



**United Water**  
CONSERVATION DISTRICT

**CONTRACT DOCUMENTS AND SPECIFICATIONS  
FOR  
INVERTED SIPHON REPLACEMENT PROJECT  
(SPECIFICATION NO. 22 - 02)**

**UNITED WATER CONSERVATION DISTRICT  
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**August 2022**



**INVERTED SIPHON REPLACEMENT PROJECT  
(SPECIFICATION NO. 22-02)  
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**UNITED WATER CONSERVATION DISTRICT**  
**1701 N. Lombard Street, Suite 200**  
**Oxnard, California 93030**

**NOTICE INVITING BIDS**

**For the Inverted Siphon Replacement Project**  
**[Specification No. 22-02]**

**N-1 NOTICE IS HEREBY GIVEN** that sealed bids will be received by United Water Conservation District, a public agency (hereinafter "Owner"), at its office, 1701 N. Lombard Street, Suite 200, Oxnard, CA 93030, until 2:00 p.m. on September 22, 2022 at which time and place the bids will be publicly opened and read aloud for the construction (including the furnishing of all plant, labor, materials, tools, services, materials, supplies, transportation, equipment, utilities, and other necessary items and facilities) of the Work and all appurtenances thereto as described in Section N-3. All Work must be performed in strict accordance with the specifications and drawings on file at the office of Owner. Bids shall be submitted in sealed envelopes marked as directed in the Instructions to Bidders. It is each bidder's sole responsibility to ensure its bid is timely delivered and received at the required location. Bids received at the wrong location or after the deadline specified will be returned unopened to the bidder.

**N-2 LOCATION OF THE WORK --** The Work to be constructed pursuant to the Contract Documents is located at 2641 West Los Angeles Avenue, Oxnard, California.

**N-3 DESCRIPTION OF WORK**

Demolition of existing Inverted Siphon including headwalls, 60-inch RCP, conduit and any other appurtenance required to be removed in order to perform the required work. Construction of new headwall, footings, installation of a 36 liner feet of 30 foot span by 6.45 foot rise Con/Span Precast Concrete united, two (2) precast headwalls, four (4) precast wingwalls, receiving of precast structures, grout, joint seal work, earthwork, rip rap, base, asphalt and any other appurtenance required to complete the work.

**N-4 COMPLETION OF WORK –** The Work must be fully completed within time set forth in the Agreement. Liquidated damages will be assessed as set forth in the Agreement for failure to meet the specified completion date.

**N-5 CLASSIFICATION OF CONTRACTORS' LICENSES & DIR REGISTRATION –** In accordance with Public Contract Code section 3300 and Business and Professions Code section 7059(b), a Contractor submitting a proposal for performance of the Work shall possess a valid Class A or appropriate C license at the time of bid. A Contractor shall certify that the license(s) specified herein is/are the classification(s) of contractor's license(s) required by law to perform the Work contemplated by the Contract Documents. A Contractor shall provide Owner with its Contractor's license number and expiration date as provided in its bid, and shall present satisfactory evidence that it is licensed and in good standing. The Contractor or any subcontractor shall not be qualified to bid on, be listed in a bid proposal, subject to the requirements of Section 4104 of the Public Contract Code, or engage in the performance of any contract for public work, as defined in the Labor Code, unless currently registered and qualified to perform public work pursuant to Section 1725.5.

**N-6 CONFORMITY WITH BID INSTRUCTIONS –** Each bid must conform and be responsive to the bid Contract Documents. Failure to conform to the Instructions to Bidders may render a bid non-

responsive. The Owner reserves the right to reject any or all bids, to waive any informalities or irregularities in any bids or in the bidding process, and to make an award to the lowest responsive and responsible bidder and reject all other bids, as it may serve the best interest of Owner. A good faith determination by the Owner as to whether a bid is responsive or whether a bidder is responsible shall be final, conclusive and binding, and shall not be the basis of a claim for lost profits or other damages by a bidder to whom the Contract is not awarded.

**N-7 SITE INSPECTION** – A mandatory job walk will be held on September 8, 2022 at 9:00 am. All interested bidders and third parties are required to visit and inspect the Site prior to submitting a bid.

**N-8 BID SECURITY** -- Each bid shall be submitted under sealed cover and must be accompanied by a certified or cashier's check, or by a corporate surety bond on the form furnished by the Owner (hereinafter "Bid Security"), as set forth in the Instructions to Bidders in an amount not less than ten percent (10%) of the total amount of the bid. Failure to include the proper Bid Security shall render a bid non-responsive.

**N-9 BIDS TO REMAIN OPEN** -- The bidder shall guarantee the total bid price for a period of sixty (60) consecutive calendar days from the date of Bid Opening.

**N-10 SECURITIES WITHHELD TO ENSURE PERFORMANCE** -- At the request and expense of the Contractor and pursuant to Public Contract Code section 22300, the Contractor may substitute certain securities for any money held by Owner to insure performance of the Contract, except where not allowed by law. At the Contractor's request and expense, securities equivalent to any amount withheld shall be deposited with the Owner, or with a state or federally chartered bank as the escrow agent who shall then pay those monies to the Contractor and shall return such securities to the Contractor upon satisfactory completion of the Contract. Alternatively, and at the request and expense of the Contractor, retention monies earned may be deposited directly with the escrow agent. Deposit of securities with an escrow agent shall be subject to written agreement between the escrow agent and Owner which shall conform to the requirements of Public Contract Code section 22300, incorporated herein by reference.

**N-11 PREVAILING WAGE RATES** – Contractor shall pay the general prevailing rate of per diem wages as determined by the Director of the California Department of Industrial Relations for the locality where the work is to be performed. A copy of the wage rate schedule is on file at the office of Owner and shall be made available upon request. The wage rate schedule can also be found at [www.dir.ca.gov](http://www.dir.ca.gov). The Contractor shall post a copy of the schedule at the Work site. The Contractor and any of its subcontractors shall pay not less than the specified prevailing rate of per diem wages for general, holiday and overtime work to all workers employed in the execution of this Contract.

**N-12 CONTRACT DOCUMENTS** -- A full set of Contract Documents as defined in the General Provisions (including drawings and specifications) are available on the United Water Conservation District's website, <https://www.unitedwater.org/news-a-outreach-4/public-notices>.

**N-13 PAYMENT & PERFORMANCE BONDS** -- Separate payment and performance bonds, each in an amount equal to 100% of the total Contract Price, are required, and shall be provided to the Owner prior to execution of the Contract and shall be in the form set forth in the Contract Documents. All bonds (bid, performance, and payment) must be issued by a California admitted surety as defined in California Code of Civil Procedure section 995.120.

**N-14 PROCUREMENT POLICY** -- Pursuant to the Owner's approved Procurement Policy, water conservation districts like United Water Conservation District are not included within, and are not subject to, competitive bidding requirements under the California Public Contract Code unless specifically noted, or to the extent noted, in the Contract Documents.

## **INSTRUCTIONS TO BIDDERS**

**I-1 FORM OF BID AND SIGNATURE; SUBCONTRACTORS - (a)** The Bid shall be submitted on the Proposal and Bid Forms attached hereto. The Bid shall be signed and enclosed in a sealed envelope marked in the upper left hand corner with the name and address of the Bidder, shall bear the words "Bid For" followed by the title of the Contract Documents for the Work and the date and time for opening of Bids, the name of "UNITED WATER CONSERVATION DISTRICT", and addressed as provided in the Notice Inviting Bids. Bids shall be submitted to the United Water Conservation District, 1701 North Lombard Street, Suite 200, Oxnard, CA 93030. The Bid Security shall be enclosed in the same envelope with the Bid. No Bid received after the time named or at any place other than the place stated in the Notice Inviting Bids will be considered. It is the sole responsibility of the Bidder to see that its Bid is timely received by Owner. Any Bid received after the scheduled time will be returned to the Bidder unopened. All Bids will be opened and declared publicly on the established date.

**(b)** Bids must be submitted for the entire Work described therein. Bids shall include the cost of all items shown on the drawing(s) and mentioned in the specifications, or reasonably inferred therefrom as necessary to complete the Work within the intent of the Contract Documents. The Bid shall also include all necessary permits, license fees, Federal, State or other taxes, cost of insurance, bonds and all other costs incidental to the Work to be performed. Each Bidder shall state the unit price or the specific sums, as the case may be, in the manner required by the Proposal. Each Bid shall identify the surety or sureties which have agreed to furnish the required bonds.

**(c)** If the Bid is made by an individual, it shall be signed and his or her full name and address shall be given. If the Bid is made by a partnership, it shall be signed with the partnership name by a partner of the firm, who shall also sign his or her own name, and the name and address of each partner shall be given. If the Bid is made by a corporation, it shall be signed on behalf of the corporation by its duly authorized officer(s) and attested by the corporate seal.

**(d)** Bidders shall comply with the requirements of the Subletting and Subcontracting Fair Practices Act. In accordance with the provisions of Public Contract Code section 4100 *et seq.*, each Bid shall contain the name, the location of the place of business, the California contractor license number, and public works contractor registration number issued pursuant to Section 1725.5 of the Labor Code of each proposed subcontractor who will perform work or labor or render service to the principal Contractor in an amount greater than one-half of one percent (0.5%) of the principal Contractor's Bid, and the Bid shall state the portions of the Work which will be done by each such subcontractor. A prime Contractor shall list only one subcontractor for each portion of the Work as defined in the Bid.

**(e)** Owner may require additive or deductive bids. If so, such will be noted in the Proposal Form. Additive or deductive bids will be handled in accordance with Public Contract Code-section 20103.8.

**I-2 DISCREPANCIES IN BID** - In the event that there is more than one Bid Item in the Bid Schedule, the Bidder shall furnish a price for all Bid Items in the schedule, and failure to do so will render the Bid as nonresponsive and may cause its rejection. In the event that there are unit price Bid Items in the Bid Schedule and the "amount" indicated for a unit price Bid Item does not equal the product of the unit price and quantity listed, the unit price shall govern and the amount will be corrected accordingly and the Bidder shall be bound by such correction, subject to the provisions of Section 5100 *et seq.* of the California Public Contract Code. In the event that there is more than one

Bid Item in a Bid Schedule and the total indicated for the Schedule does not agree with the sum of the prices bid on the individual items, the prices bid on the individual items shall govern and the total for the Schedule will be corrected accordingly, and the Bidder shall be bound by said correction subject to the provisions of Section 5100 *et seq.* of the California Public Contract Code. In the event of inconsistency between words and figures in any Bid price, the price that results in the lower cost to the Owner shall prevail and govern.

Bid proposals in which the prices are obviously unbalanced may be rejected. If, in the Owner's sole discretion, it determines any pricing, costs or other information submitted by a Bidder may result in an unbalanced Bid, the Owner may deem such Bid non-responsive. A Bid may be determined by the Owner to be unbalanced if the Bid is based on prices significantly less than the cost for some work and prices which are significantly overstated in relation to cost for other work, and if there is a reasonable doubt that the Bid will result in the lowest overall cost to the Owner even though it may be the low evaluated Bid, or if it is so unbalanced as to be tantamount to allowing an advanced payment.

**I-3 MODIFICATIONS AND UNAUTHORIZED ALTERNATIVE BIDS** - Blank spaces in the Bid proposal form shall be properly completed. The phraseology of the Bid proposal form must not be changed and no additions shall be made to the items mentioned therein. Completed Bids may not contain interlineations, alterations, erasures, conditions, limitations or provisions. Insertion of these items shall render the Bid informal or nonresponsive and may cause its rejection. Alternative Bids will not be considered unless expressly called for in the Notice Inviting Bids. No Bid will be considered unless it is made on the Bid proposal form furnished by Owner and attached hereto. Oral, facsimile, telegraphic or telephone Bids or modifications will not be considered.

**I-4 WITHDRAWAL OF BID** - Any Bidder may withdraw its Bid before the time fixed for opening Bids by a written request to the Owner signed by the Bidder or its authorized representative and delivered to the place stipulated in the Notice Inviting Bids prior to the scheduled closing time for receipt of Bids. An oral, facsimile, email, telegraphic or telephone request to withdraw or alter a Bid will not be accepted. No Bid may be withdrawn after the time fixed for opening of Bids. Unless otherwise specified in the Special Provisions made a part of these Contract Documents, all Bids shall be valid for a period of sixty (60) days after the Bid opening date, notwithstanding any award of the Contract by Owner to another Bidder.

**I-5 REJECTION OF BIDS; AWARD OF CONTRACT** – Pursuant to the Owner's Procurement Policy effective July 1, 2017, water conservation districts like the Owner are not included within, and are not subject to, competitive bidding requirements in the California Public Contract Code. The Owner reserves the right to waive any informality or irregularity in any Bid or the bidding process, to reject any or all Bids, to reject one part of a Bid and accept another, and to make award of the Contract to the lowest responsible and responsive Bidder as it may serve the best interest of the Owner. Bid proposals may be rejected if they show any alterations of forms, additions not called for, conditional bids, incomplete bids, erasures, or irregularities of any kind. All such determinations shall be at the sole discretion of Owner. If the Bid amount is changed after the amount is originally inserted, the change must be initialed. Deviations from specifications and/or drawings will not be considered and may be cause for rejection of the Bid. The Owner's waiver of any deviation or defect shall in no way modify the Contract Documents or excuse the Bidder from full compliance with the Contract Documents if awarded the Contract. A good faith determination by the Owner as to whether the Bid is responsive or a Bidder is responsible shall be deemed final, conclusive and binding and shall not be the basis for a claim of lost profits or other damages by a Bidder to whom the Contract is not awarded.

Award of the Contract, if it is awarded, will be based primarily on the lowest overall cost to Owner, and will be made to a responsive and responsible Bidder (as more fully set forth in Section I-7) whose Bid complies with the requirements herein. Unless otherwise specified, any such award will be made within the time period stated in the Notice Inviting Bids that the Bids are to remain open, unless extended by mutual agreement of the Bidders. Unless otherwise indicated, a single award will be made for not less than all of the bid items of an individual bid schedule. In the event the Work is contained in more than one bid schedule, Owner may award schedules individually or in combination. In the case of two or more bid schedules which are alternative to each other, only one of such alternative schedules will be awarded.

**I-6 LICENSING OF CONTRACTORS** – Except as otherwise provided under Public Contract Code section 20103.5 (where federal funds are involved), no Bid for the Work will be accepted from a Contractor who does not hold a valid contractor’s license in the State of California for the classifications named in the Notice Inviting Bids at the time of opening Bids. The Contractor shall provide proof of current licensing status and may be required to provide a signed statement which declares, under penalty of perjury, that the pocket license or Certificate of Licensure presented is his/her license, is current and valid and is in a classification appropriate to the work to be undertaken. The Contractor shall maintain the required license in good standing throughout the course of the Work.

**I-7 COMPETENCY OF BIDDERS** – Subject to any requirements in Public Contract Code section 20101, in determining a responsible Bidder, consideration will be given to the trustworthiness, quality, fitness and capacity of the Bidder, which includes, but is not limited to, the general experience of the Bidder to satisfactorily perform the work covered by the Bid. Professional integrity and honesty shall be essential requirements. In selecting a responsible Bidder, consideration will be given, but not limited to, the following: (a) the Bidder’s general competence and experience for performance of the Work; (b) information contained in the “Information Required of Bidders” form; and (c) any further information for the above purposes, as may be requested. Contractors shall submit, via the “Information Required of Bidders”, an all-inclusive list of similar projects performed by the Contractor within the past five (5) year period. This list shall include the size of the project in dollars, the agency or client for whom the Work was performed and the name and title of the agency or client contact person. The list must include at least five (5) jobs similar in size and scope to that contemplated herein. Failure to submit a complete list or to have that list include at least five (5) jobs similar in size and scope to that contemplated herein, may render a proposal informal or nonresponsive and may result in its rejection by Owner. Corporations bidding must currently be qualified to do business in California by 3:00 p.m. on the day of Bid opening. Both domestic and foreign corporations incorporated outside of California must be in good standing in order to be qualified to bid on this project. A Bidder’s failure to accurately complete and submit all information required in the “Information Required of Bidder” form may cause its Bid to be deemed non-responsive and may cause its rejection.

The Owner shall have absolute discretion as to the evaluation of past work performance of any Bidder, and its decision relating thereto shall be deemed final, conclusive and binding.

**I-8 DISQUALIFICATION OF BIDDERS** - No person, firm, association, entity, partnership, or corporation shall make, file, or be interested in more than one Bid for the same Work and more than one Bid from the same person, firm, association, entity, partnership, or corporation under the same or different names shall be rejected; provided, however, that a person, firm, or corporation who has submitted a sub-proposal to a Bidder, or who has quoted prices of materials to a Bidder, is not hereby disqualified from submitting a sub-proposal or quoting prices to other Bidders. A subcontractor submitting one or more sub-proposal(s) to a Bidder may not itself bid the Work. If the Owner believes that any Bidder is interested in more than one Bid for the Work contemplated, all Bids in which such

Bidder is interested will be rejected. If the Owner believes that collusion exists among the Bidders, all Bids will be rejected. A Bid may be rejected or a Bidder declared non-responsible on the basis of a Bidder, an officer of such Bidder, or any employee of such Bidder who has a proprietary interest in such Bidder, having been disqualified, removed or otherwise prevented from bidding on, or completing a Federal, State or local project because of a violation of law or a safety regulation. More than one Bid from an individual, firm, partnership, corporation or association under the same or different names shall be rejected.

**I-9 BID SECURITY** - Each Bid shall be accompanied by an unconditional certified or cashier's check drawn on a solvent state or national bank, or a Bidder's bond with a-California admitted surety insurer as defined in Code of Civil Procedure section 995.120, on the form attached to the Proposal, subject to the provisions of the Notice Inviting Bids. Said Bid Security shall be in a sum not less than ten percent (10%) of the amount of the Bid, and shall be made payable to or for the benefit of the Owner as a guaranty that the Bidder will, if an award is made to them in accordance with the terms of their Bid, promptly execute the Contract in the required form, secure payment of workers' compensation, and furnish satisfactory Performance and Payment Bonds and proof of insurance coverage, and such other information or documents as may be required of Bidder. Within 14 days after the Contract award is made, the Owner will return all Bidder's securities accompanying Bids that are not to be further considered in making the award. Other Bidders' securities shall be held until the executed Contract Documents are timely returned to the Owner, whereupon the securities will be released to their respective Bidders who's Bids they accompany, but in all events such securities will be returned with sixty (60) days after the Bid opening date.

#### **I-10 BIDDER'S EXAMINATION OF CONTRACT DOCUMENTS-**

(a) It is the responsibility of each Bidder before submitting a Bid to examine the Contract Documents thoroughly; to become familiar with local conditions that may affect cost, progress, or performance of the Work; consider Federal, state and local laws and regulations that may affect cost, progress or performance of the Work; study and carefully correlate the Bidder's observations with the Contract Documents; and notify **Craig Morgan 1701 N. Lombard Street, Suite 200, Oxnard, CA 93030** in writing of all conflicts, error, or discrepancies noted in the Contract Documents. The written request must be received at least seven (7) calendar days prior to the date fixed for opening of Bids. The person or entity making the request will be responsible for its prompt delivery. Interpretations or corrections will be made only by addenda to specifications or by dated revisions of drawings with a copy of each addition or change being furnished, through the Owner, to each prospective Bidder. Only questions that have been resolved by formal written addenda will be binding. Oral and other interpretations or clarifications will be without legal or contractual effect.

(b) Bidders shall read the specifications, examine the drawings, and make their own estimates of the existing facilities and the difficulties which will affect cost, progress and/or performance of the Work called for by the proposed Contract, including local conditions, uncertainty of weather, and all other contingencies. Bidders, at their own expense, shall make or obtain such examinations and investigations which pertain to physical conditions (including surface, subsurface and underground utilities) at or contiguous to the site and review such records, reports and drawings as they deem necessary to satisfy themselves that they are familiar with the site and the condition and location of existing underground facilities and other potential sources of interference with the Work contemplated under the Contract Documents. By providing access to reports, drawings or other records in its possession, the Owner makes no representations or guarantees as to the accuracy of such drawings or records, and such records, reports or drawings are not part of the Contract Documents, but any technical data contained thereon upon which Bidder is entitled to rely is limited to that set forth in the Special Provisions. The interpretation of such technical data, including

any interpolation or extrapolation thereof, together with non-technical data, interpretations and opinions contained therein or the completeness thereof is the responsibility of the Bidder.

(c) Information derived from the maps, plans, specifications, profiles, or drawings, or from the Engineer or its assistants, shall not relieve the Bidder of its responsibility to conduct examinations at or contiguous to the site, and the interpretation of the data disclosed by borings or other preliminary investigations is not guaranteed by the Owner.

(d) Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders on subsurface conditions, underground utilities and other physical conditions, and possible changes in the Contract Documents due to differing conditions appear in the Specifications and Special Provisions. Subject to the provisions of Section 4215 of the California Government Code, information and data reflected in the Contract Documents with respect to underground utilities at or contiguous to the site is based upon information and data furnished to Owner and the Engineer by the owners of such underground utilities or others, and Owner does not assume responsibility for the accuracy or completeness thereof unless it is expressly provided otherwise in the Special Provisions.

(e) The lands upon which the Work is to be performed, the rights-of-way and easement for access thereto, and the other lands designated for use by the Bidder in performing the Work are identified in the Contract Documents. All additional lands and access thereto required for temporary construction facilities or storage of materials and equipment are to be provided by the Bidder.

(f) The submittal of a Bid will constitute an incontrovertible representation by the Bidder that the Bidder has complied with every requirement of this Instructions to Bidders; THAT WITHOUT EXCEPTION the Bid is premised upon performing the Work required by the Contract Documents and such means, methods, techniques, sequences, or procedures of construction as may be indicated in or required by the Contract Documents; and that the Contract Documents are sufficient in scope and detail to indicate and convey the understanding of all the terms and conditions for performance of the Work.

**I-11 QUANTITIES OF WORK** – The quantities of work or material stated in the unit-price items of the Bidding Sheet(s) are supplied only to give an indication of the general scope of the Work; the Owner does not expressly or by implication agree that the actual amount of work or material will correspond therewith. In the event of an increase or decrease in a Bid item quantity of a unit price contract, the total amount of work actually done or materials or equipment furnished shall be paid for according to the unit prices established for such work under the Contract Documents; provided that increases of more than 25 percent or decreases of more than 25 percent, and eliminated items shall be adjusted as provided in the Contract Documents.

**I-12 EXECUTION OF CONTRACT** – The successful Bidder shall sign all copies of the Contract Agreement and return them along with all applicable bonds, insurance and any other required documents within ten (10) days (not including Sundays and holidays) following notification to Contractor to sign and return the Contract. Failure to sign the Contract and to submit applicable bonds, insurance verification and any other required documents within the prescribed time as specified herein shall be cause for rejection of the Bid and the Bid being awarded to the next lowest responsive and responsible Bidder. The failure or refusal of a Bidder to whom award is made to enter into the Contract as specified herein, or to conform to any of the stipulated requirements in connection therewith, will result in damages to the Owner. Such damages are, and will continue to be, impracticable and extremely difficult to ascertain. In the event of such failure or refusal to comply with the requirements of the Contract Documents, the Bid Security shall be forfeited to Owner and shall become the property of the Owner as liquidated damages and not as a penalty, and the award

will be annulled. At the Owner's discretion, the Owner may award the Contract to the second lowest responsive and responsible Bidder, and thereafter to the third lowest responsive and responsible Bidder if the second likewise fails to meet these requirements; or otherwise, reject all Bids.

**I-13 BONDS - (a)** In conformance with the Notice Inviting Bids, a Bidder to whom the Contract is awarded shall, within the time specified in Section I-12 hereof, furnish to Owner a bond with a surety conditioned upon the faithful performance of said Bidder of all covenants and stipulations in the Contract Documents. Said bond, hereinafter referred to as the Performance Bond, shall be on the mandatory form included as a part of these Contract Documents, and shall be in an amount that is not less than one hundred percent (100%) of the total amount payable under the Contract Documents.

**(b)** Within the time specified in Section I-12 hereof, the Bidder to whom the Contract is awarded shall also furnish to Owner a Payment Bond, approved by the Owner, in accordance with applicable provisions of the Civil Code. The Payment Bond shall be in a sum not less than one hundred percent (100%) of the total amount payable under the Contract Documents. The form of Payment Bond set forth in these Contract Documents is a mandatory form.

**(c)** Unless Owner otherwise authorizes, the surety or sureties on all bonds furnished must be admitted in California as defined in Code of Civil Procedure section 995.120 and satisfactory to Owner in its sole discretion. The Bidder to whom the Contract is awarded shall provide copies of the surety insurers' most recent annual and quarterly statements filed with the California Department of Insurance, and a certified copy of the Certificate of Authority issued by the Department of Insurance. Any Power of Attorney provided, evidencing the authority of the person executing the bonds to bind the surety, shall be an unrevoked power, and shall be an original or a certified copy of the original. If during the continuance of the Contract any of the sureties in the sole discretion of the Owner are or become insufficient, the Owner may require additional sufficient sureties which the Contractor shall furnish to the satisfaction of the Owner within fifteen (15) days after written notice, and in default thereof the Contract may be suspended and the Work completed as provided in the General Conditions. The party required to furnish bonds pursuant to these instructions shall furnish such bonds at their own cost and expense.

**I-14 LIABILITY INSURANCE** - A Bidder to whom the Contract has been awarded shall furnish to the Owner a policy or policies of insurance of the type and coverage, and in the form, required by the General Provisions and Special Provisions. The insurance carrier(s), and forms provided, must be satisfactory to Owner in its sole discretion.

**I-15 ASSIGNMENT OF CONTRACT** - The Contractor shall not assign the Contract Documents or any part thereof, or any funds to be received thereunder, without the prior written approval of both the Owner and surety. Notwithstanding the foregoing, and to the extent permitted by law, Owner has the absolute right to refuse, on any ground or no grounds, any and all assignments or attempted assignments of the Contract Documents or of any rights to payment pursuant thereto.

**I-16 FINANCIAL STATEMENT** - In the course of evaluating the capacity and competence of a Bidder to perform the Work, the Owner may require any Bidder to furnish a recent statement of their financial condition or such other evidence of their qualifications as may be requested by the Owner. Submission of such information shall be considered consent by the Bidder to Owner making inquiries regarding the Bidder's financial condition and information set forth in the statement. If a Bidder fails to promptly furnish the information requested, it shall be considered sufficient grounds for rejection of such Bidder's entire Bid.

**I-17 SUBSTITUTE OR “OR EQUAL” ITEMS-** the Work, if awarded, will be on the basis of materials and equipment described in the Drawings or specified in the Specifications without consideration of possible substitute or “or-equal” items. Whenever it is indicated in the Drawings or specified in the Specifications that a substitute or “or-equal” item of material or equipment may be furnished or used by the Contractor if acceptable to the Engineer, application for such acceptance may be considered by the Engineer pursuant to the provisions of Public Contract Code section 3400. All requests for substitution shall be made and submitted at the time of bid. The procedure for submittal of any such application by the Contractor and consideration by the Engineer shall be as specified in the Specifications or Special Provisions.

**I-18 LIQUIDATED DAMAGES-** See Agreement.

**I-19 WORKER’S COMPENSATION CERTIFICATION** - Bidder is advised that in accordance with the laws of the State of California, the Bidder will, if awarded the Contract, be required to secure the payment of compensation to employees and execute the Workers Compensation Certification.

**I-20 REQUIRED DOCUMENTS** – The following documents must be returned with the Bid by Bid submission date and time. The Bid must be submitted on the attached “Bid Proposal” form, signed and dated by the Bidder or his/her fully authorized representative with his/her address, and be submitted in a sealed envelope clearly marked with the project information set forth in Section 1-1 herein.

- (a) Ten Percent (10%) Bid Security [**Section I-9 herein**] (submit attached form).
- (b) Bid Proposal, including Bidder’s Declaration, Bid Schedule, and List of Proposed Subcontractors (submit attached forms).
- (c) Information Required of Bidder (submit attached forms).
- (d) Non-Collusion Declaration (submit attached form).

These documents must be completed, signed and returned with the Bid, or the Bid may be deemed non-responsive and may be rejected.

**I-21 DEFINED TERMS-** Terms used in these Instructions to Bidders and the Notice Inviting Bids and not defined herein shall have the meanings given to them in the General Provisions or Special Provisions. The term “Bidder” shall mean one who submits the Bid directly to the Owner, as distinct from a sub-bidder or subcontractor, who submits a Bid to a Bidder.

# PROPOSAL FORMS

**Note: Failure of a Bidder to fully execute and submit these Proposal Forms will render a-Bid non-responsive and subject to rejection.**

## BID PROPOSAL AND DECLARATION

The undersigned Bidder proposes and agrees, that if this Bid is accepted, to enter into an Agreement with United Water Conservation District ("Owner") in the form included in the Contract Documents and to perform the Work specified in the Contract Documents (including, without limitation, all provisions, drawings and specifications thereto) in strict conformity with the requirements and timelines thereto. Bidder hereby furnishes a Bid Security to Owner, as set forth hereafter.

Bidder agrees to furnish all plant, labor, materials, tools, services, transportation, utilities, equipment, supervision; and other necessary items and facilities in its performance of the Work in accordance with the Contract Documents; to pay all taxes, insurance, bonds, license and permit fees and other costs incidental to the Work; and to accept in full payment therefore the Contract Price based on the Lump Sum or Unit Bid Price(s) named in the attached Bid Schedule sheets, upon which award of Contract will be made. The Bid price includes the costs of bonds, insurance, permit fees, taxes and any other item or expense incidental to this Contract. In the case of discrepancies between words and figures, the price that results in the lower cost to the Owner shall prevail and govern.

This Bid will remain open for the period stated in the Notice Inviting Bids, unless otherwise required by law. Bidder will enter into an Agreement within the time and in the manner required in the Instructions to Bidders, and will timely furnish the insurance certificates, Payment Bond, Performance Bond, all permits and any other documents required by the Contract Documents. If the undersigned withdraws its proposal within the time period for proposals to remain open, or alternatively fails to timely enter into an Agreement with Owner and furnish all documents as required herein, the undersigned and its surety shall be liable, and the Bid Security shall be forfeited to the Owner.

Bidder has carefully examined copies of all the Contract Documents, including the following Addenda (receipt of which is hereby acknowledged):

Number _____	Date _____

Bidder has familiarized itself with the nature and extent of the Contract Documents, the Work, the site, the locality where the Work is to be performed, the legal requirements (federal, state, and local laws, ordinances, rules, and regulations), and the conditions affecting cost, progress

or performance of the Work including, but not limited to, the Bid quantities, any specifications regarding materials to be used, the-Contract provisions relating to payment for extra work and the procedures for seeking extensions of time, and has made such independent investigations as Bidder deems necessary, and is satisfied as to the nature and location of the work and is fully informed as to all conditions and matters which can in any way affect the Work or the cost thereof, including the location of all underground facilities in the area affected by the Work.

The undersigned fully understands the scope of the Work and has checked carefully all words and figures inserted in this Proposal and further understands that Owner will in no way be responsible for any errors or omissions in the-Bidder's preparation of this Proposal.

In conformance with current statutory requirement of California Labor Code Section 1860 *et seq.*, the undersigned confirm the following as its certification:

I am aware of the provisions of Section 3700 of the Labor Code, which require every employer to be insured against liability for workers' compensation, or to undertake self-insurance in accordance with the provisions, before commencing the performance of the Work of this Contract, and I will comply with such provisions.

The undersigned-Bidder hereby certifies that this Proposal is genuine and not sham or collusive, and makes the further representations to Owner set forth in the Non-Collusion-Declaration attached hereto.

The undersigned-Bidder hereby certifies the accuracy of the representations made herein concerning the contractor's license number, type and expiration date; that the license(s) are current and valid; and the license(s) is/are in a classification appropriate to the Work to be undertaken.

If this Bid is made by an individual, it shall be signed and his or her full name and address shall be given below. If the Bid is made by a partnership, it shall be signed with the partnership name by a partner of the firm, who shall also sign his or her own name, and shall provide the name and address of each partner. If the Bid is made by a corporation, it shall be signed on behalf of the corporation by its duly authorized officer(s) and attested by the corporate seal.

Business Name \_\_\_\_\_ Federal ID No. \_\_\_\_\_

Contractor's License No. \_\_\_\_\_ Type(s) \_\_\_\_\_

Expiration Date \_\_\_\_\_ DIR Registration No. \_\_\_\_\_

**NOTE: Bidder must attach copies of all current, applicable contractor's licenses to this Proposal.**

**If Bidder is a corporation, affix corporate seal.**

The undersigned declares under penalty of perjury under the laws of the State of California that the foregoing is true and correct. Executed at \_\_\_\_\_, California.

Dated: \_\_\_\_\_ 20 \_\_\_\_\_

**AUTHORIZED SIGNATURE**

By: \_\_\_\_\_

Print Name: \_\_\_\_\_

Title \_\_\_\_\_

If Bidder is a Corporation, the Proposal shall also be signed by its Secretary:

By: \_\_\_\_\_

Print Name: \_\_\_\_\_

Bidder's business address:

\_\_\_\_\_  
\_\_\_\_\_

Telephone No.: \_\_\_\_\_

Facsimile No.: \_\_\_\_\_

If Bidder is a partnership, provide the name and address of each partner here:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

If awarded the Contract, the Contractor or an authorized representative of the Contractor agrees to sign the Contract (original signatures) and to furnish applicable bonds, insurance, and all other documentation in accordance with requirements identified in this Bid package and the Contract Documents. Failure to do any of the aforementioned shall be cause for rejection of the Bid, forfeiture of the Bid Security and the Contract may be awarded to the next lowest responsive/responsible Bidder.

## BID SCHEDULE

Schedule of Prices for the Inverted Siphon Replacement Project  
(Specification No. 22-02)  
United Water Conservation District

BID ITEM NO.	WORK TASK	UNITS	QTY.	UNIT PRICE	ITEM TOTAL
1	Mobilization/ Demobilization	L.S.	1		\$
2	Demolition	L.S.	1		\$
3	Earthwork	L.S.	1		\$
4	Con/Span Installation	L.S.	1		\$
5	Concrete Apron & Slab	L.S.	1		\$
6	Paved Road/Ashpalt Work	L.S.	1		\$
7	Rip Rap/Rock Slope Protection	L.S.	1		\$
8	Site Restoration	L.S.	1		\$

Total Bid Price:

\$

(Price in Figures)

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(Price in Words)

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### QUANTITIES OF WORK

The quantities of work or material stated in the unit price items of the Bid Schedule are supplied only to give an indication of the general scope of the Work. Owner does not expressly or by implication agree that the actual amounts of work or material will correspond therewith, and reserves the right after award to increase or decrease the quantity of any unit price bid item, by an amount up to 25 percent of increase or decrease, without a change in the unit prices, and shall have the right to delete any bid item in its entirety, and receive full credit in the amount shown in the Bid Schedule for the deleted item of Work.

## INFORMATION REQUIRED OF BIDDER

### **EQUIPMENT/MATERIAL SOURCE INFORMATION**

The Bidder shall indicate opposite each item of equipment or material listed below, the name of the manufacturer or supplier of the equipment or material proposed to be furnished under the Bid. Failure to comply with this requirement will render the proposal informal and may cause its rejection. Awarding of a Contract under this Bid will not imply approval by the Owner of the manufacturers or suppliers listed by the Bidder. No substitution will be permitted after award of Contract unless equipment or material of the listed manufacturer or supplier cannot meet the specifications.

Equipment/Material      Manufacturer/Supplier      Estimated Delivery Time\*

Concrete  
Bridge  
Asphalt  
Rip Rap

\*Contractor shall provide the estimated delivery time following approval of submittals. Time is of the essence in this Contract. In providing this information, contractor is not responsible for labor disputes or acts of nature which are unanticipated and impact delivery times.

## **INFORMATION REQUIRED OF BIDDER**

The following section will be considered by Owner as part of the submitted Bid. This information will assist in determining the Bidder's responsibility as a qualified contractor and contractor's experience. Owner is seeking contractors with specific experience with projects similar to the Work herein proposed.

Failure to provide all information required herein may cause a Bid to be deemed informal or non-responsive and may cause its rejection. By its Bid submission, a Bidder acknowledges and consents to Owner investigating all information, and contacting the references provided herein. If any answer to any of Questions 2 through 6 is "yes," please provide further explanation, including the project name, contact information for the public agency owner, and applicable court case number(s). The term "firm" as used herein refers to and includes the Bidders' firm and any of its owners, officers, principals and qualifying individuals.

1. How many years has your firm been in business in California as a contractor under your present business name and license number? \_\_\_\_\_ years
  
2. Has your firm declared insolvency, been adjudged insolvent, or filed bankruptcy at any time during the last five (5) years?  
\_\_\_\_\_yes \_\_\_\_\_no
  
3. At any time in the past five (5) years, has your firm been assessed or paid liquidated damages after completion of a project, under a construction contract with a public agency?  
\_\_\_\_\_yes \_\_\_\_\_no
  
4. In the last five (5) years, has your firm been denied an award of a public works contract based on a finding by a public agency that your firm was not a responsible bidder?  
\_\_\_\_\_yes \_\_\_\_\_no
  
5. In the past five (5) years, has any claim been filed in court or in arbitration against your firm concerning your firm's work on a public works construction project?  
\_\_\_\_\_yes \_\_\_\_\_no
  
6. In the past five (5) years, has any surety company made any payments on your firm's behalf as a result of a default to satisfy any claims made against a performance or payment bond issued on your firm's behalf in connection with a public works construction project?  
\_\_\_\_\_yes \_\_\_\_\_no
  
7. Number of years of experience as a contractor in this specific type of construction work: \_\_\_\_\_
  
8. Please provide the information requested on five (5) similar projects [as defined in Instructions to Bidders, Section I-7] completed within the past five (5) years.

**1. Project Name:** \_\_\_\_\_  
Location: \_\_\_\_\_  
Owner (name and current phone number): \_\_\_\_\_  
\_\_\_\_\_  
Architect or Engineer (name and phone number): \_\_\_\_\_  
\_\_\_\_\_  
Bid Award amount: \$ \_\_\_\_\_  
Total value of construction (Including change orders); \$ \_\_\_\_\_  
Scheduled completion date: \_\_\_\_\_  
Time extensions granted \_\_\_\_\_  
Actual completion date: \_\_\_\_\_

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**2. Project Name:** \_\_\_\_\_  
Location: \_\_\_\_\_  
  
Owner (name and current phone number) \_\_\_\_\_  
\_\_\_\_\_  
Architect or Engineer (name and current phone number): \_\_\_\_\_  
\_\_\_\_\_  
Bid Award amount: \$ \_\_\_\_\_  
Total value of construction (including change orders):\$ \_\_\_\_\_  
Scheduled completion date: \_\_\_\_\_  
Time extensions granted: \_\_\_\_\_  
Actual completion date: \_\_\_\_\_

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**3. Project Name:** \_\_\_\_\_  
Location: \_\_\_\_\_  
  
Owner (name and current phone number) \_\_\_\_\_  
\_\_\_\_\_  
Architect or Engineer (name and current phone number): \_\_\_\_\_  
\_\_\_\_\_  
Bid Award amount: \$ \_\_\_\_\_  
Total value of construction (including change orders):\$ \_\_\_\_\_  
Scheduled completion date: \_\_\_\_\_  
Time extensions granted: \_\_\_\_\_  
Actual completion date: \_\_\_\_\_

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**4. Project Name:** \_\_\_\_\_

Location: \_\_\_\_\_

Owner (name and current phone number) \_\_\_\_\_

Architect or Engineer (name and current phone number): \_\_\_\_\_

Bid Award amount: \$ \_\_\_\_\_

Total value of construction (including change orders): \$ \_\_\_\_\_

Scheduled completion date: \_\_\_\_\_

Time extensions granted: \_\_\_\_\_

Actual completion date: \_\_\_\_\_

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**5. Project Name:** \_\_\_\_\_

Location: \_\_\_\_\_

Owner (name and current phone number) \_\_\_\_\_

Architect or Engineer (name and current phone number): \_\_\_\_\_

Bid Award amount: \$ \_\_\_\_\_

Total value of construction (including change orders): \$ \_\_\_\_\_

Scheduled completion date: \_\_\_\_\_

Time extensions granted: \_\_\_\_\_

Actual completion date: \_\_\_\_\_

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9. A. Please provide the name of your representative who attended the mandatory pre-bid conference and site inspection, if required under the Notice Inviting Bids:

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B. Describe when, by whom, and in what manner (a) the site for this proposed Work was inspected and (b) records of local utility providers were reviewed on behalf of the Bidder (**NOTE:** Failure to demonstrate diligent effort in ascertaining local conditions which may affect the Work may render this Proposal informal or nonresponsive and may result in its rejection).

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10. Attach to this form the experience resume of the person who will be designated by Bidder to act as the full time general construction supervisor or on-site construction manager for the project. Please indicate if the supervisor is an employee of the Bidder: \_\_\_\_\_.

**NOTE:** In accordance with Section I-16 of the Instructions to Bidders, a financial statement or other information and references sufficiently comprehensive to permit an appraisal of Bidder's current financial condition may be required by the Owner.

## **LIST OF SUBCONTRACTORS**

In compliance with the Subletting and Subcontracting Fair Practices Act- California Public Contract Code section 4100 *et seq.* ("Act") and any amendments thereof, each Bidder shall set forth below: (a) name, the location of the place of business, the license number, and DIR registration number issued pursuant to Section 1725.5 of the Labor Code of each Subcontractor who will perform work or labor or render service to the Contractor, who will perform work or labor or work or improvement to be performed under this Contract, or a Subcontractor licensed by the State of California who, under subcontract to the Contractor, specially fabricates and installs a portion of the work or improvements according to detailed drawings contained in the plans and specifications in an amount in excess of one-half of one percent of the Contractor's total bid; and (b) the portion and description of the work which will be done by each Subcontractor under the Act. The Contractor shall list only one Subcontractor for each such portion as is defined by the Contractor in this bid. All Subcontractors shall be properly licensed by the California State Licensing Board.

If a Contractor fails to specify a Subcontractor, or if a Contractor specifies more than one Subcontractor for the same portion of work to be performed under the Contract in excess of one-half of one percent of the Contractor's total bid, the Contractor shall be deemed to have agreed that the Contractor is fully qualified to perform that portion, and that the Contractor alone shall perform that portion.

No Contractor whose bid is accepted shall (a) substitute any Subcontractor, (b) permit any Subcontractor to be voluntarily assigned or transferred or allow the relevant portion of the work to be performed by anyone other than the original Subcontractor listed in the original bid, or (c) sublet or subcontract any portion of the work in excess of one-half of one percent of the Contractor's total bid where the original bid did not designate a Subcontractor, except as authorized by the Act.

Subletting or subcontracting of any portion of the work in excess of one-half of one percent of the Contractor's total bid where no Subcontractor was designated in the original bid shall only be permitted in cases of public emergency or necessity, and then only after a finding, reduced to writing as a public record, of the authority awarding this Contract setting forth the facts constituting the emergency or necessity.

All Subcontractors (of any tier) performing any portion of the Work must comply with the Labor Code sections 1725.5 and 1771.1 and must be properly and currently registered with the California Department of Industrial Relations and qualified to perform public works pursuant to Labor Code section 1725.5 throughout the duration of the Project.

If alternate bids are called for and bidder intends to use different or additional Subcontractors on the alternates, a separate list of Subcontractors must be provided for each such Alternate.

THAT PORTION OF THE WORK TO BE PERFORMED BY SUBCONTRACTORS CAN BE 90% OR MORE OF ALL WORK PERFORMED, BASED UPON THE TOTAL DOLLAR VALUE OF THE WORK.

After the opening of Bids, no changes or substitutions will be allowed except as otherwise provided by law. The listing of more than one Subcontractor for each item of Work to be performed with the words "and/or" will not be permitted.



(NOTE: THE FOLLOWING FORM SHALL BE USED IF CHECK OR CASH ACCOMPANIES BID.)

**BID SECURITY FORM**  
**(Check or Cash to Accompany Bid)**

Accompanying this Proposal is

(check one)

- Cash
- Certified check payable to the order of United Water Conservation District ("Owner")
- Cashier's check payable to the order of United Water Conservation District ("Owner")

In an amount not less than ten percent (10%) of the total amount of the Bid (hereinafter referred to as "Bid Security").

The Bid Security shall become the property of the Owner if this Proposal is accepted by the Owner through action of its legally authorized contracting authorities and the undersigned fails to execute the Contract, furnish the required Performance and Payment Bonds, proof of insurance coverage, and any other information required and set forth in the Instructions to Bidders pursuant to the terms of and within the time set forth in the Contract Documents.

The Bid Security shall also become the property of the Owner if the undersigned withdraw its Bid within sixty (60) days after the date set for Bid opening, and notwithstanding the award of the contract to another Bidder.

Understood and Agreed:

By: \_\_\_\_\_

Print Name: \_\_\_\_\_

Title: \_\_\_\_\_

(NOTE: THIS FORM SHALL BE USED WHERE THE BIDDER SUBMITS A BOND INSTEAD OF CHECK OR CASH.)

**BID SECURITY FORM**

**BID BOND**

**KNOW ALL MEN BY THESE PRESENTS:**

That \_\_\_\_\_ as Principal, and \_\_\_\_\_ as Surety, are held and firmly bound unto United Water Conservation District (hereinafter "Owner,") in a sum not less than ten percent (10%) of the total amount of the Bid amount for payment of which in lawful money of the United States, to be paid to Owner, its successors, and assigns, for the payment of which sum, well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

**WHEREAS**, said Principal has submitted a Bid to said Owner to perform the Work required under the Bid Schedules of Owner’s Contract Documents entitled: Construction of the new District Headquarters Project, all in accordance with the Contract Documents, including specifications and drawings on file at the offices of the Owner.

**NOW, THEREFORE**, if said Principal is awarded a Contract by said Owner, and within the time and in the manner required in the “Notice Inviting Bids” and the “Instructions to Bidders” enters into a written Agreement contained within said Contract Documents, furnishes the required Certificates of Insurance, and furnishes the required Performance Bond and Payment Bond and all other required documents, then this obligation shall be null and void, otherwise it shall remain in full force and effect. In the event suit is brought upon this Bond by said Owner, said Surety shall pay all costs incurred by said Owner in such suit, including reasonable attorney’s fees to be fixed by the court. Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration, or addition to the terms of the Contract, or the call for bids, or the work to be performed thereunder, or the specifications accompanying the same, shall in anyway affect its obligation under this bond, and it does hereby waive notice of any such change, extension of time, alteration, or addition to the terms of said Contract, or the call for bids, or the work, or to the specifications.

**IN WITNESS WHEREOF, we hereunto set our hands and seals this**  
day of \_\_\_\_\_, 20 \_\_\_\_\_

\_\_\_\_\_ (SEAL)

\_\_\_\_\_ (SEAL)

\_\_\_\_\_

**(Seal and Notarial Acknowledgement of Surety)**

\_\_\_\_\_  
Principal

\_\_\_\_\_  
Surety

\_\_\_\_\_  
(Signature)

\_\_\_\_\_  
(Signature)

**NOTE:**

- (1) This bid bond form is a mandatory form.
- (2) The bid bond form must be acknowledged before notaries public, and a legally sufficient power of attorney must be attached to the bid bond to verify the authority of the party signing on behalf of the surety.

Any claims under this bond may be addressed to (Name and Address of Surety):

\_\_\_\_\_  
\_\_\_\_\_

Name and Address of agent or representative for service of process in California if different from above:

\_\_\_\_\_  
\_\_\_\_\_

Telephone Number of Surety and agent or representative for service of process in California:

\_\_\_\_\_

TO BE EXECUTED BY EACH BIDDER

**NON-COLLUSION DECLARATION [PUBLIC CONTRACT CODE 7106]  
TO BE EXECUTED BY BIDDER AND SUBMITTED WITH BID**

The undersigned declares:

I am the \_\_\_\_\_ [Title] of \_\_\_\_\_ [Name of Company],  
the party making the foregoing bid.

The bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation. The bid is genuine and not collusive or sham. The bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid. The bidder has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or to refrain from bidding. The bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other bidder. All statements contained in the bid are true. The bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, to any corporation, partnership, company, association, organization, bid depository, or to any member or agent thereof, to effectuate a collusive or sham bid, and has not paid, and will not pay, any person or entity for such purpose.

Any person executing this declaration on behalf of a bidder that is a corporation, partnership, joint venture, limited liability company, limited liability partnership, or any other entity, hereby represents that he or she has full power to execute, and does execute, this declaration on behalf of the bidder.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct and that this declaration is executed on \_\_\_\_\_ [Date], at \_\_\_\_\_ [City], \_\_\_\_\_ [State].

Signed: \_\_\_\_\_

Typed Name: \_\_\_\_\_

# AGREEMENT

**THIS AGREEMENT**, made and entered into on \_\_\_\_\_, 20\_\_ by and between United Water Conservation District, a public corporation organized and existing under the provisions of California Water Code section 74000 *et seq.*, hereinafter referred to as "Owner," and

---

---

hereinafter referred to as "Contractor."

The parties hereto mutually covenant and agree as follows:

1. The Contract Documents, as that term is defined, are hereby incorporated in and made a part of this Agreement as though fully set forth herein. If there exist any provisions of local, state or federal laws, ordinances or regulations which are required to be expressly set forth in the Contract Documents and have not been included therein, such provisions are incorporated herein as if expressly set forth.

2. For and in consideration of the payments and agreements to be made and performed by the Owner as set forth in said Contract Documents, the Contractor agrees with the Owner to perform the Work generally described as Construction of the Inverted Siphon Replacement Project (Specification No. 22-02).

And as more specifically set forth in the Contract Documents for which award of contract was made; to furnish at its own proper cost and expense all plant, labor, services, materials, tools, equipment, supplies, transportation, utilities, and all other items and facilities necessary therefor, as provided in the Contract Documents, and to do everything required therein. In accordance with the provisions of Section 3700 of the Labor Code, the Contractor will secure payment of compensation of its employees by acquisition of workers' compensation insurance or by qualification as a self-insurer.

3. The Contractor shall provide for payments on all required insurance policies, and shall obtain all necessary permits and licenses for performance of the Work. The Contractor shall furnish and remove all temporary work or structures, tools, equipment and appurtenances necessary to accomplish the Work contemplated by this Agreement and the Contract Documents, and shall be responsible for all loss and damage arising out of the nature of the Work during its progress and prior to Owner's acceptance, from the action of the elements and from any unforeseen difficulties which may arise or be encountered in the prosecution of the Work, and for all other risks of any description connected with the Work. The Contractor shall also be responsible for all expenses incurred by or in consequence of the suspension or discontinuance of Work, except where the Contract Documents expressly stipulate otherwise. In consideration of the foregoing, and for well and faithfully completing the Work within the stipulated time and in the manner shown and described in the Contract Documents and in accordance with the requirements of the Engineer, the Owner shall pay, and the Contractor shall receive as full compensation therefor, the prices set forth in the accepted Bid Proposal and herein, subject to additions or deductions as provided for in the Contract Documents. The total compensation to be paid to Contractor shall be computed on the basis of the units of work actually performed and approved in accordance with the requirements of the Contract Documents and paid for at the prices stated by the Contractor in the Bid Schedule for final completion of the Work.

4. The Work shall commence within fifteen (15) days after the date specified in the Notice To Proceed issued by the Owner, and shall be fully completed not later than 90 working days from the-Commencement Date specified in the Notice To Proceed. If the Work is not fully completed in the time specified herein, plus any extension of time as-may be granted by the Owner pursuant to the terms of the Contract Documents, the parties recognize: (a) that Owner will suffer financial damages which are, and will continue to be, impracticable and extremely difficult to ascertain; and (b) the delay, expense and difficulty involved in proving the actual damages suffered by Owner as a result of such delay. Accordingly, instead of requiring such proof, the parties agree that as authorized by California Government Code section 53069.85, Contractor shall forfeit and pay to Owner as liquidated damages, and not as a penalty or forfeiture, the sum of Five Hundred Dollars (\$500) for each calendar day past completion date.

5. The Owner promises and agrees to employ, and does hereby employ, Contractor to provide the materials and to do the Work according to the terms and conditions herein contained and referred to, for the sum of \$XXX,XXX.XX (XXXXXXX Dollars), said sum being the total amount stipulated in the Bid Proposal, and hereby contracts to pay the same at the time, in the manner, and subject to the conditions set forth in the Contract Documents; and the parties for themselves, their heirs, executors, administrators, successors and assigns do hereby agree to the full performance of the covenants herein contained in this Agreement.

6. No work, services, material, or equipment shall be performed or furnished under this Agreement unless and until a written Notice to Proceed has been given to the Contractor by the Owner, in accordance with the Contract Documents. The Work under this Agreement shall be fully completed to the approval and entire satisfaction of the Owner and its Engineer.

7. The Contractor shall assume the defense of and indemnify and hold harmless the Owner, and its Engineer, the Owner's Representative, and their respective directors, officers, board members, employees, independent contractors, representatives, consultants, agents-, and volunteers, and each of their respective successors and assigns, and each of them (collectively herein "Indemnitees") from and against:

a. Any and all claims, demands, causes of action, actions, proceedings, liens, judgments, damages, costs, expenses (including costs of defense and attorneys' fees), losses or liabilities, in law or in equity, of every kind or nature whatsoever for, including, but not limited to, (1) injury to or death of any person, including the Indemnitees; (2) damages to or destruction of property of any person, including the Indemnitees, (3) any failure or alleged failure to comply with any provision of law or the Contract Documents; or (4) other loss, damage, or expense, arising out of or in any manner directly or indirectly connected with the Work to be performed under this Agreement, caused in whole or in part by any negligent act or omission of the Contractor, or any Subcontractor, supplier, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, except to the extent caused by the active negligence, sole negligence or willful misconduct of the Indemnitees;

b. Any and all claims, demands, causes of action, actions, proceedings, liens, judgments, damages, costs, expenses (including costs of defense and attorneys' fees), penalties or liabilities, in law or in equity, of every kind or nature whatsoever, arising out of, resulting from or on account of the violation of any existing or future governmental law, ordinance or regulation, specifically including, but not limited to, the safety of workers, compliance with

which is the responsibility of Contractor, any Subcontractor, supplier, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable.

c. Any dispute between Contractor and Contractor's Subcontractors, suppliers, and/or sureties, including, but not limited to, any failure or alleged failure of the Contractor (or any person hired or employed directly or indirectly by the Contractor) to pay any Subcontractor or materialman of any tier or any other person employed in connection with the Work.

d. Any liens, stop notices, or assertion of security interests, including judgments and levies. If after written notice Contractor fails to address the lien, stop notice, or other security interest, the Owner may proceed to address the lien, stop notice, or claim and seek reimbursement from Contractor, either directly or by deduction from any payments due or to become due to Contractor

Contractor shall give prompt written notice to the Owner of any litigation, mediation, arbitration or proceedings pending or threatened against Contractor or any Subcontractor or which relates to the Project and in which the amount in controversy is (or is reasonably likely to be, when aggregated with all related actions) equal to or greater than \$50,000. Contractor shall not (and shall not cause or permit any Subcontractor to) initiate or settle any litigation arising out of or related to the Project and/or any Work in which the amount in controversy is (or is reasonably likely to be, when aggregated with all related actions) equal to or greater than \$250,000 without Owner's prior written consent and Contractor shall keep Owner apprised of the status of any such litigation.

Contractor shall defend, at the Contractor's own cost, expense, and risk, any and all such aforesaid suits, actions or other legal proceedings of every kind arising out of or connected with the Work that may be brought or instituted against the Indemnitees. Contractor shall promptly, but in no event later than thirty (30) days following Owner's or Indemnitee's demand therefor, pay and satisfy any judgment, award, or decree that may be rendered against the Indemnitees in any such suit, action, or other legal proceeding. Contractor shall promptly, but in no event later than thirty (30) days following Owner's or Indemnitee's demand therefor, reimburse the Indemnitees for any and all legal expenses and costs incurred by each of them in connection therewith or in enforcing the indemnity herein provided.

Promptly after receipt by an Indemnitee of any claim or notice of the commencement of any action, administrative or legal proceeding, or investigation in connection with an actual or potential claim from a third party as to which any indemnity provided for in this Agreement and the Contract Documents may apply, the Indemnitee will notify the Owner and Contractor in writing of such fact. Any delay by an Indemnitee in notifying Contractor of any such claim or notice will not excuse Contractor of its obligations hereunder. Upon Contractor's receipt of such notice, Contractor shall assume, on behalf of the Indemnitee, and conduct with due diligence and in good faith, the defense thereof with counsel reasonably satisfactory to the Indemnitee; provided that the Indemnitee shall have the right at its own expense to be represented therein by advisory counsel of its own selection; and provided further that if the defendants in any such action include both the Contractor and the Indemnitee, and if the Indemnitee shall have reasonably concluded that there may be legal defenses available to it which are different from, additional to, or inconsistent with those available to Contractor, then the Indemnitee shall have the right to select separate counsel to participate in the defense of such action on its own behalf and at Contractor's expense.

If any third party claim arises as to which any indemnity provided for in this Agreement and the Contract Documents may apply, and Contractor fails to assume the defense of such claim promptly after the receipt by Contractor of notification thereof, then the Indemnitee against which the claim is instituted or commenced may, at Contractor's expense, contest, or (with the prior written consent of Contractor, not to be unreasonably withheld) settle such claim; provided that no such contest need be made and settlement or full payment of any such claim may be made without Contractor's consent (with Contractor remaining obligated to indemnify the Indemnitee under this Agreement and the Contract Documents) if, in the written opinion of the Indemnitee's legal counsel, such claim is meritorious. All costs and expenses incurred by Indemnitee and/or the Owner in connection with any such contest, settlement, or payment may be deducted from any amounts due or to become due to Contractor under this Agreement and the Contract Documents, with all such costs in excess of the amount deducted to be reimbursed by Contractor to the Owner or the Indemnitee promptly following, but not later than thirty (30) days following, Owner's or Indemnitee's demand therefor. In the event and to the extent that the Owner makes a deduction as described in the preceding sentence, then Owner shall be responsible for making appropriate payments to any Indemnitees, and shall indemnify Contractor for any claims by the Indemnitees arising out of Owner's failure to make such payments.

The indemnification obligations herein shall survive the completion of the Work under the Contract and/or expiration or termination of the Contract.

Contractor agrees to carry insurance for this purpose as set out in the specifications. See Section I-14 of the Instructions to Bidders, entitled LIABILITY INSURANCE; and Article 7 of the General Provisions, entitled CONTRACTOR'S INSURANCE; and the Special Provisions for insurance specifications and coverage. Contractor's obligation to indemnify shall not be restricted to insurance proceeds, if any, received by the Indemnitees. The indemnification obligations herein shall be in effect without regard to whether or not Owner, Contractor, or any other person maintains, or fails to maintain, insurance coverage, or a self-insurance program, for any such indemnified claims.

8. The Contract entered into by this Agreement consists of the following Contract Documents, all of which are component parts of the Contract as if herein set out in full or attached hereto.

- Notice Inviting Bids
- Instructions to Bidders
- Bid Proposal and Declaration
- Bid Schedule
- Information Required of Bidder
- List/ Designation of Subcontractors
- Bid Security Form and Bid Bond or other Bid Security
- Non-Collusion Declaration of Contractor
- Agreement Form
- Faithful Performance Bond
- Payment Bond
- Non-Collusion Declarations of Subcontractors
- All Required Insurance Policies and Endorsements
- Notice to Proceed
- General Provisions
- Special Provisions
- Specifications
- All Addenda as Issued

Drawings/Plans  
Requirements, Reports and/or Other Documents Issued to Bidders

All of the above named Contract Documents are intended to be complementary. Work required by one of the above named Contract Documents and not by others shall be done as if required by all.

9. Wage rates for this Project shall be in accordance with the general prevailing rate of holiday and overtime work in the locality in which the work is to be performed for each craft, classification, or type of work needed to execute the Contract as determined by the Director of the Department of Industrial Relations. The following are hereby referenced and made a part of this Agreement and Contractor stipulates to the provisions contained therein: (a) Chapter 1 of Part 7 of Division 2 of the Labor Code (Section 1720 et seq.); and (b) California Code of Regulations, Title 8, Chapter 8, Subchapters 3 through 6 (Section 16000 et seq.)

10. If any term, covenant, condition, or provision of this Agreement or any of the Contract Documents is found by a court of competent jurisdiction to be invalid, void-, or unenforceable for any reason, the remaining provisions shall continue in full force and effect without being impaired or invalidated in any way. If the court finds that any provision of this Agreement is invalid or unenforceable, but that by limiting such provision it would then become valid and enforceable, then such provision shall be deemed written, construed-, and enforced as so limited taking into account the intent of the parties at the time of executing this Agreement.

11. In employing Contractor to perform the Work contemplated under the Contract Documents, the Owner has relied on the experience, expertise-, and integrity of the Contractor. The rights and obligations of the Contractor under this Agreement shall therefore not be assignable without the prior express written consent of the Owner.

12. This Agreement constitutes the entire Agreement of the parties with respect to the subject matter, and no amendment, modification or alteration of the terms hereof shall be binding unless the same is in writing, dated subsequent to the date hereof and duly approved and executed by each of the parties. No oral understanding or agreement not incorporated herein shall be binding on any of the parties.

13. This Agreement, and the application or interpretation hereof, shall be governed exclusively by its terms and by the laws of the State of California. Venue for all purposes shall be deemed to lie within Ventura County, California, and any action to enforce this Agreement or for any remedies, damages, or other relief shall only be brought in either the state courts of the State of California in and for the County of Ventura or in the United States District Court, Central District of California.

IN WITNESS WHEREOF: The parties hereto have caused this Agreement to be executed as of the day and year first above written.

"OWNER"

"CONTRACTOR"

By: \_\_\_\_\_

License No(s).\_\_\_\_\_

Its: General Manager  
[TITLE]

Expiration Date(s):\_\_\_\_\_

By: \_\_\_\_\_

By: \_\_\_\_\_

Its: \_\_\_\_\_  
[TITLE]

Its: \_\_\_\_\_  
[TITLE]

Address: For Giving Notice to Owner

1701 N. Lombard Street, Suite 200  
Oxnard, CA 93030

By: \_\_\_\_\_

Its: \_\_\_\_\_  
[TITLE]

NOTE: Contractor shall furnish, to the satisfaction of Owner's Attorney, verification that the persons signing this Agreement as Contractor or on behalf of the Contractor have authority and legal authorization to bind the Contractor. Where such verification is a Power of Attorney, it shall be an unrevoked power, and Contractor shall provide an original or certified copy of the original.

FAITHFUL PERFORMANCE BOND

Bond

No. \_\_\_\_\_

KNOW ALL MEN BY THESE PRESENTS:

THAT WHEREAS, the UNITED WATER CONSERVATION DISTRICT (sometimes referred to hereinafter as "Obligee") has awarded to \_\_\_\_\_ (hereinafter designated as the "Principal" or "Contractor"), an agreement for the work described as follows: Inverted Siphon Replacement Project (Specification No. 22-02) (hereinafter referred to as the "Public Work"); and

WHEREAS, the work to be performed by the Contractor is more particularly set forth in that certain contract for said Public Work dated \_\_\_\_\_, (hereinafter referred to as the "Contract"), which Contract is incorporated herein by this reference; and

WHEREAS, the Contractor is required by said Contract to perform the terms thereof and to provide a bond both for the performance and guaranty thereof.

NOW, THEREFORE, we, \_\_\_\_\_, the undersigned Contractor, as Principal, and \_\_\_\_\_, a corporation organized and existing under the laws of the State of \_\_\_\_\_, and duly authorized to transact business under the laws of the State of California, as Surety, are held and firmly bound unto the UNITED WATER CONSERVATION DISTRICT in the sum of XXX,XXX Dollars (\$XXX,XXX.XX), said sum being not less than one hundred percent (100%) of the total amount payable by said Obligee under the terms of said Contract, for which amount well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH THAT, if the bounded Contractor, his or her heirs, executors, administrators, successors or assigns, shall in all things stand to and abide by, and well and truly keep and perform the covenants, conditions, and agreements in said Contract and any alteration thereof made as therein provided, on his or her part, to be kept and performed at the time and in the manner therein specified, and in all respects according to their intent and meaning; and shall faithfully fulfill guarantees of all materials and workmanship; and indemnify, defend and save harmless the Obligee, its officers and agents, as stipulated in said Contract, then this obligation shall become null and void; otherwise it shall be and remain in full force and effect.

The Surety, for value received, hereby stipulates and agrees that it shall not be exonerated or released from the obligation of this bond (either by total exonerated or pro tanto) by any change, extension of time, alteration in or addition to the terms of the contract or to the work to be performed there under or the specifications accompanying the same, nor by any change or modification to any terms of payment or extension of time for any payment pertaining or relating to any scheme of work of improvement under the contract. Surety also stipulates and agrees that it shall not be exonerated or released from the obligation of this bond (either by total exonerated or pro tanto) by any overpayment or underpayment by the Obligee that is based upon estimates approved by the Architect. The Surety stipulates and agrees that none of the aforementioned

changes, modifications, alterations, additions, extension of time or actions shall in any way affect its obligation on this bond, and it does hereby waive notice of any such changes, modifications, alterations, additions or extension of time to the terms of the contract, or to the work, or the specifications as well notice of any other actions that result in the foregoing.

Whenever Principal shall be, and is declared by the Obligees to be, in default under the Contract, the Surety shall promptly either remedy the default, or shall promptly take over and complete the Contract through its agents or independent contractors, subject to acceptance and approval of such agents or independent contractors by Obligees as hereinafter set forth, in accordance with its terms and conditions and to pay and perform all obligations of Principal under the Contract, including, without limitation, all obligations with respect to warranties, guarantees and the payment of Liquidated Damages; or, at Obligees's sole discretion and election, Surety shall obtain a bid or bids for completing the Contract in accordance with its terms and conditions, and upon determination by Obligees of the lowest responsible bidder, arrange for a contract between such bidder and the Obligees and make available as Work progresses (even though there should be a default or succession of defaults under the contract or contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the "balance of the Contract Price" (as hereinafter defined), and to pay and perform all obligations of Principal under the Contract, including, without limitation, all obligations with respect to warranties, guarantees and the payment of Liquidated Damages. The term "balance of the Contract Price," as used in this paragraph, shall mean the total amount payable to Principal by the Obligees under the Contract and any modifications thereto, less the amount previously paid by the Obligees to the Principal, less any withholdings by the Obligees allowed under the Contract. Obligees shall not be required or obligated to accept a tender of a completion contractor from the Surety.

Surety expressly agrees that the Obligees may reject any agent or contractor which may be proposed by Surety in fulfillment of its obligations in the event of default by the Principal. Unless otherwise agreed by Obligees, in its sole discretion, Surety shall not utilize Principal in completing the Contract nor shall Surety accept a bid from Principal for completion of the work in the event of default by the Principal.

No final settlement between the Obligees and the Contractor shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

The Surety shall remain responsible and liable for all patent and latent defects that arise out of or relate to the Contractor's failure and/or inability to properly complete the Public Work as required by the Contract and the Contract Documents. The obligation of the Surety hereunder shall continue so long as any obligation of the Contractor remains.

Contractor and Surety agree that if the Obligees is required to engage the services of an attorney in connection with enforcement of the bond, Contractor and Surety shall pay Obligees's reasonable attorneys' fees incurred, with or without suit, in addition to the above sum.

In the event suit is brought upon this bond by the Obligees and judgment is recovered the Surety shall pay all costs incurred by the Obligees in such suit, including reasonable attorneys' fees to be fixed by the Court.

IN WITNESS WHEREOF, we have hereunto set our hands and seals this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

PRINCIPAL/CONTRACTOR:

By:

SURETY:

By:

Attorney-in-Fact

The rate of premium on this bond is \_\_\_\_\_ per thousand.

The total amount of premium charged: \$\_\_\_\_\_ (This must be filled in by a corporate surety).

IMPORTANT: THIS IS A REQUIRED FORM.

Surety companies executing bonds must possess a certificate of authority from the California Insurance Commissioner authorizing them to write surety insurance defined in California Insurance Code section 105, and if the work or project is financed, in whole or in part, with federal, grant or loan funds, Surety's name must also appear on the Treasury Department's most current list (Circular 570 as amended).

Any claims under this bond may be addressed to:

(Name and Address of Surety)	(Name and Address of agent or representative for service for service of process in California)
_____	_____
_____	_____
Telephone: _____	Telephone: _____

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

STATE OF CALIFORNIA )  
 ) ss.  
COUNTY OF )

On \_\_\_\_\_, before me,  
\_\_\_\_\_, personally appeared  
\_\_\_\_\_, who proved on the basis of satisfactory evidence to be  
the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me  
that he/she/they executed the same in his/her/their authorized capacity(ies) as the Attorney-in-  
Fact of \_\_\_\_\_ (Surety) and acknowledged to me that by his/her/their  
signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s)  
executed the instrument.

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

WITNESS my hand and official seal.

\_\_\_\_\_  
Notary Public in and for said State (SEAL)  
Commission expires:\_\_\_\_\_

NOTE: A copy of the power-of-attorney to local representatives of the bonding company must be  
attached hereto.

PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS:

THAT WHEREAS, the UNITED WATER CONSERVATION DISTRICT (sometimes referred to hereinafter as "Obligee") has awarded to \_\_\_\_\_ (hereinafter designated as the "Principal" or "Contractor"), an agreement for the work described as follows: Construction of the Inverted Siphon Replacement Project (Specification No. 22-02) (hereinafter referred to as the "Public Work"); and

WHEREAS, the work to be performed by the Contractor is more particularly set forth in that certain contract for said Public Work dated \_\_\_\_\_, (hereinafter referred to as the "Contract"), which Contract is incorporated herein by this reference; and

WHEREAS, the Contractor is required by said Contract to perform the terms thereof and to provide a bond both for the performance and guaranty thereof. NOW, THEREFORE, we, \_\_\_\_\_, the undersigned Contractor, as Principal, and \_\_\_\_\_, a corporation organized and existing under the laws of the State of \_\_\_\_\_, and duly authorized to transact business under the laws of the State of California, as Surety, are held and firmly bound unto the UNITED WATER CONSERVATION DISTRICT in the sum of XXXXXXXXXXXXXX Dollars (\$XXX,XXX.XX), said sum being not less than one hundred percent (100%) of the total amount payable by said Obligee under the terms of said Contract, for which amount well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH THAT, if the bounded Contractor, his or her heirs, executors, administrators, successors or assigns, shall in all things stand to and abide by, and well and truly keep and perform the covenants, conditions, and agreements in said Contract and any alteration thereof made as therein provided, on his or her part, to be kept and performed at the time and in the manner therein specified, and in all respects according to their intent and meaning; and shall faithfully fulfill guarantees of all materials and workmanship; and indemnify, defend and save harmless the Obligee, its officers and agents, as stipulated in said Contract, then this obligation shall become null and void; otherwise it shall be and remain in full force and effect.

The Surety, for value received, hereby stipulates and agrees that it shall not be exonerated or released from the obligation of this bond (either by total exonerated or pro tanto) by any change, extension of time, alteration in or addition to the terms of the contract or to the work to be performed there under or the specifications accompanying the same, nor by any change or modification to any terms of payment or extension of time for any payment pertaining or relating to any scheme of work of improvement under the contract. Surety also stipulates and agrees that it shall not be exonerated or released from the obligation of this bond (either by total exonerated or pro tanto) by any overpayment or underpayment by the Obligee that is based upon estimates approved by the Architect. The Surety stipulates and agrees that none of the aforementioned changes, modifications, alterations, additions, extension of time or actions shall in any way affect its obligation on this bond, and it does hereby waive notice of any such changes, modifications, alterations, additions or extension of time to the terms of the contract, or to the work, or the specifications as well notice of any other actions that result in the foregoing.

Whenever Principal shall be, and is declared by the Obligee to be, in default under the Contract, the Surety shall promptly either remedy the default, or shall promptly take over and complete the Contract through its agents or independent contractors, subject to acceptance and approval of such agents or independent contractors by Obligee as hereinafter set forth, in accordance with its terms and conditions and to pay and perform all obligations of Principal under the Contract, including, without limitation, all obligations with respect to warranties, guarantees and the payment of Liquidated Damages; or, at Obligee's sole discretion and election, Surety shall obtain a bid or bids for completing the Contract in accordance with its terms and conditions, and upon determination by Obligee of the lowest responsible bidder, arrange for a contract between such bidder and the Obligee and make available as Work progresses (even though there should be a default or succession of defaults under the contract or contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the "balance of the Contract Price" (as hereinafter defined), and to pay and perform all obligations of Principal under the Contract, including, without limitation, all obligations with respect to warranties, guarantees and the payment of Liquidated Damages. The term "balance of the Contract Price," as used in this paragraph, shall mean the total amount payable to Principal by the Obligee under the Contract and any modifications thereto, less the amount previously paid by the Obligee to the Principal, less any withholdings by the Obligee allowed under the Contract. Obligee shall not be required or obligated to accept a tender of a completion contractor from the Surety.

Surety expressly agrees that the Obligee may reject any agent or contractor which may be proposed by Surety in fulfillment of its obligations in the event of default by the Principal. Unless otherwise agreed by Obligee, in its sole discretion, Surety shall not utilize Principal in completing the Contract nor shall Surety accept a bid from Principal for completion of the work in the event of default by the Principal.

No final settlement between the Obligee and the Contractor shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

The Surety shall remain responsible and liable for all patent and latent defects that arise out of or relate to the Contractor's failure and/or inability to properly complete the Public Work as required by the Contract and the Contract Documents. The obligation of the Surety hereunder shall continue so long as any obligation of the Contractor remains.

Contractor and Surety agree that if the Obligee is required to engage the services of an attorney in connection with enforcement of the bond, Contractor and Surety shall pay Obligee's reasonable attorneys' fees incurred, with or without suit, in addition to the above sum.

In the event suit is brought upon this bond by the Obligee and judgment is recovered, the Surety shall pay all costs incurred by the Obligee in such suit, including reasonable attorneys' fees to be fixed by the Court.

IN WITNESS WHEREOF, we have hereunto set our hands and seals this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

PRINCIPAL/CONTRACTOR:

By:

SURETY:

By:

Attorney-in-Fact

The rate of premium on this bond is \_\_\_\_\_ per thousand.

The total amount of premium charged: \$\_\_\_\_\_ (This must be filled in by a corporate surety).

IMPORTANT: THIS IS A REQUIRED FORM.

Surety companies executing bonds must possess a certificate of authority from the California Insurance Commissioner authorizing them to write surety insurance defined in California Insurance Code section 105, and if the work or project is financed, in whole or in part, with federal, grant or loan funds, Surety's name must also appear on the Treasury Department's most current list (Circular 570 as amended).

Any claims under this bond may be addressed to:

(Name and Address of Surety)

(Name and Address of agent or representative for service for service of process in California)

Telephone:

Telephone:



## NON-COLLUSION DECLARATION

The undersigned declares:

I am the \_\_\_\_\_ [Title] of \_\_\_\_\_ [Name of Company], the party making the foregoing bid.

The bid is not made in the interest of or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation. The bid is genuine and not collusive or sham. The bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid. The bidder has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or to refrain from bidding. The bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other bidder. All statements contained in the bid are true. The bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, to any corporation, partnership, company, association, organization, bid depository, or to any member or agent thereof, to effectuate a collusive or sham bid, and has not paid, and will not pay, any person or entity for such purpose.

Any person executing this declaration on behalf of a bidder that is a corporation, partnership, joint venture, limited liability company, limited liability partnership, or any other entity, hereby represents that he or she has full power to execute, and does execute, this declaration on behalf of the bidder.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct and that this declaration is executed on \_\_\_\_\_ [Date], at \_\_\_\_\_ [City], \_\_\_\_\_ [State].

Signed: \_\_\_\_\_

Typed Name: \_\_\_\_\_

NOTICE TO PROCEED

TO: \_\_\_\_\_

[CONTRACT AWARDEE]

FROM: Board of Directors, United Water Conservation District

NOTICE IS HEREBY GIVEN that you are authorized and directed to proceed with the following project in accordance with the Contract Documents:

Inverted Siphon Replacement Project (Specification 22-02)

\_\_\_\_\_  
[IDENTIFICATION OF PROJECT]

The documents checked off below have been received and are on file with the General Manager of United Water Conservation District:

Agreement, fully executed	[ ]
Payment Bond (100%)	[ ]
Faithful Performance Bond (100%)	[ ]
Worker's Compensation Insurance Certificate	[ ]
Liability Insurance Policy or Certificate, w/ Endorsements	[ ]
Non-Collusion Declarations	[ ]

A copy of the Award of Contract has been mailed by this District to the California Division of Apprenticeship Standards, Department of Industrial Relations.

Under the terms of the Contract Documents, work is to start within fifteen (15) calendar days after the Commencement Date set forth below and is to be fully completed within the time set forth in the Agreement.

UNITED WATER CONSERVATION DISTRICT

By:

Title:

Commencement Date:

## GENERAL PROVISIONS

### ARTICLE 1 -- DEFINITIONS, TERMS, AND ABBREVIATIONS

#### 1-1 DEFINITIONS

Whenever the following terms occur in the Contract Documents, the meaning shall be interpreted as follows. However, the following shall not be construed as a comprehensive list of all definitions in the Contract Documents and there may be other definitions set forth in the Contract Documents.

**ACCEPTANCE, FINAL ACCEPTANCE** --The formal action by the Owner's Board and written acknowledgment by the Owner accepting the work as being complete.

**ACCEPTED BID** -- The Bid (Proposal) accepted by the Owner.

**ADDENDUM** -- Written or graphic instrument issued prior to the opening of bids which clarifies, corrects, or changes the bidding or Contract Documents. The term Addendum shall include bulletins and all other types of written notices issued to potential bidders prior to opening of bids.

**AGREEMENT** -- The written agreement executed between the Owner and the Contractor establishing the respective rights and obligations of the Parties with respect to performance of the Work. Also referred to as "Contract".

**AS-BUILT DRAWINGS** -- A set of drawings maintained by the Contractor, updated and marked to clearly show all changes, revisions, substitutions, field changes, final locations, and other significant features of the Project, including, but not limited to, deviations made during construction, details in the Work not previously shown, changes to existing conditions found to differ from those shown on existing drawings, and the actual installed position of equipment and fixtures. The As-Builts shall be maintained continuously throughout the Work for the Project and is a prerequisite to the issuance of payments to the Contractor and a delivery requirement for final Contract close-out.

**BASELINE SCHEDULE** -- This first Schedule which outlines the Contractor's view of the practical way in which the Work will be accomplished, including the proposed dates of commencement and completion and cost of each of the various parts of the Work and the anticipated amount of each monthly payment that will become due the Contractor in accordance therewith.

**(BID) PROPOSAL FORMS** -- The set of documents submitted by a bidder on the form provided as part of the Contract Documents, setting forth the amount for which the bidder is willing to perform the work contemplated under the Contract Documents, and including a price breakdown by contract item as shown on the Bid Schedule. The Bid or Proposal shall include the following documents: the signed Bidder's Declaration, Bid Schedule, Information Required of Bidder, the List of Subcontractors, Bid Security Forms (including the Bidder's Bond or other required Bid Security) and Non-Collusion Declaration. The terms "Bid" or "Proposal" are used interchangeably throughout the Contract Documents, and each shall carry the same meaning.

**BIDDER** -- Any individual, partnership, corporation, joint venture, or other combination thereof submitting a proposal for the work contemplated, acting directly or through an authorized representative.

**CHANGE NOTICE** -- A written notice issued by the Owner to the Contractor regarding a proposed change in the Work, including a proposed basis for adjustment, if any, in the Contract Price or Contract Time.

CHANGE ORDER -- A written order implementing changes in the Work, for which adjustments to the Contract Price or Contract Time, if any, have been agreed upon prior to the issuance of the Change Order.

CHANGE ORDER REQUEST -- A written request by the Contractor to the Owner for a Change Order.

CHANGE PROPOSAL -- A proposal for a Change Order, submitted by the Contractor to the Owner, detailing changes in the Work and the proposed basis for adjustment, if any, in the Contract Price or Contract Time. A Change Proposal may be submitted in response to a Change Notice by the Owner or on the Contractor's own initiative in connection with a written Change Order Request.

CLAIM/DISPUTE -- A separate written demand by the Contractor for (A) a time extension including, without limitation, relief from damages or penalties for delay assessed by the Owner under the Contract; (B) payment by the Owner of money or damages arising from the Work done by , or on behalf of , the Contractor pursuant to the Contract and payment for which is not otherwise expressly provided for or to which the Contractor is not otherwise entitled to, ; and/or (C) an amount of payment disputed by the Owner.

CONTRACT -- Either the written agreement executed between the Owner and the Contractor (also referred to as "Agreement") establishing the respective rights and obligations of the Parties with respect to performance of the Work; or the Contract Documents, depending on the context.

CONTRACTOR -- The individual, partnership, corporation, joint venture, or other combination thereof who has entered into the Contract with the Owner for the performance of the work. The term "Contractor" means the Contractor and/or its authorized representative(s).

CONTRACT DOCUMENTS -- The Contract Documents shall consist of the Notice Inviting Bids, the Instructions To Bidders, all of the Proposal Forms [including the Bid Proposal and Declaration, Bid Schedule, Information Required of Bidder, List of Subcontractors, Bid Security Form, and (Contractor's) Non-Collusion Declaration], the Agreement, the Faithful Performance Bond, the Payment Bond, the Non-Collusion Declarations (Subcontractors), the Notice To Proceed, these General Provisions, the Special Provisions, the Specifications and Drawings, and any Change Order or addenda and the Specifications and Drawings listed therein, all of which documents are on file in the office of the Owner and are hereby incorporated by reference herein; also any and all supplemental agreements amending or extending the work contemplated and any other documents referenced in Section 8 of the Agreement. Supplemental agreements are written agreements covering alterations, amendments, or extensions to the Contract and include Contract Change Orders

CONTRACT PRICE -- The contract price agreed to between the Owner and the Contractor for the construction and completion of all of the Work, as set forth in the Contractor's accepted Bid Proposal and the Contract Documents.

CONTRACT TIME -- The time for construction and final completion of the Work, as set forth in Section 4 of the Agreement. Any references to complete or for the completion of the Project shall mean final completion of the Project.

DAYS -- Unless otherwise specified, days shall mean consecutive calendar days.

ENGINEER -- The term "Engineer" means the Owner's Manager of Engineering acting either directly or through his/ her authorized agents when such agents are acting within the scope of the particular duties delegated to them.

OWNER -- The public entity identified as such in the Agreement. The term "Owner", "District", "Agency", or "UWCD" means the United Water Conservation District and/or its authorized representative.

OWNER'S REPRESENTATIVE -- The person or firm or employee of the Owner authorized by the Owner to represent it during the performance of the work by the Contractor. The Owner's Representative means the Owner's Representative and/or its assistants, and includes those identified as "inspector" by the Owner.

PARTIES -- The parties to the Agreement, the Owner and the Contractor.

PLANS, DRAWINGS -- The plans (drawings), or reproductions thereof, which show the location, character, dimensions, and details of the work to be done.

PROJECT -- The construction of the Work for the Owner, as identified in the Notice Inviting Bids and Notice to Proceed, or as may otherwise be described in the Contract Documents.

RECOVERY SCHEDULE -- A plan that includes an updated critical path Schedule submitted by the Contractor in the event Work is behind schedule, demonstrating Contractor's proposed plan to regain lost schedule progress in order to achieve completion of the Work within the Contract Time, in accordance with the Contract Documents.

REQUESTS FOR INFORMATION -- A written request prepared by the Contractor requesting the Owner, and/or Engineer, provide additional information necessary to clarify an item which Contractor believes is not clearly shown or called for, or constructible as shown or called for, in the Plans and Specifications, or to address field conditions which may arise on the Project.

SCHEDULE -- The approved schedule for performance of the Work, pursuant to which Contractor has agreed to complete the Work, and which may be adjusted pursuant to the terms of the Contract Documents, including Section 5-2 of the General Provisions.

SPECIAL PROVISIONS -- Contractually binding additions, supplements, deletions, and /or changes to the Notice Inviting Bids, the Instructions to Bidders, and the General Provisions.

SPECIFICATIONS -- The directions, provisions, and requirements contained in the General Provisions and Special Provisions as supplemented by the technical detailed Specifications and Drawings.

SUBCONTRACTOR -- An individual, partnership, corporation, joint venture, or other combination thereof who has a contract with the Contractor to perform any of the Work. Subcontractor also means an individual, partnership, corporation, joint venture, or other combination thereof who has a contract with another subcontractor to perform any of the Work.

TIME AND MATERIALS CHANGE ORDER -- A time and materials Change Order, unilaterally issued by the Owner, instructing the Contractor to perform work, expressing indicating such work shall be treated as a change in the Work, and setting forth the nature and limits of the Work as can be reasonably ascertained by the Owner, the terms under which any changes in the Contract Price and Contract Time, if any, will be determined, and the not-to-exceed estimated cost of the change. Upon final determination of any allowable costs, a Change Order shall be finalized to set forth adjustments to the Contract Price or Contract Time, if any.

WORK -- Any and all obligations, duties, and responsibilities necessary to complete the construction assigned to, or undertaken by, the Contractor pursuant to the Contract Documents, including supervision and management of the Project and the furnishing of all labor, materials, equipment, and

supplies for the Project, as required by the Contract Documents, including all efforts necessary and appropriate to achieve final acceptance of the Project, except as to those efforts which the Contract Documents may specify will be performed by the Owner or other persons. Also, the completed construction or parts thereof required to be provided under the Contract Documents, including all labor, materials, equipment, and supplies incorporated or to be incorporated in the construction.

WORK DIRECTIVE -- A written order issued and signed by the Owner, in the event of any dispute regarding the scope of the Work, describing the Work in question, providing instructions for the completion of such Work, and stating the basis for determining any compensation associated with such Work, if any, pending resolution of the dispute.

1-2 TERMS

Wherever the terms "required", "permitted", "ordered", "designated", "prescribed", or terms of like import are used, it shall be understood that the requirements, permission, order designation, or prescription of the Owner's Representative is intended. Similarly, the terms "acceptable", "satisfactory", "or equal", or terms of like import shall mean acceptable to or satisfactory to the Owner's Representative, unless otherwise expressly stated. The word "provide" shall be understood to mean furnish and install.

1-3 ABBREVIATIONS

Wherever the following abbreviations are used, they shall have the meanings indicated:

AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
AGA	American Gas Association
AI	The Asphalt Institute
AIA	American Institute of Architects
AIEE	American Institute of Electrical Engineers
AISC	American Institute of Steel Construction
AISI	American Iron & Steel Institute
ANSI	American National Standards Institute (formerly USASI, USAS, ASA)
API	American Petroleum Institute
APWA	American Public Works Association
AREA	American Railway Engineering Association
ASA	American Standards Association (Now ANSI)
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigerating, and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWS	American Welding Society
AWWA	American Water Works Association
CRSI	Concrete Reinforcing Steel Institute
IEEE	Institute of Electrical and Electronics Engineers
NBFU	National Board of Fire Underwriters
NEMA	National Electrical Manufacturers Association
PCA	Portland Cement Association
State Specification	California Standard Specifications, State of California, Department of Transportation, Division of Highways
SSPC	Steel Structures Painting Council

UBC

Uniform Building Code, Pacific  
Coast Building Officials Conference of the International  
Conference of Building Officials  
Underwriters' Laboratories, Inc.

U/L or UL

## 1-4 CITATIONS

Whenever reference is made in the Contract Documents to specific statutes, regulations, orders or other cited materials, such reference shall be read to incorporate any subsequent statutes, regulations, orders or other cited materials which amend, modify or supersede such originally cited reference. Pursuant to the Owner's approved Procurement Policy, the Owner is not included within, and not subject to, competitive bidding requirements in the California Public Contract Code unless specifically noted, or to the extent noted, in the Contract Documents.

## ARTICLE 2 -- PROPOSAL REQUIREMENTS AND CONDITIONS

### 2-1 CONTRACT DOCUMENTS

The Contract Documents are defined in Section N-12 of the Notice Inviting Bids and Section 1-1 of these General Provisions. The Contract Documents are complementary, and what is called for in any one shall be as binding as if called for in all. The intention of the Contract Documents is to require a complete and finished piece of work including all labor, materials, equipment and transportation necessary for the proper execution of the work, with the exception of such items as are definitely stipulated in the Specifications or the Drawings to be furnished by the Owner. Anything shown in the Drawings and not in the Specifications, or in the Specifications and not in the Drawings, or neither in the Specifications nor in the Drawings but necessary to properly complete the structure in accordance with the law and governmental rules and regulations, shall be performed by the Contractor as though shown in both the Drawings and the Specifications. Material or work described in words which so applied have a well-known technical or trade meaning shall be held to refer to such recognized standards. In the event of a conflict between one portion of the Contract Documents and another, the more stringent, higher quality, and greater quantity of Work shall apply and the more particular shall prevail over the more general, such that, for example, Special Provisions shall govern over General Provisions and detail Specifications and Drawings over standard Specifications.

### 2-2 LICENSE

No bid will be accepted from a bidder who is not licensed to conduct business in the State of California and licensed to perform the class of work defined by the Contract Documents, as specified in the Notice Inviting Bids. In the event between the time of bid and the award of the Contract the successful bidder is no longer licensed in good standing to perform the class of work defined by the Contract Documents, that bidder's Bid Security shall be forfeited to the Owner, and the Contract shall be awarded to the next lowest responsive and responsible bidder. Should the Contractor's license status change or their license expire after construction of the work has begun, the Contractor shall immediately terminate all activity on the work, except that necessary to ensure the safety of persons or property. In such event, the Agreement shall be deemed terminated and the provisions of Section 6-19, entitled TERMINATION FOR BREACH, shall apply. Nothing herein shall be construed as limiting or precluding Owner's rights and remedies provided by law, including, but not limited to, California Business & Professions Code section 7031, relating to Contractor's licensure status.

### 2-3 PROPOSALS

Bids shall be made upon the Proposal Forms furnished by the Owner and a part of the Contract Documents. All bids shall be properly executed and with all items filled in; the signatures of all

persons signing shall be in longhand. Erasures, interlineations, or other corrections shall be authenticated by affixing in the margin immediately opposite the correction the initials of a person signing the bid. If the unit price and the total amount named by a bidder for any item are not in Agreement, the unit price alone shall be considered as representing the bidder's intention and the totals shall be corrected to conform thereto.

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

Bids shall be accompanied by "Bid Security" in the form of cash, a cashier's or certified check, or bidder's bond, in an amount not less than 10% of the total amount of the bid, made payable to or for the benefit of the Owner. Said Bid Security shall be given as a guarantee that the bidder will enter into the Contract and furnish the required bonds and insurance certificates and endorsements if awarded the Contract. The refusal or failure of the bidder to enter into the Contract and furnish the required bonds, insurance certificates and endorsements, and any other information required under the instructions to bidders within ten (10) days (not including Sundays and holidays) after the date of notification of award by the Owner in writing will result in the bidder's Bid Security being forfeited. Forfeiture does not preclude the Owner from seeking all other remedies provided by law to recover losses sustained as a result of the Contractor's failure to enter into the Contract or to furnish the required bonds, insurance certificates and endorsements, or other information required of bidder.

Bids shall be sealed in an envelope marked and addressed as set forth in the Notice Inviting Bids. Bids shall be delivered to the addressee at the location designated in the Notice Inviting Bids on or before the day and time set for the opening of bids in the Notice Inviting Bids, and shall bear the name of the bidder. A bid will not be accepted after the date and time designated in the Notice Inviting Bids. It is the sole responsibility of the bidder to see that its bid is delivered and received in proper time and location. Any bid received after said designated date and time shall be returned to the bidder unopened.

#### 2-4 ADDENDA

Addenda issued by the Owner before the time set for opening bids shall be included in the bid and shall be made a part of the Contract. However, where any addendum to the Contract Documents includes a material change in, addition to, or deletion from the bid Specifications, as defined in Public Contract Code section 4104.5, and that addendum is issued later than seventy-two (72) hours prior to the bid opening date, the bid opening date will be extended by at least seventy-two (72) hours. Notification of such extension of the bid opening date will be included in the addendum.

#### 2-5 EXISTING CONDITIONS AND EXAMINATION OF CONTRACT DOCUMENTS

The bidder represents that it has carefully examined the Contract Documents and the site where the Work is to be performed and that it has familiarized itself with all local conditions and federal, state and local laws, ordinances, rules, and regulations that may affect in any manner the performance of the Work. The bidder further represents that it has studied all surveys and investigation reports about subsurface and latent physical conditions pertaining to the area affected by the Work, including the location of underground facilities, that it has performed such additional surveys and investigations as it deems necessary to complete the Work at their bid price, and that it has correlated the results of all such data with the requirements of the Contract Documents. The submittal of a bid shall be conclusive evidence that the bidder has investigated and is satisfied as to the conditions to be encountered, including locality, uncertainty of weather and all other contingencies, and as to the character, quality, quantities, and scope of the Work.

The Plans and Specifications for the Work show subsurface conditions or otherwise hidden conditions as they are supposed or believed by the Engineer to exist; but it is not intended or to be

inferred that the conditions as shown thereon constitute a representation that such conditions are actually existent. Except as otherwise specifically provided in the Contract Documents, the Owner, the Engineer, and their consultants shall not be liable for any loss sustained by the Contractor as a result of any variance of such conditions as shown on the Plans and the actual conditions revealed during the progress of the Work or otherwise.

Where the Owner or the Engineer or their consultants have made investigations of subsurface conditions in areas where the Work is to be performed, such investigations were made only for the purpose of study and design. The conditions indicated by such investigations apply only at the specific location of each boring or excavation at the time the borings or excavations were made. Where such investigations have been made, bidders or Contractors may inspect the records as to such investigations subject to and upon the conditions hereinafter set forth. The inspection of the records shall be made at the office of the Engineer.

When a log of test borings showing a record of the data obtained by the investigation of subsurface conditions by the Owner, the Engineer, or their consultants is included with the Plans or other documents, it is expressly understood and agreed that said log of test borings does not constitute a part of the Contract, represents only the opinion of the Owner or the Engineer or their consultants as to the character of the materials encountered by them in the test borings, is included in the Plans or other documents only for the convenience of bidders, and its use is subject to all of the conditions and limitations set forth in this Article.

The records of such investigations are not a part of the Contract and are shown solely for the convenience of the bidder or Contractor. It is expressly understood and agreed that the Owner, the Engineer, and their consultants assume no responsibility whatsoever in respect to the sufficiency or accuracy of the investigations; the records thereof; or of the interpretations set forth therein or made by the Owner's consultants, the Engineer or its consultants in the use thereof by the Engineer, and there is no warranty or guarantee, either express or implied, that the conditions indicated by such investigations or records thereof are representative of those existing throughout such areas, or any part thereof, or that unlooked-for developments may not occur, or that materials other than, or in proportions, densities, or other characteristics different from, those indicated may not be encountered.

The availability or use of information described in this Section 2-5 is not to be construed in any way as a waiver of the provisions of the first paragraph in this Section and a bidder or Contractor is cautioned to make such independent investigations and examination as they deem necessary to satisfy themselves as to conditions to be encountered in the performance of the Work.

No information derived from such inspection of records of investigations or compilation thereof made by the Owner, the Engineer, or their consultants will in any way relieve the bidder or Contractor from any risk or from properly fulfilling the terms of the Contract nor entitle the Contractor to any additional compensation, except as otherwise provided in Section 3-5, entitled UTILITIES.

## ARTICLE 3 -- SCOPE OF WORK

### 3-1 WORK TO BE DONE

The work to be done consists of furnishing all transportation, labor, materials, tools, equipment, services, permits, utilities and all other items which are necessary or appurtenant to construct and complete the entire Project and construct the Project designated in the Contract Documents, in accordance with the Plans and Specifications and subject to the requirements of the Contract Documents, and to leave the grounds in a neat and presentable condition.

The Owner may require changes in, additions to, or deductions from the Work, including complete termination thereof. Adjustment, if any, in the amounts to be paid to the Contractor by reason of any such change, addition, or deduction shall be determined as set forth in Article 8 hereof, entitled ESTIMATES AND PAYMENTS. All such changes in the Work shall be performed pursuant to the terms of the Contract Documents. Contractor shall promptly perform all such approved changes unless otherwise directed in writing by the Owner

The Owner's Representative may order minor changes in the Work not involving an increase or decrease in the Contract Price, not involving a change in the Contract Time, and not inconsistent with the purposes for which the Work is being constructed. If the Contractor believes that any order for minor changes in the Work involves changes in the Contract Price or Contract Time, they shall not proceed with the minor changes so ordered and shall within seven (7) days of the receipt of such order notify the Owner's Representative in writing of their estimate of the changes in the Contract Price and Contract Time they believe to be appropriate.

No payment for changes in the Work will be made and no change in the Contract Time by reason of changes in the Work will be made, unless the changes are covered by a written Change Order approved by the Owner in advance of the Contractor's proceeding with the changed Work, and no claim for additions to the Contract Price or Contract Time shall be permitted unless so ordered. Changes in the Work shall not constitute the basis for a claim for damages or anticipated profits due to an increase or diminution in work done.

The Owner may issue a written Change Notice to the Contractor describing a proposed change to the Work and requesting the Contractor submit a written Change Proposal, in a format acceptable to the Owner, within ten (10) days after the Owner's issuance of the Change Notice. The Contractor's Change Proposal shall include an analysis and itemization of any impacts the change may have on the Contract Price and Contract Time, and Contractor's proposed plan for mitigating the costs and impact on the performance of the Work in the construction of such change. In the event the Contractor fails to submit a Change Proposal within the time specified herein, it shall be presumed agreed to by the Contractor that such change will not result in an increase to the Contract Price or Contract Time, and Contractor shall proceed to promptly and diligently perform the changes without any such increases.

If the Owner and Contractor agree on the cost of pricing such change, the Owner will issue a written Change Order specifying any increase in the Contract Price or Contract Time. A Change Order must expressly indicate the Owner's intention to treat the work included therein as a change in the Work, and Contractor shall not commence any work included therein until a written Change Order, signed by the Owner and its Engineer, is issued to the Contractor. If the Owner and Contractor are unable to agree on the cost of pricing such change, the Owner will issue a unilateral Time and Materials Change Order.

If the Contractor alleges changes in the Work or extra work instructed by the Owner will result in an increase to the Contract Price or Contract Time, or if the Contractor otherwise becomes aware of the need or desirability for a change in the Work, the Contractor may submit a written Change Order Request to the Owner, in a format acceptable to the Owner, detailing the reasons and circumstances for such change, with supporting back up documentation, and describing any impacts on the Project schedule. A Change Proposal shall be submitted with the Change Order Request. A Change Order Request should be submitted promptly upon the instructions by the Owner for the change or the discovery by the Contractor of the need for the change, but in no event later than five (5) days after such instructions or discovery, whichever occurs sooner. The Contractor's failure to submit a Change Order within such time period shall be deemed a waiver by the Contractor of any right to adjustment in the Contract Price and/or Contract Time for such change. Change Order Requests approved by

the Owner will be set forth in a Change Notice, Change Order, or Time and Materials Change Order. If the Owner determines such work is not a change, the Owner will issue a Work Directive, ordering the Contractor to proceed with the work without delay. Any disputes arising under this Section shall be handled and determined in accordance with the terms of the Contract Documents, including the General Provisions, Section 3-9.

Any dispute between the Owner and the Contractor regarding payment for changes in the work or a change in the Contract Time shall proceed in accordance with the procedures set forth in Section 3-9 entitled DISPUTES AND CLAIMS.

### 3-3 EXTRA WORK

The Owner may determine, in the Owner's sole discretion, that it is necessary or desirable for the proper completion of the Contract to order work done or materials or equipment furnished which in the opinion of the Owner are not susceptible of classification under the unit-price items named in the Bid Schedule, and are not included in any item for which a lump sum is bid. The Contractor shall promptly do and perform such work and furnish such materials and equipment upon Owner's request. Such labor, materials, and/or equipment will be classified as extra work and shall be ordered in writing before such work is started. No extra work shall be paid for unless ordered in writing by the Owner before Contractor begins such work.

Extra work and material will be paid for at a lump sum or unit price agreed on in writing by the Owner and the Contractor before the extra work shall be ordered.

Performance of any extra work or the furnishing of any extra materials which in the judgment of the Owner is of like character to and susceptible of classification under the unit-price items of the Contract shall, at Owner's discretion, be paid for at the unit price named for such work in the Bid Schedule.

Whenever, in the Owner's sole discretion, such extra work or such extra material, as the case may be, is not of like character to and susceptible of classification under the unit-price items of the Contract as specified, and it is impracticable because of the nature of the work or for any other reason to fix the price before the extra work order shall be issued, extra work and material, when furnished by the Contractor, shall be paid for at actual necessary cost of materials, supplies, labor, workers' compensation insurance, contributions made to the State as required by the provisions of the Unemployment Insurance Act, Chapter 352, Statutes of 1935, as amended, taxes paid to the Federal Government as required by the Social Security Act, approved August 14, 1935, as amended, and the reasonable value of the use of equipment for the actual time it is used, all as determined by the Owner, plus fifteen percent (15%) for profit, general expenses, excise taxes, property taxes, bond premiums, license and inspection fees imposed by any governmental authority and all other items of expense, whether of the kind enumerated herein or otherwise. No other additional costs or mark-ups shall be allowed or approved.

If any work or material is ordered under this Section on a cost-plus basis, the Contractor shall, at the times directed during the performing of the work or the furnishing of the materials, render to the Owner written reports in prescribed form, showing the name and number of each worker employed thereon, the number of hours employed thereon, the character of work that worker is doing, and the wages paid or to be paid to him or her, also showing the equipment utilized, the materials delivered and the type and rental cost of equipment, the quantity and character of each such material, from whom purchased and the net amount paid or to be paid therefor, any other items that may enter into the cost, and such other information as directed. If required, the Contractor shall produce any books, vouchers, other records, or memoranda which will assist the Owner in determining the true, necessary cost of work and materials to be paid for.

Any extra work performed hereunder shall be subject to all of the provisions of the Contract and the Contractor's sureties shall be bound with reference thereto as under the original Contract.

Any dispute regarding payment for extra work shall proceed in accordance with the procedures set forth in Section 3-9 entitled DISPUTES AND CLAIMS.

### 3-4 OBSTRUCTIONS

The Contractor shall remove and dispose of all structures, debris, or other obstructions of any character necessary to accommodate the Work. Where such obstructions consist of improvements required by law, they shall be removed, maintained and permanently replaced by the Contractor at the Contractor's expense except as otherwise specifically provided in the Contract Documents.

### 3-5 UTILITIES

The Owner and/or the Engineer have endeavored to determine the existence of utilities at the site of the Work from the records of the owners of known utilities in the area affected by the Work. The positions of these utilities as derived from such records are shown on the Plans. The service connections to these utilities may not be shown on the Plans.

The Contractor shall make their own investigations, including exploratory excavation, and inquiries with area utility providers, to determine the locations and type of existing service laterals or appurtenances when their presence can be inferred from the presence of other visible facilities, such as buildings, meter and junction boxes, on or adjacent to the site of the Work. If the Contractor discovers utility facilities not identified in the Plans or Specifications or in a position different from that shown in the Plans and Specifications, they shall immediately notify in writing the Owner's Representative and the owner of the utility facility.

Prior to excavation, the Contractor shall contact the appropriate regional notification center, such as Underground Service Alert, as provided in Government Code section 4216 et seq.

In the event it is necessary to remove, relocate, protect, or temporarily maintain a utility because of interference with the Work, the work on such utility shall be performed and paid for as follows:

When it is necessary to remove, relocate, protect, or temporarily maintain an existing main or trunkline utility facility on the site and not indicated in the Plans and Specifications with reasonable accuracy, the Owner will compensate the Contractor for the following costs reasonably incurred, if any: for the costs of locating, for the costs of repairing damage not due to the failure of the Contractor to exercise reasonable care, for the costs of removing and relocating such utility facilities, and for the costs for equipment on the Project necessarily idled during such work. If applicable, these costs shall be covered by a written Change Order conforming to the provisions herein pertaining to changes in the Work. The Owner may make changes in the alignment and grade of the Work to obviate the necessity to remove, relocate, protect, or temporarily maintain such utility facilities or to reduce the costs of the work involved in removing, and relocating such utility facilities. Changes in alignment and grade will be ordered in accordance with the provisions herein pertaining to changes in the Work.

The Contractor shall not be assessed liquidated damages for delay in completion of the Work, when such delay was caused by the failure of the Owner, the Engineer or the owner of the utility to provide for removal or relocation of such utility facilities. The right is reserved to governmental agencies and to owners of utilities to enter at any time upon any street, alley, right-of-way, or easement for the

purpose of making changes in their property made necessary by the Work and the purpose of maintaining and making repairs to their property.

These provisions shall be construed in accordance with Government Code section 4215.

### 3-6 PLANS AND SPECIFICATIONS FURNISHED BY THE OWNER

The Owner will furnish to the Contractor free of charge all copies of Plans and Specifications reasonably necessary for the execution of the Work. The Contractor shall keep one set of Plans and Specifications in good order available to the Owner's Representative at the site of the Work.

### 3-7 CLEANUP

Contractor at all times shall keep premises free from debris such as waste, dust, excess water, storm water runoffs, rubbish, and excess materials and equipment. Contractor shall not leave debris under, in, or about the premises, but shall promptly remove same from the premises and dispose of it in a lawful manner. Disposal receipts or dump tickets shall be furnished to the Owner within five (5) days of request.

Contractor shall remove rubbish and debris resulting from the Work on a daily basis. Contractor shall maintain the structures and site in a clean and orderly condition at all times until acceptance of the Project by the Owner. Contractor shall keep its access driveways and adjacent streets, sidewalks, gutters and drains free of rubbish, debris and excess water by cleaning and removal each day. All concrete, sidewalks, and paths of travel shall be broom cleaned daily.

Upon completion and before making application for acceptance of the Work, the Contractor shall clean all rights-of-way, streets, borrow pits, and all other grounds occupied in connection with the Work of all rubbish, excess materials, temporary structures, and equipment, and all parts of the Work and grounds occupied shall be left in a neat and presentable condition. In the event the Contractor fails to clean up as specified herein upon forty-eight (48) hours' written notice to Contractor, clean up may be performed by the Owner at the Contractor's expense, which Owner may charge directly to the Contractor or deduct from any monies due or to become due the Contractor.

### 3-8 PROTESTS

If the Contractor considers any work required by the Owner to be outside the requirements of the Contract Documents, or if the Contractor considers any record or ruling of the Owner, the Owner's Representative or any governmental inspector to be unfair, the Contractor shall immediately upon such work being demanded or such record or ruling being made, ask for written instructions or decision, and within ten (10) days after receipt thereof file a written protest with the Owner, stating clearly and in detail each objection and the reasons therefor. The Contractor shall, whether or not a written protest will be filed, immediately upon receipt of written instructions or decision proceed without delay to perform the work or conform to the record or ruling. The Contractor hereby agrees that, unless a separate and specific written objection or protest has been timely made as provided herein, the Contractor waives all grounds for protests or objections to the records, rulings, instructions, or decisions of the Owner or the Owner's Representative, and further agrees that as to all matters not included in such objections or protests, the records, instructions, and decisions of the Owner or Owner's Representative shall be final and conclusive. Such protests shall proceed in accordance with the procedures set forth in Section 3-9 entitled DISPUTES AND CLAIMS.

Contractor shall continue to perform all Work under the Contract and shall not cause a stoppage, delay or slowdown of the Work during any Dispute, Claim, negotiation, mediation, or arbitration proceeding, except by written agreement by the Owner. Prior to submitting a Dispute or Claim under this Section 3-9, the Contractor shall comply with all applicable notification requirements under the Contract Documents.

The term "Dispute" is defined in Section 1-1.

If Contractor intends to apply for an increase in the Contract Price or Contract Time for any reason including, without limitation, the acts of the Engineer, Owner, or its agents, Contractor shall, within ten (10) days after the event giving rise to the Dispute, give notice of the Dispute in writing and submit to the Owner a written statement of the damage sustained or time requested. On or before twenty (20) days after Contractor's written Notice of Dispute, Contractor shall file with the Owner an itemized statement of the details and amounts of its Dispute for any increase in the Contract Price or Contract Time; otherwise, Contractor shall have waived and relinquished its Dispute and Claim against the Owner and Contractor's Claims for compensation or an extension of time shall be forfeited and invalidated, and Contractor shall not be entitled to consideration for payment or time on account of the instant matter.

The Notice of Dispute shall identify: (1) the issues, events, conditions, circumstances and/or causes giving rise to the Dispute; (2) the pertinent dates and/or durations and actual and/or anticipated effects on the Contract Price, Contract Schedule milestones and/or Contract Time adjustments including an evaluation of any impacts to the critical path of the approved Schedule for the Project; and (3) line-item costs for labor, material, and/or equipment, if applicable.

The Notice of Dispute shall include the following certification by the Contractor:

"The undersigned Contractor certifies under penalty of perjury that the attached Dispute is made in good faith; that the supporting data is accurate and complete to the best of my knowledge and belief; that the amount requested accurately reflects the adjustment for which Contractor believes the Owner is liable; and that I am duly authorized to certify the Dispute on behalf of the Contractor. Furthermore, Contractor understands that the value of the attached Dispute expressly includes any and all of the Contractor's costs and expenses, direct and indirect, resulting from the Work performed on the Project, additional time required on the Project and/or resulting from delay to the Project. Any costs, expenses, damages, or time extensions not included are deemed waived."

Contractor shall file with the Owner the Notice of Dispute, including the documents necessary to substantiate it, on or before the day of submitting the application for final payment or retention.

Owner will respond in writing within forty-five (45) days of receipt of the Notice of Dispute and all required information and documents, or may request in writing within thirty (30) days of receipt of the Dispute, any additional documentation supporting the Dispute or relating to defenses or claims Owner may have against the Contractor. If additional information or documents are required, they shall be provided by the Contractor.

Owner's written response to the documented Dispute shall be submitted to the Contractor within fifteen (15) days after receipt of the further documentation or within a period of time no greater than that taken by the Contractor to produce the additional information, whichever is greater.

If a Dispute, or any portion thereof, remains unresolved upon satisfaction of all applicable Dispute Resolution requirements above, or if the Contractor disputes the Owner's written response, Contractor may file a Claim pursuant to the Claim Resolution requirements provided below.

The term "Claim" means a Dispute that remains unresolved at the conclusion of the Dispute Resolution requirements as provided above.

Contractor must timely submit the Claim and all reasonable documentation necessary to substantiate any Claim by registered mail or certified mail with return receipt requested within ten (10) days after denial of a Dispute or any portion thereof. Otherwise, Contractor shall have waived and relinquished its Claim against the Owner and Contractor's Claims for compensation or an extension of time shall be forfeited and invalidated, and Contractor shall not be entitled to consideration for payment or time on account of the instant matter.

Reasonable documentation to support a Claim includes, without limitation, and at a minimum, the following: summary of factual basis of Claim and amount of Claim; summary of the basis of the Claim, including the specific clause and section under the Contract under which the Claim is made; specific references to the Plans and Specifications in question; applicable clarifications/ RFI's; Contractor's analysis of any Subcontractor or vendor Claims that are being passed through; any analysis performed by outside consultants; any legal analysis that Contractor deems relevant; break down of all costs associated with the Claim; for Claims relating to time extensions, an analysis and supporting documentation evidencing any effect upon the critical path in conformance with the requirements of Section 5-2; chronology of events and related correspondence; applicable daily reports and logs; for Claims involving overhead, cost escalation, acceleration, disruption or increased costs, a full version of job costs reports organized by category of work or schedule of values with budget information tracked against actual costs; any and all supporting back-up data, including the original bid; and any other relevant documents or information reasonably requested by the Owner.

All Claims shall include the following certification by the Contractor:

"The undersigned Contractor certifies under penalty of perjury that the attached Claim is made in good faith; that the supporting data is accurate and complete to the best of my knowledge and belief; that the amount requested accurately reflects the adjustment for which Contractor believes the Owner is liable; and that I am duly authorized to certify the Claim on behalf of the Contractor. Furthermore, Contractor understands that the value of the attached Claim expressly includes any and all of the Contractor's costs and expenses, direct and indirect, resulting from the Work performed on the Project, additional time required on the Project and/or resulting from delay to the Project. Any costs, expenses, damages, or time extensions not included are deemed waived."

The Owner shall respond to Claims as properly presented in accordance with the Claim Presentation requirements above as follows:

a. For Claims of fifty thousand dollars (\$50,000) or less, the Owner shall respond in writing within 45 days of receipt of the Claim, or may request, in writing, within 30 days of receipt of the, any additional documentation supporting the Claim or relating to defenses to the Claim the Owner may have against the Contractor. If additional information is thereafter required, it shall be requested and provided upon mutual agreement of the Owner and the Contractor. The Owner's written response to the Claim, as further documented, shall be submitted to the Contractor within 15 days after receipt of the further documentation or within a period of time no greater than that taken by the Contractor in producing the additional information, whichever is greater. The Owner's written response to the Claim submitted under this paragraph will identify what portion of the Claim is disputed and what portion is undisputed.

b. For Claims of over fifty thousand dollars (\$50,000) and less than or equal to three hundred seventy-five thousand dollars (\$375,000), the Owner shall respond in writing within 60 days of receipt of the Claim, or may request, in writing, within 30 days of receipt of the Claim, any additional documentation supporting the Claim or relating to defenses to the Claim the Owner may have against the Contractor. If additional information is thereafter required, it shall be requested and provided upon mutual agreement of the Owner and the Contractor. The Owner's written response to the Claim, as further documented, shall be submitted to the Contractor within 30 days after receipt of the further documentation, or within a period of time no greater than that taken by the Contractor in producing the additional information or requested documentation, whichever is greater. The Owner's written response to the Claim submitted under this paragraph will identify what portion of the Claim is disputed and what portion is undisputed.

c. For all other Claims and Claim amounts, upon receipt of a Claim as set forth above, the Owner shall conduct a reasonable review of the Claim and, within a period not to exceed 45 days, shall provide the Contractor a written statement identifying what portion of the Claim is disputed and what portion is undisputed. Upon receipt of a Claim under this paragraph, the Owner and Contractor may, by mutual agreement, extend the time period provided in this paragraph.

d. If the Owner needs approval from its governing Board to provide the Contractor a written statement identifying the disputed portion and the undisputed portion of the Claim, and the governing Board does not meet within the applicable time required for the Owner's written response to the Claim as set forth above, or within the mutually agreed to extension of time following receipt of a Claim sent by registered mail or certified mail, return receipt requested, the Owner shall have up to three days following the next duly publicly noticed meeting of the governing Board after the applicable time required for the Owner's written response to the Claim as set forth above or extension expires to provide the Contractor a written statement identifying the disputed portion and the undisputed portion.

e. Any payment due on an undisputed portion of the Claim shall be processed and made within 60 days after the Owner issues its written statement. If the Owner fails to issue a written statement, paragraph I. below shall apply.

f. If the Contractor disputes the Owner's written response, or if the Owner fails to respond to the Claim issued pursuant to this Section within the time prescribed, the Contractor may demand in writing an informal conference to meet and confer for settlement of the issues in dispute within 15 days of receipt of the Owner's written response or within 15 days of the Owner's failure to respond within the applicable time prescribed. Upon receipt of a demand in writing sent by registered mail or certified mail, return receipt requested, the Owner shall schedule a meet and confer conference within 30 days for settlement of the Claim.

g. Following the conclusion of the meet and confer conference, if the Claim or any portion of it remains in dispute, the Contractor may file a claim as provided in Chapter 1 (commencing with Section 900) and Chapter 2 (commencing with Section 910) of Part 3 of Division 3.6 of Title 1 of the Government Code. For purposes of those provisions the running of the time within which a Claim must be filed shall be tolled from the time the Contractor submits its written Claim until the time the Claim is denied, including any period of time utilized by the meet and confer process. However, nothing in the Dispute and Claims procedures set forth in this Section 3-9 shall act to waive or relieve the Contractor from meeting the requirements or extend the time requirements set forth in Government Code section 900 et seq.

h. Within 10 business days following the conclusion of the meet and confer conference, if the Claim or any portion of the Claim remains in dispute, the Owner shall provide the Contractor a written statement identifying the portion of the Claim that remains in dispute and the portion that is undisputed. Any payment due on an undisputed portion of the Claim shall be processed and made

within 60 days after the Owner issues its written statement. Any disputed portion of the Claim, as identified by the Contractor in writing, shall be submitted to nonbinding mediation, with the Owner and the Contractor sharing the associated costs equally. The Owner and Contractor shall mutually agree to a mediator within 10 business days after the disputed portion of the Claim has been identified in writing. If the Parties cannot agree upon a mediator, each party shall select a mediator and those mediators shall select a qualified neutral third party to mediate with regard to the disputed portion of the Claim. Each party shall bear the fees and costs charged by its respective mediator in connection with the selection of the neutral mediator. If mediation is unsuccessful, the parts of the Claim remaining in dispute shall be subject to applicable procedures outside this Section.

i. For purposes of this Section, mediation includes any nonbinding process, including, but not limited to, neutral evaluation or a dispute review board, in which an independent third party or board assists the Parties in dispute resolution through negotiation or by issuance of an evaluation. Any mediation utilized shall conform to the timeframes in this Section.

j. Unless otherwise agreed to by the Owner and the Contractor in writing, the mediation conducted pursuant to this Section shall excuse any further obligation under Public Contract Code section 20104.4 to mediate after litigation has been commenced.

k. This Section does not preclude the Owner from requiring arbitration of Claims under private arbitration or the Public Works Contract Arbitration Program, if mediation under this Section does not resolve the Claim.

l. Failure by the Owner to respond to a Claim from the Contractor within the time periods described in this subdivision or to otherwise meet the time requirements of this Section shall result in the Claim being deemed rejected in its entirety. A Claim that is denied by reason of the Owner's failure to have responded to the Claim, or its failure to otherwise meet the time requirements of this Section, shall not constitute an adverse finding with regard to the merits of the Claim or the responsibility or qualifications of the Contractor.

m. Amounts not paid in a timely manner as required by this Section shall bear interest at 7 percent per annum.

n. If a Subcontractor or a lower tier Subcontractor lacks legal standing to assert a Claim against the Owner because privity of contract does not exist, the Contractor may present to the Owner a Claim on behalf of a Subcontractor or lower tier Subcontractor. A Subcontractor may request in writing, either on his or her own behalf or on behalf of a lower tier Subcontractor, that the Contractor present a Claim for work which was performed by the Subcontractor or by a lower tier Subcontractor on behalf of the Subcontractor. The Subcontractor requesting that the Claim be presented to the Owner shall furnish reasonable documentation to support the Claim. Within 45 days of receipt of this written request, the Contractor shall notify the Subcontractor in writing as to whether the Contractor presented the Claim to the Owner and, if the Contractor did not present the Claim, provide the Subcontractor with a statement of the reasons for not having done so.

o. Upon receipt of a Claim, the Parties may mutually agree to waive, in writing, mediation and proceed directly to the commencement of arbitration as noted below.

The attention of the Contractor is drawn to Government Code section 12650, et seq. regarding penalties for false claims.

The Contractor shall bind all its Subcontractors to the provisions of this Section 3-9 and will hold the Owner harmless against Disputes or Claims by Subcontractors.

If the Claim remains in dispute, the Parties may agree to submit the matter to binding arbitration, on such terms as may be established by stipulation. Otherwise, the case shall be submitted to judicial (non-binding) arbitration pursuant to Code of Civil Procedure Section 1141.10 et seq. The Parties may agree by stipulation as to the required experience of and compensation payable to the arbitrator or mediator, except that compensation paid to arbitrators and mediators shall not exceed their customary hourly rates. Fees and expenses shall be paid equally by the Parties, unless the arbitrator finds good cause for a different division of fees and expenses. If either party objects to the arbitrator's award, the matter can then go to trial de novo in the trial court, subject to the usual rules of litigation.

Should the party requesting trial de novo fail to obtain a more favorable judgment than that received through arbitration, such party shall, in addition to the payment of costs and fees under the arbitration provision of the Code of Civil Procedure, pay the attorney's fees arising out of trial de novo. In any lawsuit filed under these provisions, the Owner shall pay interest at the prevailing rate on any arbitration award or judgment from the date the lawsuit is filed.

## ARTICLE 4 -- QUALITY OF THE WORK

### 4-1 AUTHORITY OF THE OWNER'S REPRESENTATIVE

The Owner's Representative shall decide any and all questions which may arise as to the interpretation of the Plans and Specifications and shall have authority to disapprove or reject materials and equipment furnished and work performed which, in its opinion, is not in accordance with the Contract Documents, and its decision shall be binding and conclusive.

### 4-2 SUPPLEMENTAL DRAWINGS

The Plans shall be supplemented by such Drawings as are necessary to define the Work adequately. All such Drawings delivered to the Contractor by the Owner's Representative shall be deemed written instructions to the Contractor. If the Contractor believes that any supplemental Drawings call for changes in the Work for which the Contract Price or Contract Time should be changed, the Contractor shall not proceed with the changes in the Work so called for and shall within seven (7) days of the receipt of the supplemental Drawings notify the Owner's Representative in writing of their estimate of the changes in the Contract Price and Contract Time they believe to be appropriate.

No payment for changes in the Work will be made and no change in the Contract Time by reason of changes in the Work will be made, unless the changes are covered by a written Change Order approved by the Owner prior to commencement of the changed Work.

### 4-3 CONFORMITY WITH THE CONTRACT DOCUMENTS AND ALLOWABLE DEVIATIONS

The Work shall conform to the lines, grades, dimensions, tolerances, and material and equipment requirements shown on the Plans or set forth in the Specifications. Although measurement, sampling, and testing may be considered evidence as to such conformity, the Owner's Representative shall be the sole judge as to whether the work or materials deviate from the Plans and Specifications, and its decision as to any allowable deviations therefrom shall be final.

If specific lines, grades, and dimensions are not shown on Plans, those furnished by the Owner's Representative shall govern.

#### 4-4 MANUFACTURER'S INSTRUCTIONS

All materials and equipment shall be applied, installed, connected, erected, used, cleaned, and conditioned in accordance with the instructions of the applicable manufacturer, fabricator, supplier, or distributor, except as otherwise specifically provided in the Contract Documents.

#### 4-5 INTERPRETATION OF PLANS AND SPECIFICATIONS

Figured dimensions on Drawings shall govern, but work not dimensioned shall be as directed. Work not particularly shown or specified shall be the same as similar parts that are shown or specified. Refined scale details shall take precedence over grosser scale Drawings as to shape and details of construction. Specifications shall govern as to materials and workmanship. Drawings and Specifications are intended to be fully complementary and to agree. The specification calling for the higher quality material or workmanship shall prevail. Materials or work described in words which so applied have a well known technical or trade meaning shall be deemed to refer to such recognized standards. In the event of any discrepancy between any Drawings and the figures thereon, the figures shall be taken as correct. In the event of any doubt or question arising respecting the true meaning of the or Specifications, the Contractor shall, within three (3) days of discovering such doubt or question, request clarification of the matter via a written Request for Information from the Owner's Representative, who shall respond within five (5) working days (Saturdays, Sundays and holidays excluded) after receipt of the request. The decision of the Owner's Representative shall be final.

#### 4-6 ERRORS OR DISCREPANCIES NOTED BY CONTRACTOR

It is the duty of the Contractor to promptly notify the Owner's Representative in writing of any design, materials, or specified method that the Contractor believes may prove defective or insufficient. If the Contractor believes that a defect or insufficiency exists in design, materials, or specified method and fails to notify the Owner's Representative in writing of this belief, via a Request for Information, within three (3) days of discovering the defect or insufficiency, the Contractor waives any right to assert that defect or insufficiency in design, materials, or specified method at any later date in any legal or equitable proceeding against the Owner, or in any subsequent arbitration or settlement conference between the Owner and the Contractor. The Contractor's Request for Information shall be in a format acceptable to the Owner and shall request further written explanations should it appear that the Work to be done is not sufficiently detailed or explained in the Contract Documents.

The Owner's Representative, on receipt of any such notice, will promptly investigate the circumstances and give appropriate instructions to the Contractor. Until such instructions are given, any work done by the Contractor after they come to the belief that a defect or insufficiency exists in design, materials, or specified method which is directly or indirectly affected by such alleged defect or insufficiency in design, materials, or specified method will be at the Contractor's own risk and they shall bear all cost arising therefrom. Perceived and/or actual errors, omissions, inconsistencies, or other defects in the Contract Documents shall not relieve Contractor from performing such Work, and all such Work shall be performed as if fully, completely, and correctly set forth and described in the Contract Documents.

If the Contractor, either before commencing work or in the course of the Work, finds any discrepancy between the Specifications and the Plans or between either of them and physical conditions at the site of the Work or finds any error or omission in any of the Plans or in any survey, the Contractor shall promptly notify the Owner's Representative of such discrepancy, error, or omission. If the

Contractor observes that any Plans or Specifications are at variance with any applicable law, ordinance regulation, order, or decree, they shall promptly notify the Owner's Representative in writing of such conflict. Such written notices shall be in the form of a Request for Information. The Owner's Representative, on receipt of any such Request for Information, will promptly investigate the circumstances and give appropriate instructions to the Contractor. Until such instructions are given, any work done by the Contractor after their discovery of such error, discrepancy, or conflict which is directly or indirectly affected by such error, discrepancy, or conflict will be at the Contractor's own risk and they shall bear all cost arising therefrom.

#### 4-7 SUPERVISION AND SUPERINTENDENCE

The Contractor shall supervise and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. The Contractor shall be solely responsible for the means, methods, techniques, sequences and procedures of construction, but the Contractor shall not be solely responsible for the negligence of others in the design or selection of a specific means, method, technique, sequence, or procedure of construction which is indicated in and required by the Contract Documents except as otherwise provided in Section 4-6, entitled ERRORS OR DISCREPANCIES NOTED BY CONTRACTOR.

The Contractor shall be responsible to see that the completed Work complies with the Contract Documents.

The Contractor shall designate and keep on the Work at all times during its progress a competent English speaking superintendent, who shall not be replaced without written notice to the Owner's Representative. The superintendent shall be present at the Project site on a full-time basis, shall be dedicated exclusively to the Project and shall not share superintendent duties with another project or job. No Work shall begin on any day by the Contractor or any Subcontractor or other person on the Project site until the superintendent has arrived, nor shall any Work continue during the day after the superintendent has departed from the Project site. The superintendent shall not be replaced except with written consent of the Owner and any replacement superintendent shall be subject to the approval of Owner acting in its reasonable discretion. The superintendent will be the Contractor's representative at the site and shall have authority to act on behalf of the Contractor. All communications given to the superintendent shall be as binding as if given to the Contractor. During periods when the Work is suspended, the Contractor shall make appropriate arrangements for any emergency work which may be required.

Whenever the superintendent is not present on any particular part of the Work where the Owner's Representative may desire to inform the Contractor relative to interpretation of the Plans and Specifications or to disapproval or rejection of materials or work performed, the Owner's Representative may so inform the foreman or other worker in charge of the particular part of the Work in reference to which the information is given. Information so given shall be as binding as if given to the superintendent.

Owner shall have the right, but not the obligation, to require the removal from the Project of any superintendent, staff member, agent, or employee of any Contractor, Subcontractor, material or equipment supplier.

#### 4-8 SHOP DRAWINGS

Shop drawings are drawings, diagrams, illustrations, schedules, performance charts, brochures, and other data which are prepared by the Contractor or any Subcontractor, manufacturer, supplier, or distributor and which illustrate some portion of the Work.

The Contractor shall review, mark as approved, and submit for review by the Owner's Representative, shop drawings as called for in the Special Provisions and Standard Specifications and as may also be requested by the Owner's Representative. Drawings shall be submitted in sextuplet to the Owner's Representative and be accompanied by a letter of transmittal listing the drawings submitted. Drawings shall show the name of the Project, the name of the Contractor, and, if any, the names of suppliers, manufacturers, and Subcontractors. Shop drawings shall be submitted with promptness and in orderly sequence so as to cause no delay in prosecution of the Work.

Shop drawings shall be complete in all respects. If the shop drawings show any deviations from the requirements of the Plans and Specifications because of standard shop practices or other reasons, the deviations and the reasons therefor shall be set forth in the letter of transmittal.

By submitting shop drawings, the Contractor represents that material, equipment, and other work shown thereon conform to the Plans and Specifications, except for any deviations set forth in the letter of transmittal.

Within thirty (30) days after receipt of said drawings, the Owner's Representative will return two (2) of the copies of the drawings to the Contractor with any comments noted thereon. If so noted by the Owner's Representative, the Contractor shall promptly correct the drawings and resubmit them in the same manner as specified for the original submittal. The Contractor in the letter of transmittal accompanying resubmitted shop drawings shall direct specific attention to revisions other than the corrections requested by the Owner's Representative on previous submittals.

The review by the Owner's Representative is for the limited purpose of ensuring general conformity with the design concept of the Project, and general compliance with the Plans and Specifications only, and shall not be construed as relieving the Contractor of the full responsibility for: providing materials, equipment, and work required by the Contract; the proper fitting and construction of the Work; the accuracy and completeness of the shop drawings; selecting fabrication processes and means, methods, sequences, and techniques of construction; and performing the Work in a safe, diligent, and workmanlike manner.

No portion of the Work requiring a shop drawing submittal shall be commenced until the submittal has been reviewed by the Owner's Representative and returned to the Contractor with a notation indicating that resubmittal is not required.

If the Contractor believes that any shop drawing or communication relative thereto calls for changes in the Work for which the Contract Price or Contract Time should be changed, they shall not proceed with the changes in the Work so called for and shall promptly submit to the Owner's Representative a written estimate of the changes in the Contract Price and Contract Time the Contractor believes to be appropriate. No payment for changes in the Work will be made and no change in the Contract Time by reason of changes in the Work will be made, unless the changes are covered by a written Change Order approved by the Owner prior to commencement of the changed Work.

#### 4-9 QUALITY AND SAFETY OF MATERIALS AND EQUIPMENT

All equipment, materials, and supplies to be incorporated in the Work shall be new, unless otherwise specified. All equipment, materials, and supplies shall be produced in a good and workmanlike manner. When the quality of a material, process, or article is not specifically set forth in the and Specifications, the best available quality of the material, process, or article shall be provided.

Whenever any material, process, or article is indicated or specified by grade, patent or proprietary name, or by name of manufacturer, such specification is for the purpose of facilitating description of the materials, process, or articles desired and the Contractor may offer any material, process, or

article which shall be substantially equal or better in every respect to that indicated or specified; provided, however, that if the material, process, or article offered by the Contractor is not, in the sole discretion of the Owner's Representative, equal or better in every respect to that specified, then the Contractor must furnish the material, process, or article specified or one that in the sole discretion of the Owner's Representative is the substantial equal or better in every respect. In the event that the Contractor-furnished material, process, or article is more expensive than that specified, or involves additional labor or other cost, such difference in cost shall be borne by the Contractor.

In accordance with Section 3400 of the Public Contract Code, the Contractor shall submit data substantiating requests for substitution of "equal" items at the time of submission of the Contractor's bid or proposal. Any request for substitution must be accompanied by evidence as to whether the proposed substitution: (1) is equal in quality, service, and ability to the Specified Item as demonstrated by a side by side comparison of key characteristics and performance criteria (CSI comparison chart); (2) will entail no changes in detail, construction and scheduling of related work; (3) will be acceptable in consideration of the required design and artistic effect; (4) will provide no cost disadvantage to the Owner; (5) will require no excessive or more expensive maintenance, including adequacy and availability of replacement parts; and (6) will require no change in the Contract Time or approved Schedule.

After the Owner's receipt of such evidence by Contractor, the Owner will make its final decision as to whether the bidder's request for substitution for any specified items will be granted. The Owner shall have sole discretion in deciding as to whether a proposed request for substitution is equal to or better than a specified item. Any request for substitution which is granted by the Owner shall be documented and processed through a Change Order. The Owner may condition its approval of any substitution upon delivery to the Owner of an extended warranty or other assurances of adequate performance of the substitution. Any and all risks of delay due to any governmental agency having jurisdiction shall be on the Contractor.

In the event the Owner denies Contractor's requested substitution for a specified item, Contractor shall execute the Contract and provide the specified item without any additional cost or charge to the Owner, and if Contractor fails to execute the Contract with the specified item(s), Contractor's bid security shall be forfeited. If this occurs, the Owner, in its sole discretion, may award the Contract to the next lowest bidder or reject all bids.

All materials, equipment, and supplies provided shall, without additional charge to Owner, fully conform with all applicable state and federal safety laws, rules, regulations, and orders, and it shall be Contractor's responsibility to provide only such materials, equipment, and supplies notwithstanding any omission in the Contract Documents therefor or that a particular material, equipment, or supply was specified.

#### 4-10 STANDARDS, CODES, SAMPLES, AND TESTS

Wherever reference is made to a standard, code, specification, or test and the designation representing the date of adoption or latest revision thereof is omitted, it shall mean the latest revision of such standard, code, specification, or test in effect on the day the Notice Inviting Bids is dated.

Tests shall be made in accordance with commonly recognized procedures of technical organizations and such special procedures as may be prescribed elsewhere in the Plans and Specifications. The Contractor shall furnish without charge such samples for testing as may be required by the Owner's Representative.

The Owner's Representative, and other employees or agents of Owner, shall at all times have access to the Work during construction and shall be furnished with every reasonable facility for ascertaining full knowledge respecting the progress, workmanship, and character of materials and equipment used and employed in the Work.

Whenever the Contractor varies the normal period during which work or any portion of it is carried on each day, as provided in the construction progress schedule submitted by the Contractor pursuant to Section 5-2 entitled CONTRACTOR'S CONSTRUCTION SCHEDULE AND COST BREAKDOWN, they shall give timely notice to the Owner's Representative so that the Owner's Representative may, if desired, be present to observe the work in progress. If the Contractor fails to obtain prior authorization, any work done in the absence of the Owner's Representative will be subject to rejection. Where the Contractor performs any part of the Work on a Saturday, Sunday, or holiday designated by the Owner, or for more than eight (8) hours in a workday, the Contractor shall, upon demand by the Owner, reimburse the Owner for the cost of employing inspectors or otherwise providing inspection of the Work. The Owner shall be entitled to withhold such costs from payments due the Contractor.

The Contractor shall give timely notice to the Owner's Representative in advance of backfilling or otherwise covering any part of the Work so that the Owner's Representative may, if desired, observe such part of the Work before it is concealed. Upon the request of the Owner or Engineer, any un-inspected concealed works shall be promptly re-exposed at the Contractor's sole expense.

The observation, if any, by the Owner's Representative of the Work shall not relieve the Contractor of any of their obligations to fulfill the Contract as prescribed. Defective work shall be made good, and materials and equipment furnished and work performed which is not in accordance with the Contract Documents may be rejected notwithstanding the fact that such materials, equipment, and work have been previously observed by the Owner's Representative or that payment therefor has been included in an estimate for payment.

If a portion of the Work is covered contrary to the Owner's request or to requirements specifically expressed in the Contract Documents, it must, if required in writing by the Owner, be uncovered for the Owner's observation and be replaced at the Contractor's expense without change in the Contract Time or Contract Price.

If a portion of the Work has been covered which the Owner has not specifically requested to observe prior to it being covered, the Owner may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, cost of uncovering and replacement shall, by appropriate Change Order, be at the Owner's expense. If such Work is not in accordance with the Contract Documents, correction shall be at the Contractor's expense unless the condition was caused by the Owner or a separate contractor, unrelated to this Agreement between Owner and Contractor, in which event the Owner shall be responsible for payment of such costs.

Any work which does not conform to the requirements of the Contract Documents shall be immediately remedied or removed and replaced by the Contractor, together with any other work which may be displaced in so doing, and no compensation will be allowed for such removal, replacement, or remedial work. All nonconforming materials shall be immediately removed from the site. Contractor shall proceed promptly with the work required herein so as to cause no delay in prosecution of the Work.

Any work done beyond the lines and grades shown on the Plans or established by the Owner's Representative or any changes in, additions to, or deductions from the work done without written authority will be considered as unauthorized and will not be paid for. Work so done may be ordered remedied, removed, or replaced at the Contractor's expense.

Upon failure on the part of the Contractor to comply promptly with any order of the Owner's Representative made under the provisions of this Section, the Owner's Representative shall have authority to cause nonconforming materials, rejected work, or unauthorized work to be remedied, removed, or replaced at the Contractor's expense and to deduct the costs from any monies due or to become due the Contractor.

#### 4-13 ONE-YEAR GUARANTEE

In addition to guarantees otherwise required, the Contractor shall and hereby does guarantee the Work against defects in workmanship or materials for a period of one (1) year after completion of the Project and the Owner's acceptance of the Work, except for any portion of the Work that is utilized or placed into service by the Owner in accordance with the provisions of Section 5-6, entitled USE OF COMPLETED PORTIONS. The guarantee period for portions of the Work so utilized or placed into service shall be one year from the date of written notification to the Contractor described in said Section 5-6. The Contractor shall repair or remove and replace any and all such work, together with any other work which may be displaced in so doing, that is found to be defective in workmanship and/or materials within said one (1) year period, without expense whatsoever to the Owner, ordinary wear and tear and unusual abuse or neglect excepted. In the event of a failure to comply with the above-mentioned conditions within seven (7) days after being notified in writing, the Owner is hereby authorized to proceed to have the defects remedied and made good at the Contractor's expense. The Contractor agrees to pay all such expenses immediately on demand therefor by the Owner. Such action by the Owner will not relieve the Contractor of the guarantees required by this Section or elsewhere in the Contract Documents.

The performance bond and the payment bond shall continue in full force and effect for at least the one (1) year guarantee period and as long as required by such bonds or the Contract Documents.

If, in the opinion of the Owner, defective work creates a dangerous condition or requires immediate correction or attention to prevent further loss to the Owner or to prevent interruption of its operations, the Owner will attempt to give the notice required by this Section. If the Contractor cannot be contacted or does not comply with the Owner's request for correction within a reasonable time as determined by the Owner, the Owner, notwithstanding the provisions of this Section, may proceed to make such correction or provide such attention; and the costs of such correction or attention shall be charged against the Contractor, and shall be paid immediately upon demand therefor by the Owner. Such action by the Owner will not relieve the Contractor of the guarantees required by this Section or elsewhere in the Contract Documents.

This Section does not in any way limit the guarantee on any items for which a longer guarantee is specified or on any items for which a manufacturer or supplier gives a guarantee for a longer period. The Contractor agrees to act as a co-guarantor with such manufacturer or supplier and shall furnish the Owner all appropriate guarantee or warranty certificates upon completion of the Project. No guarantee period, whether provided for in this Section or elsewhere, shall in any way limit the liability of Contractor or his sureties or insurers under the indemnity or insurance provisions of the Contract Documents. The Contractor and its surety shall be jointly and severally liable for any costs arising from the Owner's enforcement of any required warranty or guarantee.

The Contractor shall maintain in a safe place at the Project site and make available to the Owner for inspection and copying, one record copy of all Drawings, Specifications, requests for information, written amendments, Change Orders, field orders and Work Directives, in good order. In addition, the Contractor shall maintain at the site approved shop drawings, product data, samples and mock-ups, permits, inspection reports, test results, daily logs, schedules, subcontracts, and purchase orders ("Record Documents"). The Record Documents shall be prepared and continuously updated during the prosecution of the Work.

As part of Record Documents, the Contractor shall maintain a set of As-Built Drawings on-site in good condition and shall use colored pencils to mark-up said set with "record information" in a legible manner to show deviations from the Drawings made during construction; details in the Work not previously shown; changes to existing conditions or existing conditions found to differ from those shown on any existing Drawings; the actual installed position of equipment, piping, and like items; and such other information as the Owner may reasonable request.

The Contractor's submission of evidence of updated Record Documents shall be a condition precedent to the Owner's duty to process payment requests.

The Contractor shall, as part of the Contract Price, within thirty (30) calendar days after completion of the Work, or earlier termination of the Agreement, and as a condition precedent to certifying of the final payment under the Contract, transfer the "As-Built" changes to the Work maintained by the Contractor from the Record Documents kept at the Project site to: (1) a true and complete final set of "As-Built" Drawings complying with the Owner's instructions; (2) final approved shop drawings; and (3) a complete certified "As-Built" survey for the Project site indicating the actual location of the improvements as constructed on the site. The Contractor shall provide one hard copy and one electronic set in pdf or other format approved by the Owner of all As-Built Drawing and documents required under this Section. The Contractor's duty to provide such As-Built Drawings, shop drawings and survey obligation shall survive the completion of the Work or termination of the Agreement.

## ARTICLE 5 -- PROSECUTION AND PROGRESS

Subcontracts may be permitted to such extent as shall be shown to be necessary or advantageous to the Contractor in the prosecution of the Work, in the sole discretion of the Owner. No subcontract will be permitted which has the effect of avoiding the residence or wage requirements or any other provisions of the Contract. The Contractor shall not enter into any subcontract with a Subcontractor which has been debarred by the Labor Commissioner pursuant to Sections 1777.1 and 1777.7 of the Labor Code. In the event the Contractor subcontracts any part of this Contract, the Contractor shall be as fully responsible to the Owner for the acts and omissions of each Subcontractor and anyone either directly or indirectly employed by them or anyone for whose acts they may be responsible, as the Contractor is responsible to the Owner for the acts and omissions of their employees. Nothing contained in the Contract Documents shall create any contractual relationship between any Subcontractor and the Owner. The Contractor shall include in every subcontract a provision incorporating the terms and conditions of the Contract Documents into the subcontract. All subcontracts shall be in writing and copies of all subcontracts shall be filed with the Owner before the Subcontractor begins work. The Contractor shall require each Subcontractor to obtain and enter into similar agreements pursuant to this Section 5-1 with its sub-subcontractors, whereby the sub-subcontractors will be bound to the Subcontractor to the same extent the Subcontractor is bound to the Contractor and the Contractor is bound to the Owner. The Owner shall have the right, but not

the obligation, to review and accept the form of the Contractor's agreements with Subcontractors on the Project.

Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner provided the assignment is effective only after termination of the Contract with the Contractor by the Owner, and only for such subcontract agreements which the Owner accepts by notifying the Subcontractor in writing. Said assignments are subject to the prior rights of the sureties obligated on the bonds relating to this Agreement. Each subcontract shall specifically provide that the Owner shall only be responsible to the Subcontractor for those obligations that accrue subsequent to the Owner's exercise of any rights under this contingent assignment.

The divisions and sections of the Specifications and the identifications of any Drawings shall not control the Contractor in dividing the Work among Subcontractors.

Contractor shall comply with all applicable provisions of the Subletting and Subcontracting Fair Practices Act, Public Contract Code section 4100 *et seq.*

Contractor shall require each of its Subcontractors on the Project indemnify the Contractor and Owner from any claims, demands, causes of action, actions, proceedings, damages, costs, expenses (including costs of defense and attorneys' fees), losses, and liabilities arising from the Subcontractors' failure to pay wages, fringe, or other benefits to their laborers on the Project under California law, including, but not limited to, Labor Code section 218.7.

## 5-2 CONTRACTOR'S CONSTRUCTION SCHEDULE AND COST BREAKDOWN

### Baseline Schedule

Within ten (10) days after execution of the Contract, the Contractor shall deliver to the Owner's Representative a construction Schedule and cost breakdown in bar chart form showing the proposed dates of commencement and completion and cost of each of the various parts of the Work and the anticipated amount of each monthly payment that will become due the Contractor in accordance therewith. The Baseline Schedule shall specify the normal period during which work will be carried on each day, and whether any overtime, weekend or holiday work is anticipated. If the Contractor fails to submit the Baseline Schedule within the ten (10) days noted, then the Owner may withhold processing and approval of progress payments under the terms of the Contract Documents.

The Owner and Engineer will review the Baseline Schedule and may provide comments as noted in this Article and either approve or disapprove the Baseline Schedule. All Schedules shall be prepared using an electronic scheduling program acceptable to the Owner. All Schedules shall be delivered in an electronic format usable by the Owner. All logic ties and electronic information shall be included in the electronic copy of the Baseline Schedule that is delivered to the Owner.

Contractor shall include all required submittals as line items in the Baseline Schedule. Submittals shall not delay the Work or the Contract Time. Failure to include submittals in the Baseline Schedule shall be deemed a material breach by the Contractor.

The Baseline Schedule must indicate the beginning and completion of all phases of construction and shall use the "critical path method" (commonly called CPM) for the value reporting, planning and scheduling, of all Work required under the Contract Documents. The Baseline Schedule shall incorporate any schedule and milestones provided by the Owner as part of the bid or Contract Documents and shall note durations that will not be adequate or should be shortened based on Contractor's review. These changes shall be identified and incorporated into Contractor's Baseline Schedule as long as requested changes are made within ten (10) days after the Owner chooses to move forward with the Project. Scheduling is necessary for the Owner's adequate monitoring of the

progress of the Work and shall be prepared in accordance with the time frame described in this Article. The Owner or Engineer may disapprove of any schedule or require modification to it if, in the opinion of the Owner or Engineer, adherence to the any schedule prepared by the Contractor will not cause the Work to be completed in accordance with the Contract Documents.

Contractor shall not submit any schedule showing early completion without indicating float time through the date set for Project completion by the Owner. Contractor's Baseline Schedule shall account for all days past early completion as float which belongs to the Project. Usage of float shall not entitle Contractor to any delay claim or damages due to delay.

In some cases, the bid will include a preliminary schedule indicating milestones and construction sequences for the Project along with general timing for the Project. The preliminary schedule is not intended to serve as the Baseline Schedule utilized for construction. It is up to the Contractor to study and develop a Baseline Schedule to address the actual durations and sequences of Work that is anticipated while maintaining the milestones provided by the Owner. Contractor shall obtain information from Contractor's Subcontractors and vendors on the planning, progress, delivery of equipment, coordination, and timing of availability of Subcontractors so a practical plan of Work is fully developed and represented in the Baseline Schedule.

The Owner may reject or indicate durations, sequences, critical path, or logic are not acceptable and request changes. The electronic copy of the Baseline Schedule shall have adequate information so logic ties, duration, sequences, and critical path may be reviewed electronically. Contractor is to diligently rebuild and resubmit the Baseline Schedule to represent the Contractor's plan to complete the Work and maintain milestones at the next progress meeting, or before the next progress meeting. If Contractor is not able to build a Baseline Schedule that is acceptable to the Owner or Engineer, the Owner reserves the right to utilize the unapproved originally submitted Baseline Schedule and the comments submitted to hold Contractor accountable for timely delivery of Work and maintenance of any milestones. Furthermore, Contractor's representations in the Baseline Schedule, if unacceptable, may also be used as a basis for termination of the Contract under Section 6-19 if Contractor fails to adequately maintain the schedule and falls significantly behind without undertaking the efforts to either submit and follow a Recovery Schedule or fail to submit a Recovery Schedule and make no effort toward recovery on the Project. Failure on the part of the Owner or Engineer to discover errors or omissions in any schedules submitted shall not be construed to be an approval of the error or omission and any flawed schedule is not grounds for a time extension.

Failure of the Contractor to provide proper schedules as required by this Section is a material breach of the Contract and grounds for termination pursuant to Section 6-19. The Owner, at its sole discretion, may choose, instead, to withhold, in whole or in part, any progress payments or retention amounts otherwise payable to the Contractor.

If the Baseline Schedule submitted by the Contractor is unacceptable to the Owner and Contractor does not incorporate or address the written comments to the Baseline Schedule and a Baseline Schedule is not approved, but due to extreme necessity, the Owner moves forward without an approved Baseline Schedule, Contractor shall diligently revise and meet schedule update requirements of this Article. However, for purposes of termination pursuant to Section 6-19, the unapproved Baseline Schedule initially submitted shall be treated as the Baseline Schedule with durations shortened or revised to accommodate all float, all mandatory schedule requirements under this Section, any requirements in the Contract Documents, and all revisions by the Owner or Engineer.

Schedule Updates

Except in the case where there has not been agreement as to a Baseline Schedule, the approved Baseline Schedule shall be used to build future schedule updates. Schedule updates shall be a CPM based schedule consistent with the Baseline Schedule requirements of this Section.

In the case that no Baseline Schedule has been approved, schedule updates shall be provided monthly and each update shall incorporate all comments and revisions noted as not complying with the requirements of this Section. Contractor shall be held to the unapproved Baseline Schedule, inclusive of all milestones, float, comments and revisions by the Owner and Engineer, all required Baseline Schedule inclusions under this Section, and any requirements in the Contract Documents.

Contractor shall update the approved schedule each month to address actual start dates and durations, the percent complete on activities, actual completion dates, estimated remaining duration for the Work in progress, estimated start dates for Work scheduled to start at future times and changes in duration of Work items

Schedule updates shall provide a listing of activities which are causing delay in the progress of Work and a narrative shall be provided showing a description of problem areas, anticipated delays, and impacts on the schedule. Simply stating "Owner Delay" or "Engineer Delay" shall be an inadequate listing. Delays shall only be listed if they meet the requirements under Article 5.

In addition to providing a schedule update every thirty (30) days, the Contractor, if requested by the Owner or Engineer, shall take the steps necessary to improve Contractor's progress and demonstrate to the Owner and Engineer that the Contractor has seriously considered how the lost time, the completion date, or the milestones that are required to be met within the terms of the Contract. Contractor shall immediately provide a Recovery Schedule showing how milestones and the completion date will be met. In no case shall a Recovery Schedule be provided later than ten (10) days following the request for a recovery schedule from the Owner or Engineer.

Failure to provide a Recovery Schedule shall subject Contractor to the assessment of liquidated damages for failure to meet the Contract Time set forth in the Agreement. Refusal or failure to provide a Recovery Schedule shall be considered a substantial failure of performance and a material breach of Contract and may result in termination of the Contract pursuant to Section 6-19.

The Owner may require Contractor prepare a Recovery Schedule showing how the Project shall be accelerated, without any additional cost to the Owner. The Owner may order, without additional cost, the following: increase the number of shifts; utilize overtime to recover the approved schedule; and/or increase the days when Work occurs, including weekends, at the Project and at any manufacturer's plant.

If Contractor disputes that the Recovery Schedule acceleration shall be issued without additional costs, the Contractor shall submit concurrent with Recovery Schedule a written request pursuant to Section 5-5.

### 5-3 TIME FOR COMPLETION AND FORFEITURE DUE TO DELAY

The Contractor shall begin and complete all or any designated portion of the Work called for under the Contract within the time set forth in the Agreement. Time is of the essence in this Contract. By executing the Contract, the Contractor confirms that the Contract Time set forth in the Agreement is a reasonable period for performing the Work.

Except and only to the extent provided under Article 5, by signing the Contract, Contractor agrees to bear the risk of delays to completion of the Work and that Contractor's bid for the Project was made with full knowledge of this risk.

In agreeing to bear the risk of delays to complete the Work, Contractor understands that, except and only to the extent provided otherwise in Article 5, the occurrence of events that delay the Work shall not excuse Contractor from its obligation to achieve completion of the Project within the Contract Time, and shall not entitle the Contractor to an adjustment to the Contract Time.

Failure of the Contractor to perform any covenant or condition contained in the Contract Documents within the time period specified shall constitute a material breach of this Contract entitling the Owner to terminate the Contract unless the Contractor applies for, and receives, an extension of time in accordance with the procedures set forth in this Article and Section 5-5 entitled EXTENSION OF TIME.

Failure of the Owner to insist upon the performance of any covenant or condition within the time period specified in the Contract Documents shall not constitute a waiver of the Contractor's duty to complete performance within the designated periods unless the waiver is in writing.

The Owner's agreement to waive a specific time provision or to extend the time for performance shall not constitute a waiver of any other time provisions contained in the Contract Documents. Failure of the Contractor to complete performance promptly within the additional time authorized in the waiver or extension of time agreement shall constitute a material breach of this Contract entitling the Owner to terminate.

In accordance with Government Code section 53069.85, Contractor agrees to forfeit and pay Owner the amount per day set forth in Section 4 of the Agreement for each and every day of delay which shall be deducted from any payments due or to become due the Contractor.

The Contractor shall notify the Owner in writing within ten (10) days of any anticipated delay and its cause, in order that the Owner may take immediate steps to prevent, if possible, the occurrence or continuance of delay, and may determine whether the delay is to be considered avoidable or unavoidable, how long it continues, and to what extent the prosecution and completion of the Work might be delayed thereby. Failure to provide the required written notice shall result in the Contractor waiving and relinquishing any Claims for compensation or an extension of time, and Contractor shall not be entitled to consideration for payment or time.

The Contractor shall not be deemed in breach of this Contract and no forfeiture due to delay shall be made because of any delays in the completion of the Work due to unforeseeable causes beyond the control and without the fault or negligence of the Contractor or its Subcontractors, provided the Contractor timely requests an extension of time in accordance with the procedures set forth in this Article and in Section 5-5 entitled EXTENSION OF TIME. Unforeseen causes of delay beyond the Contractor's control may include acts of God, acts of a public enemy, acts of the government, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and weather. Delays caused by actions or neglect of Contractor or his agents, servants, employees, officers, Subcontractors, suppliers, directors, or of any party contracting to perform part or all of the Work or to supply any equipment or materials shall not be excusable delays.

Contractor shall within ten (10) days of beginning of any such delay notify the Owner in writing of causes of delay; thereupon the Owner shall ascertain the facts and extent of delay and grant extension of time for completing Work when, in its judgment, the findings of fact justify such an extension. Extensions of time shall apply only to that portion of Work affected by delay, and shall not apply to other portions of Work not so affected. An extension of time may only be granted after proper compliance with Section 5-2 requiring preparation and submission of a properly prepared schedule.

Excusable delays (those beyond Contractor's control) shall not entitle the Contractor to any additional compensation. Subject to the provisions of Public Contract Code section 7102 (relating to unreasonable delay by Owner), the Contractor's sole remedy shall be to request an extension of time

pursuant to Section 5-5, and any time extensions are intended to and shall provide the exclusive and full method of compensation to the Contractor and its Subcontractors for changes in the Work and construction delays.

#### 5-4 SUSPENSION OF WORK

The Work may be suspended in whole or in part when determined by the Owner's Representative or the Engineer that the suspension is necessary in the interests of the Owner. The Contractor shall comply immediately with any written order of the Owner, the Owner's Representative or the Engineer to suspend the Work. The Contractor shall be responsible for taking reasonable steps to protect the Work in progress, any materials and equipment on the site of the Work, and any materials delivered to the Contractor which are to be incorporated into the Work during the period of the suspension. Such suspension shall not form the basis of any claim by the Contractor against the Owner, except as provided in Section 5-5 entitled EXTENSION OF TIME.

#### 5-5 EXTENSION OF TIME

The time specified for completion of all or any part of the Work may be extended only by a written Change Order executed by or on behalf of the Owner.

Requests for an extension of time must be delivered to the Owner's Representative within ten (10) consecutive days following the date of the occurrence which caused the delay. The request must be submitted in writing and must state the cause of the delay, the date of the occurrence causing the delay, and the amount of additional time requested. Requests for extensions of time shall be supported by all evidence and documentation available or known to the Contractor which would support the time extension requested. Requests for extensions of time which fail to include the specified information and supporting documentation or which are not received within the specified time shall result in the forfeiture of the Contractor's right to receive any extension of time requested.

Requests for a time extension due to weather or other conditions beyond the Contractor's control shall include daily written reports to the Owner's Representative describing such weather or conditions and specifying the work which, but for such weather or conditions, the Contractor would otherwise have performed. The Owner's receipt of the daily reports shall not be deemed an admission of the Contractor's right to receive an extension of time or a waiver of the Owner's right to strictly enforce the time provisions contained in the Contract Documents.

When the Contractor has submitted a request for an extension of time in accordance with the procedures of this Article and Section 5-3, entitled TIME FOR COMPLETION AND FORFEITURE DUE TO DELAY, the Owner will ascertain the facts and extent of the delay and extend the time for completing the Work if, in its judgment, the findings of fact justify such an extension. Should the Contractor disagree with the decision of the Owner, the Contractor may appeal that decision to the governing body of the Owner, which shall review the basis for the decision of its staff and make appropriate findings regarding the Contractor's request for an extension of time. The findings of facts by the governing body of the Owner shall be final and conclusive. An extension of time may be granted by the Owner after the expiration of the time originally fixed in the Contract or as previously extended; the extension so granted shall be deemed to commence and be effective from the date of such expiration.

Any extension of time shall not release the sureties upon any bond required under the Contract.

Any further dispute regarding an extension of time shall proceed in accordance with the procedures set forth in Section 3-9 entitled DISPUTES AND CLAIMS, provided, however, that the Contractor first has exhausted its remedies pursuant to the procedure set forth in this Section 5-5.

## 5-6 USE OF COMPLETED PORTIONS

When the Work or any portion of it is sufficiently complete to be occupied, utilized or placed into service, as determined at the Owner's discretion, the Owner shall have the right, upon written notification to the Contractor, to occupy or utilize such portions of the Work and to place the operable portions into service and to operate same.

Once the Owner has given notice and commenced occupation, utilization or operation of any part of the Work, the Owner and the Contractor shall agree in writing to the responsibilities assigned to each of them for payments, security, maintenance, heat, utilities, damage to the Work, insurance, the period for correction of the Work, and the commencement of warranties, if any, required by the Contract Documents. If Owner and Contractor cannot agree as to responsibilities such disagreement shall be resolved pursuant to Section 3-9. However, nothing in this Section shall be construed as relieving the Contractor of the full responsibility for completing the Work in its entirety, for correcting defective work and materials, for protecting the Work from damage, and for being responsible for damage and for the Work as set forth in the General Provisions and other Contract Documents; nor shall such action by the Owner be deemed completion, final acceptance or acceptance of any Work not complying with the Contract Documents, and such action shall not relieve the Contractor, their sureties, or insurers of the provisions of Article 7, entitled CONTRACTOR'S INSURANCE, and 7 of the Agreement.

## 5-7 CHARACTER OF WORKERS

None but skilled workers shall be employed where the Work requires special qualifications. When required in writing by the Owner, the Contractor or any Subcontractor shall discharge any person who is, in the sole discretion of the Owner, incompetent, unfaithful, disorderly or otherwise unsatisfactory, and shall not again employ such discharged person on the Work except with the prior written consent of the Owner. Such discharge shall not be the basis of any claim for compensation or damages against the Owner, its Engineer or any of its officers. No convict labor shall be directly employed by the Contractor or any Subcontractor in the performance of any work done under this Contract.

## 5-8 ENFORCEMENT OF ORDER

The Contractor shall be responsible for maintaining good order at all locations where work is performed under this Contract and to that end shall employ such watchmen or other persons as may be required. Unauthorized persons shall be excluded from any of the sites affected by the Work. The Contractor shall not sell, nor shall they permit or suffer the introduction or use of intoxicating liquors or narcotics upon the Work embraced in the Specifications or upon any of the grounds occupied or controlled by them in connection with such work, either by Contractor or its Subcontractors, or anyone for whom they may be responsible.

## 5-9 USE OF OWNER'S PROPERTY DURING CONSTRUCTION

Where necessary for the prosecution of the Work, and upon application to and written approval by the Owner, the Contractor may use property or facilities of the Owner during construction of the Work for storage of equipment or materials, to fabricate materials to be incorporated into the Work, or for any other reason related to the prosecution of the Work.

In the event the Contractor is afforded the use of the Owner's property as provided herein, the Contractor shall be responsible for ensuring that any materials or equipment stored thereon are kept safe from theft, vandalism, or damage due to any cause, and shall erect such temporary structures as are necessary to protect the material or equipment from damage, at the expense of the Contractor.

The Contractor shall ensure that the insurance required under the Contract Documents includes coverage for the Contractor's use of the Owner's property in accordance with this Section 5-9. If Contractor fails or is unable to obtain such coverage, Contractor's rights under this Section 5-9 shall be revoked.

## ARTICLE 6 -- LEGAL RELATIONS AND RESPONSIBILITIES

### 6-1 OBSERVING LAWS AND ORDINANCES

The Contractor shall keep fully informed of and comply with all existing and future laws, ordinances, orders, rules, regulations and decrees (herein "laws") which in any manner affect those engaged or employed in the Work or the materials used in the Work or which in any way affect the conduct of the Work and of all such orders and decrees (also herein "laws") of bodies or tribunals having any jurisdiction or authority over the Work. If any discrepancy or inconsistency is discovered in the Plans, Specifications, or Contract for the Work in relation to any such laws, the Contractor shall promptly report the same to the Owner's Representative in writing and if lawfully required to do so, cease operations on the affected portion of the Work until the Owner's Representative has given appropriate instructions as provided for in Section 4-6, entitled ERRORS OR DISCREPANCIES NOTED BY CONTRACTOR. No payment for changes in the Work will be made and no change in the Contract Time by reason of such discrepancy or inconsistency will be made, unless the changes are covered by a written Change Order approved by the Owner in advance of the Contractor's proceeding with the changed Work.

The Contractor shall at all times observe and comply with and shall cause their agents, employees, Subcontractors, and suppliers to observe and comply with all such laws, and indemnify, defend and hold harmless the Owner and other parties consistent with Section of the Agreement.

In the event the Contractor, after 72-hours' written notice to comply, fails to comply with any laws, which in any way affects the conduct or prosecution of the Work, and the Owner takes reasonable steps to ensure compliance with such laws, the costs and expenses incurred in effecting such compliance shall be paid by the Contractor. Should the Contractor fail to pay such costs and expenses, the Owner may charge the Contractor directly for such costs or may deduct them from any amounts then due or that may become due to the Contractor. In the event such costs and expenses exceed the amounts deducted by the Owner, the Contractor shall pay the balance thereof immediately upon demand by the Owner.

### 6-2 PERMITS AND LICENSES

The Contractor shall procure all permits and licenses, pay all charges and fees, and give all notices necessary and incidental to the proper, due, and lawful prosecution and completion of the Work.

### 6-3 INVENTIONS, PATENTS, AND COPYRIGHTS

The Contractor shall pay all royalties and assume all costs arising from the use of any invention, design, process, materials, equipment, product, or device which is the subject of patent rights or copyrights, as necessary to allow the Owner the full, unlimited, and unencumbered use of that expression for the execution, operation, maintenance, modernization, or expansion of the Project. The Contractor shall immediately convey all such copyrights, assignments, and licenses to the Owner without reservation except that which is expressly allowed in this Section. In the case of products, materials, systems, etc., protected by patent, the Contractor and its consultants shall not specify or cause to be specified any infringing use of a patent.

Should the Contractor become aware of or receive notice of potential infringement of any intellectual property right related to the Project, regardless of the source of that awareness or notice, the Contractor shall: (a) immediately cease the copying and any other activity which is the potential source of infringement; and within seven (7) calendar days (b) investigate the potential infringement; (c) submit to the Owner copies of all documents relating to that awareness, the notice, or the object thereof; and (d) issue to the Owner a complete written response and analysis of the potential infringement and the course of action recommended by the Contractor. The Contractor shall submit to the Owner a supplement of the initial report within seven (7) calendar days of the Contractor's receipt of, or awareness of, additional related information. Nothing in this Agreement shall be deemed to relieve the Contractor of its obligations under this Section, nor shall the Owner's receipt of the information indicated in this Section give rise to any duty or obligation on the part of Owner.

The Contractor shall hold harmless, indemnify, and defend the Owner and other parties consistent with Article 7 of the Agreement from and against all claims, damages, losses, expenses, and other costs, including costs of defense and attorneys' fees, arising out of any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, materials, equipment, product or device, and shall defend all such claims in connection with any alleged infringement of such rights.

#### 6-4 SAFETY AND PUBLIC CONVENIENCE

The Contractor shall conduct their operations so as to avoid injury or damage to any person or property, and to minimize any obstruction and inconvenience to the public. The Contractor shall comply with the requirements of the Contract Documents relating to safety measures applicable in particular operations or kinds of work. The Contractor shall have under construction no greater amount of Work than can be prosecuted properly with due regard to the rights and safety of the public and the workers.

Convenient access to driveways, houses, and buildings along the line of Work shall be maintained and temporary crossings shall be provided and maintained in good condition. Not more than one crossing or intersecting street or road shall be closed at any one time.

The Contractor shall provide and maintain such fences, barriers, directional signs, lights, and flagmen as are necessary to give adequate warning to the public at all times of any dangerous conditions to be encountered as a result of the construction work and to give directions to the public.

In accordance with generally accepted construction practices, the Contractor shall be solely and completely responsible for conditions of the job site, including safety of all persons and property during performance of the Work, and the Contractor shall fully comply with all state, federal and other laws, rules, regulations, and orders relating to safety of the public and workers, including State of California, Division of Industrial Safety (Cal/OSHA) regulations. Safety precautions as applicable shall include, but not be limited to, adequate life protection and life saving equipment; adequate illumination for underground and night operations; instructions in accident prevention for all employees; in matters such as machinery guards, safe walkways, scaffolds, ladders, bridges, gang planks, confined space procedures, trenching and shoring, and other safety devices, equipment and wearing apparel as are necessary or lawfully required to prevent accident or injuries; and adequate facilities for the proper inspection and maintenance of all safety measures. Unless otherwise designated by Contractor, Contractor's on-site superintendent shall be deemed to be Contractor's safety officer.

The names and telephone numbers of at least two medical doctors practicing in the vicinity and the telephone number of the local ambulance service shall be prominently displayed at the Work site.

The right of the Engineer or the Owner's Representative to conduct construction review or observation of the Contractor's performance will not include review or observation of the adequacy of the Contractor's safety measures in, on, or near the site of the Work. However, in the event that the Owner determines that the Contractor has failed to ensure the safety of the public and the workers, or has failed to take reasonable steps to protect the workers and the public, the Owner may give the Contractor 72-hours' written notice to take appropriate action to ensure their safety. In the event the Contractor fails to comply, and the Owner takes such steps as are reasonably necessary to ensure the safety and protection of the public and the workers, the Contractor shall pay the cost and expenses incurred in taking such action. Should the Contractor fail to pay, the Owner may deduct the costs and expenses incurred in taking such action from any amounts then due or that may become due to the Contractor. In the event such costs and expenses exceed the amounts deducted by the Owner, the Contractor shall pay the balance thereof immediately upon demand therefor by the Owner.

#### 6-5 RESPONSIBILITY FOR LOSS, DAMAGE, OR INJURIES

The Contractor shall be responsible for all claims, demands, or liability from any cause arising out of or resulting from or in connection with the performance of the Work, excepting only those as may be caused by the active negligence, sole negligence, or willful misconduct of the Owner, the Engineer, the Owner's Representative, or their consultants, or their directors, officers, employees, and agents. Such responsibility shall extend to claims, demands, or liability for loss, damage, or injuries occurring after completion of the Work as well as during the progress of the Work.

#### 6-6 CONTRACTOR'S RESPONSIBILITY FOR THE WORK

Until the acceptance of the Work, the Contractor shall have the responsible charge and care of the Work and of the materials to be used therein (including materials for which partial payment has been made or materials which have been furnished by the Owner) and shall bear the risk of injury, loss, or damage to any part thereof by the action of the elements or from any other cause, whether arising from the execution or from the nonexecution of the Work.

The Contractor shall rebuild, repair, restore, and make good all injuries, losses, or damages to any portion of the Work or the materials occasioned by any cause before its completion and acceptance and shall bear the expense thereof. Where necessary to protect the Work or materials from damage, the Contractor shall at their expense provide suitable drainage and erect such temporary structures as are necessary to protect the Work or materials from damage. The suspension of the Work or the granting of an extension of time from any cause whatever shall not relieve the Contractor of the responsibility for the Work and materials as herein specified.

In an emergency affecting the safety of life or property, including adjoining property, the Contractor, without special instructions or authorizations, is authorized to act at their discretion to prevent such threatened loss or injury.

#### 6-7 PRESERVATION OF PROPERTY

The Contractor shall exercise due care to avoid injury to existing improvements or facilities, utility facilities, adjacent property, and trees and shrubbery that are not to be removed.

All trees, shrubbery, and landscaping that are not to be removed, and pole lines, fences, signs, survey markers and monuments, buildings and structures, conduits, pipelines under or above ground, sewer and water lines, all highway or street facilities, and any other improvements or facilities within or adjacent to the Work shall be protected from injury or damage, and the Contractor shall provide and install suitable safeguards to protect such objects from injury or damage. If such objects are injured

or damaged by reason of the Contractor's operation, they shall be replaced or restored at the Contractor's expense to a condition as good as when the Contractor entered upon the Work or as good as required by the Plans and Specifications if any such objects are a part of the work being performed.

The fact that any such pipe or other underground facility is not shown on the Plans shall not relieve the Contractor of his responsibility under this Article.

In addition to any requirements imposed by law, the Contractor shall shore up, brace, underpin, and protect as may be necessary, all foundations and other parts of all existing structures adjacent to and adjoining the site of the Work which are in any way affected by the excavations or other operations connected with the performance of the Work. Whenever any notice is required to be given by the Owner or the Contractor to any adjacent or adjoining landowner or other party before commencement of any work, such notice shall be given by the Contractor.

#### 6-8 EXCAVATION PLANS FOR WORKER PROTECTION REQUIRED BY LABOR CODE SECTION 6705

If the total amount of the Contract is in excess of \$25,000, the Contractor shall submit to the Owner for acceptance, in advance of excavation, a detailed plan showing the design of shoring, bracing, sloping, or other provisions to be made for worker protection from the hazard of caving ground during the excavation of any trench or trenches five (5) feet or more in depth. The plan shall be prepared by a registered civil or structural engineer. As a part of the plan, a note shall be included stating that the registered civil or structural engineer certifies that the plan complies with all governmental regulations and orders, or that the registered civil or structural engineer certifies that the plan is not less effective than the shoring, bracing, sloping, or other provisions of the General Industry Safety Orders promulgated by the Department of Industrial Relations, Division of Industrial Safety, or by such other agency with responsibility therefor.

The Owner or the Engineer or their consultants may have made investigations of subsurface conditions in areas where the Work is to be performed. If so, these investigations are identified in the Special Provisions and the records of such investigations are available for inspection at the office of the Owner. The detailed plan showing the design of shoring, etc., which the Contractor is required to submit to the Owner for acceptance in advance of excavation will not be accepted by the Owner if the plan is based on subsurface conditions which are more favorable than those revealed by the investigations made by the Owner or the Engineer or their consultants; nor will the plan be accepted if it is based on soils-related design criteria which is less restrictive than the criteria set forth in the report on the aforesaid investigations of subsurface conditions.

The detailed plan showing the design of shoring, etc., shall include surcharge loads for nearby embankments and structures, for spoil banks, and for construction equipment and other construction loadings. The plan shall indicate for all trench conditions the minimum horizontal distances from the side of the trench at its top to the near side of the surcharge loads.

Nothing contained in this Article shall be construed as relieving the Contractor of the full responsibility for providing shoring, bracing, sloping, or other provisions which are adequate for worker protection. Contractor shall also comply with any applicable construction safety orders relating to concrete forms, falsework and shoring.

Pursuant to Labor Code section 6705, nothing in this Section shall impose tort liability upon the Owner or any of its employees.

6-9 PERSONAL LIABILITY

No director, officer, employee, or agent of the Owner, the Engineer, the Owner's Representative, or their consultants shall be personally responsible for any liability arising under or by virtue of the Contract.

6-10 INDEMNITY

See Section 7 of the Agreement.

6-11 HOURS OF LABOR

The Contractor shall forfeit as a penalty to the Owner the maximum amount provided by statute for each worker employed in the execution of the Contract by the Contractor or any of their Subcontractors for each calendar day during which such worker is required or permitted to work more than eight (8) hours in any one calendar day and forty (40) hours in any one calendar week in violation of the provisions of the Labor Code and, in particular, Section 1810 to Section 1815 thereof, inclusive, except that work performed by employees of Contractor in excess of eight (8) hours per day and forty (40) hours during any one week shall be permitted upon compensation for all hours worked in excess of eight (8) hours per day at not less than one and one-half times the basic rate of pay as provided in said Section 1815.

6-12 PREVAILING WAGE

Pursuant to the provisions of Article 2 (commencing at Section 1720), Chapter 1, Part 7, Division 2, of the Labor Code, the Owner has obtained the general prevailing rate of per diem wages and the general prevailing rate for holiday and overtime work in the locality in which this public works project is to be performed for each craft, classification, or type of worker needed for this Project from the Director of the Department of Industrial Relations ("Director"). These rates are on file at the administrative office of the Owner and are also available from the Director of the Department of Industrial Relations. Copies will be made available to any interested party on request. The Contractor shall post a copy of such wage rates at appropriate, conspicuous, weatherproof points at the Site. Any worker employed to perform Work on the Project, but such Work is not covered by any classification listed in the published general prevailing wage rate determinations or per diem wages determined by the Director of the Department of Industrial Relations, shall be paid not less than the minimum rate of wages specified therein for the classification which most nearly corresponds to the employment of such person in such classification.

Holiday and overtime work, when permitted by law, shall be paid for at the rate set forth in the prevailing wage rate determinations issued by the Director of the Department of Industrial Relations or at least one and one-half (1½) times the specified basic rate of per diem wages, plus employer payments, unless otherwise specified in the Contract Documents or authorized by law.

The Contractor shall pay and shall cause to be paid each worker engaged in the execution of the Work on the Project not less than the general prevailing rate of per diem wages determined by the Director, regardless of any contractual relationship which may be alleged to exist between the Contractor or any Subcontractor and such workers.

Pursuant to Labor Code section 1775, the Contractor shall forfeit to the Owner, not more than Two Hundred Dollars (\$200.00) for each calendar day, or portion thereof, for each worker paid less than the prevailing wages rates as determined by the Director of the Department of Industrial Relations, for the work or craft in which the worker is employed for any Work done under the Agreement by the Contractor or by any Subcontractor under it. The amount of the penalty shall be determined by the

Labor Commissioner and shall be based on consideration of: (1) whether the Contractor or Subcontractor's failure to pay the correct rate of per diem wages was a good faith mistake and, if so, the error was promptly and voluntarily correct upon being brought to the attention of the Contractor or Subcontractor; and (2) whether the Contractor or Subcontractor has a prior record of failing to meet its prevailing wage obligations.

Monitoring and enforcement of the prevailing wage laws and related requirements will be performed by the Labor Commissioner/ Department of Labor Standards Enforcement (DLSE). The Contractor and all subcontractors shall be required to furnish, at least monthly, certified payroll records directly to the Labor Commissioner in accordance with Labor Code section 1771.4. All payroll records shall be furnished in a format required by the Labor Commissioner. The Contractor and all subcontractors must sign up for, and utilize, the Labor Commissioner's electronic certified payroll records submission system. The Owner will have direct and immediate access to all CPRs for the Project that are submitted through the Labor Commissioner's system. The Owner can use this information for any appropriate purpose, including monitoring compliance, identifying suspected violations, and responding to Public Records Act requests.

The Labor Commissioner/ DLSE may conduct various compliance monitoring and enforcement activities including, but not limited to, confirming the accuracy of payroll records, conducting worker interviews, conducting audits, requiring submission of itemized statements prepared in accordance with Labor Code section 226, and conducting random in-person inspections of the Project site ("On-Site Visits"). On-Site Visits may include inspections of records, inspections of the Work site and observation of work activities, interviews of workers and others involved with the Project, and any other activities deemed necessary by the Labor Commissioner/DLSE to ensure compliance with prevailing wage requirements. The Labor Commissioner/DLSE shall have free access to any construction site or other place of labor and may obtain any information or statistics pertaining to the lawful duties of the Labor Commissioner/DLSE.

Any lawful activities conducted or any requests made by the Labor Commissioner/DLSE shall not be the basis for any delays, claims, costs, damages or liability of any kind against the Owner by the Contractor. Contractor and all subcontractors shall cooperate and comply with any lawful requests by the Labor Commissioner/ DLSE. The failure of the Labor Commissioner, DLSE, or any other entity related to the Department of Industrial Relations to comply with any requirement imposed by the California Code of Regulations, Title 8, Chapter 8 shall not of itself constitute a defense to the failure to pay prevailing wages or to comply with any other obligation imposed by Division 2, Part 7, Chapter 1 of the Labor Code.

Prior to commencing any Work on the Project, the Contractor shall post the required notice/poster required under the California Code of Regulations and Labor Code section 1771.4 in both English and Spanish at a conspicuous, weatherproof area at the Project site. The required notice/poster is available on the Labor Commissioner's website.

The Owner may withhold or delay contract payments to the Contractor and/or any Subcontractor if: (1) the required prevailing rate of per diem wages determined by the Director of the Department of Industrial Relations is not paid to all workers employed on the Project; or (2) the Contractor or Subcontractor(s) fail to submit all required certified payroll records with each application for payment, but not less than once per month; or (3) the Contractor or Subcontractor(s) submit incomplete or inadequate payroll records; or (4) the Contractor or Subcontractor(s) fail to comply with the Labor Code requirements concerning apprentices; or (5) the Contractor or Subcontractor(s) fail to comply with any applicable state laws governing workers on public works projects.

Responsibility for compliance with this Section shall rest upon the Contractor.

6-13 TRAVEL AND SUBSISTENCE PAYMENTS

The Contractor shall pay and shall cause to be paid to each worker needed to execute the Work on the Project per diem wages including, but not limited to, employer payments for health and welfare, pensions, vacation, travel time and subsistence pay as provided for in Labor Code section 1773.1.

6-14 APPRENTICES

All apprentices employed by the Contractor to perform services under the Contract shall be paid the standard wage paid to apprentices under the regulations of the craft or trade for which he or she is employed, and as determined by the Director of the Department of Industrial Relations, and shall be employed only at the craft or trade to which he or she is registered. Only apprentices, as defined in Labor Code section 3077, who are in training under apprenticeship standards that have been approved by the Chief of the Division of Apprenticeship Standards and who are parties to written apprenticeship agreements under Chapter 4 (commencing with Section 3070) of Division 3, are eligible to be employed under this Contract. The employment and training of each apprentice shall be in accordance with the apprenticeship standards and apprentice agreements under which he or she is training, or in accordance with the rules and regulations of the California Apprenticeship Council.

Contractor agrees to comply with the requirements of Labor Code section 1777.5. The Contractor awarded the Project, or any Subcontractor under him or her, when performing any of the Work under the Contract or subcontract, employs workers in any apprenticeable craft or trade, the Contractor and Subcontractor shall employ apprentices in the ratio set forth in Labor Code section 1777.5. The Contractor or any Subcontractor must apply to any apprenticeship program in the craft or trade that can provide apprentices to the Project site for a certificate approving the contractor or subcontractor under the apprenticeship standards for the employment and training of apprentices in the area or industry affected. However, the decision of the apprenticeship program to approve or deny a certificate shall be subject to review by the Administrator of Apprenticeship. The apprenticeship program or programs, upon approving the Contractor or Subcontractor, shall arrange for the dispatch of apprentices to the Contractor or Subcontractor upon the Contractor's or Subcontractor's request. "Apprenticeable craft or trade" as used in this Article means a craft or trade determined as an apprenticeable occupation in accordance with the rules and regulations prescribed by the California Apprenticeship Council. The ratio of work performed by apprentices to journeyman employed in a particular craft or trade on the Project shall be in accordance with Labor Code section 1777.5.

Prior to commencing Work on the Project, the Contractor and Subcontractors shall submit contract award information to the applicable apprenticeship program(s) that can supply apprentices to the Project and make the request for the dispatch of apprentices in accordance with the Labor Code. The information submitted shall include an estimate of journeyman hours to be performed under the Contract, the number of apprentices proposed to be employed, and the approximate dates the apprentices would be employed. A copy of this information shall also be submitted to the Owner if requested. Within 60 days after concluding Work on the Project, the Contractor and Subcontractors shall submit to the Owner, if requested, and to the apprenticeship program a verified statement of the journeyman and apprentice hours performed on the Project.

The Contractor or any Subcontractor under him or her, who, in performing any of the Work under the Contract, employs journeymen or apprentices in any apprenticeable craft or trade shall contribute to the California Apprenticeship Council the same amount that the Director determines is the prevailing amount of apprenticeship training contributions in the area of the Project. The Contractor and Subcontractors may take as a credit for payments to the California Apprenticeship Council any amounts paid by the Contractor or Subcontractor to an approved apprenticeship program that can

supply apprentices to the Project. The Contractor and Subcontractors may add the amount of the contributions in computing his or her bid for the Contract.

The responsibility of compliance with Article 13 and section 1777.5 of the Labor Code for all apprenticeable occupations is with the Prime Contractor. Any Contractor or Subcontractor that knowingly violates the provisions of this Article or Labor Code section 1777.5 shall be subject to the penalties set forth in Labor Code section 1777.7.

#### 6-15 WARRANTY OF TITLE AND STOP NOTICE CLAIMS

No materials, supplies, or equipment for the Work under this Contract shall be purchased subject to any conditional sale contract or other agreement by which an interest therein or any part thereof is retained by the seller or supplier. The Contractor warrants clear and good title to all materials, supplies, and equipment installed and incorporated in the Work and agrees upon completion of all work to deliver the premises together with all improvements and appurtenances constructed or placed thereon to the Owner free from any claims, liens, stop notices, security interests, encumbrances, and/or charges in favor of the Contractor, Subcontractors, material and equipment suppliers, or other persons or entities making a claim by reason of having provided labor, materials, and/or equipment relating to the Work. Contractor further agrees that neither the Contractor nor any person, firm, or corporation furnishing any material or labor for any work covered by the Contract shall have any right to a lien upon the premises or any improvement or appurtenance thereon, provided that this shall not preclude the Contractor from installing metering devices or other equipment of utility companies or of public entities, the title of which is commonly retained by the utility company or the public entity.

Failure to keep work free of liens, stop notices, claims, security interests, or encumbrances is grounds to make a claim against Contractor's Payment and Performance Bond to immediately remedy and defend. If a lien or stop notice of any nature should at any time be filed against the Work or any Owner property, by any entity which has supplied material or services at the request of the Contractor, Contractor and Contractor's Surety shall promptly, on demand by Owner and at Contractor's and its surety's own expense, take any and all action necessary to cause any such lien or stop notice to be released or discharged immediately therefrom. If the Contractor fails to furnish to the Owner within ten (10) calendar days after written demand by the Owner, satisfactory evidence that a lien or stop notice has been so released, discharged, or secured, then Owner may discharge such indebtedness and deduct the amount required therefor, together with any and all losses, costs, damages, and attorney's fees and expense incurred or suffered by Owner from any sum payable to Contractor under the Contract. In addition, any liens, stop notices, claims, security interests or encumbrances shall trigger the indemnification requirements under Article 7 of the Agreement and the Contract Documents, and shall act as a trigger under California Civil Code sections 2778 and 2779 requiring reimbursement for any and all costs following from when the Owner's written demand has been made. Any withholdings by the Owner for stop notices in accordance with Civil Code section 9358 shall not be a basis by the Contractor to make a claim for interest penalties under Public Contract Code sections 7107 or 20104.50.

Nothing contained in this Article, 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 right under any law permitting such persons to look to funds due the Contractor in the hands of the Owner. The provisions of this Article shall be inserted in all subcontracts and material contracts, and notices of its provision shall be given to all persons furnishing materials for the Work when no formal contract is entered into for such materials.

## 6-16 PROPERTY RIGHTS IN MATERIALS

Nothing in the Contract shall be construed as vesting in the Contractor any right of property in the materials used after they have been attached or affixed to the Work or the soil, or after payment has been made for materials delivered to the site of the Work, or stored subject to or under the control of the Owner. All such materials shall become the property of the Owner upon being so attached or affixed or upon payment for materials delivered to the site of the Work or stored subject to or under the control of the Owner, but all risk of loss in respect thereto shall remain with the Contractor until the Owner has accepted the materials following the completion of construction/installation and testing thereof. This risk of loss includes insuring the shipment and acting as the principal plaintiff in case of damage incurred during shipment or construction/installation of the equipment.

Although title to materials passes to the Owner upon shipment, as indicated above, the Contractor shall have the charge and care thereof until completion of construction/installation. The Contractor shall bear the expense of any theft or damage whatsoever to the materials during such period, except to the extent caused by the Owner's sole negligence.

Soil, stone, gravel, and other materials found at the site of the Work and which conform to the Plans and Specifications for incorporation into the Work may be used in the Work. No other use shall be made of such materials except as may be otherwise described in the Plans and Specifications.

## 6-17 TITLE TO MATERIALS FOUND ON THE WORK

The title to all water and to the right to use of all water, to all soil, stone, gravel, sand, minerals, and all other materials developed or obtained in the excavation or other operations by the Contractor or any Subcontractor or any of their employees, and the right to use or dispose of the same, are hereby expressly reserved in the Owner and neither the Contractor, nor any Subcontractor, nor any of their employees shall have any right, title, or interest in or to any part thereof; neither shall they, nor any of them, assert or make any claim thereto. The Contractor may be permitted to use in the Work without charge any such materials which meet the requirements of the Specifications, provided the completed lines and grades match those shown in the Contract Documents.

## 6-18 MUTUAL RESPONSIBILITY OF CONTRACTORS

Nothing in the Contract shall be interpreted as granting to the Contractor exclusive occupancy of the site of the Work. The Contractor must ascertain to their own satisfaction the scope of the Project and the nature of any other contracts that have been or may be awarded by the Owner in the construction of the Project, to the end that the Contractor may perform this Contract in the light of such other contracts, if any.

The Contractor shall not cause any unnecessary hindrance or delay to any other contractor working in the vicinity of the Work. If the performance of any contract for the Project is likely to be interfered with by the simultaneous performance of some other contract or contracts, the Owner's Representative 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. On all questions concerning conflicting interest of contractors performing related work, the decision of the Owner's Representative shall be binding upon all contractors concerned and the Owner, the Engineer, the Owner's Representative, and their consultants 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 in the vicinity of the Work or caused by a decision or omission of the Owner's Representative respecting the order of precedence in the performance of the contracts.

If through acts of neglect on the part of the Contractor, any other contractor or any subcontractor shall suffer loss or damage on the Work, the Contractor may agree to settle with such other contractor or subcontractor by agreement or arbitration, if such other contractor or subcontractor will so settle. If such other contractor or subcontractor shall assert any claim against the Owner, the Engineer, the Owner's Representative, or their consultants on account of any damage alleged to have been so sustained, the Owner shall notify the Contractor who shall hold harmless, indemnify, and defend the Owner, the Engineer, the Owner's Representative, and their consultants, and each of their directors, officers, employees, and agents against any such claim, including all attorneys' fees and any other costs incurred by the indemnified parties relative to any such claim as required under Article 7 of the Agreement.

#### 6-19 TERMINATION FOR BREACH

If the Contractor refuses or fails to prosecute all or any part of the Work with such diligence as will ensure its completion within the Contract Time, or any extension thereof, or fails to complete such work within such time, or if the Contractor is adjudged a bankrupt, or makes a general assignment for the benefit of their creditors, or if a receiver is appointed on account of their insolvency, or if they file a petition to take advantage of any debtor's act, or if the Contractor or any of its Subcontractors violate any of the provisions of the Contract, or refuse or fail to supply enough properly skilled workers or proper materials to complete the Work within the Contract Time, as adjusted by any time extensions granted, or fail to provide a schedule and updates or fails or refuses to update schedules required under the Contract, or fall behind on the Project and refuse or fail to undertake a Recovery Schedule or they fail to make prompt payment to subcontractors or for material or labor, or if the Contractor disregards any laws or ordinances, or instructions given by the Owner or Owner's Representative, the Owner may, without prejudice to any other right or remedy, serve written notice upon the Contractor and their Surety of its intention to terminate the Contract. Such notice by the Owner shall set forth the reasons for the intended termination of the Contract, and unless within ten (10) days after the service of such notice such violations shall cease and satisfactory arrangements for the corrections thereof be made, the Contract shall upon the expiration of said ten (10) days cease and terminate. In such case, the Contractor shall not be entitled to receive any further payment until the Work is finished. All costs associated with the termination and completion of the Project shall be the responsibility of the Contractor and/or its Surety.

Upon termination as provided above, the Owner shall immediately give written notice to 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 seven (7) days after receipt of a notice of termination does not notify the Owner in writing of its intention to take over and perform the Contract, or does not commence performance of the Contract within twenty (20) days from the date of serving said notice, the Owner may take over the Work 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 its Surety shall be liable to the Owner for any excess cost or other damage occasioned by the Owner thereby, and in such event the Owner may, without liability for so doing, take possession of and utilize in completing the Work such materials, equipment, tools, appliances, plants, and other property belonging to the Contractor that may be on the site of the Work or on any other property of the Owner and be necessary for the Work. Contractor acknowledges and agrees that if the Owner (in its sole and absolute discretion) decides to takeover completion of the Project, the Contractor agrees to immediately assign all subcontracts to the Owner which the Owner has chosen to accept. For any portion of such work that the Owner elects to complete by furnishing its own employees, materials, tools, and equipment, the Owner shall be compensated for such in accordance with the schedule of compensation for cost-plus work in Section 8-1, entitled PAYMENT FOR CHANGES IN THE WORK.

If the unpaid balance of the Contract Price exceeds the direct and indirect costs of completing the Work, including, but not limited to, all costs to Owner arising from professional services and attorneys' fees (including but not limited to those incurred by Owner in contacting Contractor's Surety

concerning Contractor's breach) and all costs generated to insure or bond the work of substituted contractors or subcontractors utilized to complete the Work, such excess shall be paid to Contractor. If such costs exceed the unpaid balance, Contractor shall pay the difference to Owner promptly upon demand; on failure of Contractor to pay, the Surety shall pay on demand by Owner. Any portion of such difference not paid by Contractor or Surety within thirty (30) days following the mailing of a demand for such costs by Owner shall earn interest at the rate of ten percent (10%) per annum or the maximum rate authorized by California law, whichever is lower.

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

#### 6-20 TERMINATION FOR CONVENIENCE

Owner may terminate the Contract upon fifteen (15) calendar days of written notice to the Contractor and use any reasonable method the Owner deems expedient to complete the Project, including contracting with replacement contractor or contractors, if it is found that reasons beyond the control of either the Owner or Contractor make it impossible or against the Owner's interest to complete the Project. In such a case, the Contractor shall have no claims against the Owner except for: (1) the actual cost for approved labor, materials, and services performed in accordance with the Contract Documents which have not otherwise been previously paid for and which are supported and documented through timesheets, invoices, receipts, or otherwise; and (2) profit and overhead of ten percent (10%) of the approved costs in item (1); and (3) termination cost of five percent (5%) of the approved costs in item (1). Contractor acknowledges and agrees that if the Owner (in its sole and absolute discretion) decides to takeover completion of the Project, the Contractor agrees to immediately assign all subcontracts to the Owner which the Owner has chosen to accept.

In the event that sufficient funds are not appropriated to complete the Project or the Owner determines that sufficient funds are not available to complete the Project, Owner may terminate or suspend the completion of the Project at any time by giving written notice to the Contractor. In the event that the Owner exercises this option, the Owner shall pay for any and all work and materials completed or delivered onto the site for which value is received, and the value of any and all work then in progress and orders actually placed which cannot be canceled up to the date of notice of termination. The value of work and materials paid for shall include a factor of fifteen percent (15%) for the Contractor's overhead and profit and there shall be no other costs or expenses paid to Contractor. All work, materials and orders paid for pursuant to this provision shall become the property of the Owner. Owner may, without cause, order Contractor in writing to suspend, delay, or interrupt the Project in whole or in part for such period of time as Owner may determine. Extensions shall be granted for increases in the time for performance of the Contract caused by suspense, delay, or interruption.

#### 6-21 NOTICE AND SERVICE THEREOF

Any notice required or given under the Contract shall be in writing, be dated, and signed by the party giving such notice or their duly authorized representative, and be served as follows:

If to the Owner, by personal delivery or by deposit in the United States mail.

If to the Contractor, by personal delivery to the Contractor or to their authorized representative at the site of the Project or by deposit in the United States mail.

If to the Surety or any other person, by personal delivery to said Surety or other person or by deposit in the United States mail.

All mailed notices shall be in sealed envelopes, shall be sent by certified mail with postage prepaid, and shall be addressed to the addresses in the Contract Documents or such substitute addresses which a party designates in writing and serves as set forth herein.

Any notice served in accordance with this Section 6-21, shall be deemed received by the addressee seventy-two (72) hours after deposited, postage prepaid, in the United States mail.

#### 6-22 LANDS AND RIGHTS-OF-WAY

The lands and rights-of-way for the facility to be constructed will be provided by the Owner. Except to the extent the Contractor is authorized to use other property of the Owner as provided in Section 5-9 entitled USE OF OWNER'S PROPERTY DURING CONSTRUCTION, the Contractor shall make their own arrangements and pay all expenses for additional area required by them outside the limits of the Owner's lands and rights-of-way.

Work in public rights-of-way shall be done in accordance with the requirements of the permit issued by the public agency in whose right-of-way the Work is located in addition to conforming to the Plans and Specifications. If a permit is not required, the Work shall conform to the standards of the public agency involved in addition to conforming to the Plans and Specifications.

#### 6-23 WAIVER OF RIGHTS

Except as otherwise specifically provided in the Contract Documents, no action or failure to act by the Owner, Engineer, Owner's Representative, or Contractor shall constitute a waiver of any right or duty afforded any of them under the Contract Documents, nor shall any such action or failure to act constitute an approval of or acquiescence in any breach thereunder.

#### 6-24 TAXES

The Contractor shall pay all sales, consumer, use, and other taxes arising out of its operation under the Contract Documents.

#### 6-25 ASSIGNMENTS OF ANTITRUST ACTIONS

In entering into this Contract or any subcontract to supply goods, services, or materials to the Contractor pursuant to this Contract, the Contractor or Subcontractor offers and agrees to assign to the awarding body all rights, title, and interest in and to all causes of action any of them may have under Section 4 of the Clayton Act (15 U.S.C. Section 15) or under the Cartwright Act (Chapter 2 [commencing with Section 16700] of Part 2 of Division 7 of the Business and Professions Code), arising from purchases of goods, services, or materials pursuant to this Contract or any subcontract hereunder. This assignment shall be made and become effective at the time the awarding body tenders final payment to the Contractor, without further acknowledgment by the Parties.

#### 6-26 PAYROLL RECORDS

Pursuant to Labor Code section 1776, the Contractor and each Subcontractor shall keep an accurate payroll record showing the name, address, social security number, work classification, and straight time and overtime hours worked each day and week, and the actual per diem wages paid to each journeyman, apprentice, worker or other employee employed by him or her in connection with the Project.

All payroll records as specified in Labor Code section 1776 of the Contractor and all Subcontractors shall be certified and furnished directly to the Labor Commissioner in accordance with Labor Code section 1771.4(a)(3) on a monthly basis (or more frequently if required by the Owner or the Labor Commissioner) and in a format prescribed by the Labor Commissioner. Payroll records as specified in Labor Code section 1776 shall be certified and submitted to the Owner with each application for payment. All payroll records shall be available for inspection at all reasonable hours at the principal office of the Contractor on the following basis: (1) a certified copy of an employee's payroll record shall be made available for inspection or furnished to the employee or his or her authorized representative on request; (2) a certified copy of all payroll records shall be made available for inspection or furnished upon request to a representative of Owner, the Division of Labor Standards Enforcement or the Division of Apprenticeship Standards of the Department of Industrial Relations (3) a certified copy of all payroll records shall be made available upon request by the public for inspection or for copies thereof. However, a request by the public shall be made through the Owner, the Division of Apprenticeship Standards, or the Division of Labor Standards Enforcement of the Department of Industrial Relations.. If the requested payroll records have not been provided pursuant to (2) above, the requesting party shall, prior to being provided the records, reimburse the costs, according to law for the preparation by the Contractor, Subcontractor(s), and the entity through which the request was made. The public shall not be given access to such records at the principal office of the Contractor.

The certified payroll records shall be on forms provided by the Division of Labor Standards Enforcement or shall contain the same information as the forms provided by the Division of Labor Standards Enforcement. The Contractor or Subcontractor(s) shall file a certified copy of all payroll records with the entity that requested such records within 10 calendar days after receipt of a written request.

Any copy of records made available for inspection as copies and furnished upon request to the public or any public agency by the Owner, the Division of Apprenticeship Standards or the Division of Labor Standards Enforcement shall be marked or obliterated to prevent disclosure of an individual's name, address and social security number. The name and address of the Contractor awarded the Contract or the Subcontractor(s) performing the Contract shall not be marked or obliterated. Any copy of records made available for inspection by, or furnished to, a joint labor-management committee established pursuant to the federal Labor Management Cooperation Act of 1978 (Section 175a of Title 29 of the United States Code) shall be marked or obliterated only to prevent disclosure of an individual's name and social security number. Notwithstanding any other provision of law, agencies that are included in the Joint Enforcement Strike Force on the Underground Economy established pursuant to Section 329 of the Unemployment Insurance Code and other law enforcement agencies investigating violations of law shall, upon request, be provided non-redacted copies of certified payroll records.

The Contractor shall inform the Owner of the location of all payroll records, including the street address, city and county, and shall, within five working days, provide a notice of a change of location and address.

The Contractor or Subcontractor(s) shall have 10 calendar days in which to comply subsequent to receipt of a written notice requesting payroll records. In the event that the Contractor or Subcontractor(s) fails to comply within the 10-day period, the Contractor or Subcontractor(s) shall, as a penalty to the Owner, forfeit One Hundred Dollars (\$100.00) for each calendar day, or portion thereof, for each worker, until strict compliance is effectuated. Upon the request of the Division of Apprenticeship Standards or the Division of Labor Standards Enforcement these penalties shall be withheld from progress payments then due.

In accordance with Section 7104 of the Public Contract Code, where the Contract Specifications require digging trenches or excavating deeper than four (4) feet below the surface, the Contractor shall promptly, and before the following conditions are disturbed, notify the Owner, in writing, of any:

- (a) Material that the Contractor may believe is hazardous waste as defined in Section 25117 of the Health and Safety Code, that is required to be removed to a Class I, Class II, or Class III disposal site in accordance with provisions of existing law;
- (b) Subsurface or latent physical conditions differing from those indicated by information about the site made available to bidders prior to the deadline for submitting bids;
- (c) Unknown physical conditions of any unusual nature, materially different from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Specifications.

Upon receipt of written notice by the Contractor of such conditions, the Owner shall promptly investigate. If the Owner finds such conditions to exist and determines that an increase or decrease in the Contractor's cost of or time required for performance of the Work will result from the change in conditions, the Owner will issue a Change Order.

In the event a dispute arises between the Owner and the Contractor as to whether the conditions materially differ, or involve hazardous waste, or cause decrease or increase in the cost of or time required for performance of any part of the Work, the Contractor shall not be excused from the scheduled completion of the Work, and shall retain any and all rights which he may have pertaining to the resolution of disputes between the Owner and the Contractor, as provided in Section 3-9 entitled DISPUTES AND CLAIMS.

In the event the Contractor encounters or suspects the presence on the job site of material reasonably believed to be asbestos, polychlorinated biphenyl (PCB), or any other material defined as being hazardous by Section 25249.5 of the California Health and Safety Code, which has not been rendered harmless, the Contractor shall immediately stop Work in the area affected and report the condition to the Owner in writing, whether or not such material was generated by the Contractor or the Owner. The Work in the affected area shall not thereafter be resumed, except by written agreement of the Owner and the Contractor, if in fact the material is asbestos, polychlorinated biphenyl (PCB), or other hazardous material, and has not been rendered harmless. The Work in the affected area shall be resumed only in the absence of asbestos, polychlorinated biphenyl (PCB), or other hazardous material, or when it has been rendered harmless by written agreement of the Owner and the Contractor.

In the event that the presence of hazardous materials is suspected or discovered on the site (except in cases where asbestos and other hazardous material Work in the Contractor's responsibility), the Owner shall retain an independent testing laboratory to determine the nature of the material encountered and whether corrective measures or remedial action is required. The Contractor shall not be required to perform without consent any Work in the affected area of the site relating to asbestos, polychlorinated biphenyl (PCB), or other hazardous material, until any known or suspected hazardous material has been removed, or rendered harmless, or determined to be harmless by the Owner, as certified by an independent testing laboratory and approved by the appropriate government agency.

In the event the hazardous materials on the Project site is caused by the Contractor, the Contractor shall pay for all costs of testing and remediation, if any, and shall compensate the Owner for any additional costs incurred as a result of Contractor's generation of hazardous material on the Project

site. In addition, the Contractor shall defend, indemnify and hold harmless the Owner, the Engineer, the Owner's Representative, and their consultants, and each of their directors, officers, employees, and agents from and against any and all claims, damages, losses, costs and expenses, including attorneys' fees, incurred in connection with, arising out of, or relating to, the presence of hazardous material on the Project site.

The terms of this hazardous material provision shall survive the completion of the Work and/or any termination of this Contract.

#### 6-28 CONTRACTOR'S OBLIGATIONS CONCERNING PAYMENT OF WORKERS' COMPENSATION AND UNEMPLOYMENT INSURANCE

The Contractor shall be responsible for complying with the provisions of Division 4 of the Labor Code, relating to securing payment of Workers' Compensation, and of the Unemployment Insurance Code.

#### 6-29 CERTIFICATION OF POSTCONSUMER MATERIAL

To the extent the provisions of Public Contract Code section 22152 may be applicable, Contractor shall certify to Owner the percentage of postconsumer material in the products, materials, goods, or supplies provided to Owner in the prosecution and completion of the Work.

### ARTICLE 7 -- CONTRACTOR'S INSURANCE

#### 7-1 GENERAL

Prior to commencement of the Work, the Contractor shall procure and maintain for the duration of the Work, and thereafter as specified herein, insurance against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the Work hereunder by Contractor, its employees, Subcontractors, agents and representatives. The Contractor shall not commence or continue to perform any work unless the Contractor, at their own expense, has in full force and effect all required insurance. The Contractor shall not permit any Subcontractor to perform work on this Project unless the Workers' Compensation Insurance and other insurance requirements have been complied with by such Subcontractor.

The types of insurance the Contractor shall obtain and maintain are Workers' Compensation (Employer's Liability) Insurance, Commercial General Liability Insurance, Automobile Liability Insurance, and Builders' Risk Insurance. Minimum coverage amounts are set forth in the Special Provisions. Any required insurance shall not contain any exclusion that applies to the type of work performed by the Contractor under the Contract Documents. Contractor shall purchase and maintain insurance as will protect the Owner from claims including:

- Claims for damages because of bodily injury, sickness, disease, or death of any person Owner would require indemnification and coverage for employee claim;
- Claims for damages insured by usual personal injury liability coverage, which are sustained by a person as a result of an offense directly or indirectly related to employment of such person by the Contractor or by another person;
- Claims for damages because of injury or destruction of tangible property, including loss of use resulting therefrom, arising from operations under the Contract Documents;
- Claims for damages because of bodily injury, death of a person, or property damage arising out of the ownership, maintenance, or use of a motor vehicle, all mobile equipment, and vehicles moving under their own power and engaged in the Work;
- Claims involving contractual liability applicable to the Contractor's obligations under the Contract Documents, including liability assumed by and the indemnity and defense

- obligations of the Contractor and the Subcontractors;
- Claims involving Completed Operations, Independent Contractors' coverage, and Broad Form property damage, without any exclusions for collapse, explosion, demolition, underground coverage, and excavating (XCU); and
  - Claims involving sudden or accidental discharge of contaminants or pollutants.

Workers Compensation (Employers Liability) and Commercial General Liability Insurance shall be maintained in effect for the full guarantee period set forth in Section 4-13.

Insurers must be authorized to do business and have an agent for service of process in California and have an "A-" policyholder's rating and a financial rating of at least Class VIII in accordance with the most current Best's Rating, unless otherwise approved by the Owner. If Best's is no longer published, comparable ratings must be provided from a service acceptable to Owner.

As evidence of specified insurance coverage, the Contractor shall provide original certificates of insurance and amendatory endorsements, including any additional insured endorsements, on forms approved by or otherwise acceptable to the Owner. All certificates and endorsements are to be received and approved by Owner before Work commences. However, failure to do so shall not operate as a waiver of these insurance requirements. Owner reserves the right to require complete, certified copies of all required insurance policies, including endorsements affecting the coverage required by the Specifications at any time.

Any deductible or self-insured retention must be declared to and approved by the Owner. At the option of the Owner, either the insurer shall reduce or eliminate such deductibles or self-insured retentions as respects the Owner, the Engineer, the Owner's Representative and each of their consultants, directors, officers, employees, agents and volunteers, or the Contractor shall procure a bond guaranteeing payment of losses and related investigations, claim administration and defense expenses.

Upon demand by the Owner, the Contractor shall deliver all policies of insurance and the receipts for payment of premiums thereon. Should the Contractor neglect to maintain in force insurance required under the Contract Documents, then it shall be lawful for the Owner to obtain and maintain such insurance, and the Contractor hereby appoints the Owner as its true and lawful attorney-in-fact to do all things necessary for this purpose. Should the Owner make such payments on behalf of the Contractor, any monies so paid shall be charged to the Contractor and shall be deducted such from any payments due the Contractor under the Contract Documents.

Contractor hereby agrees to waive subrogation which any insurer of Contractor may acquire from Contractor by virtue of the payment of any loss. Contractor agrees to obtain any endorsement that may be necessary to effectuate this waiver of subrogation.

The Contractor shall require and verify that all Subcontractors maintain insurance meeting all of the requirements stated herein.

## 7-2 WORKERS' COMPENSATION INSURANCE

The Contractor and all Subcontractors shall cover or insure under the applicable laws relating to workers' compensation insurance, all of their employees engaged in Work under this Contract and/or working on or about the area affected by the Work, regardless of whether such coverage or insurance is mandatory or merely elective under the law. Any class of employee or employees not covered by a Subcontractor's insurance shall be covered by the Contractor's insurance. In case any class of employees engaged in Work under this Contract on or at the site of the Project is not protected under the Workers' Compensation laws, the Contractor shall provide or cause a Subcontractor to provide insurance coverage for the protection of those employees not otherwise protected.

Upon execution of the Agreement, the Contractor shall provide a certificate(s) of insurance certifying that they have obtained for the period of the Contract full Workers' Compensation Insurance coverage for all persons employed directly by the Contractor or through Subcontractors in carrying out the Work under the Contract. At the same time, the Contractor shall provide the insurance endorsement(s) on the forms provided as a part of the Contract Documents or as otherwise acceptable to Owner. This insurance shall be in strict accordance with the requirements of the most current and applicable state Workers' Compensation Insurance laws, including, but not limited to California Labor Code section 3700. The Contractor shall defend, protect and save harmless the Owner, the Engineer and the Owner's Representative and each of their directors, officers, employees, agents and volunteers from and against all claims, suits and actions arising from any failure of the Contractor or any Subcontractor to maintain such coverage or insurance.

The Workers' Compensation policy shall be endorsed with a waiver of subrogation in favor of the Owner, the Engineer, and the Owner's Representative, and each of their directors, officers, employees, agents, and volunteers for losses paid under the terms of the insurance policy that arise from all Work performed by the Contractor or its Subcontractors, and each of their employees and agents.

### 7-3 LIABILITY INSURANCE

At the time of execution of this Contract, the Contractor shall file with the Owner original certificates and amendatory endorsements in a form satisfactory to the Owner and evidencing liability insurance as required under these Contract Documents.

The certificates and endorsements shall provide that coverage may not be canceled, reduced, or changed without giving the Owner and its Engineer at least thirty (30) days prior notice thereof in writing, which notice shall be effective only after being actually and physically received by the Owner and its Engineer. Notwithstanding the foregoing, Owner's initial receipt or "acceptance" of certificates of insurance, or of policies of insurance, shall not obligate the Owner to review such certificates or policies for compliance with the Owner's insurance requirements in this Article. Any failure of any Contractor-provided insurance to at least match the insurance requirements of this Article, whether such failure is discovered before or after issuance of the Notice to Proceed, shall not be the basis on any legal theory whatsoever for any lessening whatsoever of Contractor's financial responsibilities under this Contract for risks described in this Article.

Nothing contained in the insurance requirements shall be construed as limiting the extent of the Contractor's responsibility for payment of greater damages resulting from the Contractor's operations under this Contract, including, but not limited to, Contractor's indemnity obligations under the Contract.

The Liability Insurance coverage shall include each of the following types of insurance:

- A. Commercial General Liability, including premises/operations, products/completed operations, owners and contractors protective liability, contractual liability, explosion, collapse, underground excavation, and removal of lateral support. Coverage provided shall be at least as broad as that provided under the Insurance Services Office (ISO) Commercial General Liability - Occurrence Form CG 0001. The coverage shall also provide "cross liability" or "severability of interest" coverage for all insured under the policy or policies. The coverage shall contain no special limitations on the scope of protection afforded the additional insured.

B. Automobile Liability, with coverage at least as broad as ISO Form Number CA 0001(ed. 1/87) covering Automobile Liability, Code 1 (any auto) and must include the following coverages:

- (1) Comprehensive Form Including Loading and Unloading.
- (2) Owned.
- (3) Hired.
- (4) Non-Owned.

These policies of insurance shall also contain, or be endorsed to contain provisions: (a) covering as additional insureds the Owner, the Engineer, the Owner's Representative, and their respective consultants, directors, officers, employees, agents, and volunteers ("insured entities"); with respect to liability arising out of automobiles owned, leased, hired, or borrowed by or on behalf of Contractor, and with respect to liability arising out of work or operations performed by or on behalf of the Contractor including materials, parts, or equipment furnished in connection with such work or operations; (b) for any claims related to the Work, the Contractor's insurance coverage shall be primary insurance as respects the insured entities, and any insurance or self-insurance maintained by the insured entities shall be excess of Contractor's insurance and shall not contribute with it; and (c) that any failure of the Contractor or any Subcontractor to comply with reporting or other provisions of the policies including breaches of warranties shall not affect coverage provided to the insured entities. If the insured entities have other insurance which might be applicable to any loss, the amount of the insurance provided under this Article shall not be reduced or prorated by the existence of such other insurance.

Included in such insurance shall be (blanket) contractual coverage sufficiently broad to insure defense and indemnity obligations set forth in Article 7 of the Agreement.

#### 7-4 BUILDER'S RISK (COURSE OF CONSTRUCTION) INSURANCE

If listed in the coverage amounts included in the Special Provisions, the Contractor shall provide and maintain Builder's Risk Insurance covering all risks of direct physical loss, damage, or destruction to the Work, or loss, damages, or destruction to the Owner's existing property or facilities, in the minimum amount of the dollar value of the Work contemplated under the Contract Documents and listed in the Special Provisions, subject to adjustment by Change Order duly issued by the Owner, to insure against such losses until final acceptance of the Work by the Owner. Coverage must include, by the basic grant of coverage or by endorsement, the perils of vandalism, malicious mischief (both without any limitation regarding vacancy or occupancy), fire, sprinkler leakage, civil authority, sonic boom, explosion, earthquake, flood, collapse, underground excavation and removal of lateral support, wind, lightning, smoke and riot. The Owner shall be named as loss payee. The making of progress payments to the Contractor shall not in any way be construed as creating an insurable interest by or for the Owner or be construed as relieving the Contractor or its Subcontractors of responsibility for loss from any direct physical loss, damage or destruction occurring prior to the final acceptance of the Work by the Owner.

The insurer shall waive all rights of subrogation against the Owner. The Contractor shall provide the Owner with a certificate of insurance for Builder's Risk Insurance coverage and evidence of waiver of rights of subrogation against the Owner.

The risk of the damage to the Work due to the perils covered by the Builder's Risk "all risk" insurance, as well as any other hazard which might result in damage to the Work, is that of the Contractor and its sureties, and no claims for such loss or damage shall be recognized by the Owner, nor will such loss or damage excuse the complete and satisfactory performance of the Contract by the Contractor.

Nothing contained in these insurance requirements is to be construed as limiting the liability of the Contractor or the Contractor's sureties, including but not limited to the Contractor's indemnity obligations herein and in the Agreement.

## ARTICLE 8 -- ESTIMATES AND PAYMENTS

### 8-1 PAYMENT FOR CHANGES IN THE WORK

Changes in, additions to, or deductions from the Work, including increases or decreases in the quantity of any item or portion of the Work, shall be set forth in a written Change Order executed by the Owner which shall specify:

The changes, additions, and deductions to be made.

The increase or decrease in compensation due the Contractor, if any.

Adjustment in the Contract Time, if any.

Adjustment in the compensation due Contractor shall be determined by one or more of the following methods in the order of precedence listed below:

- 1) Unit prices contained in the Contract.
- 2) Mutually agreeable lump-sum or unit prices. The Contractor shall furnish an itemized breakdown of the quantities and prices used in computing proposed lump-sum and unit prices.
- 3) Where an adjustment in compensation due the Contractor has not been determined, but a written Change Notice or Work Directive has been issued by the Owner, the Contractor shall promptly proceed with the work involved. In such case, the Contractor shall be compensated for furnishing labor, materials, tools, and equipment on a cost-plus basis, as follows:
  - a) Labor will be the cost for wages prevailing locally for each craft or type of workers at the time the extra work is done, plus employer payments of payroll taxes and workers compensation insurance (exclude insurance costs as part of the overhead and profit mark-up), health and welfare, pension, vacation, apprenticeship funds, and other direct costs resulting from Federal, State, or local laws, as well as assessments or benefits required by lawful collective bargaining agreements. In no case shall the total labor costs exceed the applicable prevailing wage rate for that particular classification. The use of a labor classification which would increase the extra work cost will not be permitted unless the Contractor establishes the necessity for such additional costs. Labor costs for equipment operators and helpers shall be reported only when such costs are not included in the invoice for equipment rental.
  - b) Materials shall be at invoice or lowest current price at which such materials are locally available and delivered to the site in the quantities involved, plus sales tax, freight, and delivery. The Owner reserves the right to approve materials and sources of supply or to supply materials to the

Contractor if necessary for the progress of the Work. No markup shall be applied to any material provided by the Owner.

c) Tool and Equipment Rental. No payment will be made for the use of tools which have a replacement value of \$500 or less. Regardless of ownership, the rates to be used in determining equipment rental costs shall not exceed listed rates prevailing locally at equipment rental agencies or distributors at the time the work is performed. Rates applied shall be appropriate based on actual equipment need and usage. Monthly, weekly or other extended use rates that results in the lowest cost shall be applied if equipment is used on site for extended periods. The rental rates paid shall include the cost of fuel, oil, lubrication, supplies, small tools, necessary attachments, repairs and maintenance of any kind, depreciation, storage, insurance, and all incidentals. Necessary loading and transportation costs for equipment used on the extra work shall be included. If equipment is used intermittently and, when not in use, could be returned to its rental source at less expense to the Owner than holding it at the Project site, it shall be returned unless the Contractor elects to keep it at the Project site at no expense to the Owner. All equipment shall be acceptable to the Owner and Owner's Representative, in good working condition, and suitable for the purpose for which it is to be used. Manufacturer's ratings and modifications shall be used to classify equipment, and equipment shall be powered by a unit of at least the minimum rating recommended by the manufacturer. If tool and equipment charges are part of a Dispute or Claim, the Owner reserves the right to utilize actual costs for tools and equipment or a depreciation rate for equipment based on any audit finding and deduct any rental charges that exceed actual or depreciated costs.

d) Subcontractor invoices for material, equipment rental, and other expenditures shall be submitted with the COR. If the request for payment is not substantiated by invoices or other documentation, the Owner may establish the cost of the item involved at the lowest price which was current at the time of the Daily Report.

e) Overhead, including direct and indirect costs, shall be submitted with the Change Order Proposal and include: field overhead, home office overhead, off-site supervision, Change Order preparation/ negotiation/ research, time delays, Project interference and disruption, additional guaranty and warranty durations, on-site supervision, additional temporary protection, additional temporary utilities, additional material handling costs, liability and property damage insurance, and additional safety equipment costs.

f) The following format shall be used. All costs submitted shall be actual costs and labor shall be unburdened labor.

	EXTRA	CREDIT
(a) Material (attach itemized quantity and unit cost plus sales tax)		
(b) Labor Not to Exceed Applicable Prevailing Wage Rates (attach itemized hours and rates)		

		<u>EXTRA</u>	<u>CREDIT</u>
(c)	Equipment (attach invoices)		
(d)	Subtotal		
(e)	If Subcontractor performed work, add Subcontractor's overhead and profit to portions performed by Subcontractor, not to exceed 10% of item (d).		
(f)	Subtotal		
(g)	Contractor's Overhead and Profit: Not to exceed 10% of Item (d) if Contractor performed the work. No more than 5% of Item (d) if Subcontractor performed the work. If work was performed by Contractor and Subcontractors, portions performed by Contractor shall not exceed 10% of Item (d), and portions performed by Subcontractor shall not exceed 10% of Item (d).		
(h)	Subtotal		
(i)	Bond not to exceed one percent (1%) of Item (h)		
(k)	TOTAL		
(l)	Extra Days		

No payment shall be made for any item not set forth above.

Unless otherwise mutually agreed upon by the parties, all deductive Change Orders, Change Notices, Change Proposals or Change Order Requests must be prepared utilizing line items (a) – (d) only in the format in paragraph f) above, setting forth the actual costs incurred. Contractor will be allowed a maximum of 5% total profit and overhead.

For cost-plus work, the Contractor shall submit to the Owner's Representative for verification daily work sheets showing an itemized breakdown of labor, materials, tools, and equipment used in performing the Work, including the name and number of each worker employed thereon, the number of hours employed thereon, the character of work each worker is doing, and the wages paid or to be paid each worker. In the case of tool and equipment rentals, the Contractor shall be compensated at the rate applicable to that type or article of tool or equipment reasonably necessary to perform the Work contemplated by the Change Order, as determined by and in the sole discretion of the Owner's Representative. Receipt of the Contractor's daily work sheets by the Owner's Representative shall not be deemed an admission of the Contractor's right to be compensated for the labor, materials, tools and equipment set forth therein, but is merely an acknowledgment that the workers, materials,

tools and equipment specified in the report were in fact employed or used in the prosecution of the Work by the Contractor on the date indicated in the report.

If requested by the Owner, the Contractor shall produce any books, vouchers, memoranda, or other records which will enable the Owner to determine the true, necessary cost of work and materials to be paid for. In no case of cost-plus work ordered by Owner shall additional payment be made to the Contractor due to overtime or holiday wages paid by them in connection with such cost-plus work unless specifically ordered and agreed to in writing by the Owner, and then only to the extent extra payment is regularly being made up by the Contractor for overtime or holiday work of a similar nature in the same locality. No payment will be made for work not verified by the Owner's Representative.

It is expressly understood that the value of such extra work or changes, as determined by any of the aforementioned methods, expressly includes any and all of the Contractor's costs and expenses, both direct and indirect, resulting from additional time required on the Project or resulting from delay to the Project. Any costs, expenses, damages or time extensions not included are deemed waived.

Any disputes regarding payment for changes in the Work or for extra work, or regarding extensions of time, shall proceed in accordance with the procedures set forth in Section 3-9 entitled DISPUTES AND CLAIMS.

#### 8-2 NO PAYMENT FOR TEMPORARY WORK

No direct payment will be made to the Contractor for providing transportation, light, power, tools, and equipment or for furnishing, building, and maintaining camps, construction plant, access roads, sanitary conveniences, disposal work, water supply, fire protection, guards, trestles, telephone system, and other temporary works, or for the removal of all temporary structures, plant and materials, or for medical attendance or health protection, or for watchmen, magazine keepers or guards, or for any other service, thing, or material, unless payment therefor has been provided in the Contract Documents or expressly authorized by the Owner. Compensation for all such services, facilities, things or materials necessary or required to execute the Work in accordance with the provisions of the Contract shall be considered as having been included in the prices stipulated for the appropriate items on the submitted Bid Schedule.

#### 8-3 PROGRESS PAYMENTS

The Contractor shall, on or before the tenth (10th) day of each calendar month after actual construction work is started, submit to the Owner's Representative a written estimate of the value of the work completed by the Contractor and of materials delivered on the ground at the site of the Work or stored subject to or under the control of the Owner prior to the first of the month in which the estimate is made. In reviewing such payment requests, the Owner's Representative may take into consideration, along with other facts and conditions deemed by them to be proper, the ratio of the difficulty or cost of the work done to the probable difficulty or cost of the work remaining to be done. In each request for payment, the Contractor warrants that title to all Work covered by each request for payment shall pass to the Owner pursuant to the Contract Documents. The Contractor further warrants that all Work covered by the previous request for payment is free and clear of liens, claims, security interests, or any other encumbrances.

Each request for payment shall include the following:

- 1) The amount paid to the date of the payment application to the Contractor, to all its Subcontractors, and all others furnishing labor, material, or equipment under the Contract;
- 2) The amount being requested under the payment application by the Contractor on its own behalf and separately stating the amount requested on behalf of each of the

- Subcontractors and all others furnishing labor, material, and equipment under the Contract;
- 3) The balance that will be due to each of such entities after said payment is made;
  - 4) A certification that the As-Built Drawings are updated and current;
  - 5) Itemized breakdown of Work done for the purpose of requesting partial payment;
  - 6) An updated or approved Baseline Schedule or other schedule updates in conformance with Article 5;
  - 7) An updated approved schedule for the month or any previous month;
  - 8) The additions to and subtractions from the Contract Price and Contract Time;
  - 9) A summary of the retention held;
  - 10) Material invoices, evidence of equipment purchases, rentals, and other support and details of cost as the Owner may require from time to time;
  - 11) The percentage of completion of the Contractor's Work by line item;
  - 12) An updated schedule of values from the preceding application for payment;
  - 13) A certification by Contractor that the Work has been performed in accordance with the provisions of the Contract Documents;
  - 14) Duly completed and executed forms of Conditional Waiver and Release in accordance with California Civil Code section 8132 for all claimants eligible to file stop notices in connection with the Work covering the payment requested;
  - 15) Duly completed and executed forms of Unconditional Waiver and Release in accordance with California Civil Code section 8134 for all claimants eligible to file stop notices in connection with the Work covering the payment received by Contractor for the previous payment request; and
  - 16) Any other information or documents reasonably requested by the Owner, Owner's Representative, or Engineer.

The Owner shall retain five percent (5%) of such estimated value as part security for the fulfillment of the Contract by the Contractor and , if the Owner is satisfied that the Contractor is making satisfactory progress toward completion of the Work, shall within thirty (30) days of the date which the estimate is received pay to the Contractor the balance of such estimated value after deducting therefrom all previous payments and all sums to be kept or retained under the terms of the Contract. All amounts so retained are withheld subject to the provisions of Public Contract Code section 7107.

The payment request shall be reviewed by the Owner as soon as practicable after receipt for the purpose of determining that the payment request is proper. Any payment request determined not to be proper shall be returned to the Contractor not later than seven (7) days after receipt by the Owner's Representative. Such returned requests shall be accompanied by a written explanation of the reasons why the payment request is not proper.

In the event a payment request is rejected, all or in part, beyond the seven-day period after receipt, the number of days available to the Owner to make payment without incurring interest shall be reduced by the number of days by which the Owner exceeds the seven-day return requirement set forth above.

#### 8-4 FINAL ESTIMATE AND PAYMENT

The Contractor shall, upon completion of the Work and final clean up, submit to the Owner a sworn affidavit of final completion, signed by the Contractor, that to the best of signatory's knowledge and belief, the Work has been completed in accordance with the Contract Documents, that no lawful debts for labor or materials are outstanding, that all request for fund for undisputed Work under the Contract Documents, including changes in the Work, and under all billings of whatever nature are accurate, complete, and final, and that no additional compensation over and above the final payment will be requested or is due under the Contract Documents or under any adjustment thereunder for said undisputed Work, and that upon receipt of final payment the Contractor will release the Owner

from all claims or liability for additional sums on account of undisputed Work. The Owner will inspect the Work and will either reject the request or accept the Work as evidenced by the recordation of a notice of completion.

Neither final payment nor any final release of retention shall become due to Contractor until thirty-five (35) days following completion of all punch list Work by the Contractor, final acceptance by the Owner, the Owner's recordation of a notice of completion, any final certificates required by appropriate governmental agencies, and the Contractor's submission of the following to the Owner:

- 1) Duly completed and executed forms of Conditional Waiver and Release in accordance with California Civil Code section 8136 for all claimants eligible to file stop notices in connection with the Work covering the payment requested;
- 2) Duly completed and executed forms of Unconditional Waiver and Release in accordance with California Civil Code section 8138 for all claimants eligible to file stop notices in connection with the Work covering the payment received by Contractor for the previous payment request;
- 3) An affidavit that all payrolls, bills for materials and equipment and other indebtedness connected with the Work for which the Owner might in any way be responsible, have been paid or otherwise satisfied;
- 4) Consent of surety to final payment;
- 5) Documentation establishing payment or satisfaction of all obligations, such as receipts and releases and waivers from all persons legally eligible to file stop notices in connection with the Work;
- 6) Submission of As-Built Drawings;
- 7) Submission of warranties, operations and maintenance manuals, and other submittals as may be required by the Owner;
- 8) Removal of temporary facilities and services; and
- 9) Such other documentation as the Owner may reasonably require.

When the Work has been completed and the Contractor has submitted the documentation required herein, the Owner's Representative will make a final estimate of the total amount of work done thereunder and the amount to be paid therefor under the terms of the Contract Documents. If the Owner finds the Work has been completed according to the Contract Documents, it shall accept the Work, file a notice of completion, and pay the entire sum so found to be due after deducting therefrom all previous payments and all amounts to be retained under the provisions of the Contract Documents, including any right of offset the Owner may have against the Contractor under the terms of this or any other contract between the Owner and the Contractor. All prior progress estimates and payments shall be subject to correction in the final estimate and payment. The final payment, including all amounts retained from any progress payments, shall not be due and payable until the expiration of thirty-five (35) days from the date of filing a notice of completion of the Work by the Owner.

In the event of a dispute between the Owner and the Contractor over the amount due, the Owner may withhold from the final payment an amount not to exceed one hundred fifty percent (150%) of the disputed amount and/or up to 150% of the reasonable cost for incomplete or deficient Work or punch list items as determined by the Owner and Engineer.

It is mutually agreed between the Parties to the Contract that no certificate given or payment made under the Contract shall be conclusive evidence of performance of the Contract and no payment shall be construed to be an acceptance of any defective work, nonconforming work, or improper materials.

The Contractor further agrees that the payment of the final amount due under the Contract shall release the Owner, the Engineer, the Owner's Representative, and their consultants, and each of



Any other amounts owing by Contractor to Owner pursuant to applicable law or the Contract Documents.

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

## 8-6 COST STATEMENT

The Contractor shall furnish the Owner promptly, upon completion of the Work, all information necessary to determine the cost of the Work, including an itemized statement in a form satisfactory to the Owner of the actual cost of all labor, materials, rentals, repairs, compensation and other insurance, transportation of labor, equipment and materials, engineering or other special services, supervision, overhead, depreciation, and taxes properly chargeable against the Work, and any and all costs entering into the work performed. The Contractor shall permit the Owner to have access to original payrolls, vouchers, and other records to the extent required to verify the figures given in said statement, and the Contractor shall not be entitled to receive payment on account of the final estimate as hereinabove provided, unless and until the Contractor furnishes the Owner a satisfactory statement of the cost of the entire Work.

## ARTICLE 9 -- MISCELLANEOUS PROVISIONS

The Contract Documents shall be binding upon and inure to the benefit of Owner and Contractor and their successors and assigns.

This Contract, nor any part thereof, shall not be assigned, hypothecated, sold, alienated, or transferred by the Contractor or by operation of law or otherwise, and will not be recognized or create any liability of the Owner thereby, with the sole exception and unless the prior formal approval of the Owner has been obtained thereto and the surety has consented thereto in writing filed with the Owner.

The Contractor shall employ, insofar as possible, such methods and means in the performance of the Work as will cause the minimum of interruption to public utilities, or interference with the work of the Owner or any other contractor, or the activities of others whose property may be used by the Contractor.

Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights, and remedies otherwise imposed or available by law.

No action or failure to act by the Owner, its Engineer, or the Owner's Representative shall constitute a waiver of a right or duty afforded them under the Contract Documents, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed in writing.

## **SPECIAL PROVISIONS**

### **SP-01            CONTRACT DOCUMENTS**

The following list describes the order of precedence of certain Contract Documents. In cases where conflicts occur between Contract Documents, the document with the highest precedence shall govern (Number 1 has the highest precedence) and the more stringent, higher quality, and greater quantity of Work shall apply.

1. Permit conditions issued by regulatory agencies with jurisdiction over aspects of the Work.
2. Modifications issued after the execution of the Contract.
3. Agreement.
4. Addenda issued prior to execution of the Contract.
5. Special Provisions.
6. Plans and Technical Provisions.
7. General Provisions.
8. Standard Specifications for Public Works Construction (“Greenbook”) – 2009 Edition.

### **SP-02            PROJECT TIMELINE**

Bids due:	9/22/22
Project Award:	10/13/22
Executed Contract:	10/27/22
Bridge Procurement:	10/31/22 – 5/1/23
Notice to Proceed:	5/1/23
Construction Start:	5/1/23 – 9/15/23

Due to the anticipation of river runoff running through the canal from December 2022 through April 2023, actual work in the canal cannot commence until May 2023.

### **SP-03            INSURANCE COVERAGE AMOUNTS**

Contractor shall maintain insurance in accordance with General Provisions Article 7 in limits no less than:

1. General Liability: (including operations, products and completed operations): \$2,000,000 per occurrence for bodily injury, personal injury and property damage. If Commercial General Liability Insurance or other form with a general aggregate limit is used, either the general aggregate limit shall apply separately to this Work/location or the general aggregate limit shall be twice the required occurrence limit.
2. Automobile Liability: \$1,000,000 per accident for bodily injury and property damage.
3. Workers’ Compensation: As required by the State of California, but not less than \$1,000,000.
4. Employer’s Liability: \$1,000,000 per accident for bodily injury or disease.

5. When required herein and in accordance with General Provisions Section 7-4, Builder's Risk Insurance: Completed value of the Project with no coinsurance provisions.

**SP-04 TIME FOR COMPLETION AND FORFEITURE DUE TO DELAY**

See Agreement.

**SP-05 PERIOD WHICH BIDS REMAIN VALID**

In accordance with Section N-9 of the Notice Inviting Bids, submitted proposals will be considered valid and secured for sixty (60) beyond the closing date for receipt of bids.

**SP-06 MEETINGS**

The Engineer shall arrange a pre-construction meeting prior to the start of the Work. The Contractor, major Subcontractors and major equipment and/ or material suppliers shall attend. The purpose of this meeting is to discuss the Work from an overall Project viewpoint including, but not limited to administrative requirements, scheduling and sequencing of activities, Work specific hazards and safety concerns, inspection needs and Work site limitations.

During construction, weekly Project meetings shall be called by the Engineer. The Contractor and any Subcontractor and material or equipment supplier whose presence is either necessary or requested by the Engineer shall attend.

**SP-07 WORKING HOURS**

Normal working hours are limited to 7:00 AM to 5:00 PM Monday through Friday, excluding the Owner's legal holidays. Deviation from these hours will not be permitted without the prior written consent of the Owner. Nothing in this Section shall relieve the Contractor of the legal obligations regarding Hours of Labor under General Provisions Section 6-11 or of contractual obligations regarding Observation of Work under General Provisions Section 4-11.

**SP-08 ADDITIONAL SAFETY REQUIREMENTS**

In addition to safety requirements described throughout Article 6 of the General Provisions, the Contractor shall implement an effective safety program covering all aspects of the Work. The program shall at a minimum include; all Cal-OSHA requirements and procedures including but not limited to those for: confined space entry, hot work, fall hazard, electrical hazard, excavation and trenching, lock-out/ tag-out, chemical and carcinogen hazard, documentation and training.

The Contractor shall provide an experienced and competent Safety Officer (Safety Engineer) and shall provide the same sufficient line authority to effectively conduct the safety program.

**SP-09 NOISE ABATEMENT**

The Contractor shall comply with all local sound control and noise level rules, regulations and ordinances, which apply to any Work performed pursuant to the Contract, and in no case shall noise levels exceed 95 dBa at a distance of fifty (50) feet.

**SP-10 FUGITIVE DUST ABATEMENT**

The Contractor at a minimum shall comply with Ventura County Air Pollution Control District's most current rules regarding fugitive dust emissions. The Contractor shall furnish all labor, equipment and means required to prevent dust arising from the Work from damaging property, including agricultural crops, or causing nuisance.

**SP-11 [RESERVED]**

**SP-12 DEWATERING**

Should dewatering of tanks, reservoirs, canals, pipelines or excavations be necessary, the Contractor shall prepare and implement a dewatering plan, and shall acquire all necessary permits for the treatment and disposal of waters. The dewatering plan shall address all permit requirements as well as the proposed methods for avoiding erosion. The Contractor may not begin dewatering efforts until after Owner has reviewed the dewatering plan.

Many of the Owners existing valves, gates and other water control structures can leak when fully closed. Nuisance water from such features is expected to be encountered. The Contractor shall supply labor, equipment and materials to remove any nuisance water from the Work.

**SP-13 WATER SUPPLY**

Construction Water, non-potable river surface water, is available approximately a quarter of a mile from the work at the Owner's desilting basin. The Contractor shall supply all pumping equipment and labor for extracting construction water supplies.

Potable Water is available from a hydrant approximately 3 miles from the site at the Owner's El Rio pumping plant located at 3561 N. Rose Ave, Oxnard.

**SP-14 POWER AVAILABILITY**

Power for construction shall be arranged and supplied by the Contractor.

**SP-15 SANITATION**

All parts of the Work shall be maintained in a neat, clean and sanitary condition. The Contractor shall provide fixed portable toilets, made inaccessible to flies, for workers' use. Use of toilet(s) shall be strictly enforced.

All waste and refuse from any source related to the Contractor's operation shall be removed and disposed of in a sanitary manner, satisfactory to the Owner and in accordance with all applicable laws and regulations.

**SP-16 CONSTRUCTION SURVEYS**

The Contractor shall be responsible for providing all construction surveying and staking. Construction surveys shall be performed under the direction of a licensed land surveyor or civil engineer authorized by the State of California to provide such services. The Contractor shall protect in-place all survey monuments within the Work site and shall replace any monuments otherwise disturbed or removed.

**SP-17 CONTRACT DRAWINGS (PLANS)**

The Drawings (Plans) depict the location and nature of the Work as well as existing, proposed and appurtenant Works and are herein made a part of the Specifications. When deemed necessary by the Engineer, supplemental drawings will be furnished to the Contractor in accordance with General Provisions Section 4-2. Copies of the Drawings and Contract Documents shall be furnished to the Contractor in accordance with General Provisions Section 3-6.

**SP-18 SUBMITTALS (SHOP DRAWINGS)**

The Contractor shall submit detailed information of appropriate selectable component of the Work in accordance with General Provisions Section 4-8.

The Contractor shall submit a detailed Baseline Schedule in accordance with General Provisions Section 5-2 prior to the Owner's issuance of a Notice to Proceed.

**SP-19 BID DESCRIPTION**

The individual unit prices and/or lump-sum prices to be paid for Work items listed on the Bid Schedule (Proposal) shall each include full compensation for furnishing all labor, materials, tools, equipment, temporary structures, transportation, coordination, administration, and any function not included herein, to complete each item of Work so as to provide the Owner with a functioning finished product. No other cost or mark-ups shall be allowed.

All items of Work shown on the Drawings or included in the Contract Documents must be included in a bid item. If a bidder is unsure of which bid item a specific cost should be included, it shall either be brought to the Owner's attention in accordance with Instructions to Bidders Section I-10, or shall be included in the item judged by the bidder to be most appropriate. The awarded Contract shall contain dollar sums inclusive of all items of Work within the most appropriate bid item.

BID SCHEDULE

Item No.	Description	Cost Basis	Bid Includes
1.	Mobilization/ Demobilization/ Cleanup	L.S.	Bonding, insurance, financing, permits and compliance, moving to the site, security, safety, sanitation, and storage. Moving off site, cleanup, disposal, removal of equipment, Record Drawings and incidentals.
2.	Demolition	L.S.	Equipment, labor, disposal fees required to prepare the area detailed in the plans for the proposed Con/Span Bridge, structures and equipment. This includes the existing 60-inch reinforced concrete culvert pipes, concrete headwalls, grouted rip rap, conduit, concrete pads, asphalt, equipment and any other appurtenance that will prevent the work to be accomplished.
3.	Earthwork	L.S.	Equipment, labor and material required to install the <b>Con/Span Bridge</b> as shown on the plans. This shall include any and all excavation, bedding, compaction, joint treatment and any other task required to install functioning reinforced concrete boxes.
4.	Con/Span Installation	L.S.	Equipment, labor and material required for the installation of the Con/Span Bridge including all of the footings, bedding, compaction, forms, rebar, cranes, straps, ties and any other appurtenance needed to complete the work.
5.	Concrete Apron & Slab	L.S.	Equipment, labor and material to install the concrete apron and slab beneath the Con/Span bridge as shown on the plans.
6.	Paved Road/Asphalt Work	L.S.	Equipment, labor and material to install a asphalt road that completes the travel way across the new Con/Span Bridge and connecting with the road on either side of the

			proposed bridge as shown on the plans.
7.	Rip Rap/Rock Slope Protection	L.S.	Material, equipment and labor required to place the rip rap as shown on the plans. This shall include any excavation, fill, compaction, concrete and any other appurtenance required to complete the work.
8.	Site Restoration	L.S.	Equipment, labor and material required to return the site the pre-construction condition, including slope work, fencing, roadwork, pads or any other appurtenance as required by the plans.

## SECTION 01000 MOBILIZATION/DEMobilIZATION AND CLEANUP

### PART 1 - GENERAL

#### A. Description

This section describes mobilization, including the following:

1. Organization and mobilization of Contractor's forces and equipment.
2. Transporting construction plant and equipment to the site and setting up of it.
3. Transporting various tools, materials, and equipment to the site.
4. Erection of temporary buildings and facilities required for construction operations.
5. Removal of all equipment, temporary facilities and appurtenances required during construction operations from site.
6. Disposal of all excess construction materials and trash.

### PART 2 - MATERIALS

- A. Temporary facilities and other mobilization items are specified in the General and Special Provisions sections of the contract documents.
- B. Mobilization shall also include bonding, insurance, financing, permits, security, storage areas, temporary utilities, sanitation facilities and general surveying.

### PART 3 - EXECUTION

- A. Mobilization shall include mobilization of all construction equipment, materials, supplies, appurtenances, and the like, manned and ready for commencing and prosecuting the work; and the subsequent demobilization and removal from the site of said equipment, appurtenances, and the like upon completion of the work.
- B. Mobilization shall also include assembly and delivery to the site of plant, equipment, materials, and supplies necessary for the prosecution of work, but which are not intended to be incorporated in the work; the clearing of and preparation of the Contractor's work area; the complete assembly, in working order, of equipment necessary to perform the required work; personnel services preparatory to commencing actual work; and all other preparatory work required

to permit commencement of the actual work on construction items for which payment is provided under the Contract.

- C. Upon completion and before making application for acceptance of the work, the Contractor shall clean all rights-of-way, streets, borrow pits, and all other grounds occupied by him in connection with the work of all rubbish, excess materials, temporary structures, and equipment, and all parts of the work and grounds occupied by him shall be left in a neat and presentable condition. In the event the Contractor fails to clean up as specified herein, clean up may be performed by the Owner at the Contractor's expense.

#### PART 4 - PAYMENT

Payment of the work in this section shall be included as part of the lump sum bid amount stated in the Proposal for items of work to which it is appurtenant thereto.

END OF SECTION

## SECTION 01045 EXISTING FACILITIES

### PART 1 - GENERAL

#### A. Description

This section includes requirements for connection to and abandonment of existing water facilities.

#### B. Related Work

Section 01563	Diversion and Control of Water
Section 02050	Removal of Existing Facilities
Section 02223	Trenching, Backfilling and Compacting

#### C. Condition of Existing Facilities

The Owner does not warranty the condition of existing facilities.

#### D. Location

The Contractor shall be responsible for determining in advance the location and elevation of all existing pipelines to which connections are to be made.

### PART 2 - MATERIALS

#### A. Connection to Existing Water Lines

1. All connections shall be made by the Contractor unless otherwise shown on the plans or specified herein.
2. The Contractor shall give the Owner a minimum of twenty-one (21) calendar days notice before the time of any proposed shutdown of existing mains or services as noted in the Special Provisions.
3. Connections shall be made only in the presence of the Owner's Representative and no connection work shall proceed until the Owner's Representative has given notice to proceed.
4. The Contractor shall furnish all pipe and materials including furnishing all labor and equipment necessary to make the connections, all required excavation, backfill, pavement replacement, lights, and barricades, and he may be required to include a water truck, highline hose, and fittings as part of this equipment for making the connections. In addition, he shall assist the Owner in alleviating any hardship incurred during the shutdown for

connections. Standby equipment or materials may be required by the Owner's Representative.

5. Where connections are made to existing valves, the Contractor shall furnish and install all temporary blocking, steel clamps, shackles, and anchors as required by the Owner's Representative, and he shall replace the gate well and cover and adjust the valve cover to the proper grade.
6. The Owner will operate all existing valves.
7. The Contractor will dewater existing main, as required, in the presence of the Owner's Representative.
8. The Owner's Representative may postpone or reschedule any shutdown operation if for any reason he feels that the Contractor is improperly prepared with competent personnel, equipment, or materials to proceed with the connection work.
9. If progress is inadequate during the connection operations to complete the connection in the time specified, the Owner's Representative shall order necessary corrective measures. All costs for corrective measures shall be paid by the Contractor.
10. Connections shall be made with as little change as possible in the grade of the new main. If the grade of the existing pipe is below that of the new pipeline, a sufficient length of the new line shall be deepened so as to prevent the creation of any high spot or abrupt changes in grade of the new line. Where the grade of the existing pipe is above that of the new pipeline, the new line shall be laid at specified depth, except for the first joint adjacent to the connection, which shall be deflected as necessary to meet the grade of the existing pipe. If sufficient change in direction cannot be obtained by the limited deflection of the first joint, a fitting of the proper angle shall be installed. Where the connection creates a high or low spot in the line, a standard air release or blowoff assembly shall be installed as directed by the Owner's Representative.
11. The new pipeline shall NOT be connected to an existing facility until the new pipeline has successfully passed all pressure and disinfection tests.

B. Removal from Service of Existing Mains and Appurtenances

1. Existing mains and appurtenances shall be removed from service at the locations shown on the plans or as directed by the Owner's Representative.
2. Pipe taken out of service may be removed to the most downstream valve as deemed necessary.

3. Existing pipe which is removed from service may be either filled with a one-sack grout, or crushed in place per the requirements of the Engineer.
4. Existing pipe and appurtenances will be removed from the ground, in which case all backfill and repair of surface shall be in accordance with Section 02223.
5. Removed pipe and appurtenances may be temporarily stockpiled on the job in a location that will not disrupt traffic or be a safety hazard.

#### PART 4 - PAYMENT

Payment of the work in this section shall be included as part of the lump sum bid amount stated in the Proposal for items of work to which it is appurtenant.

END OF SECTION

## SECTION 01563 DIVERSION AND CONTROL OF WATER

### PART 1 - GENERAL

#### A. Description

This section covers the control of surface water runoff, dewatering of pipeline trenches and structural excavations, and other elements required for control of water if the site conditions should dictate the need.

#### B. Related Work

Section 02200 Earthwork

#### C. Submittals

Prior to the Contractor performing any excavation, he shall submit his proposed dewatering diversion plan to the Owner a minimum of 17 days prior to starting excavation, for review. The submittal shall include method, installation, and details of the proposed dewatering diversion system.

### PART 2 - MATERIALS

Materials and equipment required for control of water shall be furnished and maintained by the Contractor, as required to perform the construction.

### PART 3 - EXECUTION

- A. Perform all permanent construction in area free from water.
- B. The necessary machinery, appliances and equipment shall be provided and operated to keep excavations free from water during construction, and to dispose of the water so as not to cause injury to public or private property or to cause a nuisance or a menace to the public. Sufficient pumping equipment and machinery, in good working condition, shall be provided for all emergencies including power outage; and sufficient workmen shall be available at all times for the operation of the pumping equipment. The dewatering diversion systems shall not be shut down between shifts, on holidays or weekends, or during work stoppages without written permission from the Owner.
- C. The control of groundwater shall be such that softening of the bottom of excavations, or formation of "quick" conditions or "boils" during excavation, shall be prevented. Dewatering diversion systems shall be designed and operated so as to prevent removal of the natural soils. Natural or compacted soils softened by saturation with groundwater or standing surface water shall be removed and

replaced as instructed by the Owner's Representative at no additional expense to the Owner.

- D. During excavation, excavations shall be kept free of water except as specified. Surface runoff shall be controlled so as to prevent entry or collection of water in excavations. The static water level shall be drawn a minimum of 1 foot below the bottom of the excavation, except 2 feet below the bottom of excavations for structures, so as to maintain the undisturbed state of the foundation soils and allow the placement of fill or backfill to the required density. The dewatering diversion system shall be installed and operated so that the groundwater level outside the excavation is not reduced to the extent that would damage or endanger adjacent structures or property.
- E. Open and cased sumps shall not be used as primary dewatering for excavation deeper than 3 feet below the static water table. Location of open or cased sumps shall be outside of trench excavation or limits of structural excavation.
- F. The release of groundwater to its static level shall be performed in such a manner as to maintain the undisturbed state of the natural foundation soils, prevent disturbance of compacted backfill, and prevent flotation or movement of structures, pipelines and sewers. Underdrain systems and hydrostatic relief valves shall be operational prior to release of groundwater.
- G. Provision shall be made to take care of surplus water, mud, silt, slickings or other runoff pumped from excavations and trenches or resulting from sluicing or other operations.

#### PART 4 - PAYMENT

Payment of the work in this section shall be included as part of the lump sum bid amount stated in the Proposal for items of work to which it is appurtenant.

END OF SECTION

## SECTION 02050 REMOVAL OF EXISTING FACILITIES

### PART I - GENERAL

#### A. Description

This section describes demolition, removal, replacement, and abandonment of existing pipelines and other facilities interfering with construction of new facilities.

#### B. Related Work

Including but not limited to:

Section 01045	Existing Facilities
Section 02200	Earthwork
Section 02222	Protecting Existing Underground Utilities
Section 02223	Trenching, Backfilling and Compacting

#### C. Submittals

Submit shop drawings for new pipelines and connections to existing pipelines.

Sand for filling abandoned piping shall be in accordance with Section 02223, Trenching, Backfilling and Compacting, Part 2.G.

Submit support calculations for crossing of critical existing utilities per Section 02222, Protecting Existing Underground Utilities.

### PART 2 - MATERIALS

#### A. General

Perform removal, replacement, abandonment, and demolition work in accordance these specifications and as shown on the drawings. Prepare remaining surfaces to receive new scheduled and specified materials and finishes or to match materials and finishes of adjacent surfaces if none are specified or shown on the drawings.

#### B. Removal and Salvaging

1. Remove piping and other facilities as shown on the drawings or specified herein. Materials and equipment salvaged from the project site are the property of the Owner. The Owner may designate certain materials and/or equipment to become the property of the Contractor and, in such case, the Contractor shall remove such materials and/or equipment from the project

site. Salvaged material and equipment not designated by the Owner to become the property of the Contractor shall be delivered by the Contractor to a laydown area or areas within the project site as determined by the Owner.

2. All facilities designated on the drawings to be salvaged shall become the Contractor's property.

C. Replacement

Replace, removed or abandoned piping with new piping in locations as shown on the drawings.

D. Demolition

1. Existing structures, boxes, pipes, and other items are to be removed, altered, salvaged, and disposed of as specified herein or indicated on the drawings. Remove and dispose of all portions of these items which interfere with project construction. Protect existing facilities that do not directly interfere with project construction unless otherwise shown on the drawings to be abandoned or removed.
2. Facilities to be demolished shall be removed in their entirety and disposed of offsite including all belowground footings, foundations, and other associated appurtenances, as shown on the drawings or as specified herein. Backfill and compact all site areas disturbed by demolition work with earth backfill material in accordance with Section 02223.
3. Perform the work in a manner that will not damage parts of the structure not intended to be removed or to be salvaged for the Owner. If, in the opinion of the Owner, the method of demolition used may endanger or damage parts of the structure or affect the satisfactory operation of the facilities, promptly change the method when so notified by the Owner. No blasting will be permitted.
4. All equipment, material (including concrete), and piping, except as specified to be salvaged for the owner, or removed by others, within the limits of the demolition, excavations, and backfills, will become the property of the Contractor and shall be removed from the project site.
5. Material salvaged from demolition work on this project may not be re-used, except as specifically requested by the Owner.

PART 3 - EXECUTION

(Not Used)

#### PART 4 - PAYMENT

Payment of the work in this section will be included as part of the lump sum bid amount stated in the Proposal for items of work to which it is appurtenant thereto.

END OF SECTION

## SECTION 02100 CLEARING AND GRUBBING

### PART 1 - GENERAL

#### A. Description

Clear and grub the site as shown on the Drawings and specified in this Section.

#### B. Related Work

Section 02200	Earthwork
Section 02222	Protecting Existing Underground Utilities
Section 02223	Trenching, Backfilling and Compacting

#### C. Quality Assurance

Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

### PART 2 - MATERIALS

Provide materials, not specifically described but required for proper completion of the work of this Section, as selected by the Contractor subject to the approval of the Owner.

### PART 3 - EXECUTION

#### A. Surface Conditions

Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the work. Do not proceed until unsatisfactory conditions are corrected.

#### B. Protection

1. Protect existing utilities indicated or made known.
2. Protect trees and shrubs, where indicated to remain, by providing a fence around the tree or shrub of sufficient distance away and of sufficient height so trees and shrubs will not be damaged in any way as part of this work.

3. Protection of persons and property:
  - a. Barricade open depressions and holes occurring as part of this work, and post warning lights on property adjacent to or within public access.
  - b. Operate warning lights during hours from dusk to dawn each day and as otherwise required.
  - c. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by operations under this section.
4. Use means necessary to prevent dust from becoming a nuisance to the public, to neighbors, and to other work being performed on or near the site.
5. Maintain access to the site at all times.

C. Clearing

Clean out roots 1/2-inch in diameter and larger to a depth of at least 12-inches below the existing ground surface or subgrade of new graded surface, whichever is lower. Treat roots remaining in the soil with a weed killer approved by the Owner.

D. Conservation of Topsoil and Existing Landscaping/Groundcover

1. After the area has been cleared of vegetation, strip the existing topsoil to the depth necessary to provide at least 6-inch depth of topsoil in areas shown on the Drawings to be turfed or planted, without contamination with subsoils.
2. Stockpile in an area clear of new construction.
3. Maintain the stockpile in a manner which will not obstruct the natural flow of drainage.
  - a. Maintain stockpile free from debris and trash.
  - b. Keep the topsoil damp to prevent dust and drying out.
4. Disturbed vegetation shall be replaced in kind approved by the Owner.

E. Disposal

1. General:
  - a. Remove brush, grass roots, trash, and other material from clearing operations.
  - b. Dispose of away from the site in a legal manner.
  - c. Do not store or permit debris to accumulate on the job site.
2. Do not burn debris at the site!

F. Utilities

1. Coordinate with utility companies and agencies as required.
2. Where utility cutting, capping, or plugging is required, perform such work in accordance with requirements of the utility company or governmental agency having jurisdiction.

PART 4 - PAYMENT

Payment of the work in this section will be included as part of the lump sum bid amount stated in the Proposal for items of work to which it is appurtenant.

END OF SECTION

## SECTION 02200 EARTHWORK

### PART 1 - GENERAL

#### A. Description

This section includes materials, testing, and installation of earthwork for excavations, fills and embankments for roadways, structures and sites, and accessory items such as filter fabric. See Section 02223 for pipeline trenching, backfilling and compaction requirements.

#### B. Related Work

Section 01563	Diversion and Control of Water
Section 02100	Clearing and Grubbing
Section 02222	Protecting Existing Underground Utilities
Section 02223	Trenching, Backfilling, and Compacting
Section 03000	General Concrete Construction

#### C. Submittals

1. Submit excavation and shoring drawings for worker protection in accordance with the General Provisions.
2. Submit six (6) copies of a report from a testing laboratory verifying that the material conforms to the gradation specified, including the proposed use of on-site materials for subgrade, structural fill and pipe bedding.
3. Submit manufacturer's catalog data and a sample of filter fabric (geotextile). Also submit the manufacturer's installation instructions and details for filter fabric.
4. Submit dewatering plan including disposition of groundwater if required.
5. Compliance with ASTM specifications shall be supplied for any subdrain pipe installed.

#### D. Testing for Compaction

1. Tests specified below will be performed by the District's Representative during the progress of the work to determine compliance with the compaction requirements specified herein, and the Contractor shall cooperate on the making of such tests by providing the labor and equipment necessary to obtain said tests at the required depth and allowing a reasonable time therefore.

2. Determine the density of soil in place by the sand cone method, ASTM D 1556 or by nuclear methods, ASTM D 2922 and D 3017.
3. Determine laboratory moisture-density relations of soils by ASTM D 1557.
4. Determine the relative density of cohesion less soils by ASTM D 4253 AND D 4254.
5. Sample backfill materials by ASTM D 75.
6. "Relative compaction" is the ratio, expressed as a percentage, of the in-place dry density to the laboratory maximum dry density.
7. Any test showing compaction less than the specified relative compaction shall be deemed not to comply with the specifications. The area should be reworked and/or rerolled until all tests in the area meet the specified relative compaction. The Contractor shall be responsible for the costs of all failing tests.

E. Disposal of Excess Materials

Excess site excavated by the Contractor, at his expense, shall promptly dispose of wasted material. Should the material to be wasted be found acceptable to the District, the material may be spread uniformly within a designated area at the El Rio site.

F. Material Availability

Sufficient earthwork material to complete the work will be made available at the El Rio site. Sand bedding for piping shall be imported material. Removal, hauling and conditioning of material from on-site Pond(s) is the Contractor's responsibility.

PART 2 - MATERIALS

A. Fill Material

1. Existing artificial fill and alluvium may be used as general fill for the proposed levees, provided they are free of organic materials, unsuitable fill debris and other deleterious materials.
2. Oversize material defined as rock or other irreducible material with a maximum dimension greater than 6 inches, shall not be buried or placed in fills, unless the location, materials, and disposal methods are specifically approved by the District.
3. If importing of fill material is required for grading, the import material shall

meet the specifications above.

B. Structural Backfill

1. Material for structural backfill shall be free from clay balls and organic material, and shall have a sand equivalent greater than 30 per ASTM D 2419 and shall have the following gradation:

<u>Sieve Size</u>	<u>Percent Passing By Weight</u>
6 inch	100
3 inch	95
No. 4	70-95
No. 30	40-80
No. 200	10 - 20

2. Excavated material may be used for structural backfill provided it conforms to the above specifications for structural backfill material.

C. Sand

Granular material free from clay balls, organic matter, and other deleterious substances and conforming to the following gradation:

<u>Sieve Size</u>	<u>Percent Passing By Weight</u>
½ inch	100
No. 4	70 - 100
No. 16	35 - 75
No. 50	10 - 40
No. 200	0 - 10

Sand shall have a minimum sand equivalent of 30 per ASTM D 2419.

D. Water for Compaction

Water shall be free of organic materials and shall have a pH of 7.0 to 9.0, a maximum chloride concentration of 500 mg/l, and a maximum sulfate concentration of 500 mg/l. Provide all water needed for earthwork. Provide temporary piping, valves, meters and backflow devices, as required, to convey water from the source to the point of use.

PART 3 - EXECUTION

A. Dewatering

Contractor shall provide and operate equipment adequate to keep excavations and trenches free of water. Remove water during period when concrete is being deposited, when pipe is being laid and during the placing of backfill. Avoid settlement or damage to adjacent property. Dispose of water in a manner that will not damage adjacent property. When dewatering open excavations, dewater from outside the structural limits and from a point below the bottom of the excavation. Comply with all discharge rules and regulations.

B. Excavation

1. Perform all excavation regardless of the type, nature, or condition of the material encountered to accomplish the construction. Do not operate excavation equipment within 5 feet of existing structures or near newly completed construction. Excavate with hand tools in these areas.
2. After the required excavation has been completed, the District will observe the exposed subgrade to determine the need for any additional excavation. Additional excavation shall be required in all areas within the influence of the structure where unacceptable material exists at the exposed subgrade. Overexcavation shall include the removal of all such unacceptable material that exists directly beneath the structure or within a zone outside and below the structure defined by a line sloping at 1 horizontal to 1 vertical from 1 foot outside the edge of the footing. Structural backfill material shall be used to refill the overexcavated areas.

C. Preparation of Clearwell Subgrade (Bottom and Sloping Walls)

The upper 6 inches below the clearwell bottom elevation and below the face of the sloped inside walls shall consist of granular soils free of any organics, hazardous materials, debris, sharp objects of any type, or any other deleterious materials.

Subgrade soils within the upper 12 inches of the clearwell bottom elevation and below the sloped inside walls shall be scarified, moisture-conditioned to within  $\pm 2$  percent of optimum and compacted to at least 90 percent of the maximum dry density determined from ASTM D1557. During or after scarification, the Contractor shall remove all materials exceeding 1 inch in any dimension from the top 6 inches of the Clearwell subgrade and the top 6 inches of the sloping inside walls of the Clearwell. The upper 6 inches of the subgrade shall be sterilized to prevent vegetation from growing through the liner.

Surfaces to be lined with the polypropylene liner shall be free of all rocks, stones, sticks, roots, sharp objects, or debris of any kind. The surface shall provide a firm, unyielding foundation for the polypropylene liner with no sharp or abrupt changes, or breaks in grade.

Care shall be undertaken to ensure that surface runoff from any source does not

create ruts or erosion on the finished smooth surface prior to placement of the liner. The liner installation contractor shall certify in writing that the surface on which the membrane is to be installed is acceptable before commencing liner placement. The liner installation sub-contractor shall review subgrade material selection and surface condition during construction in order to assess whether acceptable surface conditions are being constructed.

D. Fill Selection

1. General Fill

Existing artificial fill and alluvium may be used as general fill for the proposed embankments provided they are free of organic materials, unsuitable fill debris, and other deleterious materials.

E. Limits of Foundation Excavation

Excavate to the depths and widths needed to accomplish the construction. Allow for forms, working space, structural backfill, and site grading. Do not carry excavation for footings, slabs, or conduits below elevations indicated. Stockpile all excavated materials beyond a 1:1 plane drawn upward from the lower of the base of shoring or excavation. Unless unacceptable material is encountered and overexcavation is authorized by District, backfill overexcavations with compacted structural backfill material. Correct cuts below grade by benching adjoining areas and creating a smooth transition. The Contractor shall bear all costs for correcting unauthorized overexcavated areas.

I. Preparation for Placing Fill

1. All brush, vegetation and debris shall be removed, piled and/or otherwise disposed of per Section 02100.
2. The existing ground, which is determined to be satisfactory for support of fill, shall be scarified to a minimum depth of 6 inches. Existing ground, which is not satisfactory, shall be overexcavated as specified in the following section. Scarification shall continue until the soils are broken down and free of large clay lumps or clods and until the working surface is reasonably uniform and free of uneven features which would inhibit uniform compaction.
3. Soft, dry, spongy, highly fractured or otherwise unsuitable ground, extending to such a depth that surface processing cannot adequately improve the condition, shall be overexcavated down to firm ground, approved by the District.
4. Overexcavated and processed soils shall be watered, dried-back, blended, and/or mixed, as required to attain a uniform moisture content near optimum.

5. Overexcavated and processed soils which have been properly mixed and moisture-conditioned shall be recompacted to a minimum relative compaction of 90 percent.
6. Where fills are to be placed on ground with slopes steeper than 5:1 (horizontal to vertical units), the ground shall be stepped or benched. The lowest bench shall be a minimum of 15 feet wide, shall be at least 2 feet deep, shall expose firm material, and shall be approved by the District. Other benches shall be excavated in firm material for a minimum width of 2 feet. Ground sloping flatter than 5:1 shall be benched or otherwise overexcavated when considered necessary by the District.
7. All areas to receive fill, including processed areas, removal areas and toe-of-fill benches shall be approved by the District prior to fill placement.
8. Remove form materials and trash from the excavation before placing any fill material. Obtain the specified compressive strength and finish of concrete work per Sections 03000 before backfilling.
9. Do not operate earthmoving equipment within 5 feet of walls of concrete structures. Use hand-operated tampers or other equipment that will not damage the structure, when placing and compacting fill or backfill adjacent to concrete walls.

J. Placing and Compacting Fill

1. Approved fill material shall be placed in areas prepared to receive fill in near-horizontal layers not exceeding 8 inches in compacted thickness. The District may approve thicker lifts if testing indicates the grading procedures are such that adequate compaction is being achieved with lifts of greater thickness. Each layer shall be spread evenly and shall be thoroughly mixed during spreading to attain uniformity of material and moisture in each layer.
2. Fill layers at a moisture content less than optimum shall be watered and mixed, and wet fill layers shall be aerated by scarification or shall be blended with drier material. Moisture-conditioning and mixing of fill layers shall continue until the fill material is at uniform moisture content at or near optimum.
3. After each layer has been evenly spread, moisture-conditioned, and mixed it shall be uniformly compacted to not less than 90 percent of maximum dry density. Compaction equipment shall be adequately sized and shall be either specifically designed for soil compaction or of proven reliability, to efficiently achieve the specified degree of compaction.
4. Compacting of slope shall be accomplished, in addition to normal compacting procedures, by backrolling of slopes with sheeps foot rollers at frequent increments of 2 to 3 feet in fill elevation gain, or by other methods producing

satisfactory compaction test results. At the completion of grading, the relative compaction of the slope out to the slope face shall be at least 90 percent.

5. Field tests to check the fill moisture and degree of compaction will be performed by the District. The location and frequency of tests shall be at the discretion of the District. In general, the tests will be taken at an interval not exceeding 2 feet in vertical rise and/or 1,000 cubic yards of embankment. In addition, on slope faces, at least one test shall be taken for each 5,000 square feet of slope face and/or each 10 feet of vertical height of slope.

K. Compaction Requirements

Unless otherwise specified, compact fill areas and embankments to 90 percent relative compaction.

L. Placing and Compacting Structural Backfill

1. Place structural backfill material around structures, channels, and other areas. Do not exceed loose lifts of 8 inches. Compact each lift to 90 percent relative compaction, unless otherwise shown in the drawings.
2. Fill or backfill around concrete structures as specified in Section 03000.

M. Moisture Control of Backfills and Embankments

During the compacting operations, maintain optimum practicable moisture content required for compaction purposes in each lift of the backfill material. Maintain moisture content uniform throughout the lift. Insofar as practical, add water to the material at the site of excavation. Supplement by sprinkling the backfill material. At the time of compaction, the water content shall be within  $\pm 2\%$  of the optimum moisture content. Aerate material containing excessive moisture by blading, discing or harrowing to hasten the drying process.

N. Site Grading

1. Perform earthwork to the lines and grades shown on the drawings. Shape, trim, and finish slopes to conform to the lines, grades, and cross sections as shown. Remove exposed roots and loose rocks in accordance with Section 02100. Do not overexcavate and backfill to achieve the proper grade.

PART 4 - PAYMENT

Payment of the work in this section will be included as part of the lump sum bid amount stated in the Proposal for items of work to which it is appurtenant.

END OF SECTION

## SECTION 02222 PROTECTING EXISTING UNDERGROUND UTILITIES

### PART 1 - GENERAL

#### A. General

This section describes materials and procedures for protecting existing underground utilities.

#### B. Related Work

Section 01045	Existing Facilities
Section 02223	Trenching, Backfilling, and Compacting

#### C. Submittals

Submit drawings and calculations for support and protection at the pipeline crossings larger than 36-inch at least 30 days prior to excavation of crossing.

### PART 2 - MATERIALS

#### A. Replacement in Kind

Except as indicated on the drawings or as specifically authorized by the Owner, reconstruct utilities with new material of the same size, type, and original quality as that removed.

### PART 3 - EXECUTION

#### A. General

1. Replace in kind improvements that are cut, removed, damaged, or otherwise disturbed by the construction.
2. Where utilities are parallel to or cross the pipeline trench but do not conflict with the permanent work to be constructed, follow the procedures given below and as indicated on the Drawings. Notify the Owner 48 hours in advance of the crossing construction and coordinate the construction schedule with the Owner's requirements.
3. Determine the true location and depth of utilities and service connections which may be affected by or affect the work. Determine the type, material, and condition of these utilities. The Contractor shall pothole all utilities, except those listed in the contract documents as already being potholed,

prior to submitting pipe laying drawings. The Contractor shall submit a set of potholing plans to the Owner prior to submitting laying diagrams.

B. Procedures

1. Protect in Place: Protect utilities in place, unless abandoned, and maintain the utility in service, unless otherwise specified on the Drawings or in the Specifications.
2. Cut and Plug Ends: Cut abandoned utility lines (conduits) and plug the ends with brick and mortar or concrete plug. Plug utility lines with an 8-inch wall of brick and mortar or 8 inch concrete plug from the cut end of the pipe. Dispose of the cut pipe as unsuitable material.
3. Contractor shall provide temporary support for all pipelines crossing the proposed trench.

C. Thrust Blocks on Water Lines

1. The Contractor's attention is called to thrust blocks on water lines throughout the project whose thrust is in the direction of the trench excavation and, therefore, may be affected by the pipeline construction. Protect thrust blocks in place or shore to resist the thrust by a means acceptable to the Owner and reconstruct.

D. Abandoned Utilities

Remove and dispose of abandoned utilities within the trench excavation.

PART 4 - PAYMENT

Payment of the work in this section will be included as part of the lump sum bid amount stated in the Proposal for items of work to which it is appurtenant.

END OF SECTION

## SECTION 02223 TRENCHING, BACKFILLING AND COMPACTING

### PART 1 - GENERAL

#### A. Description

This section includes materials, testing and installation for trench excavation, backfilling, and compacting.

#### B. Related Work

Section 01563	Diversion and Control of Water
Section 02200	Earthwork
Section 03000	General Concrete Construction

#### C. Submittals

1. Submit excavation drawings for worker protection in accordance with the General Provisions.
2. Submit six (6) copies of a report from a testing laboratory verifying that material conforms to the specified gradations or characteristics for pea gravel, granular material, imported sand, rock refill for foundation stabilization, and water.

#### D. Trench Excavation

##### 1. General

Excavation of every description and of whatever substance encountered shall be performed, to the depths, lines and grades indicated or specified. It may be necessary to increase or decrease the quantity of excavation because of unknown factors. The Owner reserves the right to change the trench alignment from that indicated by 10 feet horizontally without additional expense to the Owner. If additional piping is required, this will be at the expense of the Owner.

##### 2. Trenches

- a. Unless otherwise indicated, excavation shall be open cut. During excavation, material suitable for backfilling shall be stockpiled in an orderly manner, a distance back from the edges of the excavations specified by the governing safety agency. Materials unsuitable for backfilling shall be wasted as specified. Caution shall be exercised in operating heavy equipment over pipelines. Leaks or breaks caused by

the Contractor's operations shall immediately be repaired at no additional expense to the Owner and in a manner acceptable to the Owner's Representative. The banks of excavated areas shall be controlled as is necessary to prevent movement of soil in areas supporting existing foundations, slabs, pole lines, underground power or telephone cables, trees, pipelines or other structures. If, as a result of the excavation or through fault or neglect of the Contractor, the earth or ground under or around such foundations, slabs, pole lines, underground power or telephone cables, trees, pipelines or other structures, slips or is otherwise disturbed, corrective measures shall be taken as directed at no additional expense to the Owner.

- b. In the event the maximum allowable trench width is exceeded, the Contractor may be required, depending on the depth of trench, to improve the pipe bedding by utilizing concrete or other bedding materials as necessary to assure that the type of pipe installed can withstand the loads imposed by the backfill due to the depth of the trench.
- c. The bottom of the trench shall be excavated to the lines and grades shown with proper allowance for pipe thickness, and for foundation stabilization and special bedding when required. Material containing rocks or cobbles larger than 2 inches in maximum dimension shall not be permitted within 6 inches of the pipe. Material of this type shall be removed from the bottom of the trench and replaced with backfill material. Parts of the trench excavated below grade shall be corrected with backfill as specified. The depth of trenches shall be as indicated on the Drawings.

E. Testing for Compaction

- 1. Determine the density of soil in place by the Sand Cone Method ASTM D1556, or Nuclear Gage Method ASTM D2922 and D3017.
- 2. Determine laboratory moisture-density relations of soils by ASTM D1557.
- 3. Determine the relative density of cohesionless soils by ASTM D4253 and D4254
- 4. Sample backfill materials by ASTM D75.
- 5. Express "relative compaction" as the ratio, expressed as a percentage, of the in-place dry density to the laboratory maximum dry density.

6. Compaction shall be deemed to comply with the specifications when no test falls below the specified relative compaction. The Contractor shall pay the costs of any retesting of work not conforming to the specifications.

F. Pavement Zone

The pavement zone includes the asphalt concrete and aggregate base pavement section placed over the trench backfill.

G. Street Zone

The street zone is the top 18 inches of the trench immediately below the pavement zone in paved areas.

H. Trench Zone

The trench zone includes the portion of the trench from the top of the pipe zone to the bottom of the street zone in paved areas or to the surface in unpaved areas.

I. Pipe Zone

The pipe zone shall include the full width of trench from the bottom of the pipe or conduit to a horizontal level above the top of the pipe, as specified below. Where multiple pipes or conduits are placed in the same trench, the pipe zone shall extend from the bottom of the lowest pipes to a horizontal level above the top of the highest or topmost pipe. Thickness of pipe zone above the highest top of pipe shall be 12 inches.

J. Pipe Base

The pipe base shall be defined as a layer of material immediately below the bottom of the pipe or conduit and extending over the full trench width in which the pipe is bedded. Thickness of pipe base shall be 6 inches or as otherwise shown on the Drawings or otherwise described in the specifications for the particular type of pipe installed.

K. Safety

1. All excavations shall be performed, protected, and supported as required for safety and in the manner set forth in the operation rules, orders, and regulations prescribed by the Division of Industrial Safety of the State of California.
2. Barriers shall be placed at each end of all excavations and at such places as may be necessary along excavations to warn all pedestrians and vehicular traffic of such excavations. Lights shall also be placed along excavations from sunset each day to sunrise of the next day until such excavation is entirely refilled.

## PART 2 - MATERIALS

### A. Native Earth Backfill--Trench Zone

Native earth backfill used above the pipe zone shall be excavated fine-grained materials free from roots, debris, organic matter and rocks larger than 3 inches.

### B. Backfill - Pipe Zone and Pipe Base

The pipe base and pipe zone backfill material shall consist of imported sand having a minimum sand equivalent (SE) value of 30.

### C. Refill Material for Foundation Stabilization

Refill material shall be either material conforming to the requirements for the pipe zone or crushed or natural rock having the following gradation:

<u>Sieve Size</u>	<u>Percent Passing</u>
1½ inches	- 100
1 inch	90 - 100
¾ inch	30 - 60
½ inch	0 - 20
_ inch	0 - 5

### D. Pea Gravel

Pea gravel shall be defined as gravel, uniformly graded from coarse to fine with less than 10 percent passing as a No. 200 sieve, less than 50 percent passing a No. 4 sieve, and having a maximum particle size of 3/8 inch.

### E. Concrete for Pipe Encasement

Concrete for pipe encasement shall be Class B per Section 03000, unless otherwise shown on the Drawings.

### F. Water for Compaction

Water used in compaction shall have a maximum chloride concentration of 500 mg/l, a maximum sulfate concentration of 500 mg/l, and shall have a pH of 7.0 to 9.0. Water shall be free of acid, alkali, or organic materials injurious to the pipe coatings.

G. Imported Sand

Imported sand used for the project shall have the following gradation:

<u>Sieve Size</u>	<u>Percent Passing by weight</u>
½ inch	-100
No. 4	70 - 100
No. 16	35 - 75
No. 50	10 - 40
No. 200	0 - 10

Minimum sand equivalent shall be 30 per ASTM D-2419. If jetting of the bedding material is desired, the bedding material shall have a minimum sand equivalent value of 50.

H. Cement Slurry or Alkalized Sand Backfill

Cement slurry backfill shall consist of one sack (94 pounds) Type II Portland cement added per cubic yard of sand, except within 6 inches of a buried flexible pipe coupling, in which case use one-half sack (25 pounds) hydrated lime added per cubic yard of sand. Sand shall be as described in Section 2.G., Sand.

I. Gravel and Crushed Rock

Gravel and crushed rock shall contain less than 1 percent asbestos by weight or volume. The portion of the material that is larger than will pass a 3/8 sieve shall contain at least 50 percent of particles having three or more fractured faces. Not over 5 percent shall be pieces that show no such faces. Of that portion which passes the 3/8 sieve but is retained on the No. 4 sieve, not more than 10 percent shall be gravel particles. Gravel and crushed rock shall conform to the following gradation:

<u>Sieve Size</u>	<u>Percent Passing By Weight</u>
1-inch	100
¾ inch	90 - 100
½ inch	30 - 60
¼ inch	0 - 20
No. 4	0 - 5

## PART 3 - EXECUTION

### A. Compaction Requirements

Unless otherwise shown on the Drawings or otherwise described in the specifications for the particular type of pipe installed, relative compaction in pipe trenches shall be as follows:

1. Pipe zone--90 percent relative compaction unless shown otherwise on the Drawings.
2. Backfill in trench zone not beneath paving--90 percent relative compaction.
3. Backfill in trench zone to pavement zone in paved areas--90 percent relative compaction.
4. Rock refill material for foundation stabilization--90 percent relative compaction.
5. Rock refill for overexcavation--90 percent relative compaction.

### B. Material Replacement

Remove and replace any trenching and backfilling material which does not meet the specifications, at the Contractor's expense.

### C. Sheeting, Shoring, and Bracing of Trenches

Trenches shall have sheeting, shoring, and bracing conforming to CAL/OSHA requirements and the General Provisions. Lateral pressures for design of trench sheeting, shoring, and bracing shall be based on type of soil exposed in the trench, groundwater conditions, surcharge loads adjacent to the trench, and type of shoring that will be used in the trench.

### D. Trench Widths

Trench widths in the pipe zone shall be as shown on the Drawings. Trench width at the top of the trench will not be limited except where width of excavation would undercut adjacent structures, footings or slopes. In such case, width of trench shall be such that there is at least 18 inches between top of edge of the trench and the structure, footing or slopes.

### E. Grade

Excavate the trench to the lines and grades shown on the Drawings with allowance for pipe thickness and for pipe base or special bedding. If the trench is inadvertently

excavated below the required grade, refill any part of the trench excavated below the grade at no additional cost to the Owner with rock refill. Place the refilling material over the full width of trench in compacted layers not exceeding 6 inches deep to the established grade with allowance for the pipe base or special bedding.

F. Dewatering

Provide and maintain means and devices to remove and dispose of all water entering the trench excavation during the time the trench is being prepared for the pipelaying, during the laying of the pipe, and until the backfill at the pipe zone has been completed. These provisions shall apply during the noon hour as well as overnight. Dispose of the water in a manner to prevent damage to adjacent property. Do not drain trench water through the pipeline under construction. Do not allow groundwater to rise around the pipe until jointing compound has set hard.

Contractor shall notify the Owner 48 hours prior to commencement of dewatering. Methods employed shall be in conformance with the Owner's existing NPDES permit.

G. Location of Excavated Material

During trench excavation, place the excavated material only within the working area. Do not obstruct any roadways or streets. Conform to federal, state, and local codes governing the safe loading of trenches with excavated material.

H. Length of Open Trench

Limit the length of open trench to 600 feet in advance of pipelaying or amount of pipe installed in one working day. Complete backfilling not more than 1,000 feet in the rear of pipelaying.

I. Foundation Stabilization

1. After the required excavation has been completed, the Owner's Representative will inspect the exposed pipe zone and trench subgrade to determine the need for any additional excavation. It is the intent that additional excavation be conducted in all areas within the influence of the pipeline where unacceptable materials exist at the exposed subgrade. Overexcavation shall include the removal of all such unacceptable material that exists directly beneath the pipeline or within the pipe zone to the width shown on the Drawings and to the depth required. This may require excavating a wider trench. Backfill the trench to subgrade of pipe base with refill material for foundation stabilization. Place the foundation stabilization in layers not exceeding 6 inches deep to the required grade. Foundation stabilization work shall be executed in accordance with a change order.

2. Refill material used by the Contractor for his convenience will not receive any additional payment.
3. Pipe Bedding
  - a. Bedding of the pipe shall be done only in the presence of the Owner's Representative, and in accordance with the trench detail on the Drawings. Bedding shall be done only after foundation preparation, laying of and jointing of the pipe.
  - b. As the pipe is installed it shall be bedded by hand with material as shown. Care shall be taken to prevent any damage or shifting of the pipe. The pipe bedding material shall be compacted into place to the same density as specified for backfill above the pipe bedding material with materials as specified.
  - c. Pipe bedding shall extend a minimum of 6 inches below the bottom of the pipe. Rocks and cobbles exceeding 2 inches in maximum dimension shall be removed to a minimum depth of 6 inches below the bottom of the pipe.

J. Trench Backfilling

1. Backfill per the detailed piping specification for the particular pipe and per the following.
2. Place the specified thickness of pipe base material over the full width of trench. Grade the top of the pipe base ahead of the pipelaying to provide firm, uniform support along the full length of pipe.
3. Excavate coupling or bell holes at each joint to permit proper assembly and inspection of the entire joint.
4. After pipe has been bedded, place pipe zone material simultaneously on both sides of the pipe, keeping the level of backfill the same on each side. Carefully place the material around the pipe so that the pipe barrel is completely supported and that no voids or uncompacted areas are left beneath the pipe. Use particular care in placing material on the underside of the pipe to prevent lateral movement during subsequent backfilling.
5. Compact material within 12 inches of the outer surface of the pipe by hand-tamping only.
6. Push the backfill material carefully onto the backfill previously placed in the pipe zone. Do not permit free fall of the material until at least 2 feet of cover is provided over the top of the pipe. Do not drop sharp, heavy pieces of material directly onto the pipe or the tamped material around the pipe.

K. Backfill Compaction

1. Compact per the detailed piping specification for the particular pipe and per the following.
2. Compact trench backfill to the specified relative compaction. Compact by using mechanical compaction or hand tamping. Consolidation by jetting or flooding will not be permitted unless appropriate drainage is provided and the bedding material has a minimum soil equivalent value of 50. Do not use high impact hammer-type equipment except where the pipe manufacturer warrants in writing that such use will not damage the pipe.
3. Do not use any axle-driven or tractor-drawn compaction equipment within 15 feet of walls and structures.

PART 4 - PAYMENT

Payment for work in this section shall be included as part of the lump sum bid amount stated in the Proposal for items of work to which it is appurtenant.

END OF SECTION

## SECTION 03000 GENERAL CONCRETE CONSTRUCTION

### PART 1 - GENERAL

#### A. Description

This section includes materials, installation, and testing of formwork, reinforcing steel, joints, concrete, and finishing and curing for general concrete construction. Concrete is required in the following work areas (not necessarily an all inclusive list): slab for electrical building, existing and proposed settling basins, inlet, outlet and overflow structures, thrust blocks where required, and slurry backfill.

#### B. Related Work

Section 03462      Precast Concrete Vaults

#### C. Submittals

1.      Submit shop drawings in accordance with the General Provisions.
2.      Submit manufacturer's catalog data and descriptive literature for form ties, spreaders, corner formers, form coatings and curing compound, bond breakers, joint sealant, backing rod, joint filler, epoxy bonding compound, and color additive.
3.      Submit mill test certificates identifying chemical and physical analyses of each load of reinforcing steel delivered. If mill test reports are unavailable and the quantity of steel for a structure exceeds 5 tons, provide a laboratory test to prove conformance with the specified ASTM standard.
4.      Submit reinforcing bending lists and placing drawings for all reinforcing. Placing drawings shall indicate all openings (mechanical, electrical, equipment, and architectural) including additional reinforcing at openings and corner bar arrangements at intersecting beams, walls, and footings indicated in the typical detail and structural drawings. Placing drawings shall be coordinated with the concrete placing schedule. Each bending list and placing drawing submitted shall be complete for each major element of a structure (grade slabs, footings, walls, deck, floor, or roof slabs) including dowels and corner bars. Furnishing such lists shall not be construed that the lists will be reviewed for accuracy. The Contractor shall be wholly and completely responsible for the accuracy of the lists and for furnishing and placing reinforcing steel in accordance with the details shown on the plans and as specified.
5.      Submit concrete mix design at least 15 days before placing concrete. Mix designs shall be signed and stamped by a registered civil or structural engineer.

6. Submit six (6) copies of a report from a testing laboratory verifying that aggregate material contains less than 1% asbestos by weight or volume and conforms to the specified gradations or characteristics.
7. Submit six copies of lab compressive test results for a proposed mix design. Tests may be for trial batches or past tests for the same identical mix design for this work.

PART 2 - MATERIALS

A. General

Except as otherwise specified, 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 these Specifications and suitable to the specific conditions of placement. The proportions of materials shall be such as to secure the lowest water-cement ratio which is consistent with good workability, a plastic, cohesive mixture, and one which is within the specified slump range. The proportion of fine and coarse aggregate shall be such as not to produce harshness in placing nor honeycombing in the structures.

B. Classes of Concrete

Concrete shall be of five classes, herein referred to as Classes A, B, C, D, and CE which shall be as specified herein and which shall be used where specified or indicated on the Drawings. These classes of concrete shall have a minimum weight of 140 pounds per cubic foot. Class C concrete may be used for fill for unauthorized excavation, for thrust blocks and ground anchors for piping, for bedding of pipe, and where indicated on the Drawings. Class B concrete may be substituted for Class A concrete, if high-early strength concrete is desired by the Contractor, only in those areas specifically approved by the Owner and which do not require a sulfate resistant concrete. Class D concrete shall be used for precast concrete items. Class CE shall be used for electrical conduit encasements. All other concrete, unless specified or otherwise indicated on the Drawings, shall be Class A concrete.

TABLE A  
CONCRETE  
WITHOUT AIR ENTRAINMENT

<u>Class</u>	<u>Specified Compressive Strength f'c at 28-Days (psi)</u>	<u>Min. Cement Max. Net Water To Cement Ratio By Weight</u>	<u>Per Cubic Yard Of Concrete (Pounds)</u>	<u>Slump Range (Inches)</u>
A	4,000	0.53	564	2 to 4*
C	2,500	0.71	423	3 to 6

\*Note Slump for slabs, decks, walks, and beams shall be not more than

3 1/2 inches.

Concrete that is pumped shall meet all the requirements of these Specifications. Concrete with a slump outside the limits indicated in the above Table shall not be placed.

Classes A, C, concrete shall be made with Type II, Low Alkali cement.

C. Aggregate

1. General

All concrete aggregates shall be sound, uniformly graded, and free of deleterious material in excess of the allowable amounts specified.

The Contractor shall furnish the Owner certified copies in triplicate of commercial laboratory tests of all samples of concrete aggregates submitted. Tests on concrete aggregates shall indicate as a minimum all specified tests. All concrete aggregate tests shall be at the Contractor's expense.

Aggregate shall be sampled and graded in accordance with ASTM D 75 and C 136.

Sieves for testing grading of aggregates shall have square openings.

Sieve analyses of the fine and coarse aggregates being used shall be furnished the Owner in triplicate at any time there is a significant change in the grading of the materials, and in any event, shall be furnished at least every three weeks. If such sieve analyses indicate a significant change in the materials, the Owner may require that a new mix design be submitted for review and acceptance before further placing of concrete.

If either fine or coarse aggregate is to be batched from more than one bin, analyses shall be furnished for each bin, and a composite analysis made up from these, using the proportions of materials to be used in the mix.

The unit weight of fine and coarse aggregate shall be of a unit weight which will produce in place concrete with a weight of not less than 140 pounds per cubic foot.

2. Fine Aggregate

Fine aggregate for concrete or mortar shall consist of clean, natural sand or of sand prepared from crushed stone or crushed gravel. Deleterious substances shall not be present in excess of the following percentages by weight of contaminating substances. In no case shall the total exceed 3 percent.

<u>Material</u>	<u>Test Method</u>	<u>Percent</u>
Removed by decantation (dirt, silt, etc.)	ASTM C 1173	3
Shale or chert	ASTM C 2951	1
Clay lumps	ASTM C 142	1

Fine aggregate shall not contain strong alkali nor organic matter which gives a color darker than the standard color when tested in accordance with ASTM C 40. Except as otherwise specified, fine aggregate shall be graded from coarse to fine in accordance with the requirements of ASTM C 33. Aggregate soundness shall comply with the requirements of ASTM C 33 when tested in accordance with ASTM C 88. Aggregate shall comply with the reactivity requirements contained in ASTM C-33 when tested in accordance with ASTM C-289.

### 3. Coarse Aggregate

Coarse aggregate shall consist of gravel or crushed stone made up of clean, hard, durable particles free from calcareous coatings, organic matter, or other foreign substances. Thin or elongated pieces having a length greater than five times the average thickness shall not exceed 15 percent by weight. Deleterious substances shall not be present in excess of the following percentages by weight, and in no case shall the total of all deleterious substances exceed 2 percent.

<u>Material</u>	<u>Test Method</u>	<u>Percent</u>
Shale or chert	ASTM C 295	1
Coal and lignite	ASTM C 123	1/4
Clay lumps and friable particles	ASTM C 142	1/4
Materials finer than No. 200 sieve	ASTM C 117	1/2*

\* Except that when material finer than No. 200 sieve consists of crusher dust, the maximum amount shall be 1 percent.

Aggregate when tested in accordance with ASTM C 88 for soundness shall have a loss not greater than 10 percent when tested with sodium sulfate.

Abrasion loss of coarse aggregate shall not exceed 45 percent after 500 revolutions when tested in accordance with ASTM C 131. Coarse aggregate reactivity shall not exceed the limits specified in the appendix of ASTM C 33 when tested in accordance with ASTM C 289.

Except as otherwise specified or authorized in writing by the Owner, coarse aggregate shall be graded as specified in ASTM C 33, Size No. 57. Coarse aggregate for Class CE concrete for encasement of electrical conduits shall be graded as specified in ASTM C 33, Size No. 8; concrete utilizing this aggregate will be equal to Class C concrete in all other respects, and will be designated as Class CE.

D. Water

Water for concrete, washing aggregate, and curing concrete shall be clean and free from oil and deleterious amounts of alkali, acid, organic matter, or other substances. Water shall not contain more than 1,000 milligrams per liter of chlorides calculated as chloride ion, nor more than 1,000 milligrams per liter of sulfates calculated as sulfate ion for conventional reinforced concrete. Water for prestressed or post-tensioned concrete shall not contain more than 650 milligrams per liter of chlorides calculated as chloride ion, nor more than 800 milligrams per liter of sulfates calculated as sulfate ion.

E. Portland Cement

Except as otherwise specified all Portland cement shall conform to the specifications and test for Portland cement ASTM C 150, Types II or III, Low Alkali. Low alkali Portland cement shall contain not more than 0.6 percent total alkali. The word "alkali" shall be taken to mean the sum of sodium oxide and potassium oxide calculated as sodium oxide. The determination for total alkali shall be made by the method set forth in ASTM C 114. Only one brand of Portland cement shall be used for exposed concrete in any individual structure.

Certified copies in triplicate of mill tests representative of each shipment of cement shall be furnished to the Owner for verification of compliance with these Specifications. Mill tests on cement shall include a report on alkali content.

F. Admixtures

1. General

Admixtures of any type, except as otherwise specified, shall not be used unless written authorization has been obtained from the Owner. Admixtures used shall be compatible with the concrete and other admixtures. Admixtures containing chlorides calculated as chloride ion in excess of 0.5 percent by weight shall not be used. Admixtures shall be used in accordance with the manufacturer's recommendations and shall be added separately to the concrete mix.

2. Water Reducing Admixture

A water reducing admixture may be used at the Contractor's option. Such admixtures shall conform to ASTM C 494, Type A or Type D. The admixture

shall not contain air entraining agents. Admixture shall be in liquid form before adding to the concrete mix. No decrease in cement shall be permitted as a result of the use of a water reducing admixture.

## G. Forms

### 1. General

Forms shall be so constructed that the finished concrete will conform to the shapes, lines, grades, and dimensions indicated on the Drawings. It is intended that the surface of the concrete after stripping shall present a smooth, hard, and dense finish that will require a minimum amount of finishing. Sufficient number of forms shall be provided so that the work may be completed rapidly and present a uniform appearance in form patterns and finish. Forms shall be clean and free from all dirt, debris, concrete, etc. and shall be coated with an acceptable form release oil if required, prior to use or reuse.

The design of all concrete forms, falsework, and shoring shall be the responsibility of the Contractor and the design and installation of these items shall comply with all local, State, and Federal regulations.

Information on the Contractor's proposed forming system shall be submitted in such detail as the Owner may require to assure himself that the intent of the Specifications can be complied with by the use of the proposed system. Except as otherwise specified, or accepted in writing by the Owner, only forming systems by manufacturers with a minimum of five years' experience shall be considered.

### 2. Form Ties

Form ties for the forming system selected shall be the cone-snap tie or flat bar type with a waterstop manufactured by a recognized manufacturer of concrete forming equipment. Forms shall be tied together at not less than 2 foot centers vertically and horizontally. Wire ties or wood spreaders of any form shall not be used. Ties shall be of a type that will accurately tie, lock, and spread the forms. Forms and ties shall be designed to withstand concrete pressures without bulging, spreading, or lifting of the forms. The form tie shall be of such design that when the forms are removed no metals shall be within 3/4 inch of any surface. Holes in the forms for ties shall not allow leakage during placement of concrete.

Tapered form ties may be used for the forming system selected, if approved by the Owner. Tapered ties shall be manufactured by a recognized manufacturer of concrete forming equipment. Forms shall be tied together with the tapered ties such that the wall is held to the required dimensions, prior to and during concrete placement.

### 3. Built-Up Plywood Forms

Built-up plywood forms may be substituted for a prefabricated forming system subject to the following minimum requirements: full sized (4 foot by 8 foot) plywood sheets must be used except where smaller pieces will cover an entire area. Plywood sheets shall be 5-ply, 3/4 inch nominal, made with 100 percent waterproof adhesive, and the finish surface shall be coated or overlaid with a surface which is impervious to water and the alkaline calcium and sodium hydroxide of cement. Studding shall be not less than 2 inch by 4 inch lumber spaced at 16 inches or 24 inches on center. Closer spacing may be required depending upon the strength requirements of the forms, in order to prevent any bulging surfaces on the faces of finished concrete work. Studs shall be installed perpendicular to the grain of the exterior plies of the plywood sheets. Wales shall be formed of double 2 inch by 4 inch lumber as a minimum. Studding and wales shall contain no loose knots and shall be free of warps, cups, and bows. The number of reuses of forms will depend upon the durability of the surface coating or overlay used, and the Contractor's ability to maintain the forms in a condition which will produce a flat, smooth, hard, dense finish on the concrete when stripped. Alternate combinations of plywood thickness and stud spacing may be submitted to the Owner for review and acceptance.

### 4. Steel or Steel Framed Forms

Steel forms shall be rigidly constructed and adequately braced for minimum deflection of the finish surface. The finish surface shall be flat without bows, cups, or dents.

Steel framed plywood forms shall be rigidly constructed and braced with joints fitting closely and smoothly. Plywood paneling shall be 5-ply, 5/8 inch nominal or 3/4 inch nominal, made with 100 percent waterproof adhesive, and the finish surface shall be coated or overlaid with a surface which is impervious to water and the alkaline calcium and sodium hydroxide of cement. The number of reuses will depend upon the durability of the surface coating or overlay used.

Built-up plywood forms, as specified above, may be used in conjunction with steel forms or steel framed plywood forms for special forming conditions such as corbels and forming around items which will project through the forms.

## H. Caulking, Joints and Sealing

### 1. General

Expansion, contraction, and construction joints shall be constructed as indicated on the Drawings, and materials used shall be as specified herein.

Pipe and conduit shall be installed in structures as indicated on the Drawings, and shall be sealed with the materials specified herein. Doors, windows, louvers, and other items installed in or over concrete openings shall be caulked inside and out with the materials specified herein.

2. Caulking

All caulking where indicated on the Drawings or as specified, except for masonry construction and where specified otherwise, shall be done with synthetic rubber sealing compound. Caulking shall be completed prior to painting.

3. Synthetic Rubber Sealing Compound

Synthetic rubber sealing compound shall be a multi-part polyurethane designed for continuous submerged condition in water or sewage and exposed to direct sunlight in a dry condition. Synthetic rubber sealing compound shall be PRC 270 as manufactured by Products Research and Chemical Company; Elastothane 227R as manufactured by Pacific Polymers Inc.; or equal. Sealing compound shall comply with Federal Specification TT-S-00227e, Type I (pourable grade) and Type II (nonsag), Class A, and the following requirements. Polyurethane sealant shall have the following properties determined at 75 degrees F and 50 percent relative humidity:

Base - polyurethane rubber

Solids - not less than 97 percent

Application Time - not less than 2 hours

Cure Time - not more than 3 days

Tack Free Time - 24 hours

Ultimate Hardness - 35 plus or minus 5 (Shore A)

Tensile Strength (ASTM D 412) - 300 pounds per square inch minimum

Ultimate Elongation - not less than 550 percent (ASTM D 412)

Tear Resistance - not less than 85 pounds per inch (ASTM D 624 Die C)

Color shall be gray to match concrete, unless otherwise indicated, and the temperature service range shall be 50 degrees F to 200 degrees F.

Polyurethane sealant shall be a compound designed to cure at room temperature to a firm, highly resilient rubber.

I. Epoxy Materials

1. General

All epoxy materials shall be new and shall be used within the shelf life limitations set forth by the manufacturer.

## 2. Epoxy

Epoxy shall be a water-insensitive two-part type low viscosity epoxy adhesive material containing 100 percent solids and shall meet or exceed the following characteristics when tested in accordance with the standards specified:

- a. ASTM D 638, Tensile Strength: 9,000 psi at 14 days and 77 degrees F cure.
- b. ASTM D 790, Flexure Strength: 12,000 psi at 14 days and 77 degrees F cure.
- c. ASTM D 695, Compressive Strength: 16,000 psi at 24 hours and 77 degrees F cure.
- d. Bond Strength: Concrete shall fail before failure of the epoxy.
- e. Gel Time In A 5-Mil Film: 4 hours maximum at 77 degrees F.
- f. ASTM D 638, Elongation: 1 percent minimum at 14 days and 77 degrees F.

For dry and damp concrete, the epoxy shall be Sikadur Hi-Mod LV as manufactured by the Sika Chemical Corporation; Adhesive Engineering Company Concessive No. 1380; or equal.

## 3. Epoxy Gel

Epoxy gel shall be Sikadur Hi-Mod Gel manufactured by Sika Chemical Corporation; Concessive No. 1438 manufactured by Adhesive Engineering Company; or equal. Epoxy gel shall be used for vertical or overhead work, or where a high viscosity epoxy is required. Epoxy gel for vertical or overhead work may be used for horizontal work. All mixing, installing, and curing of epoxy shall conform to the manufacturer's published instructions.

## 4. Epoxy Bonding Agent

Epoxy bonding agent shall be Concessive No. 1001 LPL as manufactured by Adhesive Engineering; Sikadur Hi-Mod as manufactured by Sika Chemical Corporation; or equal. This material shall be applied in accordance with the manufacturer's published instructions. Bonding agent will not be required for filling form tie holes or for normal finishing and patching of similar sized small defects.

## J. Expanded Polystyrene

When expanded polystyrene joint filler is indicated on the Drawings or specified, the filler shall be placed in correct position before concrete is placed against the filler. Holes and joints in the filler shall be filled with caulking to prevent the passage of mortar or concrete from one side of the joint to the other.

Expanded polystyrene shall be a commercially available polystyrene board. Expanded polystyrene shall have a flexural strength of 35 pounds per square inch, minimum, determined in accordance with ASTM C 203, and a compressive yield strength of between 16 and 40 pounds per square inch, at 5 percent compression. When indicated on the Drawings, surface of expanded polystyrene shall be faced with hardboard. Hardboard shall be 1/8 inch minimum thickness, conforming to Federal Specification LLL-B-810, any type. Other facing materials may be used provided they furnish equivalent protection. All boards shall be held in place by nails, waterproof adhesive, or other means approved by the Owner.

## K. Reinforcement

### 1. General

All reinforcing steel shall be new material, of the quality specified, free from excessive rust or scale or any defects affecting its usefulness.

### 2. Reinforcing Bars

Reinforcing bars to be embedded in concrete or masonry shall be Grade 60 deformed bars conforming to ASTM A 615. No field bending of bars will be allowed. All reinforcement bars lacking grade identification marks shall on delivery be accompanied by a manufacturer's guarantee of grade.

All bars shall be new stock free from rust scale, loose mill scale, excessive rust, dirt, oil, and other coatings which adversely affect bonding capacity when placed in the work. A thin coating of red rust resulting from short exposure will not be considered objectionable, but any bars having rust scale, loose mill scale, or a thick rust coat shall be thoroughly cleaned, or shall be rejected and removed from the premises upon order of the Owner.

Bars shall be delivered bundled and tagged with identifying tags.

Bars shall be cut and bent in accordance with the provisions of ACI 315 and ACI 318. All bars shall be bent cold. Bars shall be free from defects and kinks and from bends not indicated on the Drawings.

Reinforcing bars shall be welded where indicated on the Drawings or acceptable to the Owner. Welding shall be performed in accordance with AWS D1.4 "Structural Welding Code-Reinforcing Steel."

Shop drawings on reinforcing steel detailed by the Contractor in accordance

with the Contract Documents will be reviewed and returned. The Contractor shall supply the Owner with a copy of all reinforcing steel detail drawings. Changes to the Contract Documents made by the Contractor in reinforcing steel shop drawings shall be called out in the letter of submittal. Such changes will not be acceptable unless the Owner has expressed consent to such changes in writing.

3. Welded Wire Fabric Reinforcement

Welded wire fabric shall be welded wire fabric in accordance with ASTM A 185. It shall be of new stock, free from excessive rust when placed in the work. All necessary wiring, spacing chairs, or supports shall be installed to keep the welded wire fabric in place while concrete is being placed. The welded wire fabric shall be bent as shown or required to fit the work. Welded wire fabric shall be rolled or otherwise straightened to make a perfectly flat sheet before placing in the Work. Welded wire fabric shall be lap spliced as indicated on the Drawings. If the lap splice length is not indicated on the Drawings, the welded wire fabric shall be spliced in accordance with ACI 318.

Welded wire fabric may be used in place of reinforcing bars if accepted by the Owner. The welded wire fabric shall be furnished in flat sheet form. The cross-sectional area per linear foot of wire fabric shall be not less than the cross-sectional area per linear foot of reinforcing bars indicated on the Drawings.

4. Thread Bar

Thread bars shall have a continuous rolled-in pattern of thread-like deformations along its entire length. Hex nuts and couplers for the bars shall develop 125 percent of the yield strength of the bar. Thread bars shall conform to ASTM A 615 Grade 60. Thread bars shall be DYWIDAG Threadbar as manufactured by DYWIDAG Systems International, San Diego, California; or equal. Cut threads on regular reinforcing bars shall be not substituted for thread bars.

L. Membrane Curing

Membrane curing compound shall be a clear type with fugitive dye conforming to ASTM C 309, Type 1D.

M. Concrete Sealer

The concrete sealer shall be "CEM-SEAL" as manufactured by the Hillyard Chemical Company, San Jose, California; DeKote Compound Code T130 as manufactured by W. R. Grace and Company; or equal.

## N. Grout

### 1. General

Cement mortar or grout for the repair of imperfect concrete work, filling of holes left by form bolts or ties, and the filling of voids around items through the concrete, and grout for spreading over construction joints and cold joints etc., shall consist of Portland cement and sand mixed in the same proportions used for the concrete being repaired, with only sufficient water to give the required consistency. Essentially, this would consist of the concrete mix with the coarse aggregate removed and water quantity adjusted as required. In no case shall the water-cement ratio be more than that specified for the concrete being repaired. In the case of mortar being used for patching or repairing exposed concrete surfaces which are not to be painted or which will not be submerged in water, sufficient white cement shall be used to make the color of the finished patch match that of the surrounding concrete.

Bolt and tie holes shall be cleaned and roughened by heavy sandblasting and filled with dry-pack mortar, well tamped into the holes. For dry-pack mortar, only enough water shall be used so that the resulting mortar will crumble to the touch after being formed into a ball by hand.

Grout to fill the void between the steel casing and the carrier pipe of jacked pipe shall have the concrete mix of Class C concrete with the coarse aggregate removed.

Concrete surfaces shall be cleaned and roughened by a heavy sandblasting and thoroughly damp before grout or mortar is placed, or, where indicated on the Drawings or specified, an epoxy bonding agent shall be applied to the clean, roughened, dry surface before placing the mortar or grout.

Grout for spreading over the surfaces of construction joints or cold joints shall consist of sand and cement with no more water used than allowed by the water-cement ratio specified for the concrete.

Particular care shall be exercised in placing cement mortar or grout since it will be expected to furnish structural strength or an impermeable water seal or both. Cement mortar or grout that has not been placed within 30 minutes after mixing shall not be used.

Grout for which the mix is not otherwise specified shall be mixed in the proportions by weight of one part cement to four parts of concrete sand.

### 2. Nonshrink Grout

Nonshrink grout shall be made with a hydraulic cement, which when mixed with water will harden rapidly to produce a permanent high strength material

suitable for exterior use. Nonshrink grout shall be nonmetallic and shall not contain calcium chloride or other chemicals which accelerate the corrosion of embedded steel. The grout shall show no shrinkage prior to initial setting in accordance with ASTM C 827 and shall show no shrinkage in the hardened state when tested in accordance with ASTM C 157 and Corps of Engineers CRD C-621. Nonshrink grout shall be Five Star Grout manufactured by U.S. Grout Corporation; Masterflow 713 Grout manufactured by Master Builders; or equal.

When mixed in accordance with manufacturer's published instructions, the nonshrink grout shall be semi-fluid and suitable for placing by pouring into place when mixed to a flowable consistency. The compressive strength tested in accordance with ASTM C 109 shall be not less than 3,000 psi at 1 day and not less than 6,000 psi at 28 days. Setting time tested in accordance with ASTM C 191 shall be not less than 30 minutes.

### 3. Epoxy Grout

Epoxy grout shall be used where specified herein or where indicated on the Drawings. Epoxy grout may be used to repair surface defects in concrete work.

Epoxy grout shall be made by mixing one part epoxy with not more than two parts sand. The sand shall be clean, bagged, graded, kiln dried silica sand. The prepared grout shall wet the contact surface and provide proper adhesion or a coat of epoxy shall be applied prior to placing the epoxy grout. Manufacturer's published instructions for mixing and application shall be followed.

For vertical or overhead work, epoxy gel shall be used. For horizontal work, epoxy shall be used. Epoxy grout for vertical or overhead work may be used for horizontal work.

### O. Conduit Encasement (Electrical)

All concrete used for the encasement of electrical ducts, conduits, etc. shall be colored red by mixing into each cubic yard of concrete 10 pounds of red oxide No. 1117 as manufactured by the Frank D. Davis Company; equivalent product by I. Reiss Company, Inc.; or equal.

## PART 3 - EXECUTION

### A. Watertightness of Concrete Work

It is the intent of this Specification to secure for every part of the work concrete and grout of homogeneous structure, which when hardened will have the required strength, watertightness, and resistance to weathering.

It is recognized that some surface hairline cracks and crazing will develop in the concrete surfaces. Construction, contraction, and expansion joints have been positioned in structures, and curing methods specified, for the purpose of reducing the number and size of these expected cracks, due to the normal expansion and contraction expected from the specified concrete mixes. Class A and Class B concrete shall be watertight. Cracks which develop in walls or slabs shall be repaired. Cracks which show any signs of leakage shall be repaired until all leakage is stopped.

Visible cracks, other than hairline cracks and crazing, in the following areas shall be pressure grouted with low viscosity epoxy as specified herein as Epoxy Injection System: walls and overhead slabs of passageways or occupied spaces, the outside of which are exposed to weather or may be washed down and are not specified to receive a separate waterproof membrane; and other similar surfaces not specified to receive a separate waterproof membrane.

Walls or slabs, as above, that leak or sweat because of porosity or cracks too small for successful pressure grouting, shall be sealed on the water or weather side by coatings of a surface sealant system, as specified elsewhere herein.

Grouting or sealing as specified above shall be continued until the structure is watertight and shall remain watertight for not less than one year after final acceptance or date of final repair, whichever occurs later in time.

B. Joints and Bonding

As far as practicable the concrete work shall be constructed as a monolith. The locations of contraction, construction, and other joints are indicated on the Drawings or specified herein. Where not specified or indicated otherwise, all slabs and walls shall have construction joints at intervals not greater than 30 feet. There shall not be less than 14 days between placement of concrete in adjacent concrete wall placements. Concrete for slabs shall be placed in a checker board pattern with not less than 14 days between placement of concrete in adjacent concrete slab placements. In order to preserve the strength and watertightness of the structures, no other joints shall be made except as the Owner may authorize. At construction joints, the concrete in place shall be thoroughly cleaned of laitance, grease, oil, mud, dirt, curing compounds, mortar droppings, or other objectionable matter by means of heavy sandblasting, after which the surfaces shall be washed just prior to the succeeding concrete placement. Immediately prior to resuming concrete placing operations, a bed of grout not less than 1/2 inch in thickness nor more than 1 inch in thickness shall be thoroughly spread over the horizontal joint surfaces.

Keyways in joints shall be provided as indicated on the Drawings. Material for keyways shall be steel, plastic or lumber treated with form release coating, applied in accordance with the manufacturer's published instructions.

Construction joints shall be washed free of sawdust, chips, and other debris after forms are built and immediately before the concrete placement. Should formwork confine sawdust, chips, or other loose matter in such manner that it is impossible to remove them by flushing with water, a vacuum cleaner shall be used for their removal, after which the cleaned surfaces shall be flushed with water. A cleanout hole shall be provided at the base of each wall and column for inspection and cleaning.

Expansion, contraction, and construction joints shall be constructed where and as indicated on the Drawings. Waterstops, expansion joint material, synthetic rubber sealing compound, and other similar materials, shall be as specified elsewhere herein.

The Contractor shall prepare a test panel showing horizontal and vertical joints proposed for the project for review by the Owner. See finishes this section.

The Contractor shall schedule the placing of concrete in such a manner as to complete any single placing operation to a construction, contraction, or expansion joint. Special care shall be taken to insure that concrete is well consolidated around and against waterstops and that waterstops are secured in the proper position.

In any case where it is necessary to repair concrete by bonding mortar or new concrete to concrete which has reached its initial set, the surface of the set concrete shall first be coated with epoxy bonding agent.

C. Workmanship and Methods

Concrete work, including detailing of reinforcing, shall be in accordance with the best standard practices and as set forth in the ACI Building Code, Manuals, and Recommended Practices.

All concrete materials shall be so delivered, stored, and handled as to prevent damage to the materials and the inclusion of foreign substances. Packaged materials shall be delivered and stored in original containers until ready for use. Material containers or materials showing evidence of water or other damage shall be rejected.

D. Measurements of Materials

Materials shall be measured by weighing, except as otherwise specified or where other methods are specifically authorized in writing by the Owner. The apparatus provided for weighing the aggregates and cement shall be suitably designed and constructed for this purpose. Cement shall be weighed separately. The accuracy of all weighing devices shall be such that successive quantities of the individual item can be measured to within 1 percent of the desired amount of that item. Cement in unbroken standard packages (sack) need not be weighed, but bulk cement and fractional packages shall be weighed. The mixing water shall be measured by

volume or by weight. The water measuring device shall be capable of control of water quantities to an accuracy of 1 percent of the desired amount. All measuring or weighing devices shall be subject to review and acceptance by the Owner, and shall bear a valid seal of the Sealer of Weights and Measures having jurisdiction.

E. Concrete Proportions and Consistency

The concrete shall be of such consistency and composition that it can be worked readily into the corners and angles of the forms and around the reinforcement without excessive vibration and without permitting the materials to segregate or free water to collect on the surface.

The ratio of coarse aggregate to fine aggregate shall be not less than 1.0 nor more than 2.0 for all concrete with the exception of Class CE.

The Contractor shall prevent unnecessary or haphazard changes in consistency of the concrete. Aggregate shall be obtained from a source which shall provide uniform quality, moisture content, and grading during any single day's operation. Aggregate shall be delivered to the mixing site and handled in such a manner that variations in moisture content will not interfere with the steady production of concrete of the specified degree of uniformity and slump.

The concrete mix water to cement ratio, minimum cement content, and slump range shall conform to the values specified in Table A previously.

The Contractor shall control and adjust the concrete batch weights so as to secure the maximum yield, yet at all times the Contractor shall maintain the proportions of the concrete mix within the specified limits.

If it is required, in the opinion of the Owner, the mixture shall be modified within the limits set forth in these Specifications.

F. Concrete Mixes

Prior to placement of concrete, the Contractor shall submit full details, including mix design calculations for the concrete mix he proposes to use for each class of concrete. The concrete mix shall be proportioned based on the required average compressive strength  $f'_{cr}$  defined in the following subsection.

After acceptance, the Contractor shall have trial batches of the accepted Class A, Class B, and Class D concrete mix designs prepared by a testing laboratory acceptable to the Owner. The trial batches shall be prepared using the specified cement and aggregates proposed to be used for the Work. The trial batch shall be of sufficient quantity to determine slump, workability, consistency and finishing characteristics, and to provide sufficient test cylinders. Test cylinders shall be 6 inch diameter by 12 inch long and prepared in accordance with ASTM C 31 for the tests specified hereinafter. Data shall be submitted for each of the test cylinders. The

data shall identify the mix and slump for each of the test cylinders. Slump shall be determined in accordance with ASTM C 143.

Eight test cylinders shall be compression tested in accordance with ASTM C 39. Four test cylinders shall be tested at 7 days and four at 28 days. A ratio between 7 day and 28 day strength will be established for the mix and the 7 day strength may be taken as a satisfactory indication of the 28 day strength provided the effects on the concrete of temperature and humidity between the seventh and 28 day are taken into account. The average compressive strength of the four test cylinders tested at 28 days shall be equal to or greater than the required average compressive strength  $f'_{cr}$  on which the concrete mix design is based.

If the trial batch tests do not meet the Specifications for slump, strength, workability, consistency, and finishing, the concrete mix design proportions and, if necessary, source of aggregate shall be changed and additional trial batches and tests shall be made until an acceptable trial batch is produced that meets the Specifications.

All test batches and tests required to establish trial batches and acceptability of materials shall be paid for by the Contractor.

After acceptance, the mixes shall not be changed without reacceptance by the Owner, except that at all times the batching of water shall be adjusted to compensate for the free moisture content of the fine aggregate. The total water content of each of the classes of concrete shall not exceed those specified in Table B previously. Satisfactory means shall be provided at the batching plant for checking the moisture content of the fine aggregate. The details of concrete mixes submitted for review shall include information on the correction of the batching for varying moisture contents of the fine aggregate.

If there is a change in the aggregate source, or if there is a change in aggregate quality from the same source, the Contractor shall submit a new set of design mixes covering each class of concrete, and a new trial batch and test program shall be undertaken as hereinbefore specified. Each new trial batch and test program shall be at the expense of the Contractor.

#### G. Required Average Compressive Strength

The required average compressive strength,  $f'_{cr}$  for the selection of concrete proportion for the mix design, for each class of concrete, shall be determined using the calculated standard deviation and its corresponding specified compressive strength  $f'_c$ , in accordance with ACI 318, Part 3, Chapter 5.

Where the Contractor has a test record of at least 30 consecutive tests that span a period of not less than 45 calendar days, a standard deviation shall be established as described in ACI 318, Part 3, Chapter 5 and as modified herein. Test records from which the standard deviation is calculated shall represent materials, quality control procedures, and conditions similar to the materials, quality control

procedures, and conditions expected to apply in the preparation of concrete for the Work. Changes in materials and proportions within the test records shall have been more restricted than those for the Work. The specified compressive strength  $f'_c$  of concrete used in the test records shall be within 1,000 psi of that specified for the Work.

The Contractor shall include the test records with the mix design submittal.

Where the Contractor does not have a test record for calculation of standard deviation meeting requirements specified herein, the required average compressive strength  $f'_{cr}$  shall be determined from Table A.

TABLE A

Specified Compressive Strength $f'_c$ (pound per square inch)	Required Average Compressive Strength $f'_{cr}$ (pound per square inch)
Less than 3,000	$f'_c + 1,000$
3,000 to 5,000	$f'_c + 1,200$
Over 5,000	$f'_c + 1,400$

H. Testing of Concrete

During the progress of construction, the Owner will have tests made to determine whether the concrete, as being produced, complies with the requirements specified herein. These tests shall be made in accordance with ASTM C 31, ASTM C 39, and ASTM C 172. Test cylinders will be made and delivered to the laboratory by the Owner and the testing expense will be borne by the Owner.

Not less than three cylinder specimens, 6 inch diameter by 12 inch long, will be tested for each 150 cubic yards of each class of concrete with a minimum of three specimens for each class of concrete placed and not less than three specimens for each half day's placement. One cylinder will be broken at 7 days and two at 28 days.

The Contractor shall test the slump of concrete using a slump cone in accordance with the requirements of ASTM C 143. The Contractor shall provide the test equipment. Concrete that does not meet the Specification requirements as to slump shall not be used and shall be removed from the job. The Contractor shall test the slump at the beginning of each placement, as often as necessary to keep the slump within the specified range, and when requested to do so by the Owner.

The Contractor shall make provisions for and furnish all concrete for the test specimens, and provide manual assistance to the Owner in preparing said specimens. The Contractor shall be responsible for the care of and providing curing conditions for the test specimens in accordance with ASTM C 31.

I. Enforcement of Strength Requirement

Concrete is expected to reach a higher compressive strength than that which is indicated in Table B as the specified compressive strength  $f'_c$ . The strength level of the concrete will be considered acceptable if all of the following conditions are satisfied.

1. The averages of all sets of three consecutive strength test results shall be greater or equal to specified compressive strength  $f'_c$ .
2. No individual strength test (average of two cylinders) shall fall below specified compressive strength  $f'_c$  by more than 500 psi.

Whenever one, or both, of the two conditions stated above is not satisfied, the Contractor shall provide additional curing of the affected portion followed by cores taken in accordance with ASTM C 42 and ACI 318. If the additional curing does not bring the average of three cores taken in the affected area to at least the specified compressive strength  $f'_c$ , all concrete in the affected area shall be designated as defective. The Owner may require the Contractor to strengthen the defective concrete by means of additional concrete, additional reinforcing steel, or replacement of the defective concrete, all at the Contractor's expense.

J. Forms and Accessories

1. Removal

Vertical forms shall remain in place a minimum of 24 hours after the concrete is placed. If, after 24 hours, the concrete has sufficient strength and hardness to resist surface or other damage, the vertical forms may be removed. Other forms supporting concrete and shoring shall remain in place as follows:

Sides of footings	24 hours minimum
Vertical sides of beams, girders, and similar members	48 hours minimum
Slabs, beams, and girders	Until concrete strength reaches the specified strength or until shoring is installed
Shoring for slabs, beams, and girders	Until concrete strength reaches the specified strength
Wall bracing	Until concrete strength of the beams and slabs laterally supporting the wall reaches the specified strength

Forms shall not be removed from concrete which has been placed with outside ambient air temperature below 50 degrees F until the concrete has attained the specified strength as determined by test cylinders stored in the field under equivalent conditions as the concrete structure. No heavy loading on green concrete will be permitted. Green concrete shall be defined as concrete with less than the specified strength. Immediately after forms are removed, the surface of the concrete shall be carefully examined, and any irregularities in the surface shall be repaired and finished as specified hereinafter.

## 2. Form Ties

After the forms and the tapered ties are removed from the wall, the tapered tie holes shall be plugged. The tie holes shall be heavy blasted, and then cleaned. After cleaning, a rubber plug shall be driven into each of the tapered tie holes with a steel rod. The steel rod shall be located in a cylindrical recess, made in the plug, during driving. At no time shall plugs be driven on the flat area outside the cylindrical recess. The rubber plug shall be sized so that after it is driven into the tapered tie hole, the plug will be located near the center of the wall.

After installing plugs in the tapered tie holes, the tie holes shall be coated with epoxy bonding agent and filled with dry-pack mortar with a dry consistency and with a mix of one part of Portland cement to one part of plaster sand. The amount of water to be added to the cement-sand mix shall be such that the mortar can be driven into the holes and will compact properly. The dry-pack mortar shall be heavily compacted in the holes and shall be placed in layers with a thickness not exceeding the tie hole diameter. Admixtures or additives shall not be used in the dry-pack mortar.

The wall surfaces in the area of the dry-packed tie holes shall be covered with a minimum of 10 mils of epoxy gel. The epoxy gel coating on the wall surface shall extend a minimum of 2 inches past the dry-pack mortar filled tie hole. The finish surfaces shall be free from sand streaks or other voids.

## 3. Incidentals

Where not otherwise indicated on the Drawings, all external angles of walkways, slabs, walls, beams, columns, and openings shall have a 3/4 inch bevel formed by utilizing a true dimensioned wood or solid plastic chamfer strip and external angles of walkways, walls, and slabs at expansion, contraction, and construction joints shall be a 1/2 inch bevel formed by utilizing a true dimensioned wood or solid plastic chamfer strip. Reentrant angles may be left square. Level strips shall be installed at the top of all wall concrete placements to maintain a true line at all horizontal construction joints.

Keyways shall be constructed as indicated on the Drawings. Material for keyways shall be steel, plastic, or lumber treated with form coating, applied according to label directions.

Pipes, anchor bolts, steps, reglets, castings, and other inserts, as indicated on the Drawings or as required, shall be encased in the concrete. Dovetail anchors or ties shall be used in conjunction with the slots or inserts for the various materials as specified under their respective sections and as may be necessary for the required work.

#### 4. Bracing and Alignment of Forms

It shall be the Contractor's responsibility to limit deviations in line and grade to tolerances which will permit proper installation of all structural embedded items or mechanical and electrical equipment and piping.

All formwork shall be securely braced, supported, tied down, or otherwise held in place to prevent any movement of formwork. Adequate provisions shall be made for uplift pressure, lateral bulging of forms, and deflection of forms for slabs and beams.

When a second lift is placed on hardened concrete, special precautions shall be taken in the form work at the top of the old lift and bottom of the new lift to prevent spreading, vertical or horizontal displacement of forms; and to prevent grout "bleeding" on finished concrete surfaces. Pipe stubs, anchor bolts, and other embedded items shall be set in the forms where required.

No concrete shall be placed until all forms have been thoroughly checked by the Contractor for alignment, level, strength, and to assure accurate location of all mechanical and electrical inserts or other embedded items. All cracks, openings, or offsets at joints in the formwork which are 1/16 inch or larger shall be closed by tightening the forms or by filling with an acceptable crack filler.

#### 5. Tolerances

It is the intent that the finished concrete conforms to the shapes, lines, grades, and dimensions indicated on the Drawings. It shall be the responsibility of the Contractor to comply with the intent of these Specifications, but it is also recognized that there will be occasions when some deviation will occur or be required. It shall therefore be agreed that the maximum deviation from true line and grade shall not exceed the tolerances listed below at the time of acceptance of the project.

- a. In general all tolerances shall comply with AC1 117-81, paragraphs 2.0 through 2.2 and paragraphs 4.0 through 4.5, except as modified in

the following. All slabs shall be uniformly sloped to drain when a slope is indicated. Slabs which are indicated to be level shall have a maximum deviation of 1/8 inch in 10 feet without any apparent changes in grade.

- b. All inserts shall be set to the tolerances required for the proper installation and operation of the equipment or systems to which the insert pertains. The following shall be considered maximum tolerances.

<u>Item</u>	<u>Maximum Tolerance,</u> <u>_____ inches</u>
Sleeves and inserts	plus 1/8 minus 1/8
Projected ends of anchor bolts	plus 1/4 minus 0.0
Anchor bolt setting	plus 1/16 minus 1/16

K. Caulking

Concrete must be thoroughly cured prior to caulking. All surfaces to be caulked shall be dry, clean, and free of dirt, grease, curing compounds, and other residue which might interfere with adhesion of the caulking compound. Concrete, masonry, wood, and steel surfaces shall be cleaned and primed in strict accordance with the manufacturer's recommendations prior to caulking. Synthetic sponge rubber filler materials may be used as backing for caulking, if acceptable to the Owner. Filler material, when used, shall be compressible and untreated.

Caulking shall be applied with a pneumatic caulking gun. Nozzles of the proper shape and size shall be used for the application intended. A continuous bond shall be maintained between the caulking and the sides of the joint to eliminate gaps, bubbles, or voids and to fill the joint in a continuous operation without layering of the compound. All joints and seams shall be caulked by experienced applicators in a neat workmanlike manner.

No caulking shall be applied when the temperature exceeds 120 degrees F to avoid sponging or bubbling of compound. To hasten curing of the compound when used on wide joints subject to movement, the Contractor shall apply heat with infra-red lamps or other convenient means.

Excess caulking shall be removed by soaking and scrubbing before caulking has cured with Chem Seal CS9900; equivalent product of Products Research and Chemical Corporation; or equal. Excess cured material shall be removed by sanding with No. 80 grit sandpaper.

L. Synthetic Rubber Sealing Compound

All surfaces to which synthetic rubber must bond shall be dry and free of dust, dirt,

and other foreign residue, heavy sandblasted caulking groove to provide a sound surface, and shall be primed with the manufacturer's recommended primer for the particular surface.

Application shall be in strict accordance with the manufacturer's published instructions. Application shall be by means of a pneumatic caulking tool or other acceptable method.

All packages shall be code dated. No material shall be more than six months old when used. Material shall have been kept at temperatures lower than 80 degrees F at all times.

M. Epoxy Injection System

Where epoxy injection is required to repair cracks in concrete material, information on the epoxy injection system shall be submitted.

Adequate surface seal shall be applied to the crack or joint to prevent escape of the epoxy. Entry points shall be established at a distance along the seal not less than the thickness of the cracked member.

A 100 percent solid epoxy adhesive as specified above shall be forced into the crack at the first port with sufficient pressure to advance the epoxy to the adjacent port. The original port shall be sealed and entry shifted to the port at which the epoxy appears. This manner of port-to-port injection shall be continued until each joint has been injected for its entire length.

Before processing, the space in the vicinity of a crack location receiving epoxy shall have been swept and left in a generally clean condition. All joints receiving epoxy under this section shall be cleaned free from dirt, laitance, and other loose matter.

Pump unit used for injection shall be a positive displacement type with interlock to provide an in-line mixing and metering system for the two-component epoxy. The pressure hoses and injection nozzle shall be of such a design as to allow proper mixing of the two components of epoxy. The presence of a standby injection unit may be required.

For small amounts, or where excessive grout pressure developed by a pump unit might further damage the structure, premixed material and a hand caulking gun may be used if acceptable to the Owner.

Seal all ports, including adjacent locations where epoxy seepage occurs, as necessary to prevent drips or run out. Any condition other than normal shall be reported to the Owner. Solvents may not be used to thin the epoxy system introduced into the cracks or joints. All work under this Specification shall be performed and conducted in a neat orderly manner.

N. Placing Bar Reinforcement

1. General

Reinforcing bars shall be accurately placed and adequately secured in position. Bars at splices shall overlap as specified or indicated on the Drawings. Unless specifically otherwise indicated on the Drawings, the bars at a lap splice shall be in contact with each other and the bars shall be fastened together with tie wire. If the lap splice length is not specified or indicated on the Drawings, bars shall be lap spliced in accordance with ACI 318. Lap splices for masonry, if not specified or indicated on the Drawings and not specified in the section on masonry, shall be in accordance with the Uniform Building Code.

Bar supports shall be hot-dip galvanized steel, shall conform to ACI 315, and shall be furnished in sufficient number to prevent sagging and to support loads during construction, but in no case shall the quantities and locations of the supports be less than indicated in ACI 315. Bar supports, where used in slabs which will be exposed to view, shall be equipped with plastic tips. Reinforcing for concrete placed on the ground shall be supported by standard manufactured chairs, with steel plates for resting on the ground. No use shall be made of brick, broken concrete masonry units, spalls, rocks, or similar material for supporting reinforcing steel.

Unless otherwise indicated on the Drawings, reinforcement shall be placed so as to provide the thickness of protective concrete covering as indicated on the Drawings. If not indicated on the Drawings, the protective concrete cover shall be in accordance with ACI 318.

The Contractor shall submit samples of all chairs he proposes to use along with a letter stating where each type chair will be used. No concrete shall be placed until this prior acceptance has been obtained.

2. Tying Bar Reinforcement

Bars shall be fastened securely in place with annealed steel wire ties. Bars shall be tied sufficiently often to prevent shifting. There shall be at least three ties in each bar length (does not apply to dowel laps or to bars shorter than 4 feet, unless necessary for rigidity). Slab bars shall be tied at every intersection around the periphery of the slab. Wall bars and slab bar intersections other than around the periphery shall be tied at not less than every fourth intersection, but at not greater than the following maximum spacings

	<u>Slab Bars,</u> <u>inches</u>	<u>Wall Bars,</u> <u>inches</u>
Bars No. 5 and smaller	60	48

Bars No. 6 through No. 9	96	60
Bars No. 10 and No. 11	120	96

The above tying requirements do not apply to reinforcement for masonry.

Where bars are to be lapped spliced at joints in the concrete, all bars shall project from the concrete first placed, a length equal to the lap splice length indicated on the Drawings. Where the lap splice length is not indicated on the Drawings, then the lap splice length shall be as specified in ACI 318 and this Division. All concrete or other deleterious coating shall be removed from dowels and other projecting bars by wire brushing or sandblasting before the bars are embedded in a subsequent concrete placement.

The Drawings contain general notes concerning amount of reinforcement and placing, details of reinforcement at wall corners and intersections, and details of extra reinforcement around openings in concrete.

O. Mixing Concrete

1. General

Submit information on mixing equipment. Mixers may be of the stationary plant, paver, or truck mixer type. Adequate equipment and facilities shall be provided for accurate measurement and control of all materials and for readily changing the proportions of the material.

The mixing equipment shall be capable of combining the aggregates, cement, and water within the specified time into a thoroughly mixed and uniform mass and of discharging the mixture without segregation.

Concrete mixing plant and equipment shall be maintained in good working order and shall be operated at the loads, speeds, and timing recommended by the manufacturer or as specified.

The cement and aggregate shall be proportioned by weight.

2. Machine Mixing

The batch plant shall be capable of controlling the delivery of all material to within 1 percent by weight of the individual material. If bulk cement is used, it shall be weighed on a separate visible scale which will accurately register the scale load at any stage of the weighing operation from zero to full capacity.

Cement shall not come in contact with aggregate or with water until the materials are in the mixer ready for complete mixing with all mixing water. The procedure of mixing cement with sand or with sand and coarse aggregate for delivery to the jobsite for final mixing and addition of mixing

water will not be permitted. Retempering of concrete will not be permitted. The entire batch shall be discharged before recharging. The volume of the mixed material per batch shall not exceed the manufacturer's rated capacity of the mixer.

Mixing shall be done in batch mixers of acceptable type. Each mixer shall be equipped with a device for accurately measuring and indicating the quantity of water entering the concrete, and the operating mechanism shall be such that leakage will not occur when the valves are closed. Each mixer shall be equipped with a device for automatically measuring, indicating, and controlling the time required for mixing. This device shall be interlocked to prevent the discharge of concrete from the mixer before the expiration of the mixing period.

Transit-mixed concrete shall be mixed and delivered in accordance with ASTM C 94. The total elapsed time between the addition of water at the batch plant and discharging the completed mix shall not exceed 90 minutes or shall the elapsed time at the jobsite exceed 30 minutes. Under conditions contributing to quick setting, the total elapsed time permitted may be reduced by the Owner. Each truck mixer shall be equipped with a device for counting the number of revolutions of the drum which device shall be interlocked so as to prevent the discharge of concrete from the drum before the required number of turns. After the drum is once started, it shall be revolved continuously until it has completely discharged its batch. Water shall not be admitted to the mix until the drum has started revolving. The right is reserved to increase the required minimum number of revolutions or to decrease the designated maximum number of revolutions allowed, if necessary, to obtain satisfactory mixing, and the Contractor will not be entitled to additional compensation because of such increase or decrease.

In the case of other types of mixers, mixing shall be as follows. The concrete shall be mixed until there is uniform distribution of the materials, and the mixer shall be discharged completely before being recharged. Neither speed nor volume loading of the mixer shall exceed the manufacturer's recommendations. Mixing shall be continued for a minimum of 1 1/2 minutes after all materials are in the drum, and for batches larger than 1 cubic yard the minimum mixing time shall be increased 15 seconds for each additional cubic yard or fraction thereof.

### 3. Hand Mixed Concrete

Hand mixing of concrete shall be done only when requested by the Contractor in writing and accepted by the Owner.

Hand mixed concrete shall be prepared on a watertight level platform in batches of not to exceed 1/3 cubic yard each. The required amount of coarse aggregate shall first be spread on the platform in an even and uniform

layer, over which the proper proportion of fine aggregate shall then be likewise spread. The combined depth of both such layers shall not be greater than 1 foot. The required quantity of cement shall then be evenly distributed over the fine aggregate; following which the entire batch shall be turned with shovels at least twice before the water is added. The proper amount of water shall then be uniformly sprinkled or sprayed over the batch which shall thereafter be turned with shovels not less than three times before being removed from the platform.

P. Conveying and Placing Concrete

1. General

Concrete shall be conveyed from the mixer to the place of final deposit by methods which will prevent the separation or loss of the materials.

2. Conveying Concrete

Equipment for chuting, pumping, and conveying concrete shall be of such size and design as to insure a practically continuous flow of concrete at the delivery end without separation of the materials. Chutes and devices for conveying and depositing concrete shall be so designed and used that the concrete shall be directed vertically downward when discharged from the chute or conveying device.

Chutes for conveying concrete shall be kept thoroughly cleaned by washing and scraping upon the completion of any day's placement.

3. Placing Concrete

No concrete shall be placed without the prior authorization of the Owner.

Concrete shall not be placed until all reinforcement is securely and properly fastened in its correct position and loose form ties at construction joints have been retightened, nor until all dowels, bucks, sleeves, hangers, pipes, conduits, bolts, and any other fixtures required to be embedded therein have been placed and adequately anchored, nor until the forms have been cleaned and oiled as specified.

Placement of concrete in which initial set has occurred or of retempered concrete will not be permitted.

No concrete shall be placed during rainstorms or high velocity winds. Concrete placed immediately before rain shall be protected to prevent the water from coming in contact with it or winds causing excessive drying. Sufficient protective covering shall be kept on hand at all times for protection purposes.

The Contractor shall submit a proposed sequence of placing concrete showing proposed beginning and ending of individual placements. After acceptance, this sequence shall be adhered to except when specific changes are requested by the Contractor and accepted by the Owner.

The Contractor shall notify the Owner by written memorandum of his readiness (not just his intention) to place concrete in any portion of the work. This notification shall be such time in advance of the operation as the Owner deems necessary for him to make final inspection of the preparations at the location of the proposed concrete placing. All forms, steel, screeds, anchors, ties, and inserts shall be in place before the Contractor's notification of readiness is given to the Owner.

Concrete shall be deposited at or near its final position to avoid segregation caused by rehandling or flowing. Concrete shall not be deposited in large quantities in one place and worked along the forms with the vibrator or otherwise. No concrete shall be dropped freely into place from a greater height than 5 feet. Tremies shall be used for placing concrete where the drop is over 5 feet. Placement of concrete on slopes shall commence at the bottom of the slope.

Concrete shall be placed in approximately horizontal layers not to exceed 24 inches in depth and shall be brought up evenly in all parts of the forms. Concrete placement shall continue without avoidable interruption, in a continuous operation, until the end of the placement is reached.

If it takes more than 20 minutes lapse prior to placement of new concrete over concrete previously placed, the depth of the layers being placed at one time shall be reduced, and/or placing equipment increased, until it is possible to return with the placing operation to previously placed concrete within 20 minutes. If concrete is to be placed over previously placed concrete and more than 20 minutes have elapsed, then a layer of grout not less than 1/2 inch thick nor more than 1 inch in thickness shall be spread over the surface before placing the additional concrete.

The placement of concrete for slabs, beams, or walkways cast monolithically with walls or columns shall not commence until the concrete in the walls or columns has been allowed to set and shrink. The time allowed for shrinkage shall be not less than one hour.

#### 4. Consolidating Concrete

Concrete shall be placed with the aid of acceptable mechanical vibrators. The concrete shall be thoroughly consolidated around reinforcement, pipes, or other shapes built into the work. The vibration shall be sufficiently intense to cause the concrete to flow and settle readily into place and to visibly affect the concrete over a radius of at least 18 inches.

Sufficient vibrators shall be on hand at all times to vibrate the concrete as placed. In addition to the vibrators in actual use while concrete is being placed, the Contractor shall have on hand one spare vibrator in serviceable condition. No concrete shall be placed until it has been ascertained that all vibrating equipment, including spares, is in serviceable condition.

Special care shall be taken to place the concrete solidly against the forms so as to leave no voids. Every precaution shall be taken to make all concrete solid, compact, and smooth, and if for any reason the surfaces or interiors have voids or are in any way defective, such concrete shall be repaired in a manner acceptable to the Owner.

#### 5. Extreme Weather Conditions

For concrete placed when the ambient air temperature is above 90 degrees F, the forms and reinforcing steel shall be cooled to below 90 degrees F by water spraying. The temperature of the concrete mix at time of placement shall be kept below 90 degrees F by methods which do not impair the quality of the concrete.

The Contractor shall submit information on the type of equipment to be used for heating materials and/or new concrete in the process of curing during excessively cold weather.

For concrete placed below an ambient air temperature of 40 degrees F, or 45 degrees F and falling, provision shall be made for heating the water. If materials have been exposed to freezing temperatures to the degree that any material is below 35 degrees F, the material shall be heated. Water, cement, or aggregate materials shall not be heated in excess of 160 degrees F. Concrete in the forms shall be protected by means of covering with tarpaulins, or other acceptable covering, and a means shall be provided for circulating warm moist air around the forms to maintain a temperature of 50 degrees F for at least five days.

For conditions which promote rapid drying of freshly placed concrete such as low humidity, high temperature, and wind, the Contractor shall take corrective measures to minimize the rapid water loss from the concrete. The Contractor shall submit the corrective measures he plans to use prior to placing concrete.

The Contractor shall provide and use a sufficient number of maximum and minimum self-recording thermometers to adequately indicate the temperature around the concrete.

#### 6. Footings and Slabs on Grade

Concrete to be placed on ground or compacted fill shall not be placed until the subgrade is in a moist condition acceptable to the Owner. If necessary, the subgrade shall be well sprinkled with water not less than 6 nor more than 20 hours in advance of placing concrete. If it becomes dry prior to the actual placing of concrete, it shall be sprinkled again, without forming pools of water. No concrete shall be placed if the subgrade is muddy or soft.

Q. Repair of Defective Concrete

All defective work shall be removed and replaced or repaired. Any work which has not been constructed in accordance with the Plans and Specifications shall be considered defective.

Correction of defective work shall be as specified herein. No defective work shall be patched, repaired, or covered without inspection by the Owner. Repair shall have a strength equal or greater than the specified concrete for the area. The Contractor shall submit a mix design for the grout which is proposed for use. All imperfections in the work shall be chipped out and keyed ready for repair.

The dry pack method shall be used for holes having a depth nearly equal to or greater than the least surface dimension of the hole, for cone-bolt, and narrow slots cut for repair. Smooth holes shall be cleaned and roughened by heavy sandblasting before repair.

The mortar method of replacement shall be used for holes too wide to dry pack and too shallow for concrete replacement and shall be used for comparatively shallow depressions, large or small, which extend no deeper than the reinforcement nearest the surface.

Concrete replacement shall be used when holes extend entirely through the concrete section or when holes are more than 1 square foot in area and extend halfway through the section. All surfaces of the set concrete to be repaired shall first be coated with epoxy bonding agent. No repair shall be made until the Owner has accepted the method of preparing the surface and the proposed method of repair.

The color of the repair concrete dry pack and grout shall match that of the adjoining concrete. The use of white cement may be required to match color. The Contractor shall prepare test panels for proposed repairs at the beginning of the project for review and approval by the Owner. This panel will serve as a standard for repairs during the project.

Curing of all repaired concrete shall be the same as specified for concrete.

R. Curing Concrete

1. General

All concrete shall be cured by the methods specified herein.

All concrete shall be cured a minimum of seven days.

All concrete that is to be painted shall be water or plastic membrane cured. No curing compound shall be used on any concrete surface that is to receive paint or upon which any material is to be bonded. All other concrete shall be cured by water curing or sprayed curing membrane at the Contractor's option, except floors and slabs which are specified to be sealed with a concrete sealer. Floor slabs may be cured using a plastic film membrane curing.

## 2. Water Curing

All surfaces of concrete being water cured shall be kept constantly and visibly moist day and night for a period of not less than seven days and nights. Each day the forms remain in place may count as one day of water curing. No further curing credit will be allowed for forms in place after contact has once been broken between the concrete surface and the forms. Ties shall not be loosened during the period when concrete is being cured by leaving the forms in place. The top of walls shall be flooded with water at least three times per day, and the concrete surface shall be kept moist at all times during the seven day curing period.

## 3. Sprayed Membrane Curing

The curing compound shall be applied to the concrete surface after repairing and patching, and within one hour after the forms are removed. If more than one hour elapses after the removal of the forms, membrane compound shall not be used and water curing shall be applied for the full curing period. If the surface requires repairing or painting, the concrete shall be water cured.

Curing compound shall not be removed from the concrete in less than seven days. Curing compound may be removed by the Contractor only upon written request by the Contractor and acceptance by the Owner, stating what measures the Contractor shall take to adequately cure the structure.

Care shall be taken to apply curing compound in the area of the constructions joints to see that curing compound is placed within the construction joint silhouette. The curing compound placed within the construction joint silhouette shall be removed by heavy sandblasting prior to placing any new concrete. The Contractor has the option of water curing the construction joint.

Curing compound shall be applied by a mechanical, power operated sprayer and mechanical agitator that will uniformly mix all pigment and compound. The compound shall be applied in at least two coats. Each coat shall be applied in a direction opposite to the preceding coat. The compound shall be

applied in sufficient quantity so that the surface will have a uniform appearance and will effectively and completely conceal all natural color of the concrete at the time of the spraying. The Contractor shall continue to coat and recoat the surface until the specified coverage is achieved and until a coating film remains on the surface of the concrete. The thickness and coverage of the compound shall be such that the film can be scraped from the surface at any and all points after drying for at least 24 hours.

The Contractor is cautioned that the method of applying curing compound specified herein may require more compound than normally suggested by the manufacturer of the compound and also more than is customary in the trade. The amounts specified herein shall be applied, regardless of manufacturer's recommendations or customary practice, if the Contractor elects to use curing compound in place of water curing.

If the Contractor desires to use a curing compound other than the specified compound, the Contractor shall coat sample areas of concrete wall with the proposed compound and also a similar adjacent area with the specified compound in the specified manner for comparison. Complete data on the proposed compound shall also be submitted for review. If the proposed sample is not equal or better, in the opinion of the Owner, in all features, the proposed substitution will not be allowed.

Prior to final acceptance of the work, the Contractor shall remove, by sandblasting or other acceptable method, any curing compound on surfaces that will be exposed to view, so that only the natural color of the finished concrete will be visible uniformly over the entire surface.

#### 4. Plastic Membrane Curing

Polyethylene film may be used to cure slabs, and shall be sealed at joints and edges with a small sand berm. The plastic membrane shall be installed as soon as the concrete is finished and can be walked on without damage. The concrete shall be kept moist under the plastic membrane.

### S. Concrete Finishing

Concrete surfaces shall be finished as indicated on the Drawings. Where not specified or indicated on the Drawings, the surfaces shall be finished as follows:

Concrete surfaces which are specified or indicated to be painted, and all concrete surfaces, interior or exterior, exposed to view shall have fins removed and joints ground smooth, and shall be "sacked" with cement mortar so that all pits and holes are filled. Surfaces in open channels, basins, and similar structures, which are normally below the water surface shall have fins removed, but need not have joints ground. However, surfaces in such locations which are above the normal water surface and exposed to

view shall have fins removed and joints ground smooth, and shall be "sacked" with cement mortar so that all pits and holes are filled. Concrete surfaces in closed boxes or channels where there is normally no access or passageway shall have the fins removed. All form ties shall be removed from all surfaces, and holes shall be filled after being cleaned and roughened by heavy sandblasting.

The following surfaces shall be troweled, then given a light hairbroom finish:

- Exterior walkways
- Tops of exterior walls or beams which are to serve as walkways
- Tops of exterior walls or beams which are to support grating

The following surfaces shall be screeded off to grade and left rough:

- Projecting footings which are to be covered with dirt
- Slab surfaces which are to be covered with concrete fill or equipment pads

The following surfaces shall receive a smooth steel trowel finish:

- Tops of corbels
- Tops of walls and beams not covered above
- Tops of all slabs not covered above herein
- All other surfaces not specified to be finished otherwise

The final steel trowel finish shall be uniformly smooth and free of all irregularities. Building and machine room floors which are not to be covered with surfacing material shall be free from trowel marks. Trowel marks will be permitted in other locations. Concrete floor surfaces to which a surfacing material is to be applied shall be finished level and smooth with a tolerance of not over 1/8 inch in 10 feet in any direction.

#### PART 4 - PAYMENT

Payment of the work in this section will be included as part of the lump sum bid amount stated in the Proposal for items of work to which it is appurtenant.

END OF SECTION



**GENERAL NOTES**

- ALL WORK SHALL BE IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
- UNLESS OTHERWISE NOTED, CONSTRUCTION SHALL BE IN ACCORDANCE WITH CALTRANS STANDARD SPECIFICATION 2018. IN CASE OF CONFLICT BETWEEN THE CONSTRUCTION DOCUMENTS AND CALTRANS STANDARD SPECIFICATIONS AND PLANS, THE MOST STRINGENT PROVISIONS SHALL APPLY.
- THE CONTRACTOR IS RESPONSIBLE FOR ALL CONSTRUCTION MEANS AND METHODS INCLUDING DESIGN, INSTALLATION, AND REMOVAL OF ANY TEMPORARY SHORING THAT MAY BE NEEDED, BASED ON THE CONTRACTOR'S CHOSEN MEANS AND METHODS TO PERFORM THE WORK.
- LOCATIONS AND DIMENSIONS OF EXISTING STRUCTURES AND FEATURES HAVE NOT BEEN VERIFIED. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL CONTROLLING DIMENSIONS OF NEW AND EXISTING FEATURES PRIOR TO ORDERING OR FABRICATING MATERIAL OR CONSTRUCTING PROPOSED IMPROVEMENTS. REPORT ANY DISCREPANCIES TO THE ENGINEER PRIOR TO PROCEEDING WITH CONSTRUCTION OF THE FEATURE IN QUESTION.
- PRIOR TO THE START OF CONSTRUCTION, LOCATE ALL EXISTING AND UNDERGROUND UTILITIES IN AND AROUND THE AREAS OF NEW CONSTRUCTION. VERIFY THAT THE PROPOSED CONSTRUCTION DOES NOT CONFLICT WITH EXISTING OR PROPOSED UTILITIES OR THAT APPROPRIATE MEANS ARE PROVIDED FOR REROUTING, SUPPORTING, PROTECTING, OR OTHERWISE INCORPORATING THE UTILITIES INTO THE CONSTRUCTION.
- NOTIFY THE OWNER AND/OR ENGINEER WHERE A CONFLICT OR DISCREPANCY OCCURS BETWEEN THESE DRAWINGS AND ANY OTHER PORTION OF THE CONTRACT DOCUMENTS OR EXISTING FIELD CONDITIONS.
- PRODUCTS REFERENCED ON THE DRAWINGS SHALL BE CONSTRUCTED, INSTALLED, AND/OR APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN RECOMMENDATIONS UNLESS OTHERWISE NOTED.
- DO NOT SCALE DRAWINGS. CONTACT THE ENGINEER FOR ANY DIMENSIONS OR SPECIFIC DETAIL NOT SHOWN.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING RECORDS SUITABLE FOR DEVELOPING "AS-BUILT" DRAWINGS THROUGHOUT THE COURSE OF CONSTRUCTION, INCLUDING, BUT NOT LIMITED TO, THE LOCATIONS AND GRADES OF ALL UNDERGROUND AND SURFACE IMPROVEMENTS. THESE RECORDS SHALL BE MARKED IN RED (INCLUDE), GREEN (REMOVE), BLUE (COMMENTS/DIRECTIONS) STANDARD FORMAT. THESE RECORDS SHALL BE DELIVERED TO THE OWNER PRIOR TO THE ACCEPTANCE OF WORK.
- THE CONTRACTOR SHOULD COORDINATE WITH UNITED WATER CONSERVATION DISTRICT BEFORE ANY ROAD CLOSURES OR TRAFFIC DISRUPTIONS. CONTRACTOR SHALL SUBMIT A TRAFFIC CONTROL PLAN AND WORK SCHEDULE FOR REVIEW AND APPROVAL BY UNITED WATER CONSERVATION DISTRICT.

**DESIGN BASIS AND LOADING**

- THE DESIGNS DEPICTED IN THESE DRAWINGS ARE BASED ON INFORMATION PROVIDED IN THE FOLLOWING REFERENCES:
  - TOPOGRAPHIC BASE MAP, PROVIDED BY STANTEC, DATED JUNE 11, 2020.
  - DRAFT GEOTECHNICAL MEMORANDUM, PROVIDED BY GANNETT FLEMING, DATED SEPTEMBER 30, 2020.
  - VFD THREE BARREL CULVERT AND INVERTED SIPHON DESIGN – ALTERNATIVES ANALYSIS TECHNICAL MEMORANDUM, PROVIDED BY NHC DATED JULY 16, 2020.

DESIGN DISCHARGE GOAL 750 CFS
- DESIGN IS IN ACCORDANCE WITH THE FOLLOWING CODES AND STANDARDS:
  - ACI 318-19, BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE
  - ACI 350-06. CODE REQUIREMENTS FOR ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES
  - 2019 CALIFORNIA BUILDING CODE

**SURVEY**

- HORIZONTAL COORDINATE SYSTEM: NAD83 CALIFORNIA STATE PLANE, ZONE 5.
- VERTICAL DATUM: NGVD29.
- ALL UNITS SHOWN IN ARE IN U.S. SURVEY FEET.
- CONTRACTOR TO PROVIDE FIELD SURVEYING FOR PROJECT LAYOUT AND CONTROL.

**DEWATERING**

- THE CANAL SYSTEM IN THE PROJECT VICINITY WILL BE DEWATERED BY THE OWNER FOR THE DURATION OF THE WORK.

- GROUNDWATER AND/OR SURFACE WATER MAY BE ENCOUNTERED DURING EXCAVATION AND SUBGRADE PREPARATION. THE CONTRACTOR IS RESPONSIBLE FOR DEWATERING AS NECESSARY TO MAINTAIN STABLE AND CLEAN EXCAVATIONS. DIRECT DISCHARGE OF AFOREMENTIONED GROUNDWATER/SURFACE WATER INTO STREAMBED IS NOT PERMISSIBLE. FINAL DISCHARGE POINTS FOR ALL DEWATERING SHALL BE APPROVED BY UNITED WATER CONSERVATION DISTRICT.
- ALL PERMANENT IMPROVEMENTS SHALL BE CONSTRUCTED IN DRY CONDITIONS FREE FROM WATER.
- CONTRACTOR SHALL PROVIDE A DEWATERING PLAN PRIOR TO CONSTRUCTION FOR REVIEW AND APPROVAL BY THE OWNER.

**EXCAVATION**

- NOTIFY UNDERGROUND SERVICE ALERT (USA SOUTH) TO IDENTIFY THE LOCATION OF EXISTING UTILITIES AT LEAST TWO WORKING DAYS PRIOR TO ANY EXCAVATION WORK: (800)-422-4133 OR WWW.DIGALERT.ORG.
- THE CONTRACTOR IS RESPONSIBLE FOR STABILITY AND SHORING OF TEMPORARY CUT SLOPES AND TRENCHES, AND SHALL CONFORM TO THE REQUIREMENTS OF CAL-OSHA.
- EXCAVATIONS SHALL BE KEPT CLEAN AND DRY FOR THE DURATION OF THE WORK PERFORMED.
- CONTRACTOR SHALL BE PREPARED FOR POSSIBLE GRAVEL, COBBLES AND/OR ROCKFILL IN EXCAVATIONS.

**DEMOLITION**

- PROTECT EXISTING FEATURES THAT ARE TO REMAIN IN PLACE FROM DAMAGE UNLESS OTHERWISE NOTED.
- CONTRACTOR TO DISPOSE OF ALL DEMOLISHED MATERIALS AT THE DIRECTION OF THE OWNER.

**EARTHWORK**

- REFER TO CALTRANS 2018 STANDARD PLAN A62E FOR EARTHWORK RELATED TO THE CULVERTS.
- THE SUBGRADE SURFACE SHALL BE FREE OF LOOSE SOIL, STANDING WATER OR MUD; ANY SOFT SOILS SHALL BE EXCAVATED TO EXPOSE FIRM, NON-YIELDING MATERIALS.
- PREPARE DESIGNATED FILL AREAS BY GRUBBING AND STRIPPING VEGETATION, REMOVING DEBRIS, AND SCARIFYING TO A MINIMUM DEPTH OF 8 INCHES PRIOR TO MATERIAL PLACEMENT.
- UNLESS OTHERWISE NOTED, COMPACT FILL MATERIAL IN 8-INCH LOOSE LIFTS AND COMPACT TO AT LEAST 95% RELATIVE COMPACTION (RC) AT A MOISTURE CONTENT AT LEAST 2% OVER OPTIMUM PER ASTM D1557.
- ONSITE FILL MATERIAL SHALL BE FREE OF ORGANIC MATERIAL (LESS THAN 3% BY VOLUME) AND SHOULD NOT CONTAIN ANY PARTICLES GREATER THAN 3" IN DIAMETER.
- IMPORTED FILL MATERIAL SHALL BE FREE OF ORGANICS (LESS THAN 3% BY VOLUME), DEBRIS, ANY PARTICLES GREATER THAN 3" IN DIAMETER, HAVE AT LEAST 20% FINES, AND HAVE A PLASTICITY INDEX OF 12 OR LESS.
- PERFORM GRADING TO THE LINES AND GRADES SHOWN. FINISHED SURFACES SHALL PROVIDE POSITIVE SURFACE DRAINAGE TO PREVENT PONDING.

**TEMPORARY ENVIRONMENTAL/EROSION CONTROL**

- CONTAIN SURFACE RUNOFF AND CEMENTITIOUS MATERIAL DURING CONSTRUCTION TO PREVENT CONTAMINATION OF GROUND AND SURFACE WATERS.
- MAINTAIN THE SITE AND ADJACENT PROPERTY IN A CLEAN, SAFE, AND USABLE CONDITION. ALL SPILLS OF SOIL, ROCK, OR CONSTRUCTION DEBRIS SHALL BE PROMPTLY REMOVED.
- CONTRACTOR IS RESPONSIBLE FOR DEVELOPING AND IMPLEMENTING EROSION AND SEDIMENT CONTROL PLANS AND BEST MANAGEMENT PRACTICES AS REQUIRED BY LOCAL AND STATE JURISDICTIONS.

**CONCRETE APRON**

- CONCRETE STRENGTH AND MIX REQUIREMENTS:
  - MINIMUM 28-DAY COMPRESSIVE STRENGTH (f'c) = 4,500 PSI
  - WATER/CEMENT RATIO = 0.40 (±.03)
  - MAXIMUM AGGREGATE SIZE = 1"
  - AIR ENTRAINMENT = 4.5% MIN (SEE ACI 318-19 TABLE 19.3.3.1 FOR SMALLER AGGREGATE SIZE REQUIREMENTS)
  - CEMENT = ASTM C150 TYPE II
  - EXPOSURE CLASSES:
    - FREEZING AND THAWING = F0
    - SULFATE = S0
    - PERMEABILITY = W0
    - CORROSION = C1

- FORMS SHALL BE PROVIDED TO ACHIEVE LINES, GRADES, AND GEOMETRY OF CONCRETE STRUCTURES AS INDICATED ON THESE DRAWINGS.
- EXPOSED CONCRETE EDGES SHALL HAVE A 3/4" CHAMFER.
- CONCRETE SURFACES SHALL BE CLASS 1 SURFACE FINISH PER CALTRANS 2018 STANDARD SPECIFICATION SECTION 51-1.03F(3).
- REINFORCING STEEL:
  - DEFORMED REBAR = ASTM A615, GRADE 60 (fy = 60 KSI)
- REINFORCEMENT SPACING SHOWN IS CENTER TO CENTER OF BARS.
- UNLESS OTHERWISE NOTED, MAINTAIN COVERAGE TO THE FACE OF REBAR AS FOLLOWS:
  - CONCRETE CAST AGAINST EARTH = 3"
  - CONCRETE EXPOSED TO EARTH LIQUID OR WEATHER = 2"
- MINIMUM LAP LENGTHS SHALL CONFORM TO TABLE 1, THIS SHEET.
- STEEL SHALL BE KEPT CLEAN AND FREE OF RUST SCALES.
- REINFORCING BARS SHALL BE PLACED IN LENGTHS AS LONG AS POSSIBLE. ALL REINFORCING STEEL SHALL BE COLD BENT.
- REINFORCING AND INSERTS SHALL BE RIGIDLY HELD IN PLACE PRIOR TO CONCRETE PLACEMENT.
- INSPECTION AND TESTING REQUIREMENTS FOR FIRST BATCH PRODUCED EACH DAY SHALL MEET THE FOLLOWING:
  - TEMPERATURE PER ASTM C172
  - AIR CONTENT PER ASTM C231
  - SLUMP PER ASTM C143
  - CONCRETE COMPRESSIVE STRENGTH PER CALIFORNIA TEST 529 & 533 FOR FIVE TEST CYLINDERS PER EVERY 300 CUBIC YARDS (1 AT 7 DAYS, 1 AT 14 DAYS, 2 AT 28 DAYS, AND ONE HOLD)

**PRECAST CULVERT**

- CONTRACTOR IS RESPONSIBLE FOR PROCUREMENT AND INSTALLATION OF CONSPAN O-SERIES BRIDGE BY CONTECH OR APPROVED EQUIVALENT.
- ALL ELEMENTS OF PRECAST CULVERT INCLUDING, BUT NOT LIMITED TO HEADWALLS, WINGWALLS, CAST IN PLACE FOOTINGS, AND TRAFFIC BARRIER TO BE DESIGNED BY SUPPLIER.
- CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND STRUCTURAL CALCULATIONS FOR OWNER AND/OR ENGINEER REVIEW AND APPROVAL. SHOP DRAWINGS SHALL INCLUDE, BUT NOT BE LIMITED TO CULVERT, WINGWALLS, HEADWALLS, ASSOCIATED FOOTINGS, ATTACHMENTS, AND PROPOSED AESTHETIC TREATMENTS.
- BRIDGE DESIGN:
  - DEAD LOADS: CONCRETE = 150 PCF  
SUPERSTRUCTURE = 418 KIPS (UNFACTURED, PER MANUFACTURER)
  - LIVE LOADING: HL-93; BRIDGE RAILING DESIGNED TO AASHTO RAIL LOAD
  - SOIL LOADING: ACTIVE EARTH PRESSURE EQUIVALENT TO A FLUID WEIGHING 35 PCF ABOVE WATER AND 17 PCF BELOW WATER
  - SEISMIC DESIGN: CALTRANS SEISMIC DESIGN CRITERIA 2.0
  - SEISMIC LOADING: 2019 CBC SITE CLASS D, PGA = 0.858

**INSPECTION AND OBSERVATION**

- CONTRACTOR SHALL PROVIDE QUALITY CONTROL, MATERIALS TESTING AND SPECIAL INSPECTION RELATED TO THE PROPOSED WORK. CONTRACTOR SHALL PERFORM AND/OR RETAIN THE SERVICES OF A CERTIFIED TESTING LABORATORY TO PERFORM ALL QUALITY CONTROL TESTS OF THE PROPOSED WORK. ONLY THE CERTIFIED TESTS BY THE TESTING LABORATORY CAN BE USED TO VERIFY COMPLIANCE TO THE PROJECT DOCUMENTS.
- CONSTRUCTION OBSERVATION BY THE INSPECTOR AND/OR THE ENGINEER IS REQUIRED AT THE FOLLOWING STAGES OF CONSTRUCTION:
  - SITE LAYOUT
  - COMPLETION OF EXCAVATION/APPROVAL OF FOUNDATION
  - PLACEMENT OF FOUNDATION
  - PLACEMENT OF PRECAST UNITS
  - PLACEMENT AND COMPACTION OF FILL MATERIALS
- NOTIFY THE INSPECTOR/ENGINEER AT LEAST 48 HOURS BEFORE INSPECTION OR OBSERVATION IS NEEDED.
- CONTRACTOR SHALL SUBMIT PROPOSED MATERIALS AND PRODUCTS CALLED FOR IN THE PLANS FOR REVIEW AND APPROVAL OF THE ENGINEER: DEWATERING PLAN, CONCRETE, AND REINFORCING STEEL.

**ROCK SLOPE PROTECTION**

- RIP RAP SHALL COMPLY WITH THE ROCK GRADING SHOWN IN THE FOLLOWING TABLE:

MAX % PASSING	MIN % PASSING	APPROX ROCK SIZE (IN)
100	100	18
100	90	15
75	50	12
30	15	9
15	0	6
0	0	3

- RIP RAP SHALL CONFORM TO THE REQUIREMENTS OF CALTRANS METHOD B PLACEMENT.
- ROCK MATERIAL MUST MEET THE REQUIREMENTS IN SECTION 72-2.02B OF THE CALTRANS 2018 STANDARD SPECIFICATIONS.
- ROCK SLOPE PROTECTION (NON-CONCRETED) SHALL BE IN ACCORDANCE WITH SECTION 72-2 OF THE 2018 CALTRANS STANDARD SPECIFICATIONS.
- ROCK SHALL BE ANGULAR. ROUNDED ROCK AND COBBLES ARE NOT ACCEPTABLE.
- THE AREA COVERED WITH RIP RAP SHALL BE CLEARED OF LOOSE SOIL AND DEBRIS. ALL EXCESS EXCAVATED MATERIAL SHALL BE DISPOSED OF IN UNITED WATER CONSERVATION DISTRICTS DESIGNATED AREAS NEAR THE SITE OR OFF-HAULED TO AN ACCEPTABLE WASTE DISPOSAL FACILITY AS DETERMINED BY UNITED WATER CONSERVATION DISTRICT.

BAR SIZE	f'c = 4,500 PSI		fy = 60,000 PSI		
	TOP BARS <sup>B</sup>		OTHER BARS		STD HOOKS
	DEV LENGTH Ld (IN)	CLASS B LAP SPLICE (IN)	DEV LENGTH Ld (IN)	CLASS B LAP SPLICE (IN)	DEV LENGTH Ldh (IN)
#5	30	38	23	30	8

**FOOTNOTES:**

- BASED ON ACI 318-19 SECTIONS 25.4.3
- TOP BARS SHALL BE DEFINED AS ANY HORIZONTAL BAR PLACED SUCH THAT MORE THAN 12 INCHES OF FRESH CONCRETE IS CAST IN THE MEMBER BELOW THE BAR IN ANY SINGLE POUR. HORIZONTAL WALL BARS ARE CONSIDERED TOP BARS..

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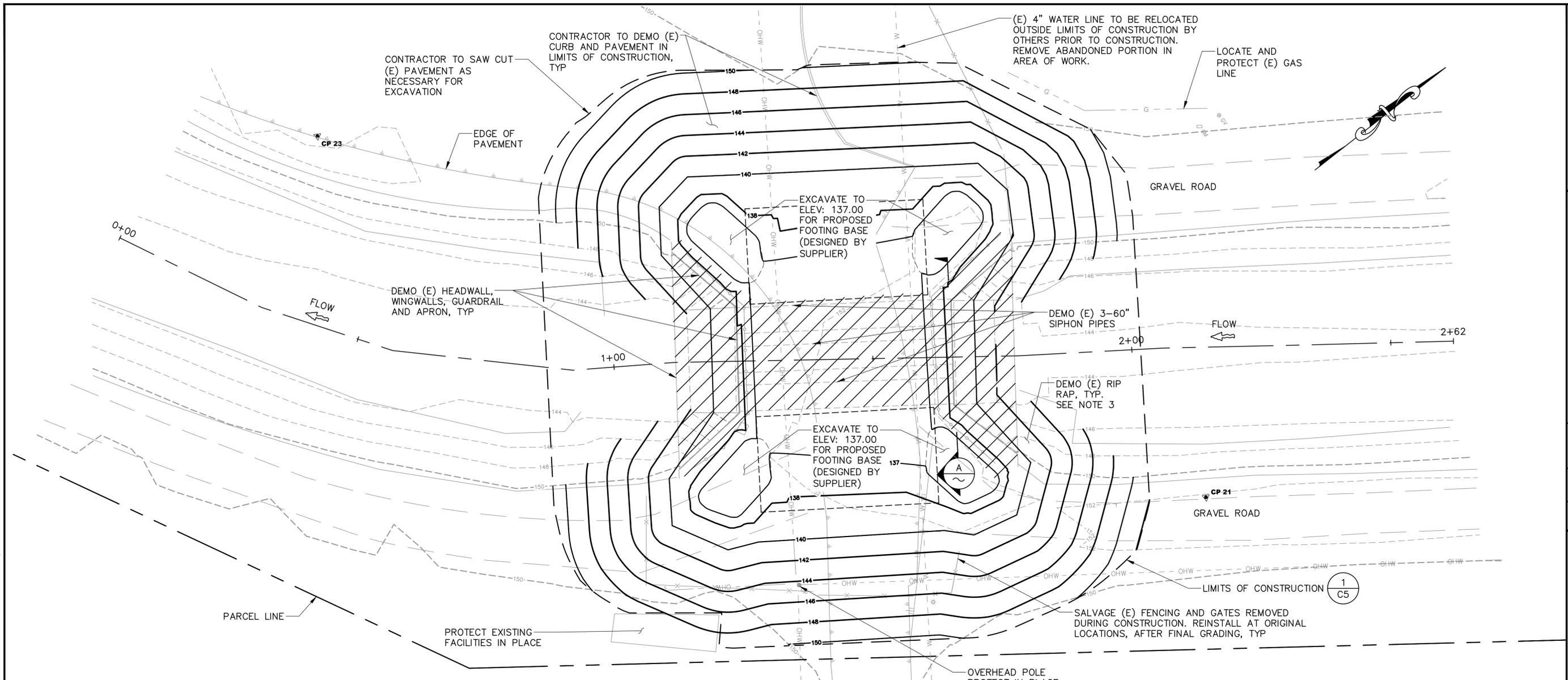
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NOTES & ABBREVIATIONS  
INVERTED SIPHON REPLACEMENT  
VERN FREEMAN DIVERSION CONVEYANCE SYSTEM  
SANTA PAULA VENTURA COUNTY CALIFORNIA



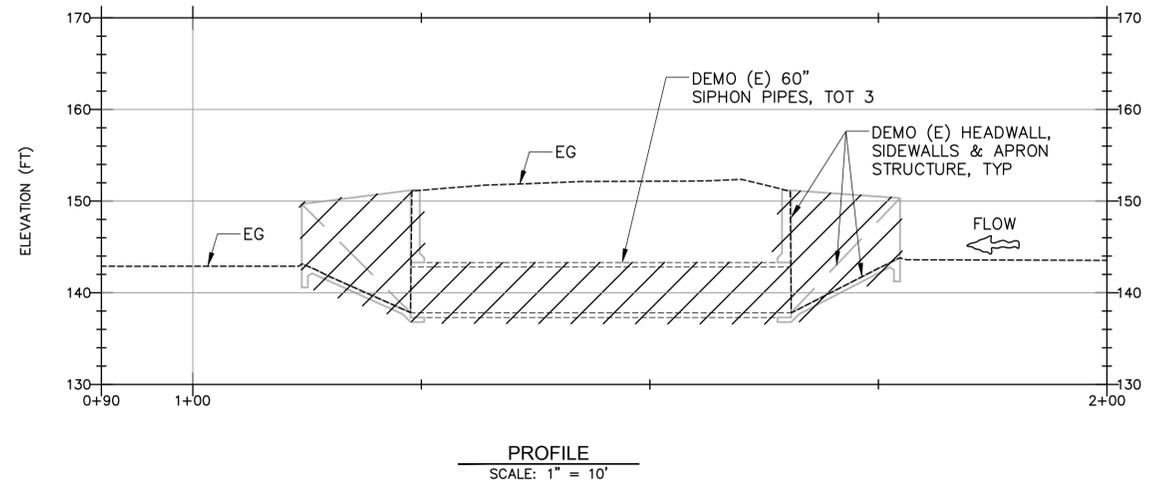
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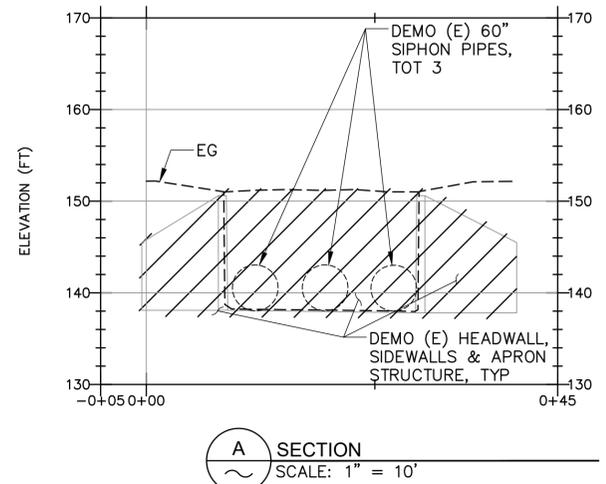


**DEMOLITION/EXCAVATION PLAN**  
 SCALE: 1" = 10'

CONTROL POINT TABLE				
POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION
CP21	1926346.34	6221853.29	152.11	FND 1/2" IP W/PP
CP23	1926254.06	6221692.94	152.29	SET CP MAG IN AC



**PROFILE**  
 SCALE: 1" = 10'



**A SECTION**  
 SCALE: 1" = 10'

- NOTES**
- CONTRACTOR TO FILL EXCAVATION TO SUITABLE WORKING PAD ELEVATION FOR INSTALLATION OF CULVERT FOOTINGS (DESIGNED BY SUPPLIER). SEE NOTES ON SHEET G2.
  - CONTRACTOR TO PROVIDE TEMPORARY TRAFFIC CONTROL DURING CONSTRUCTION.
  - SALVAGE EXISTING RIP RAP REMOVED DURING CONSTRUCTION. EVALUATE RIP RAP PER ROCK SLOPE PROTECTION NOTES ON SHEET G2 FOR POTENTIAL REUSE ON SITE.

REV	BY	DATE	DESCRIPTION

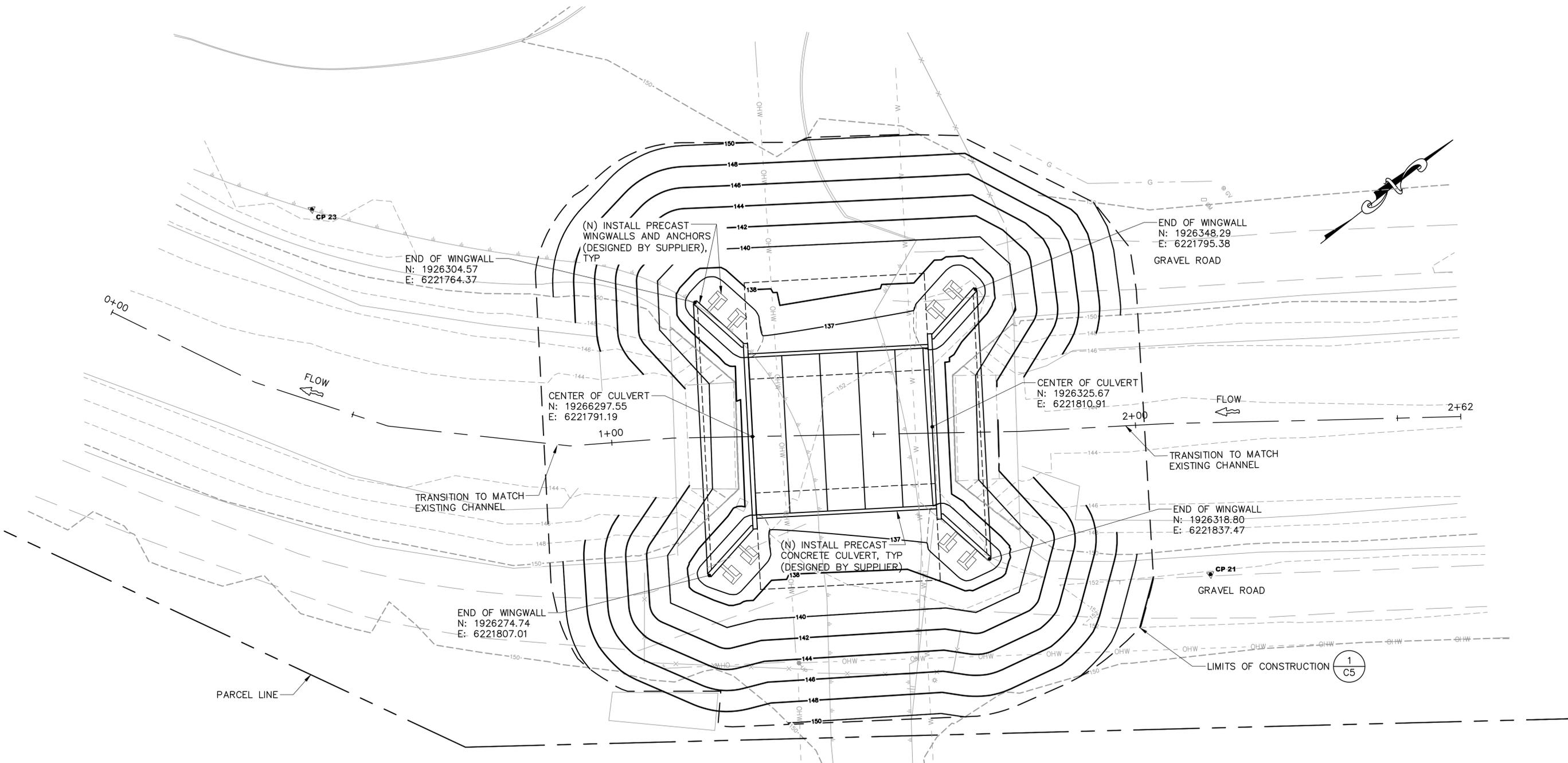
**DEMOLITION/EXCAVATION PLAN, PROFILE & SECTION**  
**INVERTED SIPHON REPLACEMENT**  
**VERN FREEMAN DIVERSION CONVEYANCE SYSTEM**

SANTA PAULA  
 VENTURA COUNTY  
 CALIFORNIA



DATE: 08/03/2022  
 SCALE: AS NOTED  
 DESIGNED BY: RBG  
 DRAFTED BY: JAO  
 CHECKED BY: JSA  
 JOB NO.: 067376  
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EXCAVATION PLAN & NEW IMPROVEMENTS  
 SCALE: 1" = 10'

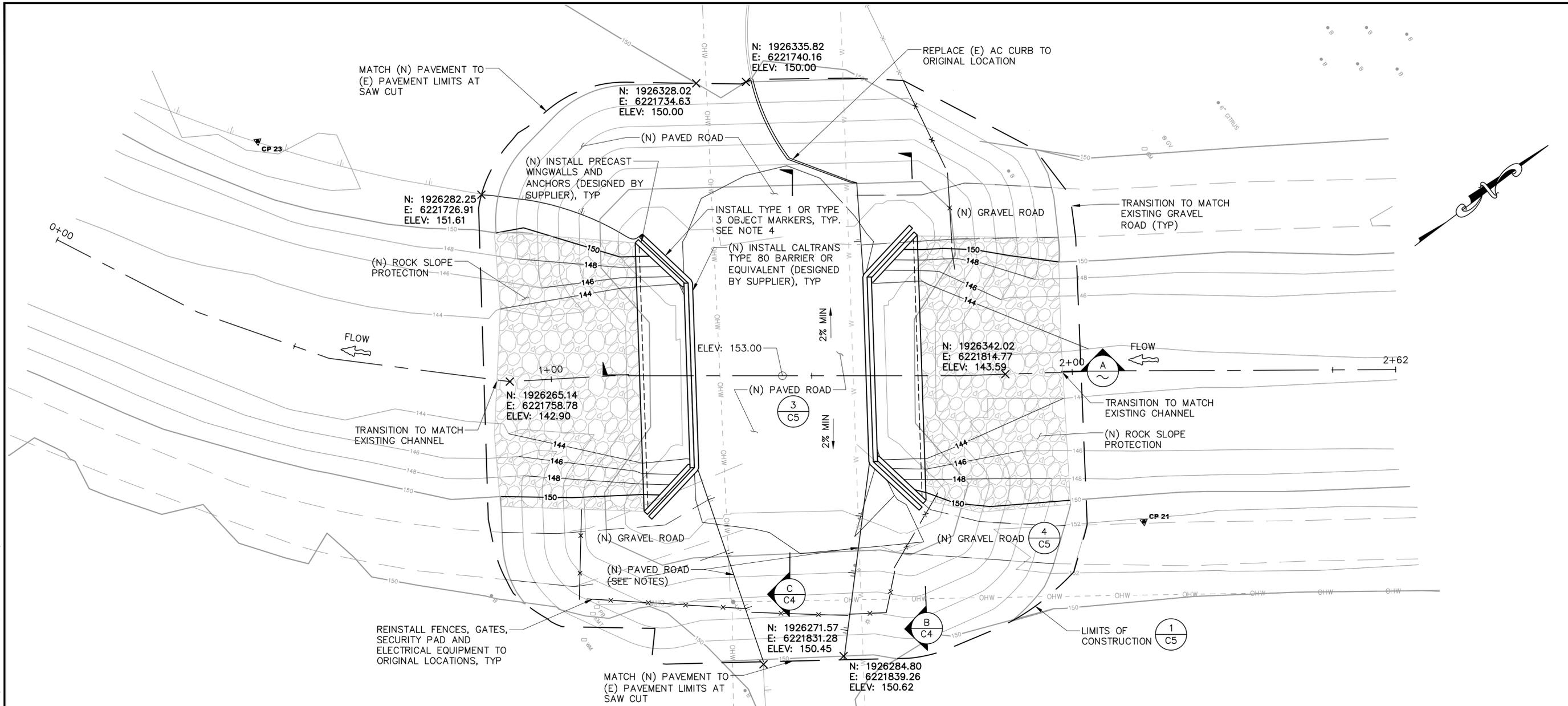
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EXCAVATION PLAN & NEW IMPROVEMENTS  
 INVERTED SIPHON REPLACEMENT  
 VERN FREEMAN DIVERSION CONVEYANCE SYSTEM  
 SANTA PAULA VENTURA COUNTY CALIFORNIA

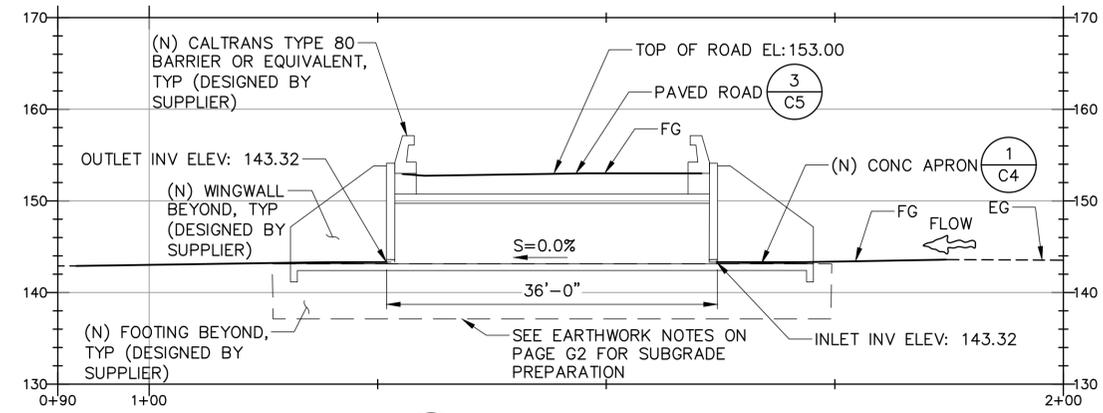


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**GRADING PLAN**  
 SCALE: 1" = 10'



**A SECTION**  
 SCALE: 1" = 10'

- NOTES:**
1. CONTRACTOR TO RESTORE DISTURBED SECTIONS OF GRAVEL AND PAVED ROAD TO PREVIOUS CONDITIONS.
  2. CONTRACTOR TO DISPOSE OF ALL DEMOLISHED MATERIALS AT DIRECTION OF THE OWNER.
  3. DISTRICT TO APPROVE PAVEMENT LOCATION TO THE CONTRACTOR.
  4. PRECAST CONCRETE BRIDGE DESIGN PER CONTRACTOR PLANS AND SPECIFICATIONS (DESIGNED BY SUPPLIER, SEE NOTES ON G2).
  5. OBJECT MARKERS PER SECTION 3C.03 OF FEDERAL HIGHWAY ADMINISTRATION MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

REV	BY	DATE	DESCRIPTION

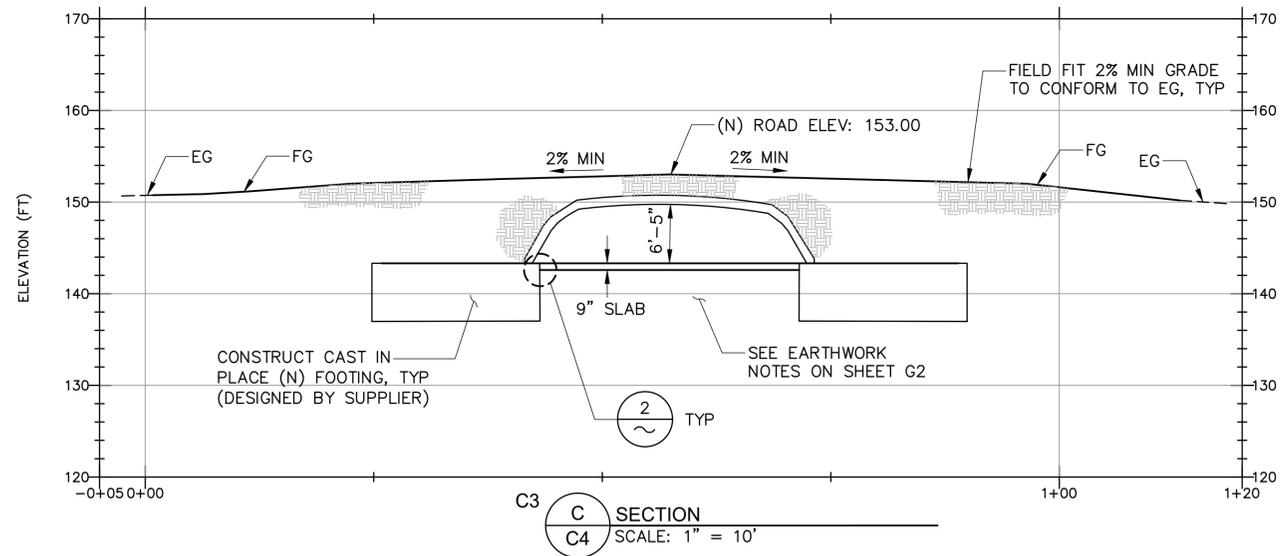
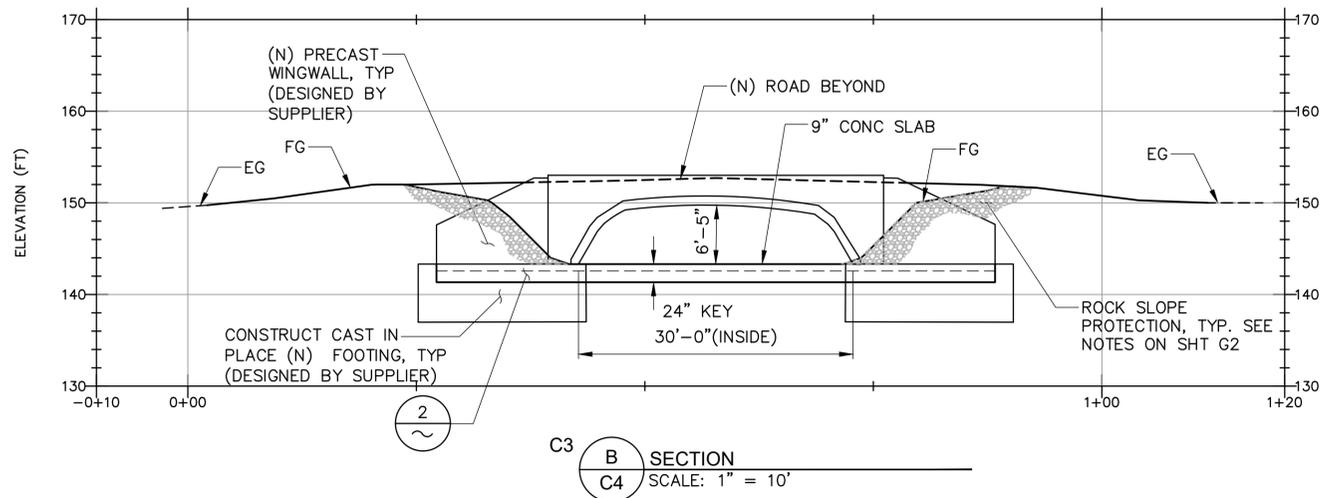
**GRADING PLAN & SECTION**  
**INVERTED SIPHON REPLACEMENT**  
**VERN FREEMAN DIVERSION CONVEYANCE SYSTEM**

SANTA PAULA  
 VENTURA COUNTY  
 CALIFORNIA

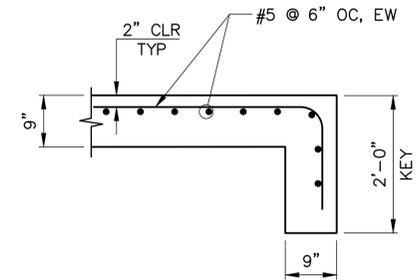


DATE: 08/03/2022  
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 DESIGNED BY: RBG  
 DRAFTED BY: JAO  
 CHECKED BY: JSA  
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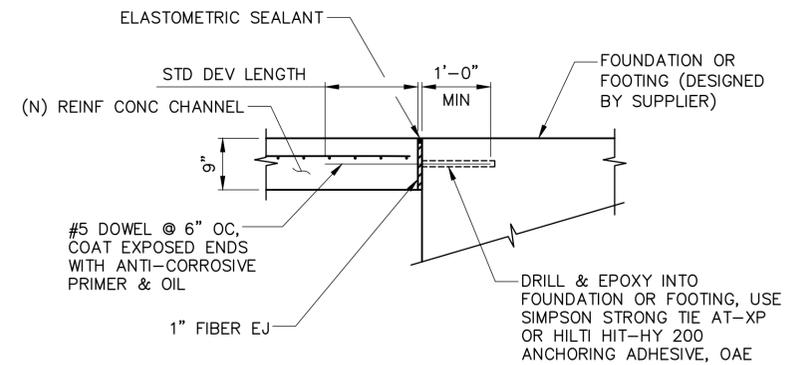


GENERAL NOTE:  
 1. PRECAST CULVERT AND FOOTING DESIGN PER CONTRACTOR PLANS AND SPECIFICATIONS (PROVIDED BY SUPPLIER). SEE NOTES ON G2.



CONCRETE APRON & SLAB REINFORCEMENT

C3  
 1  
 C4  
 SCALE: 3/4" = 1'-0"



TYPICAL EXPANSION JOINT

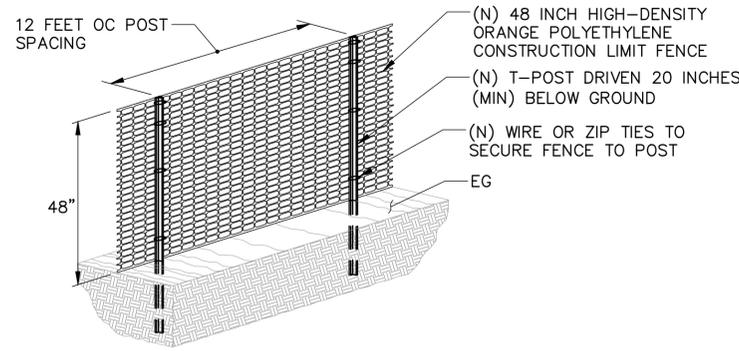
2  
 ~  
 C4  
 SCALE: 3/4" = 1'-0"

REV	BY	DATE	DESCRIPTION

SECTIONS & DETAILS  
 INVERTED SIPHON REPLACEMENT  
 VERN FREEMAN DIVERSION CONVEYANCE SYSTEM  
 SANTA PAULA VENTURA COUNTY CALIFORNIA



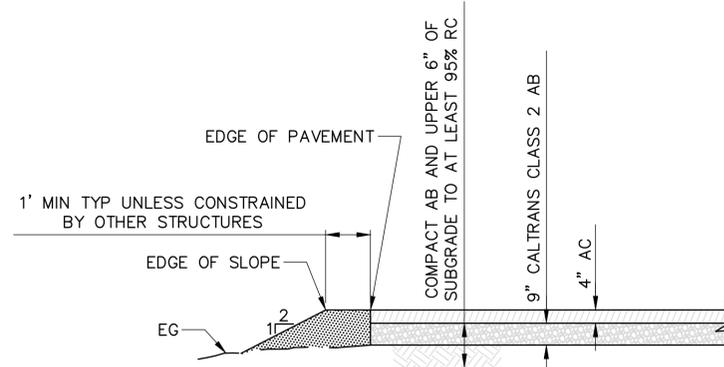
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 SCALE: AS NOTED  
 DESIGNED BY: RBG  
 DRAFTED BY: JAO  
 CHECKED BY: JSA  
 JOB NO.: 067376  
 FILE: 067376 006.dwg



- NOTES:**
1. ALL VEGETATION IN CONSTRUCTION LIMITS NOT SPECIFICALLY DESIGNATED FOR REMOVAL SHALL BE PRESERVED AND PROTECTED.
  2. WHEN PRACTICABLE INSTALL FENCE 3 FEET OUTSIDE OF DRIP LINE OF ANY TREE OR TREE GROUP.
  3. CONSTRUCTION LIMIT FENCING SHALL REMAIN IN PLACE DURING ALL PHASES OF CONSTRUCTION; ANY CHANGE OF THE PROTECTIVE FENCING MUST BE PRE-APPROVED.

**CONSTRUCTION LIMIT FENCE**

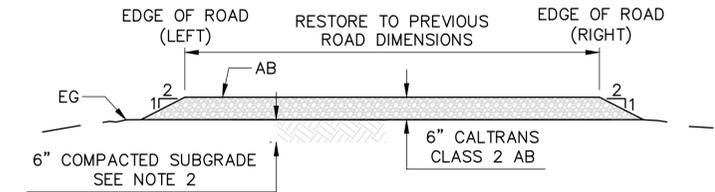
C1,C,2 C3 **1** DETAIL  
C5 NOT TO SCALE



- NOTES:**
1. AC SHALL BE 3/4", TYPE A PER SECTION 39 OF THE CALTRANS STANDARD SPECIFICATIONS. MAXIMUM PER SECTION 26-1.028 OF THE CALTRANS STANDARD.
  2. AB SHALL BE CALTRANS CLASS 2, 3/4" SPECIFICATIONS. AB SHALL BE SPREAD AND COMPACTED TO AT LEAST 95% RELATIVE COMPACTION PER ASTM D1557 IN LAYERS NOT MORE THAN 6 INCHES COMPACTED THICKNESS.
  3. ASPHALT BINDER SHALL BE BF64-28 PER SECTION 92 OF THE CALTRANS STANDARD SPECIFICATIONS.
  4. AT CONNECTIONS TO EXISTING PAVEMENTS AND PREVIOUSLY PLACED LIFTS, MAKE THE TRANSVERSE JOINTS VERTICAL TO THE DEPTH OF THE NEW PAVEMENT. FORM TRANSVERSE JOINTS BY CUTTING BACK THE PREVIOUS RUN TO EXPOSE THE FULL-DEPTH COURSE. FOR BOTH TRANSVERSE AND LONGITUDINAL JOINTS, PREPARE JOINT SURFACE AND APPLY AN ASPHALT TACK COAT TO THE JOINT EDGE.
  5. PAVING SHOULD BE COMPLETED IN TWO LIFTS. STAGGER JOINTS BETWEEN LIFTS AS NECESSARY.
  6. PREPARE SUBGRADE PER CALTRANS STANDARD SPECIFICATION SECTION 39-1.09A&B.
  7. WORKMANSHIP IN THE PRODUCTION AND PLACING OF AGGREGATE BASE AND ASPHALT CONCRETE SHALL COMPLY WITH THE PROVISIONS OF SECTIONS 26 AND 39 OF THE STANDARD CALTRANS SPECIFICATIONS, RESPECTIVELY.
  8. "BIRDBATHS" GREATER THAN 1/8" WILL NOT BE ACCEPTED. OTHER SURFACE IRREGULARITIES SHALL BE ELIMINATED. CRACKS, PONDING, SETTLING OF SURFACE, IMPROPER DRAINAGE, AGGREGATE RAVELING, AND ROUGH OR UNSMOOTH CONNECTIONS TO EXISTING SURFACES WILL BE CONSTRUED AS SURFACE IRREGULARITIES AND WILL BE REMEDIED AT CONTRACTORS EXPENSE UNTIL SPECIFICATION REQUIREMENT IS ACHIEVED.
  9. THE ONLY ACCEPTABLE METHODS OF ASPHALT CONCRETE REPAIR ARE TO REMOVE AND REPLACE OR PROFILE GRIND PER CALTRANS STANDARD SPECIFICATION 391.12

**AC PAVEMENT**

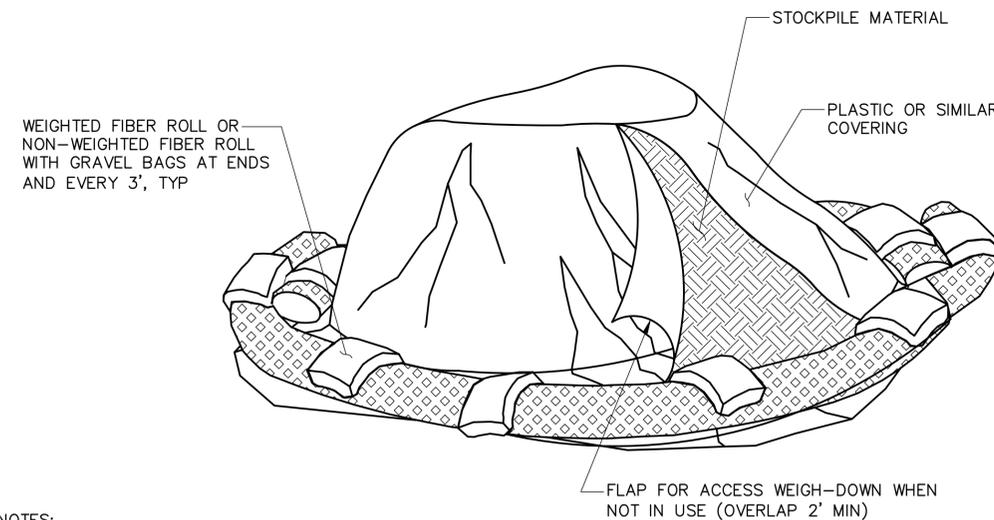
C3 **3** DETAIL  
C5 NOT TO SCALE



- NOTES:**
1. ASPHALT BASE SHALL BE CALTRANS CLASS 2, 3/4" MAXIMUM PER SECTION 26 OF THE CALTRANS STANDARD SPECIFICATIONS. COMPACT TO AT LEAST 95% RELATIVE COMPACTION.
  2. SCARIFY AND COMPACT UPPER 6" OF SUBGRADE UNLESS OTHERWISE DIRECTED IN FIELD BY THE INSPECTOR. COMPACT TO AT LEAST 95% RELATIVE COMPACTION.
  3. GRADE FINISH SURFACE TO CREATE POSITIVE DRAINAGE OFF THE TRAVELED WAY.

**GRAVEL ROAD**

C3 **4** DETAIL  
C5 NOT TO SCALE



- NOTES:**
1. LOCATE STOCKPILE AWAY FROM DRAINAGE COURSES, DRAIN INLETS OR CONCENTRATED FLOWS OF STORMWATER.
  2. ALL STOCKPILE PERIMETERS SHALL BE PROTECTED WITH TEMPORARY LINEAR SEDIMENT BARRIERS.
  3. COVER ALL STOCK AND/OR SPOIL PILES WITH 6 MM PLASTIC, CANVAS TARP OR SIMILAR TO PREVENT WIND AND RAIN EROSION. EVENLY SPACE WEIGHTS (GRAVEL BAGS) ON COVER TO KEEP IN PLACE DURING WIND.
  4. CONDUCT REGULAR INSPECTIONS OF STOCK AND/OR SPOIL PILES DURING AND AFTER RAIN EVENTS.
  5. REMOVE SPOIL PILES FROM CONSTRUCTION SITE AS SOON AS POSSIBLE.
  6. STOCK/SPOIL PILES MUST BE STORED WITHIN AREAS APPROVED BY THE OWNER.

**STOCKPILE MANAGEMENT**

**2** DETAIL  
NOT TO SCALE



REV	BY	DATE	DESCRIPTION

**DETAILS**  
INVERTED SIPHON REPLACEMENT  
VERN FREEMAN DIVERSION CONVEYANCE SYSTEM  
SANTA PAULA  
VENTURA COUNTY  
CALIFORNIA



DATE: 08/03/2022  
SCALE: AS NOTED  
DESIGNED BY: RBG  
DRAFTED BY: JAO  
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JOB NO.: 067376  
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FILE: C:\Users\pbarber\OneDrive - Gannett Fleming Inc\067376\_FREEMAN-504-CADD\Siphon Only (CURRENT FILES)\067376 007.dwg

**PROJECT SUMMARY**

LOCAL BRIDGE CONSULTANT

- NAME = Jason Leach
- EMAIL = Jason.Leach@conteches.com
- PHONE NUMBER = 916-747-7585

STRUCTURE DETAILS

- SPAN = 30' - 0"
- PRECAST RISE = 6' - 5 3/8"
- CLEAR RISE = 6.5 FT.
- LENGTH = 36 FT.

HEADWALLS

- INLET HEADWALL HEIGHT = 2 FT.
- OUTLET HEADWALL HEIGHT = 2 FT.

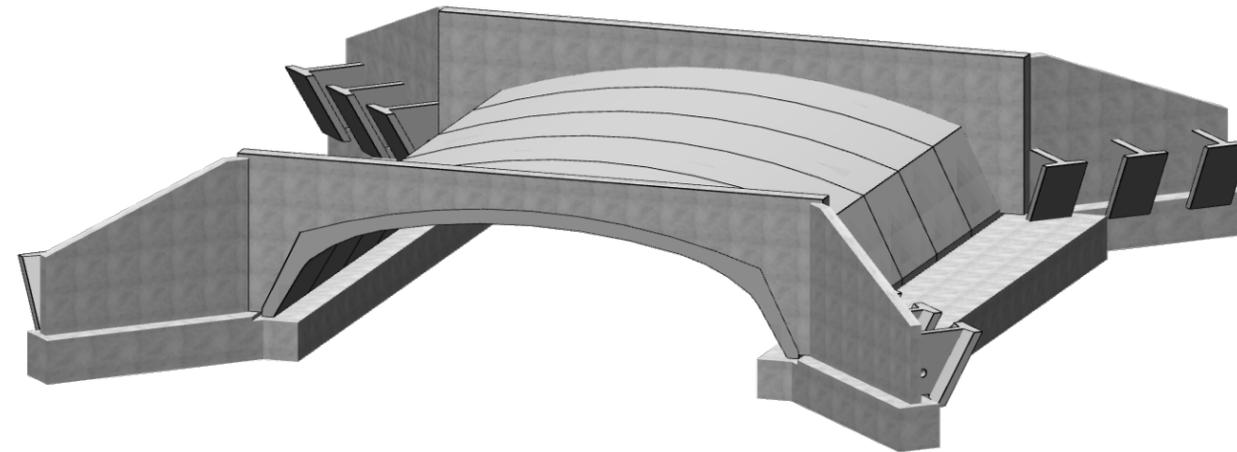
FOUNDATIONS

- FOUNDATION TYPE = STRIP

WINGWALLS

- WW 1 ANGLE = 45 DEG.
- WW 1 LENGTH = 12.5 FT.
- WW 1 HIGH HEIGHT = 8.78 FT.
- WW 1 LOW HEIGHT = 4.5 FT.
  
- WW 2 ANGLE = 45 DEG.
- WW 2 LENGTH = 12.5 FT.
- WW 2 HIGH HEIGHT = 8.78 FT.
- WW 2 LOW HEIGHT = 4.5 FT.
  
- WW 3 ANGLE = 45 DEG.
- WW 3 LENGTH = 12.5 FT.
- WW 3 HIGH HEIGHT = 8.78 FT.
- WW 3 LOW HEIGHT = 4.5 FT.
  
- WW 4 ANGLE = 45 DEG.
- WW 4 LENGTH = 12.5 FT.
- WW 4 HIGH HEIGHT = 8.78 FT.
- WW 4 LOW HEIGHT = 4.5 FT.

# CON/SPAN O-Series DYO Inverted Syphon



NOTES

1. THIS BRIDGE HAS BEEN DESIGNED FOR GENERAL SITE CONDITIONS. THE PROJECT ENGINEER SHALL BE RESPONSIBLE FOR THE STRUCTURE'S SUITABILITY TO THE EXISTING SITE CONDITIONS AND FOR THE HYDRAULIC EVALUATION -- INCLUDING SCOUR AND CONFIRMATION OF SOIL CONDITIONS.
2. PRIOR TO CONSTRUCTION, CONTRACTOR MUST VERIFY ALL ELEVATIONS SHOWN THROUGH THE ENGINEER.
3. ONLY CONTECH ENGINEERED SOLUTIONS LLC, THE CONSPAN APPROVED MANUFACTURER IN THE PROJECT STATE MAY PROVIDE THE STRUCTURE DESIGNED IN ACCORDANCE WITH THESE PLANS.
4. THIS DYOB DRAWING IS A CONCEPTUAL DESIGN. PLEASE WORK WITH YOUR LOCAL BRIDGE CONSULTANT FOR FURTHER SOLUTION DEVELOPMENT AND PRICING.
5. THE USE OF ANOTHER PRECAST STRUCTURE WITH THE DESIGN ASSUMPTIONS USED FOR THE CON/SPAN® STRUCTURE MAY LEAD TO SERIOUS DESIGN ERRORS. USE OF ANY OTHER PRECAST STRUCTURE WITH THIS DESIGN AND DRAWINGS VOIDS ANY CERTIFICATION OF THIS DESIGN AND WARRANTY. CONTECH ENGINEERED SOLUTIONS ASSUMES NO LIABILITY FOR DESIGN OF ANY ALTERNATE OR SIMILAR TYPE STRUCTURES.

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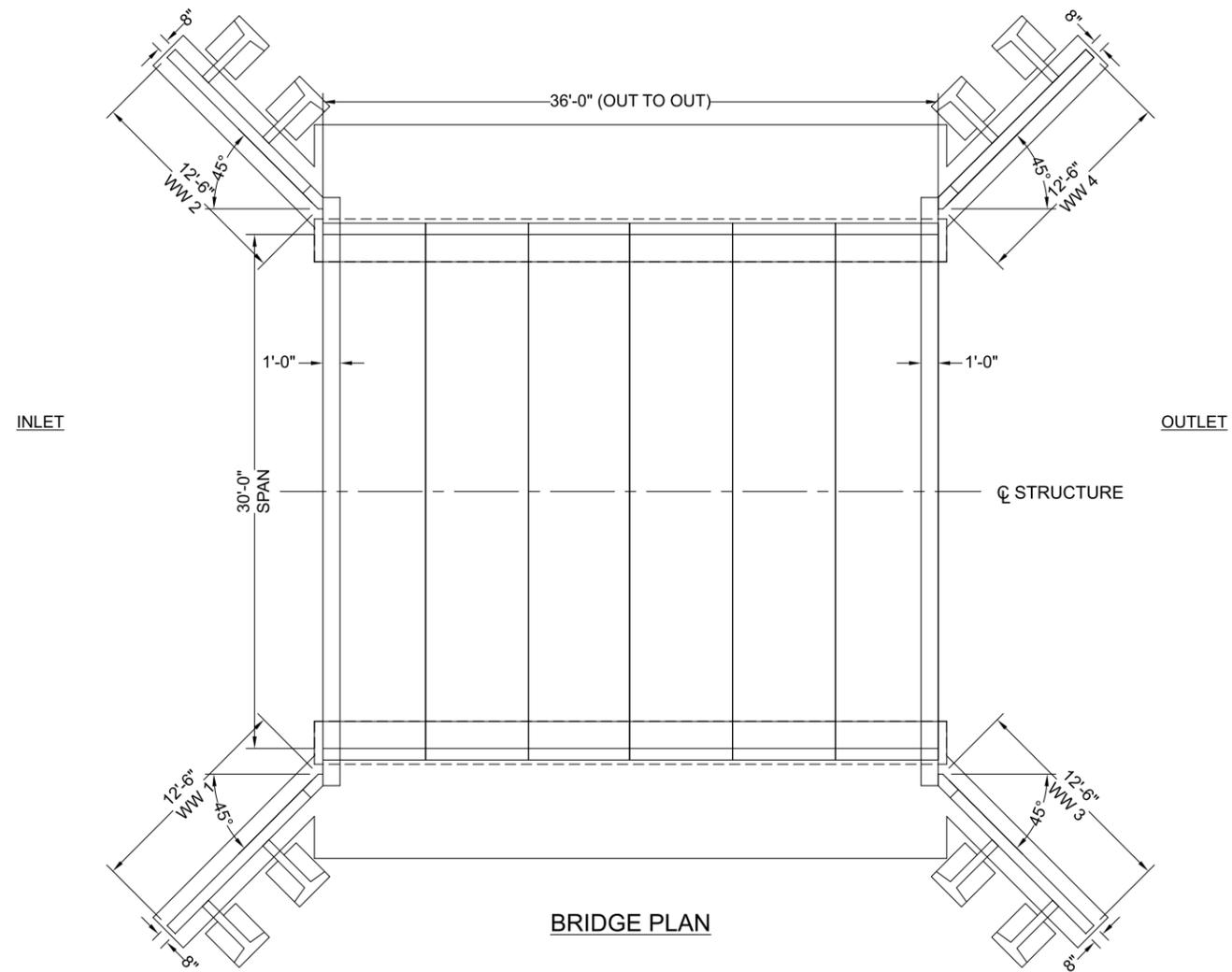
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ENGINEERED SOLUTIONS LLC  
www.ContechES.com  
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069  
800-338-1122 513-645-7000 513-645-7993 FAX

**CON/SPAN**  
O-SERIES  
DYOB  
DRAWING

DYO19150, Vern Freeman Diversion Conveyance System  
Inverted Syphon  
Santa Paula, CA  
O Series, 30' Span x 6'-5 3/8" Rise

PROJECT No.: 12383	DYO No.: 19150	DATE: 07/15/2022
DESIGNED: DYO	DRAWN: DYO	
CHECKED: DYO	APPROVED: DYO	
SHEET NO.: D1 OF D9		



BRIDGE PLAN

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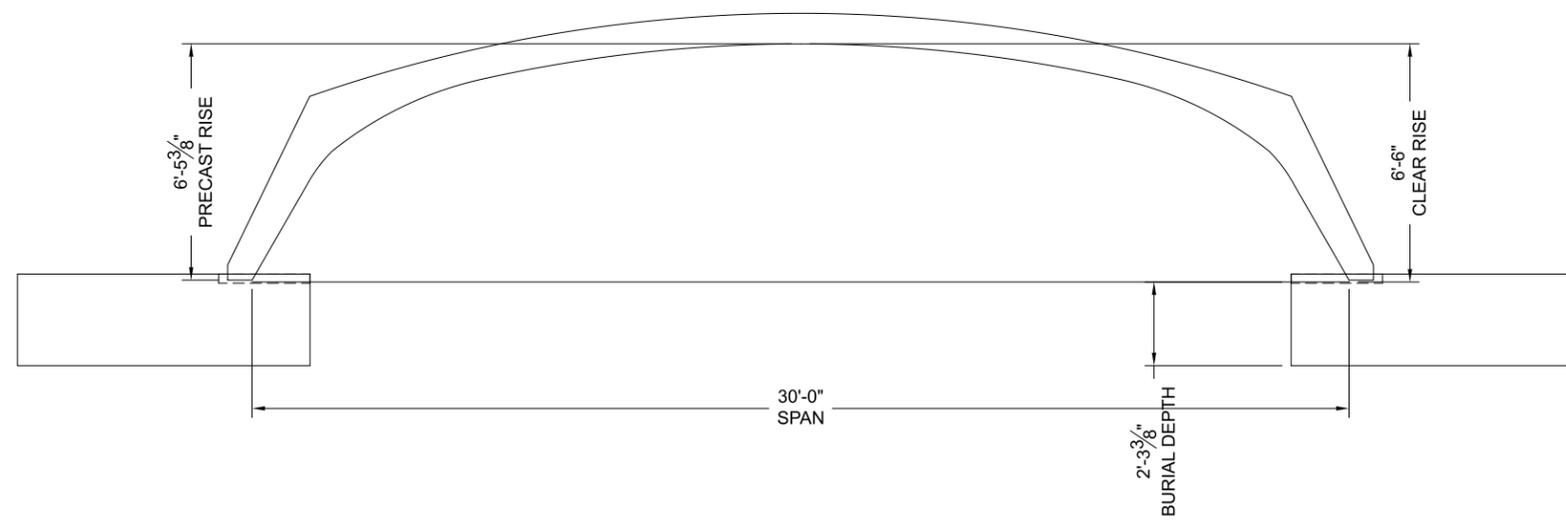
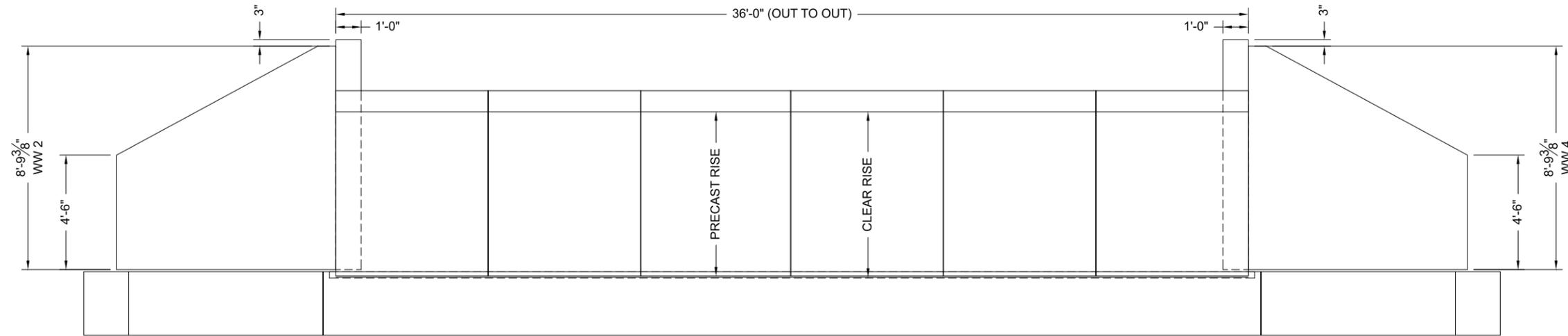
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**CONSPAN**  
SERIES  
DYOB  
DRAWING

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PROJECT No.: 12383	DYO No.: 19150	DATE: 07/15/2022
DESIGNED: DYO	DRAWN: DYO	
CHECKED: DYO	APPROVED: DYO	
SHEET NO.:		D2 OF D9



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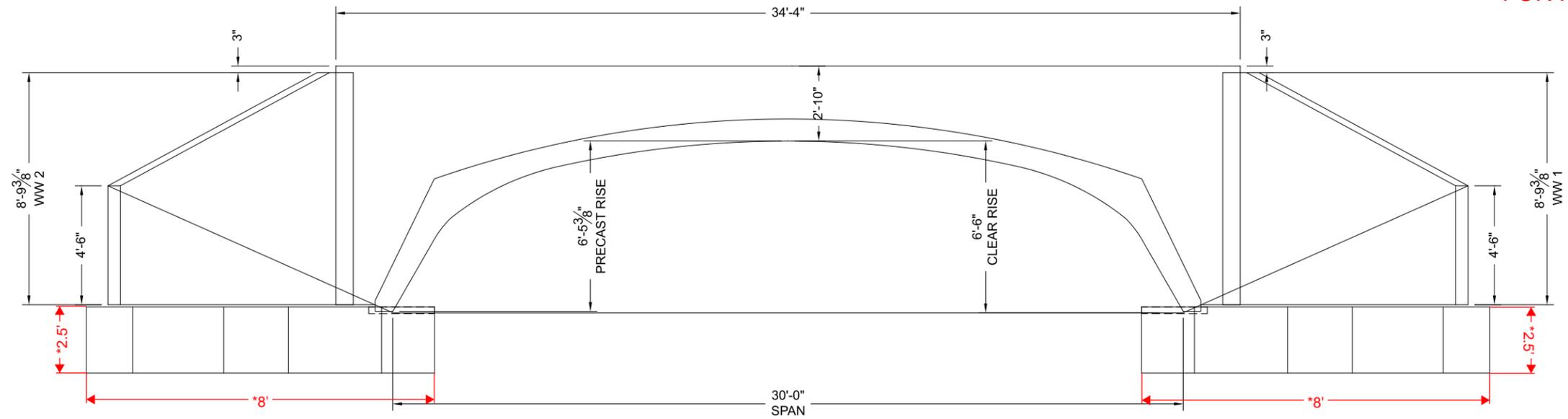
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**CONSPAN**  
-SERIES-  
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DRAWING

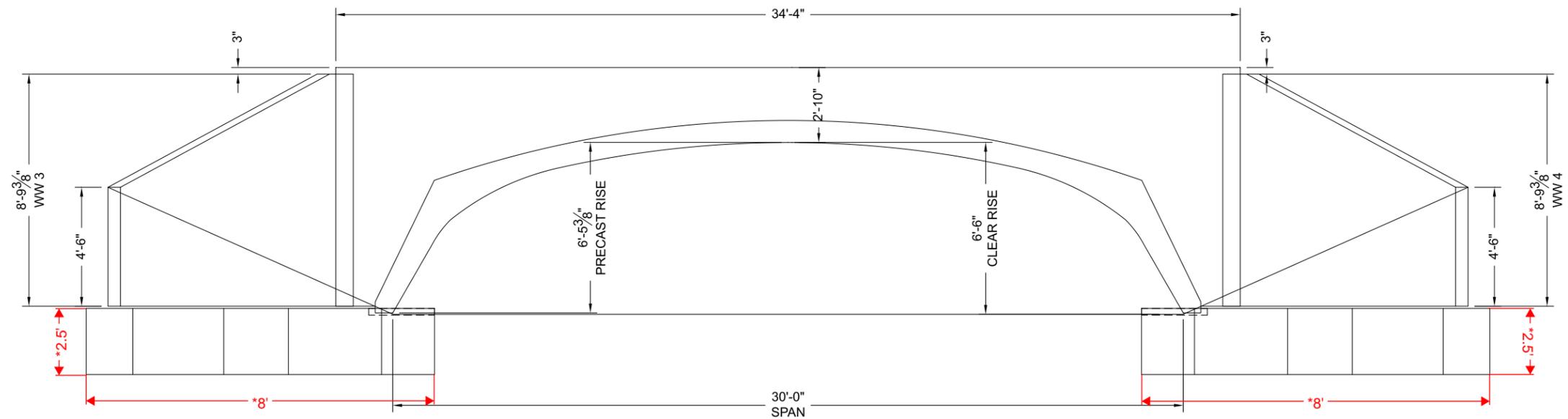
DYO19150, Vern Freeman Diversion Conveyance System  
Inverted Syphon  
Santa Paula, CA  
O Series, 30' Span x 6'-5 3/8" Rise

PROJECT No.: 12383	DYO No.: 19150	DATE: 07/15/2022
DESIGNED: DYO	DRAWN: DYO	
CHECKED: DYO	APPROVED: DYO	
SHEET NO.:		D3 OF D9



\*Estimated approximate footing dimensions

INLET END ELEVATION



\*Estimated approximate footing dimensions

OUTLET END ELEVATION

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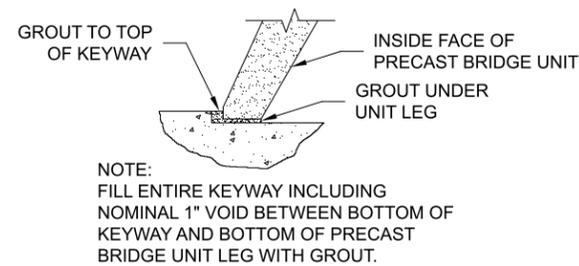
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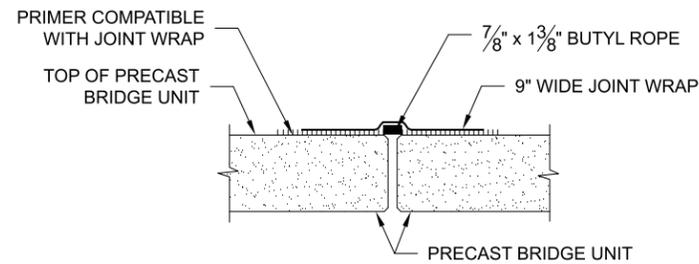
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DYO19150, Vern Freeman Diversion Conveyance System  
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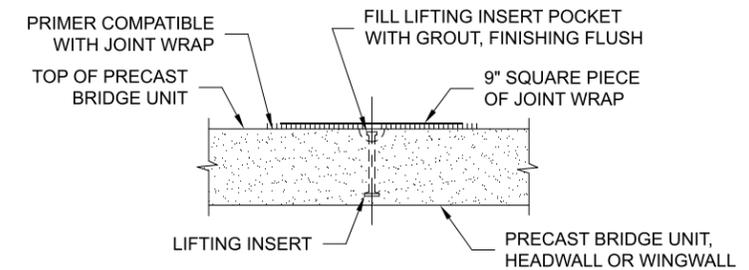
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DESIGNED: DYO	DRAWN: DYO	
CHECKED: DYO	APPROVED: DYO	
SHEET NO.: D4 OF D9		



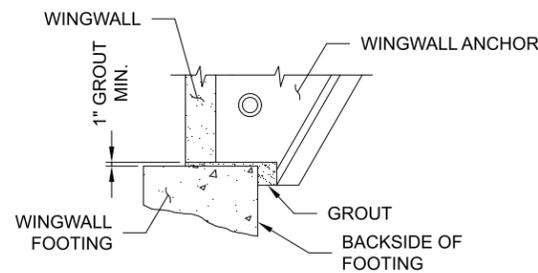
**TYPICAL BRIDGE UNIT GROUT DETAIL**  
NOT TO SCALE



**TYPICAL JOINT SEAL DETAIL**  
NOT TO SCALE

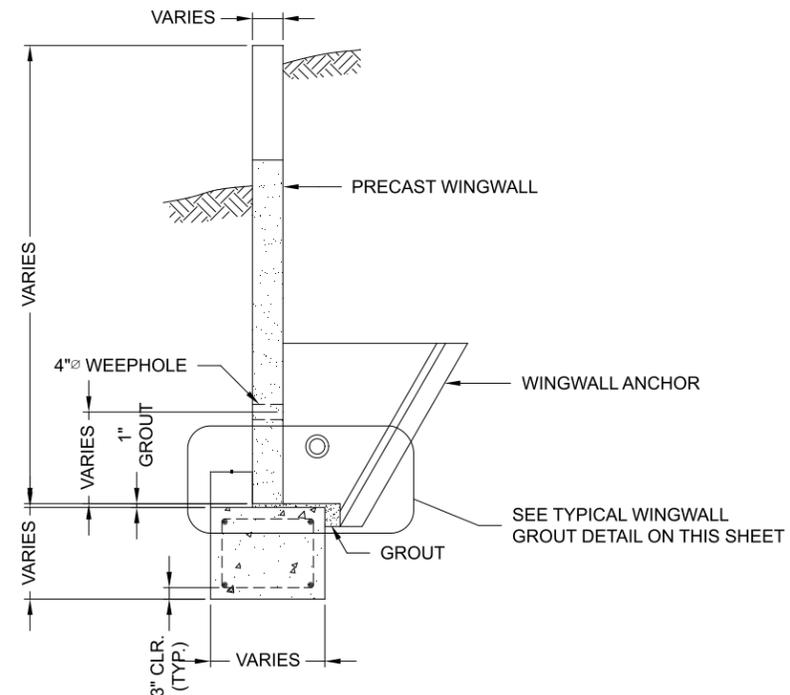


**TYPICAL LIFT INSERT SEALING DETAIL**  
NOT TO SCALE



- NOTES:
- MINIMUM 1" GROUT UNDER WINGWALL LEG & ANCHOR STEM.
  - AREA BETWEEN WINGWALL FOOTING AND WINGWALL ANCHOR SHALL BE GROUTED SOLID BEFORE BACKFILL.
  - FORM BACKSIDE OF FOOTING TO DIMENSIONS SHOWN ON FOUNDATION PLAN.

**TYPICAL WINGWALL GROUT DETAIL**  
NOT TO SCALE



**TYPICAL WINGWALL SECTION**  
NOT TO SCALE

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CHECKED: DYO	APPROVED: DYO	
SHEET NO.:		D5 OF D9

# SPECIFICATIONS FOR MANUFACTURE AND INSTALLATION OF CON/SPAN® O-SERIES BRIDGE SYSTEMS

**1. DESCRIPTION**

1.1. TYPE - THIS WORK SHALL CONSIST OF FURNISHING AND CONSTRUCTING A CON/SPAN® O-SERIES BRIDGE SYSTEM IN ACCORDANCE WITH THESE SPECIFICATIONS AND IN REASONABLY CLOSE CONFORMITY WITH THE LINES, GRADES, DESIGN AND DIMENSIONS SHOWN ON THE PLANS OR AS ESTABLISHED BY THE ENGINEER. IN SITUATIONS WHERE TWO OR MORE SPECIFICATIONS APPLY TO THIS WORK, THE MOST STRINGENT REQUIREMENTS SHALL GOVERN.

1.2. DESIGNATION - PRECAST REINFORCED CONCRETE CON/SPAN® O-SERIES BRIDGE UNITS MANUFACTURED IN ACCORDANCE WITH THIS SPECIFICATION SHALL BE DESIGNATED BY SPAN AND RISE. PRECAST REINFORCED CONCRETE WINGWALLS AND HEADWALLS MANUFACTURED IN ACCORDANCE WITH THIS SPECIFICATION SHALL BE DESIGNATED BY LENGTH, HEIGHT, AND DEFLECTION ANGLE. PRECAST REINFORCED CONCRETE EXPRESS™ FOUNDATION UNITS MANUFACTURED IN ACCORDANCE WITH THIS SPECIFICATION SHALL BE DESIGNATED BY LENGTH, HEIGHT AND WIDTH.

**2. DESIGN**

2.1. SPECIFICATIONS - THE PRECAST ELEMENTS ARE DESIGNED IN ACCORDANCE WITH THE "AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS" 8TH EDITION, ADOPED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 2017. A MINIMUM OF ONE FOOT OF COVER ABOVE THE CROWN OF THE BRIDGE UNITS IS REQUIRED IN THE INSTALLED CONDITION. (UNLESS NOTED OTHERWISE ON THE SHOP DRAWINGS AND DESIGNED ACCORDINGLY.)

**3. MATERIALS**

3.1. CONCRETE - THE CONCRETE FOR THE PRECAST ELEMENTS SHALL BE AIR-ENTRAINED WHEN INSTALLED IN AREAS SUBJECT TO FREEZE-THAW CONDITIONS, COMPOSED OF PORTLAND CEMENT, FINE AND COARSE AGGREGATES, ADMIXTURES AND WATER. AIR-ENTRAINED CONCRETE SHALL CONTAIN 6 ± 2 PERCENT AIR. THE AIR-ENTRAINED ADMIXTURE SHALL CONFORM TO AASHTO M154. THE MINIMUM CONCRETE COMPRESSIVE STRENGTH SHALL BE AS SHOWN ON THE SHOP DRAWINGS.

3.1.1. PORTLAND CEMENT - SHALL CONFORM TO THE REQUIREMENTS OF ASTM SPECIFICATIONS C150-TYPE I, TYPE II, OR TYPE III CEMENT.

3.1.2. COARSE AGGREGATE - SHALL CONSIST OF STONE HAVING A MAXIMUM SIZE OF 1 INCH. AGGREGATE SHALL MEET REQUIREMENTS FOR ASTM C33.

3.1.3. WATER REDUCING ADMIXTURE - THE MANUFACTURER MAY SUBMIT, FOR APPROVAL BY THE ENGINEER, A WATER-REDUCING ADMIXTURE FOR THE PURPOSE OF INCREASING WORKABILITY AND REDUCING THE WATER REQUIREMENT FOR THE CONCRETE.

3.1.4. CALCIUM CHLORIDE - THE ADDITION TO THE MIX OF CALCIUM CHLORIDE OR ADMIXTURES CONTAINING CALCIUM CHLORIDE WILL NOT BE PERMITTED.

3.1.5. MIXTURE - THE AGGREGATES, CEMENT AND WATER SHALL BE PROPORTIONED AND MIXED IN A BATCH MIXER TO PRODUCE A HOMOGENEOUS CONCRETE MEETING THE STRENGTH REQUIREMENTS OF THIS SPECIFICATION. THE PROPORTION OF PORTLAND CEMENT IN THE MIXTURE SHALL NOT BE LESS THAN 564 POUNDS (6 SACKS) PER CUBIC YARD OF CONCRETE.

3.2. STEEL REINFORCEMENT

3.2.1. THE MINIMUM STEEL YIELD STRENGTH SHALL BE 60,000 PSI, UNLESS OTHERWISE NOTED ON THE SHOP DRAWINGS.

3.2.2. ALL REINFORCING STEEL FOR THE PRECAST ELEMENTS SHALL BE FABRICATED AND PLACED IN ACCORDANCE WITH THE DETAILED SHOP DRAWINGS SUBMITTED BY THE MANUFACTURER.

3.2.3. REINFORCEMENT SHALL CONSIST OF WELDED WIRE REINFORCING CONFORMING TO ASTM SPECIFICATION A 1064, OR DEFORMED STEEL BARS CONFORMING TO ASTM SPECIFICATION A 615, GRADE 60. LONGITUDINAL DISTRIBUTION REINFORCEMENT MAY CONSIST OF WELDED WIRE FABRIC OR DEFORMED BILLET-STEEL BARS.

3.3. STEEL HARDWARE

3.3.1. BOLTS AND THREADED RODS FOR WINGWALL CONNECTIONS SHALL CONFORM TO ASTM A 307. NUTS SHALL CONFORM TO AASHTO M292 (ASTM A194) GRADE 2H. ALL BOLTS, THREADED RODS AND NUTS USED IN WINGWALL CONNECTIONS SHALL BE MECHANICALLY ZINC COATED IN ACCORDANCE WITH ASTM B695 CLASS 50.

3.3.2. STRUCTURAL STEEL FOR WINGWALL CONNECTION PLATES AND PLATE WASHERS SHALL CONFORM TO AASHTO M 270 (ASTM A 709) GRADE 36 AND SHALL BE HOT DIP GALVANIZED AS PER AASHTO M111 (ASTM A123).

3.3.3. INSERTS FOR WINGWALLS SHALL BE 1" DIAMETER TWO-BOLT PRESET WINGWALL ANCHORS AS MANUFACTURED BY DAYTON SUPERIOR CONCRETE ACCESSORIES, MIAMISBURG, OHIO, (800) 745-3700 AND SHALL BE ELECTRO GALVANIZED IN ACCORDANCE WITH ASTM B633 SC-1.

3.3.4. FERRULE LOOP INSERTS SHALL BE F-64 FERRULE LOOP INSERTS AS MANUFACTURED BY DAYTON SUPERIOR CONCRETE ACCESSORIES, MIAMISBURG, OHIO, (800) 745-3700 AND SHALL BE ELECTRO GALVANIZED.

3.3.5. HOOK BOLTS USED IN ATTACHED HEADWALL CONNECTIONS SHALL BE ASTM A307.

3.3.6. INSERTS FOR DETACHED HEADWALL CONNECTIONS SHALL BE AISI TYPE 304 STAINLESS STEEL, EXPANDED COIL INSERTS AS MANUFACTURED BY DAYTON SUPERIOR

CONCRETE ACCESSORIES, MIAMISBURG, OHIO, (800) 745-3700. COIL RODS AND NUTS USED IN HEADWALL CONNECTIONS SHALL BE AISI TYPE 304 STAINLESS STEEL. WASHERS USED IN HEADWALL CONNECTIONS SHALL BE EITHER AISI TYPE 304 STAINLESS STEEL PLATE WASHERS OR AASHTO M270 (ASTM A709) GRADE 36 PLATE WASHERS HOT DIP GALVANIZED AS PER AASHTO M111 (ASTM A123).

3.3.7. MECHANICAL SPLICES OF REINFORCING BARS SHALL BE MADE USING THE DOWEL BAR SPLICER SYSTEM AS MANUFACTURED BY DAYTON SUPERIOR CONCRETE ACCESSORIES, MIAMISBURG, OHIO, (800) 745-3700, AND SHALL CONSIST OF THE DBDI SPLICE SYSTEM (DOWEL BAR SPLICER AND DOWEL-IN), OR AS MANUFACTURED BY BARSPICE PRODUCTS INC, DAYTON, OHIO, (937)-275-8700, AND SHALL CONSIST OF BARSPICER XP TYPE 2 SYSTEM.

4. MANUFACTURE OF PRECAST ELEMENTS - SUBJECT TO THE PROVISIONS OF SECTION 5, BELOW, THE PRECAST ELEMENT DIMENSION AND REINFORCEMENT DETAILS SHALL BE AS PRESCRIBED IN THE PLAN AND SHOP DRAWINGS PROVIDED BY THE MANUFACTURER.

4.1. FORMS - THE FORMS USED IN MANUFACTURE SHALL BE SUFFICIENTLY RIGID AND ACCURATE TO MAINTAIN THE REQUIRED PRECAST ELEMENT DIMENSIONS WITHIN THE PERMISSIBLE VARIATIONS GIVEN IN SECTION 5 OF THESE SPECIFICATIONS. ALL CASTING SURFACES SHALL BE OF A SMOOTH MATERIAL.

4.2. PLACEMENT OF REINFORCEMENT

4.2.1. PLACEMENT OF REINFORCEMENT IN PRECAST BRIDGE UNITS - THE COVER OF CONCRETE OVER THE OUTSIDE CIRCUMFERENTIAL REINFORCEMENT SHALL BE 2" MINIMUM. THE COVER OF CONCRETE OVER THE INSIDE CIRCUMFERENTIAL REINFORCEMENT SHALL BE 1½" MINIMUM, UNLESS OTHERWISE NOTED ON THE SHOP DRAWINGS. THE CLEAR DISTANCE OF THE END CIRCUMFERENTIAL WIRES SHALL NOT BE LESS THAN 1" NOR MORE THAN 2" FROM THE ENDS OF EACH SECTION. REINFORCEMENT SHALL BE ASSEMBLED UTILIZING SINGLE OR MULTIPLE LAYERS OF WELDED WIRE FABRIC (NOT TO EXCEED 3 LAYERS), SUPPLEMENTED WITH A SINGLE LAYER OF DEFORMED BILLET-STEEL BARS, WHEN NECESSARY. WELDED WIRE FABRIC SHALL BE COMPOSED OF CIRCUMFERENTIAL AND LONGITUDINAL WIRES MEETING THE SPACING REQUIREMENTS OF 4.3, BELOW, AND SHALL CONTAIN SUFFICIENT LONGITUDINAL WIRES EXTENDING THROUGH THE BRIDGE UNIT TO MAINTAIN THE SHAPE AND POSITION OF THE REINFORCEMENT. LONGITUDINAL DISTRIBUTION REINFORCEMENT MAY BE WELDED WIRE FABRIC OR DEFORMED BILLET-STEEL BARS AND SHALL MEET THE SPACING REQUIREMENTS OF 4.3, BELOW. THE ENDS OF THE LONGITUDINAL DISTRIBUTION REINFORCEMENT SHALL BE NOT MORE THAN 3" AND NOT LESS THAN 1½" FROM THE ENDS OF THE BRIDGE UNIT.

4.2.2. BENDING OF REINFORCEMENT FOR PRECAST BRIDGE UNITS - THE OUTSIDE AND INSIDE CIRCUMFERENTIAL REINFORCING STEEL FOR THE CORNERS OF THE BRIDGE SHALL BE BENT TO SUCH AN ANGLE THAT IS APPROXIMATELY EQUAL TO THE CONFIGURATION OF THE BRIDGE'S OUTSIDE CORNER.

4.2.3. PLACEMENT OF REINFORCEMENT FOR PRECAST WINGWALLS AND HEADWALLS - THE COVER OF CONCRETE OVER THE LONGITUDINAL AND TRANSVERSE REINFORCEMENT SHALL BE 2" MINIMUM. THE CLEAR DISTANCE FROM THE END OF EACH PRECAST ELEMENT TO THE END OF REINFORCING STEEL SHALL NOT BE LESS THAN 1½" NOR MORE THAN 3". REINFORCEMENT SHALL BE ASSEMBLED UTILIZING A SINGLE LAYER OF WELDED WIRE FABRIC, OR A SINGLE LAYER OF DEFORMED BILLET-STEEL BARS. WELDED WIRE FABRIC SHALL BE COMPOSED OF TRANSVERSE AND LONGITUDINAL WIRES MEETING THE SPACING REQUIREMENTS OF 4.3, BELOW, AND SHALL CONTAIN SUFFICIENT LONGITUDINAL WIRES EXTENDING THROUGH THE ELEMENT TO MAINTAIN THE SHAPE AND POSITION OF THE REINFORCEMENT. LONGITUDINAL REINFORCEMENT MAY BE WELDED WIRE FABRIC OR DEFORMED BILLET-STEEL BARS AND SHALL MEET THE SPACING REQUIREMENTS OF 4.3, BELOW.

4.2.4. PLACEMENT OF REINFORCEMENT FOR PRECAST FOUNDATION UNITS - THE COVER OF CONCRETE OVER THE BOTTOM REINFORCEMENT SHALL BE 3 INCHES MINIMUM. THE COVER OF CONCRETE FOR ALL OTHER REINFORCEMENT SHALL BE 2 INCHES MINIMUM. THE CLEAR DISTANCE FROM THE END OF EACH PRECAST ELEMENT TO THE END OF REINFORCING STEEL SHALL NOT BE LESS THAN 2 INCHES NOR MORE THAN 3 INCHES. REINFORCEMENT SHALL BE ASSEMBLED UTILIZING A SINGLE LAYER OF WELDED WIRE FABRIC OR A SINGLE LAYER OF DEFORMED BILLET-STEEL BARS. WELDED WIRE FABRIC SHALL BE COMPOSED OF TRANSVERSE AND LONGITUDINAL WIRES MEETING THE SPACING REQUIREMENTS OF 4.3, BELOW, AND SHALL CONTAIN SUFFICIENT LONGITUDINAL WIRES EXTENDING THROUGH THE ELEMENT TO MAINTAIN THE SHAPE AND POSITION OF THE REINFORCEMENT. LONGITUDINAL REINFORCEMENT MAY BE WELDED WIRE FABRIC OR DEFORMED BILLET-STEEL BARS AND SHALL MEET THE SPACING REQUIREMENTS OF 4.3, BELOW.

4.3. LAPS, WELDS, SPACING

4.3.1. LAPS, WELDS, AND SPACING FOR PRECAST BRIDGE UNITS - TENSION SPLICES IN THE CIRCUMFERENTIAL REINFORCEMENT SHALL BE MADE BY LAPPING. LAPS

MAY BE TACK WELDED TOGETHER FOR ASSEMBLY PURPOSES. FOR SMOOTH WELDED WIRE FABRIC, THE OVERLAP SHALL MEET THE REQUIREMENTS OF AASHTO 5.10.8.2.5B AND 5.10.8.5.2. FOR DEFORMED WELDED WIRE FABRIC, THE OVERLAP SHALL MEET THE REQUIREMENTS OF AASHTO 5.10.8.2.5A AND 5.10.8.5.1. THE OVERLAP OF WELDED WIRE FABRIC SHALL BE MEASURED BETWEEN THE OUTER-MOST LONGITUDINAL WIRES OF EACH FABRIC SHEET. FOR DEFORMED BILLET-STEEL BARS, THE OVERLAP SHALL MEET THE REQUIREMENTS OF AASHTO 5.10.8.2.1 FOR SPLICES OTHER THAN TENSION SPLICES. THE OVERLAP SHALL BE A MINIMUM OF 1'-0" FOR WELDED WIRE FABRIC OR DEFORMED BILLET-STEEL BARS. THE SPACING CENTER TO CENTER OF THE CIRCUMFERENTIAL WIRES IN A WIRE FABRIC SHEET SHALL BE NOT LESS THAN 2" NOR MORE THAN 4". THE SPACING CENTER TO CENTER OF THE LONGITUDINAL WIRES SHALL NOT BE MORE THAN 8". THE SPACING CENTER TO CENTER OF THE LONGITUDINAL DISTRIBUTION STEEL FOR EITHER LINE OF REINFORCING IN THE TOP SLAB SHALL BE NOT MORE THAN 1'-4".

4.3.2. LAPS, WELDS, AND SPACING FOR PRECAST WINGWALLS, HEADWALLS AND FOUNDATIONS - SPLICES IN THE REINFORCEMENT SHALL BE MADE BY LAPPING. LAPS MAY BE TACK WELDED TOGETHER FOR ASSEMBLY PURPOSES. FOR SMOOTH WELDED WIRE FABRIC, THE OVERLAP SHALL MEET THE REQUIREMENTS OF AASHTO 5.10.8.2.5B AND 5.10.8.5.2. FOR DEFORMED WELDED WIRE FABRIC, THE OVERLAP SHALL MEET THE REQUIREMENTS OF AASHTO 5.10.8.2.5A AND 5.10.8.5.1. FOR DEFORMED BILLET-STEEL BARS, THE OVERLAP SHALL MEET THE REQUIREMENTS OF AASHTO 5.10.8.2.1. THE SPACING CENTER-TO-CENTER OF THE WIRES IN A WIRE FABRIC SHEET SHALL BE NOT LESS THAN 2" NOR MORE THAN 8".

4.4. CURING - THE PRECAST CONCRETE ELEMENTS SHALL BE CURED FOR A SUFFICIENT LENGTH OF TIME SO THAT THE CONCRETE WILL DEVELOP THE SPECIFIED COMPRESSIVE STRENGTH IN 28 DAYS OR LESS. ANY ONE OF THE FOLLOWING METHODS OF CURING OR COMBINATIONS THERE OF SHALL BE USED:

4.4.1. STEAM CURING - THE PRECAST ELEMENTS MAY BE LOW-PRESSURE STEAM CURED BY A SYSTEM THAT WILL MAINTAIN A MOIST ATMOSPHERE.

4.4.2. WATER CURING - THE PRECAST ELEMENTS MAY BE WATER CURED BY ANY METHOD THAT WILL KEEP THE SECTIONS MOIST.

4.4.3. MEMBRANE CURING - A SEALING MEMBRANE CONFORMING TO THE REQUIREMENTS OF ASTM SPECIFICATION C309 MAY BE APPLIED AND SHALL BE LEFT INTACT UNTIL THE REQUIRED CONCRETE COMPRESSIVE STRENGTH IS ATTAINED. THE CONCRETE TEMPERATURE AT THE TIME OF APPLICATION SHALL BE WITHIN +/- 10 DEGREES F OF THE ATMOSPHERIC TEMPERATURE. ALL SURFACES SHALL BE KEPT MOIST PRIOR TO THE APPLICATION OF THE COMPOUNDS AND SHALL BE DAMP WHEN THE COMPOUND IS APPLIED.

4.5. STORAGE, HANDLING & DELIVERY

4.5.1. STORAGE - PRECAST CONCRETE BRIDGE ELEMENTS SHALL BE LIFTED AND STORED IN "AS-CAST" POSITION. PRECAST CONCRETE HEADWALL AND WINGWALL UNITS ARE CAST, STORED AND SHIPPED IN A FLAT POSITION. THE PRECAST ELEMENTS SHALL BE STORED IN SUCH A MANNER TO PREVENT CRACKING OR DAMAGE. STORE ELEMENTS USING TIMBER SUPPORTS AS APPROPRIATE. THE UNITS SHALL NOT BE MOVED UNTIL THE CONCRETE COMPRESSIVE STRENGTH HAS REACHED A MINIMUM OF 2500 PSI (3000 PSI FOR SPANS >48 FEET), AND THEY SHALL NOT BE STORED IN AN UPRIGHT POSITION.

4.5.2. HANDLING - HANDLING DEVICES SHALL BE PERMITTED IN EACH PRECAST ELEMENT FOR THE PURPOSE OF HANDLING AND SETTING. SPREADER BEAMS MAY BE REQUIRED FOR THE LIFTING OF PRECAST CONCRETE BRIDGE ELEMENTS TO PRECLUDE DAMAGE FROM BENDING OR TORSION FORCES.

4.5.3. DELIVERY - PRECAST CONCRETE ELEMENTS MUST NOT BE SHIPPED UNTIL THE CONCRETE HAS ATTAINED THE SPECIFIED DESIGN COMPRESSIVE STRENGTH, OR AS DIRECTED BY THE DESIGN ENGINEER. PRECAST CONCRETE ELEMENTS MAY BE UNLOADED AND PLACED ON THE GROUND AT THE SITE UNTIL INSTALLED. STORE ELEMENTS USING TIMBER SUPPORTS AS APPROPRIATE.

4.6. QUALITY ASSURANCE - THE PRECASTER SHALL DEMONSTRATE ADHERENCE TO THE STANDARDS SET FORTH IN THE NPCA QUALITY CONTROL MANUAL. THE PRECASTER SHALL MEET EITHER SECTION 4.6.1 OR 4.6.2.

4.6.1. CERTIFICATION - THE PRECASTER SHALL BE CERTIFIED BY THE PRECAST/PRESTRESSED CONCRETE INSTITUTE PLANT CERTIFICATION PROGRAM OR THE NATIONAL PRECAST CONCRETE ASSOCIATION'S PLANT CERTIFICATION PROGRAM PRIOR TO AND DURING PRODUCTION OF THE PRODUCTS COVERED BY THIS SPECIFICATION.

4.6.2. QUALIFICATIONS, TESTING AND INSPECTION

4.6.2.1. THE PRECASTER SHALL HAVE BEEN IN THE BUSINESS OF PRODUCING PRECAST CONCRETE PRODUCTS SIMILAR TO THOSE SPECIFIED FOR A MINIMUM OF THREE YEARS. HE SHALL MAINTAIN A PERMANENT QUALITY CONTROL DEPARTMENT OR RETAIN AN INDEPENDENT TESTING AGENCY ON A CONTINUING BASIS. THE AGENCY SHALL ISSUE A REPORT, CERTIFIED BY A LICENSED ENGINEER, DETAILING THE ABILITY OF THE PRECASTER TO PRODUCE QUALITY PRODUCTS CONSISTENT WITH INDUSTRY STANDARDS.

4.6.2.2. THE PRECASTER SHALL SHOW THAT THE

FOLLOWING TESTS ARE PERFORMED IN ACCORDANCE WITH THE ASTM STANDARDS INDICATED. TESTS SHALL BE PERFORMED AS INDICATED IN SECTION 6 OF THESE SPECIFICATIONS.

4.6.2.2.1. AIR CONTENT: C231 OR C173

4.6.2.2.2. COMPRESSIVE STRENGTH: C31,C39,C497

4.6.2.3. THE PRECASTER SHALL PROVIDE DOCUMENTATION DEMONSTRATING COMPLIANCE WITH THIS SECTION TO CONTECH® ENGINEERED SOLUTIONS AT REGULAR INTERVALS OR UPON REQUEST.

4.6.2.4. THE OWNER MAY PLACE AN INSPECTOR IN THE PLANT WHEN THE PRODUCTS COVERED BY THIS SPECIFICATION ARE BEING MANUFACTURED.

4.6.3. DOCUMENTATION - THE PRECASTER SHALL SUBMIT PRECAST PRODUCTION REPORTS TO CONTECH® ENGINEERED SOLUTIONS AS REQUIRED.

**5. PERMISSIBLE VARIATIONS**

**5.1. BRIDGE UNITS**

5.1.1. INTERNAL DIMENSIONS - THE INTERNAL DIMENSION SHALL VARY NOT MORE THAN 1% FROM THE DESIGN DIMENSIONS NOR MORE THAN 1½" WHICHEVER IS LESS.

5.1.2. SLAB AND WALL THICKNESS - THE SLAB AND WALL THICKNESS SHALL NOT BE LESS THAN THAT SHOWN IN THE DESIGN BY MORE THAN ½". A THICKNESS MORE THAN THAT REQUIRED IN THE DESIGN SHALL NOT BE CAUSE FOR REJECTION.

5.1.3. LENGTH OF OPPOSITE SURFACES - VARIATIONS IN LAYING LENGTHS OF TWO OPPOSITE SURFACES OF THE BRIDGE UNIT SHALL NOT BE MORE THAN ½" IN ANY SECTION, EXCEPT WHERE BEVELED ENDS FOR LAYING OF CURVES ARE SPECIFIED BY THE PURCHASER.

5.1.4. LENGTH OF SECTION - THE UNDERRUN IN LENGTH OF A SECTION SHALL NOT BE MORE THAN ½" IN ANY BRIDGE UNIT.

5.1.5. POSITION OF REINFORCEMENT - THE MAXIMUM VARIATION IN POSITION OF THE REINFORCEMENT SHALL BE ± ½". IN NO CASE SHALL THE COVER OVER THE REINFORCEMENT BE LESS THAN 1½" FOR THE OUTSIDE CIRCUMFERENTIAL STEEL OR BE LESS THAN 1" FOR THE INSIDE CIRCUMFERENTIAL STEEL AS MEASURED TO THE EXTERNAL OR INTERNAL SURFACE OF THE BRIDGE. THESE TOLERANCES OR COVER REQUIREMENTS DO NOT APPLY TO MATING SURFACES OF THE JOINTS.

5.1.6. AREA OF REINFORCEMENT - THE AREAS OF STEEL REINFORCEMENT SHALL BE THE DESIGN STEEL AREAS AS SHOWN IN THE MANUFACTURER'S SHOP DRAWINGS. STEEL AREAS GREATER THAN THOSE REQUIRED SHALL NOT BE CAUSE FOR REJECTION. THE PERMISSIBLE VARIATION IN DIAMETER OF ANY REINFORCEMENT SHALL CONFORM TO THE TOLERANCES PRESCRIBED IN THE ASTM SPECIFICATION FOR THAT TYPE OF REINFORCEMENT.

**5.2. WINGWALLS & HEADWALLS**

5.2.1. WALL THICKNESS - THE WALL THICKNESS SHALL NOT VARY FROM THAT SHOWN IN THE DESIGN BY MORE THAN ½".

5.2.2. LENGTH/HEIGHT OF WALL SECTIONS - THE LENGTH AND HEIGHT OF THE WALL SHALL NOT VARY FROM THAT SHOWN IN THE DESIGN BY MORE THAN ½".

5.2.3. POSITION OF REINFORCEMENT - THE MAXIMUM VARIATION IN THE POSITION OF THE REINFORCEMENT SHALL BE ± ½". IN NO CASE SHALL THE COVER OVER THE REINFORCEMENT BE LESS THAN 1½".

5.2.4. SIZE OF REINFORCEMENT - THE PERMISSIBLE VARIATION IN DIAMETER OF ANY REINFORCING SHALL CONFORM TO THE TOLERANCES PRESCRIBED IN THE ASTM SPECIFICATION FOR THAT TYPE OF REINFORCING. STEEL AREA GREATER THAN THAT REQUIRED SHALL NOT BE CAUSE FOR REJECTION.

**5.3. FOUNDATION UNITS**

5.3.1. WALL THICKNESS - THE WALL THICKNESS SHALL NOT VARY FROM THAT SHOWN IN THE DESIGN BY MORE THAN ½".

5.3.2. LENGTH/ HEIGHT/WIDTH OF FOUNDATION SECTIONS - THE LENGTH, HEIGHT AND WIDTH OF THE FOUNDATION UNITS SHALL NOT VARY FROM THAT SHOWN IN THE DESIGN BY MORE THAN ½".

5.3.3. POSITION OF REINFORCEMENT - THE MAXIMUM VARIATION IN THE POSITION OF THE REINFORCEMENT SHALL BE ± ½". IN NO CASE SHALL THE COVER OVER THE REINFORCEMENT BE LESS THAN 1½".

5.3.4. SIZE OF REINFORCEMENT - THE PERMISSIBLE VARIATION IN DIAMETER OF ANY REINFORCING SHALL CONFORM TO THE TOLERANCES PRESCRIBED IN THE ASTM SPECIFICATION FOR THAT TYPE OF REINFORCING. STEEL AREA GREATER THAN THAT REQUIRED SHALL NOT BE CAUSE FOR REJECTION.

**6. TESTING/ INSPECTION**

**6.1. TESTING**

6.1.1. TYPE OF TEST SPECIMEN - CONCRETE COMPRESSIVE STRENGTH SHALL BE DETERMINED FROM COMPRESSION TESTS MADE ON CYLINDERS OR CORES. FOR CYLINDER TESTING, A MINIMUM OF 4 CYLINDERS SHALL BE TAKEN FOR EACH BRIDGE ELEMENT. FOR CORE TESTING, A MINIMUM OF 2 CORES SHALL BE TAKEN FOR EACH BRIDGE ELEMENT. EACH ELEMENT SHALL BE CONSIDERED SEPARATELY FOR THE PURPOSE OF TESTING AND ACCEPTANCE.

6.1.2. COMPRESSION TESTING - CYLINDERS SHALL BE MADE AND TESTED AS PRESCRIBED BY THE ASTM C39 SPECIFICATION. CYLINDERS SHALL BE CURED IN THE SAME ENVIRONMENT AS THE BRIDGE ELEMENTS. CORES SHALL BE OBTAINED AND TESTED FOR COMPRESSIVE STRENGTH FROM EACH ELEMENT IN ACCORDANCE WITH THE PROVISIONS OF THE

ASTM C42 SPECIFICATION.

6.1.3. ACCEPTABILITY OF CYLINDER TESTS - WHEN THE AVERAGE COMPRESSIVE STRENGTH OF ALL CYLINDERS TESTED IS EQUAL TO OR GREATER THAN THE DESIGN COMPRESSIVE STRENGTH, AND NOT MORE THAN 10% OF THE CYLINDERS TESTED HAVE A COMPRESSIVE STRENGTH LESS THAN THE DESIGN CONCRETE STRENGTH, AND NO CYLINDER TESTED HAS A COMPRESSIVE STRENGTH LESS THAN 90% OF THE REQUIRED CONCRETE STRENGTH, THEN THE ELEMENT SHALL BE ACCEPTED. WHEN THE COMPRESSIVE STRENGTH OF THE CYLINDERS TESTED DOES NOT CONFORM TO THESE ACCEPTANCE CRITERIA, THE ACCEPTABILITY OF THE ELEMENT MAY BE DETERMINED AS DESCRIBED IN SECTION 6.1.4, BELOW.

6.1.4. ACCEPTABILITY OF CORE TESTS - THE COMPRESSIVE STRENGTH OF THE CONCRETE IN A BRIDGE ELEMENT IS ACCEPTABLE WHEN EACH CORE TEST STRENGTH IS EQUAL TO OR GREATER THAN THE DESIGN CONCRETE STRENGTH. WHEN THE COMPRESSIVE STRENGTH OF A CORE TESTED IS LESS THAN THE DESIGN CONCRETE STRENGTH, THE PRECAST ELEMENT FROM WHICH THAT CORE WAS TAKEN MAY BE RE-CORED. WHEN THE COMPRESSIVE STRENGTH OF THE RE-CORE IS EQUAL TO OR GREATER THAN THE DESIGN CONCRETE STRENGTH, THE COMPRESSIVE STRENGTH OF THE CONCRETE IN THAT BRIDGE ELEMENT IS ACCEPTABLE.

6.1.4.1. WHEN THE COMPRESSIVE STRENGTH OF ANY RECORE IS LESS THAN THE DESIGN CONCRETE STRENGTH, THE PRECAST ELEMENT FROM WHICH THAT CORE WAS TAKEN SHALL BE REJECTED.

6.1.4.2. PLUGGING CORE HOLES - THE CORE HOLES SHALL BE PLUGGED AND SEALED BY THE MANUFACTURER IN A MANNER SUCH THAT THE ELEMENTS WILL MEET ALL OF THE TEST REQUIREMENTS OF THIS SPECIFICATION. PRECAST ELEMENTS SO SEALED SHALL BE CONSIDERED SATISFACTORY FOR USE.

6.1.4.3. TEST EQUIPMENT - EVERY MANUFACTURER FURNISHING PRECAST ELEMENTS UNDER THIS SPECIFICATION SHALL FURNISH ALL FACILITIES AND PERSONNEL NECESSARY TO CARRY OUT THE TEST REQUIRED.

6.2. INSPECTION - THE QUALITY OF MATERIALS, THE PROCESS OF MANUFACTURE, AND THE FINISHED PRECAST ELEMENTS SHALL BE SUBJECT TO INSPECTION BY THE PURCHASER.

**7. JOINTS**

THE BRIDGE UNITS SHALL BE PRODUCED WITH FLAT BUTT ENDS. THE ENDS OF THE BRIDGE UNITS SHALL BE SUCH THAT WHEN THE SECTIONS ARE LAID TOGETHER THEY WILL MAKE A CONTINUOUS LINE WITH A SMOOTH INTERIOR FREE OF APPRECIABLE IRREGULARITIES, ALL COMPATIBLE WITH THE PERMISSIBLE VARIATIONS IN SECTION 5, ABOVE. THE JOINT WIDTH BETWEEN ADJACENT PRECAST UNITS SHALL NOT EXCEED ½".

**8. WORKMANSHIP/ FINISH**

THE BRIDGE UNITS, WINGWALLS, HEADWALLS AND FOUNDATION UNITS SHALL BE SUBSTANTIALLY FREE OF FRACTURES. THE ENDS OF THE BRIDGE UNITS SHALL BE NORMAL TO THE WALLS AND CENTERLINE OF THE BRIDGE SECTION, WITHIN THE LIMITS OF THE VARIATIONS GIVEN IN SECTION 5, ABOVE, EXCEPT WHERE BEVELED ENDS ARE SPECIFIED. THE FACES OF THE WINGWALLS AND HEADWALLS SHALL BE PARALLEL TO EACH OTHER, WITHIN THE LIMITS OF VARIATIONS GIVEN IN SECTION 5, ABOVE. THE SURFACE OF THE PRECAST ELEMENTS SHALL BE A SMOOTH STEEL FORM OR TROWELED SURFACE. TRAPPED AIR POCKETS CAUSING SURFACE DEFECTS SHALL BE CONSIDERED AS PART OF A SMOOTH, STEEL FORM FINISH.

**9. REPAIRS**

PRECAST ELEMENTS MAY BE REPAIRED, IF NECESSARY, BECAUSE OF IMPERFECTIONS IN MANUFACTURE OR HANDLING DAMAGE AND WILL BE ACCEPTABLE IF, IN THE OPINION OF THE PURCHASER, THE REPAIRS ARE SOUND, PROPERLY FINISHED AND CURED, AND THE REPAIRED SECTION CONFORMS TO THE REQUIREMENTS OF THIS SPECIFICATION.

**10. REJECTION**

THE PRECAST ELEMENTS SHALL BE SUBJECT TO REJECTION ON ACCOUNT OF ANY OF THE SPECIFICATION REQUIREMENTS. INDIVIDUAL PRECAST ELEMENTS MAY BE REJECTED BECAUSE OF ANY OF THE FOLLOWING:

- 10.1. FRACTURES OR CRACKS PASSING THROUGH THE WALL, EXCEPT FOR A SINGLE END CRACK THAT DOES NOT EXCEED ONE HALF THE THICKNESS OF THE WALL.
- 10.2. DEFECTS THAT INDICATE PROPORTIONING, MIXING, AND MOLDING NOT IN COMPLIANCE WITH SECTION 4 OF THESE SPECIFICATIONS.
- 10.3. HONEYCOMBED OR OPEN TEXTURE.
- 10.4. DAMAGED ENDS, WHERE SUCH DAMAGE WOULD PREVENT MAKING A SATISFACTORY JOINT.

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SPECIFICATIONS

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CHECKED: DYO	APPROVED: DYO	
SHEET NO.:	D6 OF D9	

# SPECIFICATIONS FOR MANUFACTURE AND INSTALLATION OF CON/SPAN® O-SERIES BRIDGE SYSTEMS (CONT'D)

**11. MARKING**  
EACH BRIDGE UNIT SHALL BE CLEARLY MARKED BY WATERPROOF PAINT. THE FOLLOWING SHALL BE SHOWN ON THE INSIDE OF THE VERTICAL LEG OF THE BRIDGE SECTION:  
BRIDGE SPAN X BRIDGE RISE  
DATE OF MANUFACTURE  
NAME OR TRADEMARK OF THE MANUFACTURER

**12. INSTALLATION PREPARATION**  
TO ENSURE CORRECT INSTALLATION OF THE PRECAST CONCRETE BRIDGE SYSTEM, CARE AND CAUTION MUST BE EXERCISED IN FORMING THE SUPPORT AREAS FOR BRIDGE UNITS, HEADWALL, AND WINGWALL ELEMENTS. EXERCISING SPECIAL CARE WILL FACILITATE THE RAPID INSTALLATION OF THE PRECAST COMPONENTS.

**12.1. FOOTINGS**  
DO NOT OVER EXCAVATE FOUNDATIONS UNLESS DIRECTED BY SITE SOIL ENGINEER TO REMOVE UNSUITABLE SOIL.

THE SITE SOILS ENGINEER SHALL CERTIFY THAT THE BEARING CAPACITY MEETS OR EXCEEDS THE FOOTING DESIGN REQUIREMENTS, PRIOR TO THE CONTRACTOR POURING OF THE FOOTINGS.

THE BRIDGE UNITS AND WINGWALLS SHALL BE INSTALLED ON EITHER PRECAST OR CAST-IN-PLACE CONCRETE FOOTINGS. THE SIZE AND ELEVATION OF THE FOOTINGS SHALL BE AS DESIGNED BY THE ENGINEER. A KEYWAY SHALL BE FORMED IN THE TOP SURFACE OF THE BRIDGE FOOTING AS SPECIFIED ON THE PLANS. NO KEYWAY IS REQUIRED IN THE WINGWALL FOOTINGS, UNLESS OTHERWISE SPECIFIED ON THE PLANS.

THE FOOTINGS SHALL BE GIVEN A SMOOTH FLOAT FINISH AND SHALL REACH A COMPRESSIVE STRENGTH OF 2,000 PSI BEFORE PLACEMENT OF THE BRIDGE AND WINGWALL ELEMENTS. BACKFILLING SHALL NOT BEGIN UNTIL THE FOOTING HAS REACHED THE FULL DESIGN COMPRESSIVE STRENGTH.

THE FOOTING SURFACE SHALL BE CONSTRUCTED IN ACCORDANCE WITH GRADES SHOWN ON THE PLANS. WHEN TESTED WITH A 10'-0" STRAIGHT EDGE, THE SURFACE SHALL NOT VARY MORE THAN 1/4" IN 10'-0".

IF A PRECAST CONCRETE FOOTING IS USED, THE CONTRACTOR SHALL PREPARE A 4" THICK BASE LAYER OF COMPACTED GRANULAR MATERIAL THE FULL WIDTH OF THE FOOTING PRIOR TO PLACING THE PRECAST FOOTING.

THE FOUNDATIONS FOR PRECAST CONCRETE BRIDGE ELEMENTS AND WINGWALLS MUST BE CONNECTED BY REINFORCEMENT TO FORM ONE MONOLITHIC BODY. EXPANSION JOINTS SHALL NOT BE USED.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CONSTRUCTION OF THE FOUNDATIONS PER THE PLANS AND SPECIFICATIONS.

**13. INSTALLATION**  
**13.1. GENERAL** - THE INSTALLATION OF THE PRECAST CONCRETE ELEMENTS SHALL BE AS EXPLAINED IN THE PUBLICATION CON/SPAN BRIDGE SYSTEMS INSTALLATION HANDBOOK.

**13.1.1. LIFTING** - IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE THAT A CRANE OF THE CORRECT LIFTING CAPACITY IS AVAILABLE TO HANDLE THE PRECAST CONCRETE UNITS. THIS CAN BE ACCOMPLISHED BY USING THE WEIGHTS GIVEN FOR THE PRECAST CONCRETE COMPONENTS AND BY DETERMINING THE LIFTING REACH FOR EACH CRANE UNIT. SITE CONDITIONS MUST BE CHECKED WELL IN ADVANCE OF SHIPPING TO ENSURE PROPER CRANE LOCATION AND TO AVOID ANY LIFTING RESTRICTIONS. THE LIFT ANCHORS OR HOLES PROVIDED IN EACH UNIT ARE THE ONLY MEANS TO BE USED TO LIFT THE ELEMENTS. THE PRECAST CONCRETE ELEMENTS MUST NOT BE SUPPORTED OR RAISED BY OTHER MEANS THAN THOSE GIVEN IN THE MANUALS AND DRAWINGS WITHOUT WRITTEN APPROVAL FROM CONTECH® ENGINEERED SOLUTIONS.

**13.1.2. CONSTRUCTION EQUIPMENT WEIGHT RESTRICTIONS** - IN NO CASE SHALL EQUIPMENT OPERATING IN EXCESS OF THE DESIGN LOAD (HL-93) BE PERMITTED OVER THE BRIDGE UNITS UNLESS APPROVED BY CONTECH® ENGINEERED SOLUTIONS.

**13.1.2.1. IN THE IMMEDIATE AREA OF THE BRIDGE UNITS, THE FOLLOWING RESTRICTIONS FOR THE USE OF HEAVY CONSTRUCTION MACHINERY DURING BACKFILLING OPERATIONS APPLY:**

- NO CONSTRUCTION EQUIPMENT SHALL CROSS THE BARE PRECAST CONCRETE BRIDGE UNIT.
- AFTER THE COMPACTED FILL LEVEL HAS REACHED A MINIMUM OF 4" OVER THE CROWN OF THE BRIDGE, CONSTRUCTION EQUIPMENT WITH A WEIGHT OF LESS THAN 10 TONS MAY CROSS THE BRIDGE.
- AFTER THE COMPACTED FILL LEVEL HAS REACHED A MINIMUM OF 1'-0" OVER THE CROWN OF THE BRIDGE, CONSTRUCTION EQUIPMENT WITH A WEIGHT OF LESS THAN 30 TONS MAY CROSS THE BRIDGE.
- AFTER THE COMPACTED FILL LEVEL HAS REACHED THE DESIGN COVER, OR 2'-0" MINIMUM, OVER THE CROWN OF THE PRECAST CONCRETE BRIDGE, CONSTRUCTION EQUIPMENT WITHIN THE DESIGN LOAD LIMITS FOR THE ROAD MAY CROSS THE PRECAST CONCRETE BRIDGE.

**13.2. LEVELING PADS/SHIMS** - THE BRIDGE UNITS AND WINGWALLS SHALL BE SET ON HARDBOARD SHIMS CONFORMING TO ASTM D1037 OR PLASTIC SHIMS (DAYTON SUPERIOR P-80, P-81 OR APPROVED EQUAL) MEASURING 5" x 5", MINIMUM, UNLESS SHOWN OTHERWISE ON THE PLANS. A MINIMUM GAP OF 1/2" SHALL BE PROVIDED BETWEEN THE FOOTING AND THE BOTTOM OF THE BRIDGE'S

VERTICAL LEGS OR THE BOTTOM OF THE WINGWALL. ALSO, A SUPPLY OF 1/4", 1/2" AND 3/8" THICK HARDBOARD OR PLASTIC SHIMS FOR VARIOUS SHIMMING PURPOSES SHALL BE ON SITE.

**13.3. PLACEMENT OF BRIDGE UNITS** - THE BRIDGE UNITS SHALL BE PLACED AS SHOWN ON THE ENGINEER'S PLAN DRAWINGS. SPECIAL CARE SHALL BE TAKEN IN SETTING THE ELEMENTS TO THE TRUE LINE AND GRADE. THE JOINT WIDTH BETWEEN ADJACENT PRECAST UNITS SHALL NOT EXCEED 1/4".

**13.4. IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN THE STRUCTURE SPAN DURING ALL PHASES OF INSTALLATION.** DUE TO THE ARCH SHAPE, BRIDGE ELEMENTS WILL TEND TO SPREAD UNDER SELF-WEIGHT. IT IS IMPERATIVE THAT ANY LATERAL SPREADING OF THE BRIDGE ELEMENTS BE AVOIDED DURING AND AFTER THEIR PLACEMENT. GENERALLY, HORIZONTAL CABLE TIES OR TIE RODS ARE SHIPPED IN THE LARGER BRIDGE ELEMENTS TO ASSIST IN PREVENTING THIS SPREADING. CABLE TIES/TIE RODS SHALL NOT BE REMOVED UNTIL BRIDGE UNITS ARE GROUTED AND GROUT HAS CURED. IT IS RECOMMENDED THAT TEMPORARY HARDWOOD BLOCKS BE USED IN CONJUNCTION WITH THE CABLE TIES/TIE RODS TO MAINTAIN SPAN. IF, HOWEVER, DUE TO SITE RESTRICTIONS, THESE CABLE TIES/TIE RODS MUST BE REMOVED PRIOR TO PLACEMENT OF THE BRIDGE ELEMENTS, THE CONTRACTOR MUST NOTIFY CONTECH (MANUFACTURER) AND REQUEST A SUGGESTED INSTALLATION PROCEDURE.

IN ADDITION, IF THE CABLE TIES/TIE RODS MUST BE REMOVED PRIOR TO SETTING ARCH UNITS, THE FOLLOWING QUALITY CONTROL PROCEDURE MUST BE FOLLOWED:

- 1) FIND "MEASURED SPAN" UPON ARCH UNIT'S DELIVERY TO SITE, PRIOR TO LIFTING FROM TRUCK AND REMOVING CABLE TIES/TIE RODS. "MEASURED SPAN" SHALL BE THE AVERAGE OF (3) SPAN MEASUREMENTS ALONG THE LAY LENGTH OF THE ARCH UNIT.
- 2) AFTER SETTING OF BRIDGE UNIT ON THE FOUNDATION, VERIFY THE SPAN. THIS "INSTALLED SPAN MEASUREMENT" SHALL NOT EXCEED THE MAXIMUM OF:
  - A) THE NOMINAL SPAN + 1/2" OR
  - B) THE "MEASURED SPAN"

IF THE "INSTALLED SPAN MEASUREMENT" EXCEEDS THIS AMOUNT, THE ARCH UNIT SHALL BE LIFTED AND RE-SET UNTIL THE "INSTALLED SPAN MEASUREMENT" MEETS THE LIMITS.

**13.5. PLACEMENT OF WINGWALLS, HEADWALLS AND FOUNDATION UNITS** - THE WINGWALLS, HEADWALLS AND FOUNDATIONS SHALL BE PLACED AS SHOWN ON THE PLAN DRAWINGS. SPECIAL CARE SHALL BE TAKEN IN SETTING THE ELEMENTS TO THE TRUE LINE AND GRADE.

**13.6. JOINT PROTECTION AND SUBSURFACE DRAINAGE**

**13.6.1. EXTERNAL PROTECTION OF JOINTS** - THE BUTT JOINT MADE BY TWO ADJOINING BRIDGE UNITS SHALL BE COVERED WITH A 1/2" x 1 1/2" PREFORMED BITUMINOUS JOINT SEALANT AND A MINIMUM OF A 9" WIDE JOINT WRAP. THE SURFACE SHALL BE FREE OF DIRT BEFORE APPLYING THE JOINT MATERIAL. A PRIMER COMPATIBLE WITH THE JOINT WRAP TO BE USED SHALL BE APPLIED FOR A MINIMUM WIDTH OF 9" ON EACH SIDE OF THE JOINT. THE EXTERNAL WRAP SHALL BE CS212 BY CONCRETE SEALANTS INC., EZ-WRAP RUBBER BY PRESS-SEAL GASKET CORPORATION, SEAL WRAP BY MAR MAC MANUFACTURING CO. INC. OR APPROVED EQUAL. THE JOINT SHALL BE COVERED CONTINUOUSLY FROM THE BOTTOM OF ONE BRIDGE SECTION LEG, ACROSS THE TOP OF THE BRIDGE AND TO THE OPPOSITE BRIDGE SECTION LEG. ANY LAPS THAT RESULT IN THE JOINT WRAP SHALL BE A MINIMUM OF 6" LONG WITH THE OVERLAP RUNNING DOWNHILL.

**13.6.2. IN ADDITION TO THE JOINTS BETWEEN BRIDGE UNITS, THE JOINT BETWEEN THE END BRIDGE UNIT AND THE HEADWALL SHALL ALSO BE SEALED AS DESCRIBED ABOVE.** IF PRECAST WINGWALLS ARE USED, THE JOINT BETWEEN THE END BRIDGE UNIT AND THE WINGWALL SHALL BE SEALED WITH A 2'-0" STRIP OF FILTER FABRIC. ALSO, IF LIFT HOLES ARE FORMED IN THE BRIDGE UNITS, THEY SHALL BE PRIMED AND COVERED WITH A 9" x 9" SQUARE OF JOINT WRAP.

**13.6.3. DURING THE BACKFILLING OPERATION, CARE SHALL BE TAKEN TO KEEP THE JOINT WRAP IN ITS PROPER LOCATION OVER THE JOINT.**

**13.6.4. SUBSOIL DRAINAGE SHALL BE AS DIRECTED BY THE ENGINEER.**

**13.7. GROUTING**

**13.7.1. GROUTING SHALL NOT BE PERFORMED WHEN TEMPERATURES ARE EXPECTED TO GO BELOW 35° FOR A PERIOD OF 72 HOURS.** GROUTING SHOULD BE COMPLETED AS SOON AS PRACTICAL AFTER PRECAST ARCHES HAVE BEEN INSTALLED. FILL THE BRIDGE-FOUNDATION KEYWAY WITH CEMENT GROUT (PORTLAND CEMENT AND WATER OR CEMENT MORTAR COMPOSED OF PORTLAND CEMENT, SAND AND WATER) WITH A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 3000 PSI. VIBRATE AS REQUIRED TO ENSURE THAT THE ENTIRE KEY AROUND THE BRIDGE ELEMENT IS COMPLETELY FILLED. IF BRIDGE ELEMENTS HAVE BEEN SET WITH TEMPORARY TIES (CABLES, BARS, ETC.) GROUT MUST ATTAIN A MINIMUM COMPRESSIVE STRENGTH OF 1500 PSI BEFORE TIES MAY BE REMOVED.

**13.7.2. ALL GROUT SHALL HAVE A MAXIMUM AGGREGATE SIZE OF 1/4".**

**13.7.3. LIFTING AND ERECTION ANCHOR RECESSES SHALL BE FILLED WITH GROUT.**

**13.7.4. AFTER GROUT HAS REACHED ITS DESIGN STRENGTH THE TEMPORARY HARDWOOD WEDGES SHALL BE REMOVED AND THEIR HOLES FILLED WITH GROUT.**

**13.8. BACKFILL**

**13.8.1. DO NOT PERFORM BACKFILLING DURING WET OR FREEZING WEATHER.**

**13.8.2. NO BACKFILL SHALL BE PLACED AGAINST ANY STRUCTURAL ELEMENTS UNTIL THEY HAVE BEEN APPROVED BY THE ENGINEER.**

**13.8.3. BACKFILL SHALL BE CONSIDERED AS ALL REPLACED EXCAVATION AND NEW EMBANKMENT ADJACENT TO THE PRECAST CONCRETE ELEMENTS.** THE PROJECT CONSTRUCTION AND MATERIAL SPECIFICATIONS, WHICH INCLUDE THE SPECIFICATIONS FOR EXCAVATION FOR STRUCTURES AND ROADWAY EXCAVATION AND EMBANKMENT CONSTRUCTION, SHALL APPLY EXCEPT AS MODIFIED IN THIS SECTION.

**13.8.4. BACKFILL ZONES:**

- IN-SITU SOIL
- ZONE A: CONSTRUCTED EMBANKMENT OR OVERFILL.
- ZONE B: FILL THAT IS DIRECTLY ASSOCIATED WITH PRECAST CONCRETE BRIDGE INSTALLATION.
- ZONE C: ROAD STRUCTURE.

**13.8.5. REQUIRED BACKFILL PROPERTIES**

**13.8.5.1. IN-SITU SOIL** - NATURAL GROUND IS TO BE SUFFICIENTLY STABLE TO ALLOW EFFECTIVE SUPPORT TO THE PRECAST CONCRETE BRIDGE UNITS. AS A GUIDE, THE EXISTING NATURAL GROUND SHOULD BE OF SIMILAR QUALITY AND DENSITY TO ZONE B MATERIAL FOR MINIMUM LATERAL DIMENSION OF ONE BRIDGE SPAN OUTSIDE OF THE BRIDGE FOOTING.

**13.8.5.2. ZONE A** - ZONE A REQUIRES FILL MATERIAL WITH SPECIFICATIONS AND COMPACTING PROCEDURES EQUAL TO THAT FOR NORMAL ROAD EMBANKMENTS.

**13.8.5.3. ZONE B** - GENERALLY, SOILS SHALL BE REASONABLY FREE OF ORGANIC MATTER, AND, NEAR CONCRETE SURFACES, FREE OF STONES LARGER THAN 3" IN DIAMETER SEE CHARTS FOR DETAILED DESCRIPTIONS OF ACCEPTABLE SOILS.

**13.8.5.4. ZONE C** - ZONE C IS THE ROAD SECTION OF GRAVEL, ASPHALT OR CONCRETE BUILT IN COMPLIANCE WITH LOCAL ENGINEERING PRACTICES.

**13.8.5.5. GEOTECHNICAL ENGINEER SHALL REVIEW GRADATIONS OF ALL INTERFACING MATERIALS AND, IF NECESSARY, RECOMMEND GEOTEXTILE FILTER FABRIC (PROVIDED BY CONTRACTOR)**

**13.8.6. PLACING AND COMPACTING BACKFILL** DUMPING FOR BACKFILLING IS NOT ALLOWED ANY NEARER THAN 3'-0" FROM THE BRIDGE LEG.

THE FILL MUST BE PLACED AND COMPACTED IN LAYERS NOT EXCEEDING 8". THE MAXIMUM DIFFERENCE IN THE SURFACE LEVELS OF THE FILL ON OPPOSITE SIDES OF THE BRIDGE MUST NOT EXCEED 2'-0".

THE FILL BEHIND WINGWALLS MUST BE PLACED AT THE SAME TIME AS THAT OF THE BRIDGE FILL. IT MUST BE PLACED IN PROGRESSIVELY PLACED HORIZONTAL LAYERS NOT EXCEEDING 8" PER LAYER.

THE BACKFILL OF ZONE B SHALL BE COMPACTED TO A MINIMUM DENSITY OF 95% OF THE STANDARD PROCTOR, AS REQUIRED BY AASHTO T-99.

SOIL WITHIN 1'-0" OF CONCRETE SURFACES SHALL BE HAND-COMPACTED. ELSEWHERE, USE OF ROLLERS IS ACCEPTABLE. IF VIBRATING ROLLER COMPACTORS ARE USED, THEY SHALL NOT BE STARTED OR STOPPED WITHIN ZONE B AND THE VIBRATION FREQUENCY SHOULD BE AT LEAST 30 REVOLUTIONS PER SECOND.

THE BACKFILL MATERIAL AND COMPACTING BEHIND WINGWALLS SHALL SATISFY THE CRITERIA FOR THE BRIDGE BACKFILL, ZONE B.

BACKFILL AGAINST A WATERPROOFED SURFACE SHALL BE PLACED CAREFULLY TO AVOID DAMAGE TO THE WATERPROOFING MATERIAL.

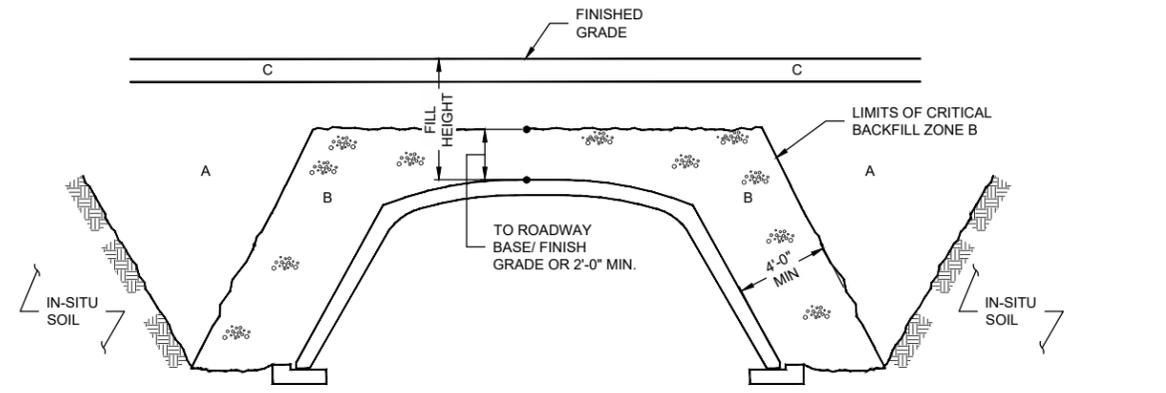
**13.8.7. BRIDGE UNITS**  
FOR FILL HEIGHTS OVER 12 FEET (AS MEASURED FROM TOP CROWN OF BRIDGE TO FINISHED GRADE), NO BACKFILLING MAY BEGIN UNTIL A BACKFILL COMPACTION TESTING PLAN HAS BEEN COORDINATED WITH AND APPROVED BY CONTECH® ENGINEERED SOLUTIONS.

**13.8.8. WINGWALLS**  
BACKFILL IN FRONT OF WINGWALLS SHALL BE CARRIED TO GROUND LINES SHOWN IN THE PLANS.

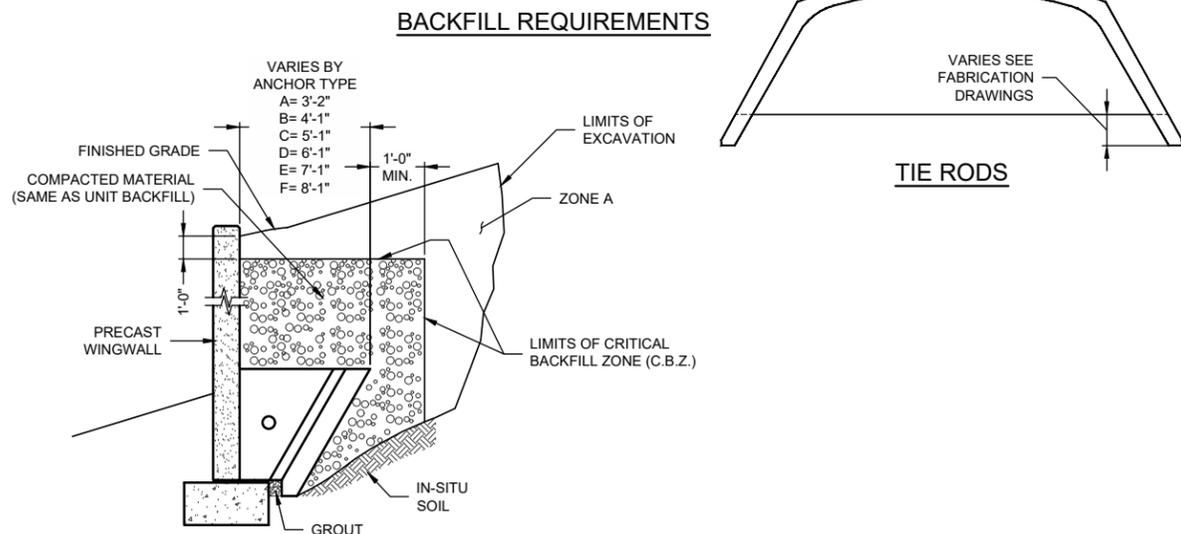
**13.8.9. MONITORING**  
THE CONTRACTOR SHALL CHECK SETTLEMENTS AND HORIZONTAL DISPLACEMENT OF FOUNDATION TO ENSURE THAT THEY ARE WITHIN THE ALLOWABLE LIMIT PROVIDED BY THE ENGINEER. THESE MEASUREMENTS SHOULD GIVE AN INDICATION OF THE SETTLEMENTS AND DEFORMATIONS ALONG THE LENGTH OF THE FOUNDATIONS.

THE FIRST MEASUREMENT SHOULD TAKE PLACE AFTER THE ERECTION OF ALL PRECAST BRIDGE SYSTEM ELEMENTS, A SECOND AFTER COMPLETION OF BACKFILLING, AND A THIRD BEFORE OPENING OF THE BRIDGE TO TRAFFIC. FURTHER MEASUREMENTS MAY BE MADE ACCORDING TO LOCAL CONDITIONS.

TYPICAL USCS MATERIALS	AASHTO GROUP	AASHTO SUBGROUP	PERCENT PASSING US SIEVE NO.			CHARACTER OF FRACTION PASSING NO. 40 SIEVE		SOIL DESCRIPTION
			#10	#40	#200	LIQUID LIMIT	PLASTICITY INDEX	
GW, GP, SP	A1	A-1a	50 MAX	30 MAX	15 MAX	6 MAX	LARGELY GRAVEL BUT CAN INCLUDE SAND AND FINES GRAVELLY SAND OR GRADED SAND, MAY INCLUDE FINES	
GM, SW, SP, SM		A-1b		50 MAX	25 MAX			
GM, SM, ML, SP, GP	A2	A-2-4			35 MAX	40 MAX	10 MAX	SANDS, GRAVELS WITH LOW-PLASTICITY SILT FINES SANDS, GRAVELS WITH PLASTIC SILT FINES
SC, GC, GM		A-2-5			35 MAX	41 MIN	10 MAX	
SP, SM, SW	A3			51 MIN	10 MAX		NON-PLASTIC	FINE SANDS
ML, SM, SC	A4				36 MIN	40 MAX	10 MAX	LOW-COMPRESSIBILITY SILTS



SPAN	FILL HEIGHT	ACCEPTABLE MATERIAL INSIDE ZONE B
≤ 24'-0"	≥ 12'-0"	A1, A3
≤ 24'-0"	< 12'-0"	A1, A2, A3, A4
> 24'-0"	ALL	A1, A3



WALL BACKFILL REQUIREMENTS

## CON/SPAN O-SERIES SPECIFICATIONS

C:\USERS\JEREMY.JOHNSON\DRIVE - THE QUIKRETE COMPANIES\DOCUMENTS\DRAWINGS\DWG - 11/22/2022 10:35 AM

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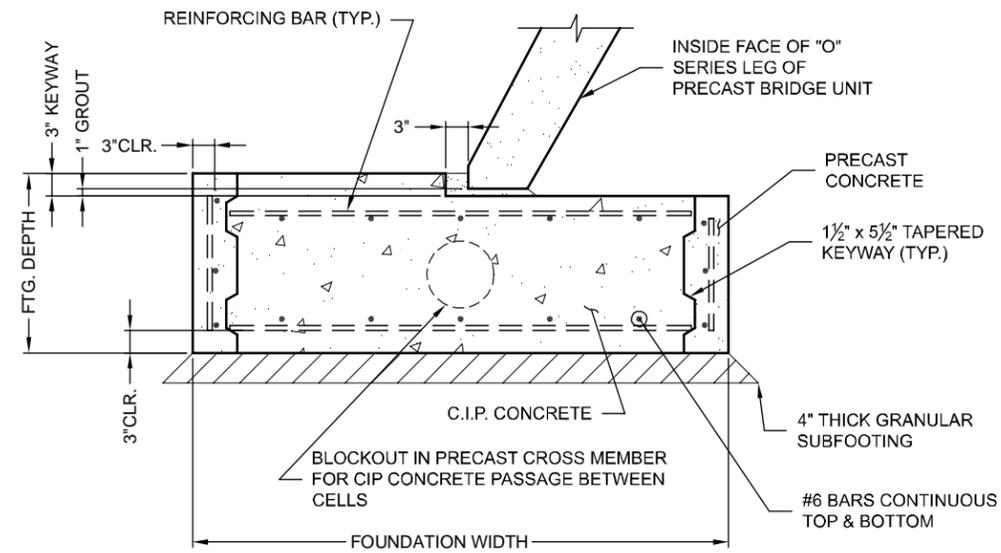
**CON/SPAN**  
O-SERIES  
DYOB DRAWING

PROJECT No.:	SEQ. No.:	DATE:
DESIGNED: DYO	DRAWN: DYO	
CHECKED: DYO	APPROVED: DYO	
SHEET No.:	D7 OF D9	

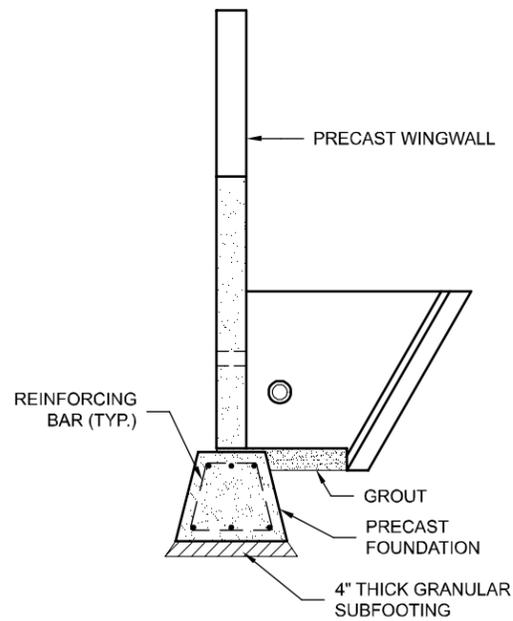
EXPRESS FOUNDATIONS



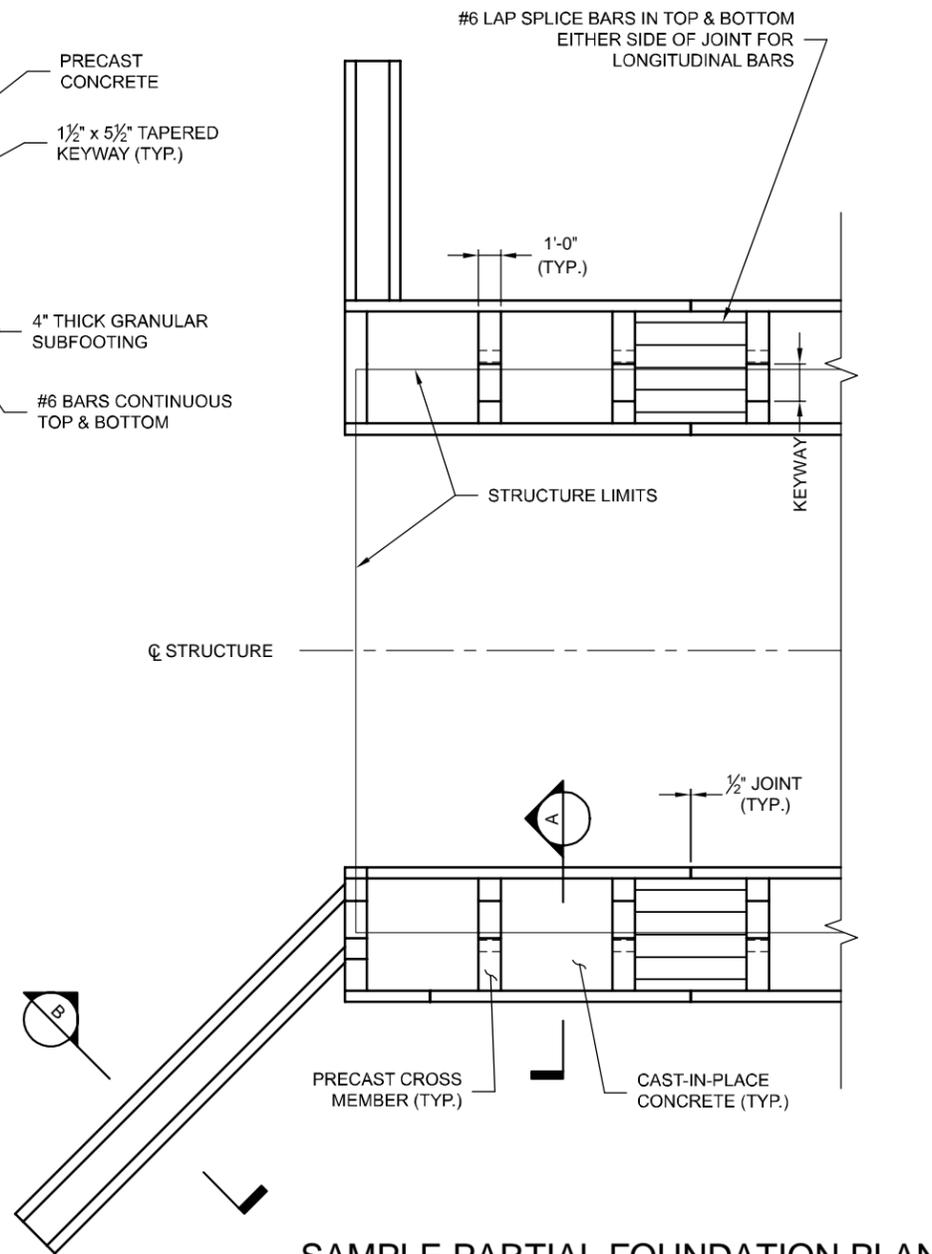
SAMPLE DRAWING ONLY



SECTION A  
(NOT PROJECT SPECIFIC)



SECTION B  
(NOT PROJECT SPECIFIC)



SAMPLE PARTIAL FOUNDATION PLAN  
(NOT PROJECT SPECIFIC)

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**CONSPAN**  
O-SERIES  
DYOB  
DRAWING

CON/SPAN O-SERIES  
EXPRESS FOUNDATION SAMPLES

PROJECT No.:	DATE:
DESIGNED: DYO	DRAWN: DYO
CHECKED: DYO	APPROVED: DYO
SHEET NO.:	D8 OF D9

SAMPLE DRAWING ONLY



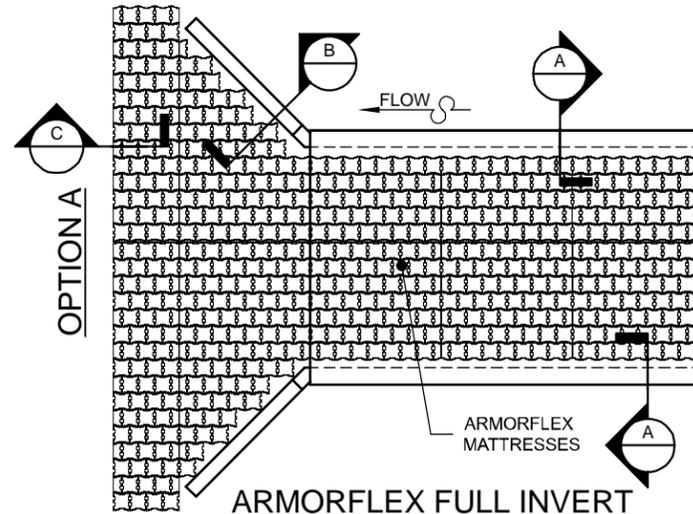
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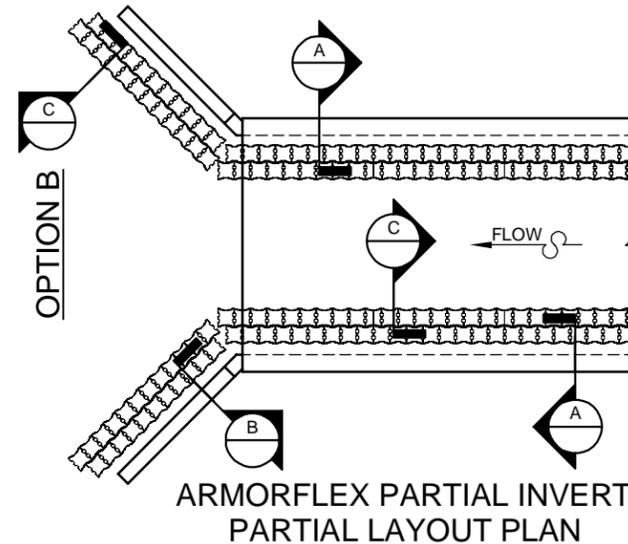
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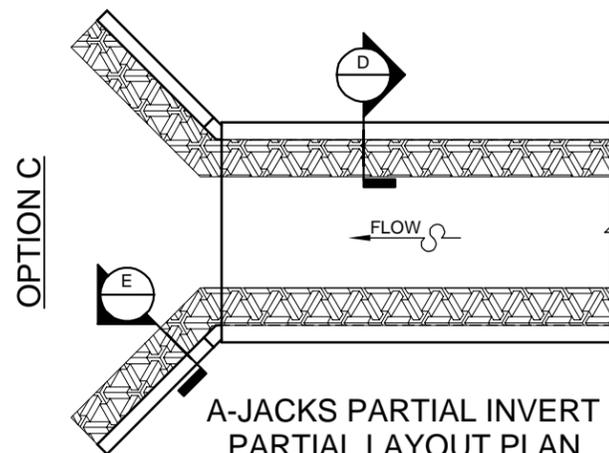
A-JACKS PARTIAL INVERT  
N.T.S.



ARMORFLEX FULL INVERT  
PARTIAL LAYOUT PLAN  
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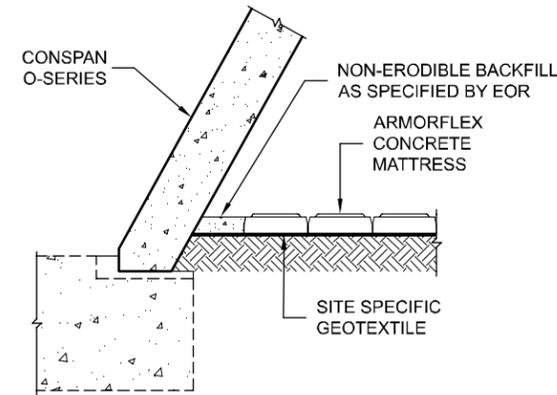


ARMORFLEX PARTIAL INVERT  
PARTIAL LAYOUT PLAN  
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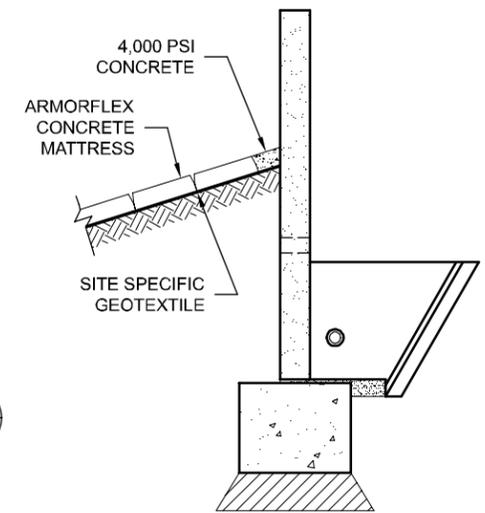


A-JACKS PARTIAL INVERT  
PARTIAL LAYOUT PLAN  
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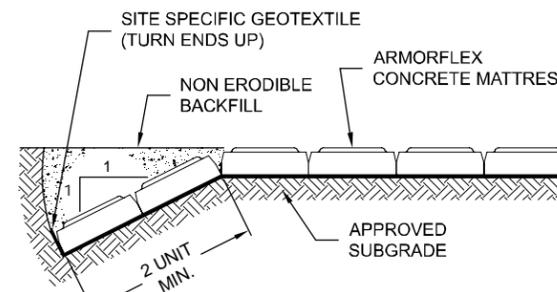
CONSIDER A COMPLETE SYSTEM WITH ARMORTEC REVETMENT



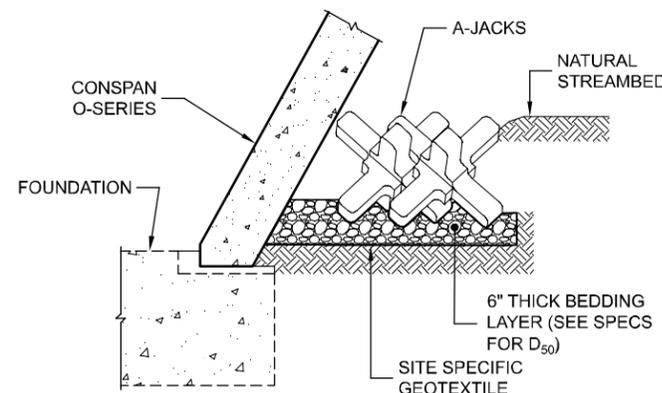
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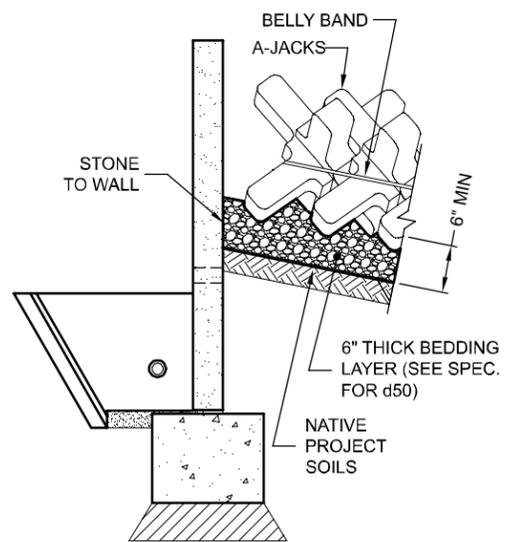
ARMORFLEX WINGWALL  
TERMINATION  
N.T.S.



STANDARD TERMINATION  
N.T.S.



A-JACKS STRUCTURE  
TERMINATION  
N.T.S.



A-JACKS WINGWALL  
TERMINATION  
N.T.S.

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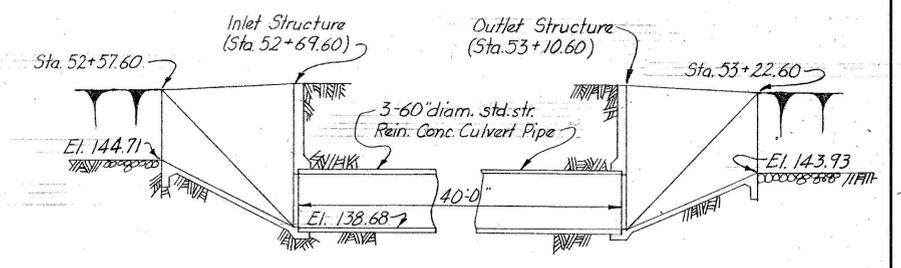
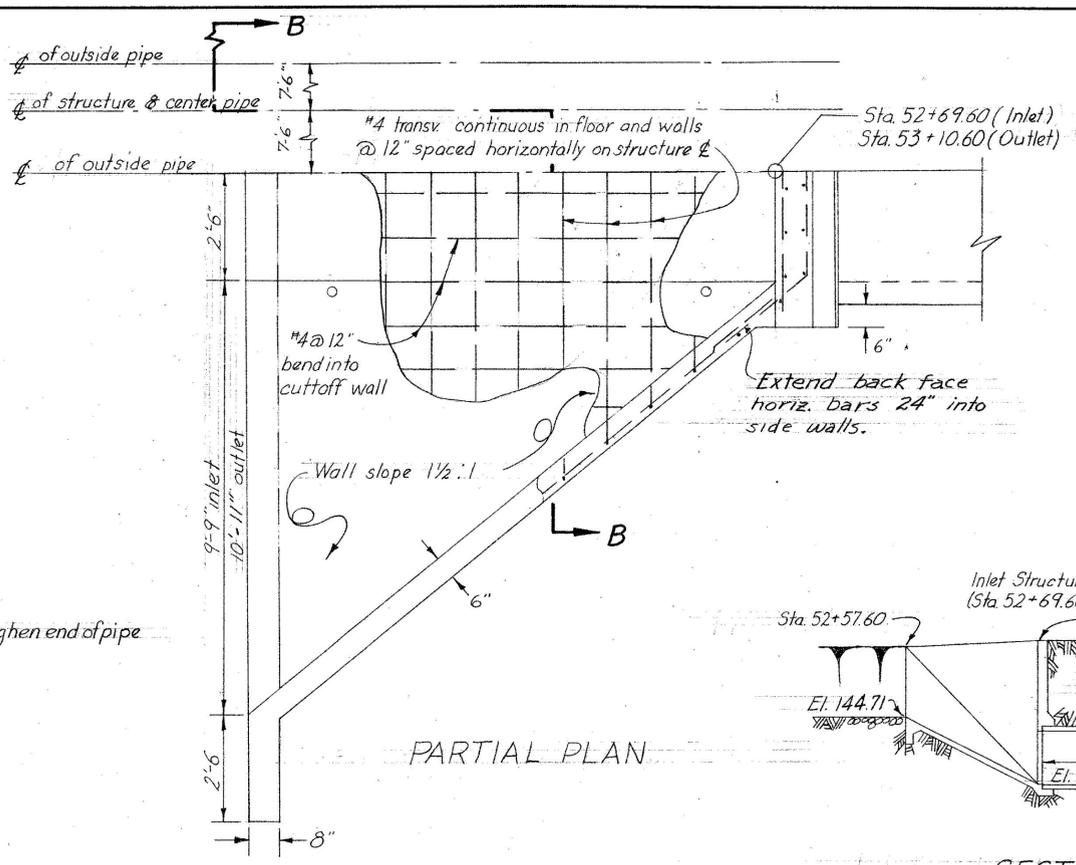
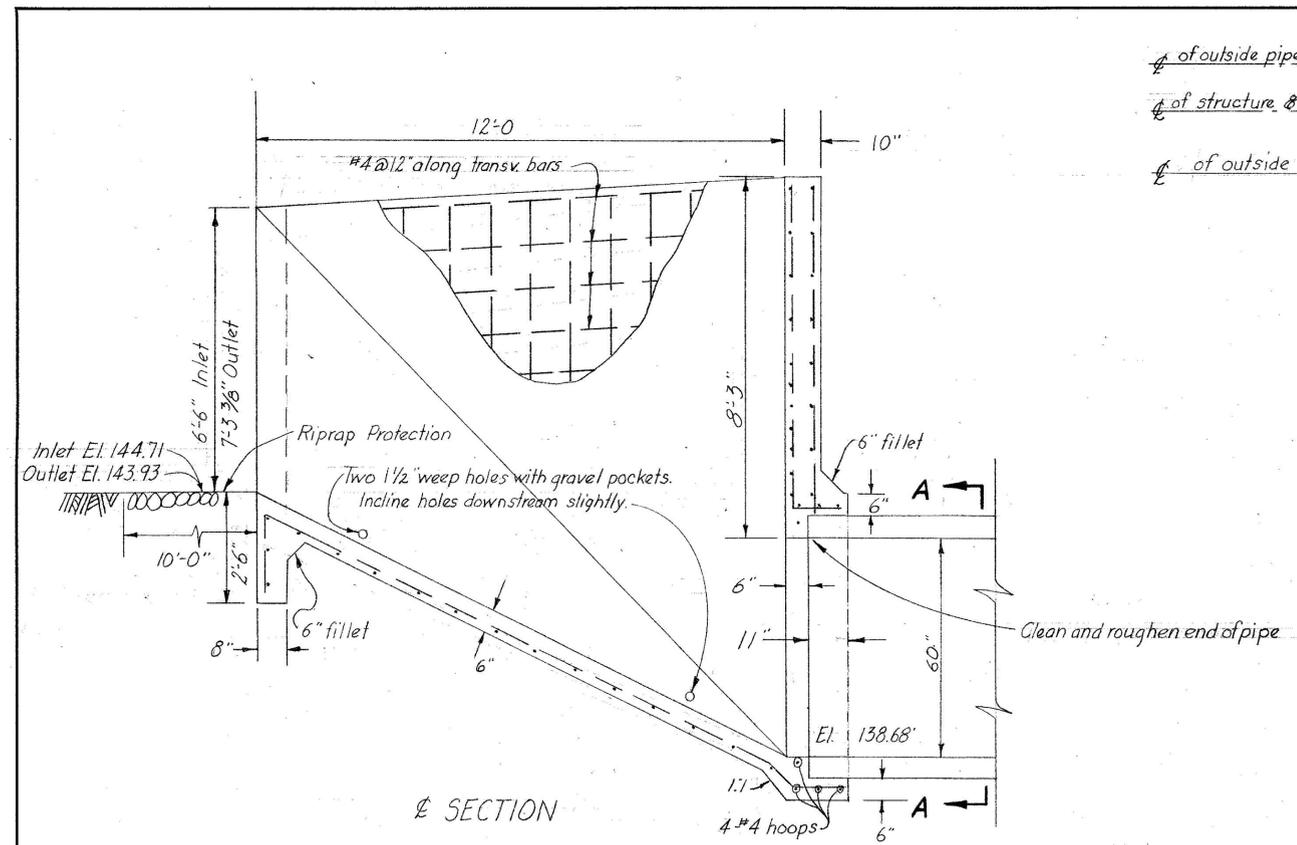
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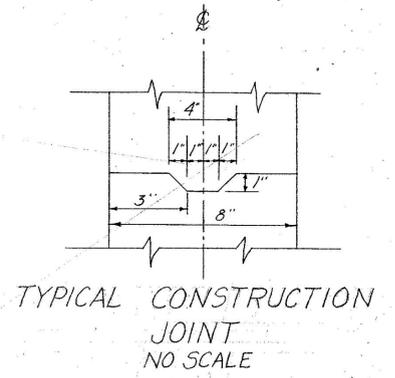
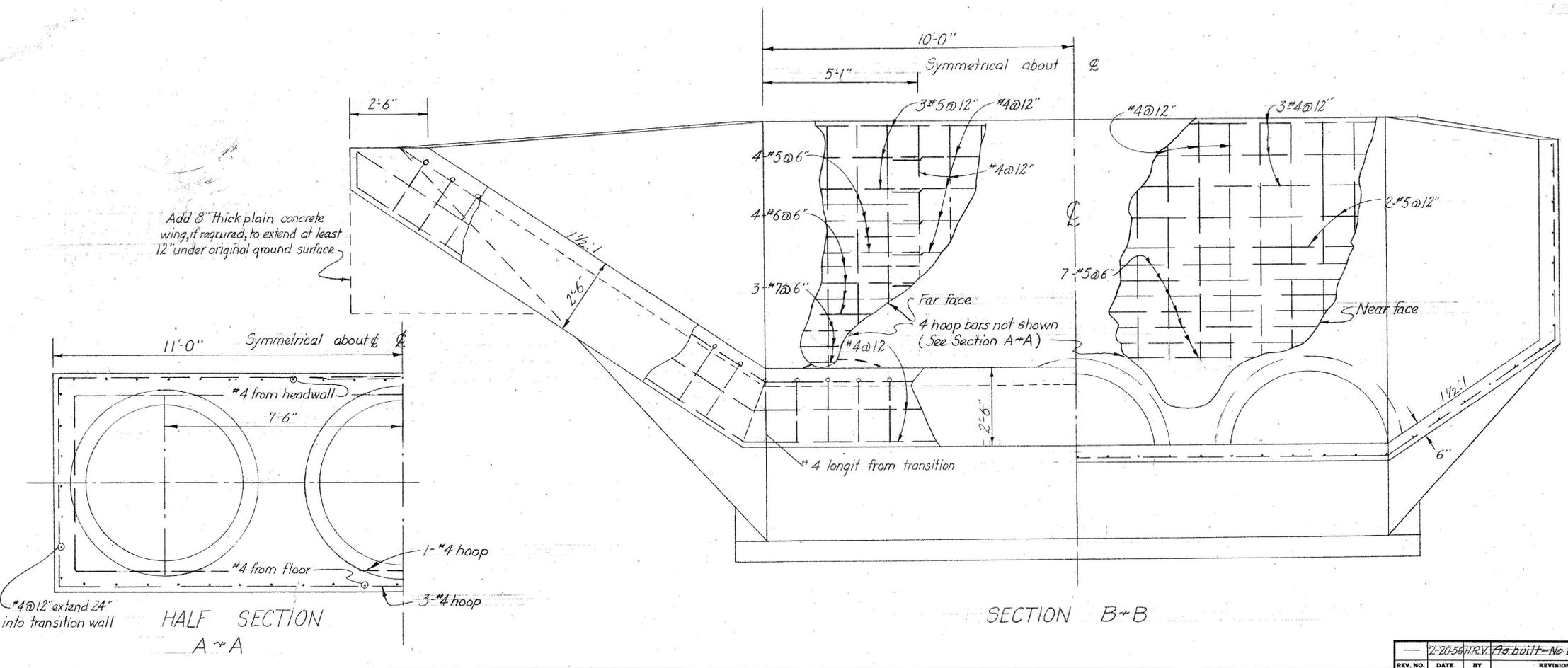
**CONSPAN**  
O-SERIES  
DYOB  
DRAWING

CON/SPAN O-SERIES  
ARMORTEC EXAMPLES

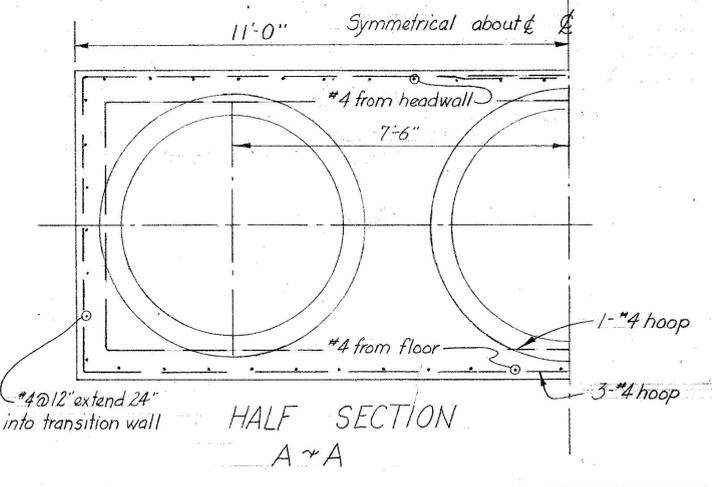
PROJECT No.:	DATE:
DESIGNED: DYO	DRAWN: DYO
CHECKED: DYO	APPROVED: DYO
SHEET No.:	D9 OF D9



SECTION THRU OF SIPHON  
SCALE 1/8"=1'-0"



TYPICAL CONSTRUCTION JOINT  
NO SCALE



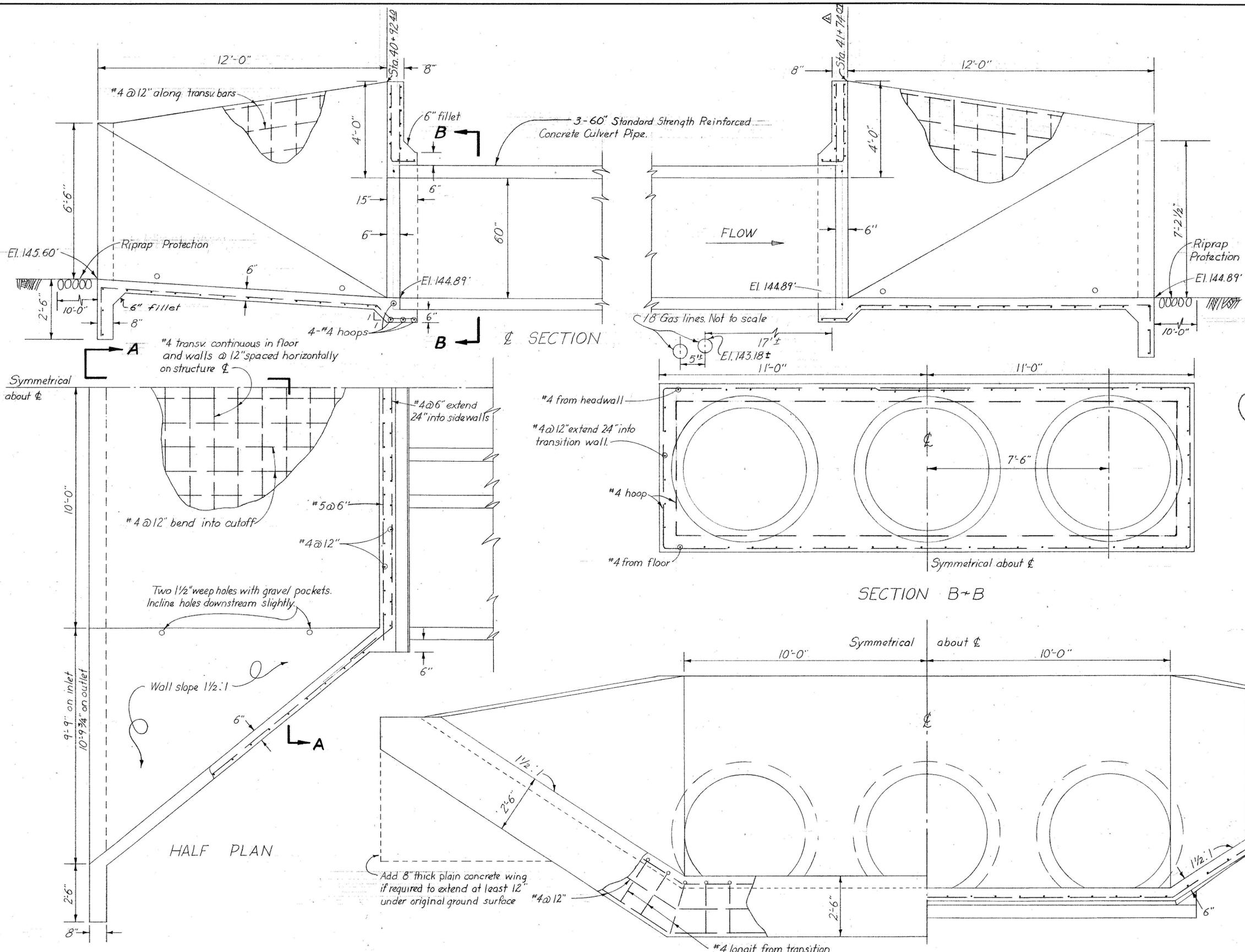
HALF SECTION  
A-A

NOTES

1. All concrete to have 3000 pounds per square inch compressive strength at 28 days.
2. Reinforcing steel shall be "Intermediate grade" deformed bars in accordance with A.S.T.M.-A305
3. Lap bars 17 diameters or a minimum of 1'-0" except as otherwise shown.
4. All reinforcing steel shall be 1 1/2" clear distance from forms and 2" clear distance from ground. And shall be securely held in place with wire ties or supported on concrete blocks.
5. All detailing, fabrication and erection of reinforcing bars unless otherwise noted, must follow the "A.C.I. Manual of Standard Practice for Detailing Reinforced Concrete Structures" (A.C.I. 315-51).
6. Chamfer all exposed corners 3/4" unless otherwise noted.
7. Structure to be placed on undisturbed earth or thoroughly compacted backfill.

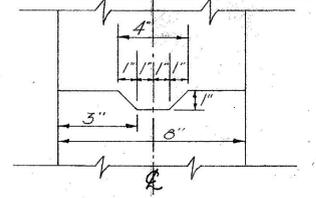
2-2056 HRV 1/2 built - No change				APVD	SCALE	1/2" = 1'-0"	C-2	M-100-14
DESIGNED	2/20/54	DATE	7-22-54	APPROVED		DATE	9-3-54	CIVIL ENGINEER

F 25 Structure



**NOTES**

1. All concrete to have 3000 pounds per square inch compressive strength at 28 days.
2. Reinforcing steel shall be "Intermediate grade" deformed bars in accordance with A.S.T.M.-A305.
3. Lap bars 17 diameters or a minimum of 1'-0" except as otherwise shown.
4. All reinforcing steel shall be 1/2" clear distance from forms, and in base slab 2" clear distance from ground, and shall be securely held in place with wire ties or supported on concrete blocks.
5. All detailing, fabrication and erection of reinforcing bars unless otherwise noted, must follow the "A.C.I. Manual of Standard Practice for Detailing Reinforced Concrete Structures (A.C.I. 315-51).
6. Chamfer all exposed corners 3/4" unless otherwise noted.
7. Structure to be placed on undisturbed earth or thoroughly compacted backfill.
8. Structure modified in 1959 in connection with construction of flood control levee. Modification consisted of addition of flap gates at upstream end of culvert barrels. Gates normally open, held by cables; manual release effects closure during floods. Also canal lining of grouted riprap placed for a distance of 65 feet upstream of structure. See drawings M-100-54 and -55.



DESIGNED <i>JMM</i>		SUBMITTED <i>Hollings</i>	
DRAWN <i>L.R.H.</i>		APPROVED <i>[Signature]</i>	
CHECKED <i>[Signature]</i>		DATE <i>5-3-54</i>	
CIVIL ENGINEER		CIVIL ENGINEER	
SCALE 1/2" = 1'-0"	C-2	M-100-15	

REV. NO.	DATE	BY	REVISION
1	5/13/54	J.E.	Added Note B
2	2-20-56	HRV	As built