with water for a minimum of 24 hours. Before testing, the pipe shall be backfilled with 2-½ feet of material or center loaded to hold the pipe in place while testing. The water necessary to maintain this pressure shall be measured through a meter. Any noticeable leaks shall be repaired and any defective pipe shall be replaced with new sections prior to commencing a retest. Test sections shall be physically isolated from previously tested pipelines, existing pipelines or main lines prior to connecting the new line. Tests shall be conducted with the open ends of pipe, valves and fittings suitably closed with plugs or caps as necessary per Greenbook. Valves shall not be operated during the testing procedures. All testing shall be inspected by the Owner and/or Engineer.

B. FIELD TESTING PROCEDURE

The test shall be conducted in the following manner. All air shall be expelled from the pipe. To accomplish this, if air valves or other outlets are not available, taps shall be made at the high points to expel the air and these taps shall be tightly plugged afterwards. The pressure in the pipeline shall then be pumped up to the specified test pressure. When the test pressure in the line has dropped to 10 PSI, at which time the pressure shall again be pumped up to the specified test pressure. This procedure shall be repeated until four (4) hours have elapsed from the time the specified test pressure was first applied. At the end of the four hour period, the pressure shall be pumped up to the test pressure for the last time.

C. LEAKAGE ALLOWANCE

The leakage shall be considered as the total amount of water pumped into the pipeline during the four (4) hour period including the amount required to reach the test pressure for the final time. Leakage shall not exceed the rate of 24 gallons per inch of diameter, per mile, per 24 hours.

The following table indicates the leakage allowance for various size pipes and is equal to the number of gallons per the four hour test period per 1,000 feet of pipe being tested:

Leakage Allowances
Gallons Per Four Hours per 1,000 Feet of Pipe

Pipe Size (Inches)	Test Pressure (PSI)	Allowable Leakage (Gallons)
1	50	.8
1-1/2	50	1.2
2	50	1.5
2-1/2	50	1.9

3	50	2.3
4	50	3.0
6	50	4.6
8	50	6.0
10	50	7.6
12	50	9.0
15	50	11.4
18	50	13.6
21	50	16.0
24	50	18.2
27	50	20.4

Any noticeable leak shall be stopped and all defective pipes, fittings, valves, and other accessories discovered in consequence of the test shall be removed and replaced by the Contractor with sound material. The test shall then be repeated until the total leakage during a test of four hours duration does not exceed the rate specified above. All testing shall be inspected by the Owner's representative.

END OF SECTION 131251 – LAKE PIPING AND PIPELINE TESTING

SECTION 131252 – LAKE WATERSTOP

Part 1 - General

Contractor shall provide all labor, materials, appurtenances, tools, equipment, facilities, transportation, and services necessary for and incidental to performing all construction activities and operations for the work described in this section, complete, as shown on the drawings or specified herein. The work includes but is not necessarily limited to all the section below.

Part 2 - Products

2.01 WATERSTOPS:

A. Provide Waterstop-RX bentonite waterstop and water-based adhesive as manufactured by Colloid Environmental Technologies Company (CETCO), 1500 West Shure Drive, Arlington Heights, Illinois 60004-1440, USA. Phone: (847)392-5800; Fax: (847)506-6195; Web-site: http://www.cetco.com.

B. Waterstop shall consist of 75% sodium bentonite and 25% butyl rubber compound formed into uniform coils.

C. NSF Certified: Bentonite waterstop shall be certified by NSF International to conform to the requirements of NSF Standard 61 – Drinking Water System Components – Health Effects.

D. BENTONITE WATERSTOPS:

1. WATERSTOP-RX 101: 1" x 3/4" x 16' 8"' rolls of a flexible strip of bentonite and butyl rubber compound for use in concrete construction joints - not designed for expansion joints.
2. WATESTOP-RX 101T: 1-1/4" x 1/2" x 16' 8" trapezoidal rolls of flexible strip of bentonite and butyl rubber compound with a reinforcing poly scrim for use in concrete construction joints - not designed for expansion joints.
3. WATERSTOP-RX 102: 3/4" x 3/8" x 25' rolls of flexible strip of bentonite and butyl rubber compound for use in concrete construction joints - not designed for expansion joints.

E. WATERSTOP ADHESIVE

1. Volclay WB - ADHESIVE: Gray, non-flammable, latex and water based adhesive used to secure all Volclay Waterstop-RX products to concrete, metal and PVC horizontal and vertical surfaces. Keep from freezing. Application rate: 400-600 linear feet per gallon.

F. WATERSTOP PRODUCT DELIVERY, STORAGE & HANDLING

Deliver materials in factory sealed and labeled packaging. Sequence deliveries to avoid delays, while minimizing on-site storage. Handle and store following manufacturer's instructions, recommendations and material safety data sheets. Protect from construction operation related damage, as well as, damage from weather, excessive temperatures and prolonged sunlight. Remove damaged material from site and dispose of in accordance with applicable regulations.

Part 3 - Execution

3.01 WATERSTOP INSTALLATION

A. WATERSTOP SUBSTRATE INSPECTION AND CONDITIONS:

1. The installer shall examine conditions of substrates and other conditions under which this section work is to be performed and notify the contractor, in writing, of circumstances detrimental to the proper completion of the work. Do not proceed with work until unsatisfactory conditions are corrected, and are acceptable for compliance with manufacturer's warranty requirements.
2. Installation shall not proceed when work areas are flooded or wet to the extent that would cause bentonite waterstop to hydrate prior to concrete encapsulation.

B. WATERSTOP SURFACE PREPARATION:

Remove dirt, debris, oil, grease, cement laitance, or other foreign matter which will impair or negatively affect the installation of the waterstop. Protect adjacent material surfaces from damage or contamination during installation operations.

C. WATERSTOP GENERAL INSTALLATION GUIDELINES:

1. Install WATERSTOP-RX in all applicable vertical and horizontal cast-in-place concrete construction joints; and around applicable penetrations and structural members. Place WATERSTOP-RX to allow for minimum 3” (75 mm) concrete coverage on all sides (2” (50 mm) coverage for RX-102).
2. Apply WB-ADHESIVE by brush 1" to 1-1/4" (25 - 30 mm) wide, to dry, smooth concrete surface maintaining a minimum 3” (75 mm) depth within the concrete joint. Allow adhesive to dry until the adhesive cures black (5-10 minutes in warm weather; cold weather will extend drying time).
3. Remove release paper from coil of WATERSTOP-RX. Firmly press the entire length of WATERSTOP-RX against the cured (black) adhesive. Verify 3” (75 mm) minimum concrete coverage will be maintained over entire placement of waterstop. Place in maximum practical lengths to minimize coil end joints.
4. Tightly butt coil ends together to form continuous waterstop. Do not overlap coil ends. Where required, cut coils with sharp knife or utility blade to fit coil ends together without overlapping.
5. Following Steps 1-3, install waterstop around all applicable through wall pipes and mechanical penetrations; and around all applicable structural elements like metal H-Piles through the slab.
6. Protect installed waterstop from prehydration prior to concrete placement and product encapsulation. Replace any waterstop material that exhibits significant expansion prior to concrete encapsulation.

D. WATERSTOP CLEAN UP:

Clean areas where adjacent finished surfaces are soiled by work of this Section. Remove all tools, equipment, and remaining product on-site. Dispose of section work debris and damaged product following all applicable regulations.

E. WATERSTOPS QUALITY ASSURANCE

1. Verification of Details: Contractor is to notify the Engineer immediately of any detail, note, or specification which does not comply with current manufacturer's installation requirements.

2. Adhesion: Waterstop-RX is not a self-adhering product. Volclay WB-Adhesive is required to secure Waterstop-RX. No other adhesive should be used. Mechanical fasteners can be used in conjunction with WB-Adhesive, but should not be used solely to secure the waterstop.
3. Installation Instructions: Components and installation procedures shall be in accordance with current manufacturer's printed specifications and recommendations. Verify that the technical data submittals are the most current with manufacturer - (847)392-5800.
4. Expansion Joints: WATERSTOP-RX is not designed, nor intended for waterproofing or sealing expansion joints. Responsibility of waterproofing expansion joints is of others.
5. Concrete: Concrete shall be structural grade quality with a minimum 3000 psi tensile strength. For RX-101 and RX-101T a minimum thickness of 8" (200 mm) with two rows of reinforcing steel is required. For RX-102 a minimum thickness of 5" (125 mm) with a single row of reinforcing steel is required.
6. Protect installed waterstop from prehydration prior to concrete placement and product encapsulation. Replace any waterstop material that exhibits significant expansion prior to concrete encapsulation.

END OF SECTION 131252 – LAKE WATERSTOP

SECTION 131260 – LAKE ELECTRICAL

Part 1 - General

1.01 WORK INCLUDED

A. This Specification and the associated Drawings cover the complete Lake electrical system and all related Work including but not limited to:

1. A complete and operable system of service equipment, switchboards, panelboards, conduits, switches, time clocks, and lighting.

2. Junction and/or pull boxes, conduits, disconnects, starters, contactors, wiring and connection of all motors and mechanical equipment, including connect-ion and wiring of line voltage controls associated with the mechanical systems.

5. Complete grounding system as required and shown on the Drawings.

6. Testing and adjusting of the completed electrical system in the manner described herein.

7. Cleaning of all completed Work and installation adjustment of all trim and decorative items.

1.02 QUALITY ASSURANCE

A. Qualifications of Workers

1. Provide at least one person who shall be present at all times during the execution of the Work of this Section and who shall be thoroughly familiar with the type of materials being installed and the best methods for the installation and who shall direct all Work performed under this Section.

2. Use only experienced licensed electricians completely familiar with the type of construction involved and the materials and techniques specified.

B. Ordinances and Codes: Materials and construction shall conform with applicable sections of the:

National Electrical Code; Department of Industrial Relations; regulations of the State Fire Marshal; and all applicable codes, ordinances, rules and regulations which apply to the construction.

In the event of conflict between the referenced codes, ordinances, Drawings and Specifications, the more stringent shall govern. Any changes required to the Drawings to conform with above mentioned "more stringent" requirement shall not be the cause for additional charges or claims by the Contractor.

C. Verification of Conditions

1. Before commencing Work the Contractor shall inspect the Project site and by submitting a bid for this work shall be deemed to have verified all existing conditions and accepted same as true and complete.

2. The Work under this Section has been indicated on the Drawings in locations which should allow installation without interfering with the Work of other trades; however, the locations are diagrammatic only and the exact finish location of equipment and materials cannot be indicated. Therefore, locations of all Work and equipment shall be verified to avoid interferences, preserve head room and keep openings and passageways clear. Changes shall be made in locations of equipment and materials which may be necessary to accomplish these purposes.

D. Preliminary Operations and Testing

1. Motor driven equipment shall be tested for correct rotation and completion of all connections.

2. Wiring and connections shall be tested for continuity, shorts and improper grounds in accordance with the requirements of the National Electrical Code. Receptacle outlets shall be tested for proper grounding. Repairs resulting from the tests or preliminary operation of the equipment shall be made at the Contractor's expense and shall not be the cause for additional charges or claims by the Contractor.

3. Required tests, in addition to those mentioned above, include but are not limited to:

a. Ground resistance test.

b. Service and feeder conductors insulation resistance.

c. Motor controls and disconnecting devices.

d. Such other tests as may be required by the Construction Manager.

1.03 SUBMITTALS

Provide submittals in accordance with Section 131202

1.04 PRODUCT HANDLING

A. Protection: Use all means necessary to protect electrical materials before, during, and after installation and to protect the installed Work of all other trades.

B. Replacements: In the event of damage, immediately make all repairs and replacements necessary to the approval of the Owner and Landscape Architect and at no additional cost to the Owner.

Part 2 - Products

2.01 MATERIALS, GENERAL

A. Materials shall be new, in unbroken packages and bear the U.L. label of approval.

B. Equipment of one type shall be by same manufacturer. One type of equipment for classifications such as:

1. Switchboards, panels, buss duct, disconnect switches, motor control centers and allied items.

2. Conduit.

3. Wire.

4. Conduit fittings.

5. Fixtures of the same general type.

6. Wiring devices.

2.02 CONDUIT AND FITTINGS

A. Conduit within or under buildings or where exposed outdoors shall be rigid threaded, hot dipped, galvanized, or U.L. approved plastic except where noted otherwise on the Drawings. Metallic conduit shall be of the same metal between outlets or terminals.

B. Use flexible metallic conduit only for short connections of motors and where specifically called for on Drawings. Maximum length shall be 40". Use only liquid tight flexible metal conduit. Install an unbroken code sized, green insulated copper grounding conductor in each liquid tight flexible conduit with permanent connection at motor junction box and service panel ground.

C. Protect, before installation, metallic conduit runs in all slabs laid on grade or in contact with the earth or exposed in damp locations, with two (2) heavy coats of asphaltum rust-resisting compound.

D. Encase conduits 1-1/2" or larger run underground, outside, or under buildings, in concrete envelopes a minimum of 3" thick, except as indicated otherwise on Drawings or stubouts. Conduits 1-1/4" and smaller laid partially in the lower part of or under concrete shall have a minimum of 3" of concrete encasement all around.

E. Low voltage runs underground outside buildings, 1-1/4" or smaller, may be G.I. or sherardized steel conduit, with machine applied wrapping equal to double wrap or Scotch-Wrap #50 tape, half lapped and quadrupled at joints in lieu of concrete encasement.

F. Service conduits through foundations or concrete members shall run through metal sleeves with adequate clearances for full movement of the conduit. Do not run conduits through footings.

G. Secure conduit runs exposed on surfaces with one hole heavy-duty straps or fasten with matching fittings to inserts or trapezes, parallel to building walls and ceilings.

H. Cap all conduit or duct stub-outs with standard factory caps; except cap threaded steel conduit with B.I. water pipe caps in outdoor locations.

I. Use conduit fittings as manufactured by Crouse-Hinds Company, Appleton Electric Co., Plasti-Bond, Perma-Cote, Kor Kap, or approved equal.

J. Employ U.L. liquid tight fittings for use with liquid tight flexible metal conduit.

K. Use unions as manufactured by Appleton, O-Z/Gedney. The use of running threads will not be permitted.

L. Exposed conduit in chemical rooms shall be rigid NEMA 3R Type suitable for installation in corrosive atmospheres.

M. Provide code sized, insulated equipment ground conductor in all conduits with conductors.

2.03 WIRING CONNECTIONS

A. Make connections without strain on conductors, allowing the conductors to take a natural position after connections or taps are made. Include all strand of wire in making the connection.

B. Make connections for wiring by one of the following means

1. Make all taps or connections to conductors with compression type connectors except those smaller than #8 B&S gauge may have soldered connections. Solderless connections for #10 AWG or smaller may be used and shall be "Scotchlok", Buchanan. For #8 AWG or larger, they shall be T&B "LockTite", Burndy "Versitaps".

2. All cable or conductor terminal lugs shall be Burndy "Quicklug", Ilsco. Two piece stamped lugs and solder lugs will not be approved.

3. Paint taped splices in damp or outdoor locations with two (2) coats of insulating paint.

4. Tag all branch circuit wires with circuit number at the panel board and at each point of use with linen or plastic tags.

2.04 CONDUCTORS

Copper conductors 250MCM and Larger shall be stranded, 600 volts, ethylene propylene rubber insulation, Type RHW. Conductors smaller than 250MCM shall be stranded, 600 volt and Type XHHW-2. Conductors shall be manufactured by Rome, Southwire, or approved equal. Do not make splices between boxes.

2.05 COLOR CODING

A. Neutrals (identified conductors shall be white).

B. Phase conductors shall be: Phase A – Black; Phase B - Red; and Phase C - Blue.

C. Green shall be used for mechanical equipment and receptacle grounds only.

2.06 MOTOR WIRING

A. Make final connections to motors with the required AWG (Minimum #12), Flamenol machine tool wire, 19 strand. Control wiring for equipment shall be Flamenol machine tool wire, 19 strand of required AWG. Provide junction boxes at each item of equipment to change from standard building wiring to machine tool wire.

B. Phase motors as proper in direction of rotation.

2.07 PANELBOARDS

A. Minimum interrupting rating of circuit breakers shall be 10,000 amps. Refer to Drawings for higher interrupt rating requirements. Series rated equipment will not be accepted.

B. Panels shall be fully bussed.

C. Busses shall be full length copper and shall be located in the rear of the panel board cabinet. Circuit breakers shall be bolt-on to suitable supporting members at front of cabinet and connected with suitable lugs to the bussing in the rear of the cabinet. Individual circuit breakers shall be removable from the cabinet without disturbing the bussing in any way. Panel boards shall contain ground busses.

D. Locks shall be provided on panel boards. Locks shall be keyed alike.

E. Each panel shall have a two-column circuit index card set under glass or glass equivalent on inside of door. Each circuit shall be identified as to use or area.

F. Tandem mounted or wafer type circuit breakers are not acceptable.

G. Multi-pole breakers shall have one common trip handle or be internally connected. Handle ties are not acceptable.

H. Breaker arrangements shown on the Drawings shall be maintained.

I. Acceptable manufacturers are General Electric, Square D.

2.08 EXTERNALLY OPERATED SWITCHES

Disconnect switches shall meet Fed. Spec. W-S865 for type "A" switches, and have full cover door interlock. The switch enclosure shall carry the NEMA rating for intended use as shown on the Drawings. The H.P. rating of the switch shall be suitable for its' intended use. Switches shall be as manufactured by Square-D, Cutler Hammer.

2.09 TIME CLOCKS

A. Contacts shall have a minimum rating of 40 amperes at 277V.

B. Timing motor shall be heavy duty synchronous, self starting, high torque type, and shall be rated at 120, 208, 240, 277 volt 60 Hz.

C. Motor shall operate normally at temperature range of -60 degrees Fahrenheit to +120 degrees Fahrenheit.

D. Dial shall be 3" diameter, clearly calibrated with day/night zones and 24 hour rotation, with gear to provide one revolution yearly which automatically varies the on/off settings each day according to seasonal changes. Day and month of the year shall show clearly through calendar window on the dial.

E. Clock shall be equipped with 7-spoke omitting wheel marked with days of the week.

F. Clock shall be housed in a flush enclosure where supply circuits emanate from a flush mounted panel board and surface enclosure when supply circuits are from a surface mounted panel.

G. Acceptable manufacturers are Tork, Paragon.

2.10 GROUND FAULT CIRCUIT INTERRUPTERS

A. Minimum rating shall be 20 amperes, 125V, 5 milliampere trip setting, Class A per UL943.

B. Manufacturer to be Crouse-Hinds, Leviton.

2.11 BOXES

A. Boxes shall be of the size required by ordinances or larger, and of pressed galvanized code gauge steel where concealed or exposed on ceilings. Exposed boxes on walls below 7'6" shall be cast steel similar to "FA" condulets.

B. Outlets to be surface where wiring is exposed and flush in areas where conduit is concealed.

C. Provide surface outlets with proper galvanized steel surface cover. Box and cover shall be deep enough to provide at least 1/4" clearance between back of device and back of box. Where box contains more than one device, use proper gang box with proper cover. Surface outlet boxes shall be of the threaded hub type wherever below 8'0".

D. Provide exposed junction boxes with proper flat blank galvanized cover. If necessary for cable installation, additional pull boxes or junction boxes may be installed in accessible locations.

E. Where pull boxes larger than outlet boxes are required, galvanized code gauge sheet steel boxes may be used with covers attached by brass machine screws. Boxes exposed to the weather shall be approved for the purpose, and conduit entrances shall be on the bottom made by means of an interchangeable hub with gasket and adapter nut. Pull boxes not shown on Drawings may be added only after approval of size and location is obtained.

F. For outlets exposed to weather or where noted, cast outlet boxes shall be Crouse-Hinds, Appleton. Boxes shall have proper number and size hubs. Device plates, covers, adapters and boxes shall be as manufactured by Crouse-Hinds, Appleton.

G. Exposed junction boxes, outlet boxes and pull boxes for chemical rooms shall be NEMA 3R type suitable for corrosive atmosphere, non-metallic.

2.12 IDENTIFICATION MARKINGS

A. Plainly mark all motor and electrical appliance control equipment indicating the equipment controlled with engraved metal tags.

B. Provide laminated plastic nameplates on panel boards on the outside of the door at the top indicating panel designation and feeder source.

C. Provide laminated plastic nameplates on distribution switchboards and motor control centers at the top center indicating panel designation and feeder source.

D. Identify each distribution switchboard and motor control center circuit breaker with a laminated plastic nameplate indicating its' use.

E. Type panel board directories on the forms provided with the equipment, indicating the use of each branch circuit breaker.

F. Fasten all laminated plastic nameplates to surfaces with two (2) or more screws.

Part 3 - Execution

3.01 INSPECTION

Be responsible for providing all necessary wiring for the new electrical systems. Wherever wiring is being disrupted due to remodeling or changes, reconnect existing and provide new wiring circuits to accomplish a fully operable system at no additional cost to the Owner.

3.02 COORDINATION

The Drawings are essentially diagrammatic and indicate the desired location, size, routes, connection points, etc., and are to be followed as closely as possible. Proper judgment must be exercised in executing the Work so as to provide the best possible installation in the available space and to overcome difficulties, limitations or interference wherever encountered. Be responsible for the correct placement of this Work, the proper location and connection in relation to Work of other trades, for determining the exact location of all conduits, outlets and equipment, and for installing the conduits in such a manner as to conform to the structure, avoid obstruction, preserve headroom and keep openings and passageways clear. Particular attention is directed to the close coordination required on exposed Work. Locations shown on Architectural or Mechanical Drawings if different than those shown on Electrical Drawings should be communicated to the Landscape Architect and Owner in writing for clarification.

3.03 INSTALLATION

A. Conduit Installation

1. Conduit and metallic raceway systems shall be mechanically and electrically continuous from sources of current to all outlets in a manner to provide a continuous grounding path. Close ends of conduit during construction to prevent entrance of dirt or moisture.

2. Securely fasten conduit to the building construction within three feet of each outlet and within every ten feet thereafter. Secure it to boxes, cabinets, pull boxes, terminals with two locknuts and ends equipped with bushings or a terminal fitting. Cut square with ends carefully reamed.

3. Make bends or elbows so that the conduit will not be injured or flattened.

4. Use insulated metallic bushings in all places where bushings are required.

5. Run exposed conduits level or plumb and parallel to the construction members of the building. No cutting across or diagonal runs will be

permitted. Neatly surmount structural obstructions encountered on conduit runs by the use of fittings or pull boxes.

6. Identify feeder conduits by stamped metal tags secured to exposed section of conduit in main or sub-panels.

7. Make up all threaded conduit joints gas and watertight with conductive sealer except conduit above ground in dry indoor locations.

8. Rigidly support all boxes independently of the conduit system.

B. CONNECTIONS TO EQUIPMENT

1. Fully connect, in an approved manner, all electrical outlets, apparatus, motors, equipment, fixtures, wiring devices and appliances whether they are installed under the Electrical Contract or not, which require electrical connections, to the corresponding electrical system outlet.

2. Where the Work of this Section requires connections to be made to equipment that is furnished and set-in-place under other Sections, obtain such roughing-in dimensions from the manufacturer or supplier of each item as required and assume full responsibility for the installation of the connections thereto.

3.04 ADJUSTMENT AND CLEAN-UP

A. Preliminary Operation: Should the Landscape Architect deem it necessary to operate the electrical installation or any part thereof prior to Substantial Completion of the Work, consent to such preliminary operation and supervise conduction of same. Sub-Contractor to pay all costs occasioned by such operation. Preliminary operation shall not be construed as an acceptance of any Work installed under this Contract.

B. Clean-up: Upon completion of the Work of this Section, immediately remove all electrical materials, debris and rubbish occasioned by this Work to the approval of the Landscape Architect and Owner.

END OF SECTION 131260 – LAKE ELECTRICAL

SECTION "G"

APPENDIX "A"

PROJECT LOCATION MAP

TeWINKLE PARK LAKES
970 Arlington Dr., Costa Mesa

SECTION "G"

APPENDIX "B"

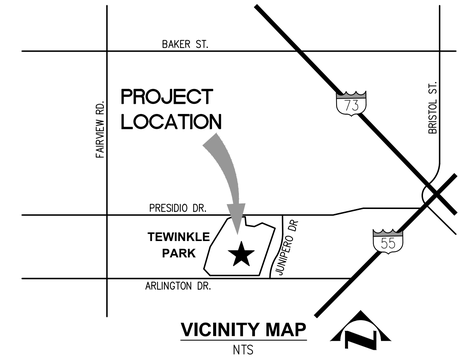
CONSTRUCTION PLANS

Jul. 22, 2024

TEWINKLE PARK

LAKE RENOVATION
BID DOCUMENT PLANS

SITE PLAN
1"=60'



VICINITY MAP
NTS

CONTACTS:

CLIENT:

CITY OF COSTA MESA
PUBLIC WORKS DEPARTMENT
77 FAIR DRIVE (4TH FLOOR)
COSTA MESA, CA 92626
PHONE: (714) 754-5633
CONTACT: SEUNG YANG

ENVIRONMENT CONSULTANT:

VCS ENVIRONMENTAL
30900 RANCHO VIEJO ROAD,
SUITE 100
SAN JUAN CAPISTRANO, CA 92675
PHONE: (949)-489-2700
CONTACT: DAN BOTT

LAKE ENGINEER:

PACIFIC ADVANCED CIVIL ENGINEERING (PACE)
17520 NEWHOPE STREET, SUITE 200
FOUNTAIN VALLEY, CA 92708
PHONE: (714) 481-7300
CONTACT: ZIRANG SONG, P.E.

SHEET LIST INDEX

Sheet Number	Sheet Title
W100	Title Sheet
W101	General Notes
W102	Structural Notes
W110	Erosion Control and Fencing Plan
W200	Overall Lake Plan
~~W210~~	~~Drain Plan~~ NOT USED
W211	Demolition Plan
W212	Irrigation Demolition Plan
W213	Lake Piping and Utility Plan
~~W214~~	~~Aeration Plan~~ NOT USED
W215	Lake 1 Plan
W216	Irrigation Proposed Plan
W217	Planting Plan
~~W220~~	~~Drain Plan~~ NOT USED
W221	Demolition Plan
W222	Lake Piping and Utility Plan
~~W223~~	~~Aeration Plan~~ NOT USED
W224	Deductive Bid Items – Lake 2 Plan
W225	Deductive Bid Item #1 – Pond and Stream Plan
W226	Deductive Bid Item #2 – Pond and Stream Plan
W227	Deductive Bid Items – Sections
~~W231~~	~~Demolition Plan~~ NOT USED
~~W232~~	~~Island Piping and Utility Plan~~ NOT USED
~~W233~~	~~Island Plan~~ NOT USED
W240	Demolition Details
W250	Lake Details
W251	Lake Details
W252	Lake Details
W253	Lake Details
~~W254~~	~~Lake Details~~ NOT USED
~~W255~~	~~Lake Details~~ NOT USED
W256	Lake Details
~~W257~~	~~Lake Details~~ NOT USED
~~W258~~	~~Lake Details~~ NOT USED
~~W259~~	~~Lake Details~~ NOT USED
W260	Irrigation Details
W300	Flow Schematic
W400	Pump Station Demolition Plan
W410	Pump Station Plan
W411	Pump Station Section
W450	Pump Station Details
W451	Pump Station Details
W500	Electrical General Notes
W501	Electrical Legend
W502	Electrical Single Line Diagram
W503	Electrical Power and Control Plan
~~W532~~	~~Electrical – Island Conduit Utility Plan~~ NOT USED
~~W600~~	~~CP SCHEMATIC~~ NOT USED
~~W601~~	~~CP SCHEMATIC~~ NOT USED
~~W602~~	~~CP SCHEMATIC~~ NOT USED

PLAN APPROVAL:

REVIEWED FOR CONFORMANCE WITH CITY OF COSTA MESA STANDARDS AND REQUIREMENTS. APPROVAL FOR CONSTRUCTION IS SUBJECT TO THE INFORMATION SHOWN HEREIN. THE CITY OF COSTA MESA AND THE UNDERSIGNED ARE NOT RESPONSIBLE FOR ANY ERRORS OR OMISSIONS THAT MAY EXIST ON THESE PLANS.

CITY OF COSTA MESA — DATE:

R.C.E. NO.: — EXPIRES:

PRELIMINARY NOT FOR CONSTRUCTION

PRELIMINARY DESIGN DRAWING

THIS DRAWING IS FOR BIDDING USE ONLY AND NOT INTENDED TO BE USED FOR CONSTRUCTION.

NO	BY	DATE	REVISIONS	DATE	APP.

PREPARED BY ZIRANG SONG
PROJECT ENGINEER
R.C.E. NO. ---- #C79315
EXP. 09/30/2026
DRAWN SP/RC/RT
SCALE AS SHOWN
DESIGNED BL
CHECKED ZS
DATE 7/22/2024

TITLE: TITLE SHEET

JOB: TEWINKLE PARK — LAKE RENOVATION — COSTA MESA, CA

PACE
Advanced Water Engineering
17520 Newhope Street, Suite 200 | Fountain Valley, CA 92708
P: (714) 481-7300 | www.pacewater.com

SHEET W100
01 OF 50 SHEETS
JOB NO. B836

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Xrefs: B836-07 36x24v.dwg; TopoSurvey.dwg; B836 - Lake Base.dwg
Dimscale = 24, Ltscale = 1, PSltscale = 1; ACAD Ver. = 23.0s (LMS Tech); Viewtem = 1
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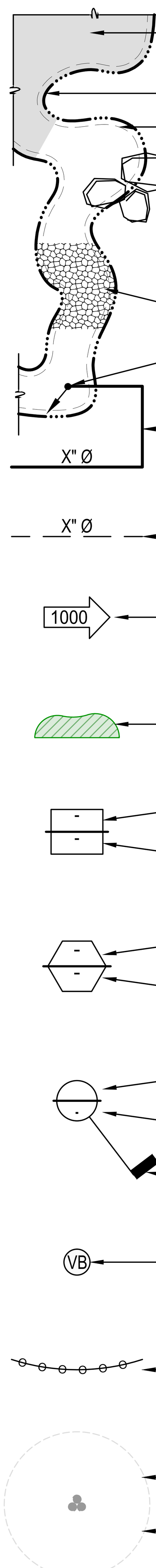

- SHADED AREA INDICATES LIMIT OF CONCRETE
- INDICATES SHORELINE
- INDICATES SHORELINE HINGE POINT
- INDICATES BOULDERS WITH GRADUATED SIZES

2'ø	=	10%
3'ø	=	20%
4'ø	=	40%
5'ø	=	20%
6'ø	=	10%

- INDICATES RIVER COBBLE SHELL
- INDICATES DISCHARGE RISER
- INDICATES RECIRCULATION DISCHARGE PIPE AND SIZE SEE GENERAL NOTES #2 & #3
- INDICATES RECIRCULATION INTAKE PIPE AND SIZE
- INDICATES RECIRCULATION FLOW IN GALLONS PER MINUTE ±25%
- INDICATES WETLAND PLANTER
- INDICATES TOTAL EFFECTIVE WEIR LENGTH
- INDICATES TOP OF WEIR ELEVATION
- INDICATES WATER SURFACE ELEVATION
- INDICATES FINISH BOTTOM ELEVATION
- INDICATES DETAIL LETTER DESIGNATION
- INDICATES SHEET LOCATION
- FOOT INDICATES SECTION DIRECTION
- INDICATES AERATION VALVE BOX
- INDICATES ½"ø WEIGHTED AERATION TUBING
- INDICATES AREA OF INFLUENCE
- INDICATES AERATION POD

NOTE: NOT ALL SYMBOLS MAY BE USED.

BASE BID SCOPE - SUGGESTED CONSTRUCTION SEQUENCE:

1. CONTRACTOR TO REVIEW ALL AS-BUILT DOCUMENTS AND DO SITE CONFIRMATION BEFORE ANY DEMOLITION OR CONSTRUCTION
2. LAKE 1 AND LAKE 2 DEMOLITION (CONTRACTOR TO DETERMINE CONSTRUCTION PHASING)
   a. CONTRACTOR WILL REMOVE AND TRANSFER EXCESSIVE AND/OR INVASIVE WILDLIFE INCLUDING TURTLES AND FISH TO APPROPRIATE SHELTERS/WILDLIFE CARE CENTERS. CITY WILL DRAIN WATER OUT OF THE LAKE, CONTRACTOR DOES NOT NEED TO INCLUDE THE DRAINAGE OF THE LAKE IN THE SCOPE OF THE WORK BUT WILL NEED TO COORDINATE WITH CITY FOR DRAINING THE LAKES.
   b. CONTRACTOR TO FOLLOW DEMOLITION PLAN (SHEET W211 AND W221) FOR ITEMS TO BE PROTECTED IN PLACE, REMOVED AND REUSED
   c. CONTRACTOR TO CHECK QUANTITY OF THE DEMOLITION ITEMS
3. LAKE 1 AND LAKE 2 CONSTRUCTION (CONTRACTOR TO DETERMINE CONSTRUCTION PHASING)
   a. INSTALL PIPING VALVES AND FITTING (SEE SHEET W213 AND W222)
   b. REGRADING THE LAKE (FINE GRADING)
   c. INSTALL RPE LINER PER SPECIFICATIONS
   d. INSTALL SHORELINE, CONCRETE VENEER AND OTHER LAKE COMPONENTS (SEE SHEET W213 AND W224)
   e. FILL THE LAKE
   f. INSTALL WALKWAY, BOULDERS, LANDSCAPE AND IRRIGATION
4. DEDUCTIVE BID ITEMS
   a. DEDUCTIVE BID ITEMS CONSISTS OF THE UPPER PONDS, STREAMS AND WATERFALLS (CITY WILL HAVE THE OPTION OF INCLUDING OR ELIMINATING DEDUCTIVE BID ITEMS IN THE CONSTRUCTION CONTRACT DEPENDING ON BIDDING RESULT AND AVAILABLE CONSTRUCTION BUDGET)
   b. DEMO THE EXISTING STREAMS, PONDS, AND REBUILD THEM (SEE SHEET W225 AND W226)
   c. INSTALL PONDS PIPING, FITTING AND VALVES INSIDE AND OUTSIDE THE PONDS/STREAMS (SEE SHEET W224)

SUGGESTED LAKE CONSTRUCTION PROCEDURES:

LAKE DRAINAGE AND WILDLIFE REMOVAL:

1. CITY WILL DRAIN WATER IN LAKES. CONTRACTOR WILL NEED TO COORDINATE WITH CITY FOR DRAINING THE LAKES.
2. CONTRACTOR IS RESPONSIBLE FOR WILDLIFE REMOVAL AND TRANSFER. FISH, TURTLES AND OTHER WILD LIFE SHALL BE REMOVED AND CARED FOR BY AN APPROVED WILDLIFE EXPERT (AQUABIO ENVIRONMENTAL TECHNOLOGIES – OFFICE : 310-397-3114)
3. RINSE SIDES OF POND AS THE LEVEL OF THE POND DROPS WITH WATER PROVIDED ONSITE. CONTRACTOR TO WORK ALONGSIDE WILDLIFE COMPANY SO WORK CAN BE DONE AT THE SAME TIME AS WATER LEVEL DECREASES.
4. CONTRACTOR TO REMOVE SEDIMENT FROM THE BOTTOM OF THE POND. CONTRACTOR TO PROVIDE FEE IN THE BID FORM. CONTRACTOR TO STOCKPILE THE SETTLEMENT FOR OTHER USE. CONTRACTOR TO PROVIDE NECESSARY ENZYMES (DIVERSIFIED WATERSCAPES, INC.) AS REQUIRED FOR REMOVAL OF ODORS EMANATING FROM THE SEDIMENT. ENZYMES NEED TO BE ADDED PRIOR TO COMPLETE REMOVAL OF THE WATER FROM THE LAKE AS RECOMMENDED BY THE ENZYME SUPPLIER. CONTRACTOR TO PROVIDE ENZYME LINE ITEM INCLUDING UNIT PRICE IN BID FORMS.
5. CONTRACTOR TO DETERMINE LIMITS OF SOIL LINER AND SEDIMENT. CONTRACTOR TO REMOVE EXISTING LINER.
6. CONTRACTOR TO GRADE THE LAKE PER PLAN AND INSTALL LAKE SHORELINE AND LINER PER SPECIFICATIONS.
7. REMOVE AND DISPOSE OF VEGETATION THAT OCCURS FROM THE PERIMETER OF THE POND PER THE ENVIRONMENTAL REPORT.
8. AT CONCLUSION OF PROJECT, CONTRACTOR SHALL REMOVE ALL EQUIPMENT AND DEBRIS RESULTING FROM THEIR WORK.

LAKE EDGE AND LINING CONSTRUCTION:

1. COMPACT THE SUBGRADE UNDER THE LAKE PER SPECIFICATIONS OR WITH A MINIMUM 90% RELATIVE DENSITY.
2. THE ELEVATIONS SHOWN ON THE LAKE PLANS IS DEPENDENT ON THE WATER SURFACE ELEVATIONS SHOWN.
3. VERIFY ELEVATIONS OF TOP OF SHORELINES AND HINGE POINTS AND CONFIRM THAT THE ELEVATION IS WITHIN PLUS OR MINUS 0.10 FOOT OF THE MAXIMUM WATER SURFACE ELEVATION SHOWN ON THE LAKE PLANS. FINE GRADE AS REQUIRED.
4. STAKE CRITICAL POINTS SUCH AS LAKE EDGE, PIPING PENETRATIONS, AND ALL LAKE COMPONENTS AS SHOWN ON THE PLANS.
5. PROVIDE LAYOUT OF LAKE SIDE OF FREEFORM LAKE EDGE ON THE GROUND FOR APPROVAL BY OWNER OR OWNER'S REPRESENTATIVE.
6. CONSTRUCT THE LAKE EDGE PER THE SHORELINE CONSTRUCTION DETAILS SHOWN ON THE LAKE PLANS. PROVIDE KEYWAY AS REQUIRED. NOT ALL LAKE SHORELINES WILL REQUIRE A KEYWAY.

PIPING NOTES:

1. THE PIPING PLAN IS DIAGRAMMATIC. ROUTING AND FINAL LAYOUT TO BE FIELD DETERMINED BY CONTRACTOR AND APPROVED BY ENGINEER PRIOR TO CONSTRUCTION.
2. PIPE TYPE, MATERIALS, AND SUPPORTS SHALL CONFORM TO THE PROJECT SPECIFICATIONS. IN ADDITION, PIPE SHALL BE IN CONFORMANCE WITH UBC, UPC, LOCAL AND NATIONAL BUILDING CODE REQUIREMENTS.
3. PARALLEL PIPE RUNS SHALL BE INSTALLED WITHIN COMMON TRENCHES AND OR PIPE SUPPORTS WHENEVER POSSIBLE.
4. ALL PIPING SHALL BE UNIFORMLY AND CONTINUOUSLY SUPPORTED OVER ITS ENTIRE LENGTH AND ROUTE.
5. ALL ELECTRICAL CONDUITS SHALL BE INSTALLED USING SWEEP FITTINGS IN CONFORMANCE WITH LOCAL AND NATIONAL BUILDING CODES.
6. PRESSURE TEST ALL PIPING PER PROJECT SPECIFICATIONS. KEEP PIPING UNDER PRESSURE TESTING CONDITIONS DURING TRENCH BACKFILL/COMPACTION AND DURING THE INSTALLATION OF WATER FEATURE CONCRETE BASIN.
7. ALL UNDERGROUND AND EQUIPMENT PIPING SHALL BE PVC SCHEDULE 40 UNLESS OTHERWISE DESIGNATED WITHIN PLANS AND SPECIFICATIONS.
8. ALL PIPING RUNS SHALL HAVE THRUST BLOCKS.

LAKE GENERAL NOTES:

1. THESE PLANS ARE INTENDED FOR LAKE/WATER FEATURE CONSTRUCTION USE ONLY. SEE DRAWINGS BY RESPECTIVE DESIGNERS FOR OTHER ASPECTS OF CONSTRUCTION.
2. ALL RECIRCULATION PIPE SHALL BE INSTALLED WITHOUT HIGH POINTS. PREVENT AIR TRAPS AND PROVIDE A 3'-0" (MIN) COVER OUTSIDE WATER FEATURE LIMITS AND A 1'-0" (MIN) COVER WITHIN UNLESS OTHERWISE NOTED ON THE PLANS.
3. ALL PVC PIPE SHALL BE PER THE FOLLOWING SCHEDULE UNLESS OTHERWISE NOTED:

30"ø AND LARGER	80 PSI PVC PIPE OR AS SPECIFIED ON PLAN
15"ø – 27"ø	80 PSI PVC IRRIGATION PIPE (P.I.P.)
10"ø – 12"ø	100 PSI PVC IRRIGATION PIPE (P.I.P.)
8"ø	RING-TITE (RT) CLASS 160
6"ø AND SMALLER	SCHEDULE 40 IPS PVC PIPE

4. PROVIDE THRUST BLOCK ON EVERY PIPE BEND AS REQUIRED. SEE THRUST BLOCK BEARING AREA TABLE ON THE DETAIL SHEETS FOR THRUST BLOCK SCHEDULING.
5. PAINT ALL EXPOSED PVC PIPE WITHIN THE LAKE/WATER FEATURE AREA AND VISIBLE FROM THE SHORELINE WITH BLACK OR DARK BLUE PAINT SUITABLE FOR PIPE MATERIAL.
6. WATER LEVELS SHOWN INDICATE AVERAGE SURFACE ELEVATIONS DURING OPERATION. ELEVATIONS MAY DIFFER DURING SHUTDOWN CONDITIONS.
7. ALL MANUFACTURER PRODUCT CALL-OUTS SHOWN IN THESE PLANS SHALL BE CONSIDERED "OR APPROVED EQUAL" UNLESS OTHERWISE NOTED. CONTRACTOR TO PROVIDE SHOP DRAWINGS FOR SUBSTITUTIONS FOR APPROVAL.
8. THE LAKE/WATER FEATURE CONTRACTOR SHALL VERIFY THE AVAILABLE ELECTRICAL POWER PRIOR TO PURCHASING EQUIPMENT.
9. REFER TO SPECIFICATIONS FOR COLOR, TYPE OF BOULDERS TO BE USED, AND INSTALLATION REQUIREMENTS. THE LAKE/WATER FEATURE CONTRACTOR SHALL FURNISH AND INSTALL BOULDERS SUBJECT TO APPROVAL OF THE OWNER. NOTIFY OWNER'S REPRESENTATIVE PRIOR TO SETTING ANY BOULDERS.
10. TOP OF CONCRETE SHORELINE & CONTROL WEIR ELEVATIONS SHALL BE INSTALLED ±0.05' OF ELEVATION AS SHOWN ON PLANS.
11. CONCRETE FOR LAKE CONSTRUCTION UNLESS OTHERWISE SPECIFIED ON PLANS SHALL BE 6 SACK MINIMUM PEA GRAVEL PUMP MIX AND SHALL BE ABLE TO BE PUMPED AT A 3" SLUMP WITH A TRAILER MOUNTED GROUT PUMP WITH A 2" HOSE.
12. THE MEMBRANE LINER SHALL BE 30MIL RPE – SEE LINER SPECIFICATIONS FOR ADDITIONAL INFORMATION.

ABBREVIATIONS:

AR	AIR RELEASE	MAX	MAXIMUM
AIR/VAC	AIR RELEASE AND VACUUM RELIEF	MG	MILLION GALLON
APP EQ	APPROVED EQUAL	MIN	MINIMUM
BL	BALL VALVE	OC	ON CENTER
BF	BIOFILTER	PH	PHASE
BLDG	BUILDING	PUE	PUBLIC UTILITY EASEMENT
BV	BUTTERFLY VALVE	PVC	POLYVINYL CHLORIDE
CV	CHECK VALVE	PSF	POUNDS PER SQUARE FOOT
CONC	CONCRETE	PSI	POUNDS PER SQUARE INCH
CONT	CONTINOUS	PS	PUMP STATION
DIA	DIAMETER	RB	REDUCER BUSHING
DIP	DUCTILE IRON PIPE	REINF	REINFORCED
EW	EACH WAY	RCP	REINFORCED CONCRETE PIPE
EOP	EDGE OF PAVEMENT	R/W	RIGHT OF WAY
EL	ELEVATION	SCH	SCHEDULE
ENG'G	ENGINEERING	SPECS	SPECIFICATIONS
EQ	EQUALIZER	SF	SQUARE FEET
FF	FINISH FLOOR	THK	THICK
FG	FINISH GRADE	TOF	TOP OF FOOTING
FLG	FLANGE	TOP	TOP OF PAVEMENT
GAL	GALLONS	TOS	TOP OF SHORELINE
GA	GAUGE	TOW	TOP OF WALL
GPM	GALLONS PER MINUTE	TDH	TOTAL DYNAMIC HEAD
GV	GATE VALVE	TYP	TYPICAL
HP	HORSE POWER	V	VOLTS
HZ	HERTZ	WS	WATER SURFACE
IE	INVERT ELEVATION	WP	WETLAND PLANTER
IRR	IRRIGATION	WQF	WATER QUALITY FILTER
MFR	MANUFACTURER		

PRELIMINARY NOT FOR CONSTRUCTION

PRELIMINARY DESIGN DRAWING

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NO	BY	DATE	REVISIONS	DATE	APP.

PREPARED BY ZIRANG SONG
PROJECT ENGINEER
R.C.E. NO. -- #C69315
EXP. 6/30/2026
DRAWN SP/RC/RT
DESIGNED BL
CHECKED ZS
SCALE AS SHOWN
DATE 7/22/2024

TITLE **GENERAL NOTES**

JOB **TEWINKLE PARK** *LAKE RENOVATION*
COSTA MESA **CA**

PACE Advanced Water Engineering
17520 Newhope Street, Suite 200 | Fountain Valley, CA 92708
P: (714) 481-7300 | www.pacewater.com

SHEET **W101** 02 OF 50 SHEETS
JOB NO. B836

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Xrefs: B836-07 36x24v.dwg; B836-07 - Piping Notes.dwg
Dimscale = 24; LTscale = 1; PSltscale = 1; ACAD Ver. = 23.0s (LMS Tech); Visretain = 1

Jul. 22, 2024

STRUCTURAL TESTS AND SPECIAL INSPECTIONS:

1. STRUCTURAL TESTS AND INSPECTIONS SHALL BE ACCORDING TO CURRENT CALIFORNIA BUILDING CODE.
2. THE SPECIAL INSPECTIONS IDENTIFIED ARE IN ADDITION TO THOSE REQUIRED BY SECTION 110 OF THE CODE, AS AMENDED. SPECIAL INSPECTION IS NOT A SUBSTITUTE FOR INSPECTION BY THE GOVERNING JURISDICTION.
3. AN INDEPENDENT TESTING AGENCY AND SPECIAL INSPECTORS WILL BE RETAINED BY THE OWNER (NOT THE CONTRACTOR OR ANY OTHER PERSON RESPONSIBLE FOR THE WORK) TO PERFORM TESTS AND SPECIAL INSPECTIONS. THE CONTRACTOR SHALL PROVIDE ACCESS AND FURNISH SAMPLES TO THE AGENCY AS REQUIRED.
4. IF INITIAL TESTS OR INSPECTIONS MADE BY THE OWNER'S TESTING AGENCY REVEAL THAT ANY PORTION OF THE WORK DOES NOT COMPLY WITH THE CONTRACT DOCUMENTS, ADDITIONAL TESTS, INSPECTIONS AND NECESSARY REPAIRS WILL BE MADE AT THE CONTRACTOR'S EXPENSE.
5. A CERTIFICATE OF SATISFACTORY COMPLETION OF WORK REQUIRING SPECIAL INSPECTION MUST BE COMPLETED AND SUBMITTED TO THE GOVERNING JURISDICTION AND SEOR.
6. PERIODIC OR CONTINUOUS PRESENCE AND INSPECTION BY THE PROJECT OR SPECIAL INSPECTOR ARE REQUIRED FOR THE FOLLOWING TYPES OF WORK WHERE OCCURS:

REQUIRED VERIFICATION AND INSPECTION OF CONCRETE CONSTRUCTION (CBC TABLE 1705.3)

VERIFICATION AND INSPECTION		FREQUENCY
1.	INSPECTION OF REINFORCING STEEL AND PLACEMENT.	P
3.	INSPECT BOLTS TO BE INSTALLED IN CONCRETE.	C
4.	INSPECTION OF (POST-INSTALLED) ANCHORS INSTALLED IN HARDENED CONCRETE. INSTALLERS MUST BE CERTIFIED BY MANUFACTURER IN ACCORDANCE WITH ITS ICC REPORTS.	P
5.	VERIFYING USE OF REQUIRED DESIGN MIX.	P
6.	AT THE TIME FRESH CONCRETE IS SAMPLED TO FABRICATE SPECIMENS FOR STRENGTH TESTS, PERFORM SLUMP AND AIR CONTENT TESTS, AND DETERMINE THE TEMPERATURE OF THE CONCRETE.	C
7.	INSPECTION OF CONCRETE PLACEMENT FOR PROPER APPLICATION TECHNIQUES.	C
8.	INSPECTION FOR MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES.	P
12.	INSPECT FORMWORK FOR SHAPE, LOCATION AND DIMENSIONS OF THE CONCRETE MEMBER BEING FORMED.	P

REQUIRED VERIFICATION AND SPECIAL INSPECTION OF SOILS (CBC TABLE 1705.6)

VERIFICATION AND INSPECTION TASK		FREQUENCY
1.	VERIFY MATERIALS BELOW SHALLOW FOUNDATIONS ARE ADEQUATE TO ACHIEVE THE DESIGN BEARING CAPACITY.	P
2	VERIFY EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND HAVE REACHED PROPER MATERIAL.	P
3	PERFORM CLASSIFICATION AND TESTING OF CONTROLLED FILL MATERIALS	P
4	VERIFY USE OF PROPER MATERIALS, DENSITIES AND LIFT THICKNESS DURING PLACEMENT AND COMPACTION OF CONTROLLED FILL.	C
5	PRIOR TO PLACEMENT OF CONTROLLED FILL, OBSERVE SUBGRADE AND VERIFY THAT SITE HAS BEEN PREPARED PROPERLY.	P

NOTE:
C = CONTINUOUS INSPECTION
P = PERIODIC INSPECTION

EXPANSION (WEDGE) ANCHORS:

1. WHEN INSTALLING DRILLED–IN ANCHORS IN NON–PRESTRESSED CONCRETE, USE CARE AND CAUTION TO AVOID CUTTING OR DAMAGING THE EXISTING REINFORCING.
2. EXPANSION OR WEDGE ANCHORS SHALL BE:
   A. INTO CONCRETE: HILTI KB–TZ (ICC ESR–1917)
3. INSTALL ANCHORS IN ACCORDANCE WITH THE ICC REPORT.
4. PROVIDE STAINLESS STEEL FASTENERS FOR EXTERIOR USE OR WHEN EXPOSED TO WEATHER. PROVIDE GALVANIZED CARBON STEEL ANCHORS AT OTHER LOCATIONS UNLESS OTHERWISE NOTED.
5. IF REINFORCEMENT IS ENCOUNTERED DURING DRILLING, ABANDON HOLE AND SHIFT LOCATION TO AVOID THE REINFORCEMENT. PROVIDE A MINIMUM OF 2 ANCHOR DIAMETERS OR 1", WHICHEVER IS LARGER, OF SOUND CONCRETE BETWEEN THE ANCHOR AND THE ABANDONED HOLE. FILL THE ABANDONED HOLE WITH NON–SHRINK GROUT. IF THE ANCHOR MAY NOT BE SHIFTED AS NOTED ABOVE, CONTACT THE SEOR.
6. LOCATE REINFORCEMENT AND CONFIRM FINAL ANCHOR LOCATIONS PRIOR TO FABRICATING PLATES, MEMBERS OR OTHER STEEL ASSEMBLIES ATTACHED WITH ANCHORS.
7. INSTALL ANCHORS TO THE FOLLOWING SPECIFICATIONS:

HILTI KB-TZ ANCHOR

ANCHOR DIAMETER (IN)	⅜	½		⅝		¾	
EMBED (IN)	2	2	3¼	3⅛	4	3¾	4¾
MIN HOLE DEPTH (IN)	2⅝	2⅝	4	3⅞"	4¾"	4⅝	5¾"
INSTALL TORQUE (LB-FT)	25	40	40	60	60	110	110
MIN THICKNESS (IN)	4	4	6	5	6	6	8

8. MAINTAIN A MINIMUM EDGE DISTANCE OF 1.5 TIMES THE ANCHOR EMBEDMENT AND MINIMUM ANCHOR SPACING OF 3 TIMES THE ANCHOR EMBEDMENT UNLESS OTHERWISE NOTED. CONTACT SEOR IF THIS CANNOT BE ACCOMPLISHED.

EPOXY DOWELS:

1. WHEN INSTALLING DRILLED–IN DOWELS IN EXISTING NON–PRESTRESSED REINFORCED CONCRETE, USE CARE AND CAUTION TO AVOID CUTTING OR DAMAGING THE EXISTING REINFORCING BARS.
2. DOWELS SHALL BE EPOXIED WITH THE FOLLOWING MATERIALS:
   A. INTO CONCRETE: HILTI HIY–HY 200 WITH SAFESET SYSTEM (ICC ESR–3187)
   HILTI HIT–RE 500–SD (ICC ESR–2322)
   SIMPSON SET–XP (ICC ESR–2508)
3. DOWEL SHALL CONFORM TO ASTM A615 GRADE 60 REINFORCING STEEL.
4. REMOVE GREASE, OIL, RUST AND OTHER LAITANCE FROM RODS AND DOWELS PRIOR TO INSTALLATION.
5. IF REINFORCEMENT IS ENCOUNTERED DURING DRILLING, ABANDON HOLE AND SHIFT THE ANCHOR LOCATION TO AVOID REINFORCEMENT. PROVIDE A MINIMUM OF 2 ANCHOR OR DOWEL DIAMETERS OR 1", WHICHEVER IS LARGER, OF SOUND CONCRETE BETWEEN THE ANCHOR OR DOWEL AND THE ABANDONED HOLE. FILL THE ABANDONED HOLE WITH NON–SHRINK GROUT. IF THE ANCHOR OR DOWEL MAY NOT BE SHIFTED AS NOTED ABOVE, CONTACT THE SEOR.
6. LOCATED REINFORCEMENT AND CONFIRM FINAL ANCHOR LOCATIONS PRIOR TO FABRICATING PLATES, MEMBERS OR OTHER STEEL ASSEMBLIES ATTACHED WITH EPOXY ANCHORS.

STRUCTURAL GENERAL NOTES:

1. MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE CURRENT EDITION OF THE CALIFORNIA BUILDING CODE, TITLE 24, THE ORDINANCES OF THE LOCAL BUILDING OFFICIAL, AND THE REQUIREMENTS OF THE CONTRACT DOCUMENTS.
2. REFERENCE TO CODES, RULES REGULATIONS, STANDARDS, MANUFACTURER'S INSTRUCTIONS OR REQUIREMENTS OF REGULATORY AGENCIES IS TO THE LATEST EDITION OF EACH IN EFFECT AT THE DATE OF SUBMISSION OF BID UNLESS THE DOCUMENT DATE IS SHOWN.
3. DRAWINGS INDICATE GENERAL AND TYPICAL DETAILS OF CONSTRUCTION. WHERE CONDITIONS ARE NOT SPECIFICALLY INDICATED BUT ARE OF SIMILAR CHARACTER TO DETAILS SHOWN, USE SIMILAR DETAILS OF CONSTRUCTION, SUBJECT TO REVIEW BY THE STRUCTURAL ENGINEER OF RECORD (SEOR).
4. VERIFY ALL DIMENSIONS, ELEVATIONS AND SITE CONDITIONS BEFORE STARTING WORK. NOTIFY LANDSCAPE ARCHITECT OF DISCREPANCIES.
5. DO NOT SCALE THE DRAWINGS.
6. TOLERANCES SHALL BE ACCORDING TO THE BUILDING CODE.
7. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING THE WORK OF ALL TRADES. NOTIFY THE LANDSCAPE ARCHITECT OF ANY DISCREPANCIES AND RESOLVE BEFORE PROCEEDING WITH THE WORK.
8. THE CONTRACTOR SHALL SUPERVISE, DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES. THE SUPPORTING SERVICES BY THE SEOR, WHETHER PERFORMED PRIOR TO, DURING, OR AFTER CONSTRUCTION, ARE PERFORMED SOLELY FOR THE PURPOSE OF ASSISTING IN QUALITY CONTROL AND IN ACHIEVING CONFORMANCE WITH CONTRACT DRAWINGS; BUT THEY DO NOT GUARANTEE THE CONTRACTOR'S PERFORMANCE AND SHALL NOT BE CONSIDERED AS SUPERVISION OF CONSTRUCTION.
9. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR PROVIDING A SAFE PLACE TO WORK AND MEETING THE REQUIREMENTS OF ALL APPLICABLE JURISDICTIONS. EXECUTE WORK TO ENSURE THE SAFETY OF PERSONS AND ADJACENT PROPERTY AGAINST DAMAGE BY FALLING DEBRIS AND OTHER HAZARDS RELATED WITH THIS WORK.
10. CONCRETE SLAB ON GRADE HAS NOT BEEN DESIGNED FOR THE FOLLOWING:
    A. ANY CONSTRUCTION LOADS (I.E. CRANES, CONCRETE TRUCKS OR ETC.)
    B. ANY SPECIFIC OCCUPANT SERVICE LOADS (I.E. FORKLIFTS, STORAGE RACKS OR ETC.)

REINFORCING STEEL:

1. REINFORCING SHALL BE FABRICATED ACCORDING TO THE "MANUAL OF STANDARD PRACTICE FOR REINFORCED CONCRETE CONSTRUCTION" AND SHALL CONFORM TO ASTM A615, GRADE 60.
2. PROVIDE REINFORCING SHOWN OR NOTED CONTINUOUS IN LENGTHS AS LONG AS PRACTICABLE.
3. TERMINATE REINFORCING STEEL IN STANDARD HOOKS UNLESS OTHERWISE SHOWN.
4. ALL REINFORCING STEEL INTERRUPTED BY STRUCTURAL STEEL SHALL TERMINATE WITHIN 1" OF STEEL SURFACE WITH A 90° STANDARD HOOK UNLESS OTHERWISE NOTED.
5. ANCHOR BOLTS, DOWELS AND OTHER EMBEDDED ITEMS SHALL BE SECURELY TIED IN PLACE BEFORE CONCRETE IS PLACED.
6. ACCURATELY POSITION, SUPPORT AND SECURE REINFORCEMENT FROM DISPLACING DUE TO FORMWORK, CONSTRUCTION, OR CONCRETE PLACEMENT OPERATIONS. LOCATE AND SUPPORT REINFORCING BY METAL CHAIRS, RUNNERS, BOLSTERS, SPACERS AND HANGERS AT A MAXIMUM SPACING OF 3'–0".
7. SUBMITTAL OF REBAR SHOP DRAWINGS IS NOT REQUIRED BY THE SEOR FOR THIS PROJECT. REBAR SHOP DRAWINGS WILL NOT BE REVIEWED BY THE SEOR.
8. FIELD BENDING OF REINFORCING STEEL SHALL NOT BE ALLOWED UNLESS APPROVED BY THE SEOR.
9. MILL CERTIFICATIONS SHALL BE SUBMITTED FOR REVIEW.

SOILS AND FOUNDATIONS:

1. LOCATE AND PROTECT EXISTING UTILITIES TO REMAIN DURING AND/OR AFTER CONSTRUCTION.
2. REMOVE ABANDONED FOOTINGS, UTILITIES, ETC. WHICH INTERFERE WITH NEW CONSTRUCTION, UNLESS OTHERWISE INDICATED.
3. NOTIFY THE ENGINEER IF ANY BURIED STRUCTURES NOT INDICATED, SUCH AS CESSPOOLS, CISTERNS, FOUNDATIONS, ETC. ARE FOUND.
4. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR EXCAVATION PROCEDURES INCLUDING LAGGING, SHORING, UNDERPINNING AND PROTECTION OF EXISTING CONSTRUCTION.
5. REMOVE LOOSE SOIL AND STANDING WATER FROM EXCAVATIONS PRIOR TO PLACING CONCRETE.
6. EXCAVATIONS MUST BE ACCEPTED BY ENGINEER OF RECORD PRIOR TO PLACING REINFORCING AND CONCRETE. NOTIFY THE EOR WHEN EXCAVATIONS ARE READY FOR INSPECTION.
7. PLACE BACKFILL BEHIND RETAINING WALLS AFTER CONCRETE HAS ATTAINED FULL DESIGN STRENGTH.
8. MECHANICALLY COMPACT EXCAVATION BACKFILLS IN LAYERS. PROVIDE 90% MINIMUM COMPACTION IN ACCORDANCE WITH THE ASTM D1557 TEST METHOD UON IN SOILS REPORT. PROVIDE 95% MINIMUM COMPACTION FOR FILL BENEATH FOOTINGS.
9. SCARIFY AND RECOMPACT TOP 6 INCHES OF SOIL BENEATH FILL PER ITEM ABOVE.

PRELIMINARY NOT FOR CONSTRUCTION

PRELIMINARY DESIGN DRAWING

THIS DRAWING IS FOR BIDDING USE ONLY AND NOT INTENDED TO BE USED FOR CONSTRUCTION.

NO	BY	DATE	REVISIONS	DATE	APP.

PREPARED BY ZIRANG SONG
PROJECT ENGINEER
R.C.E. NO. –– #C69315
EXP. 6/30/2026
DRAWN SP/RC/RT
SCALE AS SHOWN
DESIGNED BL
CHECKED ZS
DATE 7/22/2024

TITLE **STRUCTURAL NOTES**

JOB **TEWINKLE PARK** *LAKE RENOVATION* **COSTA MESA CA**

PACE
Advanced Water Engineering
17520 Newhope Street, Suite 200 | Fountain Valley, CA 92708
P: (714) 481-7300 | www.pacewater.com

SHEET **W102** 03 OF 50 SHEETS

JOB NO. B836

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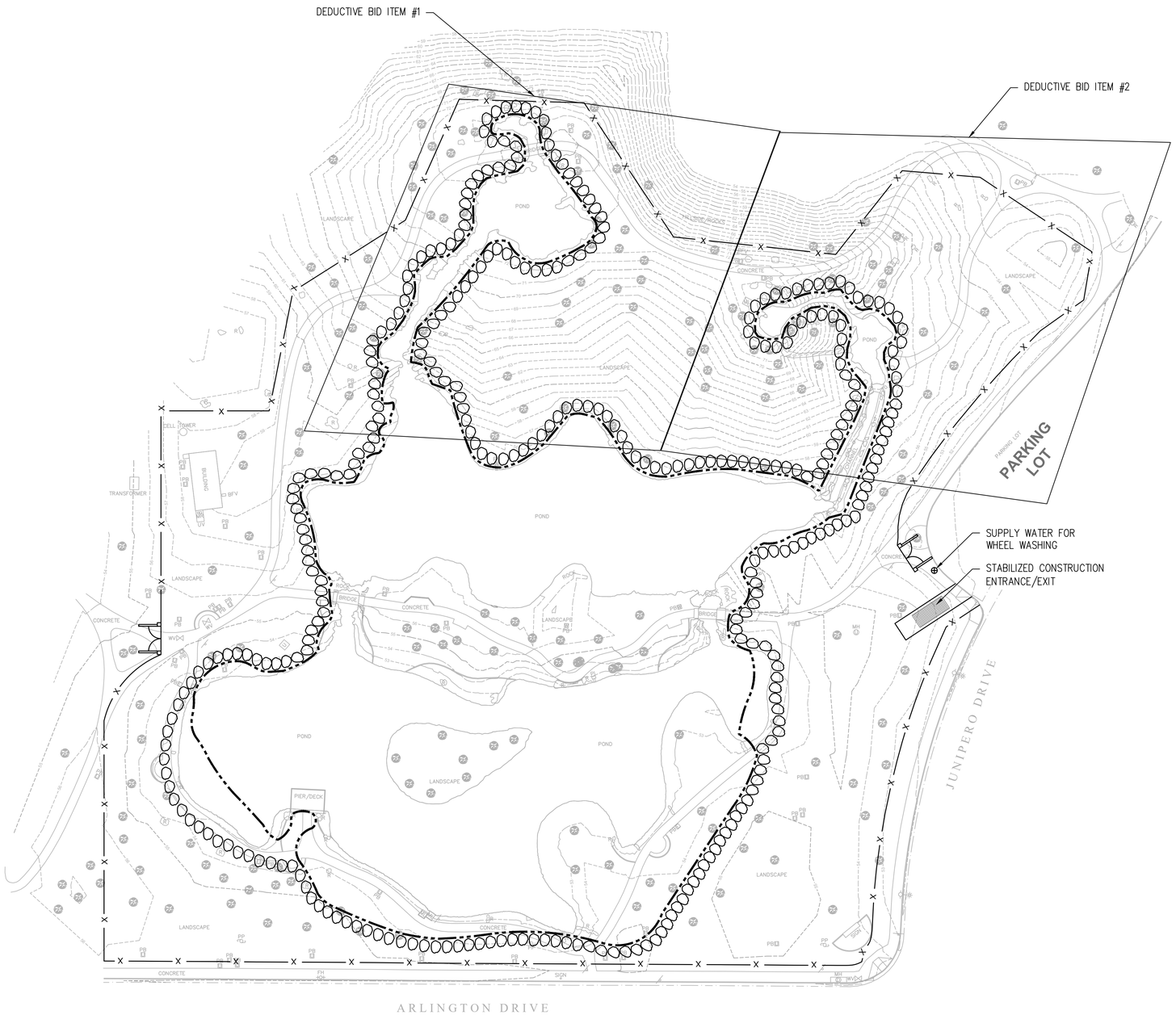
Xrefs: B836-07 36x24v.dwg
Dimscale = 24; LTscale = 1; PSltscale = 1; ACAD Ver. = 23.0s (LMS Tech); Visretain = 1
R:\B836\Engineering\B836-13 (Bid Documents)\sheets\B836-13 W102 Structural Notes.dwg – Tab: 03 – by rtran on 06/27/24 at 9:26:04 AM

Jul. 22, 2024



EROSION CONTROL & FENCING PLAN

SCALE: 1"=40'

EROSION CONTROL LEGENDS:

- STABILIZED CONSTRUCTION ENTRANCE
- SAND AND GRAVEL BAGS
- CONSTRUCTION FENCE AND SILT FENCE
- LIMIT OF WORK

STORM WATER POLLUTION PREVENTION NOTES:

1. EFFECTIVE COMBINATION OF EROSION AND SEDIMENT CONTROL BMP'S SHALL BE IMPLEMENTED TO PROTECT THE EXPOSED PORTIONS OF THE SITE FROM EROSION AND TO PREVENT SEDIMENT DISCHARGES.
2. SEDIMENTS AND OTHER POLLUTANTS SHALL BE RETAINED ON SITE UNTIL PROPERLY DISPOSED OF, AND MAY NOT BE TRANSPORTED FROM THE SITE VIA SHEET FLOW, SWALES, AREA DRAINS, NATURAL DRAINAGE COURSES OR WIND.
3. STOCKPILES OF EARTH AND OTHER CONSTRUCTION-RELATED MATERIALS SHALL BE PROTECTED FROM BEING TRANSPORTED FROM THE SITE BY THE FORCES OF WIND AND WATER FLOW.
4. FUELS, OILS, SOLVENTS, AND OTHER TOXIC MATERIALS SHALL BE STORED IN ACCORDANCE WITH THEIR LISTING AND ARE NOT TO CONTAMINATE THE SOIL AND SURFACE WATERS. ALL APPROVED STORAGE CONTAINERS ARE TO BE PROTECTED FROM THE WEATHER. SPILLS MUST BE CLEANED UP IMMEDIATELY AND DISPOSED OF IN A PROPER MANNER. SPILLS MAY NOT BE WASHED INTO THE DRAINAGE SYSTEM, NOR BE ALLOWED TO SETTLE OR INFILTRATE INTO SOIL.
5. EXCESS OR WASTE CONCRETE MAY NOT BE WASHED INTO THE PUBLIC WAY OR ANY OTHER DRAINAGE SYSTEM. PROVISIONS SHALL BE MADE TO RETAIN CONCRETE WASTES ON SITE UNTIL THEY CAN BE DISPOSED OF AS SOLID WASTES.
6. TRASH AND CONSTRUCTION SOLID WASTES SHALL BE DEPOSITED INTO A COVERED RECEPTACLE TO PREVENT CONTAMINATION OF RAINWATER AND DISPERSAL BY WIND.
7. SEDIMENTS AND OTHER MATERIALS MAY NOT BE TRACKED FROM THE SITE BY VEHICULAR TRAFFIC. THE CONSTRUCTION ENTRANCE ROADWAYS MUST BE STABILIZED SO AS TO INHIBIT SEDIMENTS FROM BEING DEPOSITED INTO THE PUBLIC WAY. ACCIDENTAL DEPOSITS SHALL BE SWEPT UP IMMEDIATELY AND MAY NOT BE WASHED DOWN BY RAIN OR OTHER MEANS.
8. STORM WATER POLLUTION PREVENTION DEVICES AND / OR PRACTICES SHALL BE MODIFIED AS NEEDED AS THE PROJECT PROGRESSES TO ENSURE EFFECTIVENESS.

NOTE: ANY ADDITIONAL EROSION/SEDIMENT CONTROLS MEASURES CALLED OUT BY THE SWPPP WOULD SUPERSEDE THOSE SHOWN ON THIS SHEET.

EROSION CONTROL KEYNOTES:

1. INSTALL GRAVEL BAG BARRIER PER CASQA BMP SE-6
2. INSTALL STABILIZED CONSTRUCTION ENTRANCE/EXIT PER CASQA BMP TC-1
3. INSTALL SILT FENCE PER CASQA BMP SE-1

NORTH

40 20 0 40 80

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NO	BY	DATE	REVISIONS	DATE	APP.

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PREPARED BY ZIRANG SONG
PROJECT ENGINEER
R.C.E. NO. ---- #C89315
EXP. 6/30/2026
DRAWN SP/RC/RT
SCALE AS SHOWN
DESIGNED BL
CHECKED ZS
DATE 7/22/2024

TITLE **EROSION CONTROL AND FENCING PLAN**

JOB **TEWINKLE PARK** *LAKE RENOVATION* **COSTA MESA** CA

PACE
Advanced Water Engineering
17520 Newhope Street, Suite 200 | Fountain Valley, CA 92708
P: (714) 481-7300 | www.pacewater.com

SHEET **W110**
04 OF 50 SHEETS
JOB NO. B836

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Xrefs: B836-07 36x24v.dwg; TopoSurvey.dwg; B836 – Existing Piping.dwg; B836 – Lake Base.dwg
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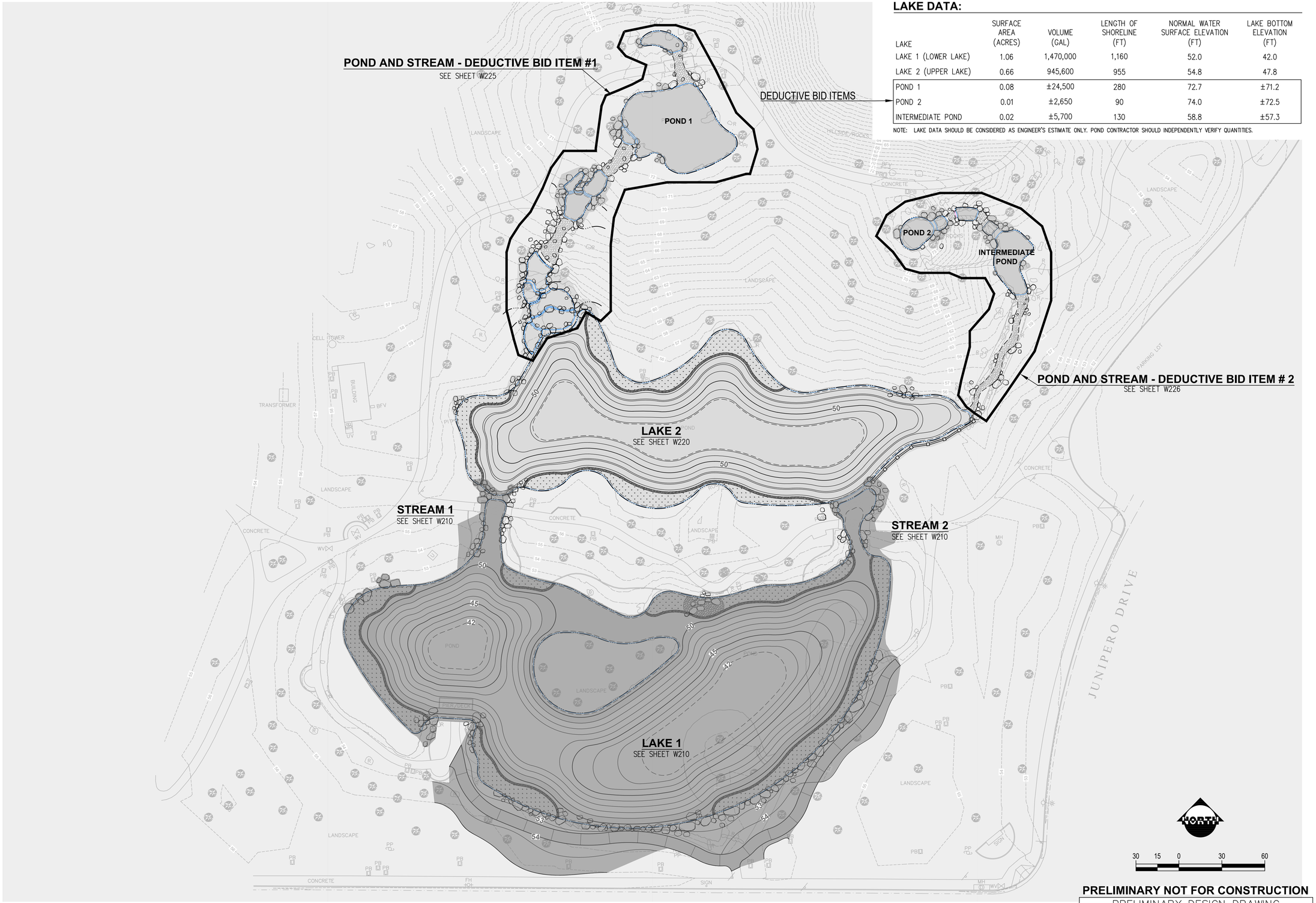
Jul. 22, 2024



LAKE DATA:

LAKE	SURFACE AREA (ACRES)	VOLUME (GAL)	LENGTH OF SHORELINE (FT)	NORMAL WATER SURFACE ELEVATION (FT)	LAKE BOTTOM ELEVATION (FT)
LAKE 1 (LOWER LAKE)	1.06	1,470,000	1,160	52.0	42.0
LAKE 2 (UPPER LAKE)	0.66	945,600	955	54.8	47.8
POND 1	0.08	±24,500	280	72.7	±71.2
POND 2	0.01	±2,650	90	74.0	±72.5
INTERMEDIATE POND	0.02	±5,700	130	58.8	±57.3

NOTE: LAKE DATA SHOULD BE CONSIDERED AS ENGINEER'S ESTIMATE ONLY. POND CONTRACTOR SHOULD INDEPENDENTLY VERIFY QUANTITIES.

OVERALL LAKE - PLAN VIEW

SCALE: 1"=30'

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PRELIMINARY DESIGN DRAWING

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NO	BY	DATE	REVISIONS	DATE	APP.

PREPARED BY ZHRANG SONG
R.C.E. NO. ---- PROJECT ENGINEER
EXP. 6/30/2026 #C89315
DRAWN SP/RC/RT
DESIGNED BL
CHECKED ZS
SCALE AS SHOWN
DATE 7/22/2024

TITLE **OVERALL LAKE PLAN**

JOB **TEWINKLE PARK**
LAKE RENOVATION
COSTA MESA *CA*

PACE
Advanced Water Engineering
17520 Newhope Street, Suite 200 | Fountain Valley, CA 92708
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SHEET **W200**
05 OF 50 SHEETS

JOB NO. B836

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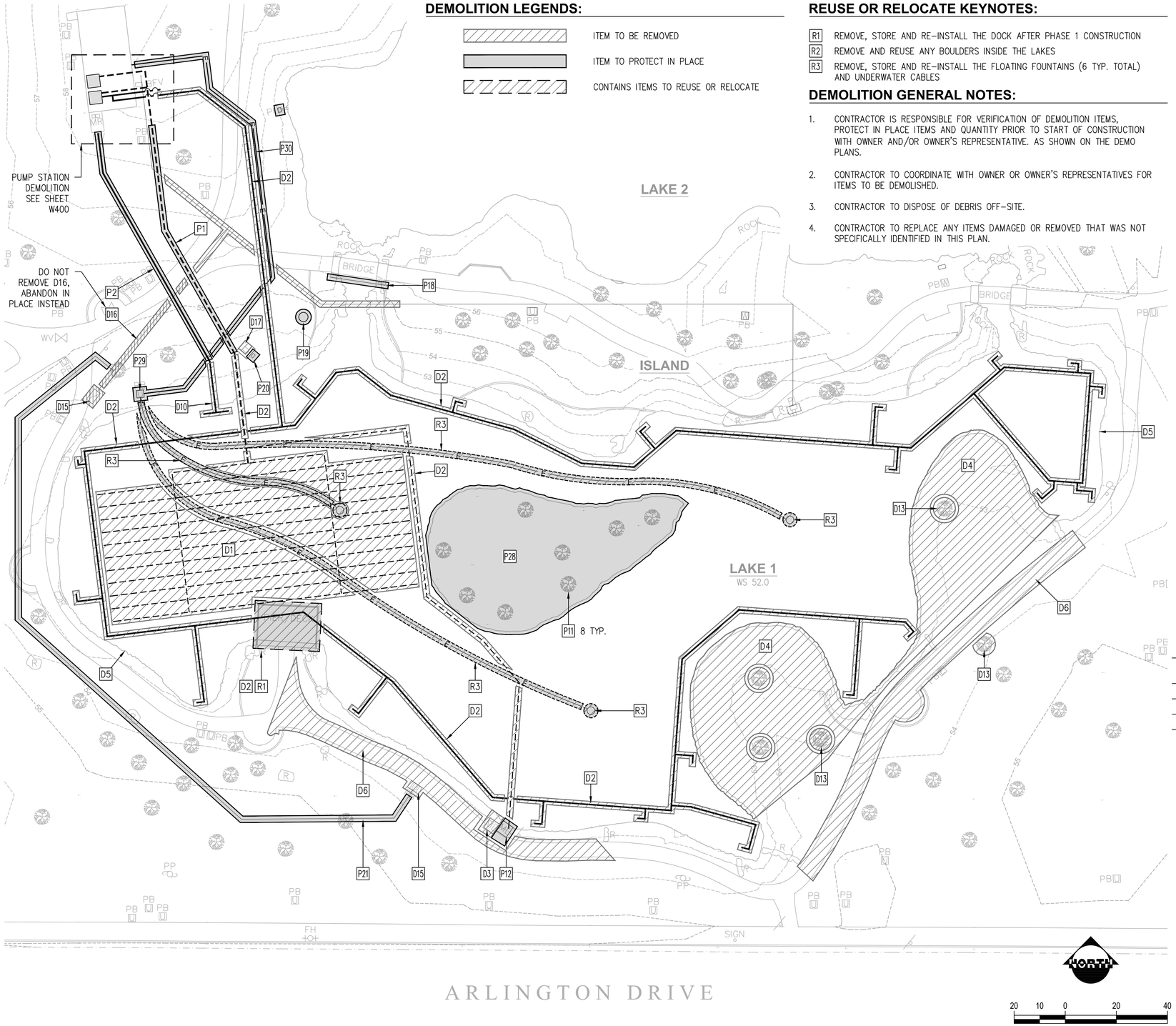
Xrefs: B836-07 36x24v.dwg; TopoSurvey.dwg; B836 – Lake Base.dwg; B836 – Lake Base.dwg
Dimscale = 24; LTscale = 1; PSltscale = 1; ACAD Ver. = 23.0s (LMS Tech); Viewtain = 1

Jul. 22, 2024



DEMOLITION LEGENDS:

- ITEM TO BE REMOVED
- ITEM TO PROTECT IN PLACE
- CONTAINS ITEMS TO REUSE OR RELOCATE

REUSE OR RELOCATE KEYNOTES:

- R1 REMOVE, STORE AND RE-INSTALL THE DOCK AFTER PHASE 1 CONSTRUCTION
- R2 REMOVE AND REUSE ANY BOULDERS INSIDE THE LAKES
- R3 REMOVE, STORE AND RE-INSTALL THE FLOATING FOUNTAINS (6 TYP. TOTAL) AND UNDERWATER CABLES

DEMOLITION GENERAL NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR VERIFICATION OF DEMOLITION ITEMS, PROTECT IN PLACE ITEMS AND QUANTITY PRIOR TO START OF CONSTRUCTION WITH OWNER AND/OR OWNER'S REPRESENTATIVE. AS SHOWN ON THE DEMO PLANS.
2. CONTRACTOR TO COORDINATE WITH OWNER OR OWNER'S REPRESENTATIVES FOR ITEMS TO BE DEMOLISHED.
3. CONTRACTOR TO DISPOSE OF DEBRIS OFF-SITE.
4. CONTRACTOR TO REPLACE ANY ITEMS DAMAGED OR REMOVED THAT WAS NOT SPECIFICALLY IDENTIFIED IN THIS PLAN.

DEMOLITION KEYNOTES:

- D1 REMOVE BIOFILTER AT BOTTOM OF LAKE 1
- D2 REMOVE LAKE 1 PIPES
  - a. 4" BIOFILTER PIPES
  - b. 12" BIOFILTER BACKWASH PIPE
  - c. 14"ø INTAKE PIPE
  - d. RECIRCULATION PIPES (8", 6", 4", 2", 2 1/2", 1 1/2")
- D3 REMOVE EXISTING UNDERGROUND VAULT NEXT TO THE OVERFLOW BOX
- D4 REMOVE LAKE 1 PENINSULAS
- D5 REMOVE LAKE 1 EXISTING SHORELINE & LINER
- D6 REMOVE WALKWAY
- D7 REMOVE LAKE 2 AND PONDS PIPES
  - a. LAKE 2 RECIRCULATION PIPES (8", 6", 4", 3", 2 1/2", 2", 1 1/2")
  - b. POND 1 PIPES
  - c. INTERMEDIATE POND PIPES
- D8 REMOVE LAKE 2 SHORELINE AND LINER
- D9 REMOVE EXISTING VAULT
- D10 REMOVE 2 1/2"ø WATER LEVEL SENSOR EQUALIZER
- ~~D11 REMOVE EXISTING FLOATING FOUNTAIN JUNCTION BOX (CONTRACTOR TO CONFIRM THE LOCATION)~~ NOT USED
- ~~D12 REMOVE EXISTING FLOATING FOUNTAIN CONDUITS (CONTRACTOR TO CONFIRM THE COUNDUIT ROUTES)~~ NOT USED
- D13 REMOVE EXISTING TREES IN DEMOLITION AREA. LOCATION TO BE CONFIRM WITH CITY (5 TYP).
- D14 REMOVE EXISTING WATERFALL
- D15 REMOVE EXISTING OZONE BOX AND PIPES INSIDE THE LAKE (3 PLCS. AT LAKE 1 AND 1 PLC. AT LAKE 2)
- ~~D16 REMOVE OZONE EXISTING PIPING~~ NOT USED
- D17 REMOVE EXISTING UNDERGROUND VAULT (SCREEN VAULT)
- D18 REMOVE EXISTING STREAM #3 AND POND 1
- D19 REMOVE EXISTING STREAM #4 AND POND 2
- D20 REMOVE EXISTING STREAM #5 AND INTERMEDIATE POND
- D21 REMOVE EXISTING WATERFALL FOR REBUILT
- D22 REMOVE 8" AND 4"ø POND 1 DISCHARGE
- D23 REMOVE 8"ø POND 2 DISCHARGE
- D24 REMOVE VALVE AND VALVE BOX
- D25 REMOVE 4"ø INTERMEDIATE POND DISCHARGE
- D26 REMOVE EXISTING WIRING AND CONDUIT FROM WATER LEVEL SENSOR TO FILL VALVE
- D27 REMOVE EXISTING POTABLE WATER CONTROL VALVE
- D28 REMOVE EXISTING OVER SHORELINE DISCHARGE

PROTECT-IN-PLACE KEYNOTES:

- P1 PROTECT IN PLACE 14"ø INTAKE PIPE
- P2 PROTECT IN PLACE 2 1/2"ø WATER LEVEL SENSOR EQUALIZER
- ~~P3 PROTECT IN PLACE WIRING & CONDUIT FROM WATERLEVEL SENSOR TO FILL VALVE~~ **NOT USED**
- ~~P4 PROTECT IN PLACE 8"ø & 4"ø POND 1 DISCHARGES~~ **NOT USED**
- ~~P5 PROTECT IN PLACE 8"ø POND 2 DISCHARGE~~ **NOT USED**
- ~~P6 PROTECT IN PLACE VALVES IN VALVE BOX~~ **NOT USED**
- ~~P7 PROTECT IN PLACE 4"ø INTERMEDIATE POND DISCHARGE~~ **NOT USED**
- P8 PROTECT IN PLACE BRIDGES BETWEEN LAKE 1 & LAKE 2
- P9 PROTECT IN PLACE ALL PONDS SHORELINE, LINER, AND FEATURES
- P10 PROTECT IN PLACE WOODEN BRIDGE
- P11 PROTECT IN PLACE ALL EXISTING TREES IN AREA OF RENOVATION (26 TYP). NO ACTION ON TREES OUTSIDE OF RENOVATION AREA.
- P12 PROTECT IN PLACE OVERFLOW BOX
- P13 PROTECT IN PLACE IRRIGATION VALVE BOX FOR FUTURE IMPROVEMENT
- P14 PROTECT IN PLACE ELECTRICAL WIRES AND CONDUITS FOR FLOATING FOUNTAIN
- P15 PROTECT IN PLACE CONCRETE PULL BOX FOR FUTURE IMPROVEMENT
- P16 PROTECT IN PLACE UNDERGROUND VAULT FOR FUTURE IMPROVEMENT
- P17 PROTECT IN PLACE ELECTRICAL BOX FOR FUTURE IMPROVEMENT
- P18 PROTECT IN PLACE EXISTING PIPING
- P19 PROTECT IN PLACE EXISTING SEWER MANHOLE
- P20 PROTECT IN PLACE EXISTING IRRIGATION ISOLATION VALVE
- P21 CAP AND ABANDON IN PLACE EXISTING OZONE PIPE
- P22 PROTECT IN PLACE EXISTING RECYCLED WATER PIPES AND VALVE BOX
- P23 PROTECT IN PLACE EXISTING IRRIGATION VALVE BOX
- P24 PROTECT IN PLACE EXISTING POTABLE WATER PIPES
- P25 PROTECT IN PLACE EXISTING POTABLE WATER VALVE BOX
- P26 PROTECT IN PLACE EXISTING POTABLE WATER DISCHARGE
- P27 PROTECT IN PLACE DISCHARGE VALVE
- P28 PROTECT IN PLACE LAKE 1 ISLAND
- P29 PROTECT IN PLACE EXISTING FLOATING FOUNTAIN JUNCTION BOX (CONTRACTOR TO CONFIRM THE LOCATION)
- P30 PROTECT IN PLACE EXISTING FLOATING FOUNTAIN CONDUITS (CONTRACTOR TO CONFIRM THE CONDUIT ROUTES)

PRELIMINARY NOT FOR CONSTRUCTION

PRELIMINARY DESIGN DRAWING

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DEMOLITION PLAN

SCALE: 1"=20'

NO	BY	DATE	REVISIONS	DATE	APP.

PREPARED BY ZIRANG SONG
PROJECT ENGINEER
R.C.E. NO. ---- #C89315
EXP. 09/30/2026
DRAWN SP/RC/RT
SCALE AS SHOWN
DESIGNED BL
CHECKED ZS
DATE 7/22/2024

TITLE: DEMOLITION PLAN

JOB: TEWINKLE PARK LAKE RENOVATION COSTA MESA CA

PACE Advanced Water Engineering
17520 Newhope Street, Suite 200 | Fountain Valley, CA 92708
P: (714) 481-7300 | www.pacewater.com

SHEET W211
07 OF 50 SHEETS

JOB NO. B836

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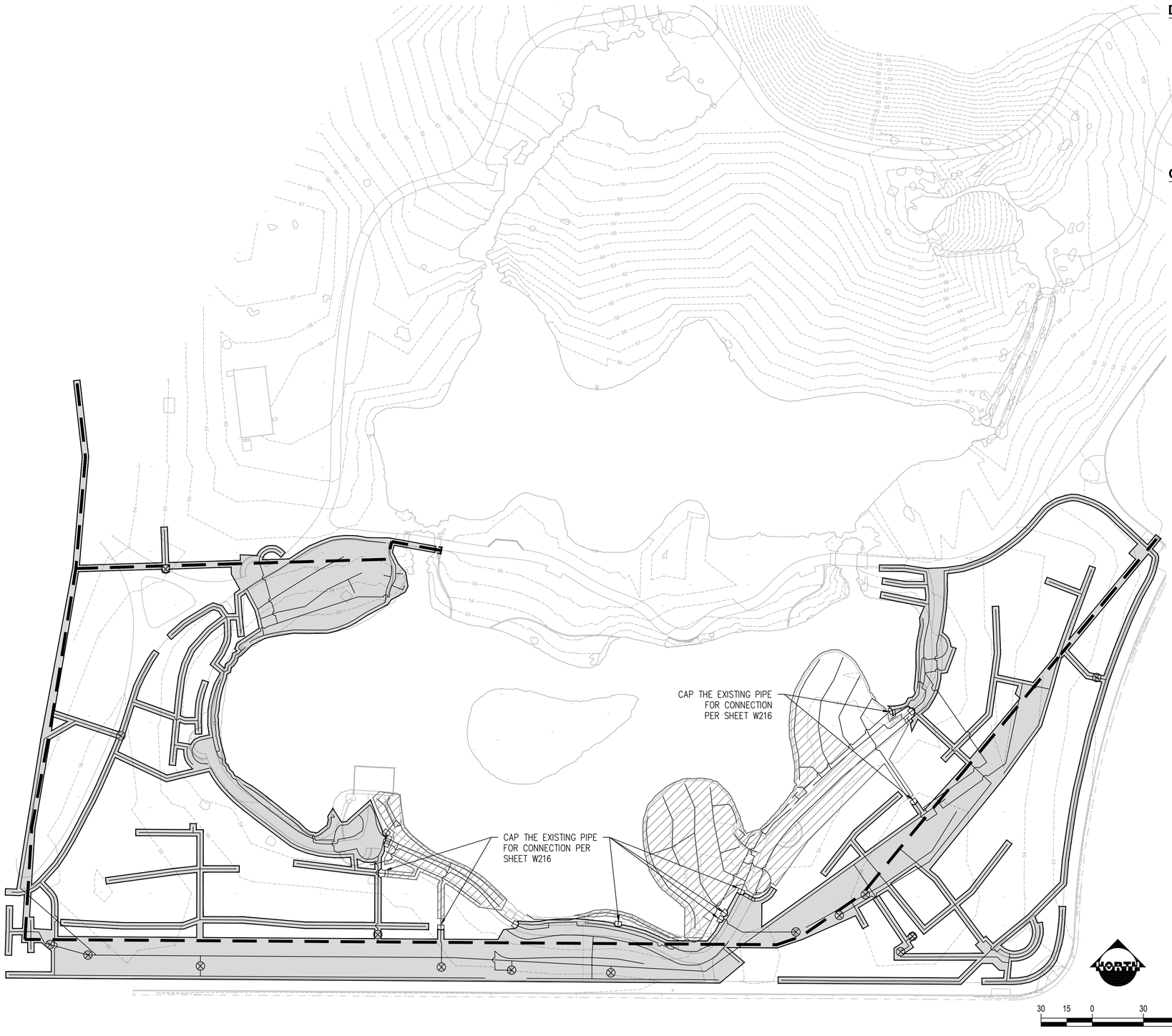
R:\B836\Engineering\B836-13 (Bid Documents)\sheets\B836-13 W211 Demolition Plan.dwg – Tab: 07 – by rtran on 07/02/24 at 4:13:42 PM

Xrefs: B836-07 36x24v.dwg; TopoSurvey.dwg; B836 - Existing Piping.dwg; B836-07 - Demo Keynotes.dwg; B836 - Lake Base.dwg
Dimscale = 24; LTscale = 1; PSltscale = 1; ACAD Ver. = 23.0s (LMS Tech); Viewtain = 1

Jul. 22, 2024



IRRIGATION DEMOLITION PLAN

SCALE: 1"=30'

DEMOLITION LEGENDS:

- ITEM TO BE REMOVED
- ITEM TO PROTECT IN PLACE
- EXISTING MAIN IRRIGATION LINE
- EXISTING IRRIGATION LINE
- EXISTING IRRIGATION VALVE

GENERAL IRRIGATION NOTES

1. ALL MAINLINE PIPINS AND CONTROL WIRES UNDER PAVING SHALL BE INSTALLED IN SEPARATE SLEEVES.
2. ALL LATERAL LINE PIPING UNDER PAVING SHALL BE PVC SCHEDULE 40 AND SHALL BE INSTALLED PRIOR TO PACING. THE PIPING SHALL BE A MINIMUM OF 12" BELOW SUB GRADE.
3. PIPE SIZE SHALL CONFORM TO THOSE SHOWN ON THE DRAWINGS. NO SUBSTITUTION OF SMALLER PIPE SIZES SHALL BE PERMITTED BUT SUBSTITUTION OF LARGER SIZES MAY BE APPROVED. ALL DAMAGES AND REJECTED PIPE SHALL BE REMOVED FROM THE SITE AT THE TIME OF THE REJECTION
4. THE 120 VAC ELECTRICAL POWER SOURCE AT THE CONTROLLER LOCATION SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR. MAKE THE FINAL CONNECTION FROM THE SOURCE TO THE CONTROLLER OR AS ALLOWED BY LOCAL CODES.
5. ALL SPRINKLER HEADS SHALL BE SET PERPENDICULAR TO FINISH GRADE UNLESS OTHERWISE SPECIFIED OR DIRECTED.
6. THIS DESIGN IS DIAGRAMMATIC. ALL PIPING, VALVES, OR OTHER SIMILAR APPURTENANCES SHOWN IN PACED AREAS IS FOR DESIGN AND GRAPHIC CLARIFICATION AND SHALL BE INSTALLED IN IRRIGATED PLANTING AREA WHEREVER POSSIBLE INSTALL ALL VALVES AND BOXES IN SHRUB AREAS AND NOT IN TURF AREAS
7. IT IS THE RESPONSIBILITY OF THE IRRIGATION CONTACTOR TO FAMILIARIZED HIMSELF WITH ALL GRADE DIFFERENCES, LOCATION OF WALLS, RETAINING WALL, STRUCTURES, AND UTILITIES OF THE SITE. COORDINATE WORK WITH OTHER TRADES AND CONTRACTORS FOR THE LOCATION AND INSTALLATION OF ALL IRRIGATION EQUIPMENT. REPAIR AND/OR REPLACE ALL ITEMS DAMAGED BY WORK PERFORMED.
8. DO NOT WILLFULLY INSTALL THE INSTALLATION SYSTEM WHEN IT IS OBVIOUS THAT THE FIELD CONDITIONS VARY FROM THE DRAWINGS AND THAT UNKNOWN OBSTRUCTIONS, GRADE DIFFERENCES, OR DIFFERENCES IN THE AREA DIMENSIONS EXIST THAT HAVE NOT BEEN INDICATED ON THE ENGINEERING. SUCH ITEMS SHALL BE BROUGHT TO THE ATTENTION OF THE OWNERS AUTHORIZED REPRESENTATIVE, ASSUME FULL RESPONSIBILITY FOR ANY NECESSARY REVISIONS IN THE WENT THAT HIS NOTIFICATION IS HEEDED,
9. FLUSH AND ADJUST ALL SPRINKLER HEADS AND VALVES FOR THEIR OPTIMUM OPERATION
10. VERIFY WATER PRESSURE PRIOR TO CONSTRUCTION, REPORT ANY DIFFERENCES BETWEEN THE WATER PRESSURE SHOWN IN THE PLANS AND THE PRESSURE READING IN THE FIELD TO THE OWNERS AUTHORIZED REPRESENTATIVE
11. ALL IRRIGATION EQUIPMENT NOT OTHERWISE DETAILED OR SPECIFIED HEREIN SHALL BE INSTALLED PER THE MANUFACTURES RECOMMENDATIONS AND SPECIFICATIONS.
12. REFER TO THE SPECIFICATIONS FOR ADDITIONAL DETAILED INFORMATION.
13. ALL IRRIGATION AREAS SHALL BE 100% COVERED WITHIN IRRIGATION SPRAY ZONE
14. CONTRACTOR TO VERIFY THE EXISTING IRRIGATION PIPE PRIOR TO INSTALLATION OR DEMOLITION.

PRELIMINARY NOT FOR CONSTRUCTION

PRELIMINARY DESIGN DRAWING

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NO	BY	DATE	REVISIONS	DATE	APP.

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PREPARED BY ZIKANG SONG
R.C.E. NO. ---- PROJECT ENGINEER
EXP: 6/30/2026 #C09315
DRAWN SP/RC/RT
SCALE AS SHOWN
DESIGNED BL
CHECKED ZS
DATE 7/22/2024

TITLE **IRRIGATION DEMOLITION PLAN**

JOB **TEWINKLE PARK** *LAKE RENOVATION* **COSTA MESA CA**

PACE Advanced Water Engineering
17520 Newhope Street, Suite 200 | Fountain Valley, CA 92708
P: (714) 481-7300 | www.pacewater.com

SHEET **W212**
08 OF 50 SHEETS

JOB NO. B836

Xrefs: B836-07_36x24.dwg; TopoSurvey.dwg; B836-07 - Irrigation Base.dwg; B836 - Lake Base.dwg
Dimscale = 24, Ltscale = 1; PSltscale = 1; AcAD Ver. = 23.0s (LMS Tech); Viewtwist = 1

R:\B836\Engineering\B836-13 (Bid Documents)\sheets\B836-13 W212 Irrigation Demolition Plan.dwg - Tab: 08 - by rtran on 06/27/24 at 10:56:19 AM

LEGENDS:

- DISCHARGE PIPE
- INTAKE PIPE
- IRRIGATION MAIN LINE
- RW — RECLAIMED WATER
- W — POTABLE WATER
- SS — SANITARY SEWER
- SD — STORM DRAIN
- E — ELECTRICAL SERVICE
- POINT OF CONNECTION
- ALUM DISCHARGE W/ VALVE AT SHORELINE
- DISCHARGE JET W/ VALVE AT SHORELINE
- XXX — INDICATES RECIRCULATION FLOW (GPM)
- X — INDICATES UTILITY REQUIREMENT
- X — INDICATES PIPING COMPONENTS

PIPING NOTES:

1. THE PIPING PLAN IS DIAGRAMMATIC. ROUTING AND FINAL LAYOUT TO BE FIELD DETERMINED BY CONTRACTOR AND APPROVED BY ENGINEER PRIOR TO CONSTRUCTION.
2. PIPE TYPE, MATERIALS, AND SUPPORTS SHALL CONFORM TO THE PROJECT SPECIFICATIONS. IN ADDITION, PIPE SHALL BE IN CONFORMANCE WITH UBC, UPC, LOCAL AND NATIONAL BUILDING CODE REQUIREMENTS.
3. PARALLEL PIPE RUNS SHALL BE INSTALLED WITHIN COMMON TRENCHES AND OR PIPE SUPPORTS WHENEVER POSSIBLE.
4. ALL PIPING SHALL BE UNIFORMLY AND CONTINUOUSLY SUPPORTED OVER ITS ENTIRE LENGTH AND ROUTE.
5. ALL ELECTRICAL CONDUITS SHALL BE INSTALLED USING SWEEP FITTINGS IN CONFORMANCE WITH LOCAL AND NATIONAL BUILDING CODES.
6. PRESSURE TEST ALL PIPING PER PROJECT SPECIFICATIONS. KEEP PIPING UNDER PRESSURE TESTING CONDITIONS DURING TRENCH BACKFILL/COMPACTION AND DURING THE INSTALLATION OF WATER FEATURE CONCRETE BASIN.
7. ALL UNDERGROUND AND EQUIPMENT PIPING SHALL BE PVC SCHEDULE 40 UNLESS OTHERWISE DESIGNATED WITHIN PLANS AND SPECIFICATIONS.
8. ALL PIPING RUNS SHALL HAVE THRUST BLOCKS.

UTILITY REQUIREMENTS:

1. EXISTING 4" POTABLE WATER CONNECTION. CONTROL BY EXISTING WATER LEVEL SENSOR IN VALVE BOX.
2. AN EXISTING ELECTRICAL FEED @ 480V, 3ø, 4 WIRE TO BE PROTECTED IN PLACE. PROVIDE TERMINATION AT LAKE MOTOR CONTROL PANEL IN THE PUMP STATION. VERIFY REQUIREMENTS WITH THE ELECTRICAL SHEETS. THE ELECTRICAL SHEETS OVERRIDE THIS SHEET FOR CALCULATIONS.
3. EXISTING SEWER CONNECTION FOR SUMP PUMP DISCHARGE
4. EXISTING 2"ø RECYCLED WATER

PIPING COMPONENTS:

1. 8"ø LAKES RECIRCULATION DISCHARGE PIPE
2. 6"ø LAKES RECIRCULATION DISCHARGE PIPE
3. 14"ø LAKE INTAKE PIPE WITH SCREEN
4. PIPE PENETRATION
5. EXISTING WATER LEVEL SENSOR IN VALVE BOX
6. EXISTING 2.5" PVC EQUALIZER FOR WATER LEVEL CONTROL
7. NEW PONDS AND STREAMS DISCHARGE PIPE
8. NEW WIRING AND 2" CONDUIT FOR WATER LEVEL CONTROL
9. EXISTING INTAKE PIPE
10. NEW FILL VALVE IN VALVE BOX TO MATCH THE EXISTING
11. EXISTING 3"ø VACUUM BREAKER
12. EXISTING MANHOLE
13. 2" ELECTRICAL CONDUIT
14. EXISTING UNDERGROUND VAULT (SCREEN VAULT)
15. REUSE EXISTING FLOATING FOUNTAINS
16. REUSE EXISTING FLOATING FOUNTAIN JUNCTION BOX

PRELIMINARY NOT FOR CONSTRUCTION

PRELIMINARY DESIGN DRAWING

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PIPING & UTILITY PLAN

SCALE: 1"=20'

NO	BY	DATE	REVISIONS	DATE	APP.

PREPARED BY ZIRANG SONG
PROJECT ENGINEER
R.C.E. NO. ---- #C89315
EXP. 09/30/2026
DRAWN SP/RC/RT
SCALE AS SHOWN
DESIGNED BL
CHECKED ZS
DATE 7/22/2024

TITLE: **LAKE PIPING AND UTILITY PLAN**

JOB: **TEWINKLE PARK** *LAKE RENOVATION* **COSTA MESA** CA

PACE Advanced Water Engineering
17520 Newhope Street, Suite 200 | Fountain Valley, CA 92708
P: (714) 481-7300 | www.pacewater.com

SHEET **W213**
09 OF 50 SHEETS

JOB NO. B836

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Jul. 22, 2024
Xrefs: B836-07 36x24.dwg; TopoSurvey.dwg; B836 - Lake Base.dwg; B836 - Piping Base.dwg; B836 - Existing Piping.dwg; B836-07 - Legends.dwg; B836-07 - Piping Notes.dwg; B836-07 - Utility Requirement Notes.dwg; B836-07 - Piping Components.dwg
Dimscale = 24; LTscale = 1; PSltscale = 1; ACAD Ver. = 23.0s (LMS Tech); Viewtwist = 1
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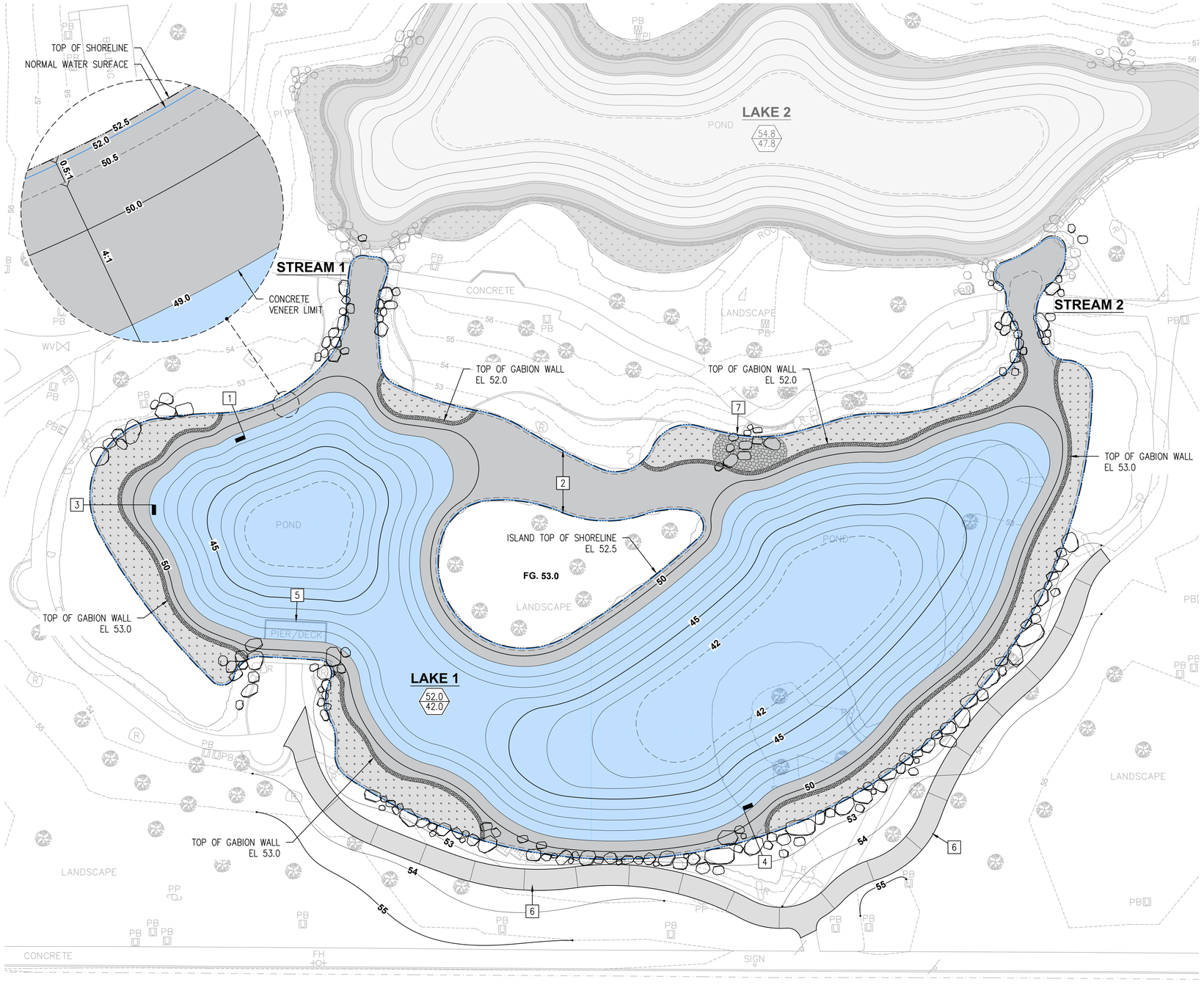
Jul. 22, 2024



LAKE DATA:

	LAKE 1
SURFACE AREA (ACRES)	1.06
VOLUME (GAL)	1,470,000
LENGTH OF SHORELINE (FT)	1,160
NORMAL WATER SURFACE ELEVATION (FT)	52.0
LAKE BOTTOM ELEVATION (FT)	42.0

NOTE: LAKE DATA SHOULD BE CONSIDERED AS ENGINEER'S ESTIMATE ONLY. POND CONTRACTOR SHOULD INDEPENDENTLY VERIFY QUANTITIES.

LAKE COMPONENTS:

- A/W250 — 1 — ERODED CONCRETE SHORELINE
- B/W250 — 2 — ERODED CONCRETE SHORELINE WITH STABILIZED DG
- C/W250 — 3 — PLANTER SHORELINE
- E/W250 — 4 — BOULDER POCKET
- B/W251 — 5 — OBSERVATION DECK
- E/W258 — 6 — CONCRETE PAVING
- D/W250 — 7 — STEPPING STONE AT PLANTER

NORTH

20 10 0 20 40

LAKE 1 - PLAN VIEW

SCALE: 1"=20'

PRELIMINARY NOT FOR CONSTRUCTION

PRELIMINARY DESIGN DRAWING

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NO	BY	DATE	REVISIONS	DATE	APP.

PREPARED BY ZIKANG SONG
PROJECT ENGINEER
R.C.E. NO. ---- #C89315
EXP. 09/30/2026
DRAWN SP/RC/RT
SCALE AS SHOWN
DESIGNED BL
CHECKED ZS
DATE 7/22/2024

TITLE: LAKE 1 PLAN

JOB: TEWINKLE PARK
LAKE RENOVATION
COSTA MESA CA

PACE
Advanced Water Engineering
17520 Newhope Street, Suite 200 | Fountain Valley, CA 92708
P: (714) 481-7300 | www.pacewater.com

SHEET W215
11 OF 50 SHEETS

JOB NO. B836

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R:\B836\Engineering\B836-13 W215 Lake 1 Plan.dwg – Tab: 11 – by rfran on 06/27/24 at 1:29:28 PM
Xrefs: B836-07 36x24x.dwg; TopoSurvey.dwg; B836 - Lake Base.dwg
Dimscale = 24; LTscale = 1; PSltscale = 1; ACAD Ver. = 23.0s (LMS Tech); Visretain = 1

Jul. 22, 2024

IRRIGATION LEGEND

SYMBOL	MANUFACTURER	MODEL # / DESCRIPTION	PSI	GPM	RADIUS	NOZZLE	DETAIL
●	RAINBIRD	1812-SAM-PRS SHRUB POP-UP, 180°	20	0.1	5 FT	5H	SEE SHEET W260-AS BUILT DETAIL C
▼	RAINBIRD	1812-SAM-PRS SHRUB POP-UP, 180°	20	0.4	8 FT	8H	SEE SHEET W260-AS BUILT DETAIL C
○	RAINBIRD	1806-SAM-PRS TURF POP-UP, 360°	20	3.0	14 FT	15F	SEE SHEET W260-AS BUILT DETAIL B
◐	RAINBIRD	EFB-CP SERIES BRASS VALVE; SEE PLAN FOR SIZE	–	–	–	–	SEE SHEET W260-AS BUILT DETAIL D
⊕	RAINBIRD	QUICK COUPLING IN VALVE BOX	–	–	–	–	SEE SHEET W260-AS BUILT DETAIL E

LEGENDS:

- DISCHARGE PIPE
- INTAKE PIPE
- IRRIGATION MAIN LINE
- RW — RECLAIMED WATER
- W — POTABLE WATER
- SS — SANITARY SEWER
- SD — STORM DRAIN
- E — ELECTRICAL SERVICE
- POINT OF CONNECTION
- ALUM DISCHARGE W/ VALVE AT SHORELINE
- DISCHARGE JET W/ VALVE AT SHORELINE
- XXX — INDICATES RECIRCULATION FLOW (GPM)
- X — INDICATES UTILITY REQUIREMENT
- X — INDICATES PIPING COMPONENTS

GENERAL IRRIGATION NOTES

1. ALL MAINLINE PIPINS AND CONTROL WIRES UNDER PAVING SHALL BE INSTALLED IN SEPARATE SLEEVES.
2. ALL LATERAL LINE PIPING UNDER PAVING SHALL BE PVC SCHEDULE 40 AND SHALL BE INSTALLED PRIOR TO PACING. THE PIPING SHALL BE A MINIMUM OF 12" BELOW SUB GRADE.
3. PIPE SIZE SHALL CONFORM TO THOSE SHOWN ON THE DRAWINGS. NO SUBSTITUTION OF SMALLER PIPE SIZES SHALL BE PERMITTED BUT SUBSTITUTION OF LARGER SIZES MAY BE APPROVED. ALL DAMAGES AND REJECTED PIPE SHALL BE REMOVED FROM THE SITE AT THE TIME OF THE REJECTION
4. THE 120 VAC ELECTRICAL POWER SOURCE AT THE CONTROLLER LOCATION SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR. MAKE THE FINAL CONNECTION FROM THE SOURCE TO THE CONTROLLER OR AS ALLOWED BY LOCAL CODES.
5. ALL SPRINKLER HEADS SHALL BE SET PERPENDICULAR TO FINISH GRADE UNLESS OTHERWISE SPECIFIED OR DIRECTED.
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7. IT IS THE RESPONSIBILITY OF THE IRRIGATION CONTACTOR TO FAMILIARIZED HIMSELF WITH ALL GRADE DIFFERENCES, LOCATION OF WALLS, RETAINING WALL, STRUCTURES, AND UTILITIES OF THE SITE. COORDINATE WORK WITH OTHER TRADES AND CONTRACTORS FOR THE LOCATION AND INSTALLATION OF ALL IRRIGATION EQUIPMENT. REPAIR AND/OR REPLACE ALL ITEMS DAMAGED BY WORK PERFORMED.
8. DO NOT WILLFULLY INSTALL THE INSTALLATION SYSTEM WHEN IT IS OBVIOUS THAT THE FIELD CONDITIONS VARY FROM THE DRAWINGS AND THAT UNKNOWN OBSTRUCTIONS, GRADE DIFFERENCES, OR DIFFERENCES IN THE AREA DIMENSIONS EXIST THAT HAVE NOT BEEN INDICATED ON THE ENGINEERING. SUCH ITEMS SHALL BE BROUGHT TO THE ATTENTION OF THE OWNERS AUTHORIZED REPRESENTATIVE, ASSUME FULL RESPONSIBILITY FOR ANY NECESSARY REVISIONS IN THE WENT THAT HIS NOTIFICATION IS HEEDED,
9. FLUSH AND ADJUST ALL SPRINKLER HEADS AND VALVES FOR THEIR OPTIMUM OPERATION
10. VERIFY WATER PRESSURE PRIOR TO CONSTRUCTION, REPORT ANY DIFFERENCES BETWEEN THE WATER PRESSURE SHOWN IN THE PLANS AND THE PRESSURE READING IN THE FIELD TO THE OWNERS AUTHORIZED REPRESENTATIVE
11. ALL IRRIGATION EQUIPMENT NOT OTHERWISE DETAILED OR SPECIFIED HEREIN SHALL BE INSTALLED PER THE MANUFACTURES RECOMMENDATIONS AND SPECIFICATIONS.
12. REFER TO THE SPECIFICATIONS FOR ADDITIONAL DETAILED INFORMATION.
13. ALL IRRIGATION AREAS SHALL BE 100% COVERED WITHIN IRRIGATION SPRAY ZONE
14. CONTRACTOR TO VERIFY THE EXISTING IRRIGATION PIPE PRIOR TO INSTALLATION OR DEMOLITION.

NORTH

20 10 0 20 40

PROPOSED IRRIGATION PLAN

SCALE: 1"=20'

PRELIMINARY NOT FOR CONSTRUCTION

PRELIMINARY DESIGN DRAWING

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NO	BY	DATE	REVISIONS	DATE	APP.

PREPARED BY
ZIRANG SONG
PROJECT ENGINEER
R.C.E. NO. ——
EXP. 6/30/2026

DRAWN SP/RC/RT
SCALE AS SHOWN
DESIGNED BL
CHECKED ZS
DATE 7/22/2024

TITLE **IRRIGATION PROPOSED PLAN**

JOB **TEWINKLE PARK** *LAKE RENOVATION* **COSTA MESA** CA

PACE
Advanced Water Engineering
17520 Newhope Street, Suite 200 | Fountain Valley, CA 92708
P: (714) 481-7300 | www.pacewater.com

SHEET **W216**
12 OF 50 SHEETS

JOB NO. B836

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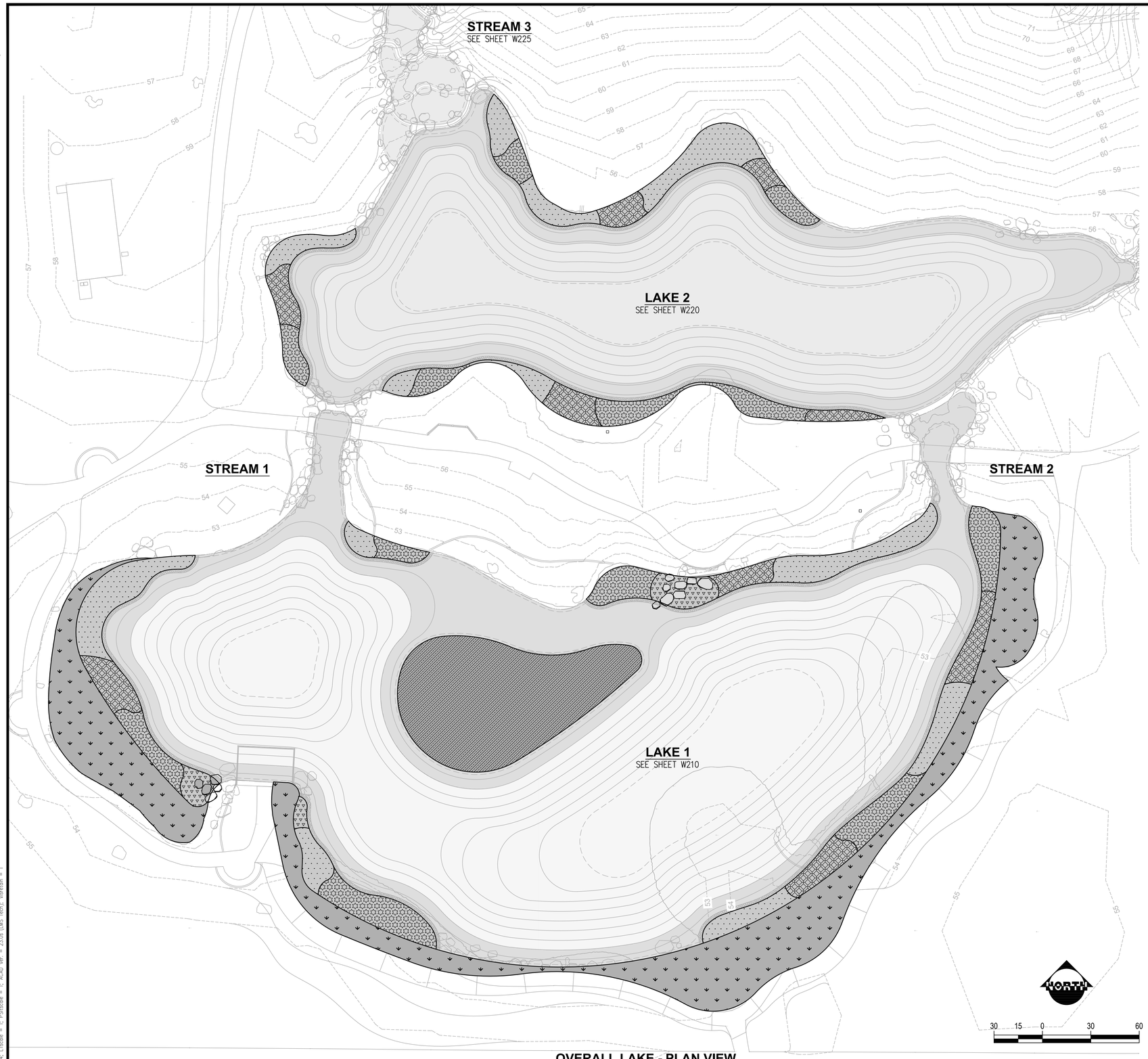
R:\B836\Engineering\B836-13 (Bid Documents)\sheets\B836-13 W216 Irrigation Proposed Plan.dwg – Tab: 12 – by rhan on 07/02/24 at 11:48:27 AM

Xrefs: B836-07 36x24v.dwg; B836-07 – Legends.dwg; B836 – Lake Base.dwg; B836 – Piping Base.dwg; TopoSurvey.dwg; B836-07 – Irrigation Base.dwg
Dimscale = 24; LTscale = 1; PSltscale = 1; ACAD Ver. = 23.0s (LMS Tech); Viewtwist = 1

Jul. 22, 2024



OVERALL LAKE - PLAN VIEW

SCALE: 1"=30'

PLANTING PLAN NOTES

1. CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS, AND EQUIPMENT NECESSARY TO FURNISH AND INSTALL PLANT AS SHOWN ON THE PLAN.
2. PLANT LIST ON THIS PLAN SHALL BE USED AS A GUIDE ONLY. CONTRACTOR TO TAKEOFF, VERIFY SIZES AND QUANTITIES.
3. ALL WORK ON THE IRRIGATION SYSTEM, INCLUDING HYDROSTATIC, COVERAGE, OPERATIONAL TESTS, BACKFILL AND COMPACTION OF TRENCHES SHALL BE PERFORMED PRIOR TO PLANTING OPERATIONS.
4. ALL STRUCTURAL, SHORELINE, AND HARDSCAPE SHALL BE INSTALLED PRIOR TO PLANTING OPERATIONS.
5. SAMPLES OF FERTILIZERS, ORGANIC AMENDMENT, SOIL CONDITIONERS AND SEED SHALL BE SUBMITTED PRIOR TO INCORPORATION, CONTRACTOR SHALL FURNISH TO CITY REPRESENTATIVE A CERTIFICATE OF COMPLIANCE FOR SUCH FURNISHED MATERIALS.
6. LOCATIONS OF PLANTS SHALL BE REVIEWED ON SITE BY ENGINEER/ CITY REPRESENTATIVE PRIOR TO INSTALLATION.
7. IF DURING PLANTING OPERATIONS THERE SEEMS TO BE MINIMAL OR NO PERCOLATION IN PLANTING PITS, CONTRACTOR SHALL CEASE PLANTING OPERATIONS AND IMMEDIATELY NOTIFY THE ENGINEER/ CITY REPRESENTATIVE TO DISCUSS ALTERNATIVE TO MAINTAIN POSITIVE ROOTBALL DRAINAGE MEASURES.
8. PLANTING MATERIAL SHALL BE REVIEWED AND APPROVED BY ENGINEER AND CITY REPRESENTATIVE.
9. EXISTING IRRIGATION OUTSIDE OF THE SCOPE OF WORK SHALL REMAIN FULLY OPERATIONAL AND BE PROTECTED IN PLACE. SEE SHEET W212 FOR IRRIGATION DEMOLITION PLAN AND SHEET W216 FOR IRRIGATION PROPOSED PLAN.
10. CONTRACTOR SHALL ADJUST IRRIGATION HEADS AND LATERAL LINES AS NECESSARY TO ACCOMMODATE MODIFICATIONS TO EXISTING PLANTERS AND PROVIDE 100% IRRIGATION COVERAGE TO PROPOSED PLANTING AREAS.

EXISTING TREE NOTES

1. UNLESS OTHERWISE NOTED ON THE PLAN, ALL EXISTING TREES SHALL BE PROTECT IN PLACE.
2. CONTRACTOR, PRIOR TO ANY WORK WITHIN THE PARK, SHALL MEET WITH ENGINEER/ CITY REPRESENTATIVES TO FLAG THE NUMBER OF ALL THE TREES WITH IN THE PARK. EACH TREE SHALL BE ASSIGNED A UNIQUE NUMBER AND CITY REPRESENTATIVE TO CONFIRM DISPOSITION (REMOVAL, RELOCATION, OR PROTECT IN PLACE) OF TREE PRIOR TO ANY CONTRACTOR ACTIVITY RELATED TO THE TREES. TREES SHALL BE FLAGGED WITH COMPASS ORIENTATION.
3. CONTRACTOR TO COORDINATE WITH CITY TO PRUNE THE EXISTING TREE PRIOR TO CONSTRUCTION.
4. ALL EXISTING TREES ON SHALL HAVE PROTECTED BARRIER AROUND THE TREE MINIMUM 15'-0" FROM THE TREE TRUNK. NO HEAVY EQUIPMENT OR VEHICLE TO DRIVE OVER THE TREE ROOTS.
5. ALL TRENCH SHALL STOP MINIMUM 15'-0" AWAY FROM THE TRUNK OF THE TREE. PIPES AND CONDUITS SHALL BE IN TUNNEL UNDER THE TREES. SEE DETAIL X/WXX

AQUATIC PLANTING NOTES

1. PLANT 3 ANEMOPSIS CALIFORNICA IMMEDIATELY OUTSIDE OF LAKE SHORELINE IN DAMP OR WET SOIL. CHOOSE PROTECTED LOCATIONS IF POSSIBLE. SPREAD THE THREE PLANTS AT LEAST TWO FEET APART. THIS DETAIL TYPICALLY MORE IS USED WHERE THERE ARE OTHER PLANTS IN THE WETLAND OR NO WETLAND.
2. PLANT 5 ANEMOSPSIS CALIFORNICA ON MOUNDS OF SOIL BETWEEN ROCKS. SOIL MOUND SHOULD REACH 3 INCHES ABOVE THE WATER SURFACE ELEVATION. ALLOW 1 FT OF SPACE BETWEEN PLANTS. THIS NOTE IS USED WHERE THERE ARE ROCKS IN WETLAND AND NO OTHER PLANTS ARE SHOWN IN THE IMMEDIATE AREA OF THE ROCKS.
3. INSTALL 18 INCH HIGH BLACK PLASTIC WEATHER-RESISTANT FENCE ALONG WETLAND PERIMETER. ATTACH MESH TO 3 FT METAL STAKES, BLACK OR GREEN, AT 5 FT INTERVALS. SECURE WITH BLACK OR GREEN WIRE OR CABLE TIES, 3 PER STAKE. SEE DETAIL C/W259.

PLANTING LEGEND

SYMBOL	BOTANICAL NAME	COMMON NAME	SIZE	QTY. / DENSITY
	JUNCUS BALTICUS	BALTIC RUSH	3 FT TALL	1.5 FT SPACING, 1 PLANT PER 9 SF
	JUNCUS EFFUSUS	SOFT RUSH	3 FT TALL	1.5 FT SPACING, 1 PLANT PER 9 SF
	ANEMOPSIS CALIFORNICA	YERBA MANSA	1 FT TALL	PER AQUATIC PLANTING NOTES
	PONTEDARIA CORDATA	PICKERELWEED	3 FT TALL	1.5 FT SPACING, 1 PLANT PER 9 SF
	VINCA MINOR	MYRTLE		
	DYMONDIA	SILVER CARPET		
	ISOTOMA FLUVIATILIS	BLUE STAR CREEPER		
	GRASS TO MATCH EXISTING LANDSCAPE			
	STABILIZED DG			

PRELIMINARY NOT FOR CONSTRUCTION

PRELIMINARY DESIGN DRAWING

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PREPARED BY
ZIRANG SONG
PROJECT ENGINEER
R.C.E. NO. ---- #C89315
EXP. 6/30/2026

DRAWN SP/RC/RT
SCALE AS SHOWN
DESIGNED BL
CHECKED ZS
DATE 7/22/2024

TITLE
PLANTING PLAN

JOB
TEWINKLE PARK
LAKE RENOVATION
COSTA MESA CA

PACE
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17520 Newhope Street, Suite 200 | Fountain Valley, CA 92708
P: (714) 481-7300 | www.pacewater.com

SHEET
W217
13 OF 50 SHEETS

JOB NO. B836

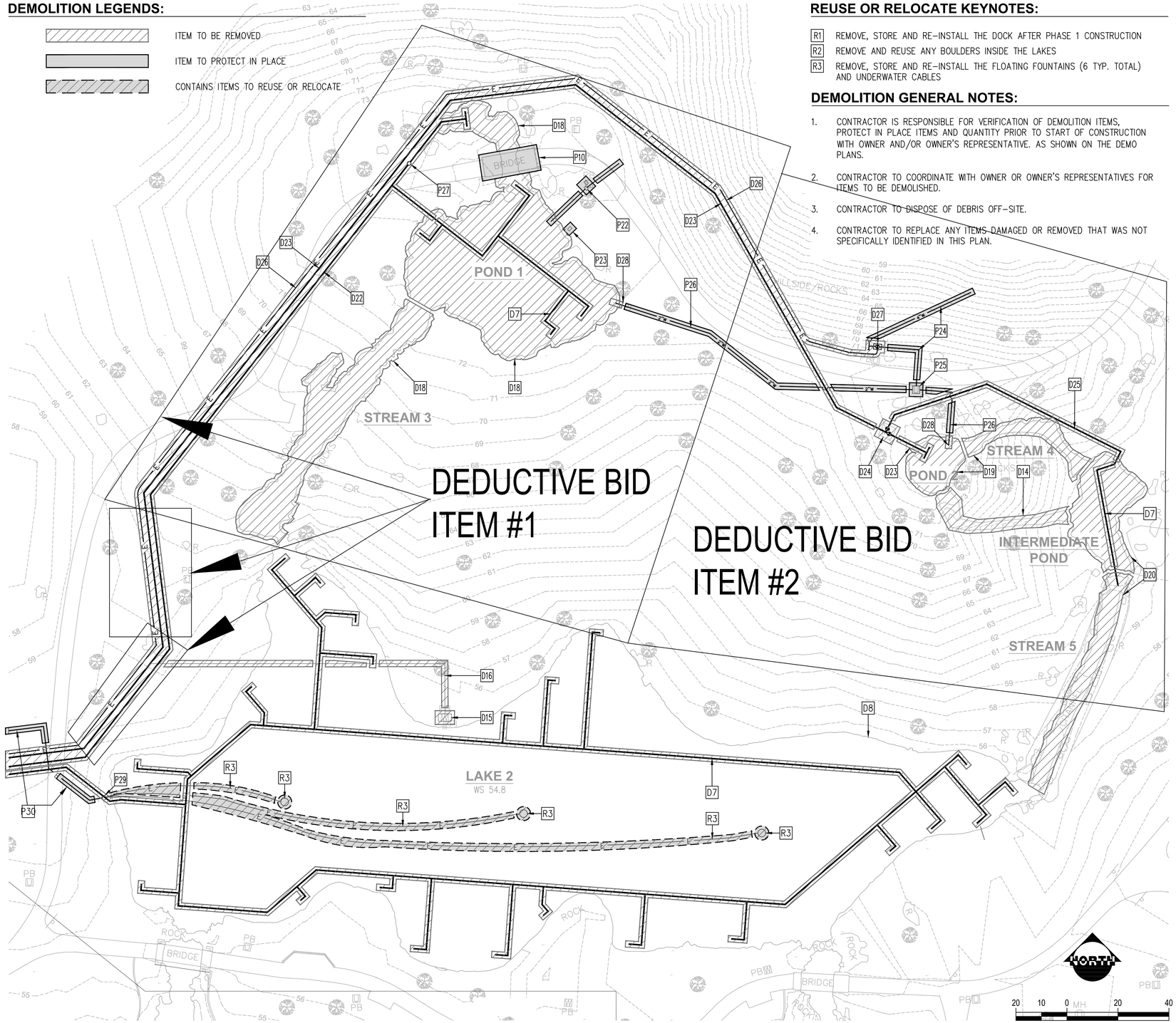
Xrefs: B836-07 36x24v.dwg; B836 - Lake Base.dwg; TopoSurvey.dwg; B836-07 - Planting Plan.dwg
Dimscale = 24, LTscale = 1, PSltscale = 1, ACAD Ver. = 23.0s (LMS Tech), Visretain = 1

R:\B836\Engineering\B836-13 W217 Planting Plan.dwg - Tab: 13 - by rtran on 06/28/24 at 2:00:12 PM

Jul. 22, 2024

DEMOLITION LEGENDS:

- ITEM TO BE REMOVED
- ITEM TO PROTECT IN PLACE
- CONTAINS ITEMS TO REUSE OR RELOCATE



REUSE OR RELOCATE KEYNOTES:

- R1 REMOVE, STORE AND RE-INSTALL THE DOCK AFTER PHASE 1 CONSTRUCTION
- R2 REMOVE AND REUSE ANY BOULDERS INSIDE THE LAKES
- R3 REMOVE, STORE AND RE-INSTALL THE FLOATING FOUNTAINS (6 TYP. TOTAL) AND UNDERWATER CABLES

DEMOLITION GENERAL NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR VERIFICATION OF DEMOLITION ITEMS, PROTECT IN PLACE ITEMS AND QUANTITY PRIOR TO START OF CONSTRUCTION WITH OWNER AND/OR OWNER'S REPRESENTATIVE. AS SHOWN ON THE DEMO PLANS.
2. CONTRACTOR TO COORDINATE WITH OWNER OR OWNER'S REPRESENTATIVES FOR ITEMS TO BE DEMOLISHED.
3. CONTRACTOR TO DISPOSE OF DEBRIS OFF-SITE.
4. CONTRACTOR TO REPLACE ANY ITEMS DAMAGED OR REMOVED THAT WAS NOT SPECIFICALLY IDENTIFIED IN THIS PLAN.

DEMOLITION KEYNOTES:

- D1 REMOVE BIOFILTER AT BOTTOM OF LAKE 1
- D2 REMOVE LAKE 1 PIPES
  - a. 4" BIOFILTER PIPES
  - b. 12" BIOFILTER BACKWASH PIPE
  - c. 14"ø INTAKE PIPE
  - d. RECIRCULATION PIPES (8", 6", 4", 2", 2 ½", 1½")
- D3 REMOVE EXISTING UNDERGROUND VAULT NEXT TO THE OVERFLOW BOX
- D4 REMOVE LAKE 1 PENINSULAS
- D5 REMOVE LAKE 1 EXISTING SHORELINE & LINER
- D6 REMOVE WALKWAY
- D7 REMOVE LAKE 2 AND PONDS PIPES
  - a. LAKE 2 RECIRCULATION PIPES (8", 6", 4", 3", 2 ½", 2", 1½")
  - b. POND 1 PIPES
  - c. INTERMEDIATE POND PIPES
- D8 REMOVE LAKE 2 SHORELINE AND LINER
- D9 REMOVE EXISTING VAULT
- D10 REMOVE 2½"ø WATER LEVEL SENSOR EQUALIZER
- ~~D11 REMOVE EXISTING FLOATING FOUNTAIN JUNCTION BOX (CONTRACTOR TO CONFIRM THE LOCATION)~~ NOT USED
- ~~D12 REMOVE EXISTING FLOATING FOUNTAIN CONDUITS (CONTRACTOR TO CONFIRM THE COUNDUIT ROUTES)~~ NOT USED
- D13 REMOVE EXISTING TREES IN DEMOLITION AREA. LOCATION TO BE CONFIRM WITH CITY (5 TYP).
- D14 REMOVE EXISTING WATERFALL
- D15 REMOVE EXISTING OZONE BOX AND PIPES INSIDE THE LAKE (3 PLCS. AT LAKE 1 AND 1 PLC. AT LAKE 2)
- D16 REMOVE OZONE EXISTING PIPING
- D17 REMOVE EXISTING UNDERGROUND VAULT (SCREEN VAULT)
- D18 REMOVE EXISTING STREAM #3 AND POND 1
- D19 REMOVE EXISTING STREAM #4 AND POND 2
- D20 REMOVE EXISTING STREAM #5 AND INTERMEDIATE POND
- D21 REMOVE EXISTING WATERFALL FOR REBUILT
- D22 REMOVE 8" AND 4"ø POND 1 DISCHARGE
- D23 REMOVE 8"ø POND 2 DISCHARGE
- D24 REMOVE VALVE AND VALVE BOX
- D25 REMOVE 4"ø INTERMEDIATE POND DISCHARGE
- D26 REMOVE EXISTING WIRING AND CONDUIT FROM WATER LEVEL SENSOR TO FILL VALVE
- D27 REMOVE EXISTING POTABLE WATER CONTROL VALVE
- D28 REMOVE EXISTING OVER SHORELINE DISCHARGE

PROTECT-IN-PLACE KEYNOTES:

- P1 PROTECT IN PLACE 14"ø INTAKE PIPE
- P2 PROTECT IN PLACE 2½"ø WATER LEVEL SENSOR EQUALIZER
- ~~P3 PROTECT IN PLACE WIRING & CONDUIT FROM WATERLEVEL SENSOR TO FILL VALVE~~ **NOT USED**
- ~~P4 PROTECT IN PLACE 8"ø & 4"ø POND 1 DISCHARGES~~ **NOT USED**
- ~~P5 PROTECT IN PLACE 8"ø POND 2 DISCHARGE~~ **NOT USED**
- ~~P6 PROTECT IN PLACE VALVES IN VALVE BOX~~ **NOT USED**
- ~~P7 PROTECT IN PLACE 4"ø INTERMEDIATE POND DISCHARGE~~ **NOT USED**
- P8 PROTECT IN PLACE BRIDGES BETWEEN LAKE 1 & LAKE 2
- P9 PROTECT IN PLACE ALL PONDS SHORELINE, LINER, AND FEATURES
- P10 PROTECT IN PLACE WOODEN BRIDGE
- P11 PROTECT IN PLACE ALL EXISTING TREES IN AREA OF RENOVATION (26 TYP). NO ACTION ON TREES OUTSIDE OF RENOVATION AREA.
- P12 PROTECT IN PLACE OVERFLOW BOX
- P13 PROTECT IN PLACE IRRIGATION VALVE BOX FOR FUTURE IMPROVEMENT
- P14 PROTECT IN PLACE ELECTRICAL WIRES AND CONDUITS FOR FLOATING FOUNTAIN
- P15 PROTECT IN PLACE CONCRETE PULL BOX FOR FUTURE IMPROVEMENT
- P16 PROTECT IN PLACE UNDERGROUND VAULT FOR FUTURE IMPROVEMENT
- P17 PROTECT IN PLACE ELECTRICAL BOX FOR FUTURE IMPROVEMENT
- P18 PROTECT IN PLACE EXISTING PIPING
- P19 PROTECT IN PLACE EXISTING SEWER MANHOLE
- P20 PROTECT IN PLACE EXISTING IRRIGATION ISOLATION VALVE
- P21 CAP AND ABANDON IN PLACE EXISTING OZONE PIPE
- P22 PROTECT IN PLACE EXISTING RECYCLED WATER PIPES AND VALVE BOX
- P23 PROTECT IN PLACE EXISTING IRRIGATION VALVE BOX
- P24 PROTECT IN PLACE EXISTING POTABLE WATER PIPES
- P25 PROTECT IN PLACE EXISTING POTABLE WATER VALVE BOX
- P26 PROTECT IN PLACE EXISTING POTABLE WATER DISCHARGE
- P27 PROTECT IN PLACE DISCHARGE VALVE
- P28 PROTECT IN PLACE LAKE 1 ISLAND
- P29 PROTECT IN PLACE EXISTING FLOATING FOUNTAIN JUNCTION BOX (CONTRACTOR TO CONFIRM THE LOCATION)
- P30 PROTECT IN PLACE EXISTING FLOATING FOUNTAIN CONDUITS (CONTRACTOR TO CONFIRM THE CONDUIT ROUTES)

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PRELIMINARY DESIGN DRAWING

THIS DRAWING IS FOR BIDDING USE ONLY AND NOT INTENDED TO BE USED FOR CONSTRUCTION.

DEMOLITION PLAN

SCALE: 1"=20'

NO	BY	DATE	REVISIONS	DATE	APP.

PREPARED BY ZIRANG SONG
PROJECT ENGINEER
R.C.E. NO. #C89315
EXP. 09/30/2026
DRAWN SP/RC/RT
SCALE AS SHOWN
DESIGNED BL
CHECKED ZS
DATE 7/22/2024

TITLE **DEMOLITION PLAN**

JOB **TEWINKLE PARK** *LAKE RENOVATION* **COSTA MESA** CA

PACE Advanced Water Engineering
17520 Newhope Street, Suite 200 | Fountain Valley, CA 92708
P: (714) 481-7300 | www.pacewater.com

SHEET **W221**
15 OF 50 SHEETS

JOB NO. B836

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Xrefs: B836-07 36x24v.dwg; TopoSurvey.dwg; B836 - Existing Piping.dwg; B836-07 - Demo Keynotes.dwg
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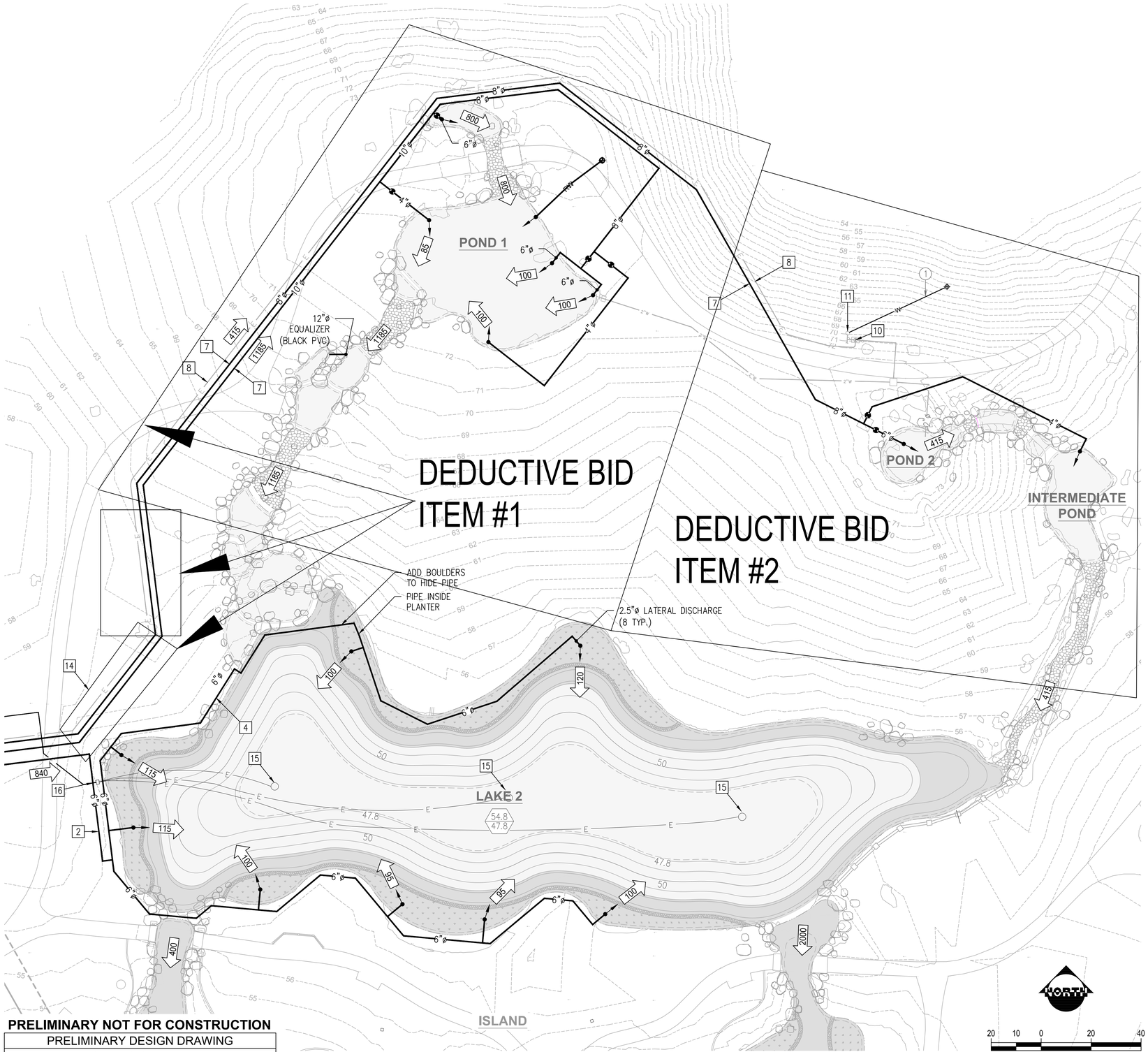

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LAKE 2 - PIPING & UTILITY PLAN

SCALE: 1"=20'

LEGENDS:

- DISCHARGE PIPE
- INTAKE PIPE
- IRRIGATION MAIN LINE
- RW — RECLAIMED WATER
- W — POTABLE WATER
- SS — SANITARY SEWER
- SD — STORM DRAIN
- E — ELECTRICAL SERVICE
- POINT OF CONNECTION
- ALUM DISCHARGE W/ VALVE AT SHORELINE
- DISCHARGE JET W/ VALVE AT SHORELINE
- XXX — INDICATES RECIRCULATION FLOW (GPM)
- X — INDICATES UTILITY REQUIREMENT
- X — INDICATES PIPING COMPONENTS

PIPING NOTES:

1. THE PIPING PLAN IS DIAGRAMMATIC. ROUTING AND FINAL LAYOUT TO BE FIELD DETERMINED BY CONTRACTOR AND APPROVED BY ENGINEER PRIOR TO CONSTRUCTION.
2. PIPE TYPE, MATERIALS, AND SUPPORTS SHALL CONFORM TO THE PROJECT SPECIFICATIONS. IN ADDITION, PIPE SHALL BE IN CONFORMANCE WITH UBC, UPC, LOCAL AND NATIONAL BUILDING CODE REQUIREMENTS.
3. PARALLEL PIPE RUNS SHALL BE INSTALLED WITHIN COMMON TRENCHES AND OR PIPE SUPPORTS WHENEVER POSSIBLE.
4. ALL PIPING SHALL BE UNIFORMLY AND CONTINUOUSLY SUPPORTED OVER ITS ENTIRE LENGTH AND ROUTE.
5. ALL ELECTRICAL CONDUITS SHALL BE INSTALLED USING SWEEP FITTINGS IN CONFORMANCE WITH LOCAL AND NATIONAL BUILDING CODES.
6. PRESSURE TEST ALL PIPING PER PROJECT SPECIFICATIONS. KEEP PIPING UNDER PRESSURE TESTING CONDITIONS DURING TRENCH BACKFILL/COMPACTION AND DURING THE INSTALLATION OF WATER FEATURE CONCRETE BASIN.
7. ALL UNDERGROUND AND EQUIPMENT PIPING SHALL BE PVC SCHEDULE 40 UNLESS OTHERWISE DESIGNATED WITHIN PLANS AND SPECIFICATIONS.
8. ALL PIPING RUNS SHALL HAVE THRUST BLOCKS.

UTILITY REQUIREMENTS:

1. EXISTING 4" POTABLE WATER CONNECTION. CONTROL BY EXISTING WATER LEVEL SENSOR IN VALVE BOX.
2. AN EXISTING ELECTRICAL FEED @ 480V, 3ø, 4 WIRE TO BE PROTECTED IN PLACE. PROVIDE TERMINATION AT LAKE MOTOR CONTROL PANEL IN THE PUMP STATION. VERIFY REQUIREMENTS WITH THE ELECTRICAL SHEETS. THE ELECTRICAL SHEETS OVERRIDE THIS SHEET FOR CALCULATIONS.
3. EXISTING SEWER CONNECTION FOR SUMP PUMP DISCHARGE
4. EXISTING 2"ø RECYCLED WATER

PIPING COMPONENTS:

1. 8"ø LAKES RECIRCULATION DISCHARGE PIPE
2. 6"ø LAKES RECIRCULATION DISCHARGE PIPE
3. 14"ø LAKE INTAKE PIPE WITH SCREEN
4. PIPE PENETRATION
5. EXISTING WATER LEVEL SENSOR IN VALVE BOX
6. EXISTING 2.5" PVC EQUALIZER FOR WATER LEVEL CONTROL
7. NEW PONDS AND STREAMS DISCHARGE PIPE
8. NEW WIRING AND 2" CONDUIT FOR WATER LEVEL CONTROL
9. EXISTING INTAKE PIPE
10. NEW FILL VALVE IN VALVE BOX TO MATCH THE EXISTING
11. EXISTING 3"ø VACUUM BREAKER
12. EXISTING MANHOLE
13. 2" ELECTRICAL CONDUIT
14. EXISTING UNDERGROUND VAULT (SCREEN VAULT)
15. REUSE EXISTING FLOATING FOUNTAINS
16. REUSE EXISTING FLOATING FOUNTAIN JUNCTION BOX

NO	BY	DATE	REVISIONS	DATE	APP.

PREPARED BY ZIRANG SONG
PROJECT ENGINEER
R.C.E. NO. ---- #C89315
EXP. 09/30/2026
DRAWN SP/RC/RT
SCALE AS SHOWN
DESIGNED BL
CHECKED ZS
DATE 7/22/2024

TITLE: LAKE PIPING AND UTILITY PLAN

JOB: TEWINKLE PARK
LAKE RENOVATION
COSTA MESA CA

PACE Advanced Water Engineering
17520 Newhope Street, Suite 200 | Fountain Valley, CA 92708
P: (714) 481-7300 | www.pacewater.com

SHEET W222
16 OF 50 SHEETS

JOB NO. B836

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Jul. 22, 2024
Xrefs: B836-07_36x24v.dwg; TopoSurvey.dwg; B836 - Lake Base.dwg; B836 - Piping Base.dwg; B836 - Existing Piping.dwg; B836-07 - Legends.dwg; B836-07 - Piping Notes.dwg; B836-07 - Utility Requirement Notes.dwg; B836-07 - Piping Components.dwg
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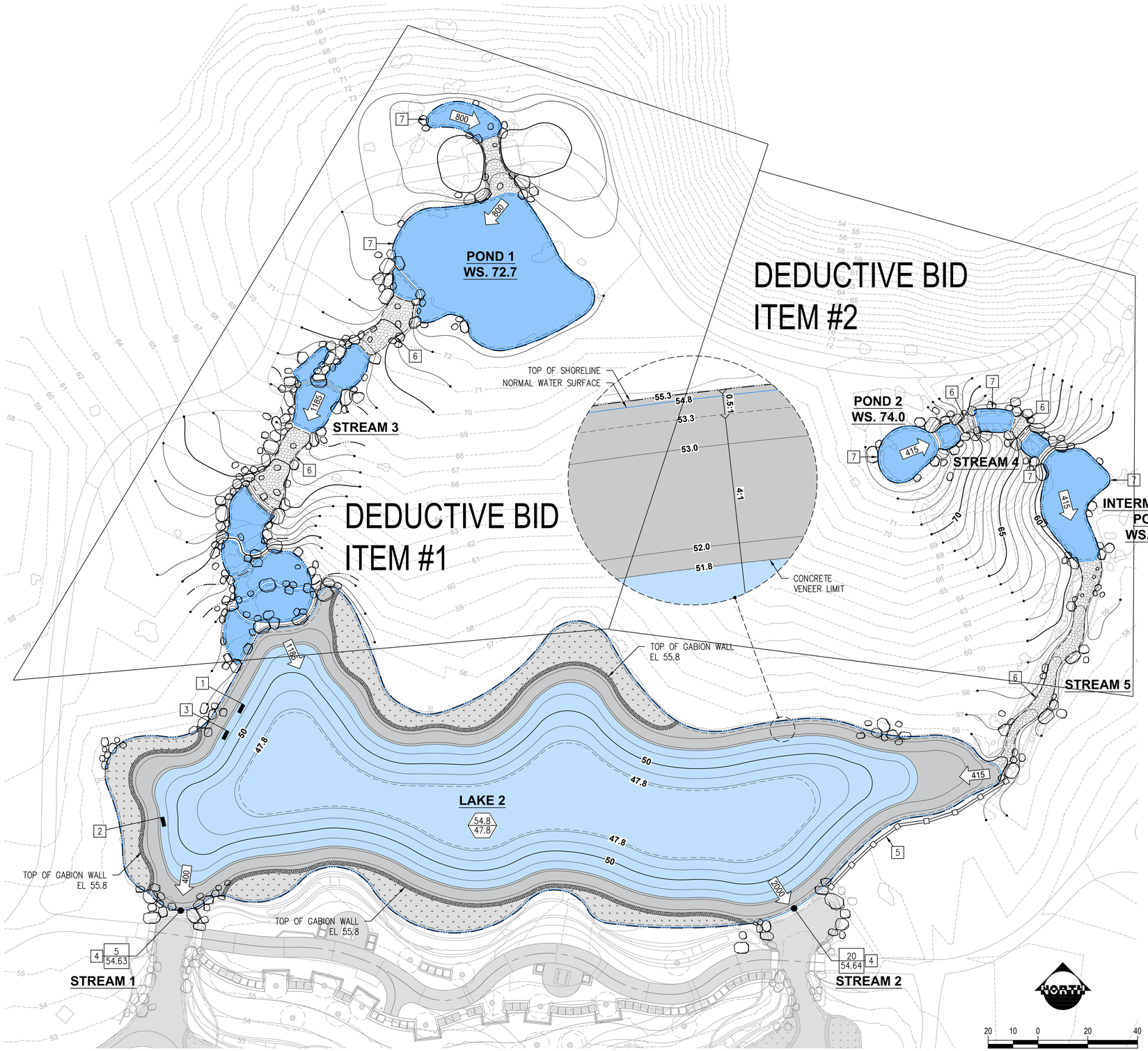

LAKE 2 - PLAN VIEW
SCALE: 1"=20'

LAKE DATA:

	LAKE 2
SURFACE AREA (ACRES)	0.66
VOLUME (GAL)	945,600
LENGTH OF SHORELINE (FT)	955
NORMAL WATER SURFACE ELEVATION (FT)	54.8
LAKE BOTTOM ELEVATION (FT)	47.8

NOTE: LAKE DATA SHOULD BE CONSIDERED AS ENGINEER'S ESTIMATE ONLY. POND CONTRACTOR SHOULD INDEPENDENTLY VERIFY QUANTITIES.

LAKE COMPONENTS:

- A W250 / 1 — ERODED CONCRETE SHORELINE
- E W250 / 2 — PLANTER SHORELINE
- B W250 / 3 — BOULDER POCKET
- C W255 / 4 — WATERFALL WITH CONTROL WEIR
- A W258 / 5 — POLE FENCE
- E W256 / 6 — NEW STREAM
- F W256 / 7 — NEW POND

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PROJECT ENGINEER
R.C.E. NO. ---- #C69315
EXP. 01/30/2026

DRAWN SP/RC/RT
SCALE AS SHOWN
DESIGNED BL
CHECKED ZS
DATE 7/22/2024

TITLE: DEDUCTIVE BID ITEMS - LAKE 2 PLAN

JOB: TEWINKLE PARK
LAKE RENOVATION
COSTA MESA CA

PACE
Advanced Water Engineering
17520 Newhope Street, Suite 200 | Fountain Valley, CA 92708
P: (714) 481-7300 | www.pacewater.com

SHEET W224
18 OF 50 SHEETS

JOB NO. B836

Xrefs: B836-07_36x24v.dwg; TopoSurvey.dwg; B836 - Lake Base.dwg
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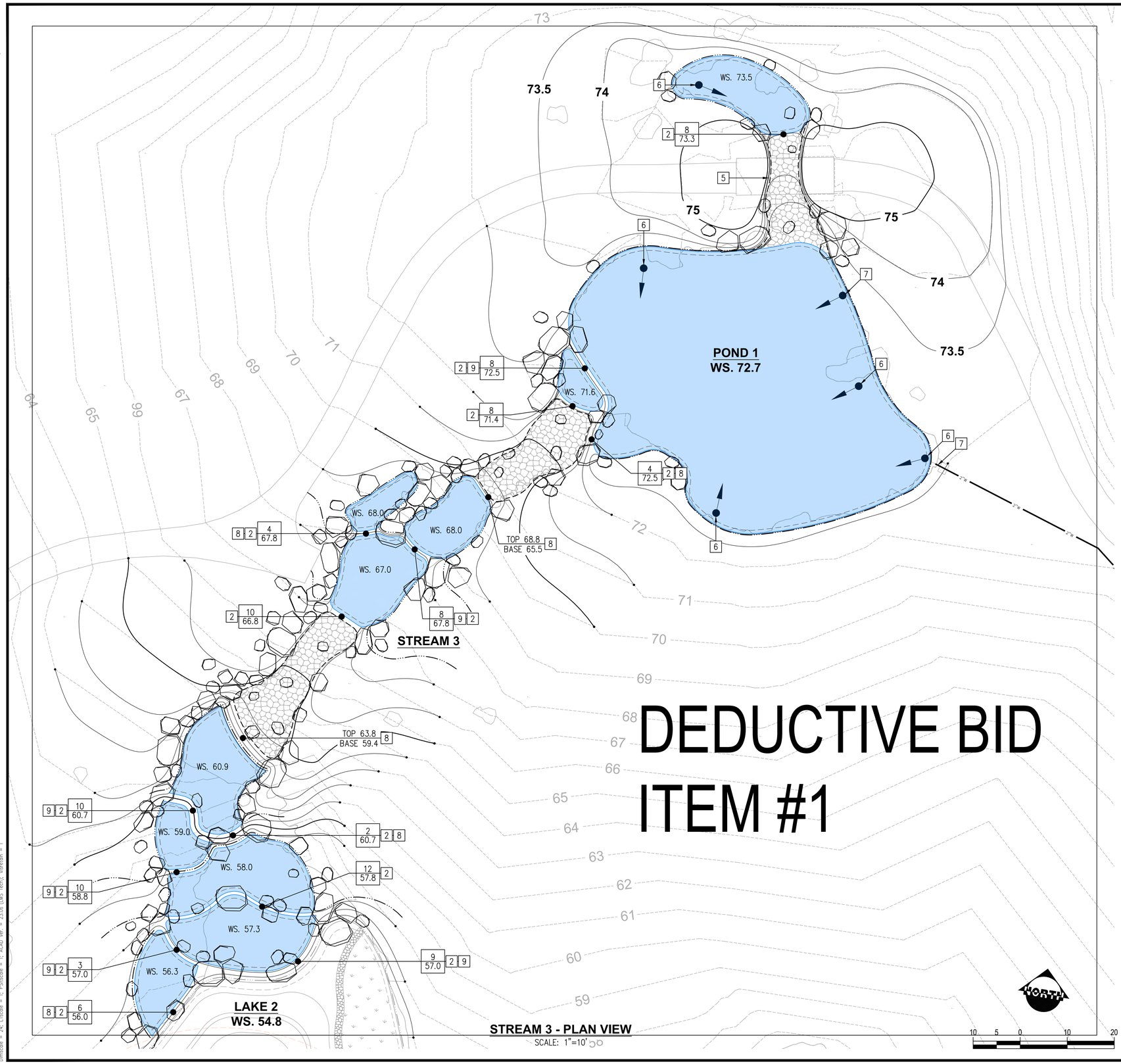
Jul. 22, 2024



LAKE COMPONENTS:

A/W250	1	ERODED CONCRETE SHORELINE
D/W256	2	WATERFALL CONTROL WEIR
E/W256	3	NEW STREAM
F/W256	4	NEW POND
A/W251	5	STREAM AT BRIDGE
A/W251	6	DISCHARGE RISERS (6 TYP.)
A/W251	7	DISCHARGE ABOVE WATER (12" AIR GAP) FOR POTABLE WATER FILL LINE
C/W256	8	CASCADE WATERFALL
A/W256	9	FREEFALL WATERFALL

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PRELIMINARY DESIGN DRAWING

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PREPARED BY ZHIANG SONG
R.C.E. NO. ---- PROJECT ENGINEER
EXP. 09/30/2026 #C89315
DRAWN SP/RC/RT
SCALE AS SHOWN
DESIGNED BL
CHECKED ZS
DATE 7/22/2024

TITLE DEDUCTIVE BID ITEM #1 - POND AND STREAM PLAN

JOB TEWINKLE PARK
LAKE RENOVATION
COSTA MESA CA

PACE
Advanced Water Engineering
17520 Newhope Street, Suite 200 | Fountain Valley, CA 92708
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SHEET W225
19 OF 50 SHEETS

JOB NO. B836

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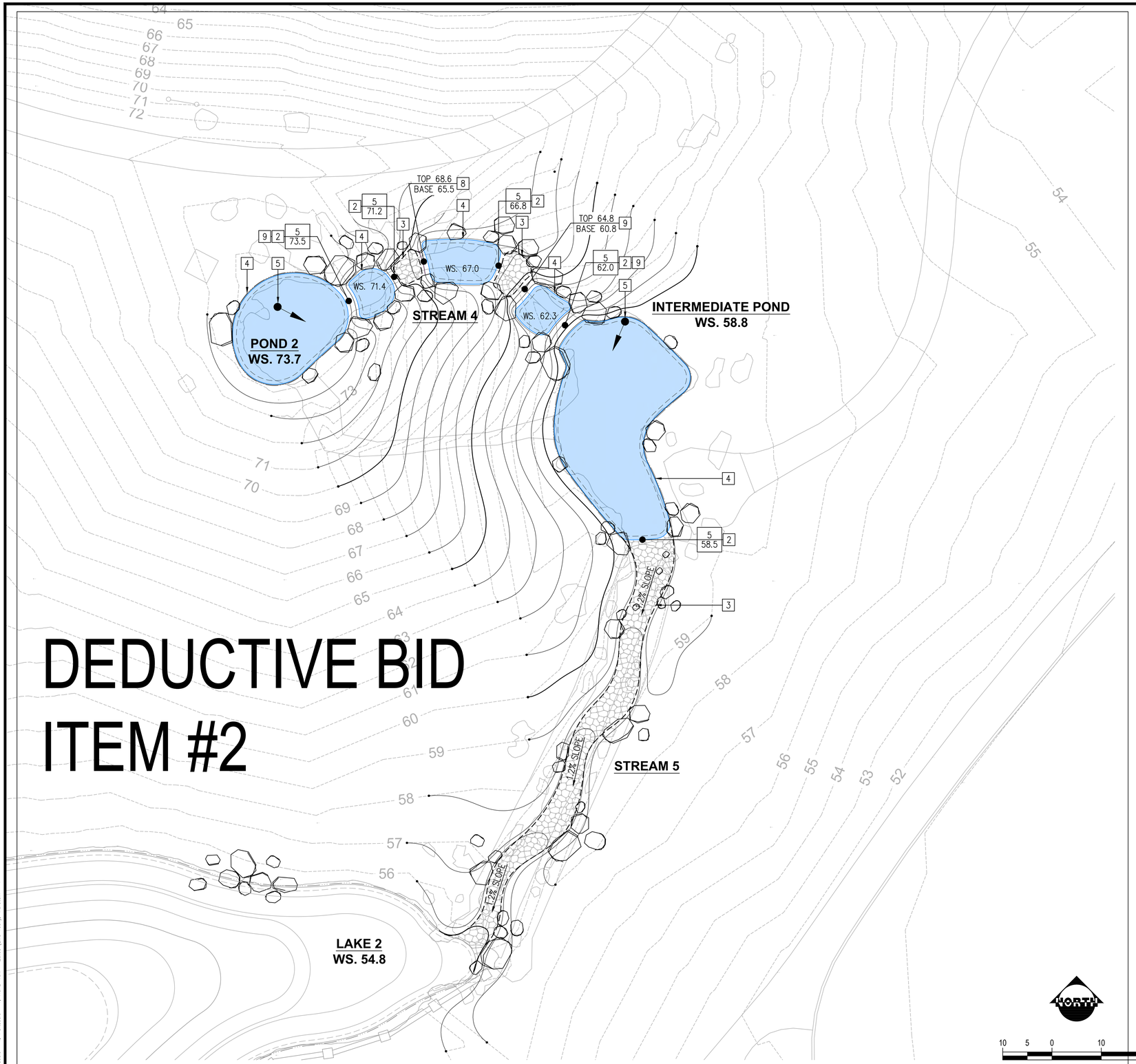

DEDUCTIVE BID ITEM #2

STREAM 4 AND 5 - PLAN VIEW

SCALE: 1"=10'

LAKE COMPONENTS:

A W250	1	ERODED CONCRETE SHORELINE
D W256	2	WATERFALL CONTROL WEIR
E W256	3	NEW STREAM
F W256	4	NEW POND
A W251	5	STREAM AT BRIDGE
A W251	6	DISCHARGE RISERS (6 TYP.)
A W251	7	DISCHARGE ABOVE WATER (12" AIR GAP) FOR POTABLE WATER FILL LINE
C W256	8	CASCADE WATERFALL
A W256	9	FREEFALL WATERFALL

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PRELIMINARY DESIGN DRAWING

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R.C.E. NO. ---- PROJECT ENGINEER
EXP. 6/30/2026 #C69315
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DATE 7/22/2024

TITLE DEDUCTIVE BID ITEM #2 - POND AND STREAM PLAN

JOB TEWINKLE PARK
LAKE RENOVATION
COSTA MESA CA

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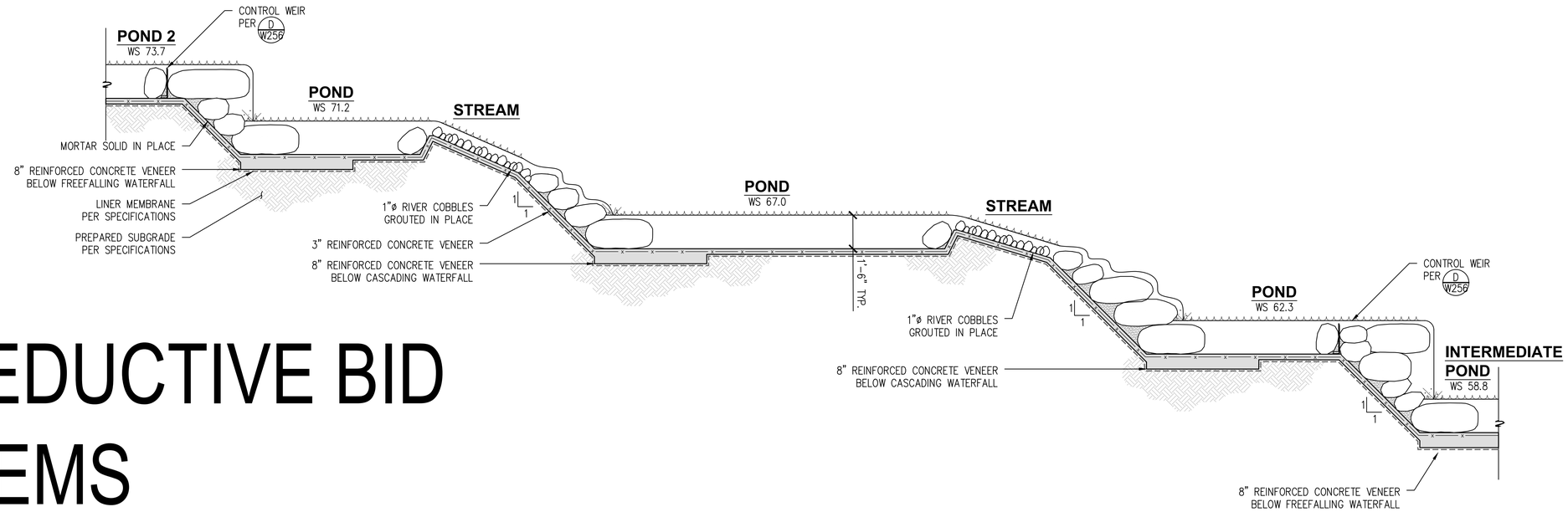
Jul. 22, 2024



DEDUCTIVE BID ITEMS

A *TYPICAL STREAM SECTION*
SCALE: 3/8"=1'-0"

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PRELIMINARY DESIGN DRAWING

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PREPARED BY ZIRANG SONG
PROJECT ENGINEER
R.C.E. NO. ---
EXP. 09/30/2026
DRAWN SP/RC/RT
SCALE AS SHOWN
DESIGNED BL
CHECKED ZS
DATE 7/22/2024

TITLE
DEDUCTIVE BID ITEMS - SECTIONS

JOB
TEWINKLE PARK
LAKE RENOVATION
COSTA MESA ***CA***

PACE
Advanced Water Engineering
17520 Newhope Street, Suite 200 | Fountain Valley, CA 92708
P: (714) 481-7300 | www.pacewater.com

SHEET
W227
21 OF 50 SHEETS

JOB NO. B836

Xrefs: B836-07 36x24v.dwg; Lake Sections.dwg
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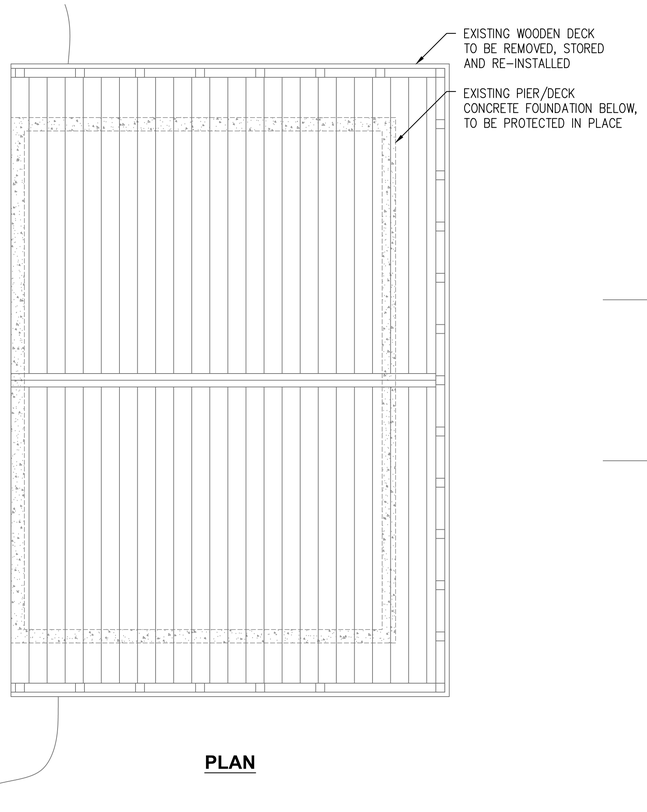
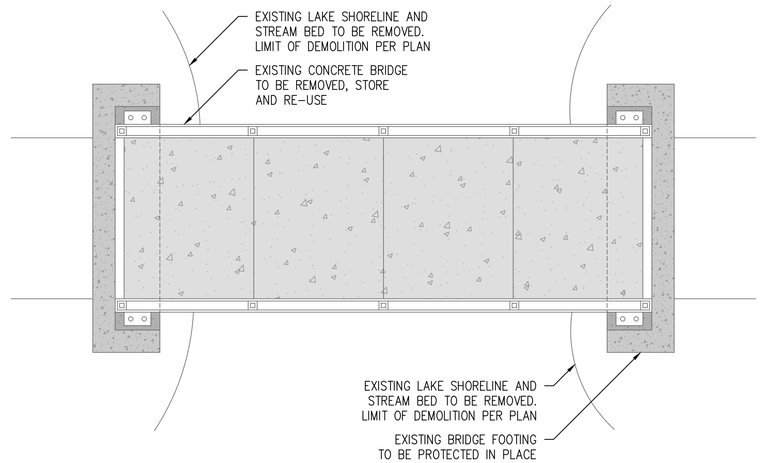
Jul. 22, 2024

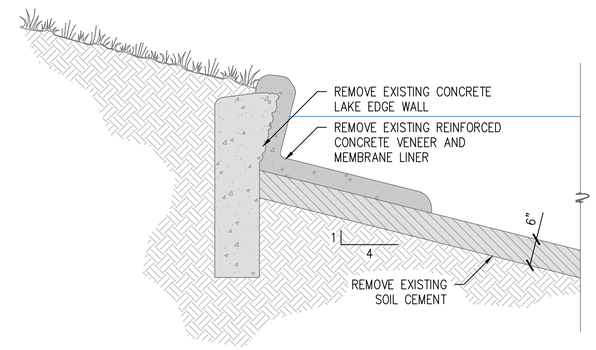


PLAN



PLAN

NOTE:
EXISTING SHORELINE SECTION SHOWN FOR REFERENCE ONLY, PER AS-BUILT PLANS. CONTRACTOR TO VERIFY CONDITION ON SITE BEFORE PROCEEDING WITH DEMOLITION.



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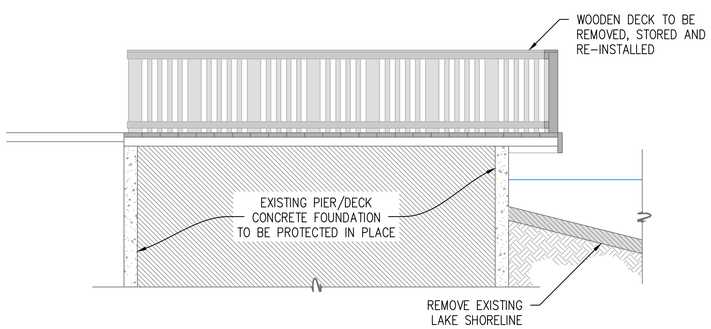

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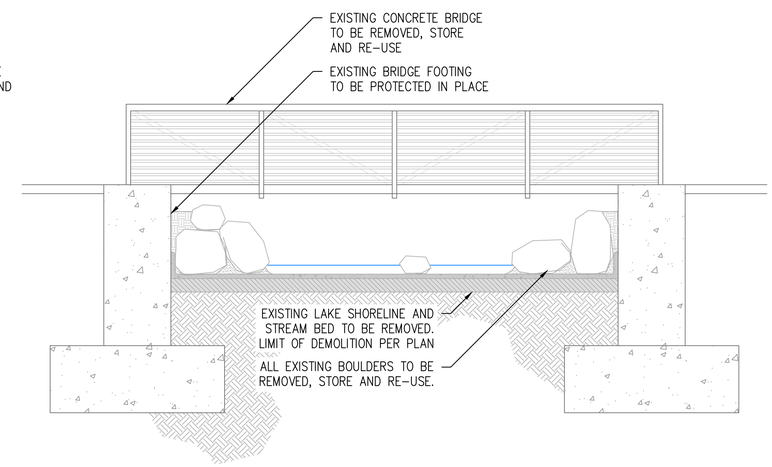

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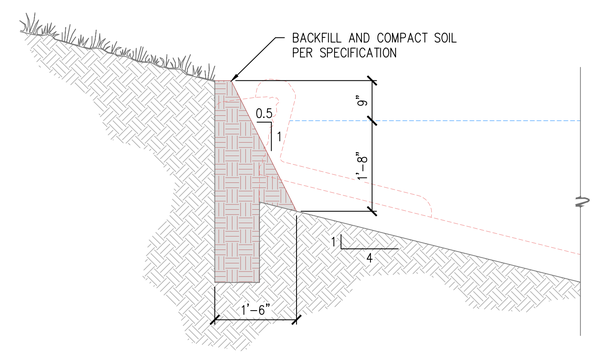

TYPICAL PROPOSED GRADING SECTION

F ***DEMOLITION AT WOODEN DECK***
SCALE

D ***DEMOLITION AT BRIDGE***
3/8" = 1'-0"

B ***TYPICAL SHORELINE DEMOLITION***
3/4" = 1'-0"

PRELIMINARY NOT FOR CONSTRUCTION

PRELIMINARY DESIGN DRAWING

THIS DRAWING IS FOR BIDDING USE ONLY AND NOT INTENDED TO BE USED FOR CONSTRUCTION.

NO	BY	DATE	REVISIONS	DATE	APP.

PREPARED BY
ZIKANG SONG
PROJECT ENGINEER
R.C.E. NO. ---
EXP. 6/30/2026

DRAWN SP/RC/RT
SCALE AS SHOWN
DESIGNED BL
CHECKED ZS
DATE 7/22/2024

TITLE **DEMOLITION DETAILS**

JOB **TEWINKLE PARK**
LAKE RENOVATION
COSTA MESA *CA*

PACE
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17520 Newhope Street, Suite 200 | Fountain Valley, CA 92708
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SHEET **W240**
25 OF 50 SHEETS

JOB NO. B836

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R:\B836\Engineering\B836-13 (Bid Documents)\sheets\B836-13 W240 Demolition Details.dwg - Tab: 25 - by rtran on 06/27/24 at 2:58:44 PM
Xrefs: B836-07 36x24v.dwg; TopoSurvey.dwg
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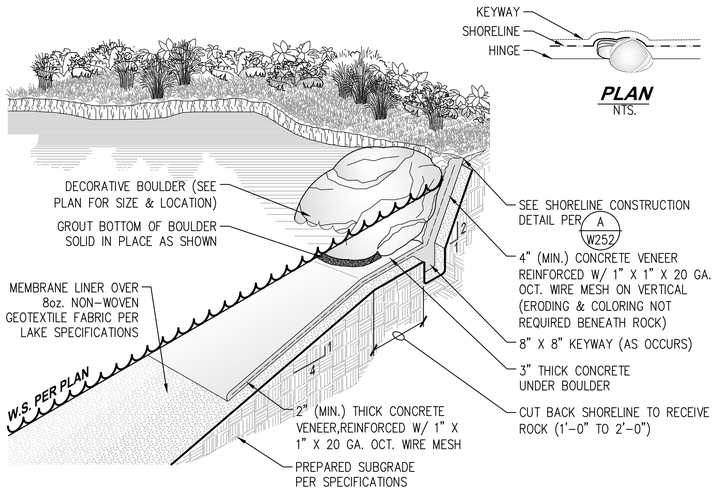
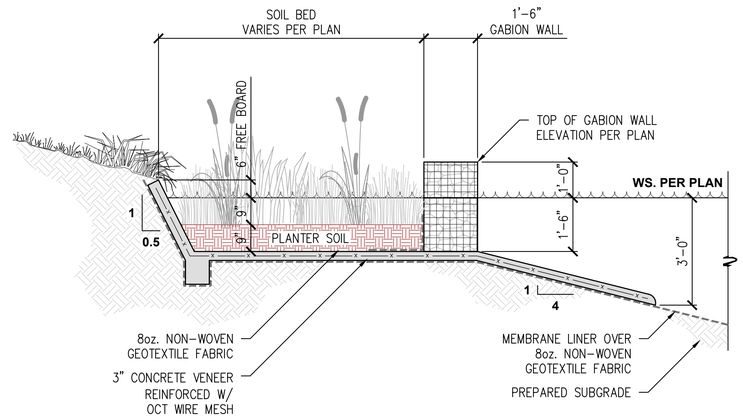
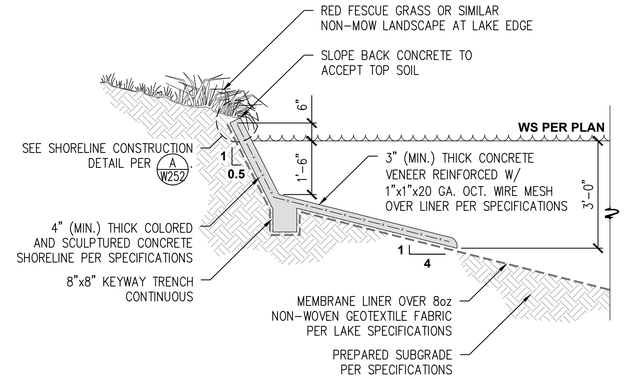
Jul. 22, 2024



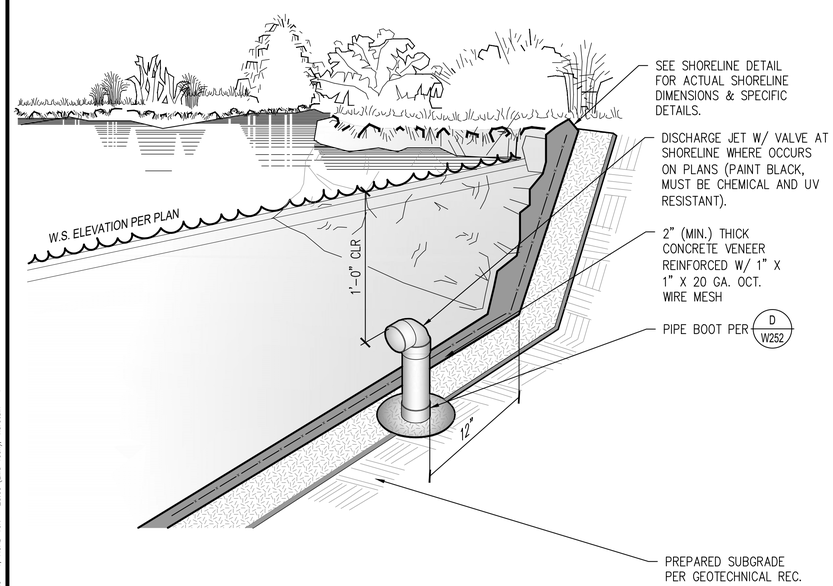
E BOULDER POCKET SHORELINE
NOT TO SCALE



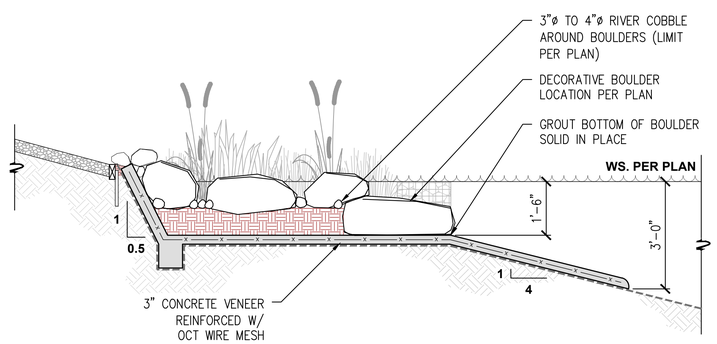
C LAKE PLANTER / WETLAND SHORELINE
SCALE: 1/2" = 1'-0"



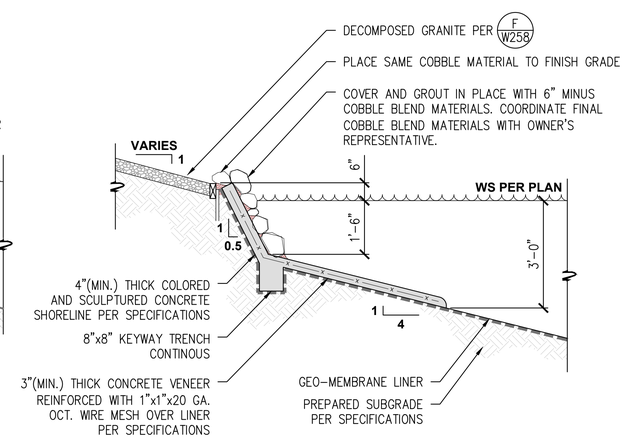
A ERODED CONCRETE SHORELINE
SCALE: 1/2" = 1'-0"



F DISCHARGE JET
NOT TO SCALE



D STEPPING STONE AT PLANTER
SCALE: 1/2" = 1'-0"



B ROCK SHORELINE
SCALE: 1/2" = 1'-0"

PRELIMINARY NOT FOR CONSTRUCTION

PRELIMINARY DESIGN DRAWING

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NO	BY	DATE	REVISIONS	DATE	APP.

PREPARED BY ZHANG SONG
PROJECT ENGINEER
R.C.E. NO. ----
EXP. 09/30/2026
DRAWN SP/RC/RT
SCALE AS SHOWN
DESIGNED BL
CHECKED ZS
DATE 7/22/2024

TITLE: LAKE DETAILS

JOB: TEWINKLE PARK
LAKE RENOVATION
COSTA MESA CA

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SHEET W250
26 OF 50 SHEETS
JOB NO. B836

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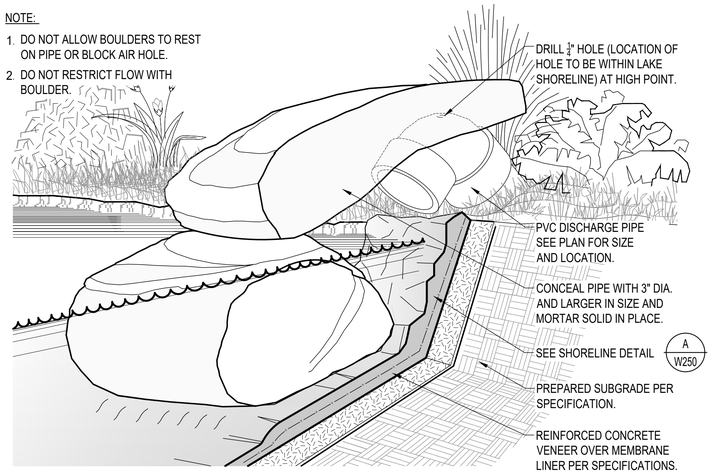
Xrefs: B836-07 36x24v.dwg; Lake Sections.dwg
Dimscale = 24; LTscale = 1; PSltscale = 1; ACAD Ver. = 23.0s (LMS Tech); Varietan = 1

Jul. 22, 2024

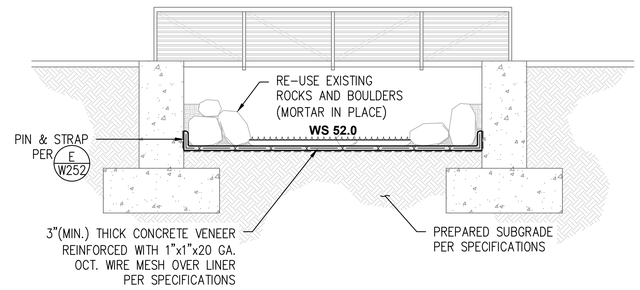
NOTE:

1. DO NOT ALLOW BOULDERS TO REST ON PIPE OR BLOCK AIR HOLE.
2. DO NOT RESTRICT FLOW WITH BOULDER.



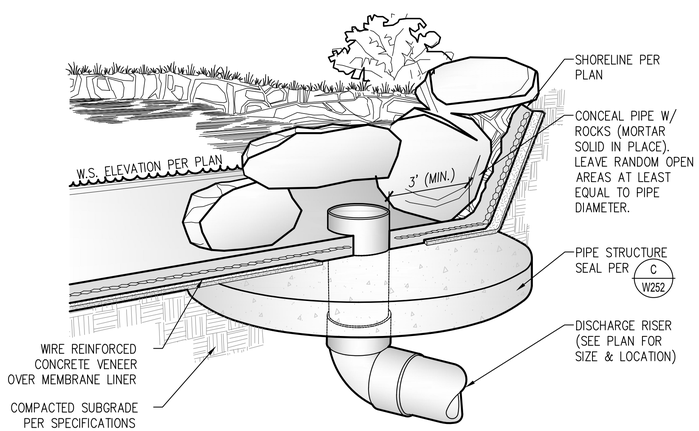
C DISCHARGE ABOVE WATER (FOR POTABLE FILL LINE)

SCALE: NTS.



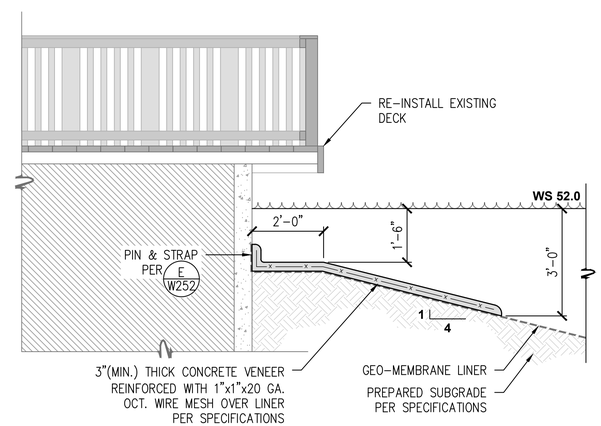
A STREAM AT BRIDGE

SCALE: 1/4"=1'



D DISCHARGE RISER

SCALE: NTS.



B DECK SHORELINE

SCALE: 1/2" = 1'-0"

PRELIMINARY NOT FOR CONSTRUCTION

PRELIMINARY DESIGN DRAWING

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NO	BY	DATE	REVISIONS	DATE	APP.

PREPARED BY ZHANG SONG
PROJECT ENGINEER
R.C.E. NO. ---
EXP. 09/30/2026
DRAWN SP/RC/RT
SCALE AS SHOWN
DESIGNED BL
CHECKED ZS
DATE 7/22/2024

TITLE: LAKE DETAILS

JOB: TEWINKLE PARK
LAKE RENOVATION
COSTA MESA CA

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SHEET W251
27 OF 50 SHEETS

JOB NO. B836

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Xrefs: B836-07 36x24v.dwg; Lake Sections.dwg
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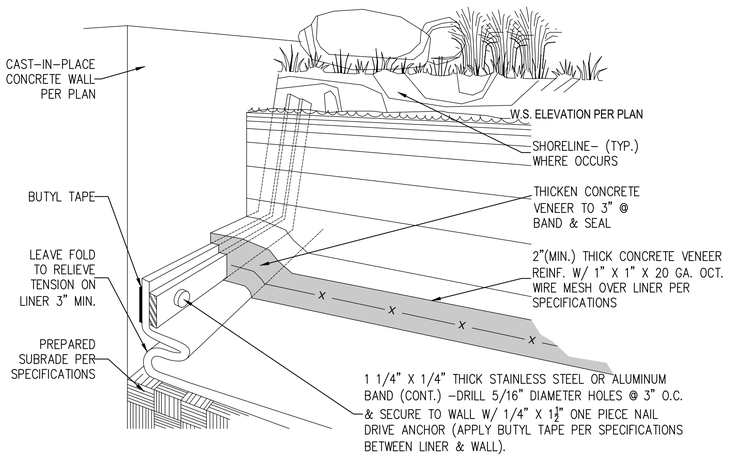
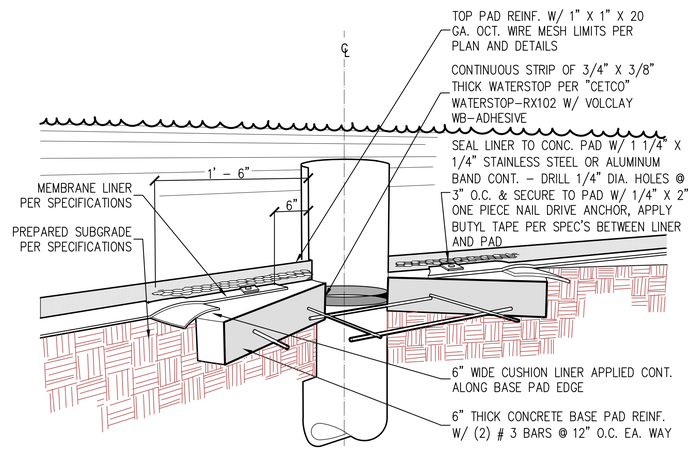
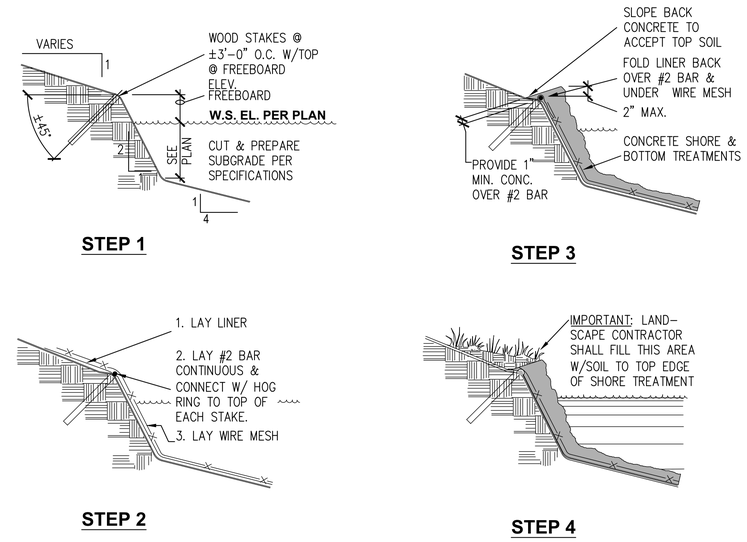
Jul. 22, 2024



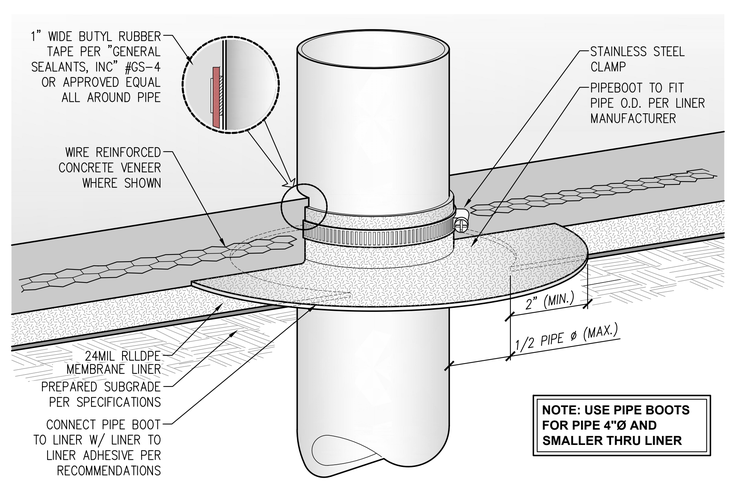
E *PIN & STRAP*
N.T.S.



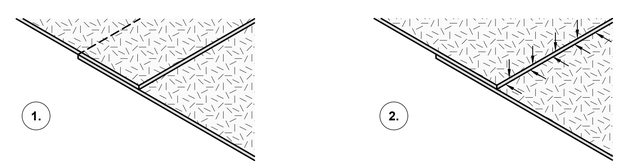
C *PIPE STRUCTURE SEAL*
NOT TO SCALE



A *SHORELINE CONSTRUCTION*
NOT TO SCALE



D *PIPE BOOT*
NOT TO SCALE



1. ALIGN PANELS & OVERLAP EDGES APPROX. 4" TO 6".
2. UTILIZE HOT AIR OR HOT WEDGE WELDING TECHNIQUES TO WELD SEAM TOGETHER IMMEDIATELY. EXTREME CARE SHOULD BE TAKEN THROUGHOUT THE WORK TO AVOID FISHMOUTHS, WRINKLES, FOLDS OR PLEATS IN THE SEAM AREA. PARTICULAR CARE SHOULD BE TAKEN TO ENSURE THAT NO STONES, SCRAP MATERIALS, TRASH, TOOLS OR OTHER UNWANTED ITEMS ARE TRAPPED BENEATH THE GEOMEMBRANE LINER.

B *HDPE LINER SEAMING PROCEDURE*
NOT TO SCALE

PRELIMINARY NOT FOR CONSTRUCTION

PRELIMINARY DESIGN DRAWING

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PREPARED BY ZIRANG SONG
PROJECT ENGINEER
R.C.E. NO. ----
EXP. 09/30/2026
DRAWN SP/RC/RT
SCALE AS SHOWN
DESIGNED BL
CHECKED ZS
DATE 7/22/2024

TITLE: LAKE DETAILS

JOB: TEWINKLE PARK
LAKE RENOVATION
COSTA MESA CA

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17520 Newhope Street, Suite 200 | Fountain Valley, CA 92708
P: (714) 481-7300 | www.pacewater.com

SHEET W252
28 OF 50 SHEETS
JOB NO. B836

Xrefs: B836-07_36x24v.dwg
Dimscale = 24, Ltscale = 1, PSltscale = 1, ACAD Ver. = 23.0s (LMS Tech), Viewton = 1
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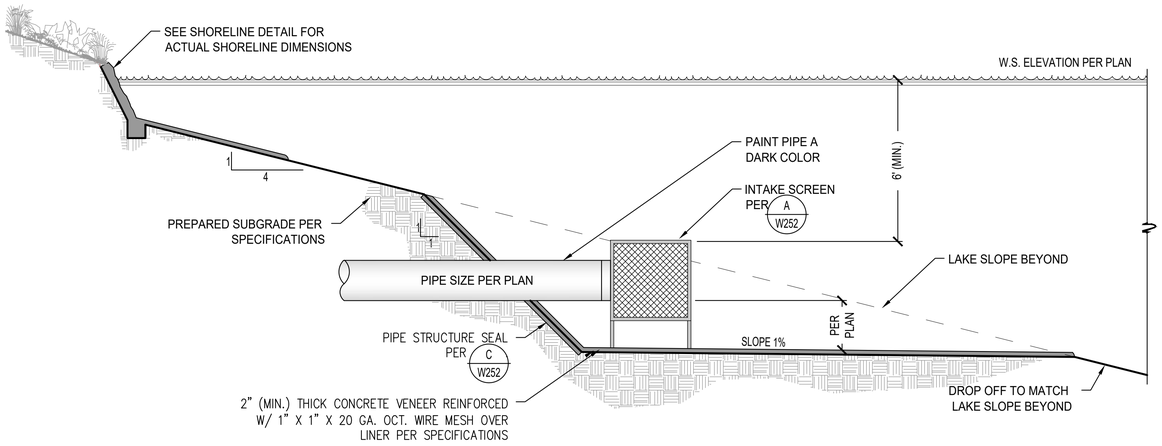
Jul. 22, 2024

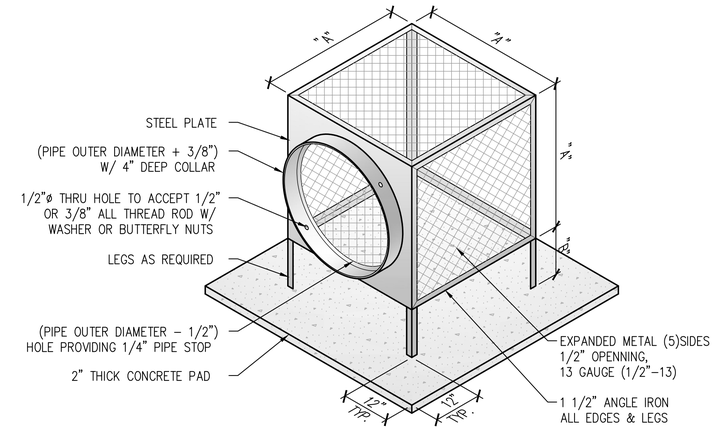


E LAKE INTAKE PIPE
NOT TO SCALE

PIPE SIZE	"A"	"B"
4", 6", 8"	18"	NO LEGS*
10" – 12"	2'–0"	6"
14" – 18"	3'–0"	12"
21" – 24"	4'–0"	12"
> 30"	5'–0"	12"

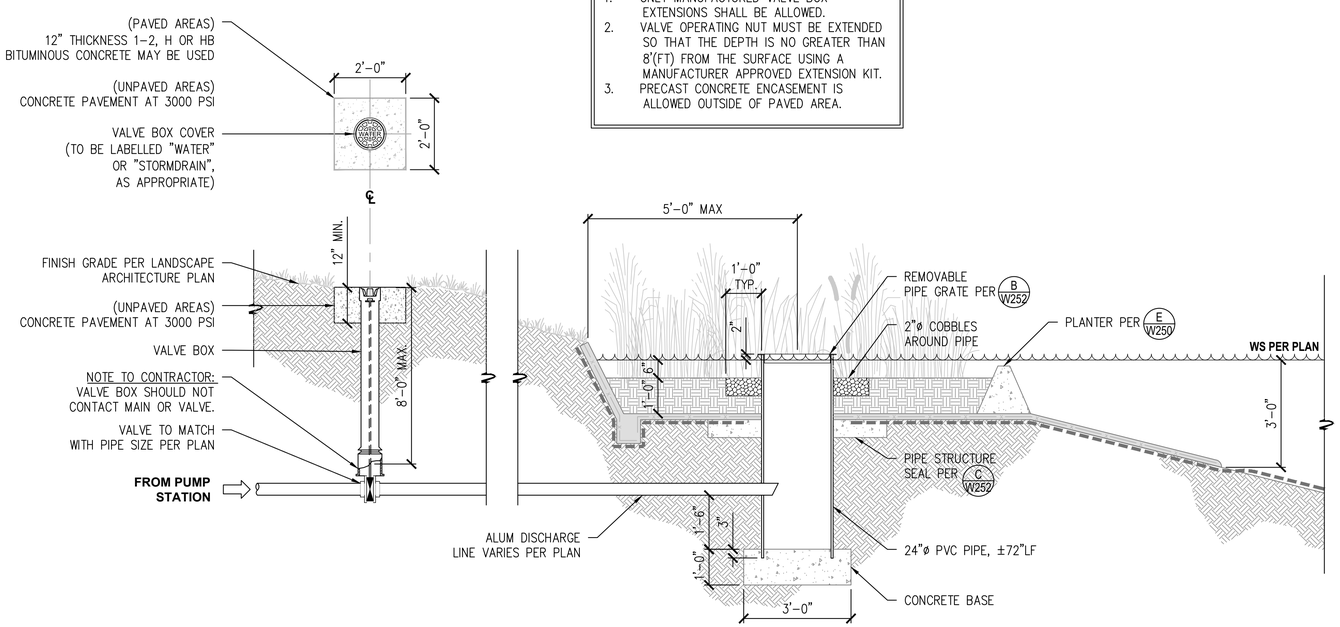
*SOLID BOTTOM & NO CONCRETE PAD

NOTE: EPOXY COAT
ENTIRE ASSEMBLY

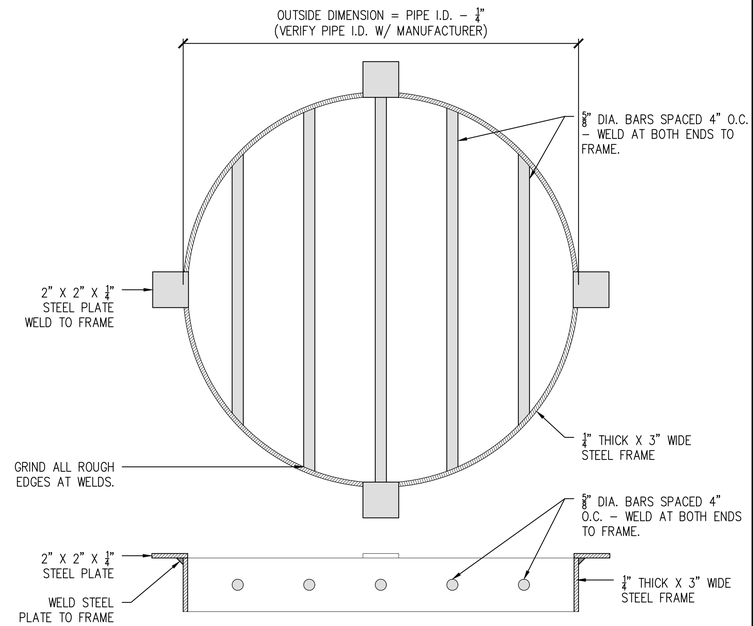


A INTAKE SCREEN
NOT TO SCALE

NOTES:
1. ONLY MANUFACTURED VALVE BOX EXTENSIONS SHALL BE ALLOWED.
2. VALVE OPERATING NUT MUST BE EXTENDED SO THAT THE DEPTH IS NO GREATER THAN 8'(FT) FROM THE SURFACE USING A MANUFACTURER APPROVED EXTENSION KIT.
3. PRECAST CONCRETE ENCASEMENT IS ALLOWED OUTSIDE OF PAVED AREA.



F ALUM DISCHARGE STANDPIPE INSIDE LAKE PLANTER
SCALE: 1/2"=1'



NOTE:
THIS ENTIRE ASSEMBLY SHALL BE HOT–DIP
GALVANIZED AFTER ASSEMBLY.

B PIPE GRATE
3"=1'-0"

PRELIMINARY NOT FOR CONSTRUCTION

PRELIMINARY DESIGN DRAWING

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NO	BY	DATE	REVISIONS	DATE	APP.

PREPARED BY
ZIRANG SONG
PROJECT ENGINEER
R.C.E. NO. ----
EXP. 01/30/2026
DRAWN SP/RC/RT
SCALE 1"=5'SHOWN
DESIGNED BL
CHECKED ZS
DATE 7/22/2024

TITLE
LAKE DETAILS

JOB
TEWINKLE PARK
LAKE RENOVATION
COSTA MESA CA

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SHEET
W253
29 OF 50 SHEETS

JOB NO. B836

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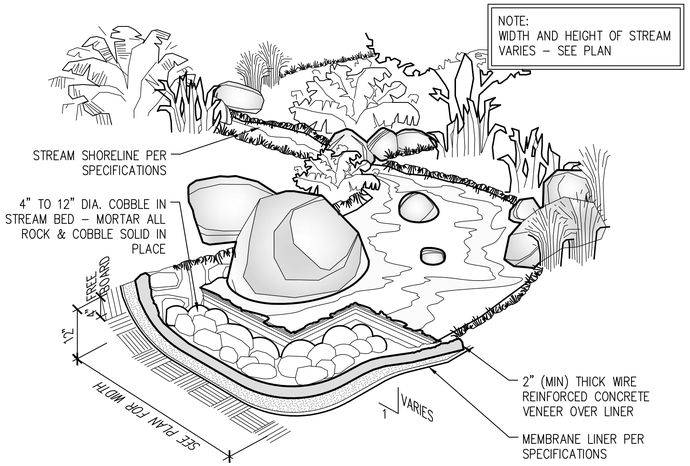
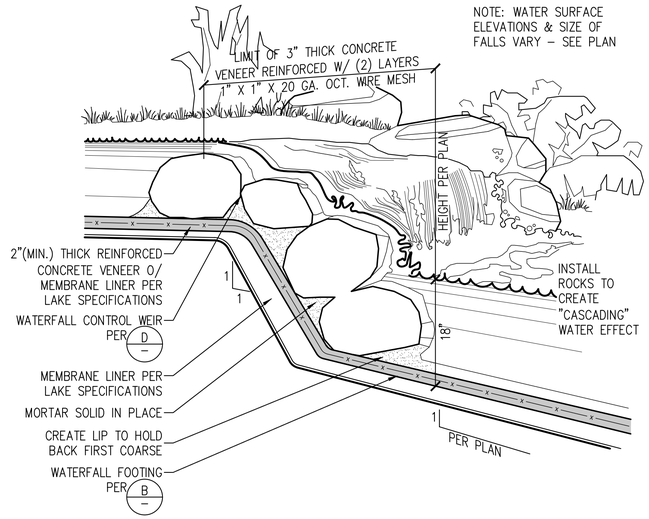
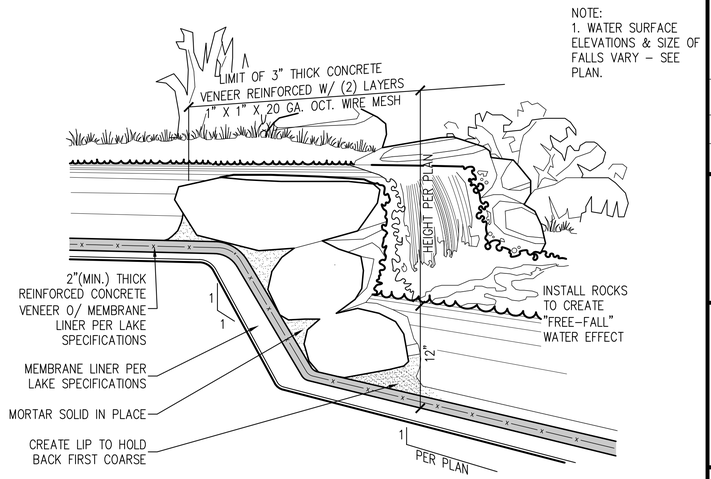
Jul. 22, 2024



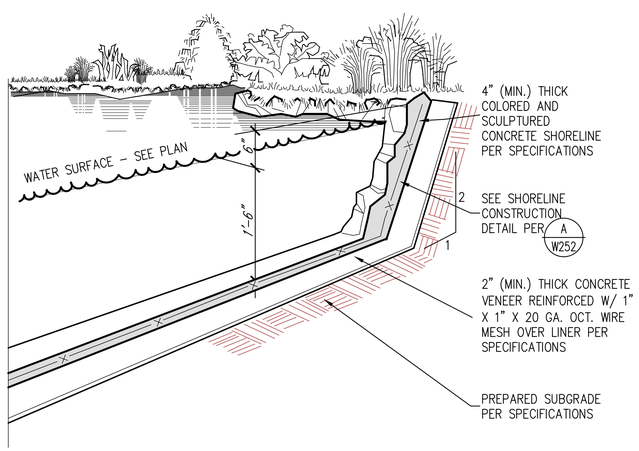
E STREAM
SCALE: NOT TO SCALE



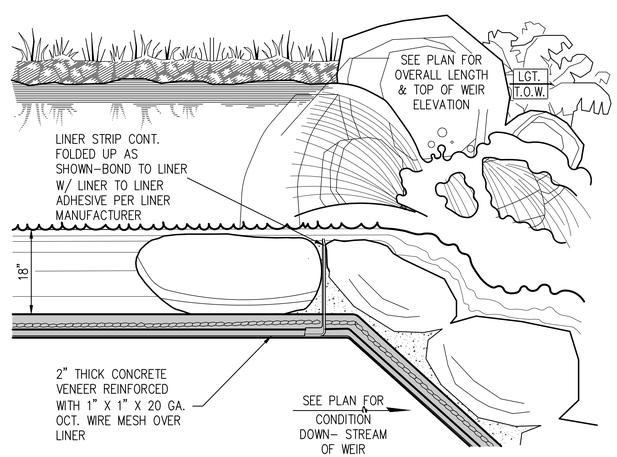
C CASCADE WATERFALL
SCALE: NOT TO SCALE



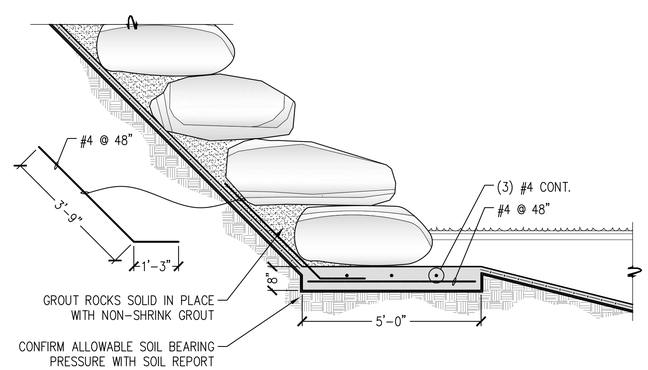
A FREEFALL WATERFALL
SCALE: NOT TO SCALE



F POND DETAIL
SCALE: NOT TO SCALE



D WATERFALL CONTROL WEIR
SCALE: NOT TO SCALE



PRELIMINARY NOT FOR CONSTRUCTION

PRELIMINARY DESIGN DRAWING

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B WATERFALL FOOTING
SCALE: NOT TO SCALE

NO	BY	DATE	REVISIONS	DATE	APP.

PREPARED BY ZIRANG SONG
PROJECT ENGINEER
R.C.E. NO. ---- #C09315
EXP. 09/30/2026
DRAWN SP/RC/RT
SCALE 1"=5' SHOWN
DESIGNED BL
CHECKED ZS
DATE 7/22/2024

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TITLE **LAKE DETAILS**

JOB **TEWINKLE PARK**
LAKE RENOVATION
COSTA MESA *CA*

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SHEET **W256**
32 OF 50 SHEETS

JOB NO. B836

R:\B836\Engineering\B836-13 (Bid Documents)\sheets\B836-13 W256 Lake Details.dwg - Tab: 32 - by rfran on 06/28/24 at 1:44:10 PM
Xrefs: B836-07 36x24v.dwg
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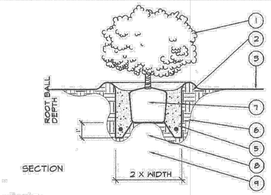
REV. 07/10/08

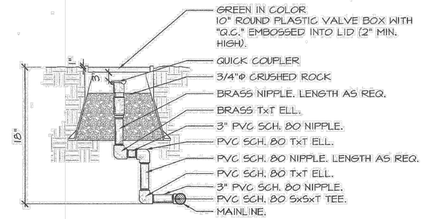
Jul. 22, 2024



LEGEND:

1. 1 OR 5 GAL. SHRUB
2. WATER BASIN 3" MIN. DEPTH
3. FINISH GRADE
4. AMENDED BACKFILL - SEE SPECIFICATIONS
5. 21 GRAM PLANT TABLET - SEE SPECIFICATIONS
6. EXISTING SOIL
7. ROOT BALL
8. COMPACTED SOIL BACKFILL MIX. (SEE SPECS.)
9. VERTICAL MULCH DRAIN HOLE (1 1/2" DIA. X 12"DEPTH) FILLED W/ COMPACTED SOIL BACKFILL MIX.

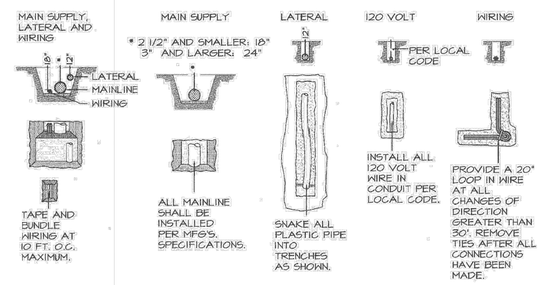
(1) SHRUB PLANTING DETAIL — N.T.S.



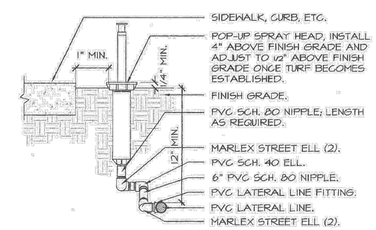
(E) QUICK COUPLER — N.T.S.

NOT USED

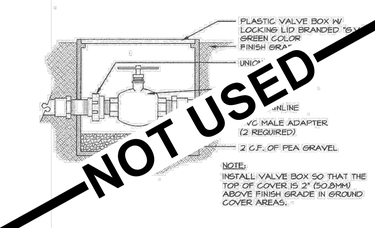
(A) TURF ROTOR — N.T.S.



(F) IRRIGATION PIPING / WIRING — N.T.S.

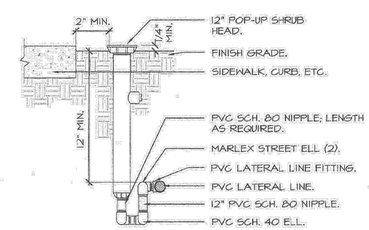


(B) TURF SPRAY — N.T.S.



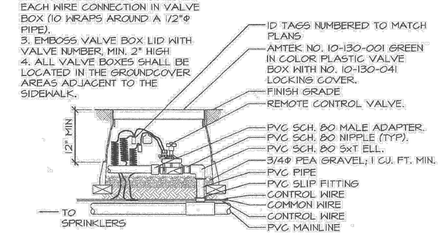
NOT USED

(G) GATE VALVE — N.T.S.



(C) SHRUB SPRAY — N.T.S.

NOTE:
1. INSTALL ALL WIRE PER LOCAL CODE.
2. PROVIDE EXPANSION COILS AT EACH WIRE CONNECTION IN VALVE BOX (10 WRAPS AROUND A 1/2"Φ PIPE).
3. EMBOSS VALVE BOX LID WITH VALVE NUMBER, MIN. 2" HIGH.
4. ALL VALVE BOXES SHALL BE LOCATED IN THE GROUNDCOVER AREAS ADJACENT TO THE SIDEWALK.



(D) REMOTE CONTROL VALVE — N.T.S.

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PRELIMINARY DESIGN DRAWING

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PERIDIAN INTERNATIONAL, INC.
Landscape Architecture & Planning
2600 NEWPORT BLVD. SUITE 130
NEWPORT BEACH • CA 92663
PHONE: 949.675.2445 FAX: 949.675.9982

REGISTERED LANDSCAPE ARCHITECT — ROBERT J. McMAHON — NO. 3863 — Signature — Date — STATE OF CALIFORNIA

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TEWINKLE PARK UPGRADE
CITY OF COSTA MESA

REVISION

NO.	DATE	DESCRIPTION

23-03655-00
PROJECT NUMBER
30 April 2004
DATE
D.L.
DRAWN
R.J.M.
CHECKED

SHEET TITLE
IRRIGATION & PLANTING DETAILS

SHEET NUMBER
LA-ID.PD.1

07/22/2004

NO	BY	DATE	REVISIONS	DATE	APP.

PREPARED BY
ZIRANG SONG
R.C.E. NO. ——
PROJECT ENGINEER
EXP. 6/30/2026
#C69315
DRAWN SP/RC/RT
SCALE AS SHOWN
DESIGNED BL
CHECKED ZS
DATE 7/22/2024

TITLE
IRRIGATION DETAILS

JOB
TEWINKLE PARK
LAKE RENOVATION
COSTA MESA CA

PACE
Advanced Water Engineering
17520 Newhope Street, Suite 200 | Fountain Valley, CA 92708
P: (714) 481-7300 | www.pacewater.com

SHEET W260
36 OF 50 SHEETS
JOB NO. B836

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Xrefs: B836-07 36x24.dwg
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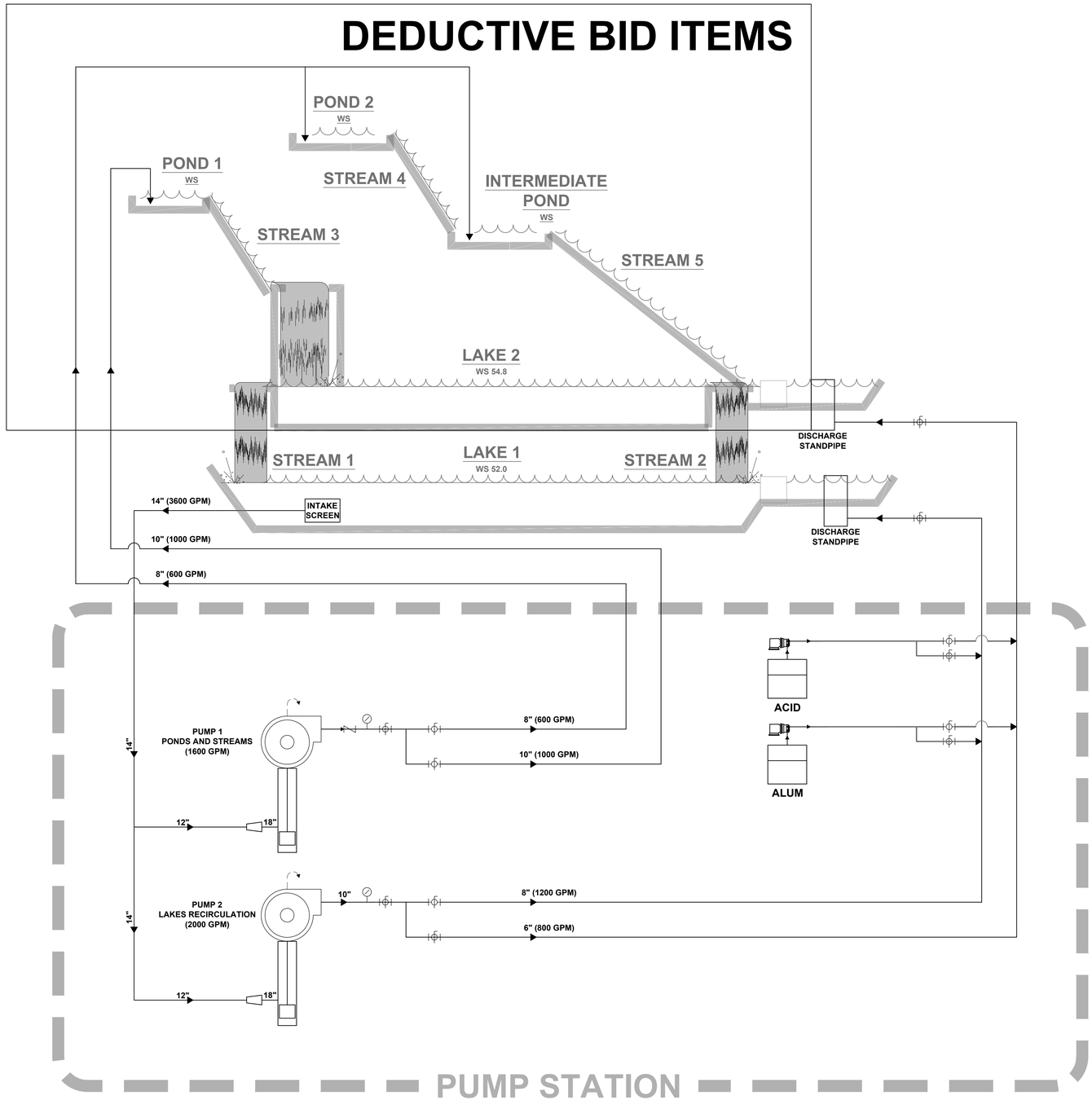
Jul. 22, 2024

DEDUCTIVE BID ITEMS



GENERAL NOTES:

1. FLOW SCHEMATIC INTENDED TO ILLUSTRATE ALL THE MAJOR MECHANICAL COMPONENTS OF THE VARIOUS WATER FEATURE SYSTEMS AND TO SHOW THE LOCATION OF ALL THE CONNECTIONS. CONTRACTOR TO USE FLOW SCHEMATIC AS GUIDE FOR CONSTRUCTION. REFER TO THE VARIOUS DETAILS FOR ADDITIONAL INFORMATION.

LEGEND:

MECHANICAL SYMBOLS:

SYMBOL	DESCRIPTION
	FLOW DIRECTION
	PRESSURE TRANSMITTER
	PRESSURE GAUGE
	3 WAY CONTROL VALVE
	FLOW METER
	FLOW TRANSMITTER
	FLOAT VALVE
	GATE VALVE
	GLOBE VALVE
	BALL VALVE
	BUTTERFLY VALVE
	CHECK VLAVE
	SOLENOID VALVE
	MOTOR OPERATED VALVE
	UNION CONNECTION
	FLANGE CONNECTION
	Y STRAINER
	PLUG OR CAP
	SIGHT GLASS
	PIPE
	ELECTRICAL WIRE
	DIAL THERMOMETER
	PRESSURE SUSTAINING VALVE
	THERMOCOUPLE
	TEMPERATURE CONTROLLER
	TEMPERATURE SWITCH
	TEMPERATURE CONTROL VALVE
	PIPE CONNECTION AS INDICATED
	ELECTRICAL CONNECTION AS INDICATED

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PREPARED BY
ZIKANG SONG
R.C.E. NO. ---
EXP. 09/30/2026
PROJECT ENGINEER
#C09315

DRAWN SP/RC/RT
SCALE 1"=5'SHOWN
DESIGNED BL
CHECKED ZS
DATE 7/22/2024

TITLE **FLOW SCHEMATIC**

JOB **TEWINKLE PARK**
LAKE RENOVATION
COSTA MESA CA

PACE
Advanced Water Engineering
17520 Newhope Street, Suite 200 | Fountain Valley, CA 92708
P: (714) 481-7300 | www.pacewater.com

SHEET **W300**
37 OF 50 SHEETS

JOB NO. B836

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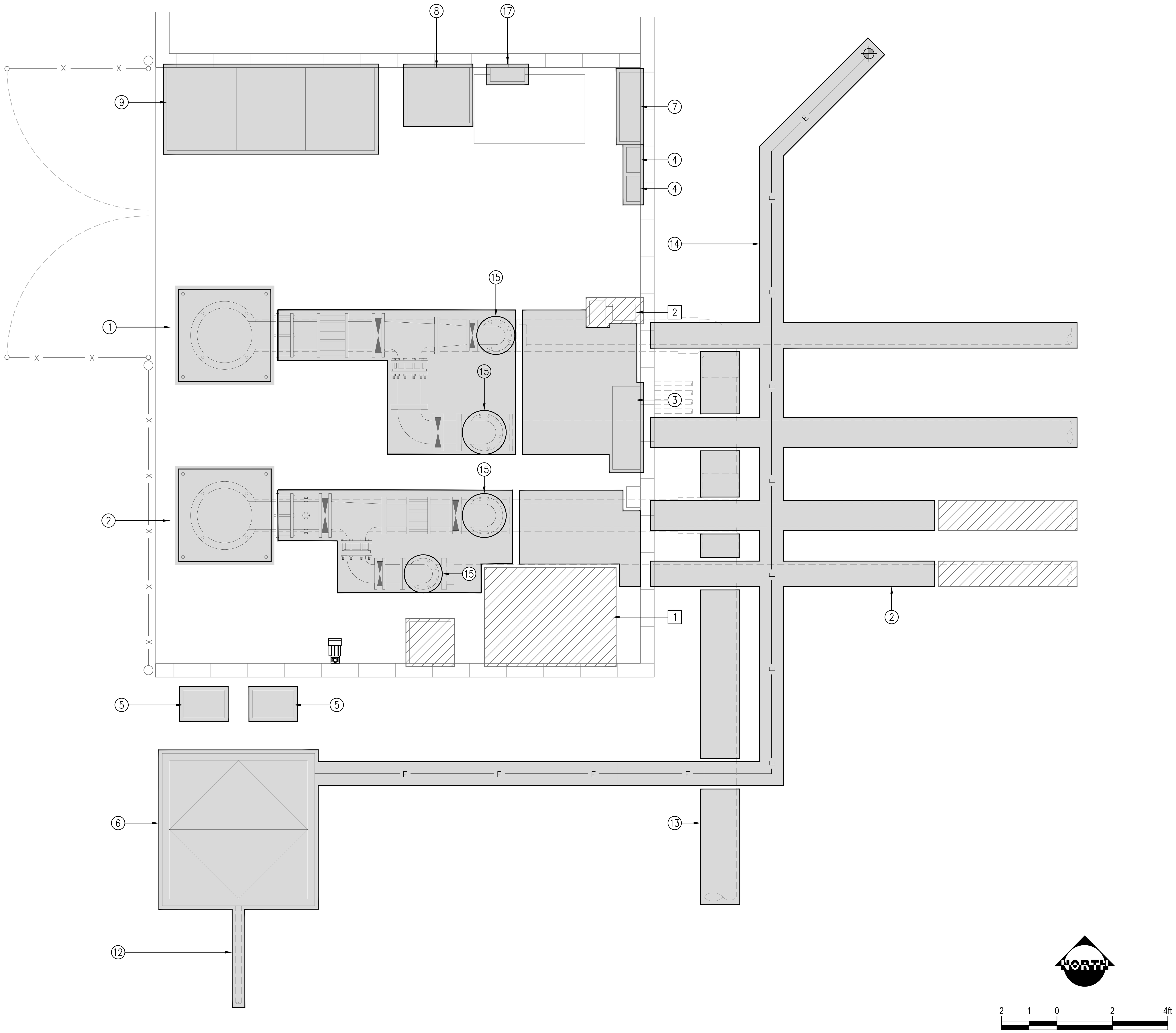

PUMP STATION DEMOLITION PLAN

½"=1'–0"

DEMOLITION LEGENDS:

- ITEM TO BE REMOVED
- ITEM TO PROTECT IN PLACE

DEMOLITION GENERAL NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR VERIFICATION OF DEMOLITION ITEMS. PROTECT IN PLACE ITEMS AND QUANTITY PRIOR TO START OF CONSTRUCTION WITH OWNER AND/OR OWNER'S REPRESENTATIVE. AS SHOWN ON THE DEMO PLANS.
2. CONTRACTOR TO COORDINATE WITH OWNER OR OWNER'S REPRESENTATIVE FOR ITEMS TO BE DEMOLISHED.
3. CONTRACTOR TO DISPOSE OF DEBRIS OFF–SITE.
4. CONTRACTOR TO REPLACE ANY ITEMS DAMAGED OR REMOVED THAT WAS NOT SPECIFICALLY IDENTIFIED IN THIS PLAN.

DEMOLITION KEYNOTES:

[1] EXISTING OZONE SKID TO BE REMOVED

[2] AERATION COMPRESSOR TO BE REMOVED AND REPLACED W/NEW COMPRESSOR. SEE EQUIPMENT LIST ON SHEET WXXX

PROTECT-IN-PLACE KEYNOTES:

(1) POND AND STREAM PUMP:
a. PUMP CAN: PROTECT IN PLACE
b. PIPE, VALVE, AND FITTING: PROTECT IN PLACE

(2) LAKES RECIRCULATION PUMP:
a. PUMP CAN: PROTECT IN PLACE
b. VALVE AND FITTING: PROTECT IN PLACE
c. PIPE: TO BE PROTECTED IN PLACE FOR 10 LF FROM PUMP STATION WALL. SEE SHEET W120 FOR P.O.C.

(3) FLOATING FOUNTAIN CONTROL PANEL TO BE PROTECTED IN PLACE

(4) IRRIGATION CONTROL PANEL TO BE PROTECTED IN PLACE

(5) IRRIGATION SYSTEM TO BE PROJECTED IN PLACE

(6) WATER LEVEL SENSOR IN VALVE BOX TO BE PROTECTED IN PLACE. CONTROL WIRING & CONDUIT TO BE PROTECTED IN PLACE

(7) LAKE CONTROL PANEL TO BE PROTECTED IN PLACE FOR REBUILT TO WORK W/NEW SYSTEM

(8) EXISTING TRANSFORMER TO BE PROTECTED IN PLACE

(9) EXISTING ELECTRICAL DISTRIBUTION PANEL TO BE PROTECTED IN PLACE

(10) ROOF HATCH OPENING: TO BE PROTECTED IN PLACE

(11) CHAIN LINK FENCE & GATE TO BE PROTECTED IN PLACE

(12) EXISTING 2 ½"ø PVC EQUALIZER PIPE TO BE PROTECTED IN PLACE

(13) EXISTING 14"ø PVC INTAKE PIPE TO BE PROTECTED IN PLACE

(14) EXISTING WIRING AND CONDUIT TO BE PROTECTED IN PLACE

(15) EXISTING VERTICAL PIPE INSIDE PUMP STATION TO BE PROTECTED IN PLACE

(16) EXISTING IRRIGATION LINE AND PROTECTION CAGE TO BE PROTECTED IN PLACE

(17) EXISTING POWER PANEL B 120 / 208 V – FOR NEW ELECTRICAL LOADS

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PRELIMINARY DESIGN DRAWING

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NO	BY	DATE	REVISIONS	DATE	APP.

PREPARED BY ZIRANG SONG
PROJECT ENGINEER
R.C.E. NO. —— #C69315
EXP. 6/30/2026
DRAWN SP/RC/RT | SCALE AS SHOWN
DESIGNED BL
CHECKED ZS | DATE 7/22/2024

TITLE **PUMP STATION DEMOLITION PLAN**

JOB **TEWINKLE PARK** *LAKE RENOVATION* **COSTA MESA CA**

PACE Advanced Water Engineering
17520 Newhope Street, Suite 200 | Fountain Valley, CA 92708
P: (714) 481-7300 | www.pacewater.com

SHEET **W400** 38 OF 50 SHEETS

JOB NO. B836

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Jul. 22, 2024

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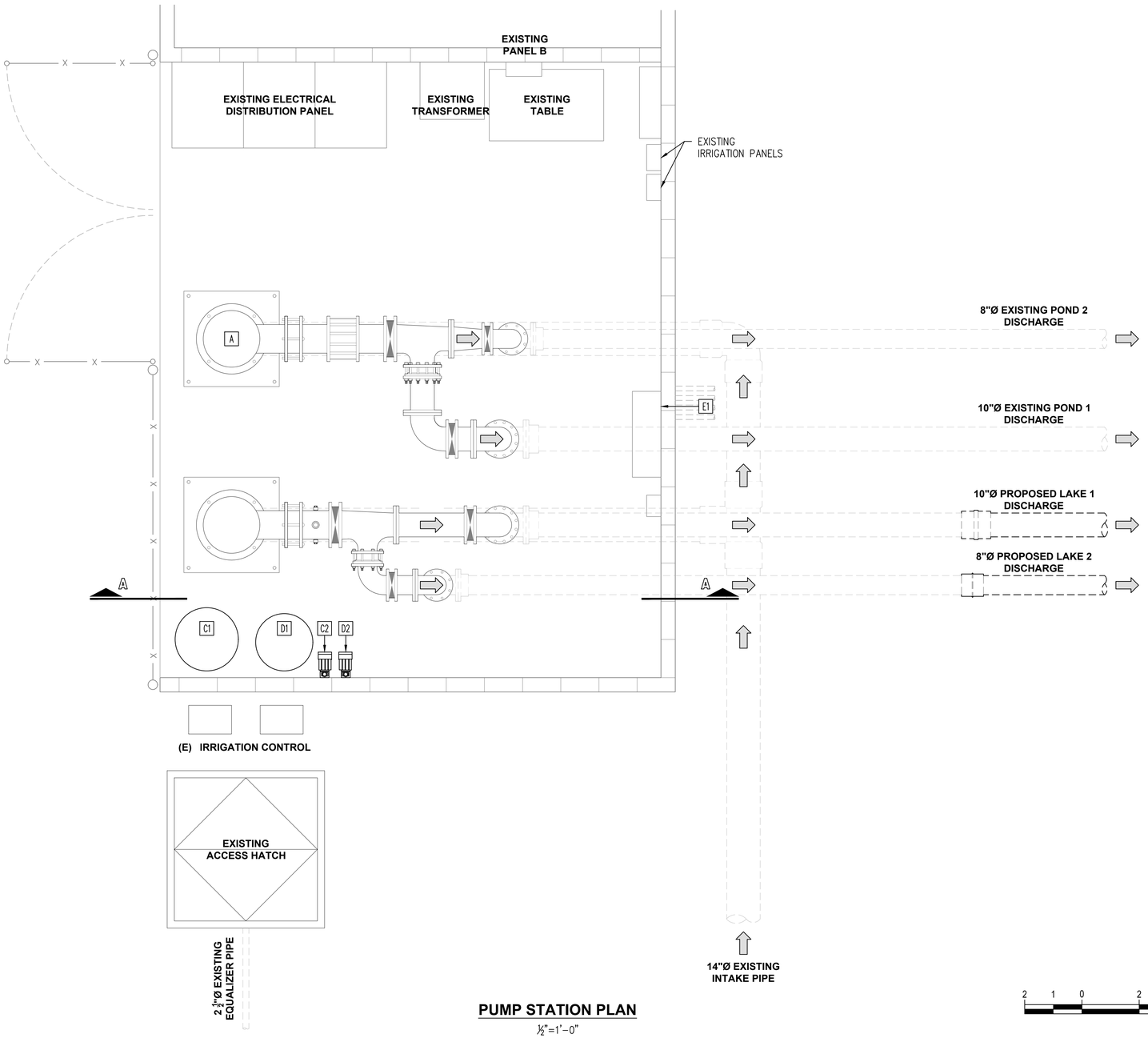
Xrefs: B836-07 36x24v.dwg; B836-07 Existing Pump Station.dwg
Dimscale = 24; LTscale = 1; PSltscale = 1; ACAD Ver. = 23.0s (LMS Tech); Visretain = 1

Jul. 22, 2024

EQUIPMENT LIST

ITEM	MODEL	MFG/SUPPLIER	DESCRIPTION	QTY
1	H14MC	NATIONAL PUMP COMPANY	REUSE EXISTING POND AND STREAM PUMP PER "NATIONAL PUMP COMPANY" MODEL H14MC – 11.3" IMP. DIA., 1 STAGE 900 RPM, RATED 1,600 GPM AT 33' TDH, 20HP, 460V, 3PH, 60 HZ.	1
2	H14MC	NATIONAL PUMP COMPANY	REUSE EXISTING LAKES RECIRCULATION PUMP PER "NATIONAL PUMP COMPANY" MODEL H14MC – 10.7" IMP. DIA., 1 STAGE 1,170 RPM, RATED 2,000 GPM AT 16.2 TDH, 15HP, 460V, 3PH, 60 HZ.	1
3	45MHP22	STENNER	CHEMICAL FEED PUMPS PER "STENNER" MODEL 45MHP22, RATED 1.1 TO 22.0 GPD AT 25 PSI.	2
4	TC2738DC	CHEMTAINER	50 GAL ALUM DOUBLE WALL STORAGE TANK PER "CHEMTAINER" MODEL TC2738DC	1
5	TC2435DC	CHEMTAINER	35 GAL ACID DOUBLE WALL STORAGE TANK PER "CHEMTAINER" MODEL TC2435DC	1



PUMP STATION PLAN

½"=1'–0"

PUMP STATION PIPING NOTES:

1. CONTRACTOR TO PROVIDE PIPE SUPPORTS PER EQUIPMENT MANUFACTURER'S REQUIREMENTS AND SPECIFICATIONS AND PER THE PROJECT SPECIFICATIONS.
2. ALL D.I.P. SHALL BE CLASS 350 UNLESS NOTED OTHERWISE.
3. ALL UNDERGROUND MECHANICAL JOINT FITTINGS SHALL BE SUPPLIED WITH RESTRAINING BOLTS (RJ FITTINGS).
4. ALL BURIED PVC PIPE GREATER THAN 3"ø SHOWN ON PLANS SHALL BE C900 UNLESS NOTED OTHERWISE. ALL BURIED PVC PIPE 3"ø OR LESS SHALL BE SCH 40 PVC.
5. ALL PVC PIPE ABOVE GRADE SHALL BE SCH 80 PVC FOR ALL SIZES.
6. ALL STAINLESS STEEL PIPE SHOWN ON PLANS SHALL BE MINIMUM TYPE 304L SCH 10 UNLESS NOTED OTHERWISE.
7. ALL PROCESS PIPES SHALL BE COLOR COATED PER THE PROJECT SPECIFICATIONS WITH THE EXCEPTION OF STAINLESS STEEL PIPES.
8. ALL VALVES SHALL BE ROTATED/ORIENTED PER MANUFACTURE'S RECOMMENDATIONS.

PUMP STATION CONSTRUCTION NOTES:

A POND AND STREAM PUMP SYSTEM: TO BE PROTECTED IN PLACE

B LAKES RECIRCULATION SYSTEM: TO BE PROTECTED IN PLACE

C ALUM ADDITION SYSTEM:
1. INSTALL 50 GAL DOUBLE WALL CONTAINMENT ALUM TANK (SEE EQUIPMENT LIST #4).
2. INSTALL ALUM FEED PUMP (SEE EQUIPMENT LIST #3).

D ACID ADDITION SYSTEM:
1. INSTALL 35 GAL DOUBLE WALL CONTAINMENT CHEMICAL TANK (SEE EQUIPMENT LIST #5).
2. INSTALL ACID FEED PUMP (SEE EQUIPMENT LIST #3).

E FLOATING FOUNTAIN SYSTEM:
1. REUSE FLOATING FOUNTAIN CONTROL PANEL.

2 1 0 2 4ft

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PRELIMINARY DESIGN DRAWING

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NO	BY	DATE	REVISIONS	DATE	APP.

PREPARED BY ZIRANG SONG
R.C.E. NO. ---- PROJECT ENGINEER
EXP. 6/30/2026 #C89315
DRAWN SP/RC/RT
SCALE AS SHOWN
DESIGNED BL
CHECKED ZS
DATE 7/22/2024

TITLE PUMP STATION PLAN

JOB TEWINKLE PARK
LAKE RENOVATION
COSTA MESA CA

PACE
Advanced Water Engineering
17520 Newhope Street, Suite 200 | Fountain Valley, CA 92708
P: (714) 481-7300 | www.pacewater.com

SHEET W410
39 OF 50 SHEETS

JOB NO. B836

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Xrefs: B836-07 36x24v.dwg; B836-07 Existing Pump Station.dwg
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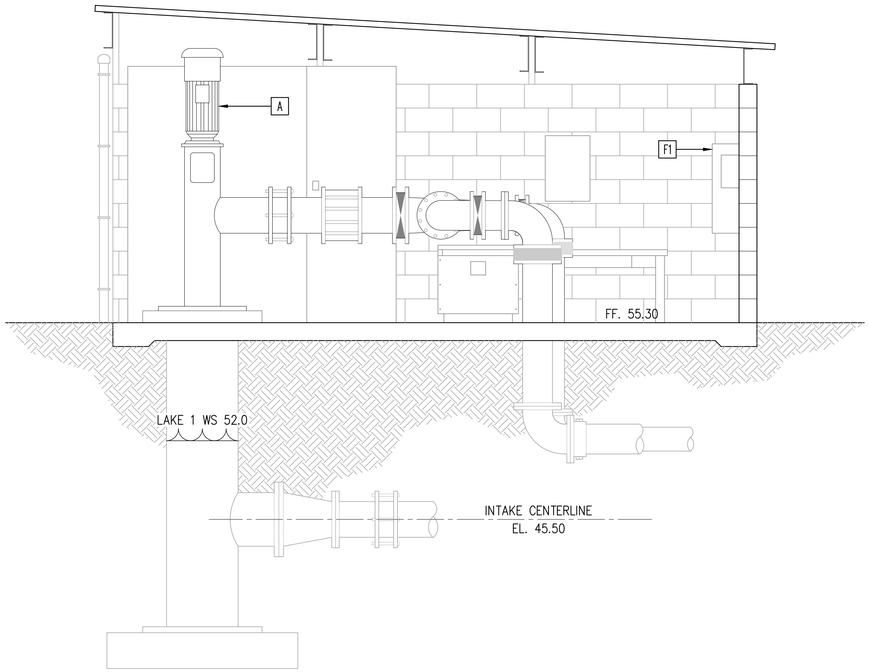
Jul. 22, 2024



PUMP STATION - SECTION A

½"=1'-0"

PUMP STATION PIPING NOTES:

1. CONTRACTOR TO PROVIDE PIPE SUPPORTS PER EQUIPMENT MANUFACTURER'S REQUIREMENTS AND SPECIFICATIONS AND PER THE PROJECT SPECIFICATIONS.
2. ALL D.I.P. SHALL BE CLASS 350 UNLESS NOTED OTHERWISE.
3. ALL UNDERGROUND MECHANICAL JOINT FITTINGS SHALL BE SUPPLIED WITH RESTRAINING BOLTS (RJ FITTINGS).
4. ALL BURIED PVC PIPE GREATER THAN 3"ø SHOWN ON PLANS SHALL BE C900 UNLESS NOTED OTHERWISE. ALL BURIED PVC PIPE 3"ø OR LESS SHALL BE SCH 40 PVC.
5. ALL PVC PIPE ABOVE GRADE SHALL BE SCH 80 PVC FOR ALL SIZES.
6. ALL STAINLESS STEEL PIPE SHOWN ON PLANS SHALL BE MINIMUM TYPE 304L SCH 10 UNLESS NOTED OTHERWISE.
7. ALL PROCESS PIPES SHALL BE COLOR COATED PER THE PROJECT SPECIFICATIONS WITH THE EXCEPTION OF STAINLESS STEEL PIPES.
8. ALL VALVES SHALL BE ROTATED/ORIENTED PER MANUFACTURE'S RECOMMENDATIONS.

PUMP STATION CONSTRUCTION NOTES:

A POND AND STREAM PUMP SYSTEM: TO BE PROTECTED IN PLACE

B LAKES RECIRCULATION SYSTEM: TO BE PROTECTED IN PLACE

C ALUM ADDITION SYSTEM:
1. INSTALL 50 GAL DOUBLE WALL CONTAINMENT ALUM TANK (SEE EQUIPMENT LIST).
2. INSTALL ALUM FEED PUMP (SEE EQUIPMENT LIST).

D ACID ADDITION SYSTEM:
1. INSTALL 50 GAL DOUBLE WALL CONTAINMENT CHEMICAL TANK (SEE EQUIPMENT LIST).
2. INSTALL ACID FEED PUMP (SEE EQUIPMENT LIST).

E FLOATING FOUNTAIN SYSTEM:
1. REUSE FLOATING FOUNTAIN CONTROL PANEL.

F CONTROL PANEL:
1. REUSE THE CONTROL PANEL TO WORK W / NEW SYSTEM.

2 1 0 2 4ft

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PRELIMINARY DESIGN DRAWING

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NO	BY	DATE	REVISIONS	DATE	APP.

PREPARED BY ZIRANG SONG
PROJECT ENGINEER
R.C.E. NO. ---- #C89315
EXP. 6/30/2026
DRAWN SP/RC/RT
SCALE AS SHOWN
DESIGNED BL
CHECKED ZS
DATE 7/22/2024

TITLE **PUMP STATION SECTION**

JOB **TEWINKLE PARK** *LAKE RENOVATION* **COSTA MESA** CA

PACE Advanced Water Engineering
17520 Newhope Street, Suite 200 | Fountain Valley, CA 92708
P: (714) 481-7300 | www.pacewater.com

SHEET **W411**
40 OF 50 SHEETS

JOB NO. B836

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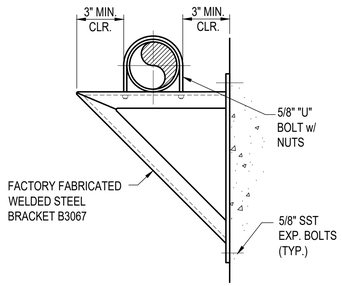
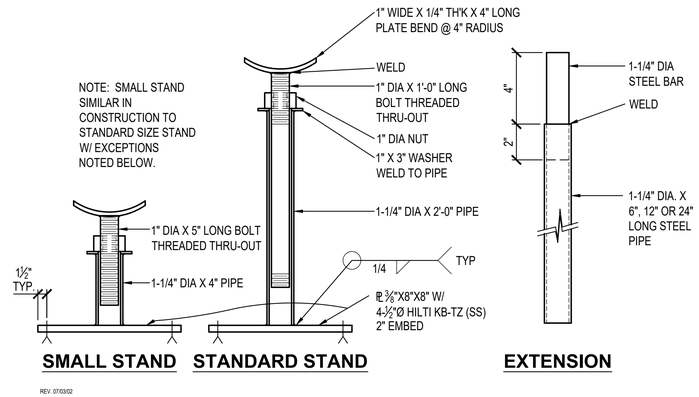
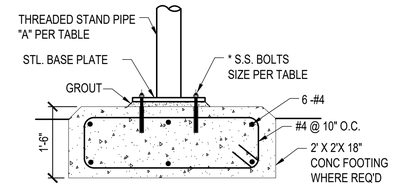


WALL BRACKET SUPPORT

NOTE: PAINT ENTIRE ASSEMBLY WITH PRIMER PAINT



PIPE STAND 10" OR SMALLER



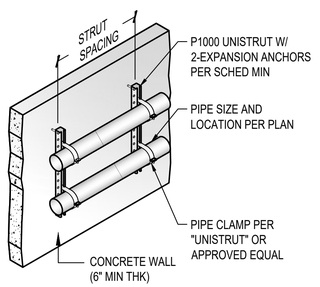
DIMENSIONS				
PIPE Ø SIZE	BOLT SIZE	STAND PIPE "A"	ADJ. PIPE "B"	FLANGE SUPPORT PLATE THK. "C"
4-12	1/2	3"	2 1/2"	1/4"
14-16	5/8	4"	3"	3/8"
18-36	7/8	6"	4"	3/8"

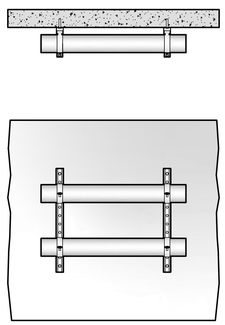
INSTALLATION NOTE:
PIPE SUPPORT SPACING, MATERIAL AND QUANTITY PER SPECS.

* BOLT EMBEDMENT DEPTH PER TABLE HEREON.

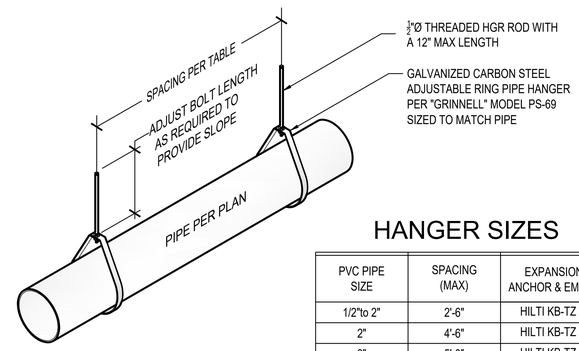
PIPE STAND FOOTING (AS NEEDED)

PVC PIPE SIZE	MAX. HANGING LOAD RATING (LBS)	STRUT SPACING	EXPANSION ANCHOR & EMBED
3/8" TO 1/2"	400	4'-0"	HILTI KB-TZ (SS)
3/4" TO 1 1/4"	600	4'-5"	HILTI KB-TZ (SS)
1 1/2" TO 3"	800	5'-3/4"	HILTI KB-TZ (SS)
3 1/2" TO 5"	1000	8'-1/4"	HILTI KB-TZ (SS)
6" TO 12"	1000	10'-0"	HILTI KB-TZ (SS)





PIPE SUPPORT AT WALL

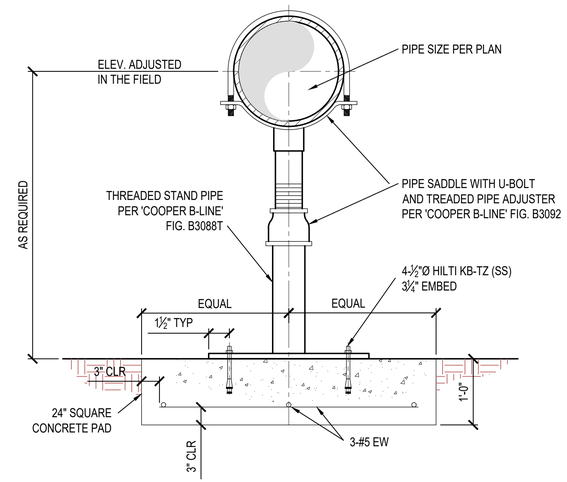


NOTE: ATTACH EXPANSION ANCHORS INTO A CONCRETE SLAB WITH A 6" MINIMUM THICKNESS OR INTO A 3¼" CONCRETE OVER A 3" METAL DECK.

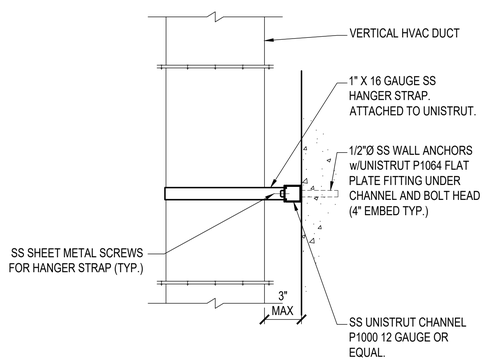
HANGER SIZES

PVC PIPE SIZE	SPACING (MAX)	EXPANSION ANCHOR & EMBED
1/2"to 2"	2'-6"	HILTI KB-TZ (SS)
2"	4'-6"	HILTI KB-TZ (SS)
3"	5'-0"	HILTI KB-TZ (SS)
4"	6'-0"	HILTI KB-TZ (SS)
6"	6'-6"	HILTI KB-TZ (SS)
8"	7'-6"	HILTI KB-TZ (SS)

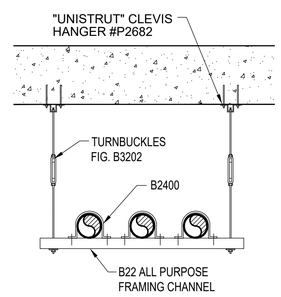
PIPE HANGER



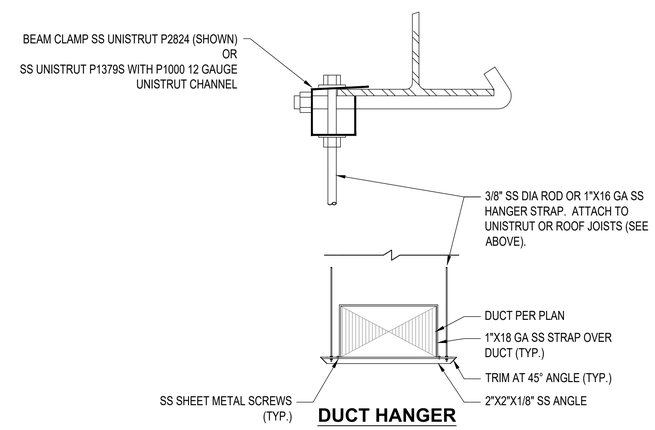
PIPE SUPPORT 12" OR BIGGER



VERTICAL DUCT SUPPORT



PIPE HANGER



DUCT HANGER

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PRELIMINARY DESIGN DRAWING

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F PIPE SUPPORT/ STAND
NOT TO SCALE

NO	BY	DATE	REVISIONS	DATE	APP.

PREPARED BY ZIRANG SONG
PROJECT ENGINEER
R.C.E. NO. ---
EXP. 09/30/2026
DRAWN SP/RC/RT
SCALE 1"=5'SHOWN
DESIGNED BL
CHECKED ZS
DATE 7/22/2024

TITLE PUMP STATION DETAILS

JOB TEWINKLE PARK
LAKE RENOVATION
COSTA MESA CA

PACE
Advanced Water Engineering
17520 Newhope Street, Suite 200 | Fountain Valley, CA 92708
P: (714) 481-7300 | www.pacewater.com

SHEET W450
41 OF 50 SHEETS
JOB NO. B836

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Xref(s): B836-07 36x24v.dwg
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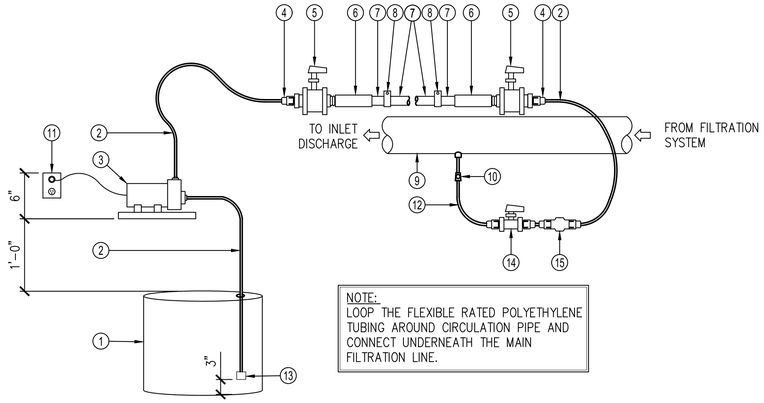
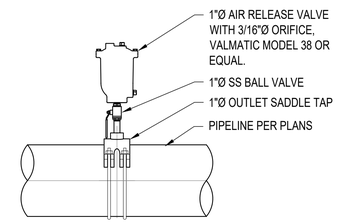


NOTE:
LOOP THE FLEXIBLE RATED POLYETHYLENE TUBING AROUND CIRCULATION PIPE AND CONNECT UNDERNEATH THE MAIN FILTRATION LINE.

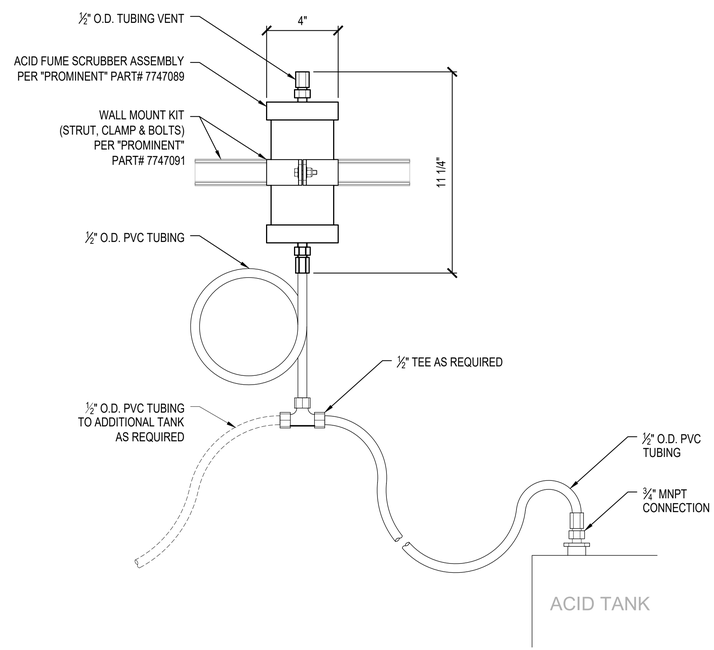
KEYNOTES

1. CHEMICAL TANK
2. FLEXIBLE PRESSURE RATED POLYETHYLENE TUBING SUPPLIED BY PUMP MANUFACTURER (MAX DISTANCES')
3. CHEMICAL FEED PUMP PER EQUIPMENT LIST
4. PIPE TO TUBE ADAPTER TYPICAL
5. ISOLATION VALVE
6. 1/2" SCH. 80 PVC FIP FEMALE ADAPTER TYPICAL
7. 1/2" SCH. 80 PVC PIPE TYPICAL
8. 1/2" PIPE CLIP B-LINE #B3191 AT 24" O.C. MOUNTED TO WALL
9. POOL/SPA CIRCULATION PIPING
10. CHEMICAL INJECTOR PER DETAIL B ON SHEET W451
11. POWER OUTLET (ON/OFF CONTROL BY CONTROL PANEL)
12. NEEDS TO BE ACCESSIBLE FROM THE GROUND BY PERSONNEL WITHOUT A LADDER
13. CHEMICAL SUCTION FOOT VALVE
14. BALL VALVE
15. CHECK VALVE

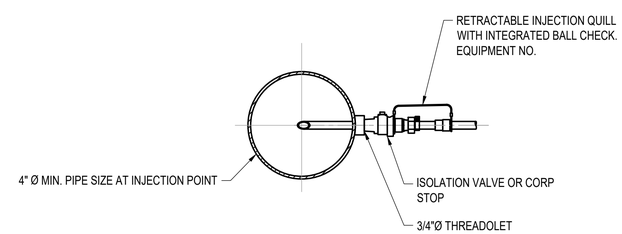
C CHEMICAL FEED SYSTEM
NOT TO SCALE



A AIR RELEASE VALVE DETAIL
NOT TO SCALE



D ACID SCRUBBER TANK
NOT TO SCALE



B CHEMICAL INJECTION DETAIL
NOT TO SCALE

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NO	BY	DATE	REVISIONS	DATE	APP.

PREPARED BY ZIRANG SONG
PROJECT ENGINEER
R.C.E. NO. ---- #C89315
EXP. 09/30/2026
DRAWN SP/RC/RT
SCALE 1"=5'SHOWN
DESIGNED BL
CHECKED ZS
DATE 7/22/2024

TITLE **PUMP STATION DETAILS**

JOB **TEWINKLE PARK** *LAKE RENOVATION* **COSTA MESA** CA

PACE Advanced Water Engineering
17520 Newhope Street, Suite 200 | Fountain Valley, CA 92708
P: (714) 481-7300 | www.pacewater.com

SHEET **W451**
42 OF 50 SHEETS

JOB NO. B836

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Jul. 22, 2024
Xrefs: B836-07 36x24v.dwg
Dimscale = 24, LTscale = 1, PSltscale = 1, ACAD Ver. = 23.0s (LMS Tech), Visretain = 1
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Jul. 22, 2024

GENERAL ELECTRICAL NOTES:

1. ELECTRICAL CODE SHALL COMPLY WITH THE NATIONAL ELECTRICAL CODE (2020 NEC) AS AMENDED BY THE CALIFORNIA ELECTRICAL CODE (2019 CEC) THE ENERGY CODE REFERENCE TO READ CALIFORNIA ENERGY CODE TITLE 24 (2019 CENC) AND ADD CALIFORNIA BUILDING CODE (2019 CBC) AND THE CITY OF COSTA MESA MUNICIPAL CODE.
2. ALL WORK SHALL BE DONE IN A NEAT, WORKMANLIKE, FINISHED AND SAFE MANNER, ACCORDING TO THE LATEST PUBLISHED NATIONAL ELECTRICAL CONTRACTOR'S ASSOCIATION STANDARDS OF INSTALLATION, UNDER COMPETENT SUPERVISION.
3. CONTRACTOR SHALL VISIT THE SITE PRIOR TO CONSTRUCTION TO BECOME FAMILIAR WITH EXISTING CONDITIONS AND ALL OTHER FACTORS WHICH MAY AFFECT THE EXECUTION OF THIS WORK.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGE TO EXISTING WALKS, WALLS, DRIVEWAYS, CURBS, ETC. DAMAGES SHALL BE REPAIRED BY THE CONTRACTOR TO THE SATISFACTION OF THE CITY AT NO ADDITIONAL COST TO THE CITY.
5. CONTRACTOR SHALL PAY FOR LOCAL FEES, PERMITS AND INSPECTIONS AS MAY BE REQUIRED AND PROVIDE A CERTIFICATE OF INSPECTION TO THE CITY.
6. LEAVE THE SITE CLEAN, REMOVE ALL DEBRIS, EMPTY CARTONS, TOOLS, CONDUIT, WIRE SCRAPS AND ALL MISCELLANEOUS SPARE EQUIPMENT AND MATERIALS USED IN THE WORK DURING CONSTRUCTION.
7. IT IS THE OBLIGATION OF THE CONTRACTOR TO ORGANIZE HIS WORK SO THAT A COMPLETE ELECTRICAL, INSTRUMENTATION, AND/OR CONTROL SYSTEM FOR THE FACILITY WILL BE PROVIDED AND SUPPORTED BY ACCURATE SHOP AND RECORD DRAWINGS, AND ALL O&M MANUALS.
8. ALL CABLES SHALL BE NEW, COPPER, RATED FOR 600V AND LISTED FOR ITS LOCATION WITH A MINIMUM TEMPERATURE RATING OF 75 DEG C WET AND 90 DEG C DRY; POWER CABLES SHALL BE TYPE XHHW-2 FOR UNDERGROUND/ABOVE GROUND, UNLESS NOTED OTHERWISE.
9. MINIMUM SIZE CONDUIT ABOVE GROUND SHALL BE 3/4" AND MINIMUM SIZE CONDUIT BELOW GROUND SHALL BE 1" UNLESS NOTED OTHERWISE. ALL CONDUITS FOR POWER AND LIGHTING SHALL CONTAIN A GROUNDING CONDUCTOR.
10. MINIMUM SIZE POWER CONDUCTORS SHALL BE #12 AWG UNLESS NOTED OTHERWISE.
11. ALL TERMINAL RATINGS SHALL HAVE A MINIMUM TEMPERATURE RATING OF 75 DEG C. CABLES SHALL BE DE-RATED PER NEC 110.14 (C).
12. CONDUIT SIZE SHALL BE AS SPECIFIED IN THE PLANS OR DETAILS. UNDERGROUND CONDUIT SHALL BE SCH 40 PVC ENCASED IN CONCRETE WITH PVC COATED GALVANIZED RIGID STEEL BENDS, ELBOWS AND TURN-UPS. EXPOSED CONDUIT IN THE CHEMICAL ROOM AND OUTDOORS SHALL BE PVC COATED GRS. ALL OTHER EXPOSED ABOVE-GROUND CONDUIT SHALL BE GALVANIZED RIGID STEEL.
13. EQUIPMENT AND WIRING METHODS LOCATED OUTSIDE SHALL BE RATED FOR CORROSIVE LOCATIONS, ENCLOSURES SHALL BE NEMA 4X SS. EQUIPMENT IN THE ELECTRICAL ROOM SHALL BE NEMA 12 UNLESS NOTED OTHERWISE.
14. GROUND AND BOND ALL EQUIPMENT AND ENCLOSURES PER NEC ARTICLE 250 AND MANUFACTURER REQUIREMENTS.
15. CONTRACTOR SHALL PLAN AND INSTALL WORK IN SUCH A MANNER AS TO CONFORM TO THE STRUCTURE, AVOID OBSTRUCTIONS, PRESERVE HEADROOM AND KEEP OPENINGS AND PASSAGEWAYS CLEAR.
16. CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIAL, ETC. NECESSARY FOR A COMPLETE AND WORKABLE ELECTRICAL SYSTEM WHETHER OR NOT THESE ITEMS ARE SPECIFICALLY NOTED ON THESE DRAWINGS. INCIDENTAL ITEMS NOT INDICATED ON THE DRAWINGS, NOR MENTIONED IN SPECIFICATIONS THAT CAN BE LEGITIMATELY AND REASONABLY INFERRED TO BELONG TO THE WORK DESCRIBED OR BE NECESSARY IN GOOD PRACTICE TO PROVIDE A COMPLETE SYSTEM, SHALL BE FURNISHED AND INSTALLED AS THOUGH ITEMIZED HERE IN EVERY DETAIL.
17. ALL TRENCHING, CONDUITS, ETC. SHALL BE ROUTED AND INSTALLED IN SUCH A MANNER THAT WILL NOT DAMAGE EXISTING FACILITIES OR UNDERGROUND UTILITIES. SHOULD DAMAGE OCCUR, IT WILL BE THE CONTRACTOR'S RESPONSIBILITY TO REPAIR DAMAGE TO THE SATISFACTION OF THE CITY OR INSPECTOR.
18. ALL CONDUIT RUNS SHOWN ON THIS PLAN ARE SCHEMATIC IN NATURE. THE CONTRACTOR SHALL MAKE SURE THAT ALL CONDUIT MEETS LOCAL AND STATE CODES.
19. WHEN CROSSING PATHWAYS OR SIDEWALKS, CONTRACTOR SHALL BORE UNDER EXISTING CONCRETE WALKS AND SAWCUT ASPHALT WALKS. ASPHALT WALKS AND CONCRETE SIDEWALKS TO BE REPLACED IN KIND.
20. CONTRACTOR SHALL GUARANTEE WORK INSTALLED UNDER THE CONTRACT TO BE FREE FROM DEFECTIVE WORKMANSHIP AND MATERIALS, USUAL WEAR EXPECTED, AND SHOULD ANY SUCH DEFECTS DEVELOP WITHIN A PERIOD OF ONE YEAR ACCEPTANCE OF THE PROJECT BY THE CITY, THE CONTRACTOR SHALL REPAIR AND/OR REPLACE ANY DEFECTIVE ITEMS AND DAMAGE RESULTING FROM FAILURE OF THESE ITEMS, AT NO EXPENSE WHATSOEVER TO THE CITY.
21. ALL CIRCUITS SHALL BE LEGIBLY IDENTIFIED AT THE PANEL, JUNCTION BOXES AND AT ALL EQUIPMENT IN A PERMANENT MANNER (I.E. ETCHED PLATES, CONDUCTOR TAG, PERMANENT MARKER, ETC.). THE LABELING SHALL INCLUDE PANEL CIRCUIT NUMBER, "TO" AND "FROM" IDENTIFICATION, AND MARKED "SPARE" WHERE APPLICABLE.
22. CONTRACTOR SHALL TEST ELECTRICAL SYSTEM FOR SHORT CIRCUITS AND MEGGER TEST FEEDERS AND BRANCH CIRCUIT WIRING. INSURE LOW IMPEDANCE GROUND PATH SYSTEM. PERFORM HIPOT TESTING WHEN REQUIRED BY LOCAL JURISDICTION.
23. CONTRACTOR SHALL COORDINATE ALL EQUIPMENT CONNECTIONS WITH EQUIPMENT SUPPLIER PRIOR TO ROUGH-IN. PROVIDE ADDITIONAL FUSED DISCONNECT SWITCHES AND CONTROLS IF OVERCURRENT PROTECTION OR CONTROLS ARE NOT INTEGRAL WITH UNITS.
24. FULL LOAD AMPS (FLA) SIZES, AS NOTED IN THESE DRAWINGS, ARE BASED ON SPECIFIED EQUIPMENT DATA. CONTRACTOR SHALL VERIFY NAMEPLATE FLA OF EQUIPMENT SUPPLIED AND COORDINATE ACCORDINGLY PER EQUIPMENT SUPPLIERS RECOMMENDATIONS AND CODE REQUIREMENTS.
25. CONDUITS OR RACEWAYS INSTALLED IN AREAS WHERE ELEVATION CHANGES MAY CAUSE WATER OR MOISTURE TO ENTER THE ELECTRICAL EQUIPMENT THROUGH THE CONDUIT SHALL BE SEALED IN ACCORDANCE WITH NEC 300.5 (G).
26. MATERIALS SHALL BE NEW AND OF THE BEST QUALITY WITH MANUFACTURER'S NAME PRINTED THEREON. MATERIALS SHALL BE MANUFACTURED IN ACCORDANCE WITH NEMA, ANSI, UNDERWRITER'S LABORATORY OR OTHER APPLICABLE STANDARDS AND RATED FOR HEAVY DUTY SERVICE.
27. SELECTION OF MATERIALS SHALL BE IN STRICT ACCORDANCE WITH THE DRAWINGS AND/OR SPECIFICATIONS.
28. THE SUBMITTALS SHALL BE NEATLY GROUPED AND ORGANIZED. PERTINENT INFORMATION SHALL BE HIGHLIGHTED, AND THE SPECIFIC PRODUCT SHALL BE IDENTIFIED. ALL SUBMITTALS SHALL BE COMPLETE, AND PRESENTED IN ONE PACKAGE. THE SUBMITTAL SHALL INCLUDE A COMPLETE LIST OF THE EQUIPMENT AND MATERIALS, INCLUDING THE MANUFACTURER'S NAME, PRODUCT SPECIFICATION, DESCRIPTIVE DATA, TECHNICAL LITERATURE, PERFORMANCE CHARTS, CATALOG CUTS, INSTALLATION INSTRUCTION, AND SPARE PART RECOMMENDATIONS FOR EACH DIFFERENT ITEM OF THE EQUIPMENT SPECIFIED.
29. VERIFY ALL CONDUIT FILL RATIOS, BOX FILLS, AND CONDUIT BENDS (MAX 360 DEGREES) ARE MET PER NEC REQUIREMENTS. INSTALL PULL BOXES AND DE-RATE CABLE AMPACITY AS NECESSARY.
30. CONTRACTOR TO READ ALL THE DRAWINGS IN THIS SET TO BECOME FAMILIARIZED WITH THE FULL ELECTRICAL SCOPE, INCLUDING BUT NOT LIMITED TO THE MECHANICAL, INSTRUMENTATION AND CIVIL DRAWINGS.
31. THESE DRAWINGS AND THE PROJECT SPECIFICATIONS ARE COMPLEMENTARY. WHERE THERE IS OVERLAP, THE MORE STRINGENT REQUIREMENT WILL TAKE PRECEDENCE.
32. CONTRACTOR SHALL VERIFY ALL CIRCUITS CONTAIN LESS THAN 5% VOLTAGE DROP. CONTRACTOR SHALL PROVIDE SHORT CIRCUIT ANALYSIS AND ARC FLASH STUDY, AS REQUIRED.
33. CONTRACTOR SHALL COORDINATE AND PERFORM WORK TO THE STANDARDS OF ALL APPLICABLE UTILITY COMPANIES, INCLUDING BUT NOT LIMITED TO UNDERGROUND ELECTRICAL LINES, GAS LINES AND WATER LINES. WHEN AN ISSUE OR DISCREPANCY ARISES, NOTIFY THE CITY AND ENGINEER IMMEDIATELY.
34. CONTRACTOR TO PROVIDE REQUIREMENTS FOR NFPA 70E, AS REQUIRED.
35. CONTRACTOR SHALL NOTIFY THE ENGINEER AND THE CITY WITH ANY DISCREPANCIES FOUND DURING INSTALLATION OR REVIEW.
36. LIGHTING SHALL BE INSTALLED IN THE BUILDING TO PROVIDE A MINIMUM OF 30 FOOT CANDLES IN ALL INDOOR ROOMS.
37. ALL POWER AND LIGHTING CONDUITS SHALL HAVE A GROUND WIRE, BE AT LEAST #12 THHN, AND SIZED FOR PROPER AMPACITY DERATING AND CONDUIT FILL.
38. ALL 120V RECEPTACLES SHALL BE GFCI PROTECTED, EITHER WITH A GFCI RECEPTACLE OR THROUGH A GFCI CIRCUIT BREAKER.

SCOPE OF WORK:

THE CITY OF COSTA MESA UPGRADE LAKE PUMP MOTORS AT TEWINKLE MEMORIAL PARK:

1. PROVIDE DESIGN DETAIL TO UPGRADE POWER CONDUIT SUPPORT CONNECTIONS TO REFURBISHED LAKE PUMP MOTORS PER N.E.C.
2. PROVIDE DEDICATED 120V CIRCUITS TO NEW LAKE AIR COMPRESSOR AND CHEMICAL INJECTION PUMPS.

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PRELIMINARY DESIGN DRAWING

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NO	BY	DATE	REVISIONS	DATE	APP.

PREPARED BY ZIRANG SONG
PROJECT ENGINEER
R.C.E. NO. ---
EXP. 09/30/2026
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SCALE AS SHOWN
DESIGNED BL
CHECKED ZS
DATE 7/22/2024

TITLE ELECTRICAL GENERAL NOTES

JOB TEWINKLE PARK
LAKE RENOVATION
COSTA MESA CA

PACE
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17520 Newhope Street, Suite 200 | Fountain Valley, CA 92708
P: (714) 481-7300 | www.pacewater.com

SHEET W500
43 OF 50 SHEETS
JOB NO. B836

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Xrefs: B836-07 36x24v.dwg
Dimscale = 24, LTscale = 1, PSltscale = 1, ACAD Ver. = 23.0s (LMS Tech), Viewtab = 1

Jul. 22, 2024

PLAN LEGEND

- EXPOSED CONDUIT
- EXISTING EXPOSED CONDUIT
- CONDUIT WITHIN CEILING, FLOOR, WALLS, OR UNDERGROUND
- EXIST. CONDUIT WITHIN CEILING, FLOOR, WALLS, OR UNDERGROUND
- GROUNDING ELECTRODE CONDUCTOR
- OHE — EXISTING OVERHEAD ELECTRIC
- CONDUIT BEND UP
- CONDUIT BEND DOWN
- FENCE
- FLOOR MOUNTED ETHERNET (10/100) OUTLET (RJ-45)
- TELEPHONE OUTLET (RJ-11)
- ETHERNET (10/100) OUTLET (RJ-45)
- COMBINATION TELEPHONE/ETHERNET (10/100) OUTLET (RJ-11 & RJ-45)
- 20 — 240V SIMPLEX RECEPTACLE (NUMBER DENOTES CIRCUIT AMPS)
- 20 — 480V SIMPLEX RECEPTACLE (NUMBER DENOTES CIRCUIT AMPS)
- 120V, 20A SIMPLEX RECEPTACLE
- 120V, 20A DUPLEX RECEPTACLE
- 120V, 20A QUADRAPLEX RECEPTACLE
- $ — 120V, 20A SPST SWITCH
- $M — MANUAL MOTOR STARTER
- $3 — 120V, 20A 3-WAY SWITCH
- $4 — 120V, 20A 4-WAY SWITCH
- AT — ANALYZER TRANSMITTER
- CS — CONDUCTIVITY SWITCH
- FS — FLOAT SWITCH
- J — ABOVE GROUND JUNCTION BOX
- LE — LEVEL ELEMENT
- LP — LEVEL PROBES
- LT — LEVEL TRANSPONDER
- PC — PHOTOCELL
- PS — PRESSURE SWITCH
- TS — TEMPERATURE SWITCH
- T — THERMOSTAT
- ZS — INTRUSION ALARM SWITCH
- JB — UNDERGROUND JUNCTION BOX
- MH — MANHOLE
- HH — HANDHOLE
- DISCONNECT SWITCH
- F — FUSED DISCONNECT SWITCH
- CB — ENCLOSED CIRCUIT BREAKER
- COMBINATION MOTOR STARTER
- MOTOR STARTER
- PUSHBUTTON CONTROL STATION
- CONDUIT SEAL-OFF FITTING
- S — SOLENOID VALVE (ENERGIZED TO CLOSE)
- S — SOLENOID VALVE (ENERGIZED TO OPEN)
- BUTTERFLY VALVE
- PLUG VALVE
- GATE VALVE
- R — ALARM BEACON
- H — HORN

SINGLE LINE DIAGRAM AND SCHEMATIC LEGEND

- FIELD WIRING
- PANEL WIRING
- COMMUNICATIONS WIRING
- CABLE (MULTICONDUTOR SHIELDED)
- R — PILOT LIGHT (LETTER DENOTES COLOR)
- H R — PUSH-TO-TEST PILOT LIGHT (LETTER DENOTES COLOR)
- CR — CONTROL RELAY
- PRESSURE SWITCH (N.O.) CLOSES ON RISING LEVEL
- PRESSURE SWITCH (N.C.) OPENS ON RISING LEVEL
- TIMING RELAY, (N.O.) CONTACT TIME TO CLOSE (ON DELAY TIMER)
- TIMING RELAY, (N.C.) CONTACT TIME TO OPEN (ON DELAY TIMER)
- TIMING RELAY, (N.O.) CONTACT TIME TO OPEN (OFF DELAY TIMER)
- TIMING RELAY, (N.C.) CONTACT TIME TO CLOSE (OFF DELAY TIMER)
- FLOW SWITCH (N.O.) CLOSES ON RISING LEVEL
- FLOW SWITCH (N.C.) OPENS ON RISING LEVEL
- FLOAT SWITCH (N.C.) OPENS ON RISING LEVEL
- FLOAT SWITCH (N.O.) CLOSES ON RISING LEVEL
- LIMIT SWITCH (N.C.)
- LIMIT SWITCH (N.O.)
- LIMIT SWITCH (N.C.)
- LIMIT SWITCH (N.O.)
- TEMPERATURE SWITCH (N.C.) OPENS ON RISING LEVEL
- TEMPERATURE SWITCH (N.O.) CLOSES ON RISING LEVEL
- CIRCUIT BREAKER WITH DOOR OPERATED HANDLE, 3P, 480V, THERM MAG TRIP, UNO
- 3P, 480V MOLDED CASE CIRCUIT BREAKER WITH THERMAL MAG TRIP, UNO
- CONTACT (N.O.)
- CONTACT (N.C.)
- PUSHBUTTON (N.O.) MOMENTARY CLOSE
- PUSHBUTTON (N.C.) MOMENTARY OPEN
- 2-POSITION SELECTOR SWITCH
- H O A — 3-POSITION SELECTOR SWITCH (HAND-OFF-AUTO)
- LO STOP — LOCKOUT STOP PUSHBUTTON
- PUSH-PULL EMERGENCY STOP PUSHBUTTON
- DISCONNECT SWITCH (N.O.)
- DISCONNECT SWITCH (N.C.)
- EARTH GROUND CONNECTION
- GROUND ROD AND WELL
- OVERLOAD (ELECTRONIC TYPE)
- THERMAL OVERLOAD (BI-METALLIC)
- FUSED TERMINAL BLOCK
- N — NEUTRAL BUS
- G — GROUND BUS
- H — HORN
- BUZZER
- TERMINAL BLOCK
- FIELD TERMINATION
- MLO — MAIN LUG ONLY
- POWER DISTRIBUTION BLOCK
- COIL/INDUCTOR
- POWER TRANSFORMER
- HEATER
- M — MOTOR STARTER CONTACTOR COIL
- ETM — ELAPSED TIME METER
- M — METER & CURRENT TRANSFORMER
- WHM — WATT HOUR METER AND SOCKET
- PFR — PHASE FAILURE RELAY
- TR XX — TIME DELAY RELAY
- LR XX — LATCHING RELAY
- CR XX — CONTROL RELAY
- ISR XX — INTRINSICALLY SAFE RELAY
- EDGE CONNECTORS
- INTERNAL CONTACT (N.O.)
- INTERNAL CONTACT (N.C.)
- BATTERY
- CAPACITOR
- SOLENOID
- RESISTOR
- DIODE
- MOV — METAL OXIDE VARISTOR
- INDICATING FUSE HOLDER AMPERE SIZE SHOWN
- S LA — LIGHTNING ARRESTER
- CXXXX — CONDUIT DESIGNATION C-CONTROL P-POWER
- EQUIPMENT TAG REFERENCE
- I/O POINT REFERENCE PLC, I/O RACK, OR ENUNCIATOR PANEL
- DRAWING REFERENCE
- LOCATION SYMBOL
- SHEET NOTE TAG
- EDGE CONNECTOR
- INSTRUMENTATION
- $ — PHOTOCELL AND TIME CLOCK
- CONDUIT STUB-UP AND CAP
- INV — ACTIVE HARMONIC FILTER

ABBREVIATION LIST

A, AMP	AMPERES	RR	RUN RELAY
AM	AMMETER	RV	REDUCED VOLTAGE
AC	ALTERNATING CURRENT	RVAT	REDUCED VOLTAGE AUTO-TRANSFORMER
AIC	AMPS INTERRUPTING CAPACITY	SSS	SOLID-STATE STARTER
BAT	BATTERY BC BATTERY CHARGER	SR	SIMPLEX RECEPTACLE
C	COMMON	SS	SELECTOR SWITCH, SOFT STARTER
CB	CIRCUIT BREAKER	SP	SURGE PROTECTOR
CNTL	CONTROL	SPD	SURGE PROTECTOR DEVICE
CPT	CONTROL POWER TRANSFORMER	SV	SOLENOID VALVE
CP	CONTROL PANEL	SWBD	SWITCHBOARD
CR	CONTROL RELAY	TB	TERMINAL BLOCK
CT	CURRENT TRANSFORMER	TR	TIME DELAY RELAY
DC	DIRECT CURRENT	TC	TIMECLOCK
DR	DUPLEX RECEPTACLE	TM	THERMAL MAGNETIC
(E)	EXISTING	TS	TEMPERATURE SWITCH
EC	EDGE CONNECTOR	TSP	TWISTED SHIELDED PAIR
EF	EXHAUST FAN	TWP	TWISTED PAIR
ETM	ELAPSED TIME METER	TYP	TYPICAL
F	FUSE	UG	UNDERGROUND
FB	FUSE BLOCK	V	VOLTS, VOLTAGE
(F)	FUTURE	VM	VOLTMETER
FLTR	FILTER	VFD	VARIABLE FREQUENCY DRIVE
FS	FLOAT SWITCH	WP	WEATHERPROOF
FVNR	FULL VOLTAGE NON REVERSING	TR,XFMR	TRANSFORMER
FVR	FULL VOLTAGE REVERSING	XP	EXPLOSION PROOF
G, GND	GROUND	XMITR	TRANSMITTER/TRANSPONDER
GFCI	GROUND FAULT CIRCUIT INTERRUPTER		
HPS	HIGH PRESSURE SODIUM		
HS	HAND SWITCH		
ICP	INSTRUMENTATION CONTROL PANEL		
ISR	INTRINSICALLY SAFE RELAY		
I, IND	INDICATOR		
INST	INSTANTANEOUS		
KV	KILOVOLT		
KVA	KILOVOLT AMPERES		
KW	KILOWATT		
LED	LIGHT EMITTING DIODE		
LCD	LIQUID CRYSTAL DISPLAY		
LA	LIGHTNING ARRESTER		
LCP	LOCAL CONTROL PANEL		
LPU	LIGHTNING PROTECTION UNIT		
LOS	LOCK OUT STOP		
LR	LATCH RELAY		
LS	LOAD SPLITTER		
MA	MILLIAMPERES		
MB	MAIN BREAKER		
MCC	MOTOR CONTROL CENTER		
MCP	MOTOR CIRCUIT PROTECTOR		
MOT	MOTOR OVERTEMPERATURE		
MMS	MOTOR MOISTURE SENSOR		
MS	MOTOR STARTER		
N	NEUTRAL		
NA	NON AUTOMATIC		
(N)	NEW		
N.I.C.	NOT IN CONTRACT		
NP	NAMEPLATE		
OT	OVERTEMPERATURE		
O/L	OVERLOAD DEVICE		
PB	PUSHBUTTON		
PCB	PRINTED CIRCUIT BOARD		
PC	PROGRAMMABLE CONTROLLER		
PLC	PROGRAMMABLE LOGIC CONTROLLER		
PL-1	PILOT LIGHT 1		
PFR	PHASE/POWER FAIL RELAY		
PNL	PANEL		
POT	POTENTIOMETER		
PPM	POWER PHASE MONITOR		
PR	PAIR CABLE		
PS	PRESSURE SWITCH		
PT	POTENTIAL TRANSFORMER		
PTT	PUSH TO TEST		
PVC	POLYVINYL CHLORIDE		
PWR	POWER		

PRELIMINARY NOT FOR CONSTRUCTION

PRELIMINARY DESIGN DRAWING

THIS DRAWING IS FOR BIDDING USE ONLY AND NOT INTENDED TO BE USED FOR CONSTRUCTION.

NO	BY	DATE	REVISIONS	DATE	APP.

PREPARED BY ZIRANG SONG
PROJECT ENGINEER
R.C.E. NO. ——
EXP. 09/30/2026
DRAWN SP/RC/RT
SCALE AS SHOWN
DESIGNED BL
CHECKED ZS
DATE 7/22/2024

TITLE ELECTRICAL LEGEND

JOB TEWINKLE PARK
LAKE RENOVATION
COSTA MESA CA

PACE
Advanced Water Engineering
17520 Newhope Street, Suite 200 | Fountain Valley, CA 92708
P: (714) 481-7300 | www.pacewater.com

SHEET W501
44 OF 50 SHEETS
JOB NO. B836

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R:\B836\Engineering\B836-13 (Bid Documents)\sheets\B836-13 W501 Electrical Legend.dwg - Tab: 44 - by rhron on 06/28/24 at 1:57:54 PM
Xrefs: B836-07 36x24v.dwg
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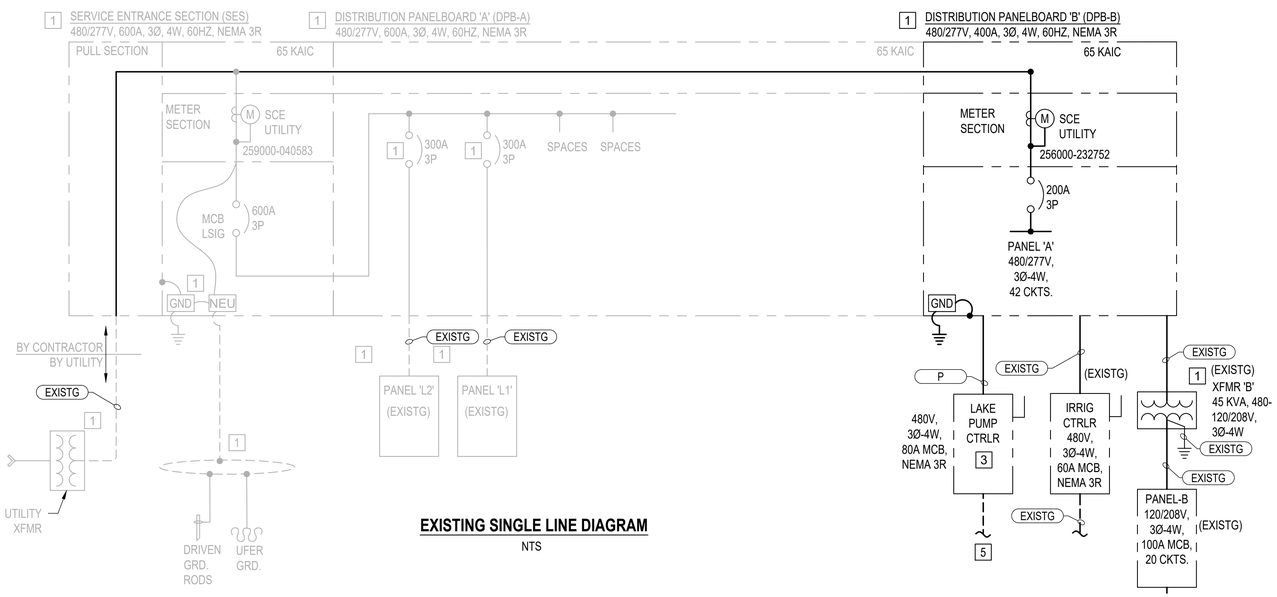

EXISTING SINGLE LINE DIAGRAM

NTS

CONSTRUCTION NOTES:

1. EXISTING ELECTRICAL EQUIPMENT AND CONDUIT TO REMAIN.
2. REFER TO POWER AND CONTROL PLAN FOR ROUTING OF NEW ELECTRICAL EQUIPMENT IN LAKE PUMP STATION.
3. REUSE EXISTING LAKE PUMP CONTROLLER PANEL WALL - MOUNTED BY (TOTAL CONTROL MANUF) AND PANEL A.
4. DEMO AND LABEL "SPACE" REMOVE ALL EXISTING "OZONE" ELECTRICAL EQUIPMENT FROM THE LAKE PUMP STATION RETURN TO CITY PER PROJECT SCOPE OF WORK.
5. USE EXISTING CONDUIT STUB-UP PROTECTION WITH FLOOR MOUNTED STRUT SYSTEM TO EXISTING MOTORS ON VERTICAL POWER PER NEC CODE.
6. ADDED GFCI RECEPTACLE FOR DOSING PUMPS.

NOTES:

1. DRAWINGS ARE DIAGRAMMATIC AND DO NOT REFLECT ACTUAL ROUTING. CONTRACTOR SHALL INSTALL PULLPOINTS WHERE REQUIRED FOR PULLING TENSION AND MAINTAINING LESS THEN (4) 90 DEGREE BENDS.
2. ALL EQUIPMENT, INCLUDING INSTRUMENTATION, IS NOT SHOWN ON THIS DIAGRAM. REFERENCE MECHANICAL AND INSTRUMENTATION DIAGRAMS.
3. GROUND AND BOND ALL ENCLOSURES PER GROUNDING PLANS AND MANUFACTURER/CODE REQUIREMENTS.
4. NOT ALL EQUIPMENT AND WIRING IS SHOWN ON THIS DIAGRAM. REFERENCE DRAWINGS IN THE ELECTRICAL SET AND ENTIRE PROJECT TO COMPLETELY UNDERSTAND THE SCOPE OF ELECTRICAL WORK.

PANEL "A"

VOLTAGE:	480/277 VAC	VOLT AMPS									MAIN BKR:	200	A	
SCCR:	42 KAIC										PANEL BUS:	225	A	
LOAD DESCRIPTION		VA	CB	BKR	PHASE A	PHASE B	PHASE C	BKR	CB	VA	LOAD DESCRIPTION			
"SPACE"				1	16295			2		16295	LAKE PUMP CTRLR PANEL			3
"SPACE"				3		16295		4	80/3	16295	LAKE PUMP CTRLR PANEL			3
"SPACE"				5			16295	6		16295	LAKE PUMP CTRLR PANEL			3
"SPACE"				7	14000			8		14000	XFMR B 45 KVA			
"SPACE"				9		14000		10	100/3	14000	XFMR B 45 KVA			
"SPACE"				11			14000	12		14000	XFMR B 45 KVA			
"SPACE"				13	4750			14		4750	IRRIG CONTROLLER			
"SPACE"				15		4750		16	60/3	4750	IRRIG CONTROLLER			
"SPACE"				17			4750	18		4750	IRRIG CONTROLLER			
"SPACE"				19	0			20			"SPACE"			
"SPACE"				21		0		22			"SPACE"			
"SPACE"				23			0	24			"SPACE"			
"SPACE"				25	0			26			"SPACE"			
"SPACE"				27		0		28			"SPACE"			
"SPACE"				29			0	30			"SPACE"			
"SPACE"				31	0			32			"SPACE"			
"SPACE"				33		0		34			"SPACE"			
"SPACE"				35			0	36			"SPACE"			
"SPACE"				37	0			38			"SPACE"			4
"SPACE"				39		0		40			"SPACE"			4
"SPACE"				41			0	42			"SPACE"			4
					PHASE A	PHASE B	PHASE C							
VA/PHASE (SUBTOTAL)					35045	35045	35045	3Φ, 4W						
AMPS/PHASE (SUBTOTAL)					126.5	126.5	126.5	10,000 AIC BREAKERS						
VA (SUBTOTAL)					105135			NEMA 1 INSIDE "DPB-B" INSIDE NEMA 3R ENCL.						
25% OF LARGEST INDUCTIVE LOAD (VA)					0	290	0							
GRAND TOTAL (AMPS)					126.8			* INDICATES LOAD CALCULATED AT 125%						
PERCENT CAPACITY					63.4%									

PANEL "B"

VOLTAGE:	120/208 VAC	VOLT AMPS									MAIN BKR:	100	A	
SCCR:	22 KAIC										PANEL BUS:	125	A	
LOAD DESCRIPTION		VA	CB	BKR	PHASE A	PHASE B	PHASE C	BKR	CB	VA	LOAD DESCRIPTION			
MAIN			100	1	0			2		0	"SPACE"			
CIRCUIT			/	3		0		4	15/1	0	SPARE			
BKR			3	5			0	6	15/1	0	SPARE			
LIGHTS		300	20/1	7	550			8	20/1	250	SPRINKLER TIMER			
GFCI RECEPT		180	20/1	9		680		10	20/1	500	SPRINKLER TIMER			
SPARE		0	20/1	11			204	12	20/1	204	GFCI RECEPT FOR CHEM. FEED PUMP #1			6
"SPACE"		0		13	0			14	15/1	0	SPARE			
"SPACE"		0		15		0		16		0	"SPACE"			
SPARE		0	20/1	17			204	18	20/1	204	GFCI RECEPT FOR CHEM. FEED PUMP #2			6
"SPACE"		0		19	0			20		0	"SPACE"			
					PHASE A	PHASE B	PHASE C							
VA/PHASE (SUBTOTAL)					550	680	408	3Φ, 4W						
AMPS/PHASE (SUBTOTAL)					4.6	5.7	3.4	10,000 AIC BREAKERS						
VA (SUBTOTAL)					1638			NEMA 3R ENCL.						
25% OF LARGEST INDUCTIVE LOAD (VA)					125	125	125							
GRAND TOTAL (AMPS)					5.6			* INDICATES LOAD CALCULATED AT 125%						
PERCENT CAPACITY					5.6%									

BUS BRACING CALCULATION (WORST CASE)
MAIN CIRCUIT BREAKER - 600 AMPERES

Isc = $\frac{(300A)\ (480V)\ (1.73)}{1000}$ = 249.4 KVA

ASSUME 300KVA UTILITY TRANSFORMER @ 3.0% Z

SHORT-CIRCUIT CURRENT AVAILABLE (WORST CASE) BY EATON, TABLE 1.

= 33,451 AMPS.

ADD MOTOR CONTRIBUTION

33,451 + (48) = 33,499 AMPS

MULTIPLY BY 10% FOR VOLTAGE FLUCTUATION

33,499 X 1.1 = 36,849 AMPS

BUS BRACING SHALL BE 42 KAIC

PRELIMINARY NOT FOR CONSTRUCTION

PRELIMINARY DESIGN DRAWING

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NO	BY	DATE	REVISIONS	DATE	APP.

PREPARED BY ZIRANG SONG
R.C.E. NO. ——
PROJECT ENGINEER #C89315
EXP. 6/30/2026
DRAWN SP/RC/RT
SCALE AS SHOWN
DESIGNED BL
CHECKED ZS
DATE 7/22/2024

TITLE: ELECTRICAL SINGLE LINE DIAGRAM

JOB: TEWINKLE PARK LAKE RENOVATION COSTA MESA CA

PACE Advanced Water Engineering
17520 Newhope Street, Suite 200 | Fountain Valley, CA 92708
P: (714) 481-7300 | www.pacewater.com

SHEET W502
45 OF 50 SHEETS

JOB NO. B836

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Jul. 22, 2024
Xrefs: B836-07 36x24v.dwg
Dimscale = 24; LTscale = 1; PSltscale = 1; ACAD Ver. = 23.0s (LMS Tech); Visretain = 1
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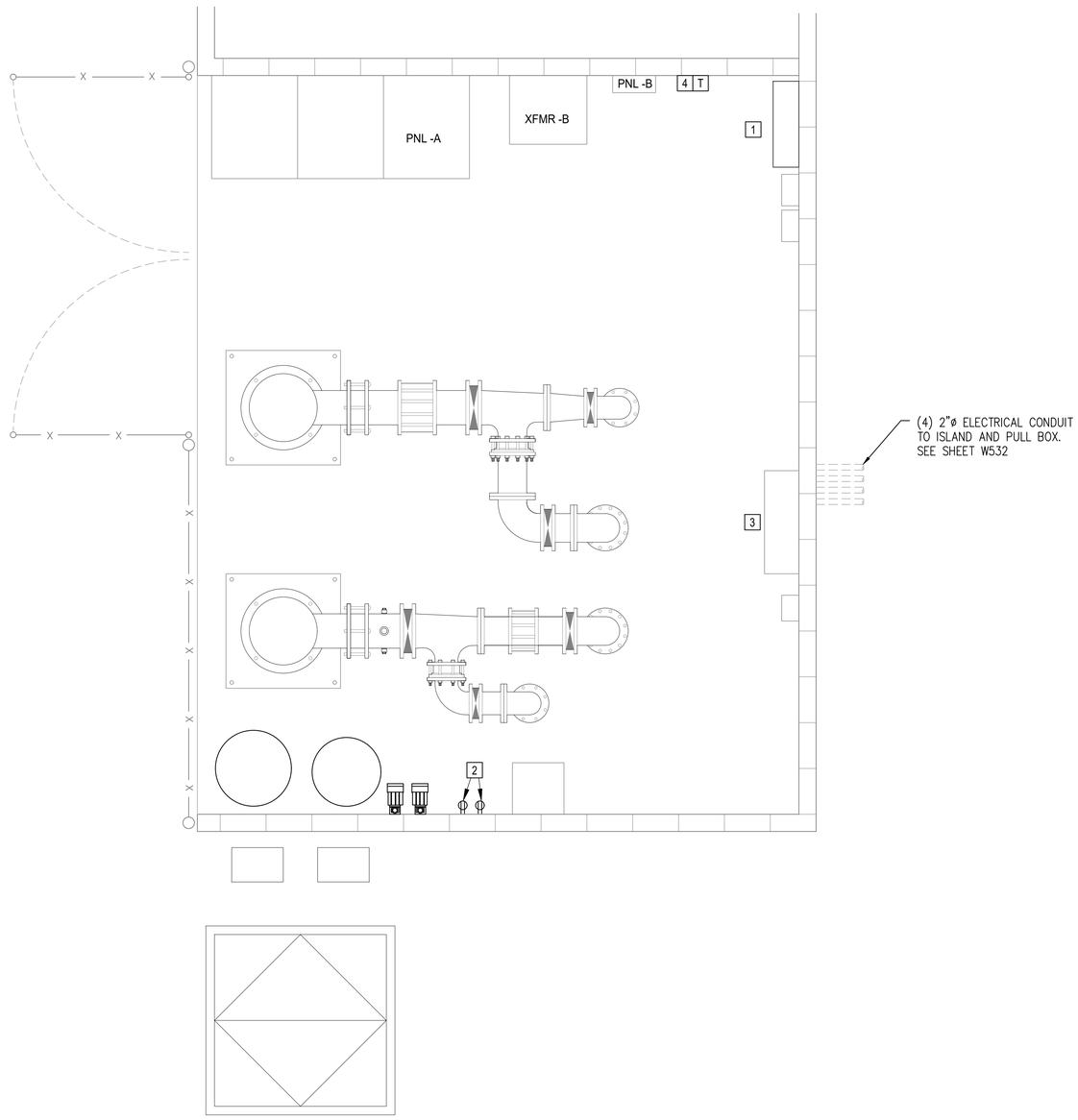
Jul. 22, 2024



PUMP STATION PLAN

½"=1'-0"

2 1 0 2 4ft

CONSTRUCTION NOTES:

1. ~~REUSE EXISTING PUMP CONTROLLER FROM MIXER MOTOR AS REQUIRED BY MANUFACTURER SPECIFICATIONS.~~ NOT USED
2. INSTALL NEW #10 AWG WIRE IN 0.75" CONDUIT FROM RECEPTACLES TO EXISTING PANEL B.
3. REUSE EXISTING IRRIGATION / FOUNTAIN CONTROLLER PANEL.
4. REUSE EXISTING PUMP CONTROLLER PANEL TRANSFORMER WALL MOUNTED.
5. ~~INSTALL NEW DISCONNECT SWITCH FOR NEW MIXER.~~ NOT USED

NOTES:

1. LABEL CONDUITS PER DETAIL "F" ON.
2. CONDUCTORS FOR HOME RUN CIRCUITS FOR LIGHTING AND RECEPTACLES SHALL BE #10 AWG MINIMUM SIZE.
3. RECEPTACLE WIRING SHALL BE TYPE XHHW-2.
4. RECEPTACLE OUTLETS SHALL BE CLEARLY LABELED WITH THE CIRCUIT PROVIDING POWER. LABEL SHALL BE SUITED FOR ENVIRONMENT RECEPTACLE IS LOCATED IN.
5. ALL CONDUITS SHALL CONTAIN A PROPERLY SIZED GROUND CONDUCTOR.
6. MOUNT AND WIRE ALL EQUIPMENT PER MANUFACTURER REQUIREMENTS.

LEGEND:

WP	120V, 20A GFCI DUPLEX TAMPER-WEATHER RESISTANT RECEPTACLE WITH METALLIC WEATHERPROOF WHILE IN USE COVER, EXTRA DUTY.
	120V, 20A GFCI DUPLEX TAMPER-WEATHER RESISTANT RECEPTACLE.
J	ABOVE GROUND JUNCTION BOX
T	POWER TRANSFORMER

PRELIMINARY NOT FOR CONSTRUCTION

PRELIMINARY DESIGN DRAWING

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NO	BY	DATE	REVISIONS	DATE	APP.

PREPARED BY ZIRANG SONG
PROJECT ENGINEER
R.C.E. NO. ~~~ #C89315
EXP. 6/30/2026
DRAWN SP/RC/RT
SCALE AS SHOWN
DESIGNED BL
CHECKED ZS
DATE 7/22/2024

TITLE ELECTRICAL POWER AND CONTROL PLAN

JOB TEWINKLE PARK LAKE RENOVATION COSTA MESA CA

PACE Advanced Water Engineering
17520 Newhope Street, Suite 200 | Fountain Valley, CA 92708
P: (714) 481-7300 | www.pacewater.com

SHEET W503
46 OF 50 SHEETS

JOB NO. B836

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Xrefs: B836-07 36x24x.dwg; B836-07 Existing Pump Station.dwg
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SECTION "G"

APPENDIX "C"

CITY AND CALTRANS STANDARD DRAWINGS

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

Atifa Ferouz
REGISTERED CIVIL ENGINEER

May 31, 2018
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Atifa Ferouz
No. C80402
Exp. 3-31-19
CIVIL
STATE OF CALIFORNIA

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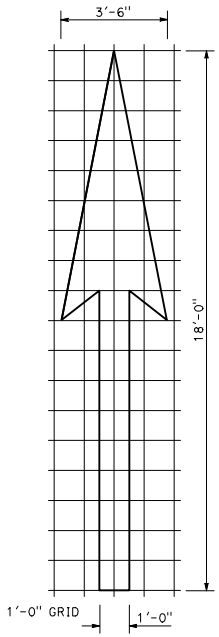
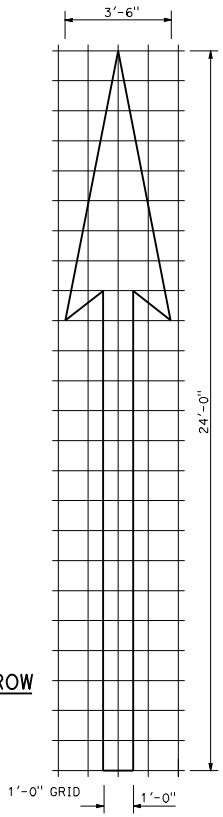


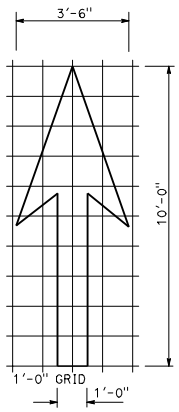
A=25 ft²

TYPE I 18'-0" ARROW



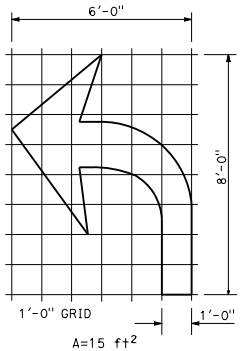
A=31 ft²

TYPE I 24'-0" ARROW



A=14 ft²

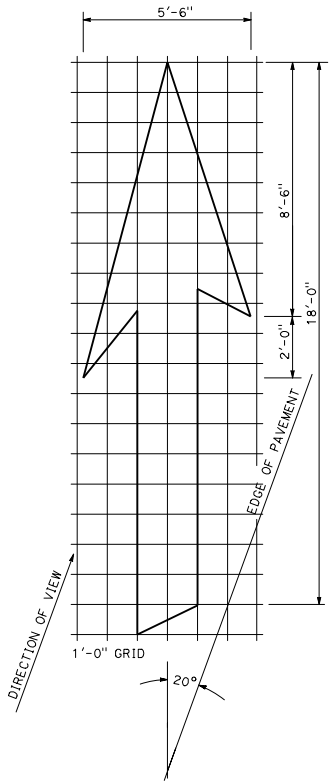
TYPE I 10'-0" ARROW



A=15 ft²

TYPE IV (L) ARROW

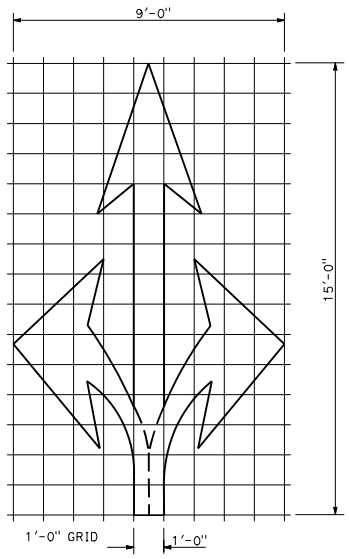
(For Type IV (R) arrow, use mirror image)



A=42 ft²

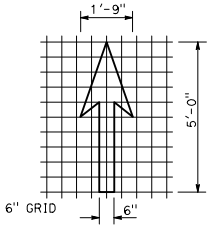
TYPE VI ARROW

Right lane drop arrow (For left lane, use mirror image)



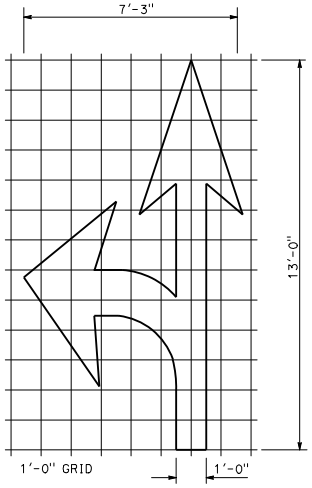
A=36 ft²

TYPE VIII ARROW



A=3.5 ft²

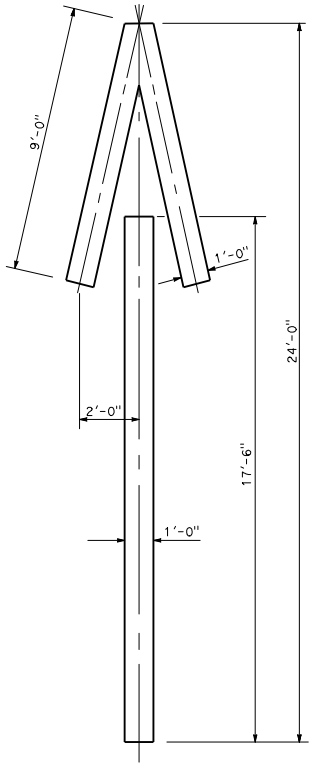
BIKE LANE ARROW



A=27 ft²

TYPE VII (L) ARROW

(For Type VII (R) arrow, use mirror image)



A=33 ft²

TYPE V ARROW

NOTE:
Minor variations in dimensions may be accepted by the Engineer.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKINGS ARROWS

NO SCALE

A24A

1-26-18

Return to Table of Contents

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

Atifa Ferouz
REGISTERED CIVIL ENGINEER

May 31, 2018
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Atifa Ferouz
No. C80402
Exp. 3-31-19
CIVIL
STATE OF CALIFORNIA

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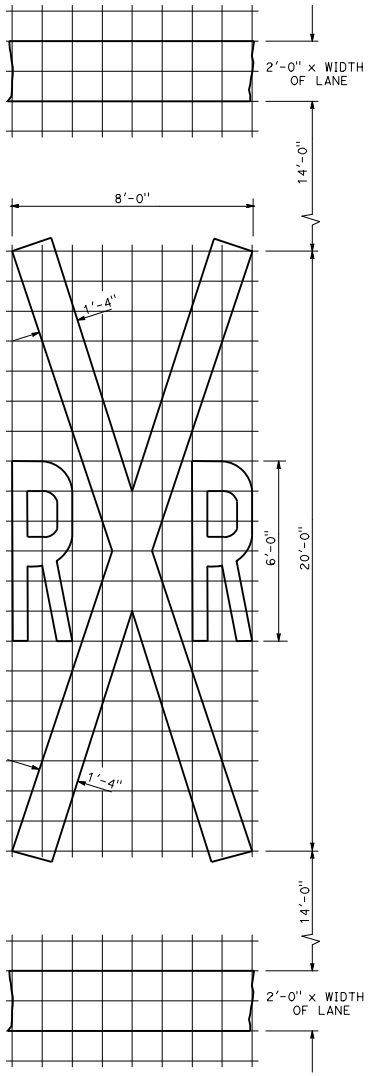
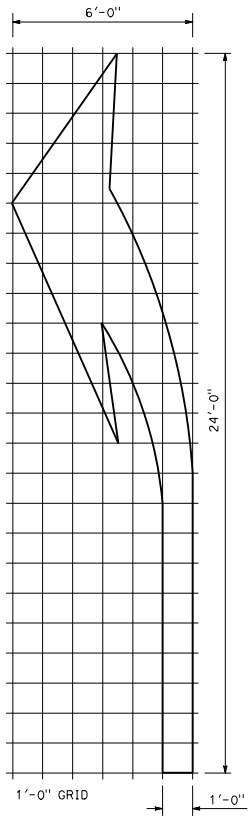


A=70 ft² ✳

RAILROAD CROSSING SYMBOL

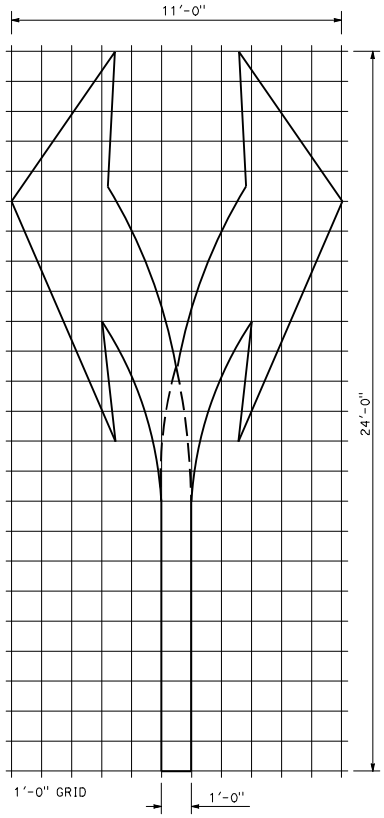
✳ 70 ft² does not include the 2'-0" x variable width transverse lines.



A=42 ft²

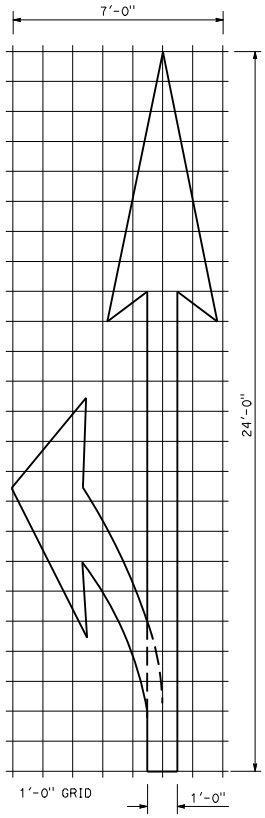
TYPE III (L) ARROW

(For Type III (R) use mirror image)



A=73 ft²

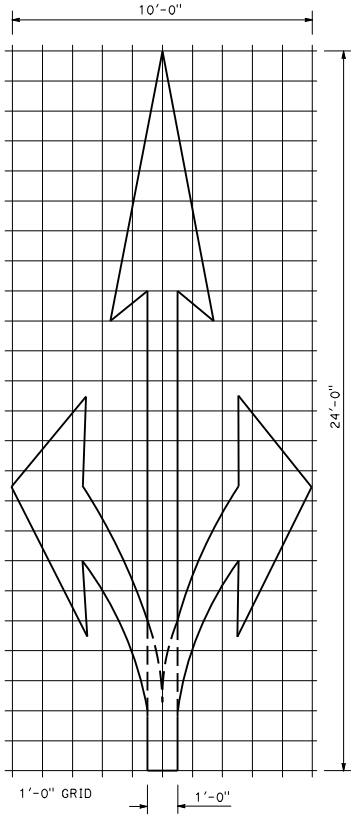
TYPE III (B) ARROW



A=45 ft²

TYPE II (L) ARROW

(For Type II (R) use mirror image)



A=59 ft²

TYPE II (B) ARROW

NOTE:

Minor variations in dimensions may be accepted by the Engineer.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKINGS ARROWS AND SYMBOLS

NO SCALE

A24B

2018 STANDARD PLAN A24B

1-26-18

Return to Table of Contents

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER

May 31, 2018
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Atifa Ferouz
No. C80402
Exp. 3-31-19
CIVIL
STATE OF CALIFORNIA

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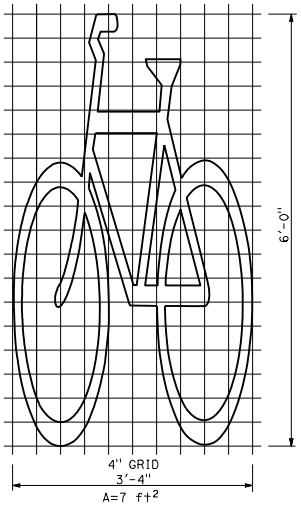
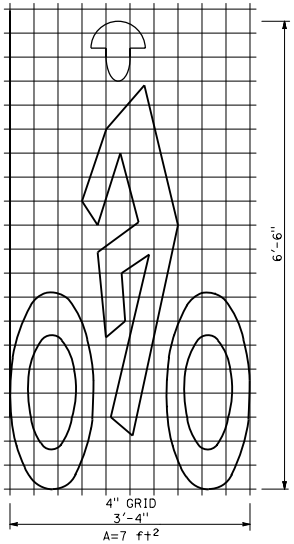
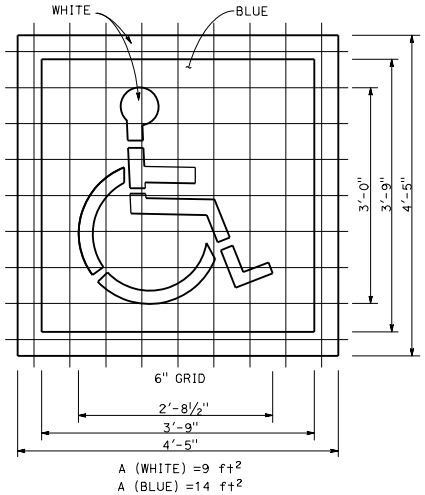


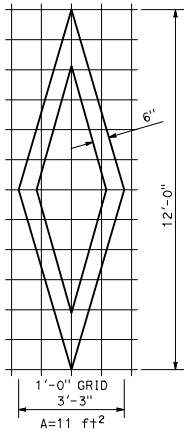
BIKE LANE SYMBOL WITHOUT PERSON



BIKE LANE SYMBOL WITH PERSON



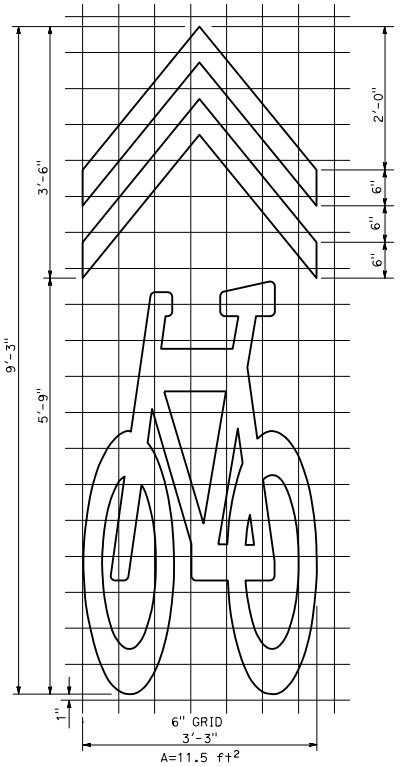
INTERNATIONAL SYMBOL OF ACCESSIBILITY (ISA) MARKING



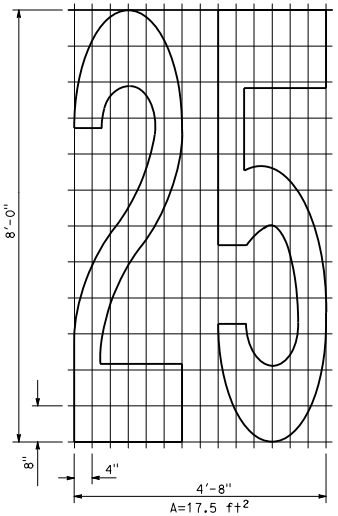
DIAMOND SYMBOL

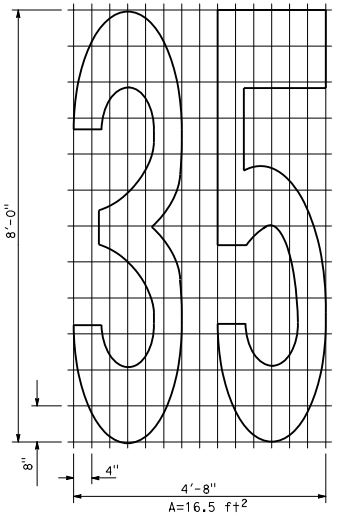
NOTE:

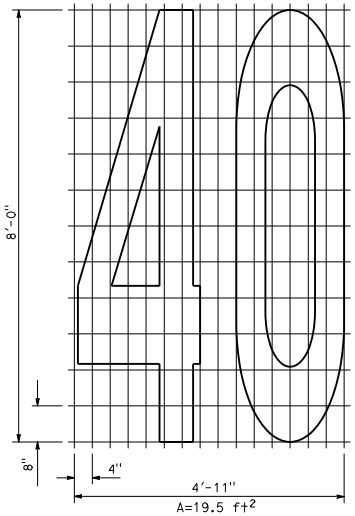
Minor variations in dimensions may be accepted by the Engineer.



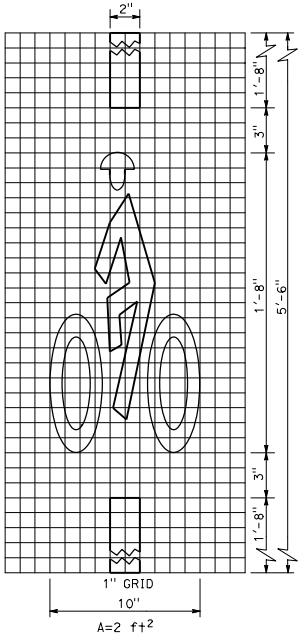
SHARED ROADWAY BICYCLE MARKING







NUMERALS



BICYCLE LOOP DETECTOR SYMBOL

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKINGS SYMBOLS AND NUMERALS

NO SCALE

A24C

1-26-18

2018 STANDARD PLAN A24C

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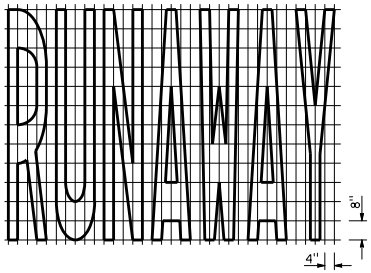
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

Atifa Ferouz
REGISTERED CIVIL ENGINEER

May 31, 2018
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Atifa Ferouz
No. C80402
Exp. 3-31-19
CIVIL
STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



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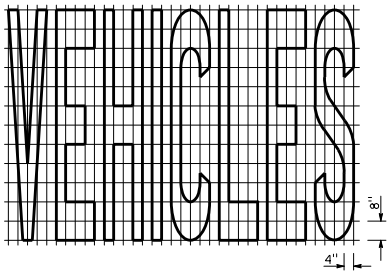

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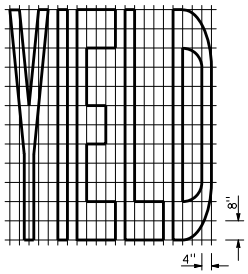

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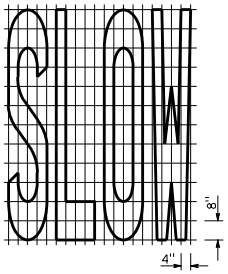

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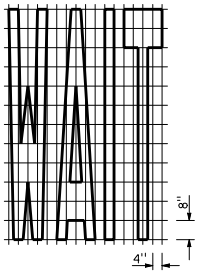

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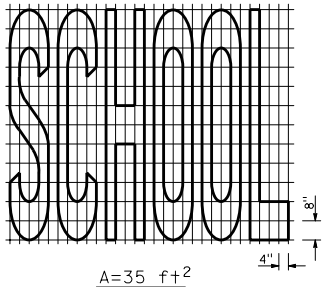

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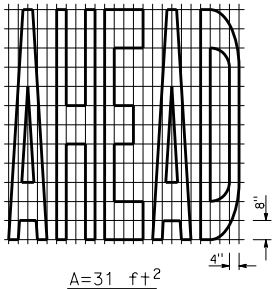

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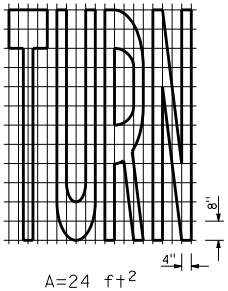

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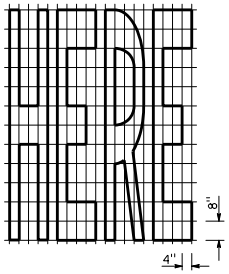

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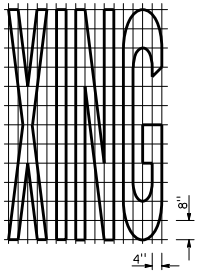

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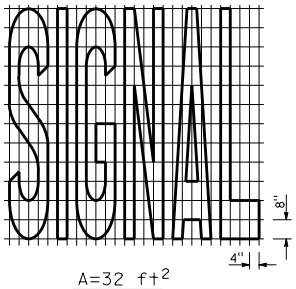

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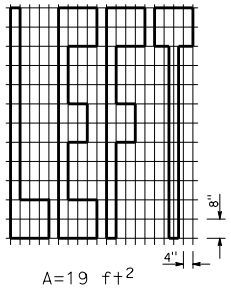

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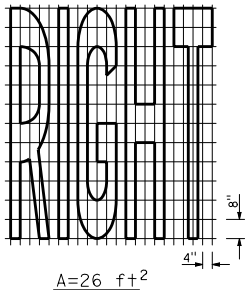

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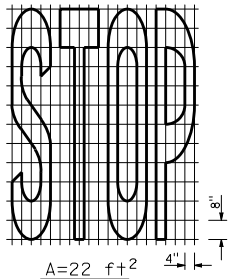

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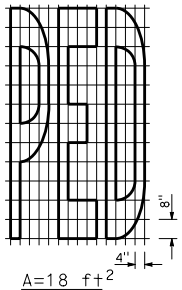

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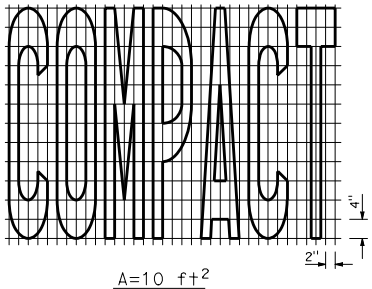
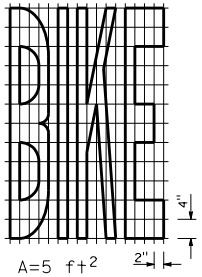
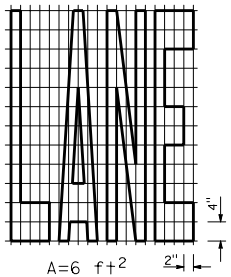


A=10 ft^2



A=5 ft^2



A=6 ft^2

NOTES:

1. If a message consists of more than one word, it must read "UP", i.e., the first word must be nearest the driver.
2. The space between words must be at least four times the height of the characters for low speed roads, but not more than ten times the height of the characters. The space may be reduced appropriately where there is limited space because of local conditions.
3. Minor variations in dimensions may be accepted by the Engineer.
4. Portions of a letter, number or symbol may be separated by connecting segments not to exceed 2" in width.

WORD MARKINGS

ITEM	ft^2	ITEM	ft^2	ITEM	ft^2	ITEM	ft^2
XING	21	YIELD	24	BIKE	5	PED	18
AHEAD	31	SCHOOL	35	SLOW	23	COMPACT	10
WAIT	19	SIGNAL	32	STOP	22	RUNAWAY	43
LANE	6	TURN	24	LEFT	19	VEHICLES	42
RIGHT	26	HERE	26				

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKINGS WORDS

NO SCALE

A24D

2018 STANDARD PLAN A24D

1-26-18

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

Atifa Ferouz
REGISTERED CIVIL ENGINEER

May 31, 2018
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Atifa Ferouz
No. C80402
Exp. 3-31-19
CIVIL
STATE OF CALIFORNIA

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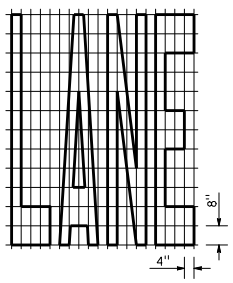
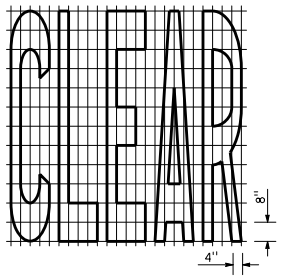
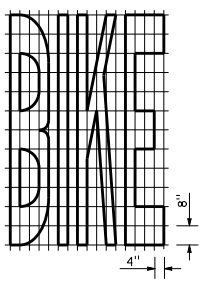


A=24 ft²



A=27 ft²



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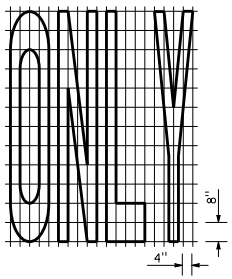

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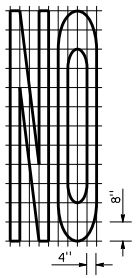
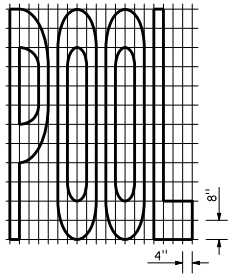


A=14 ft²



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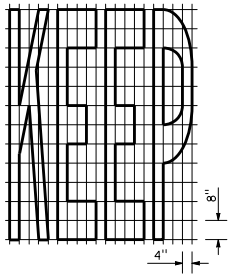

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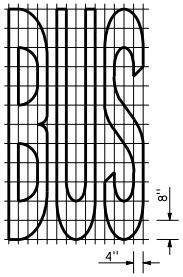
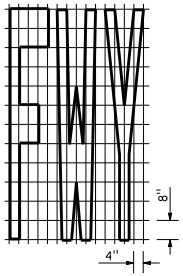
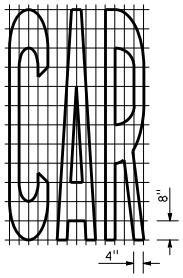


A=20 ft²



A=16 ft²

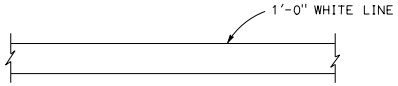


A=17 ft²

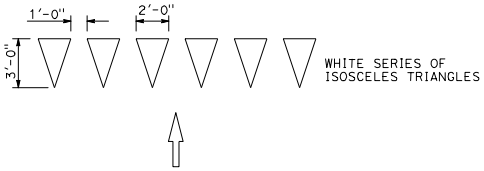
WORD MARKINGS			
ITEM	ft²	ITEM	ft²
LANE	24	NO	14
POOL	23	BIKE	21
CAR	17	BUS	20
CLEAR	27	ONLY	22
KEEP	24	FWY	16

A=2 ft²

See Notes 6 and 7



LIMIT LINE (STOP LINE)



YIELD LINE

NOTES:

1. If a message consists of more than one word, it must read "UP", i.e., the first word must be nearest the driver.
2. The space between words must be at least four times the height of the characters for low speed roads, but not more than ten times the height of the characters. The space may be reduced appropriately where there is limited space because of local conditions.
3. Minor variations in dimensions may be accepted by the Engineer.
4. Portions of a letter, number or symbol may be separated by connecting segments not to exceed 2" in width.
5. The words "NO PARKING" pavement marking is to be used for parking facilities. For typical locations of markings, see Standard Plans A90A and A90B.
6. The words "NO PARKING", shall be painted in white letters no less than 1'-0" high on a contrasting background and located so that it is visible to traffic enforcement officials.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKINGS
WORDS, LIMIT AND YIELD LINES

NO SCALE

A24E

2018 STANDARD PLAN A24E

1-26-18

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER

May 31, 2018
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Atifa Ferouz
No. C80402
Exp. 3-31-19
CIVIL
STATE OF CALIFORNIA

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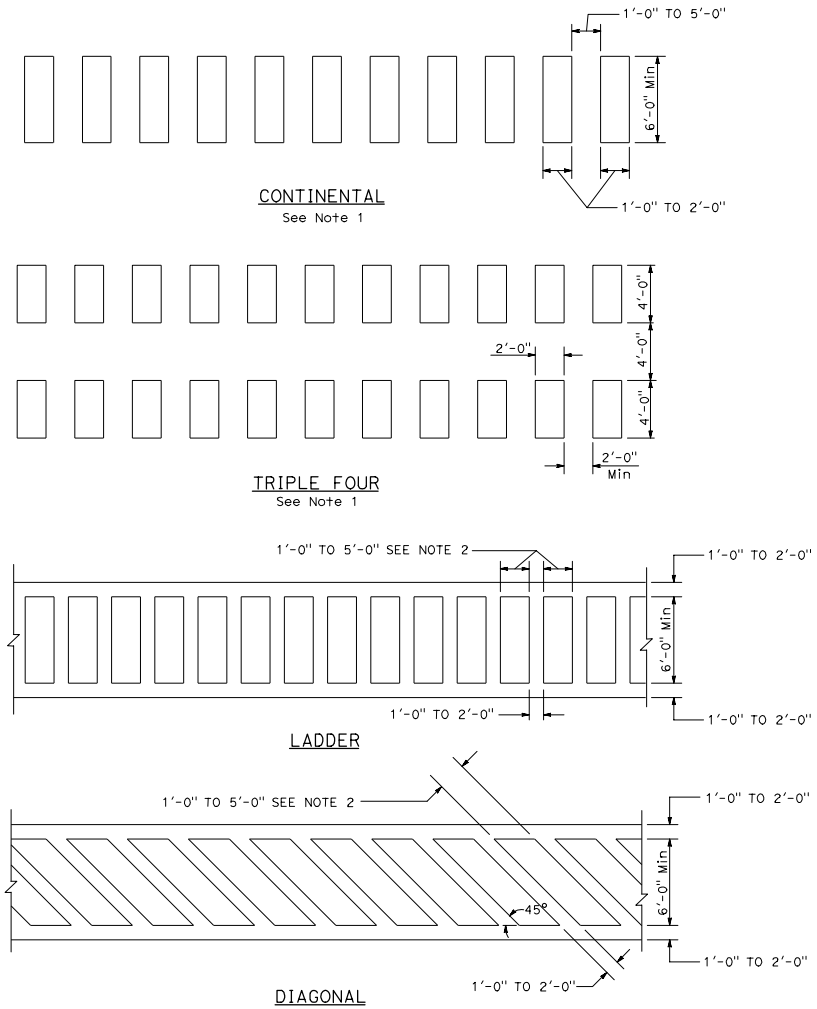
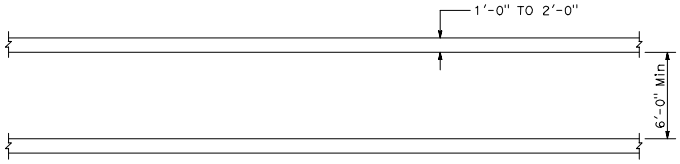


HIGHER VISIBILITY CROSSWALKS

NOTES:

1. Spaces between markings must be placed in wheel tracks of each lane.
2. Spacings not to exceed 2.5 times width of longitudinal line.
3. All crosswalk markings must be white except those near schools must be yellow.



BASIC

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKINGS
CROSSWALKS

NO SCALE

A24F

2018 STANDARD PLAN A24F

1-26-18

Return to Table of Contents

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER

May 31, 2018
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER Atifa Ferouz No. C80402 Exp. 3-31-19 CIVIL STATE OF CALIFORNIA

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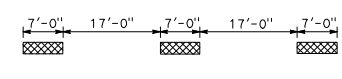
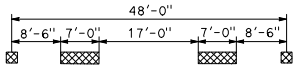
CENTERLINES
(2 LANE HIGHWAYS)

DETAIL 1



DETAIL 2



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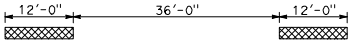
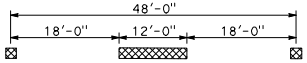
~~DETAIL 4~~ DETAIL 4 DELETED

DETAIL 5



DETAIL 6



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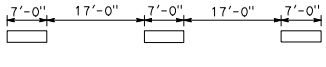
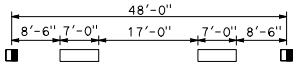
LANELINES
(MULTILANE HIGHWAYS)

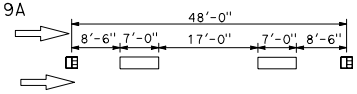
DETAIL 8



DETAIL 9



DETAIL 9A
SEE NOTE



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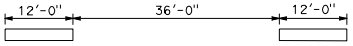
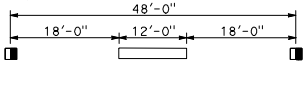
DETAIL 11

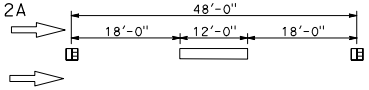


LANELINES (Cont)
(MULTILANE HIGHWAYS)

DETAIL 12



DETAIL 12A
SEE NOTE



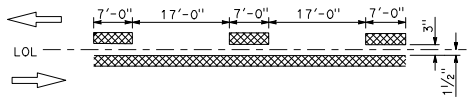
~~DETAIL 13~~ DETAIL 13 DELETED

~~DETAIL 14~~ DETAIL 14 DELETED

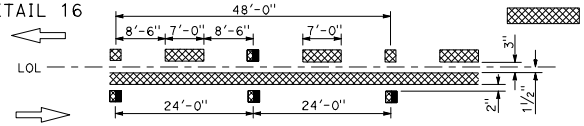
~~DETAIL 14A~~ DETAIL 14A DELETED

NO PASSING ZONES-ONE DIRECTION

DETAIL 15



DETAIL 16



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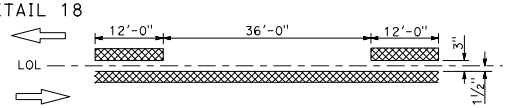
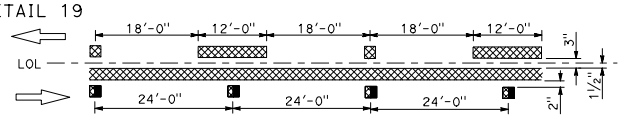
DETAIL 18



DETAIL 19

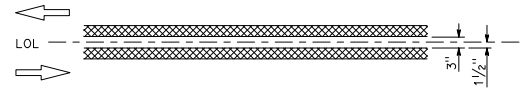


~~DETAIL 20~~ DETAIL 20 DELETED

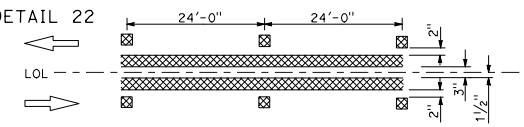
NOTE:
FOR FREEWAY APPLICATION ONLY

NO PASSING ZONES-TWO DIRECTION

DETAIL 21



DETAIL 22



~~DETAIL 23~~ DETAIL 23 DELETED

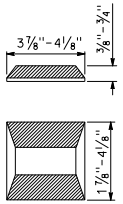
LEGEND

MARKERS

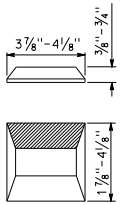
- TYPE C RED-CLEAR RETROREFLECTIVE
- TYPE D TWO-WAY YELLOW RETROREFLECTIVE
- TYPE G ONE-WAY CLEAR RETROREFLECTIVE
- TYPE H ONE-WAY YELLOW RETROREFLECTIVE

LINES

- 6" WHITE
- 6" YELLOW



TYPE C AND TYPE D



TYPE G AND TYPE H

RETROREFLECTIVE FACE

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKERS AND TRAFFIC LINES TYPICAL DETAILS

NO SCALE

A20A

2018 STANDARD PLAN A20A

1-26-18

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER

May 31, 2018
PLANS APPROVAL DATE

Atifa Ferouz
No. C80402
Exp. 3-31-19
CIVIL
STATE OF CALIFORNIA
REGISTERED PROFESSIONAL ENGINEER

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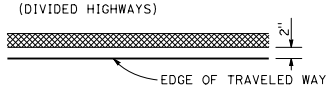
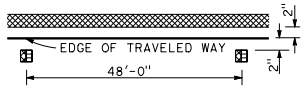
LEFT EDGELINES

(DIVIDED HIGHWAYS)

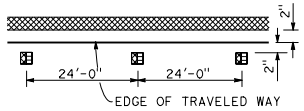
DETAIL 24



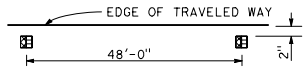
DETAIL 25



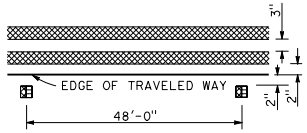
DETAIL 25A



DETAIL 26

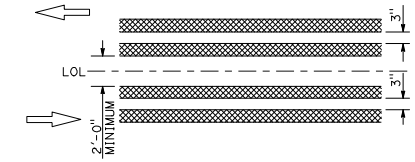


DETAIL 27

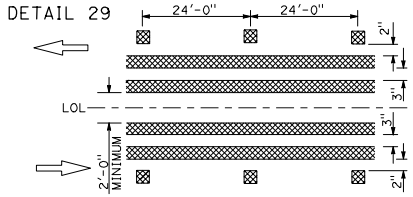


MEDIAN ISLANDS

DETAIL 28



DETAIL 29



~~DETAIL 30~~ DETAIL 30 DELETED

LEGEND

MARKERS

TYPE D	TWO-WAY YELLOW RETROREFLECTIVE	
TYPE H	ONE-WAY YELLOW RETROREFLECTIVE	
TYPE RY	RED-YELLOW RETROREFLECTIVE	

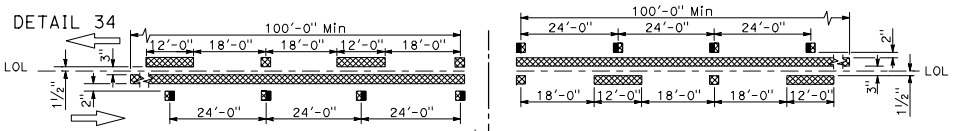
LINES

6" WHITE

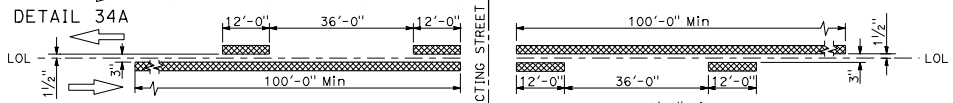
6" YELLOW

INTERSECTION TREATMENTS

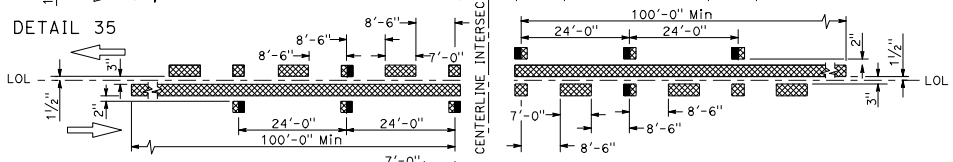
DETAIL 34



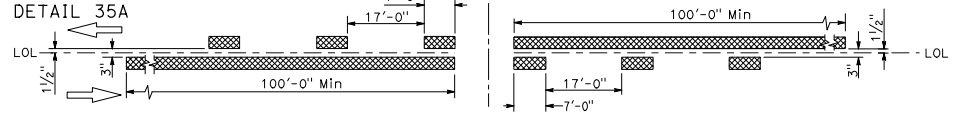
DETAIL 34A



DETAIL 35



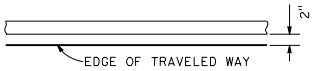
DETAIL 35A



RIGHT EDGELINES

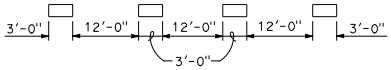
~~DETAIL 27A~~ DETAIL 27A DELETED

DETAIL 27B



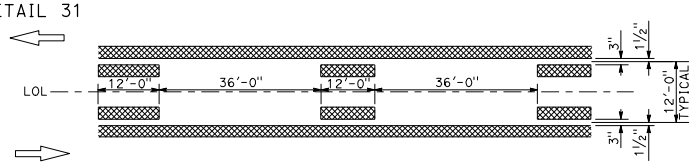
RIGHT EDGELINE EXTENSION THROUGH INTERSECTIONS

DETAIL 27C

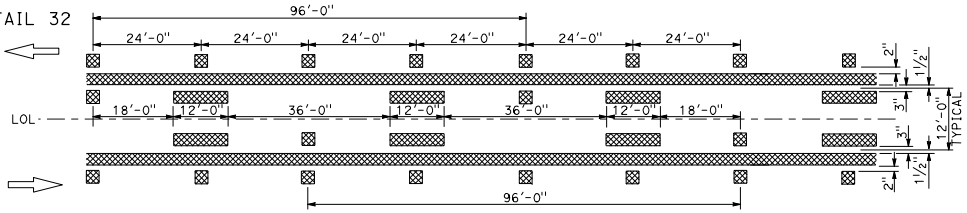


TWO-WAY LEFT TURN LANES

DETAIL 31

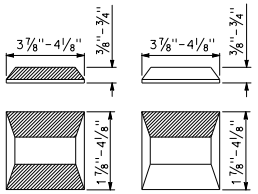


DETAIL 32



~~DETAIL 33~~ DETAIL 33 DELETED

MARKER DETAILS



TYPE RY AND TYPE D

TYPE H

RETROREFLECTIVE FACE

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKERS AND TRAFFIC LINES TYPICAL DETAILS

NO SCALE

A20B

1-26-18

2018 STANDARD PLAN A20B

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER

May 31, 2018
PLANS APPROVAL DATE

Atifa Ferouz
No. C80402
Exp. 3-31-19
CIVIL
STATE OF CALIFORNIA
REGISTERED PROFESSIONAL ENGINEER

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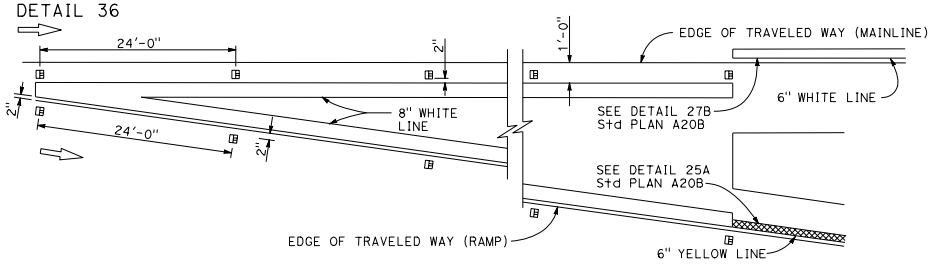
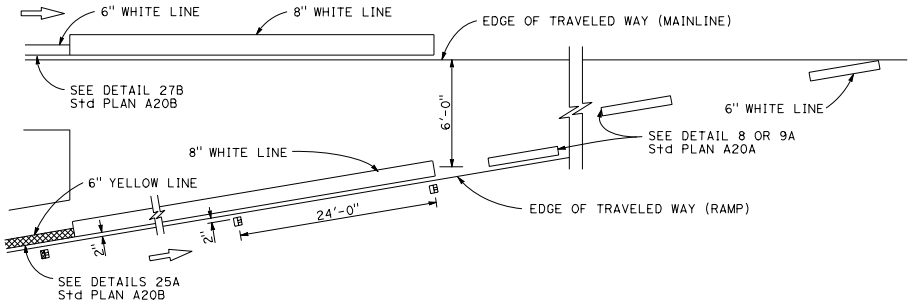
EXIT RAMP NEUTRAL AREA (GORE) TREATMENT

DETAIL 36



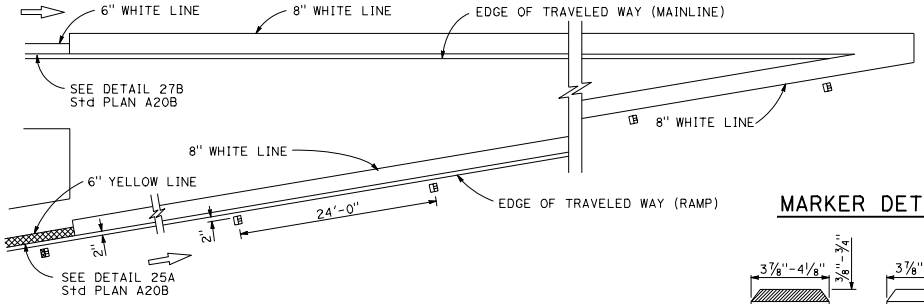
ENTRANCE RAMP NEUTRAL AREA (MERGE) TREATMENT

DETAIL 36A



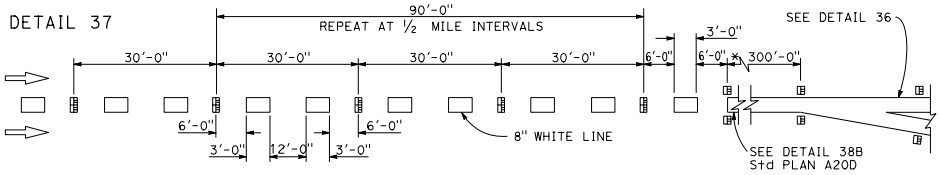
ENTRANCE RAMP NEUTRAL AREA (ACCELERATION LANE) TREATMENT

DETAIL 36B



LANE DROP AT EXIT RAMPS

DETAIL 37

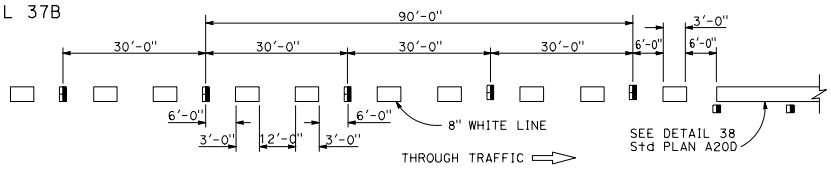


* The solid channelizing line shown may be omitted on short auxiliary lanes where weaving length is critical.

~~DETAIL 37A~~ DETAIL 37A DELETED

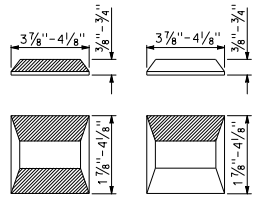
LANE DROP AT INTERSECTIONS

DETAIL 37B



~~DETAIL 37C~~ DETAIL 37C DELETED

MARKER DETAILS



TYPE C AND TYPE RY

TYPE G

RETROREFLECTIVE FACE

LEGEND:

MARKERS

- TYPE C RED-CLEAR RETROREFLECTIVE
- TYPE G ONE-WAY CLEAR RETROREFLECTIVE
- TYPE RY RED-YELLOW RETROREFLECTIVE

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKERS AND TRAFFIC LINES TYPICAL DETAILS

NO SCALE

A20C

2018 STANDARD PLAN A20C

1-26-18

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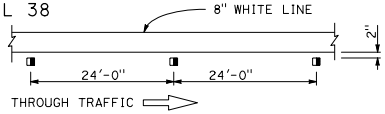
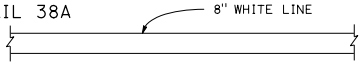
CHANNELIZING LINE

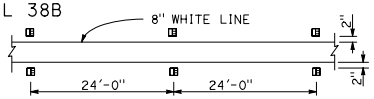
DETAIL 38



DETAIL 38A



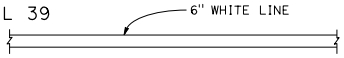
DETAIL 38B



~~DETAIL 38C~~ DETAIL 38C DELETED

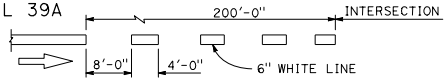
BIKE LANE LINE

DETAIL 39



INTERSECTION LINE
BIKE LANE

DETAIL 39A



LANE LINE EXTENSIONS THROUGH INTERSECTIONS

DETAIL 40

~~DETAIL 40A~~ DETAIL 40A DELETED

CENTER LINE EXTENSIONS THROUGH INTERSECTIONS

DETAIL 41

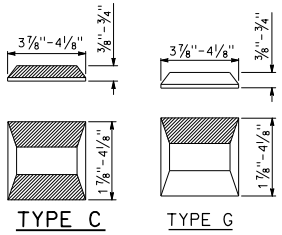
~~DETAIL 41A~~ DETAIL 41A DELETED

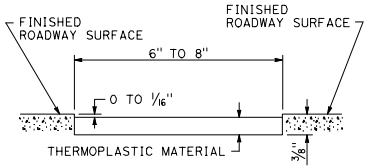
LEGEND

MARKERS

- TYPE C RED-CLEAR RETROREFLECTIVE
- TYPE G ONE-WAY CLEAR RETROREFLECTIVE
- 6" YELLOW LINE

MARKER DETAILS





DETAIL FOR RECESSED THERMOPLASTIC TRAFFIC STRIPE

See Notes A and B.

RECESSED THERMOPLASTIC NOTES

A. See typical traffic line details for pavement marking patterns.

B. The top of the thermoplastic installed in recessed pavement shall be 0 to 1/16" below the pavement surface.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER

May 31, 2018
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER Atifa Ferouz No. C80402 Exp. 3-31-19 CIVIL STATE OF CALIFORNIA

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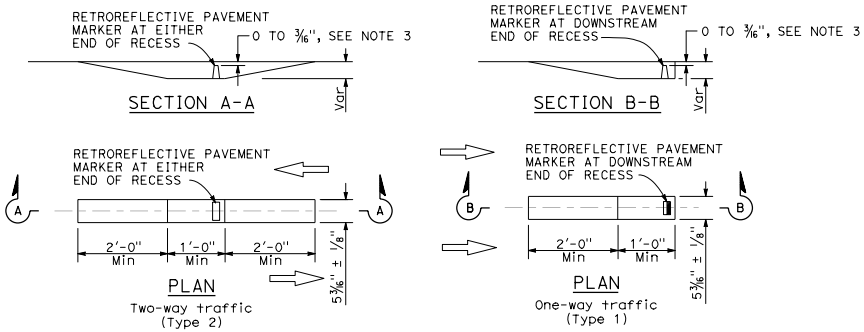
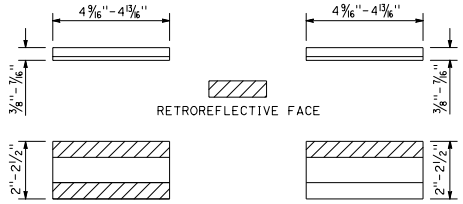


RECESS DETAIL FOR RETROREFLECTIVE PAVEMENT MARKER



TYPE C AND TYPE D TYPE G AND TYPE H

See Notes 1 and 2.

RETROREFLECTIVE PAVEMENT MARKER FOR RECESSED INSTALLATION

RECESSED MARKER NOTES:

1. See typical traffic line details for marker patterns to be used with recessed pavement markers. Detail 14A requires a Type 2 recess.
2. The retroreflective pavement markers shown for recessed installations are not to be used for non-recessed installations.
3. The top of pavement markers installed in recesses shall be 0 to 3/16" below the pavement surface.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKERS AND TRAFFIC LINES TYPICAL DETAILS

NO SCALE

A20D

1-26-18

2018 STANDARD PLAN A20D

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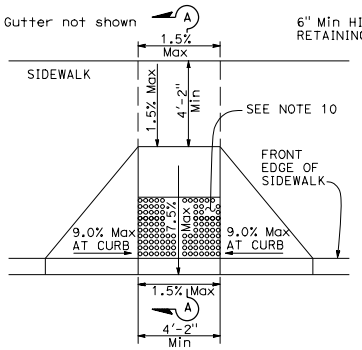
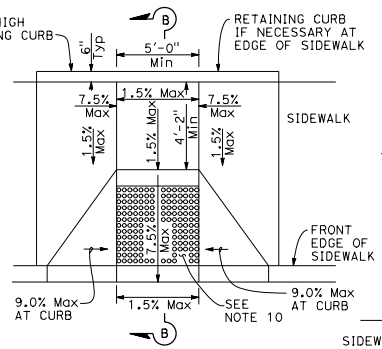
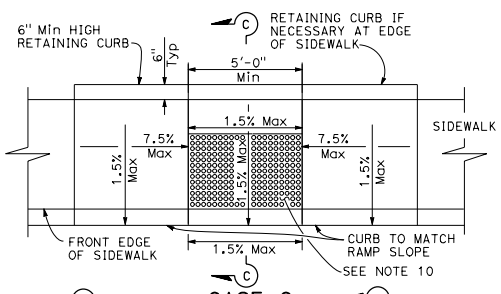


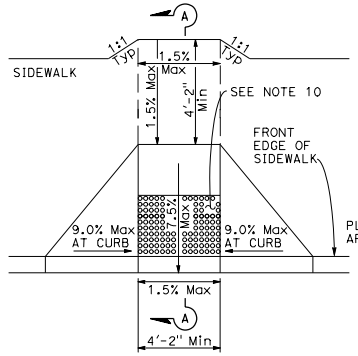
CASE A



CASE B



CASE C



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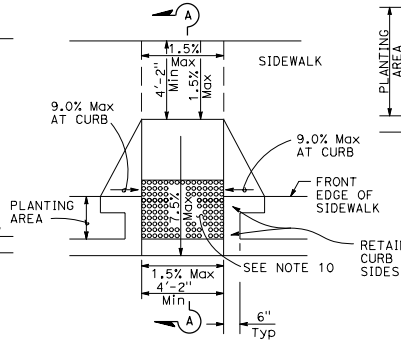
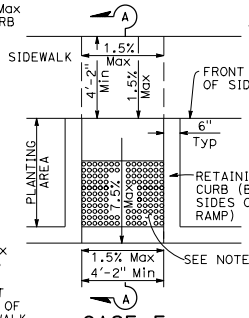
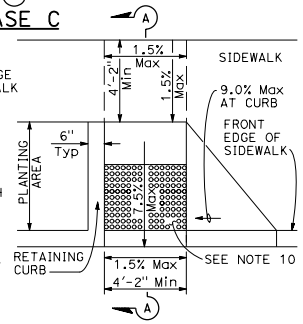


CASE E

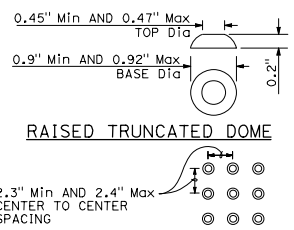


CASE F



CASE G

See Note 4



RAISED TRUNCATED DOME

RAISED TRUNCATED DOME PATTERN (IN-LINE)

DETECTABLE WARNING SURFACE

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER

May 31, 2018

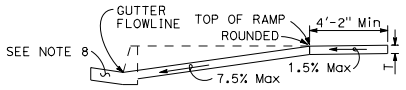
PLANS APPROVAL DATE

Rebecca Lynn Mowry No. C54415 Exp. 12-31-19 CIVIL STATE OF CALIFORNIA REGISTERED PROFESSIONAL ENGINEER

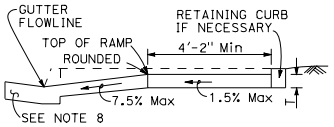
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

NOTES: See Note 10

1. As site conditions dictate, Case A through Case G curb ramps may be used for corner installations similar to those shown in Detail A and Detail B. The case of curb ramps used in Detail A do not have to be the same. Case A through Case G curb ramps also may be used at mid block locations, as site conditions dictate. For specific site condition configuration, including the conform to existing sidewalk, see Project Plans.
2. If distance from curb to back of sidewalk is too short to accommodate ramp and 4'-2" platform (landing) as shown in Case A, the sidewalk may be depressed longitudinally as in Case B or C or may be widened as in Case D.
3. When ramp is located in center of curb return, crosswalk configuration must be similar to that shown for Detail B.
4. As site conditions dictate, the retaining curb side and the flared side of the Case G ramp shall be constructed in reversed position.
5. The ramp portion of the curb ramp is a typical rectangle, unless modified in the Project Plans.
6. Side slope of ramp flares vary uniformly from a maximum of 9.0% at curb to conform with longitudinal sidewalk slope adjacent to top of the ramp, except in Case C and Case F.
7. The adjacent surfaces at transitions at curb ramps to walks, gutters, and streets shall be at the same level.
8. Counter slopes of adjoining gutters and road surfaces immediately adjacent to and within 24 inches of the curb ramp shall not be steeper than 1V:20H (5.0%). Gutter pan slope shall not exceed 1" of depth for each 2'-0" of width.
9. Transition gutter pan slope from 1" of depth for each 2'-0" of width to match typical gutter pan slope per Standard Plan A87A.
10. The detectable warning surface will be a rectangle as shown at back of curb, unless modified in the Project Plans. Curb ramps shall have a detectable warning surface that extends the full width and 3'-0" depth of the ramp. Detectable warning surfaces shall extend the full width of the ramp except a maximum gap of 1 inch is allowed on each side of the ramp. Detectable warning surfaces shall conform to the requirements in the Standard Specifications.
11. Sidewalk and ramp thickness, "T", shall be 3½" minimum.
12. Utility pull boxes, manholes, vaults and all other utility facilities within the boundaries of the curb ramp will be relocated or adjusted to grade by the owner prior to, or in conjunction with, curb ramp construction.
13. Detectable warning surface may have to be cut to allow removal of utility covers while maintaining detectable warning width and depth.

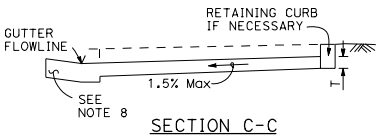


SECTION A-A

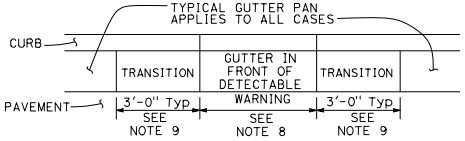


SECTION B-B

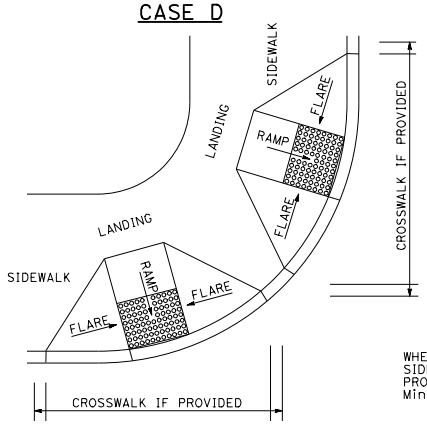
Depress entire sidewalk as required



SECTION C-C



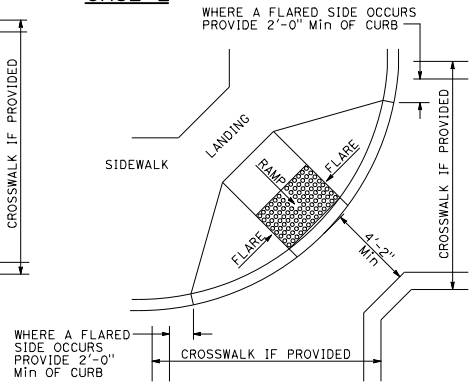
GUTTER PAN TRANSITION



DETAIL A

TYPICAL TWO-RAMP CORNER INSTALLATION

See Note 1



DETAIL B

TYPICAL ONE-RAMP CORNER INSTALLATION

See Notes 1 and 3

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CURB RAMP DETAILS

NO SCALE

A88A

1-29-18

Return to Table of Contents

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER

May 31, 2018

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER Rebecca Lynn Mowry No. C54415 Exp. 12-31-19 CIVIL STATE OF CALIFORNIA

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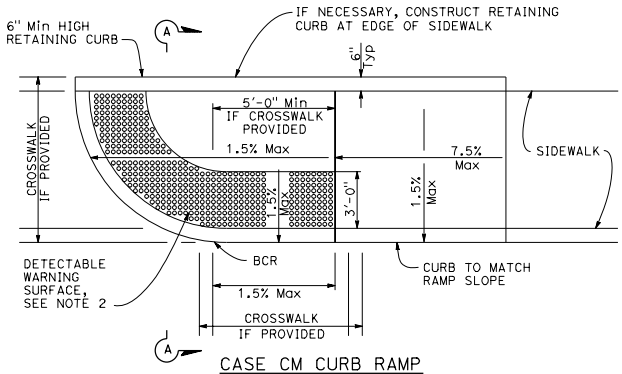
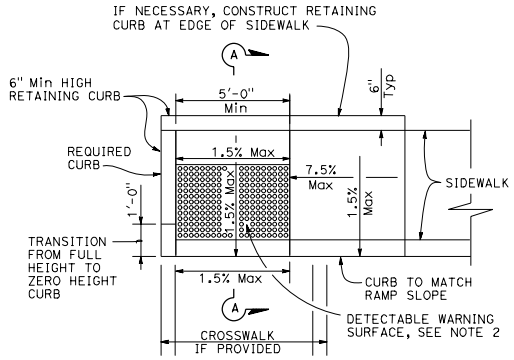
Gutter not shown



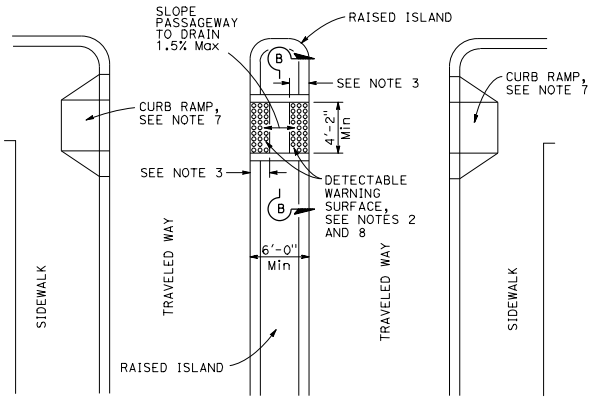
CASE CM CURB RAMP



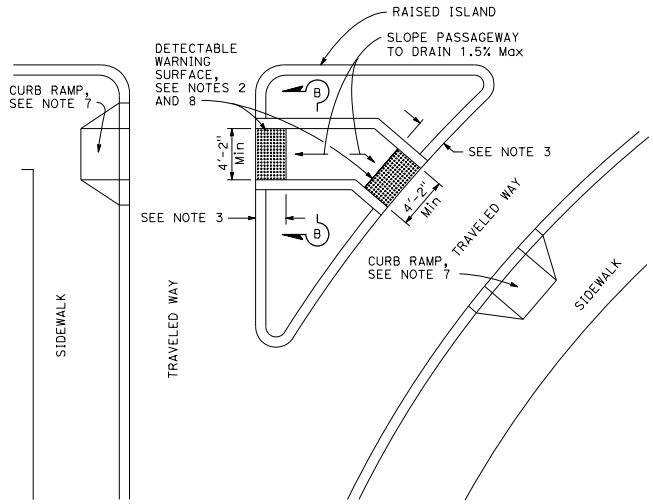
CASE CH CURB RAMP

NOTES:

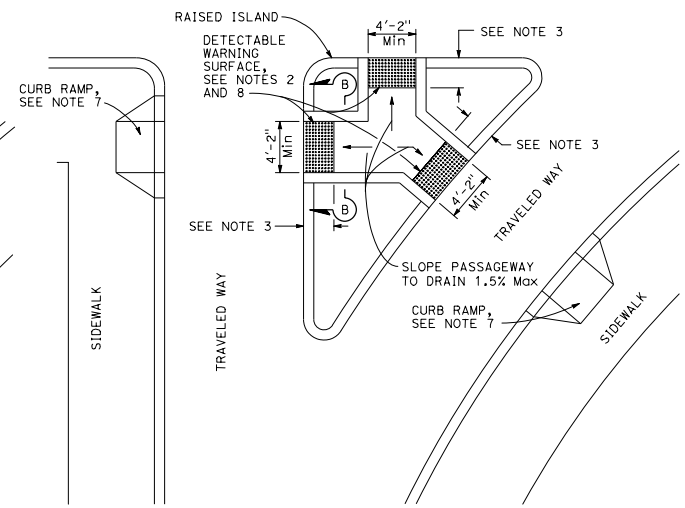
1. Sidewalk, ramp and passageway thickness, "T", shall be 3½" minimum.
2. For details of detectable warning surfaces, see Standard Plan A88A.
3. Where an island passageway length is greater than or equal to 6'-0", but less than 8'-0", each detectable warning surface shall extend the full width and 2'-0" depth of the passageway length. Where an island passageway length is greater than or equal to 8'-0", each detectable warning surface shall extend the full width and 3'-0" depth of the passageway length. Detectable warning surfaces shall extend the full width of the island passageway except a maximum gap of 1 inch is allowed on each side of the passageway.
4. The adjacent surfaces at transitions at curb ramps to walks, gutters, and streets shall be at the same level.
5. Utility pull boxes, manholes, vaults and all other utility facilities within the boundaries of the curb ramp will be relocated or adjusted to grade by the owner prior to, or in conjunction with, curb ramp construction.
6. Detectable warning surface may have to be cut to allow removal of utility covers while maintaining detectable warning width and depth.
7. For additional curb ramp details, see Standard Plan A88A.
8. The detectable warning surface will be a rectangle as shown at the face of curb, unless modified in the Project Plans.



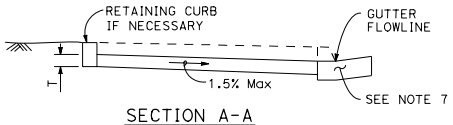
TYPE A PASSAGEWAY



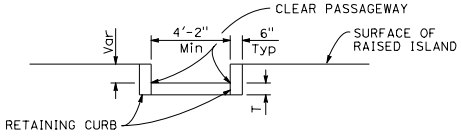
TYPE B PASSAGEWAY



TYPE C PASSAGEWAY



SECTION A-A



SECTION B-B

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CURB RAMP AND ISLAND PASSAGEWAY DETAILS

NO SCALE

A88B

1-29-18

2018 STANDARD PLAN A88B

Return to Table of Contents

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

REGISTERED ELECTRICAL ENGINEER

May 31, 2018
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER Hamid Zolfaghari No. E15636 Exp. 12-31-19 ELECTRICAL STATE OF CALIFORNIA

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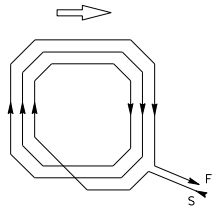
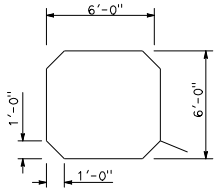
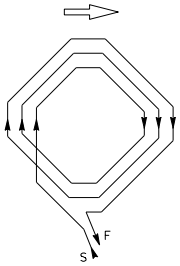


WINDING DETAIL



SAW CUT DETAIL

TYPE A LOOP DETECTOR CONFIGURATION



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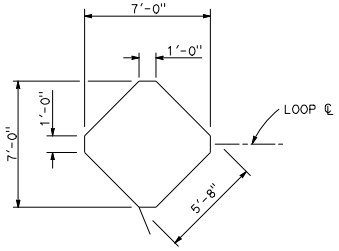
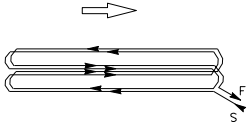


SAW CUT DETAIL

TYPE B LOOP DETECTOR CONFIGURATION



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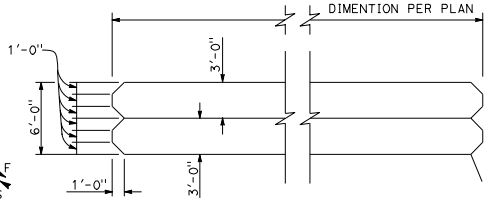
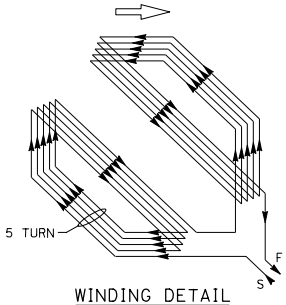
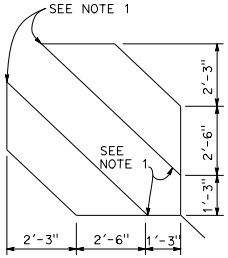


SAW CUT DETAIL

TYPE C LOOP DETECTOR CONFIGURATION

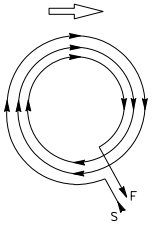


WINDING DETAIL



SAW CUT DETAIL

TYPE D LOOP DETECTOR CONFIGURATION



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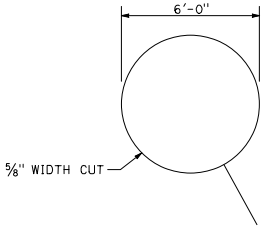
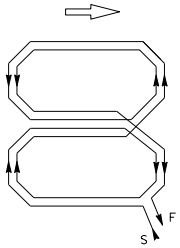
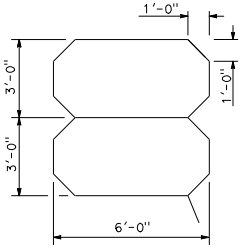


SAW CUT DETAIL

TYPE E LOOP DETECTOR CONFIGURATION

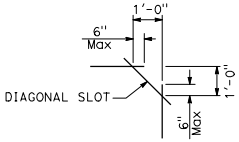


WINDING DETAIL



SAW CUT DETAIL

TYPE Q LOOP DETECTOR CONFIGURATION



PLAN VIEW OF DIAGONAL SLOT AT CORNERS

NOTES:

1. Round corners of acute angle saw cuts to prevent damage to conductors.
2. Typical distance separating loops from edge to edge is 10' for Type A, B, D, and E installation in single lane.
3. Use Type D loops for limit line detection and bicycle lanes.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (DETECTORS)

NO SCALE

ES-5B

1-30-18

2018 STANDARD PLAN ES-5B

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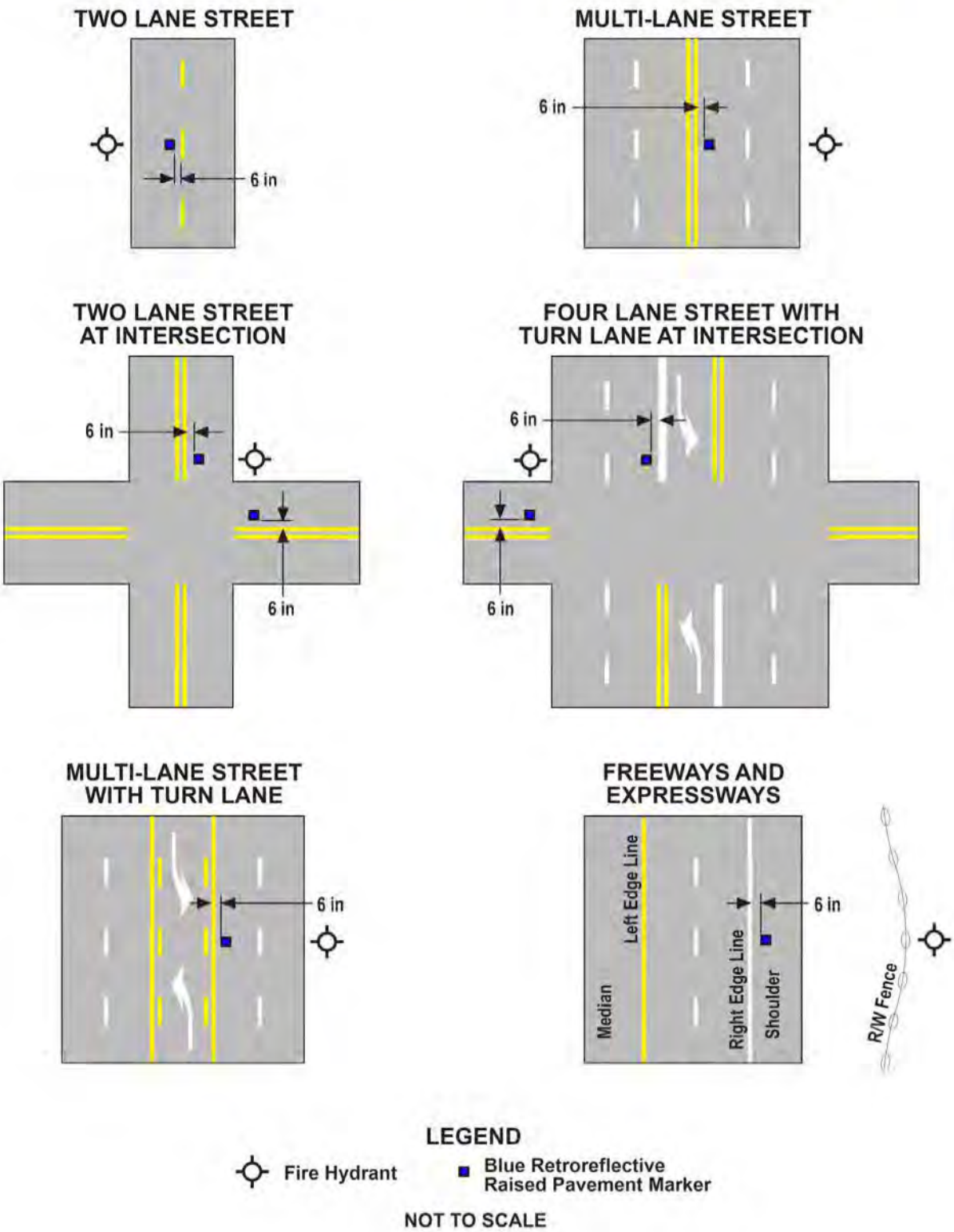
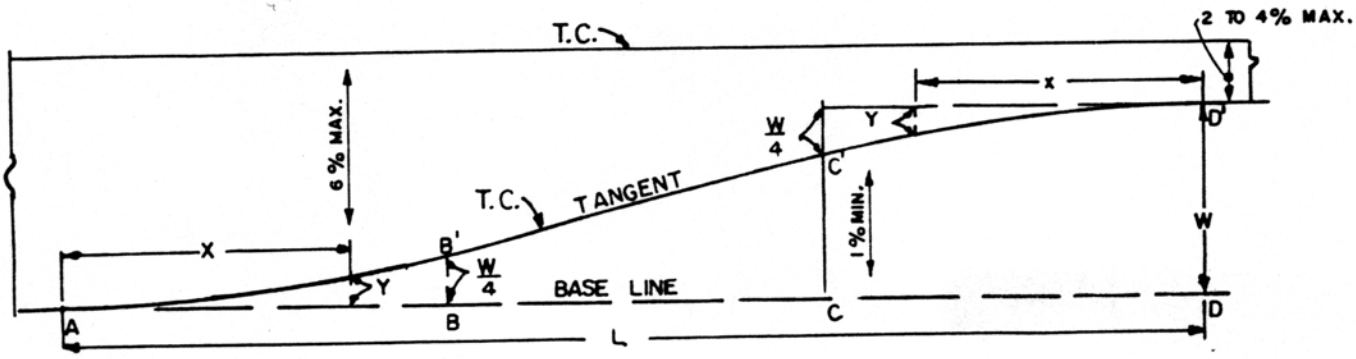
Figure 3B-102 (CA). Examples of Fire Hydrant Location Pavement Markers





W = Width of left turn pocket

L = Length of taper

AB = BC = CD = $\frac{L}{3}$

AB' and C'D' are parabolic curves except on curved alignments

X = Distance from point "A" along base line

Y = Offset from base line = $2.25 W X^2/L^2$

SINGLE LEFT TURN POCKET

L=90' W=10'

X	0'	10'	20'	30'	40'	50'	60'	70'	80'	90'
Y	0.00'	0.28'	1.11'	2.50'	4.17'	5.83'	7.50'	8.89'	9.72'	10.00

L=60'* W=10'

X	0'	10'	20'	30'	40'	50'	60'
Y	0.00'	0.62'	2.50'	5.00'	7.50'	9.38'	10.00'

DOUBLE LEFT TURN POCKET

L=150' W=20'

X	0'	10'	20'	30'	40'	50'	60'	70'	80'	90'	100'	110'	120'	130'	140'	150'
Y	0.00'	0.20'	0.80'	1.80'	3.20'	5.00'	7.00'	9.00'	11.00'	13.00'	15.00'	16.80'	18.20'	19.20'	19.80'	20.00'

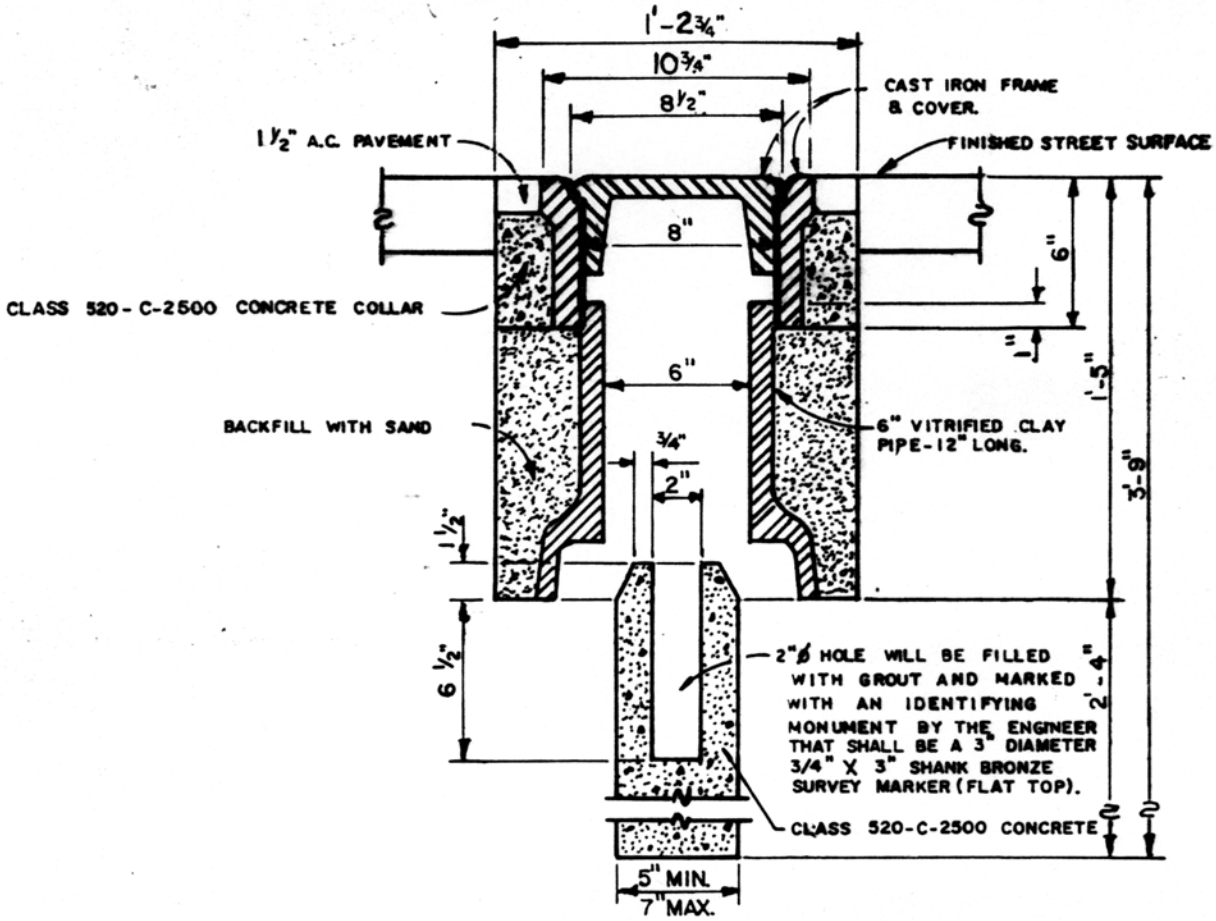
NOTE:

In the case when the base line is curved the offsets are calculated by assuming the base line to be a tangent they are then applied to the curved base line. AB' and C'D' are no longer parabolic and BC is no longer a tangent.

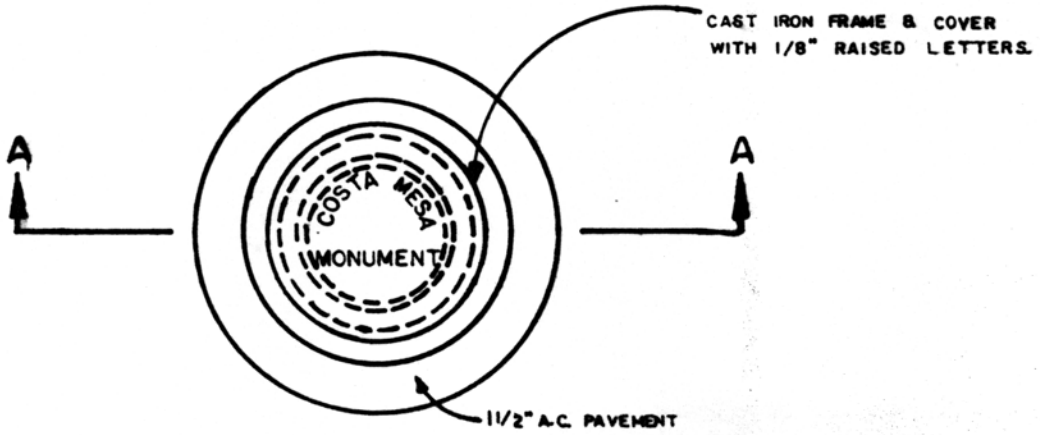
* Use 60' transition when insufficient distance is available for 90' transition or where approved by the Engineer.

CITY OF COSTA MESA CALIFORNIA PUBLIC SERVICES DEPARTMENT	PARABOLIC MEDIAN CURB TRANSITION APPROVED BD Mattern DATE: 12/13/85 BRUCE D. MATTERN R.C.E. 19388	DRAWN: C.P.R. SCALE: NONE STD. DWG NO. 116

REV.:

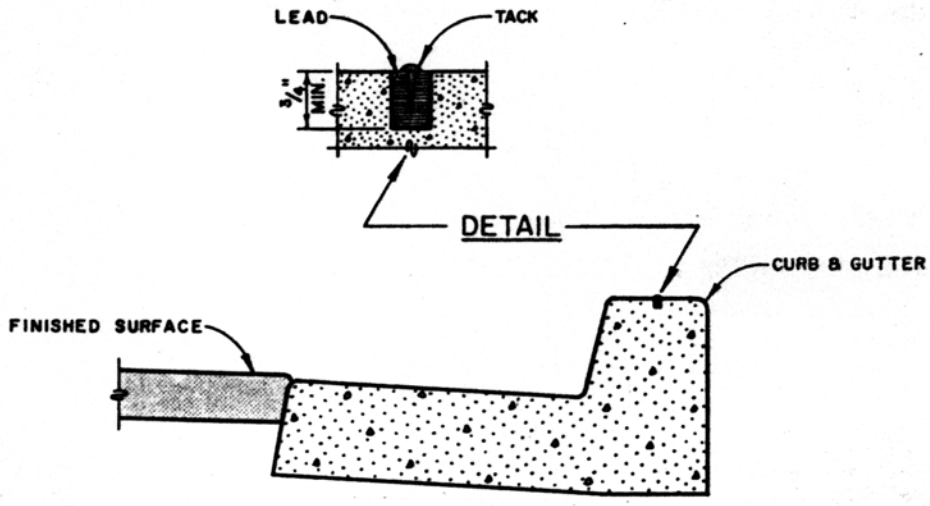


SECTION A-A



PLAN

CITY OF COSTA MESA CALIFORNIA PUBLIC SERVICES DEPARTMENT	SURVEY MONUMENT TYPE "A"	DRAWN C.P.R. SCALE NONE
	APPROVED B.D. Mattern DATE 12/13/85 BRUCE D. MATTERN R.C.E. 19388	STD. DWG. NO. 613



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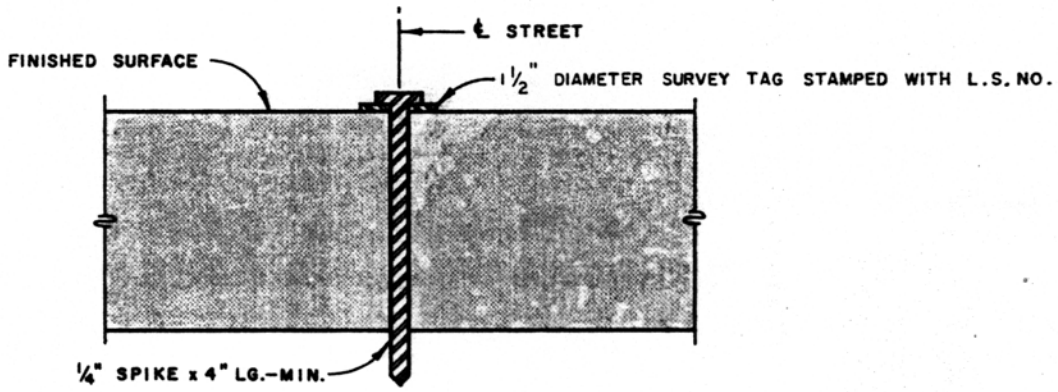


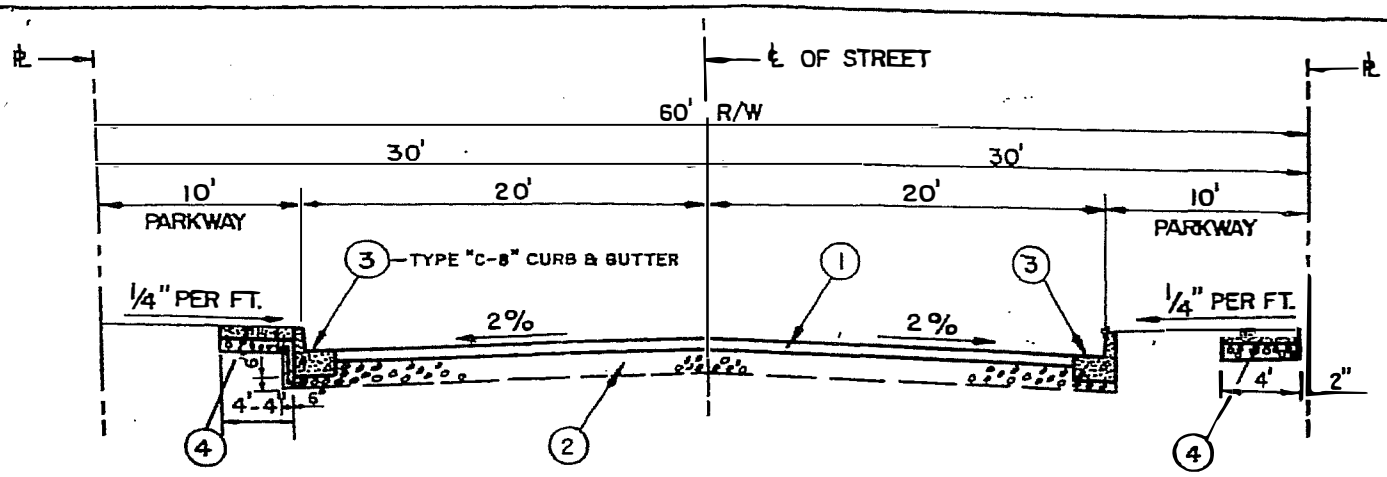
SECTION

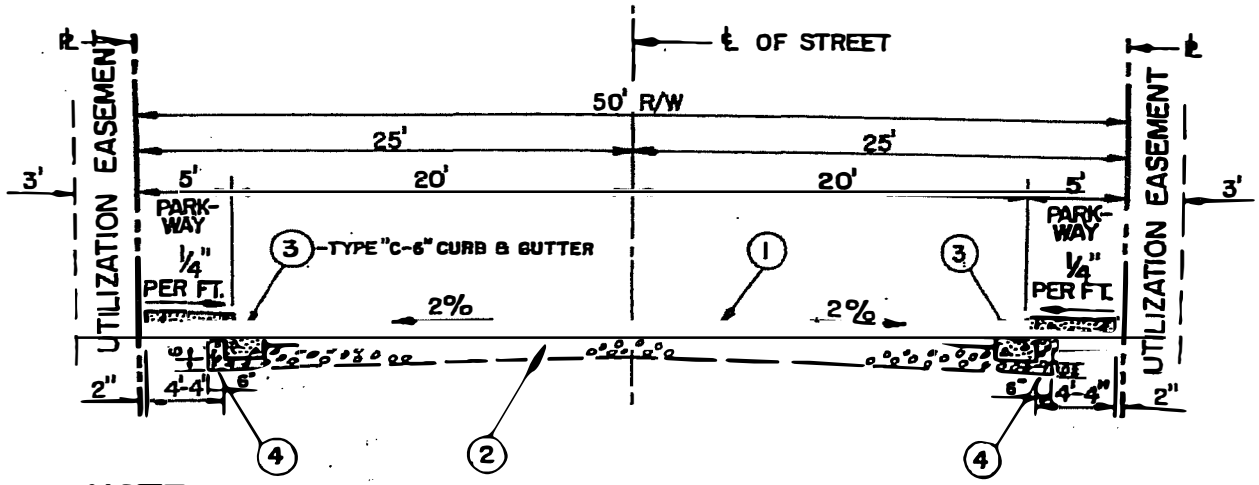
NOTES:

1. ALL TIE POINTS SHALL BE LEAD & TACK. LEAD SHALL BE A MIN. OF 3/4" DEEP AND TACKS SHALL BE MADE OF BRASS.
2. ALL INTERSECTION & CENTER LINE CONTROL POINTS SHALL BE SPIKE & WASHER.
3. ALL CONTROL POINTS SHALL HAVE A MIN. OF 4 TIES, WITH TIES PLACED SUCH THAT A PROPER ANGLE IS OBTAINED FROM THE TIE TO THE CONTROL POINT AS DETERMINED BY THE CITY ENGINEER.
4. RECORD CENTER LINE TIE DATA ON TIE SHEET AVAILABLE AT THE CITY OF COSTA MESA, ENGINEERING DIVISION.

CITY OF COSTA MESA CALIFORNIA PUBLIC SERVICES DEPARTMENT	SURVEY CENTER LINE TIES APPROVED BD Mattern DATE 12/13/85 BRUCE D. MATTERN R.C.E. 19388	DRAWN W.A.B. SCALE NONE STD. DWG. NO. 615

REV.





NOTE:

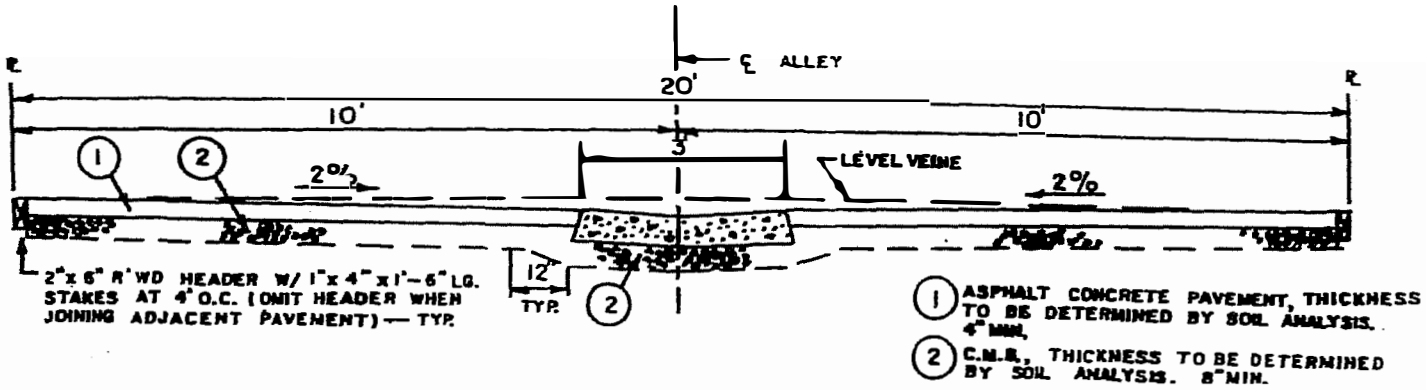
50' R/W TO BE USED WITH CITY COUNCIL APPROVAL ONLY.

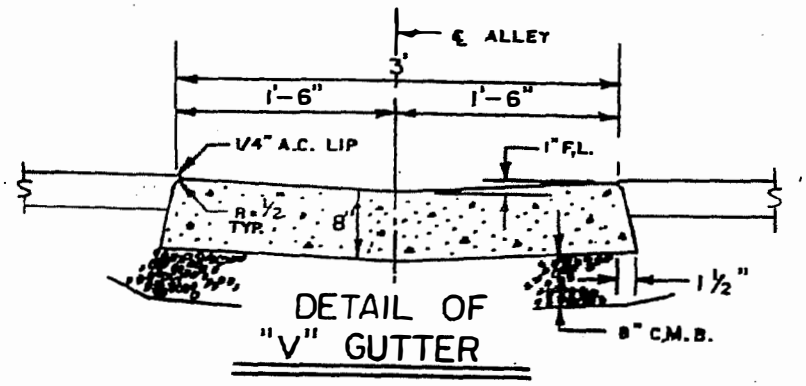
NOTES:

1. ASPHALTIC CONCRETE PAVEMENT (4" THICKNESS). ACTUAL THICKNESS TO BE DETERMINED AFTER ROUGH GRADING.
2. CRUSHED AGGREGATE BASE (8" THICKNESS). ACTUAL THICKNESS TO BE DETERMINED AFTER ROUGH GRADING.
3. TYPE "C-8" OR "C-6" CURB AND GUTTER PER STD. DWG. NO. 312.
4. 4" P.C.C. SIDEWALK PER STD. DWG. NO. 411.

DRIVEWAY LOCATIONS AND SLOPES SHALL BE APPROVED BY THE CITY ENGINEER ON STREETS WITH 50' R/W.

CITY OF COSTA MESA CALIFORNIA PUBLIC SERVICES DEPARTMENT	TYPICAL SECTION 60' & 50' RESIDENTIAL STREETS	DRAWN J.C.B. SCALE NONE
	APPROVED B D Matteau DATE 12/13/85 BRUCE D. MATTEAU R.C.E. 19388	STD. DWG. NO. 114



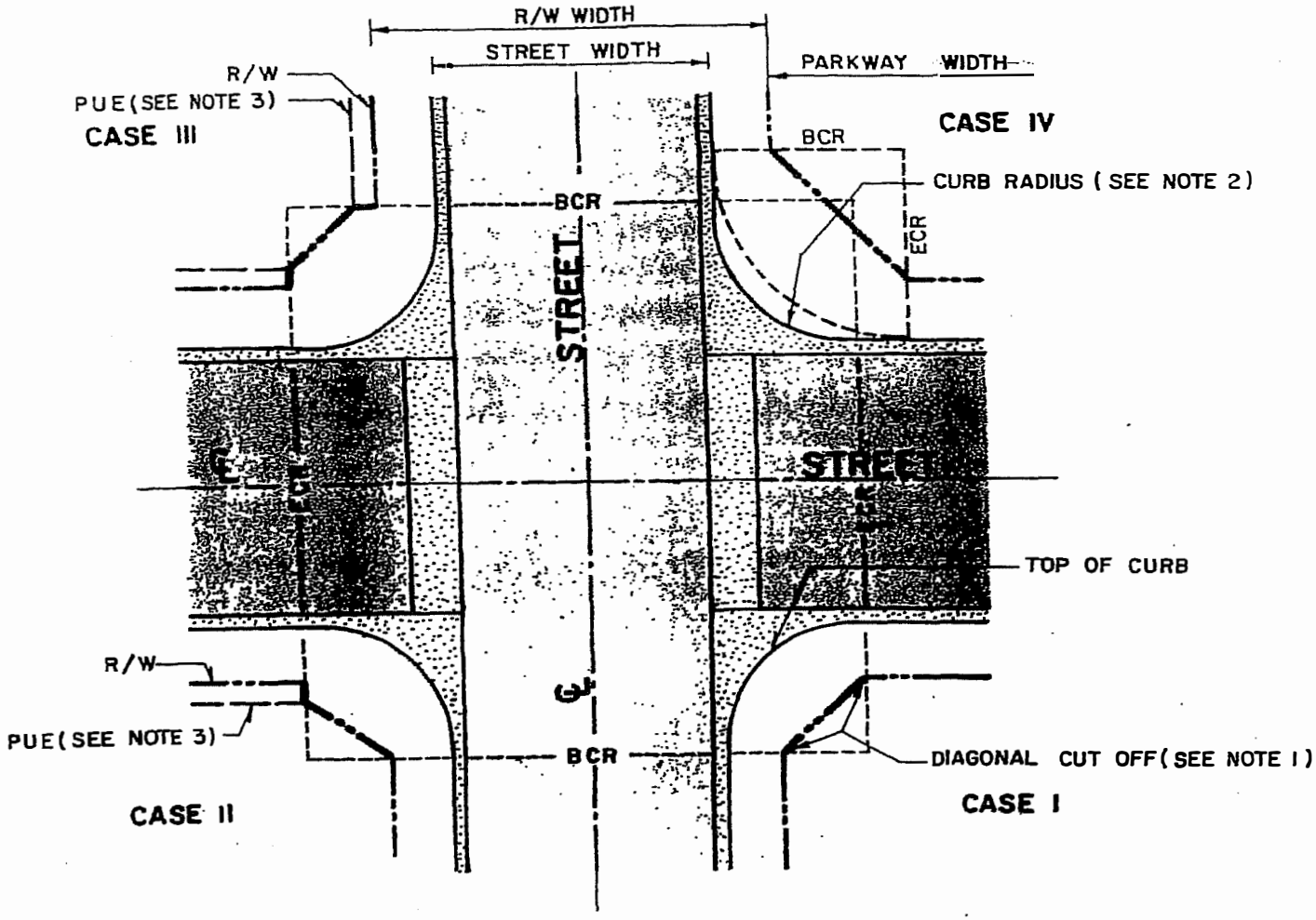


DETAIL OF "V" GUTTER

NOTES:

1. CONCRETE SHALL BE 560-C-3250 PER CURRENT EDITION OF STANDARD SPECIFICATIONS SEC. 201-1.
2. ALLEYS SHALL NOT RECEIVE STREET DRAINAGE.
3. ALLEY APPROACH SEE CITY STD. DWG. 514.
4. 1/4 INCH TRANSVERSE EXPANSION JOINTS SHALL BE PLACED AT 40' INTERVALS AND 1/8"x 2" WEAKENED PLANE JOINTS SHALL BE PLACED AT 10' INTERVALS IN THE P.C.C. "V" GUTTER, FOR DETAILS SEE CITY STD. DWG. NO. 314.

CITY OF COSTA MESA CALIFORNIA ENGINEERING DEPARTMENT	TYPICAL SECTION ALLEY AND "V" GUTTER	DRAWN B.T.M. SCALE NONE
	APPROVED BDMattern 1/21/88 BRUCE D. MATTERN RCE 19388 DATE	STD. DWG. NO. 118



PLAN

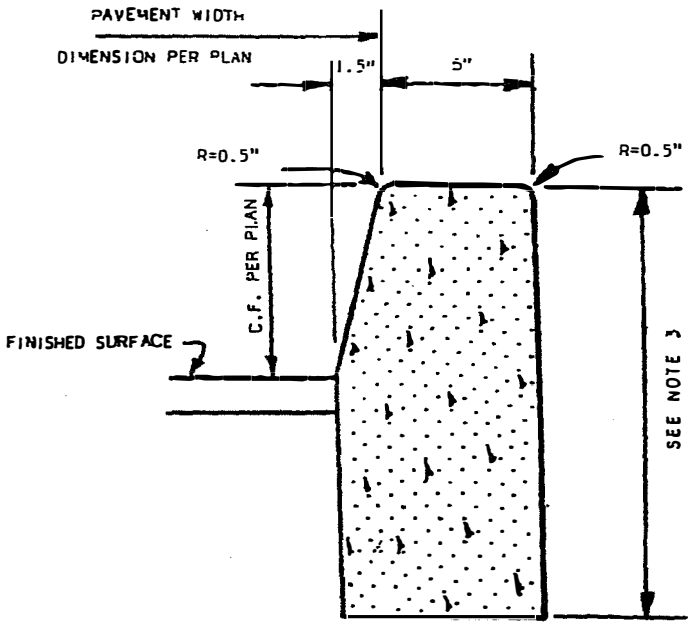
PARKWAY WIDTHS:

5' FOR 50' R/W
10' FOR 60' R/W
7' FOR 84' R/W
7' FOR 106' R/W
8' FOR 120' R/W

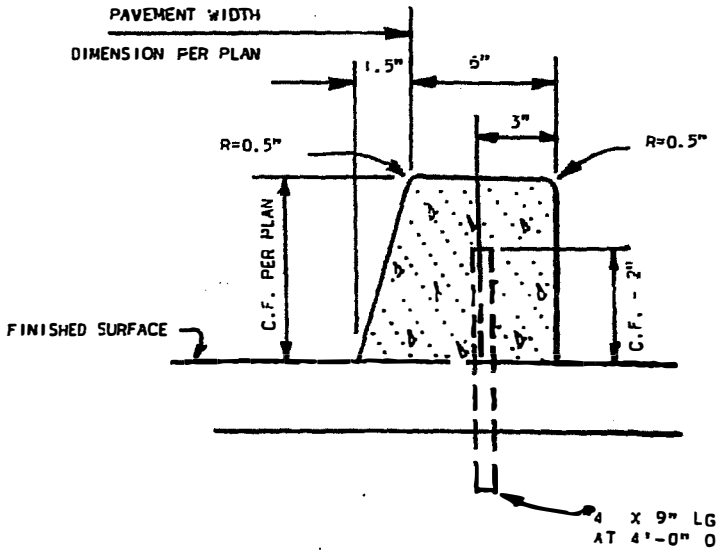
NOTES:

1. THE PROPERTY LINE DIAGONAL CUT-OFF IS A STRAIGHT LINE DRAWN BETWEEN THE R/W LINES (OR PUE LINES, IF EXISTING) AT THE BCR AND ECR.
2. ALL CURB RETURN RADII SHALL BE 25' UNLESS BOTH STREETS ARE ON THE MASTER PLAN OF HIGHWAYS, AND THEN THE DIAGONAL CUT-OFF SHALL BE FOR A 35' CURB RETURN RADIUS.
3. ALL 50' STREETS REQUIRE A 3' PUBLIC UTILIZATION EASEMENT. SEE STD. DWG. NO. 114.

CITY OF COSTA MESA CALIFORNIA PUBLIC SERVICES DEPARTMENT	CURB RETURN RADII AND PROPERTY LINE DIAGONAL CUT-OFF	DRAWN F.S. SCALE NONE
	APPROVED BDMattern DATE 12/13/85 BRUCE D. MATTERN R.C.E. 19388	STD. DWG. NO. 214



TYPE "A" CURB



TYPE "B" CURB

NOTES

1. 1/4" EXPANSION JOINTS SHALL BE PLACED AT 40' INTERVALS AND AT ALL MEDIAN NOSES. 1/8" x 2" WEAKENED PLANE OR PLASTIC CONTROL JOINTS SHALL BE PLACED AT 10' INTERVALS. FOR DETAILS SEE STD. DWG. NO. 314.

2. DOWELS FOR TYPE "B" CURB MAY BE DELETED WHEN EXTRUDED CONCRETE IS BONDED TO THE PAVEMENT WITH APPROVED ADHESIVE, EXCEPT THE ISLAND NOSES WHICH SHALL BE DOWELED.

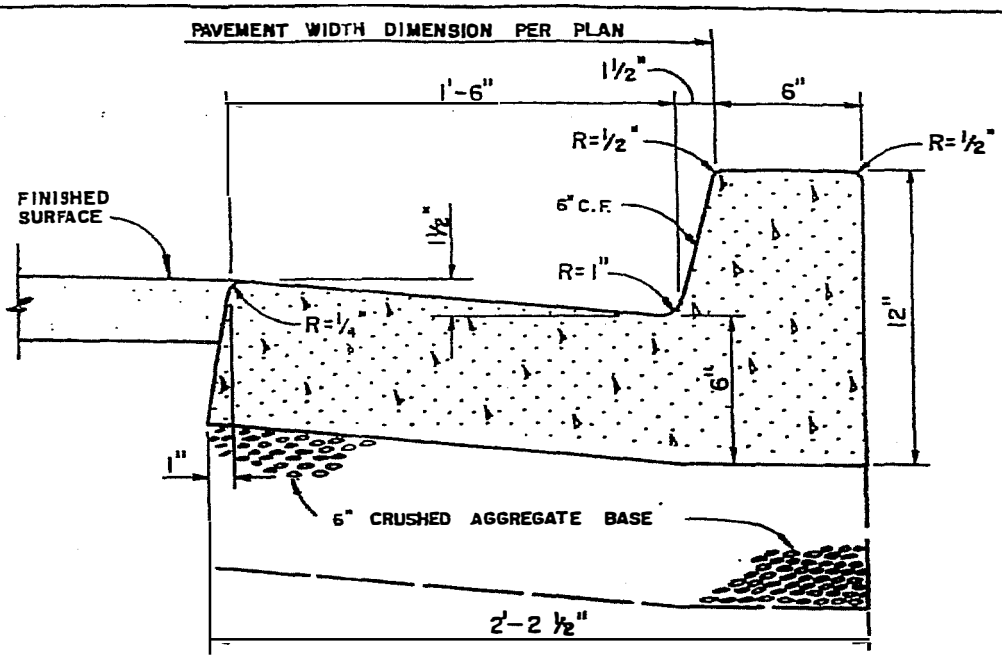
3. WHERE MEDIANS ARE LANDSCAPED, CURB SHALL EXTEND 6" BELOW SUB-GRADE AND BE BACKED WITH A 20 MIL PLASTIC MOISTURE BARRIER THAT EXTENDS 6" BELOW CURB. C.F. AND H SHALL BE PER PLAN.

4. THESE CURBS ARE NON-WATER CARRYING. TRANSITION TO TYPE "C" CURB AND GUTTER PER PLAN.

5. CONCRETE SHALL BE 560-C-3250 PER CURRENT EDITION OF STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION SEC. 201-1.1.2 .

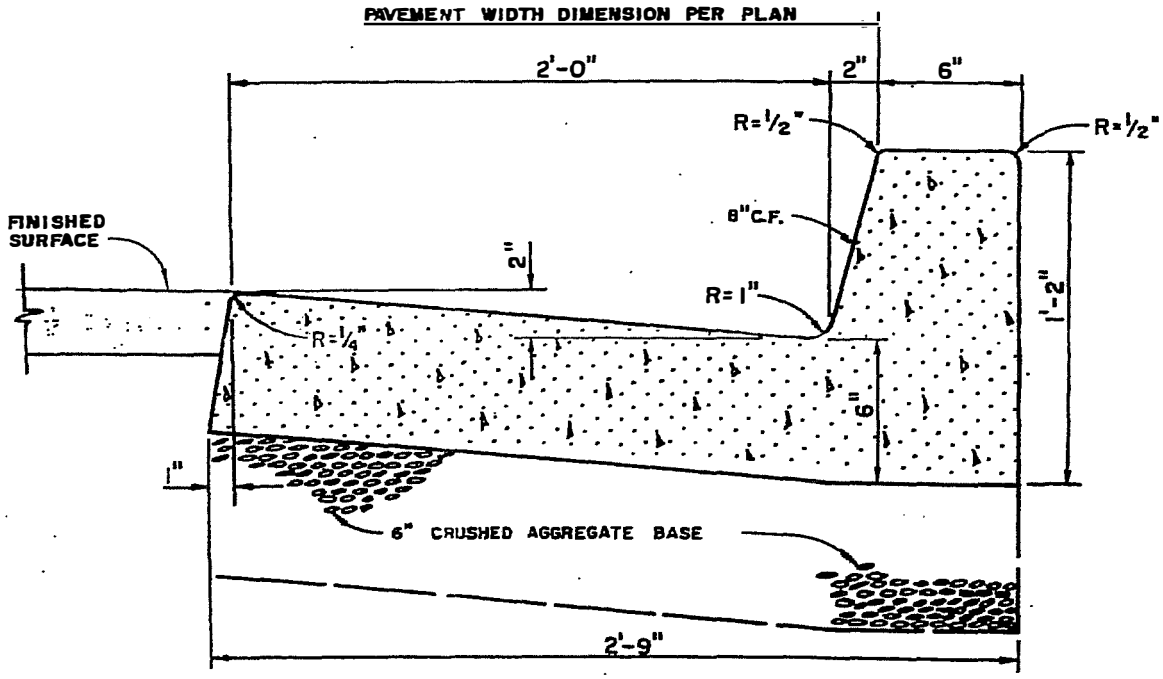
REVISED 4-16-86

CITY OF COSTA MESA CALIFORNIA PUBLIC SERVICES DEPARTMENT	TYPES "A" & "B" CURBS	DRAWN DWL SCALE NONE
	APPROVED B.D. Matthew BRICE MATTHEW R.C.E. 14588 DATE 4/23/86	STD. DRWG. NO. 311



CONC. PER LIN. FT. = 0.05054 CU. YDS.
1 CU. YD. = 19.7863 LIN. FT.

TYPE "C-6" CURB & GUTTER



CONC. PER LIN. FT. = 0.0645 CU. YDS.
1 CU. YD. = 15.50 LIN. FT.

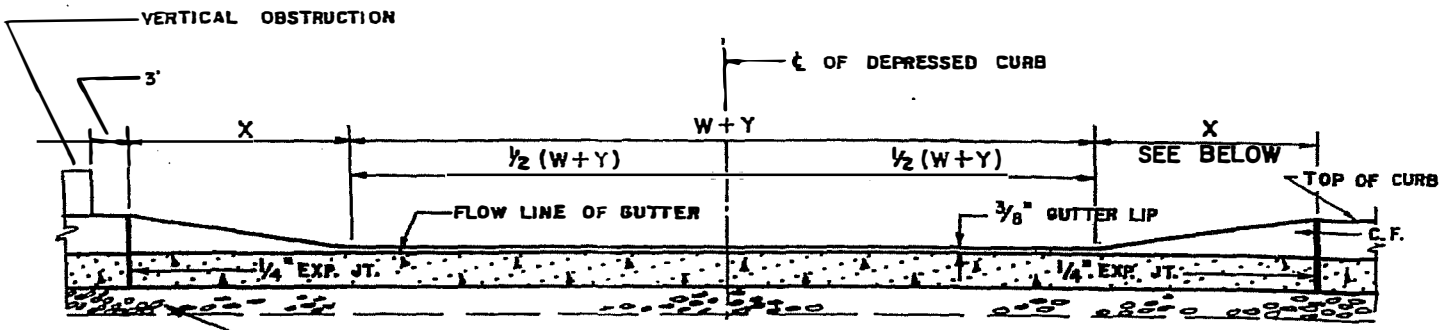
TYPE "C-8" CURB & GUTTER

NOTES:

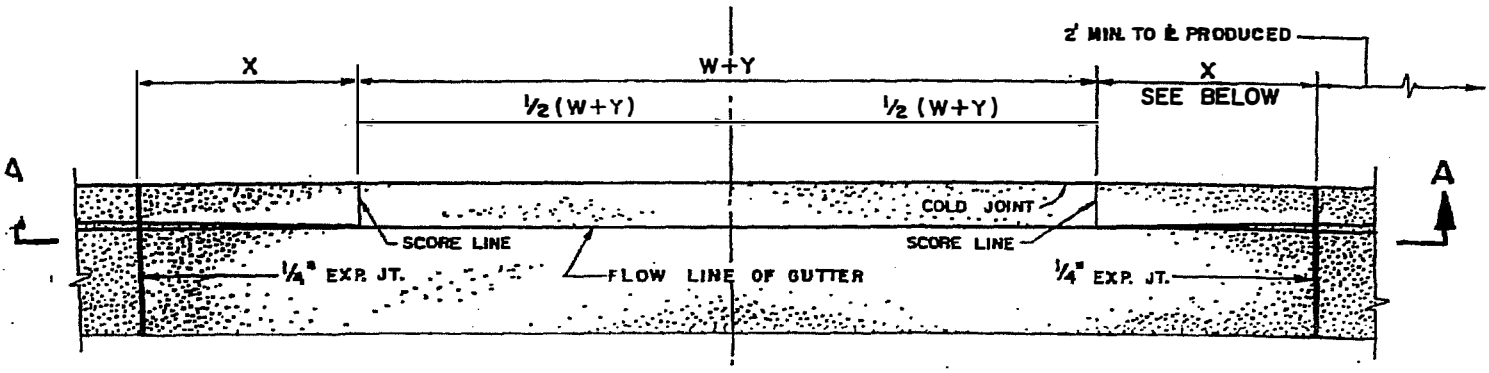
1. ¼" EXPANSION JOINTS SHALL BE PLACED AT 40' INTERVALS AND AT ALL B.C.R.'S E.C.R.'S AND 1/8"X2" WEAKENED PLANE OR PLASTIC CONTROL JOINTS SHALL BE PLACED AT 10' INTERVALS. FOR DETAILS, SEE STD. DWG. NO. 314.
2. CONCRETE SHALL BE 560-C-3250 PER CURRENT EDITION OF STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION SEC. 201-1.1.2.
3. SUBGRADE RELATIVE COMPACTION SHALL NOT BE LESS THAN 90%.

CITY OF COSTA MESA CALIFORNIA PUBLIC SERVICES DEPARTMENT	TYPE "C" CURB & GUTTER	DRAWN M.K.S. SCALE NONE
	APPROVED BDMattern DATE 12/13/85 BRUCE D. MATTERN R.C.E. 19388	STD. DWG. NO. 312

REV.



SECTION A-A



PLAN

NOTES:

1. FOR CURB AND GUTTER DETAILS, SEE STD. DWG. NO. 312.
2. FOR JOINT DETAILS, SEE STD. DWG. NO. 314.
3. CONCRETE TO BE 560-C-3250 PER CURRENT EDITION OF STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION SEC. 201-1.1.2
4. ALL DRIVEWAY LOCATIONS AND DIMENSIONS SHALL BE APPROVED BY TRANSPORTATION SERVICES ENGINEER.

DIMENSIONS:

W = 10' MIN.–16' MAX. FOR RESIDENTIAL DRIVEWAYS IN R-1 ZONE. Y = 0.

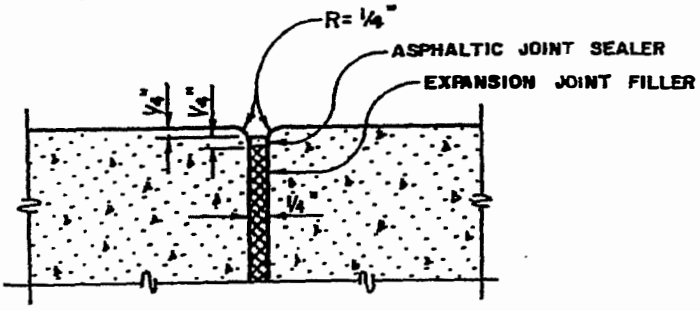
W = 16' MIN.–26' MAX. FOR OTHER DRIVEWAYS.

X = 4' FOR 6" CURB FACE.

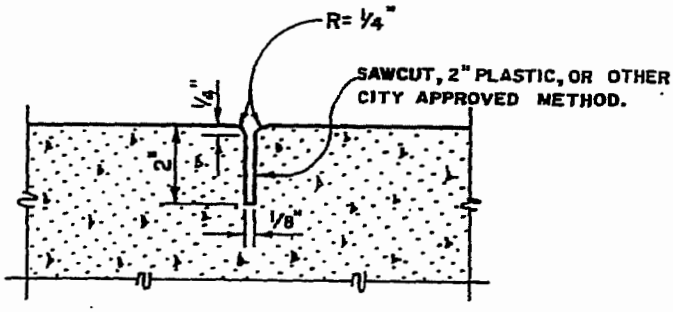
X = 5' FOR 8" CURB FACE.

CITY OF COSTA MESA CALIFORNIA PUBLIC SERVICES DEPARTMENT	DEPRESSED CURB FOR DRIVEWAY APPROACH APPROVED BDMattern DATE 12/13/85 BRUCE D. MATTERN R.C.E. 19388	DRAWN M.K.S. SCALE NONE STD. DWG. NO. 313

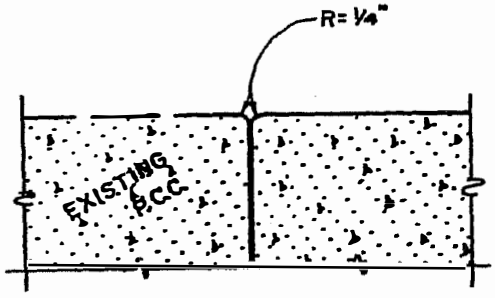
REV.



1/4" EXPANSION JOINT
40' INTERVALS



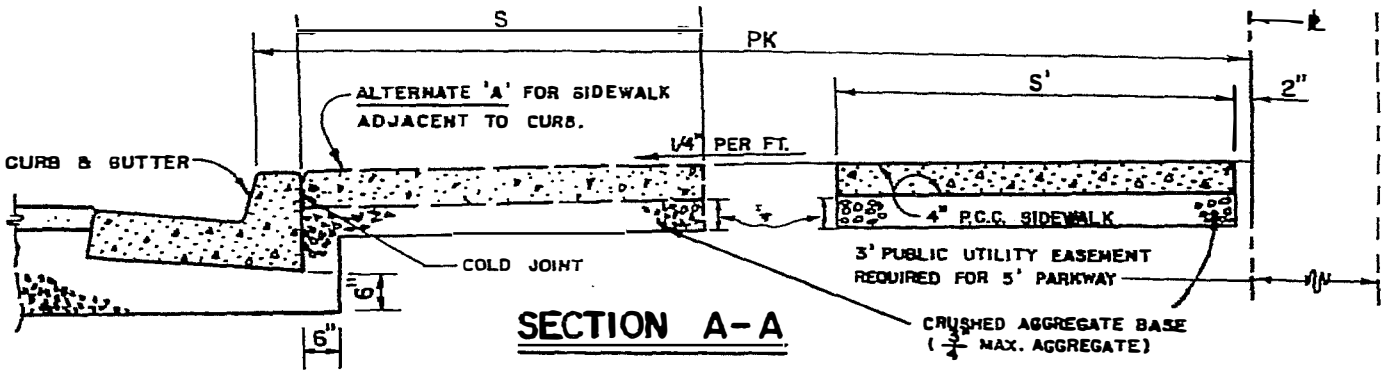
1/8" x 2" WEAKENED PLANE JOINT
10' INTERVALS



CONSTRUCTION JOINT

CITY OF COSTA MESA CALIFORNIA PUBLIC SERVICES DEPARTMENT	JOINT DETAILS	DRAWN M.K.S. SCALE NONE
	APPROVED BDMattern DATE 12/13/85 BRUCE D. MATTERN R.C.E. 19388	STD. DWG. NO. 314

REV.



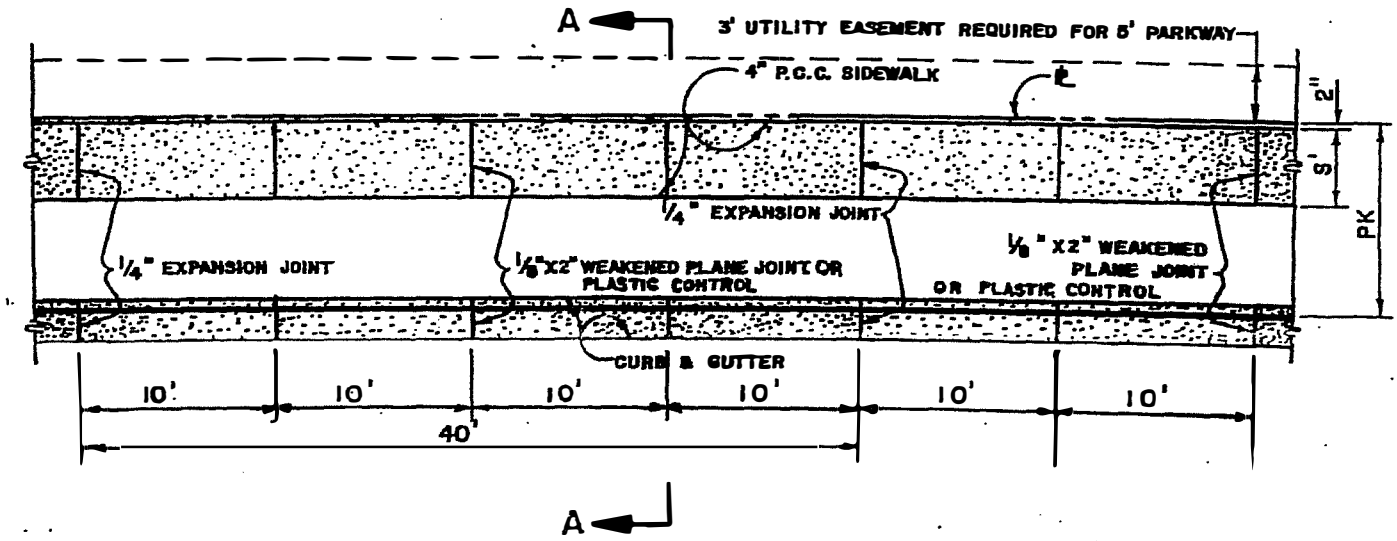
SECTION A-A

DIMENSIONS:

PK = PARKWAY WIDTH
S = SIDEWALK WIDTH

50' R/W — PK = 5'	S = 4'-4"	
60' R/W — PK = 10'	S = 4'-4"	
84' R/W — PK = 7'	S = 4'-4"	RESIDENTIAL, 6'-4" COMMERCIAL & INDUSTRIAL
106' R/W — PK = 7'	S = 4'-4"	RESIDENTIAL, 6'-4" COMMERCIAL & INDUSTRIAL
120' R/W — PK = 8'	S = 4'-4"	RESIDENTIAL, 7'-4" COMMERCIAL & INDUSTRIAL

S' = 4'-0"



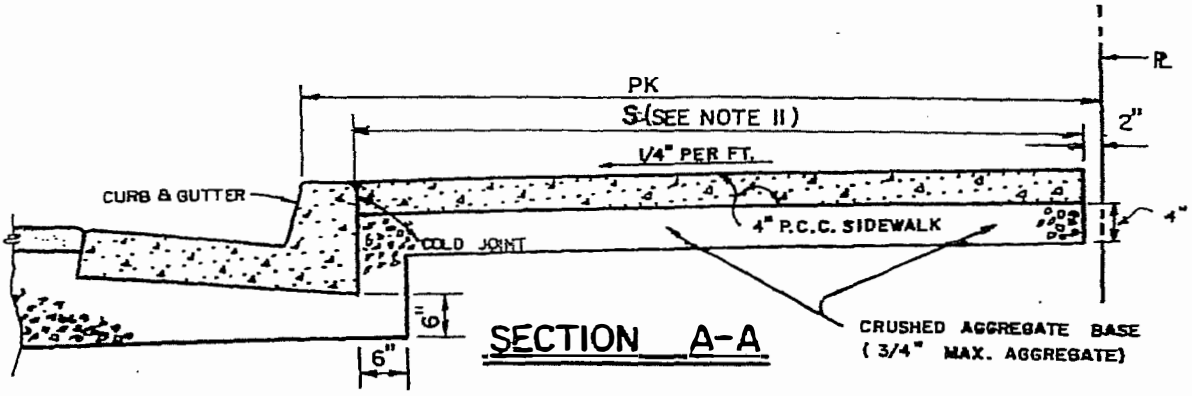
PLAN

NOTES:

1. 1/4" EXPANSION JOINTS SHALL BE PLACED AT 40' INTERVALS AND AT THE END OF ALL CURB RETURNS.
2. 1/8" X 2" PLASTIC CONTROL OR WEAKENED PLANE JOINTS SHALL BE PLACED AT 10' INTERVALS
3. EXPANSION JOINTS AND WEAKENED PLANE JOINTS FOR SIDEWALK SHALL BE PLACED TO COINCIDE WITH JOINTS OF THE CURB.
4. FOR EXPANSION JOINT AND WEAKENED PLANE JOINT DETAILS, SEE STD. DWG. NO. 314.
5. SIDEWALK THICKNESS IS 4" EXCEPT AT DRIVEWAYS WHERE IT SHALL BE 6" THICK.
6. CONCRETE SHALL BE 520-C-2500 PER CURRENT EDITION OF STANDARD SPECIFICATIONS SEC. 201-1.1.2.
7. 10' INTERVAL BETWEEN TRANSVERSE JOINTS MAY BE VARIED. IF JOINING EXISTING IMPROVEMENTS AND APPROVED BY CITY ENGINEER.
8. WIDEN SIDEWALK TO PROVIDE MIN. CLEAR DISTANCE PER STD. DWG. NO. 413.
9. ALL EXPOSED CORNERS ON SIDEWALK SHALL BE ROUNDED OFF WITH 1/2" RADIUS, EXCEPT AS OTHERWISE SHOWN ON STD. DWG. NO. 314.

CITY OF COSTA MESA CALIFORNIA PUBLIC SERVICES DEPARTMENT	STANDARD SIDEWALK DETAILS APPROVED BD Mattern DATE 12/12/85 BRUCE D. MATTERN R.C.E. 19388	DRAWN: W.A.B. SCALE NONE STD. DWG. NO. 411

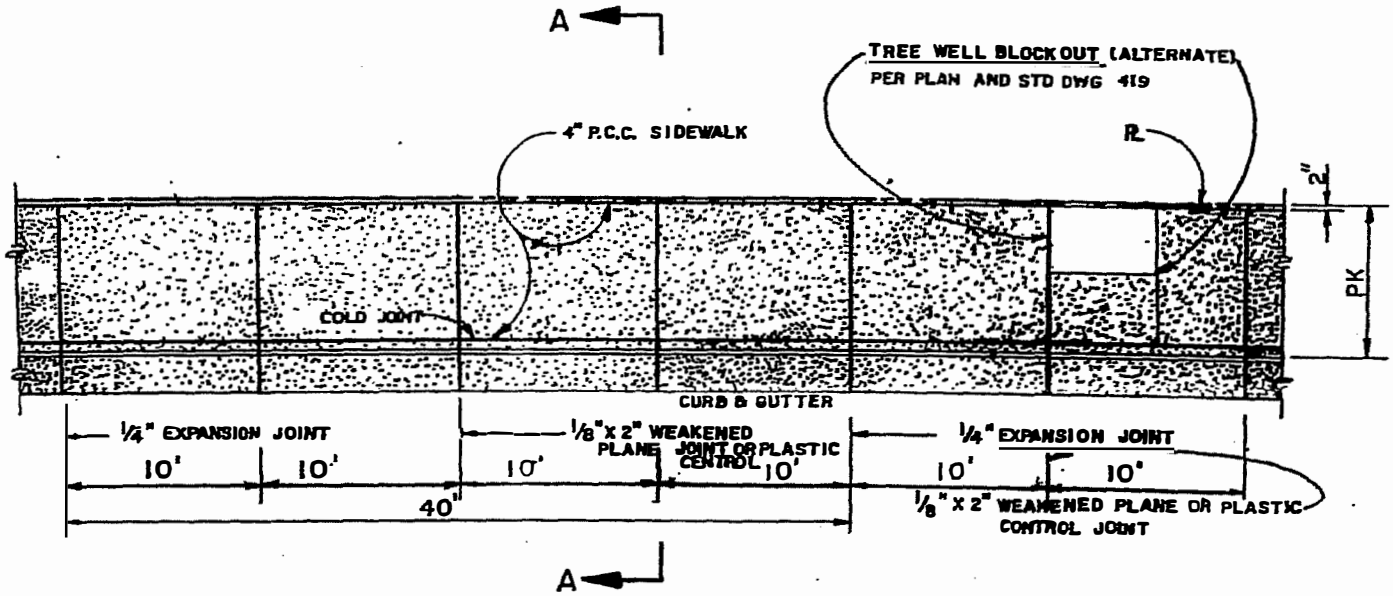
REV. 6-9-75 DB



SECTION A-A

DIMENSIONS:

PK=PARKWAY WIDTH
60' R/W--- PK = 10'
84' R/W--- PK = 7'
106' R/W--- PK = 7'
120' R/W--- PK = 8'



PLAN

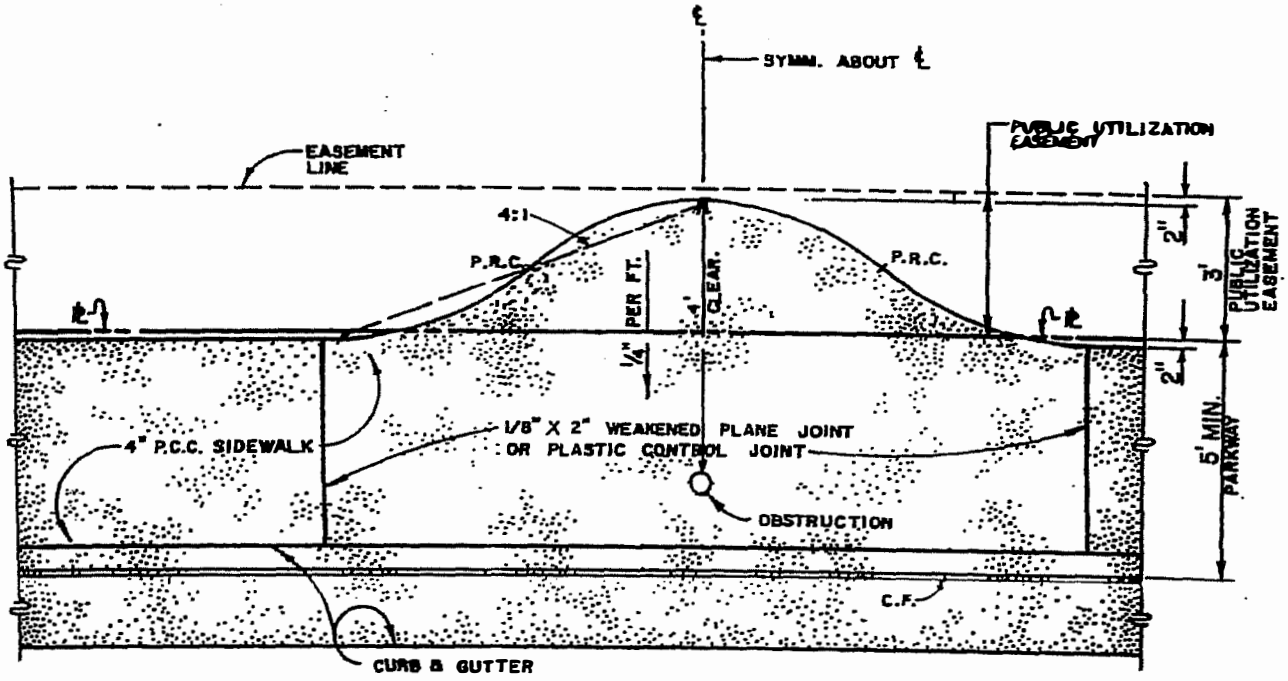
NOTES:

1. 1/4" EXPANSION JOINTS SHALL BE PLACED AT 40' INTERVALS AND AT THE END OF ALL CURB RETURNS.
2. 1/8"X 2" WEAKENED PLANE OR PLASTIC CONTROL JOINTS SHALL BE PLACED AT 10' INTERVALS.
3. EXPANSION JOINTS AND WEAKENED PLANE JOINTS FOR SIDEWALK SHALL BE PLACED TO COINCIDE WITH JOINTS OF THE CURB.
4. FOR EXPANSION JOINT AND WEAKENED PLANE JOINT DETAILS, SEE STD. DWG. NO. 314.
5. SIDEWALK THICKNESS IS 4" EXCEPT AT DRIVEWAYS WHERE IT SHALL BE 6" THICK.
6. CONCRETE SHALL BE 520 C 2500 PER CURRENT EDITION OF STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION SEC. 201-1.1.2.
7. TREE WELL BLOCKOUTS TO BE CONSTRUCTED W/ LOCATION & SPACING PER PLAN.
8. 10' INTERVAL BETWEEN TRANSVERSE JOINTS MAY BE VARIED IF JOINING EXISTING IMPROVEMENTS.
9. ALL EXPOSED CORNERS ON SIDEWALK SHALL BE ROUNDED WITH 1/2" RADIUS, EXCEPT AS OTHERWISE SHOWN ON STD. DWG. NO. 314.
10. WIDEN SIDEWALK TO PROVIDE MIN. CLEAR DISTANCE PER STD. DWG. NO. 413.
11. SIDEWALK WIDTH (S) SHALL BE PER STD. DWG. NO. 411.

REV. 6-25-80 H.R.
REV. 2-2-79 CMG
REV. 3-23-78
REV. 3-12-77
REV. 12-23-75

CITY OF COSTA MESA CALIFORNIA PUBLIC SERVICE DEPARTMENT	COMMERCIAL SIDEWALK DETAILS	DRAWN W.A.B. SCALE NONE
	APPROVED [signature] DATE [illegible] BRUCE D. MATTERN R.C.E. 19388	STD. DWG. NO. 412

REV.



PLAN

NOTES:

1. FOR STANDARD SIDEWALK DETAILS, SEE STD. DWG. NO. 411 AND/OR 412.
2. FIRE HYDRANTS SHALL BE 2' CLEAR OFF OF THE CURB FACE.
3. NO VERTICAL OBSTRUCTION WITHIN 3' CLEAR OF DRIVEWAY TOP OF "X."
4. MAILBOXES SHALL BE 6" CLEAR OFF THE CURB FACE, ULTIMATE LOCATION, HEIGHT, AND MATERIAL TO BE APPROVED BY LOCAL POSTMASTER.
5. POWER POLES, GUY ANCHORS, AND STREET LIGHTS SHALL BE 18" CLEAR OFF CURB FACE.

CITY OF COSTA MESA CALIFORNIA PUBLIC SERVICES DEPARTMENT	SIDEWALK OBSTRUCTIONS FLARE	DRAWN W.A.B. SCALE NONE
	APPROVED [redacted] DATE [redacted] BRUCE D. MATTERN R.C.E. 19388	STD. DWG. NO. 413

DIMENSIONS:

PK = PARKWAY WIDTH

S = SIDEWALK WIDTH SEE NOTE 7

50' R/W — PK = 5'

60' R/W — PK = 10'

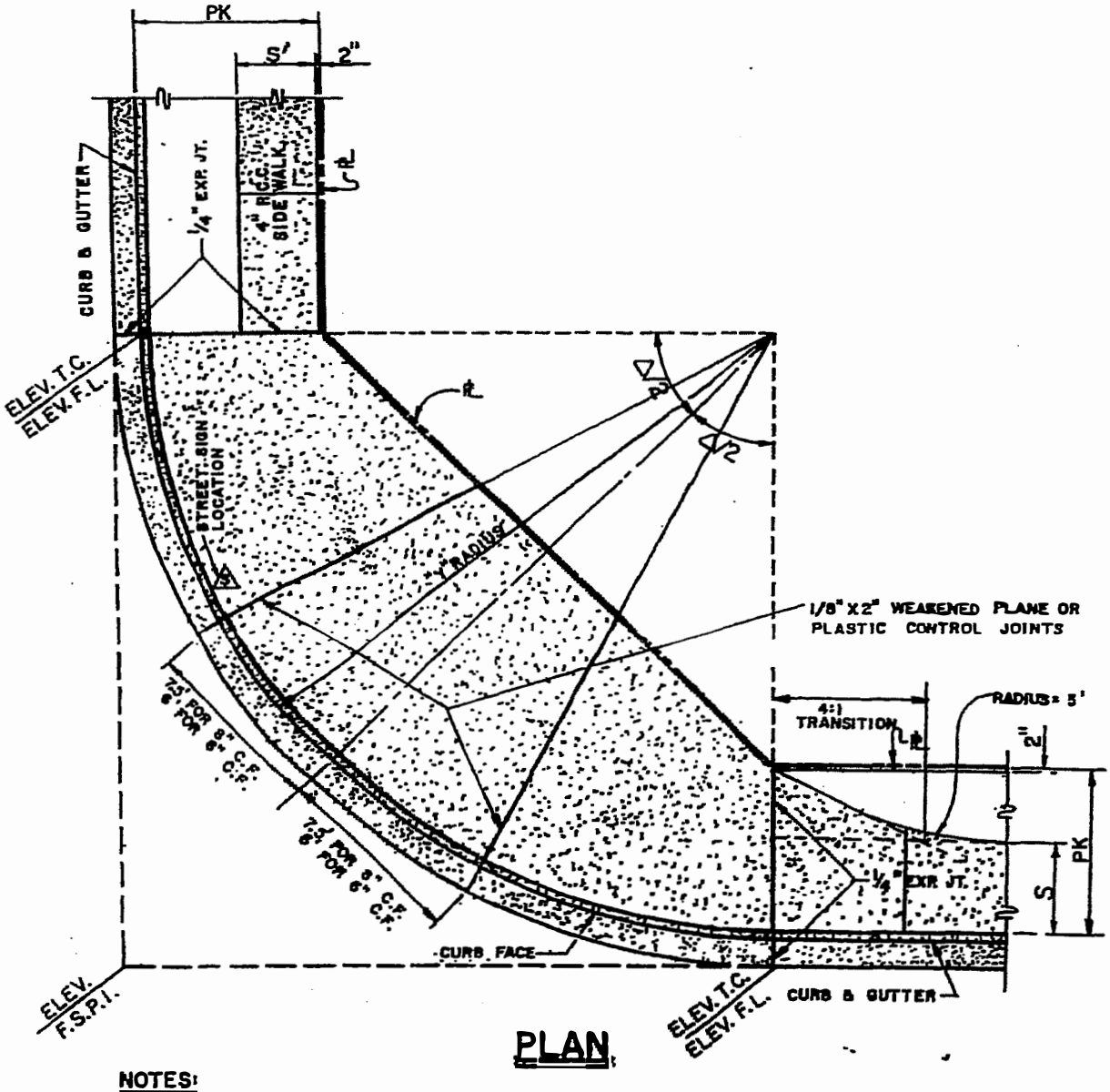
84' R/W — PK = 7'

106' R/W — PK = 7'

120' R/W — PK = 8'

"Y" — RADIUS VARIES (25' OR 35')

5' = 4'—0"

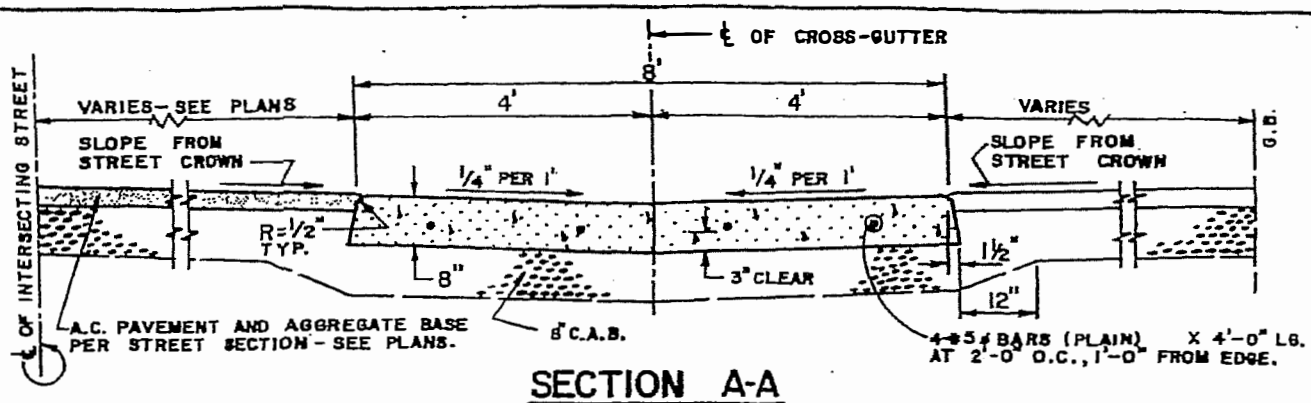


PLAN

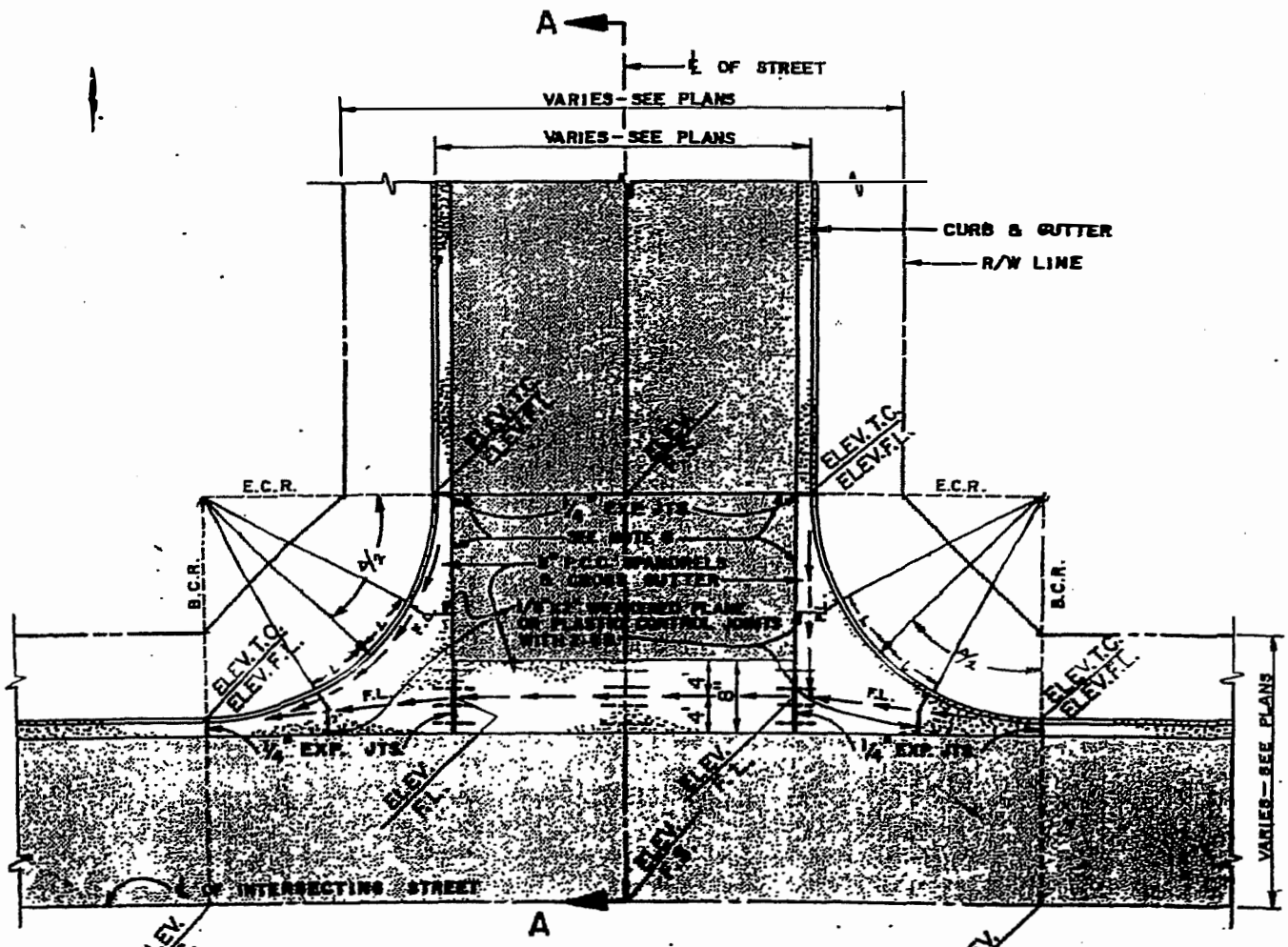
NOTES:

1. 1/4" EXPANSION JOINTS SHALL BE PLACED AT END OF CURB RETURNS.
2. 1/8" X 2" WEAKENED PLANE OR PLASTIC CONTROL JOINTS SHALL BE PLACED SO AS NOT TO EXCEED 10' O.C. AT R.
3. FOR EXPANSION JOINT AND WEAKENED PLANE JOINT DETAILS, SEE STD. DWG. NO. 314.
4. CONCRETE SHALL BE PER CURRENT EDITION OF STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION SEC. 201.-1.1.2, CLASS 520C-2500
5. ALL ELEVATIONS PER PLAN. FOR CROSS GUTTERS F.L.P.I. PER STD. DWG. NO. 415 SHALL BE SHOWN ON PLAN.
6. FOR STREET RADIUS DATA, SEE STD. DWG. NO. 214.
7. SEE STD. DWG. NO. 411, 412 AND 415 FOR BASE AND SIDEWALK REQUIREMENTS.

CITY OF COSTA MESA CALIFORNIA PUBLIC SERVICES DEPARTMENT	STANDARD SIDEWALK RETURN APPROVED [redacted] DATE [redacted]	DRAWN W.A.B. SCALE NONE STD. DWG. NO. 414



SECTION A-A

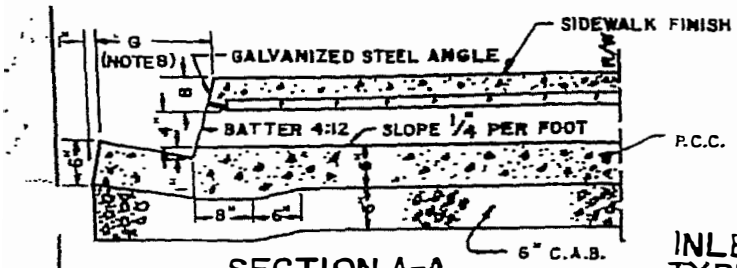


PLAN

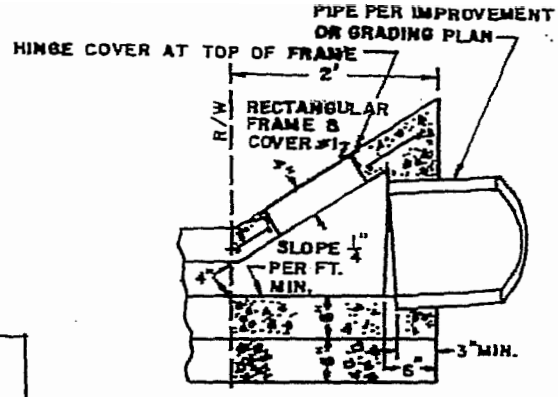
NOTES:

1. SMOOTH TROWEL 8" WIDE FLOW LINE IN CROSS-GUTTER AND SPANDRELS.
2. AGGREGATE BASE THICKNESS FOR SPANDRELS SHALL BE THE SAME AS FOR CROSS-GUTTER.
3. POUR CURB MONOLITHICALLY WITH SPANDREL.
4. FOR JOINT DETAILS, SEE STD. DWG. NO. 314 AND 414.
5. CONCRETE SHALL BE 560 C 3250 PER CURRENT EDITION OF STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, SEC 201-1.1.2.
6. ALL ELEVATIONS SHALL BE PER PLAN.
7. DISTANCE L FROM MIDDLE ORDINATE OF CURB RETURN TO JOINT SHALL BE 7' FOR 8" C.F. OR 6' FOR 6" C.F..
8. ANY CROSS-GUTTER TO BE CONSTRUCTED ON LESS THAN 0.20 % SHALL HAVE DRAINAGE STRUCTURES CONSTRUCTED TO MITIGATE THE ADVERSE EFFECTS OF NUISANCE WATER AND FULL CONCRETE APRON WITH EXPANSION JOINTS ALONG ℄ AND ALONG EDGE OF GUTTERS.

CITY OF COSTA MESA CALIFORNIA PUBLIC SERVICES DEPARTMENT	TYPICAL CROSS-GUTTER	DRAWN MKS SCALE NONE
	APPROVED Bruce D. Mattern DATE 12/8/80 BRUCE D. MATTERN R.C.E. 19588	STD. DWG. NO. 415



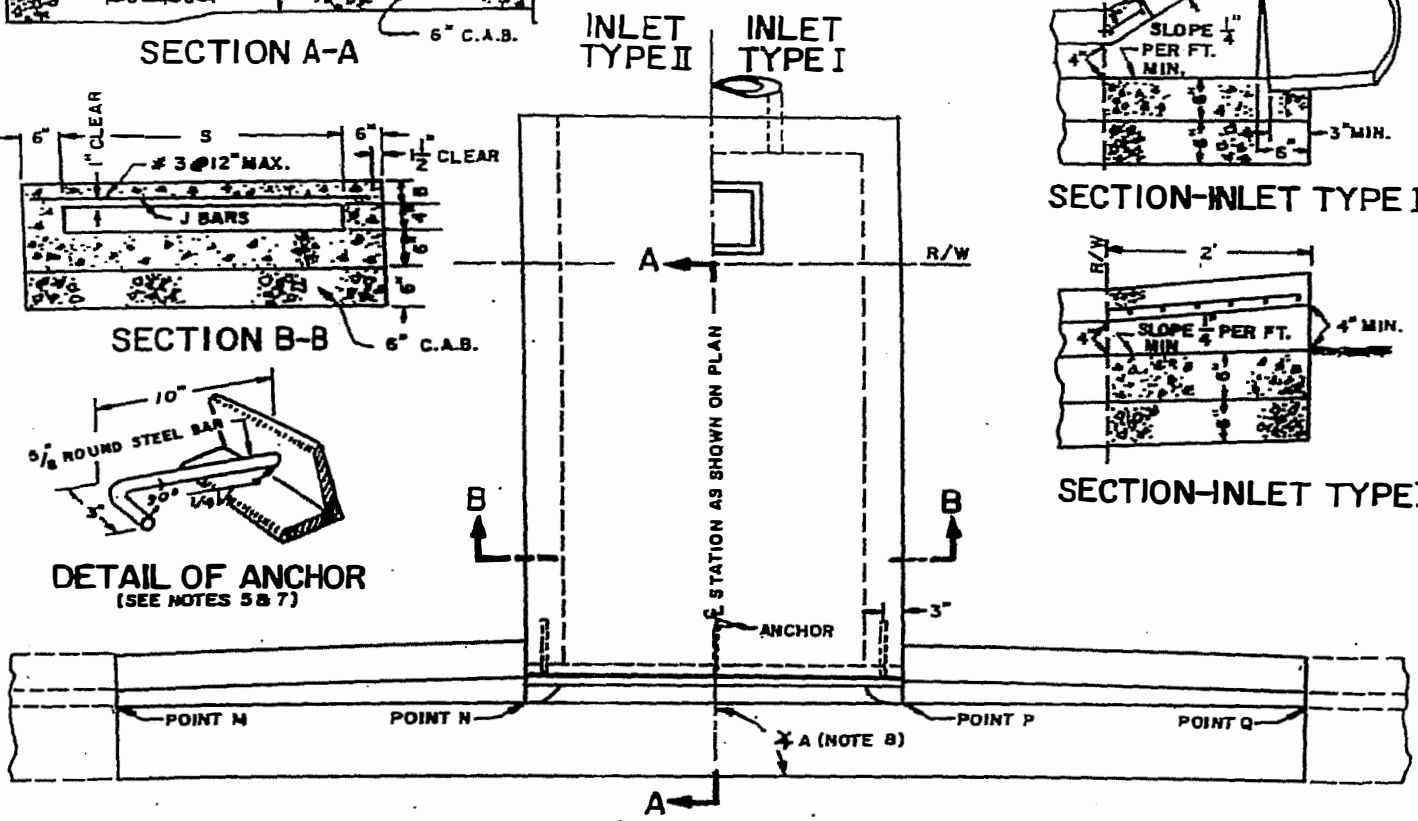
SECTION A-A



SECTION-INLET TYPE I

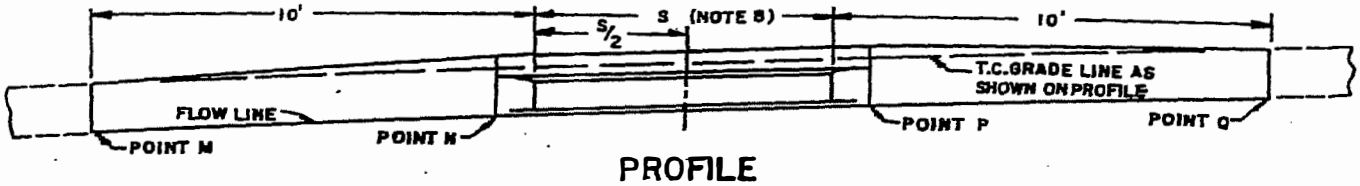
SECTION B-B

DETAIL OF ANCHOR
(SEE NOTES 5 & 7)



PLAN

SECTION-INLET TYPE II



PROFILE

NOTES:

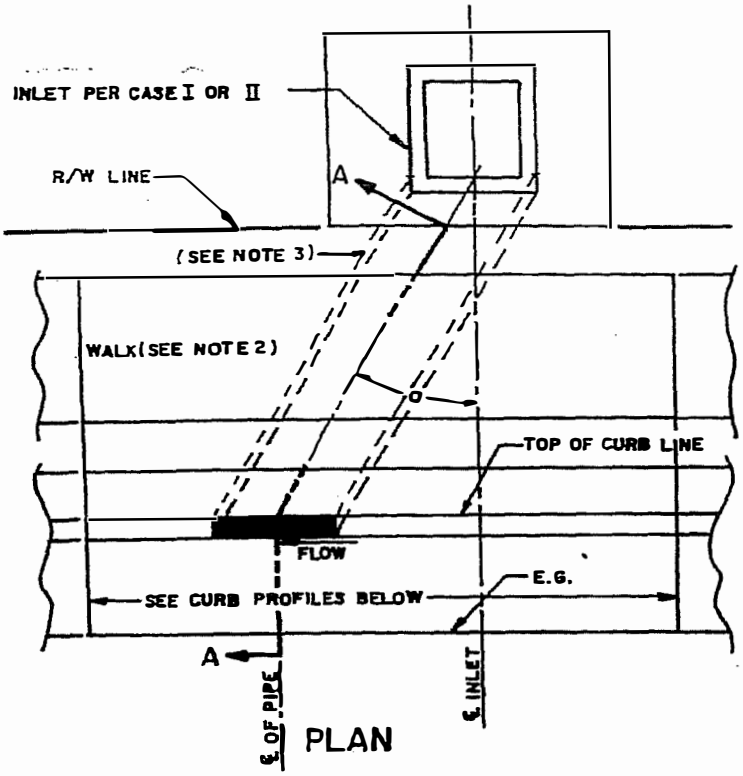
1. FLOOR OF BOX TO BE TROWELED SMOOTH.
2. WHEN THE TOE OF SLOPE IS WITHIN THE R/W, INLET TYPE I BEGINS AT THE TOE RATHER THAN AT THE R/W LINE.
3. FOR OPEN DITCH APPROACH (TYPE II) THE 2' EXTENSION IS NOT REQUIRED WHEN THE BACK OF WALK IS 2' OR MORE FROM THE R/W LINE.
4. TOP OF INLET STRUCTURE (TYPE I & II) TO BE FLUSH WITH ADJACENT SURFACE WHERE PRACTICABLE.
5. A HEADED STEEL STUD $\frac{5}{8}$" X $6\frac{1}{2}$" WITH HEAD D=1" ATTACHED BY A FULL PENETRATION BUTT WELD MAY BE USED AS AN ALTERNATE ANCHOR.
6. NORMAL CURB FACE AT POINT M AND Q, B+5" AT POINT N AND P.
7. THE 3" LEG OF THE INTERIOR ANCHORS SHALL BE PARALLEL TO THE TOP OF SIDEWALK.
8. G, S, AND ∡A SHALL BE PER IMPROVEMENT PLANS.
9. CURB BATTER SHALL CONFORM TO EXISTING ADJOINING CURB. SEE STD. DWG. NO. 311.
10. CONCRETE SHALL BE CLASS 560 C 3250.

STEEL LIST

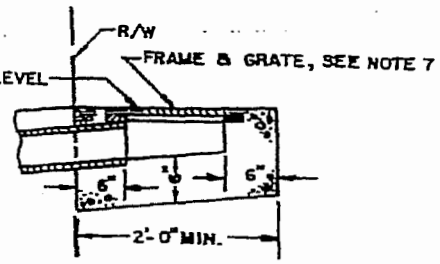
S	B	GALVANIZED STEEL ANGLE	ANCHOR	J BAR SIZE	J BAR SPACING	J BAR LENGTH
1'-0"	3"	$2\frac{1}{2}$" X 2" X $\frac{3}{8}$"	2	#3	7"	1'-9"
1'-6"	"	"	"	"	"	2'-3"
2'-0"	"	"	"	"	"	2'-8"
2'-6"	"	"	"	"	"	3'-3"
3'-0"	"	"	3	"	"	3'-9"
3'-6"	"	"	"	"	6"	4'-3"
4'-0"	"	"	"	"	5"	4'-9"
4'-6"	4"	$3\frac{1}{2}$" X 3" X $\frac{1}{2}$"	"	"	$6\frac{1}{2}$"	5'-3"
5'-0"	"	"	"	"	5"	5'-9"
5'-6"	"	"	"	"	4"	6'-3"
6'-0"	"	"	"	"	$3\frac{1}{2}$"	6'-9"

CITY OF COSTA MESA CALIFORNIA PUBLIC SERVICES DEPARTMENT	PARKWAY DRAIN NO. 1	DRAWN E.K.S. SCALE NONE
	APPROVED B.D. Mattern DATE 12/13/65 BRUCE D. MATTERN R.C.E. 19399	STD. DWG. NO. 417

REV.

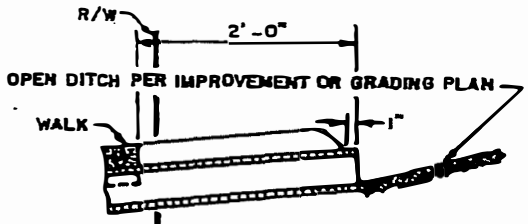


PLAN



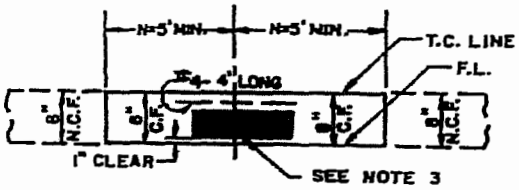
CASE I INLET

DROP INLET CATCH BASIN SECTION



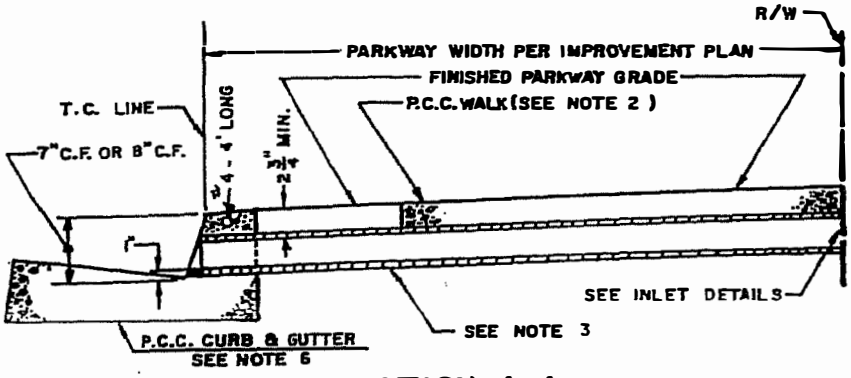
CASE II INLET

GRADED DITCH SECTION

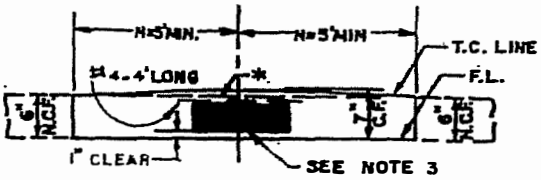


CURB PROFILE

8" NORMAL CURB FACE



SECTION A-A



* NORMAL T.C. GRADE LINE AS SHOWN ON PROFILE

CURB PROFILE

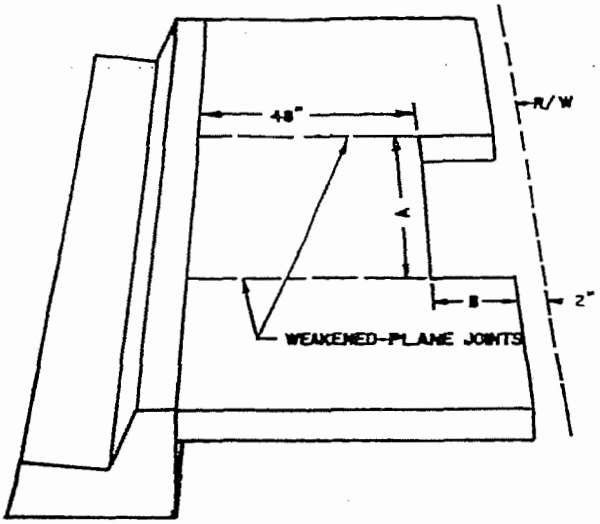
6" NORMAL CURB FACE

NOTE:

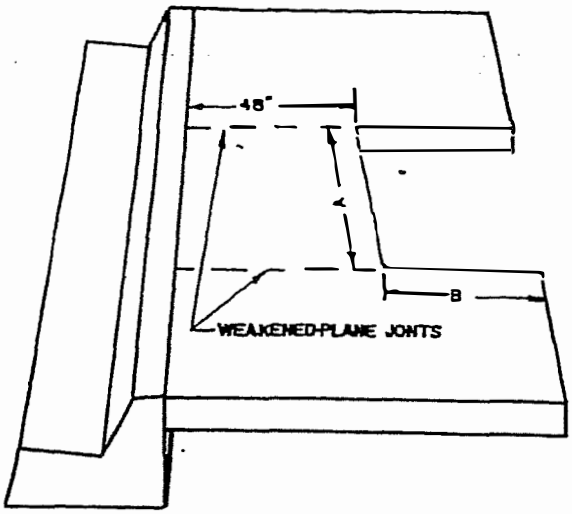
1. TOP OF INLET STRUCTURE (CASE I) TO BE FLUSH WITH ADJACENT SURFACE.
2. CONSTRUCT P.C.C. WALK AND CURB AND GUTTER AS SPECIFIED ON PLAN. MINIMUM REPLACEMENT OF WALK AND CURB AND GUTTER SHALL BE FROM JOINT TO JOINT OR AS DIRECTED BY THE CITY ENGINEER. SEE STD. DWG. NO. 314. THE CONTRACT PRICE PAID FOR P.C.C. WALK ITEM SHALL INCLUDE WALK CONSTRUCTED IN CONJUCTION WITH PARKWAY CULVERT.
3. ONE CIRCULAR PIPE SHALL BE PLACED AT A LOCATION OTHERWISE, THE PIPE SHALL BE ALHAMBRA FOUNDRY A470 OR EQUAL WITH THE SIZE AS SPECIFIED ON PLAN, FOR SIZES OTHER THAN 3" X 5, 9, 12" H SHALL BE 10" AND C.F. OVER PIPE SHALL BE INCREASED 1" FOR 1".
4. INLET CASE TO BE SPECIFIED ON IMPROVEMENT OR GRADING PLAN.
5. ANGLE "a" EQUALS 0° UNLESS OTHERWISE SPECIFIED.
6. TYPE, DIMENSIONS, AND ELEVATIONS OF P.C.C. CURB AND GUTTER PER IMPROVEMENT PLAN.
7. UNLESS OTHERWISE SPECIFIED, FRAME AND GRATE FOR INLET CASE I SHALL BE ALHAMBRA FOUNDRY 14" X 24" TYPE A-2422 (GALVANIZED) OR EQUAL, PLACED LEVEL.
8. CONCRETE SHALL BE CLASS 520C 2500.

CITY OF COSTA MESA CALIFORNIA PUBLIC SERVICES DEPARTMENT	PARKWAY DRAIN NO.2	DRAWN E.K.S. SCALE NONE
	APPROVED BD Mattern DATE 12/13/85 BRUCE D. MATTERN R.C.E. 19368	STD. DWG. NO. 418

REV.



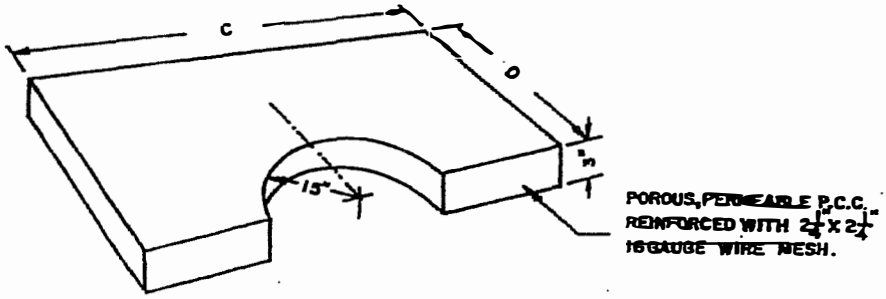
PARKWAYS LESS THAN 8'
1 COVER REQUIRED
CASE I: 2' X 4' TREE WELL



PARKWAYS 8' OR GREATER
2 COVERS REQUIRED
CASE II: 4' X 4' TREE WELL

TREE WELLS

CASE	A	B	C	D
I	4'-0"	2'-0"	3'-11"	1'-11½"
II	4'-0"	4'-0"	3'-11"	1'-11½"



POROUS TREE WELL COVER

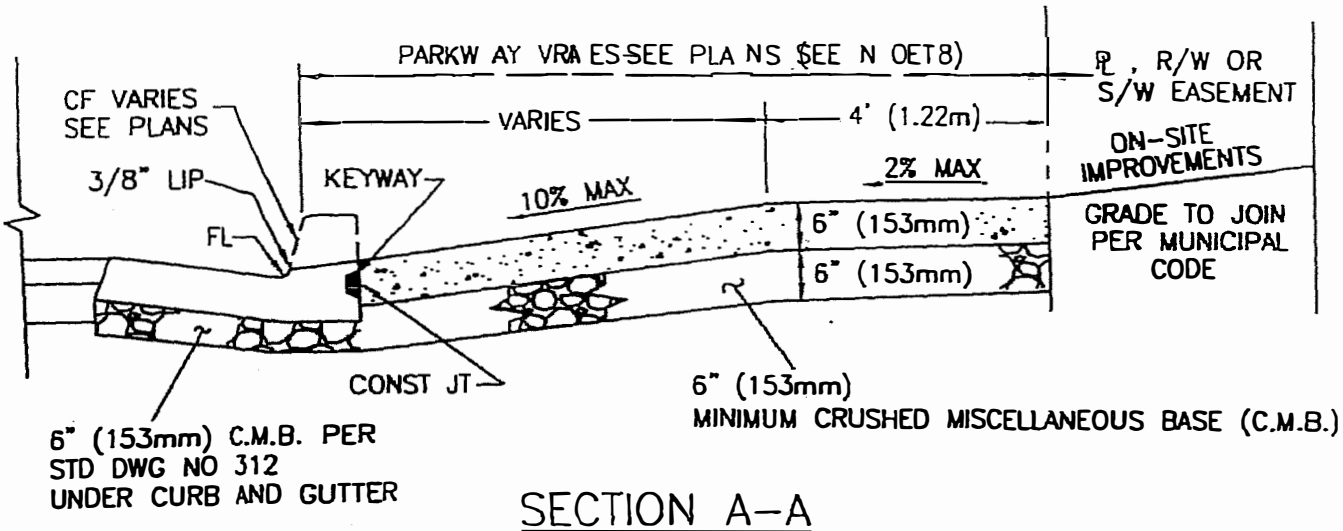
TYPICAL SECTIONS

NOTES:

1. TREE WELLS SHALL BE PLACED APPROXIMATELY 50' APART, BUT NOT LESS THAN ONE PER RESIDENTIAL LOT.
2. LOCATION OF TREE WELLS WILL BE SUBJECT TO THE FOLLOWING CONDITIONS:
   A. 25' FROM CURB RETURNS.
   B. 15' FROM LIGHT STANDARDS AND POWER POLES.
   C. 10' FROM FIRE HYDRANTS, DRIVEWAYS, HOUSE WALKS, UTILITY METERS, PEDESTALS.
   D. 10' FROM ALL UTILITY LATERALS AND MAINS.
3. COVERS ARE TO BE COLORED BUFF USING AN ACCEPTABLE COLORING AGENT.
4. TREE WELLS ARE TO BE BACKFILLED WITH CLEAN DIRT AND FLUSH WITH ADJACENT WALK UNTIL TREES ARE PLANTED.

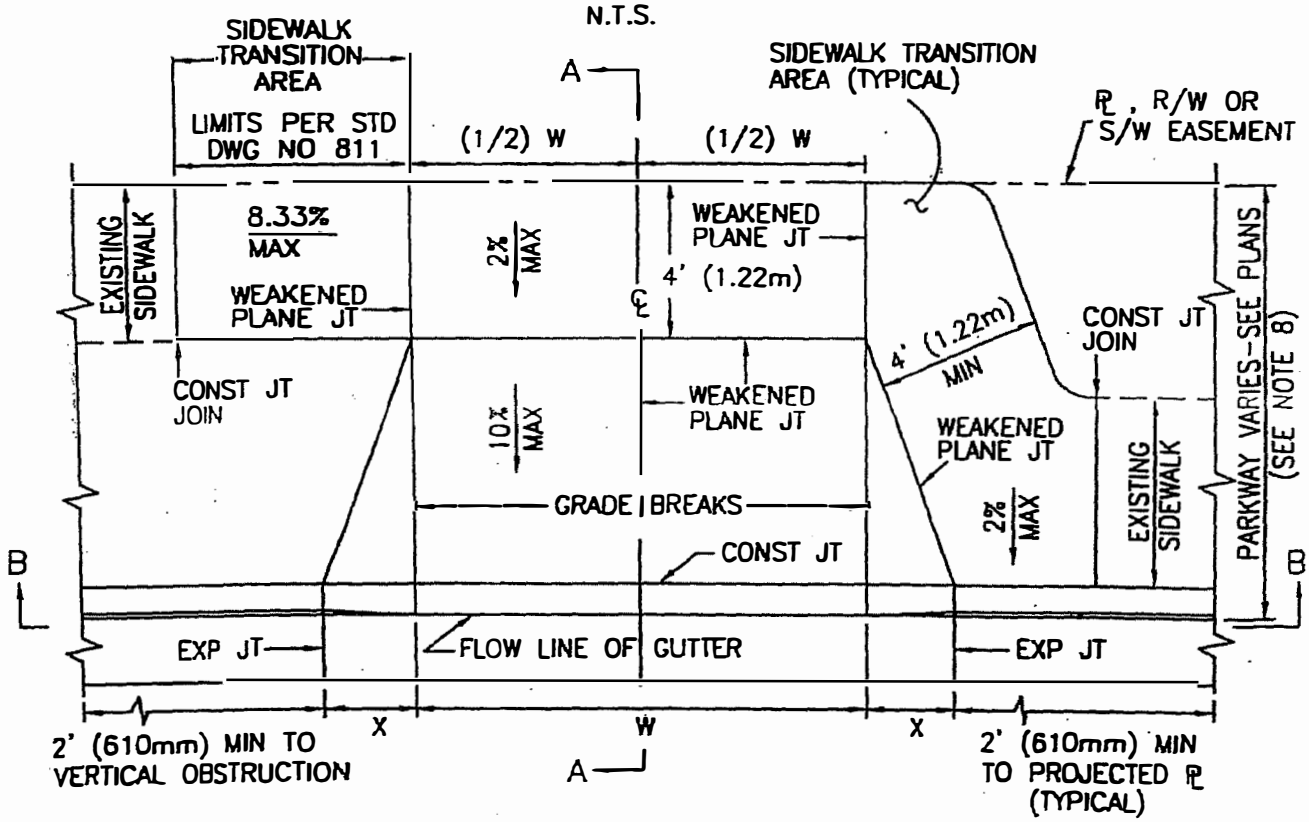
CITY OF COSTA MESA CALIFORNIA PUBLIC SERVICES DEPARTMENT	SIDEWALK TREE WELL & COVER APPROVED B D Mattern DATE 12/13/85 BRUCE D. MATTERN R.C.E. 19388	DRAWN E.K.S. SCALE NONE STD. DWG. NO. 419

REV.



SECTION A–A

N.T.S.

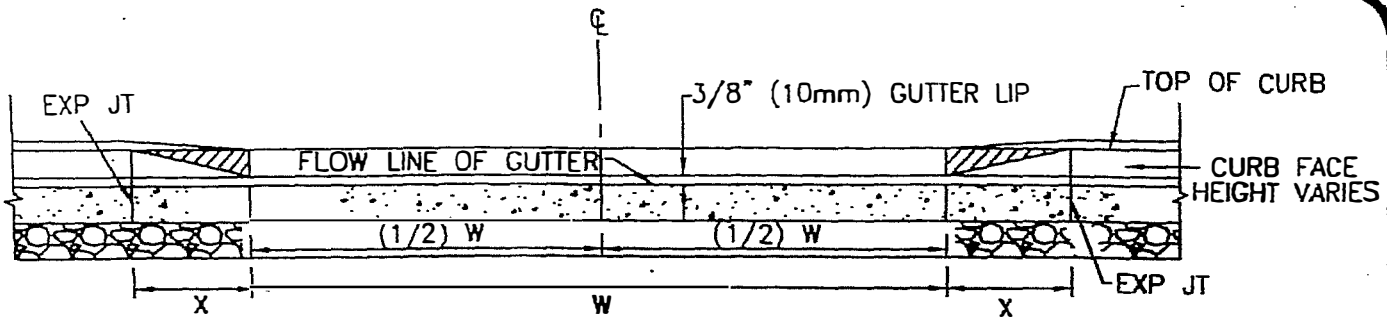


PLAN

N.T.S.

CITY OF COSTA MESA PUBLIC SERVICES DEPARTMENT	RESIDENTIAL DRIVEWAY APPROACH TYPE I	
APPROVED BY: ERNESTO MUÑOZ, CITY ENGINEER — WILLIAM MORRIS, DIRECTOR OF PUBLIC SERVICES 1/10/03		STD. DWG. NO. 513

FILE NAME: STD-513.DWG/ REVISED: SHT. 1 OF 2



SECTION B–B

N.T.S.

DIMENSIONS

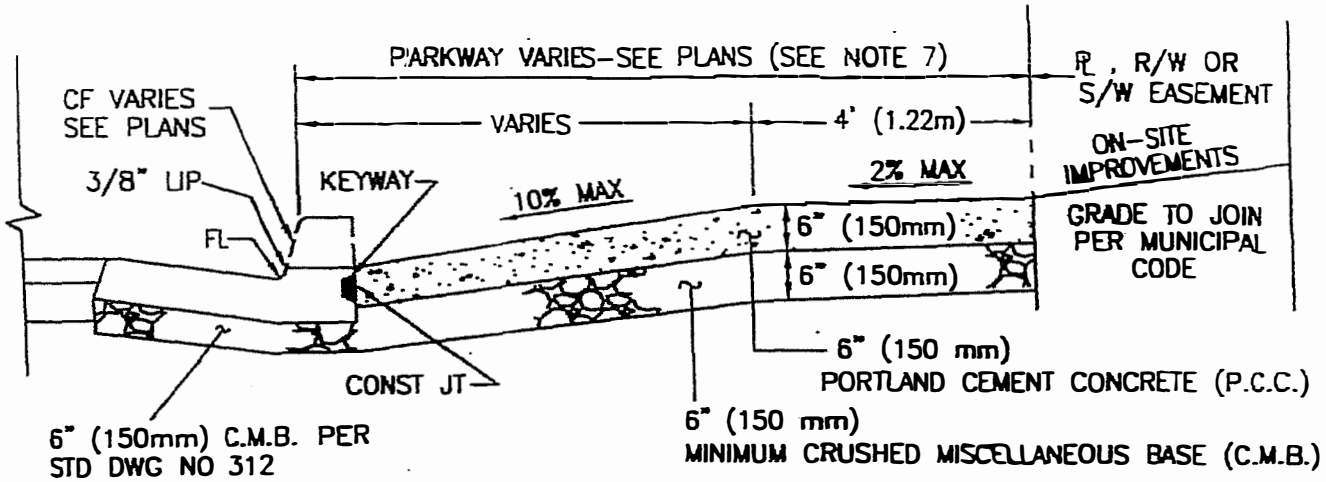
W=10' (3.05m) MIN – 16' (4.88m) MAX FOR RESIDENTIAL DRIVEWAYS.
X= 4' (1.22m) FOR 6" (153mm) CURB FACE.
X= 5' (1.52m) FOR 8" (204mm) CURB FACE.

NOTES:

1. ALL DRIVEWAY LOCATIONS AND DIMENSIONS SHALL BE APPROVED BY THE TRANSPORTATION SERVICES DIVISION.
2. THERE SHALL BE ONE DRIVEWAY PER PROPERTY.
3. CONCRETE SHALL BE CLASS 560–C–3250 PER LATEST EDITION OF STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION SEC. 201–1.
4. DEPRESSED CURB IS STRAIGHT GRADED WITH 3/8" (10mm) GUTTER LIP.
5. BASED UPON EXISTING SOIL CONDITIONS, THE CITY ENGINEER MAY REQUIRE A KEYWAY AT BACK OF CURB.
6. FOR JOINT DETAILS AND KEYWAY DETAIL, SEE STD DWG NO 314.
7. ALL PARTIAL DRIVEWAY RECONSTRUCTION SHALL REQUIRE TIE BARS (#4 x 24") AT 24" ON CENTER.
8. FOR A 5' (1.52m) PARKWAY, A 3' (914mm) PUBLIC SIDEWALK EASEMENT IS REQUIRED AT THE BACK OF RIGHT–OF–WAY/PROPERTY LINE.

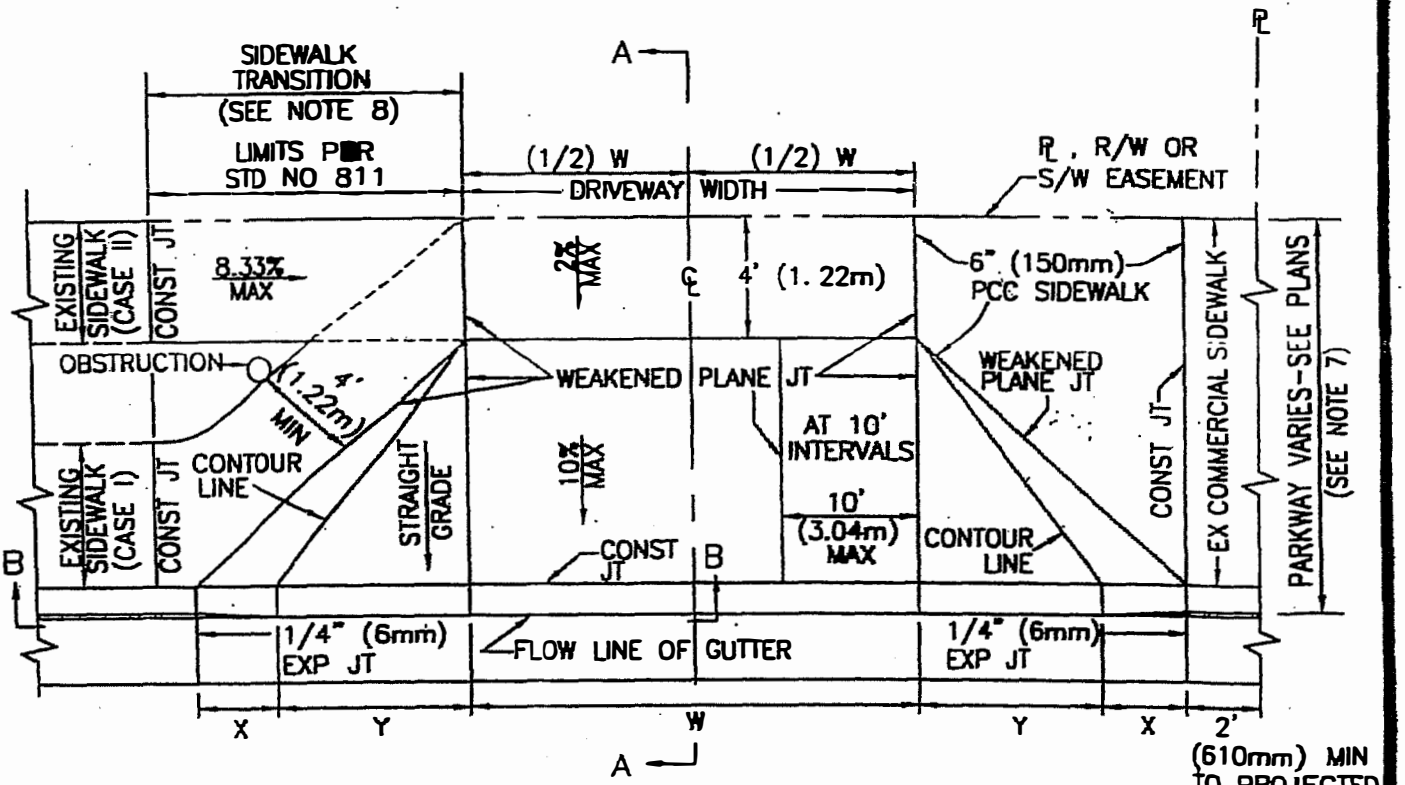
CITY OF COSTA MESA PUBLIC SERVICES DEPARTMENT	RESIDENTIAL DRIVEWAY APPROACH TYPE I	
APPROVED BY: ERNESTO MUÑOZ CITY ENGINEER — WILLIAM MORRISSEY DIRECTOR OF PUBLIC SERVICES 1/10/03		STD. DWG. NO. 513

FILE NAME: STD–513.DWG REVISED: SHT. 2 OF 2



SECTION A-A

N.T.S.



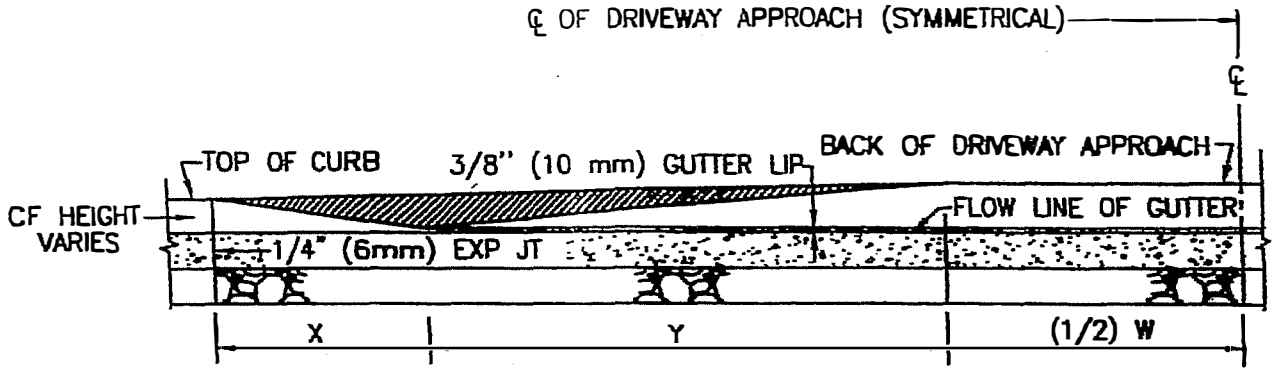
(610mm) MIN TO PROJECTED P AND/OR VERTICAL OBSTRUCTION

PLAN

N.T.S.

CITY OF COSTA MESA PUBLIC SERVICES DEPARTMENT	DRIVEWAY APPROACH-TYPE II COMMERCIAL AND MULTI-USE	Costa Mesa
APPROVED: ERNESTO MUNOZ CITY ENGINEER — WILLIAM MORRIS DIRECTOR OF PUBLIC SERVICES 9/24/03		STD. DWG. NO. 514

FILE NAME: STD-514.DWG REVISED: SHT. 1 OF 2



SECTION B–B

N.T.S.

DIMENSIONS

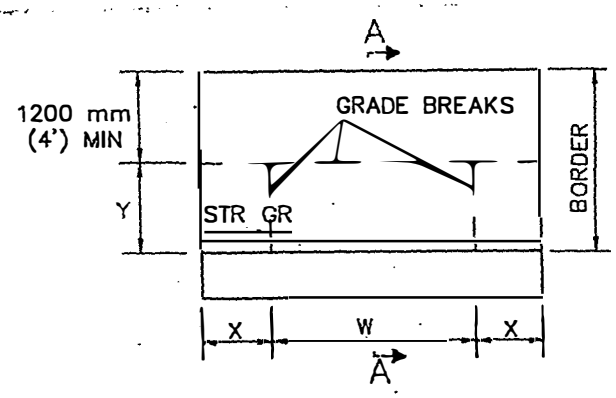
W= 16' (4.88m) MIN – 26' (7.92m) MAX FOR ALL DRIVEWAYS.
X= 4' (1.22m) FOR 6" (150mm) CURB FACE.
X= 5' (1.52m) FOR 8" (200mm) CURB FACE.
Y= 7' (2.13m) ON MASTER PLAN STREETS
Y= 4' (1.22m) ON RESIDENTIAL, NON–MASTER PLAN STREETS.

NOTES:

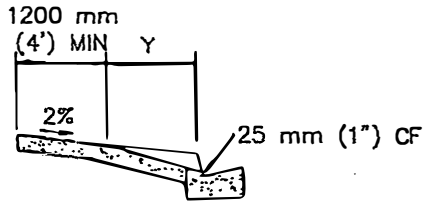
1. ALL DRIVEWAY LOCATIONS AND DIMENSIONS SHALL BE APPROVED BY THE TRANSPORTATION SERVICES DIVISION.
2. CONCRETE SHALL BE CLASS 560–C–3250 PER LATEST EDITION OF STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION SEC. 201–1.
3. DEPRESSED CURB IS STRAIGHT GRADED WITH 3/8" (10mm) GUTTER LIP.
4. BASED UPON EXISTING SOIL CONDITIONS, THE CITY ENGINEER MAY REQUIRE A KEYWAY AT BACK OF CURB.
5. FOR JOINT DETAILS AND KEYWAY DETAIL, SEE STD DWG NO 314.
6. ALL PARTIAL DRIVEWAY RECONSTRUCTION SHALL REQUIRE TIE BARS (#4 x 24") AT 24" ON CENTER.
7. FOR A 5' (1.52m) PARKWAY, A 3' (914mm) PUBLIC SIDEWALK EASEMENT IS REQUIRED AT THE BACK OF PROPERTY/RIGHT–OF–WAY LINE.
8. CASE I – SIDEWALK ADJACENT TO CURB AND GUTTER. NO GREENBELT.
   CASE II – EXISTING GREENBELT BETWEEN SIDEWALK AND CURB AND GUTTER.

CITY OF COSTA MESA PUBLIC SERVICES DEPARTMENT	DRIVEWAY APPROACH–TYPE II COMMERCIAL AND MULTI–USE	Costa Mesa
APPROVED: ERNESTO MUNOZ / CITY ENGINEER	WILLIAM MORRIS / DIRECTOR OF PUBLIC SERVICES 9/24/03	STD. DWG. NO. 514

FILE NAME: STD–514.DWG REVISED: SHT. 2 OF 2

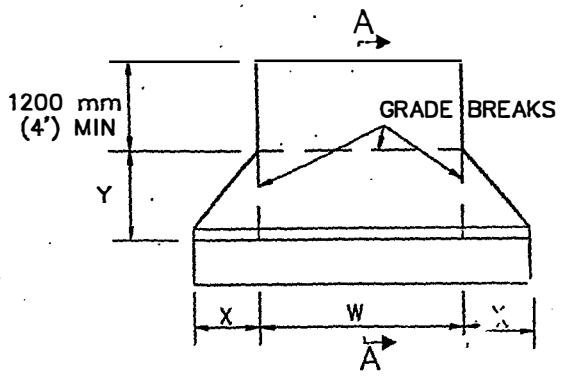


TYPE A



SECTION A–A

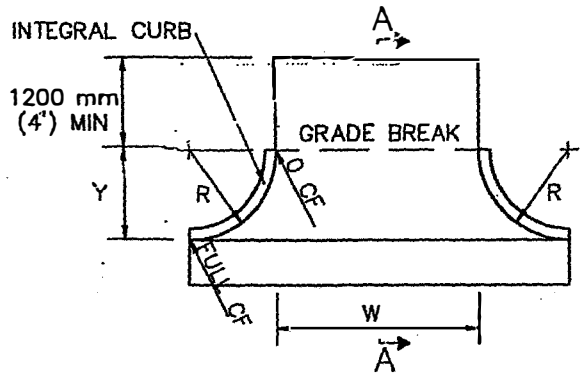
CURB FACE, mm	X, mm	Y, mm
150 (6") or less	900 (3'–0")	1200 (4'–0")
175 (7")	1050 (3'–6")	1425 (4'–9")
200 (8")	1200 (4'–0")	1700 (5'–8")
225 (9")	1350 (4'–6")	1950 (6'–6")
250 (10")	1500 (5'–0")	2175 (7'–3")
275 (11")	1650 (5'–6")	2400 (8'–0")
300 (12") or more	1800 (6'–0")	2625 (8'–9")



TYPE B

NOTES:

1. RESIDENTIAL DRIVEWAYS SHALL BE 100 mm (4") THICK PCC.
2. COMMERCIAL DRIVEWAYS SHALL BE 150 mm (6") THICK PCC.
3. WEAKENED PLANE JOINTS SHALL BE INSTALLED AT BOTH SIDE OF A DRIVEWAY AND AT APPROXIMATELY 3000 mm (10') INTERVALS.
4. CURB FOR TYPE C DRIVEWAY SHALL BE INTEGRAL AND MATCH ADJACENT CONSTRUCTION.
5. REFER TO LOCAL DEVELOPMENT REGULATIONS FOR AMERICANS WITH DISABILITIES ACCESS REQUIREMENTS AND MAXIMUM PERMITTED DRIVEWAY WIDTHS.
6. DIMENSIONS SHOWN ON THIS PLAN FOR METRIC AND ENGLISH UNITS ARE NOT EXACTLY EQUAL VALUES. IF METRIC UNITS ARE USED, ALL VALUES USED FOR CONSTRUCTION SHALL BE METRIC VALUES. IF ENGLISH UNITS ARE USED, ALL VALUES USED FOR CONSTRUCTION SHALL BE ENGLISH VALUES.



TYPE C

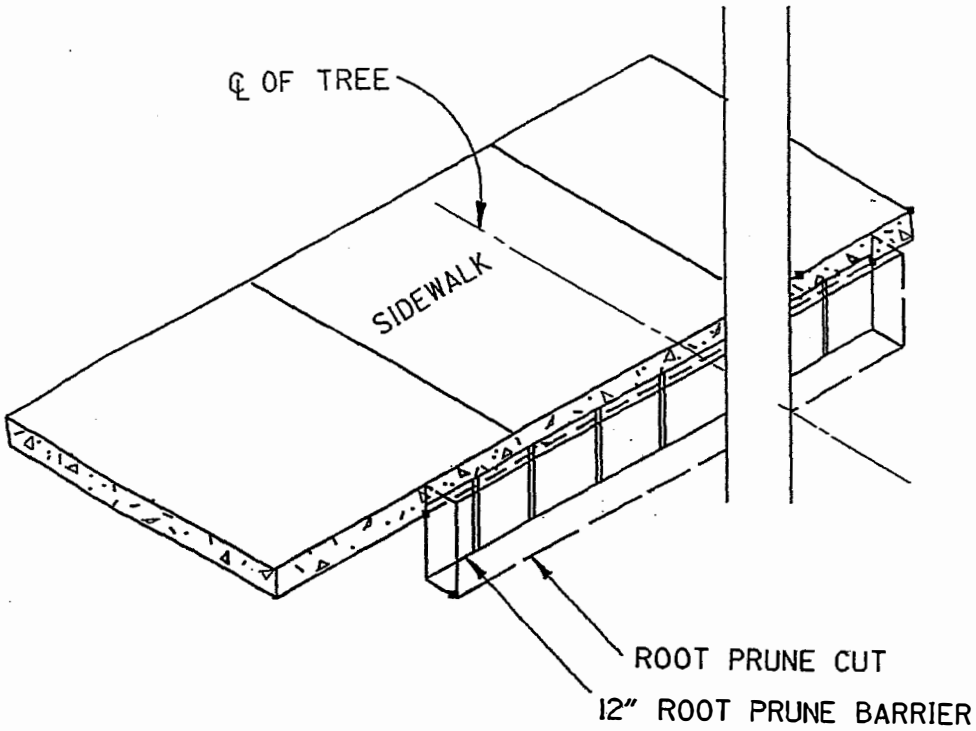
AMERICAN PUBLIC WORKS ASSOCIATION - SOUTHERN CALIFORNIA CHAPTER

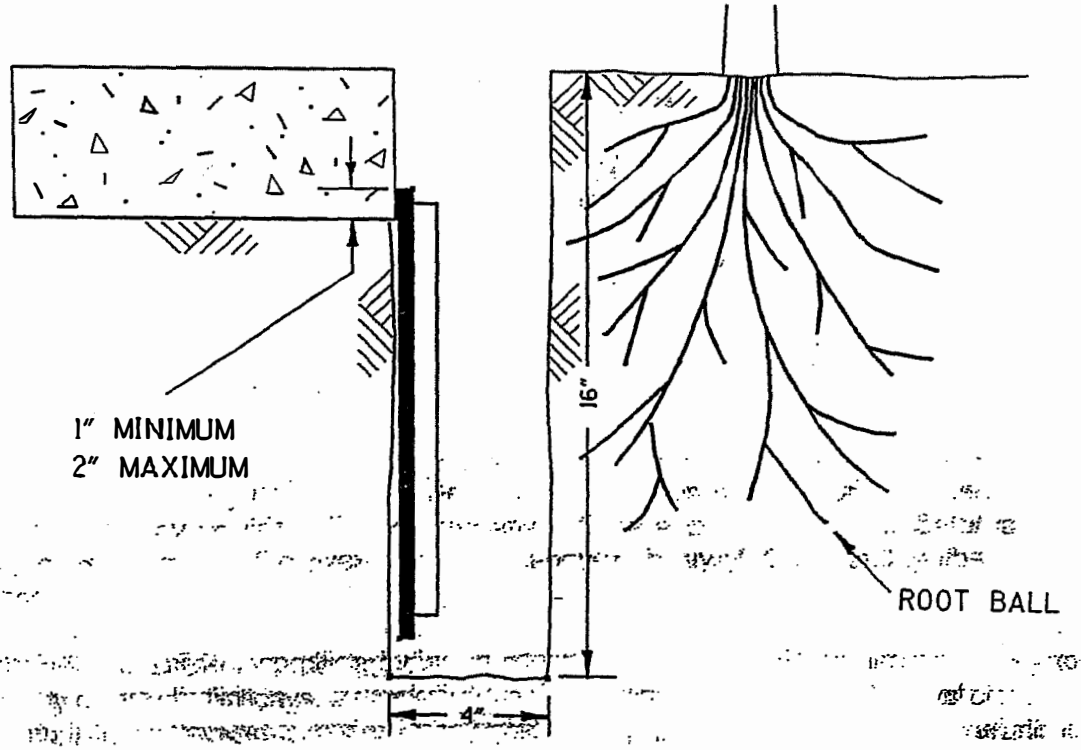
PROMULGATED BY THE PUBLIC WORKS STANDARDS INC. GREENBOOK COMMITTEE 1984 REV. 1998

DRIVEWAY APPROACHES

USE WITH STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION

STANDARD PLAN METRIC
110 - 1
SHEET 1 OF1





ORANGE COUNTY ENVIRONMENTAL MANAGEMENT AGENCY

Approved: W.L. Zoun, Director of Public Works

Adopted: Res. 78-791 Re Revised: Res. 86-1141, 88-1341, 95-546

TREE ROOT BARRIER

STD. PLAN

1708

SHT. 1 OF 2

NOTES:

Tree Trimming :

1. Prior to root pruning, each tree shall be trimmed to reduce its overall size by one-third (1/3) and to promote improved growth. Trimming shall also provide:

   a. Removal of all dead, damaged, diseased, or structurally deficient limbs;
   b. Thinning to reduce interior wind resistance;
   c. Vertical clearance of 14.0 feet over roadways 9.0 feet over sidewalks;
   d. Visual clearance around all traffic control devices and signs;
   e. An overall balanced appearance.

2. Root Pruning :

   Root pruning cuts shall be made immediately adjacent to the sidewalk and shall be 4" wide, 16" deep (measured from the top of the final grade of the sidewalk) and 16' long centered 8' either side of the center of the tree. The bottom 13" of the root prune cut shall be filled with pea gravel, to promote deeper watering, with the top 3" filled with native soil free from rocks or other materials that would interfere with landscape maintenance tasks. At least 18 months shall transpire before root pruning the opposite of a tree. In general, root pruning would not be performed adjacent to the curb due to the normal depth of the curb.

3. Root Control Barrier :

   Barrier shall be fabricated from a high density, high impact plastic, i.e. Polystyrene, Polyethylene, Polyvinyl Chloride, (PVC), or Acrylonitrile-Butadiene-Styrene (ABS). The interior surface shall have ½" high (minimum) raised vertical ribs spaces 6" to 8" apart the full depth of the barrier and shall be expressly designed for root deflection.

   Barrier used for root pruning shall have a minimum depth of 12" with a minimum thickness of 0.06". Barriers shall be 16 feet long in one continuous piece (preferred) or in a combination of pieces securely fastened with adhesive at joint points.

ORANGE COUNTY ENVIRONMENTAL MANAGEMENT AGENCY

Approved W.L. Zaun
W.L. Zaun, Director of Public Works

dopted: Res. 78-791 Revised: Res. 86-1141; 88-1341; 96-546

TREE ROOT BARRIER

STD. PLAN

1708

SHT. 2 OF 2

UNITED STATES POST OFFICE

OUR REF: WED13:JDIAZ:am:-9998 DATE: May 30, 1990

SUBJECT: Location of mailboxes P.O.CL:

TO: City of Costa Mesa

Mailboxes shall be located on the right hand side of the roadway in the direction of the delivery route except on one way streets where they may be placed on the left hand side. The bottom of the box shall be set at an elevation established by the U.S. Postal Service, usually between 3'6" and 4'0" above the roadway surface.

On curbed streets, the roadside face of the mailbox shall be set back from the face of the curb a distance between 6 and 12 inches. On residential streets without curbs, that carry low traffic volumes, the roadside face of a mailbox shall be offset between 8 and 12 inches behind the edge of pavement.

156.54 D.M.M. Location

Rural boxes must be placed so that they may be safely and conveniently served by carriers without leaving their conveyances.

In all new housing tracks, we instruct the builders to install curbline delivery boxes at 2 to a post, at the property line on the curb.

155.262 Hardship cases

a) Changes in the type of delivery authorized for an area will be considered where service by existing methods would impose an extreme physical hardship on an individual customer. Any request for a change in delivery methods must be submitted in writing. Approval of these requests should be based upon humanitarian and not economic criteria. Each request for a change in delivery service should be evaluated on the basis of the customer's needs; a request should not be denied solely because of increased operational costs or because a family member or other party may be available to receive mail for the customer.

MAILBOX IMPROVEMENT WEEK—Continued

Exhibit C

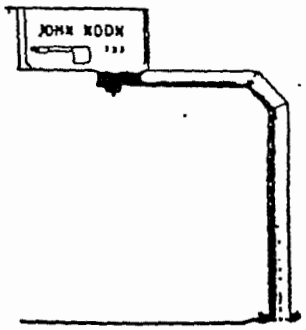
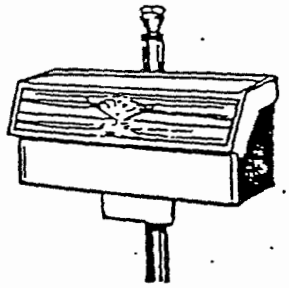


Exhibit D



Contract Delivery Routes

Contract delivery route customers must use an approved traditional rural-type or contemporary design box as new or replacement boxes.

General Requirements

The placement of mailboxes on both rural and contract routes must be safe and convenient for carriers. The boxes must be on the right-hand side of the road in the carrier's travel direction so they can deliver mail without leaving their convevance. This rule especially applies where traffic conditions make it dangerous for the carrier to drive to the left in order to reach the boxes, or when doing so would constitute a violation of traffic laws and regulations (apartment house or other multiple dwellings can be exempted from this rule as described in DMM 156.312).

On new rural routes, all boxes must be on the right-hand side of the road in the direction of the route line of travel. Box placement must conform with state laws and highway regulations. Rural carriers are subject to the same traffic laws and regulations as other motorists. Customers must remove obstructions, including vehicles, trash cans, and snow, that impede efficient delivery. Except when a box is temporarily blocked, carriers must have access to the box without leaving the vehicle unless authorized to dismount.

Mailbox Supports

Supports for mailboxes should be of adequate strength and size to support the box properly. However, customers should avoid using massive mailbox supports that, when struck, could damage vehicles and cause serious injury to vehicle occupants. Heavy metal posts, concrete posts, and miscellaneous items of farm equipment, such as milk cans filled with concrete, are examples of potentially dangerous supports. The ideal support is an assembly that bends or falls away from a striking vehicle. DMM sections 156.531, 156.54, 157.32c, and 157.4 specify postal regulations regarding construction and placement of mailboxes and supports on rural and highway contract routes.

The Federal Highway Administration (FHWA) has determined that mailbox supports no larger than 4 inches by 4 inches or a 4½-inch diameter wood post or a 2-inch diameter standard steel or aluminum pipe, buried no more than 24 inches, should safely break away if struck by a vehicle. The mailbox must also be securely attached to its post to prevent separation when struck. Exhibits E and F on page 12 are detailed examples of mailbox mountings and supports suggested by the FHWA. Boxes and supports should also be painted and free from rust.

NDCBUs and All-Weather Parcel Lockers

During Mailbox Improvement Week, postmasters/managers or their designees should also review Neighborhood Delivery and Collection Box Units (NDCBUs) and All-Weather Parcel Lockers in their delivery area to identify any hazards or irregularities. Exhibit G on page 13 is a suggested format for use in conducting the review. Results of the review should be recorded.

Employees conducting the review must complete Form 1624, *Delivery and Collection Equipment Work Request*, for any equipment that poses a safety hazard to postal customers or employees. Use Form 7380, *MDC Supply Requisition*, to request Form 1624 from the materiel distribution centers.

Equipment Review Procedure

Employees should use the NDCBU and parcel locker Equipment Checklist and Followup Review Procedure, Exhibit G, when examining the condition of NDCBU and parcel locker equipment. This exhibit may be reproduced locally. They should:

1. List the unit location, type, and manufacturer in the left-hand column (omit manufacturer if all items are in order).
2. Assign each checklist item one of the following ratings:
   - OK—Equipment does not need attention for this item.
   - X—Equipment needs attention for this item.
   - NA—Item does not apply to this particular piece of equipment.
3. Examine the following items and annotate Exhibit G:

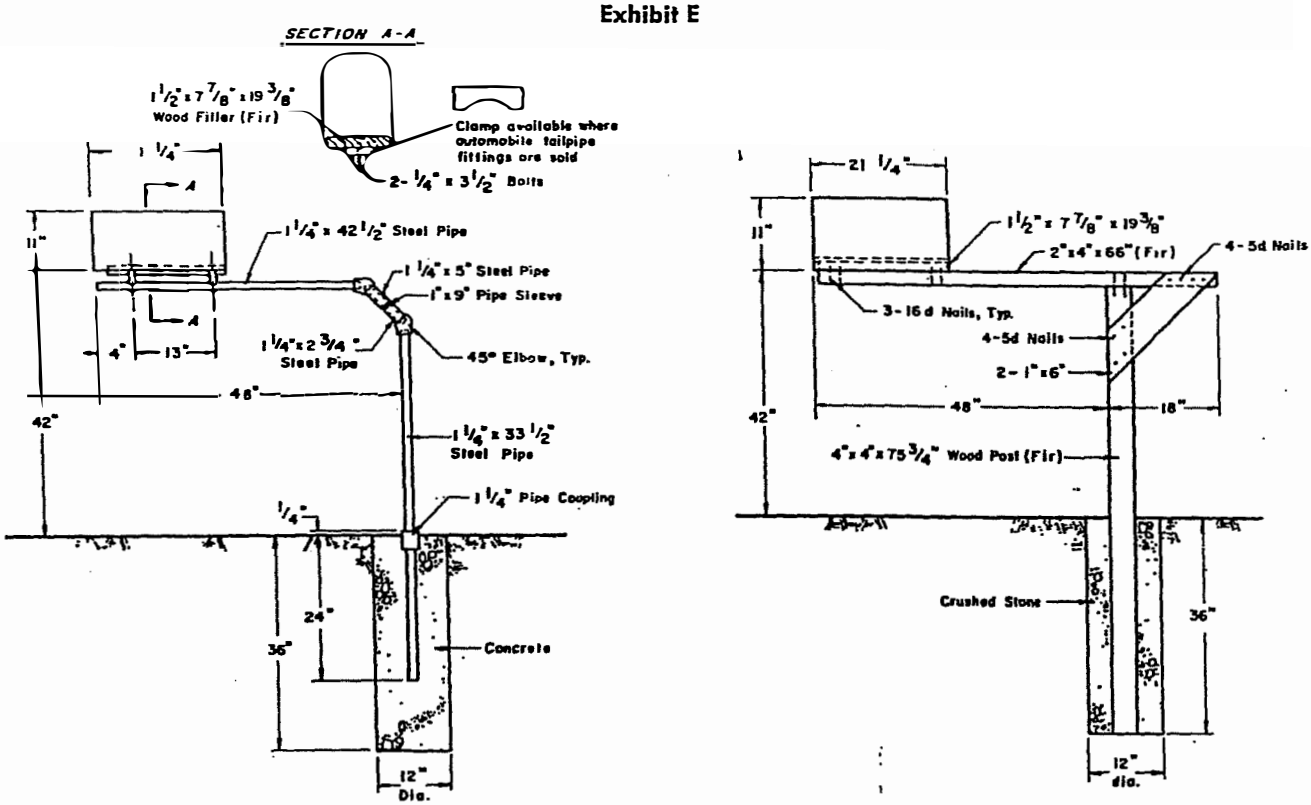
a. Equipment should be straight, vertical, and firmly mounted. Attempt to shake the unit; it should not move. If equipment is not firmly mounted, note whether it is the connection at ground level that is loose or the pedestal to customer compartments connection that needs attention.

b. Check visible welds. Make note of cracked, broken, or rusted welds.

c. Observe whether the carrier access door is locked and secure. Open it and observe that it is not bowed or warped and that the door and locking bar operate smoothly. With carrier access door(s) open, notice if restraining devices prevent the door

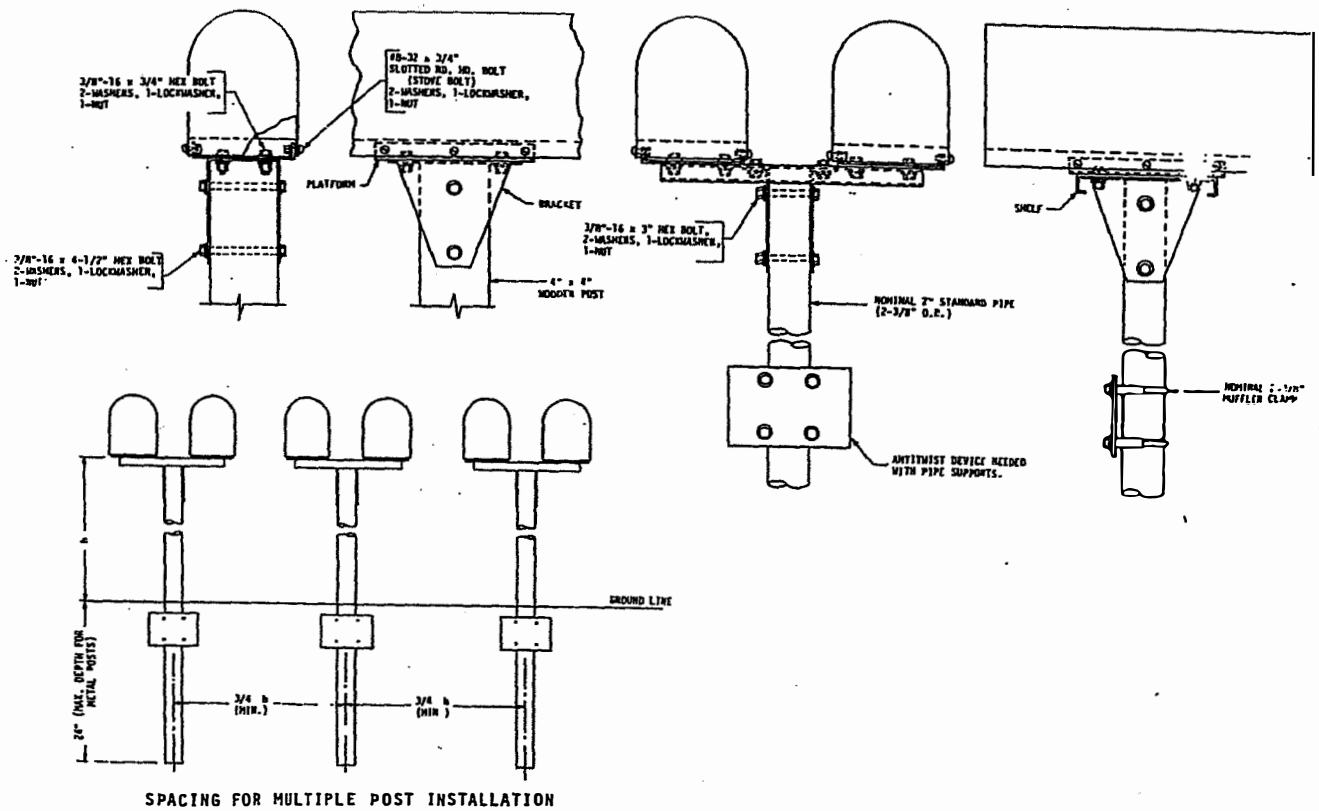
Growth Forms

Exhibit E



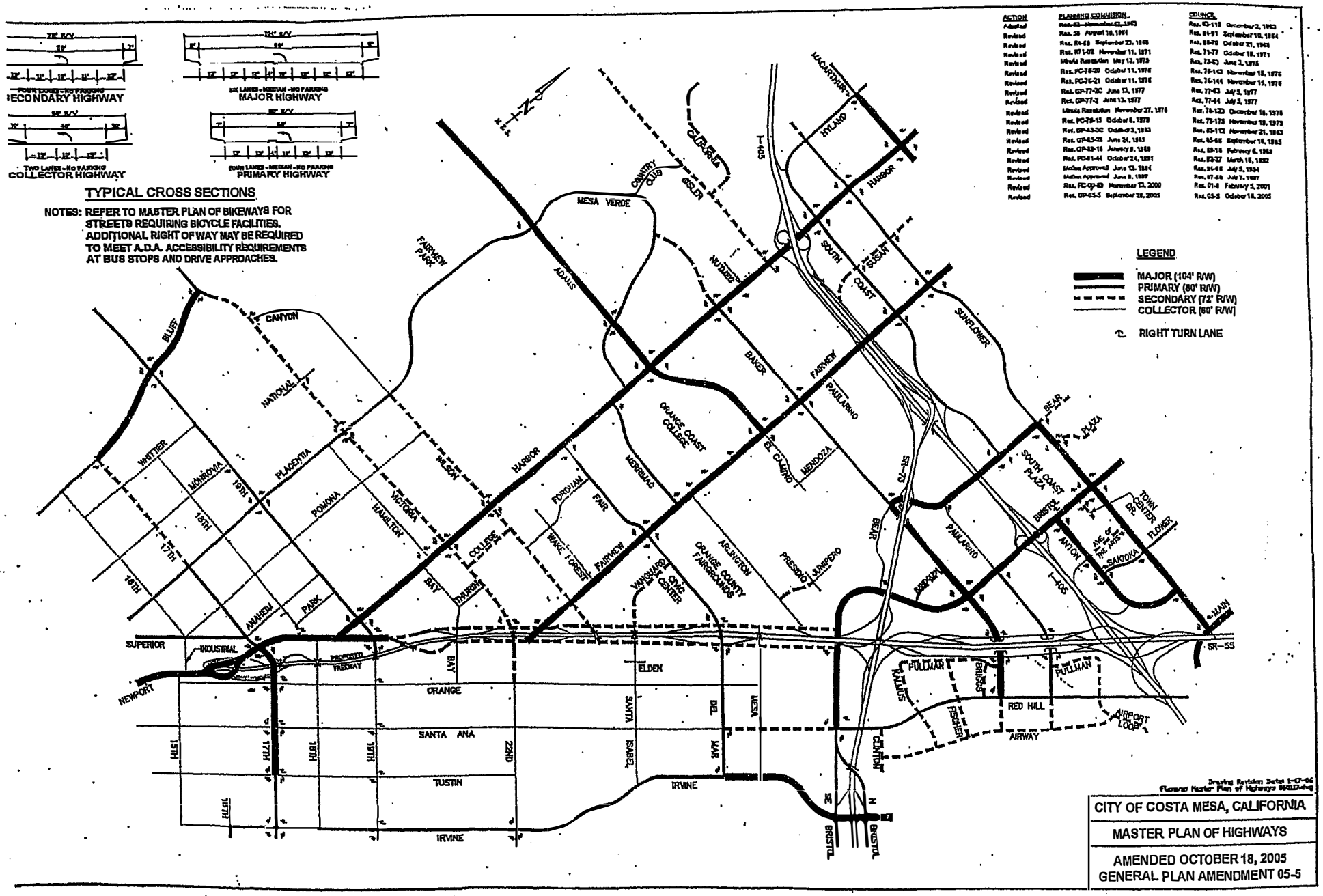
CANTILEVER MAILBOX SUPPORTS

Exhibit F



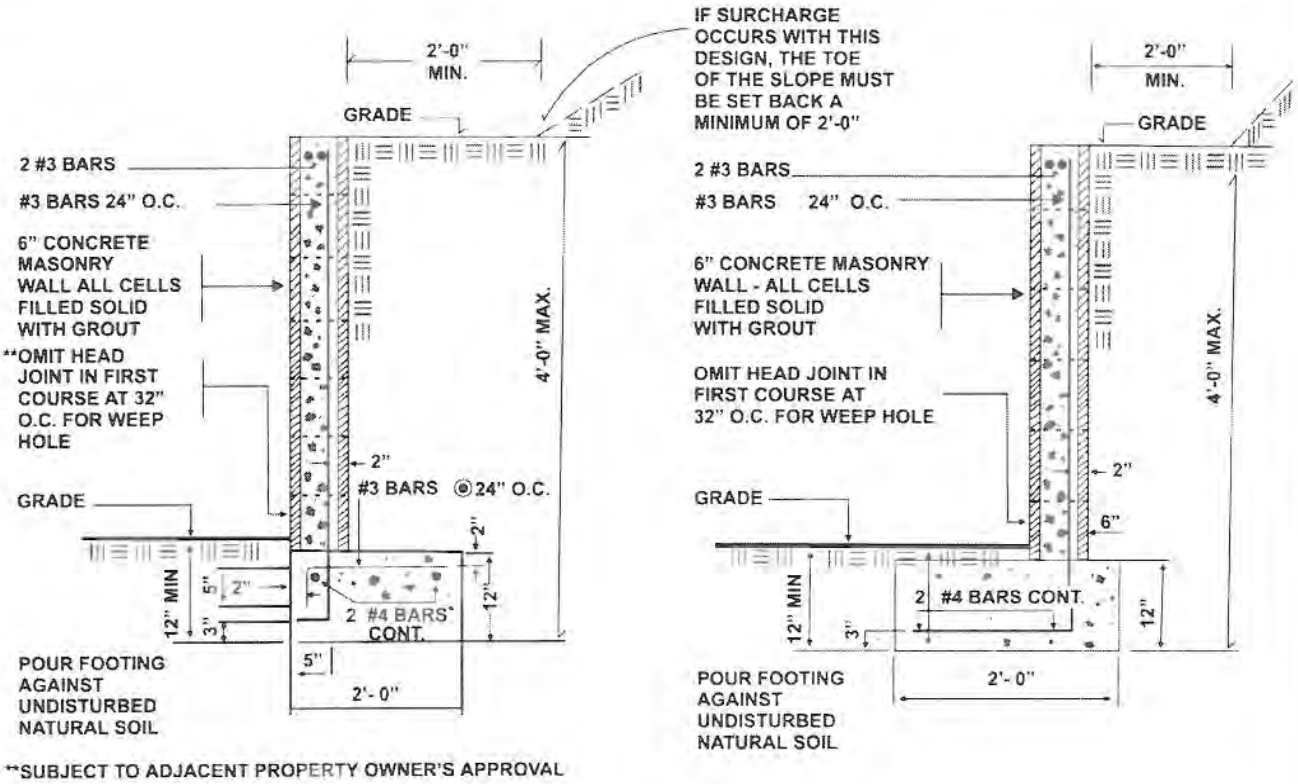
SPACING FOR MULTIPLE POST INSTALLATION

SINGLE AND DOUBLE MAILBOX INSTALLATIONS


SECONDARY HIGHWAY
MAJOR HIGHWAY
COLLECTOR HIGHWAY
PRIMARY HIGHWAY
TYPICAL CROSS SECTIONS
NOTES: REFER TO MASTER PLAN OF BIKEWAYS FOR STREETS REQUIRING BICYCLE FACILITIES. ADDITIONAL RIGHT OF WAY MAY BE REQUIRED TO MEET A.D.A. ACCESSIBILITY REQUIREMENTS AT BUS STOPS AND DRIVE APPROACHES.
ACTION
PLANNING COMMISSION
COUNCIL
LEGEND
MAJOR (104' R/W)
PRIMARY (80' R/W)
SECONDARY (72' R/W)
COLLECTOR (60' R/W)
RIGHT TURN LANE
MESA VERDE
COUNTRY CLUB
GISLER
FAIRVIEW PARK
ADAMS
NUTWOOD
MACARTHUR
HYLAND
HARBOR
SOUTH COAST
SUSAN
SUNFLOWER
BAKER
FAIRVIEW
PAULARINO
ORANGE COAST COLLEGE
EL CAMINO
MENDOZA
BEAR
PLAZA
SOUTH COAST PLAZA
BRISTOL
ANTON
TOWN CENTER DR.
FLOWER
SAKIOKA
AVE. OF THE ARTS
MAIN
SR-55
I-405
BARRANCA
CANYON
BLUFF
NATIONAL
WHITTER
MONROVIA
PLACENTIA
POMONA
HAMILTON
MILSON
MCFADDEN
COLLEGE
FORDYAN
FAIR
MERRIMAC
WAKE FOREST
VANGUARD
CIVIC CENTER
ORANGE COUNTY FAIRGROUNDS
ARLINGTON
PRESIDIO
JUNIPERO
BAY
THURSTON
ANAHEIM
PARK
16TH
17TH
18TH
19TH
SUPERIOR
INDUSTRIAL
PROPOSED FREEWAY
NEWPORT
ELDEN
ORANGE
SANTA ANA
TUSTIN
IRVINE
SANTA ISABEL
DEL MAR
VESTA
1ST
11TH
10TH
9TH
8TH
2ND
PULLMAN
BRIGGS
KALMUS
FISCHER
RED HILL
AIRWAY
AIRPORT LOOP
CLINTON
SE
N
Driving Revision Date 1-07-06
Planned Master Plan of Highways 06-01-06
CITY OF COSTA MESA, CALIFORNIA
MASTER PLAN OF HIGHWAYS
AMENDED OCTOBER 18, 2005
GENERAL PLAN AMENDMENT 05-5

City of Costa Mesa Building Division

RETAINING WALLS



NOTES:

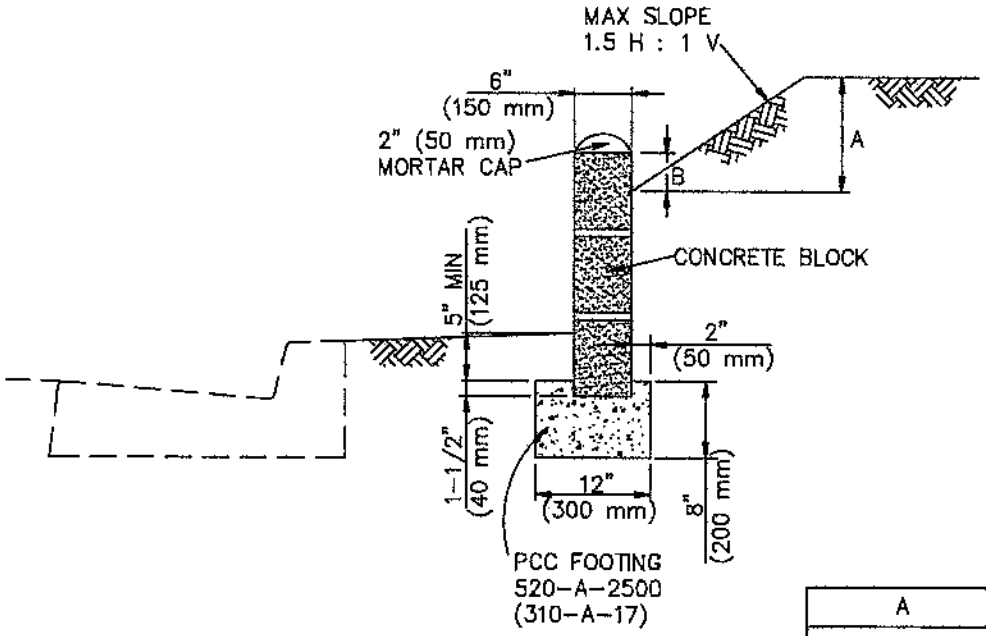
1. Retaining wall shall be grouted solid.
2. Reinforcing splices in masonry shall be lapped not less than 15", in concrete not less than 12".
3. Omit mortar at head joints of first course at 32" o.c.
4. Mortar shall be no leaner than 3 to 1.
5. Inspection required prior to grouting cells.
6. Retaining walls greater than 4'-0" in height or with surcharge loads other than shown above shall be fully engineered by a licensed engineer.
7. Retaining walls with standard concrete block walls or fences of any materials constructed above, shall be fully engineered by a licensed engineer.
8. A survey of the lot may be required by the building official to verify that the structure is located in accordance with the approved plans (2001 CBC, Section 108.1).

SPECIFICATIONS:

CONCRETE: 2500 psi at 28 days.

BLOCK: Grade N, Type 1 A.S.T.M. C-90.

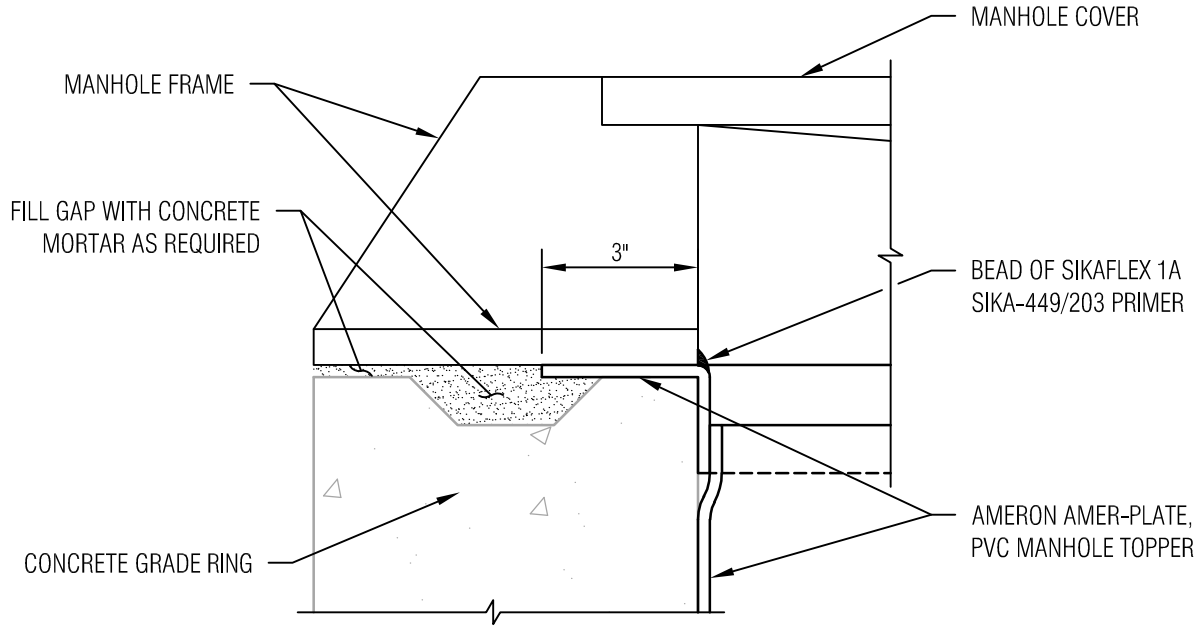
REINFORCING: Grade 40 A.S.T.M. A615.



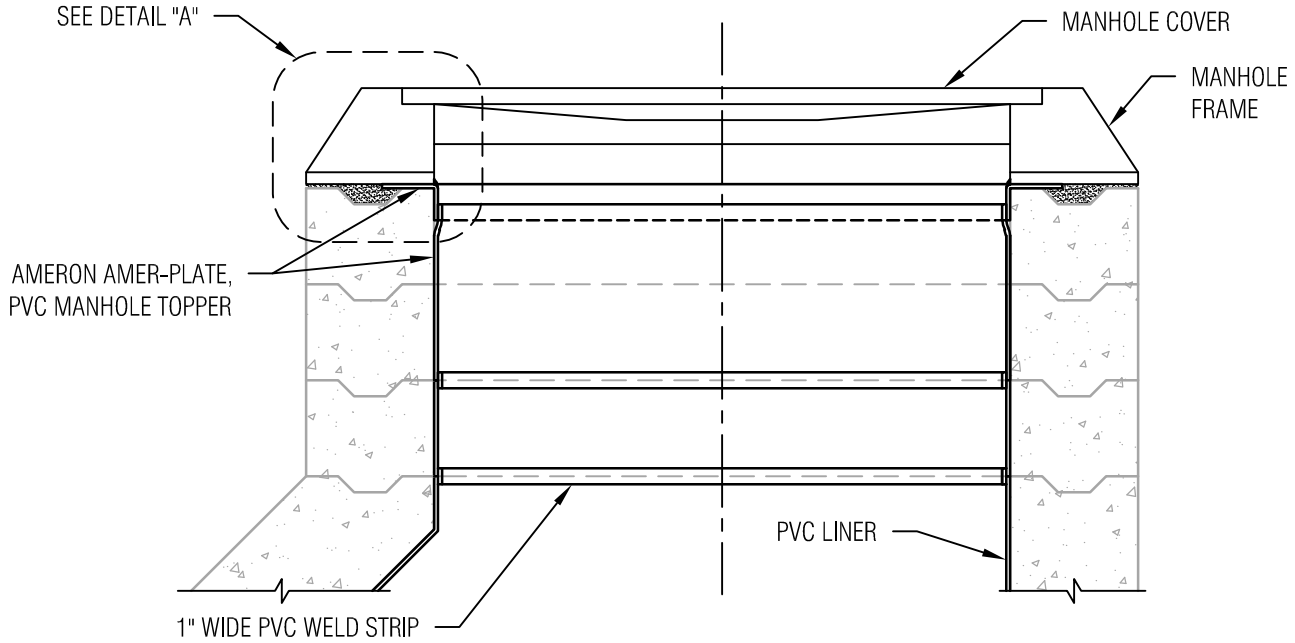
A	B
0 TO 6" (0 TO 150 mm)	2" (50 mm)
6" TO 16" (151 TO 400 mm)	4" (100 mm)
17" TO 48" (410 TO 1200 mm)	6" (150 mm)

NOTES

1. MAX HEIGHT OF WALL IS 3 COURSES OF 8" (200 mm) HIGH BLOCK.
2. NO LIVE-LOAD SURCHARGE SHALL BE ALLOWED ON RETAINED SOIL.
3. POUR FOOTING AGAINST UNDISTURBED EARTH.
4. TOP OF FOOTING MAY BE PLACED AT SAME GRADE AS STREET IF STREET GRADE IS UNIFORM AND 5% MAX.
5. PLACE CONCRETE BLOCKS IMMEDIATELY AFTER POURING THE FOOTING. FILL ALL CELLS SOLID WITH GROUT AND ROD SO THAT GROUT IS MONOLITHIC WITH FOOTING.
6. IN FIRST COURSE ABOVE FINISHED GRADE, OMIT MORTAR FROM VERTICAL JOINTS EACH 32" (800 mm) TO SERVE AS WEEP HOLES.



DETAIL "A"



NEW MANHOLE PVC LINER DETAIL

NOTES:

1. MAKE FINAL ADJUSTMENTS AT THE MORTAR JOINT BETWEEN THE FIRST AND SECOND GRADE RINGS. SET FLUSH WITH PAVEMENT TO ONE-EIGHTH INCH HIGH.
2. ADD OR REMOVE GRADE RINGS, REPAIR PVC OR SPRAYED ON LINER, AND TEST LINER FOR PINHOLES AND "PROBE TEST" FOR WEAK WELDS AS APPROVED BY THE ENGINEER. ADJUST HEIGHT AT MANHOLE RISER SECTIONS IF THE TOTAL HEIGHT OF GRADE RINGS WOULD EXCEED 24 INCHES.
3. BACKFILL FLUSH WITH SURFACE OR BELOW PAVEMENT SURFACE AS REQUIRED GOVERNING AGENCY WITH 3250 PSI (CLASS B) QUICK SETTING CONCRETE FOR COLLAR. EXPOSED CONCRETE SHALL BE BLACK IN COLOR.
4. FILL AREA ABOVE BELOW-GRADE COLLAR WITH AC WEARING SURFACE TO MATCH ADJACENT AC.
5. WHERE ODOR CONDITIONS EXIST OR WHERE DESIGNATED, SEAL MANHOLE RIM AND HOLES WITH DUCT-SEAL MASTIC. RE-SEAL IF EXISTING MANHOLE COVER WAS SEALED.

NO.	APPROVED	DATE
1	EDAC	02/22/2017

ORANGE COUNTY SANITATION DISTRICT
ORANGE COUNTY, CALIFORNIA
APPROVED BY
DIRECTOR OF ENGINEERING — DATE 6/20/18

PVC LINER INSTALLATION
EXISTING MANHOLE
ADJUST TO GRADE

NO SCALE
STANDARD DWG.
S-050A

DWG: J:_CAD Standards\WIP\WIP_Engineering Standard Drawings\REVISED\S-050A - PVC LINER INSTALLATION EXISTING MANHOLE ADJUST TO GRADE.dwg
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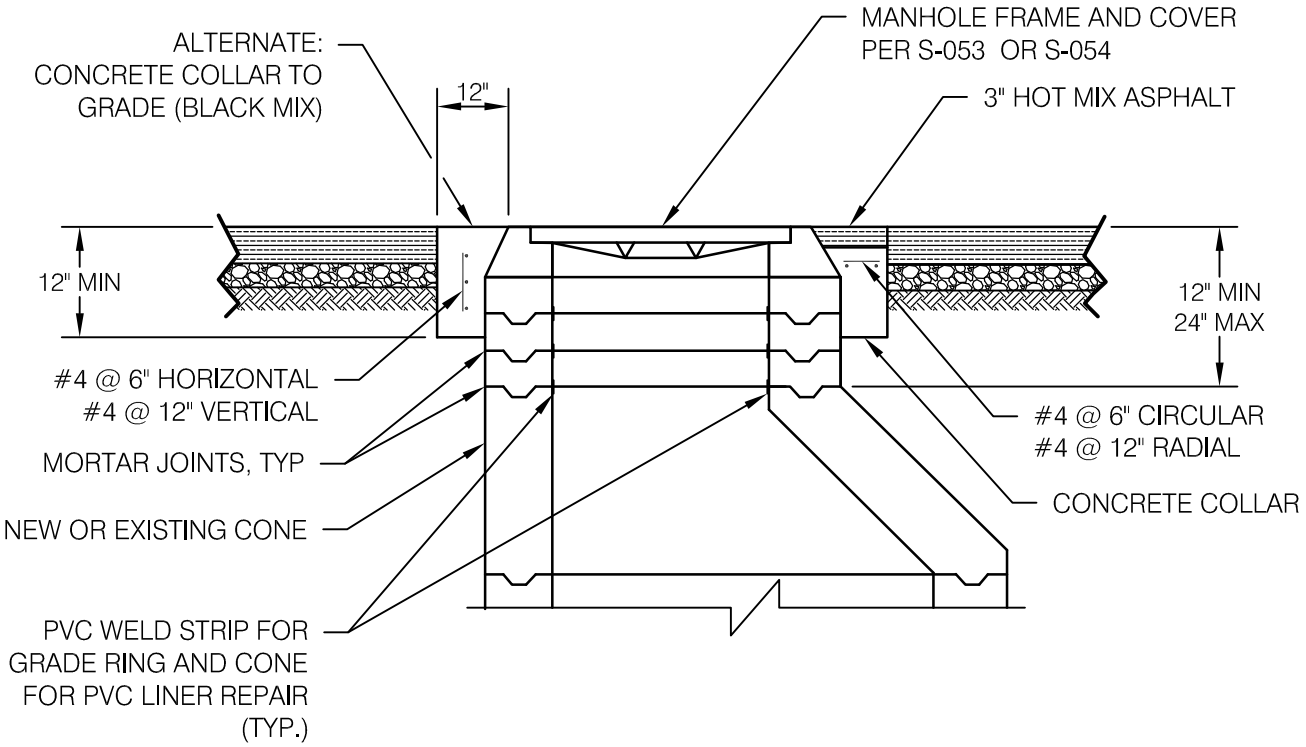

CROSS SECTION

NOTES:

1. NEATLY REMOVE PAVEMENT AND AGGREGATE BASE AS NECESSARY TO MAKE ADJUSTMENT.
2. MAKE FINAL ADJUSTMENTS AT THE MORTAR JOINT BETWEEN THE FIRST AND SECOND GRADE RINGS. SET FLUSH WITH PAVEMENT TO 1/8" HIGH.
3. AT EXISTING MANHOLES, ADD OR REMOVE GRADE RINGS, REPAIR PVC OR SPRAYED LINER, AND TEST LINER FOR PINHOLES AS APPROVED BY THE ENGINEER. ADJUST HEIGHT AT MANHOLE RISER SECTIONS IF THE TOTAL HEIGHT OF GRADE RINGS WOULD EXCEED 24".
4. BACKFILL FLUSH WITH SURFACE OR BELOW PAVEMENT SURFACE AS REQUIRED BY GOVERNING AGENCY WITH 3250 PSI (CLASS B) QUICK-SETTING CONCRETE TO FORM COLLAR. EXPOSED CONCRETE SHALL BE BLACK IN COLOR.
5. FILL AREA ABOVE BELOW-GRADE COLLAR WITH AC WEARING SURFACE TO MATCH ADJACENT AC.
6. WHERE ODOR CONDITIONS EXIST OR WHERE DESIGNATED, SEAL MANHOLE RIM AND HOLES WITH DUCT-SEAL MASTIC. RE-SEAL IF EXISTING MANHOLE COVER WAS SEALED.

NO.	APPROVED	DATE
1	EDAC	02/22/2017

ORANGE COUNTY SANITATION DISTRICT
ORANGE COUNTY, CALIFORNIA
APPROVED BY
DIRECTOR OF ENGINEERING — DATE 6/20/18

MANHOLE ADJUSTMENT TO GRADE

NO SCALE

STANDARD DWG.
S-055

DWG: J:_CAD Standards\WIP\WIP_Engineering Standard Drawings\REVISED\S-055 - MANHOLE ADJUSTMENT TO GRADE.dwg
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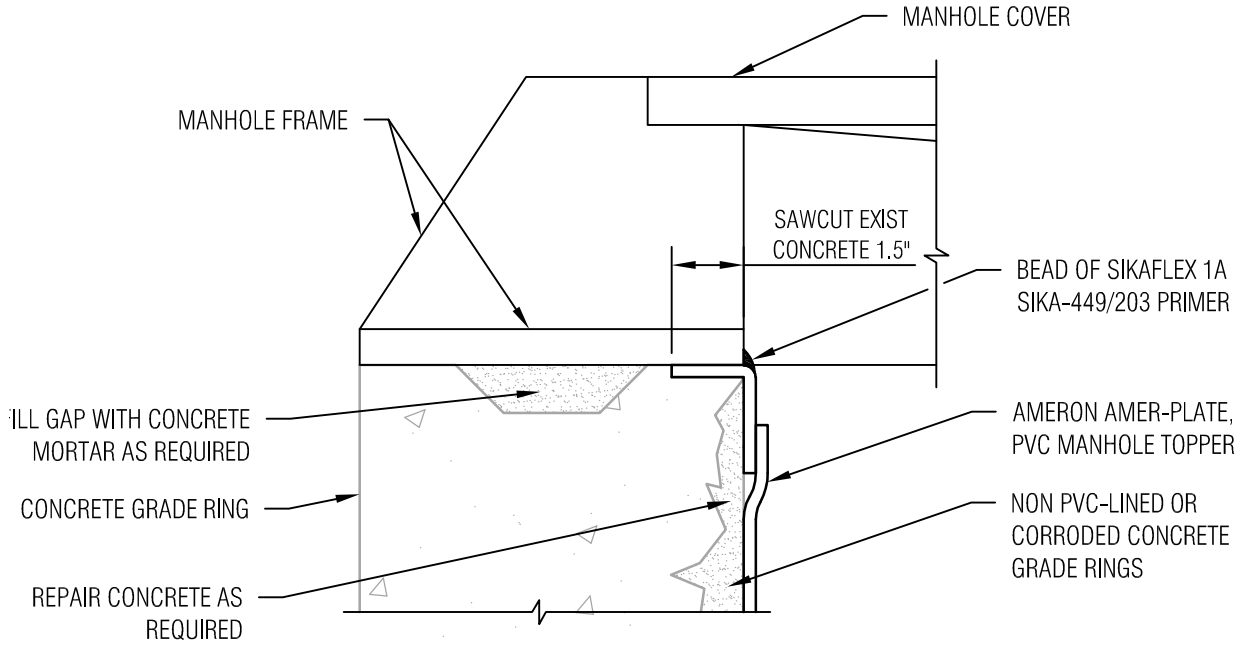
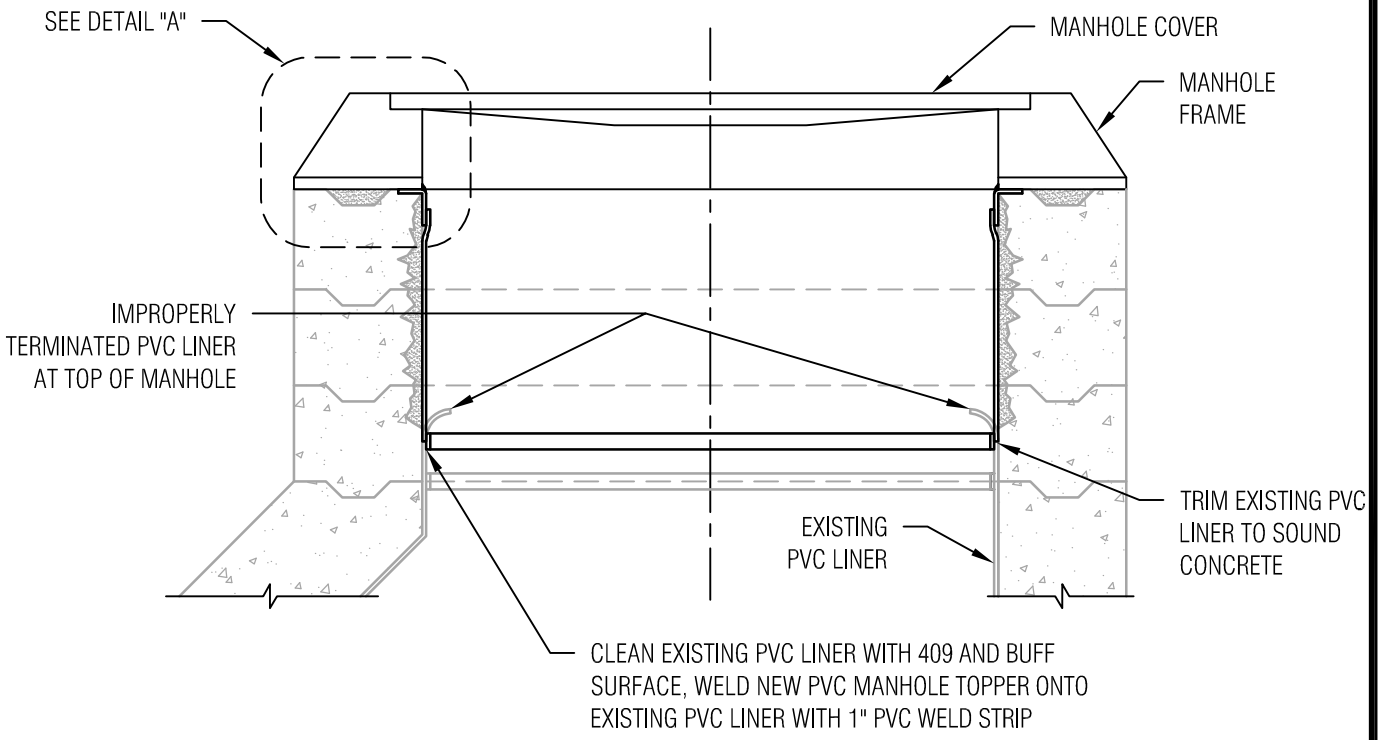


DETAIL "A"



EXISTING MANHOLE PVC LINER DETAIL

NOTES:

1. AT EXISTING MANHOLES, ADD OR REMOVE GRADE RINGS, REPAIR PVC OR SPRAYED ON LINER, AND TEST LINER FOR PINHOLES AND "PROBE TEST" FOR WEAK WELDS AS APPROVED BY THE ENGINEER. ADJUST HEIGHT AT MANHOLE RISER SECTIONS IF THE TOTAL HEIGHT OF GRADE RINGS WOULD EXCEED 24 INCHES.
2. WHERE ODOR CONDITIONS EXIST OR WHERE DESIGNATED, SEAL MANHOLE RIM AND HOLES WITH DUCT-SEAL MASTIC. RE-SEAL IF EXISTING MANHOLE COVER WAS SEALED.

NO.	APPROVED	DATE
1	EDAC	02/22/2017

ORANGE COUNTY SANITATION DISTRICT
ORANGE COUNTY, CALIFORNIA
APPROVED BY
DIRECTOR OF ENGINEERING — DATE 6/20/18

PVC LINER REPAIR
EXISTING MANHOLE

NO SCALE
STANDARD DWG.
S-055A

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