

LAS VIRGENES MUNICIPAL WATER DISTRICT

Construction Specifications

Construction of Impressed Current Cathodic Protection System for Centrate Treatment and Storage Tanks

HDR Engineering Corporation

December 5, 2013 (Issued for Bid)



(Picture is not current)

LAS VIRGENES MUNICIPAL WATER DISTRICT

**SPECIFICATIONS FOR THE
Construction of Impressed Current Cathodic
Protection System for Centrate Treatment and Storage Tanks**

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NOTICE INVITING SEALED PROPOSALS (BIDS)

Construction of Impressed Current Cathodic Protection System

for Centrate Treatment and Storage Tanks

NOTICE IS HEREBY GIVEN that the Board of Directors of Las Virgenes Municipal Water District invites and will receive sealed proposals (bids) up to the hour of **3:00 P.M. on January 16, 2014**, for furnishing the work described in the contract documents. Bids received after the time stated in the Call for Bids will not be accepted and will be returned, unopened, to the bidder. The time shall be determined by the time on the receptionist telephone console in our Headquarters lobby. Proposals will be publicly opened and read aloud at the office of the District, 4232 Las Virgenes Road, Calabasas, California. Said bids shall conform to and be responsive to the Specifications and Contract Documents for said work as heretofore approved by the District.

A **mandatory** pre-bid tour will be conducted at 9:00 a.m. on January 6, 2014. The meeting will begin at the District headquarters at 4232 Las Virgenes Road, Calabasas, CA 91302. Attendance at the pre-bid conference is a condition precedent to submittal of the bid and the District will not consider a bid from any bidder not represented at the pre-bid conference. Questions regarding the project may be directed to Lindsay Cao, P.E., at 818-251-2163.

Sets of contract documents may be purchased at the District office upon payment by check or cash only for **thirty-five dollars** (\$35) for each hard copy set and \$10 for each CD set. Checks shall be made payable to the Las Virgenes Municipal Water District. Purchase price will not be refunded

Each bid must be on the District bid form and shall be sealed and filed with the secretary of the District at or before the time stated in the Notice.

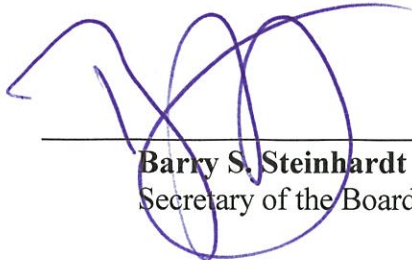
All terms and conditions contained in the Specifications and Contract Documents shall become part of the contract. The Board of Directors of Las Virgenes Municipal Water District reserves the right to reject any and all bids and to waive any and all irregularities in any bid. No bidder may withdraw his bid after the said time for bid openings until 60-days thereafter or until the District has made a final award to the successful bidder or has rejected all bids, whichever event first occurs.

The Board of Directors of the District reserves the right to select the schedule(s) under which the bids are to be compared and contract(s) awarded.

BY ORDER OF THE GOVERNING BODY OF
LAS VIRGENES MUNICIPAL WATER DISTRICT

Dated

12/2/13


Barry S. Steinhardt
Secretary of the Board

INFORMATION FOR BIDDERS

1. GENERAL

The work hereunder must be done in strict conformity with the plans and specifications adopted and approved by the District.

2. CONTRACT DOCUMENTS

(a) *The contract documents shall consist of the following:*

- Notice Inviting Sealed Proposals (Bids)*
- Information for Bidders*
- Proposal or Bid Form*
- Noncollusion Declaration*
- Agreement*
- Addenda issued Prior to Bid Opening*
- Certificate(s) of Insurance*
- Workers Compensation Certificate*
- Bonds*
- Special Provisions*
- Plans and Specifications*
- Standard Plans and Specifications for the Construction of Water Mains and Facilities*

(b) *Terms and conditions contained in the contract documents are part of the contract. The governing board of the District may reject bids and to waive informalities in bids. No bidder may withdraw a bid until the District has made a final award to the successful bidder or has rejected all bids.*

3. PROPOSALS

Bids shall be made upon the form of proposal furnished by the District and a part of the contract documents. Bids shall be properly executed and with all items filled in; the signatures of persons signing shall be in longhand. Erasures, interlineations or other corrections shall be authenticated by affixing in the margin immediately opposite the correction, the initials of a person signing the bid. The unit price and the total amount named by a bidder for an item are not in agreement, the unit price alone shall be considered as representing the bidder's intention, and the totals shall be corrected to conform.

Persons bidding may submit bids on any of the schedules set forth in the bid form.

Bids shall not contain recapitulation of the work to be done. Alternative proposals will not be considered except as called for. No oral, telegraphic or telephonic proposals or modifications will be considered.

Bids shall be accompanied by a bidder bond in a form acceptable to the District or cash in the amount of 10% of the bid price.

Before submitting a bid, bidders shall carefully examine all contract documents, shall visit the site of the work, shall fully inform themselves as to all the existing conditions and

limitations, and shall include in the bid a sum to cover the cost of all items included in the contract. No allowance will be made because of lack of such examination or knowledge.

Bids shall be sealed in an envelope marked "**Construction of Impressed Current Cathodic Protection System for Centrate Treatment and Storage Tanks**" addressed to the Secretary of the District, and be delivered thereto on or before the day and hour set for the opening of bids in the notice inviting sealed proposals, and shall bear the name of the bidder. It is the SOLE responsibility of the bidder to see that his bid is delivered and received in proper time. Any bid received after that scheduled closing time for receipt of bids shall be returned to the bidder unopened.

The District shall have a period of 60 days after the opening of bids within which to accept or reject the bids. If no bid is accepted within the period, or if the successful bidder executes and delivers the necessary contract documents to the District, the District will return to each bidder all checks and bonds received by the District from unsuccessful bidders within 10 days after the execution of the contract and presentation of required certificates and bonds or within 10 days after being requested to do so by the bidder if no bid is accepted within the period.

4. AGREEMENT AND BONDS

The form of contract which the successful bidder, as Contractor, will be required to execute is included in the contract documents, and should be carefully examined by the bidder. The agreement, bonds, and other documents to be executed by the Contractor shall be executed in original triplicates stamped according to law, one of which original triplicate shall be filed with the District, and the others with the District's Attorney and the District's Engineer.

The successful bidder, simultaneously with the execution of the agreement, shall furnish and maintain a payment bond in an amount equal to 100% of the contract price and a faithful performance bond in an amount equal to 100% of the contract price. The bonds shall be secured from a surety company satisfactory to the District and whose name is on file with the County Clerk of Los Angeles County as an approved and financially sound surety company, authorized to transact business in this State.

The bonds shall meet all of the requirements and contain the conditions required by Sections 3247 and 3248 inclusive, of the Civil Code, and other applicable provisions of the law and regulations of the State of California.

Failure to execute the contract and file acceptable bonds and proof of insurance coverage as provided therein within the time set forth herein shall be just cause for the annulment of the award and forfeiture of the proposal guarantee.

5. ADDENDA OR BULLETINS

Addenda or bulletins issued before the time to submit bids expires, or forming a part of the contract documents furnished to the bidder for preparation of his bid, shall be covered in the bid and shall be made a part of the contract.

6. WITHDRAWAL OF BID

A bidder may withdraw the bid personally or by a signed written request prior to the scheduled time for opening of the bids (but not after).

7. AWARD OR REJECTION OF BIDS

The contract will be awarded to the lowest responsible bidder complying with these instructions and with the notice inviting sealed proposals. The District may reject bids or waive informality in bids. If in the judgment of the District a bid is unbalanced, or if the bidder is not responsible, it shall be considered sufficient grounds for rejection of the entire bid.

8. BIDDERS INTERESTED IN MORE THAN ONE BID

No person, firm or corporation shall make or file, or be interested in more than one bid for the same work, unless alternative bids are solicited. A person, firm or corporation submitting a subproposal to a bidder, or who has quoted prices on material to a bidder, is not disqualified from submitting a subproposal or quoting prices to other bidders.

9. OTHER REQUIREMENTS

Before award of the contract, a bidder upon request shall furnish a recent statement of financial condition and previous construction experience or other evidence of qualifications.

Before entering into a contract, the bidder to whom the contract has been awarded shall furnish satisfactory evidence of workers' compensation insurance and public liability and property damage insurance as specified in the special provisions.

Contractor's License requirement for this project is: Class A. General.

**PROPOSAL TO
LAS VIRGENES MUNICIPAL WATER DISTRICT**

**FOR THE CONSTRUCTION OF IMPRESSED CURRENT CATHODIC PROTECTION SYSTEM
FOR CENTRATE TREATMENT AND STORAGE TANKS**

Name of Bidder: _____

Business Address: _____

Phone No.: _____

The site of the work to be constructed and referred to herein is in the County of Los Angeles, California.

The work is to be in accordance with the specifications and contract documents and as shown on plans therefore entitled: **“Centrate Tanks CP Modifications.”**

TO THE GOVERNING BOARD OF LAS VIRGENES MUNICIPAL WATER DISTRICT.

In compliance with your notice inviting sealed proposals (bids) and other documents, the undersigned bidder proposes to perform the work and in a workmanlike manner, in strict conformity with the plans and specifications and other contract documents, including Addenda Nos. ^[____], ^[____], and ^[____], on file in the office of the Secretary of the District for the contract unit prices herein.

**SCHEDULE OF WORK AND PRICES FOR CATHODIC PROTECTION SYSTEM
FOR CENTRATE TREATMENT AND STORAGE TANKS**

Item No.	Description	Estimated Quantity	Unit Price	Extension
1	Mobilization, bonds and insurance	Lump Sum	\$5,000	\$5,000
2	Impressed current cathodic protection system	Lump Sum		
3	Electrical power supply to cathodic protection system, per Section 01 30 00, Part 1.6 E	Lump Sum		
4	O&M manuals (hard copy and compact disc with pdf files), including test data	Lump Sum	\$1,000	\$1,000
5	Record drawings. Provide red-lined set of all construction changes.	Lump Sum	\$1,000	\$1,000
6	Optional one-year time extension, per Section 01 30 00, Part 1.6 F	Lump Sum	\$5,000	\$5,000
TOTAL				

In case of discrepancies, the total amount will govern. Bidders shall provide prices for all items. The project will be awarded to a single bidder. The District reserves the right to reject all bids.

It is understood the foregoing quantities are approximate only and are solely for the purpose of facilitating the comparison of bids. The Contractor's compensation will be computed upon the basis of the actual quantities in the complete work, whether they are more or less than those shown.

State manufacturers name and address for each type of material upon which this proposal is based.

TYPE OF MATERIAL

MANUFACTURER

Anodes

Rectifier

Contractor shall submit to District the following information:

- (1) The name and location of the place of business of each subcontractor performing work, labor or render construction services and each subcontractor licensed by the State of California specially fabricating and installing improvements according to detailed drawings or the plans and specifications, in an amount in excess of one-half of one percent of the Contractor's total bid.*
- (2) The portion of the work to be done by each subcontractor.*

The contractor shall list only one subcontractor for each portion of the work identified in the bid.

*DIVISION OF
WORK OR TRADE*

NAME OF SUBCONTRACTOR

*LOCATION OF MILL,
SHOP OR OFFICE*

SIGNATURE OF AUTHORIZED
OFFICER OF BIDDER:

PRINTED NAME:

DATED:

NOTE: *If Bidder is a corporation, the legal name of the corporation shall be set forth above, together with the signature of the officer or officers authorized to sign contracts on behalf of the corporation. If Bidder is a co-partnership, the true name of the firm shall be set forth above, together with the signature of the partner or partners authorized to sign contracts on behalf of the co-partnership. If the Bidder is an individual, the signature shall be placed above. If a joint venture of a special partnership, the names of the general partners and special partners shall be submitted.*

NONCOLLUSION DECLARATION

The undersigned declares under penalty of perjury as follows:

1. I am employed by [_____] of [_____] , the party making the foregoing bid as [_____].
2. The bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation.
3. The bid is genuine and not collusive or sham; that the bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid, and has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or that anyone shall refrain from bidding.
4. The bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other bidder, or to secure any advantage against the public body awarding the contract of anyone interested in the proposed contract.
5. All statements contained in the bid are true.
6. The bidder has not, directly or indirectly, submitted the bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid, and will not pay, any fee to any corporation, partnership, company, association, organization, bid depository, or to any member or agent thereof to effectuate a collusive or sham bid.

DATED: _____

By: _____

**AGREEMENT FOR THE CONSTRUCTION OF
CATHODIC PROTECTION SYSTEM FOR CENTRATE TREATMENT AND STORAGE TANKS**

As of _____, Las Virgenes Municipal Water District herein "Agency," and [**Contractor's name**], herein "Contractor," agree as follows:

GENERAL

Section 1. SCOPE OF WORK

Contractor will furnish labor, equipment and materials and will perform work for the construction of the facilities described in the plans and specifications.

Section 2. CONSIDERATION

Agency shall pay Contractor the sum set forth in Contractor's bid for the performance of the work.

Section 3. PAYMENTS

(a) Monthly progress payments shall be as follows:

(1) On or about the 25th day of each month, Contractor shall submit to Agency an invoice including an estimate of the cumulative amount and value of the work performed by Contractor prior to that date and subsequent to prior estimates. The estimate may include the value of acceptable materials and equipment delivered to the work site. The estimate shall be based on certified copies of paid invoices by the Contractor.

(2) The Agency shall review the request as soon as practicable to determine whether the payment request is proper. A payment request found not to be a proper payment shall be returned within seven days after receipt accompanied by a written description of the reasons why the request is not proper.

(3) Agency shall pay Contractor, 95% percent of the invoice amount reduced by: amounts due to Agency for equipment, services or materials furnished by Agency; amounts of claims or liens by the Agency or others, and amounts required to be deducted by federal, state or local governmental authorities.

(4) If the Agency fails to make progress payment within 35 days after receipt of an undisputed and properly submitted invoice, the Agency shall pay to the Contractor interest at the legal rate set forth in Code of Civil Procedure Section 685.101(a) from seven days after receipt of the invoice by the Agency until paid.

(5) Progress payments do not signify acceptance of the work, or any portion of the work. Payments do not preclude Agency from demanding and recovering damages for failure to fully perform.

(b) On satisfactory completion of the work, Agency shall pay Contractor ninety percent of the value of the actual work less prior monthly progress payments.

(c) Within thirty days after recordation of a notice of completion, the undisputed amounts withheld by the Agency shall be released. Completion occurs on the acceptance by the governing body of the Agency; or the filing of a notice of cessation of labor.

(d) Notwithstanding the foregoing, contractor may receive payment in full, other than retention for claims by the Agency or third parties, if the contractor deposits approved securities or enters into an agreement with an escrow agent to hold earned retentions. The substitution of securities or the use of an escrow account shall be in the form and manner permitted by law.

Section 4. CONTRACT DOCUMENTS

The complete contract includes the contract documents set forth herein, to wit: the Notice Inviting Sealed Proposals, Information For Bidders, Proposal or Bid Form, Non-collusion Declaration, this Agreement, Certificate of Insurance, Workers' Compensation Certificate, Plans and Specifications, and Addenda issued prior to Bid Opening.

Section 5. COMPLIANCE WITH PROVISIONS OF LAW

(a) This Agency is subject to laws relating to public agencies which are part of this contract though fully set forth herein.

(b) Contractor shall comply with laws relating to the work.

Section 6. ATTORNEY FEES

The Court shall award reasonable costs and expenses, including attorney fees, to the prevailing party in an action or proceeding to enforce this Agreement.

Section 7. NOTICES

Notices required or permitted shall be given by personal delivery, by first class mail, postage prepaid, or facsimile transmission:

To: **[Contractor]**, Contractor
[Contractor's Address]
[Contractor's Address]

To: Las Virgenes Municipal Water District
Attention: Lindsay Cao, PE
4232 Las Virgenes Road
Calabasas, CA 91302-1994
FAX: 818-251-2159

Section 8. CONFLICT WITH PLANS AND SPECIFICATIONS

Conflict between the plans and specifications and this contract shall be brought to the attention of the Agency which shall resolve such conflict.

Section 9. ASSIGNMENT

(a) Contractor shall not assign this contract or payments under this contract.

(b) Contractor and each subcontractor hereby assign to the Agency rights, title, and interest in and to causes of action under Section 4 of the Clayton Act (15 U.S.C.A. Sec. 15) or under the Cartwright Act (Chapter 2 (commencing with Section 16700) of Part 2 of Division 7 of the Business and Professions Code), arising from

purchases of goods, services, or materials for this contract or the subcontract. This assignment shall be made and become effective without further acknowledgment by the parties at the time the Agency tenders final payment to the Contractor.

Section 10. SECTION HEADINGS

Section headings are for the convenience of the parties and shall not affect the interpretation of this contract.

Section 11. AUTHORITY OF AGENCY REPRESENTATIVE

Agency's representative shall decide questions about the quality or acceptability of materials furnished and work performed, manner of performance and rate of progress of the work, the interpretation of the plans and specifications and the fulfillment of the contract by the Contractor.

WAGES, HOURS, AND WORKING CONDITIONS

Section 12. PREVAILING WAGES

(a) A determination of the general prevailing rates of per diem wages and holiday and overtime work where the work is to be performed is on file at the Agency's offices. Contractor and subcontractors will not pay less than the prevailing rates of wages. Contractor will post one copy of the prevailing rates of wages at the job site.

(b) Contractor shall forfeit as penalty to the Agency the sum of fifty dollars for each calendar day or portion thereof, and for each workman paid less than the prevailing rates under the contract or subcontractor.

Section 13. TRAVEL AND SUBSISTENCE PAYMENTS

Travel and subsistence payments shall be paid to each worker as defined in the applicable collective bargaining agreements filed with the Department of Industrial Relations for the particular craft, classification or type of work.

Section 14. HOURS OF WORK

(a) Eight hours labor constitutes a legal day's work. Workers shall be paid at a rate of one and one-half times the basic rate of pay for work in excess of eight hours during a calendar day or forty hours during a calendar week of the foregoing hours.

(b) Contractor shall keep and make available an accurate record showing the name each worker and hours worked each day and each week by each worker.

(c) As a penalty for failure to pay overtime when required, the Contractor shall forfeit to the Agency twenty-five dollars for each worker for each calendar day during which such worker works more than eight hours and is not paid overtime, and for each week during which such worker works more than forty hours and is not paid overtime.

Section 15. APPRENTICES

Contractor shall comply with the Labor Code concerning the employment of apprentices.

Section 16. SUBCONTRACTORS

Contractor shall comply with the *Subletting and Subcontracting Fair Practices Act* of Public Contracts Code.

Section 17. DISCRIMINATION

The Contractor shall not refuse to employ or promote any person, and shall not discriminate against any person with respect to compensation or terms and conditions of employment, and shall not discipline or discharge any person employed because of the person's race, religion, creed, color, national origin, ancestry or sex. The Contractor shall not refuse to accept otherwise qualified employees as indentured apprentices solely on the grounds of race, religion, creed, color, national origin, ancestry or sex.

Section 18. SAFETY

Contractor and subcontractors shall comply with the provisions of the Safety and Health Regulations for Construction, promulgated by the Secretary of Labor under the *Contract Work Hours and Safety Standards Act*, as set forth in Title 29, C.F.R. and by the California Division of Industrial Safety.

Section 19. CHARACTER OF WORKERS

Only competent workers shall be employed on the work. Workers who are incompetent, intemperate, troublesome, disorderly or otherwise objectionable, or who fail to perform work properly and acceptably, shall be immediately removed from the work by the Contractor and not re-employed.

INSURANCE, INDEMNIFICATION AND BONDS

Section 20. INSURANCE

(a) Before beginning the performance of the work, Contractor shall purchase and maintain insurance to protect the Contractor and the Agency from claims: (i) arising from Contractor's operations under the contract by the Contractor, a subcontractor or anyone employed by them, or anyone for whose acts any of them may be liable; (ii) under workers compensation, disability benefits and other similar benefit acts; (iii) for damages because of bodily injury, occupational sickness, or disease, or death of the Contractor's employees, or persons other than the Contractor's employees; (iv) for damages insured by usual personal injury liability coverage sustained by a person as a result of an offence related to employment of such person by the Contractor, or other persons; (v) for damages, other than the work itself, because of injury to or destruction of tangible property, including loss of use resulting therefrom; (vi) for damages because of bodily injury, death of a person or property damage arising from ownership, maintenance or use of a motor vehicle; (vii) involving contractual liability insurance applicable to the Contractor's obligations; and (viii) for damage to work in progress.

(b) The insurance required shall be written for not less than limits of liability specified in the contract documents or required by law, whichever is greater. The insurance shall be purchased from companies authorized to do business in the jurisdiction where the project is located. Coverages shall be written on an occurrence basis without interruption from the date of commencement of the work until date of final payment or until termination of coverage required to be maintained after final payment. Agency, its officers, agents and employees shall be named as additional insured.

(c) Certificates of insurance executed by the carrier(s) and acceptable to the Agency and copies of the policy shall be filed with the Agency prior to the commencement of the work. The Certificates and the insurance policies shall provide the policies will not be canceled or allowed to expire until at least thirty days prior written notice has been given to the Agency. If the insurance coverages are required to remain

in force after final payment and are reasonably available, an additional certificate evidencing continuation of such coverage shall be submitted with the final application for payment. Information concerning reduction of coverage shall be furnished by the Contractor with reasonable promptness in accordance with the Contractor's information and belief.

(d) Contractor shall require each subcontractor to maintain policies of insurance covering the hazardous, and under the conditions, mentioned above and having the Agency, its officers, agents, volunteers and employees as additional insurers. Copies of the subcontractor's certificates of insurance and policies shall be filed with the Agency.

Section 21. INDEMNIFICATION

(a) Contractor shall indemnify and save the Agency, its officers, agents, volunteers and employees, free and harmless from costs, damages or liability, including attorney fees, arising out of any act or omission to act, including any negligent act or omission to act by Contractor, its officers, agents, subcontractors and employees with respect to the performance of the work or the Contractor's obligations under this contract.

(b) In addition to the foregoing, Contractor shall pay Agency costs, including attorney fees, incurred by the Agency in handling, responding to, or litigating stop notice claims or other demands against money due to the Contractor or against the Contractor's payment bond by Contractor's officers, agents, employees or subcontractors.

Section 22. PAYMENT BOND

(a) Before beginning the performance of the work, Contractor shall file a payment bond with the Agency for its approval and acceptance. The payment bond shall be in the sum of 100 percent of the contract price.

(b) The payment bond shall be in substantially the form of the bond attached hereto. The bond shall be executed by a representative of the surety having no financial interest in the contractor. The payment bond shall be separate and distinct from any other bond required by this contract.

Section 23. PERFORMANCE BOND

(a) Before beginning the performance of the work, Contractor shall file a performance bond with the Agency for its approval and acceptance. The performance bond shall be in the sum of 100 percent of the contract price. The bond shall be payable by surety or sureties to Agency if Contractor fails to fully perform his obligations hereunder.

(b) The performance bond shall be in substantially the form of the bond attached hereto. The bond shall be executed by a representative of the surety having no financial interest in the contractor. The performance bond shall be separate and distinct from any other bond required by this contract.

PERFORMANCE

Section 24. TIME FOR COMPLETION

(a) All work under this Contract shall be completed within 180 calendar days after the date of the Notice to Proceed (hereafter "Completion Date"). The term "calendar days" includes Saturdays, Sundays, and holidays.

(b) The Agency expects the project to be completed on or before the Completion Date. If the work is not done by the Completion Date, the Agency will suffer damage and will incur substantial additional costs. Some of these damages and costs are and will be impractical and infeasible to determine, and some will be ascertainable. If the Agency determines, in its sole judgment, the failure to complete the work by the Completion Date is due to unforeseeable causes (which causes include Acts of God, or the public enemy, acts of the Government, acts of another contractor in the performance of another contract with the Agency, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, unusually severe weather, or delays of Subcontractors due to such causes) or is due to causes within the control of the Agency, the fault or negligence of the Agency, then the Contractor shall not be liable for the Agency's liquidated damages or other damages or costs resulting from the failure to complete the work by the Completion Date. If the Agency determines, in its sole judgment, the failure to complete the work by the Completion Date is due to foreseeable causes, causes within the control of the Contractor, the fault or negligence of the Contractor, or weather conditions which are normal for the area and the season, the Contractor and the Contractor's Surety shall be liable for payment to the Agency of **both** of the following:

(i) Fixed and liquidated damages, which are not a penalty, equal to \$1500 for each calendar day of delay beyond the Completion Date.

(ii) Ascertainable costs and damages incurred by the Agency resulting from the failure to complete the work by the Completion Date, including, but not limited to supervision, engineering, inspection, incidental and overhead expenses directly related to the Contract.

(c) Within ten days from the beginning of the event or reason which will prevent the work under this contract from being completed by the Completion Date, the Contractor shall notify the Agency in writing of the cause of delay and shall request an extension of the Completion Date.

(d) Upon receipt from the Contractor of a request for extension of the Completion Date, the Agency shall ascertain the facts and extent of the delay. The Agency may extend the Completion Date if the Agency determines, in its sole judgment, the findings justify an extension and such extension is in the best interest of the Agency. Such an extension will increase the Agency's financial obligations and costs incurred for supervision, engineering, inspection, incidental and overhead expenses directly related to the Contract and which accrue as a result of the extension. If the Agency extends the Completion Date and determines, in its sole judgment, the extension is needed due to unforeseeable causes (which causes include Acts of God, or the public enemy, acts of the Government, acts of another contractor in the performance of another contract with the Agency, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, unusually severe weather, or delays of Subcontractors due to such causes) or is due to causes within the control of the Agency, the fault or negligence of the Agency, then the Contractor shall not be liable for the Agency's damages or costs resulting from such extension. If the Agency extends the Completion Date and determines, in its sole

judgment, the extension is needed due to foreseeable causes, causes within the control of the Contractor, the fault or negligence of the Contractor, or weather conditions which are normal for the area and the season, then the Contractor and its Surety shall be liable for an shall reimburse Agency for such costs before the final payment.

(e) The Agency may deduct the liquidated damages and any additional costs and damages for which the Contractor is liable under this Section, from progress payments or from the final payment. The payment of progress payments before and after the Completion Date shall not constitute a waiver of liquidated damages or of additional damages or costs for which the Contractor is liable under this Section. Release of any Bonds shall be contingent upon payment of these amounts.

Section 25. ACTS OF GOD

Contractor is not responsible for the cost of repairing or restoring damage to the work exceeding five percent of the contract price and determined to have been proximately caused by earthquakes in excess of the magnitude of 3.5 on the Richter Scale and tidal waves if damaged work is built in accordance with accepted and applicable building standards and the plans and specifications.

Section 26. UTILITY RELOCATION

(a) As between the parties, Agency is responsible for the timely removal, relocation or protection of existing main or trunk line underground utility facilities located on the job site, if such utilities are not identified by the Agency in the plans and specifications. As to such unidentified utilities, Contractor shall be compensated for: the costs of relocation; repairing damage not due to the failure of Contractor to exercise reasonable care; removing or relocating such utilities not included in the plans and specifications with reasonable accuracy, and equipment on the project necessarily idled during such work. Contractor shall not be assessed liquidated damages for delay in completion of the project, when the delay is caused by the failure of the Agency or the owner of the utility to remove or relocate the facilities.

(b) The Agency is not required to indicate the presence of existing service laterals or appurtenances when the presence of such utilities on the work site can be inferred from other visible facilities, such as buildings, metering junction boxes, on or adjacent to the work site.

(c) Contractor shall immediately notify the Agency and utility in writing, if the Contractor discovers utility facilities not identified by the Agency in the contract plans or specifications.

Section 27. PUBLIC CONVENIENCE

(a) Contractor's operation shall cause no unnecessary public inconvenience. The access rights of the public shall be considered at all times. Unless otherwise authorized, traffic shall be permitted to pass through the work or an approved detour shall be provided. Safe, adequate, continuous and unobstructed pedestrian and vehicular access shall be maintained to fire hydrants, residences, commercial and industrial establishments, churches, schools, parking lots, service stations, motels, fire and police stations, and hospitals, unless other arrangements are made satisfactory to the owners.

(b) Vehicular access to residential driveways shall be maintained to the property line except when necessary construction precludes such access for reasonable periods of time.

(c) Grading operations, roadway excavation and embankment construction shall provide a reasonably satisfactory surface for traffic. When rough grading is completed, the roadbed surface shall be brought to a smooth even condition satisfactory for traffic.

(d) The Contractor shall comply with applicable state and local requirements for closure of streets. Contractor shall provide barriers, guards, lights, signs, temporary bridges, flagmen and watchmen advising the public of detours and construction hazards. Contractor shall comply with additional public safety requirements arising during construction. Contractor shall furnish and install, and upon completion of the work promptly remove, signs and warning devices.

(e) At least forty-eight hours in advance of closing or partial closing or of reopening any street, alley or other public thoroughfare, Contractor shall notify the police, fire, traffic and engineering departments of jurisdictional agencies involved and comply with their requirements.

Section 28. EXCAVATIONS

(a) Contractor shall submit for Agency approval, a detailed plan showing the design of shoring, bracing, sloping or other provisions to be made for worker protection from the hazard of caving ground during the excavation of trenches five feet or more in depth. The plan shall be at least as effective as that required by the Construction Safety Orders of the California Division of Industrial Safety. If the plan varies from the shoring systems standards established by Safety Orders, the plan shall be prepared by a registered civil or structural engineer.

(b) At the close of each working day, Contractor shall completely backfill open excavation and cover the same with temporary asphalt mix in accordance with normal practice in the industry and the rules, regulations, laws and ordinances of the State of California, the County of Los Angeles.

(c) If the work involves digging trenches of excavations extending deeper than four feet below the surface, the Contractor shall promptly, and before the conditions are disturbed, notify the Agency, in writing, of any: (1) material the Contractor believes hazardous waste, as defined in Section 25117 of the Health and Safety Code, and required to be removed to a Class I, Class II, or Class III disposal site; (2) subsurface or latent physical conditions at the work site differing from those indicated; or (3) unknown physical conditions at the work site of unusual nature, different material from those ordinarily encountered and generally recognized as inherent in the work of the character provided in the contract. The Agency shall promptly investigate the conditions. If the Agency finds the conditions are as alleged by the Contractor and conditions cause a change in the Contractor's cost, or the time required for performance, the Agency shall issue a change order. If a dispute arises whether the Agency's findings are correct, the Contractor shall proceed with the work. The Contractor shall retain rights by contract or law pertaining to resolution disputes and protests between the parties.

(d) Contractor shall comply with underground service alert regulations.

Section 29. EXTRA WORK

(a) The Agency may require changes in, additions to, or deductions from the work to be performed or to the materials to be furnished under this contract. No extra work shall be performed or change made except pursuant to a written order from the Agency stating the extra work or change is authorized, and setting forth the basis upon which payment is to be made. No claim for additional compensation shall be valid unless pursuant to such a change order. Nothing in this section shall excuse the Contractor from proceeding with the prosecution of the changed work. When required by the Agency, the Contractor shall furnish an itemized breakdown of the quantities and prices used in computing the value of any ordered change.

(b) Adjustments in the amounts to be paid to the Contractor by reason of any such change, addition or deduction shall be determined by one or more of the following methods:

- By an acceptable lump sum proposal from the Contractor.
- By unit prices contained in the Contractor's original bid and incorporated in the contract documents or fixed by subsequent agreement between the Agency and the Contractor.
- By ordering the Contractor to proceed with the work and to furnish daily reports of extra work. The reports shall itemize all costs for labor, material, and equipment rental. The reports for workmen shall include hours worked, rates of pay, names and classification; and for equipment shall include size, type, identification number and hours of operation. Records and reports shall be made immediately available to the engineer upon his request.

(c) When the Agency orders extra work and there is an agreement between the Agency and the Contractor to perform the work, the Agency may approve the method used by the Contractor to accomplish the work. At the request of the Agency, the method to be used shall be memorialized in a writing prior to work being performed.

(d) If the contractor contends a proposed change is a substantial revision in the character of the work, the question shall be immediately submitted to an arbitrator for decision. The arbitrator's decision will be final and conclusive unless it is fraudulent, capricious, arbitrary or so grossly erroneous as to imply bad faith. Each party shall advise the other in advance of the arbitration of the material on which the party intends to rely and give the other a reasonable opportunity to refute or supplement such factual material.

Section 30. CLEAN-UP

On completion of the work, Contractor shall remove debris and surplus materials from the work site.

Section 31. MATERIALS

(a) Unless otherwise specified, shown, or permitted by the Agency, materials and equipment incorporated in the work shall be new and current manufacture. The Agency may request the Contractor to furnish manufacturer's certificates to this effect.

(b) Materials furnished and work performed shall be subject to inspection and testing by Agency's authorized agents at Agency's expense. If such inspection and testing reveals non-compliance with the requirements of this contract, the Contractor

shall bear the cost of necessary corrective measures and the cost of subsequent inspecting and testing.

(c) The inspection of the work shall not relieve the Contractor of the obligations under the contract. Even though equipment, materials, or work required under the contract have been inspected, accepted, and estimated for payment, the Contractor shall replace or repair such equipment, materials, or work found to be defective or otherwise not to comply with the requirements of the contract up to the end of the maintenance and guarantee period.

Section 32. PERMITS AND LICENSES

(a) Contractor shall apply for and procure permits and licenses necessary for the work.

(b) Contractor shall give notices necessary and incidental to the due and lawful prosecution of the work and shall comply duly with the terms and conditions of permits and licenses.

(c) Contractor shall pay charges and fees in connection with permits and licenses.

Section 33. LAND AND RIGHTS OF WAY

(a) Agency shall provide land and rights-of-way where the work is constructed.

(b) Contractor shall procure additional rights-of-way desired by the Contractor to facilitate construction. Contractor shall enter into written agreements with property owners for such purposes and provide Agency with copies of the agreements.

(c) Except as provided above relating to utility relocation, when the work is to be performed in the vicinity of existing improvements, such improvements shall not be disturbed or damaged except for such removal or relocation in the land and rights-of-way provided by the Agency or unavoidable to accommodate the work.

Section 34. PLANS AND WORKING DRAWINGS SUBMITTED BY AGENCY

(a) The approved plans shall be supplemented by working drawings necessary to control the work adequately. Such drawings shall be consistent with the contract documents. Such drawings delivered to the Contractor shall be deemed written instructions to the Contractor.

(b) The Agency will furnish to the Contractor copies of drawings and specifications reasonably necessary for the execution of the work. The Contractor shall keep one set of drawings and specifications in good order available to the Agency's representative at the site of the work.

(c) The plans for the work show conditions supposed or believed by the Engineer to exist. It is not intended or inferred the plans constitute a representation such conditions actually exist. The Agency, its officers, agents and employees shall not be liable for loss sustained by the Contractor as a result of variance of the conditions as shown on the plans and the actual conditions revealed during the progress of the work.

Section 35. SHOP DRAWINGS SUBMITTED BY CONTRACTOR

(a) Shop drawings are drawings, diagrams, illustrations, schedules, performance charts, brochures and other data prepared by the Contractor or any

subcontractor, manufacturer, supplier or distributor, and illustrating some portion of the work.

(b) The Contractor shall review, stamp with approval, and submit for review by the Agency's representative shop drawings for material and equipment to be incorporated into the work. Drawings shall be submitted in quadruplicate to the Agency's representative and be accompanied by a letter of transmittal listing the drawings submitted. Drawings shall show the name of the project, the name of the Contractor, the names of suppliers, manufacturers and subcontractors. Shop drawings shall be submitted with promptness and in orderly sequence to cause no delay in the work.

(c) Shop drawings shall be complete. If the shop drawings show deviations from the requirements of the plans and specifications because of standard shop practices or other reasons, the deviations and the reasons therefor shall be set forth in the letter of transmittal.

(d) By approving and submitting shop drawings, the Contractor represents material, equipment and other work shown thereon conforms to the plans and specifications except for the deviations set forth in the letter of transmittal.

(e) Within ten calendar days after receipt of the drawings, the Agency will return two prints of the drawings to the Contractor with comments. If noted by the Agency, the Contractor shall correct the drawings and resubmit in the same manner as the original submittal. The Contractor shall direct attention in the letter of transmittal accompanying resubmitted shop drawings to revisions other than the corrections requested by the Agency's representatives on previous submittals.

(f) The review by the Agency's representative is for general conformance with the design concept of the project and general compliance with the plans and specifications and shall not be construed as relieving the Contractor of the full responsibility for: providing materials, equipment, and work required by the Contract; the proper fitting and reconstruction of the work; the accuracy and completeness of the shop drawings; selecting fabrication processes and techniques of construction; and performing the work in a safe manner.

(g) No portion of the work requiring a shop drawing submittal shall be commenced until the submittal has been reviewed by the Agency's representative and returned to the Contractor with a notation indicating re-submittal is not required.

Section 36. SUPERVISION BY THE CONTRACTOR

Before starting the work, the Contractor shall designate, in writing, a representative having authority to act for the Contractor. An alternate representative may be designated. (A joint venture shall designate only one representative and alternate.) The representative or alternate shall be present at the work site when work is in progress. Orders or communications given to this representative shall be deemed delivered to the Contractor. In the absence of the Contractor or designated representative, directions or instructions may be given by the Agency's representative to the superintendent or foreman having charge of the specific work to which the order applies. Such order shall be complied with promptly and referred to the Contractor or the representative.

Section 37. INSPECTION

(a) The Agency's representative shall have access to the work during construction and shall be furnished with reasonable facility for gaining knowledge of the progress, workmanship and character of materials used and employed in the work.

(b) When the Contractor varies the period during which work is carried on each day, Contractor shall give notice to the Agency's representative so proper inspection may be provided. Work done in the absence of the Agency's representative is subject to rejection.

(c) No materials shall be installed until approved by the Agency's representative. Installations to be backfilled shall be inspected and approved by the Agency's representative prior to backfilling. The Contractor shall give notice in advance of backfilling to the Agency's representative so proper inspection may be provided.

(d) If the Agency's Representative is required to conduct inspections of Contractor's work between the hours of 5 p.m. and 8 a.m., or is required to conduct inspections on Saturdays, Sundays or holidays, then the Agency will incur additional costs for inspection. If the Agency's Representative is required to conduct inspections between the hours of 5 p.m. and 8 a.m., or inspections on Saturdays, Sundays or holidays due to the actions or conduct of Contractor, and if the actions or conduct of Contractor are not otherwise authorized or addressed in the Specifications or in a Change Order, the Contractor shall be liable for the Agency's additional inspection costs. The Agency may deduct these additional inspection costs from progress payments or from the final payment.

Section 38. REMOVAL OF DEFECTIVE AND UNAUTHORIZED WORK

(a) Rejected work shall be removed and replaced by the Contractor in an acceptable manner and no compensation will be allowed for such removal or replacement. Work done beyond the lines and grades shown on the plans or established by the Agency's representative, or work done without written authority will be considered as unauthorized and not be paid for. Such work may be ordered removed at the Contractor's expense.

(b) Upon failure on the part of the Contractor to comply promptly with an order of the Agency's representative under this section, the Agency's representative shall have authority to cause defective work to be removed and replaced, and unauthorized work to be removed, and to deduct the costs from monies due the Contractor.

Section 39. ERRORS OR DISCREPANCIES NOTED BY CONTRACTOR

(a) If the Contractor finds discrepancy between the specifications and the drawings, and the physical conditions at the site of the work, or finds errors or omissions in the drawings or in any survey, Contractor shall promptly notify the Agency in writing of such discrepancy, error or omission. If the Contractor observes drawings or specifications at variance with applicable law, ordinance, regulation, order or decree, Contractor shall promptly notify the Agency in writing of such conflict.

(b) On receipt of any such notice, the Developer shall promptly investigate the circumstances and give appropriate instructions to the Contractor. Until such instructions are given, work done by the Contractor, after Contractor's discovery of such error, discrepancy or conflict, will be at Contractor's own risk and Contractor shall bear costs arising therefrom.

Section 40. EQUIPMENT

The Contractor must furnish adequate equipment and facilities to perform properly the work in a workmanlike manner in accordance with these specifications. Such equipment and facilities must be in a good state of repair and maintained in such state during the progress of the work and shall meet requirements of applicable ordinances and laws. No worn or obsolete equipment shall be used, and in no case shall the maker's rating of capacity for equipment be exceeded.

Section 41. STORAGE OF MATERIALS

Materials for use in the work shall be stored by the Contractor to prevent damage from exposure to the elements, admixture of foreign materials or from any other cause. The Contractor is responsible for damage to or loss of materials by weather or other causes.

MISCELLANEOUS

Section 42. GUARANTEES

Contractor guarantees work from defect in workmanship for the period of one year from the date of acceptance by the Agency and shall repair and replace such work, together with other displaced work, without expense to the Agency, ordinary wear and tear, usual abuse or neglect excepted. Agency may have the defects repaired and made good at the expense of the Contractor, if Contractor fails to comply with the above-mentioned conditions within a week after being notified in writing.

Section 43. RISK OF LOSS PRIOR TO FINAL ACCEPTANCE

Except as set forth above relating to acts of God, risk of loss from total or partial destruction of the work, prior to final acceptance, shall be borne by Contractor regardless of the cause. Contractor shall repair or replace such damages or destroyed work, to its prior undamaged condition before being entitled to additional progress payments or final payment. Total or partial destruction or damage shall not excuse Contractor from completion of the work.

Section 44. TERMINATION: CONTRACTOR AT FAULT

(a) The Agency may declare the Contractor in default, should the Contractor fail to meet the requirements of the Contract, or be placed in bankruptcy, or should a receiver be appointed for Contractor's properties, or should Contractor make an assignment for the benefit of creditors. In such event, the Agency will notify the Contractor in writing. On receipt of such written notice, the Contractor shall preserve site construction materials, equipment and plant, and undertake immediate steps to remedy such default.

If the Contractor fails to remedy such default within five calendar days after receipt of such written notice, the Agency may terminate the Contractor's right to proceed with the work as to which default has occurred. Upon receipt of such written notice, the Contractor shall for that work affected by any such termination:

(1) assist the Agency in making an inventory of materials and equipment in storage at the site, en route to the site, in storage or manufacture away from the site, and on order from suppliers;

(2) assign to the Agency, subcontracts, supply contracts and equipment rental agreements all as designated by the Agency; and

(3) remove from the site, all construction materials, equipment and plant listed in said inventory other than such construction materials, equipment and plant which are designated in writing by the Agency to be used by the Agency in completing such work.

(b) The Agency may complete the work to which notice applies by contract or otherwise, and may take possession of the materials, plant, tools, equipment, supplies and property furnished by the Contractor which is designated by the Agency in writing for such purpose.

(c) The expense of completing such work, together with a reasonable charge for administering a contract for such completion, shall be charged to the Contractor. Such expense shall be deducted by the Agency out of such monies as may become due to the Contractor. If this expense exceeds the sum otherwise payable under the Contract, the Contractor and Contractor's sureties shall be liable. Upon written notice from the Agency, the Contractor promptly pays to the Agency, the amount of such excess. The Agency shall not be required to obtain the lowest bids for completing such work, but may make such expenditures as in the Agency's sole judgment will best accomplish such completion.

Section 45. TERMINATION: CONTRACTOR NOT AT FAULT

Agency may terminate the contract upon ten days written notice to the Contractor, if Agency finds reasons beyond the control of the parties make it impossible or against the Agency's interests to complete the work. In such a case, the Contractor shall have no claims against the Agency, except for the value of work performed to the date of termination, and the cost of materials and equipment on hand, in transit, or on definite commitment, as of the date of termination if such materials and equipment would be

needed in the work. The value of work performed and the cost of materials and shipment delivered to the site shall be determined by the Agency in accordance with the procedure prescribed for the making of a final estimate and payment.

Section 46. RESOLUTION OF CERTAIN CLAIMS

(a) Notwithstanding the foregoing, a demand of \$375,000, or less, by the Contractor for a time extension; payment of money or damages arising from the work done by or on behalf of the Contractor pursuant to this contract; or payment of an amount which is disputed by the Agency shall be processed in accordance with Public Contracts Code Sections 20104 *et seq.* relating to informal conferences, non-binding judicially supervised mediation and judicial arbitration.

(b) A single written claim shall be filed under this section prior to the date of final payment for all demands, including demands not subject to Public Contracts Code Sections 20104 *et seq.* arising out of the contract.

(c) Within thirty (30) days of the receipt of the claim, the Agency may request additional documentation supporting the claim or relating to defenses or claims the Agency may have against the Contractor. If the Amount of the claim is less than \$50,000, the contractor shall respond to the request for additional information within

fifteen (15) days after receipt of the request. The contractor shall respond to the request within thirty (30) days of receipt if the amount of the claim exceeds \$50,000 but is less than \$375,000.

(d) Unless further documentation is requested, the Agency shall respond to the claim within forty-five (45) days if the amount of the claim is less than \$50,000 or within sixty (60) days if the amount of the claim is more than \$50,000 but less than \$375,000. If further documentation is requested, the Agency shall respond within the same amount of time taken by the Contractor to respond or fifteen (15) days, whichever is greater, after receipt of further information if the claim is less than \$50,000. If the claim is more than \$50,000 but less than \$375,000 and further documentation is requested by the Agency, the Agency shall respond within the same amount of time taken by the Contractor to respond or thirty (30) days, whichever is greater.

(e) If the Contractor disputes the Agency's response, or the Agency fails to respond, the Contractor may demand an informal conference to meet and confer for settlement of the issues in dispute. The demand shall be served on the Agency within fifteen (15) days after the deadline of the Agency to respond or within fifteen (15) days of the Agency's response, whichever occurs first. The Agency shall schedule the meet and confer conference within thirty (30) days of the request.

(f) If the meet and confer conference does not produce a satisfactory request, the Contractor may pursue remedies authorized by law.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement, or caused it to be executed as of the day, month and year first above written.

DISTRICT

BY: _____ DATE: _____
President

ATTEST: _____
Secretary

APPROVED: _____
Attorney for Owner

CONTRACTOR

BY: _____ DATE: _____
Authorized Representative of Contractor

PRINTED NAME: _____

TITLE: _____

SEAL IF CORPORATION:

SECTION 00 73 00
SUPPLEMENTARY CONDITIONS

Supplementary Conditions

These Supplementary Conditions modify and supplement the General Conditions, and other provisions of the Contract Documents as indicated below. All provisions of the General Conditions that are modified or supplemented remain in full force and effect as so modified or supplemented. All provisions of the General Conditions which are not so modified or supplemented remain in full force and effect.

Terms

Whenever the following terms occur in the contract documents, their meanings are as follows:

OWNER or DISTRICT	Las Virgenes Municipal Water District (LVMWD)
ENGINEER or ARCHITECT	LVMWD or HDR Engineering and its subconsultants and subsidiaries

The terms used in these Supplementary Conditions which are defined in the General Conditions have the meaning assigned to them in the General Conditions. Command type sentences refer to and are directed to the Contractor.

Insurance

The limits of liability for the insurance required shall provide the following coverages for not less than the following amounts or greater where required by laws and regulations:

Workers' Compensation and Employer's Liability: \$1,000,000 per accident.

Contractor's Liability:

General Liability:	\$1,000,000 per occurrence for bodily injury and property damage
Automobile Liability:	\$1,000,000 per occurrence for bodily injury and property damage

Liability insurance shall include as additional insureds: the Owner, the Engineer, their representatives, consultants, directors, officers, agents and employees.

Builder's Risk: 100% of the contract amount, excluding earthquake and tidal wave

All insurance required by the Contract Documents, or by laws or regulations shall remain in full force and effect on all phases of the Work, whether or not the Work is occupied or utilized by Owner, until all Work included in the agreement has been completed and final payment has been made.

Nothing contained in the insurance requirements shall be construed as limiting the extent of Contractor's responsibility for payment of damages resulting from Contractor's, subcontractor's or supplier's operations under the Contract. Contractor agrees that Contractor alone shall be completely responsible for procuring and maintaining full insurance coverage as provided herein or as may be otherwise required by the Contract Documents. Any approval by Owner or Engineer shall not operate to the contrary."

Indemnity and Personal Liability

The indemnification provided by the Contractor to the District under Section 21 of the General Provisions shall apply as well to the Engineer and their consultants, directors, officers, agents, and directors. No director, officer, employee, or agent of the Owner, Engineer, or their consultants shall be personally responsible for any liability arising under or by virtue of the contract.

LVMWD Standard Plans and Specifications

Unless otherwise noted in the contract documents, all work and materials shall conform to the requirements of the “LVMWD Standard Plans and Specifications for the Construction of Water Main Facilities.” This document is available on the District’s website: <http://www.lvmwd.com/other-services/technical-services-planning-engineering-/design-standards>

Existing Conditions and Examination of Contract Documents

The bidder represents that he has carefully examined the contract documents and the site where the work is to be performed and that he has familiarized himself with all local conditions and federal, state, and local laws, and ordinances, rules, and regulations that may affect in any manner the performance of the work. The submittal of a bid shall be conclusive evidence that the bidder has investigated and is satisfied as to the conditions to be encountered, including locality, uncertainty of weather and all other contingencies, and as to the character, quality, quantities, and scope of the work.

The plans and specifications for the work show subsurface conditions and utilities as they are believe by the Engineer to exist, but it is not to be inferred that this representation is fully accurate. The Owner, Engineer, and their consultants shall not be liable for any loss sustained by the Contractor as a result of variance between what is shown on the plans and the actual conditions. The Contractor shall perform its own subsurface investigations, in accordance with standard practices and governing law prior to excavation.

Use of Equivalent Products

Where specific brand names or models have been cited in the specifications, the use of equivalent quality products will be acceptable, unless the specified product is required to match other products in use on the same project, or unless the specified product is unique or novel and its use serves the public interest. The Contactor shall have 35 days after award of the contract for submission of data substantiating a request for substitution of “an equal” item.

Labor Code Permits

Per Section 6500 of the State of California Labor Code, the Contractor shall obtain permits for construction of trenches or excavations which are five feet or deeper and into which a person is required to descend.

END OF SECTION

SECTION 01 30 00
SPECIAL CONDITIONS

PART 1 - GENERAL

1.1 PRECONSTRUCTION CONFERENCE

- A. A preconstruction conference shall be held at LVMWD Headquarters after award of Contract.
 - 1. Engineer will notify the Contractor as to the date and time of the conference two (2) weeks in advance of the proposed date.
 - 2. Contractor's Project Manager and Project Superintendent and Contractor's Subcontractor Representatives shall attend.

1.2 DRAWINGS AND CONTRACT DOCUMENTS FOR CONTRACTOR USE

- A. Refer to General Conditions.
- B. Contractor shall pick up all "no-charge" documents within 10 days from date of Notice to Proceed.
- C. Additional documents after "no-charge" documents will be furnished to Contractor at cost.

1.3 PROJECT MEETINGS

- A. Construction Meetings:
 - 1. The Engineer will conduct monthly construction meetings involving:
 - a. Contractor's project manager.
 - b. Contractor's project superintendent.
 - c. Owner's designated representative(s).
 - d. Contractor's subcontractors as appropriate to the Work in progress.
 - 2. The Engineer will take meeting minutes and submit copies of meeting minutes to participants and designated recipients identified at the Preconstruction Conference.
 - a. Corrections, additions or deletions to the minutes shall be noted and addressed at the following meeting.
 - 3. The Engineer will schedule meetings for most convenient time frame.
 - 4. The Engineer will have available at each meeting full chronological files of all previous meeting minutes.
 - 5. The Contractor shall have available at each meeting up-to-date record drawings.

1.4 SPECIAL CONSIDERATIONS RELATED TO WORK AT TREATMENT FACILITIES

- A. Work takes place at an operating Las Virgenes Municipal Water District (LVMWD) treatment facility. Comply with LVMWD rules regarding site access and security. Coordinate work with LVMWD site staff. Store materials and equipment only in areas designated by LVMWD.
- B. Maintain conditions of access road to site such that access is not hindered as the result of construction related deterioration.
- C. Provide daily sweeping of hard-surface roadways to remove soils tracked onto roadway.
- D. Document by annotated photographs delivered to the District before job start, the preconstruction conditions at each work location. Restore each site to pre-construction conditions after completing construction work.

1.5 COORDINATION WITH SYSTEM OPERATIONS

- A. Work inside the Centrate Treatment and Storage tanks shall only take place between July 1 and September 1, 2014.

- B. Dewatering and tank cleanout will be performed by LVMWD. Only one tank may be removed from service at a time. Allow 7 days between completion of work on one tank and the start of work on the second tank.
- C. Work inside the tanks will be under a confined space entry permit. The LVMWD does not issue confined space permits to Contractors. The Contractor is responsible to provide its confined space entry program / training and submittal of its confined space program to LMWVD as an informational submittal.
- D. Where work requires the shutdown and dewatering of a tank, the Contractor shall request the shutdown not less than 7 days in advance, and perform its work such that the tank can be placed into service within 7 days.

1.6 MEASUREMENT AND PAYMENT

- A. Progress payments for lump sum items will be paid in proportion to the value of the completed work in place. No payment will be made for materials purchased but not installed.
- B. The unit prices and lump sum amounts include full compensation for labor, materials, tools, and equipment for doing all the work involved to complete the project depicted in the contract documents. Should the bidder feel that the cost for the work has not been established by specific items in the bid form, include the cost for that work in related bid items, so that the proposal for the project reflects the total cost for completing the work in its entirety.
- C. Payment for bonds, insurance, and mobilization will be made at the time of the first progress payment after the Contractor has purchased bonds and insurance, provided accepted documentation to the Owner, and begun work at the job site.
- D. Payment for record drawings and O&M manuals will be made as follows:
 - 1. Fifty percent of the amount stated in the Bid Schedule will be paid following the first submittal.
 - 2. The remaining amount will be paid upon submission of final documents, satisfactorily incorporating or responding to the comments of the Engineer.
- E. Payment for electrical power supply to cathodic protection system includes the installation of conduit, wire, and circuit breakers by a licensed electrician, as needed to connect the new system to a nearby 120V panel in accordance with NEC requirements. This work also includes pavement saw-cutting, trenching, backfill and pavement restoration needed to install galvanized rigid steel conduit between the power panel and cathodic protection panel.
- F. Payment for optional one-year time extension will be made if field work is delayed at the direction of the District until the Summer of 2015. No payment under this item will be made for a Contractor-caused delay, or if work is completed in 2014. Payment will be made at the time of the first progress payment after the Contractor has mobilized to the site during the Summer of 2015.

END OF SECTION

SECTION 01 33 00
SUBMITTALS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Description of the submittal process for:
 - a. Shop Drawings.
 - b. Miscellaneous submittals.
 - c. Samples
 - d. Operation and Maintenance Manuals.
 - 2. General content requirements for Shop Drawings.
 - 3. Content requirements for Operation and Maintenance Manuals.
- B. Related Specification Sections include but are not necessarily limited to:
 - 1. Part 1 - Bidding Requirements, Contract Forms, and Conditions of the Contract.
 - 2. Technical Specifications Sections identifying required submittals.

1.2 DEFINITIONS

- A. Shop Drawings:
 - 1. See General Conditions.
 - 2. Product data and samples are Shop Drawing information.
- B. Operation and Maintenance Manuals:
 - 1. Contain the technical information required for proper installation, operation and maintenance of process, electrical and mechanical equipment and systems.
- C. Miscellaneous Submittals:
 - 1. Submittals other than As Built Drawings and Operation and Maintenance Manuals.
 - 2. Representative types of miscellaneous submittal items include but are not limited to:
 - a. Construction schedule.
 - b. Installed equipment and systems performance test reports /user manual.
 - c. Manufacturer's installation certification letters.
 - d. Instrumentation and control commissioning reports.
 - e. Warranties.
 - f. Service agreements.
 - g. Construction photographs.

1.3 SUBMITTAL SCHEDULE

- A. Construction Schedule: Provide at time of Preconstruction Meeting.
- B. As built Drawings: Submitted within 20 days of receipt the notice to proceed
- C. Operation and Maintenance Manuals: Initial submittal within 20 days after energizing the Cathodic Protection system.

1.4 PREPARATION OF SUBMITTALS

- A. General:
 - 1. All submittals and all pages of all copies of a submittal shall be completely legible.
 - 2. Submittals which, in the Engineer's sole opinion, are illegible will be returned without review.

- B. Shop Drawings:
1. Scope of any submittal and letter of transmittal:
 - a. Limited to one (1) Specification Section.
 2. Numbering letter of transmittal:
 - a. Include as prefix the Specification Section number followed by a series number, "-xx", beginning with "01" and increasing sequentially with each additional transmittal.
 - b. If more than one (1) submittal under any Specification Section, assign consecutive series numbers to subsequent transmittal letters.
 3. Describing transmittal contents:
 - a. Provide listing of each component or item in submittal capable of receiving an independent review action.
 - b. Identify for each item:
 - 1) Manufacturer and Manufacturer's Drawing or data number.
 - 2) Contract Document tag number(s).
 - 3) Unique page numbers for each page of each separate item.
 - c. When submitting "or-equal" items that are not the products of named manufacturers, include the words "or-equal" in the item description.
 4. Contractor review and stamping:
 - a. General:
 - 1) Contractor's review and approval stamp shall be applied either to the letter of transmittal or a separate sheet preceding each independent item in the submittal.
 - a) Shop Drawing submittal stamp shall read "(Contractor's Name) has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review and approval as stipulated under General Conditions
 - b) Letters of transmittal may be stamped only when the scope of the submittal is one (1) item.
 - 2) Submittals containing multiple independent items shall be prepared with an index sheet for each item listing the discrete page numbers for each page of that item, which shall be stamped with the Contractor's review and approval stamp.
 - a) Individual pages or sheets of independent items shall be numbered in a manner that permits Contractor's review and approval stamp to be associated with the entire contents of a particular item.
 - b. Electronic stamps:
 - 1) Contractor may electronically embed Contractor's review and approval stamp to either the letter of transmittal or a separate index sheet preceding each independent item in the submittal.
 - 2) Contractor's signature and date on electronically applied stamps shall be wet ink signature.
 5. Resubmittals:
 - a. Number with original root number and a suffix letter starting with "A" on a (new) duplicate transmittal form.
 - b. Do not increase the scope of any prior transmittal.
 - c. Account for all components of prior transmittal.
 - 1) If items in prior transmittal received "A" or "B" Action code, list them and indicate "A" or "B" as appropriate.
 - a) Do not include submittal information for items listed with prior "A" or "B" Action in resubmittal.
 - 2) Indicate "Outstanding-To Be Resubmitted At a Later Date" for any prior "C" or "D" Action item not included in resubmittal.
 - a) Obtain Engineer's approval to exclude items.
 6. For 8-1/2 x 11 IN, 8-1/2 x 14 IN, and 11 x 17 IN size sheets, provide three (3) copies of each page for Engineer plus the number required by the Contractor.
 7. Provide clear space (3 IN SQ) for Engineer stamping of each component defined in PREPARATION OF SUBMITTALS – Contractor Stamping.
 8. Contractor shall not use red color for marks on transmittals.

- a. Duplicate all marks on all copies transmitted, and ensure marks are photocopy reproducible.
 - b. Outline Contractor marks on reproducible transparencies with a rectangular box.
9. Transmittal contents:
- a. Coordinate and identify Shop Drawing contents so that all items can be easily verified by the Engineer.
 - b. Identify equipment or material use, tag number, Drawing detail reference, weight, and other Project specific information.
 - c. Provide sufficient information together with technical cuts and technical data to allow an evaluation to be made to determine that the item submitted is in compliance with the Contract Documents.
 - d. Submit items such as equipment brochures, cuts of fixtures, product data sheets or catalog sheets on 8-1/2 x 11 IN pages.
 - 1) Indicate exact item or model and all options proposed.
 - e. When a Shop Drawing submittal is called for in any Specification Section, include as appropriate, scaled details, sizes, dimensions, performance characteristics, capacities, test data, anchoring details, installation instructions, storage and handling instructions, color charts, layout Drawings, rough-in diagrams, wiring diagrams, controls, weights and other pertinent data in addition to information specifically stipulated in the Specification Section.
 - 1) Arrange data and performance information in format similar to that provided in Contract Documents.
 - 2) Provide, at minimum, the detail specified in the Contract Documents.
 - f. If proposed equipment or materials deviate from the Contract Drawings or Specifications in any way, clearly note the deviation and justify the said deviation in detail in a separate letter immediately following transmittal sheet.
10. Samples:
- a. Identification:
 - 1) Identify sample as to transmittal number, manufacturer, item, use, type, project designation, tag number, standard Specification Section or Drawing detail reference, color, range, texture, finish and other pertinent data.
 - 2) If identifying information cannot be marked directly on sample without defacing or adversely altering samples, provide a durable tag with identifying information securely attached to the sample.
 - b. Include application specific brochures, and installation instructions.
 - c. Provide Contractor's stamp of approval on samples or transmittal form as indication of Contractor's checking and verification of dimensions and coordination with interrelated work.
 - d. Resubmit samples of rejected items.
- C. Miscellaneous Submittals:
- 1. Prepare in the format and detail specified in Specification requiring the miscellaneous submittal.
- D. Operation and Maintenance Manuals:
- 1. Owner's use of manufacturer's Operation and Maintenance materials:
 - a. Materials are provided for Owner's use, reproduction and distribution as training and reference materials within Owner's organization.
 - 1) Applicable to hard copy or electronic media.
 - 2) Applicable to materials containing copyright notice as well as those with no copyright notice.
 - b. Notify manufacturer of this intended use of materials provided under the Contract.
 - 2. Number each Operation and Maintenance Manual transmittal with the original root number of the associated Shop Drawing.
 - a. Identify resubmittals with the original number plus a suffix letter starting with "A."
 - 3. Submittal format:

- a. Interim submittals: Submit two (2) paper copies until manual is approved.
 - b. Final submittals:
 - 1) Within 30 days of receipt of approval, submit one (1) additional paper copy and two (2) electronic copies on Compact Disc (CD-ROM) in Portable Document Format (PDF).
 - a) Compact discs to be secured in jewel cases.
 - 2) Electronic copies will be reviewed for conformance with the approved paper copy and the electronic copy (PDF) requirements of this Specification.
 - 3) Non-conforming CDs will be returned with comments.
 - a) Provide final CDs within 30 days of receipt of comments.
4. Paper copy submittals:
- a. Submit Operation and Maintenance Manuals printed on 8-1/2 x 11 IN size heavy first quality paper with standard three-hole punching and bound in appropriately sized three-ring (or post) vinyl view binders with clear overlays front, spine and back.
 - 1) Provide binders with titles inserted under clear overlay on front and on spine of each binder.
 - a) As space allows, binder titles shall include, but not necessarily be limited to, Project Name, related Specification Number, Equipment Name(s) and Project Equipment Tag Numbers.
 - 2) Provide a Cover Page for each manual with the following information:
 - a) Manufacturer(s).
 - b) Date.
 - c) Project Owner and Project Name.
 - d) Specification Section.
 - e) Project Equipment Tag Numbers.
 - f) Model Numbers.
 - g) Engineer.
 - h) Contractor.
 - 3) Provide a Table of Contents or Index for each manual.
 - 4) Use plastic-coated dividers to tab each section of each manual per the manual's Table of Contents/Index for easy reference.
 - 5) Provide plastic sheet lifters prior to first page and following last page.
 - b. Reduce Drawings or diagrams bound in manuals to an 8-1/2 x 11 IN or 11 x 17 IN size.
 - 1) Where reduction is not practical to ensure readability, fold larger Drawings separately and place in vinyl envelopes which are bound into the binder.
 - 2) Identify vinyl envelopes with Drawing numbers.
 - c. Mark each sheet to clearly identify specific products and component parts and data applicable to the installation for the Project.
 - 1) Delete or cross out information that does not specifically apply to the Project.
5. Electronic copy submittals:
- a. Electronic copies of the approved paper copy Operation and Maintenance Manuals are to be produced in Adobe Acrobat's Portable Document Format (PDF) Version {5.0} or higher.
 - b. Do not password protect and/or lock the PDF document.
 - c. Create one (1) PDF document (PDF file) for each equipment Operation and Maintenance Manual.
 - d. Drawings or other graphics must be converted to PDF format and made part of the one (1) PDF document.
 - 1) Scanning to be used only where actual file conversion is not possible.
 - e. Rotate pages that must be viewed in landscape to the appropriate position for easy reading.
 - f. Images only shall be scanned at a resolution of 300 dpi or greater.
 - 1) Perform Optical Character Recognition (OCR) capture on all images.
 - 2) Achieve OCR with the "original image with hidden text" option.

- 3) Word searches of the PDF document must operate successfully to demonstrate OCR compliance.
- g. All PDF documents shall be set with the option "Fast Web View" to open the first pages of the document for the viewer while the rest of the document continues to load.
- h. Labeling:
 - 1) As a minimum, include the following labeling on all CD-ROM discs and jewel cases:
 - a) Project Name.
 - b) Equipment Name and Project Tag Number.
 - c) Project Specification Section.
 - d) Manufacturer Name.
 - e) Vendor Name.
 - i. Binding:
 - 1) Include labeled CD(s) in labeled jewel case(s).
 - a) Bind jewel cases in standard three-ring binder Jewel Case Page(s), inserted at the front of the Final paper copy submittal.
 - b) Jewel Case Page(s) to have means for securing Jewel Case(s) to prevent loss (e.g., flap and strap).

1.5 TRANSMITTAL OF SUBMITTALS

- A. Shop Drawings, Submittals, Samples and Operation and Maintenance Manuals:
 - 1. Transmit all submittals to:

Las Virgenes Municipal Water District
 Attention: Lindsay Cao, PE
 4232 Las Virgenes Road
 Calabasas, CA 91302-1994

- 2. All submittals must be from Contractor.
 - a. Submittals will not be received from or returned to subcontractors.
- 3. Provide submittal information defining specific equipment or materials utilized on the Project. Generalized product information, not clearly defining specific equipment or materials to be provided, will be rejected.

- B. Electronic submittals will be accepted.

1.6 ENGINEER'S REVIEW ACTION

- A. Shop Drawings and Samples:
 - 1. Items within transmittals will be reviewed for overall design intent and will receive one of the following actions:
 - a. A - FURNISH AS SUBMITTED.
 - b. B - FURNISH AS NOTED (BY ENGINEER).
 - c. C - REVISE AND RESUBMIT.
 - d. D - REJECTED.
 - e. E - ENGINEER'S REVIEW NOT REQUIRED.
 - 2. Submittals received will be initially reviewed to ascertain inclusion of Contractor's approval stamp.
 - a. Submittals not stamped by the Contractor or stamped with a stamp containing language other than that specified herein will not be reviewed for technical content and will be returned without any action.
 - 3. In relying on the representation on the Contractor's review and approval stamp, Owner and Engineer reserve the right to review and process poorly organized and poorly described submittals as follows:
 - a. Submittals transmitted with a description identifying a single item and found to contain multiple independent items:

- 1) Review and approval will be limited to the single item described on the transmittal letter.
 - 2) Other items identified in the submittal will:
 - a) Not be logged as received by the Engineer.
 - b) Be removed from the submittal package and returned without review and comment to the Contractor for coordination, description and stamping.
 - c) Be submitted by the Contractor as a new series number, not as a re-submittal number.
 - b. Engineer, at Engineer's discretion, may revise the transmittal letter item list and descriptions, and conduct review.
 - 1) Unless Contractor notifies Engineer in writing that the Engineer's revision of the transmittal letter item list and descriptions was in error, Contractor's review and approval stamp will be deemed to have applied to the entire contents of the submittal package.
 4. Submittals returned with Action "A" or "B" are considered ready for fabrication and installation.
 - a. If for any reason a submittal that has an "A" or "B" Action is resubmitted, it must be accompanied by a letter defining the changes that have been made and the reason for the resubmittal.
 - b. Destroy or conspicuously mark "SUPERSEDED" all documents having previously received "A" or "B" Action that are superseded by a resubmittal.
 5. Submittals with Action "A" or "B" combined with Action "C" (Revise and Resubmit) or "D" (Rejected) will be individually analyzed giving consideration as follows:
 - a. The portion of the submittal given "C" or "D" will not be distributed (unless previously agreed to otherwise at the Preconstruction Conference).
 - 1) One (1) copy or the one (1) transparency of the "C" or "D" Drawings will be marked up and returned to the Contractor.
 - a) Correct and resubmit items so marked.
 - b. Items marked "A" or "B" will be fully distributed.
 - c. If a portion of the items or system proposed are acceptable, however, the major part of the individual Drawings or documents are incomplete or require revision, the entire submittal may be given "C" or "D" Action.
 - 1) This is at the sole discretion of the Engineer.
 - 2) In this case, some Drawings may contain relatively few or no comments or the statement, "Resubmit to maintain a complete package."
 - 3) Distribution to the Owner and field will not be made (unless previously agreed to otherwise).
 6. Failure to include any specific information specified under the submittal paragraphs of the Specifications will result in the submittal being returned to the Contractor with "C" or "D" Action.
 7. Calculations required in individual Specification Sections will be received for information purposes only, as evidence calculations have been performed by individuals meeting specified qualifications, and will be returned stamped "E. Engineer's Review Not Required" to acknowledge receipt.
 8. Transmittals of submittals which the Engineer considers as "Not Required" submittal information, which is supplemental to but not essential to prior submitted information, or items of information in a transmittal which have been reviewed and received "A" or "B" Action in a prior submittal, will be returned with Action "E. Engineer's Review Not Required."
 9. Samples may be retained for comparison purposes.
 - a. Remove samples when directed.
 - b. Include in bid all costs of furnishing and removing samples.
 10. Approved samples submitted or constructed, constitute criteria for judging completed work.
 - a. Finished work or items not equal to samples will be rejected.
- B. Operation and Maintenance Manuals:

1. Engineer will review and indicate one of the following review actions:
 - a. A - ACCEPTABLE.
 - b. B - ~~FURNISH AS NOTED~~ - Not Used.
 - c. C - REVISE AND RESUBMIT.
 - d. D - ~~REJECTED~~ - Not Used.
2. Acceptable paper copy submittals will be retained with the transmittal form returned with a request for one (1) additional paper copy and two (2) electronic copies on CD-ROM.
3. Deficient submittals (paper copy and/or electronic copy) will be returned along with the transmittal form which will be marked to indicate deficient areas.

END OF SECTION

SECTION 07 07 49
IMPRESSED CURRENT CATHODIC PROTECTION
FOR INTERNAL PROTECTION OF WATER TANKS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section includes the material procurement, installation, and testing for internal cathodic protection systems for submerged surfaces of the Centrate tanks.

1.2 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

The reference standards of the organizations listed below form a part of these Standard Specifications to the extent referenced and are referred to in the text by the basic designation only. Reference shall be made to the latest edition of said standards unless otherwise stated.

- A. American National Standards Institute (ANSI)
C80.1 Rigid Steel Conduit, Zinc Coated
- B. ASTM International (formerly American Society for Testing and Materials, ASTM)
B3 Soft or Annealed Copper Wire
B265 Standard Specification for Titanium and Titanium Alloy Strip, Sheet, and Plate
B8 Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft
D3359 Standard Test Method for Measuring Adhesion by Tape Test
- C. American Water Works Association (AWWA) Latest Revision
C652 Disinfection of Water Storage Facilities
D102 Coating Steel Water-Storage Tanks
D104 Automatically Controlled, Impresses Current Cathodic Protection of Interior Submerged Surfaces of Steel Water Storage Tanks
- D. National Electrical Manufacturers Association (NEMA)
250 Enclosures for Electrical Equipment (1000 Volts Maximum)
- E. NACE International (formerly National Association of Corrosion Engineers, NACE)
SP0388 Impressed Current Cathodic Protection of Internal Submerged Surfaces of Carbon Steel Water Storage Tanks
TM0108 Testing of Catalyzed Titanium Anodes for Use in Soils or Natural Waters
- F. NSF International (formerly National Sanitation Foundation, NSF)
61 Drinking Water System Components
- G. National Electrical Manufacturer's Association (NEMA) Latest Revision
TC-2 Electrical Polyvinyl Chloride (PVC) Tubing and Conduit
- H. National Fire Protection Association (NFPA)
70 National Electric Code
- I. Underwriters Laboratories, Inc. (UL)
6 Electrical Rigid Metallic Conduit, Steel
83 Thermoplastic-Insulated Wires and Cables
486A Wire Connectors and Soldering Lugs for Use with Copper Conductors
489 Molded-Case Circuit Breakers, Molded-Case Switches and Circuit-Breaker Enclosures
510 Polyvinyl Chloride, Polyethylene and Rubber Insulating Tape
514 Outlet Boxes and Fittings
651 Sch. 40 and Sch. 80 Rigid PVC Conduit

1.3 GENERAL REQUIREMENTS

- A. The drawings indicate the general arrangement of the cathodic protection facilities to be installed included but not limited to anodes, reference electrodes, junction box, and automatic controlled rectifier. Where applicable, materials and equipment shall bear evidence of UL approval and conform to the requirements of all applicable federal, state and local laws, codes, and regulations. All anodes and other equipment shall be installed as noted on the drawings.

1.4 SUBMITTALS

- A. Cathodic protection constructor's qualifications.
- B. Qualifications of the contractor's Corrosion Engineer and Corrosion Technician.
- C. Proposed alternate anode installation methods.
- D. A copy of the Contractor's confined space entry program.
- E. Testing results of Catalyzed Titanium Anodes for Use in Soils or Natural Waters based on NACE TM0108.
- F. Manufacturer's information for each item listed below and its subcomponents. Include sufficient information to show that the materials meet the requirements provided herein, including references to specific sections and details shown on the drawings. Where more than one item or catalog number appears on a catalog cut, clearly identify the item proposed. Catalog cuts of the following items shall be submitted to the Owner's Engineer (or their designated representative) for approval.
 - 1. Mixed Metal Oxide Titanium Anodes
 - 2. Wire and Conduit
 - 3. Connectors
 - 4. Reference Electrodes
 - 5. Automatic Control Rectifier
- G. Test Reports: All testing performed during the completion of this project shall be submitted in a tabulated and written report format within five (10) days of its conclusion. All testing reports shall be submitted in both hardcopy and electronic formats: the electronic copies shall be in PDF and Microsoft Office 2000 formats. The following tests are required as a minimum for this project. This does alleviate the need for additional testing as deemed necessary by the Contractor's Engineer, or the Engineer's representative.
 - 1. Final Cathodic Protection readings (Tank to water potentials) implementing the permanent and portable reference electrodes.
 - 2. Current Output and voltage of the rectifier after initial setup.

1.5 QUALITY ASSURANCE

- A. The installation of the cathodic protection system's electrical components shall conform to the National Electrical Code, applicable local codes, and the NACE Standard Practice SP0388.
- B. Provide all materials, equipment, labor, and supervision necessary for the completion of all installations and testing.
- C. The contractor shall be responsible for testing the cathodic protection systems. All testing shall be performed by or under the direct supervision of a Corrosion Engineer. All field tests shall be performed at the expense of the Contractor. The tests shall be conducted in the presence of the District or its representative. The Contractor shall correct, at his expense, all deficiencies in the installation observed by these tests and inspections. The Contractor shall pay for all retests made necessary by the corrections.

1. Services of Corrosion Engineer: Obtain the services of a Corrosion Engineer to inspect, activate, adjust, locate electrical discontinuities, and evaluate the effectiveness of the cathodic protection system. The Corrosion Engineer is herein defined as a registered Professional Engineer with certification or licensing that includes education and experience in cathodic protection of buried or submerged metal structures, or a person accredited or certified by NACE International at the level of Corrosion Specialist or Cathodic Protection Specialist (i.e. NACE International CP Level 4). Such a person shall have not less than five years experience inspecting tank cathodic protection systems.
 2. Services of Cathodic Protection Technician: If necessary, obtain the services of a Cathodic Protection Technician to inspect, activate, adjust, and evaluate the effectiveness of the cathodic protection system. The Cathodic Protection Technician is herein defined as a person accredited or certified by NACE International as a Cathodic Protection Level 2 Technician. Such a person shall have not less than five years experience inspecting tank cathodic protection systems and shall be under the direct supervision of the Corrosion Engineer.
- D. The District reserves the right to test and/or inspect all phases of the Contractor's work. The Contractor shall notify the Engineer at least 5 days in advance of the tests.

PART 2 - MATERIALS

2.1 GENERAL

- A. Provide cathodic protection system materials and equipment that are new, undamaged, and in the original packaging marked with the manufacturer's name or trademark. The materials and equipment shall be of the manufacturer's latest standard design and shall be fully compatible to provide a complete and functional cathodic protection system.

2.2 MIXED METAL OXIDE (MMO) COATED TITANIUM ANODES

- A. MMO anodes shall consist of a titanium substrate coated with a mixture of precious mixed metal oxides. The protective anode film shall be fully oxidized in a controlled environment prior to field installation and energizing.
- B. The mixed metal oxide catalyst shall be iridium based.
- C. The anode consumption rate shall be no more than 4.0 mg/A/yr in a reclaimed water environment.
- D. The current output of the MMO coated titanium anode shall have a minimum of 100 ampere per square meter.-
- E. MMO anodes shall be resistive to abrasion with hardness no less than 6 on the Mohs scale and the adhesion of the MMO layer to the titanium substrate shall be tested by ASTM D3359
- F. The dimensions of the anodes shall be as shown on the drawings.
- G. Titanium employed as the Ti substrate shall be ASTM B265, Grade 1.
- H. The cable connection shall be design and implemented in a way that the wire breaks earlier than the connection in tension.
- I. The cable connection shall be fully isolated resin encapsulated and helium-tested to prove effective seal.
- J. The resistance of the cable connection shall be less than 0.001 ohm.
- K. NACE TM0108 tests shall be performed on randomly selected anodes at a minimum rate of one for every 500 anodes produced. Submit the NACE TM0108 test results for the testing date that is closest to the production date of the anodes.

2.3 WIRE AND CONDUIT

- A. Wires shall be stranded copper conforming to ASTM B3 and ASTM B8. Anode cable shall be #8 AWG copper HMWPE insulated cable run from each anode. This cable shall run from each anode or reference electrode port to the test box. The anode cable between the anode port and the test box shall be #8 AWG stranded copper THHN/THWN black colored insulation.
- B. The anode suspension system shall be a system that allows for vertical anode support from the underside of the roof of the tank. The anode lead wire shall be terminated in a secured box (anode port) or interior roof beam as specified in the drawing. The anode cable shall be supported at each anode port, each anode shall be secured by nylon rope and eye bolts to the tank bottom as shown in the drawing.
- C. Wires shall be protected from the environment and ultraviolet light outside of tank by using conduit as specified in the drawings and herein.
- D. All electrical conduits shall be galvanized rigid steel (RGS) or liquid tight flexible metal conduit (LFMC) and shall be sized and run in accordance with electrical standards for the wire contained within.

2.4 JUNCTION BOX

- A. The cathodic protection system test box shall be as shown on the drawings and consist of a non-metallic NEMA 4X enclosure with stainless steel piano hinge and lockable hasp mounted as shown in the drawing. Cabling from the test box shall be routed to the top of the tank via conduit of the size indicated. Solderless lug terminals shall be provided as termination points for the anode lead wire, structure lead wire, two reference electrode lead wires, and structure sense lead wire. Final dimension of the enclosure for the test panel to be set by manufacturer of the test station panel. The test box shall be capable of monitoring and measuring anode current output through shunts and main positive bus bar.

2.5 CATHODIC PROTECTION RECTIFIER

- A. The rectifier shall be standard auto-potential controlled. The circuit shall be solid state potential control with built-in voltage and current control modes.
- B. The rectifier shall be a product of a firm that regularly produces cathodic protection rectifiers and shall be specifically designed for use in water reservoirs.
- C. The rectifier shall be capable of supplying its full rated DC output continuously at an ambient temperature of 112 degree F in full sunlight with an expected life of 10 years minimum.
- D. The rectifier's output ratings in DC volts and DC amps shall be shown on the drawing.
- E. The rectifier's transformer shall be rated for operation with 115 Volt AC, single phase, 60 Hertz input voltage.
- F. Silicon diodes shall be connected in such a manner to provide full wave rectification.
- G. The rectifier shall be air-cooled type.
- H. The enclosure shall be NEMA 4X with stainless steel hinge and latches.
- I. Front panel shall provide separate digital LED meters for volts, amps and potential with current readings down to 10 mA.
- J. The rectifier shall have molded case thermal magnetic circuit breakers conforming to UL 489. The breaker shall be sized for 120 percent to 200 percent of the normal operating current at full rated output. Provide thermal magnetic circuit breaker switches in the AC secondary, DC positive and DC negative circuits.
- K. Protect silicon diodes by use of AC and DC lightning arrestors against overvoltage surges and by current-limiting devices against overcurrent surges.

- L. Provide three copies of the rectifier operating manual complete with a laminated spare parts list and a laminated wiring diagram.

2.6 REFERENCE ELECTRODES

- A. The reference electrode shall consist of a copper-copper sulfate electrode which is of a solid matrix design manufactured to remain stable (plus or minus 10 mV) for a minimum of twenty (20) years and suitable for use in potable or reclaimed water. The reference electrode lead wire shall be #14 AWG Teflon or Halar-coated HMWPE yellow colored insulation suitable for use in high chloride environments. The reference cell cable shall be installed without splices to the rectifier. The reference electrode shall be installed per the drawings.

2.7 CONCRETE

- A. Concrete used for rectifier and cathodic protection junction posts shall be 5 sack, (3000 psi, 28-day strength) per LVMWD Standards.
- B. Concrete used for CP conduit trenches shall be 4-sack (2,000-PSI 28-day compressive strength), per Section 03000. The concrete shall be mixed with 2-lbs of red dye per 100-lbs of cement.

2.8 HARDWARE

- A. All metallic hardware used in conjunction with the system shall be compatible with the roof material to protect against corrosion as specified in the drawings.

PART 3 - EXECUTION

3.1 GENERAL

- A. All materials, workmanship, and installation shall conform to NACE standard SP0388 – "Impressed Current Cathodic Protection of Internal Submerged Surfaces of Carbon Steel Water Storage Tanks" and AWWA D104 "Automatically Controlled, Impresses Current Cathodic Protection of Interior Submerged Surfaces of Steel Water Storage Tanks"

3.2 STORAGE OF MATERIAL

- A. All materials and equipment to be used in construction shall be stored in such a manner to be protected from detrimental effects from the elements. If actual storage cannot be secured, materials and equipment shall be stacked well above ground level and protected from the elements as appropriate.

3.3 QUALIFICATIONS

- A. The cathodic protection constructor shall have a minimum of five (5) years experience installing and servicing the types of system described in this specification. The system shall be installed by full time employees of the cathodic protection contractor.

3.4 PERFORMANCE

- A. Components of the cathodic protection systems shall be installed in the manner and at the locations as shown on the approved design drawings unless otherwise approved by the Owner or Owner's representative.
- B. The Owner or Owner's representative, prior to installation, shall inspect materials and equipment. Any defective component shall be repaired or replaced. Damaged anode lead wires will be rejected.
- C. Install electrical conduit work in accordance with the latest addition of the National Electrical Code.
- D. Wires shall be installed in a way to prevent damage from abrasion.

- E. Contractor will be installing cathodic protection system while the tank is empty and non operational, working inside the tank shall be considered as confined space and Contractor is responsible for their own confined space entry program and training. Contractor shall submit their final version of the confined space entry program to LVMWD in submittal process.

3.5 CATHODIC PROTECTION SYSTEM ACTIVATION

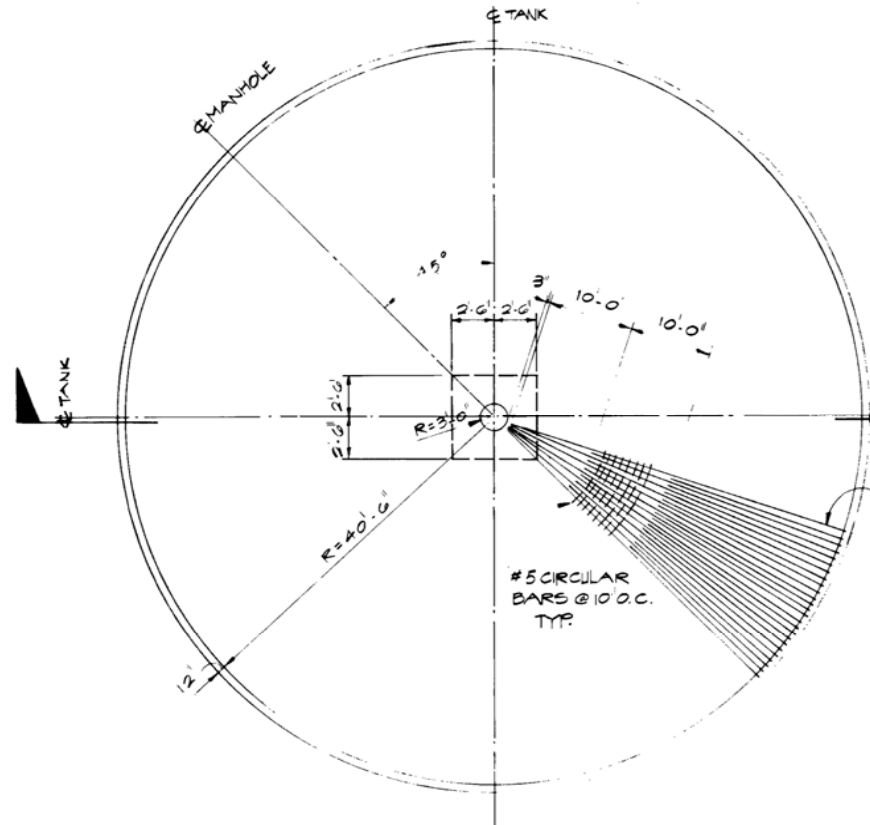
- A. The Contractor's Corrosion Engineer shall inspect, activate, adjust, and evaluate the effectiveness of the cathodic protection system.
- B. Provide a minimum of five days advance notice to the Engineer before the cathodic protection activation will be performed to allow for coordination and observance of these tests.
- C. Measure and record the structure-to-water potential at each reference electrode terminal, also the potential of the tank to water shall be recorded at reference electrode ports 12-inches from the bottom and then at five-foot increments to the surface of the water.
- D. Energize the rectifier in manual mode and adjust the voltage to measure a minimum of -850 mV instant-off potential at each reference electrode terminal.
- E. After one week of re-adjust the DC voltage and switch to automatic control.
- F. Submit a preliminary performance report to include an as-built drawing of the tank presenting the location of the rectifiers, all anodes and reference electrode ports, and all of the recorded data for both Centrate tanks.

END OF SECTION

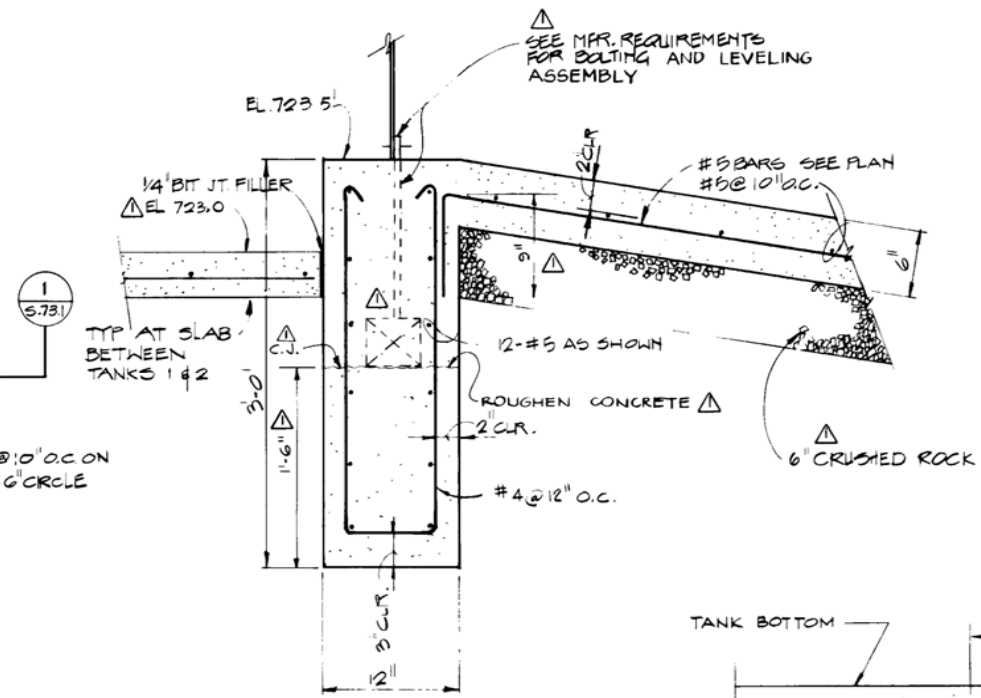
APPENDIX

LVMWD RECORD DRAWING (one sheet)

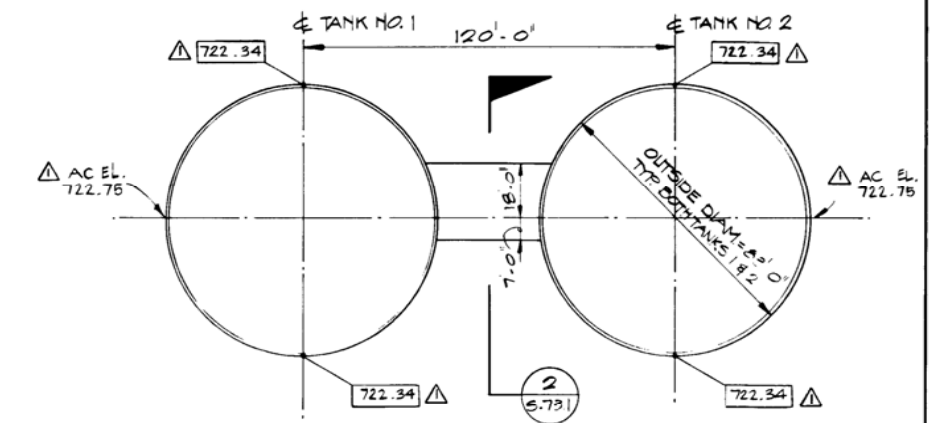
CST (Temcor) RECORD DRAWINGS (5 sheets)



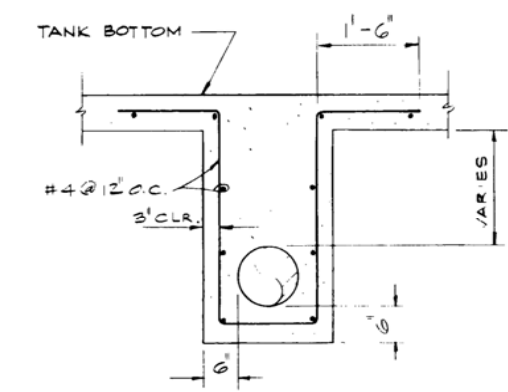
TANK FOUNDATION PLAN (TANKS 1 & 2)
3/32" = 1'-0"



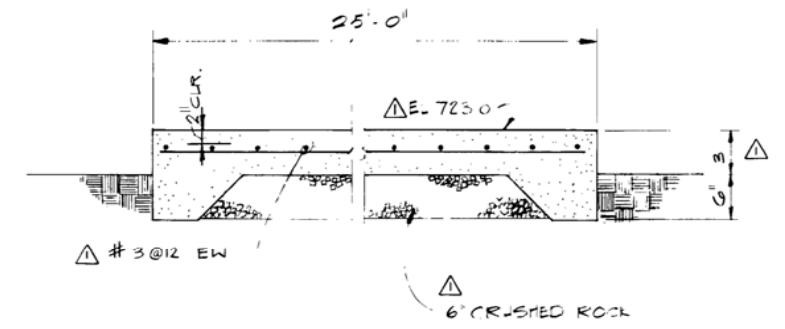
DETAIL A
1/2" = 1'-0"



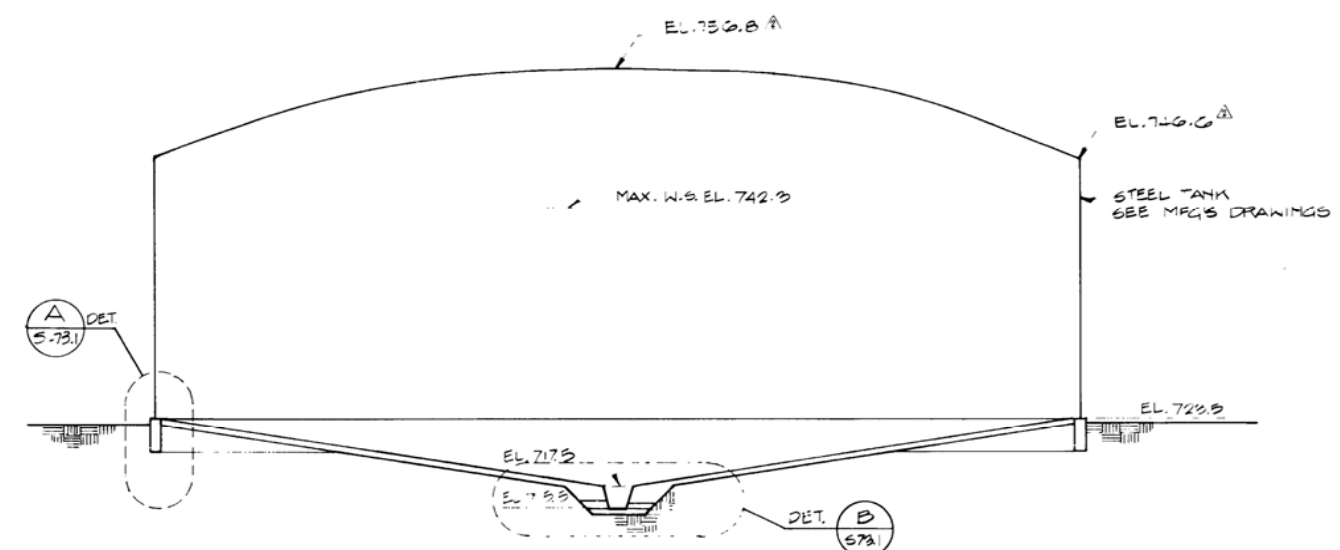
STORAGE TANKS PLAN
NO SCALE



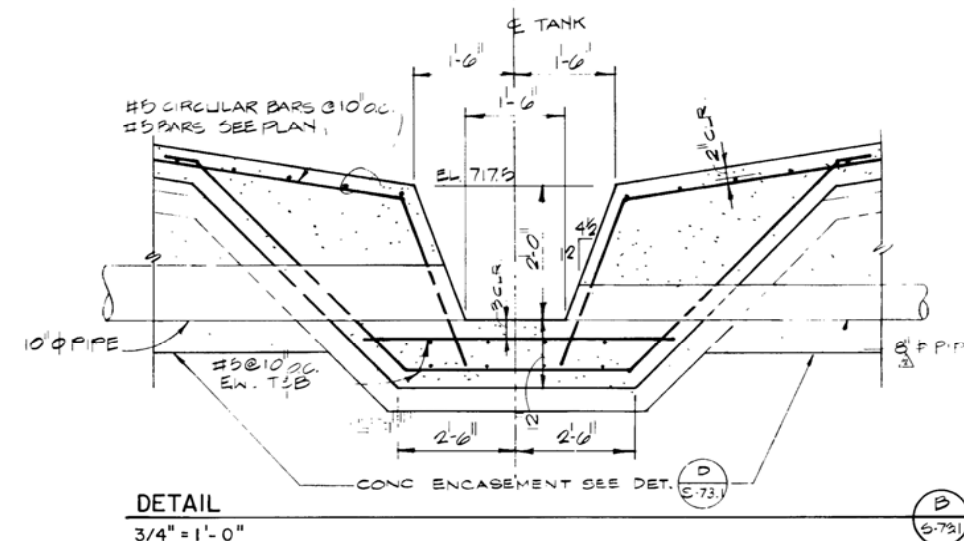
DETAIL B
N.T.S.



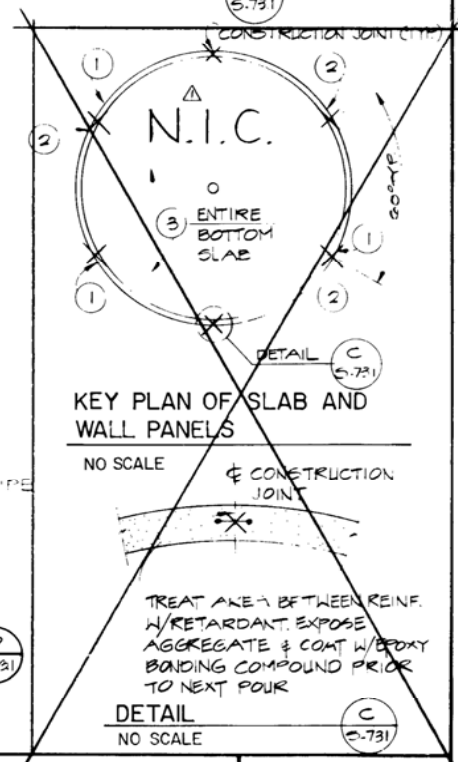
SECTION
1" = 1'-0"



SECTION
1/8" = 1'-0"



DETAIL C
3/4" = 1'-0"



KEY PLAN OF SLAB AND WALL PANELS
NO SCALE
DETAIL C
NO SCALE

NO.	CONSTR. RECORD DING.	DATE	BY
1	CONSTR. RECORD DING.	3/82	M.C.
2	CONSTR. RECORD DING.	7/82	P.J.C.

Black & Veatch
Consulting Engineers Lafayette, CA

DESIGN BY
DRAWN BY
DATE
JULY, 1979

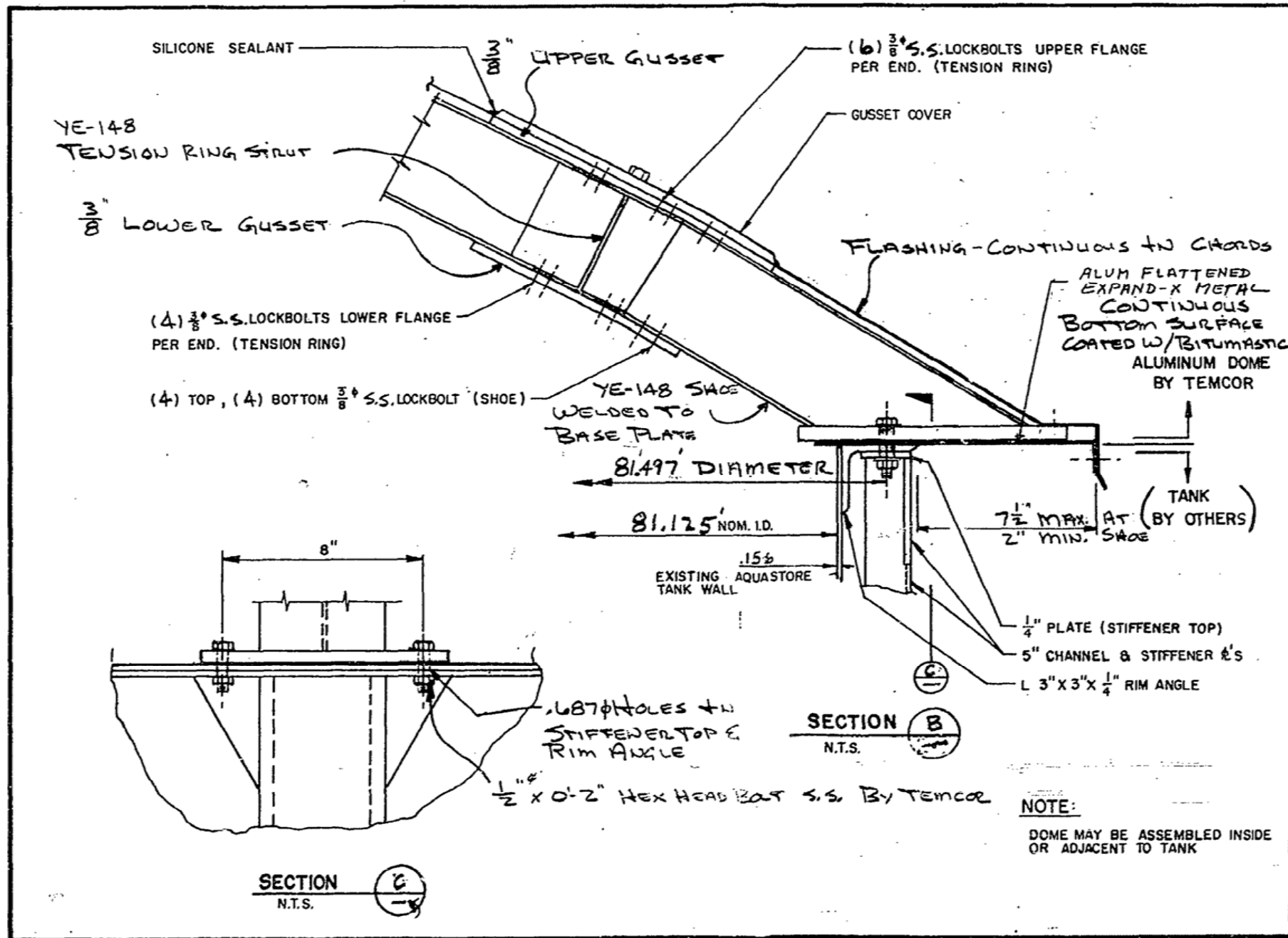
JOB NO. 780042
LAS VIRGENES MUNICIPAL WATER DISTRICT
APPROVED *Frederick Pena*
142-1432

SOLIDS DISPOSAL SYSTEM
PROJECT UNIT 3- RANCHO LAS VIRGENES

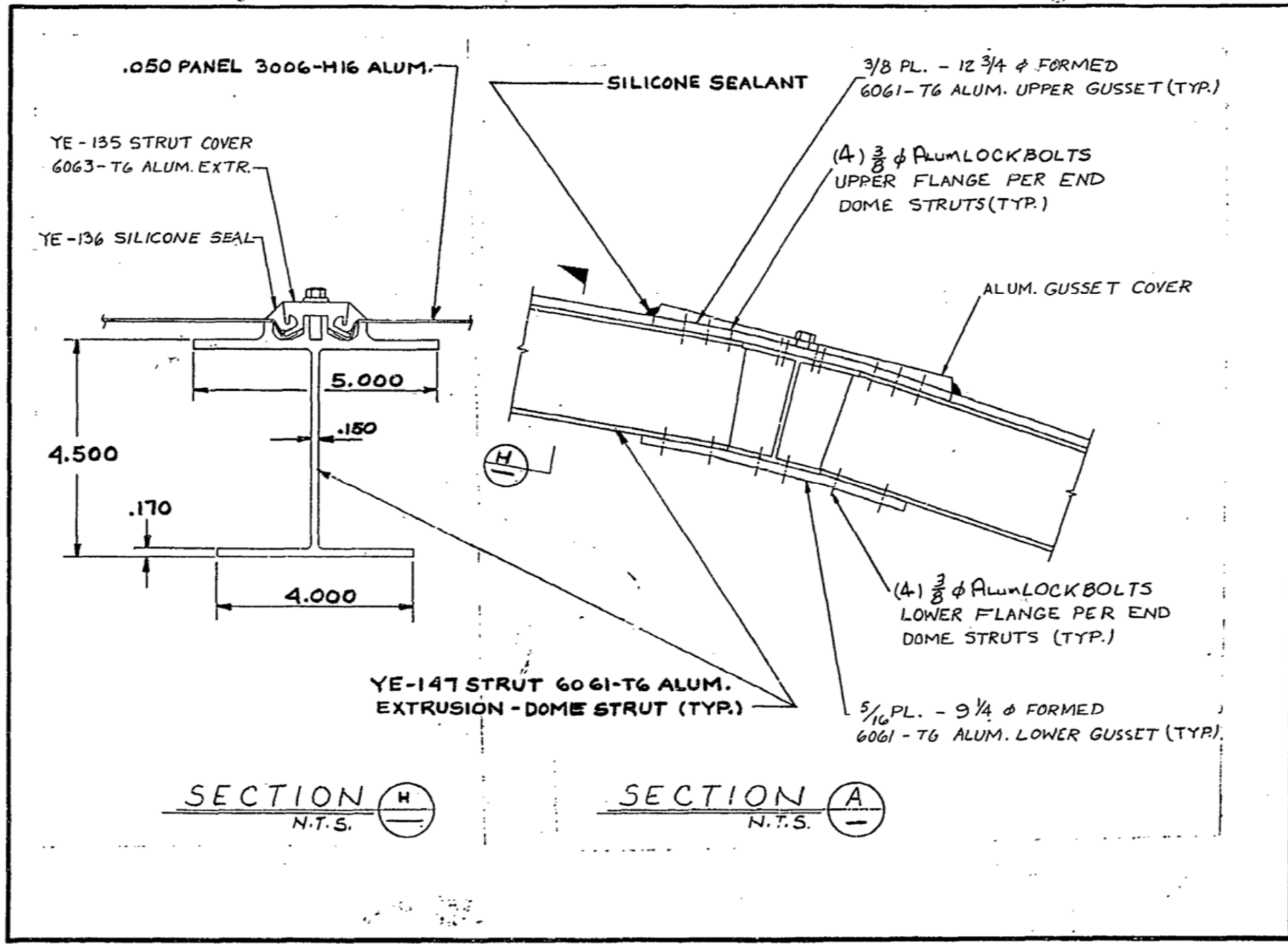
STORAGE TANK FOUNDATION

02495

S-73.1
FILE NO. D-36 OF 59



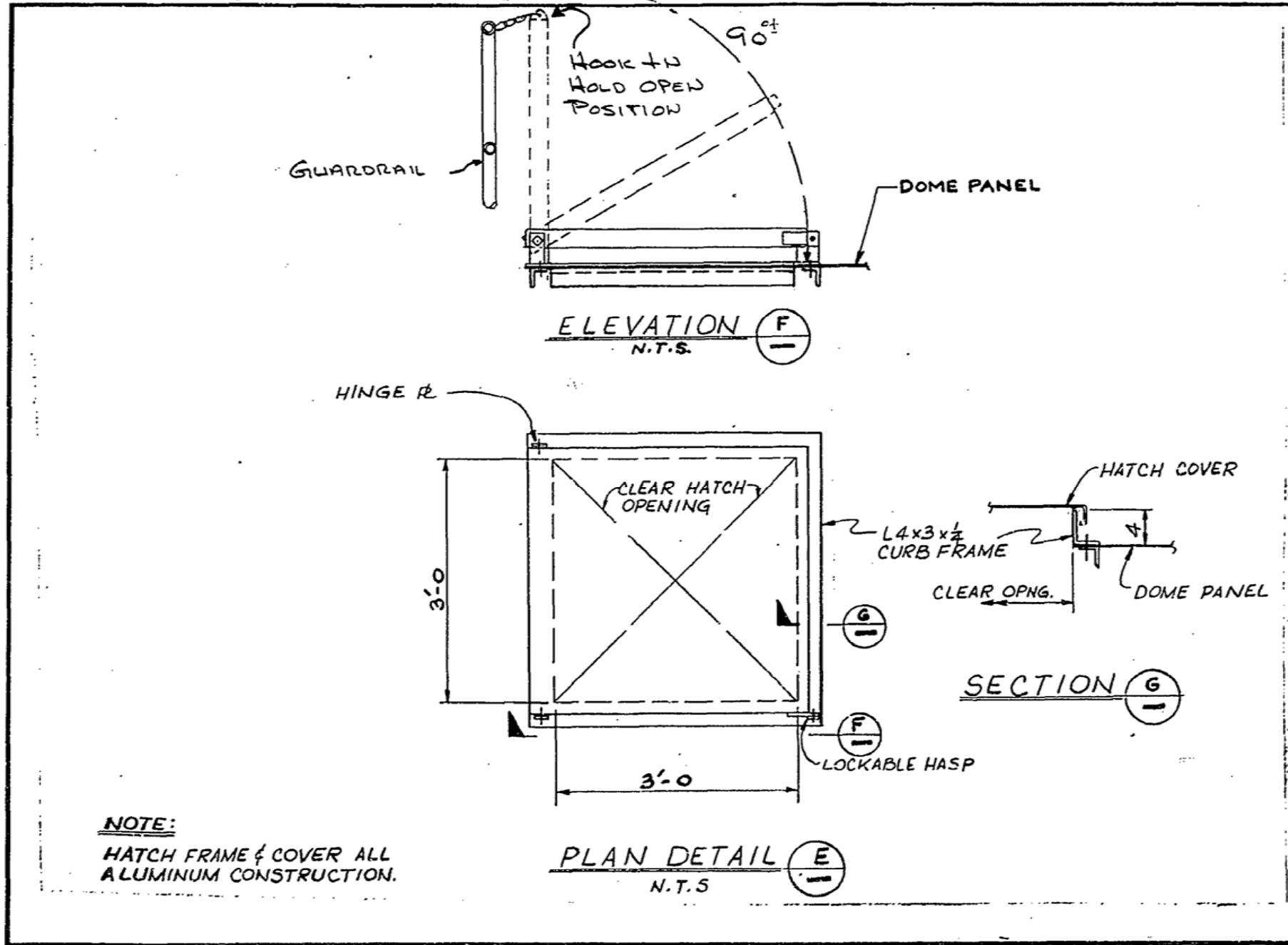
TEMCOR 2843 TOLEDO ST., TORRANCE, CA 90503 213/330-0844 TELE. NO. 901988		2 11-24-80 LO GLO CHG BLD SCEN		1 10-27-80 GLO CHG P.B. DIR		0 7-28-80 WUB 7/4. FAL APPROVAL		REV. DATE OWN BY CHG BY DESCRIPTION	
		ALL DESIGN, REPAIR, PROCESSES OR DEVELOPMENTS OPERATED OR DISCLOSED BY TEMCOR ARE PROPRIETARY, PATENTED OR UNPATENTED. NO REPRODUCTION OR TRANSMISSION WITHOUT WRITTEN PERMISSION FROM TEMCOR.		CUSTOMER: ROBERT E. MCKEE, INC.		PART. CONTR. NO. SC934-15			
TEMCOR ALUMINUM DOME		DRAWING NO. D-3		REVISION 2		DOWNS TITLE: SHOE & FLASHING DETAIL (P) 81' I.D. STEEL SLUDGE TANKS RANCHO LAS VIRGENES			
DOWNS NO. D-3231		DRAWING NO. D-3		REVISION 2		CUSTOMER: ROBERT E. MCKEE, INC.			



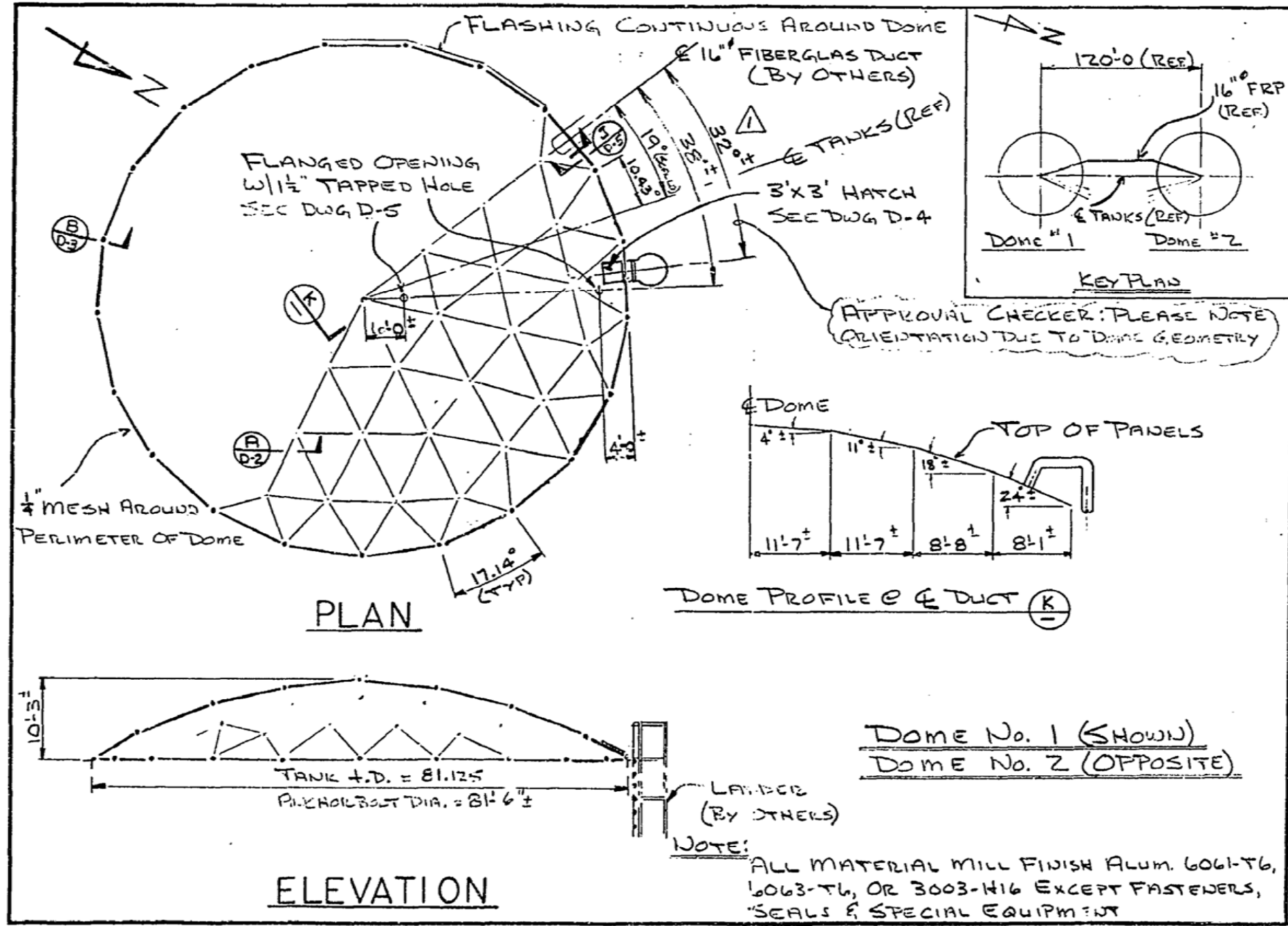
SECTION H
N.T.S.

SECTION A
N.T.S.

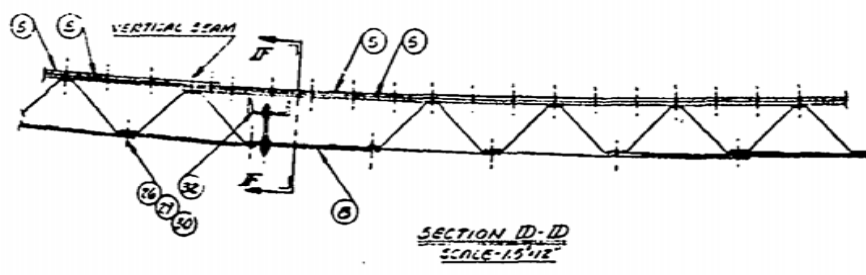
<p>TEMCOR 2825 TOLEDO ST., TOWSONE, CA. 95053 213/310-0534 TELENO. 951199</p> <p>ALL DESIGN IDEAS, PROCESSES, OR DEVELOPMENTS ORIGINATED OR DISCLOSED BY TEMCOR ARE PROPRIETARY, PATENTED, OR TRADE SECRET. ANY REPRODUCTION, COPIES, AND ANY INFORMATION DISCLOSED WITHOUT WRITTEN PERMISSION FROM TEMCOR.</p>	<p>REV. DATE</p> <p>0 7-22-80</p>	<p>DESIGNED BY</p> <p>7/22/80</p>	<p>CHECKED BY</p> <p>7/22/80</p>	<p>FOR APPROVAL</p>
	<p>CUSTOMER</p> <p>ROBERT E. MCKEE, INC.</p>	<p>DATE</p> <p>7-22-80</p>	<p>DATE</p> <p>7-22-80</p>	<p>DATE</p> <p>7-22-80</p>
<p>STRUT & GUSSET JOINT</p> <p>(2) 81' T.D. STEEL SLUDGE TANKS</p> <p>RANCHO LAS VIRGENES</p>	<p>NO. 0</p>	<p>NO. 0</p>	<p>NO. 0</p>	<p>NO. 0</p>
<p>D-3231</p>	<p>D-2</p>	<p>D-2</p>	<p>D-2</p>	<p>D-2</p>



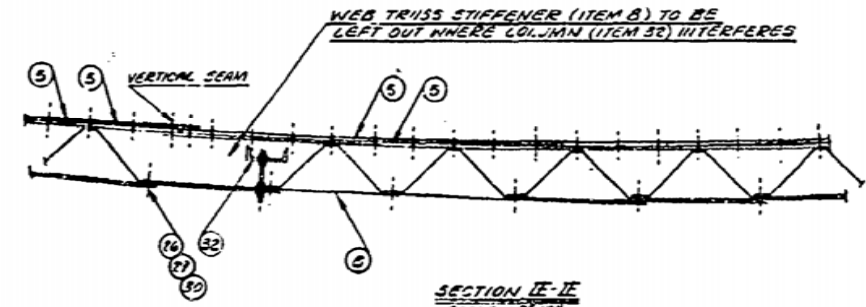
TEMCOR 285 TOLSON ST., TORRANCE, CALIF. 90503 213/250-0954 CABLE BOOKLET TELETYPE NO. 931499		ALL DESIGN IDEAS, PROCESSES, OR DEVELOPMENTS ORIGINATED OR DISCLOSED BY OR FOR THE COMPANY SHALL BE THE PROPERTY OF THE COMPANY AND SHALL NOT BE REPRODUCED OR COPIED IN ANY MANNER WITHOUT WRITTEN PERMISSION FROM TEMCOR.	
PERSONNEL HATCH DETAIL (2) 81' + D. STEEL SWIDGE TANKS RANCHO LAS VIRGENES		DRAWING NO. D-3231	REVISION 0
REV. Q	DATE 7-28-80	DESIGNED BY LAR	CHECKED BY [Signature]
FOR APPROVAL		CUSTOMER ROBERT E. MCKEE, INC.	CURT. CONTR. NO. SC934-15



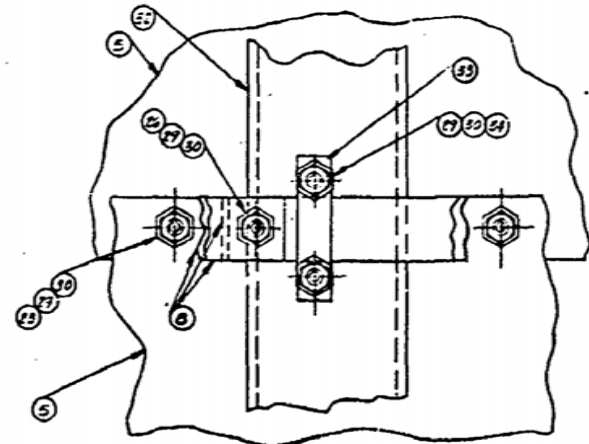
RECEIVED NOV 6 1980 TEMCOR ENGINEERING		TEMPCOR 245 TOLEDO ST., TORRANCE, CA. 90503 213/230-0354 TELEPHONE 881489		DATE: OCT 22 1980 RELOCATED LADDER & DELETED RAIL FOR APPROVAL	
DOME ORIENTATION & ELEVATION (2) 81' I.D. STEEL SLUDGE TANKS REF. A.O. SMITH AGONISTALE "8123" RANCHO LAS VIRGENES		ALL DESIGN IDEAS, PROCESSES, OR DEVELOPMENTS ORIGINATED OR DEVELOPED BY TEMCOR ARE PROPRIETARY, PATENTED, OR UNPATENTED AND MAY NOT BE REPRODUCED WITHOUT WRITTEN PERMISSION FROM TEMCOR.		REV. 1 10-21-80 AB 4.40 REV. 0 7-28-80 LWB 7/4 DATE: 7-28-80 DRAWN BY: LWB CHECKED BY: JYF CUSTOMER: ROBERT E. MCKEE, INC. DRAWING NO: D-3231 SHEET NO: 0 CUSTOMER NO: 12-174-15	



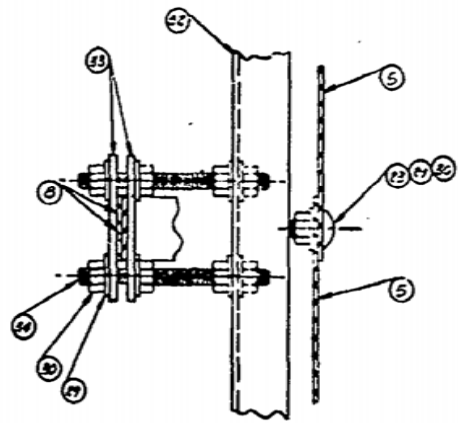
SECTION D-D
SCALE 1/8"=1'-0"



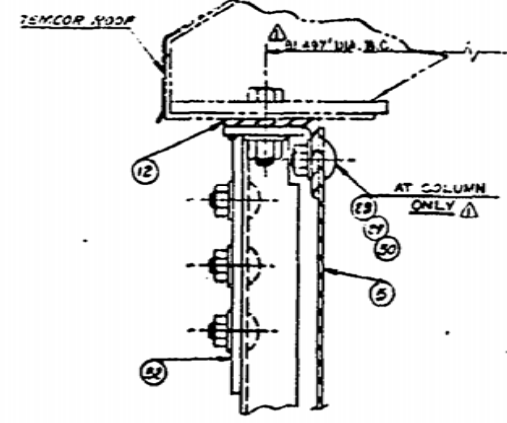
SECTION E-E
SCALE 1/8"=1'-0"



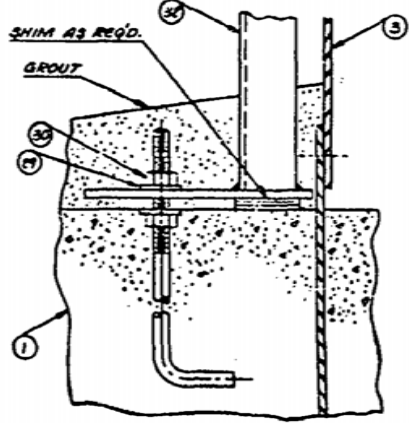
FRONT ELEVATION OF
WEB TRUSS STIFFENER
AND COLUMN
SCALE 1/8"=1'-0"



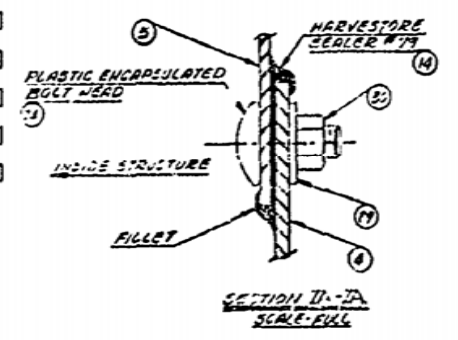
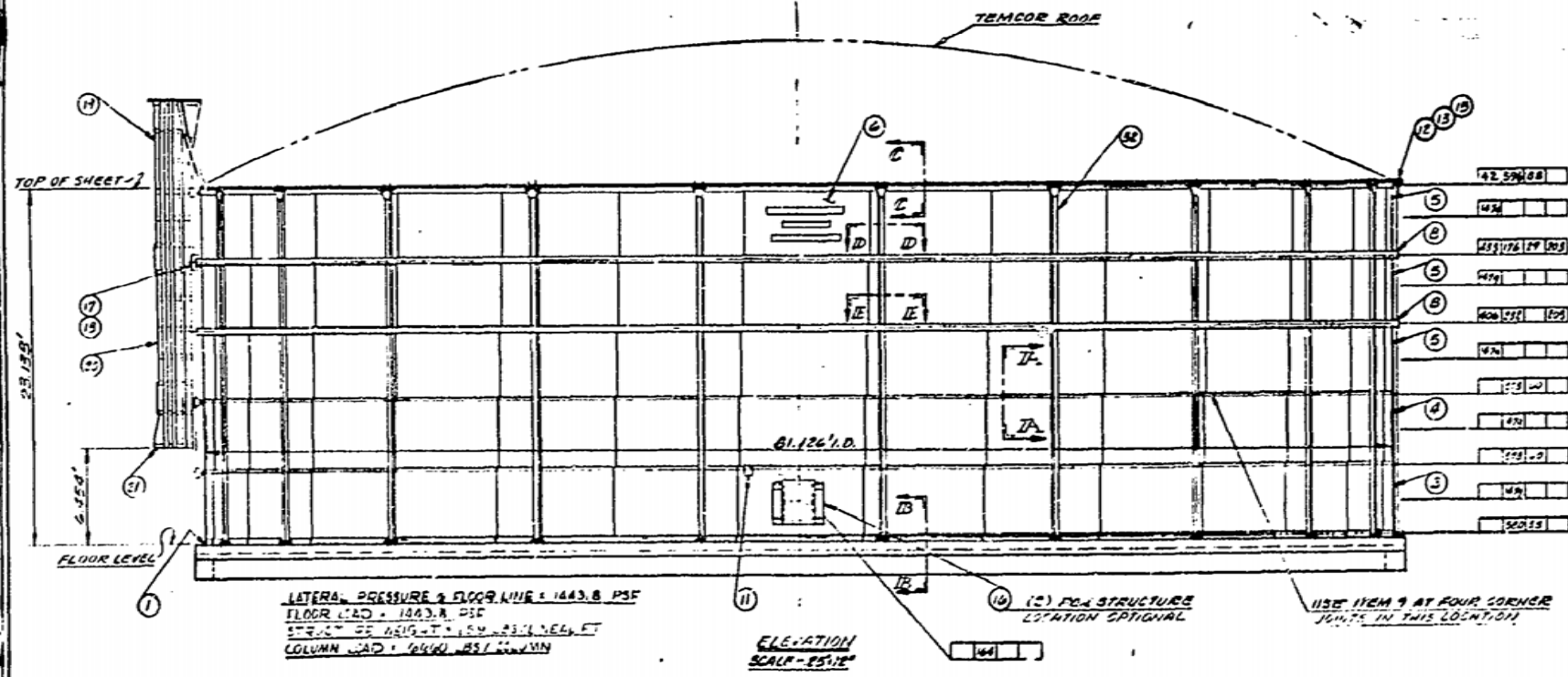
SECTION F-F
SCALE 1/8"=1'-0"



SECTION G-G
SCALE 1/8"=1'-0"



SECTION H-H
SCALE 1/8"=1'-0"



NO.	DESCRIPTION	QTY	UNIT	PRICE	TOTAL
1	42 5/8" DIA				
2	1/2" DIA				
3	1/4" DIA				
4	1/2" DIA				
5	1/4" DIA				
6	1/2" DIA				
7	1/4" DIA				
8	1/2" DIA				
9	1/4" DIA				
10	1/2" DIA				
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97	1/4" DIA				
98	1/2" DIA				
99	1/4" DIA				
100	1/2" DIA				

NO.	DESCRIPTION	QTY	UNIT	PRICE	TOTAL
1	42 5/8" DIA				
2	1/2" DIA				
3	1/4" DIA				
4	1/2" DIA				
5	1/4" DIA				
6	1/2" DIA				
7	1/4" DIA				
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100	1/2" DIA				

LEGEND
 1/2" X 1" BOLT
 1/2" X 1/2" U.S. BOLT
 1/2" X 1/2" U.S. BOLT (NATURAL) (BLACK)

LAS VIRGENES, CALIF.

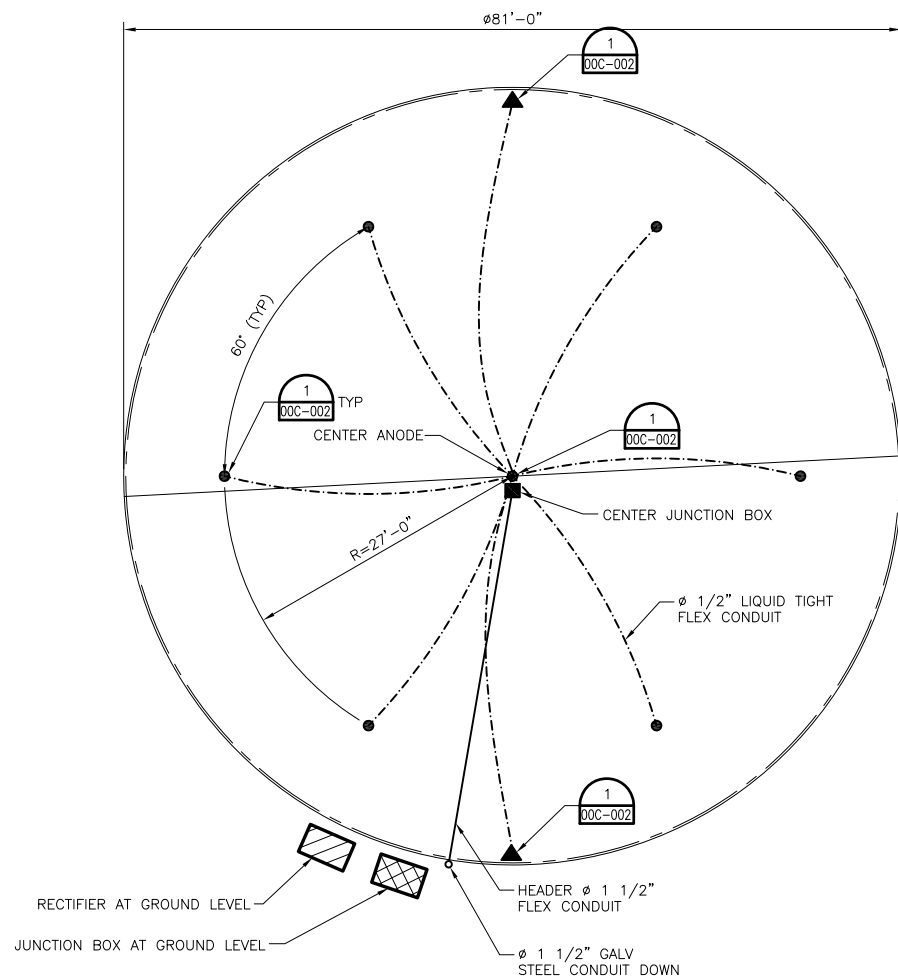
HARVESTORE
 1000 S. 10th St.
 LAS VIRGENES, CALIF. 94030
 PHONE (415) 435-1111
 FAX (415) 435-1112
 HARVESTORE SYSTEM
 P-2073-001 2

RECEIVED
 OCT 20 1980
 TEMCOR ENGINEERING

RECEIVED

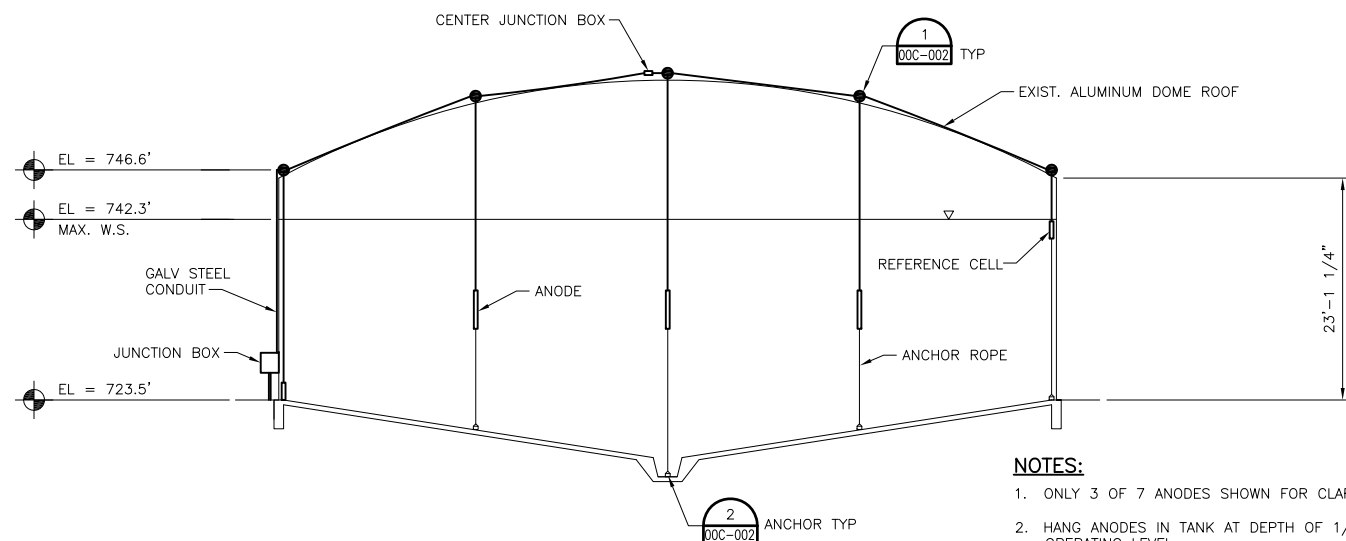
CONTRACT DRAWINGS**SHEETS 1 THRU 3**

- CP-1: Centrate Tank Cathodic Protection Installation Plan and Profile
- CP-2 : Cathodic Protection Anode/Reference Cell Port and Installation Detail
- CP-3: Cathodic Protection Wiring and Rectifier/Junction Box Installation Detail



PLAN

SCALE: 1" = 10'

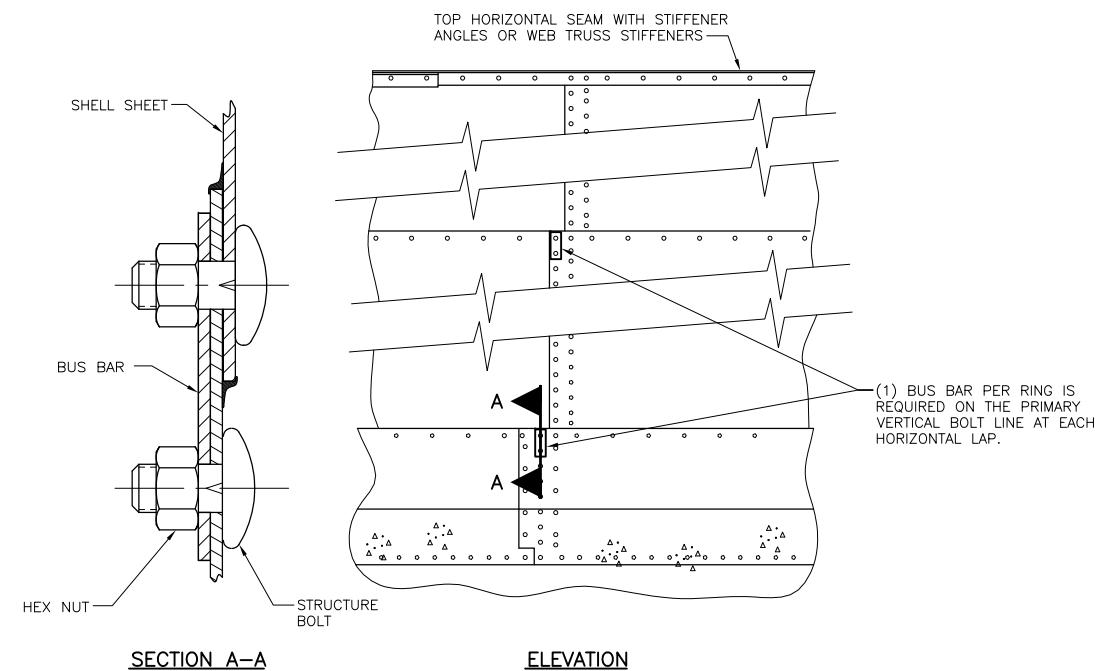


SECTION

SCALE: 1" = 10'

NOTES:

- ENTIRE CP SYSTEM INCLUDING ANODES, REFERENCE CELLS, JUNCTION BOX, AND RECTIFIER CAN BE ROTATED RELATIVE TO TANK ROOF SYSTEM TO MEET SITE INSTALLATION REQUIREMENTS.
 - LOCATIONS OF JUNCTION BOX AND RECTIFIER MAY BE ADJUSTED AS NEEDED.
 - ANY METALLIC PIPELINES CONNECTED TO THE TANK MUST HAVE ISOLATION JOINTS INSTALLED.
 - MOUNT CENTER JUNCTION BOX TO TANK ROOF.
- ANODE ACCESS PORTS - SEE 1/00C-002
 - ▲ REFERENCE CELL ACCESS PORTS - SEE 1/00C-002



SECTION A-A

ELEVATION

BUS BAR INSTALLATION

BUS BARS (A) ARE REQUIRED ON ONE FOUR-CORNER JOINT AT EVERY HORIZONTAL BOLT LINE.

- APPLY SEALER TO ONE SIDE OF THE BUS BAR.
- TO INSTALL, REMOVE THE HEX NUT AND WASHER AT THE FOUR-CORNER JOINT AND AT THE NEXT ADJACENT BOLT. INSTALL THE BUS BAR WITH THE SEALER SIDE TOWARD THE SHELL ONTO THE TWO STRUCTURE BOLTS. REINSTALL THE TWO PREVIOUSLY REMOVED HEX NUTS. DISCARD THE WASHER.

ELEVATION VIEW AND CROSS-SECTION OF BUS BAR

SCALE: NTS

NOTES:

- ONLY 3 OF 7 ANODES SHOWN FOR CLARITY.
- HANG ANODES IN TANK AT DEPTH OF 1/2 NORMAL OPERATING LEVEL.
- HANG UPPER REFERENCE CELL AT LEAST 6" BELOW MINIMUM OPERATING LEVEL.
- HANG LOWER REFERENCE CELL AT LEAST 6" ABOVE TANK FLOOR.

LINE IS 2 INCHES AT FULL SIZE IF NOT 2" - SCALE ACCORDINGLY

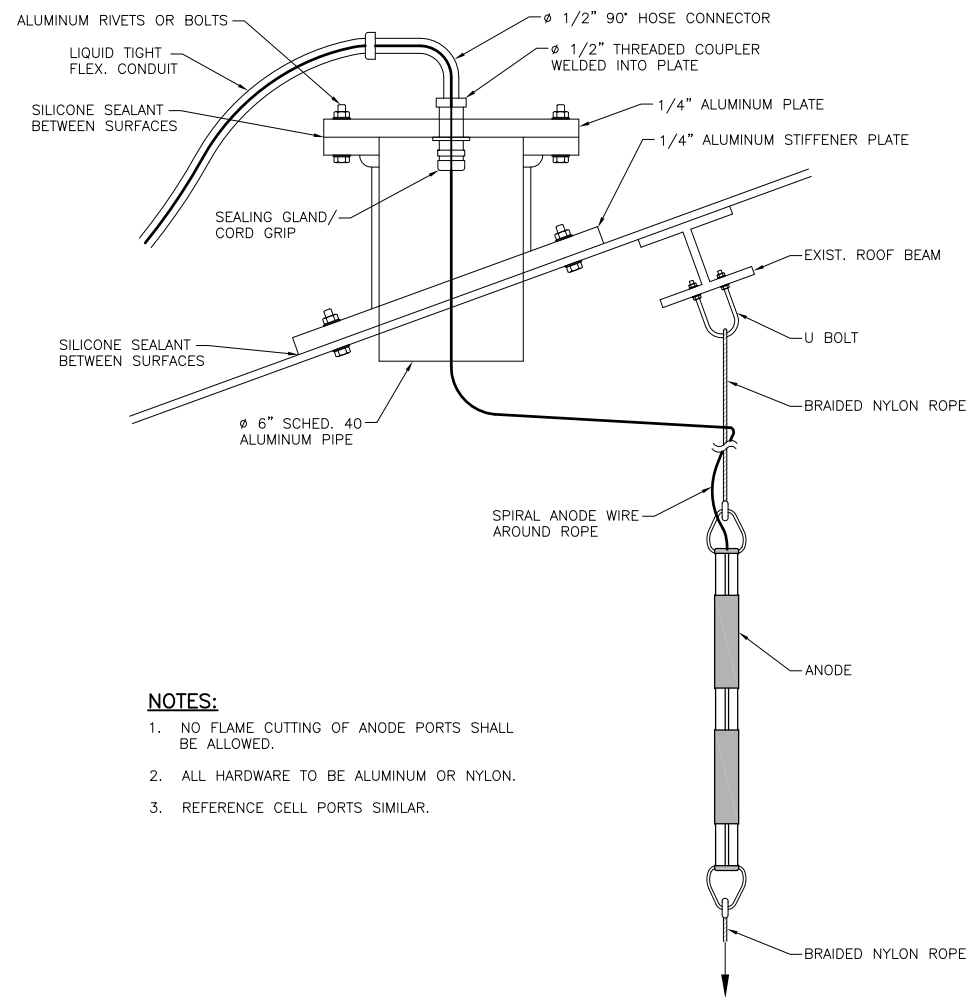
DESIGN: IB/GF
 DRAWN: DE/WS
 CHECKED: RM/CM

ENGINEER'S SEAL

REV. NO.	DATE	DESCRIPTION	APPVD.	DATE

REVISIONS

00C-001	
LAS VIRGENES MUNICIPAL WATER DISTRICT	
CENTRATE TANK CP MODIFICATIONS	
CENTRATE TANK CATHODIC PROTECTION PLAN AND PROFILE	
PREPARED BY: HDR INC SCHIFF 431 WEST BASELINE ROAD CLAREMONT, CA 91711-1608 PH: 909-626-0967 FAX: 909-626-3316	APPROVED FOR LAS VIRGENES MUNICIPAL WATER DISTRICT BY: _____ DATE: _____
SCALE: HORIZONTAL: AS NOTED VERTICAL: AS NOTED	DATE: NOVEMBER, 2012
SHEET 1 OF 2	

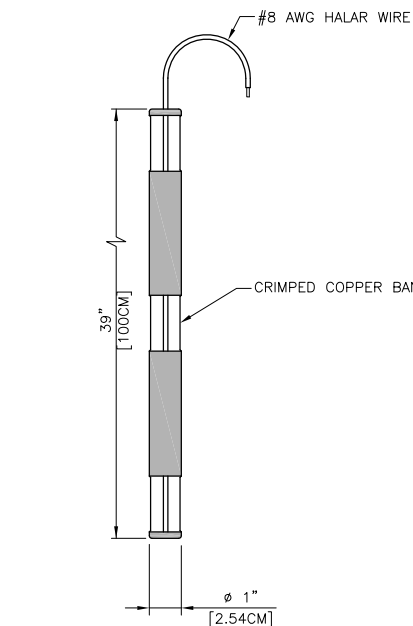


NOTES:

1. NO FLAME CUTTING OF ANODE PORTS SHALL BE ALLOWED.
2. ALL HARDWARE TO BE ALUMINUM OR NYLON.
3. REFERENCE CELL PORTS SIMILAR.

ANODE DETAIL

SCALE: NTS



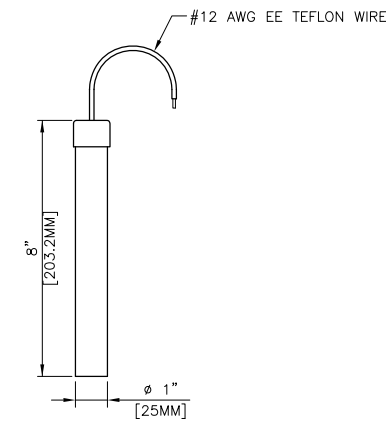
TITANIUM MIXED METAL OXIDE ANODE

SCALE: NTS



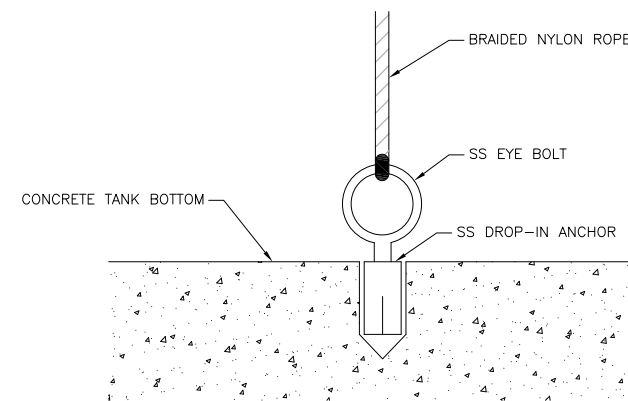
NOTES

1. REFER TO SPECIFICATIONS FOR ANODE AND REFERENCE CELL REQUIREMENTS.
2. ANODES AND REFERENCE CELLS TO BE SUSPENDED AND ANCHORED BY ROPE.



COPPER/COPPER SULFATE REFERENCE CELL

SCALE: NTS



ANCHORING DETAIL

SCALE: NTS



LINE IS 2 INCHES AT FULL SIZE
 IF NOT 2" - SCALE ACCORDINGLY

DESIGN: IB/GF
 DRAWN: DE/WS
 CHECKED: RM/CM

ENGINEER'S SEAL

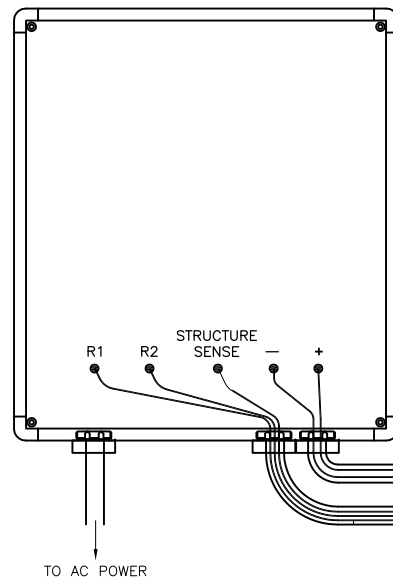
REV. NO.	DATE	DESCRIPTION	APPVD.	DATE

REVISIONS

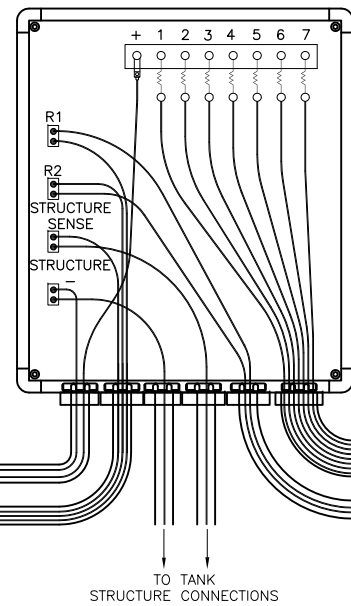
LAS VIRGENES MUNICIPAL WATER DISTRICT	
CENTRATE TANK CP MODIFICATIONS	
CATHODIC PROTECTION ANODE/REFERENCE CELL PORT AND INSTALLATION DETAILS	
PREPARED BY: HDR INC SCHIFF 431 WEST BASELINE ROAD CLAREMONT, CA 91711-1608 PH: 909-626-0967 FAX: 909-626-3316	APPROVED FOR LAS VIRGENES MUNICIPAL WATER DISTRICT BY: _____ DATE: _____
SCALE: HORIZONTAL: AS NOTED VERTICAL: AS NOTED	DATE: NOVEMBER, 2012
SHEET 2 OF 2	

00C-002

TRANSFORMER RECTIFIER



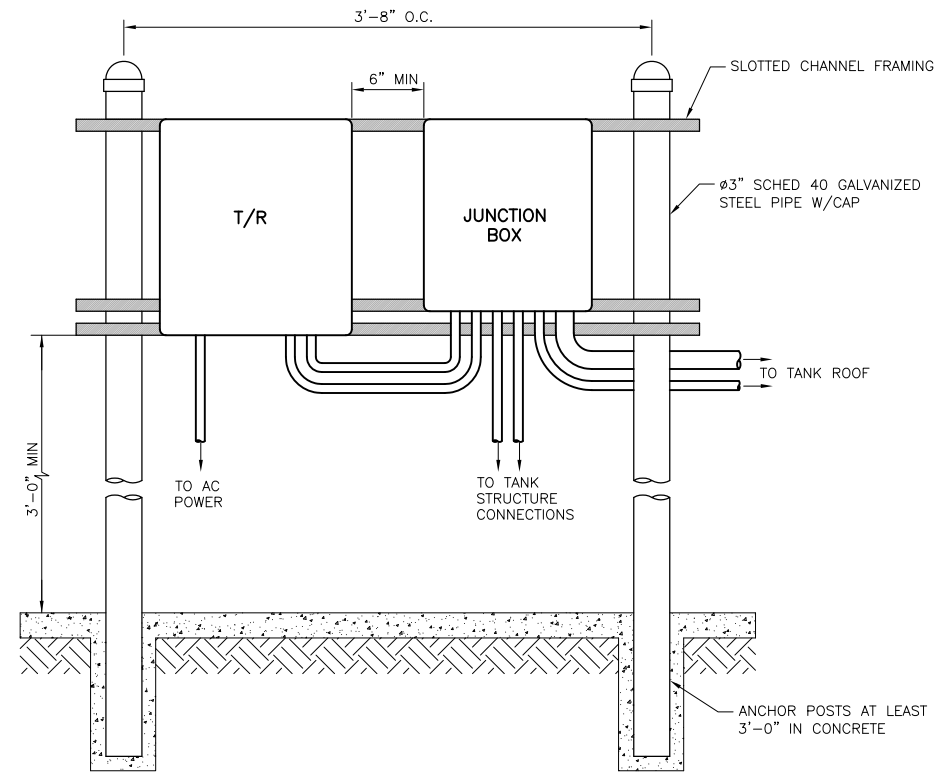
JUNCTION BOX



NOTES:

1. PROVIDE 115V 60H SINGLE PHASE AC POWER FOR RECTIFIER.
2. REFERENCE ELECTRODE AND STRUCTURE SENSE LEADS SHALL BE RUN IN A SEPARATE CONDUIT FROM THE ANODE AND STRUCTURE POWER LEADS.
3. RECTIFIER AND JUNCTION BOX CABINETS MUST REMAIN WITHIN 20' OF TANK AND STRUCTURE WIRE CONNECTIONS.
4. TANK STRUCTURE WIRE CONNECTIONS (2) TO BE EITHER PIN-BRAZED OR MECHANICAL CONNECTION.

JUNCTION BOX INTERNAL CONFIGURATION 5
SCALE: NTS



RECTIFIER MOUNTING DETAIL 6
SCALE: NTS

BILL OF MATERIALS - CP SYSTEM MAJOR COMPONENTS	
QTY	ITEM DESCRIPTION
7	TUBULAR TI-MMO ANODES AS SPECIFIED IN SHEET 2 DETAIL 3
1	AUTOMATIC 40V 10A RECTIFIER
1	JUNCTION BOX W/7X SHUNTS
1	ROOF JUNCTION BOX
2	PERMANENT SUBMERSIBLE COPPER SULFATE REFERENCE ELECTRODE AS SPECIFIED IN SHEET 2 DETAIL 4
7	ALUMINUM ROOF PORT W/BLIND FLANGE & COUPLER

NOTES:

1. QUANTITIES LISTED ARE FOR A SINGLE TANK.
2. WIRES, CONDUIT, FASTENERS, AND OTHER SMALL HARDWARE NOT INCLUDED.
3. REFER TO SPECIFICATIONS FOR CP SYSTEM COMPONENT REQUIREMENTS.

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DATE: 12/19/2012 10:41:50 AM
DRAWN: DE/WS
CHECKED: RM/CM
DESIGN: IB/GF
SCALE: NTS



LINE IS 2 INCHES AT FULL SIZE
IF NOT 2" - SCALE ACCORDINGLY

DESIGN: IB/GF
DRAWN: DE/WS
CHECKED: RM/CM

ENGINEER'S SEAL

REV. NO.	DATE	DESCRIPTION	APPVD.	DATE

REVISIONS

00C-002

LAS VIRGENES MUNICIPAL WATER DISTRICT
CENTRATE TANK CP MODIFICATIONS

**CATHODIC PROTECTION WIRING AND RECTIFIER/
JUNCTION BOX INSTALLATION DETAILS**

PREPARED BY: HDR INC SCHIFF 431 WEST BASELINE ROAD CLAREMONT, CA 91711-1608 PH: 909-626-0967 FAX: 909-626-3316	APPROVED FOR LAS VIRGENES MUNICIPAL WATER DISTRICT BY: _____ DATE: _____
SCALE: HORIZONTAL: AS NOTED VERTICAL: AS NOTED	DATE: NOVEMBER, 2012 SHEET 2 OF 2

C:\pwworking\isac\d0426399\00C-003 12/19/2012 10:41 AM ENGINEER'S NAME: HDR INC | SCHIFF ASSOCIATES - PROJECT NUMBER: 193520