

set # 1

LOS ANGELES

DONALD R. WARREN CO.
ENGINEERS

SAN FRANCISCO

CONSTRUCTION OF THE
MATILIJA-CASITAS CONDUITS

for

VENTURA COUNTY FLOOD CONTROL DISTRICT

ZONE I

JOB NO. LA 46-2c

March, 1947

INVITATION FOR BIDSLos Angeles, California
February, 1947

A. Bids will be received until 12:00 noon, _____
for:

Construction of the _____

in strict accordance with the specifications, drawings and schedules.

B. Bids shall be submitted in sealed envelopes for the pay items listed in the Schedule of Items accompanying this invitation (bound in the Specifications). No other payments or other allowances will be made except where specifically provided in the specifications or other contract documents. The proposed bids must allow for all collateral and indirect costs connected with the work.

C. Date on which work shall begin will be _____.

D. Date on which work shall be completed and accepted by the Engineer for the District will be _____.

E. A chart shall be submitted with the bid indicating the volume of work to be done and rate of progress which the bidder proposes to maintain. This chart shall be in the form of a plotted curve in which the abscissa shall represent time in days, starting with the date of notice to proceed, and the ordinate shall represent percentage of completion based on the estimated contract quantities. In preparing the chart, due allowances shall be made for delays caused by priorities, shipments, inclement weather, etc. Careful consideration shall be given in the preparation of this chart, as the Contractor will be required to maintain the rates of progress thus proposed.

F. Proposal Guarantee. An unconditional certified or cashier's check for \$ _____ payable to the "Ventura County Flood Control District, Zone I." shall accompany each bid as a guarantee of good faith. The checks shall be held uncollected and will be returned within three (3) days after the formal opening of the bids, except: the guarantees deposited by the three lowest formal bidders will be held until three (3) days after the complete execution of the Contract by the successful bidder and the District.

G. The right is reserved, as the interest of the District may require, to reject any and all bids, to waive any informality in bids received and to accept any bid. The decision of the District as to the bidder or bidders selected will be conclusive.

H. Bidders shall carefully examine the drawings and specifications, visit the site of the work, and fully inform themselves as to all conditions and matters which can in any way affect the work or the cost thereof. Should a bidder find discrepancies in, or omissions from, the drawings, specifications or other documents, or should he be in doubt as to their meaning, he shall at once notify the District's representative and obtain clarification prior to submitting any bid.

I. Wage rates shall be as given on attached sheets.

J. Envelopes containing bids should be sealed and marked and addressed as follows:

(Marked in upper left hand corner)

"Bid under Invitation No. LA 46-2c"

(Address) TO: Office of County Surveyor
County Court House
Ventura, California

VENTURA COUNTY FLOOD CONTROL DISTRICT
ZONE I
VENTURA, CALIFORNIA

PROPOSAL

FOR THE CONSTRUCTION OF THE

Proposals received until _____

To The Office of the County Surveyor, County Court House,
Ventura, California:

The undersigned hereby declares, as bidder, that the only persons or parties interested in this proposal as principals are those named herein; that this bid is made without any connection with any other person or persons making a bid for the same purpose; that the bid is in all respects fair and without collusion or fraud; that he has read the Notice Inviting Bids hereto attached, and agrees to all the stipulations contained therein; that he has examined the site of the work, the form of agreement approved by the District, and the specifications and drawings therein referred to, and he proposes and agrees that if his bid, as submitted in the attached Bidding Sheet be accepted, he will contract in the form so approved to perform all the work mentioned in said approved form of agreement and the specifications and to complete the same within the time stipulated therein; and that he will accept in full payment therefor the prices named in said Bidding Sheet. Said prices are to include and cover the furnishing of all materials, the performing of all the labor requisite or proper, and the providing of all necessary machinery, tools, apparatus, and other means of construction, and the performance and completion of all the work in the manner set forth, described and shown in the specifications and on the drawings for the work.

The bidder further agrees that, upon receipt of written notice of the acceptance of this proposal within 30 days after the date of opening of the bids, he will execute the contract in accordance with the proposal as accepted, secure the payment of workmen's compensation, and furnish the required bonds, all within 15 days from date of mailing of said notice of acceptance to him at his address as given below, or within such additional time as may be allowed by the County Surveyor; and that upon failure to do so within said time, then the certified or cashier's check accompanying this bid shall become the property of and be retained by the Ventura County Flood Control District, Zone I, as liquidated damages for such failure or refusal, and shall be deposited with the Treasurer of said District as moneys belonging to the District. If said bidder shall execute the contract, secure the payment of workmen's

compensation, and furnish the required bonds earlier than the time aforesaid, his check shall be returned to him within 3 days after completion of such requirements.

The Bidder further declares that the Surety or Sureties named in the space provided below have agreed to furnish bonds in the form and aggregate amounts set forth in the General Conditions of the Specification, in the event contract is awarded on the basis of this proposal.

Dated _____ 1947. _____

Bidder

By _____

Bidder's address: _____

Names and addresses of all members of the firm or names and titles of all officers of the corporation: _____

Corporation organized under the laws of the State of _____
Licensed in accordance with the laws of the State of California providing for the registration of contractors, License No. _____

Surety or sureties: _____

LOS ANGELES

DONALD R. WARREN CO.
ENGINEERS

SAN FRANCISCO

SCHEDULE OF BID ITEMS

Item No.	Designation	Quantity (Approx.)	Unit	Unit Price	Amount
1.	36" Conduit	4,850	Lin. Ft.		
2.	30" "	11,200	"		
3.	24" "	15,200	"		
4.	22" "	9,300	"		
5.	20" "	25,350	"		
6.	18" "	23,300	"		
7.	14" "	18,450	"		
8.	4" Blowoff Pipe	1,200	"		
9.	Miscellaneous Concrete	110	Cu. Yd.		
10.	Suspension Bridge Concrete	65	"		
11.	Suspension Bridge Superstructure		Lump Sum		
12.	Matilija Conduit Valve House		"		
13a.	Underground Ventura River Crossing (Except exca)		"		
13b.	Overhead Ventura River Crossing (Except exca)		"		
14a.	Excav. Underground Ventura River Crossing	15,000	Cu. Yd.		
14b.	Excav. Overhead Ventura River Crossing	200	"		
15.	Ojai Conduit Valve House		Lump Sum		
16.	Santa Ana Outlet Structure		"		
17.	Eastside Pressure Reducing Station		"		
18.	Eastside Conduit Valve House		"		
19.	Cathodic Protection		Allowance	3500	

LOS ANGELES

DONALD R. WARREN CO.
Engineers

SAN FRANCISCO

INDEX

SPECIFICATIONS FOR MATILIJA-CASITAS CONDUITS

SECTION	TITLE
1	General Conditions
2	Special Conditions
3	Earthwork
4	Concrete
5	Structural Steel
6	Steel Conduits
7	Carpentry
8	Roofing
9	Valves, Fittings & Miscellaneous Metal Work
10	Glazing
11	Field Painting
12	Miscellaneous Work
13	Cathodic Protection

INDEX TO SECTION 1 GENERAL CONDITIONS

1-01. Definitions.

- (a) "Contract" or "this Contract"
- (b) "Contractor"
- (c) "District"
- (d) "Magistrate"
- (e) "Subcontractor"
- (f) "Project"
- (g) "Surety"
- (h) "Standard Specifications"

1-02. In Conflict of Provisions

1-03. Notice and Service Thereof

1-04. Commencement and Completion of Work

1-05. Prosecution of Work

1-06. Liquidated Damages

1-07. Delays and Extension of Time

1-08. Permits and Compliance with Law

1-09. Construction Schedule and Periodical Estimates

1-10. Materials, Services and Facilities

1-11. Camp and Camp Site

- (a) Area for Use of Contractor
- (b) Regulations
- (c) Office
- (d) Sanitary Arrangements
- (e) Temporary Enclosures
- (f) Drinking Water
- (g) Electric Power
- (h) Removal

1-12. Care and Maintenance of Public Roads

1-13. Labor

- (a) Character of Workmen
- (b) Local Labor Preference
- (c) Wage Rates
- (d) Overtime

- 1-14. Reservation and Compliance with Specifications of Materials or Equal
- 1-15. Warranty of Title
- 1-16. Inspection by District
- 1-17. Tests
- 1-18. Conduct of Work by Contractor
 - (a) Protection against Weather
 - (b) Protection and Maintenance of Public and/or Private Property
 - (c) Accident Prevention
 - (d) In an Emergency Affecting the Safety of Life or Property
 - (e) Superintendence by Contractor
 - (f) Lines and Grades
 - (g) Removal of Debris, Cleaning, etc.
- 1-19. Contract Security
- 1-20. Insurance
 - (a) Protection for Workmen
 - (b) Approval of Insurance Companies
 - (c) The Contractor as Self-Insurer
 - (d) Public Liability Insurance
 - (e) Fire Insurance
- 1-21. General Guarantee
- 1-22. Assignment of Contract
- 1-23. Subcontractors
 - (a) Specialty Subcontractors
 - (b) Responsibility of Contractor for Subcontracted Work
- 1-24. Mutual Responsibility of Contractors
- 1-25. Patents
- 1-26. Other Contracts and Working Groups
- 1-27. Right to Retain Imperfect Work
- 1-28. Right of Engineer to Modify Methods and Equipment
- 1-29. Termination for Breach, etc.

1-30. Claims of Contractor against the District

1-31. Payments to Contractor

- (a) Payment for "Unit Price" work
 - (1) Quantities at Unit Prices
- (b) Payment for Work Covered by Lump Sum Bid
- (c) Payment for Extra, Additional or Omitted Work

1-32. District's Right to Withhold Certain Amounts and
Take Application Thereof

1-33. Payments by Contractor

1-34. Shop Drawings Furnished by Contractor

1-35. Discontinuance of Work

1-36. Board Orders Relative to Public Works.

SECTION 1

GENERAL CONDITIONS

1-01. Definitions. Wherever in the specifications or upon the drawings the words directed, required, permitted, ordered, designated, prescribed, or words of like import are used, it shall be understood that the direction, requirement, permission, order, designation, or prescription of the District's representative is intended; and similarly, the words approved, acceptable, satisfactory, or words of like import, shall mean approved by, acceptable to, or satisfactory to the District's representative, unless otherwise expressly stated. The following terms as used in this contract shall be defined and interpreted as follows:

(a) "Contract" or "this Contract". The particular contract executed by the Contractor and the district of which these General Conditions are integral parts.

(b) "Contractor." The person, firm or corporation to whom this contract is awarded by the District and who is a party thereto.

(c) "District." The entity that is a party to this contract, contracting under the official name of Ventura County Flood Control District, Zone 1, or a properly authorized agent thereof.

(d) "Engineer" shall mean Donald R. Warren Co., or a properly authorized representative thereof.

(e) "Subcontractor." Any person, firm or corporation other than an employee of the contractor, supplying, for and under agreement either with the contractor or any subcontractor of the contractor, labor or materials, or both, at the site of the project in connection with this contract.

(f) "Project" shall mean all of the work indicated on the drawings and covered in the specifications, with such work to be completed in whole through the performance of this contract.

(g) "Surety". Any firm or corporation executing a surety bond or bonds payable to the District, securing the performance of the contract either in whole or in part.

(h) "Standard Specifications" shall mean the "Standard Specifications of the Division of Highways, California Department of Public Works, date April, 1945.

1-02. In Conflict of Provisions, the stipulations of the "General Conditions" take precedence over all other provisions of the contract unless they are specifically waived. All provisions in any other part of this contract which may be in conflict or inconsistent with any provision in the "General Conditions" shall be void to the extent of such conflict or inconsistency.

1-03. Notice and Service Thereof. Any notice from one party to the other under the contract shall be in writing and shall be dated and signed by the party giving such notice or by a duly authorized representative of such party. Any such notice shall not be effective for any purpose whatsoever unless served in the following manner, namely: (a) if the notice is given to the District by personal delivery thereof to the individual duly authorized to direct and supervise the project for the District; or by depositing the same in the United States mails, enclosed in a sealed envelope, addressed to the District for the attention of said individual, postage prepaid and registered; (b) if the notice is given to the contractor, by personal delivery thereof to said contractor or to his foreman at the site of the project, or by depositing the same in the United States mails, enclosed in a sealed envelope, addressed to the contractor at his regular place of business or at such other address as may have been established for the conduct of the work under this contract, postage prepaid and registered; or (c) if the notice is given to the surety or any other person, by personal delivery to such surety or other person, or by depositing the same in the United States mails, enclosed in a sealed envelope, addressed to such surety or other person, at the address of such surety or other person last communicated by him to the party giving the notice, postage prepaid and registered.

1-04. Commencement and Completion of Work. The Contractor will be required to commence work at the site within ten (10) calendar days after the award of the contract and to complete the entire work for use in accordance with the conditions set forth in the accepted bid and with the time stated for completion to include the final clean-up of the premises resulting from construction operations.

1-05. Prosecution of Work. The Contractor shall at all times during the continuance of the contract prosecute the work with such force and equipment as in the judgment of the Engineer are sufficient to complete it within the time specified.

1-06. Liquidated Damages. Except where an extension of time is granted by the District, the Contractor shall pay as fixed, agreed and liquidated damages the sums of : (a) Four Hundred Dollars (\$400) per day on the Matilija Conduit line and (b) Two Hundred Dollars (\$200) per day on each of the Ojai, East-side, Santa Ana and Casitas Conduit lines for each Calendar day delay in completing the contract work, or

until such time as the District may reasonably procure the completion of the work by another Contractor or complete the work itself. Whatever sums may be due as liquidated damages for delay may be deducted from payments due to the Contractor or the Contractor's surety or sureties. The provision for liquidated damages shall not prevent the District from terminating the right of the Contractor to proceed in case of default.

1-07. Delays and Extension of Time. Only where delays are the result of any act or neglect of the District, the Engineer or separate Contractor employed by the District, and not due to any fault or neglect of the Contractor will an extension of time be granted by the District. The Contractor shall immediately notify the Engineer of the conditions requiring his claim for extension of time. The length of the extension to be allowed shall be determined by the Engineer.

The District reserves the right of suspending the whole or any part of the work without compensation for loss to the Contractor for such suspension other than extending the time of completing the work as much as it may have been delayed (in the judgment of the Engineer) by the suspension.

1-08. Permits and Compliance with Law. The Contractor shall, at his expense, obtain all permits and licenses necessary for the performance of this contract, and give all necessary notices, pay all fees required by law, and comply with all laws, ordinances, rules and regulations governing the Contractor's performance of the contract.

1-09. Construction Schedule and Periodical Estimates. Immediately after execution and delivery of the contract, and before the first partial payment is made, the Contractor shall deliver to the District a construction progress schedule in form satisfactory to the District, showing in detail his proposed program of operations and giving the proposed dates of commencement and completion of each of the various subdivisions of work required under the Contract Documents, and the anticipated amount of each monthly payment that will become due the Contractor in accordance with the progress schedule. The Contractor shall also furnish on forms to be supplied by the District (a) a detailed estimate giving a complete breakdown of the contract price and (b) periodical itemized estimates of work done for the purpose of making partial payments thereon. The values employed in making up any of these schedules will be used only for determining the basis of partial payments and will not be considered as fixing a basis for additions to or deductions from the contract price.

Revised construction schedules shall be furnished by the Contractor at intervals of not less than two months, and in addition thereto the Contractor shall immediately advise the Engineer of any proposed change in his construction program.

1-10. Materials, Services and Facilities. It is understood that except as otherwise specifically stated in the contract, the Contractor shall provide and pay for all materials, labor, tools, equipment, water, light, power, transportation, superintendence, temporary construction of every nature, and all other services and facilities of every nature whatsoever necessary to execute and complete the contract within the specified time.

(a) Area for Use of Contractor. The Contractor shall confine his apparatus, storage of materials, and construction as follows:

(1) In Orchards and Crop Bearing Areas - A strip to a minimum width of ten (10) feet on each side of the conduit centerline will be provided by the District.

(2) In Public Roads, Streets, and Subdivided Areas - Only access and operating space will be provided.

(3) All Other Areas - The District will provide a strip twenty-five (25) feet in width on each side of the conduit centerline.

(b) Regulations. The Contractor shall enforce all instructions of the District regarding signs, advertising, fires, danger signals, barricades, and smoking, and shall require all persons employed on the work to comply with all regulations while on the site.

(c) Office. The Contractor shall at the beginning of the work, put up a suitable temporary office (located at Contractor's field headquarters) of not less than ten (10) feet by twelve (12) feet floor space, provided with a work table located along an exterior wall. The table shall be provided with drawers for the use of the Engineer, and racks suitable for holding drawings shall be provided. Sanitary arrangements shall be provided for the Engineer.

(d) Sanitary Arrangements. The Contractor, at the beginning of the work, shall provide toilet facilities adequate for the required use as approved by the Engineer.

(f) Temporary Enclosures. The Contractor shall provide all barricades, guards, or such other protection around the work as required. The Contractor shall provide all required artificial lighting in connection with such guards at his own expense. All temporary enclosures shall be promptly removed on completion of the work. No signs of any kind or description will be allowed anywhere on these temporary enclosures without the consent of the District or Engineer.

(g) Drinking Water in sufficient quantities for the required use, and of a quality acceptable to the Engineer, shall be furnished by the Contractor.

(h) Electric Power shall be provided by the Contractor for all necessary construction purposes as required.

(i) Removal of temporary site structures shall be made by the Contractor upon completion of the work.

1-12 Care and Maintenance of Public Roads. The Contractor shall take all necessary care and precautions to prevent injury and traffic impairment to public roads in the County of Ventura due to his use of them for construction purposes, as approved by the Engineer. Where in the judgment of the Engineer any County road is injured due to their use by the Contractor, the Contractor shall make approved repairs at his own expense. Traffic shall be kept open on all roads at construction site at all times. The Contractor shall provide all required safety signs and devices as approved by the Engineer at no expense to the District.

1-13. Labor.

(a) Character of Workmen. The Contractor shall employ only orderly, competent and skillful men to do the work. When informed by the Engineer that any man or men are in his opinion incompetent, unfaithful or disorderly, such man or men shall be discharged from the work and shall not be re-employed on the same job without the Engineer's approval.

(b) Local Labor Preference. Contractor shall hire workmen living in Ventura County, California, wherever possible. Only where workmen of the proper qualifications cannot be secured will non-resident workmen be allowed on the job.

(c) Wage Rates on this project shall be as set forth in the invitation to bid.

(d) Overtime. Any work necessary to be performed after regular working hours, on Sundays or legal holidays, shall be performed without additional expense to the District.

1-14. Reservation and Compliance with Specifications of Materials or Equal. The Contractor shall reserve the required materials for delivery when needed; and within ten (10) days after acceptance of the contract, shall send written notification of material reservation or request for approval of an "or equal" material to the Engineer. Written notification of reservation of "or equal" material shall be sent to the Engineer within five (5) days of approval.

Unless otherwise specifically provided in the specifications, all workmanship, equipment, materials, and articles incorporated in the work covered by this contract are to be new and of the best available grade of their respective kinds. Whenever in the specifications any material, article, device, produce, fixture, form, type of construction, or process is indicated or specified by patent or proprietary name, by name of the manufacturer, or by catalog number, such specifications shall be deemed to be used for the purpose of establishing a standard of quality and facilitating the description of the material or process desired, and shall be deemed to be followed by the words, "or equal", and the Contractor in such cases may, at his option, use any item, type or process which shall be substantially equal in every respect to that so indicated or specified. The Engineer shall be the sole judge as to the equality of the substituted article.

1-15. Warranty of Title. No material, supplies, or equipment for the work under this contract shall be purchased subject to any chattel mortgage or under a conditional sale or other agreement by which an interest therein or in any part thereof is retained by the seller or supplier. The Contractor warrants good title to all material, supplies and equipment installed or incorporated in the work and agrees upon completion of all work to deliver the project, together with all appurtenances constructed or placed thereon by him, to the District free from any claims, liens, or charges, and further agrees that neither he nor any person, firm, or corporation furnishing any materials or labor for any work covered by this contract shall have any right to a lien upon the project or any appurtenance thereon, provided that this shall not preclude the Contractor from installing metering devices and other equipment of utility companies or of municipalities, the title of which is commonly retained by the utility company or the City. In the event of the installation of any such metering device or equipment, the Contractor shall advise the District as to the Owner thereof. Nothing contained in this section, however, shall defeat or impair the right of such persons furnishing materials or labor under any bond given by the Contractor for their protection or any rights under any law permitting such persons to look to funds due the Contractor in the hands of the District. The provisions of this section shall be inserted in all subcontracts and material contracts and notice of its provisions shall be given to all persons furnishing materials for the work when no formal contract is entered into for such materials.

1-16. Inspection by District. The District and its representatives shall at all times have access to all parts of the work and to the shops wherein the work is in preparation for the purpose of inspection, and the Contractor shall at all times maintain proper facilities and provide safe access for such inspection.

The District shall have the right to reject materials and workmanship which are defective, or to require their correction. Rejected workmanship shall be satisfactorily corrected, and rejected materials shall be removed from the premises without charge to the District. If the Contractor does not correct such rejected work within a reasonable time, fixed by written notice, the District may correct same and charge the expense to the Contractor.

Should it be considered necessary or advisable by the District at any time before final acceptance of the entire work to make an examination of work already completed by removing or tearing out any portion thereof, the Contractor shall on request promptly furnish all necessary facilities, labor, and materials. If such work is found to be defective in any respect due to the fault of the Contractor or his subcontractor, he shall defray all the expenses of such examinations and of satisfactory reconstruction. If, however, such work is found to meet the requirements of the contract, the additional cost of labor and materials necessarily involved in such examination and replacement, plus fifteen percent (15%) for overhead and profit, shall be allowed the Contractor.

Where the specifications require work to be specifically tested or approved, it shall not be tested or covered up without timely notice to the District of its readiness for inspection and without the approval or consent thereto by the District. Should any such work be covered up without such notice, approval or consent, it must, if required by the District, be uncovered for examination at the Contractor's expense.

1-17. Tests. The cost of all tests required under these specifications shall be borne by the Contractor, except that: earthwork compaction tests and the testing of Concrete cylinders will be made by the District.

1-18. Conduct of Work by Contractor. The Contractor shall be responsible for all damages to persons or property (to the extent given in paragraph 1-21) that occur as a result of his fault or negligence in connection with the prosecution of the contract and shall be responsible for the proper care and protection of all materials delivered and work performed until completion, and final acceptance by the District.

(a) Protection against Weather. The Contractor shall provide such heat, covering and enclosure as necessary to protect all work and materials against damage by weather conditions.

(b) Protection and Maintenance of Public and/or Private Property. The Contractor shall take adequate precautions to protect existing pavements, utilities, adjoining property and

structures and other public improvements, and to avoid damage thereto, and he shall at his own expense completely repair any damage thereto caused by his operations.

(d) Accident Prevention. Precaution shall be exercised at all times for the protection of persons and property. The safety provisions of applicable laws, building and construction codes shall be observed. Equipment and other hazards shall be guarded in accordance with the safety provisions of the "Manual of Accident Prevention in Construction," published by the Associated General Contractors of America, to the extent that such provisions are not in contravention of applicable law.

(e) In an Emergency Affecting the Safety of Life or Property, the Contractor, without special instruction or authorization from the District, is authorized to act at his discretion to prevent such threatened loss or injury; and he shall so act as if instructed to do so by the District.

(f) Superintendence by Contractor. The Contractor shall give his personal superintendence to the work or have a competent superintendent or foreman on the work at all times during progress with authority to act for him.

(g) Lines and Grades. Subject to the approval of the Engineer, the Contractor shall lay out his own work and he shall be responsible for all lines, elevations, and measurements executed by him under the contract except that: The Engineer will make initial survey for excavation quantities, establish the reference points from which the Contractor will work, and make all measurements and computations for payment. The Contractor shall exercise proper precaution to verify the figures shown on the drawings before laying out the work and will be held responsible for any error resulting from his failure to exercise such precaution.

(h) Removal of Debris, Cleaning, Etc. The Contractor shall as noted in the detailed specification sections or as directed by the District during the progress of the work, remove and properly dispose of the resultant dirt and debris. Upon completion of the work he shall remove all equipment and unused materials provided for the work, and leave the job in a neat and clean condition.

1-19. Contract Security. The Contractor shall furnish a surety bond in an amount equal to fifty percent (50%) of the contract price as security for the faithful performance of this contract, and shall furnish a separate bond in an amount equal to fifty percent (50%) of the contract price as security for the payment of all persons performing labor and furnishing materials in connection with this contract. The aforesaid bond or bonds shall be in form satisfactory to the District.

1.20. Insurance. In the form of any policy or certificate, or the amount of the insurance or the companies writing same are not satisfactory to the District, the Contractor shall furnish other policies or certificates in form and amount, and with companies satisfactory to the District. The Contractor shall not cause any policy to be cancelled or permit it to lapse, and all policies shall include a clause to the effect that the policy or certificate shall not be subject to cancellation or a reduction in the required limits of liability or amounts of insurance until notice has been mailed to the District stating when, not less than ten (10) days thereafter, such cancellation or reduction shall be effective. All certificates of insurance, authenticated by the proper officer of the insurer, shall state in particular those insured, the extent of the insurance, the location and operations to which the insurance applies, the expiration date, and the above-mentioned notice of cancellation clause.

(a) Protection for Workmen. In addition to such other insurance that may be required under this contract, the Contractor shall provide adequate workmen's compensation insurance for all employees employed under this contract on the project who may come within the protection of workmen's compensation laws and shall provide, where practicable, employers' general liability insurance for the benefit of his employees not protected by such compensation laws, and proof of such insurance satisfactory to the District shall be given.

The Contractor will be charged with the responsibility for proper and adequate workmen's compensation coverage for all his subcontract operations, and in the event the Contractor's insurance does not cover each and every subcontractor, certificates of insurance issued on policies by companies that may be acceptable to the District covering each and every subcontractor shall be filed with the District prior to the commencement of such subcontract operations.

(b) Approval of Insurance Companies. All insurance required to be carried under this contract shall be written with such company as may be acceptable to the District. Satisfactory certificates of said insurance shall be filed with the District in triplicate prior to the commencement of operations by the Contractor.

(c) The Contractor as Self-Insurer. If the Contractor fully satisfies the District of his responsibility and capacity under the applicable workmen's compensation laws, if any, to act as self-insurer, he may so act, and in such case the insurance required by paragraph (a) of this section need not be provided.

(d) Public Liability Insurance. The Contractor shall take out, maintain, and pay for, during the performance of his work, public liability insurance covering all claims of damage or injury which may arise out of the performance of the contract.

This policy will be for the protection of the Contractor and subcontractors and contingent liability to protect the District and will be in the amount of Fifty Thousand Dollars (\$50,000.00) for one (1) person or one (1) accident, and Five Hundred Thousand Dollars (\$500,000.00) for more than one (1) person or one (1) accident.

(2) Fire Insurance. The Contractor shall effect and maintain fire insurance with extended coverage indorsement upon the entire project on which the work of this contract is to be done to one hundred percent (100%) of the insurable value thereof, including items of labor and materials connected therewith whether in or adjacent to the work insured, materials in place or to be used as part of the permanent construction including surplus materials, shanties, protective fences, or temporary structures, miscellaneous materials and supplies incident to the work, and such scaffoldings, stagings, forms, and equipment as are not owned but rented by the Contractor, the cost of which is included in the cost of the work.

1-21. General Guarantee. Neither the final certificate of payment nor any provision in the contract nor partial or entire use of the project by the district shall constitute an acceptance of work not done in accordance with the contract or relieve the Contractor of liability in respect to any express warranties or responsibility for faulty materials or workmanship. The Contractor shall (1) remedy all defects in the work at his own expense, and (2) pay for all damage to other public, and private property to the extent of \$50,000.00 resulting from defective materials and workmanship within a period of one (1) year from the date of final acceptance of the work. The District will give notice of observed defects with reasonable promptness.

1-22. Assignment of Contract. The Contractor shall not assign this contract or any part thereof, nor any moneys due or to become due thereunder without the prior written consent of the District. No assignment of this contract shall be valid unless it shall contain provision that the funds to be paid to the assignee under the assignment are subject to a prior lien for services rendered or material supplied for performance of the work called for under this contract in favor of all persons, firms, or corporations rendering such services or supplying such materials.

1-23. Subcontractors. The Contractor shall not subcontract any work to be performed or any materials to be furnished in the performance of this contract without the prior written consent of the District. At least seventy percent (70%) of the contract work shall be done by the Contractor's own organization (not more than thirty percent (30%) of the contract work may be subcontracted.) The names of all subcontractors shall be submitted by the Contractor with his bid.

(a) Specialty Subcontractors shall be utilized for the performance of such parts of the work under this contract as, under normal contract practices, are performed by specialty subcontractors, unless the District determines that the Contractor

has heretofore customarily performed such specialty work with his own organization and is equipped to do so, or unless the District determines that performance of the specialty work by specialty subcontractors will result in increased costs or inordinate delays.

(b) Responsibility of Contractor for Subcontracted Work. If the Contractor shall subcontract any part of this contract, the Contractor shall be as fully responsible to the District for the acts and omissions of his subcontractor and of the persons either directly or indirectly employed by the subcontractor as he is for the acts and omissions of persons directly employed by himself. Nothing contained in this contract shall create any contractual relation between any subcontractor and the District. The District's consent to or approval of any subcontract under this contract shall not in any way relieve the Contractor of his obligations under this contract and no such consent or approval shall be deemed to waive any provision of this contract.

1-24. Mutual Responsibility of Contractors. If, through acts of neglect on the part of the Contractor, any other contractor or any subcontractor of any other contractor shall suffer loss or damage on the work, the Contractor agrees to settle with such other contractor or subcontractor by agreement or arbitration; if such other or subcontractor shall assert any claim against the District on account of any damage alleged to have been so sustained, the District shall notify the Contractor, who shall indemnify and save harmless the District against any such claim.

The Contractor must ascertain to his own satisfaction the scope of the project and the nature of any other contracts that have been or may be awarded by the District in the prosecution of the project to the end that the Contractor may perform this contract in the light of such other contracts, if any. Nothing herein contained shall be interpreted as granting to the Contractor exclusive occupancy of the site of the project. The Contractor shall not cause any unnecessary hindrance or delay to any other contractor working on the project. If the performance of any contract for the project is likely to be interfered with by the simultaneous execution of some other contract or contracts, the District shall decide which contractor shall cease work temporarily and which contractor shall continue, or whether the work under the contracts can be coordinated so that the contractors may proceed simultaneously. The District shall not be responsible for any damages suffered or extra costs incurred by the Contractor, resulting directly or indirectly from the award or performance or attempted performance of any other contract or contracts on the project, or caused by any decision or omission of the District respecting the order of precedence in the performance of contracts.

1-25. Patents. The Contractor shall hold and save the District and its officers, agents, servants, and employees harmless from liability of any nature or kind, including all costs and legal

...shall not be held liable for any damages or compensation for injury, property, liability, or appliance manufactured for or used in the performance of the contract, including its use by the District, unless otherwise specifically stipulated in the contract.

1-26. Other Contracts and Working Groups. The District reserves the right to let other contracts in connection with the project and to utilize County personnel. Municipal and private utilities may also perform work in connection with their lines at the sites. The Contractor shall carefully fit his own work to the work of these other groups, and shall so conduct his work, as judged by the Engineer, that it will least interfere with the efficient performance of their work. The Contractor shall upon reasonable notification provide all necessary access and working space required by the other working groups to effect their operations, and shall take all necessary precautions at the site for the safeguard of the temporary and permanent installations of these groups.

1-27. Right to Retain Imperfect Work. Where any part or portion of the work executed under this contract shall prove to be below the requirements as specified on the drawing and/or in the specifications, or as ordered by the Engineer; and where the imperfections are not of sufficient magnitude or importance to warrant removal or where removal would create dangerous or undesirable conditions, the Engineer will have the right and authority to retain such work. In such case, deductions in the final payment which are just and reasonable in the judgment of the Engineer will be made.

1-28. Right of Engineer to Modify Methods and Equipment may be exercised where safety provisions, the quality and/or rate of progress of the work, are considered below requirements in the judgment of the Engineer.

1-29. Termination for Breach, etc. If the Contractor refuses or fails to prosecute the work, or any separable part thereof, with such diligence as will insure its completion within the time specified in this contract, or any extension thereof, or fails to complete said work within such time, or if the Contractor should be adjudged a bankrupt, or if he should make a general assignment for the benefit of his creditors, or if a receiver should be appointed on account of the Contractor's insolvency, or if he or any of his subcontractors should violate any of the provisions of this contract, the District may serve written notice upon him and his surety of its intention to terminate this contract, such notice to contain the reasons for such intention to terminate this contract, and, unless within ten (10) days after serving of such notice, such violation shall cease and satisfactory arrangements for the correction thereof be made, this contract shall, upon the expiration of said ten (10) days, cease and terminate. In the event of any such termination the District shall immediately serve written notice thereof upon the surety and the Contractor, and the surety shall have the right to take over and perform the contract, provided, however, that if the surety within fifteen (15) days after the serving upon it of notice of termination does not commence performance thereof, the

District may take over the work under the contract and prosecute the same to completion by contract or by any other method it may deem advisable, for the account and at the expense of the Contractor, and his surety shall be liable to the District for any excess cost or other damages occasioned the District thereby, and in such event the District may, without liability for so doing, take possession of and utilize in completing the contract, such materials, appliances, plant and other property belonging to the Contractor as may be on the site of the project and necessary therefor.

The foregoing provisions are in addition to and not in limitation of any other rights or remedies available to the District.

1-30. Claims of Contractor against the District. If the Contractor should claim that any instruction, request, drawing, specification, action, condition, omission, default, or other situation obligates or may obligate the District to pay additional compensation to the Contractor or to grant an extension of time for the completion of the contract, or constitutes a waiver of any provision in the contract, he shall notify the District in writing of such claim within ten (10) days from the date he has actual or constructive notice of the factual basis supporting the claim. The Contractor's failure to notify the District within such ten (10) day period shall be deemed a waiver and relinquishment of any such claim against the District. If such notice be given in apt time, the procedure for its consideration shall be as stated above in this Section.

1-31. Payments to Contractor. The making of any payment to the Contractor under this contract shall not relieve the Contractor of his obligations hereunder. The Contractor is obligated to complete the contract in its entirety and to deliver to the District such completed work, finished product or structure as is specified in the contract, and until this contract is fully performed by the Contractor and the work produced thereby is accepted by the District, the Contractor shall be obligated to repair, replace, restore or rebuild any fully or partially completed work or structure, or any materials or equipment required to be provided under the contract which may be damaged, lost, stolen or otherwise injured in any way.

The District, not later than the 15th day of each calendar month, will make a partial payment to the Contractor on the basis of a duly certified and approved estimate of the work performed during the preceding calendar month under this contract. To insure the proper performance of this contract, the District will retain, except as otherwise specified in this "Section," 10 per cent (10%) of the amount of each estimate until final completion and acceptance of all work covered covered by this contract. In preparing estimates, the material delivered on the site and preparatory work done may be taken into consideration

(a) Payment for "Unit Price Work" shall be computed on the basis of work done to neat lines where such lines are shown on the drawings or directed by the Engineer.

The quantities noted in the schedules are approximations for comparing bids. No claim shall be made against the District for excess or deficiency therein, actual or relative.

(b) Payment for Work Covered by Lump Sum Bid. Except where otherwise specifically scheduled for payment, all work within the physical boundaries of the lump sum item will be considered as paid for at the price bid in the proposal for the Item. The Contractor shall furnish and pay for all labor, materials, equipment, and perform all work permanent and incidental thereto, and do everything which may be necessary to carry out the contract in good faith, complete, with good materials and workmanship, and in good working order.

(c) Payment for Extra, Additional or Omitted Work. The District, upon proper action by its governing body, may require changes in this contract, or additions to, or deduction from the work to be performed or the materials to be furnished pursuant to this contract. No employee, agent, or representative of the District, with the exception of the governing body authorized to award this contract, has any power to approve any change in this contract, and it is the responsibility of the Contractor before proceeding with any change to satisfy himself that the change has been properly authorized. Authorizations for changes will be in writing and the prices stated therein.

Adjustments, if any, 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:

(1) By an acceptable lump sum proposal from the Contractor.

(2) By a cost method pursuant to which the Contractor shall be paid the cost of the change or addition. He shall be required to keep and present in such form as the District may direct a correct account of the cost of the change or addition, together with all vouchers therefor. The cost may include an allowance for overhead and profit not to exceed fifteen per cent (15%) of the net cost.

In computing the cost, there shall be considered reasonable and proper net expenditures for labor, materials, power tools and equipment, pro rate charges for foremen, deductions for security, old age, and unemployment benefits and workmen's compensation insurance and surety bond premium. No overhead and profit shall be allowed on the deductions for social security, old age, and unemployment benefits. All other expenditures shall be treated as overhead costs.

The Contractor shall, when required by the District, furnish an itemized breakdown of the quantities and prices used in computing the value of any change, addition or deduction that might be ordered.

1-32. District's Right to Withhold Certain Amounts and Take Application Thereof. In addition to the amount which the District may otherwise retain under the contract, the District may withhold a sufficient amount or amounts of any payment or payments otherwise due to the Contractor, as in its judgment may be necessary to cover:

(a) Payments that may be past due and payable for just claims against the Contractor or any subcontractor for labor or materials furnished for the performance of this contract.

(b) Defective work not remedied.

(c) Failure of the Contractor to make proper payments to his subcontractors.

The District in its discretion may apply such withheld amount or amounts to the payment of such claims. In so doing, the District shall be deemed the agent of the Contractor, and any payment so made by the District shall be considered as a payment made under the contract by the District to the Contractor, and the District shall not be liable to the Contractor for such payment made in good faith. Such payment may be made without prior judicial determination of the claim or claims. The District will render to the Contractor a proper accounting of such funds disbursed in behalf of the Contractor.

1-33. Payments by Contractor. The Contractor shall pay:

(a) For all transportation and utility services not later than the 20th day of the calendar month following that in which such services are rendered.

(b) For all materials, tools, and other expendable equipment to the extent of ninety per cent (90%) of the cost thereof, not later than the 29th day of the calendar month following that in which such materials, tools, and equipment are delivered at the site of the project, and the balance of the cost thereof not later than the 30th day following the completion of that part of the work in or on which such materials, tools, and equipment are incorporated or used.

1-34. Shop Drawings Furnished by Contractor. Two (2) copies of all shop drawings of fabricated work shall be submitted for approval to the Engineer. These drawings shall be complete and shall contain all required detail information. If approved by the Engineer, each copy of the drawing will be identified as having received such approval by being so stamped and dated. The Contractor shall make any corrections required by the Engineer, file with him two (2) corrected copies and furnish such other copies as may be needed. The approval of the drawings by the Engineer shall not be construed as a complete check but will indicate only that the general method of construction and detailing is satisfactory. Approval of such drawings will not relieve the Contractor of the responsibility for any error which may exist as the Contractor shall be responsible for the dimensions and design of adequate connections, details, and satisfactory construction of all work. Descriptive data pertinent to materials, equipment, and accessories for which approvals are required, shall be submitted with the shop drawings. No material or equipment for which shop drawings are required shall be furnished, and no appurtenant work shall be performed until approvals of the drawings are received.

1-35. Discontinuance of Work. If for any reason beyond the control of the District, it is necessary for the District to order the discontinuance of the work after the contract is awarded, the District shall pay to the Contractor the actual cost of the work performed plus fifteen per cent (15%) to cover all overhead, cost of operation and profit.

1-36. Board Orders. Applicable Board Orders relative to Public Works shall be part of the requirements of these specifications.

SECTION 2

SPECIAL CONDITIONS

2-01. Scope. The work covered by these specifications includes the furnishing of all labor and materials, and performing all operations necessary to construct the following Conduit Systems complete as shown on the drawings and covered in these specifications.

Matilija Conduit
Santa Ana Valley Conduit
Ojai Valley Conduit
Eastside Conduit
Casitas Conduit

2-02. Lump Sum Bid Items. Payments will be made at prices bid in the proposal, while prices shall be the total prices covering full compensation for every item of work including conduit, (shown on the drawings and covered in the detailed Specification Sections) located within the physical boundaries fixed on the drawings for these Items, except as noted below.

(a) "Suspension Bridge Superstructure" bid price shall not include compensation for "Bridge Concrete," which is separately scheduled for payment as covered in the "Concrete" section.

(b) Ventura River Crossing bid prices shall not include compensation for "Excavation at Ventura River Crossing," which is separately scheduled for payment as covered in the "Earthwork" section.

2-03. Conduit below Matilija Dam will be located on Canyon slopes, and Access and Pioneer Roads will be required to be constructed by the Contractor in reaches along the Matilija Creek and the Ventura River.

2-04. Concrete Conduit Alternative. The Bidder may submit his bid based on the partial or complete use of reinforced concrete cylinder pipe with a centrifugally spun inner lining and a gunited or equal concrete coating on the exterior bonded to the steel shell with prestressed reinforcing. In such case he shall submit general data and drawings covering the conduit and fittings he proposes to use and shall submit general data and drawings on all changes necessitated by the use of the alternate conduit. After award of contract, complete detailed drawings shall be submitted for approval of the Engineer. Particular attention is called to the fact that anchor blocks are not required at bends except as shown, where steel conduit is used. However, should concrete pipe be used, the Contractor shall provide required anchor blocks at all bends, tees, and plugs, the cost of which shall not be included under "Miscellaneous Concrete" bid item but under the "Conduit" pay items. Bids on concrete conduit shall be based on using concrete aggregates in accordance with requirements of "Concrete" section, and only San Gabriel watershed aggregates shall be used.

2-05. Ventura River Crossing Alternatives. An "Underground Ventura River Crossing" (Dwgs. 19A & 26A) and an "Overhead Ventura River Crossing" (Dwgs. 19B & 26B) are fully detailed on the drawings and covered in these specifications; and the Bidder shall submit alternate prices covering each construction (Items Nos. 13a, 13b, 14a, and 14b).

2-06. Drawings and Specifications Furnished to Contractor.

(a) Interpretation. In general, the drawings will show dimensions, position, and kind of construction, and the specifications, qualities and methods; but minor modifications may be made in the full-size details.

(b) All work called for on the drawings and not mentioned in the specification, or vice versa, shall be furnished as though fully set forth in both. Work not particularly detailed, marked, or specified, shall be the same as similar parts that are detailed, marked, or specified.

(c) Errors and Discrepancies. Prior to execution of the work, the Contractor shall check all drawings and specifications, and shall immediately report all errors, discrepancies, and omissions discovered therein to the District's representative. All such errors, discrepancies and omissions will be adjusted by the District's representative. Any adjustments made by the Contractor, without prior approval, shall be at his own risk, and the settlement of any complications arising from such adjustment shall be made by the Contractor at his own expense. This includes typographical errors in the specifications and notational errors on the drawings where doubtful of interpretation.

(d) Furnishing Drawings and Specifications. Five (5) sets of drawings and specifications will be furnished to the Contractor without charge. Additional sets will be furnished upon request at the cost of reproduction. All drawings and specifications are the property of the District and are to be carefully used and returned to the District at the completion or cessation of the work or termination of the contract, and are not to be used on other work.

(e) Completeness. It is the intent of the drawings and specifications that the Contractor shall turn over to the Owner a complete job. Any work not specifically called for or specified, but necessary to comply with the intent of quality and completeness, shall be performed as a part of the contract under the pertinent conditions of payment.

(f) Issue of Subsidiary Specifications referenced herein shall be the latest revised or amended specifications to date.

(g) Drawings. The work shall conform to the design drawings listed in the Index given on drawing No. C-1, all of which form a part of these specifications.

SECTION 3

EARTHWORK

3-01. Scope. The work covered by this section consists of furnishing all labor, materials and equipment, and performing all operations required to complete in an approved manner the earthwork indicated on the drawings and specified herein. The work includes:

Locating centerline of Conduits
Construction of Pioneer Road
Conduit Trench Excavations and Backfill
Excavation and backfill for structures, saddles,
and thrust blocks.

3-02. General

(a) Conduit Centerlines. The Contractor shall locate the conduit centerlines and construct the Pioneer Road in accordance with the angles, distances, and elevations shown on the drawings, except: adjustments in the angles, distances, and elevations (which are from paper locations) may be made as approved by the Engineer to meet field conditions.

(b) Pioneer Road shall be constructed by the Contractor.

(c) Removal of Trees. Only trees designated by the Engineer may be removed from orchard land.

(d) Debris and Waste Materials shall be disposed of by the Contractor; at improved sections, disposal shall be as acceptable to the owners of such improvements.

3-03. Excavations. The Contractor shall perform all excavations to the lines and grades as specified herein.

(a) Protection of Improvements. Requirements of Sections 6.1 to 6.3, inclusive, of AWWA Specification 7D.1 shall be complied with except: the Contractor will require no permission from the Engineer and will receive no additional compensation as stated.

(b) Excavation and Preparation of Conduit Trenches shall conform to the typical sections shown on the drawings. Where the bottom of the trench is covered with solid, hard objects that might penetrate the protective coatings, the Contractor shall place a 6" layer of screened compacted earth or sand, compacted to a minimum of 90 per cent of maximum density. This cushion shall be a minimum of 6" over the highest projection. Requirements of 7.1, 7.11, 7.2, 7.31, and 7.5 to 7.92, inclusive, of the AWWA Specification 7D.1 shall be complied with, except: trench bottom shall be cut to shape to support the bottom 120° of the conduits 24" in diameter and larger.

(c) Structures. Excavation for structures shall extend a sufficient distance from walls and footings to allow for forms and for inspection, except where concrete for walls and footings is authorized to be deposited directly against excavated surfaces. Unauthorized excavation made below the elevations or outside the lines indicated on the drawings, shall be corrected as directed by the Engineer at the Contractor's own expense.

3-04. Backfill

(a) Conduit Trenches shall be backfilled (except as noted below) in accordance with requirements of Section 5-4.5 of AWWA Specifications 7A.5, except that backfill up to 6 inches above the conduit centerline shall be packed carefully around the pipe and well compacted using approved means. The remainder of the backfill shall be sufficiently packed to prevent serious settlement.

Material used for backfilling to a point 6" above the top of the pipe shall be screened thru a 1" screen for coal tar or somastic coating and thru a 4" screen for concrete coated pipe.

(1) At Shoulders of State Highway the top 6 inches shall be compacted to a minimum of 95 per cent of maximum density.

(2) Backfill at Cut Pavements shall be performed same as for "Structures" except top six inches of backfill along State Highway shall be compacted to a minimum of 95 per cent maximum density.

(3) At Valve Boxes gravel shall be placed as shown.

(b) Structures. Backfills about structures (except as noted for Anchor Blocks and Revetment) shall be performed in accordance with requirements of paragraph (1). Section 12 of the "Standard Specifications of the Division of Highways, dated April, 1945, but backfill may be placed immediately after removal of forms. Waste materials shall be disposed of as approved by the Engineer.

(c) Backfill at Suspension Bridge Anchor Blocks shall be made within the limits of the excavation, using local stone for backfill above the top of the blocks and for front slopes.

(d) Backfill at Revetment at Ventura River Crossing shall be made with rock as shown on the drawing. Eighty per cent of the rock fill shall have a minimum size of 8 inches. Care shall be taken not to injure tie cables connecting outside rails.

3-05. Payments.

(a) "Excavations at Ventura River Crossing" will be paid for at the unit prices bid in the proposal. Measurement will be made of excavation only, to the lines and grades shown on the drawings or as required by the Engineer. The cost of backfill will be included in the prices paid for excavation and no additional allowance will be made therefor

(b) All other Earthwork. Compensation for all Earthwork other than the alternate "Excavation at Ventura River Crossing" Pay Items will not be separately paid for; but the Bidder shall include full compensation for this work in the unit and lump sum prices bid for the "Conduits," the "Suspension Bridge," "Concrete," and "Structures."

SECTION 4

CONCRETE

4-01. Scope. The work covered by this section consists of furnishing all labor, materials and equipment, and performing all operations in connection with concrete work, as indicated on the drawings and as specified herein.

4-02. Included Work

(a) Structural Concrete

- (1) Suspension Bridge Concrete (Piers and Anchor Blocks)
- (2) "Ventura River Crossing" Concrete
- (3) "Santa Ana Outlet Structure" concrete
- (4) "Matilija Valve House" concrete
- (5) "Ojai Valve House" concrete
- (6) "Eastside Valve House" concrete
- (7) "Pressure Reducing Station" concrete

(b) Miscellaneous Concrete (concrete work other than listed above; major items of which are: Saddles, thrust blocks, valve boxes, conduit encasements, and concrete tower in Matilija Conduit Line).

4-03. Materials.

(a) Portland Cement shall conform to Type II, ASTM Specification C 150. Only one (1) brand of cement shall be used for work covered by these specifications. Testing of cement shall conform to ASTM Specification C 77. The total sum of sodium oxide and potassium oxide calculated as sodium oxide (total alkali as $\text{Na}_2\text{O} = \text{Na}_2\text{O} + .658\text{K}_2\text{O}$) shall be no more than six-tenths of one per cent (.6%) as determined by procedure in ASTM Specifications C 114.

(b) Aggregates shall be of such soundness that when subjected to 5 cycles of the test procedure given in ASTM Specification C 88 using a solution of sodium sulphate, the maximum total weight loss does not exceed 6% for fine and coarse aggregates. Aggregate shall contain no vegetable matter, reactive constituents, or soft, friable, thin, or elongated particles, in quantities considered deleterious by the Engineer. Aggregate material from Ventura County deposits will not qualify under these specifications except as specifically approved by the Engineer.

(1) Fine Aggregate shall be washed concrete sand of hard, strong, durable, uncoated particles and shall conform to ASTM Specification C 33.

(2) Coarse Aggregate shall be washed gravel or crushed stone, consisting of hard, tough, durable particles free from adherent coating. It shall not contain more than 15% by weight of particles which when selected by hand and tested in the Los Angeles Rattler, show a loss in excess of 55% after 500 revolutions. The results from

the following tests shall not show a loss greater than noted:

Wet Shot Rattler Test	55%
Los Angeles Rattler Test (after 100 revolutions)	9%
Los Angeles Rattler Test (after 500 revolutions)	35%

The coarse aggregate shall conform to ASTM Specification C 33 with grading to be within the limits of material passing a $1\frac{1}{2}$ inch screen to material retained on a No. 4 screen, except: maximum size of aggregate may be 3 inches for all "Miscellaneous Concrete" and for Bridge Anchor Block Concrete.

(c) Water used in mixing concrete shall be fresh, clean, and free from injurious amounts of oil, acid, alkali, or organic matter.

(d) Reinforcing Bars shall be deformed, intermediate grade, open hearth or electric furnace steel, conforming to ASTM Specification A 15.

4-04. Proportioning. Concrete shall be composed of Portland cement, fine aggregate, coarse aggregate, and water so proportioned and mixed as to produce a plastic, workable mixture in accordance with all requirements of this section and suitable to the specific conditions of placement.

(a) Required Concrete Strength. The Contractor shall supply the services of an accredited testing laboratory which shall recommend the proportions of mixes to be used. The recommendations, when approved by the Engineer, shall be strictly complied with. It shall be required that the concretes have at the end of twenty-eight (28) days the following strengths:

(1) 2000 lbs/sq. inch minimum compressive strength for "Miscellaneous Concrete."

(2) 2500 lbs/sq. inch minimum compressive strength for "Structural Concrete."

(b) Consistency shall be suitable for the methods of placement with the slump (when tested in accordance with ASTM Specification C 143) not exceeding three inches (3").

4-05. Mixing. Concrete shall be mixed in an approved batch mixer. Adequate equipment and facilities shall be provided for accurate measurement and control of all materials and for readily changing proportions as required. The time of mixing each batch in a mixer at the site after all materials are added shall be a minimum of $1\frac{1}{2}$ minutes.

4-06. Placing. Concrete shall be placed before initial set has occurred, and in no event after it has contained its water content for more than forty-five (45) minutes. All concrete shall be deposited as nearly as practicable in final position to avoid segregation and shall be so deposited that it may be effectively compacted. Each section of work shall be poured in a continuous operation as far as possible. Construction joints shall be provided as shown unless otherwise directed by the Engineer.

(a) Vibration. Concrete shall be placed with the aid of approved mechanical vibrating equipment with vibration transmitted directly to the concrete. The intensity and duration of vibration shall be to accomplish thorough compaction. Vibration shall be supplemented by forking or spading by hand adjacent to the forms on exposed surfaces, in order to secure smooth, dense, even surfaces.

(b) Compaction. The concrete shall be compacted and worked in an approved manner into all corners and angles of the forms and around reinforcement and embedded items.

(c) Construction Joints. When the placing of concrete is to be interrupted long enough for the concrete to take its final set, the working face shall be wire brushed and coated with a stiff layer of mortar of the same mixture as the concrete before fresh concrete is placed.

4-07. Finishing. The following shall apply to exposed surfaces:

(a) Formed exterior surfaces shall be smooth, free from projections and depressions. Immediately after the removal of forms, fins, and other projections shall be removed from surfaces. Cavities produced by form ties shall be thoroughly cleaned, saturated with water, and carefully pointed with mortar of the same cement-sand content as the concrete. Surfaces which have been pointed shall be kept moist for a period of twenty-four (24) hours. Finished surfaces shall be free from sand streaks or other voids. Defective surfaces shall be repaired or replaced as approved.

(b) Unformed Surfaces. Concrete for unformed surfaces shall be placed to grade without separation of coarse aggregate from the mortar, and in a comparatively stiff consistency. It shall be consolidated and shaped to grade with an approved screed and the surface brought to its true-form and grade, working the surface concrete as little as possible with a wood float finish. Floors of Valve Houses and Pressure Reducing Station shall be graded to drains and sumps. The surfaces shall be worked only enough to insure uniformity and be free from defects and blemishes and to insure proper drainage where required.

4-08. Curing and Protection.

(a) Vertical surfaces shall be kept continuously moist for not less than seven (7) days after the concrete is placed. The method of keeping concrete moist shall be by continuous sprinkling, spraying, or other methods approved by the Engineer. All water used in curing shall be free from excessive amounts of silt and other impurities. A colorless Hunt's Process or similar membrane method may be used for curing finished surfaces other than those against which concrete will be placed.

(b) Horizontal or approximately horizontal finished surfaces shall be covered with sand, earth, or other suitable material as soon as the concrete has set, and kept moist for at least two weeks after placing, or shall be covered with an approved membrane.

(c) Removal of coverings shall be made by the Contractor to the satisfaction of the Engineer.

4-09. Forms shall be smooth, mortar tight, true to the required lines and grade, and of sufficient strength to resist any appreciable amount of springing out of shape during the placing of concrete.

(a) Cleaning. All dirt, chips, sawdust and other foreign matter shall be completely removed before any concrete is deposited therein. Forms previously used shall be thoroughly cleaned before being re-used.

(b) Oiling. Before concrete is poured in forms, all inside surfaces of the forms shall be thoroughly coated with an approved form oil. The form oil shall be of high penetrating qualities leaving no film on the surface of the forms that can be absorbed by the concrete.

(c) Fasteners. Only approved bolts or form clamps shall be used to fasten forms in position. They shall be of sufficient strength and number to prevent spreading of the forms, and of such type that they can be entirely removed or cut back one (1) inch below the finished surface of the concrete. All forms shall be constructed with stiff wales at right angles to the studs and all form clamps shall extend through and fasten such wales.

(d) Removal. Forms shall be left in place until their removal is approved by the Engineer, and then shall be removed carefully to prevent injury to concrete surfaces.

4-10. Steel reinforcement

(a) General. Steel reinforcement shall be furnished, cut, bent, and placed as indicated on drawings. At time of placing concrete, all reinforcement shall be entirely free from rust, scale, grease, or other coating which might

destroy or reduce its bond with concrete.

(b) Shop drawings, lists, and bending details shall be furnished by the Contractor, as required, and all reinforcement shall be placed in accordance with the drawings and schedules as approved.

(c) Cutting and bending. Steel reinforcement shall be cut and bent in accordance with standard approved practice and by approved machine methods, either at the mill or in the field.

(d) Minimum spacing of bars. The clear distance between parallel bars shall be not less than one and one-half ($1\frac{1}{2}$) times the diameter of round bars or twice the side dimension of square bars.

(e) Protective Coverings of Concrete. unless otherwise shown, the following shall apply:

(1) Steel reinforcement shall be not less than 3" from concrete surfaces in contact with the earth.

(2) Other concrete over steel reinforcement shall be not less than $1\frac{1}{2}$ " thick.

(3) Minimum thickness of concrete protection for conduit at thrust blocks shall be 18".

(f) Splicing. Splice laps of reinforcement shall be adequate to transfer stress by bond. Bars shall be lapped at least forty (40) diameters and splices shall be staggered at least four feet (4'), unless otherwise noted on drawings.

(g) Supports. All reinforcement shall be retained in place, true to indicated lines and grades, by the use of approved metal or concrete supports, spacers, or ties. The supports shall be of sufficient strength to maintain the reinforcement in place throughout the concreting operations, shall be completely concealed in the concrete, and shall not discolor the surface of the concrete.

4-11. Embedded Items. Materials required to be built into the concrete work, shall be properly placed and secured in position in the forms before the concrete is poured. All embedded items shall be thoroughly clean and free from coating, rust, scale, oil, or any other foreign matter and shall be so located that the strength of the construction will not be impaired.

4-12. Conduit Encasement shall be provided where shown on the drawings. Such encasement shall also be provided as determined necessary by the Engineer where cover is less than 2 feet.

4-13. Test of Concrete. The Contractor shall, where required by the Engineer, take test cylinders while concrete is being poured for testing by the District of compressive strength. Concrete failing to meet the specified requirements shall be subject to replacement at the Contractor's

own expense, or retention at a reduction in payment as required by the Engineer.

4-14. Payments. Concrete work shall be paid for as follows, and no other payments will be made.

(a) Structures Concrete Work other than Suspension Bridge Concrete will not be separately paid for, but will be considered as fully paid for under the Lump Sum Prices bid in the proposal for the individual structure. This work includes concrete work at:

Santa Ana Outlet Structure
Valve Houses and Pressure Reducing Station
"Ventura River Crossing" alternatives

(b) Suspension Bridge Concrete which includes all concrete work within the physical limits shown on the drawing will be paid for at the unit price bid in the proposal. Full compensation for all required "Earthwork" and embedded items shall be included for payment under this item.

(c) Miscellaneous Concrete will be paid for at the unit price bid in the proposal. Measurement will be made to the lines and grades shown on the drawings or required by the Engineer. Payment will include compensation for all embedded items except manhole frames, which are included for payment under the "Conduit" Pay Items, and except concrete in valve boxes which are included for payment under the "Conduit" Pay Items.

SECTION 5

STRUCTURAL STEEL

5-01. Scope. The work covered by this section consists of furnishing all labor, materials, equipment, and performing all operations in connection with structural steel indicated on the drawings and specified herein. The work includes:

Suspension Bridge Superstructure

Ring Girders

Brackets at Creek and River Crossings

"Overhead Ventura River Crossing" alternative.

5-02. Shop Drawings. Materials shall not be fabricated or delivered until the shop drawings have been approved. Fabrication, assembling, and erection shall conform to approved shop drawings. Approval of shop drawings means approval of general methods only, and does not constitute an approval of dimensions, figures, or quantities. The Contractor shall be responsible for all errors of fabrication and for the proper fitting of the various members shown on the shop drawings.

5-03. Materials. Where not otherwise noted on the drawings, the following shall apply:

(a) Structural Steel shall conform to A.S.T.M. Specification A 7, except that Acid-Bessemer Process steel shall not be used for bridgework. The Contractor shall furnish certified copies of all records of tests covering the chemical and physical properties of all structural steel used in bridges where required by the Engineer. Unidentified stock material may be used for minor details which carry little or no stress.

(b) Rivet Steel shall conform to A.S.T.M. Specification A 141.

(c) Arc-welding Electrodes shall conform to A.S.T.M. Specification A 233, and shall be delivered to the job in unbroken packages bearing the name of the manufacturer.

(d) Turned Bolts or "Rivet Bolts" shall be "Dardelet" rivet bolt or equal.

5-04. Workmanship.

(a) General. Workmanship shall be in accordance with the American Institute of Steel Construction Specification except: bridgework shall conform to the requirements of California Division of Highways "Standard Specifications" dated April, 1945, Section 34, Chapter 3.

All workmanship shall be equal to the best practice in modern structural shops.

(b) Assembling. In assembly and during fabrication the component parts of built-up members shall be securely held in close contact by sufficient clamps or other adequate means. The several pieces forming built sections shall be straight and fit close together, and the finished members shall be free from twists, bond, or open joints.

(c) Welding and Welders. The surfaces of all openings, seams, or joints to be welded shall be free from rust, scale, or grease. Welding shall be electric shielded arc process, and shall comply with recommendations given in "Welding Handbook" of American Welding Society. Exposed welds shall be peened with a light air hammer or approved equal.

5-05. Erection. The Contractor shall install structural steel work as shown on the drawings.

(a) Bracings and Supports necessary for holding work securely in place and for safely sustaining all loads that may be imposed during erection shall be provided. Concrete under steelwork shall be properly protected by heavy planks kept in place during erection.

(b) Turned Bolts or "Rivet Bolts" may be used where it is impossible to drive satisfactory rivets. Where turned bolts are used, holes shall be reamed in the field.

(c) Field Welding and Riveting shall be the same workmanship as the shop work.

5-06. Steel H-beam Piles. Full length sections shall be placed to elevations shown. Where a bearing value of less than 20 tons (measured in accordance with formulas in paragraph (g), Section 35 of the "Standard Specifications") is developed, a length of piling necessary to develop the required value shall be added. Work shall be in accordance with paragraphs (e) and (f) of Section 35 of the "Standard Specifications."

5-07. Shop Painting. Structural steel shall be given shop coat of No. 1 Primer as specified in Section 64 Chapter II, article (b) of California Division of Highways "Standard Specifications" dated April, 1945. Surfaces that will be inaccessible after erection or installation shall be given a second coat.

5-08. Payments. Structural steel work will not be separately scheduled for payment, but will be included for payment under the unit and lump sums bid in the proposal for the particular Pay Items in which the steel is placed.

SECTION 6

STEEL CONDUITS

6-01. Scope. The work covered by this section includes the furnishing of all materials, labor, and equipment, and performing all operations necessary to install the conduits and specials shown or noted on the drawings and as specified herein.

6-02. Materials.

(a) Conduits shall meet requirements of AWWA Specifications 7A.3 and 7A.4, except that wall thicknesses shall be as noted on the drawings. At the Contractor's option a greater thickness may be used to facilitate shop or field operations, or handling.

(b) Protective Coatings shall be in accordance with Sections 5.2 and 6.2 of the AWWA Specifications 7A.5 and 7A.6; enamel shall be Type "A".

(c) Flanges shall be machine faced steel, provided with required bolt holes. The flanges shall meet the requirements of ASTM Specifications A181, Grade I.

(d) Mechanical Couplings shall be equal to Dresser Style 38 except where otherwise noted on drawings.

(e) Gaskets shall be 1/16" thick natural rubber or cloth inserted natural sheet rubber.

6-03. Shop Protective Coating.

(a) Coal Tar Coating. Conduit and specials and fittings shall be given interior and exterior coatings in accordance with Sections 5-1, 5-3, 5-5, 6-1, 6-3, and 6-5 of the A.W.W.A. Specifications 7A.5 and 7A.6, except:

(1) Spun lining shall be 3/32 inch thick with a tolerance of plus 1/32 inches or minus no inches.

(2) The Dam method, as covered in the Department of Water & Power of the City of Los Angeles, Specifications No. 315G, Paragraph C3.14, may be used in applying enamel coating.

(3) Conduit smaller than 30 inch diameter shall be provided with water-resistant whitewash over the felt wrapper. All exterior surfaces to be encased in concrete shall be cleaned but left uncoated.

(b) "Somastic Pipe Coating." Pipes 24" in diameter and smaller may be externally coated with "Somastic Pipe Coating" if the Contractor so desires. Pipe shall be internally coated with coal tar as specified in 6-03a if "Somastic Pipe Coating" is applied. All exterior surfaces to be encased in concrete shall be cleaned but left uncoated.

6-04. Handling and Field Procedure. Transporting and handling pipe in transportation, in the field and at the trench shall be performed in accordance with the requirements of Sections 5-4 and 6-4 of the AWWA Specifications 7A.5 and 7A.6.

6-05. Welding shall conform to the applicable requirements of Section 6, Chapter 4, of ASA Specifications B31.1. Joint surfaces shall be wirebrushed free from loose slag.

(a) Welded Branch Connections. Shop drawings shall be submitted to and approved by the Engineer before welded branch connections are fabricated.

(b) Joints. The type of joints to be used shall be at the option of the Contractor, with the proviso that interior lining is smooth and in correct alignment, and meets strength requirements.

(c) Flanges shall be welded to conduit with two circumferential fillet welds.

6-06. Field Coatings.

(a) Interior Surfaces of all Conduits shall be coated in accordance with the requirements of Sections 5-4.3 and 6-4.3 of AWWA Specifications 7A.5 and 7A.6. The Contractor shall touch up injured interior coatings of pipe 24 inches in diameter and over by hand to equal original coating, and pipe under 24 inch diameter shall have injured surfaces touched up by a method subject to approval by the Engineer.

(b) Buried Exterior Surfaces shall be coated in accordance with the requirements of Sections 5-4.3, 5-4.4, 6-4.3 and 6-4.4 of AWWA Specification 7A.5 and 7A.6 or if "Somastic Pipe Coating" is used, field joints shall be made by melting prepared "Somastic Pipe Coating" in the field and applying it under pressure to the cleaned and primed pipe so that it overlaps the factory applied coating. Priming material shall be as specified by the manufacturer of "Somastic Pipe Coating."

(1) At Intersections with ground the coatings shall be extended beyond the point of contact with the ground to a minimum length of one foot.

(2) At Intersection with concrete the coatings shall extend up to the concrete face, and juncture shall be sealed with a collar of waterproofing fabric set in hot bituminous cement.

(c) Aboveground Exterior Surfaces. Red Lead shop primed surfaces shall have injuries to first primer touched up, and then be given a second prime coat and an aluminum finish coat, with work to be in accordance with Section 6-5 of AWWA Specification 7A.6.

6-07. Field Electrical Inspection. The Contractor shall conduct electrical inspection of all conduit coating in the presence of the Engineer.

Conduit which is to be welded together in the trench shall be tested immediately prior to lowering into the ditch and shall again be retested including the field joint after it is in place.

Conduit which is welded above the ditch shall be tested after field welding and field wrapping has been completed but before it is lowered into the trench.

Tests shall be made with a 10,000-volt minimum (on secondary) standard steel brush type "holiday" detector.

6-08. Hydrostatic Test shall be performed in accordance with requirements of Section 15 of A.W.W.A. Specification 7D.1, except:

(a) Test period shall be 4 hours.

(b) Leakage. Leakage of 25 gal. per mile per inch of diameter per 24 hours will be allowed.

(c) Hydrostatic Test Pressures at the discharge end of the lines shall be as follows:

(1)	Matilija Conduit Line	-	300	lbs./sq./in.
(2)	Ojai	"	250	" "
(3)	Santa Ana	"	300	" "
(4)	Eastside	"	300	" "
(5)	Casitas	"	300	" "

(d) Eastside Conduit Line Upper Side Test. The Eastside Conduit line shall be tested at the upper side of the Pressure Reducing Station at a pressure of 300 lbs/sq. inch.

6-09. Bonding.

(a) Steel Conduit. All mechanical couplings, expansion joints, valves, meters and spools which break the continuity of the line for transmission of electrical currents shall be bonded with 1/4" x 1" steel strap welded to the bare pipe. At valve houses and pressure reducing stations bonding shall be by connection of all lines by means of 4/0 A.W.G. "Trenchlay" copper cables brazed to the bare mains. The cable shall be carried around the outside of the valve house walls.

Where bonded sections are to be buried, the bond shall be covered by the standard field wrapping as hereinbefore specified.

(b) Concrete Cylinder Pipe shall not be bonded.

6-10. Corrosion Coupons.

(a) Steel Conduit. Flat steel sheets of 3" x 2" x $\frac{1}{4}$ " plate of the same steel as used in the manufacturing of the conduit shall be installed at approximately one mile intervals or as directed by the Engineer. Coupons shall be placed in groups of two with one coupon placed loose in the trench and the other coupon connected to the conduit by a copper wire. The wire shall be No. 12 A.W.G. single conductor equal to "Trenchlay" as manufactured by General Cable Corporation. The wire and coupon shall be connected to the pipe as follows:

(1) Connections shall be made by brazing the wire to the top of the bare pipe at a field joint.

(2) A three-inch high steel pipe ring, cut from a 3-inch ring, shall then be welded to the pipe to form a cup around the wire end. This cup shall then be completely filled with coal tar or liquid "Somastic Pipe Coating" so that the end of the wire insulation extends into this material a minimum of one (1) inch.

(3) The steel ring shall then be coated and covered with the standard field coating, being careful to obtain full bond with the conduit coating.

(4) The coupon shall be attached to the wire with 125-amp. solder type lug bolted with a $\frac{1}{4}$ " copper bolt with copper washers each side.

(5) Coupons shall be placed at the depth of the centerline of the conduit and approximately one (1) foot clear of the pipe. They shall be placed with the flat side parallel to the pipe centerline. The distance between the wired and the loose coupon shall be approximately two (2) feet.

(6) Each corrosion coupon shall be drilled for a $\frac{1}{4}$ " bolt located near the center of the 2" edge. They shall each be blasted, stamped with an identification number by means of steel dies and accurately weighed to the nearest one-tenth gram. Before coupons are placed in the trench the Engineer shall be given a copy of the weights. The weight slip shall be certified by the weigher as to its accuracy.

All coupons shall be clean at time of weighing and shall be protected from dirt, grease and rust before being placed in the trench.

(7) Two coupons shall be furnished and installed for each mile of steel conduit and ten extra coupons shall be furnished to the District at the completion of the contract. Coupons will not be required for concrete cylinder pipe.

6-11. Payments.

(a) Water Conduit will be paid for at the linear foot prices bid in the Proposal. Included for payment under each size Conduit will be full compensation for: all work not specifically included for payment under the other scheduled Pay Items and located within the physical limits of the particular Conduit Pay Item lengths. Major items included are:

Earthwork (except at Structures covered by Pay
Items and Ventura River Crossing).
Structural Steel (except for Structures covered
by Pay Items).
Conduits - Specials - Fittings, Manholes, Couplings
Gate and Blowoff Valves in Lines
4" Blowoff piping shorter than 18" lengths.
Air and Vacuum, Pressure Air, and Combination Air
Valves.
Valve Boxes (Both wooden & concrete)
Packing at Saddles
Resurfacing
Corrugated metal pipe encasements
Bonding & Coupons

Conduit within the physical boundaries of Lump
Sum Pay Items will not be measured for payment under the
Conduit Pay Items, but will be included for payment under
the Pay Item involved.

SECTION 7

CARPENTRY

7-01. Scope. The work covered by this section consists of furnishing all labor, materials, and equipment, and performing all operations in connection with carpentry work, indicated on the drawings and as specified herein.

7-02. Size Defined. Minimum sizes of lumber members refer to nominal sizes. American Lumber Standard dressed sizes shall be accepted as the minimum not sizes conforming to nominal sizes.

7-03. Materials.

(a) Lumber for framing, flooring and sheathing shall be No. 1 Common Grade Douglas Fir in accordance with Rules of the West Coast Lumbermen's Association.

(b) Lumber for Valve Boxes and Bulkhead (at C.M.P. Reinforcement) shall be Foundation Grade Redwood.

(c) Window sash shall be Douglas Fir, Millrun Grade stock sash.

(d) Suspension Bridge Pipe Saddles shall be creosote treated Douglas Fir as noted on the drawing.

7-04. Storage. When delivered to the site, materials shall be piled to insure proper drainage, ventilation, and protection from weather.

7-05. Construction not explicitly shown shall be provided as required to complete the work in a thoroughly workmanlike manner.

(a) Framing shall be properly cut, closely fitted, accurately set to required lines and levels, and rigidly set in place.

(1) Anchors shall be installed under "Concrete Work" section where indicated or required to secure carpentry to concrete or framing.

(b) Roof Sheathing shall be tightly laid and nailed twice at every bearing. Joints shall be broken at least twenty-four (24) inches. All end joints shall be made over bearings.

(c) Flooring shall be laid with one-half ($\frac{1}{2}$) inch spaces between boards.

(d) Valve boxes shall be redwood as detailed.

(e) Bulkhead at ends of corrugated metal pipe reinforcements under Railroad and roadway shall be constructed around the water conduit to exclude dirt from entering the C.M.P. using two inch (2") board.

7-06. Treating Lumber. All lumber other than redwood, which comes in contact with concrete shall be given a coat of Reilly's Transparent Creosote, or Wolman Salts or equal, at least two (2) hours before being built into the work.

7-07. Payment. Full compensation for all carpentry work will be included for payment in the unit prices and lump sums bid in the proposals for the particular Bid Item involved, and no other payments will be made.

SECTION 8

ROOFING (BUILT-UP)

8-01. Scope. The work covered by this section consists of furnishing all labor, materials, equipment, and performing all operations in connection with the three ply composition roofing and placing of flashings furnished under "Miscellaneous Metalwork" section.

8-02. Materials shall be equal to below listed items made by Pioneer Division-The Flintkote Co., Los Angeles. Materials shall be delivered in original packages bearing manufacturer's label.

(a) Asphalt: Pioneer Viskalt Asphalt Roof Coating.

(b) 15 lb. Felt: Pioneer asphalt saturated felt.

(c) 90 lb. Cap Sheet: Yosemite Cap Sheet

8-03. Summary of Weights and Materials (Per 100 Square Feet)

2 Layers of 15 lb. Asphalt Felt.30 lb.
1 Layer of 90 lb. Cap Sheet.90 lb.
M. P. Asphalt Moppings between Layers	
(2 @ 25 lb. each)50 lb.
Approximate weight of Waterproofing Materials. .	1.70 lb.

8-04. Application

(a) Flashings shall be placed to give watertight installation.

(b) Base Felts. Over the wood sheathing two (2) layers of fifteen (15) pound asphalt felt shall be laid shingle method, lapping nineteen (19) inches and leaving a seventeen (17) inch exposure. The 90 lb. Cap sheet shall then be applied, lapping two (2) inches minimum on sides. All felts shall be laid in lengths not exceeding eighteen (18) feet and lapped four (4) inches minimum on ends. End laps shall be broken not less than two (2) feet apart. The first two (2) layers of felt shall be blind nailed in two (2) rows, staggered, using 7/8 inch, 12d, 5/8 inch diameter head galvanized felt nails, on twelve (12) inch centers. The top row of nails shall be one (1) inch from under edge and sixteen (16) inches from center row. All nails shall be covered with succeeding layer. Each layer shall be mopped solid with asphalt, rolled, and broomed into place.

(c) Asphalt shall be applied at an average temperature of 375 to 400 degrees Fahrenheit. It shall not be heated to a temperature higher than 425 degrees Fahrenheit.

8-05. Payment. Compensation for the work of this section will be included for payment in the lump sum bid for the "Matilija Conduit Valve House" and the "Santa Ana Outlet Structure," and no other payment will be made.

SECTION 9

VALVES, FITTINGS, & MISCELLANEOUS METAL WORK

9-01. Scope. The work covered by this section includes the furnishing of all materials, labor, and equipment, and the performance of all operations necessary to provide the miscellaneous metal work shown or noted on the drawings and noted herein. Chief items are:

- Gate Valves and Globe Valves
- Pressure Reducing Valves
- Air and Vacuum Valves
- Combination Air Valves
- Pressure Air Valves
- Relief Valve
- Water Meters
- Water Pressure Gages
- Ejectors
- Floor Drains
- Corrugated Iron Siding of Matilija Conduit Valve house
- Blind Flanges in 30" and 20" lines
- Manholes and Rungs in Valve Houses and Pressure Regulating Station
- Wire Fencing
- Revetment at Underground Ventura River Crossing
- Metal Valve Boxes - Frames and Covers of Concrete Valve Boxes
- Flashings
- Steel pipe, cast iron fittings, and forged steel flanges.
- Grating - Corrugated Metal Pipe Reinforcements

9-02. Materials.

(a) Corrugated Iron Siding shall be #26 U.S.S. ga. 2 $\frac{1}{2}$ " corrugations, galvanized iron siding in accordance with Federal Specifications QQ-I-696.

(b) Valves, Meters, Gages, Ejectors, Floor Drains, and Manholes shall be as shown or noted on the drawings. Gate valves noted on the drawings for a maximum working pressure of 150 lbs. shall meet requirements of AWWA Specifications 7F.1. Gate valves noted for a working pressure over 150 lbs. shall meet applicable requirements of Federal Specifications WW-V-58 for 250 lb. valve. Air and vacuum, combination air, and pressure air valves shall be equal to the products of the Crispin Company.

(c) Four Inch Blowoff Pipe and Miscellaneous Pipe. Pipe noted on drawing for a maximum of 150 lb. working pressure shall be "Standard." Pipe noted for working pressures above 150 lbs. shall be "Extra Heavy." All pipe shall be galvanized and meet requirements of ASTM

Specifications A120; fittings shall be galvanized.

(d) Fencing

(1) Fabric shall be #9 gage, two (2) inch mesh (.71 pounds/sq. ft.) Top and bottom shall be selvege edges with twisted and barbed finish. Height of fabric shall be as shown. Fabric shall be galvanized to withstand 12 one minute immersions in accordance with ASTM Specification A239 without showing the base metal.

(2) Posts and Gate shall be as shown on drawing, with galvanized finish equal to fabric coating.

(3) Locking Hardware for use with District furnished padlock shall be provided.

(e) Revetment

(1) Used rails shall be no less than 90 lb. section, and shall be full lengths.

(2) Wire Screening shall be galvanized 2 inch mesh, No. 11 gage.

(3) Tie Wire shall be galvanized, meeting requirements of ASTM Specification A112.

(4) Reinforcing Cable shall be 3/4 inch, used stranded cable.

(f) Valve Boxes shall be roadway type, screw adjustment equal to Mueller-Columbian "Standard" Valve Box.

(g) Frames and Covers for Concrete Valve Boxes shall be as noted on drawing.

(h) Corrugated Metal Pipe Reinforcement cement under Railroad and roadway as shown, shall be size and gage noted and shall be galvanized.

9-03. Corrugated Siding shall be securely applied to studs in accordance with manufacturer's instructions.

9-04. Valves, meters, and gages shall be installed as shown on the drawings and in accordance with the printed instructions of the manufacturer, and shall be in proper working order as approved by the Engineer before acceptance. Multiple air and vacuum valve installations shown on the drawings shall be installed in clusters unless otherwise approved by the Engineer.

9-05. Blowoff Valves and Pipe shall be placed to give suitable runoff and operating conditions as required by the Engineer.

9-06. Fencing Installation shall be made in accordance with printed instruction of the fencing manufacturer.

9-07. Revetment Construction

(a) Rails shall be driven to elevation shown.

(b) Reinforcing wire cable shall be placed around the rails on 3 foot centers (starting at the top). The cable shall be rigidly attached by means of clamps to the inside face of the rails with no sagging noticeable. The cable reinforcement shall be continuous, extending between the end rails of the revetment as a tie cable.

(c) Wire Fabric shall be placed inside the reinforcement cable and saddle tied to the cable and rails on two foot centers using four turns of No. 16 tie wire, or three turns of No. 14 tie wire. Where fabric is spliced, the ends shall overlap a minimum of two mesh spacings, and secured by means that develops the strength of the fabric section. Fabric shall be folded under at base as noted.

9-08. Metal Valve Boxes shall be installed where shown on the drawings, and properly adjusted to ground level in accordance with requirements of AWWA Specification 7D.1, Section 11.2.

9-09. Flashings. Galvanized iron flashings shall be provided as shown and required to make the Santa Ana outlet structure watertight at the stationary cover and door.

9-10. Hydrostatic Test on Water Valves. During hydrostatic tests on conduits covered in "Steel Conduit" section, the water valves shall be adjusted as required so as to be watertight through the bonnet packing in the open and closed position and during the travel between positions at the test pressures of the lines, and shall be drop tight through the valve.

9-11. Payments. Only the below payments will be made for work of this section.

(a) Corrugated Siding, Valves, Meters, Gages, Ejectors, Drains, Pipe, Rungs, Revetment, Fencing, and Miscellaneous Items located in Structures shall be included for payment in the lump sum prices bid for the structures in which the items are physically located. (See limit lines shown on drawings).

(b) Blowoff, Gate, Pressure Air, Combination Air and Air and Vacuum Valves, Valve Boxes, and Valve Box Frames and Covers will be included for payment under the "Conduit" Pay Items in which they are located.

(c) Four Inch Blowoff Piping will be paid for at the lineal foot unit price bid in the proposal. Measurement will be made only of pipe sections over 18" in length. Smaller lengths required for connection with Conduit will be included for payment under the "Conduit" Pay Item connected thereto.

SECTION 10

GLAZING

10-01. Scope. The work covered by this section consists of furnishing all materials, labor & equipment required to perform glazing, as indicated on the drawings and specified herein.

(a) Glass shall be 1/8 inch thick obscured wire glass meeting requirements of Federal Specifications DD-G-451.

(b) Putty shall be class B, in accordance with A.S.T.M. Specification D 317.

10-02. Glazing.

(a) General. Sizes of glass indicated on the drawings are approximate. Measurement for actual sizes of glass shall be taken from sash and frames. Glass shall be accurately cut to fit the frame. All edges shall be smooth.

(b) Installation. Glass shall be bedded in putty, back puttied, and face puttied. Equal bearing the entire width of each pane shall be obtained. Glass shall be set with figured surface on interior.

10-03. Protection and Replacement. The Contractor shall be responsible for all glass broken in the execution of his work and shall replace same at no expense to the District.

10-04. Cleaning. Upon completion of the work, the Contractor shall remove all dirt, stains and excess putty, clean the glass, and leave work in acceptable condition.

10-05. Payment. Full compensation for all work of this section will be included for payment in the lump sum bid in the proposal for The Matilija Conduit Valve House.

SECTION 11

FIELD PAINTING (OTHER THAN CONDUIT COATING)

11-01. Scope. The work covered by this section consists of furnishing all labor, materials, and equipment, and performing all operations in connection with the application of field prime and finish coatings to uncoated ferrous surfaces, the application of finish coatings to all surfaces not provided with shop finish coatings, and the touching up of all shop coatings which may have been injured. The work shall be as specified herein and as shown on the drawings. Work includes:

Structural Steel
Miscellaneous Metal
Wood Sash

11-02. Excluded Items. Field coating of conduit is covered in "Conduits" section.

11-03. Materials.

(a) Steel Finish Coats shall be equal to metaleaf aluminum paint as made by Pittsburgh Plate Glass Company.

(b) Oil shall be raw linseed oil in accordance with A.S.T.M. Specification D234.

(c) Turpentine shall be in accordance with A.S.T.M. Specification D13.

(d) Paint for Wood Surfaces shall be lead and oil prime and finish paint.

11-04. Application. All imperfections in shop-applied prime coats shall be touched up before field coatings are applied. Care shall be taken to prevent paint from impairing operation of moving parts.

(a) Structural Steel. All structural steel shall be given two finish coats of aluminum paint.

(b) Miscellaneous Metal shall be given one finish coat of aluminum paint.

(c) Wood Sash shall be given prime and finish coats of paint.

11-05. Payment for work of this section will be included in the prices paid for the separate Bid Items to which the paint is applied; and no other payments will be made.

SECTION 12

MISCELLANEOUS WORK

12-01. Scope. The work covered by this section consists of furnishing all labor, materials, equipment, and performing all operations necessary to complete the work indicated on the drawings and specified herein. The work includes:

Repaving cut pavements and roadways.
Matilija Conduit Valve House Door
Hardware
Packing at Saddles

12-02. Repaving Cut Pavements and Roadways shall be performed by the Contractor to give surfacing equal to adjacent pavements. Before placing the resurfacing material, edges of bituminous pavements and roadways shall be trimmed back far enough to provide clean, solid, vertical surfaces free from loose material and wirebrushed. Resurfacing shall be in accordance with the requirements applying to the particular types of pavement or roadway specified in Part XV, of "Specifications No. 138" of the City of Los Angeles. For the purpose of this specification; where the "Board of Public Works" is mentioned, it shall be construed to mean the "District."

12-03. Hardware shown on the drawings shall be provided by the Contractor, and shall have corrosion resistant finish.

12-04. Matilija Conduit Valve House Door shall be constructed of same corrugated metal as siding placed on either angle iron or wood frame. Door shall be well fitted and hung, and shall be provided with a hasp for padlocking.

12-05. Slip Joint Packing shall be provided by the Contractor at all concrete saddles and wood mounting blocks. The joint will consist of an upper sheet secured to the conduit and a lower sheet secured to the supporting surface, with the graphited surfaces in rubbing contact. Packing shall extend 3 inches beyond bearing surfaces with edges set solid in asphalt cement. A thin layer of graphite grease shall be placed between rubbing surfaces.

(a) Packing Sheets. Sheet attached to Conduit shall be 1/32 inch thick. Sheet attached to supports shall be 1/16 inch thick; sheets to be equal to the product of the Johns-Manville Products Corporation.

(b) Cement for securing sheets to mounting surfaces shall be equal to J-M bituminous cement.

12-06. Improvements Removed or Damaged during construction shall be reconstructed to original condition at the Contractors own expense, except where otherwise allowed by the Owners.

12-07. Payments. No separate payment will be made for the work of this section.

(a) Repaving work will be included for payment under the Conduit Pay Items located under the repaving.

(b) "Hardware" and "Matilija Conduit Valve House Door" will be included for payment in the lump sum prices bid for the Bid Item of which they are a part.

(c) Slip Joint Packing will be included for payment under the particular Conduit Pay Item involved, except: where packing is within the physical limits of a "Lump Sum" Bid Item, it will be included therein for payment.

SECTION 13

CATHODIC PROTECTION

13-01. General. During the period of construction, the District will have resistance tests made upon the soil. Location of Cathodic Protection stations will then be determined if required.

13-02. Regulations. All work shall be done in strict conformity with the latest published rules and regulations of Electrical Safety Orders of the State of California and all other legally constituted authorities having jurisdiction.

13-03. Cathodic rectifiers. Cathodic Corrosion-Eliminators similar and equal to "Rexselen" as manufactured by Electrical Facilities, Inc., Oakland, California, shall be installed where directed by the Engineer.

The Cathodic Corrosion eliminators shall be for operation on 110-volt, single phase, 60-cycle, with a direct current output of 100-amperes at 16-volts.

The eliminator shall be for pole or wall mounting and shall have a weather-proof enclosure.

13-04. Electric Services. At each rectifier station an outdoor metered electric service conforming to the requirements of the Southern California Edison Company shall be installed.

13-05. Installation. All work shall be performed in a neat and workmanlike manner.

13-06. Service Pole. At each rectifier station a butt treated service pole not less than 25 feet in height shall be installed. Setting depths shall be as specified in General Order No. 95 of the California Railway Commission.

A metered service, main switch, grounding and a Cathodic eliminator shall be installed on each pole at locations shown.

13-07. Pilot Pipe. At each rectifier location, approximately 30 feet distant from the conduit to be protected, a pilot pipe 20 feet long and parallel to the conduit shall be installed.

The trench shall be of such depth that the pilot pipe shall be in contact with damp soil but in no case shall the trench be less than 10 feet deep.

The pilot pipe shall be steel, 22-inch diameter, 3-gauge wall thickness and 20-feet long.

13-08. D. C. Conductors. From each rectifier on a pole, two (2) No. 4/0 stranded insulated copper conductors shall be extended underground, one to the pilot pipe and the other to the conduit to be protected. Cable shall be not less than 2-feet below grade.

These cables shall be single conductor similar and equal to "Trenchlay" as manufactured by General Cable Corp.

13-09. Cable Connections. The copper cable connections at the pilot pipe and at the conduit shall be done as follows:

A 3-inch high collar cut from a 3-inch diameter pipe shall be welded to the pilot pipe and to the conduit at the points selected for copper cable connection.

The copper cable "Trenchlay" insulation shall be removed for several inches at the end of the cable and a braze weld made to the pipe inside the 3-inch collar. The "Trenchlay" insulation should extend well down into the collar.

This collar which now forms a cup with the cable weld inside shall be filled with hot "Coal Tar," being careful to overlap the cable "Trenchlay" insulation as the cup is filled.

The copper "Trenchlay" cables extending up the pole to the rectifier shall be enclosed in rigid conduit for protection. Protection shall extend 2-feet below ground surface.

13-10. Inspection. Each complete installation shall be inspected and approved before any work is covered.

13-11. Backfill. All backfill and compaction shall conform to the "Earthwork" section of these specifications.

13-12. Tests. The completed work shall be tested for faulty connections and defective materials and workmanship. The complete installation shall be left ready for operation.

13-13. Payment. The installation of Cathodic Protection will be paid for in accordance with the provisions of Article 1-31(c) of the "General Conditions" of these Specifications. However, for the purpose of preparing bids, the Contractor shall make an allowance of \$8,500 in his proposal to cover this work. Should the cost of the work exceed this allowance, the Contractor will be reimbursed the difference between the cost and the allowance. Should the cost of the work be less than the allowance, the Contractor shall credit the difference to the District.

The District reserves the right to have any or all of the work covered in this section performed by other contractors, in which case no claim may be had by the Contractor for such work.