

Kern Delta Water District

Kern County, California

VOLUME 1 – CONTRACT DOCUMENTS

SPECIFICATIONS No. KDWD 22-02

CONSTRUCTING THE OLD RIVER PONDS GRADING PROJECT

FOR BIDDING PURPOSES ONLY

October 2022

Prepared by:

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Mandatory Pre-Bid Conference will be begin at 9:00 a.m. on October 27, 2022
Prospective Bidders should meet at the offices of Kern Delta Water District
501 Taft Highway
Bakersfield, CA 93307

Bids will be received until 11:00 a.m. local time on November 14, 2022
at the offices of Kern Delta Water District
501 Taft Highway
Bakersfield, CA 93307

KERN DELTA WATER DISTRICT

Kern County, California

CONTRACT DOCUMENTS

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Contract Documents were prepared by or under the direction of the following registered persons(s):



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SECTION A**NOTICE****KERN DELTA WATER DISTRICT****Kern County, California****NOTICE INVITING BIDS****CONSTRUCTING THE OLD RIVER PONDS GRADING PROJECT****SPECIFICATIONS NO. KDWD 22-02****A-1 Invitation for Bids**

NOTICE IS HEREBY GIVEN that sealed bids will be received by the KERN DELTA WATER DISTRICT, hereinafter referred to as the District, for furnishing all labor, services, materials, tools, equipment, supplies, transportation, utilities, and all other items and facilities necessary therefore, as provided in the Contract Documents for the acceptable completion of the Work described in Section A-4, together with all appurtenances thereto, in strict accordance with the Plans and Specifications on file at the office of the District.

Bids shall be made in accordance with the prevailing hourly rate of per diem wages for this locality and project as determined by the Director of Industrial Relations pursuant to Labor Code Section 1770 et seq. Prevailing wage schedules for Kern County are available from the Department of Industrial Relations-Division of Labor Statistics & Research via the internet at www.dir.ca.gov. Copies of the prevailing rates of per diem wages are also on file at the office of the District and will be made available to any interested party on request.

The Contractor, its Subcontractors and Suppliers will be required to comply with all applicable Federal requirements.

A-2 Submitting Bids and Bid Opening

Bids will be received at the offices of the District, 501 Taft Hwy, Bakersfield, CA 93307, on or before 11:00 a.m., local time, on November 14, 2022. Said bids shall be opened and read aloud commencing at the time and date just specified. Bids shall be timely submitted in sealed envelopes marked as directed in Section B-16.

It is the sole responsibility of the bidder to ensure that their bid is received in proper time and at the proper location and in the proper format. Facsimile bids will not be accepted. Bids received after said deadline time will be returned unopened to the bidder.

A mandatory pre-bid conference and tour will be held on October 27, 2022 at 9:00 a.m. commencing at the Kern Delta Water District office located at 501 Taft Hwy, Bakersfield, CA 93307, and then continued at the project sites.

A-3 Location of the Work

The work to be constructed hereunder is located within Kern County, California, in the vicinity of Section 32, 30/27, near the intersection of Old River Road and Taft Highway.

A-4 Description of Work

Old River Basins Grading Project:

- a. Construction of four recharge basins covering a total of approximately 145 acres.

Includes clearing and grubbing of the work site, removal of two large trees, pond bottom excavation and grading (including the grading of a low-flow channel), over-excavation, scarification, and recompaction of all subgrade underneath basin levees, construction of basin levees, construction of access ramps, and the ripping and floating of the pond bottoms.

- b. Re-Grading of the Stine Canal.

Includes hauling, conditioning, placement, and compaction of soil to restore original design grades and finishes of the Stine canal from downstream of the new culvert (see below) to Taft highway.

- c. Installation of seven pond diversions/levee crossings.

Includes installation of pre-cast reinforced concrete diversion structures with 36" or 48" HDPE pipe stub, lengths of 36" or 48" HDPE corrugated piping, backfill (including pouring of slurry to the pipe springline), installation of slurry cut-off walls, pond bottom and levee slope grading, and the placement of rip-rap.

- d. Installation of a culvert crossing on the Stine Canal.

Includes the installation of a triple 48" RCP culvert spanning 60 feet (180 feet of pipe total) in the Stine Canal near the north edge of the project area, backfill (including pouring of slurry to the pipe springline), the hauling, conditioning, placement, and compaction of soil to restore grades and finishes of the Stine canal in the project vicinity, and the placement of rip-rap.

All work must be completed in strict accordance with the Plans and Specifications, and as directed by the Engineer. More precise descriptions of the work can be found in the Proposal Bidding Schedule (Measurement and Payment) and in the Specifications.

A-5 Classification of Contractors License / Contractor Registration

A contractor submitting a proposal shall possess, at the time the contract is awarded, that classification of contractor's license required by law to enable the contractor to perform the Work contemplated under the Contract Documents. Contractors shall provide the District with their Contractor's license number and expiration date as provided in the proposal.

No contractor or subcontractor may be listed on a proposal unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5 [with limited exceptions from this requirement for bid purposes only under Labor Code section 1771.1(a)].

No contractor or subcontractor may be awarded the contract for the project unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5.

A-6 Award of Contract

Each bid shall be made on the proposal forms furnished by the District and shall be in accordance with the Contract Documents. The Proposal Bidding Schedule includes places to enter bid prices for each of the various items of work. Bidders will be required to submit prices for the all items on the bid schedule. Award of the Contract, if made by the District, will be to the responsible Bidder submitting the lowest responsive Bid Proposal on the basis of the prices in the Base Bid in accordance with California Public Contract Code Section 20103.8(a). **See Section B-16 for further particulars of the bidding and basis of award.**

Proposals will be accepted until the date and time specified in the Notice Inviting Bids. The Contract will be awarded as soon as practicable to the lowest responsible bidder that has submitted a responsive bid, price and other factors considered, provided its Bid is reasonable and is in the best interest of the District to accept.

The District reserves the right, after opening bids, to reject any or all bids, or to make award to the lowest responsive and responsible bidder and reject all other bids. Refer to Paragraph B-3 for information regarding "Responsible Bidder" and submission of a "Responsive Bid".

The successful Bidder will be notified in writing by District of the Award of Contract within 60 days after opening of Bids. Accompanying the Notice of Award will be four copies of the Contract, which successful Bidder will be required to execute properly and

return to District, together with properly executed Performance Bond, Payment Bond, Certificates of Insurance and Endorsement, and Subcontractor Non-Collusion Affidavits, all within 10 days after date of receipt of such Notice of Award. District will promptly determine whether such Contract, Bonds, and Certificates of Insurance and Endorsement are as required by the Specifications and, upon such determination, will forward a fully signed copy of the Contract to successful Bidder.

A-7 Site Conditions

Each bidder shall carefully examine the Plans, read the Specifications and the forms of the Contract Documents, and shall visit the site of the proposed work to fully inform himself as to all existing conditions and limitations that may affect the execution of work under the Contract, and each such bidder shall include in the bid prices the cost of all incidentals and appurtenances. The failure or omission of any bidder to receive or examine any form, instrument, addendum, or other document, or his failure to visit the worksite and acquaint himself with conditions at the construction site, shall in no respect relieve any such bidder from any obligation imposed by his bid or by the Contract. The submittal of a bid shall be taken as prima facie evidence of compliance with all instructions contained herein. **All Bidders must contact the District to coordinate site visits.**

A-8 Certified Checks and Bonds

Each bid shall be under sealed cover and must be accompanied by a Bid Guarantee in the form of either cash, a certified or cashier's check, or by a corporate surety bond on the form furnished by the District and made payable to the Kern Delta Water District as a guaranty that the bidder will, if an award is made to him in accordance with the terms of his bid, promptly secure worker's compensation insurance, liability insurance, and any other insurance required by the Contract Documents, execute a contract in the required form, and furnish satisfactory bonds for the faithful performance of the Contract and for the payment of claims of all persons supplying labor and materials for the construction of the work. Should the successful bidder fail to so perform, the District shall be entitled to retain the moneys represented by said check or bond as liquidated damages on account of the delay and inconvenience occasioned to the District, it being expressly agreed and understood that the amount of said check or bond constitutes reasonable damages and that it is impracticable or extremely difficult to ascertain actual damages. Said cash, check or bidder's bond shall be in an amount not less than ten percent (10%) of the amount of the bid items identified in the Proposal Bond form included in the Contract Documents. The Faithful Performance Bond and Payment Bond shall each be not less than one hundred percent (100%) of the total amount of the bid price named in the contract.

The District reserves the right to reject any bond, if in the opinion of the Engineer or the District's Attorney, the Surety's acknowledgment is not legally sufficient. All sureties utilized by bidders shall be legally qualified to do business in the State of California, shall carry a current Best's Insurance Guide rating of "A" or better, Class X or better, and shall

furnish such reports as to their financial condition, from time to time, as may be requested by the District, including the Financial Statement of Bonding Company furnished with the Bond. The premiums for all said bonds shall be paid by the bidder. If any surety becomes unacceptable to the District in the absolute judgment and discretion of the District, then the bidder/contractor shall promptly furnish at its own expense such additional bonds as may be required by the District to protect the District's interests and the interests of persons supplying labor or materials in the prosecution of the work contemplated by these Contract Documents.

In the event of any conflict between the terms of the Contract Documents and the terms of the bonds, the terms of the Contract Documents shall control and the bonds shall be deemed to be amended thereby. The District shall be entitled to exercise any and all rights granted by the Contract Documents in the event of default, without control by the surety, provided that the District promptly notifies the surety at the time or before the exercise of such rights. The exercise by the District of such rights shall not affect the liability of the surety under the bonds.

Bid security of unsuccessful bidder will be returned to the bidder within sixty (60) days of the time the execution of the contract by the District and the successful bidder award of contract is made.

A-9 Contract Retention

At the request and expense of the Contractor and pursuant to Public Contract Code section 22300, securities equivalent to any amount withheld by the District to ensure the Contractor's performance under the Contract shall be deposited with the District as substitute security, or, at the Contractor's request, with a state or federally chartered bank in California as the escrow agent. Escrow instructions shall conform to the requirements of Public Contract Code section 22300.

A-10 Wage Rates / Compliance Monitoring

Bids shall be made in accordance with the prevailing hourly rate of per diem wages for this locality and project as determined by the Director of Industrial Relations pursuant to Labor Code section 1770 et seq. A copy of the prevailing wage rate schedules are on file at the office of the District and by this reference incorporated herein. The Contractor shall post a copy of said documents at each job site. The Contractor and any Subcontractor under him 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.

This project is subject to compliance monitoring and enforcement by the Department of Industrial Relations. Each contractor and subcontractor shall furnish the records specified in Labor Code section 1776 directly to the Labor Commissions, in the manner set forth in

Labor Code section 1771.4. Contractors shall be required to post job site notices, as prescribed by regulation.

A-11 Use of Apprentices

If the project requires the employment of workers in any apprenticeable craft or trade, once awarded, the Contractor or Subcontractors must apply to the Joint Apprenticeship Council unless already covered by local apprenticeship standards under Labor Code Section 1777.5, and the Contractor shall otherwise comply with Section 1777.5.

A-12 Contract Documents

The Contract Documents shall consist of the Notice Inviting Bids, the Instructions to Bidders, the accepted Proposal and Proposal Bidding Schedule, the Contractor's Licensing Statement, the Information Required of Bidders, the Agreement, the Proposal Bond, the Faithful Performance Bond, the Payment Bond, the Non-Collusion Affidavits, the Notice of Award, Notice to Proceed Checklist and Notice to Proceed Form, General Conditions, Special Conditions, the Plans and Specifications, Appendices and any change order or Addenda, setting forth any modifications or interpretations of any of said Documents, all of which documents are on file or will be on file in the office of the District 501 Taft Hwy, Bakersfield, CA 93307, and which are hereby referred to and made a part of this Notice Inviting Bids. Questions regarding the type of work required may be addressed to:

Chris Bellue
Kern Delta Water District
Tel. 661-834-4656
Chris@kerndelta.org

All questions or inquiries regarding the project or the Contract Documents shall be directed solely to the person listed above. Bidders shall not contact any participants in the project regarding the project or the Contract Documents prior to the time that the bids are opened.

A full set of Plans and Specifications is available on the Kern Delta Water District website at <https://www.kerndelta.org/>. If a physical copy is desired, contact Chris Bellue and a hard copy will be provided for the cost of reproduction.

District may amend any provision or part of the Specifications at any time prior to three days before closing time, provided that the closing time set forth may be extended by District at any time prior to said closing time. Such amendments, if any, will be in the form of addenda which will be issued simultaneously to all persons who have obtained a copy of the Contract Documents from the District, and are on the planholder's list. Addenda will be emailed ONLY to all parties recorded by the Engineer as having received the Contract Documents. If you wish to receive addenda by some means other than email, please advise the Engineer immediately. Questions received less than three days prior to the date for opening of bids will not be answered. Only questions answered

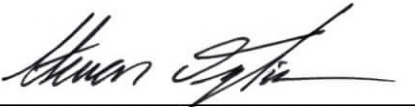
by formal written Addenda will be binding. Oral and other interpretations or responses will be without legal effect and are not to be relied upon by the Bidders unless they are integrated into the written Contract Documents.

A-13 Substitute Securities

Pursuant to Public Contract Code Section 22300, equivalent securities may be substituted for monies withheld to ensure performance of the contract. The District reserves the right to solely determine the adequacy of the securities being proposed by the Contractor and the value of those securities. The District shall also be entitled to charge an administrative fee, as determined by District in its sole discretion, for substituting equivalent securities for retention amounts. The District's decisions with respect to the administration of the provisions of Section 22300 shall be final and shall include, but not be limited to, determinations of what securities are equivalent, the value of the securities, the negotiability of the securities, the costs of administration and the determination of whether or not the administration should be accomplished by an independent agency or by the District. The District shall be entitled, at any time, to request the deposit of additional securities of a value designated by District, in District's sole discretion, to satisfy this requirement. If the District does not receive satisfactory securities within twelve (12) consecutive days of the date of the written request, District shall be entitled to withhold amounts due Contractor until securities of satisfactory value to District have been received.

Date: October 14, 2022

Kern Delta Water District

By: 

s/s Steve Teglia
General Manager

SECTION B

INSTRUCTIONS TO BIDDERS

B-1 Form of Proposal and Signature

The Proposal shall be submitted only on the forms attached hereto or copies thereof and shall be enclosed in sealed envelopes (to be provided at the mandatory pre-bid conference) and marked and addressed as described in Paragraph B-16. The bidder shall state in figures the unit prices or the specific sums, as the case may be, for which he proposes to supply the labor, materials, supplies, or machinery, and perform the work required by the Contract and other Contract Documents, including the Specifications. If the unit price and the total amount named by a bidder for any item are not in agreement, the unit price alone will be considered as representing the bidder's intention and the totals will be corrected to conform thereto.

If the Proposal is made by an individual, it shall be signed by him and his full name and address shall be given; if it is made by a firm, it shall be signed with the co-partnership name by a member of the firm, who shall also sign his own name, and the name and address of each member of such firm shall be given; and if it is made by a corporation the name of the corporation shall be signed by its duly authorized officer or officers attested by the corporate seal, the names and titles of all officers of the corporation shall be given, and the address of the corporation and the state in which incorporated shall be stated.

Proposals will be considered only from persons licensed as required under applicable provisions of the Contractors' State License Law (California Business and Professional Code, Section 7000 et seq.) and rules and regulations adopted pursuant thereto; and each bidder shall insert his license number in the place provided in the Proposal. No oral, telephonic, or telegraphic proposal or modification of a proposal will be considered.

B-2 Preparation of the Proposal

Blank spaces in the Proposal shall be properly filled. The phraseology of the Proposal must not be changed, and no additions shall be made to the items mentioned therein. Unauthorized conditions, limitations, or provisos attached to a Proposal will render it informal and may cause its rejection. If erasures, interlineations or other changes appear on the form, each erasure, interlineation or change must be initialed by the person signing the Proposal. Alternative proposals will not be considered unless specifically provided for in the Proposal Bidding Schedule.

Proposals may be withdrawn without prejudice by written or telegraphic requests received from bidder prior to the time for opening of bids, and Proposals so withdrawn will be returned to bidders unopened when reached in the process of opening bids. No Proposal may be withdrawn after the hour fixed for opening bids without rendering the

accompanying certified or cashier's check or bidder's bond subject to retention as liquidated damages in like manner as in the case of failure to execute the Contract after award, as in the Contract Documents herein provided.

No Proposal received after the time fixed or at any place other than the place stated in the Notice Inviting Bids will be considered. All bids will be opened and read publicly. Refer to Paragraph B-16 of the "Bid Submission and Opening Procedures" for information regarding the procedures for opening of bids. Bidders, their representatives and other interested parties are invited to be present at the opening. Where bonds are required, the bidder shall name in his Proposal the surety or sureties which have agreed to furnish said bonds.

B-3 Responsible Bidder and Responsive Bid

A "Responsive Bid" is one that materially conforms in all respects to the requirements set forth in Section A–Notice Inviting Bids and Section B–Instructions to Bidders. The District reserves the right to waive any irregularities in the bids received.

A "Responsible Bidder" is one that has the qualifications, general competency, and resources to perform the Work covered by the Proposal. Among other matters, a Responsible Bidder is one that can demonstrate successful completion of projects involving work of scope and complexity comparable to that being installed under the Contract Documents. Bids shall identify such projects and provide the information indicated in the "Information Required of Bidder" form. The District expressly reserves the right to reject any bid if it determines that bidder's business or technical organization, financial resources, plant and equipment to be used in performing work, or lack of successful experience in performing work of similar scope and complexity, is such that it is not in District's best interest to accept the bid.

B-4 Brokerage of Work Not Favorably Considered

In general, the brokerage of work will not be favorably considered, and the subletting of the entire Contract or of substantial complete units of it will be permitted only upon an adequate showing of the necessity involving some new condition not reasonably foreseen at the time of the Proposal.

B-5 Equalizing Factors

Wherever applicable, equalizing elements or factors not specifically mentioned or provided for herein, such as interest during construction, cost of transportation, inspection (including salaries and travel subsistence expenses), installation and operation, or any other factor or element in addition to that of price which would affect the total cost or value to the District, will be taken into consideration in comparing bids for award of the Contract.

B-6 Servicing and Maintenance

Each bidder must, if requested, furnish evidence that there is an efficient service organization which regularly carries a stock of repair parts for the proposed equipment to be furnished and installed in the work and that the organization is conveniently located for prompt service.

B-7 Local Conditions

Before submitting a Proposal, the bidder shall carefully examine the Plans, read the Specifications, visit the site of work, and fully inform himself as to all conditions and limitations, including the character of equipment and facilities needed preliminary to and during the prosecution of the work, the uncertainty of weather, site accessibility, groundwater level, and soil conditions along the line of work, and as to all other matters which can in any way affect the work to be done. Failure to do so will not release bidders from the responsibility for estimating properly the difficulty or cost of successfully performing the work. The District makes no representation or warranty regarding the accuracy or interpretation of information derived from maps, plans, specifications, profiles, drawings, borings, or other investigations and will not be responsible for any understanding or representations concerning conditions made by any of its officers or agents, including the Engineer or his assistants, prior to the execution of the Contract. The quantities of work or material stated in the unit price items of the Bidding Schedule are given only as a basis for the comparison of bids, and the District does not represent or warrant that the actual amount of work or material will correspond therewith, but reserves the right to increase or decrease the quantity of any unit price items of the work as may be deemed necessary or expedient by the Engineer.

B-8 Execution of Contract

The District reserves the right to accept or reject bids for a period of sixty (60) days after date of opening, and no bid can be withdrawn during said period. A bidder to whom award is made shall execute a written Contract with the District in the form attached hereto and obtain insurance and faithful performance and labor and material bonds of the types and character and in the amounts required in Paragraph B-9, B-10, and B-11, within ten (10) calendar days from the date of the mailing of a notice from the District to the bidder of the acceptance of his Proposal, or such additional time as may be allowed by the Engineer. If a bidder to whom award is made fails or refuses to so perform, his Bid Guarantee shall become the property of the District, as provided for in Paragraph A-8, and the award will be annulled, and in the discretion of the District, an award may be made to the bidder whose Proposal is next most acceptable to the District; and such bidder shall fulfill every requirement hereof as if he were the party to whom the first award was made.

B-9 Bonds

In conformance with Paragraph A-8 of the Notice Inviting Bids, a bidder to whom the Contract is awarded shall, within the time specified in Paragraph B-8, furnish a surety bond conditioned upon the full and faithful performance of all obligations required to be performed under the Contract and full performance and verity of all warranties and guarantees therein contained. Said bond, referred to herein as the Faithful Performance Bond, shall be in an amount equivalent to one-hundred percent (100%) of the total amount payable under the Contract Documents. The form of the Faithful Performance Bond set forth in these Contract Documents is a mandatory form.

In conformance with Paragraph A-8 of the Notice Inviting Bids, a bidder to whom the Contract is awarded shall, within the time specified in Paragraph B-8, furnish a Payment Bond, approved by the District, in accordance with the provisions of Civil Code sections 3225-3227, inclusive, and sections 3247-5252, inclusive. Said Payment Bond shall be in the sum of not less than one-hundred percent (100%) of the total amount payable under the Contract Documents. The form of the Payment Bond set forth in these Contract Documents is a mandatory form.

Said bonds shall be of a form satisfactory to the District and shall be obtained from responsible corporate sureties acceptable to the District. All sureties utilized by bidders shall be legally qualified to do business in the State of California, shall carry a current Best's Insurance Guide rating of "A" or better, Class X or better. Said sureties shall furnish reports as to their financial condition from time to time as requested by the District. The premiums for said bonds shall be paid by the bidder.

If any surety becomes unacceptable to the District or fails to furnish reports as to its financial condition as requested by the District, the Contractor shall promptly furnish such additional security as may be required from time to time to protect the interests of the District and of persons supplying labor or materials in the prosecution of the Work contemplated by this Contract.

In the event of any conflict between the terms of the Contract and the terms of said bonds, the terms of the Contract shall govern and said bonds shall be deemed to be amended thereby. Without limiting the foregoing, the District shall be entitled to exercise all rights granted to it by the Contract in the event of default, without control thereof by the surety, provided that the District gives the surety notice of such default at the time or before the exercise of any such right by the District and, regardless of the terms of said bonds, the exercise of any such right by the District shall in no manner affect the liability of the surety under said bonds.

B-10 Workers' Compensation Insurance

Prior to execution of the Contract in conformance with Section 3700 of the California Labor Code, a bidder to whom the Contract has been awarded shall sign and file with the

District the following 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 of that code, and I will comply with such provisions before commencing the performance of the Work of this Contract.” In addition, before the Contract is executed on behalf of the District, a bidder to whom the Contract has been awarded shall furnish satisfactory evidence that he has secured, in the manner required by law, the payment of the workers’ compensation provided for in the California Labor Code and all amendments thereto.

B-11 Public Liability and Property Damage Insurance

The Contractor shall at his own expense maintain in effect at all times during the performance of the Work, comprehensive liability insurance in the amounts given below, in a form and with insurance companies acceptable to the District. Such insurance shall contain endorsements as follows: (a) including the District, the Engineer, and other entities described below, and their respective directors, officers and agents as additional named insureds; (b) providing contractual liability coverage for the Contractor’s indemnification obligations under the Contract documents; (c) providing coverage for explosion, collapse and underground hazards; (d) personal injury coverage, including injury to the Contractor’s own employees; (e) providing that the insurance may not be canceled or reduced until thirty (30) days after the District and the Engineer shall receive written notice of such cancellation or reduction; (f) providing “cross liability” or “severability of interest” coverage for all insureds, providing that the coverage afforded the additional named insureds shall not be prejudiced by any failure of the Contractor to comply with notice requirements of the policy; and (g) providing that any other insurance maintained by the District or the Engineer is excess and not contributing insurance with the insurance required herein.

Contractor shall, at its sole cost and expense, procure and maintain the following insurance coverage:

Commercial General Liability Insurance: Five Million Dollars (\$5,000,000) per occurrence or the full per occurrence limits of the policies available, whichever is greater for bodily injury, personal injury and property damage. If Commercial General Liability Insurance or other form with a general aggregate limit or products-completed operations aggregate limit is used, either the general aggregate limit shall apply separately to the project (with the ISO CG 2503, ISO 2504, or insurer’s equivalent provided to the District) or the general aggregate limit and products-completed operations aggregate limit shall be twice the required occurrence limit. Coverage must be purchased on a post 2004 ISO occurrence or equivalent and include coverage for, but not limited to, the following:

- a. Bodily Injury and Property Damage
- b. Personal Injury and Advertising Injury
- c. Fire legal liability
- d. Products and completed operations

This policy shall also contain the following endorsements or language, which shall be indicated on the certificate of insurance:

- a. Waiver of subrogation in favor of and in a form acceptable to District.
- b. Additional insured endorsement in favor and in a form acceptable to District.
- c. Separation of insureds.

Business Automobile Insurance: This insurance shall contain a combined single limit of at least \$1,000,000, and include coverage for, but not limited to the following:

- a. Bodily injury and property damage.
- b. Any and all vehicles owned, used or hired.

This policy shall also contain the following endorsements, which shall be indicated on the certificate of insurance:

- a. Waiver of subrogation in favor of and in a form acceptable to District.
- b. Additional insured endorsement in favor of and in a form acceptable to District.
- c. Separation of insureds.

Workers' Compensation and Employers' Liability Insurance: This insurance shall include coverage for, but not limited to:

- a. Contractor's statutory liability under the workers' compensation laws of the state(s) in which the services are to be performed. If optional under state laws, the insurance must cover all employees anyway.
- b. Employers' Liability with limits of at least \$1,000,000 each accident, \$1,000,000 by disease policy limit, \$1,000,000 by disease each employee.

This policy shall also contain the following endorsements or language, which shall be indicated on the certificate of insurance:

- a. Waiver of subrogation in favor and in a form acceptable to District.

Excess Liability (if necessary): The limits of insurance required in these Contract Documents may be satisfied by a combination of primary and umbrella or excess insurance. Any umbrella or excess insurance shall contain or be endorsed to contain a provision that such coverage shall also apply on a primary and non-contributory basis for the benefit of the District and other required additional insureds specified above (if agreed to in a written contract or agreement) before the District or other additional insureds' own primary or self-insurance shall be called upon to protect it as a named insured.

The Contractor shall, within the period stated in Paragraph B-8 and as a condition precedent to execution of the Contract by the District, deliver to the District a certificate of insurance issued by the insurer reflecting the existence of the required insurance, together with signed copies of the above-specified endorsements. If required by the District, the Contractor shall also furnish a complete copy of the policy and all endorsements. The Contractor shall also disclose the amount of the deductible under its policy (ies) and if the District determines that the deductible is excessive, may require the Contractor to post a bond guaranteeing payment of any losses and defense costs within the deductible layer.

B-12 Subcontracts

Bidder shall furnish information regarding its Subcontractors in substantially the form set forth in the bid forms. If no Subcontractors are to be used, bidder shall so state. Bidder's attention is directed to Sections 4100 through 4113 of the California Public Contracts Code for requirements and provisions relative to Subcontractors. No substitution of subcontractors by the bidder shall be consented to or permitted except in accordance with the provisions of Public Contract Code Sections 4107 and 4107.5.

The bidder shall perform with his own organization, work equivalent to at least 60 percent of the total Contract price, and no more than work equivalent to 40 percent of the total Contract price may be performed by subcontractors. The cost of Contractor-furnished materials installed by labor carried on the bidder's own payroll may be included in the above required 60 percent.

In conformance with the provisions of Section 4104 of the Public Contract Code of the State of California, each bidder shall set forth in his or her Proposal on the form provided therefor:

- a. The name and location of the place of business of each subcontractor who will perform work or labor or render service to the Contractor in or about the construction work or improvement, or a subcontractor licensed by the State of

California who, under subcontract to the prime contractor, specifically fabricates and installs a portion of the work or improvement according to detailed drawings contained in the Plans and Specifications, in an amount in excess of one-half (½) of one percent (1%) of the Contractor's total bid; and

- b. The portion of the work which will be done by each such subcontractor and a description of the nature of such work.

B-13 Non-Collusion Affidavits

In accordance with the provisions of Section 7106 of the Public Contract Code, each bidder shall execute and submit with their bid a Non-Collusion Affidavit in the form attached hereto. Additionally, the principal contractor shall secure from each proposed subcontractor a Non-Collusion Affidavit in the form also attached hereto.

B-14 Bidder's Bond

Each proposal must be accompanied by a certified or cashier's check drawn on a responsible bank or a bidder's bond made by a responsible corporate surety, payable to the Kern Delta Water District, as a guarantee that if the bid is accepted, the bidder will, within the time specified in the Instructions to Bidders, enter into a written contract in the form hereinafter set forth and obtain insurance and faithful performance and labor and material payment bonds of the types and character, and in the amounts as required in said Instructions to Bidders. Said check or bid bond shall be for a sum not less than ten percent (10%) of the aggregate sum of the bid items identified in the Proposal Bond form included in the Contract Documents. Checks will be returned (a) to unsuccessful bidders as soon as practicable after the opening of bids and (b) to the successful bidder as soon as he has executed the contract and obtained the required insurance and bonds, provided he so performs in the manner and within the time stated in the Instruction to Bidders. Should the successful bidder fail to so perform, the District shall be entitled to retain the moneys represented by said check or bond as liquidated damages on account of the delay and inconvenience occasioned to the District, it being expressly agreed and understood that the amount of said check or bond constitutes reasonable damages and that it is impracticable or extremely difficult to ascertain actual damages. There is enclosed following the Proposal for these Specifications a form of Bidder's Bond, and all bidders submitting bonds as bid guarantees are required to make use of this form and to submit the complete form with submitted proposals.

B-15 Construction Schedule

Preliminary Construction Schedule - The Contractor shall submit with his bid a preliminary construction schedule for the District's review, which includes important milestones. **For purposes of preparing said Construction Schedule, Contractors should assume the Notice to Proceed will be issued on December 16, 2022.** The Preliminary Construction Schedule shall be in sufficient detail to show the chronological

relationship of all activities of the project, including, but not limited to, estimated starting and completion dates of various activities including shop drawing submittal and approval, mobilization of equipment and resources, procurement of materials, construction of components of project, and completion of closeout of project. The schedule shall be prepared in Critical Path Method (CPM) format.

The CPM schedule shall include at a minimum the following: (1) identification of the basic tasks or activities that must be performed to complete the project; (2) estimation of the duration of the specific activities; and (3) a determination of the logical flow of the work, which includes a determination of which activities must be completed before the subsequent ones can commence.

The Preliminary Construction Schedule shall reflect completion of all work under the contract within the specified times and in accordance with the Contract Documents, including the Specifications. The Preliminary Construction Schedule will be used by the District in determining award of the contract.

Post-Bid Pre-Award Construction Schedule - As a condition of award during the period after the opening of bids and prior to actual award of the Contract by the District, the apparent low bidder shall submit a Construction Schedule as set forth in this section. The Construction Schedule shall indicate the time of starting and completion of each major structure or phase of the Work and such intermediate phases as will serve for well-defined chronological order on the Construction Schedule. The schedule shall also indicate the anticipated date of receipt of major items of equipment, and all items of equipment receipt and installation of which is critical to the scheduled progress of the project. The Construction Schedule shall be prepared in Critical Path Method format. The schedule shall be submitted electronically.

Within five (5) calendar days after being notified by the District, the apparent low bidder shall designate in writing an authorized representative who will be responsible for the preparation of the post-bid pre-award Construction Schedule as set forth in this Section.

The apparent low bidder's representative shall have the authority to fulfill the requirements of preparing the schedule in a professional and acceptable manner demonstrating competence in use of the Construction Schedule, including scheduling experience on projects of similar value and complexity.

B-16 Bid Submission and Opening Procedures

The Proposal Bidding Schedule includes a Base Bid and the lowest bid will be determined based on the submission of a responsive bid from a responsible bidder (refer to Section B-3). Accordingly, the following procedures will be followed:

- a. **Bid Envelopes:** Bids must be submitted in a labeled envelope plainly marked in the upper left-hand corner with the name and address of the bidder and shall bear the words “Proposal for”, followed by the title of the Contract Documents for this work and the date and hour for opening bids.
- b. **Contents of Bid:** To be considered, a bid must include the following:
1. Proposal Bidding Schedule
 2. Bidder’s Proposal
 3. Information Required of Bidder Form
 4. Preliminary Construction Schedule (ref. Paragraph B-15)
 5. Bidder’s Non-Collusion Affidavit (ref. Paragraph B-13)
 6. All Issued Addenda (signed front covers only)
 7. Bid Security (in the form of a certified or cashier’s check or bidder’s bond) (ref. Paragraph B-14)
 8. Proof that contractor and subcontractors are registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5.
- c. **Delivery of Bid:** It is the bidder’s responsibility to make sure that their bid is submitted within the specified time. Late bids will not be accepted regardless of postmark and will be returned unopened to the bidder.
1. Hand Delivery – Bid shall be sealed and submitted prior to the time and place established for receiving bids.
 2. Mail or Courier Delivery – Bid shall be sealed and inserted into another envelope or packaging exhibiting all information as required for delivery of the envelope or package to the place established for receiving bids. Bidders submitting Bid Packages via mail or courier delivery are strongly encouraged to notify the District in advance that a bid is being delivered in this manner.
- d. **Opening of Bids:** The Bid Opening will be held at the place and time stated in Paragraph A-2. The envelope containing the “Bid” as described in Section B-16b will be publicly opened at the prescribed time and the amount of the Base Bid will be read aloud. This will continue until all bids are announced. A bid tabulation will be prepared during the Bid Opening which lists the Base Bid amounts and the corresponding name of the bidders. At the request of the bidders, the District will transmit a bid tabulation of all bids, to include bidder name and the corresponding Base Bid amount.

- e. **Announcement of Bid Ranking and Bidders:** The announcement of bid ranking and bidders will be completed after the public bid opening and evaluation of bids.

****END OF SECTION****

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PROPOSAL

**KERN DELTA WATER DISTRICT
Kern County, California**

CONSTRUCTING THE OLD RIVER PONDS GRADING PROJECT

Proposals received until 11:00 a.m. local time, November 14, 2022.

**To the Board of Directors,
Kern Delta Water District ("District")
501 Taft Highway
Bakersfield, CA 93307**

The undersigned hereby declares that the only persons or parties interested in this Proposal as principals are those named herein; that no director or officer of the District is in any manner interested, directly or indirectly, in this Proposal or in the profits to be derived from the contract proposed to be taken; that this bid is made without any connection with any other person or persons making a bid for the same purpose; that the bid is in all respects fair and without collusion or fraud; that the undersigned has read the Notice Inviting Bids and the Instructions to Bidders hereto attached, and agrees to all the provisions thereof; that the undersigned has examined the site of the Work, the form of the Agreement approved by the District, and the Plans and Specifications therein referred to, and proposes and agrees that if this bid as submitted in the attached Bidding Schedules be accepted, he will contract in the form so approved to perform all the Work mentioned and as provided in said approved form of the Agreement and the Plans and Specifications and to complete the same within the time stipulated therein; and that he will accept in full payment therefor the prices named in said Bidding Schedules. Said prices are to include and cover the furnishing of all materials except as otherwise provided in the Specifications, the performing of all labor requisite or proper, and the providing of all necessary machinery, tools, apparatus, and other means of construction, and the performance and completion of all the Work in the manner set forth, described, and shown in the Plans and Specifications for the work and in the form of the Agreement. The undersigned has checked carefully all words and figures inserted in said Bidding Schedules and understands that the District will not be responsible for any errors or omissions on the part of the undersigned in making up this Proposal.

The undersigned hereby agrees to execute the Agreement and furnish the required bonds and insurance within ten (10) days from the date of mailing of notice of acceptance of this Proposal, or within such additional time as may be allowed by the Engineer. A certified or cashier's check or a bidder's bond made payable to the Kern Delta Water District in the amount of \$_____, said amount to be not less than ten percent (10%) of the amount of the bid items identified in the Proposal Bond form included in the Contract Documents, is attached hereto as a guarantee that the undersigned will so perform. It is understood and agreed by the

undersigned that if he does not so perform, the District shall be entitled to retain the moneys represented by said check or bond.

The bidder further declares that the surety or sureties named in the spaces provided below have agreed to furnish bonds in the form and aggregate amounts set forth in Paragraph B-9 of the Instructions to Bidders, in the event Contract is awarded on the basis of this Proposal.

The bidder further declares under penalty of perjury, in accordance with Business and Professions Code Section 7028.15(e), that the statements contained herein are true and correct.

Dated _____, 20__

Bidder

Bidder's post office address:

By:

Title

(CORPORATE SEAL)

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

Corporation organized under the laws of
the State of:

Contractor's License No.

Expiration Date

Surety or Sureties

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PROPOSAL BOND

KNOW ALL MEN BY THESE PRESENTS

That we, _____ as Principal(s) (hereinafter called the Principal), and the _____ as Surety (hereinafter called the Surety), are held and firmly bound unto KERN DELTA WATER DISTRICT (hereinafter called the Oblige) in the penal sum of **ten percent (10%) of the amount of accompanying bid** (\$_____) for the payment of which, well and truly to be made, we, Principal and Surety, bind ourselves, our heirs, administrators, executors, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, said Principal is submitting herewith a bid, or proposal for the Kern Delta Water District CONSTRUCTING THE OLD RIVER PONDS GRADING PROJECT.

NOW, THEREFORE, if the bid or proposal is not withdrawn within sixty (60) days after the date set for the opening of bids, and notwithstanding the award of the Contract to another bidder, if the bid or proposal of said Principal shall be accepted, and the Contract for such work be awarded to the Principal thereupon by the said Oblige, and said Principal shall within the period specified in the Contract Documents enter into a written Contract and obtain insurance and faithful performance and labor and material bonds of the type and character and in the amount as may be specified, then this obligation shall be null and void; otherwise to be and remain in full force and effect.

In witness whereof, we hereunto set our hands and seals this _____ day of _____, 20__.

_____(SEAL)
(Principal)

By _____
_____(SEAL)
(Surety)

By _____

NOTE: This bond must be acknowledged before a Notary Public, and a legally sufficient power of attorney must be attached to the bond to verify the authority of any party signing on behalf of a surety.

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PROPOSAL BIDDING SCHEDULE**SPECIFICATIONS KERN DELTA WATER DISTRICT****OLD RIVER PONDS GRADING PROJECT**

The following Proposal Bid Schedule lists the items necessary to complete the Work. Bidder shall complete the schedule including the unit and total price of each item, including applicable sales and other taxes. If the total cost of any item or the total Base Bid is inconsistent with the unit cost, the unit cost shall prevail. Payment of each item will be based on the Plans and are to be considered as “final pay quantity” for each item, as denoted by an asterisk (*), unless the dimensions of the portion of the work shown on the Plans are revised by the Engineer, or unless the portion of the work is eliminated. If the dimensions of the specific portion of the work are revised, and the revisions result in an increase or decrease in the estimated quantity of the portion of the work, the final quantity for payment will be revised in the amount represented by the changes in the dimensions or quantity. If the specific portion of the work is eliminated, the final pay quantity designated for the specific portion of the work will be eliminated. All costs for completing the Work described in the Contract Documents shall be included in the bid items listed below. Contractor shall include all costs to accomplish the project including (but not limited to): mobilization/demobilization, develop water supply, materials, equipment, labor, overhead, profit, taxes, delivery charges, permits etc.

SCHEDULE “A” (Base Contract)
Old River Ponds Grading Project – Project Wide Items

<u>Item No.</u>	<u>Description</u>	<u>Estimated Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Amount</u>
1 *	Mobilization	1	LS	\$_____	\$_____
2 *	Demobilization	1	LS	\$_____	\$_____
3 *	Develop and Provide Water Supply	1	LS	\$_____	\$_____
4 *	Environmental Compliance and Permitting	1	LS	\$_____	\$_____
5 *	Prepare, Maintain and Restore Access Routes	1	LS	\$_____	\$_____
6 *	Finish Grading of Project – Roads, Levees, Side-slopes, Ramps, etc.	1	LS	\$_____	\$_____
7 *	Bond Costs	1	LS	\$_____	\$_____
Subtotal (Items 1-7):					\$_____

Old River Ponds Grading Project – Pond and Canal Grading

<u>Item No.</u>	<u>Description</u>	<u>Estimated Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Amount</u>
8 *	Removal of Large Trees from KDWD Property	1	LS	\$_____	\$_____
9 *	Clearing and Grubbing	145.2	AC	\$_____	\$_____
10 *	Over-Excavate (1'), Scarify (1'), and Re-Compact Sub-Grade under Levees	1,089,000 (25.00)	SF (AC)	\$_____	\$_____
11 *	Excavate Pond Bottoms/Construct Basin Levees – by In-Place Fill Volume	52,486	CY	\$_____	\$_____
12 *	Grading of the Stine Canal Adjacent to Ponds	2,600	LF	\$_____	\$_____
13 *	Grading of the Basin Bottoms (Includes the Low Flow Channel in Pond 2)	119.1	AC	\$_____	\$_____
14*	Rip and Float basin bottoms	119.1	AC	\$_____	\$_____
				Pond and Canal Grading Subtotal (Items 8-14):	\$_____

Old River Ponds Grading Project – Diversions and Crossings

<u>Item No.</u>	<u>Description</u>	<u>Estimated Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Amount</u>
15*	Furnish and Install Precast Concrete Diversion Structure – 7' Tall with 36" HDPE Pipe Stub, 36" C-10 Gate, and Walkway	5	EA	\$_____	\$_____
16*	Furnish and Install Precast Concrete Diversion Structure – 8' Tall with 48" HDPE Pipe Stub, 48" C-10 Gate, and Walkway	2	EA	\$_____	\$_____
17	Furnish and Install 36" HDPE pipeline with Cement Slurry to Springline	170	LF	\$_____	\$_____
18	Furnish and Install 48" HDPE pipeline with Cement Slurry to Springline	80	LF	\$_____	\$_____
19	Furnish and Install Slurry Cut-Off Wall	7	EA	\$_____	\$_____
20*	Furnish and Install Triple 60' (180' Total), 48" HDPE Culvert on the Stine Canal	180	LF	\$_____	\$_____
21*	Furnish and Install Rip-Rap for Diversions and Crossings	1	LS	\$_____	\$_____
Diversions and Crossings Subtotal (Items 14-21):					\$_____

Old River Ponds Grading Project – As-Built Survey

<u>Item No.</u>	<u>Description</u>	<u>Estimated Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Amount</u>
22 *	Provide Survey Control and Conduct As-Built Survey of Grading Project	1	LS	\$_____	\$_____

TOTAL AMOUNT FOR SCHEDULE "A" (Base Contract)
(Item No. 1 through Item No. 22)

Total Price \$ _____

* Final Pay Quantity

Bid Submitted by:

Contractor _____

Date _____

MEASUREMENT AND PAYMENT

CONSTRUCTING THE OLD RIVER PONDS GRADING PROJECT

Payment for the various items of the Bid Schedule, as further specified herein, shall include all compensation to be received by the Contractor for furnishing all tools, equipment, supplies, and manufactured articles, and for all labor, operations, and incidentals appurtenant to the items of work being described, as necessary to complete the various items of the Work all in accordance with the requirements of the Contract Documents, including all appurtenances thereto, and including all costs of permits and cost of compliance with the regulations of public agencies having jurisdiction, including Safety and Health Requirements of the California Division of Industrial Safety, and the Occupational Safety and Health Administration of the U.S. Department of Labor (OSHA). No separate payment will be made for any item that is not specifically set forth in the Bid Schedule, but which is necessary for the complete construction of the work and all costs therefore shall be included in the prices named in the Bid Schedule for the various appurtenant items of work.

PROJECT WIDE ITEMS

1. Mobilization (Bid Item No. 1):

- a. **Description:** Mobilization shall include all activities and costs for transportation of personnel, equipment, and operating supplies to and from the site; establishment of portable sanitary and refuse facilities; obtaining an adequate source of fresh water; location, provision and installation of field offices & equipment/materials, storage yards excavation equipment, buildings, and other necessary facilities for the Contractor's operations at the site; insurances, including coinsurance and reinsurance agreements as applicable.

The site is not fenced, the contractor will be responsible to provide his own security for equipment, materials, fuel, tools, etc. that he may have on site.

The Contractor shall provide all necessary equipment & materials; all tools, accessories, power, fuel, materials, supplies, lighting, water, and other support equipment; and experienced personnel necessary to execute the work in an orderly an efficient manner.

- b. **Measurement and Payment:** The Lump Sum Price paid for Mobilization shall include full compensation for all labor, materials, transportation, supplies, tools, equipment, and incidentals and for doing all other work and operations which must be performed or costs incurred to complete the mobilization effort and items

to complete the project that are not covered under any other line item – including, but not limited to, coinsurance and reinsurance agreements as applicable.

2. Demobilization (Bid Item No. 2):

- a. **Description:** Demobilization shall include all activities and costs for transportation of personnel, equipment, and supplies not included in the contract from the site; including the disassembly, removal and site cleanup, of offices, equipment, buildings, restoration of facilities, roads, fences, etc. modified or disturbed during the course of the project and other facilities assembled on the site for this contract.
- b. **Measurement and Payment:** The Lump Sum Price paid for Demobilization shall include full compensation for all labor, materials, transportation, supplies, tools, equipment, and incidentals and for doing all other work and operations which must be performed or costs incurred to complete the demobilization effort.

3. Develop and Provide Water Supply (Bid Item No. 3):

- a. **Description:** Kern Delta Water District will provide a water supply from an existing well on site. Contractor is responsible for providing all labor, tools, equipment, incidentals, etc. required to effectively utilize the water provided by the District, including, but not limited to, discharge modifications for connection to temporary pipes to fill the water trucks, etc., as needed. The Contractor is also responsible for providing all labor, tools, equipment, incidentals, etc. required to maintain enough water storage capacity such that the existing well on site only needs to be turned on **a maximum of once per day** for the construction water supply. The Contractor may choose to stage storage tanks on site or may build a temporary reservoir on site to achieve the required storage. The District will arrange for the operation of the well to fill the Contractor's storage facilities. The District makes no guarantee as to the availability of any water supply for construction.
- b. **Measurement and Payment:** The Lump Sum Price paid for Develop and Provide Water Supply shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all work involved in developing a sufficient supply of water, furnish pumps, temporary connections, pipeline, water trucks, and other necessary equipment to supply water to the water application equipment for all water required for the work.

4. **Environmental Compliance and Permitting (DCP, SWPPP, Biological, and Cultural Compliance) (Bid Item No. 4):**

- a. **Description:** The Contractor shall comply with all local, state and federal requirements for Storm Water Pollution Prevention and Site dust control and shall prepare a Storm Water Pollution Prevention Plan (SWPPP) and a Dust Control Plan (DCP) and obtain permits for each. Contractor shall install, construct, maintain all necessary measures to comply with and keep the necessary records in accordance with the requirements of the Storm Water Pollution Prevention Plan (SWPPP) and the Dust Control Plan (DCP).

The Contractor shall comply with all local, state and federal requirements for Biological Mitigation and Cultural Resources.

The Owner anticipates including additional requirements related to biological mitigation. These requirements will be issued as an addendum to this bid packet.

The contractor shall prepare all plans and shall obtain all necessary permits prior to commencement of construction.

- b. **Measurement and Payment:** The Lump Sum Price paid for Environmental Compliance and Permitting shall include full compensation for making all completed arrangements and permission, furnishing all necessary plans, permits, fees, labor, materials, tools, equipment, and incidentals and for doing all work involved in DCP, SWPPP, Biological, and Cultural compliance.

5. **Prepare, Maintain and Restore Access Routes (Bid Item No. 5):**

- a. **Description:** The Contractor shall perform all dirt work, grading, etc. as may be necessary for proper preparation and maintenance of Construction Access Routes. Following completion of the project construction, the Contractor shall restore all access routes to original design and fencing to its original location (where applicable).
- b. **Measurement and Payment:** The Lump Sum Price paid for Preparing, Maintaining and Restoring Access Routes shall include full compensation for all labor, materials, transportation, supplies, tools, equipment, and incidentals and for doing all other work and operations which must be performed or costs incurred prior to beginning, during and after the completion of the work on this item and no additional allowance shall be made therefore.

6. Finish Grading of Project (Bid Item No. 6):

- a. **Description:** The Contractor shall provide all materials, equipment, labor and incidentals to finish grade all construction areas including all Roads, Levees, Channels, Side-slopes, Ramps, etc. of the project to the following tolerances:

Finish Grading –

Basin Bottoms – -1.0' to 0.0' horizontally and -0.1' to +0.0' vertically.

Top of Levees and Outside Slopes – -0.0' to +1.0' horizontally and -0.0' to +0.3' vertically (with no more than 0.1' vertical variance in any given 100' of lineal length.

The Contractor may balance dirt outside of these tolerances with the Engineer's consent, provided a **minimum of 3 feet of clearance is maintained between basin bottoms and top of bank.** All other areas are to be left in a smooth, neat and finished condition without ruts, holes, bumps, humps, etc.

- b. **Measurement and Payment:** The Final Pay Lump Sum Price paid for Finish Grading of Project shall include full compensation for all labor, materials, transportation, supplies, tools, equipment, and incidentals and for doing all other work and operations which must be performed or costs incurred for completing finish grading of the entire project site, including all Roads, Levees, Channels, Side-slopes, Ramps, etc. and no additional allowance shall be made therefore.

7. Bond Costs (Bid Item No. 7)

- a. **Description:** The Contractor shall furnish a Faithful Performance Bond and a Payment Bond. Each bond shall individually be in an amount equivalent to one hundred percent (100%) of the total amount payable under the Contract Documents. Bonds shall adhere to any and all requirements set forth in the Contract Documents.

Said bonds shall be of a form satisfactory to Kern Delta Water District and shall be obtained from responsible corporate sureties acceptable to the District.

- b. **Measurement and Payment:** The Final Pay Lump Sum Price paid for Bond Costs shall include full compensation for the preparation and acquirement of, and the associated premiums for, a Faithful Performance Bond and a Payment Bond, and no additional allowance shall be made therefore.

GRADING ITEMS

8. Removal of Large Trees from KDWD Property (Bid Item No. 8):

- a. **Description:** The Contractor shall remove the Large Trees on KDWD Property near the south property line as shown on the Plans. Waste materials from the removal of the trees shall be disposed of off site.
- b. **Measurement and Payment:**
The “Final Pay Quantity” Price for each Large Tree removed shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all work in clearing and grubbing and no additional allowance shall be made therefore.

9. Clearing and Grubbing (Bid Item No. 9):

- a. **Description:** The Contractor shall perform all clearing and grubbing work project wide. Such areas shall be cleared and grubbed of all trees (not including trees included as part of Bid Item No. 8), vines, stumps, roots, brush, rubbish, debris, fence materials and other unsuitable or deleterious materials. No waste materials from the clearing operation shall be incorporated into compacted backfill or levees (embankments). The subgrade beneath all permanent embankments shall be grubbed and cleared of all stumps, roots, objectionable organic matter, debris, rubbish, rocks, concrete or other deleterious materials. Where directed by the Districts and/or the Engineer, all work specified herein shall be accomplished by the Contractor prior to placement of construction stakes. All cleared and grubbed organic materials may be stored on site for later re-use during the re-leveling of the pond bottoms. Organic materials shall NOT be incorporated in the fill material generated for levee construction. Trash, debris and rubbish shall be disposed of off-site. No materials or debris shall be burned without express permission from Kern Delta Water District.
- b. **Measurement and Payment:** The “Final Pay Quantity” Unit Price per Acre paid for Clearing and Grubbing shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all work in clearing and grubbing and no additional allowance shall be made therefore.

10. Over-Excavate, Scarify and Re-Compact Sub-grade Under Levees (Bid Item No. 10):

- a. **Description:** The Contractor shall perform all work associated with the preparation of the subgrade of the Basin Levees. A 30-foot-wide (minimum) strip of levee subgrade, as shown on the Plans, shall be uniformly over excavated to a

depth of not less than twelve (12) inches followed by uniform ripping and scarifying further to a depth of not less than twelve (12) inches or as required to eliminate rodent burrows below the bottom of the over excavated area. Re-compaction of subgrade is to be completed in a minimum of two (2) lifts at no less than **95% relative compaction** and optimum moisture per standard ASTM D698. The first will consist of the scarified subgrade re-compaction and the second will consist of the over excavated subgrade material re-compaction. Additional material required to bring the strip up to the original natural grade elevation shall be provided by pond bottom excavation.

- b. **Measurement and Payment:** The “Final Pay Quantity” per square foot (sq. ft.) for the over-excavation and scarification and re-compaction of basin levees shall include full compensation for all over-excavation, scarification, moisture conditioning, manufacturing, blending, the provision of material from pond bottoms due to shrinkage, and compacting of the subgrade complete, in-place, including full compensation for all materials, tools, equipment, and labor and no additional allowance shall be made therefore.

11. Excavate Pond Bottoms/Construct Basin Levees – by IN-PLACE LEVEE FILL Volume (Bid Item No. 11):

- a. **Description:** Pond bottoms and Stine Canal shall be excavated to the elevations shown on the Drawings. This excavated material shall be used to construct the basin levees. These levees shall be constructed using excavated material from the pond bottoms. The earthwork balance shown in the Plans was based on the following assumptions:
 - i. Pond 1: All perimeter levees, excluding levees shared with the Stine canal, will be constructed using all the cut from the pond bottoms shown as cut on the plans, with most of the cut required to build the levees sourced from the bottom of Pond 2. Existing levees shared with the Stine canal shall receive cut from the pond bottoms to achieve the grades shown in the plans.
 - ii. Pond 2: All perimeter levees, excluding levees shared with the Stine canal,) will be constructed using all the cut from the pond bottom shown as cut on the plans, with most of the cut required to build the levees sourced from the bottom of Pond 2. Existing levees shared with the Stine canal shall receive cut from the pond bottoms to achieve the grades shown in the plans.
 - iii. Pond 3: All perimeter levees, excluding levees shared with the Stine canal, will be constructed using all the cut from the pond bottom shown on the plans, with most of the cut required to build the levees sourced from the

bottom of Pond 3. Existing levees shared with the Stine canal shall receive cut from the pond bottoms to achieve the grades shown in the plans.

- iv. Pond 4: All perimeter levees, excluding levees shared with the Stine canal, will be constructed using cut from the pond bottom. Existing levees shared with the Stine canal shall receive cut from the pond bottoms to achieve the grades shown in the plans.
- v. Stine Canal: The Stine Canal shall be excavated to the elevations shown on the drawings. All cut from the Stine Canal is to be used with cut from pond bottoms for levee construction and the raising of the canal banks where indicated.
- vi. Cut from the pond bottoms will be required to backfill the culvert crossing on the Stine canal. The Contractor may choose where to pull cut from for the backfill of the culvert in the Stine canal with the Engineer's consent. The District and Engineer shall bear no financial responsibility for the Contractor's choice, and no exceptions will be made for final grades because of the Contractor's choice.

Contractor will be responsible for completing his own earthwork balance and managing how the dirt is moved and where it is placed.

Basin levees shall be prepared and constructed of suitable, approved, moisture conditioned material from within the overall project area. Before any excavated material for the first layer of the embankment is placed, the foundation of the embankment shall be prepared as provided in the over-excavation, Scarification and Re-compaction of Subgrade requirements above.

Basin levees shall be constructed to the elevations and to the top width and side slope shown on the Drawings. Approved levee fill materials shall be placed and compaction accomplished in loose level layers not exceeding six (6) inches in compacted thickness carried across the entire width of the embankment from face of slope to face of slope to a minimum of 95 percent of the Laboratory Standard Maximum Density as obtained by A.S.T.M. test method D698. The moisture content of compacted embankment lifts must be greater than or equal to the Optimum Moisture Content as determined by laboratory testing, but must not exceed 4% greater than the Optimum Moisture Content.

Fill and backfill shall consist of suitable material generated from within the project site and shall be free of trash, organic matter, or other debris and must be approved by the Engineer. No object having a largest dimension greater than five (5) inches shall be included in any compacted levee embankment over-excavation or backfill.

The layers shall be brought up in the full required width from the bottom of the embankment to avoid widening lower edges after the center has been brought up to grade. At all times, there shall be an acceptable and uniform gradation of

embankment materials. Cobbles and gravel shall be well distributed through other materials and not nested in any position within or under the embankment. When the material has been moisture conditioned as specified, it shall be compacted by sheeps-foot rollers of sufficient weight for proper compaction or by other compaction equipment satisfactory to the Engineer. **Hydro-compaction of levee embankments will not be allowed.**

Classification of Fill – “In-Place” Fill materials will be classified for payment. Fill and backfill shall consist of suitable material generated from within the project site and shall be free of trash, organic matter or other debris and must be approved by the Engineer. No object having a largest dimension greater than five (5) inches shall be included in any compacted levee embankment over-excavation or backfill.

- b. **Measurement and Payment:** The Final Pay Quantity Unit Price per Cubic Yard for “In-Place Fill” (In-Place Fill is defined as the actual compacted, “in-place” levee embankment volume without any shrinkage factors included) shall include full compensation for all pick up, hauling, placing, moisture conditioning, watering, manufacturing, blending, and compacting the levee embankment complete in-place, includes full compensation for all materials, tools, equipment and labor and no additional allowance shall be made therefore. Contractor shall be responsible to provide his own shrinkage factors necessary for generation of import spoil needed to construct “in-place” levee embankment.

12. Grading of the Stine Canal Adjacent to Ponds (Bid Item No. 12):

- a. **Description:** The Contractor shall provide all materials, equipment, labor and incidentals to ensure that the finish grading of the Stine Canal section is per the plans, and within the tolerances set by the Engineer. This Bid Item includes the finish grading of the canal invert, tops of banks, and interior and exterior side slopes to the lines and grades shown on the Plans.
- b. **Measurement and Payment:** The “Final Pay Quantity” Unit Price per Acre for Grading the Stine Canal shall include full compensation for all pick up, hauling, placing, leveling, deposition of excess spoil material generated in the process in the areas indicated on the plans and as directed by the Engineer and includes full compensation for all materials, tools, equipment and labor and no additional allowance shall be made therefore.

13. Grading of Basin Bottoms (Bid Item No. 13):

- a. **Description:** The Contractor shall provide all materials, equipment, labor and incidentals to laser-level flat the bottoms of the ponds to the elevations shown on

the Plans and according to the relevant Specifications. The total area of each basin bottom (recharge area) shall not be less than shown on the Plans. Included in this Bid Item is the grading of the Erosion Control Benches alongside some of the pond levees, and the low flow channel through pond 2 as shown in the plans.

- b. **Measurement and Payment:** The “Final Pay Quantity” Unit Price per Acre for Basin Bottom Leveling shall include full compensation for all pick up, hauling, placing, leveling, deposition of excess spoil material generated in the process in the areas indicated on the plans and as directed by the Engineer and includes full compensation for all materials, tools, equipment and labor and no additional allowance shall be made therefore.

14. Rip and Float Basin Bottoms (Bid Item No. 15):

- a. **Description:** The Contractor shall, upon completion of finish grading, rip the Basin bottoms in two passes. Each pass shall be to a minimum depth of 72” at 6’ on center, with the second pass at 45 or 90 degrees from the first. Ripping shall be followed by floating of the Basin bottoms to the satisfaction of the Districts and/or the Engineer.
- b. **Measurement and Payment:** The “Final Pay Quantity” Unit Price per Acre for Ripping of the Basin Bottoms shall include full compensation for furnishing all mobilization and demobilization of equipment, labor, oversight, line location, materials, tools, equipment, and no additional allowance shall be made therefore.

DIVERSIONS AND CROSSINGS ITEMS

15. Furnish and Install Precast Concrete Diversion Structure – 7’ Tall with 36” HDPE Pipe Stub, 36” C-10 Gate, and Walkway (Bid Item No. 15):

- a. **Description:** The contractor shall furnish and install Precast Concrete Diversion Structures – 7’ Tall, KDWD-approved design with 36” HDPE Pipe Stub, 36” C-10 Gate, and Walkway – as depicted on the Plans. The Precast Concrete Diversion Structure shall be provided by Briggs Manufacturing, Inc., or approved equal. The 36” C-10 gate shall be a C-10 Canal Gate provided by Waterman Valves LLC, no equal. The Walkway shall be hot-dipped galvanized or stainless steel 2”x3/16” Grip Strut (serrated) safety grating, or heavier, provided by McNichols Company, or approved equal. The contractor shall also provide weir boards (to top of structure): 2” x 6” Rough Cut (#2 or Better, Douglas Fir).

Included in this bid item is the earthwork required for the shaping and grading of the flow channels in front of and downstream of any weir/crossing described by this bid item. The upstream and downstream flow channels shall be shaped and graded per the Plans. Any Rip-Rap that must be placed in or around these flow channels shall be covered under Bid Item No. 21 below.

b. Measurement and Payment:

The “Final Pay Quantity” Unit Price for the Installation of each Precast Concrete Diversion Structure – 7’ Tall with 36” HDPE Pipe Stub shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing the work and no additional allowance shall be made therefore.

16. Furnish and Install Precast Concrete Diversion Structure – 8’ Tall with 48” HDPE Pipe Stub, 48” C-10 Gate, and Walkway (Bid Item No. 16):

- a. **Description:** The contractor shall furnish and install Precast Concrete Diversion Structures – 8’ Tall, KDWD-approved design with 48” HDPE Pipe Stub, 48” C-10 Gate, and Walkway – as depicted on the Plans. The Precast Concrete Diversion Structure shall be provided by Briggs Manufacturing, Inc., or approved equal. The 48” C-10 gate shall be a C-10 Canal Gate provided by Waterman Valves LLC, no equal. The Walkway shall be hot-dipped galvanized or stainless steel 2”x3/16” Grip Strut (serrated) safety grating, or heavier, provided by McNichols Company, or approved equal. The contractor shall also provide weir boards (to top of structure): 2” x 6” Rough Cut (#2 or Better, Douglas Fir).

Included in this bid item is the earthwork required for the shaping and grading of the flow channels in front of and downstream of any weir/crossing described by this bid item. The upstream and downstream flow channels shall be shaped and graded per the Plans. Any Rip-Rap that must be placed in or around these flow channels shall be covered under Bid Item No. 21 below.

b. Measurement and Payment:

The “Final Pay Quantity” Unit Price for the Installation of each Precast Concrete Diversion Structure – 8’ Tall with 48” HDPE Pipe Stub shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing the work and no additional allowance shall be made therefore.

17. Furnish and Install 36" HDPE Pipeline with Cement Slurry to Springline (Bid Item No. 17):

- a. **Description:** The contractor shall furnish and install approved 36" Diameter, HDPE Corrugated, Water-Tight Pipeline between each adjacent pond and/or Stine canal as depicted on the Plans, in addition to the 5 foot stub included with every weir structure. Included in this Bid Item is the placement of the pipe, pouring minimum 1.5-sack concrete slurry up to the springline of the pipe after placement, followed by compacted backfill over the pipe up to finished grade. Compaction Testing will be conducted on the backfill at 1' intervals to ensure adequate compaction and soil conditioning is being achieved. Installation and backfill of piping must adhere to the Plans and the relevant Specifications.
- b. **Measurement and Payment:**
The Unit Price per Lineal Foot for the Installation of 36" HDPE pipeline shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing the work and no additional allowance shall be made therefore.

18. Furnish and Install 48" HDPE Pipeline with Cement Slurry to Springline (Bid Item No. 18):

- a. **Description:** The contractor shall furnish and install approved 48" Diameter, HDPE Corrugated, Water-Tight Pipeline between each adjacent pond and/or Stine canal as depicted on the Plans, in addition to the 5 foot stub included with every weir structure. Included in this Bid Item is the placement of the pipe, pouring minimum 1.5-sack concrete slurry up to the springline of the pipe after placement, followed by compacted backfill over the pipe up to finished grade. Compaction Testing will be conducted on the backfill at 1' intervals to ensure adequate compaction and soil conditioning is being achieved. Installation and backfill of piping must adhere to the Plans and the relevant Specifications.
- b. **Measurement and Payment:**
The Unit Price per Lineal Foot for the Installation of 36" HDPE pipeline shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing the work and no additional allowance shall be made therefore.

19. Furnish and Install Slurry Cut-off Wall (Bid Item No. 19):

- a. **Description:** The contractor shall furnish and install a slurry cut-off along each inter-pond/canal structure exactly as depicted on the Plans. The cement slurry

used must be a minimum 1.5-sack slurry, and it shall be poured against the compacted embankment.

b. **Measurement and Payment:**

The Unit Price for the Installation of each slurry cut-off shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing the work and no additional allowance shall be made therefore.

20. Furnish and Install Triple 60 Foot (180 Total) 48” HDPE Culvert on the Stine Canal (Bid Item No. 19):

- a. **Description:** The contractor shall furnish and install three 60 foot lengths of 48 inch HDPE pipe as shown on the plans. This bid item includes, but is not limited to, excavation into canal and levee banks, subgrade preparation, installation of 48” HDPE pipelines, and the restoration of the levee banks to a condition acceptable to the Engineer and/or the District. There is no guarantee as to whether or not the Stine Canal will be flowing water during the construction of the culvert. As such, this Bid Item may require the installation of sheet piles or a bypass for flow in the Stine Canal if the District is flowing water in the canal during construction of the culvert. The Contractor will be responsible for any and all dewatering required for the completion of this Bid Item.

b. **Measurement and Payment:**

The “Final Pay Quantity” Price for furnishing and installing the Triple 60 Foot 48” HDPE Culvert shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing the work and no additional allowance shall be made therefore.

21. Furnish and Install Rip-Rap for Diversions and Crossings (Bid Item No. 21):

- a. **Description:** The contractor shall Furnish and Install rip-rap for the diversions and crossings in the locations depicted on the Plans and as directed by the Engineer. The rip-rap materials must adhere to the size and shape requirements as described in the Specifications. Rip-rap must be free of deleterious materials such as steel. The subgrade must be prepared on all sites as depicted on the Plans and the rip-rap must be placed per the Specifications.

b. **Measurement and Payment:**

The “Final Pay Quantity” Lump Sum Price for the Furnishing and Installation of Rip-Rap for the Diversions and Crossings shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing the work and no additional allowance shall be made therefore.

CONTROL AND AS-BUILT SURVEY

22. Provide Survey Control and Conduct As-Built Survey of Grading Project (Bid Item No. 22):

- a. **Description:** The Contractor shall provide their own GPS model and Survey staking, including necessary staking for levees, slope staking, etc. for construction of the ponds, levees, access ramps, etc. The District will provide a CAD file with existing grade shots (used to prepare the grading plan) and final grade points for the Contractor to determine grades, locations, and alignment. The District will also provide 4 to 8 control points across the project site (also included in the CAD file) to be used for project orientation, alignment, and vertical grade control.

For grading done using GPS Control, the contractor shall perform an As-Built survey of the final graded site **prior to Basin Bottom Ripping** and provide the electronic GPS survey points to the Engineer to verify that the grades have been completed as required. Survey points shall be tied to control points set by the District or the District's surveyor, with said control points included in the Contractor's As-Built survey. The Contractor shall provide adequate survey points for the reasonable characterization of the constructed ponds and levee banks, as determined by the Engineer; specifically, the As-Built survey must capture (but is not limited to) the locations and elevations of all pond, levee, and canal grade breaks, curves, etc. as well as adequate characterization of the concrete diversion structures and HDPE pipeline crossings. The As-Built survey will be witnessed by and approved by the Engineer.

Any independent verification of grades and alignment required by the District will be provided by the District at its own cost.

- b. **Measurement and Payment:**

The "Final Pay Quantity" Lump Sum Price for Survey Control and GPS As-Built shall include full compensation for furnishing all mobilization and demobilization of equipment, labor, oversight, line location, materials, tools, equipment, and no additional allowance shall be made therefore.

INFORMATION REQUIRED OF BIDDER

EXPERIENCE AND REFERENCES

In conformance with requirements of Sections B and D of these Specifications, the Bidder sets forth the following data:

Listed below are three projects performed under the bidder's supervision during the past ten (10) years involving work of scope and complexity comparable to that to be installed under Contract Specifications:

1. Project Name and Location: _____

Project Description: _____

Type of Grading, etc.: _____

Owner: _____

Contract Amount/Completion Date: _____

Reference Contact Name and Telephone Number(s): _____

2. Project Name and Location: _____

Project Description: _____

Type of Grading, etc.: _____

Owner: _____

Contract Amount/Completion Date: _____

Reference Contact Name and Telephone Number(s): _____

3. Project Name and Location: _____

Project Description: _____

Type of Grading, etc.: _____

Owner: _____

Contract Amount/Completion Date: _____

Reference Contact Name and Telephone Number(s): _____

LIST OF SUBCONTRACTORS

The bidder hereby designates below the names and business addresses of each subcontractor who will perform work or labor. Please fill out as completely as possible when submitting your bid. Use subcontractor's business name style as registered with the License Board.

- a. Complete the name and location of the place of business of each subcontractor (i) who will perform work or labor or render service to the Bidder in or about the construction contemplated in the Plans and Specifications or (ii) licensed by the State who, under subcontract to the Bidder, specially fabricates and installs a portion of the work or improvement according to the detailed drawings contained in the Plans and Specifications in an amount in excess of one-half of one percent of the Bidder's total Bid.
- b. Complete the portion of the Work that will be done by each subcontractor. The Bidder shall list only one subcontractor for each portion as is defined by the Bidder in his Bid.
- c. Bidders are reminded of the penalties for the improper substitution of a subcontractor pursuant to Public Contract Code Section 4110.

SUBCONTRACTOR:

Business Address: _____

Class _____ License No. _____

Item No. or Description of Work: _____

Dollar Amount or Percentage of Total Bid: _____

SUBCONTRACTOR:

Business Address: _____

Class _____ License No. _____

Item No. or Description of Work: _____

Dollar Amount or Percentage of Total Bid: _____

SUBCONTRACTOR:

Business Address: _____

Class _____ License No. _____

Item No. or Description of Work: _____

Dollar Amount or Percentage of Total Bid: _____

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Business Address: _____

Class _____ License No. _____

Item No. or Description of Work: _____

Dollar Amount or Percentage of Total Bid: _____

SUBCONTRACTOR:

Business Address: _____

Class _____ License No. _____

Item No. or Description of Work: _____

Dollar Amount or Percentage of Total Bid: _____

SUBCONTRACTOR:

Business Address: _____

Class _____ License No. _____

Item No. or Description of Work: _____

Dollar Amount or Percentage of Total Bid: _____

NOTE: Bidder shall attach all additional sheets and attachments as required. Failure to supply all items of information required of bidders may cause the bid to be considered non-responsive.

**CONTRACT FOR THE CONSTRUCTION OF
OLD RIVER PONDS GRADING PROJECT**

THIS AGREEMENT is made effective as of _____, 20__ (the “Effective Date”) by and between (i) Kern Delta Water District (“OWNER”), and (ii) _____ (“Contractor”), with respect to the following facts and circumstances:

OWNER desires to construct Recharge Basins at the Old River Ponds site as described in the contract documents, Plans, and Specifications.

Contractor desires to perform the same for OWNER, on the terms and subject to the conditions of this Agreement.

NOW THEREFORE, for valuable consideration, the receipt of which is hereby acknowledged, the parties agree as follows:

1. The Project

Contractor agrees to furnish and transport all necessary labor, materials, tools, implements, supplies, building materials and component parts, and appliances required to construct Recharge Basins at the Old River Ponds site as provided in the Plans and Specifications for this project (the “Project”).

2. Contract Price.

(a) OWNER will pay Contractor the sum of \$_____ (the “Contract Price”). The Contract Price shall constitute payment in full for all costs incurred by Contractor under this Agreement in performing and completing the Project, including, but not limited to, the costs incurred for labor, insurance, overhead, profit, subcontractor's materials, supplies, bonds, compliance with all building codes and laws (but not including permit costs), and Social Security, unemployment, sales, use, and all other taxes and costs. If the actual cost to complete the Project exceeds the Contract Price, subject to additions and deductions provided for in this Agreement, OWNER shall pay the Contractor for any additional costs incurred as approved by the OWNER. Contractor shall submit a change order request (for said additional work) and receive OWNER approval (for said additional work) in order to be reimbursed by the OWNER. Otherwise, Contractor shall pay for such excess at its sole cost and expense and OWNER shall have no liability for same.

(b) Upon final inspection and acceptance by OWNER and receipt of itemized payment request from Contractor, OWNER shall pay the Contractor within thirty (30) days from the date of acceptance or receipt of payment request, whichever is later. As a condition to Contractor's right to receive payment,

Contractor shall provide OWNER with an affidavit that all subcontractors, materialmen, and every other person with “stop notice” rights has been paid in full.

3. Time for Completion

The Contractor must be prepared to commence work immediately after execution of the Contract and issuance of a Notice to Proceed, and complete all work within one hundred and twenty (120) calendar days.

The Contractor shall pay to the OWNER for liquidated damages the sum of three-thousand (\$3,000.00) dollars per day for each and every calendar day of delay in completing the total work under the Contract. The Contractor should be fully aware of any permit requirements and further requirements of these Specifications in relation to the effect these requirements may have on the work force required to complete the various portions of the Project within the time limits provided.

The OWNER reserves the right to suspend, alter and/or modify the work in any manner deemed necessary by the OWNER. The OWNER shall not be responsible for costs for such suspension, alteration and/or modification due to conditions out of the OWNER’s control.

Unless otherwise provided, the contract time shall commence upon issuance of a Notice to Proceed. **The work shall start immediately after the Notice to Proceed with completion within one hundred and twenty (120) calendar days.**

4. Charges and Liens

Contractor must pay all charges it incurs for labor and materials used in the construction of the Project as they become due. If Contractor fails to pay any such charge, OWNER may pay the charge on Contractor’s behalf and will be reimbursed by Contractor, on request, for the payment.

5. Examination by Contractor

Contractor has by careful examination ascertained the following: (a) the nature and location of the Project; (b) the condition of the ground on which the Project is to be performed; (c) the character, quality, and quantity of the materials, equipment, and facilities necessary to complete the Project; (d) the general and local conditions pertaining to the Project; and (e) all other matters that in any way can affect the performance of this Contract by Contractor. Contractor enters into this Contract solely because of the results of that examination and not because of

any representations pertaining to the Project or the completion of the Project made by OWNER or any agent of OWNER and not contained in this Contract.

6. Warranty

All work that is unsatisfactory to OWNER in OWNER's reasonable judgment shall be immediately repaired, removed, and/or replaced with work of a quality approved by OWNER, without additional compensation to Contractor. Contractor guarantees that the work done under this Agreement will be free from faulty materials or workmanship. Upon receiving notification from OWNER, Contractor agrees to remedy, repair, or replace, immediately, without cost to OWNER and to OWNER's satisfaction, all defects, damages, or imperfections appearing in the Project (including labor and materials) within a period of one (1) year after the date of final completion and acceptance by OWNER of the Project. Contractor will continuously clean the jobsite and grounds around the jobsite, and keep it in a safe, orderly, and neat condition. Contractor warrants that it is licensed by the Contractors State Licensing Board, and currently in good standing.

7. Insurance/Indemnity

- (a) Before commencement of any work under this Agreement, Contractor shall obtain and maintain in full force and effect the following:
 - (i) Comprehensive Commercial General Liability insurance that names OWNER as an additional insured and that protects Contractor and OWNER against any liability that Contractor may incur. Policy shall cover \$5,000,000 per occurrence or the full per occurrence limits of the policies available, whichever is greater for bodily injury, personal injury and property damage.
 - (ii) Business Automobile Insurance that contains a combined single limit of at least \$1,000,000.
 - (iii) Worker's Compensation insurance in statutory form and amount. Included shall be Employer's Liability with limits of at least \$1,000,000 each accident, \$1,000,000 by disease policy limit, and \$1,000,000 by disease each employee. This policy shall include endorsements or language for the waiver of subrogation in favor and in a form acceptable to OWNER.
- (b) The insurance described in Section 7(a) above also shall provide contractual liability coverage satisfactory to OWNER with respect to liability assumed by Contractor under the indemnity provisions in this Agreement. Written proof of compliance with these requirements shall be filed with and approved by

OWNER before commencement of work. The insurance provided in Section 7(a) shall name OWNER, as an additional insured, and Contractor shall cause to be issued certificates and endorsements evidencing such coverage prior to the commencement of construction. The insurance to be maintained by the Contractor shall at all times be primary to the insurance maintained by OWNER.

- (c) To the maximum extent permitted by law, Contractor shall indemnify, defend, and hold OWNER free and harmless from any and all claims, losses, damages, injuries, and liabilities arising from the death or injury of any person or persons, or from the damage or destruction of any property or properties, caused by or connected with the performance of this Contract by Contractor or Contractor's agents, subcontractors, or employees.

8. Termination

- (a) OWNER shall have the right at any time, when in its reasonable opinion Contractor is not in good faith carrying out the terms of this Agreement, by a written notice delivered to Contractor, to require Contractor to discontinue all work under this Agreement, and Contractor shall then discontinue the work and OWNER will have the power to contract for completion of the work, and to charge the cost and expense to Contractor.
- (b) OWNER shall have the right at any time, for its own convenience, to discontinue the work being done under this Agreement by sending a written notice to Contractor to do so, and Contractor shall then discontinue the work immediately. In this event, OWNER shall pay to Contractor the full amount (including retention) to which Contractor shall be entitled for all work done by Contractor up to the time of such discontinuance.

9. Independent Contractor

Contractor agrees to perform the Project as an independent contractor and not as the agent, employee, or servant of OWNER. Contractor has and hereby retains the right to exercise full control and supervision of the Project and full control over the employment, direction, method of performing, compensation, and discharge of all persons assisting in the Project. Contractor agrees to be solely responsible for all matters relating to payment of its employees, including compliance with Social Security, withholding, and all other regulations governing such matters. Contractor agrees to be responsible for its own acts and those of its subordinates, employees, and subcontractors during this Agreement.

10. Professional's Fees

Should any action or proceeding be commenced between the parties hereto concerning this Agreement, or the rights and duties of any party in relation thereto, the party prevailing in such action or proceeding shall be entitled, in addition to such other relief as may be granted, to recover from the losing party a reasonable sum for its attorneys', paralegals', accountants', and other professional fees and costs incurred in connection with such action or proceeding.

11. Notices

All notices and other communications required under this Agreement shall be in writing and shall be deemed to have been duly given (i) on the date of service, if served personally on the person to whom notice is to be given, (ii) on the date of service if sent by telecopier, provided the original is concurrently sent by first class mail, and provided that notices received by telecopier after 5:00 p.m. shall be deemed given on the next business day, (iii) on the next business day after deposit with a recognized overnight delivery service, or (iv) on the third (3rd) day after mailing, if mailed to the party to whom notice is to be given by first class mail, registered or certified, postage-prepaid, and properly addressed as follows:

To OWNER's	Kern Delta Water District
Representative:	501 Taft Highway
	Bakersfield, CA 93307
	ATTN:Chris Bellue
	(Chris@kerndelta.org)

To Contractor :	_____

A party may change its address for notices by providing notice to the other parties as provided above.

12. Miscellaneous

No supplement, modification, or amendment of this Agreement shall be binding unless executed in writing by all of the parties hereto. Waiver of any breach of this Agreement by any party hereto shall not constitute a continuing waiver or a waiver of any breach of the same or another provision of this Agreement. This Agreement may be executed in

any number of counterparts and each such counterpart shall be deemed to be an original instrument, all of which together shall constitute one and the same instrument. Facsimile and electronic mail signature pages shall constitute originals; however, without affecting the enforceability of such signatures as originals, each party shall provide original signature pages to the other parties within five (5) business days of the execution of this Agreement. Neither party shall assign any interest in this Agreement without the express written consent of the other party. This Agreement shall be binding upon and inure to the benefit of the heirs, executors, administrators, assigns, and successors of the parties hereto.

IN WITNESS WHEREOF, the parties have executed this Agreement to be effective as of the date first above written.

13. Contract documents

The complete agreement includes and incorporates the following Contract Documents: Notice Inviting Bids, Instructions to Bidders, Proposal, Proposal Bond, Proposal Bidding Schedule, Measurement and Payment, Agreement, Bid Bond, Faithful Performance Bond, Payment Bond, Non-Collusion Affidavit, Subcontractor's Non-Collusion Affidavit, General Conditions, Special Conditions, Technical Conditions, and Drawings.

“OWNER”

Kern Delta Water District

By: _____
s/s Steve Teglia
General Manager

“Contractor”

By: _____

[Remainder of page intentionally left blank.]

FAITHFUL PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS

THAT, WHEREAS, Kern Delta Water District, entered into a Contract dated _____, 20__, with _____ hereinafter designated as the “Contractor,” for _____; and,

WHEREAS, the said Contractor is required under the terms of said Contract to furnish a bond for the faithful performance of said Contract.

NOW, THEREFORE, WE, the undersigned Contractor, as Principal, and _____ (corporate surety), 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 Kern Delta Water District in the penal sum of _____ Dollars (\$_____), lawful money of the United States, said sum being equal in amount to one-hundred percent (100%) of the total Contract amount payable by the said Kern Delta Water District under the terms of the Contract, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, THAT, if the above-bonded Contractor, his or its 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 the said Contract and any alteration thereof made as therein provided, on his or their part, to be kept and performed at the time and in the manner therein specified, and in all respects according to their true intent and meaning, and shall indemnify and save harmless Kern Delta Water District, its officers and agents, as therein stipulated, then this obligation shall become null and void; otherwise it shall be and remain in full force and effect.

And the said Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration, or addition to the terms of the Contract or to the Work to be performed thereunder or the Specifications accompanying the same shall in any way affect its obligations on this bond, and it does hereby waive notice of any such change, extension of time, alternation, or addition to the terms of the Contract or to the Work or to the Specifications.

IN WITNESS WHEREOF, WE have hereunto set our hands and seals this _____
_____ day of _____, 20__.

Contractor: _____

Surety: _____

By: _____

By: _____

Title: _____

Title: _____

By: _____

Home Office

Address: _____

Title: _____

Phone: _____

Attorney-

In-Fact: _____

Address: _____

Phone: _____

Seal

NOTE: This bond must be acknowledged before a Notary Public, and a legally sufficient power of attorney must be attached to the bond to verify the authority of any party signing on behalf of a surety.

Date of bond shall not be prior to the date of the Contract.

PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS

THAT, WHEREAS, Kern Delta Water District has awarded _____
_____ hereinafter
designated as the “Contractor,” for _____
_____; and,

WHEREAS, said Contractor is required by the provisions of Division 3, Part 4, Title 15, Chapter 7 of the Civil Code of the State of California, including, but not limited to Civil Code Sections 3225-3226 and 3247-3252, inclusive, to furnish a bond in connection with said Contract, as hereinafter set forth.

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 Kern Delta Water District in the sum of _____ Dollars (\$ _____), lawful money of the United States, said sum being equal in amount to one-hundred percent (100%) of the total Contract amount payable by the said Kern Delta Water District under the terms of the Contract, for which payment 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 said Contractor, his or its heirs, executors, administrators, successors, assigns, or subcontractors shall fail to pay for any materials, provisions, implements, or machinery used in, upon, for, or about the performance of the Work contracted to be done, or for any work or labor thereon of any kind, or for amounts due under the Unemployment Insurance Act with respect to such work or labor as required by the provisions of Division 3, Part 4, Title 15, Chapter 7 of the Civil Code; and provided that the claimant shall have complied with the provisions of said Code, the surety or sureties hereon will pay for the same in an amount not exceeding the sum specified in this bond, otherwise the above obligation shall be void. In case a suit is brought upon this bond, the said Surety will pay a reasonable attorney’s fee to be fixed by the court. This bond shall inure to the benefit of any and all persons, companies, and corporations entitled to file claims under Section 3181 of the Civil Code, so as to give a right of action to them or their assigns in any suit brought upon this bond. And the said Surety, for value received, hereby stipulates and agrees that no change, extension of time, alternation, or addition to the terms of the Contract or to the work to be performed thereunder or the Specifications accompanying the same shall in any way affect its obligations on

this bond, and it does hereby waive notice of any such change, extension of time, alteration, or addition to the terms of the Contract or to the work or to the Specifications.

IN WITNESS WHEREOF, WE have hereunto set our hands and seals this _____ day of _____, 20__.

In witness whereof, we hereunto set our hands and seals this ____ day of _____, 20__.

Contractor: _____

Surety: _____

By: _____

By: _____

Title: _____

Title: _____

By: _____

Home Office
Address: _____

Title: _____

Phone: _____
Attorney-
in-Fact: _____

Address: _____

Phone: _____

Seal

NOTE: This bond must be acknowledged before a Notary Public, and a legally sufficient power of attorney must be attached to the bond to verify the authority of any party signing on behalf of a surety.

Date of bond shall not be prior to the date of Contract.

NON-COLLUSION AFFIDAVIT

(TO BE EXECUTED BY BIDDER AND SUBMITTED WITH BID)

STATE OF CALIFORNIA)

) ss

COUNTY OF KERN)

I, _____, declare that I am _____
(sole owner, a partner, president, secretary, etc.)
of _____
the party making the foregoing bid covering _____;

that the bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation; that such bid is genuine and not collusive or sham; that the bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid, and has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or that anyone shall refrain from bidding; that the bidder has not in any manner, directly or indirectly, sought by agreement, communications, or conference with anyone to fix the bid price of the bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other bidder, or to secure any advantage against the public body awarding the contract of anyone interested in the proposed contract; that all statements contained in the bid are true; and, further, that 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, or paid, and will not pay, any fee to any corporation, partnership, company, association, organization, bid depository, or to any member or agent thereof, to effectuate a collusive or sham bid.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Signed: _____

Title: _____

Note: This affidavit must be acknowledged before a Notary Public.

SUBCONTRACTOR'S NON-COLLUSION AFFIDAVIT

(TO BE EXECUTED BY EACH AWARDEE OF A SUBCONTRACTOR)

STATE OF CALIFORNIA)

) ss

COUNTY OF KERN)

I, _____, declare that I am _____
(sole owner, a partner, president, secretary, etc.)

of _____
the party making the foregoing bid covering _____
that such bid is not made in the interest of or on behalf of any undisclosed person, partnership, company, association, organization, or corporation; that such bid is genuine and not collusive or sham; that said bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid, and has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or that anyone shall refrain from bidding; that said bidder has not in any manner, directly or indirectly, sought by agreement, communications, or conference with anyone to fix the bid price of said bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other bidder, or to secure any advantage against the public body awarding the contract of anyone interested in the proposed contract; that all statements contained in the bid are true; and, further, that 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, or paid, and will not pay, any fee in connection therewith to any corporation, partnership, company, association, organization, bid depository, or to any member or agent thereof, or to any other individual except to such person or persons as have a partnership or other financial interest with said bidder in his general business. The provisions of this affidavit shall not be held as disqualifying a person, firm, or cooperation who has submitted a sub-proposal to one bidder from submitting separate sub-proposals or quoting prices for materials or work to other bidders.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Signed: _____

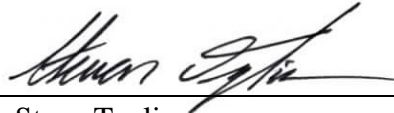
Title: _____

Note: This affidavit must be acknowledged before a Notary Public.

NOTICE TO BIDDERS OF JOB SITE TOUR

YOU ARE REQUIRED TO ATTEND a mandatory pre-bid conference and scheduled tour of the Sunset Ponds Grading Project site of the Kern Delta Water District to be conducted by the District on October 27, 2022. The pre-bid conference will start promptly at 9:00 a.m. commencing at the Kern Delta Water District, located at 501 Taft Highway, Bakersfield, CA 93307 and then continued in the field. It is anticipated that the conference and tour will last approximately two hours.

This will be the only formal tour of the job site conducted by the District.



s/s Steve Teglia
General Manager

Kern Delta Water District
501 Taft Highway
Bakersfield, CA 93307
Telephone: (661) 834-4656

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NOTICE OF AWARD

TO: _____

PROJECT: KERN DELTA WATER DISTRICT
CONSTRUCTING THE OLD RIVER PONDS GRADING PROJECT

Kern Delta Water District has considered the BID submitted by you for the above described WORK in response to its Request for Bids dated _____, and Contract Documents.

You are hereby notified that your BID has been accepted, and the sum of the items amounts to \$ _____.

You are required by the Contract Documents to execute the Agreement within ten (10) calendar days from the date of this Notice. You are also required to provide all bonds and certificates of insurance required by the Contract Documents within said ten (10) day period.

If you fail to execute said Agreement within ten (10) days from the date of this Notice, or fail to provide the required bonds and certificates of insurance, said District will be entitled to consider all your rights arising out of Kern Delta Water District's acceptance of your BID as abandoned. Kern Delta Water District will be entitled to such other rights as may be granted by law.

You are required to return an acknowledged copy of this NOTICE OF AWARD to Kern Delta Water District.

Dated this _____ day of _____.

KERN DELTA WATER DISTRICT
(OWNER)

By: _____

Title: _____

ACCEPTANCE OF NOTICE

Receipt of the foregoing NOTICE OF AWARD is hereby acknowledged

By: _____

this the _____ Day of _____,

By: _____

Title _____

NOTICE TO PROCEED FORM

TO:

PROJECT: KERN DELTA WATER DISTRICT

CONSTRUCTING THE OLD RIVER PONDS GRADING PROJECT

DATE:

You are hereby notified to commence work in accordance with the Contract Documents for the above-described project on or before _____. **You are to complete the WORK by** _____.

OWNER – KERN DELTA WATER DISTRICT

By: _____

Title: _____

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE TO PROCEED is hereby acknowledged by _____ this the _____ day of _____, 2022.

By: _____

Title: _____

NOTICE TO PROCEED CHECKLIST

To:

From: The Board of Directors,
Kern Delta Water District

Notice is hereby given that you are authorized and directed to proceed with the following project in accordance with the Contract Documents:

Constructing the Old River Ponds Grading Project

These documents have been received and are on file with the Kern Delta Water District:

The Agreement, fully executed	[]
Payment Bond (100%)	[]
Faithful Performance Bond (100%)	[]
Worker's Compensation Insurance Certificate	[]
Liability Insurance Policy or Certificate, with Endorsements	[]
Post-Award Schedule	[]
Non-Collusion Affidavits	[]

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, work is to start within ten (10) calendar days after the date set forth below and is to be completed within the time set forth in the Special Conditions.

Kern Delta Water District

Date

By: _____
Steve Teglia
General Manager

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Section C

GENERAL CONDITIONS

C-1 CORRELATION AND INTENT OF DOCUMENTS

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, facilities, and transportation necessary for the proper execution of the Work, with the exception of such items as are definitely stated in the Specifications or on the Plans to be furnished by Kern Delta Water District. Should there be a conflict between the Specifications and the Plans, the Specifications shall be controlling. Should there be a conflict between the General Conditions and the Special Conditions, the Special Conditions shall be controlling.

C-2 CONSTRUCTION STAKING & OVERTIME INSPECTION

Initial GPS reference benchmark construction staking will be provided by Kern Delta Water District (hereinafter: "DISTRICT") at no cost to the CONTRACTOR. The reference benchmark staking shall be staked prior to the start of the grading. The CONTRACTOR shall be responsible for establishing their own control or construction stakes off of the initial construction staking. All requests for staking shall be in writing; the requests shall include a diagram with locations of the reference benchmarks. It is understood and expected that the Contractor will use a GPS system to establish control on site from site control and Engineer-supplied grading points set for the GPS grading model. All requests for staking shall be submitted a minimum of three working days prior to the time that the staking is requested. Any stakes disturbed or removed prior to completion and inspection of the work controlled by said stakes shall be replaced by the DISTRICT, at the expense of the CONTRACTOR. The cost of restaking or replacement of stakes so disturbed or removed shall be charged to the CONTRACTOR at the rate of \$225.00 per survey crew hour. Said cost will be deducted from monies owed the CONTRACTOR final payment. Execution of the request for staking shall be prima facie evidence that the CONTRACTOR is responsible for all stakes set pursuant to the request.

Full compensation for all costs involved in the above shall be included in the amount bid for the various items of work and no separate payment shall be made therefore.

C-3 AWARD OF CONTRACT

Each bidder shall prepare and submit to the DISTRICT the following three items:

A. CONTRACTOR'S Quotation

- Each bidder shall fill out and submit the bid documents, contract documents, and bond documents provided after Section B of these specifications.

B. CONTRACTOR'S Experience

- Each bidder shall provide a listing of relevant project experience with references. The DISTRICT may contact any or all provided references during bid evaluation.

C. CONTRACTOR'S Subcontractors

- Each bidder shall provide a list of subcontractors to be utilized on the Project.

A bid will be considered nonresponsive if it does not contain the above three items. The DISTRICT will review the three items provided by each bidder, and will make the award to the bidder that offers the best value in the opinion of the DISTRICT, considering base bid cost, experience, and schedule of work.

C-4 COMMENCEMENT OF WORK AND TIME OF COMPLETION

The CONTRACTOR must be prepared to commence work immediately after execution of the Contract and the issuance of a Notice to Proceed, and complete all work within one hundred and twenty (120) calendar days.

The CONTRACTOR shall pay to the DISTRICT for liquidated damages the sum of three-thousand (\$3,000.00) dollars per day for each and every calendar day of delay in completing the total work under the Contract. The CONTRACTOR should be fully aware of any permit requirements and further requirements of these Specifications in relation to the effect these requirements may have on the work force required to complete the various portions of the Project within the time limits provided.

After notification of award and prior to start of any work, the CONTRACTOR shall submit to the DISTRICT for approval his proposed construction schedule and a list of all SUBCONTRACTORS and subcontract amounts.

The DISTRICT reserves the right to suspend, alter and/or modify the work in any manner deemed necessary by the DISTRICT. The CONTRACTOR shall be responsible for all additional cost for such suspension, alteration, and/or modification without compensation from the DISTRICT.

C-5 PAYMENT AND RETENTION

CONTRACTOR agrees within thirty (30) days after the completion of work described in this Contract and acceptance by the DISTRICT, to finalize payment to all vendors and others. The DISTRICT shall hold 10% retention until completion of the Project and CONTRACTOR has finalized payment to all vendors and others.

C-6 ASSIGNMENT AND TRANSFER OF CONTRACT

The CONTRACTOR shall not assign or transfer this Contract or any other part thereof or any interest therein without the consent in writing of the DISTRICT. The CONTRACTOR shall have full responsibility under these conditions for any subcontracts that he may let.

C-7 SANITARY PROVISIONS & HAZARDOUS WASTE BILL

CONTRACTOR shall conform to the rules and regulations pertaining to sanitary provisions as established by the State of California.

SB 1470. This bill now requires that any public works contract which involves digging trenches or other excavations that extend deeper than four feet below ground level contain provisions requiring that (i) the CONTRACTOR must notify the local agency of certain specified conditions relating to hazardous waste, unexpected subsurface or latent conditions, or unknown physical conditions, (ii) the local agency must promptly investigate any such conditions reported to it and issue a change order if it makes certain findings regarding those conditions, and (iii) in the event of a dispute between the local agency and the CONTRACTOR as to whether hazardous waste exists or whether the conditions encountered differ from those expected, the CONTRACTOR is not excused from performance, but must proceed with all work to be performed under the Contract.

C-8 SUPERVISION & INSPECTION

The DISTRICT shall have the full authority to interpret the Plans and Specifications and shall determine the amount, quality, and acceptance of the work and supplies to be paid under the Contract and every question relative to the fulfillment of the terms and condition herein. Unless otherwise specifically provided in the Specifications, all workmanship and equipment incorporated in the work are to be of the best of grade of their respective kinds for the purpose.

It shall be the duty of the DISTRICT to enforce the Specifications in a fair and unbiased manner, although it has the right to waive any term of the Specifications if the term is found to be unreasonable or inconsistent with the general spirit of the Specifications. If a variation from any requirement is allowed, the DISTRICT shall grant the same in writing with the reasons for the action allowed, and such actions will not invalidate or change the CONTRACT in any other manner.

The work to be done shall be subject to the review of the DISTRICT. It may specify the work sequence to obtain the best results and to protect its own interest. The CONTRACTOR shall promptly comply with the instructions from the DISTRICT'S representative.

All work is subject to inspection and approval of the DISTRICT. The CONTRACTOR shall notify the DISTRICT before noon of the working day before the inspection is required. Unless otherwise authorized, work shall be done only in the presence of the DISTRICT or its authorized representatives. Any work done without the proper inspection will be subject to rejection. The DISTRICT and its representatives shall have at all times access to the work site during construction at shops and yards as well as the Project site. The CONTRACTOR shall provide every reasonable facility for ascertaining that the workmanship is in accordance with these Specifications. Inspection of the work shall not relieve the CONTRACTOR of the obligation to fulfill all conditions of the CONTRACT.

C-9 LEVELING & GRADING

CONTRACTOR shall be responsible for clearing, grubbing, leveling and restoring the construction area within the proposed Project limits to its original condition, at no additional cost than provided in the individual bid items.

C-10 CLEANUP

During the progress of the work, the CONTRACTOR shall maintain his work site, materials and equipment in a clean and orderly manner, free from unsightly accumulations of rubbish. The CONTRACTOR shall provide interim clean-up measures to minimize dust nuisance to the public. Upon completion of work, the CONTRACTOR shall remove all equipment belonging to him or under his direction during the course of construction.

C-11 PRESERVATION OF PROPERTY

The CONTRACTOR shall effectively secure and protect adjacent property, structures, and existing facilities. The CONTRACTOR shall be responsible for all damage to any property resulting from trespass by the CONTRACTOR or his employees in the course of the employment.

The CONTRACTOR shall protect existing on-site farm irrigation lines from damage. The CONTRACTOR shall pothole the existing on-site farm irrigation lines to verify vertical and horizontal location prior to beginning construction.

C-12 SAFETY

The CONTRACTOR shall comply with the provisions of the Construction Safety Orders, Tunnel Safety Orders, and General Safety Orders issued by the State Division of Industrial Safety, and shall comply with the provisions of the Federal Occupational Safety and Health

Administration's regulations, as well as all other applicable laws, ordinances and regulations, as they pertain to the protection of workers from any potential hazards during the course of construction.

In compliance with the provisions of Section 6705 of the Labor Code of the State of California, the CONTRACTOR shall obtain the approval and acceptance of the Engineer in advance of the excavation of any trench or trenches, 5 feet or more in depth, of the detailed plans showing the design of shoring, bracing, sloping, or other provisions to be made by the CONTRACTOR for worker protection from the hazard of caving ground during the excavation of such trenches or pits, and during any other period that workers may be exposed to such hazard. Where such plan varies from the shoring system standards established by the Division of Industrial Safety, or, where other qualifying conditions exist as set forth in the Federal or State regulations (such as depth of excavation in excess of 20 feet), the plan shall be prepared by a Registered Civil or Structural Engineer.

The requirements as above set forth by the State Division of Industrial Safety or the Federal regulations for the provision of worker protection from the hazard of caving ground are minimum requirements. In addition, the CONTRACTOR shall provide, for the life of the Contract, the same protection for any person, including the Engineer or any of his authorized representatives, SUBCONTRACTORS, or any other person required to be exposed to such hazard in the performance of the work, inspection of the work, or any other reason.

The CONTRACTOR shall provide, at his expense, protective measures as necessary for testing personnel and other inspectors during the excavation, pipe bedding, pipe laying, sliplining, grouting, backfill and compaction processes. This shall consist of additional shielding, shoring, sloping, or other procedures as necessary to adequately protect said personnel and provide adequate working room during testing and inspection.

Payment for worker protection from caving ground in excavations during construction shall be made at the lump sum bid price bid therefor, as set forth on the CONTRACTOR'S quotation, and no additional compensation will be made therefor. Payment shall include all materials, labor and equipment necessary to adequately brace, shore, shield or slope all excavations and trenches as required by State and Federal regulations, for protection of workmen, testing personnel and others. Also included are all costs incurred by the CONTRACTOR in preparing 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 the trenches, pits, etc.

C-13 UTILITIES

The Engineer has made a diligent attempt to show all under and above ground utilities and facilities. The CONTRACTOR shall notify USA (811) and have all utilities within the grading and pipe trench areas marked prior to start of work. CONTRACTOR shall notify

the DISTRICT of any utilities that will need to be relocated which shall be relocated at the DISTRICT'S expense.

C-14 CHANGES IN WORK

All changes which affect the cost of the construction of the Project must be authorized by means of a written Contract Change Order. A Contract Change Order will include extra work, work for which quantities have been altered from those shown in the bidding schedule, as well as the decreases or increases in the quantities of installed units which are different than those shown in the bidding schedule because of final measurements. The DISTRICT reserves the right to contract with any extra person or firm other than the CONTRACTOR for any extra work.

C-15 COMPLETION

The DISTRICT will review CONTRACTOR'S work within five working days of notification that all work has been completed as specified in the Construction Documents and is ready for final inspection, and when found to be complete, will advise the CONTRACTOR so in writing.

C-16 PAYMENT

Payment will be made by the DISTRICT to CONTRACTOR within 30 working days of written acceptance of work by the DISTRICT and receipt by the DISTRICT of satisfactory evidence that all bills for labor and materials and other indebtedness connected with contract work have been paid by CONTRACTOR. The DISTRICT shall pay CONTRACTOR the amount for completed work at the CONTRACTOR'S quoted rate. The CONTRACTOR shall not assign any portion of the Contract or final payment without the consent of the DISTRICT.

C-17 WARRANTY

CONTRACTOR agrees to keep and maintain said structure or other appurtenances constructed by CONTRACTOR in good operating condition and repair for a period of one (1) year after the completion and acceptance by the DISTRICT, and to pay all costs of such repairs, maintenance, and replacement required to maintain the recharge basins in good operating condition.

****END OF SECTION****

Section D**SPECIAL CONDITIONS****D-1 The Requirement**

It is required that the Project be constructed in accordance with the Contract Documents. The Work is to be performed in Kern County, within the vicinity of Section 32, T.30S., R.27E., M.DM., near the intersection of Old River Road and Taft Highway.

D-2 Beginning and Completion of Work**a. General**

Unless otherwise ordered by the Engineer, as hereinafter provided, the Contractor shall begin the Work within ten (10) calendar days after issuance of the Notice to Proceed. The Contractor shall complete the work as follows: It is anticipated that Kern Delta Water District (KDWD) (hereinafter: "District") will issue the Notice to Proceed by December 16, 2022 (provided the Contractor submits all Contract Documents in acceptable form in time). The Contract Time will commence on the day indicated in the Notice to Proceed.

b. Completion of Work

The Contractor shall complete all specified work within one hundred and twenty (120) calendar days of the Notice to Proceed.

c. Contractor Notifications**1. Schedule**

- a) The Contractor shall submit a schedule per the requirements of the General Conditions. The schedule shall contain sufficient detail to allow the District and the Engineer to schedule personnel.
- b) Work shall not commence until the schedule has been submitted and approved.

2. Regular Updates

- a) After receiving the Notice to Proceed, the Contractor is expected to notify the Engineer daily of the progress of work and any scheduling changes.
- b) The Contractor shall notify the Engineer 24 hours prior to periods when the Engineer is to be present as identified in each of the items

identified in the technical specifications, of this document. Failure to notify the Engineer in a timely manner may cause delays in the work, which shall not impact the District's cost. Failure to notify the Engineer when they are to observe the work may cause the Contractor to repeat the work in the presence of the Engineer at no additional cost to the District.

D-3 Submittals

a. Technical Submittals – General

Should the contractor wish to utilize an item of material or equipment that is not specified in the Contract Documents, in the Technical Specifications, or on the Plans, they shall submit an electronic request to wzeiders@zeidersconsulting.com for approval. The Contractor shall provide the Engineer with detailed drawings, catalogs, brochures, and/or technical specifications, etc. such that the Engineer has adequate information to determine if the proposed item is functionally “equal” to the specified item. The Engineer may determine that the proposed item is not “equal” to the specified item, but is instead an adequate “substitute”. The Engineer may also wholly deny the request. See section D-5 – Trade Names or Approved Equals for further information.

b. Submittal Procedures

1. The Contractor shall submit to the Engineer for his review **one (1) electronic copy in pdf format** of each submittal.
2. Unless otherwise specified, submittals shall be delivered to:

Bill Zeiders
Zeiders Consulting
1655 Greeley Rd.
Bakersfield, California 93314
Office: (661) 589-8366 — Cell: (661) 332-5535
Email: wzeiders@zeidersconsulting.com

c. Requests for Information

1. Requests for information about the Contract Documents shall be directed by Contractor to Engineer using a Request for Information (RFI) form. Such requests will not be accepted by the Engineer from a Subcontractor or Supplier.

2. A separate RFI form shall be used for each specific item for which information is required. Requests for information for more than one item using a single RFI form will be permitted only when the items are so functionally related that expediency indicates review of the group of items as a whole.
3. The Engineer will reply to the Contractor's request for information within seven (7) regular working days following receipt by the Engineer.

D-4 Temporary Use of Facilities

Subject to the approval of the District, the Contractor will be permitted to make temporary use of any available, Kern Delta Water District-owned land in the vicinity of the Site or storage areas and all such areas shall be returned to a neat and presentable condition as approved by the Engineer, upon termination of such usage.

D-5 Trade Names or Approved Equals

- a. Where shown in the Contract Documents, or whenever materials or other items are specified using the trade name or the name of a particular Supplier, the specification is intended to establish the type, function, appearance, craftsmanship and quality required. "Equal" and "substitute" items are defined as below:
 1. **"Equal" Items:** A proposed item of material or equipment will be considered functionally equal to a specified item so named if:
 - a) It is at least equal in materials of construction, quality, durability, appearance, strength, craftsmanship and design characteristics;
 - b) It will reliably perform at least equally and achieve the results imposed by the design concept;
 - c) It has a proven record of performance and availability of responsive service; and
 - d) If approved and incorporated into the Work:
 - 1) There will be no increase in cost to the District or increase in Contract Times; and
 - 2) It will conform substantially to the detailed requirements of the item named in the Contract Documents.
 2. **"Substitute" Items:**
 - a) If in the opinion of the Engineer an item of material or equipment does not qualify as an "equal" item, it will be considered a

proposed substitute item. Below is a description of the steps that the Contractor must follow when submitting requests for substitution:

- b) Contractor shall submit sufficient information to the Engineer to allow the Engineer to determine that the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute. Requests for substitutions of material or proposed equipment will not be accepted by the Engineer unless it is submitted by the Contractor. Subcontractors or Suppliers shall not submit such requests.
 - c) The Contractor shall submit a request to the Engineer requesting review of a proposed substitute item of material or equipment that Contractor seeks to furnish or use. The written request:
 - 1) Shall demonstrate that the proposed substitute item will:
 - (a) Perform adequately,
 - (b) Be similar in substance to that specified, and
 - (c) Be suited to the same use as that specified;
 - 2) Will state:
 - (a) Whether the use of such proposed substitute item require any changes in Contract price or Contract Time; and
 - (b) Whether or not use of the proposed substitute item in the Work will require a change in any of the Contract Documents;
 - 3) And shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item.
- b. The Engineer may, at his own discretion, wholly deny any request to utilize an unspecified item.

D-6 Site Access

The site can be accessed from Old River Road to the West or Taft Highway to the South.

D-7 District Use of the Stine Canal (IMPORTANT: Special Timing for Construction)

It is expected that there will not be water in the Stine Canal at the project site when the Notice to Proceed is issued. Additionally, there is no specifically scheduled period during which the Stine Canal is expected to flow water. However, Kern Delta Water District reserves the right to flow water in the Stine Canal at any time. If water is flowing in the Stine Canal, the Contractor shall still be fully responsible for the condition of the whole work site, including the full section of the Stine Canal, from exterior toe to exterior toe, that is located within the work site.

The “wet” or “rainy” season for Kern County is generally considered to extend from November 1 through April 30 of the following calendar year. As the wet season progresses, runoff in the Kern River watershed generally increases, which, in turn, increases the likelihood that the District will flow water in the Stine Canal. If the District intends to flow water in the portion of the Stine Canal that runs through the work site, the District will provide the Contractor with as at least 48 hours advance notice.

The order of completion of specific line items of the Work is highly dependent on the hydrology described above. **In this regard, the Contractor is required to prepare his Construction Schedule in accordance with the following special conditions:** Line items or portions of line items that involve work within the Stine Canal, from exterior toe to exterior toe, must be completed as quickly as possible after the issuance of the Notice to Proceed. This includes, but is not limited to, any line items involving grading of the Stine Canal section, or the installation of culverts on the Stine Canal, or the installation of diversion structures/levee crossings into or out of the Stine Canal.

The Contract Time provided in D-2(b): Completion of Work will not be subject to change, regardless of if, and/or when, the District flows water in the Stine Canal.

D-8 Water Supply

Kern Delta Water District (KDWD) shall provide a water supply from an existing well on site. The Contractor is responsible for providing all labor, tools, equipment, incidentals, etc. required to effectively utilize the water provided by the District, including, but not limited to, discharge modifications for connection to temporary pipes to fill the water trucks, etc., as needed. The Contractor is also responsible for providing all labor, tools, equipment, incidentals, etc. required to maintain enough water storage capacity such that the existing well on site only needs to be turned on **a maximum of once per day** for the construction water supply. The Contractor may choose to stage storage tanks on site or may build a temporary reservoir on site to achieve the required storage. The District will arrange for the operation of the well to fill the Contractor’s storage facilities.

As noted in Paragraph D-7, it is possible that the District will flow water in the Stine Canal during the course of construction. If water is flowing in the Stine Canal, the Contractor may utilize the water in the Stine Canal for construction water supply. The

Contractor is responsible for providing all labor, tools, equipment, incidentals, etc. required to effectively utilize Stine Canal water.

KDWD makes no guarantee to any water supply being always available; should District-provided water supply become unavailable, due to District maintenance or otherwise, the Contractor is responsible for developing and providing their own water supply from other sources.

D-9 Responsibility for Repair of Facilities

All existing public or private facilities, including but not limited to pipelines, structures, telephone or power cables, roadways and driveways and embankments disturbed by the Contract construction shall be repaired and replaced to match existing. In addition, the Contractor shall be responsible for any settlement damage to such facilities or adjoining areas, for a period of one (1) year after District's acceptance of such repaired facilities.

D-10 Access Roads and Staging Area

- a. The Contractor shall maintain access roads to and on the Site to provide for delivery of material and for access to existing and operating plant facilities on the Site. For a road to be considered adequately maintained, it shall be reasonably dust free.
- b. Adequately maintained access roads shall be maintained to all storage areas and other areas to which frequent access is required. Similar roads shall be maintained to all existing facilities on the Site to provide access for maintenance and operation. Where such temporary roads cross, buried utilities that might be injured by the loads likely to be imposed, such utilities shall be adequately protected by steel plates or work planking, or bridges shall be provided so that no loads shall discharge on such buried utilities.
- c. The District will designate a storage area for Contractor's use while constructing the Project. It shall be the Contractor's responsibility and he shall bear all expense for any temporary fence and/or other security measures the Contractor may deem necessary for protection of the equipment and materials.
- d. The Contractor shall provide any additional temporary storage required for the protection of equipment and materials as recommended by manufacturers of such materials.
- e. Storage and protection:
 1. Materials and equipment shall be stored in accordance with Supplier's written instructions, with seals and labels intact and legible. Exposed metal surfaces of valves, fittings and similar materials shall be coated in accordance with manufacturers' recommendations to prevent corrosion.

2. Storage shall be arranged to provide access for inspection. The Contractor shall periodically inspect to assure materials and equipment are undamaged and are maintained under required conditions.

D-11 Cooperation with Others / Other Construction Projects

At all times the Contractor shall extend full cooperation to all others performing work authorized by the District within or adjacent to Contract Work areas including all landholders performing necessary private work. The Contractor shall not commit or permit any act which will interfere with the performance of work by any other contractor or by employees of the District. The Contractor shall have no claim for damages on account of interference. Exact methods of coordination of work involving the Contractor and others will be as determined by the Engineer, whose decision will be final.

Contractor shall consult with appropriate local agencies and jurisdictions prior to initiating ground-disturbing activities, to determine if other construction projects will occur coincidentally at the same time and in the vicinity of the proposed project, depending on project schedule. Coordination of construction activities for coincident projects shall occur to ensure impacts to noise and traffic do not compound to be cumulatively significant and to ensure compatibility of activities within construction zones. Adjustments to construction schedules and plans may be made accordingly as necessary

D-12 Fire Protection

The Contractor shall use all precautions to prevent fires and shall provide adequate facilities and equipment for extinguishing fires at no cost to the District. Waste disposal by burning will not be allowed at any time.

D-13 Claims for Extra Cost

If the Contractor claims that any instructions by Plans or otherwise that are issued after the Notice to Proceed involve extra cost under this Contract, he shall give the Engineer written notice thereof within ten (10) calendar days after the receipt of such instructions. No such claim shall be valid unless so made.

D-14 Quality Control

All items specified under the Specifications and the Proposal Bidding Schedule shall be of the sizes, shapes and materials as specified herein. All materials shall be new, free from defects impairing strength, durability and appearance, shall be of the best commercial quality for the purposes specified and made with structural properties to withstand all stresses and strains to which they normally will be subjected. Items furnished, unless otherwise specified, shall be standard, approved products of recognized manufacturers and fabricated in accordance with the best shop methods. All incidental items and accessories not specified herein, but which are required to fully carry out the

specified intent of the Work, shall be furnished without additional cost. At all times, the manufacturer shall provide and maintain adequate inspection and quality control procedures for all items or Work, whether manufactured or fabricated in manufacturer's plant or elsewhere. In order to ensure that all items of Work meet material quality and performance requirements of the Specifications, if so directed by the Engineer, for those items of Work manufactured or fabricated elsewhere than his plant, the Contractor shall furnish written certification that adequate supervision, inspection and quality control procedures have been provided.

D-15 Prevention of Water Pollution and Prevention of Air Pollution

The Contractor shall prepare and submit to the Engineer a Storm Water Pollution Prevention Plan (SWPPP) within 10 calendar days after the Notice to Proceed is issued. The SWPPP shall include at a minimum the following BMPs:

- a. Establish an erosion control perimeter around active construction and contractor layout areas including silt fencing, jute netting, straw waddles, or other appropriate measures to control sediment from leaving the construction area.
- b. Stockpiled soils shall be watered, covered, or otherwise managed to prevent loss due to water and wind erosion.
- c. Install containment measures at fueling stations and at fuel and chemical storage sites.
- d. Employ good house-keeping measures including clearing construction debris and waste materials at the end of each day.

The Contractor shall maintain a copy of the SWPPP onsite at all times and shall abide by the SWPPP throughout the duration of the Project. It will be the Contractor's responsibility to 1) obtain, on behalf of the District, a Construction Storm Water Permit from the State Water Resources Control Board online via their website; 2) submit all the reports to maintain compliance; and 3) close out the Permit upon completion of the Work. Additionally, the Contractor shall take measures as necessary to effect water pollution control. Construction operations shall be so conducted as to prevent discharge of wastes and pollutants into surface waters and underground water sources. Such water pollution control measures shall be directed toward eliminating discharge, or averting accidental spillage, of such industrial and domestic wastes as oils, gasses, fuels, sewage, toxic materials, and other substances which may be hazardous to public health and welfare or harmful to fish and wildlife. The Contractor shall be responsible for compliance with the applicable State and local regulations for prevention and abatement of pollution of surface and underground water. The Contractor's pollution control methods shall be subject to approval of the Engineer. The District shall have the right to require the Contractor, at his expense, to initiate and maintain such pollution control measures as deemed necessary to eliminate pollution of water caused by, or resulting from the

contractor's operation. No separate payment will be made for prevention of water pollution, the costs for all work and materials required under this paragraph shall be borne by the Contractor.

The Contractor shall prepare and submit to the Engineer and all appropriate parties, a Site dust control and PM-10 Dust Management Plan within 10 calendar days after the Notice to Proceed is issued. The Contractor shall maintain a copy of said plan onsite at all times. The Contractor shall take measures as necessary to effect air pollution control. Construction operations shall be so conducted as to prevent generation of fugitive dust and dispersion of pollutants into the air. Such air pollution control measures shall be directed toward eliminating particulates and potentially toxic or harmful materials from becoming airborne and polluting the air, as these airborne substances may be harmful to public health and/or harmful to wildlife. The Contractor shall be responsible for compliance with the applicable State, regional (APCD) and local regulations for prevention and abatement of pollution of the air and any associated reporting requirements. The Contractor's pollution control methods shall be subject to approval of the Engineer as well as applicable governmental entities with regulative power over air quality. The District shall have the right to require the Contractor, at his expense, to initiate and maintain such pollution control measures as deemed necessary to eliminate pollution of air (and/or nuisance or fugitive dust) caused by, or resulting from the contractor's operation. No separate payment will be made for prevention of air pollution, the costs for all work and materials required under this paragraph shall be borne by the Contractor.

D-16 Valley Fever – Notices to Employees

A special biological problem of the Project area is the presence of tiny organisms living in the soil which can cause Valley Fever (coccidioidomycosis) in humans. As is typical of many desert areas in the southwestern United States, Valley Fever is endemic to Kern County. Although everyone living in the valley has some contact with the disease-causing organisms, the illness is especially hazardous to those whose work brings them into close contact with the soil, as for example, agricultural and construction workers. The Contractor and all his Subcontractors shall advise all their employees, in writing, of the dangers of Valley Fever, and of precautions which can be taken such as wearing dust masks while working under dusty conditions. Refer to the California Department of Industrial Relations website at <http://www.dir.ca.gov/dosh/valley-fever-home.html>.

D-17 Superintendence

- a. The Contractor shall submit a statement of the qualifications of its proposed superintendent to the Engineer for review. The statement shall include the superintendent's name, the name of each project that is the basis of the qualifications, each project site location, a brief description of each project, and the name and mailing address of the owner for each project.

- b. The Contractor shall assign a duly authorized and competent person continually on the site during the work. The superintendent shall have not less than 7 years experience as a contractor's general superintendent on heavy engineering work with not less than 4 years as a superintendent on projects with complexity and configuration similar to the work described in the contract documents.
- c. If the superintendent is not deemed qualified or if the superintendent's performance on the work is determined to be unsatisfactory by the Engineer, the superintendent shall be immediately removed from the project.
- d. The Contractor shall furnish to the Engineer a written statement of the qualifications of the proposed substitute superintendent if a substitute superintendent is required.
- e. A substitute superintendent shall meet the same requirements and shall be subject to approval by the Engineer.

D-18 Record Drawings

- a. The Contractor shall maintain one record set of drawings at the Site. On these, it shall mark all project conditions, locations, configurations, and any other changes or deviations which may vary from the information represented on the original Plans, including buried or concealed construction and utility features which are revealed during the course of construction. Special attention shall be given to recording the horizontal and vertical location of all buried utilities that differ from the locations indicated, or which were not indicated on the Plans. Said record drawings shall be supplemented by any detailed sketches as necessary or directed to fully indicate the Work as actually constructed. These master record drawings of the Contractor's representation of as-built conditions, including all revisions made necessary by addenda and change orders shall be maintained up-to-date during the progress of the Work. Red ink shall be used for alterations and notes. Notes shall identify relevant Change Orders by number and date. Record drawings shall be maintained up to date on a daily basis.
- b. Changes shall be marked directly on the drawings. Green color-coding shall be used when showing information deleted from Drawings. Red color-coding shall be used when showing information added to Drawings. Blue color shall be used for clouding an area or areas affected by the change(s). Information shall be legible and completely detailed. The level of detail shall be sufficient to allow a draftsman to incorporate the changes into a CAD file without reference to other documents besides the marked-up drawing(s). It is not acceptable to simply reference change directives or to mark drawings: "see RFI-XX" or "see survey notes". If there is insufficient space on a drawing to markup the change, the Contractor will be required to draw additional sketches to completely explain the change and attach the sketches to the drawing.

- c. The Engineer has the right to inspect the Contractor's marked-up drawings at any time to ascertain that they are being kept up to date and show sufficient details. The Engineer may require that all as-built records, survey field notes and other documentation be submitted at the completion of certain construction elements of the overall project. Should the Contractor's marked-up drawings, survey field notes, and other as-built documentation not be up to date or lack necessary details, the Engineer may withhold five percent (5%) from each monthly progress payment, until the drawings, survey field notes and other as-built documentation are brought up to date and properly detailed.
- d. Copies of the record As-Built drawings shall be submitted on upon completion of all Work.
- e. For grading done using GPS Control, the Contractor shall do an As-Built survey of the final graded site prior to Pond Bottom Ripping and provide the electronic GPS survey points to the Engineer to verify that grades have been completed as required. Survey points shall be tied to control points set by the District's surveyor with said control points included in the Contractor's As-Built survey. Contractor shall provide adequate points for the reasonable characterization of the constructed ponds and levee/canal banks, as determined by the Engineer; specifically, the As-Built survey must capture (but is not limited to) the locations and elevations of all pond, levee, and canal grade breaks, curves, etc. as well as adequate characterization of the concrete diversion structures and HDPE pipeline crossings. The As-Built survey will be witnessed by and approved by the Engineer.
- f. In the case of those drawings which depict the detail requirement for equipment to be assembled and wired in the factory, such as motor control centers and the like, the record drawings shall be updated by indicating those portions which are superseded by Change Order drawings or final Shop Drawings, and by including appropriate reference information describing the change orders by number and the Shop Drawings by manufacturer, drawing, and revision numbers.
- g. Record drawings shall be accessible to the Engineer at all times during the construction period.
- h. Final payment will not be acted upon until the record drawings have been prepared and delivered to the Engineer. Said up-to-date record drawings shall be in the form of a set of prints with carefully plotted information overlaid.
- i. Prior to final acceptance of the Work, the Contractor shall finalize and deliver a complete set of record drawings to the Engineer for transmittal to the District, conforming to the construction records of the Contractor. This set of record drawings shall consist of corrected drawings showing the reported location of the Work. The information submitted by the Contractor and incorporated by the

Engineer into the record drawings will be assumed to be correct, and the Contractor shall be responsible for the accuracy of such information, and for any errors or omissions which may appear on the record drawings as a result.

D-19 Special Controls

- a. **Surface and Storm Water Control** – The Contractor shall divert or otherwise control surface water and waters flowing from existing projects or structures from coming onto its Work areas. The method of diversions or control shall be adequate to ensure the safety of stored materials and of personnel using these areas. Following completion of Work under the Contract, ditches, dikes, or other ground alterations made by the Contractor shall be removed and the ground surfaces shall be returned to their former condition, or as near as practicable, in the Engineer's opinion. Surface and storm water that enters the Contractor's Work area shall be controlled, treated, and disposed in a lawful manner.
- b. **Dust Control** – The Contractor shall provide effective measures to prevent operations from producing dust in amounts damaging to personnel, property, District operations, plants, or animals, and to prevent causing a nuisance to persons living or occupying buildings in the vicinity.

Areas used by the Contractor for construction roads or other purposes in connection with the Work shall be given an approved dust inhibiting surface treatment to avoid production of dust. This surface condition shall be continuously maintained during the entire construction period. The Contractor's construction facilities shall be operated in a manner ensuring minimum dust production.

Trucks transporting soil, or cement, or debris shall be covered or moistened with water to suppress the dispersion of dust.

Contractor shall meet all requirements set forth by the San Joaquin Valley Air Pollution Control District, and shall submit a Dust Control Plan.

- c. **Air Pollution Control** – The Contractor shall not discharge smoke, dust, or other air contaminants into the atmosphere in a quantity that exceeds the legal limit.

The Contractor shall maintain equipment in proper mechanical adjustment to minimize the volume of exhaust emissions.

- d. **Restoration of Improvements** – Upon completion of the Work, the Contractor shall reconstruct existing roads to a condition equivalent to that which existed before the start of Work.

- e. **Security** – The Contractor shall prevent unauthorized personnel or vehicular entry into the project site.

The Contractor shall be responsible for providing security within the Site as the Contractor deems necessary for the protection of its own equipment, materials, or Work from vandalism or theft. District shall not be responsible for theft or damage to the Contractor's equipment, materials, or Work.

All staff working for or representing the Contractor, including Subcontractors, shall possess a valid California identification with a photograph of the staff member.

The Contractor shall provide the names of its lead persons, supervisors and all employees working on the project.

D-20 Products, Materials and Equipment

- a. **General** – The word "Products" as used in the Contract Documents, is defined to include purchased items for incorporation into the Work regardless of whether specifically purchased for the Project or taken from Contractor's stock of previously purchased products. The word "Materials" is defined as products which must be substantially cut, shaped, worked, mixed, finished, refined, or otherwise fabricated, processed, installed, or applied to form Work. The word "Equipment" is defined as products with operational parts, regardless of whether motorized or manually operated, and particularly including products with service connections (wiring, piping, and other like items). Definitions in this Paragraph are not intended to negate the meaning of other terms used in the Contract Documents, including "specialties", "systems", "structure", "finishes", "accessories" "furnishings", "special construction", and similar terms, which are self-explanatory and have recognized meanings in the construction industry.

Neither "Products" nor "Materials" nor "Equipment" includes machinery and equipment used for preparation, fabrication, conveying, and erection of the Work.

- b. **Product Delivery and Storage** – The Contractor shall deliver and store the Work in accordance with manufacturer's written recommendations and by methods and means that will prevent damage, deterioration, and loss including theft.
- c. **Transportation and Handling** – Products shall be transported by methods to avoid damage and shall be delivered in undamaged condition in manufacturer's unopened containers and packaging. The Contractor shall provide equipment and personnel to handle Products by methods to prevent soiling and damage. The Contractor shall provide additional protection during handling to prevent marring and otherwise damaging Products, packaging, and surrounding surfaces.

- d. **Storage and Protection** – Products shall be stored in accordance with manufacturer's written instructions and with seals and labels intact and legible. Sensitive Products shall be stored in weather-tight climate controlled enclosures and temperature and humidity ranges shall be maintained within tolerances required by manufacturer's recommendations.

For exterior storage of Products, items shall be placed on sloped supports above ground. Products subject to deterioration shall be covered with impervious sheet covering and ventilation shall be provided to avoid condensation.

Storage shall be arranged to provide access for inspection. The Contractor shall periodically inspect to assure Products are undamaged and are maintained under required conditions.

Storage shall be arranged in a manner to provide access for maintenance of stored items and for inspection.

- e. **Maintenance of Products in Storage** – Stored Products shall be periodically inspected on a scheduled basis. The Contractor shall maintain a log of inspections and shall make the log available on request. The Contractor shall comply with manufacturer's Product storage requirements and recommendations. The Contractor shall maintain manufacturer-required environmental conditions continuously. The Contractor shall ensure that surfaces of Products exposed to the elements are not adversely affected and that weathering of finishes does not occur. For mechanical and electrical equipment, the Contractor shall provide a copy of the manufacturer's service instructions with each item and the exterior of the package shall contain notice that instructions are included.

D-21 Project Meetings

- a. **Pre-Construction Conference** – Upon receipt of the Notice to Proceed, or at an earlier time if mutually agreeable, the District will arrange a preconstruction conference to be attended by the Contractor, Contractor's superintendent, the District, the Engineer or his representative, and representatives of utilities, major Subcontractors, and others involved in the execution of the Work.

The purpose of this conference shall be to establish a working understanding between the parties and to discuss the Construction Schedule (Critical Path Method format required), Shop Drawing submittals and processing, applications for payment and their processing, and such other subjects as may be pertinent for the execution of the Work.

- b. **Progress Meetings**

1. The District may arrange and conduct progress meetings. These meetings

shall be attended by the Engineer or his representative, Contractor, Contractor's superintendent and representatives of all Subcontractors, utilities, and others, that are active in the execution of the Work. The purpose of these meetings shall be to expedite the Work of any Subcontractor (if acceptable to the District) or other organization that is not up to schedule, resolve conflicts, and in general, coordinate and expedite the execution of the Work.

2. The agenda of progress meetings shall include review of progress and schedule, of payment request, and of the latest Construction Schedule update. To the maximum extent practicable, Contractor shall contact the District and Engineer at least twenty-four (24) hours in advance of the meetings regarding items the Contractor wishes to have added to the agenda.
3. Persons designated by the Contractor to attend and participate in project meetings shall have the authority to commit the Contractor to the resolution of problems as agreed upon in the project meetings.
4. A meeting will be held every week (unless the District determine otherwise) for the duration of the Project. The location of the meetings shall be determined by the District prior to the first meeting.
5. The Contractor shall designate persons to attend these meetings who are familiar with the Construction Schedule and with the current construction problems and activities and with the logic of the Work sequences used in preparing the schedule and the updates.
6. On the last working day of every week, Contractor shall submit to Engineer, Contractor's plan of activities for the following two (2) weeks (a "two-week look-ahead schedule"). The plan of activities shall describe the activity and location of the activity. Failure to submit a two-week look-ahead schedule, shall subject the contractor to withholding of monthly progress payment for month that the schedule(s) was not submitted.

c. Progress and Schedule Review

1. The progress of the Work and the Construction Schedule shall be reviewed to verify:
 - a) Actual start and finish dates of completed activities since the last progress meeting.
 - b) Durations and progress of all activities not completed.

- c) Reason, time, and cost data for Change Order Work that is to be incorporated into the Construction Schedule or payment request form.
- d) Payment due to the Contractor based on percentage complete of items in the submitted payment request.
- e) Reasons for, and duration of, required revisions in the Construction Schedule.
- f) After each progress meeting, upon request the Contractor shall submit to the Engineer three (3) prints of the last accepted Construction Schedule, revised in accordance with the progress review.
- g) If the progress meeting coincides with the beginning of the month when Applications for Payment are due, the Contractor shall have his copy of the payment request form and all other data required by the Contract Documents completed prior to the progress meeting. The Engineer will process Contractor's payment request after satisfactory review of the schedule update.

D-22 Specification Drawings

The location of the Work, its general nature and extent, and the form and general dimensions of all appurtenant works are shown on the Plans to be attached to and made a part of these Specifications.

Drawings applicable to the work described in the Contract Documents are listed on the front page of the Drawings.

D-23 Special Construction Conditions

- a. **Existing Uses of Lands and Roads** – In addition to all other applicable provisions of these Specifications, the Contractor shall:
 - 1. Effectively secure and protect adjacent property, structures, livestock, crops and other vegetation;
 - 2. Exercise extreme care during construction to prevent damage from dust to crops and adjacent property;
 - 3. Be responsible for all damage to any property resulting from trespass by the Contractor or his employees in the course of their employment, whether such trespass was committed with or without the consent or knowledge of the Contractor;

4. See that the work site is kept drained and free of all surface and ground water;
5. Be responsible for any damage caused by drainage or water runoff from construction areas and from construction plant areas;
6. Maintain all existing roadways, roadway traffic, and water utilities, utility crossings and oilfield facilities, in an adequate and safe manner to meet all existing service requirements and shall not interfere with any roadway, utility system or oil and gas and related facilities without prior written permission of the district/owner/operator thereof, and only for any time period permitted by said district/owner/operator.
7. Provide for all water courses, ditches and pipelines and perform the construction work so that no damage will result to either public or private interests, and be liable for all damage that may result from failure to so provide during the progress of the work.

D-24 Permits, Licenses, Approvals, and Legal Obligations

1. Contractor shall be responsible for obtaining any and all permits, licenses, and approvals required for performing its obligations under this Project.

The Contractor is responsible for preparing a Dust Control Plan and for obtaining a Dust Control Permit (DCP) from the local air quality board. The Contractor is also responsible for preparing a Storm Water Pollution Prevention Plan (SWPPP) and obtaining a SWPPP permit as well. The Contractor shall abide by the requirements of the Biological and Cultural Permits.

2. Without limiting the foregoing, Contractor shall keep informed of and take all measures necessary to ensure compliance with California Labor Code requirements, including but not limited to Section 1720 et seq. of the California Labor Code regarding public works, limitations on use of volunteer labor (California Labor Code Section 1720.4), labor compliance programs (California Labor Code Section 1771.5), and payment of prevailing wages for work done under this project.

****END OF SECTION****

SECTION E**EARTHWORK AND SITE WORK****E-1 General**

The Contractor shall provide all labor, materials, and equipment and perform all operations necessary to complete all required site work and earthwork as specified, shown on the Drawings, or as directed. Included is all clearing and grubbing for levee and pond bottom spoil, excavation, levee subgrade over-excavation, scarification & compaction, levee construction, pond leveling, placement and compaction of embankments, ramps, installation of inter-basin structures, culverts & slurry cut-offs, extension of existing turnouts, roadways, site grading and all other required miscellaneous site work and earthwork.

E-2 Clearing and Grubbing**a. General**

As shown on the Drawings and as directed, the Contractor shall perform all clearing and grubbing work within the work site. The entire site shall be cleared and grubbed of all trees (including large trees called out in the Plans), vines, stumps, roots, brush, rubbish, fences, and other unsuitable materials including buried irrigation pipe to be abandoned. No waste materials from the clearing operation shall be incorporated into compacted backfill or embankments. The subgrade beneath all permanent embankments, canals, and channels shall be grubbed and cleared of all stumps, roots, and objectionable organic matter. Where directed by the Engineer, all work specified herein shall be accomplished by the Contractor prior to placement of construction stakes. All cleared, grubbed, and demolished materials (other than clean concrete) shall become the property of the Contractor and shall be removed from the work site or Kern Delta Water District property before the date of completion of Contract or otherwise disposed of as approved by the Engineer. Upon completion of the work, the Contractor shall perform all required clean-up operations as directed, including all excavation, backfill and grading to lines shown on the Drawings or as directed in order to leave affected areas in a condition satisfactory to the Engineer. No materials or debris shall be burned within the work site, except as directed or approved by the Engineer or Kern Delta Water District.

b. Payment

The Final Pay Quantity Unit Price per Acre paid for Clearing and Grubbing shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all work in clearing and grubbing and no additional allowance shall be made therefore. Separate payment is included for the removal of the large trees, as provided in the Bid Schedule.

E-3 Excavation**a. Removal of Existing Pipelines and Other Impediments**

Kern Delta Water District has, to their knowledge, removed all pipelines buried within the project area. However, if additional pipelines or other impediments are discovered in the process of completing the Work, the Contractor shall remove or protect in place as directed by the Engineer.

b. Classification of Excavation

Excavated materials shall not be classified for payment. Fill and backfill shall consist of suitable unclassified material from the project site and shall be free of trash, organic matter or other debris. No object having a largest dimension greater than five (5) inches shall be included in any compacted embankment or structural fill or backfill.

c. Tolerances

All excavation and embankment shall be graded to provide uniform surfaces to the lines and grades shown on the Drawings, as specified, or as directed by the Engineer. Tolerances for finished earth line and grade elevations and thicknesses shall be as given below.

1. All excavation or compacted embankment lines shall have a tolerance of plus or minus 0.1 foot with the exception of the following:

Recharge areas (basin bottoms): -1.0' to 0.0' horizontally and -0.1' to +0.0' vertically.

Top of banks and outside slopes: -0.0' to +1.0' horizontally and -0.0' to +0.3' vertically (with no more than 0.1' vertical variance in any given 100' of lineal length.

The Contractor may balance dirt outside of these tolerances with the Engineer's consent, provided a **minimum of 3 feet of clearance is maintained between basin bottoms and top of bank.**

2. All specified material thicknesses shall have a tolerance of plus 10 percent (+10%) or minus 5 percent (-5%).

d. Excavation for Basin Bottom leveling

The Contractor shall perform all excavation required to construct the Basin (Pond) bottoms to the lines and grades as specified or shown on the Drawings or to such lines and grades as are directed by the Engineer. Basin bottoms shall be

laser leveled and finished, unless otherwise indicated by the plans or approved by the Engineer. Basin bottoms are designed for recharging water and no compaction is allowed.

The basin bottoms include erosion control benches that run alongside some of the levees. Pond 2 also includes a Low Flow Channel. These special areas of the basin bottoms shall be graded to the lines and grades included in the Plans.

e. **Payment**

Exclusive of authorized excavation in excess of specified requirements, no separate payment will be made for any excavation work. All costs therefore shall be included in the price bid in the Proposal Bidding Schedule for the item(s) of work requiring excavation.

E-4 Dewatering

a. **General**

The Contractor shall design, furnish, install, maintain, and operate all necessary facilities for the control, collection, and disposal of all surface water and groundwater for proper construction of the work. Adequate standby equipment shall be kept available at all times to insure efficient dewatering and maintenance of the dewatering operation during power failure. The Contractor shall maintain prepared foundations and all other parts of the work free from seepage of standing water as required for constructing each part of the work. All dewatering operations shall be adequate to ensure proper construction of the work and to maintain the integrity of the work until the work is accepted by Kern Delta Water District. The Contractor shall remove all components of the dewatering systems when no longer required for completion or protection of the work.

b. **Execution**

1. Where excavations extend below the groundwater level, the portion below the groundwater level shall be dewatered in advance of excavation work.
2. At all times during construction, provide ample means and devices to remove and promptly dispose of properly all water entering excavations and keep the bottoms of the excavations firm and free of standing water until backfilling is complete and all field inspection and soil testing has been completed. Dewatering systems shall prevent loss of fines, development of boils, quick conditions, or softening of foundation strata and maintain stability of excavation slopes and bottom of excavation so that every phase of the Work can be performed in the dry. If well points or wells are used, they shall be adequately spaced to provide the necessary

dewatering, and filter pack material shall be suitable to prevent pumping of fine sands or silts from the subsurface.

3. The dewatering operations shall be performed such that no disturbance to the bearing soil or the soil supporting any other work will result. The dewatering system shall be operated continuously as necessary to prevent flotation of partially completed structures or other work. The dewatering operations shall be such that the bottoms of all excavations shall be kept firm at all times and in all respects acceptable to the Engineer. If at any point during the work, the dewatering system does not meet the specified requirements, and as a consequence loosening or disturbance of the foundations strata, instability of the slopes, or damage to the foundations or structures or any other problem that could adversely impact the integrity of the structure or its foundation occurs, the Contractor shall restore the foundation, fill soil, slopes, or structures, to the satisfaction of Engineer.

c. **Payment**

No direct payment will be made for dewatering any excavation or constructing observation holes. All costs therefore shall be included in the bid price included in the Proposal Bidding Schedule for the item of work requiring dewatering.

E-5 **Compaction and Moisture Conditioning**

a. **Laboratory Density Determination**

For cohesive materials, the maximum laboratory density at optimum moisture content will be determined by test methods in conformance with ASTM D698. For cohesionless materials, the relative density shall be based on the following formula, wherein the maximum density is the highest dry unit weight of the soil (determined by test methods in conformance with ASTM D4253), the minimum density is the lowest dry unit weight of the soil (determined by test methods in conformance with ASTM D4254), and the in-place density is the dry unit weight of the soil in place (determined by test methods in conformance with ASTM D4914):

$$\text{Rel. Den.} = (\%) \frac{\text{max. den.} \times (\text{in - place den.} - \text{min. den.})}{\text{in - place den.} \times (\text{max. den.} - \text{min. den.})} \times 100$$

b. **Compaction Requirements**

In all cases, compaction equipment and methods shall be adequate for and consistent with achieving the specified degree of compaction. Unless otherwise specified or directed, a minimum of **95 percent** of the laboratory standard

maximum density per ASTM D698 will be required. In addition to all other compaction requirements provided by the Specifications or shown on the Drawings, placement and compaction of earthwork material within City/County/State road right-of-way limits shall be in conformance with all applicable standards of the City, County, or State having jurisdiction.

c. **Moisture Conditioning of Cohesive Materials**

Unless otherwise stated or directed, prior to and during compaction operations, the materials shall have a moisture content of not more than 4 percentage points wetter or 0 percentage points drier than optimum moisture content, and the moisture content shall be uniform throughout each layer. Materials used for fill or backfill shall not have a moisture content less than the optimum moisture content. If the moisture content is less than the approved requirement, compaction operations shall not proceed until the Contractor has added the necessary amount of water. If the moisture content is greater than the approved requirement, compaction operations shall not proceed until such time as the materials have dried sufficiently or have been otherwise mechanically dewatered or replaced with materials having the approved moisture content. The term “moisture conditioning,” as used in the Specifications, is defined to refer to the above methods of obtaining an approved moisture content for materials to be compacted. Included under moisture conditioning requirements are the furnishing of all required water and the furnishing of all other necessary labor, materials, and equipment required to provide the approved percent of moisture content. Moisture conditioning, where required, shall be performed for all materials specified to be compacted regardless of whether or not such requirement is specifically stated.

d. **Payment**

No adjustment in the price of any bid item will be made for any or all operations of the Contractor pertaining to moisture conditioning or from delays occasioned thereby. The cost of all such work shall be included in the price bid included in the Proposal Bidding Schedule for the item of work requiring compaction of earthwork materials.

E-6 Backfill

a. **General**

Methods allowed for placement of compacted backfill shall be one or both of the methods listed following:

1. Compaction of native materials using sheeps-foot rollers of sufficient weight for proper compaction. Note that during levee construction

(including subgrade preparation), **compaction using a sheeps-foot roller is absolutely required.**

2. Compaction of native materials using other compaction equipment satisfactory to the Engineer.

E-7 Basin Bottom Ripping

a. General

Subsequent to laser leveling and finishing, Basin bottoms shall be ripped to minimum depth of 72" at 6' on center, followed by a second pass also to a minimum depth of 72" at 6' on center at 45 or 90 degrees from the first, in order to restore the soil to a permeable state that will percolate water and recharge the aquifer.

b. Payment

The Final Pay Quantity Unit Price per Acre paid for Basin Bottom Ripping shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all work in basin bottom ripping and no additional allowance shall be made therefore.

E-8 Embankment Construction

a. General

Compacted embankments shall be constructed of suitable, approved material from within the overall project area. Embankments shall be built in approximately 6 inch compacted horizontal layers carried across the entire width of the embankment to the required slopes. Embankments shall not be widened with loose material dumped from the top. At all times, there shall be an acceptable and uniform gradation of embankment materials so that a stable structure shall result. Cobbles and gravel shall be well distributed through the other materials and not nested in any position within or under the embankment.

b. Preparation of Surfaces Beneath Embankments (Levees)

Where the existing ground surfaces beneath constructed embankments contain unsuitable materials, as determined by the Engineer, the Contractor shall strip these areas of such unsuitable materials to a depth as directed by the Engineer. Removed material shall be disposed of as provided in Section E-9. All depressions or holes in the foundations of compacted embankments, whether caused by removal of debris, unacceptable materials or other conditions, shall be backfilled with approved material and compacted to a level surface before the construction of overlying embankment layers.

Where required as depicted on the plans, a 30-foot-wide (minimum) area of the levee subgrade shall be uniformly over-excavated to a depth of not less than twelve (12) inches, followed by further uniform ripping and scarifying to a depth of not less than twelve (12) inches below the one foot of over-excavation, or as required to eliminate rodent burrows, moisture conditioned to a range between optimum and 4% above optimum, and compacted to a minimum of **95 percent** of the Laboratory Standard Maximum Density as obtained by A.S.T.M. test method D698, before subsequent layers of the embankment are placed thereon. The remaining area under the levees, from daylight line to daylight line, shall be scarified and moisture conditioned to a minimum depth of 3" prior to constructing the levees on top.

c. **Compacted Embankments**

The Contractor shall construct compacted embankments to a minimum of **95 percent** of the maximum laboratory density as determined by **ASTM D698**. When the material has been moisture conditioned as specified under Paragraph E-5, it shall be compacted by equipment that is suitable for the type of material being placed. **For this project, compaction with sheeps-foot rollers is required.** The Contractor shall demonstrate to the Engineer that the selected compaction equipment is suitable for the proposed use and achieves the required densities. No hydro-compaction of embankments will be allowed. Approved embankment materials shall be deposited in horizontal layers with a maximum compacted thickness of 6 inches. Embankment areas immediately adjacent to structures shall be compacted by hand equipment in maximum 6-inch loose lifts. The layers shall be brought up in the full required width from the bottom of the embankment to avoid widening lower edges after the center has been brought up to grade.

d. **Compaction Testing**

Compaction Testing shall be conducted regularly over the course of construction. The cost of Compaction Testing shall be borne by Kern Delta Water District. Compaction tests are required on the compacted embankments at vertical intervals of no greater than one (1) foot, and at horizontal/longitudinal intervals no greater than 400 feet, unless otherwise directed by the Engineer. Kern Delta Water District or their representative shall be present to direct and observe all compaction tests. It is the Contractor's responsibility to coordinate with Kern Delta Water District or their representative for the scheduling of compaction testing. The Engineer shall be immediately notified of any compaction test results that indicate failure due to an unacceptable in-place dry density and/or unacceptable in-place moisture content. At the discretion of the Engineer, the Contractor may be required to remove, recondition, replace, recompact, and re-test any portion of a levee due to a failed compaction test at no additional cost to Kern Delta Water District. In other words, the Contractor is responsible for any

and all costs associated with re-working compacted embankments due to a failed compaction test (excluding the cost of the testing itself), and the Contractor shall not be reimbursed for these costs.

Between compaction tests, the Contractor shall not place more than one foot of un-tested compacted material on a levee without first conducting compaction tests to verify that the material has been acceptably conditioned and compacted, unless explicit permission to place additional material is given by the Engineer. Should this permission be given, the Contractor will be required to dig potholes into the compacted embankments for the purpose of compaction testing at the intervals specified above. If additional material is compacted into the embankments without the explicit permission of the Engineer, such that more than one foot of un-tested material has been placed and compacted since the latest compaction test, the Contractor may be required to remove, recondition, replace, recompact, and test some or all of the un-tested material at no additional cost to Kern Delta Water District.

e. **Embankment Materials**

Embankment material will be generated from required excavations and pond bottom grading and leveling. Contractor is responsible for selectively separating, stockpiling, and transporting suitable embankment backfill material from required excavations for reuse in embankment construction. Contractor is also responsible for balancing the fill generated during pond bottom grading and leveling and the fill required for levee construction.

f. **Classification of Cut and Fill**

”In-Place” Fill materials, per cubic yard, will be classified for payment. No separate payment will be made for any excavation (“cut”) work. In-Place Fill is defined as the actual compacted, “in-place” levee embankment volume without any shrinkage factors included. Contractor shall be responsible to provide his own shrinkage factors necessary for generation of import spoil needed to construct “in-place” levee embankment. Fill and backfill shall consist of suitable material generated from within the project site and shall be free of trash, organic matter or other debris and must be approved by the Engineer. No object having a largest dimension greater than five (5) inches shall be included in any compacted levee embankment over-excavation or backfill.

g. **Site Grading**

As shown on the drawings and as directed, the Contractor shall perform all rough and final grading work at the various crossings, structures, canal banks, roads, etc. as shown on the drawings.

Final Grading of Embankments – Fill dirt for the rough grading of the project must be placed such that all finish grading for elevation and alignment will be accomplished by shaving material from the levee tops and side-slopes.

Grading tolerances shall be as follows:

Rough Grading

Recharge areas: -1.0' to +.0' horizontally and -0.2' to +0.2' vertically.

Top of banks and outside slopes: -0.0' to +1.0' horizontally and -0.2' to +0.2' vertically.

Finish Grading

Recharge areas: – -1.0' to 0.0' horizontally and -0.1' to +0.0' vertically. Pond Bottoms shall be laser-leveled to 0% grade (flat).

Top of banks and outside slopes: -0.0' to +1.0' horizontally and -0.0' to +0.3' vertically (with no more than 0.1' vertical variance in any given 100' of lineal length).

The Contractor may balance dirt outside of these tolerances with the Engineer's consent, provided a **minimum of 3 feet of clearance is maintained between basin bottoms and top of bank.**

h. Payment

The Final Pay Quantity price per Cubic Yard for Levee Embankment Construction shall include full compensation for all pick up, hauling, placing, moisture conditioning, watering, manufacturing, blending, and compacting the levee embankment complete in-place, deposition of excess spoil material generated in the process in the areas indicated on the plans and as directed by the Engineer and includes full compensation for all materials, tools, equipment and labor and no additional allowance shall be made therefore.

The Final Pay Lump Sum Price paid for Finish Grading of Project shall include full compensation for all labor, materials, transportation, supplies, tools, equipment, and incidentals and for doing all other work and operations which must be performed or costs incurred for completing finish grading of the entire project site, including all roads, canal banks and side slopes, around structures and ramps etc. and no additional allowance shall be made therefore.

E-9 Disposal of Materials**a. General**

Unless otherwise specified, all suitable materials removed in contract excavation, or as much thereof as required, shall be used in the construction of embankments or for backfill. All additional excess or unsuitable excavated material shall be wasted within the designated stockpile area as described in Paragraph E-10 or as designated by the Engineer. Upon the approval of the Engineer, non-hazardous organic materials from clear and grub operation may be incorporated into the pond bottoms prior to ripping and floating provided that the specified finished grade requirements are met.

b. Payment

No separate payment will be made for disposal of suitable or unsuitable materials as described above or for any required stockpiling or re-handling of excavated materials. The cost of all such work shall be included in the lump sum price bid in the Proposal Bidding Schedule for the item of work requiring any stockpiling, re-handling, or for disposal of materials.

E-10 Construction at Roadways, Crossings and Private Driveways**a. General**

Unless otherwise specified or directed, all roads subject to interference by Contract work shall be kept open or suitable detours shall be provided by the Contractor. The cost of providing and maintaining detours, including dust abatement by sprinkling or other effective methods, shall be borne by the Contractor. Any excavation or embankment construction required for the construction of temporary crossings or for the construction of approaches to the temporary crossings shall be performed by the Contractor. After the crossings have been completed and are open to traffic, the material forming the temporary roadways shall be excavated by the Contractor and, when the affected area is farmland it shall be re-graded to meet existing ground surface and meet or exceed prior conditions. The portion of the roadway disturbed by the construction of the permanent roadway crossing shall be as small as practicable. After the permanent roadway crossing has been completed, any excavation, backfill, embankment and resurfacing construction required for approaches to the permanent crossing shall be performed by the Contractor. Roadway approach embankments shall be constructed from approved earth material from Contract excavation compacted as specified.

b. Payment

No separate payment will be made for labor, equipment and materials for temporary or permanent construction work at roadway crossings as specified hereinafter. All costs therefore shall be included in the bid prices stated in the Proposal Bidding Schedule for related items of work.

****END OF SECTION****

SECTION F**CONCRETE, SLURRY & RIP-RAP****F-1 General Scope**

The Contractor shall provide all labor, materials and equipment and perform all operations required to furnish and install Concrete, Slurry and Rip-Rap as shown on the drawings and specified herein, and as required.

- Provide all compaction, trenching and excavation in preparation of installation of Concrete, Slurry and Rip-Rap.
- Furnish all required forms, concrete and mortar materials including cement, sand, aggregates and all specified and approved admixtures. Perform all mixing, forming, placing and finishing operations required to furnish concrete and slurry of the mix designs as specified herein. Perform all operations required for repairing, curing, protecting and maintaining concrete work until final acceptance.
- Furnish and install all Rip-Rap per these specifications.
- All other miscellaneous work, whether or not specifically mentioned herein, that is required to complete the work specified under this section of the specifications.

F-2 Contractor Submittals

The Contractor shall furnish the following submittals in accordance with the General Conditions.

a. Mix Design

Prior to beginning work the Contractor shall submit preliminary concrete mix designs which shall show the proportions and gradations of materials proposed for each class and type of concrete. The mix designs shall be checked by an independent testing laboratory acceptable to the Engineer. Costs related to the checking shall be the Contractor's responsibility. When a water reducing admixture is used the Contractor shall furnish mix designs both with and without the admixture.

b. Delivery Tickets

When ready-mix concrete is used the Contractor shall furnish certified delivery tickets at the time of delivery of each load of concrete. Each ticket shall state the design 28 day compressive strength of the mix, the certified equipment used for measuring, the total quantities by weight of cement, sand, each class of aggregate,

admixtures, the amounts of water in the aggregate, the amount of water added at the batching plant, and the amount of water allowed to be added at the site for the specified mix design. The tickets shall also state the mix number, total yield in cubic yards, and the time of day to the nearest minute at which the batch was dispatched, when it left the plant, when it arrived at the site, when unloading began, and when unloading was finished.

c. Shop Plans

1. The Contractor shall submit shop Plans of reinforcing steel including bending diagrams and placement lists prior to fabrication.
2. The Contractor's reinforcement detail Plans shall be prepared following the recommendations of ACI 315, Manual of Engineering and Placing Plans for Reinforced Concrete Structures, unless otherwise shown on the reinforcement design Plans and the requirements of this specification. The shop bending diagrams shall show the actual lengths of bars to the nearest inch. Bar placement diagrams shall be provided and shall clearly indicate the dimensions of each bar splice.

The Contractor's reinforcement detail Plans shall be clean, legible, and accurate and checked by the Contractor before submittal. If any reinforcement detail drawing or group of Plans requiring review is not of a quality acceptable to the Engineer, the entire set or group of Plans will be returned to the Contractor, to be corrected and resubmitted. Acceptable reinforcement detail Plans will be reviewed by the Engineer for adequacy of general design and controlling dimensions. Errors, omissions, or corrections will be marked on the prints or otherwise relayed to the Contractor. The Contractor shall make all necessary corrections. Such review shall not relieve the Contractor of his responsibility for the correctness of details or for conformance with the requirements of these Specifications.

3. The Contractor shall submit concrete placement Plans showing the location and type of joints and concrete placement sequence for each structure. The Contractor's Plans shall show necessary details for checking the bars during placement.
4. Where mechanical couplers are required or permitted to be used to splice reinforcing steel the Contractor shall submit manufacturer's literature containing instructions and recommendations for the installation of each type of coupler used, certified test reports verifying the load capacity of each size and type of coupler used, and shop Plans showing the location of each coupler and details of how they are to be installed in the formwork.

5. If reinforcing steel is to be spliced by welding at any location the Contractor shall submit mill test reports containing the information required for the determination of the carbon equivalent per AWS D1.4 of the Structural Welding Code – Reinforcing Steel. In addition the Contractor shall submit a welding procedure for each type of weld and size of bar which is to be welded, certification of procedure qualifications, and welder qualifications for each welding procedure for each welder performing the work.

d. **Manufacturer's Information**

The Contractor shall submit manufacturer's information demonstrating compliance with these specifications for the following items:

1. Form ties and related accessories
2. Mill tests for cement
3. Admixture certification indicating that all ASTM standards have been met including chloride ion content.
4. Manufacturer's product description, instructions, recommended dosage, chloride content, precautions, and MSDS for all admixtures.
5. Aggregate gradation test results and certification
6. Certification that aggregate meets all requirements of these specifications
7. Materials and methods for curing including manufacturer's product description, instructions, application recommendations, cautions, and MSDS.
8. Certification that pozzolan meets all requirements of these specifications.
9. Manufacturer's product description and instructions and certified test results for all types of grout to be used.
10. Manufacturer's certification that non-shrink grout does not include aluminum, zinc, or magnesium powders as a method of expansion.

F-3 Quality Assurance**a. Testing of Materials**

1. Tests for compressive strength of concrete and tests on component materials will be performed as required herein.
2. Testing for aggregate shall include reactivity, sand equivalence, reactivity, organic impurities, abrasion resistance, and soundness in accordance with ASTM C33, Concrete Aggregates.
3. The cost of laboratory tests for quality on cement and aggregates shall be performed by the supplier or the Contractor. The tests on the concrete will be performed by the Engineer. The Contractor shall pay the cost of any additional tests and investigations on Work that does not meet the Specifications. The laboratory will meet or exceed the requirements of ASTM C 1077, Standard Practice for Laboratories Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for laboratory Evaluation.
4. The Contractor shall provide Concrete and other materials as required for testing at no cost to the Owner. The Contractor shall assist the Engineer in obtaining samples and with clean-up and disposal of excess material.

b. Field Compression Tests

1. Cylinders for concrete compression tests shall be taken during construction from the first placement of each class of concrete and at intervals thereafter as determined by the Engineer. Each set of test cylinders shall consist of a minimum of 5 cylinders.
2. Test cylinders for concrete shall be made in accordance with Section 9.2 of ASTM C 31, Standard Practice for Making and Curing Concrete Test Specimens in the Field. Each cylinder shall be 6-inches in diameter and 12-inches high.
3. Compression tests will be performed in accordance with ASTM C 39, Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens. One cylinder will be tested at 7 days, one at 14 days and 2 at 28 days. The remaining cylinder(s) will be held to verify test results, if needed.

c. **Evaluation and Acceptance of Concrete**

1. Evaluation and acceptance of the compressive strength of concrete shall be according to the requirements of ACI 318, Building Code Requirements for Reinforced Concrete, Chapter 5, Concrete Quality, and as indicated herein.
2. If any concrete fails to meet these requirements, immediate action shall be taken to increase the compressive strength of subsequent batches of the type of concrete affected.
3. Concrete that fails to meet the ACI requirements and the requirements of these Specifications is subject to removal and replacement as part of the Work.

d. **Construction Tolerances**

The Contractor shall set and maintain forms and perform finishing operations such that the concrete is within the tolerances herein. Surface defects and irregularities are defined as finishes and are to be distinguished from tolerances. Tolerances are the permissible variations from lines, grades, or dimensions indicated. Where tolerances are not indicated, permissible deviations shall be in accordance with ACI 117, Standard Tolerance for Concrete Construction and Materials.

F-4 Materials

a. **Forms and Accessories [Not Used for Base Plans]**

1. Except as approved in writing by the Engineer all lumber used as forms, shoring, or bracing shall be new material. Form materials shall be metal, wood, plywood, or other material that will not adversely affect the concrete and will facilitate placement of the concrete to the shape, form, line, and grade required.
2. Exterior corners of concrete members shall have 3/4-inch chamfers or be tooled to a 1/2-inch radius unless otherwise indicated. Re-entrant corners shall not have fillets unless otherwise indicated.
3. Forms and falsework which support roof or floor slabs shall be designed for the total dead load plus a minimum live load of 50 psf.

4. Form ties shall be provided with a plastic cone or other suitable means for forming a conical hole to insure that the form tie may be broken off inside the face of the concrete. The maximum diameter of removable cones for tie rods or other removable form tie fasteners having a circular cross-section shall be 1 1/2-inches. Fasteners shall be designed to leave holes of a regular shape for reaming. Form ties shall be Wrench Head Snap Ties by MeadowBurke, Snap Ties by Dayton/Richmond, or approved equal.
5. Removable taper ties may be used where approved by the Engineer. Taper ties shall be Taper Ties by MeadowBurke, Taper Ties by Dayton/Richmond, or approved equal.

b. Concrete

1. Cement - The Contractor shall furnish cementitious materials in accordance with Type V Portland cement or Type II Low Alkali Portland cement meeting physical requirements for Type V.

Portland cement shall meet the requirements of ASTM designation: C 150, Portland Cement for Type V or Type II Low Alkali meeting physical requirements for Type V. The cement shall be free from lumps and contamination by water and other foreign matter when used in concrete.

If cement is shipped from a commercial bin, a manufacturer's certification that the material was tested during production or transfer in accordance with the reference specification, together with a report of the test results shall be furnished at the time of shipment. Certifications and mill-test reports shall be submitted for each lot of cement from which shipments are drawn and shall be delivered to the location designated by the Engineer. The Contractor shall assure that cement shipments accepted and used are from only those bins for which proper certification and mill-test reports have been received. Manufacturer's certification and mill-test reports shall in no way relieve the Contractor of the responsibility for furnishing materials meeting specifications requirements. The Contractor shall be responsible for the accuracy and completeness of certifications and mill-test reports furnished.

The Contractor shall not change the cementitious materials option selected or the source of cement and pozzolan under this option, without the written permission of the Engineer.

2. Pozzolan — **The use of Pozzolan (fly ash) is not permitted.**

3. Water—Water shall be potable, clean, and free from objectionable quantities of silt, organic matter, salts, and other impurities. The Engineer will determine whether or not such quantities of impurities are objectionable. The water shall contain less than 500 ppm of chlorides.
4. Sand and Coarse Aggregate—Sand and coarse aggregate shall consist of clean, hard, dense, durable, uncoated rock fragments that are free from injurious amounts of dirt, organic matter, and other deleterious substances. Sand and coarse aggregate shall meet all requirements of ASTM designation C 33. The term “sand” is used to designate aggregate in which the maximum size particle will pass through a 3/16-inch (No. 4) test sieve. Coarse aggregate shall conform to ASTM designation C 33 gradings for either size No. 467 (1 ½ inch to No. 4 United States standard sieve), size No. 57 (1 inch to No. 4), or size No. 67 (3/4 inch to No. 4). The percentage of sand by weight to total aggregates shall not exceed forty percent (40%).

The coarse aggregate to be used in concrete shall be the largest of the specified sizes that is practicable, consistent with required strength, spacing of reinforcement and embedded items, and placement thickness. Maximum size of aggregate for canal lining shall not be greater than one-half the lining thickness; provided that, for canal lining 2 ½ inches thick or less the maximum size of aggregate shall be ¾ inch. The size of coarse aggregate to be used for other placements will be determined by the Contractor in accordance with these specifications, subject to review by the Engineer.

5. Admixtures—The Contractor shall furnish air-entraining and chemical admixtures for use in concrete. Admixtures shall be of uniform consistency, quality, and strength of solution. Admixtures shall be batched separately in liquid form in dispensers capable of measuring at one time the full quantity of each admixture required for each batch. Final approval of an admixture shall not be given until it has performed satisfactorily at the job site.
 - a) Air-Entraining Admixture—An air-entraining admixture shall be used in all concrete. The air-entraining admixture shall conform to ANSI/ASTM C260, provided that the air-entraining admixture used with type F or G chemical admixture shall be a neutralized vinsol resin formulation.

The amount of air-entraining admixture used shall be the amount necessary to result in a total air content in the concrete at placement of 3 to 5 percent. Concrete floors to receive a dry-shake

floor hardener shall have an air content of not more than 3 percent. Air content shall be tested at the point of placement.

- b) Chemical Admixtures – Admixtures shall contain no free chloride ions, shall be non-toxic after 30 Days, and shall be compatible with and made by the same manufacturer as the air entraining admixture. Chemical admixtures that will introduce more than 0.1% chloride, by weight of cementitious materials, shall not be used in concrete in which aluminum, galvanized metalwork, or prestressing steel is to be embedded. Admixtures shall conform to the requirements of ASTM C 494, Chemical admixtures for Concrete.

Accelerator—Accelerating admixtures shall not be used in the concrete.

- 1) Water-Reducing and/or Set-Controlling Admixtures—The Contractor shall use a water-reducing and/or a set-controlling admixture, referred to herein as WRA, in all concrete. Only one water-reducing admixture may be used. The admixture shall conform to ASTM C494 for type A, D, F, or G chemical admixture.

If use of the WRA chosen by the Contractor is accompanied by an abnormal setting of the fresh concrete or if the WRA does not perform in accordance with these specifications, the Contractor shall furnish and use other brands of WRA until an acceptable admixture is found. Normally, the amount of WRA used shall be that amount necessary to effect the requirements of ASTM C494. However, the Engineer reserves the right to adjust the quantities or eliminate its use.

- 2) Superplasticizer or high range water reducing admixture conforming to ASTM C494 type F or G may be used as needed to ease concrete placement.
- 6. Curing Compound—Curing compounds shall be white pigmented and resin based liquid membrane-forming curing compounds conforming to the requirements of ASTM C 309, Liquid Membrane-Forming Compounds for Curing Concrete. Curing compounds shall meet local VOC requirements.

7. **Reinforcing Steel**—Reinforcing steel shall be deformed bars conforming to the requirements of **ASTM A615, Grade 60**. Weldable Reinforcing steel shall be **ASTM A706, Grade 60**.

Welded wire fabric shall be electrically welded-wire fabric and shall conform to the requirements of ASTM A 185 for smooth steel wire or ASTM A 497 for deformed steel wire, except that for wire with a specified yield strength exceeding 60,000 pounds per square inch, the yield strength shall be the stress corresponding to a strain of 0.35 percent. Welded wire fabric with longitudinal wire of W4 size wire and smaller shall be furnished in flat sheets or in rolls with a core diameter of not less than 10-inches. Welded wire fabric with longitudinal wires larger than W4 size shall be furnished in flat sheets only.

Accessories shall include necessary chairs, slab bolsters, concrete blocks, tie wires, supports, spacers, and other devices to position reinforcement during concrete placement. Bar supports shall meet the requirements of the CRSI Manual of Standard Practice. Concrete dobies used to support and position reinforcing steel shall have the same or higher compressive strength as the required strength of the concrete in which they are located. Where concrete blocks are used on concrete surfaces which will be exposed to view, the color and texture of the concrete blocks shall match that of the finished concrete surface. Wire ties shall be embedded in the concrete doby bar supports.

8. **Mechanical Couplers** – Mechanical couplers shall be provided where indicated and where approved by the Engineer. Couplers shall develop a tensile strength that exceeds 125 percent of the yield strength of the reinforcing bars spliced.
9. **Lap Splices** – Lap splices shall be a minimum of 40 diameters and double wrapped with a distance between wraps of no greater than 24”.
10. **Welded Splices** – Welded splices shall be provided where indicated and approved by the Engineer. Welded splices of reinforcing steel shall develop a tensile strength of 125 percent of the yield strength of the bars welded. Materials required to perform the welded splices to the requirements of AWS D1.4 shall be provided.
11. **Joint Materials** – Materials for joints in concrete shall conform to the following requirements:
- a) **Sponge Rubber Filler**—Sponge rubber for joints shall conform to Federal Specification HH F 341F, Type II, Class A.

- b) Preformed elastomeric joint sealant shall conform to ASTM D2628.

12. Hydraulic Grout

- a) Non-settling grouting mortar shall be a non-shrink, non-metallic, cementitious grout, Hub Plug, SikaGrout 212 by Sika Corporation, Masterflow 928 Grout by Master Builders, Five Star Grout by Five Star Products, or approved equal.
- b) Epoxy grout for grouting reinforcing bars shall be specifically designed for such application, for the moisture condition, application temperature, and orientation of the hole to be filled.

F-5 Concrete Composition

Concrete shall be composed of cementitious materials, sand, water, and admixtures as specified, all well-mixed and brought to proper consistency. With prior approval of the Engineer, the exact proportions in which concrete materials shall be mixed may be varied by the Contractor to secure maximum economy and workability, subject to the overall requirements of concrete impermeability, density and durability, and the specific limitations placed herein on materials, content, strength and slump. However, the suitability of the mix shall be determined by the Engineer, and any adjustments in mix ordered by the Engineer to insure concrete of proper quality shall be made at no extra cost to the Agency. The Contractor, through approved testing laboratory, shall design the mix for each strength of concrete required.

The mix design shall be based on representative samples of aggregates, cement, water and admixtures to be used on the project. The mix design submittal shall include in addition to proportions of the ingredients, the results of testing of trial mix including water-cement ratio, air entrainment, slump and strength. A separate proposed mix design for each strength of concrete shall be submitted to the Engineer for review at least fifteen (15) days prior to placement of concrete in the work. If the Contractor elects to change aggregate source during the process of work, new mix designs meeting these requirements shall be submitted to the Engineer at least fifteen (15) days before such material is to be placed in the work.

The net water-cement ratio or water-cement ratio of the concrete, exclusive of water absorbed by the aggregates, shall not exceed (0.48) by weight for structural concrete. **Structural concrete shall contain a minimum of 611 (6.5 sack) pounds** of cement per cubic yard concrete. **Reinforced concrete shall contain a minimum of 564 (6 sack) pounds** of cement per cubic yard concrete. **Non-reinforced concrete shall contain a minimum of 376 (4 sack) pounds** of cement per cubic yard concrete.

Except as hereinafter specified, the slump of the concrete when placed shall not exceed 5 inches plus 1 inch. If the specified slump is exceeded at placement, the concrete is unacceptable. Uniformity in concrete consistency from batch to batch will be required. To maintain concrete at the proper consistency, the amount of water and aggregates batched for concrete shall be adjusted to compensate for variations in the moisture content or grading of the aggregates as they enter the mixer. Addition of water in excess of the design water content to compensate for stiffening of the concrete after mixing, known as re-tempering, will not be permitted.

The compressive strength of the concrete shall be sufficient to ensure that each concrete mix meets the following requirements in accordance with ASTM C 39.

The test cylinders shall have a compressive strength at twenty-eight (28) days in excess of **5,000, 4,000, and 3,000 pounds per square inch for structural, reinforced, and non-reinforced concrete, respectively.**

Concrete slump shall not exceed 5 in conformance with ASTM C143.

Air-entraining admixture shall be used in such amount as will affect the entrainment of from 3 to 5 percent of air, by volume, of the concrete at the placement.

F-6 Mixing of Concrete [Not Used for Base Plans]

Concrete may be mixed at the site of the work or by transit mix methods in conformance with ASTM C 94. The mixing time shall be sufficient to thoroughly mix the concrete but excessive over-mixing requiring the addition of water to preserve the required consistency will not be permitted. Concrete shall not be mixed or placed while the atmospheric temperature is above 100°F, unless adequate means are employed to cool the aggregate and water and satisfactory provisions have been made for protecting the work. When concrete is to be placed during periods when the atmospheric temperature is above 100°F, the Contractor shall redesign the concrete mix specifically for hot weather conditions, and shall demonstrate the adequacy of the design by testing.

Mixers shall be capable of mixing and discharging concrete of the specified slump. Concrete shall be discharged within 1 ½ hours after the introduction of the mix water and cementitious materials into the mixer.

F-7 Forms [Not Used for Base Plans]

Forms shall be of such size and shape to yield formed concrete work conforming to the shape, line, grade and dimensions as shown on the Plans. Forms shall have sufficient strength to withstand the pressure resulting from placement and vibration of the concrete and shall be maintained rigidly in position. Forms shall be sufficiently tight to prevent loss of mortar from the concrete. Chamfer strips shall be placed in the corners and at the

top of the wall line of the forms so as to produce beveled edges on permanently exposed concrete surfaces. Interior angles on such surfaces and edges of formed joints will not require beveling, except where shown on the Plans. The form sheathing or lining shall be so placed that the joint marks on the concrete surfaces will be in general alignment, both horizontally and vertically. Embedded wire ties for holding forms will not be permitted. Bolts and rods for form ties shall be so arranged that when the forms are removed, no metal shall be within one inch of any surface. Forms shall be removed as soon as practical after the concrete is placed, but not until the concrete has attained the necessary strength to support all live and dead loads occurring during the construction period. The specified repair and curing shall be commenced immediately thereafter. Forms shall be removed in such a manner as to prevent injury to the concrete. Wood forms shall be of sound lumber, free from loose knots or other defects, and of such quality that when treated or coated, there shall be no chemical deterioration or discoloration of the formed concrete surfaces. Plywood of adequate stiffness shall be used on all surfaces exposed to air or water. Lumber reused in forms shall be cleaned prior to reuse. Before concrete is placed, the forms shall be coated with an approved, non-staining commercial form oil.

F-8 Handling and Placing of Concrete [Not Used for Base Plans]

a. General

No concrete shall be placed until all form work, installation of parts to be embedded, and preparation of surfaces involved in placing have been approved by the Engineer. Placing of concrete shall conform to the applicable requirements of Chapter 8 of ACI 301 and the requirements of this specification.

Reinforcement, anchor bolts, sleeves, inserts, and similar items shall be set and secured in the forms at the locations indicated on the shop Plans and shall be acceptable to the Engineer before any concrete is placed. Accuracy of placement is the sole responsibility of the Contractor.

All surfaces of foundations upon or against which concrete is to be placed shall be free from standing water, mud, and debris. The surfaces of absorptive foundations, against which concrete is to be placed, shall be moistened thoroughly so that moisture will not be drawn from the freshly placed concrete.

Construction joints shall be cleaned of all laitance, loose or defective surface concrete and foreign materials by sandblasting and shall be thoroughly moist before concrete is placed against them.

Concrete shall not be deposited around any metal reinforcement until the Engineer has approved the reinforcement placed in the forms.

The concrete in each integral part of the structure shall be placed continuously. The Contractor will not be allowed to commence work on any monolithic part of a structure unless the inspected and approved materials on hand are sufficient to complete the part without interruption in placing of the concrete.

If for any reason the placing of concrete is interrupted long enough for the concrete to take a set, the working face shall be given a shape by the use of forms or other means, that will insure proper union with subsequent work. Such construction joints shall only be made where acceptable to the Engineer.

The concrete shall be placed as nearly as possible in its final position by means that avoid segregation of the materials and displacement of reinforcement. In no case shall the free fall of concrete exceed 4-feet in walls and 8-feet in columns below the ends of ducts, chutes, or buggies. No re-tempering of concrete will be permitted.

b. Joints in Concrete

Concrete surfaces upon or against which concrete is to be placed, where placement of the concrete has been stopped or interrupted so that as determined by the Engineer, the new concrete cannot be incorporated integrally with that previously placed, are defined as construction joints, the surfaces of horizontal joints shall be given a compacted, roughened surface. Except where the Plans call for the joint surfaces are to be coated, the joint surfaces shall be cleaned of laitance, loose or defective concrete and foreign material, and be roughened to a minimum 1/4-inch amplitude. The cleaning and roughening shall be accomplished by hydro-blasting. Pools of water shall be removed from the surface of the construction joints before the new concrete is placed.

c. Required Temperatures for Concrete

The temperature of concrete as mixed and placed shall not be less than 55°F, nor greater than 90°F. If, during day or night, the ambient temperature falls below, or is predicted to fall below 40°F, concrete shall be protected from freezing during placement and curing by means of heating of materials and other approved methods, as directed by the Engineer. The concrete mix for cold weather placement shall be maintained at a minimum temperature of 55°F during placement and this minimum temperature shall be maintained for the first seventy-two (72) hours of curing, minimum. At all times, the maximum temperature of concrete as placed shall be less than 90°F. When the temperature of concrete as placed may be 90°F or higher, as may be reasonably foretold from current temperatures of materials and the likelihood of rises in weather temperatures, the Contractor shall employ effective means, such as precooling aggregates and mixing water, use of ice as a part of the mixing water, shading

aggregates, or placing at night, as necessary, to maintain the temperature of concrete as placed below 90°F.

d. **Vibration**

All concrete placed in forms shall be placed in layers not over twenty-four (24) inches deep, and each layer shall be vibrated into place to its maximum practicable density, free from pockets of coarse aggregate and in such a manner that surfaces shall be smooth and free from voids. Approved internal vibrators shall be used for all sections which are sufficiently large and shall be supplemented by platform or screed type vibrators in the event that satisfactory top surfaces cannot be obtained solely with the internal type; or internal vibrators shall be supplemented with vibrators operated against the outside of forms to improve vertical surfaces, as required. Form vibrators shall be used when sections are too small for the internal type. Vibrators shall be adequately powered and capable of transmitting to the concrete not less than 7,000 impulses per minute when operating under load. The vibration shall be sufficiently intense to visibly affect the concrete over a radius of at least 18 inches. A sufficient number of vibrators shall be used so that the required rate of placement vibration is achieved uniformly throughout the entire volume of each layer of concrete and maximum consolidation of concrete is secured. With form or internal vibrators, vibration shall be such that concrete becomes uniformly plastic and there shall be at least twenty (20) seconds of vibration per square foot of surface of each layer of concrete, computed on the basis of the visibly affected radius and taking overlapping into consideration; however, over-vibration will not be allowed. At all times, the Contractor shall have available at least one (1) spare, workable vibrator of each type used. Either over-vibrated or under-vibrated concrete is subject to test and rejection.

e. **Removal of Forms**

Careful procedures for the removal of forms shall be strictly followed. This Work shall be done with care to avoid damage to the concrete. No heavy loading on green concrete shall be permitted. Members which must support their own weight shall not have their forms removed until they have attained at least **3,000 psi of compressive strength** unless otherwise approved by the Engineer. Forms for vertical walls and columns shall remain in place at least 48 hours after the concrete has been placed. Forms for parts of the Work not specifically mentioned herein shall remain in place for periods of time as recommended in ACI 347.

f. **Backfill Against Structure**

Mechanical compacted backfill against the structure shall not start until concrete has attained a **minimum of 80 percent (4,000 psi) of the 28-day strength (5,000**

psi) of the concrete. Non-mechanical backfill in the form of a 1.5-sack (minimum) slurry sand may be placed against the structure once concrete has reached at least 3,000 psi of compressive strength and the forms have been removed.

F-9 Tolerances for Concrete Construction

Deviations from established lines, grades and dimensions will be permitted to the extent set forth in the following list of tolerances:

Elevation of pipe inverts in structures	1 inch
Elevation of top of structure	1/2 inch
Elevation of bottom of structure	1 inch
Variation of structures from specified grades, alignment or plumb in vertical members	1/2 inch in 10 feet and 1/2 inch total if over 10 feet
Departure from specified thickness of operating deck slabs	-1/8 inch, + 1/4 inch
Departure from cross sectional dimensions of columns, walls, beams, slabs	-1/4 inch, + 1/2 inch
Departure from cross sectional dimensions of footings	-0 inch

F-10 Reinforcing Steel [Not Used for Base Plans]

a. General

Reinforcing bars shall be cut, bent, and placed in the concrete where shown on the Plans or where directed. The Contractor shall furnish all reinforcing bars required for completion of the work. Unless otherwise indicated, dowels shall match the size and spacing of the spliced bars.

Reinforcing bars shall not be straightened or re-bent in a manner that will injure the material. Bars shall be bent or straight as indicated. The Contractor shall not use bends different from the bends indicated. Bars shall be bent cold unless

otherwise permitted by the Engineer. No bars partially embedded in concrete shall be field bent except as indicated or specifically allowed by the Engineer.

b. Placing Reinforcing Bars

The placement of reinforcing shall conform to the requirements of ACI 318/318R 87, unless otherwise shown on the design Plans.

Reinforcing bars will be required to be placed in lengths up to 40 feet.

Splices shall be located where shown on the Plans, provided that the location of splices may be altered subject to the Engineer's written approval.

Subject to the Engineer's written approval, the Contractor may, for the Contractor's convenience, splice bars at additional locations other than those shown on the Plans. In order to meet design and space limitations on splicing, some bent bars may exceed usual shipping clearances. Cutting and bending of such bars from stock lengths may be required at the site.

Unless otherwise prescribed, placement dimensions shall be to the centerlines of the bars. Reinforcement will be inspected for compliance with the requirements as to size, shape, length, splicing, position, and amount after it has been placed.

Before reinforcement is embedded in concrete, the surfaces of the bars and the surfaces of any supports shall be cleaned of heavy flaky rust, loose mill scale, dirt, grease, or other foreign substances that, in the Engineer's opinion, are objectionable. Heavy flaky rust that can be removed by firm rubbing with burlap or equivalent treatment is considered objectionable. After being placed, reinforcement shall be maintained in a clean condition until the concrete is placed.

Reinforcement shall be accurately placed to meet the following tolerances:

1. The amount of concrete cover protecting reinforcement shall not deviate from that specified by more than 1/2 inch if the specified cover is more than 2 1/2 inches, nor by more than 1/4 inch if the cover specified is 2 1/2 inches or less.
2. The spacing of reinforcing bars shall not deviate from the required spacing by more than 1 inch. The minimum spacing requirements of ACI 318 shall be adhered to.

Reinforcement shall be secured in position so that it will not be displaced while the concrete is placed, and special care shall be exercised to prevent any disturbance of the reinforcement in concrete that has already been placed. Bars shall not be field-bent to the extent of permanent set, nor straightened, except as

approved by the Engineer or shown in the Plans. Bars bent without approval shall be replaced. Welding or tack welding of reinforcing bars will not be permitted except at locations shown on the Plans or where approved by the Engineer. Chairs, hangers, spacers, and other supports for reinforcement shall be of concrete, metal, or other approved material. Where portions of such supports will be exposed on concrete surfaces that will be exposed to view, the exposed portion of the supports shall be galvanized or of other corrosion-resistant material, except that concrete supports will not be permitted. Unless otherwise shown on the Plans, reinforcement in structures shall be so placed that there will be a clear distance of at least 1 inch between the reinforcement and any anchor bolts, form ties, or other embedded metalwork.

Welded wire fabric reinforcement placed over horizontal forms shall be supported on slab bolsters having gray, plastic-coated standard type legs. Slab bolsters shall not be spaced at more than 30-inch centers and shall extend continuously across the entire width of the reinforcing mat.

Welded wire fabric placed over the ground shall be supported on wired concrete dobies spaced at not more than 3-feet on center in any direction. The construction practice of placing welded wire fabric on the ground and hooking it into place in freshly placed concrete shall not be permitted.

Laps of welded wire fabric shall be in accordance with ACI 318. Adjoining sheets shall be securely tied together with No. 14 tie wire, one tie for each 2 running feet. Wires shall be staggered and tied in such a manner that they cannot slip.

F-11 Concrete Finishes

a. General

Surfaces shall be free from fins, bulges, ridges, offsets, honeycombing, or roughness of any kind, and shall present a finished, smooth, continuous hard surface. Allowable deviations from plumb or level and from the alignment, profiles, and dimensions indicated are defined as tolerances and are indicated above. These tolerances are to be distinguished from irregularities in finish as described below. Aluminum finishing tools shall not be used.

b. Formed Surfaces [Not Used for Base Plans]

Formed surfaces against which backfill will be placed require no treatment after form removal except filling of holes left by removal of fasteners and repair of defective concrete.

Formed surfaces of walls which will be exposed to view will be given a smooth finish.

c. **Unformed Surfaces**

Surfaces that are covered by backfill shall be formed by sufficient leveling and screeding to produce even, uniform surfaces. Unformed surfaces of structures not covered by backfill or concrete, shall receive a “float” finish. Floating shall be the minimum necessary to produce a surface free from screed marks and uniform in texture. Joints and edges shall be tooled where shown on the Plans or as directed. For linings, hand finishing shall only be used to smooth out surface irregularities.

F-12 Curing and Protection

The Contractor shall protect all concrete against injury until final acceptance. Unless otherwise directed, all concrete shall be cured by membrane curing, using a white-pigmented liquid membrane curing compound. One coat of curing compound shall be spray-applied to concrete surfaces to provide a continuous, uniform white membrane over all areas. Coverage shall not exceed one-hundred fifty (150) square feet per gallon and on rough surfaces the coverage area per gallon shall be decreased as necessary or directed to obtain the required continuous membrane. When used on an unformed surface, application shall begin immediately after finishing operations are complete. When used on a formed concrete surface, the surface shall first be continuously moistened with a light spray of water until the surface will not readily absorb any more water. As soon as surface moisture film has disappeared and there is an approach to surface dryness, the curing compound shall be applied. In all cases, the curing compound shall be applied as soon after finishing operations as is possible without marring the surface. The light fog spray of moisture shall be continued to be applied to all surfaces if application of curing compound is delayed. Concrete shall be protected with temporary coverings during any appreciable delay between placing and finishing. Equipment for applying curing compound and the method of application shall be in accordance with the provisions of Chapter VI of the Eighth Edition of the Bureau of Reclamation Concrete Manual.

F-13 Repair of Concrete

Concrete that is damaged from any cause and concrete that is honeycombed, fractured, or otherwise defective shall be removed and replaced with dry-pack mortar, or concrete as directed and in accordance with Bureau of Reclamation “Standard Specification for Repair of Concrete”. Repairs on concrete shall be made within twenty-four (24) hours after form removal. Each repair surface after being finished, shall be moistened and coated with curing compound.

F-14 Joints and Waterstops [Not Used for Base Plans]

Unless otherwise specified, all details as to location, spacing and construction of joints shall be as shown on the Plans. No construction joints shall be made unless shown on the Plans or directed by the Engineer.

Construction joints either shall be keyed joints or butt-type joints as shown on the Plans or directed. Keyed construction joints shall be in conformance with details shown on the Plans. Butt-type joints shall be made at right angles to the concrete surface affected. The butting surface of concrete placed to form the first face of the joint shall be sandblasted, moistened and slushed with a coat of hydraulic grout before new concrete is placed to complete the joint.

Where shown, expansion joints shall be formed by two concrete surfaces sandwiching a layer of sponge rubber filler cut to the size and shape of the joint surface. The filler shall be secured to the concrete in an approved manner, with copper nails at 12-inch centers, embedded in the first-placed concrete in such a manner that the nails protrude from the joint surface to be covered or by adhesive applied between the filler and the first-placed concrete. Elastomeric sealer shall also be furnished and placed in the joints where shown. The adhesive shall be a non-bituminous adhesive as recommended by the manufacturer of the filler material.

Waterstops shall be Sika PVC flat-ribbed waterstop Model 786 or Model 646 or approved equal. Hydrophilic waterstops shall be Sika Waterstop CJ-0725-3K-ADH or CJ-1020-2K-ADH (or approved equivalent), as required by size and approved by the Engineer. In no instance shall swellstop be substituted for waterstop when specifically shown in drawings, unless otherwise approved. Waterstops shall be used at all cold joints and as designated by the drawings, or as directed/approved by the Engineer.

Swellstops shall be Sika Swellstop, Sika Swellstop II, or Sika Swellstop SC as required by size (or approved equivalent) and approved by the Engineer. Swellstops shall be used as designated by the drawings, or as directed/approved by the Engineer.

F-15 Grout for Equipment and Metalwork

a. General

Non-settling hydraulic grout shall be a non-shrink, non-metallic, cementitious grout, SikaGrout 212 by Sika Corporation, Masterflow 928 Grout by Master Builders, Five Star Grout by Five Star Products, or equal. Grout placement shall be performed in accordance with the Manufacturer's instructions and recommendations.

b. Preparation of Surfaces and Placing Grouting Mortar

Before placing grouting mortars, the surface of base concrete to which the mortar will be bonded shall be roughened and cleaned of all laitance loose or defective concrete, curing compound and other coatings, and other foreign material by effective means, followed by thorough washing with water. If any delay occurs between the washing of the concrete and placing of the mortar, the surfaces of the concrete shall be lubricated by washing with water immediately before placing of the mortar. Forms shall be used where required to confine the non-settling grouting mortar. The mortar shall be placed completely filling spaces adjacent to equipment and metalwork as shown on the Plans.

c. **Curing**

The exposed surfaces of mortar shall be cured for seventy-two (72) hours by keeping them covered with moist burlap, damp sand, or by other effective means.

Loads shall not be applied to the mortar sooner than seventy-two (72) hours after placement and shall be applied only after the mortar has attained a compressive strength of at least 3,000 pounds per square inch. Care shall be taken when applying loads on the hardened mortar and the Contractor shall be responsible for any damage thereto resulting from impact loads when positioning equipment or metalwork.

F-16 Concrete Slurry

- a. **General** – Concrete slurry shall be composed of cement, aggregates (sand), water and any specified admixtures of the qualities and proportions specified herein, all well mixed and brought to the proper consistency and all mixed in proportions as directed or approved by the Engineer. A concrete mix design shall be submitted to the Engineer for review and approval prior to delivery to the site.

Mix – The concrete slurry mix shall contain not less than 1.5 sacks of cement per cubic yard.

- b. **Placement** – Concrete Slurry shall be placed within trench as a monolithic pour and consolidated using vibratory equipment such that the concrete slurry is consolidated into a continuous wall with no voids surrounding every inter-basin pipeline as shown on the plans. Surfaces that are covered by backfill shall be formed by sufficient leveling and screeding to produce even, uniform surfaces.

F-17 Rip-Rap

- a. **Materials** - Rip Rap shall be clean concrete or rock no larger than 16 inches in the largest dimension, without steel reinforcement, wood, rubbish or other deleterious materials. Rip Rap shall be placed in an orderly fashion to the

dimensions specified so as to produce a uniform finished appearance without large voids or sharp protrusions.

Rip-rap shall be sound, dense and durable with a bulk specific gravity of not less than 2.5. Rip-rap shall be angular to sub-rounded in shape with the greatest dimension not greater than three times the least dimension. The rip-rap shall conform to the grading limits given below unless otherwise specified.

<u>Percent Passing</u>	<u>Size, Inches</u>
100	16
50	10
10	6

- b. **Subgrade Preparation** - The subgrade surfaces on which the rip-rap, bedding or filter course is to be placed shall be cleared and graded prior to placement of bedding or rock. When fill to subgrade lines is required, it shall consist of approved materials and shall conform to the requirements contained in these specifications.
- c. **Placement** - The rip-rap shall be constructed to the full course thickness in one operation and in such a manner as to avoid displacement of the underlying materials which includes geotextile. The rock or concrete shall be delivered and placed in a manner that will ensure that the rip-rap in place shall be reasonably homogeneous with the larger materials uniformly distributed and firmly in contact one to another with the smaller rocks/concrete, filling the voids between the larger rocks/concrete.

Rip-rap shall be placed in a manner to prevent damage to structures. Hand placing will be required to the extent necessary to prevent damage to the permanent works and to achieve the finished surface placement. Rip-rap shall be securely bedded firmly in contact one to another. Spaces between the larger rip-rap shall be filled with smaller rocks, concrete and spalls. Smaller rip-rap shall not be grouped as a substitute for larger rock/concrete materials.

F-18 Measurement and Payment

Measurement and payment for Concrete, Slurry and Rip-Rap shall include the cost of all work and materials specified in this section including transportation and delivery. Such payment shall constitute full compensation for all labor, equipment, tools and all other items necessary and incidental to the completion of the work. Payment shall be as stated in the Bidding Schedule.

****END OF SECTION****

SECTION G

CONCRETE STRUCTURES AND PIPING

G-1 General

The Contractor shall provide all labor, materials, and equipment and perform all operations necessary to furnish and install inter-basin structures with HDPE piping as specified, shown on the Plans, and/or as directed by the Engineer. Included is the furnishing and installation of the reinforced concrete weir structures, HDPE piping for the crossings, and slurry cut-off collars as shown on the Plans and specified herein.

G-2 Weir Structures

a. General

As shown on the Plans and as directed, the Contractor shall furnish and install a weir structure or structures at the upstream end of each inter-basin crossing, and at the upstream end of pond outlets to the canal. Each weir structure shall be one of two possible designs: A 7'-Tall Box with 36" HDPE Pipe stub, a 36" C-10 Gate, and 2" Strut Grip Walkway; or an 8'-Tall Box with 48" HDPE Pipe stub, a 48" C-10 Gate, and 2" Strut Grip Walkway, as per the Plans. The Precast Concrete Diversion Structure shall be provided by Briggs Manufacturing, Inc., or approved equal. Each C-10 gate shall be a C-10 Canal Gate provided by Waterman Valves LLC, no equal. The Walkway shall be hot-dipped galvanized or stainless steel 2"x3/16" Grip Strut (serrated) safety grating, or heavier, provided by McNichols Company, or approved equal. Each weir structure shall be placed such that the back side of each structure is parallel with the crown of the levee at a distance as specified on the Plans. The elevation of the top of each weir structure shall match the elevation of the top of the levee. Weir boards (to top of structure) are to be included: 2" x 6" Rough Cut – Douglas Fir, #2 or better.

b. Payment

The Final Pay Quantity Price for the Installation of each Precast Concrete Diversion Structure with Pipe Stub shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing the work and no additional allowance shall be made therefore, as provided in the Bid Schedule.

G-3 HDPE Piping

a. General

The Contractor shall furnish, test, transport and install HDPE Pipe in accordance with the details shown on the Drawings and as specified herein. The piping shall be Corrugated HDPE, Low Head, Water-Tight, Irrigation Pipe, as manufactured

by ADS or Approved Equal. The pipe shall be as uniform as commercially practicable in color, opaqueness, density, and other specified physical properties. It shall be free from visible cracks, holes, foreign inclusions, or other defects.

b. Installation

1. The Engineer shall be notified at least two weeks prior to field installation of any piping.
2. The trench for the piping shall be prepared as specified in Section E – Earthwork and Site Work and as follows:
 - a) The pipe shall be firmly and uniformly placed on compacted earthfill bedding or an in-place earth material bedding of ample bearing strength to support the pipe without noticeable settlement. The earth material on which the pipe is placed shall be of uniform density to prevent differential settlement.
 - b) Earth bedding shall be compacted to a density not less than adjacent undisturbed in-place earth material or be compacted earth backfill. Earthfill material used for compacted earth bedding shall be free of rocks or stones greater than 1 inch in diameter and earth clods greater than 2 inches in diameter. The pipe shall be loaded sufficiently during the compaction of bedding under the haunches and around the sides of the pipe to prevent displacement from its final approved placement.
3. Backfilling around and over the pipe shall be accomplished as specified in Section E – Earthwork and Site Work and as follows:
 - a) A minimum 1.5-sack slurry shall be used to backfill the haunches of the pipe up to the springline. The slurry shall be poured against compacted embankment and vibrated by mechanical vibrator operated by experienced personnel as the slurry is being poured. The Contractor shall ensure that the pipe is secured in place as to prevent floating of the pipe.
 - b) Backfill above the springline shall consist of material excavated from the levees for the pipe trench, replaced in horizontal layers not exceeding 6 inches compacted. Backfill must be compacted to a minimum of **95 percent** of maximum density per ASTM D698. Backfill shall be tested at 1' vertical intervals per paragraph E-8e.
4. Individual crossings shall be installed per the Plans and as directed by the Engineer. The soffit of the pipe shall be approximately three inches (3")

above the high water mark of the downstream pond at the terminus of the pipe unless otherwise noted on the Plans.

c. Tolerances

1. Alignment Deflection on Horizontal Plane: No greater than plus or minus 0.5 feet.
2. Alignment Deflection on Vertical Plane: No greater than plus or minus 0.2 feet.
3. Out-of-Round Deformation of Backfilled Pipe: Shall not exceed 7.5% of the pipe's interior diameter or the manufacturer's requirements or recommendations – whichever is most stringent.

The Contractor shall be responsible for methods and measures and all costs associated therein to ensure that the pipeline does not exceed any of the above deflection and deformation specifications. The Contractor shall also be responsible for all costs associated with fixing pipeline that is out of spec, up to and including complete replacement of any section of pipe damaged as a result of excessive deformation as determined by the Engineer and the pipe manufacturer.

d. Payment

The Final Pay Quantity Unit Price per Lineal Foot for the Installation of HDPE pipeline shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing the work and no additional allowance shall be made therefore.

G-4 Slurry Cut-Off Collar

a. General

The Contractor shall furnish and install a concrete slurry cut-off collar along each inter-basin crossing as depicted on the Plans. The slurry shall be prepared as specified in Section F – Concrete Slurry & Rip-Rap. Slurry specifications include, but are not limited to: The Concrete Slurry mix shall contain not less than 1.5 sacks of cement per cubic yard.

Each slurry cut-off collar will be poured against the compacted embankment of the levee in a double-configuration as depicted on the Plans. The collar shall be a minimum of eighteen inches (18") thick and shall extend three feet (3') away in each direction from the surrounded HDPE pipe. The top of the slurry collar shall be a minimum of 1' below the top of the levee; the collar may extend less than three feet upward from the top of the pipe to ensure this 1' minimum distance is maintained.

b. Payment

The Final Pay Quantity Unit Price for the Installation of each slurry cut-off shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing the work and no additional allowance shall be made therefore.

****END OF SECTION****

SECTION H**STRUCTURAL STEEL AND MISCELLANEOUS METALS****H-1 General**

The Contractor shall provide all labor, materials, and equipment and shall perform all operations required to furnish and install, complete, all structural steel and miscellaneous metals. Painting and protective coatings for ferrous metalwork shall be as specified in Section L.

H-2 Quality Control**a. General**

All items required under Section H of the Specifications shall be of the sizes, shapes and materials as indicated on the drawings or specified herein. All materials shall be new, free from defects impairing strength, durability and appearance, shall be of the best commercial quality for the purposes specified and made with structural properties to withstand all stresses and strains to which they normally will be subjected. Items furnished, unless otherwise specified, shall be standard approved products of recognized manufacturers and fabricated in accordance with the best shop methods. All incidental items and accessories not shown on the drawings or specified herein, but which are required to fully carry out the specified intent of work, shall be furnished without additional cost.

b. Shop Drawings and Mill Reports

Shop drawings of all fabricated units shall be submitted to the Engineer for review in accordance with applicable provisions of Section D. Shop drawings shall conform to AISC recommendations and specifications and shall show all holes, etc required for other work. Drawings shall include complete details showing all members and their connections, anchor bolt layouts, schedules for fabrication procedures, and diagrams showing sequence of erection.

Layout drawings for grating shall be submitted showing the direction of span, type and depth of grating, size and shape of grating panels, seat angle details, and details of hold down fasteners. Load and deflection tables shall be submitted for each style and depth of grating used.

Erection layout drawings of metal decking where occurs showing the location of deck sheets, end laps, side laps, types and locations of welds, and details of accessories shall be submitted. An ICBO report for each type of metal deck used shall be submitted. In addition the Contractor shall submit certification furnished by the deck manufacturer of the yield strength of the steel used for the metal deck.

The Contractor shall also submit gage and section properties and diaphragm shear values for the deck supplied using the welding pattern shown on the drawings.

An ICBO report listing the ultimate and allowable load capacity in tension and shear for each size and type of concrete anchor shall be submitted.

No substitution for the indicated anchors shall be considered unless the request for substitution is accompanied by an ICBO report verifying strength and material equivalency, including temperature at which load capacity is reduced to 90 percent of that determined at 75 degrees F.

Testing laboratory certifications for shop and field welders shall be submitted to the Engineer prior to the start of work.

The Engineer reserves the right to reject any material at any time before final acceptance of Contract work, if, in the opinion of the Engineer, the materials and workmanship do not conform to any or all requirements of the Specifications.

H-3 Structural Steel

a. General

The Contractor shall furnish and install all structural steel as shown on the drawings and specified herein.

b. Materials

Unless otherwise specified or shown on the drawings, materials shall be in conformance with the following requirements. All members shall be furnished full length, without splices, unless otherwise indicated or approved by the Engineer.

1. Wide flange shapes shall be ASTM A992 or ASTM A572, Grade 50. All other shapes, plates, and bars shall be ASTM A36, unless noted otherwise.
2. Structural steel pipe shall be ASTM A501 or ASTM A53, Type E or S, Grade B.
3. Structural tubing shall be ASTM A500, Grade B.
4. All structural steel shall be hot dip galvanized after fabrication per ASTM A123, unless otherwise specified.
5. All structural stainless steel shall be ASTM Type 304 or ASTM Type 316.

6. Bolts – Bolts, nuts, and washers for stainless steel connections shall be ASTM Type 304 or ASTM Type 316 stainless steel. Bolts for carbon steel connections shall be ASTM A325N, unless otherwise indicated. Bolts used to connect dissimilar metals shall be ASTM A193, Type 316 stainless steel. All carbon steel bolts and nuts and other threaded fasteners shall be hot-dip galvanized per ASTM A153.

Anchor bolts shall be ASTM 193 Type 316 stainless steel unless otherwise indicated.

Nuts shall be of the same material as the bolts and shall be capable of developing the full strength of the bolts.

Bolts and nuts shall be installed with washers fabricated from material matching the base material of the bolts, except hardened washers for high strength bolts shall conform to the requirements of the AISC Specification.

The length of each bolt shall be such that after the joint is made up, the bolt extends through the entire nut, but no more than 1/2-inch beyond the nut.

7. Walkway – Walkway welded bar grating shall be McNichols GHB series or approved equal, stainless steel type 304 or, if carbon steel, it shall be hot dip galvanized.

c. Fabrication and Installation

Structural steel shall be fabricated in accordance with the drawings, AISC Specifications, and as shown on the approved shop drawings. Materials shall be properly marked and match-marked for field assembly. Where finishing is required, assembly shall be completed, including bolting and welding, before the start of finishing operations.

1. Unless otherwise specified or shown on the drawings, all embedded metalwork shall be set accurately in position when concrete is placed and shall be supported rigidly to prevent displacement or undue vibration during or after the placement of concrete. Unless otherwise specified, where structural steel is to be installed in recesses in formed concrete, said recesses shall be made, structural steel installed, and recesses filled with drypack mortar in conformance with applicable provisions of Section H. All anchor bolt assemblies shall be in accordance with details shown on the drawings.

2. All surfaces of structural steel, except galvanized surfaces, shall be painted or coated after installation in accordance with applicable provisions specified elsewhere under Section J. Structural steel with damaged galvanized surfaces either shall be repaired or replaced at the option of the Engineer, and at no additional cost to the District. Repair of galvanized surfaces shall be effected with Galvanox repair compound, as manufactured by Subox, Inc., Z.R.C. Cold Galvanizing Compound, as manufactured by ZRC Products Company, or approved equal. All damaged and uncoated areas shall be repaired per ASTM A780.
3. Connections – Shop and field connections shall be bolted or welded as shown or specified. All connections shall develop the full strength of the members joined and shall conform to AISC standard connections, unless noted otherwise on the Drawings.
4. Welding shall comply with the requirements of AWS D1.1, latest revision. Shielded metal arc welding method shall be used for welding structural steel. Upon completion of welding, weld splatter, flux, slag, and burrs left by attachments shall be removed. Welds shall be repaired to produce a workman like appearance, with uniform weld contours and dimensions. Unless otherwise shown, all butt and bevel welds shall be complete penetration.
5. Holes for other work shall be provided as necessary or as indicated for securing other work to the structural steel framing, and for the passage of other work through steel framing members. No torch cut holes will be permitted.

d. Product Delivery, Storage, and Handling

Structural members shall be loaded in such a manner that they may be transported and unloaded without being excessively stressed, deformed, or otherwise damaged. Structural steel members and packaged materials shall be protected from corrosion and other deterioration. Material shall be stored in a dry area and shall not be placed in contact with the ground. Contractor shall repair or replace damaged materials as directed.

e. Erection

The Contractor shall comply with the AISC Specifications and Code of Standard Practice and with specified requirements. Structural steel shall be set accurately to the lines and elevations indicated. Members shall be aligned and adjusted to form a complete frame or structure before being permanently fastened. Surfaces which will be in permanent contact shall be cleaned before assembly. Adjustments

necessary to allow for discrepancies in elevations and alignments shall be performed.

High strength bolts shall be installed in accordance with the AISC Specification for Structural Joints Using ASTM A325 Bolts. The connections shall be friction type, unless otherwise indicated.

Incorrectly sized or misaligned holes in members shall not be enlarged by burning or by the use of drift pins. Correction of misfits is part of the Work. Gas cutting torches shall not be used in the field for correcting fabrication errors except when approved by the Engineer.

Anchor bolts and other connectors required for securing structural steel or equipment to in-place work, and templates and other devices for presetting bolts and other anchors to accurate locations shall be furnished by the Contractor.

The Contractor shall be responsible for designing, supplying, and installing any temporary bracing required for the safe erection of all structural steel.

f. Setting Bearing and Base Plates

Before placing non-shrink grout under bearing and base plates the plates and the concrete or masonry bearing surface shall be cleaned of all bond reducing materials. The concrete or masonry bearing surface shall also be roughened to improve bonding.

Base plates and bearing plates for structural members and equipment shall be set on wedges, leveling nuts, or other adjustable devices. Baseplates shall be grouted prior to loading the structure to assure uniform bearing. Anchor bolts shall be tightened after the supported members have been positioned and plumbed and the grout has attained its indicated strength.

H-4 Miscellaneous Metals

a. General

The Contractor shall furnish and install all miscellaneous metals in conformance with details shown on the drawings and as specified herein.

b. Materials

Unless otherwise specified or shown on the drawings, materials shall be in conformance with the following requirements:

1. Stainless Steel – Unless otherwise indicated, stainless steel metalwork and bolts shall be Type 316 stainless steel.

2. Aluminum – Unless otherwise indicated, aluminum metalwork shall be Alloy 6061-T6. Aluminum in contact with concrete, masonry, wood, dissimilar metals, or porous materials shall have contact surfaces coated in accordance with Section J.
3. Cast Iron – Cast-iron castings and sleeves shall be in conformance with AWWA C100, Class D.
4. Metal Grating - Metal grating shall be of the design, types, and sizes indicated. Bearing bars in each panel shall be banded at the ends with banding bars of the same size as the bearing bars, welded to each bearing bar. All openings in grating that require cutting of more than three bearing bars shall be finished in the same manner as the ends of the grating panels. All pieces of grating shall be fastened in two locations to each support. Grating shall be smooth (non-serrated) unless otherwise indicated on the drawings.

Where grating forms the landing at the top of a stairway, the edge of the grating which forms the top riser shall have an integral non-slip nosing with a width equal to that of the stairway treads.

Except where otherwise indicated bar grating shall be hot-dipped galvanized or stainless steel with cross bars welded into position.

5. Checkered Plate – Where no material is indicated on the drawings checkered plate shall be A36 steel. Checkered plate shall have a pattern of raised lugs on one face and shall be smooth on the opposite face. Lugs shall be a minimum of one-inch in length and raised a minimum of 0.050-inches above the surface. The lugs shall be located in a pattern in which the lugs are oriented at 90 degrees from the adjacent lugs in two orthogonal directions and the rows of lugs shall be oriented at 45 degrees from the edges of the plates.
6. Grating Stair Treads - Grating stair treads shall be designed to support a live load of 100 psf or a concentrated load at mid-span of 1000 pounds, whichever creates the higher stress. The maximum deflection due to the uniform live load shall not exceed 1/4-inch or the span divided by 180, whichever is less. All grating stair treads shall have an integrated non-slip nosing. Grating stair treads shall be hot dip galvanized per ASTM A123.
7. Stair Safety Nosing - Stair safety nosing shall be provided on all concrete stairs and at other locations as indicated. The nosing shall be 3-inch wide, extruded aluminum with cast-in abrasive strips and integral extruded anchors. The color of the nosing shall be selected by the ENGINEER from the manufacturer's standard colors. The nosing shall be Amstep Products

Company, "Amstep 231A"; American Safety Tread Company, "Type 2211" or approved equal.

8. Ladders – Ladders shall be hot dip galvanized after fabrication unless otherwise indicated. Every ladder which does not have an exterior handhold shall be equipped with a pop-up extension. The pop-up extension device shall be of the same material and finish as the ladder with a telescoping tubular section that locks automatically when fully extended. Upward and downward movement shall be controlled by stainless steel spring balancing mechanisms. Units shall be completely assembled with fasteners for securing to the ladder rungs in accordance with manufacturer's instructions.
9. Floor Hatches - Where access hatches are mounted on a floor slab (including top slabs which are not covered with a roofing membrane) or on a concrete curb, the hatch shall be a flush type as indicated herein. Hatches mounted on a roof surface which has a membrane or other roofing material covering it shall be the integral raised curb type.

Hatches shall be fabricated from Aluminum 6061 T6, unless otherwise indicated. Hatch hardware shall be Type 316 stainless steel. Hatches shall be gutter-type; Bilco Type "J" or "JD" Babcock-Davis type "FT" or "AM" or equal.

The design live load shall be 300 psf, unless indicated otherwise.

Hatch opening sizes, number and swing direction of door leaves, and locations, shall be as indicated. Sizes are for the clear opening. Where the number of leaves is not given, openings larger than 42 inches in either direction shall have double-leaf doors. Unless indicated otherwise, hinges shall be located on the longer dimension side. Unless indicated otherwise, ladder hatches shall be a minimum of 30 inches wide by 38 inches long, with the ladder centered on the shorter dimension, and the door hinge opposite the ladder.

Door leaves shall be a minimum of 1/4-inch thick checkered pattern plate. Channel frames shall be a minimum of 1/4-inch material with an anchor flange around the perimeter. Hatches shall be provided with an automatic hold-open arm with release handle. Hatches shall be designed for easy opening from both inside and outside.

Hatches shall be designed to be water-tight and shall be equipped with a joint gutter and moat-type edge drain. A minimum 1-1/2-inch diameter drain connection shall be provided, located by the manufacturer.

Hatches shall include a recessed hasp for a padlock that is covered by a hinged lid flush with the surface.

10. Metal Decking (where occurs) – All metal deck shall be manufactured from steel conforming to ASTM A611, Grades C, D, or E; or A446, Grades A, B, C, D, E, or F, or equal, having a minimum yield strength of 33,000 psi. The maximum design working stress of the deck shall not exceed 0.6 times the yield strength.

The structural properties of the deck shall be shown on the drawings. The moment of inertia and section modulus of the deck shall be computed in accordance with the Steel Deck Institute specifications and in accordance with the American Iron and Steel Institute Specification for the Design of Cold-Formed Steel Structural Members.

All steel deck shall be galvanized and shall conform to ASTM A 653.

Decking stored at the job site before erection shall not be in contact with the ground and shall be protected from the weather.

The metal deck shall have a sheet length that covers a minimum of 3 spans.

The metal deck shall be formed at the longitudinal edges in such a manner that they will overlap and/or interlock. Where the ends of sheets overlap they shall be die-formed such that the sheet in the next row telescopes and snugly overlaps the sheet laid previously.

All plates required to connect decking to the supports or to maintain continuity shall be a minimum of 14 gage and shall be galvanized.

Metal deck sheets shall be positioned on supporting steel framework and adjusted to final position with ends bearing a minimum of 2-inches on supporting members. Units shall be placed end to end, with all ribs aligned over the entire length of the run before being permanently fastened.

Special care shall be exercised not to damage or overload the deck during installation. The deck shall not be used for storage or as working platforms until permanently secured in position. Construction loads shall not exceed the deck carrying capacity, as recommended by the manufacturer.

All openings in the deck shall be cut and fitted neatly and shall be reinforced with structural steel members to distribute the load.

Where concrete fill is required on the Drawings, deck shall be installed with closure plates and other accessories as needed to prevent loss of water, cement, and fines during placing and consolidation of the concrete.

Care shall be exercised in the selection of electrodes and an amperage to provide positive welds and to prevent high amperage blow holes. Welds shall be made from the top side of the deck immediately after alignment.

The metal deck shall be welded to all supporting members with 1/2-inch effective diameter puddle welds spaced at 12-inches on center at members parallel to the ribs and at every rib valley at members perpendicular to the ribs, unless otherwise shown on the Drawings. Welding washers shall be used when welding steel deck of less than 0.028-inch thickness. Welding washers shall not be used when welding steel deck of 0.028-inches or greater.

Side laps shall be welded with 1 1/2 inch long top seam welds, spaced at 12-inches on center unless indicated otherwise.

All welds shall be free of sharp points or edges. All welds shall be cleaned immediately by chipping or wire brushing and shall be coated with a zinc dust type primer paint.

Welding shall conform to the applicable requirements of AISC "Light Gauge Steel Design." Welders shall be AWS certified.

11. Drilled Anchors – Drilled anchors and reinforcing bars shall be installed in strict accordance with the manufacturer's instructions. Holes shall be roughened with a brush on a power drill, cleaned and dried. Drilled anchors shall not be installed until concrete has reached the required 28-day compressive strength. Adhesive anchors shall not be loaded until the adhesive has reached its indicated strength in accordance with the manufacturer's instructions. Material for drilled anchors shall be as shown on the drawings.
12. Adhesive Anchors - All drilled concrete or masonry anchors if indicated or permitted by the Engineer shall be 316 Stainless Steel epoxied anchors unless otherwise indicated. Epoxy adhesive anchors shall not be permitted in areas where the concrete temperature is in excess of 100 degrees F or higher than the limiting temperature recommended by the manufacturer. Epoxy anchors shall not be used where the anchors are subject to vibration or fire. Embedment depth shall be as shown on the drawings or as recommended by the manufacturer for the loads to be supported. The epoxy adhesive product shall be Hilti HIT-RE 500-SD (ICC-ESR No. 2322) as manufactured by Hilti, Inc. or approved equal.

13. Expansion Anchors – Expansion anchors if indicated or permitted shall be 316 Stainless Steel expansion anchors. Diameter and embedment shall be as indicated on the drawings. Unless otherwise approved by the Engineer, expansion anchors shall not be used, only epoxy anchors shall be used, in precast structures.
14. Handrail – All handrail shall be fabricated from structural steel pipe unless otherwise indicated. All exposed welds in handrail shall be ground smooth and flush. All handrails shall be welded and hot dip galvanized after fabrication.

H-5 Payment

No separate payment will be made for structural steel and miscellaneous metal work. All costs therefore shall be included in the lump sum price bid in the Schedule of Pay Items for the item of work requiring structural steel and miscellaneous metal work.

END OF SECTION

APPENDIX A – SOILS REPORT



To: Steve Teglia

From: Jana Marquez

CC: L. Mark Mulkay, Chris Bellue, Richard Iger

Date: March 19, 2021

Re: **Soil Boring Drilling Results, AC Electric Property**

BACKGROUND

In an attempt to gain a better understanding of subsurface soils on the AC Electric property and to determine if the subject location might be suitable for groundwater recharge, Kern Delta contracted Soils Engineering, Inc. to drill four exploratory soil borings on the property (the site). The site, identified as Assessor Parcel Number 543-020-01, is located immediately northeast of the intersection of Taft Highway and Old River Road. The Stine Canal runs through the western portion of the parcel (**Figure 1**).

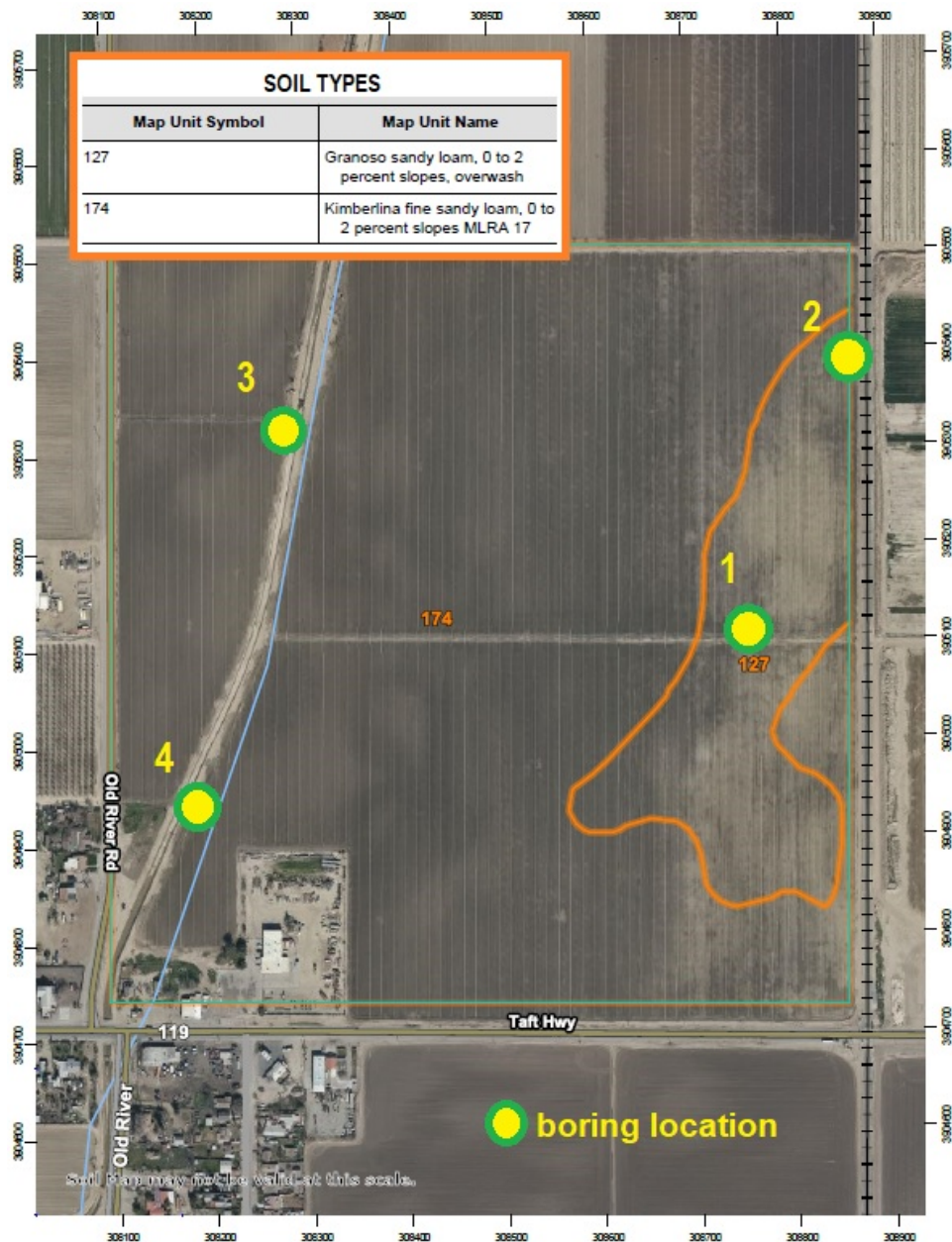
Figure 1



METHOD

Boring locations were chosen utilizing the United States Department of Agriculture - Natural Resources Conservation Service's soil map (**Appendix 1**); the decision was made to drill the soil borings on or close to defined roads and/or canal banks in order to avoid any damage to the current carrot crop.

Figure 2



Three borings were drilled to a depth of 50 feet (Boring 2, Boring 3, and Boring 4), and one boring was drilled to a depth of 100 feet (Boring 1). A hollow stem auger was used, and samples were retrieved using a split-spoon sampler. Cuttings were continuously monitored with any changes in lithology noted. Samples were taken at five-foot intervals. Soils were looked at with the naked eye for color and a general description. A hand lens was used to discern between sands, silts, clays, as well as to identify the degree of grain sorting. A small grab sample from each five foot interval was placed into a Ziploc bag; these samples were then brought back to the office. The bagged samples, in conjunction with the notes taken in the field (**Appendix 2**), assisted in writing this summary memo.

FIELD RESULTS

The borings were advanced to full depth with no issues, in all four locations.

A summary of each soil boring is shown in **Table 1** on the following page.

Table 1 – Soil Boring Summaries

	BORING 1		BORING 2		BORING 3		BORING 4	
GS	SILT	Silty cuttings	SILT	Silty cuttings	SAND	Sandy cuttings	SAND	Silty/sand cuttings
5'	SILT	Brn silt	SILT	Brn silt w/ sand, minor clay	SAND	Tan sand	SAND	Lt tan silty sand
10'	SILT	Brn silt	SAND	Tan sand	SAND	Lt tan sand	SAND	Lt tan sand
15'	SILT	Brn silt, minor clay	SILT	Brn silt w/ sand, moist, minor clay	SAND	Lt tan sand	SAND	Tan sand
20'	SILT	Tan/brn silt, oxidation	SAND	Tan sand	SILT	Brown sandy silt	SAND	Tan sand
25'	SAND	Lt grey/tan sand, fine grained	SAND	Lt tan sand	SAND	Lt tan sand	SAND	Tan sand
30'	SAND	6" grey silt, 12" tan sand	SAND	Tan/grey sand	SAND	Lt tan sand	SAND	Tan sand
35'	SAND	Lt tan sand	SAND	Lt tan sand	SAND	Lt tan sand	SAND	Lt tan sand
40'	SAND	Tan sand w/ silt	SAND	Lt tan sand	SILT	Brn sandy silt, wet, minor clay	SAND	Tan sand
45'	SAND	Tan sand	SAND	Lt tan sand	SAND	Lt tan sand	SILT	Brn silt, moist, minor clay
50'	SILT	Grey silt, wet, clay	SAND	Lt tan sand	SAND	Lt tan sand	SILT	Grey sandy silt, minor clay
55'	SILT	12" tan/grey silt, 6" tan sand	n/a					
60'	SAND	Tan sand	n/a					
65'	SILT	Grey silt w/ clay	n/a					
70'	SAND	3" grey silt, 15" tan sand	n/a					
75'	SAND	Tan sand	n/a					
80'	SAND	Tan sand	n/a					
85'	SAND	Tan sand	n/a					
90'	SILT	Brn silt, with clay	n/a					
95'	SILT	Brn silt, minor clay	n/a					
100'	SILT	Brn silt, wet, clay	n/a					

GS=ground surface LT=light Brn= brown

INTERPRETATION/RECOMMENDATION

Based upon field analysis and review of the four soil borings drilled on the AC Electric property, I believe the subject parcel would be suitable for groundwater recharge.

The majority of subsurface soils encountered were sands, with silts being present also. Very few samples presented with moisture and/or minor clay; there were no confining clay layers encountered in any of the borings.

The soil boring results from the AC Electric property are similar to, if not better than, exploratory borings drilled on other Kern Delta recharge basin sites.

APPENDIX 1



United States
Department of
Agriculture

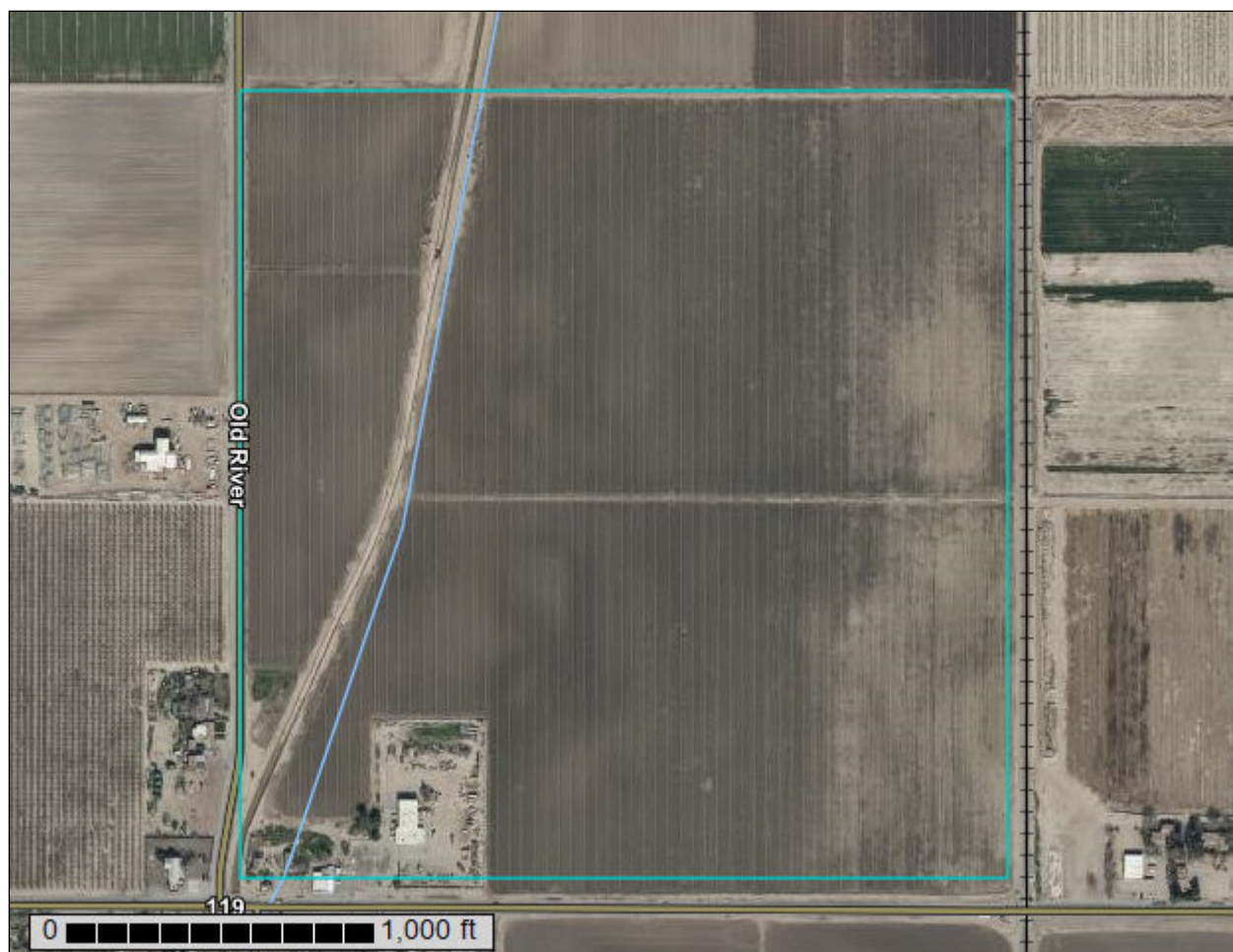
NRCS

Natural
Resources
Conservation
Service

A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

Custom Soil Resource Report for **Kern County, California, Northwestern Part**

**AC Electric Property Old River &
Taft Hwy**



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

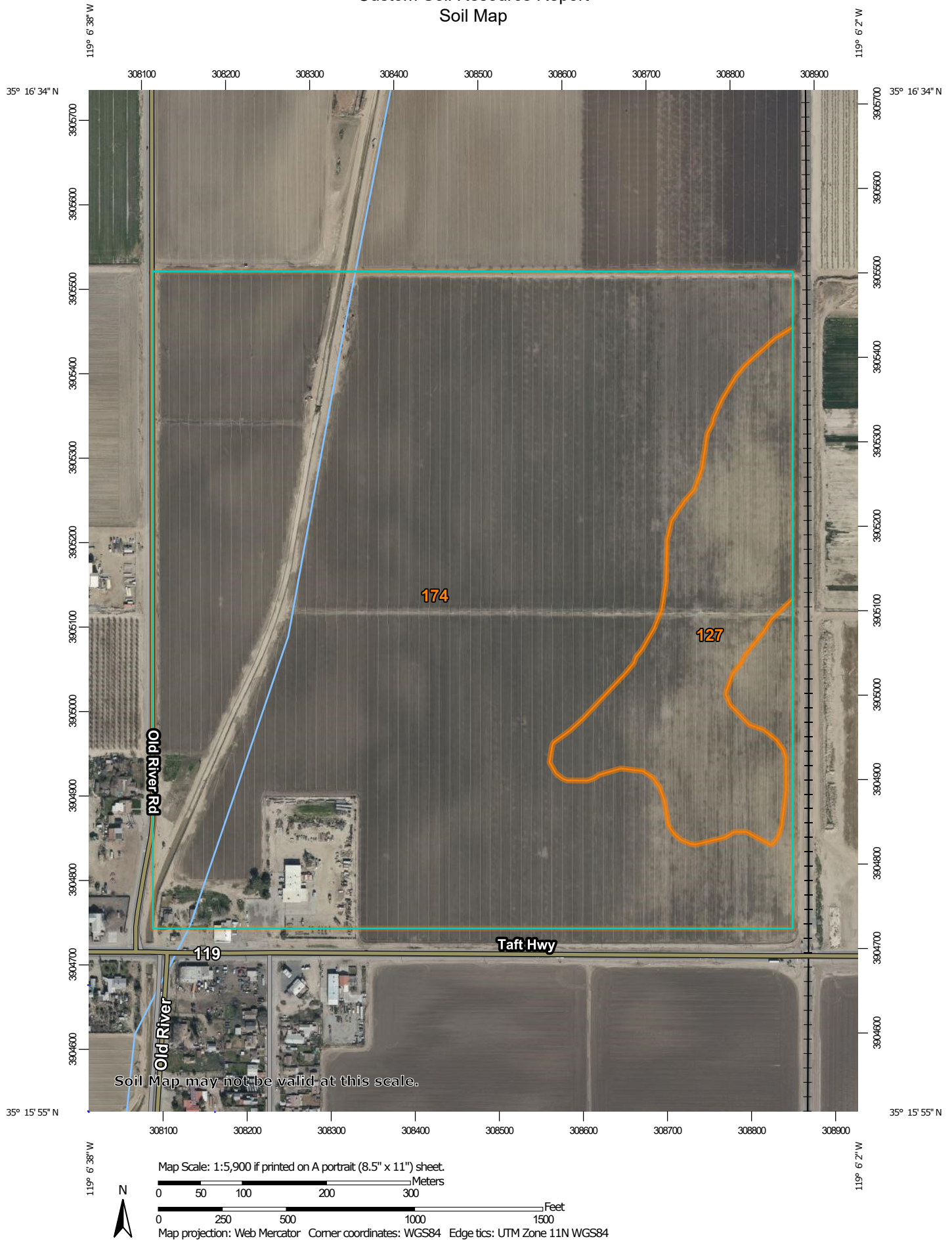
Custom Soil Resource Report

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report Soil Map




MAP LEGEND


Area of Interest (AOI)

 Area of Interest (AOI)

Soils


 Soil Map Unit Polygons


 Soil Map Unit Lines


 Soil Map Unit Points

Special Point Features

 Blowout

 Borrow Pit


 Clay Spot

 Closed Depression

 Gravel Pit

 Gravelly Spot

 Landfill

 Lava Flow

 Marsh or swamp

 Mine or Quarry

 Miscellaneous Water

 Perennial Water

 Rock Outcrop

 Saline Spot

 Sandy Spot

 Severely Eroded Spot


 Sinkhole


 Slide or Slip

 Sodic Spot


 Spoil Area

 Stony Spot

 Very Stony Spot

 Wet Spot

 Other

 Special Line Features

Water Features

 Streams and Canals


Transportation

 Rails

 Interstate Highways

 US Routes

 Major Roads

 Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Kern County, California, Northwestern Part
Survey Area Data: Version 13, May 29, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Feb 25, 2019—Feb 25, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
127	Granoso sandy loam, 0 to 2 percent slopes, overwash	20.2	13.8%
174	Kimberlina fine sandy loam, 0 to 2 percent slopes MLRA 17	126.6	86.2%
Totals for Area of Interest		146.8	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however,

onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Kern County, California, Northwestern Part

127—Granoso sandy loam, 0 to 2 percent slopes, overwash

Map Unit Setting

National map unit symbol: hkh5
Elevation: 300 to 490 feet
Mean annual precipitation: 5 to 7 inches
Mean annual air temperature: 62 to 65 degrees F
Frost-free period: 250 to 300 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Granoso and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Granoso

Setting

Landform: Alluvial fans, flood plains
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from mixed rock sources

Typical profile

Ap - 0 to 10 inches: sandy loam
C1 - 10 to 20 inches: loamy sand
C2 - 20 to 36 inches: sand
C3 - 36 to 62 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: RareNone
Frequency of ponding: None
Calcium carbonate, maximum content: 3 percent
Maximum salinity: Nonsaline to very slightly saline (0.1 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water capacity: Low (about 4.9 inches)

Interpretive groups

Land capability classification (irrigated): 3s
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Milagro, fine sandy loam

Percent of map unit: 3 percent
Landform: Alluvial fans, fan skirts
Landform position (three-dimensional): Talf
Hydric soil rating: No

Kimberlina

Percent of map unit: 3 percent
Landform: Alluvial fans, flood plains
Landform position (three-dimensional): Talf
Hydric soil rating: No

Excelsior

Percent of map unit: 3 percent
Landform: Alluvial fans, flood plains
Landform position (three-dimensional): Talf
Hydric soil rating: No

Bakersfield

Percent of map unit: 3 percent
Landform: Alluvial fans, flood plains
Landform position (three-dimensional): Talf
Hydric soil rating: Yes

Wasco

Percent of map unit: 2 percent
Landform: Alluvial fans, flood plains
Landform position (three-dimensional): Talf
Hydric soil rating: No

Unnamed, slough

Percent of map unit: 1 percent
Landform: Sloughs
Hydric soil rating: Yes

174—Kimberlina fine sandy loam, 0 to 2 percent slopes MLRA 17

Map Unit Setting

National map unit symbol: 2ss96
Elevation: 120 to 1,160 feet
Mean annual precipitation: 4 to 8 inches
Mean annual air temperature: 63 to 64 degrees F
Frost-free period: 240 to 300 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Kimberlina and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Kimberlina

Setting

Landform: Alluvial fans

Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Talf

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Alluvium derived from igneous and sedimentary rock

Typical profile

Ap - 0 to 9 inches: fine sandy loam

C - 9 to 45 inches: fine sandy loam

2C - 45 to 71 inches: silt loam

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Runoff class: Very low

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.57 to 1.98 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: RareNone

Frequency of ponding: None

Calcium carbonate, maximum content: 10 percent

Maximum salinity: Nonsaline to slightly saline (0.3 to 4.0 mmhos/cm)

Sodium adsorption ratio, maximum: 4.0

Available water capacity: Moderate (about 8.7 inches)

Interpretive groups

Land capability classification (irrigated): 1

Land capability classification (nonirrigated): 7e

Hydrologic Soil Group: A

Hydric soil rating: No

Minor Components

Wasco

Percent of map unit: 7 percent

Landform: Alluvial fans

Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Talf

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

Milham

Percent of map unit: 6 percent

Landform: Alluvial fans

Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Talf

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

Unnamed

Percent of map unit: 2 percent

Landform: Flood plains

Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Talf

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: Yes

References

- American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.
- American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.
- Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.
- Federal Register. July 13, 1994. Changes in hydric soils of the United States.
- Federal Register. September 18, 2002. Hydric soils of the United States.
- Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.
- National Research Council. 1995. Wetlands: Characteristics and boundaries.
- Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262
- Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577
- Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580
- Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.
- United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.
- United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374
- United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. <http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084>

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

APPENDIX 2

KERN DELTA WATER DISTRICT

SOIL BORING LITHOLOGIC LOG

SITE: AC Biotic
 BORING NUMBER: 1 PAGE 1 OF 2
 LOGGED BY: J. Marguez
 BORING TOTAL DEPTH: 10'
 DRILLING CONTRACTOR: SET

DATE: 3/14/21 TIME: 8:00am
 BORING LOCATION: Jagt + Old River
 CHECKED BY:
 APPROXIMATE GS ELEV: ca 341'
 DRILLING METHOD: Follow Stem

Depth	Sample Recovery	Blow Count	Lithologic Description	USCS	Graphic Log	Comments
5'						Silty, chunky cuttings
5'	X	3/4	Brn silt			
10'	X	3/3	Brn silt			
10'		1/4				
15'	X	2/3	Brn silt w/ minor clay			
15'		1/4				
20'	X	6/3	tan/brn silt, oxidation			
20'		1/9				
25'	X	4/9	lt gray/tan sand, fine-grained			
25'		1/11				
30'	X	2/4	6" gray silt - minor clay			
30'		1/15	12" tan sand, well sorted			
35'	X	7/12	lt tan sand, well sorted, med-grained			
35'		1/22				
40'	X	2/3	tan sand w/ silt, some oxidation			
40'		1/10				
45'	X	12/19	tan sand, med/fine grained			
45'		1/25				
50'	X	2/9	gray silt, wet, w/ clay			
50'		1/12				

543-020-01

KERN DELTA WATER DISTRICT

SOIL BORING LITHOLOGIC LOG

SITE: *Ac Electric*
 BORING NUMBER: *2* OF *2*
 LOGGED BY: *J. Mangione*
 BORING TOTAL DEPTH: *100'*
 DRILLING CONTRACTOR: *SEI*

DATE: *3/10/2021* TIME: *8:00am*
 BORING LOCATION: *Left of Old Road*
 CHECKED BY:
 APPROXIMATE GS ELEV: *2341'*
 DRILLING METHOD: *Hollow Stem*

Depth	Sample Recovery	Blow Count	Lithologic Description	USCS	Graphic Log	Comments
<i>5'</i>	<input checked="" type="checkbox"/>	<i>9/12</i>	<i>2" tan dry silt</i>			
<i>10'</i>	<input checked="" type="checkbox"/>	<i>14/24</i>	<i>14" tan sand fine grained</i>			
<i>15'</i>	<input checked="" type="checkbox"/>	<i>13/24</i>	<i>tan sand, med / fine grained,</i>			
<i>20'</i>	<input checked="" type="checkbox"/>	<i>19/24</i>	<i>very silt, w/ clay</i>			
<i>25'</i>	<input checked="" type="checkbox"/>	<i>14/24</i>	<i>3" grey silt</i>			
<i>30'</i>	<input checked="" type="checkbox"/>	<i>14/24</i>	<i>15" tan sand, med grained</i>			
<i>35'</i>	<input checked="" type="checkbox"/>	<i>14/32</i>	<i>tan sand, med - grained</i>			
<i>40'</i>	<input checked="" type="checkbox"/>	<i>9/24</i>	<i>tan sand, med - grained</i>			
<i>45'</i>	<input checked="" type="checkbox"/>	<i>17/30</i>	<i>tan sand, med grained</i>			
<i>50'</i>	<input checked="" type="checkbox"/>	<i>5/13</i>	<i>Brn silt, hard, w/ clay</i>			
<i>55'</i>	<input checked="" type="checkbox"/>	<i>8/16</i>	<i>Brn silt, hard, minor clay</i>			
<i>60'</i>	<input checked="" type="checkbox"/>	<i>9/18</i>	<i>Brn silt, wet, some clay</i>			

KERN DELTA WATER DISTRICT

SOIL BORING LITHOLOGIC LOG

SITE: *AC Electric*
 BORING NUMBER: *2* PAGE *1* OF *1*
 LOGGED BY: *J. Murphy*
 BORING TOTAL DEPTH: *50'*
 DRILLING CONTRACTOR: *SRT*

DATE: *3/15/2021* TIME: *1:15 pm*
 BORING LOCATION:
 CHECKED BY:
 APPROXIMATE GS ELEV: *2341'*
 DRILLING METHOD: *Hollow Stem*

Depth	Sample Recovery	Blow Count	Lithologic Description	USCS	Graphic Log	Comments
5'	<input checked="" type="checkbox"/>	<i>2 3/6</i>	<i>brn silt w/ sand, minor clay</i>			<i>dark brown silty fragment cuttings</i>
10'	<input checked="" type="checkbox"/>	<i>3 3/4</i>	<i>tan sand, moderately well sorted, medium grained</i>			
15'	<input checked="" type="checkbox"/>	<i>2 1/5</i>	<i>brn silt w/ sand, moist, minor clay oxidation</i>			
20'	<input checked="" type="checkbox"/>	<i>5 1/9</i>	<i>lt tan sand, med-grained</i>			
25'	<input checked="" type="checkbox"/>	<i>6 1/12</i>	<i>lt tan sand, med-grained</i>			
30'	<input checked="" type="checkbox"/>	<i>3 1/11</i>	<i>tan/grey sand fine grained</i>			
35'	<input checked="" type="checkbox"/>	<i>9 1/22</i>	<i>lt tan sand, well sorted, med grained</i>			
40'	<input checked="" type="checkbox"/>	<i>2 1/22</i>	<i>lt tan sand, well sorted, med grained</i>			
45'	<input checked="" type="checkbox"/>	<i>11 1/17</i>	<i>tan lt tan sand, well sorted, med-grained</i>			
50'	<input checked="" type="checkbox"/>	<i>11 1/25</i>	<i>lt tan sand, well sorted, med-grained</i>			

KERN DELTA WATER DISTRICT

SOIL BORING LITHOLOGIC LOG

SITE: AC Electric
 BORING NUMBER: 223 PAGE 1 OF 1
 LOGGED BY: J. Marquez
 BORING TOTAL DEPTH: 50'
 DRILLING CONTRACTOR: SSI

DATE: 3/15/21 TIME: 8:00 am
 BORING LOCATION: Left of Red River
 CHECKED BY:
 APPROXIMATE GS ELEV: 341'
 DRILLING METHOD: Hand Sown

Depth	Sample Recovery	Blow Count	Lithologic Description	USCS	Graphic Log	Comments
5'						Sandy cuttings ↓
10'	X	2/2/3	lt tan sand, well sorted med-grained			
15'	X	2/4/3	lt tan sand, well sorted med-grained			
20'	X	2/3/4	lt tan sand - well sorted, med-grained			
25'	X	2/7/3	Brown sandy silt			Some balling of cuttings } 22'-24'
30'	X	9/8/12	lt tan sand, med- course grained, some pebbles, oxidation			
35'	X	10/14/15	lt tan sand - well sorted - med fine grained			
40'	X	11/14/14	lt tan sand fine grained			
45'	X	9/15/13	brn sandy silt, minor clay, wet, oxidation			Large chunky clay cuttings } 43-44'
50'	X	14/25/27	lt tan med grained sand, well sorted			
	X	14/29/29	lt tan sand med-fine grained well sorted			

KERN DELTA WATER DISTRICT

SOIL BORING LITHOLOGIC LOG

SITE: AC Electric

DATE: 3/15/2021

TIME: 10:30 am

BORING NUMBER: 9 PAGE 1 OF 1

BORING LOCATION: Left of Old River

LOGGED BY: J. Margery

CHECKED BY:

BORING TOTAL DEPTH: 50' SET

APPROXIMATE GS ELEV: 3341'

DRILLING CONTRACTOR: SET

DRILLING METHOD: Hollow Stem

Depth	Sample Recovery	Blow Count	Lithologic Description	USCS	Graphic Log	Comments
5'						silt/sand cuttings ↓
5'	X	2/3	lt tan/brown silty sand			
10'	X	1/3	lt tan sand, med-grained, well sorted			
15'	X	3/5	tan sand, well sorted, med-grained			
20'	X	4/12	tan sand, well sorted, med-grained			
25'	X	7/14	tan sand, well sorted, med-grained			
30'	X	9/20	lt tan sand, well sorted, med-grained			
35'	X	10/19	lt tan sand, well sorted, med-grained			
40'	X	7/16	tan sand, fine grained			
45'	X	7/13	tan silt, minor clay			
50'	X	9/12	grey sandy silt, minor clay			

DRAWINGS

KERN DELTA WATER DISTRICT OLD RIVER RECHARGE BASIN PROJECT



DRAWING NO. **1**
of 37

ZEIDERS CONSULTING
1655 GREELEY ROAD
BAKERSFIELD, CA. 93314
(661) 589-8366

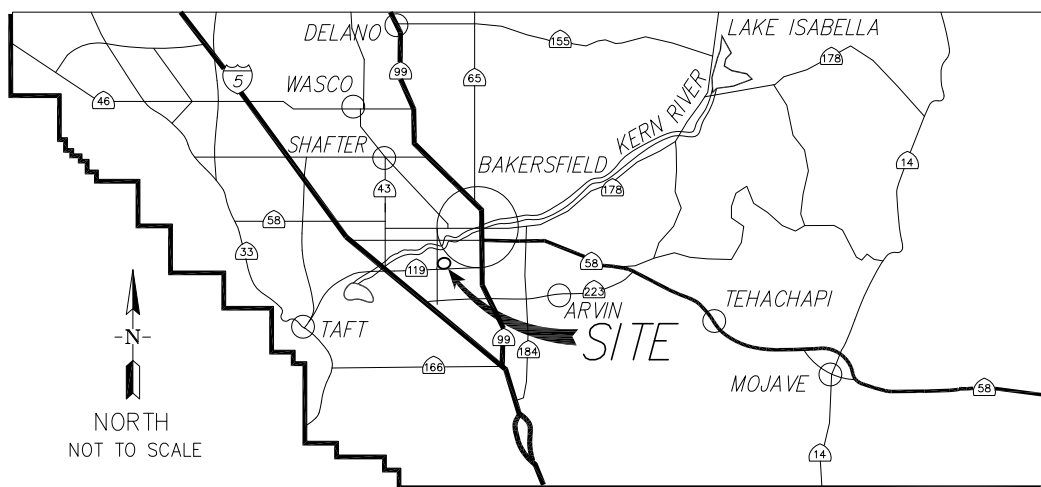
**KERN DELTA
WATER DISTRICT**
501 TAFT HIGHWAY, BAKERSFIELD, CALIFORNIA, 93307

**KERN DELTA WATER DISTRICT
OLD RIVER GROUNDWATER
RECHARGE FACILITY**
COVER SHEET / INDEX

REV. DATE DESCRIPTION
DATE: OCTOBER 10, 2022
SCALE: AS NOTED
DRAWN BY: J. STORMONT
CHECKED BY: W. ZEIDERS
FILE NAME: OLD RIVER RECHARGE PLANS

SHEET INDEX

- | | |
|---|-------------------------------------|
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| 2. KERN DELTA WATER DISTRICT NOTES | 32. CANAL TO POND 4 PIPE STRUCTURE |
| 3. SITE ACCESS PLAN | 33. POND 4 TO CANAL PIPE STRUCTURE |
| 4. POND LAYOUT | 34. TYPICAL DETAILS |
| 5. POND 1 PLAN | 35. INLET/OUTLET STRUCTURE DETAILS |
| 6. POND 2 PLAN | 36. EARTHWORK QUANTITY CALCULATIONS |
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| 16. LEVEE CROSS SECTIONS | |
| 17. LEVEE CROSS SECTIONS | |
| 18. LEVEE CROSS SECTIONS | |
| 19. LEVEE CROSS SECTIONS | |
| 20. LEVEE CROSS SECTIONS | |
| 21. LEVEE CROSS SECTIONS | |
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| 23. WELL PAD CROSS SECTIONS (EXISTING WELL) | |
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| 26. STINE CANAL 48" HDPE ROAD CROSSING | |
| 27. CANAL TO POND 1 PIPE STRUCTURE | |
| 28. POND 1 TO POND 2 INTER BASIN STRUCTURE | |
| 29. POND 2 TO POND 3 INTER BASIN STRUCTURE | |
| 30. POND 2 TO CANAL PIPE STRUCTURE | |



LOCATION MAP

ENGINEER

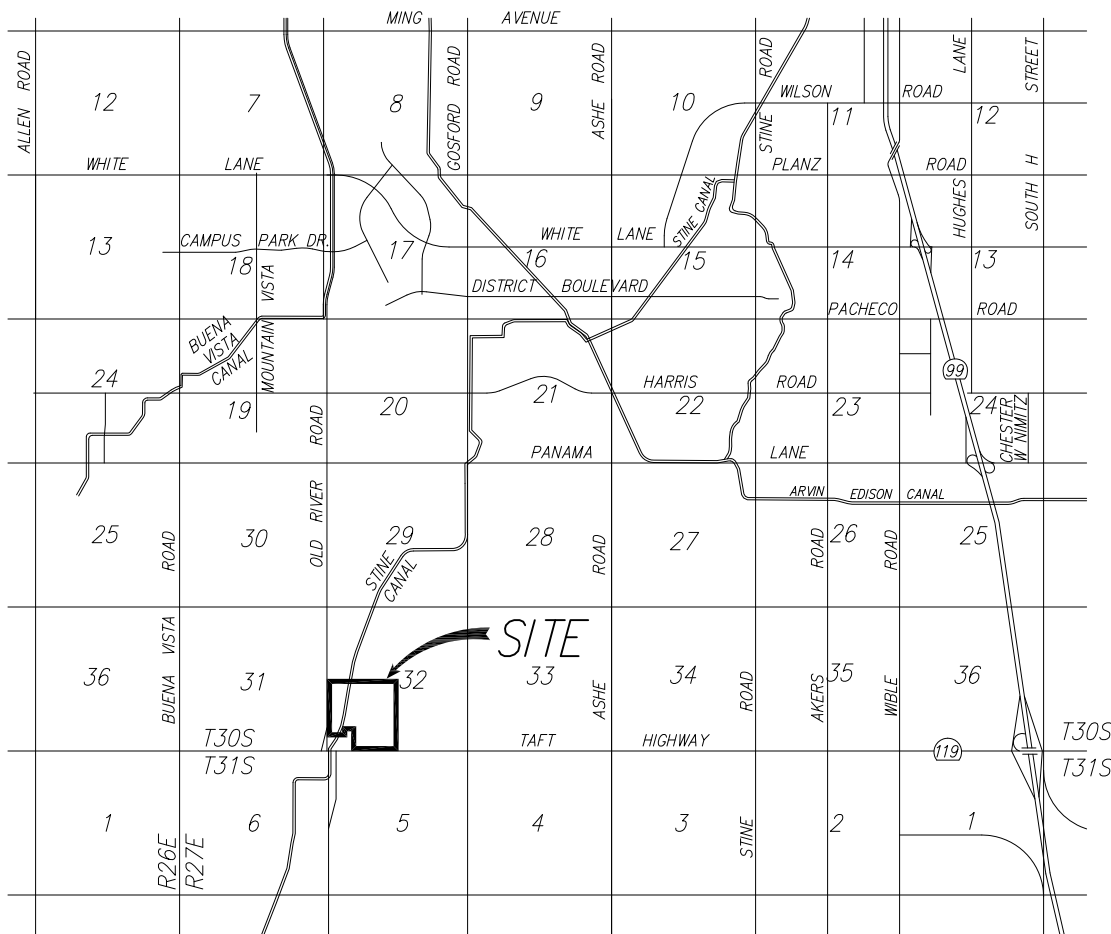
ZEIDERS CONSULTING
1655 GREELEY ROAD
BAKERSFIELD, CA. 93314
(661)589-8366
wzeiders@zeidersconsulting.com

BASIS OF BEARING

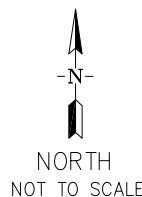
WEST LINE OF THE SOUTHWEST 1/4 OF SECTION 32,
T.30S., R.27E, M.D.M., A BEARING OF N00°26'56"E
PER RECORD OF SURVEY FILED JULY 9, 2007
IN BOOK 24, PAGE 71, OF RECORD OF SURVEYS
IN THE OFFICE OF THE COUNTY SURVEYOR,
KERN COUNTY, CALIFORNIA.

BENCH MARK USED

TOP OF THE WEST END OF THE
NORTH HEADWALL OF TAFT HIGHWAY CROSSING OF THE
STINE CANAL, APPROXIMATELY 74 FEET EAST OF
THE INTERSECTION OF TAFT HIGHWAY AND OLD RIVER RD,
SAID LOCATION ALSO NEAR THE SOUTHWEST
CORNER OF SECTION 32, T.30S., R.27E., M.D.M.
ELEVATION = 342.75 FEET NAVD88



VICINITY MAP



ENGINEER:

William W. Zeiders
WILLIAM W. ZEIDERS R.C.E. 40031
EXP. 12/31/2023

10-13-22

KERN DELTA WATER DISTRICT NOTES:

1.

THE STINE CANAL IS UNDER THE JURISDICTION OF THE KERN DELTA WATER DISTRICT. THE CONTRACTOR, IN THE PERFORMANCE OF THE WORK HEREUNDER, SHALL AT ALL TIMES COMPLY WITH THE RULES AND REGULATIONS AS THE SAME PRESENTLY EXIST OR AS THEY MAY BE AMENDED FROM TIME TO TIME. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO INFORM HIMSELF REGARDING THE CONTENTS OF SAID RULES AND REGULATIONS.
2.

THE CONTRACTOR SHALL INCLUDE THE KERN DELTA WATER DISTRICT AND EACH OF ITS DIRECTORS, OFFICERS, AGENTS, SERVANTS, EMPLOYEES, MEMBERS AND CONSULTANTS, AS ADDITIONAL INSUREDS UNDER AND WITH RESPECT TO ANY AND ALL INSURANCE COVERAGE REQUIRED BY THESE SPECIFICATIONS, INCLUDING \$1,000,000.00 LIABILITY LIMIT.
3.

THE STINE CANAL WILL BE SHUT DOWN FOR A PERIOD OF _____ CALENDAR DAYS. THE SHUTDOWN WILL COMMENCE ON _____, 20__ AND END ON _____, 20___. CANAL DEWATERING WILL COMMENCE ON OR BEFORE THE MORNING OF THE FIRST DAY OF THE SCHEDULED SHUTDOWN. THE CONTRACTOR, DURING ALL OTHER PERIODS OF TIME SHALL BE REQUIRED TO MAINTAIN THE CANAL IN FULL OPERATION. "FULL OPERATION", FOR THE PURPOSES HEREOF, SHALL MEAN CONTINUOUS, CONSTANT, AND SAFE OPERATION AT FLOW RATES AS MAY BE REQUIRED OR SPECIFIED BY THE DISTRICT FROM TIME TO TIME AT THE DISTRICT'S SOLE DISCRETION.
4.

IF THE CONTRACTOR IS WORKING IN OR AROUND THE CANAL, IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE FOR HANDLING OF ANY WATER THAT MAY REMAIN IN THE CANAL OR IN AND AROUND THE JOB SITE DURING THE SHUTDOWN PERIOD. IT SHALL ALSO BE THE RESPONSIBILITY OF THE CONTRACTOR TO HIS REGARD, THE CONTRACTOR IS ADVISED AND ACKNOWLEDGES THAT, DURING PERIODS OF PRECIPITATION IN THE BAKERSFIELD AREA, THE STINE CANAL IS USED FOR THE DISPOSAL OF SURFACE DRAINAGE WATER. KERN DELTA WATER DISTRICT CANNOT AND DOES NOT WARRANT OR REPRESENT THE ACTUAL AMOUNT OF WATER THE CONTRACTOR MAY BE REQUIRED TO HANDLE DURING THE CONSTRUCTION PERIOD AND THE CONTRACTOR ASSUMES ALL RISK AND RESPONSIBILITY THEREFORE REGARDLESS OF THE ACTUAL VOLUME THEREOF.
5.

AT LEAST TWO (2) WORKING DAYS PRIOR TO THE BEGINNING WORK ON THE PROJECT, (1) THE CONTRACTOR SHALL CONTACT THE KERN DELTA WATER DISTRICT, 501 TAFT HIGHWAY; (2) CONTRACTOR SHALL OBTAIN A PERMIT TO WORK WITHIN THE CANAL RIGHT-OF-WAY FROM KERN DELTA WATER DISTRICT; (3) CONTRACTOR SHALL CONFIRM THE ACTUAL DATES OF THE SCHEDULED SHUTDOWN PERIOD FOR THE STINE CANAL, AND (4) CONTRACTOR SHALL PROVIDE KERN DELTA WATER DISTRICT WITH A COPY OF THE ADDITIONAL INSURED'S ENDORSEMENT.
6.

THE CONTRACTOR IS ADVISED AND ACKNOWLEDGES THAT SECTION 53069.85 OF THE GOVERNMENT SATE CODE OF THE STATE OF CALIFORNIA PROVIDES AS FOLLOWS:

THE LEGISLATIVE BODY OF A CITY, COUNTY, OR DISTRICT MAY INCLUDE OR CAUSE TO BE INCLUDED IN THE CONTRACTS FOR PUBLIC PROJECTS A PROVISION ESTABLISHING THE TIME WITHIN WHICH THE WHOLE OR ANY SPECIFIED PORTION OF THE WORK CONTEMPLATED SHALL BE COMPLETED. THE LEGISLATIVE BODY MAY PROVIDE THAT FOR EACH DAY COMPLETION IS DELAYED BEYOND THE SPECIFIED TIME, THE CONTRACTOR SHALL FORFEIT AND PAY TO SUCH AGENCY INVOLVED A SPECIFIED SUM OF MONEY, TO BE DEDUCTED FROM ANY PAYMENTS DUE OR TO BECOME DUE TO THE CONTRACTOR. THE SUM SO SPECIFIED IS VALID AS LIQUIDATED DAMAGES UNLESS MANIFESTLY UNREASONABLE UNDER THE CIRCUMSTANCES EXISTING AT THE TIME THE CONTRACT WAS MADE. A CONTRACT FOR SUCH A PROJECT MAY ALSO PROVIDE FOR THE PAYMENT OF EXTRA COMPENSATION TO THE CONTRACTOR, AS A BONUS FOR COMPLETION OF THE PROJECT PRIOR TO THE SPECIFIED TIME. SUCH PROVISIONS, IF USED, SHALL BE INCLUDED IN THE SPECIFICATIONS UPON WHICH BIDS ARE RECEIVED, WHICH SPECIFICATIONS SHALL CLEARLY SET FORTH THE PROVISIONS. THEN THE CONTRACTOR AGREES THAT (1) THE PROJECT IS A "PUBLIC PROJECT" WITHIN THE MEANING OF SAID CODE SECTION; (2) THAT DAMAGES TO KERN DELTA WATER DISTRICT SHOULD CONTRACTOR DELAY COMPLETION OF ARE DIFFICULT TO ASCERTAIN OR ESTIMATE, BUT COULD BE SUBSTANTIAL; (3) THAT SUCH DAMAGES ARE MEASURABLE NOT ONLY BY POTENTIAL LOSS OF WATER SALES TO THE DISTRICT, BUT ALSO A POTENTIAL LOSS OF GROWING CROPS TO DISTRICT'S CUSTOMERS AND/OR A POTENTIAL CLAIM AGAINST DISTRICT'S WATER RIGHTS; (4) THAT, UNDER THE CIRCUMSTANCES EXISTING AT THE TIME THIS CONTRACT IS MADE, THE SUM OF THREE THOUSAND AND NO/100 DOLLARS (\$3,000) PER DAY FOR EACH AND EVERY CALENDAR DAYS' DELAY IN RESTORING THE CANAL TO FULL OPERATION (AS THAT TERM IS DEFINED IN PARAGRAPH 3 ABOVE) IS NOT MANIFESTLY UNREASONABLE AND THEREFORE IS VALID AS LIQUIDATED DAMAGES. IT IS THEREFORE UNDERSTOOD AND AGREED THAT IN ADDITION TO ANY OTHER LIABILITIES WHICH THE CONTRACTOR MAY HAVE TO OTHERS ARISING OUT OF OR ASSOCIATED WITH A DELAY IN COMPLETION OF THE PROJECT, THE CONTRACTOR SHALL BE LIABLE TO AND SHALL PROMPTLY PAY TO THE KERN DELTA WATER DISTRICT AN AMOUNT EQUAL TO THREE THOUSAND DOLLARS AND NO/100 DOLLARS (\$3,000.00) PER DAY FOR EACH AND EVERY CALENDAR DAYS' DELAY IN RESTORATION OF THE CANAL TO FULL OPERATION (AS THAT TERM IS DEFINED IN PARAGRAPH 3 ABOVE) IN EXCESS OF THE NUMBER OF CALENDAR DAYS PRESCRIBED FOR THE PERFORMANCE OF THE WORK (I.E. BEING THE NUMBER OF DAYS ALLOWED DURING THE SHUTDOWN PERIOD.)

KERN DELTA WATER DISTRICT NOTES (CONTINUED):

7.

IF THE CONTRACTOR BECOMES SUBJECT TO LIQUIDATED DAMAGES AS SPECIFIED ABOVE, AND IF KERN DELTA WATER DISTRICT PROVIDES NOTICE OF THE FACT TO THE CONTRACTOR (INCLUDING THEREIN THE AMOUNT OF SUCH DAMAGES) THEN THE DISTRICT SHALL RETAIN THE AMOUNT OF DAMAGES SO SPECIFIED FROM ANY MONIES THEN DUE OR THAT MAY THEREFORE BECOME DUE TO THE CONTRACTOR UNDER THIS CONTRACT. HEREINAFTER PROVIDED.
8.

FULL COMPENSATION FOR COMPLYING WITH EACH AND ALL OF THE TERMS AND PROVISIONS CONTAINED IN THIS SECTION ENTITLED "RELATIONS WITH KERN DELTA WATER DISTRICT" SHALL BE INCLUDED IN THE CONTRACT BID FOR THE PROJECT AND PAID FOR THE VARIOUS ITEMS OF WORK CONTAINED THEREIN, AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED THEREFORE CHARGEABLE AGAINST KERN DELTA WATER DISTRICT OR OTHERWISE.
9.

THIS PROJECT IS SUBJECT TO PREVAILING WAGE.

UTILITY SEARCH:

THE ENGINEER HAS MADE A DILIGENT SEARCH OF RECORDS, CONTACTED UTILITY COMPANIES AND OTHERWISE ENDEAVORED TO INDICATE ON THE DRAWINGS, UTILITIES WHICH EXIST WITHIN THE LIMITS OF THE WORK. HOWEVER, SINCE THE LOCATIONS AND DESCRIPTIONS WERE NOT ALL OBTAINED FROM ACTUAL FIELD SURVEYS, THE ENGINEER DOES NOT ASSUME RESPONSIBILITY FOR ERRORS OR OMISSIONS TO THE LOCATIONS AND DESCRIPTIONS OF EXISTING UTILITIES. THE CONTRACTOR SHALL CONTACT THE OWNERS OF UNDERGROUND FACILITIES AND REQUEST THEY LOCATE AND MARK ON THE GROUND THEIR FACILITIES PRIOR TO BEGINNING ANY WORK.

CALL 1-800-642-244 FOR KERN COUNTY
OR 1-800-227-260 FOR KERN COUNTY

PRIOR TO DELIVERY OF ANY MATERIALS OR BEGINNING EXCAVATION FOR ANY CONSTRUCTION INCLUDING BUT NOT LIMITED TO PRE-IRRIGATION, CLEARING AND GRUBBING, AND PRIOR TO BRINGING ANY ADDITIONAL MEN OR EQUIPMENT ON THE JOB, THE CONTRACTOR SHALL EXPOSE AND CONFIRM THE EXACT LOCATION OF ALL UNDERGROUND UTILITIES AND REPORT TO THE ENGINEER OF SAID LOCATIONS AND ANY POSSIBLE CONFLICT WITH THE WORK TO BE PERFORMED. THE ENGINEER SHALL THEN DETERMINE IF ANY REVISIONS TO THE PLANS PRIOR TO THE CONTRACTOR PROCEEDING WITH ANY WORK ON OR AROUND THE AFFECTED LINE OR LINES. NO EXTRA COMPENSATION WILL BE ALLOWED FOR EXTRA COSTS INCURRED DUE TO CONTRACTOR'S FAILURE TO STRICTLY FOLLOW THIS PROCEDURE.

GENERAL NOTES:

1.

CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS BEFORE START OF CONSTRUCTION, INCLUDING A NO-FEE PERMIT TO WORK WITHIN CITY OR COUNTY RIGHTS-OF-WAY AND A PERMIT FROM THE KERN DELTA WATER DISTRICT FOR ANY CONSTRUCTION WITHIN THE CANAL RIGHT-OF-WAY, PIPELINE RIGHT-OF-WAY, OR PERCOLATION BASIN. ANY TRENCHING TO BE CONDUCTED WITHIN THIS PROJECT SHALL BE BACKFILLED AND COMPACTED PER THESE PLANS AND SPECIFICATIONS.
2.

UNLESS OTHERWISE SPECIFIED, ALL IMPROVEMENTS SHALL BE IN ACCORDANCE WITH "GREENBOOK" STANDARD SPECIFICATIONS.
3.

IMPROVEMENTS SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, 1988 EDITION AND AS DETERMINED APPLICABLE BY THE DISTRICT ENGINEER.
4.

CONTRACTOR AGREES THAT HE SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR THE JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE COURSE OF CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY: THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS: THAT THE CONTRACTOR SHALL DEFEND, INDEMNIFY AND HOLD THE DISTRICT, OWNER, AND THE ENGINEER HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING FOR LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE DISTRICT, OWNER, OR THE ENGINEER.
5.

SHOULD A PROBLEM ARISE DURING THE COURSE OF CONSTRUCTION, IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO NOTIFY THE RESIDENT ENGINEER IMMEDIATELY PRIOR TO ANY FURTHER WORK.
6.

ANY WORK WHICH AFFECTS ANY EXISTING COUNTY OR STATE MAINTAINED ROAD OR TRAFFIC THEREON SHALL BE COMPLETED IN CONFORMANCE WITH THE PERMIT.

GENERAL NOTES (CONTINUED):

7.

THE LOCATIONS OF EXISTING UTILITIES AND UNDERGROUND PIPELINES ARE SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION AND DEPTH OF ALL EXISTING UTILITIES AND UNDERGROUND PIPELINES BEFORE COMMENCING WORK. CONTRACTOR AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY HIS FAILURE TO EXACTLY LOCATE, PRESERVE AND PROTECT ANY AND ALL UNDERGROUND UTILITIES AND PIPELINES. THE CONTRACTOR SHALL CALL USA (UNDERGROUND SERVICE ALERT) 1-800-227-2600 TWO WORKING DAYS PRIOR TO ANY CONSTRUCTION OR EXCAVATION.
8.

IF THE CONTRACTOR IS IN DOUBT AS TO THE MEANING OF ANY PART OF THE PLAN AND SPECIFICATIONS OR FINDS DISCREPANCIES IN OR OMISSIONS FROM THE DRAWINGS, HE SHALL SUBMIT A WRITTEN REQUEST FOR AN INTERPRETATION OR A CORRECTION THEREOF, PRIOR TO FILING HIS BID PRICE FOR THE PROJECT.
9.

CONSTRUCTION STAKING IS TO BE BASED ON DISTRICT'S PLANS, DRAWINGS, AND OTHER DOCUMENTS; AND IS TO BE ACCOMPLISHED BY THE DISTRICT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPLACEMENT OF ANY GRADE STAKES OR REFERENCE POINTS THAT ARE DESTROYED OR OTHERWISE LOST, AT NO ADDITIONAL COST TO THE DISTRICT.
10.

ALL EXISTING IMPROVEMENTS REMOVED, DAMAGED, OR UNDERCUT BY THE CONTRACTOR SHALL BE REPLACED IN KIND AS DIRECTED BY THE ENGINEER.
11.

COMPACTION TESTS SHALL BE THE RESPONSIBILITY OF THE DISTRICT. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE DISTRICT INSPECTOR.
12.

KERN DELTA WATER DISTRICT SHALL NOT BE RESPONSIBLE OR LIABLE FOR UNAUTHORIZED CHANGES TO, OR USES OF THESE PLANS. ALL CHANGES TO THESE PLANS MUST BE APPROVED IN WRITING BY KERN DELTA WATER DISTRICT.
13.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR DEWATERING ALL TRENCHES. IF TRENCHES OR PIPING BECOME DAMAGED DUE TO WATER INFILTRATION, IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO REPAIR THE TRENCH AND PIPING TO THE SATISFACTION OF THE ENGINEER AT THE CONTRACTORS EXPENSE.
14.

UNDER NO CIRCUMSTANCES SHALL WATER JETTING SHALL BE USED FOR SOIL COMPACTION. BACKFILL OF HDPE PIPING SHALL BE ACCOMPLISHED AS FOLLOWS: FIRSTLY, THE HAUNCHES OF THE PIPING SHALL BE SLURRIED WITH A 1.5-SACK (MINIMUM) CEMENT SLURRY UP TO THE SPRINGLINE. THE SLURRY SHALL BE VIBRATED IN PLACE AS IT IS POURED WITH A MECHANICAL VIBRATOR OPERATED BY EXPERIENCED PERSONNEL, AND THE CONTRACTOR SHALL ENSURE THAT THE PIPING IS SECURED IN PLACE AS TO PREVENT FLOATING OF THE PIPE. SECONDLY, ABOVE THE SPRINGLINE, THE BACKFILL SHALL BE COMPACTED TO FINISHED GRADE TO A MINIMUM COMPACTION RATIO OF 95% PER ASTM D698.
15.

ALL EXISTING FACILITIES, INCLUDING BUT NOT LIMITED TO STRUCTURES, POLES, PIPELINES, CONDUITS, CANALS AND APPURTENANCES, SHALL BE PROTECTED IN PLACE.
16.

ALL GRADING AND SITE PREPARATION SHALL CONFORM TO THESE PLANS, AND THE PROJECT SPECIFICATIONS AND PROJECT BORINGS. IN AND WHICH ARE MADE A PART HEREOF, EXTRA COMPENSATION WILL NOT BE ALLOWED FOR CONTRACTOR'S FAILURE TO READ AND TAKE INTO CONSIDERATION ALL REQUIREMENTS CONTAINED IN THE ABOVE PARAGRAPH PRIOR TO BIDDING.
17.

EARTHWORK QUANTITIES ARE FINAL PAY QUANTITIES.
18.

CONCRETE, MORTAR, AND RELATED MATERIALS:
- 18.A.

CEMENT SLURRY USED FOR SLURRY CUT-OFFS AND FOR BACKFILL OF THE HDPE PIPING UP TO THE SPRINGLINE MUST BE A MINIMUM 1.5-SACK MIX. THE SLURRY SHALL BE IN CONFORMANCE TO ASTM C150, TYPE (SULFATE RESISTANT), AND SHALL BE ENTIRELY FROM ONE MANUFACTURER.
- 18.B.

ALL WATER FOR CONCRETE SHALL BE CLEAN AND FREE FROM DETRIMENTAL AMOUNTS OF ACID, ALKALI, AND ORGANIC MATTER AND SHALL BE FROM AN APPROVED WATER SUPPLY.
- 18.C.

CONCRETE RIP-RAP SHALL BE CLEAN CONCRETE OR ROCK NO LARGER THAN 16 INCHES IN THE LARGEST DIMENSION. RIP-RAP WILL NOT BE ACCEPTED IF IT CONTAINS ANY STEEL REINFORCEMENT, WOOD, RUBBISH, OR OTHER MATERIALS THAT THE DISTRICT CONSIDERS DELETERIOUS. RIP-RAP SHALL BE ANGULAR TO SUB-ROUNDED IN SHAPE WITH THE GREATEST DIMENSION NO GREATER THAN THREE TIMES THE SMALLEST DIMENSION.



REV.	DATE	DESCRIPTION
1	10/10/2022	ISSUED FOR BIDDING
2	10/10/2022	REVISED PER DISTRICT COMMENTS

DATE: OCTOBER 10, 2022
SCALE: AS NOTED
DRAWN BY: J. STORMONT
CHECKED BY: W. ZEIDERS
FILE NAME: OLD RIVER RECHARGE PLANS

KERN DELTA WATER DISTRICT
OLD RIVER GROUNDWATER
RECHARGE FACILITY
KERN DELTA WATER DISTRICT NOTES



501 TAFT HIGHWAY, BAKERSFIELD, CALIFORNIA, 93307

ZEIDERS CONSULTING
1655 GREELEY ROAD
BAKERSFIELD, CA. 93314
(661) 589-8366

DRAWING NO. 2 of 37

SITE ACCESS & PLANSHEET KEY MAP



DRAWING NO. 3 of 37

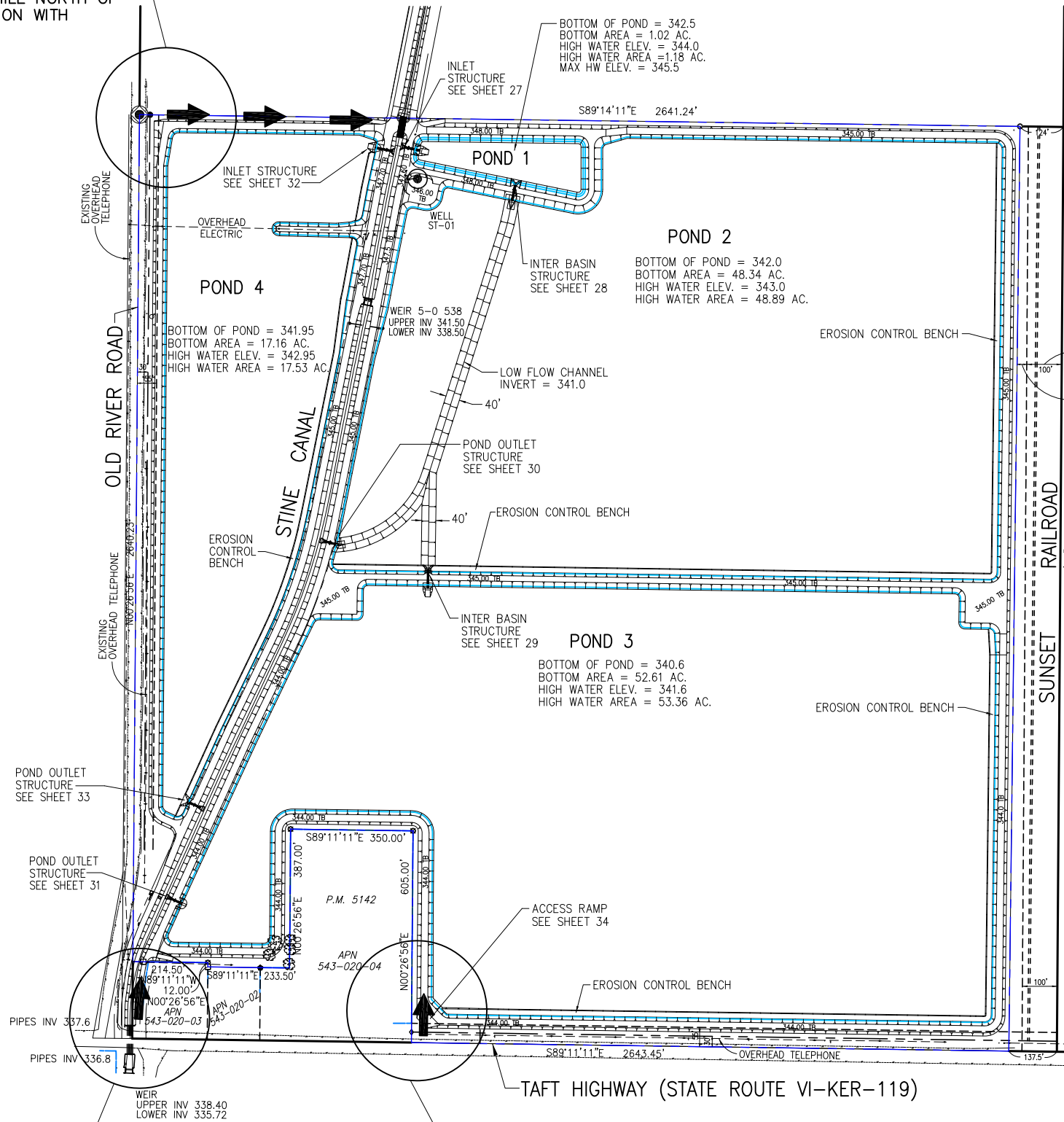
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KERN DELTA
WATER DISTRICT
501 TAFT HIGHWAY, BAKERSFIELD, CALIFORNIA, 93307

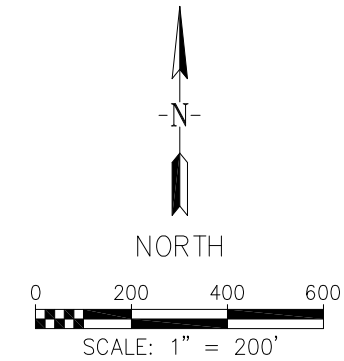
KERN DELTA WATER DISTRICT
OLD RIVER GROUNDWATER
RECHARGE FACILITY
SITE ACCESS PLAN

REV. DATE DESCRIPTION
DATE: OCTOBER 10, 2022
SCALE: AS NOTED
DRAWN BY: J. STORMONT
CHECKED BY: W. ZEIDERS
FILE NAME: OLD RIVER RECHARGE

PRIMARY SITE ACCESS
TO WEST PONDS
OFF OLD RIVER ROAD
APPROX. 1/2 MILE NORTH OF
THE INTERSECTION WITH
TAFT HIGHWAY



LEGEND
➔ = SITE ACCESS ROUTE
⊙ = EXISTING WATER WELL



POND AREAS

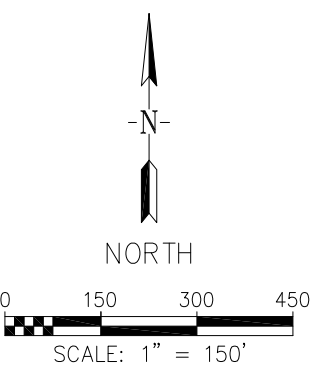
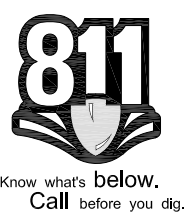
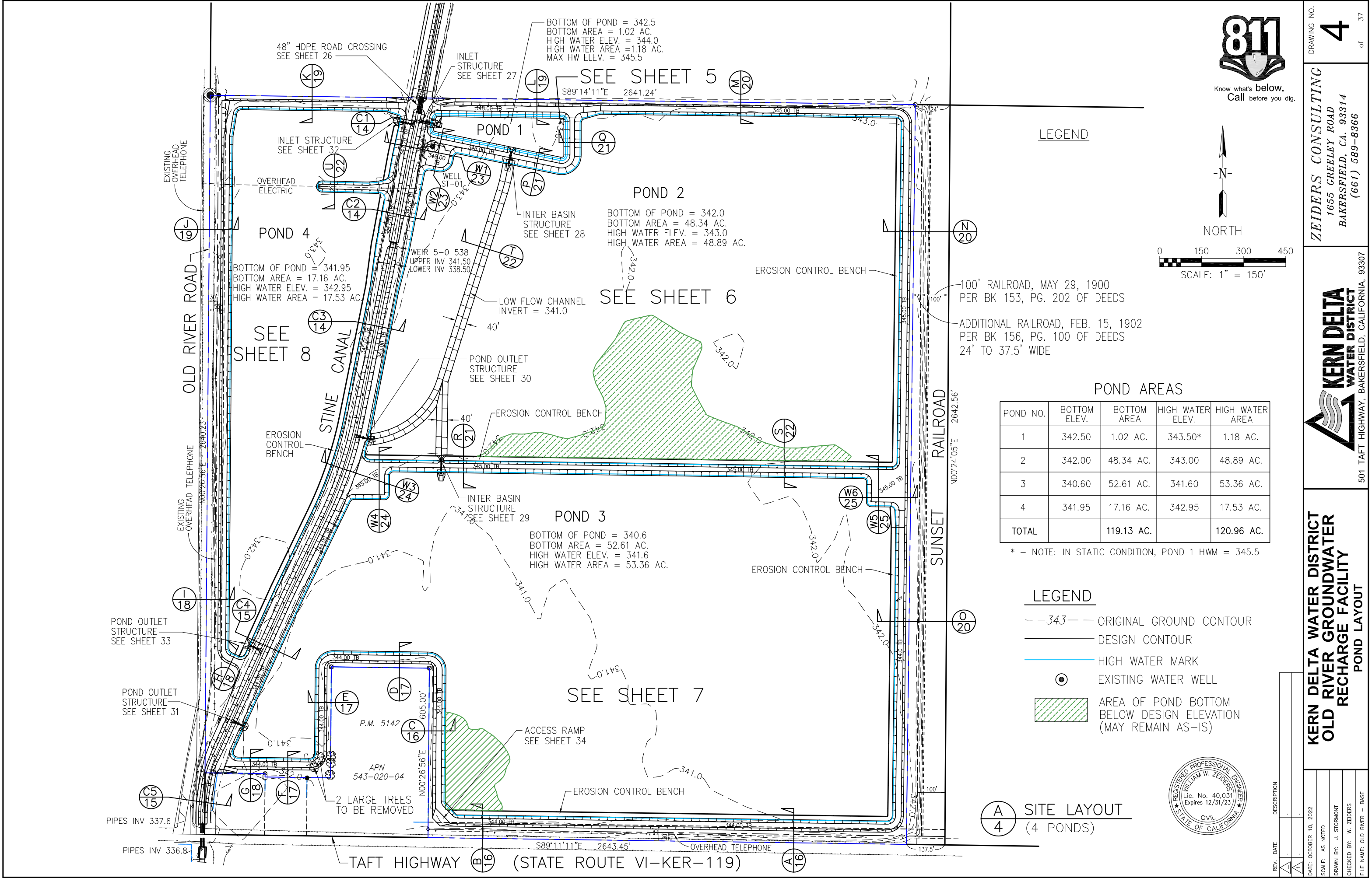
POND NO.	BOTTOM ELEV.	BOTTOM AREA	HIGH WATER ELEV.	HIGH WATER AREA
1	342.50	1.02 AC.	343.50*	1.18 AC.
2	342.00	48.34 AC.	343.00	48.89 AC.
3	340.60	52.61 AC.	341.60	53.36 AC.
4	341.95	17.16 AC.	342.95	17.53 AC.
TOTAL		119.13 AC.		120.96 AC.

* - NOTE: IN STATIC CONDITION, POND 1 HWM = 345.5



SECONDARY SITE ACCESS OFF TAFT HIGHWAY
EAST OF INTERSECTION WITH OLD RIVER
ROAD - EAST SIDE OF STINE CANAL

PRIMARY SITE ACCESS OFF
TAFT HIGHWAY, APPROX.
900' EAST OF THE INTER-
SECTION WITH OLD RIVER ROAD



LEGEND

POND AREAS

POND NO.	BOTTOM ELEV.	BOTTOM AREA	HIGH WATER ELEV.	HIGH WATER AREA
1	342.50	1.02 AC.	343.50*	1.18 AC.
2	342.00	48.34 AC.	343.00	48.89 AC.
3	340.60	52.61 AC.	341.60	53.36 AC.
4	341.95	17.16 AC.	342.95	17.53 AC.
TOTAL		119.13 AC.		120.96 AC.

* - NOTE: IN STATIC CONDITION, POND 1 HWM = 345.5

LEGEND

- - 343 - - ORIGINAL GROUND CONTOUR
- — — — — DESIGN CONTOUR
- — — — — HIGH WATER MARK
- EXISTING WATER WELL
- [Hatched Box] AREA OF POND BOTTOM BELOW DESIGN ELEVATION (MAY REMAIN AS-IS)

A
4 SITE LAYOUT
(4 PONDS)



DRAWING NO.
4
of 37

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BAKERSFIELD, CA. 93314
(661) 589-8366

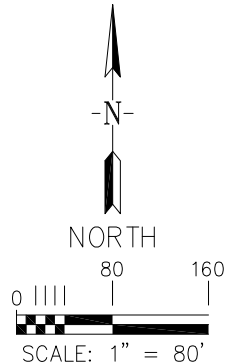
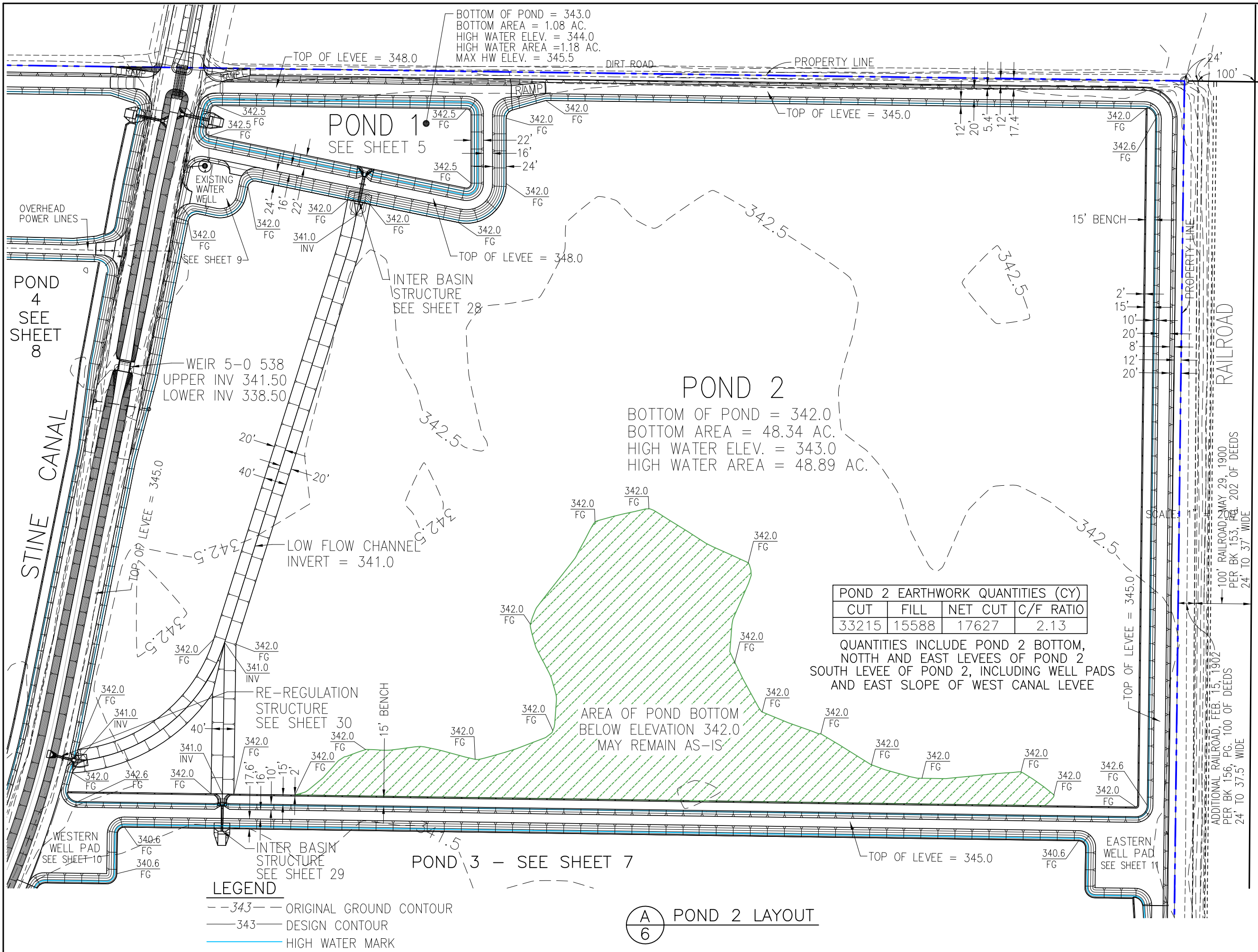
KERN DELTA WATER DISTRICT

501 TAFT HIGHWAY, BAKERSFIELD, CALIFORNIA, 93307

**KERN DELTA WATER DISTRICT
OLD RIVER GROUNDWATER
RECHARGE FACILITY**

POND LAYOUT

REV.	DATE	DESCRIPTION
1	OCTOBER 10, 2022	DATE: OCTOBER 10, 2022
2	AS NOTED	SCALE: AS NOTED
3	J. STORMONT	DRAWN BY: J. STORMONT
4	W. ZEIDERS	CHECKED BY: W. ZEIDERS
		FILE NAME: OLD RIVER - BASE



REV.	DATE	DESCRIPTION
1	OCTOBER 10, 2022	DATE: OCTOBER 10, 2022
2	AS NOTED	SCALE: AS NOTED
3	J. STORMONT	DRAWN BY: J. STORMONT
4	W. ZEIDERS	CHECKED BY: W. ZEIDERS
5	BASE	FILE NAME: OLD RIVER - BASE

**KERN DELTA WATER DISTRICT
OLD RIVER GROUNDWATER
RECHARGE FACILITY
POND 2 LAYOUT**



ZEIDERS CONSULTING
1655 GREELEY ROAD
BAKERSFIELD, CA. 93314
(661) 589-8366



Know what's below.
Call before you dig.

EXISTING
OVERHEAD
POWER
LINES



NORTH

0 100 200
SCALE: 1" = 100'

EXISTING
BOOSTER
PUMP

OLD RIVER ROAD

POND 4
SEE
SHEET 8

STINE CANAL

RE-REGULATION
STRUCTURE AND
PIPE (36" HDPE)
SEE SHEET 33
P.M. 5142

2 LARGE TREES
TO BE REMOVED
ACCESS RAMP
SEE SHEET 34

POND 3 EARTHWORK QUANTITIES (CY)			
CUT	FILL	NET CUT	C/F RATIO
54669	14338	40331	3.81

QUANTITIES INCLUDE POND 3 BOTTOM,
SOUTH AND EAST LEVEES OF POND 3
AND EAST SLOPE OF WEST CANAL LEVEE

EXISTING OVERHEAD
POWER LINES

POND 2 - SEE SHEET 6

POND 3

BOTTOM OF POND = 340.6
BOTTOM AREA = 52.61 AC.
HIGH WATER ELEV. = 341.6
HIGH WATER AREA = 53.36 AC.

TAFT HIGHWAY (ROUTE VI-KER-119)

A
7
POND 3 LAYOUT

LEGEND

--343-- ORIGINAL GROUND CONTOUR
---343--- DESIGN CONTOUR
--- HIGH WATER MARK



RAILROAD

SCALE: 1" = 200'

TOP OF LEVEE = 345.0
TOP OF EROSION CONTROL
BENCH = 341.1

TOP OF LEVEE = 345.0
TOP OF EROSION
CONTROL BENCH = 341.1

341.1
BENCH
340.6
FG

2'
15'
11.6'
20'
8'
12'
20'

ADDITIONAL RAILROAD, FEB. 15, 1902
PER BK 156, PG. 100 OF DEEDS
24' TO 37' WIDE

REV. DATE DESCRIPTION

DATE: OCTOBER 10, 2022

SCALE: AS NOTED

DRAWN BY: J. STORMONT

CHECKED BY: W. ZEIDERS

FILE NAME: OLD RIVER - BASE

KERN DELTA WATER DISTRICT
OLD RIVER GROUNDWATER
RECHARGE FACILITY
POND 3 LAYOUT



501 TAFT HIGHWAY, BAKERSFIELD, CALIFORNIA, 93307

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(661) 589-8366

DRAWING NO.

7

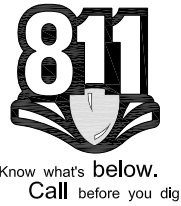
of 37

POND 1
SEE SHEET 5

POND 2 - SEE SHEET 6

LEGEND

— 343 — ORIGINAL GROUND CONTOUR
— 343 — DESIGN CONTOUR
— HIGH WATER MARK



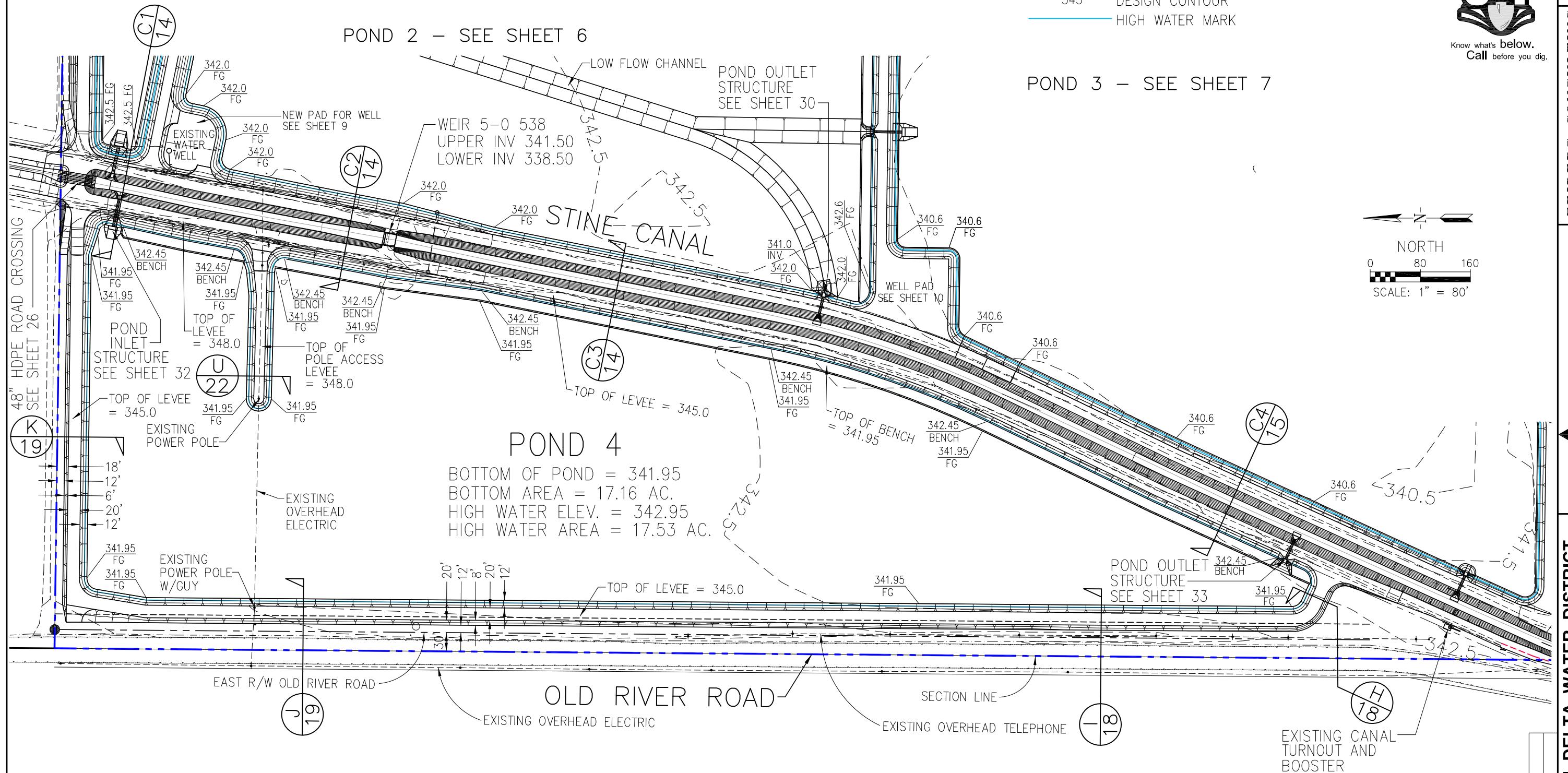
8 of 37

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KERN DELTA
WATER DISTRICT
501 TAFT HIGHWAY, BAKERSFIELD, CALIFORNIA, 93307


**KERN DELTA WATER DISTRICT
OLD RIVER GROUNDWATER
RECHARGE FACILITY
POND 4 LAYOUT**

REV.	DATE	DESCRIPTION
1	10/10/2022	AS NOTED
1	10/10/2022	AS NOTED
DATE: OCTOBER 10, 2022		
SCALE: AS NOTED		
DRAWN BY: J. STORMONT		
CHECKED BY: W. ZEIDERS		
TITLE NAME: OLD RIVER RECHARGE		

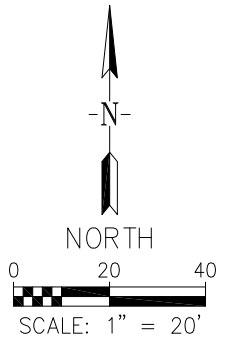
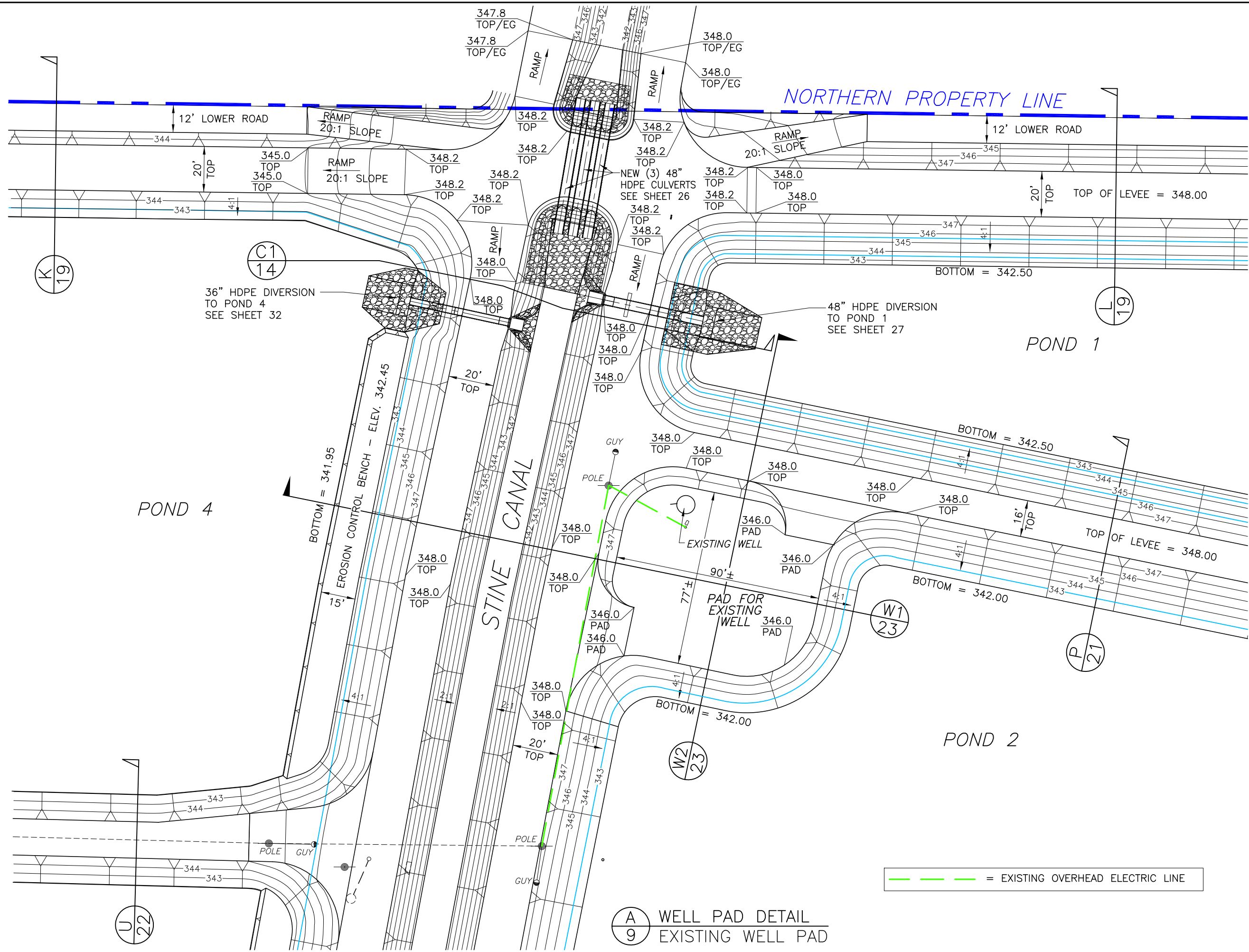


POND 4 EARTHWORK QUANTITIES (CY)			
CUT	FILL	NET CUT	C/F RATIO
16976	8135	8841	2.09

QUANTITIES INCLUDE POND 4 BOTTOM,
NORTH, SOUTH AND WEST LEVEES OF POND 4
POLE ACCESS LEVEE
AND WEST SLOPE OF EAST CANAL LEVEE


 POND 4 LAYOUT



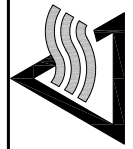


--- = EXISTING OVERHEAD ELECTRIC LINE

A
9 WELL PAD DETAIL
EXISTING WELL PAD

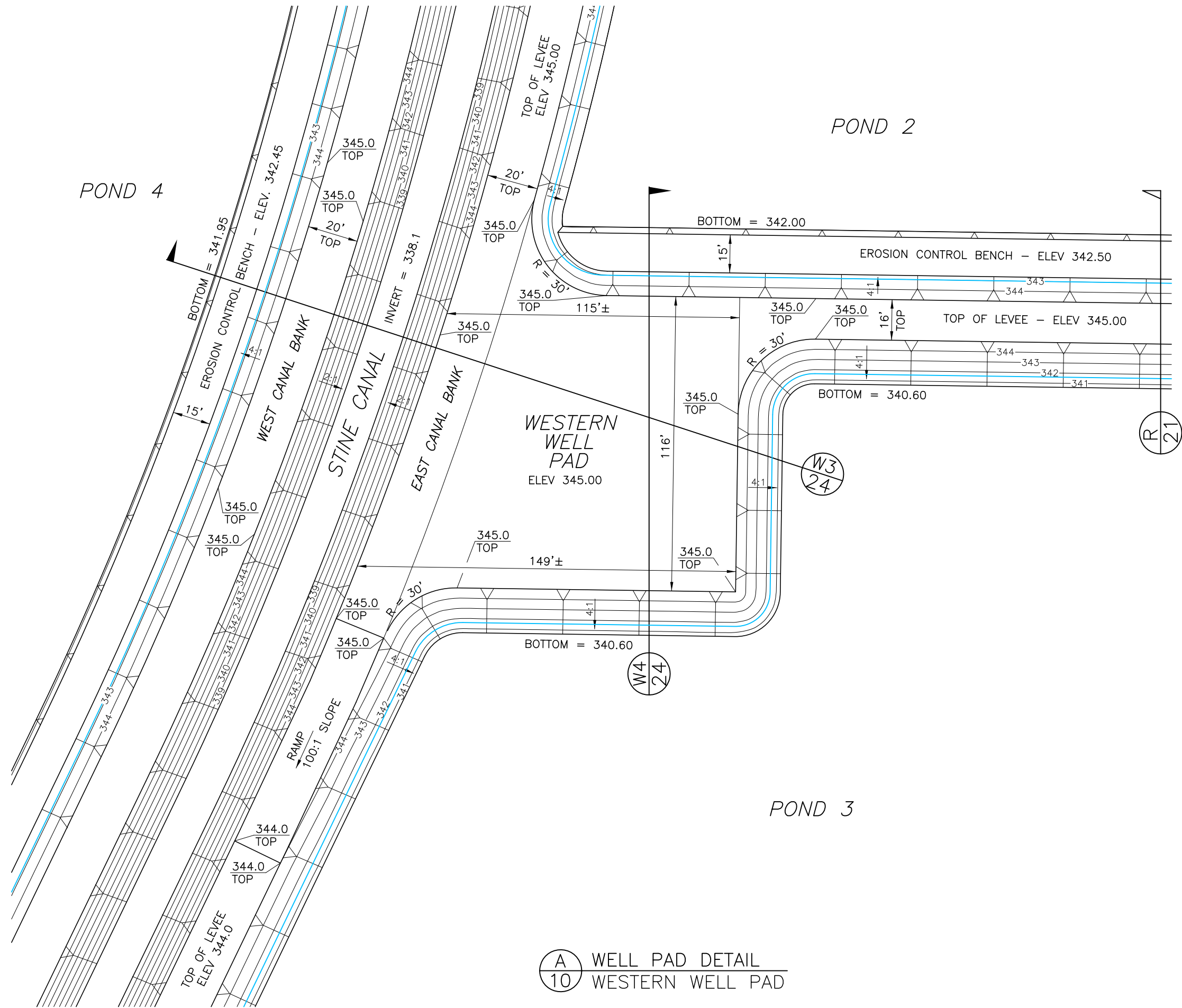
DRAWING NO.
9
of 37

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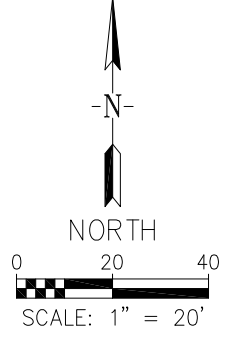
**KERN DELTA
WATER DISTRICT**
501 TAFT HIGHWAY, BAKERSFIELD, CALIFORNIA, 93307

**KERN DELTA WATER DISTRICT
OLD RIVER GROUNDWATER
RECHARGE FACILITY**
WELL PAD DETAIL (EXISTING WELL SITE)

REV.	DATE	DESCRIPTION
1	OCTOBER 10, 2022	DATE: OCTOBER 10, 2022
2	AS NOTED	SCALE: AS NOTED
3	A. TAYLOR	DRAWN BY: A. TAYLOR
4	W. ZEIDERS	CHECKED BY: W. ZEIDERS
5	OLD RIVER RECHARGE	FILE NAME: OLD RIVER RECHARGE



A WELL PAD DETAIL
10 WESTERN WELL PAD



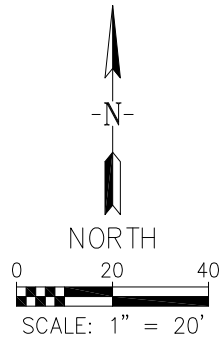
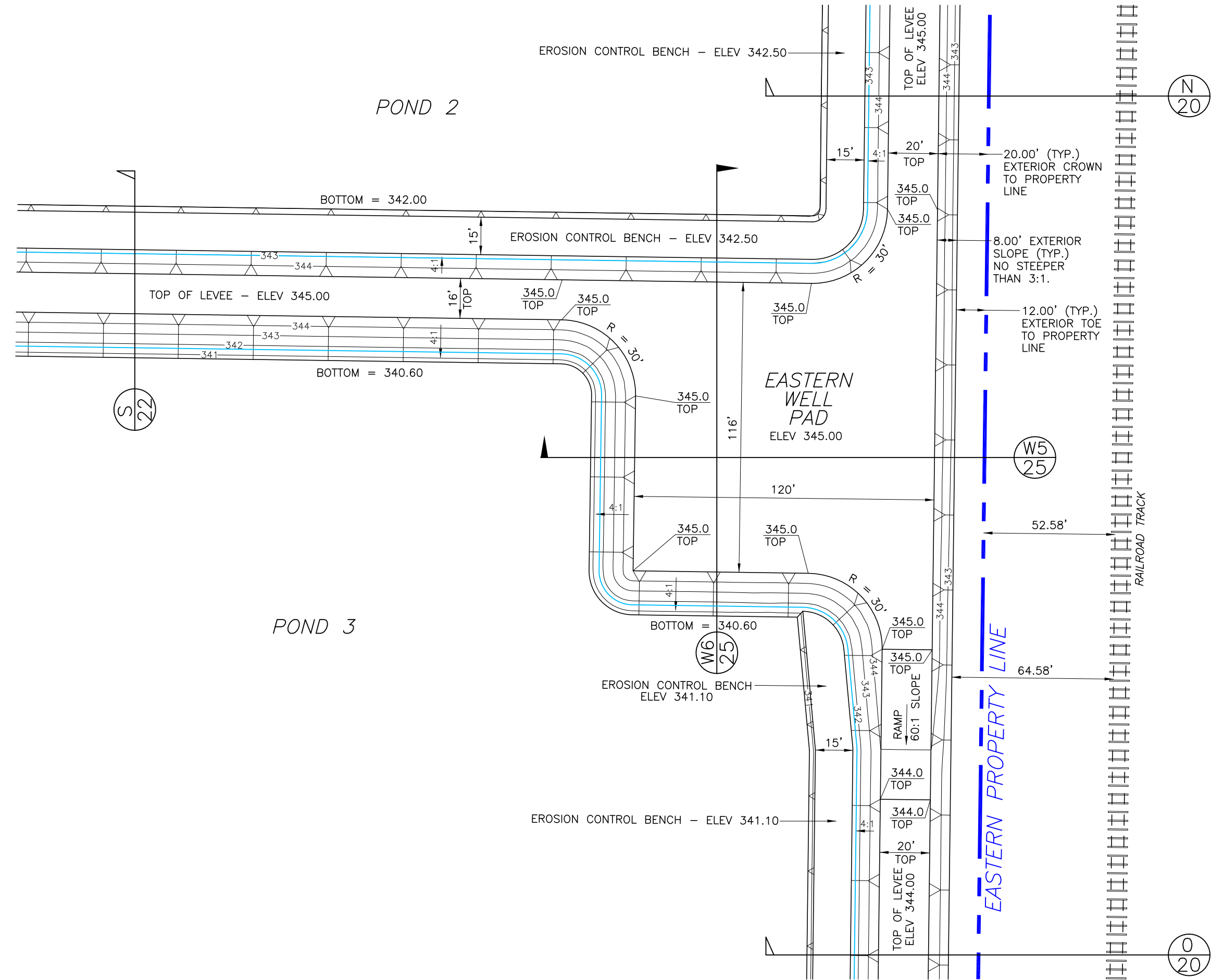
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1		
2		

DATE: OCTOBER 10, 2022
SCALE: AS NOTED
DRAWN BY: A. TAYLOR
CHECKED BY: W. ZEIDERS
FILE NAME: OLD RIVER RECHARGE

KERN DELTA WATER DISTRICT
OLD RIVER GROUNDWATER
RECHARGE FACILITY
WELL PAD DETAIL (WESTERN WELL PAD)



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SECTION 32 - MID-SECTION LINE

(A) WELL PAD DETAIL
11 EASTERN WELL PAD

REV.	DATE	DESCRIPTION
1		
2		

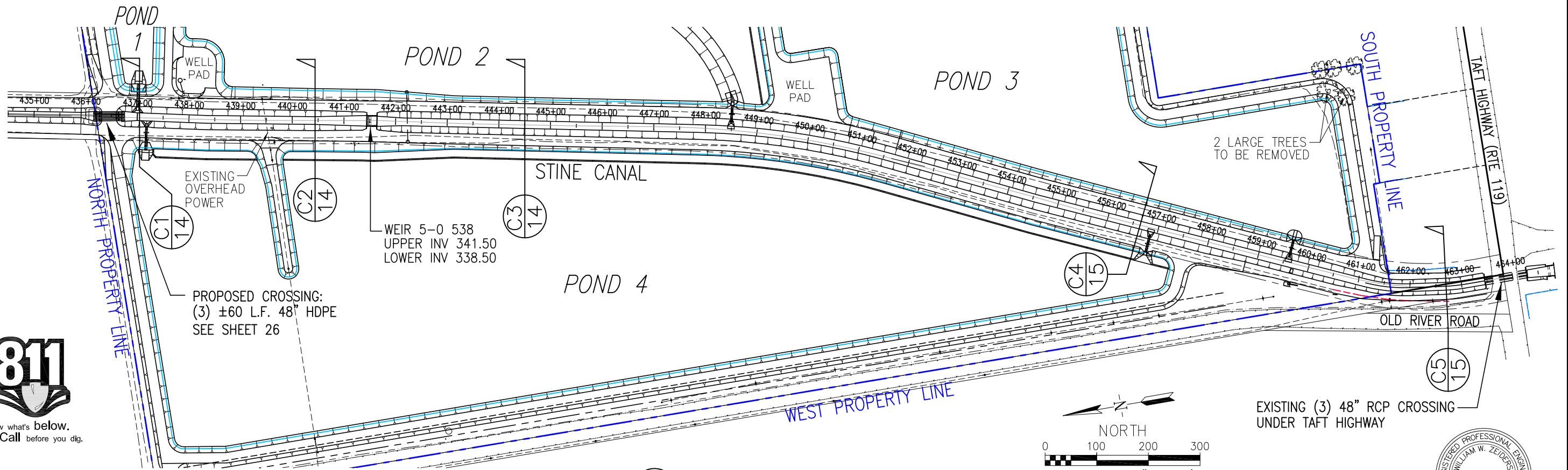
DATE: OCTOBER 10, 2022
SCALE: AS NOTED
DRAWN BY: A. TAYLOR
CHECKED BY: W. ZEIDERS
FILE NAME: OLD RIVER RECHARGE

KERN DELTA WATER DISTRICT
OLD RIVER GROUNDWATER
RECHARGE FACILITY
WELL PAD DETAIL (EASTERN WELL PAD)

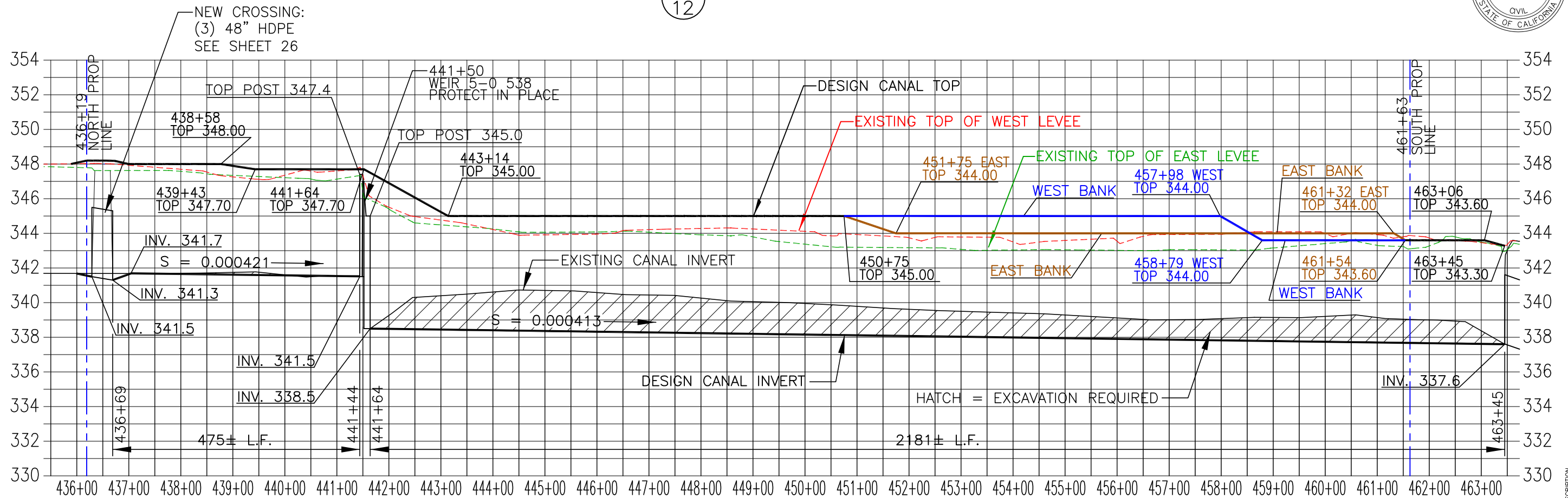
**KERN DELTA
WATER DISTRICT**
501 TAFT HIGHWAY, BAKERSFIELD, CALIFORNIA, 93307

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DRAWING NO. **11**
of 37



A
12 STINE CANAL PLAN



B
12 STINE CANAL PROFILE



Know what's below.
Call before you dig.

DRAWING NO.

13

of 37

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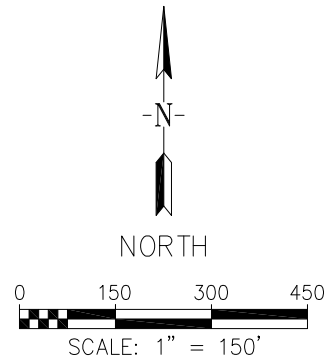
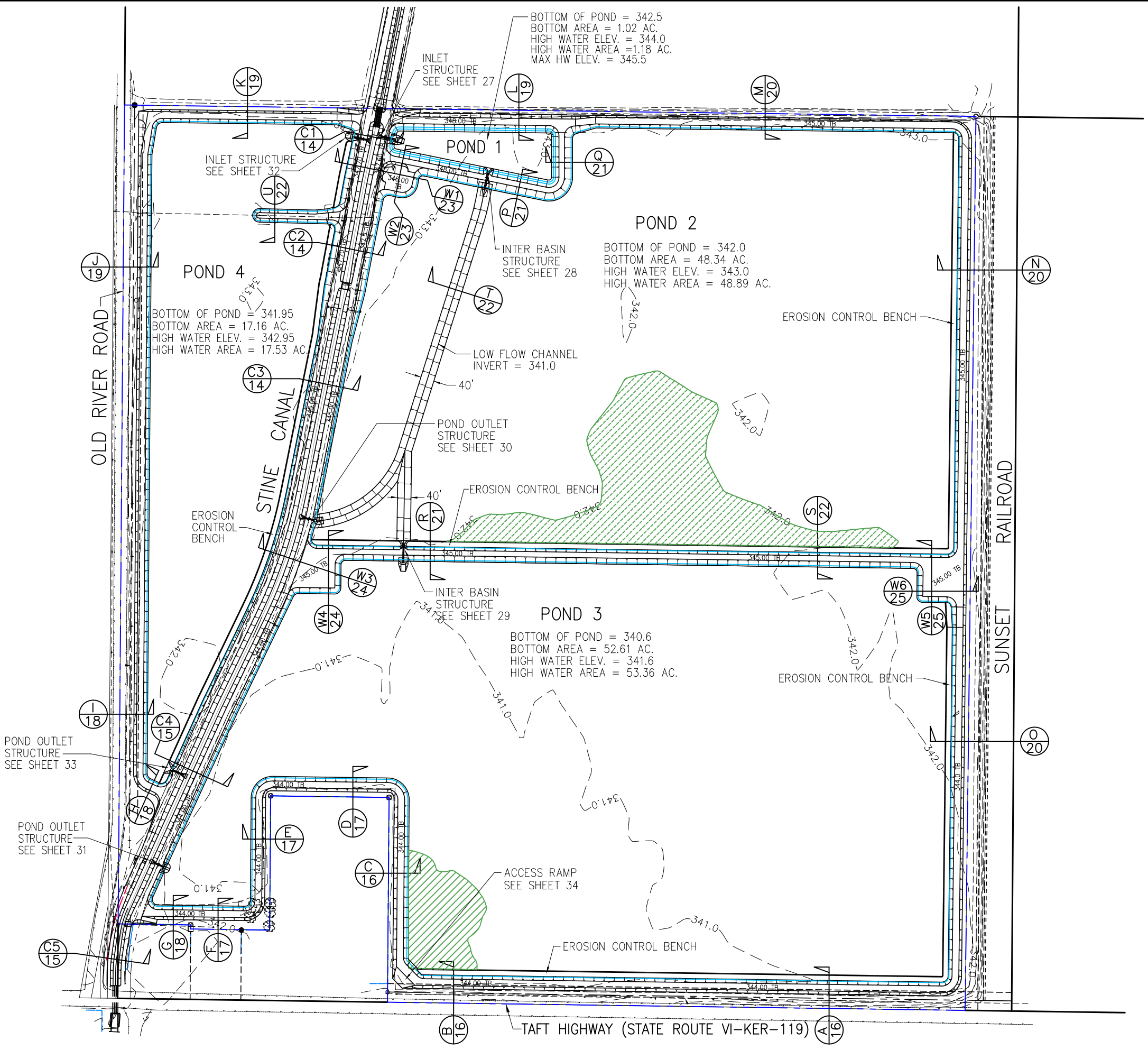
KERN DELTA
WATER DISTRICT

501 TAFT HIGHWAY, BAKERSFIELD, CALIFORNIA, 93307

KERN DELTA WATER DISTRICT
OLD RIVER GROUNDWATER
RECHARGE FACILITY

INDEX TO SECTIONS

REV.	DATE	DESCRIPTION
1	OCTOBER 10, 2022	DATE: OCTOBER 10, 2022
2	AS NOTED	SCALE: AS NOTED
3	J. STORMONT	DRAWN BY: J. STORMONT
4	W. ZEIDERS	CHECKED BY: W. ZEIDERS
5	BASE	FILE NAME: OLD RIVER - BASE

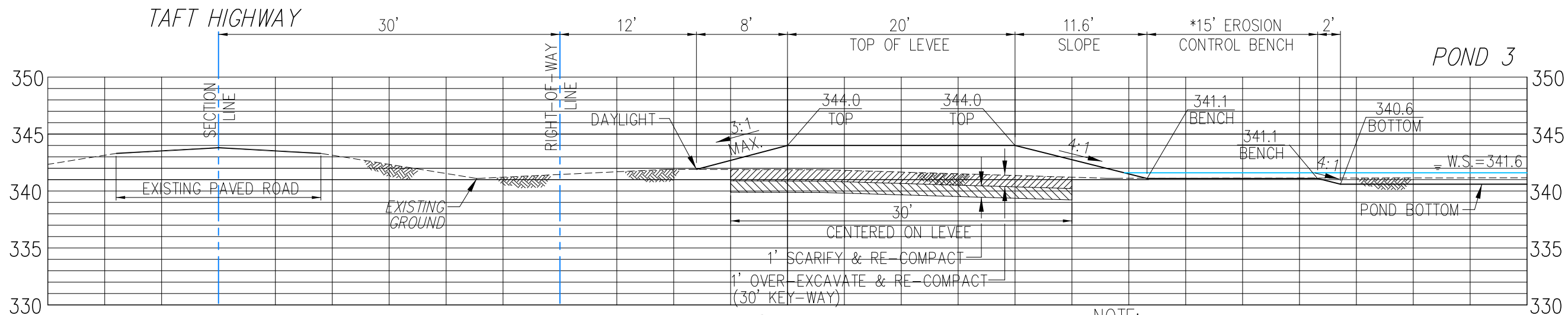




REV. DATE		DESCRIPTION
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△	.	
△	.	

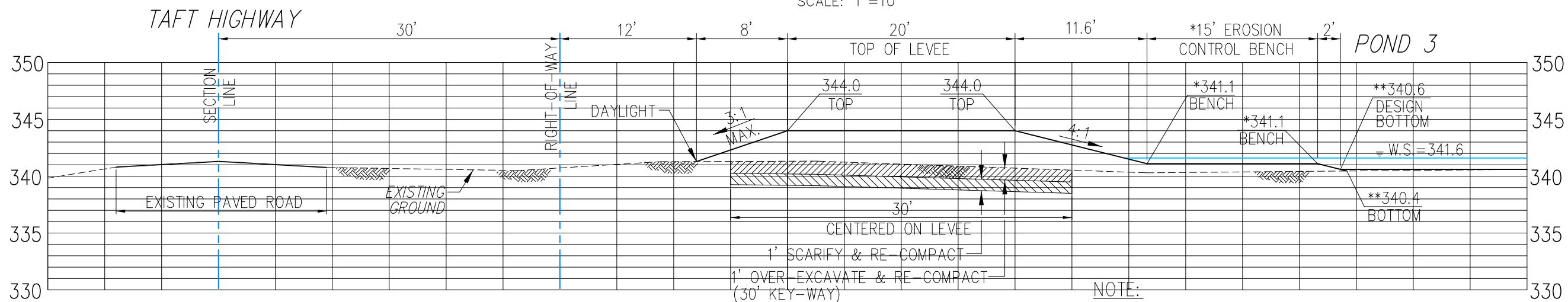
DATE: OCTOBER 10, 2022	
SCALE: AS NOTED	
DRAWN BY: A. TAYLOR	
CHECKED BY: W. ZEDERS	
FILE NAME: OLD RIVER RECHARGE	

KERN DEL OLD RIVER RECHARGE CANAL
--



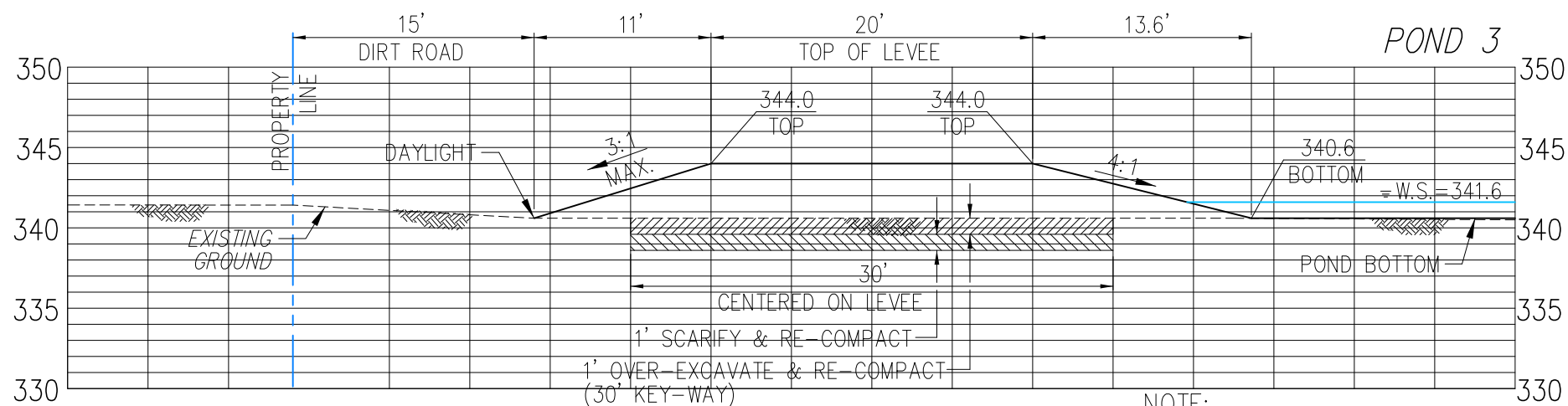
A SECTION
16 POND 3 LEVEE
AT SOUTH PROPERTY LINE
LOOKING WEST
SCALE: 1"=10'

NOTE:
*EROSION CONTROL BENCHES
NOT TO BE COMPACTED.



B SECTION
16 POND 3 LEVEE
AT SOUTH PROPERTY LINE
LOOKING WEST
SCALE: 1"=10'

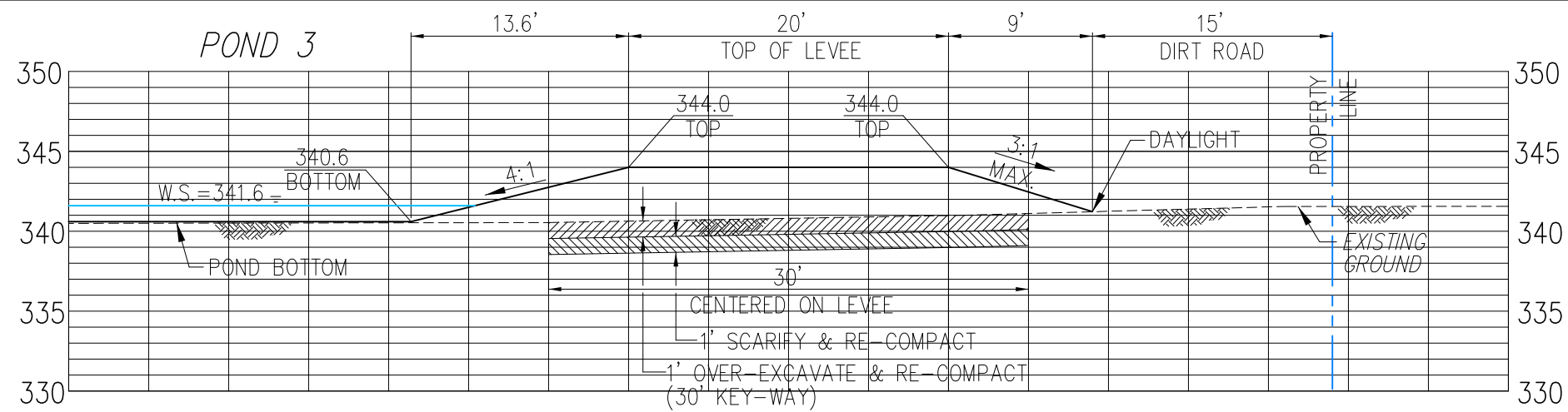
NOTE:
*EROSION CONTROL BENCHES
NOT TO BE COMPACTED.
**PORTION OF POND BOTTOM BELOW DESIGN ELEVATION
MAY REMAIN AS IS.



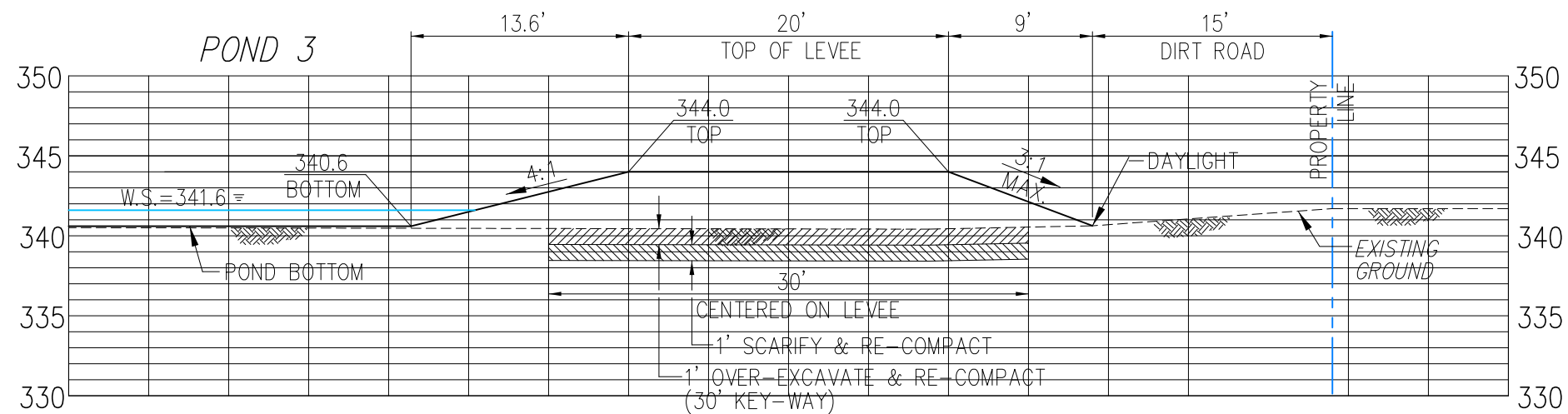
C SECTION
16 POND 3 LEVEE
AT WEST PROPERTY LINE
LOOKING NORTH
SCALE: 1"=10'

NOTE:
*EROSION CONTROL BENCHES
NOT TO BE COMPACTED.

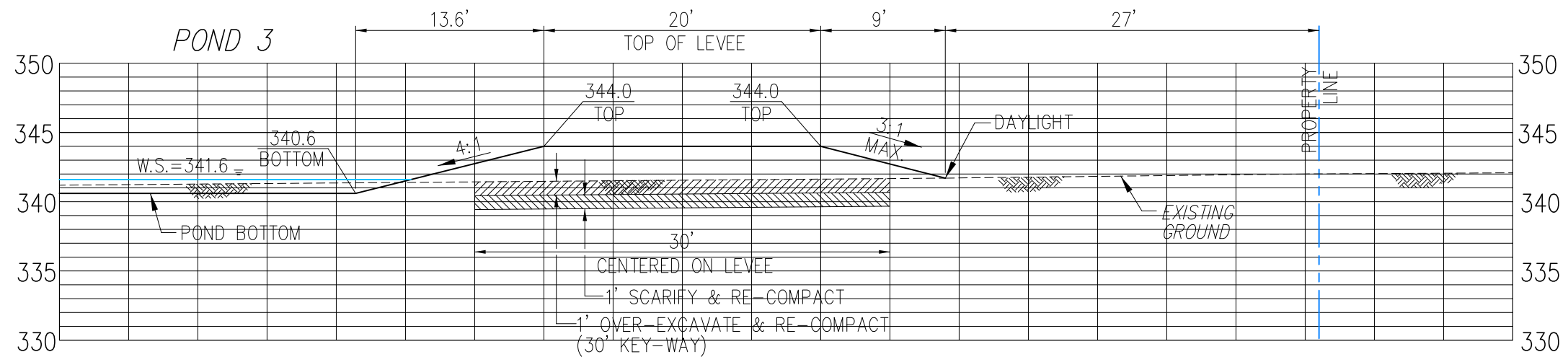
REV.	DATE	DESCRIPTION
1	OCTOBER 10, 2022	DATE: OCTOBER 10, 2022
2	AS NOTED	SCALE: AS NOTED
3	J. STORMONT	DRAWN BY: J. STORMONT
4	W. ZEIDERS	CHECKED BY: W. ZEIDERS
5	OLD RIVER RECHARGE	FILE NAME: OLD RIVER RECHARGE



D
17
SECTION
POND 3 LEVEE
AT SOUTH PROPERTY LINE
LOOKING EAST
SCALE: 1"=10'

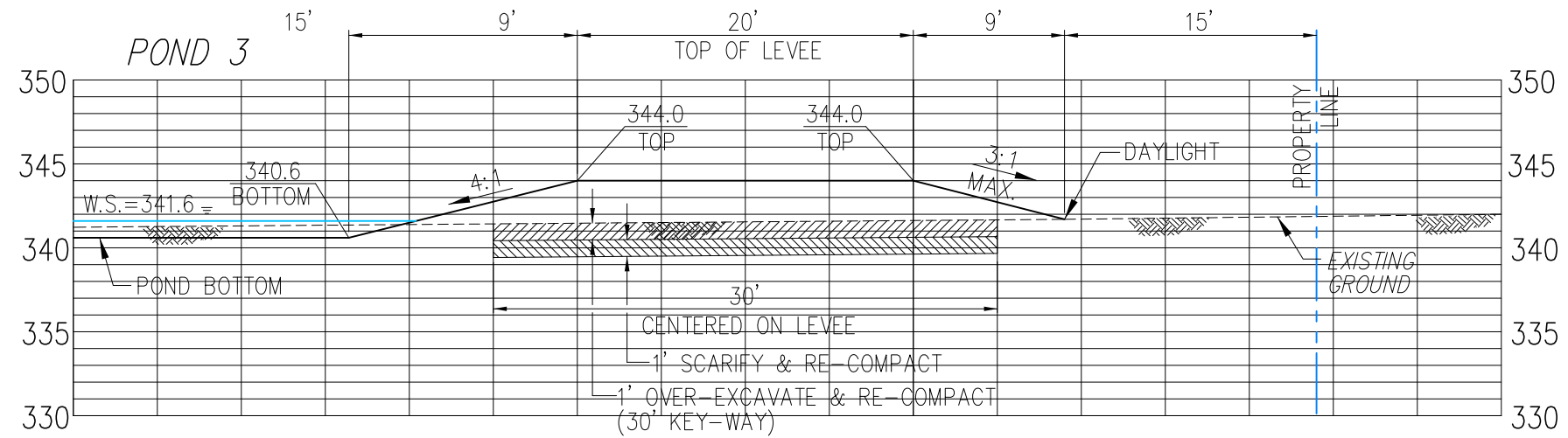


E
17
SECTION
POND 3 LEVEE
AT EAST PROPERTY LINE
LOOKING NORTH
SCALE: 1"=10'

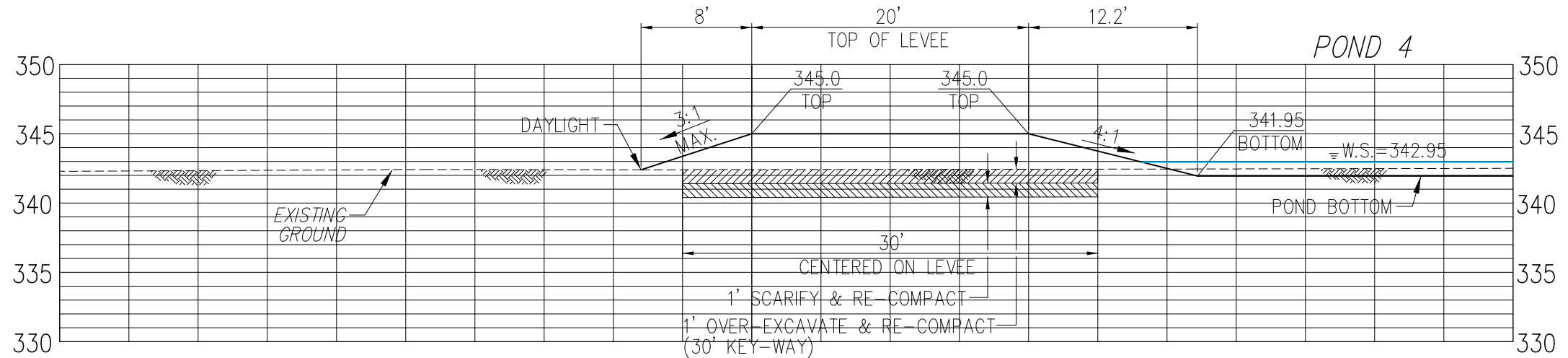


F
17
SECTION
POND 3 LEVEE
AT SOUTH PROPERTY LINE
LOOKING EAST
SCALE: 1"=10'

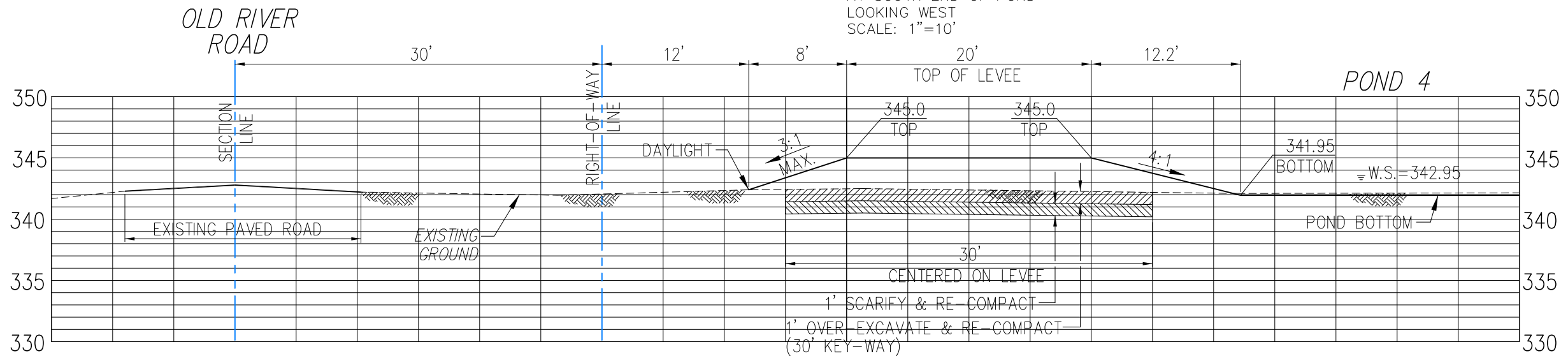




G
18 SECTION
POND 3 LEVEE
AT SOUTH PROPERTY LINE
LOOKING EAST
SCALE: 1"=10'

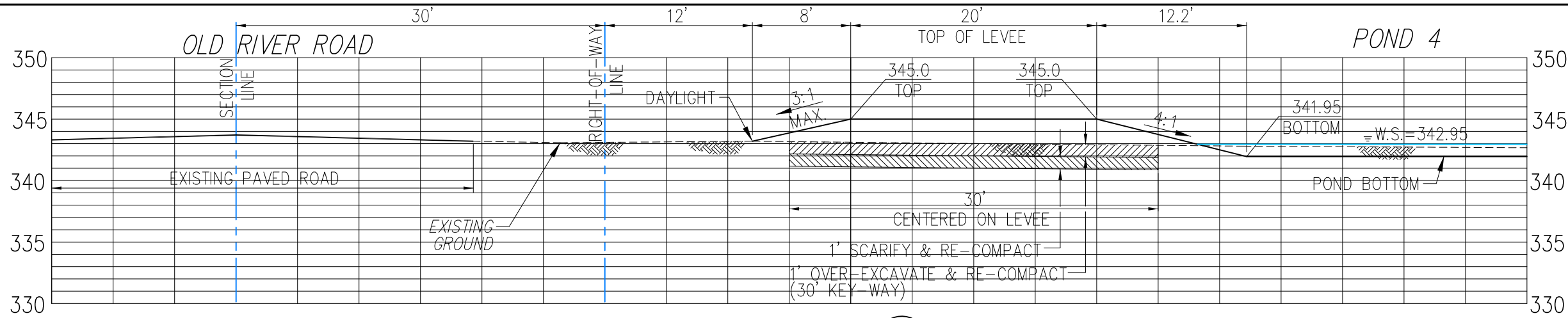


H
18 SECTION
POND 4 LEVEE
AT SOUTH END OF POND
LOOKING WEST
SCALE: 1"=10'

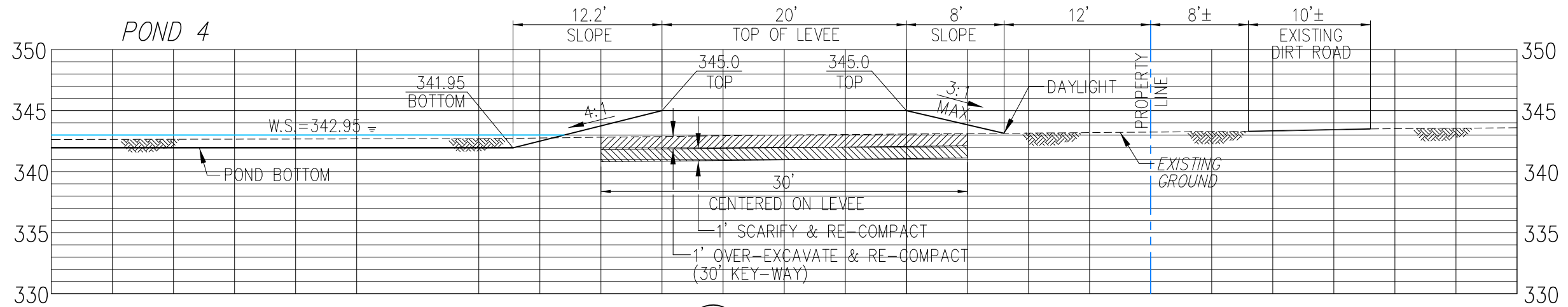


I
18 SECTION
POND 4 LEVEE
AT WEST PROPERTY LINE
LOOKING NORTH
SCALE: 1"=10'

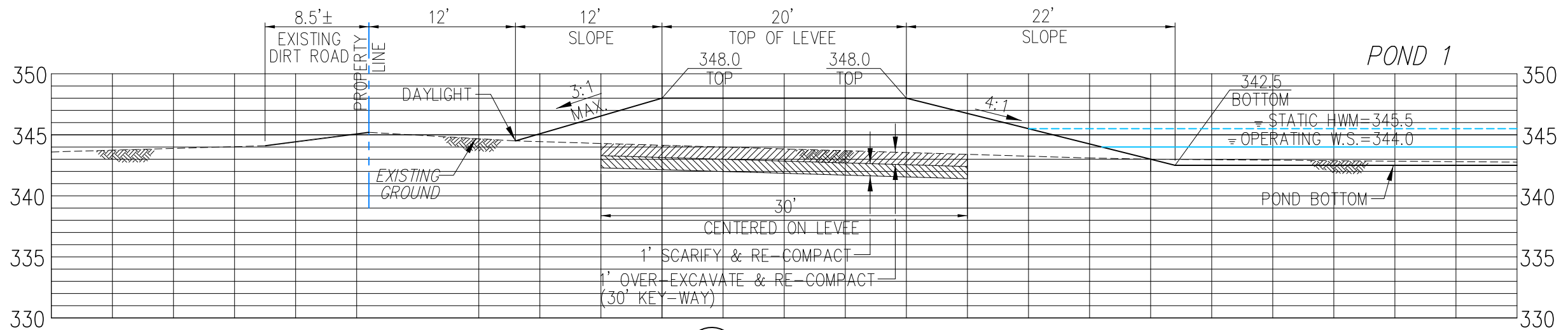
REV.	DATE	DESCRIPTION
1	OCTOBER 10, 2022	DATE: OCTOBER 10, 2022
2	AS NOTED	SCALE: AS NOTED
3	J. STORMONT	DRAWN BY: J. STORMONT
4	W. ZEIDERS	CHECKED BY: W. ZEIDERS
5	OLD RIVER RECHARGE	FILE NAME: OLD RIVER RECHARGE



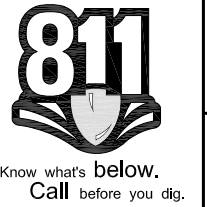
J
19 SECTION
POND 4 LEVEE
AT WEST PROPERTY LINE
LOOKING NORTH
SCALE: 1"=10'



K
19 SECTION
POND 2 LEVEE
AT WEST PROPERTY LINE
LOOKING WEST
SCALE: 1"=10'



L
19 SECTION
POND 1 LEVEE
AT NORTH PROPERTY LINE
LOOKING EAST
SCALE: 1"=10'



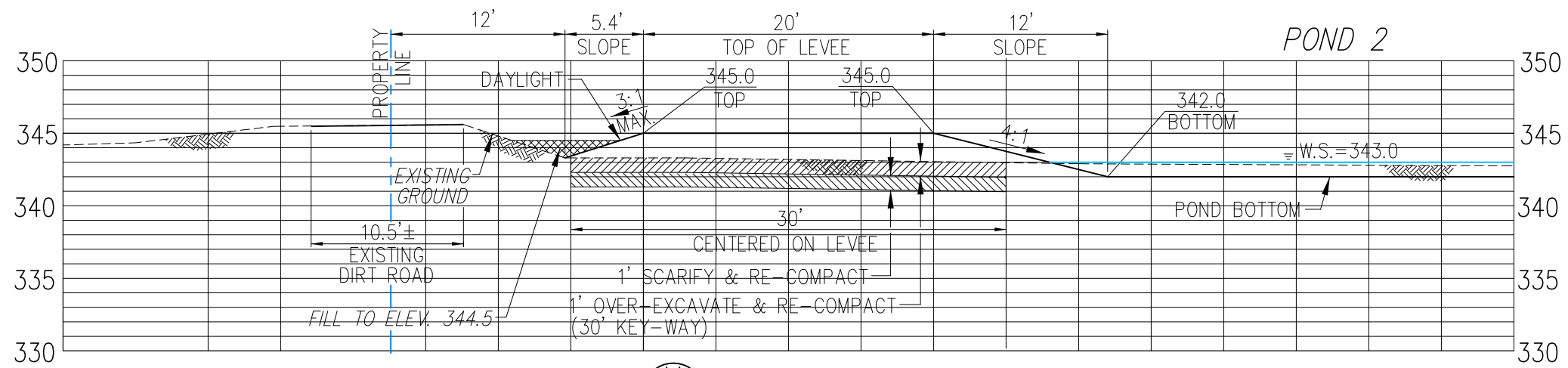
DRAWING NO.
19
of 37

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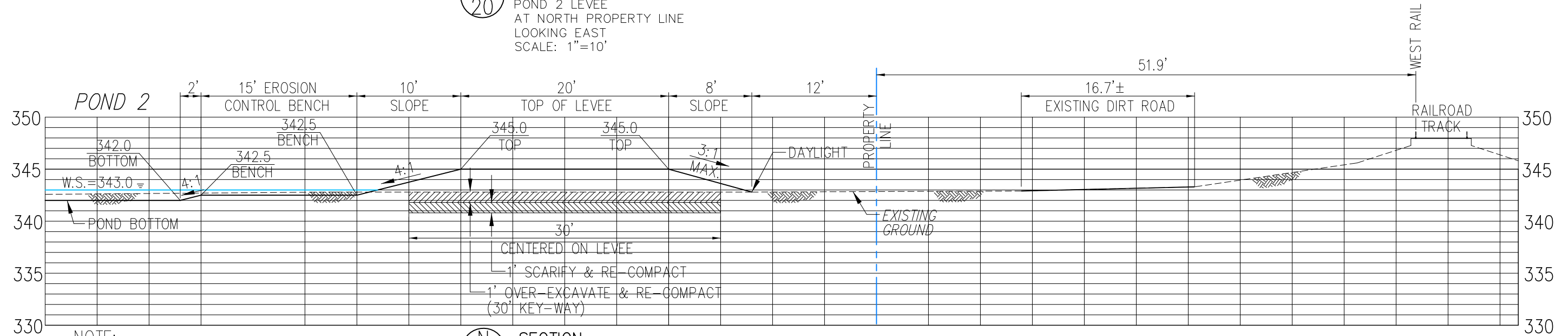
KERN DELTA WATER DISTRICT
501 TAFT HIGHWAY, BAKERSFIELD, CALIFORNIA, 93307

**KERN DELTA WATER DISTRICT
OLD RIVER GROUNDWATER
RECHARGE FACILITY
LEVEE CROSS SECTIONS**

REV.	DATE	DESCRIPTION
1	OCTOBER 10, 2022	DATE: OCTOBER 10, 2022
2	AS NOTED	SCALE: AS NOTED
3	J. STORMONT	DRAWN BY: J. STORMONT
4	W. ZEIDERS	CHECKED BY: W. ZEIDERS
5	OLD RIVER RECHARGE	FILE NAME: OLD RIVER RECHARGE

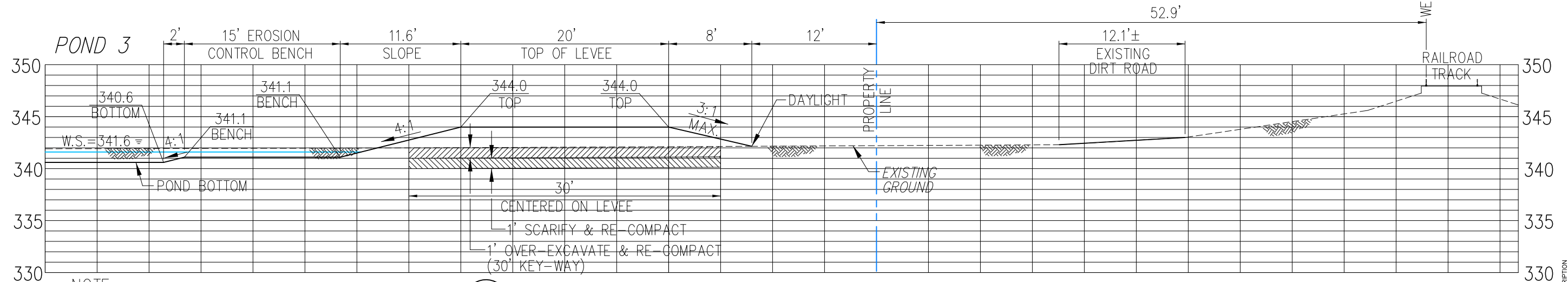


M
20 SECTION
POND 2 LEVEE
AT NORTH PROPERTY LINE
LOOKING EAST
SCALE: 1"=10'



NOTE:
*EROSION CONTROL BENCHES
NOT TO BE COMPACTED.

N
20 SECTION
POND 2 LEVEE
AT WEST PROPERTY LINE
LOOKING NORTH
SCALE: 1"=10'

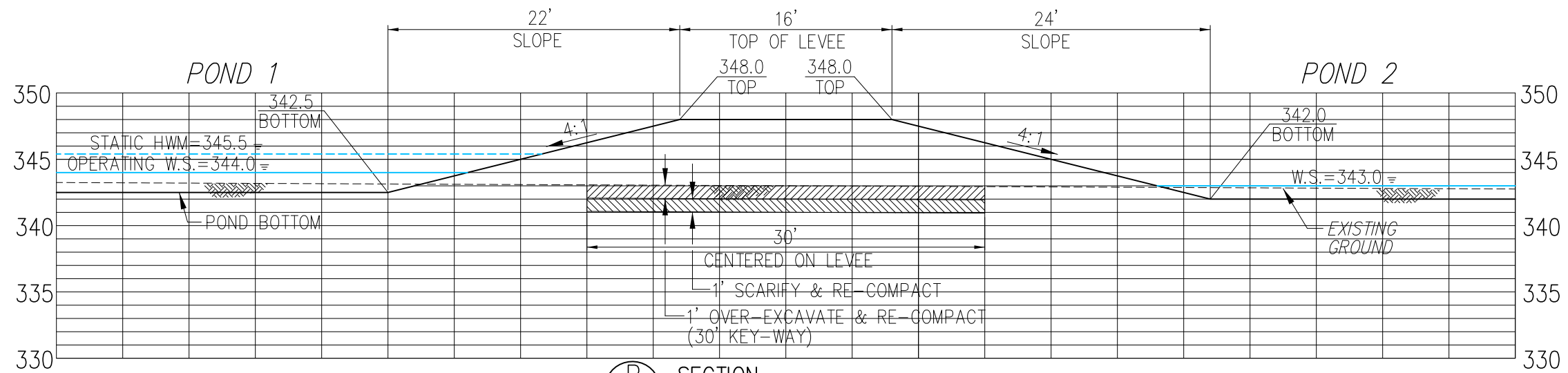


NOTE:
*EROSION CONTROL BENCHES
NOT TO BE COMPACTED.

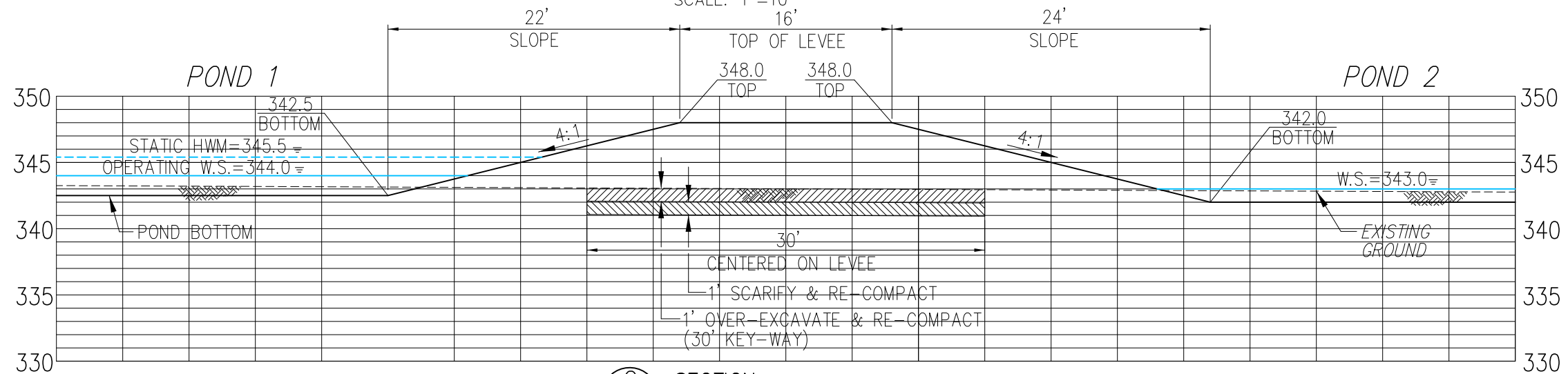
O
20 SECTION
POND 3 LEVEE
AT WEST PROPERTY LINE
LOOKING NORTH
SCALE: 1"=10'



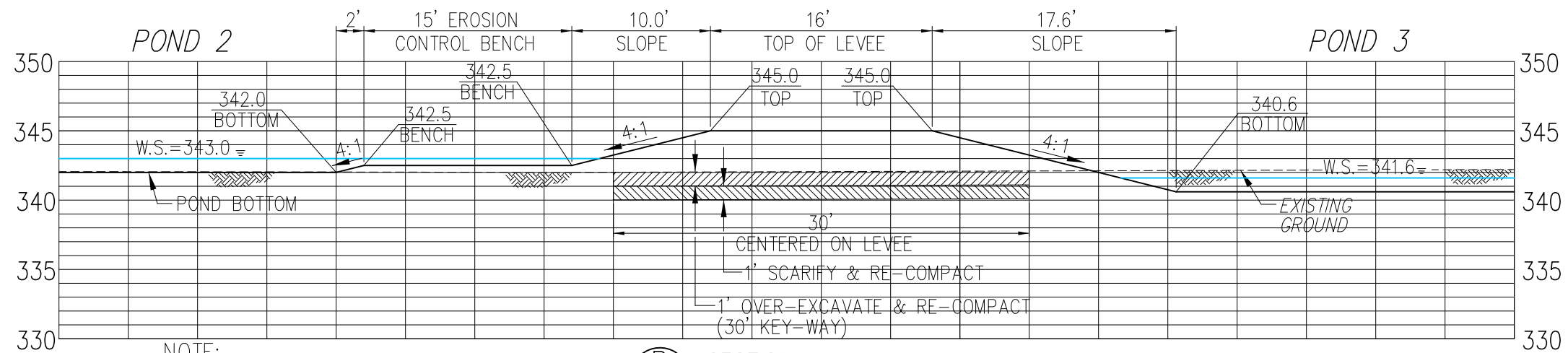
REV.	DATE	DESCRIPTION
1	OCTOBER 10, 2022	DATE: OCTOBER 10, 2022
2	AS NOTED	SCALE: AS NOTED
3	J. STORMONT	DRAWN BY: J. STORMONT
4	W. ZEIDERS	CHECKED BY: W. ZEIDERS
5	OLD RIVER RECHARGE	FILE NAME: OLD RIVER RECHARGE



P
21 SECTION
LEVEE BETWEEN PONDS 1 AND 2
SOUTH SIDE OF POND 1
LOOKING EAST
SCALE: 1"=10'



Q
21 SECTION
LEVEE BETWEEN PONDS 1 AND 2
EAST END OF OF POND 1
LOOKING NORTH
SCALE: 1"=10'



NOTE:
*EROSION CONTROL BENCHES
NOT TO BE COMPACTED.

R
21 SECTION
LEVEE BETWEEN PONDS 2 AND 3
EASTERLY END OF LEVEE
LOOKING EAST
SCALE: 1"=10'

REV.	DATE	DESCRIPTION
1	10/10/2022	DATE: OCTOBER 10, 2022
2	AS NOTED	SCALE: AS NOTED
3	J. STORMONT	DRAWN BY: J. STORMONT
4	W. ZEIDERS	CHECKED BY: W. ZEIDERS
5	OLD RIVER RECHARGE	FILE NAME: OLD RIVER RECHARGE



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of 37

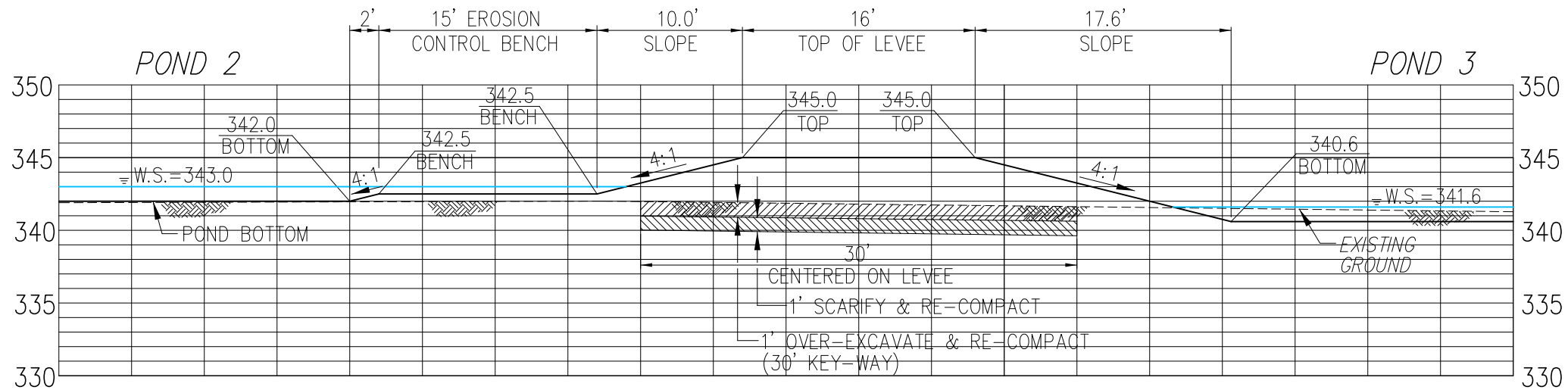
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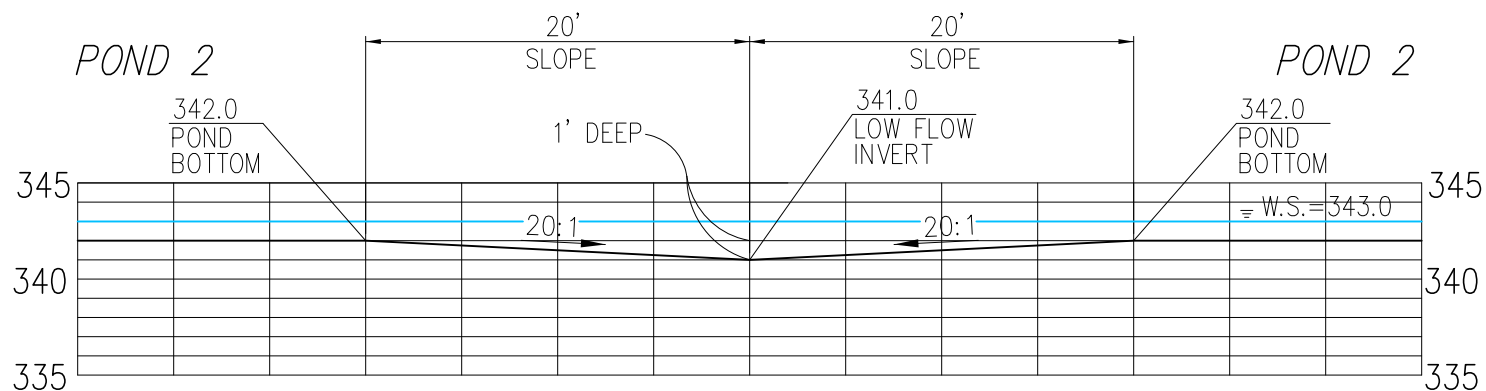
KERN DELTA WATER DISTRICT
OLD RIVER GROUNDWATER
RECHARGE FACILITY
LEVEE CROSS SECTIONS



NOTE:
*EROSION CONTROL BENCHES
NOT TO BE COMPACTED.

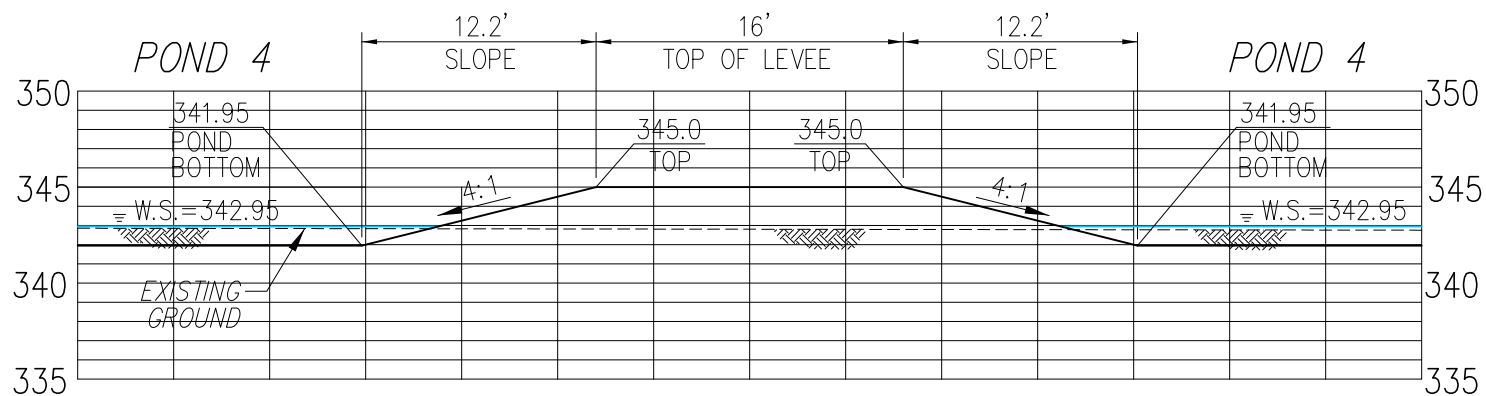
S
22

SECTION
LEVEE BETWEEN PONDS 2 AND 3
WESTERLY END OF LEVEE
LOOKING EAST
SCALE: 1"=10'



T
22

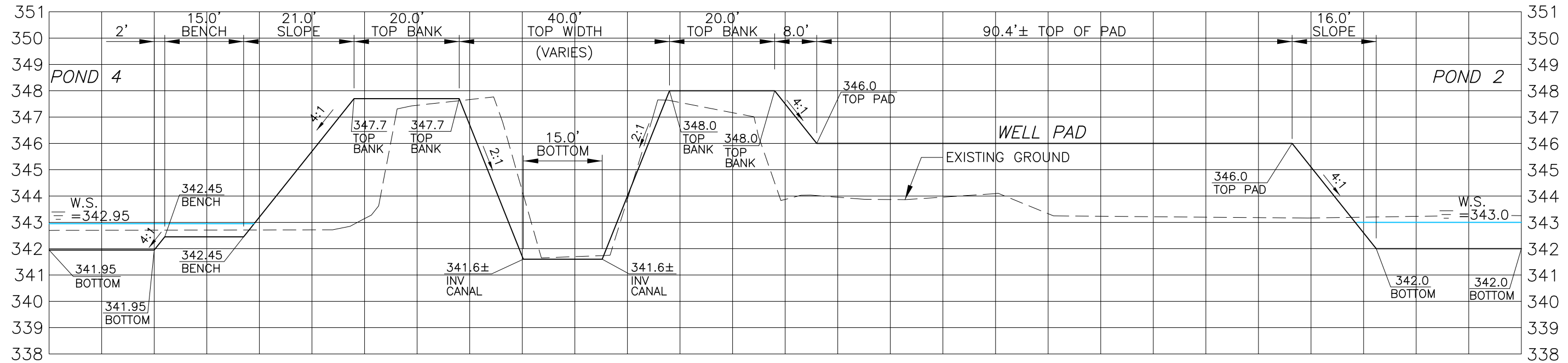
SECTION
LOW FLOW CHANNEL
WITHIN POND 2
SCALE: 1"=10'



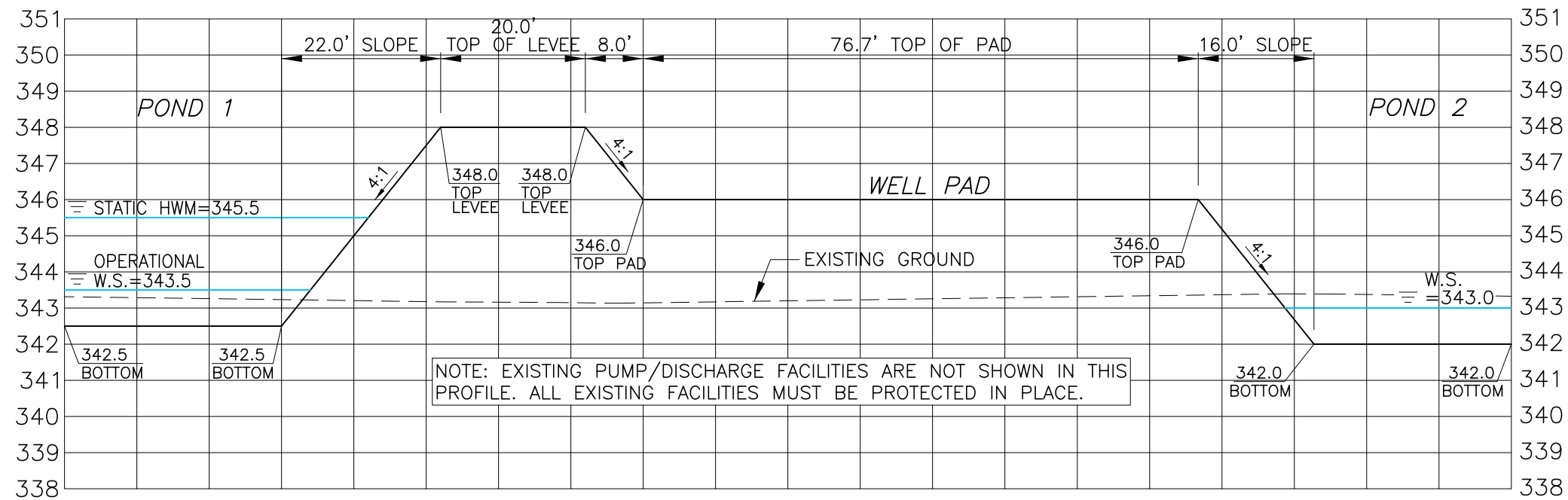
U
22

SECTION
POWER LINE LEVEE
WITHIN POND 4
SCALE: 1"=10'

REV.	DATE	DESCRIPTION
1	OCTOBER 10, 2022	AS NOTED
2		
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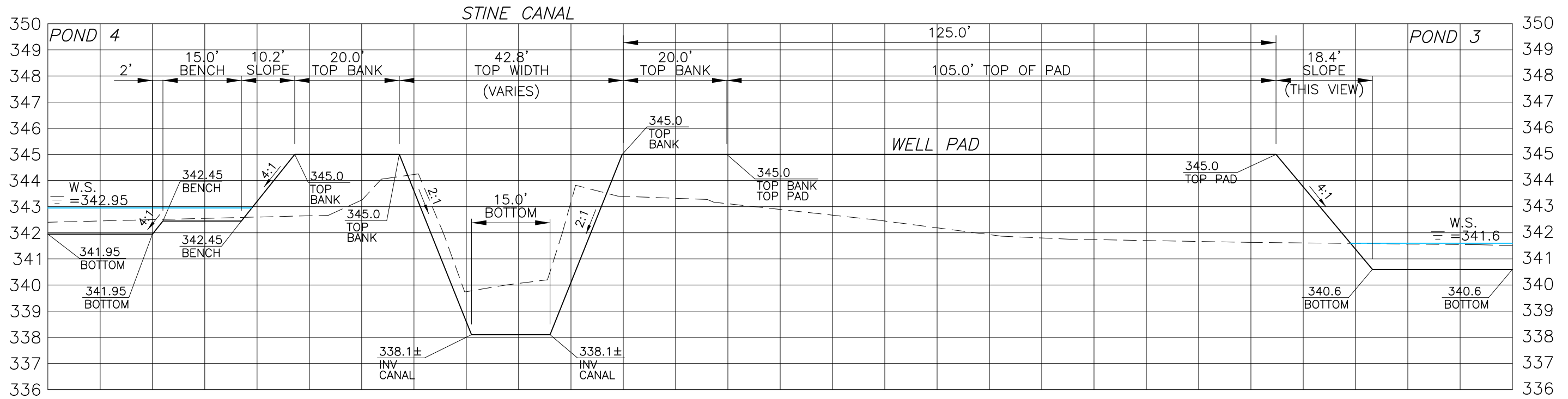


W1 SECTION
23 THROUGH EASTERN WELL PAD
LOOKING NORTH
HORIZ SCALE: 1" = 10'
VERT SCALE: 1" = 2'

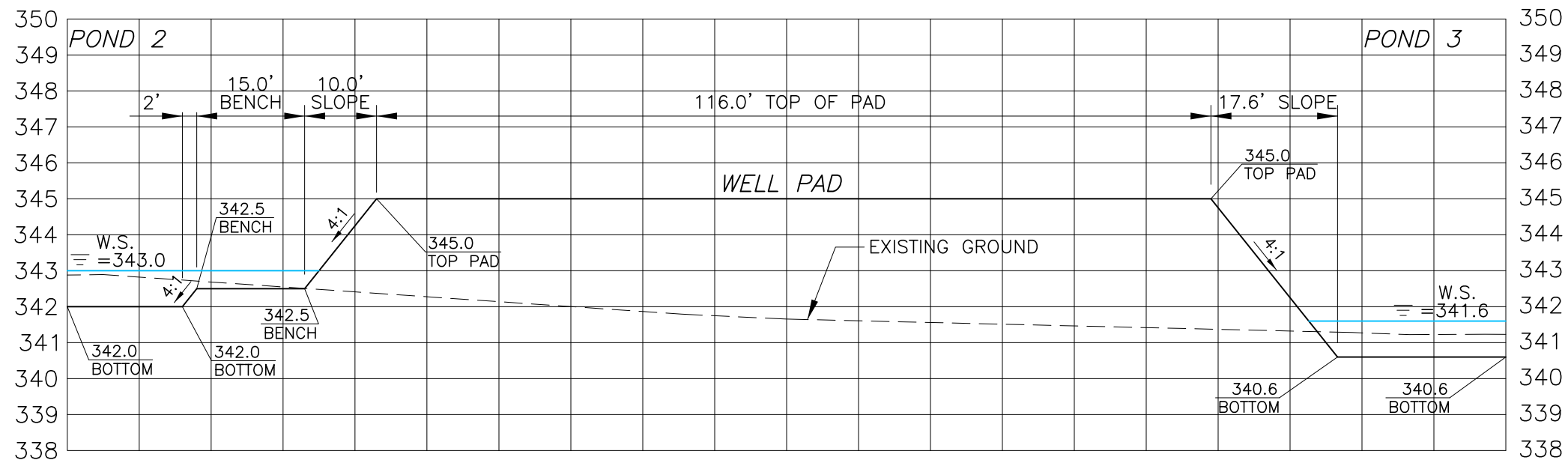


W2 SECTION
23 THROUGH EASTERN WELL PAD
LOOKING EAST
HORIZ SCALE: 1" = 10'
VERT SCALE: 1" = 2'

REV.	DATE	DESCRIPTION
1	OCTOBER 10, 2022	DATE: OCTOBER 10, 2022
2	AS NOTED	SCALE: AS NOTED
3	A. TAYLOR	DRAWN BY: A. TAYLOR
4	W. ZEIDERS	CHECKED BY: W. ZEIDERS
5	OLD RIVER RECHARGE	FILE NAME: OLD RIVER RECHARGE



W3 SECTION
24 THROUGH WESTERN WELL PAD
LOOKING NORTH
HORIZ SCALE: 1" = 10'
VERT SCALE: 1" = 2'

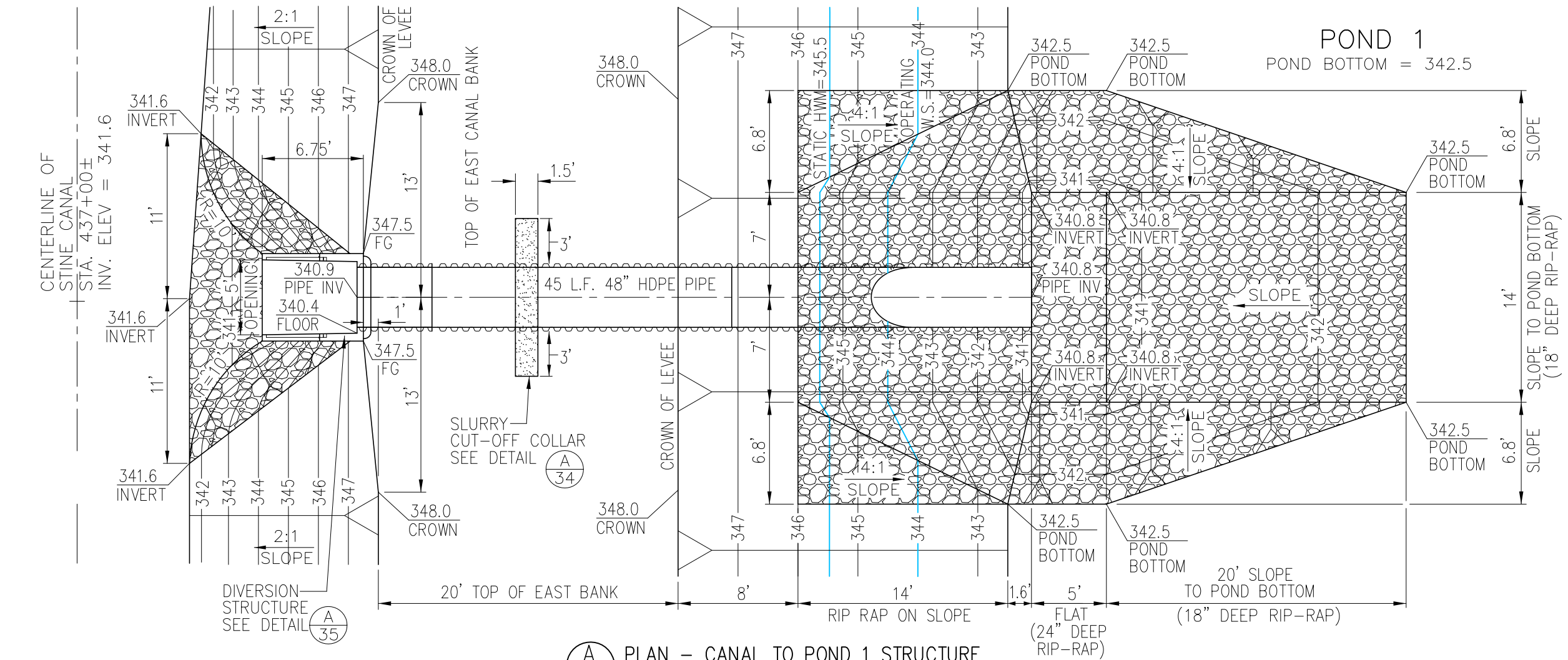
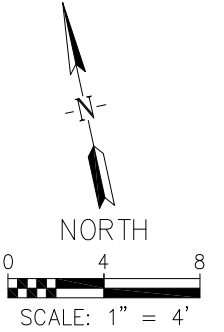


W4 SECTION
24 THROUGH WESTERN WELL PAD
LOOKING EAST
HORIZ SCALE: 1" = 10'

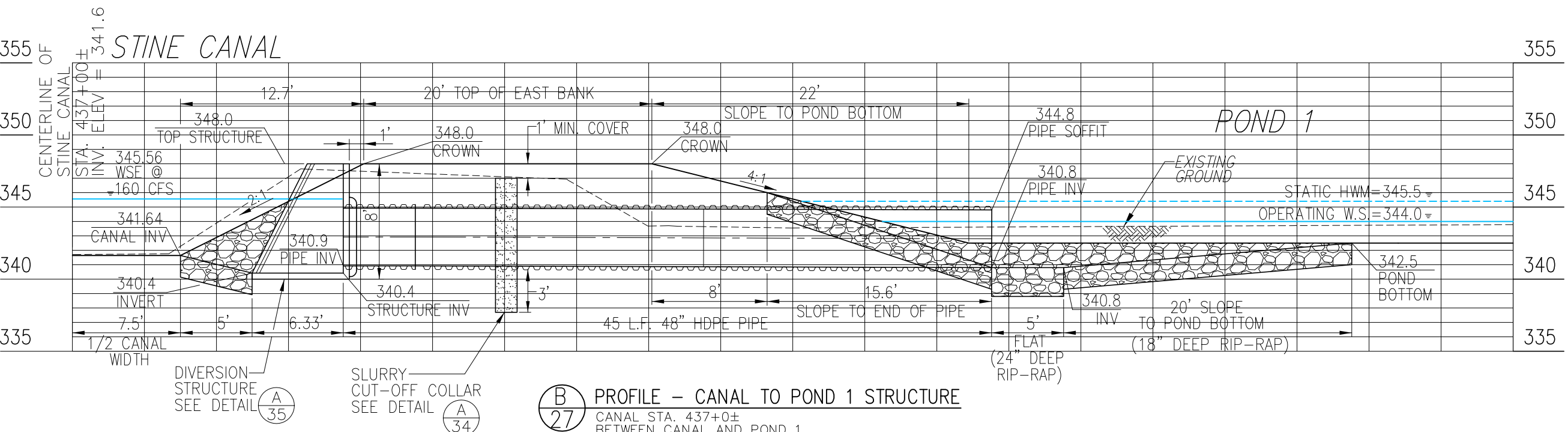
REV.	DATE	DESCRIPTION
1	OCTOBER 10, 2022	DATE: OCTOBER 10, 2022
2	AS NOTED	SCALE: AS NOTED
3	A. TAYLOR	DRAWN BY: A. TAYLOR
4	W. ZEIDERS	CHECKED BY: W. ZEIDERS
5	OLD RIVER RECHARGE	FILE NAME: OLD RIVER RECHARGE



REV.	DATE	DESCRIPTION
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A
27 **PLAN - CANAL TO POND 1 STRUCTURE**
CANAL STA. 437+0±
BETWEEN CANAL AND POND 1



B
27 **PROFILE - CANAL TO POND 1 STRUCTURE**
CANAL STA. 437+0±
BETWEEN CANAL AND POND 1
LOOKING NORTH
SCALE: 1"=4' (HORIZ. & VERT.)



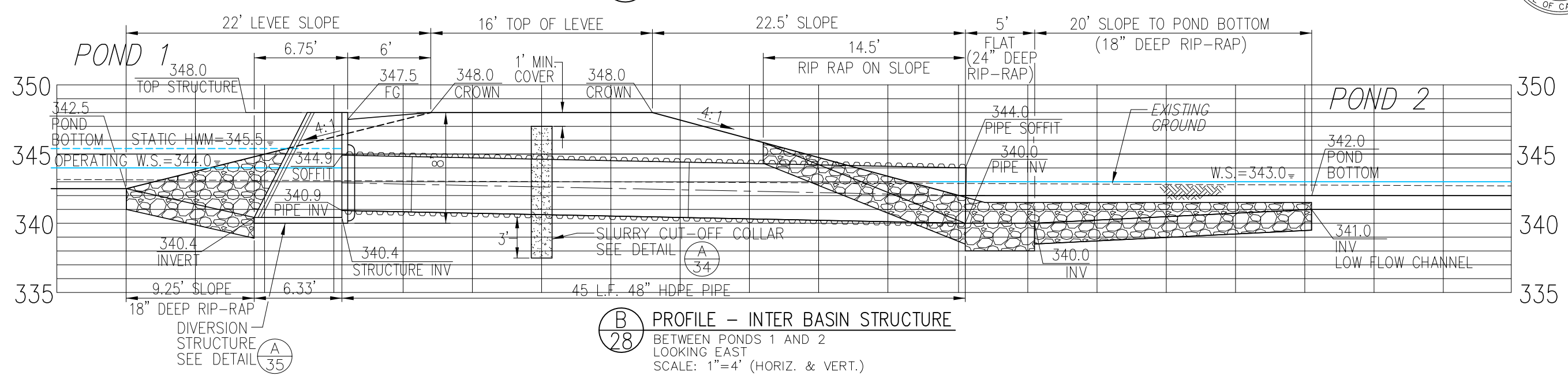
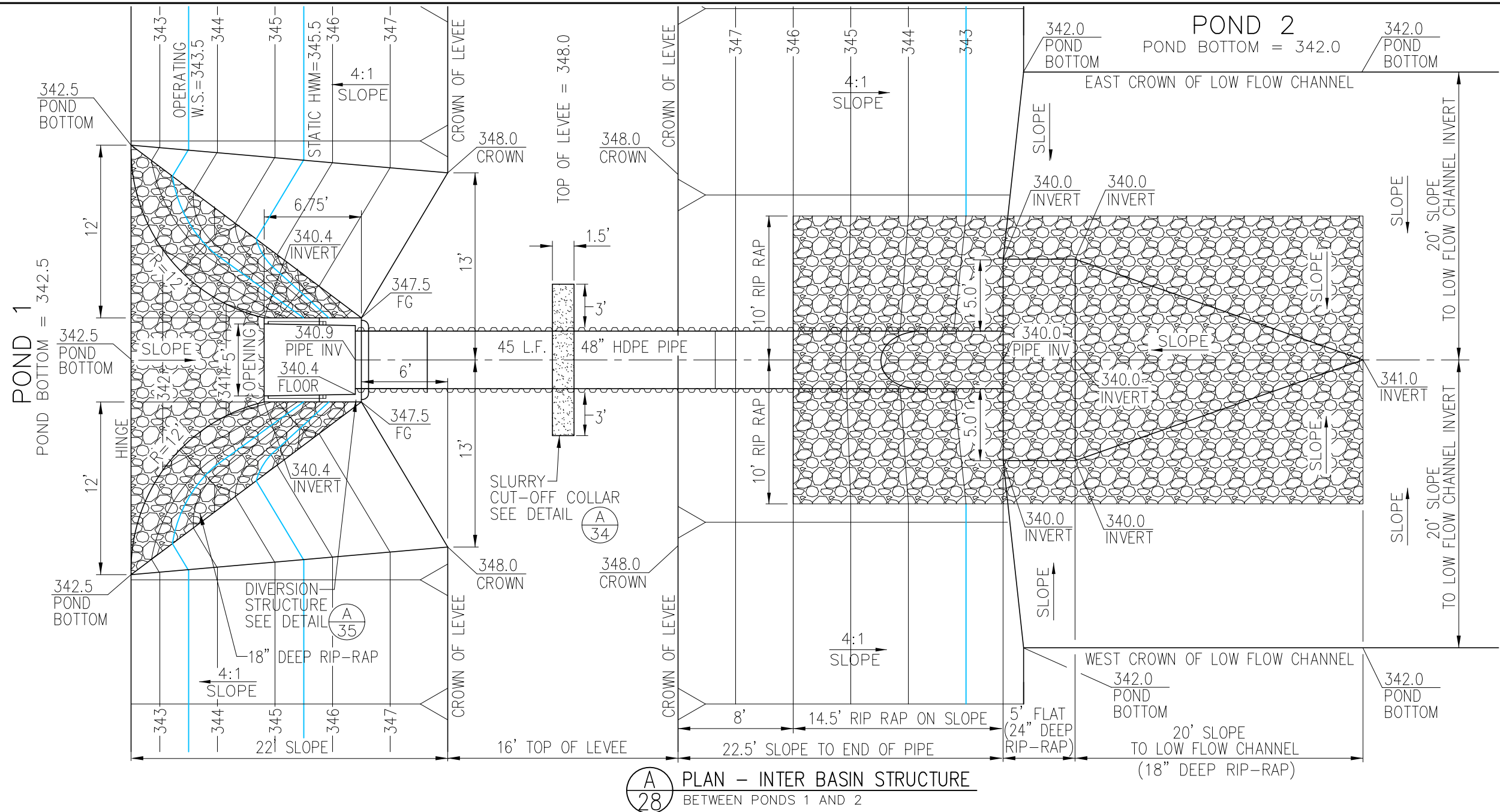
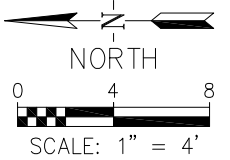
DRAWING NO. **28** of 37

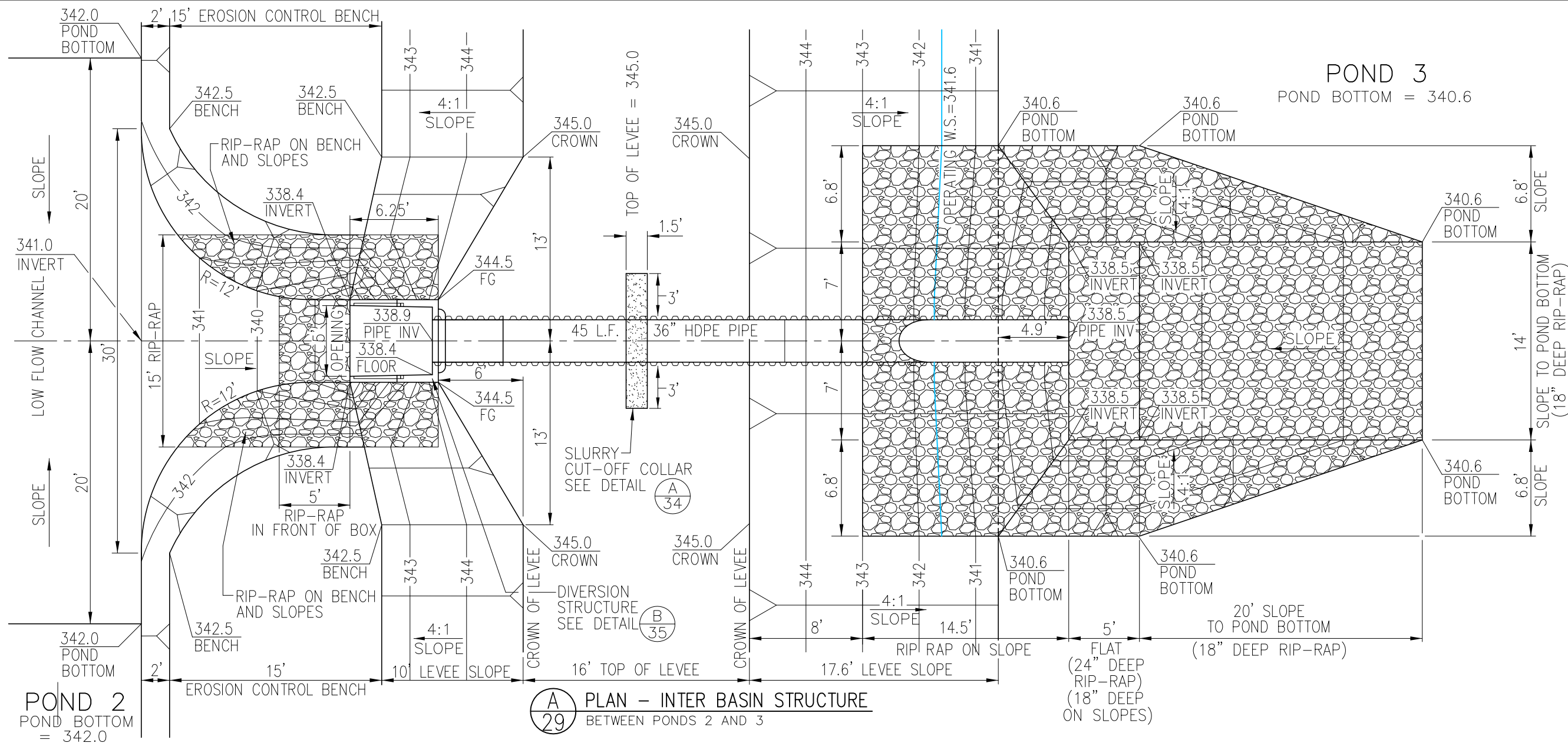
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KERN DELTA WATER DISTRICT
501 TAFT HIGHWAY, BAKERSFIELD, CALIFORNIA, 93307

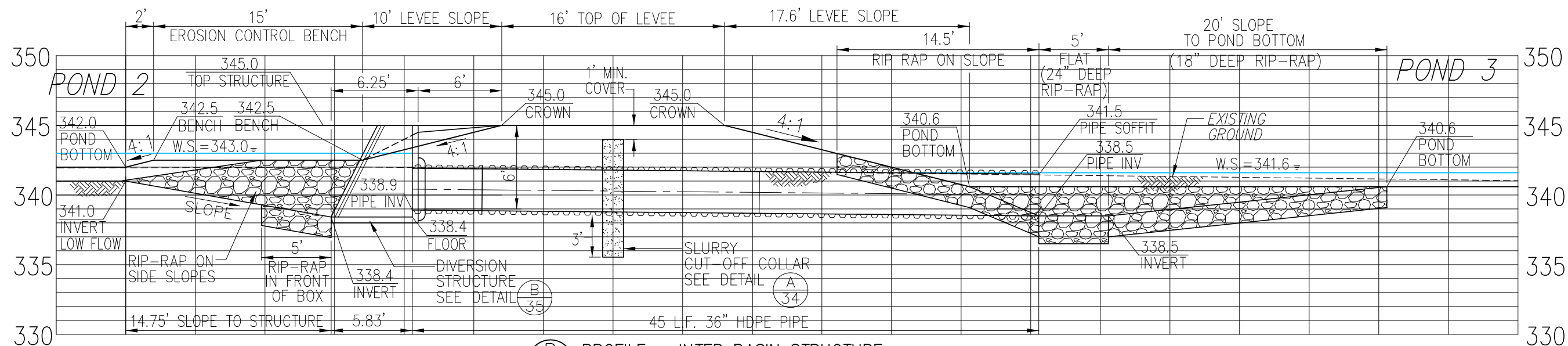
**KERN DELTA WATER DISTRICT
OLD RIVER GROUNDWATER
RECHARGE FACILITY**
POND 1 TO POND 2 INTER BASIN STRUCTURE

REV.	DATE	DESCRIPTION
1	OCTOBER 10, 2022	DATE: OCTOBER 10, 2022
2	AS NOTED	SCALE: AS NOTED
3	J. STORMONT	DRAWN BY: J. STORMONT
4	W. ZEIDERS	CHECKED BY: W. ZEIDERS
5	OLD RIVER RECHARGE	FILE NAME: OLD RIVER RECHARGE

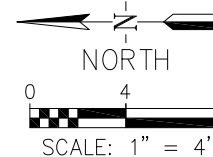




(A) PLAN - INTER BASIN STRUCTURE
29 BETWEEN PONDS 2 AND 3



(B) PROFILE - INTER BASIN STRUCTURE
29 BETWEEN PONDS 2 AND 3
 LOOKING EAST
 SCALE: 1"=4' (HORIZ. & VERT.)



DRAWING NO.

29

of 37

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KERN DELTA WATER DISTRICT

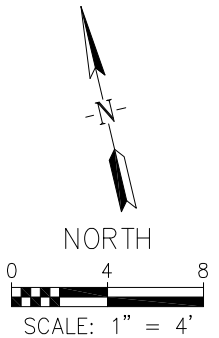
501 TAFT HIGHWAY, BAKERSFIELD, CALIFORNIA, 93307

KERN DELTA WATER DISTRICT
OLD RIVER GROUNDWATER
RECHARGE FACILITY

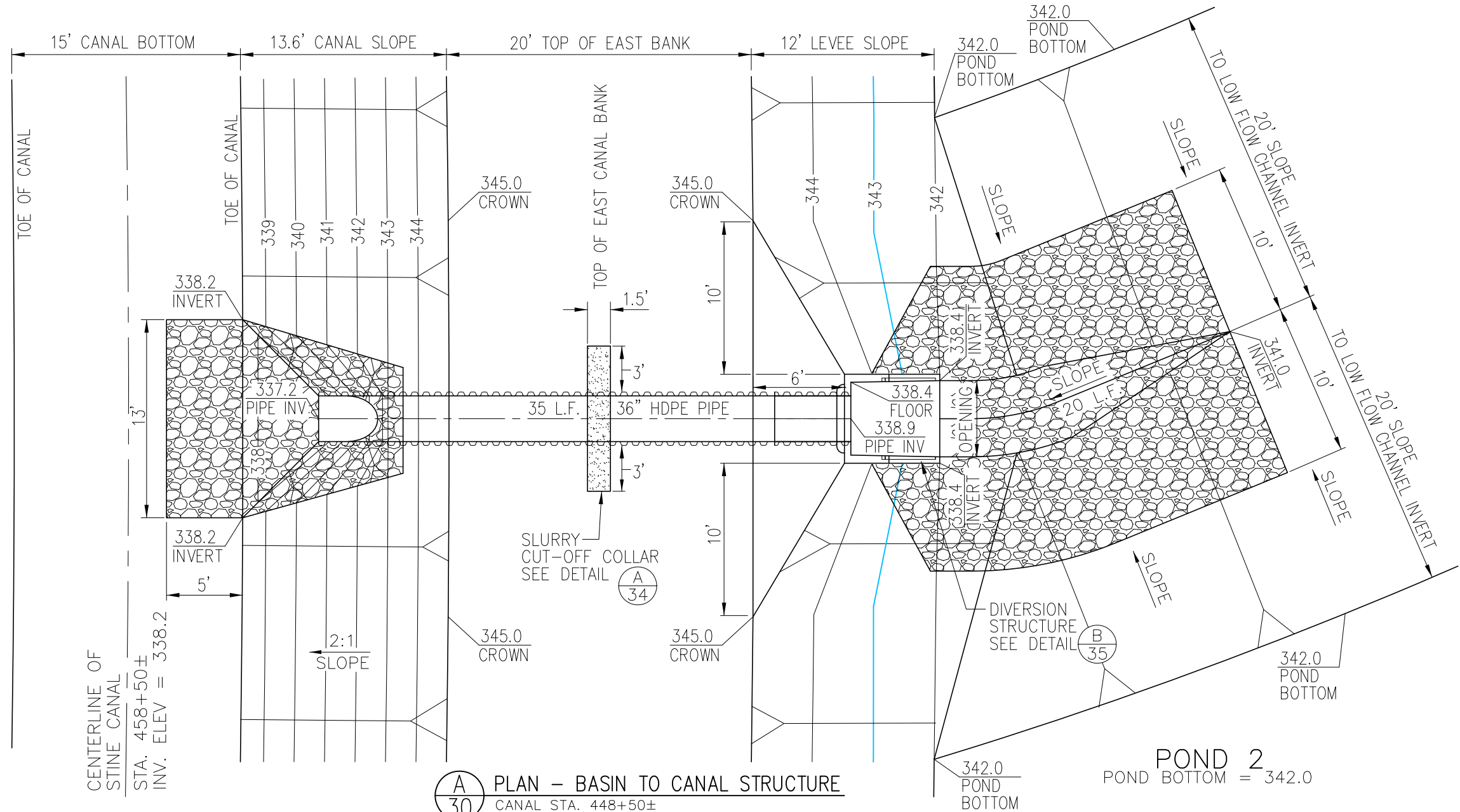
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REV. DATE DESCRIPTION

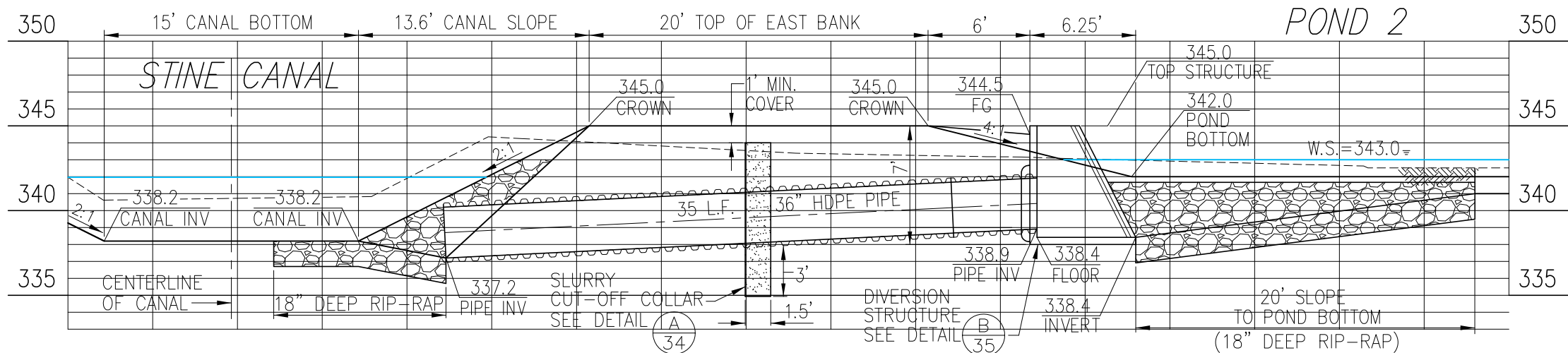
1	DATE: OCTOBER 10, 2022	DESCRIPTION
2	SCALE: AS NOTED	
3	DRAWN BY: J. STORMONT	
4	CHECKED BY: W. ZEIDERS	
5	FILE NAME: OLD RIVER RECHARGE	



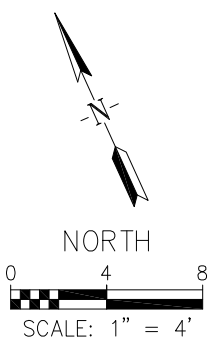
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A
30 PLAN - BASIN TO CANAL STRUCTURE
CANAL STA. 448+50±
BETWEEN POND 2 AND CANAL



B
30 PROFILE - BASIN TO CANAL STRUCTURE
CANAL STA. 448+50±
BETWEEN POND 2 AND CANAL
LOOKING NORTH
SCALE: 1"=4' (HORIZ. & VERT.)



 **KERN DELTA
WATER DISTRICT**
501 TAFT HIGHWAY, BAKERSFIELD, CALIFORNIA, 93307

REV.	DATE	DESCRIPTION
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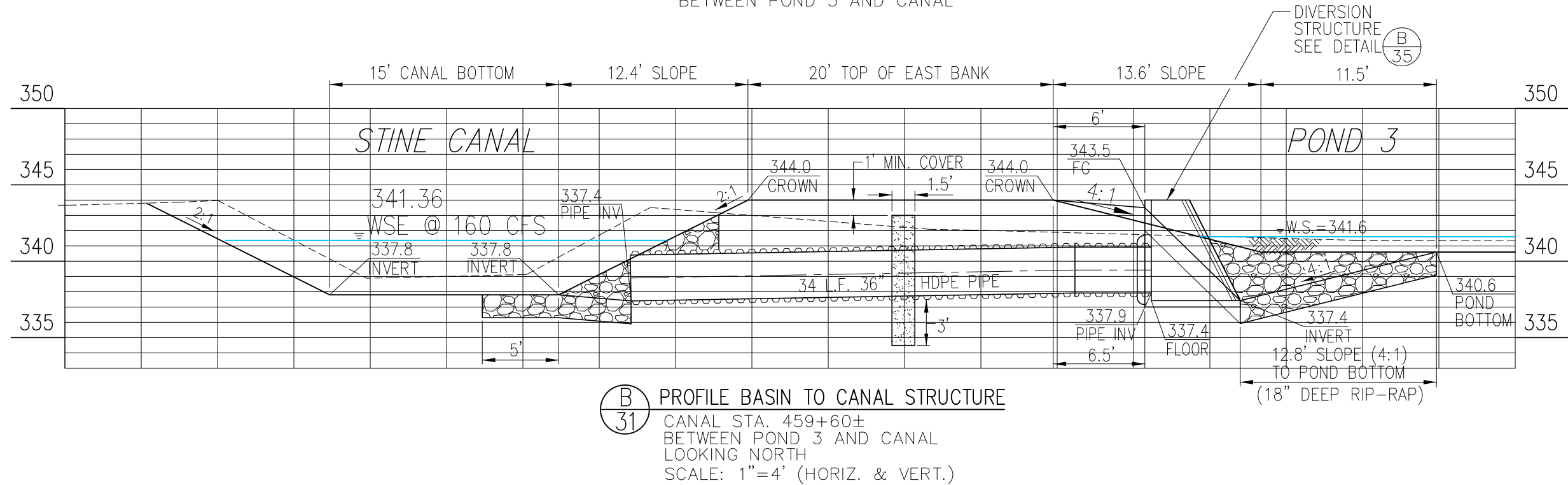
DATE: OCTOBER 10, 2022

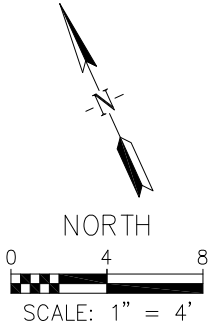
SCALE: AS NOTED

DRAWN BY: J. STORMONT

CHECKED BY: W. ZEIDERS

FILE NAME: OLD RIVER RECHARGE





DRAWING NO. **33** of 37

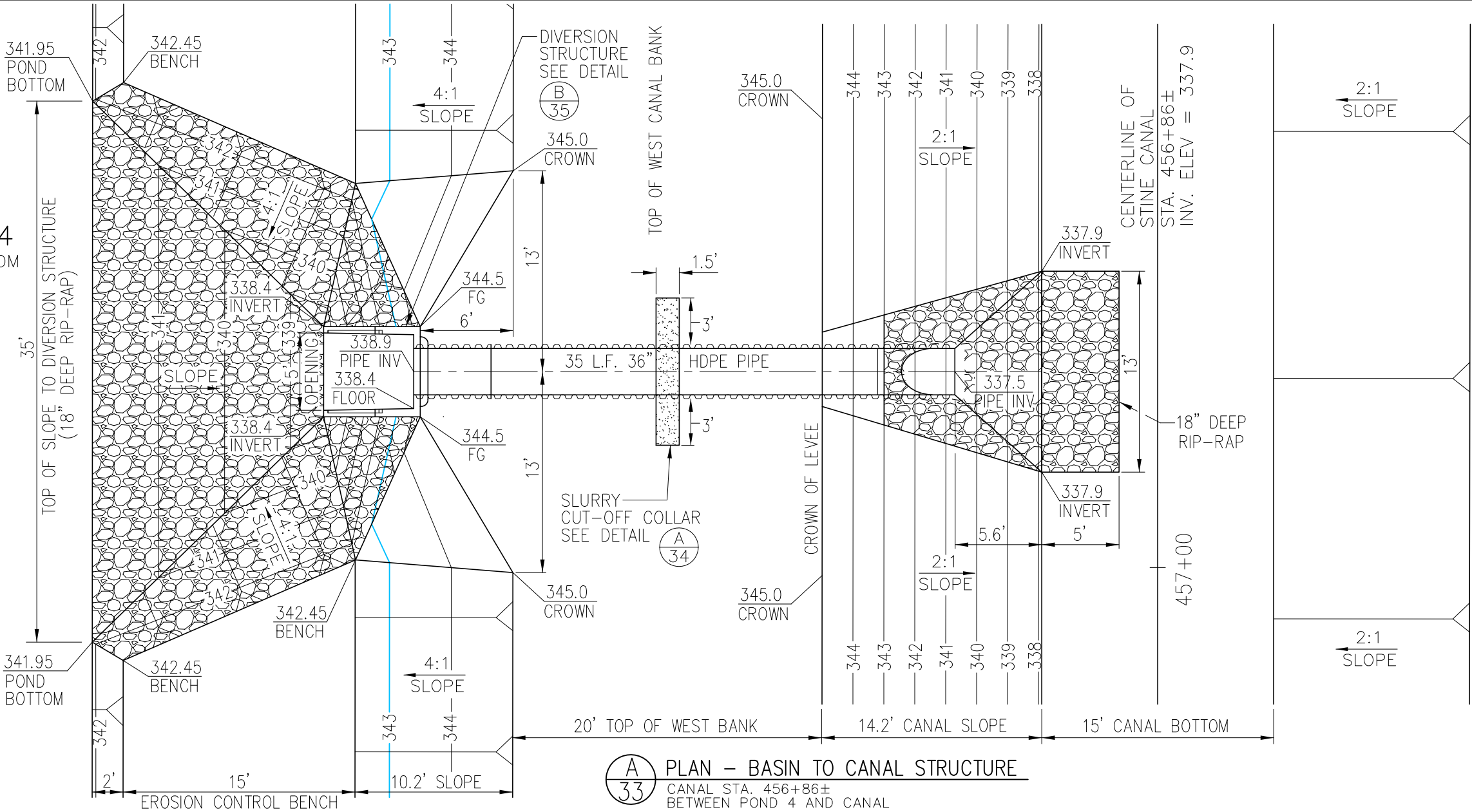
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KERN DELTA WATER DISTRICT
501 TAFT HIGHWAY, BAKERSFIELD, CALIFORNIA, 93307

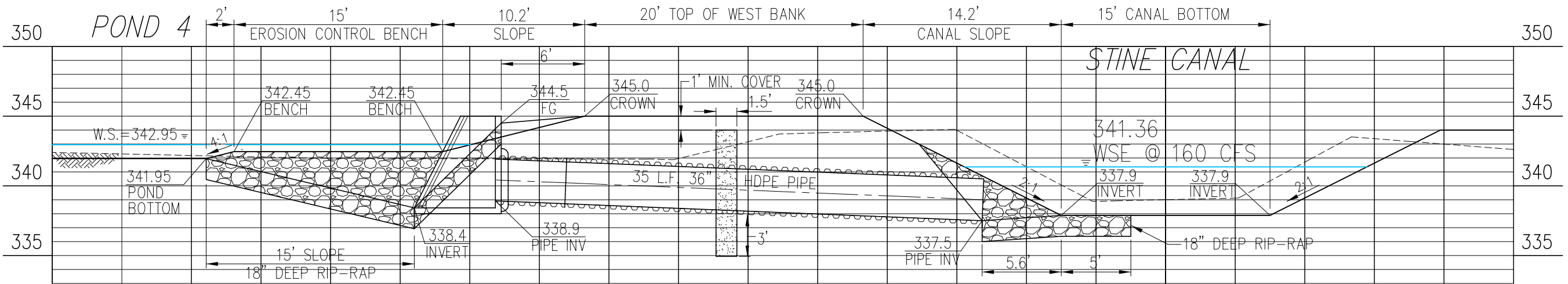
**KERN DELTA WATER DISTRICT
OLD RIVER GROUNDWATER
RECHARGE FACILITY**
POND 4 TO CANAL PIPE STRUCTURE

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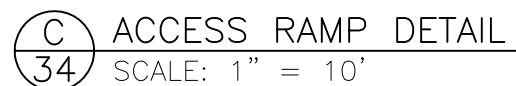
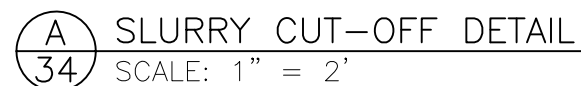
POND 4
POND BOTTOM
= 341.95

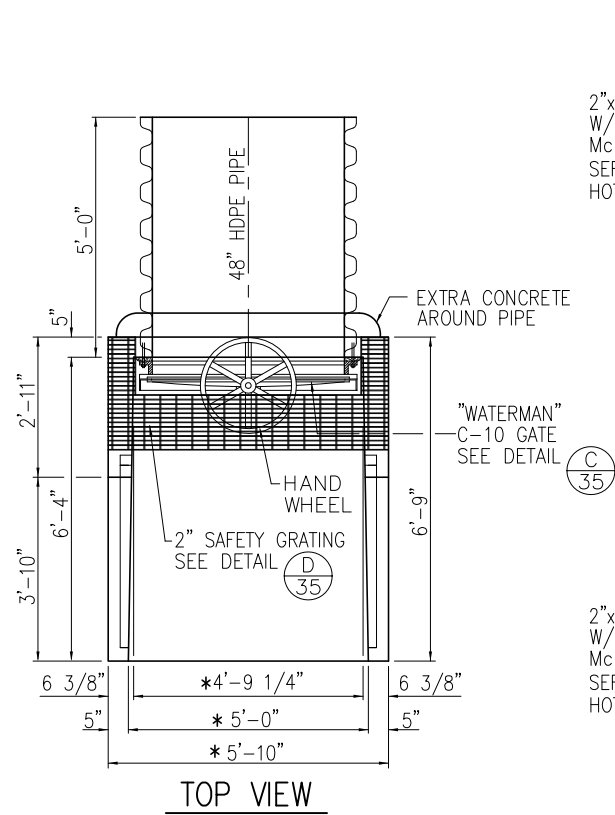


A PLAN - BASIN TO CANAL STRUCTURE
CANAL STA. 456+86±
BETWEEN POND 4 AND CANAL

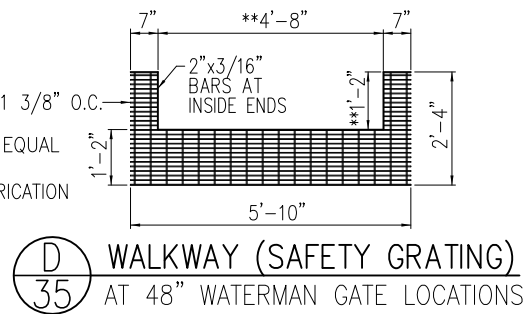


B PROFILE - BASIN TO CANAL STRUCTURE
CANAL STA. 456+86±
BETWEEN POND 4 AND CANAL
LOOKING NORTH
SCALE: 1"=4' (HORIZ. & VERT.)



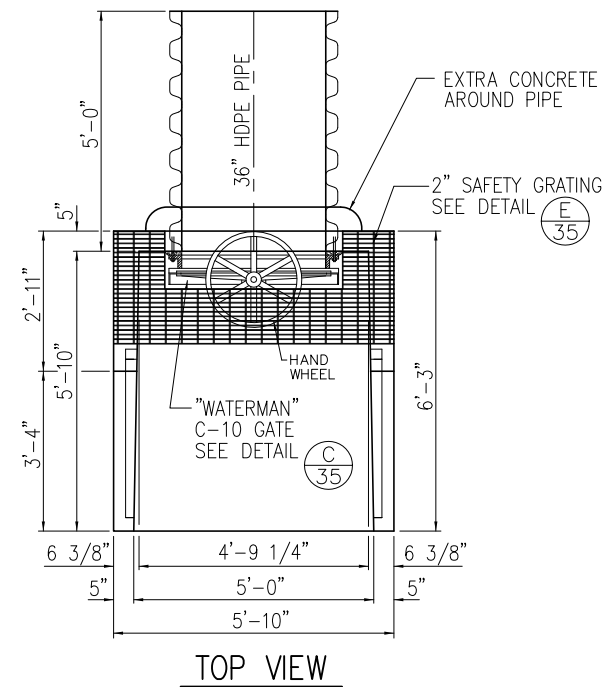
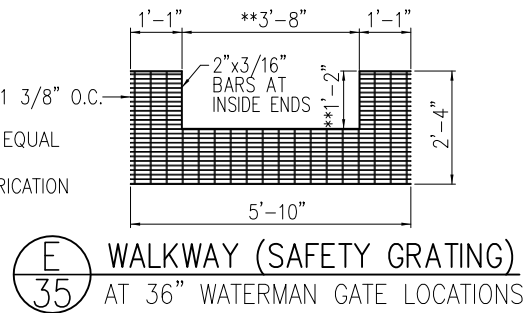


2"x3/8" STEEL BEARING BARS @ 1 3/8" O.C.
W/ CROSS BARS @ 4" O.C.
McNICHOLS GW OR APPROVED EQUAL
SERRATED (GRIP STRUT)
HOT DIP GALVANIZED AFTER FABRICATION



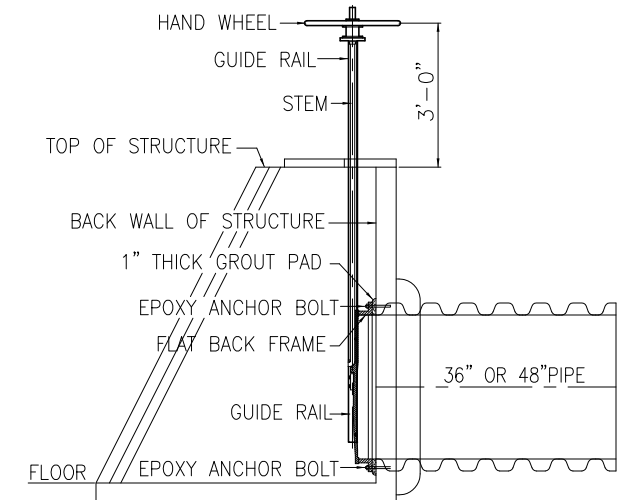
**VERIFY DIMENSIONS OF OPENING TO ALLOW WATERMAN GATE CLEARANCE

2"x3/8" STEEL BEARING BARS @ 1 3/8" O.C.
W/ CROSS BARS @ 4" O.C.
McNICHOLS GW OR APPROVED EQUAL
SERRATED (GRIP STRUT)
HOT DIP GALVANIZED AFTER FABRICATION

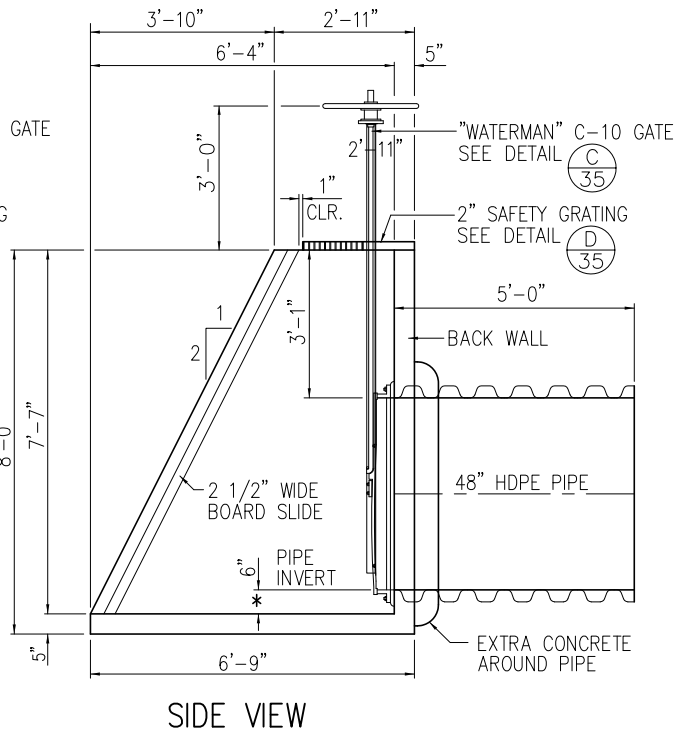
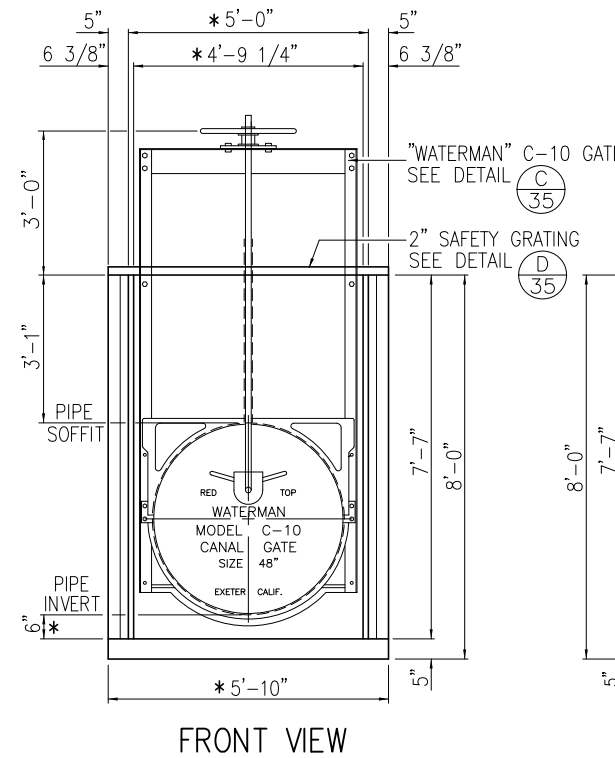


NOTE:

FLAT BACK WATERMAN C-10 GATES
WILL BE INSTALLED OVER PIPE OUTLET
MAKE SURE INSIDE BACK
WALL OF STRUCTURE CAN ACCOMMODATE
MOUNTING OF GATE.

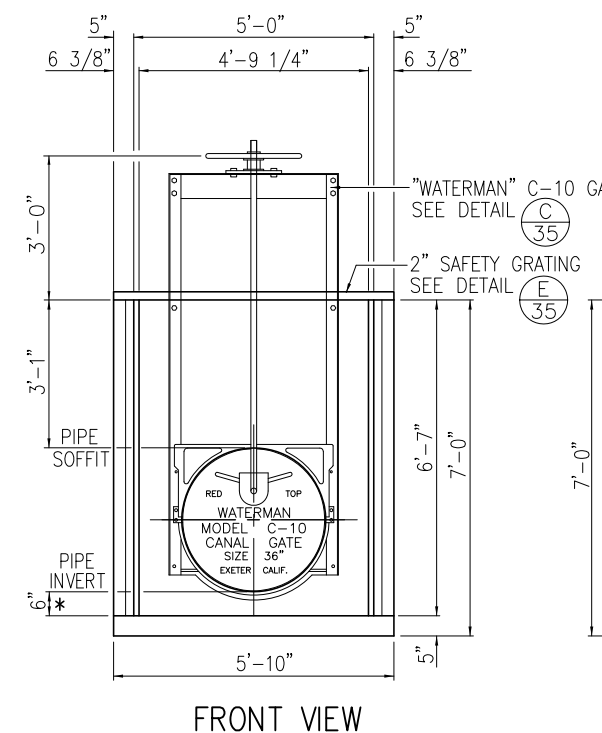


(C) 35 WATERMAN C-10 GATE INSTALLATION
36" OR 48" GATE SCALE: 1"=2'

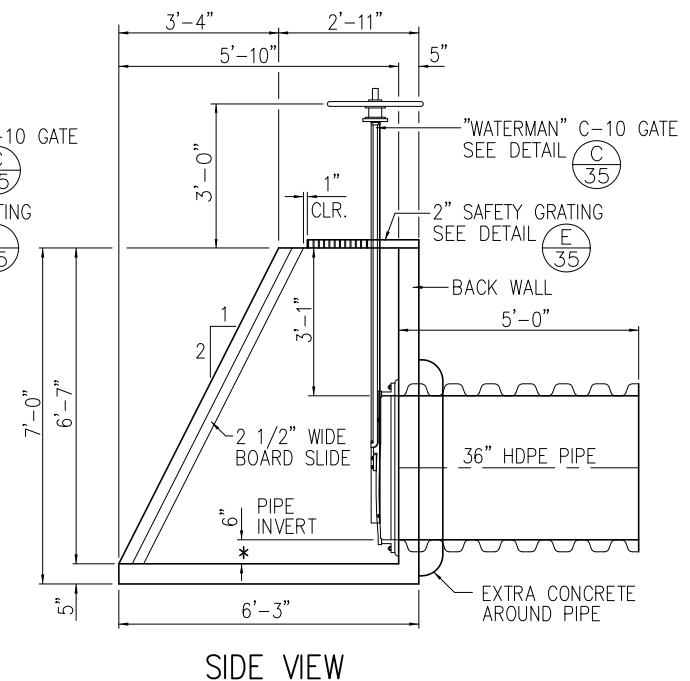


NOTE:

* CONTRACTOR TO VERIFY DIMENSIONS OF
DIVERSION STRUCTURE AND PIPE TO FLOOR
DIMENSION WILL ALLOW FOR ENOUGH SPACE
TO MOUNT THE WATERMAN C-10 GATE



(B) 35 CONCRETE DIVERSION STRUCTURE
BRIGGS MANUFACTURING 7' TALL STRUCTURE SCALE: 1"=2'



(A) 35 CONCRETE DIVERSION STRUCTURE
BRIGGS MANUFACTURING 8' TALL STRUCTURE SCALE: 1"=2'

REV.	DATE	DESCRIPTION
1	OCTOBER 10, 2022	DATE: OCTOBER 10, 2022
2	AS NOTED	SCALE: AS NOTED
3	J. STORMONT	DRAWN BY: J. STORMONT
4	W. ZEIDERS	CHECKED BY: W. ZEIDERS
5	OLD RIVER RECHARGE	FILE NAME: OLD RIVER RECHARGE

KERN DELTA WATER DISTRICT
OLD RIVER GROUNDWATER
RECHARGE FACILITY
CONCRETE DIVERSION STRUCTURES

KERN DELTA
WATER DISTRICT

501 TAFT HIGHWAY, BAKERSFIELD, CALIFORNIA, 93307

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EARTHWORK QUANTITIES AND CALCULATIONS

1’ OVER–EXCAVATION AND RE–COMPACTION:

ESTMATED LENGTH OF LEVEE SUBGRADE: 17,938 FT
AREA OF LEVEE SUBGRADE: 17,938 FT * 30 FT WIDTH
= 538,140 SQ. FT.
= 19,931 CY

1’ OVER–EXCAVATION AND RE–COMPACTION:

ESTMATED LENGTH OF LEVEE SUBGRADE: 18,362 FT
ESTMATED SCARIFICATION AND RE–COMPACTION AREA: 18,362 FT * 30 FT WIDTH
= 550,860 SQ. FT.
= 20,402 CY

TOTAL OVER–EXCAVATION, SCARIFICATION, AND RE–COMPACTION (BID ITEM #10)

TOTAL AREA OF OVER–EXCAVATION, SCARIFICATION, AND RE–COMPACTION: 538,140 SQ. FT + 550,860 SQ. FT
= 1,089,000 SQ. FT (25.00 AC) **
TOTAL VOLUME OF OVER–EXCAVATION, SCARIFICATION, AND RE–COMPACTION: 19,931 CY + 20,402 CY = 40,333 CY

EXCAVATION OF POND BOTTOMS & LEVEE CONSTRUCTION (BID ITEM #11 – BY IN–PLACE FILL):

ESTIMATED POND EARTHWORKS QUANTITY TABLE

POND NO.	CUT (CY)	FILL (CY)	NET CUT (CY)	CUT/FILL
1	1,160	8,611	–7,451	0.13
2	33,215	15,588	17,627	2.13
3	54,669	14,338	40,331	3.81
4	16,976	8,135	8,841	2.09
STINE CANAL	5,723	5,814	–91	0.98
POND/LEVEE TOTAL	111,743	52,486**	59,257	2.13
SUBGRADE	40,333	40,333	0	1.00
GRAND TOTAL DIRT BALANCE	152,076	92,819	59,257	1.64

SUBGRADE NOT INCLUDED

NOTE:

THESE NOTES ARE MEANT TO BE COMPLEMENTARY TO THE PLANS AND SPECIFICATIONS. IN THE EVENT OF ANY DISCREPANCY, THE PLANS AND SPECIFICATIONS WILL GOVERN.

NOTE:

NO MATERIAL OR DEBRIS SHALL BE BURNED WITHIN THE WORK SITE, EXCEPT AS DIRECTED OR APPROVED BY THE ENGINEER.

NOTE:

CONTRACTOR TO USE EXTREME CAUTION WHEN WORKING IN THE VICINITY OF OVERHEAD HIGH VOLTAGE POWER LINES AND BURIED OIL AND GAS PIPELINES.

** – DENOTES BID QUANTITY

BID QUANTITIES FOR GRADING ITEMS

BID ITEM #9 – CLEAR AND GRUB (TOTAL SITE ACREAGE)	= 145.2 AC
BID ITEM #10 – SUBGRADE PREPARATION	= 1,089,000 SQ. FT (25.00 AC)
BID ITEM #11 – CONSTRUCT LEVEES (BY IN–PLACE FILL)	= 52,486 CY
BID ITEM #12 – GRADING OF STINE CANAL	= 2,600 LF
BID ITEM #13 – GRADING OF BASIN BOTTOMS (TOTAL POND BOTTOM AREA)	= 119.1 AC
BID ITEM #14 – RIPPING AND FLOATING (TOTAL POND BOTTOM AREA)	= 119.1 AC

EARTHWORK QUANTITIES NOTES

1. THE EARTHWORK QUANTITIES AND CUT/FILL RATIOS SHOWN WERE CALCULATED USING THE FOLLOWING ASSUMPTIONS:

POND 1: ALL PERIMETER LEVEES (EXCEPTING THE LEVEE SHARED WITH THE STINE CANAL) CONSTRUCTED USING CUT FROM POND BOTTOM.

POND 2: ALL PERIMETER LEVEES (EXCEPTING THE LEVEE THAT IS SHARED WITH POND 1 AND THE LEVEE SHARED WITH THE STINE CANAL) CONSTRUCTED USING CUT FROM POND BOTTOM.

POND 3: ALL PERIMETER LEVEES (EXCEPTING THE LEVEE THAT IS SHARED WITH POND 2 AND THE LEVEE SHARED WITH THE STINE CANAL) CONSTRUCTED USING CUT FROM POND BOTTOM.

POND 4: ALL PERIMETER LEVEES (EXCEPTING THE LEVEE THAT IS SHARED WITH THE STINE CANAL) CONSTRUCTED USING CUT FROM POND BOTTOM.

STINE CANAL: BOTH BANKS RAISED USING CUT FROM THE INVERT AND SLOPES OF THE CANAL.

2. A COMBINED CUT/FILL RATIO OF 1.65/1 IS INCLUDED IN THE EARTHWORK QUANTITIES TO COMPENSATE FOR SHRINKAGE DUE TO LEVEE CONSTRUCTION, INCLUDING RAISING THE BANKS OF THE STINE CANAL OR AS INDICATED IN CALCULATIONS ON THIS SHEET.

SUBGRADE OVER–EXCAVATION, SCARIFICATION, AND RE–COMPACTION WAS ALSO ASSUMED AT 1.65/1 FOR SHRINKAGE UNDER LEVEES IN POND AREAS, AND A 1.50/1 SHRINKAGE WAS ASSUMED FOR THE STINE CANAL BANKS OVER–EXCAVATION, SCARIFICATION, AND RE–COMPACTION.

THE BID ITEMS ARE FOR "IN–PLACE" COMPACTED FILL. THE ENGINEER MAKES NO WARRANTY THAT THE ACTUAL CUT/FILL RATIOS WILL BE THE SAME. THE CONTRACTOR SHOULD MAKE HIS OWN DETERMINATION OF CUT/FILL RATIOS. AS SUCH, THE QUANTITIES SHOWN FOR THE AMOUNT OF EXCAVATION REQUIRED IS AN ESTIMATE, AND THE ENGINEER MAKES NO GUARANTEE AS TO THE ACTUAL AMOUNT OF EXCAVATION REQUIRED FOR THE COMPLETION OF THIS PROJECT.

REV.	DATE	DESCRIPTION
1	10/10/2022	AS NOTED

DATE: OCTOBER 10, 2022

SCALE: AS NOTED

DRAWN BY: A. TAYLOR

CHECKED BY: W. ZEIDERS

FILE NAME: OLD RIVER – BASE

KERN DELTA WATER DISTRICT
OLD RIVER GROUNDWATER
RECHARGE FACILITY
EARTHWORK QUANTITY CALCULATIONS



501 TAFT HIGHWAY, BAKERSFIELD, CALIFORNIA, 93307

ZEIDERS CONSULTING

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BAKERSFIELD, CA. 93314

(661) 589-8366

DRAWING NO.

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GRADING NOTES

1.

ALL WORK SHALL BE DONE IN CONFORMANCE WITH KERN DELTA WATER DISTRICT, ARVIN-EDISON WATER STORAGE DISTRICT, AND KERN COUNTY PERMIT REQUIREMENTS AND STANDARDS.

2.

THE CONTRACTOR IS RESPONSIBLE FOR PREPARING A DUST CONTROL PLAN AND FOR OBTAINING A DUST CONTROL PERMIT (DCP) FROM THE LOCAL AIR QUALITY BOARD. THE CONTRACTOR IS ALSO RESPONSIBLE FOR PREPARING A STORM WATER POLLUTION PREVENTION PLAN (SWPPP) AND OBTAINING A SWPPP PERMIT AS WELL. THE CONTRACTOR SHALL ABIDE BY THE REQUIREMENTS OF ANY REQUIRED BIOLOGICAL AND CULTURAL PERMITS.

3.

THE ENGINEER HAS SHOWN EXISTING UNDERGROUND LINES ON THIS PLAN TO THE BEST OF HIS KNOWLEDGE. THERE MAY BE OTHER LINES IN THE GROUND. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY LINES IN THE FIELD PRIOR TO ANY CONSTRUCTION. THE CONTRACTOR SHALL CONTACT UNDERGROUND ALERT (811) FOR UTILITY LOCATION 48 HOURS PRIOR TO ANY EXCAVATION OR TRENCHING.

4.

CONTRACTOR AGREES THAT HE SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS; AND THAT THE CONTRACTOR SHALL DEFEND, INDEMNIFY AND HOLD THE OWNERS AND THE ENGINEER HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING FOR LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE OWNERS OR THE ENGINEER.

5.

ALL EXISTING IMPROVEMENTS THAT ARE REMOVED, DAMAGED OR UNDERCUT SHALL BE REPAIRED OR REPLACED AS DIRECTED BY THE ENGINEER, AT THE CONTRACTOR'S EXPENSE.

6.

THE CONTRACTOR SHALL NOTIFY THE ENGINEER 48 HOURS PRIOR TO EXCAVATION OR PLACING OF ANY FILL MATERIAL.

7.

LIMITED SOILS INFORMATION (SIEVE ANALYSIS) IS PROVIDED IN THE APPENDIX. CONTRACTOR SHALL MAKE THEIR OWN DETERMINATION AS TO THE EXISTING FIELD AND SOIL CONDITIONS, AS WELL AS THE EFFORT REQUIRED TO GENERATE THE SPOIL, CONSTRUCT THE LEVEES, ETC.

8.

COMPACTION TESTING IS REQUIRED. TESTING INTERVALS AND FREQUENCY WILL BE PROVIDED FOR LEVEE SUBGRADE AND IN-PLACE FILL AT 1 FT VERTICAL INTERVALS AT A HORIZONTAL SPACING DEEMED NECESSARY BY THE ENGINEER TO PROVIDE ADEQUATE ASSURANCE THAT THE COMPACTION REQUIREMENTS HAVE BEEN MET.

9.

PRIOR TO CONSTRUCTION OF THE LEVEES, THE CONTRACTOR SHALL OVER-EXCAVATE A MINIMUM OF 12", SCARIFY THE SUBGRADE A MINIMUM OF AN ADDITIONAL 12", AND RE-COMPACT AS SPECIFIED.

10.

GRADING TOLERANCES SHALL BE AS FOLLOWS:

ROUGH GRADING –

•

RECHARGE AREAS: −1.0' TO +0.0' HORIZONTALLY AND −0.2' TO +0.2' VERTICALLY.

•

TOP OF BANKS AND OUTSIDE SLOPES: −0.0' TO +1.0' HORIZONTALLY AND −0.2' TO +0.2' VERTICALLY.

FINISH GRADING –

•

RECHARGE AREAS: −1.0' TO +0.0' HORIZONTALLY AND −0.1' TO +0.1' VERTICALLY.

•

TOP OF BANKS AND OUTSIDE SLOPES: −0.0' TO +1.0' HORIZONTALLY AND −0.0' TO +0.3' VERTICALLY.

11.

ALL LEVEES, ROADS, RAMPS, AND PADS SHALL BE COMPACTED TO A MINIMUM OF 95% OF THE MAXIMUM DENSITY AS OBTAINED BY A.S.T.M. TEST METHOD D698. MOISTURE CONTENT OF CONDITIONED SOIL MUST BE GREATER THAN OR EQUAL TO OPTIMUM MOISTURE CONTENT.

12.

POND BOTTOMS SHALL BE LASER LEVELED AND FINISHED – AS THE POND BOTTOMS ARE DESIGNED FOR RECHARGING WATER, NO COMPACTION IS ALLOWED. SUBSEQUENT TO LASER LEVELING AND FINISHING, POND BOTTOMS SHALL BE RIPPED TO A DEPTH OF 72" (6.0 FT) DEEP AT 6' ON CENTER IN TWO PASSES, THE SECOND AT 45° OR 90° TO THE FIRST, AND SUBSEQUENTLY FLOATED AFTERWARD TO THE SATISFACTION OF KERN DELTA WATER DISTRICT.

13.

FILL MATERIAL SHALL BE PLACED IN LAYERS NOT EXCEEDING SIX (6) INCHES IN COMPACTED THICKNESS AND COMPACTED AT OPTIMUM MOISTURE CONTENT BY AN APPROVED METHOD.

14.

THE DESIGN ENGINEER SHALL EXERCISE SUFFICIENT SUPERVISORY CONTROL DURING GRADING AND CONSTRUCTION TO INSURE COMPLIANCE WITH THE PLANS, SPECIFICATIONS, AND CODE WITHIN HIS PURVIEW.

15.

UPON COMPLETION OF GRADING, A FINAL SOILS REPORT COVERING THE SITE PREPARATION AND GRADING SHALL BE SUBMITTED BY THE SOILS ENGINEER.

16.

ALL CUT SLOPES SHALL NOT BE STEEPER THAN ALLOWED BY CAL OSHA STANDARDS.

17.

ALL FILL SLOPES SHALL NOT BE STEEPER THAN 3 HORIZONTAL TO 1 VERTICAL (UNLESS OTHERWISE INDICATED).

18.

ALL FILL AREAS SHALL BE CLEARED OF ALL VEGETATION AND OTHER UNSUITABLE MATERIAL.

19.

DUST CONTROL: IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PREVENT A DUST NUISANCE FROM ORIGINATING FROM THE SITE OF WORK AS A RESULT OF HIS OPERATIONS DURING THE EFFECTIVE PERIOD OF THIS CONTRACT. PREVENTATIVE MEASURES TO BE TAKEN BY THE CONTRACTOR SHALL INCLUDE, BUT NOT BE LIMITED TO, THE FOLLOWING:

WATER SHALL BE APPLIED TO ALL UNPAVED AREAS AS REQUIRED TO PREVENT THE SURFACES FROM BECOMING DRY ENOUGH TO PERMIT DUST FORMATION.

GRADING NOTES (CONTINUED):

CONTRACTOR IS REQUIRED TO COMPLY WITH ALL REQUIREMENTS OF THE APPLICABLE RULES UNDER SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DISTRICT REGULATION VIII AND THE DISTRICT'S RULES AND REGULATIONS AT ALL TIMES.

19.

THE ENGINEER SHALL NOT BE RESPONSIBLE OR LIABLE FOR UNAUTHORIZED CHANGES TO, OR USES OF, THESE PLANS. ALL CHANGES TO THESE PLANS MUST BE APPROVED IN WRITING BY THE ENGINEER.

20.

REFERENCE STAKING AND MARKING OF THE PROJECT SHALL BE DONE ONLY ONCE BY THE ENGINEER AND ALL RESTAKING OR REMARKING SHALL BE AT THE EXPENSE OF THE CONTRACTOR.

21.

THE SOILS ENGINEER MUST APPROVE ALL MATERIAL, INCLUDING IMPORT, AND ALL SOIL COMPACTION INCLUDING THE STABILITY OF ALL SLOPES, BOTH THOSE THAT ARE CREATED BY AND THOSE REMAINING AFTER GRADING OPERATIONS.

22.

THE ENGINEER WILL FURNISH REFERENCE LINES AND GRADE STAKES AT THE BEGINNING OF THE WORK TO ESTABLISH ALIGNMENT AND GRADE. ANY GRADE STAKES OR REFERENCE POINTS WHICH MAY BE LOST OR DESTROYED BY THE CONTRACTOR DURING THE PROGRESS OF HIS WORK SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE. THE ENGINEER MAY REQUIRE FIELD CHECKS AT ANY STAGE OF THE WORK. THE COST OF THESE FIELD CHECKS SHALL BE BORNE BY THE OWNERS. THE CONTRACTOR'S RESPONSIBILITY FOR THIS SECTION WILL NOT APPLY IN THE CASE OF MALICIOUS DAMAGE BY OTHERS.

23.

IF THE CONTRACTOR IS IN DOUBT AS TO THE MEANING OF ANY PART OF THE PLAN AND SPECIFICATIONS OR FINDS DISCREPANCIES IN OR OMISSIONS FROM THE DRAWING OR SPECIFICATIONS, HE SHALL SUBMIT A WRITTEN REQUEST FOR AN INTERPRETATION OR A CORRECTION THEREOF, PRIOR TO FILING HIS BID FOR THE PROJECT.

24.

THE CONTRACTOR SHALL PROVIDE ALL SLOPE STAKING.

25.

UPON THE DISCOVERY OF ARTIFACTS OR OTHER CULTURAL RESOURCES DURING CONSTRUCTION ACTIVITIES ASSOCIATED WITH THIS PROJECT, ALL ACTIVITY ON THAT AREA OF THE SITE SHALL BE HALTED, AND THE ENGINEER SHALL BE NOTIFIED. A QUALIFIED ARCHAEOLOGIST SHALL BE CALLED TO THE SITE TO IDENTIFY THE RESOURCE.

26.

A PRE-CONSTRUCTON MEETING SHALL BE HELD WITH THE PROJECT PARTICIPANTS AND THE OWNERS' REPRESENTATIVES A MINIMUM OF ONE WEEK PRIOR TO START OF CONSTRUCTION.

27.

THE CONTRACTOR SHALL RESTORE ALL DISTURBED/COMPACTED SURFACES INCLUDING, BUT NOT LIMITED TO, ACCESS ROADS, STORAGE AREAS, AND CONSTRUCTION ZONES, TO MEET OR EXCEED PRIOR CONDITIONS AS DIRECTED BY THE RESPONSIBLE PARTY (I.E. DISTRICT, PRIVATE ENTITY, ETC.) AT THE END OF THE PROJECT AND PRIOR TO LEAVING THE SITE, ALL FIELD AND RECHARGE AREAS THAT WERE COMPACTED DURING CONSTRUCTION (UNLESS DESIGNATED PERMANENT ACCESS AREAS BY KDWD), SHALL HAVE THE SOILS LOOSENED BY RIPPING WITH TWO PASSES. ON EACH PASS, THE SOILS SHALL BE RIPPED TO A MINIMUM DEPTH OF 72 INCHES (6 FEET) AT 6' ON CENTER, WITH THE SECOND PASS AT 45 OR 90 DEGREES FROM THE FIRST.

EXISTING INFRASTRUCTURE NOTES

1.

THE CONTRACTOR SHALL FIELD VERIFY THE LOCATION OF ALL EXISTING UNDERGROUND INFRASTRUCTURE PRIOR TO CONSTRUCTION AND SUBMIT TO THE ENGINEER FOR REVIEW PRIOR TO CONSTRUCTION.

2.

THE CONTRACTOR SHALL PROTECT EXISTING INFRASTRUCTURE THAT IS TO REMAIN DURING DEMOLITION AND CONSTRUCTION OPERATIONS.

3.

ALL CLEAN CONCRETE SHALL BE STOCKPILED ON SITE AS DIRECTED BY THE ENGINEER. ALL METALS AND OTHER DELETERIOUS MATERIALS SHALL BE DISPOSED OF OFF SITE.

4.

ALL ABANDONED SUBSURFACE OBSTRUCTIONS SHALL BE REMOVED AS DIRECTED IN THE PLANS. IF THE TERMINUS OF ANY ABANDONED PIPING IS OUTSIDE THE PROJECT LIMITS, THE PIPING SHOULD BE REMOVED WITHIN THE PROJECT AND PROPERLY GROUTED, CAPPED, AND THRUST BLOCKED AT THE PROJECT BOUNDARY AS DIRECTED BY THE ENGINEER.

CONCRETE NOTES

1.

PRIOR TO BEGINNING WORK, THE CONTRACTOR SHALL FORMALLY SUBMIT TO THE ENGINEER PRELIMINARY CONCRETE MIX DESIGNS WHICH SHALL SHOW THE PROPORTIONS AND GRADATIONS OF MATERIALS PROPOSED FOR EACH CLASS AND TYPE OF CONCRETE.

2.

THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER THE MANUFACTURER'S MIX DESIGN FOR ANY CONCRETE A MINIMUM OF 72 HOURS BEFORE THE CONCRETE IS POURED. THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER A FORMAL REQUEST FOR USE OF ADMIXTURES FOR THE ENGINEER'S REVIEW AND APPROVAL.

3.

ALL NON-REINFORCED CONCRETE SHALL BE A MINIMUM STRENGTH OF 3,000 PSI AT 28 DAYS, UNLESS OTHERWISE INDICATED. ALL REINFORCED CONCRETE SHALL BE A MINIMUM STRENGTH OF 4,000 PSI AT 28 DAYS.

4.

ALL STRUCTURAL CONCRETE SHALL BE A MINIMUM 7.0-SACK MIX AND A MINIMUM COMPRESSIVE STRENGTH OF 5,000 PSI AT 28 DAYS.

5.

ALL AGGREGATE SHALL CONFORM TO THE REQUIREMENTS OF ASTM C33.

6.

VIBRATE ALL CONCRETE (INCLUDING SLABS ON GRADE) AS IT IS PLACED WITH A MECHANICAL VIBRATOR OPERATED BY EXPERIENCED PERSONNEL. THE VIBRATOR SHALL BE USED TO CONSOLIDATE THE CONCRETE, NOT TRANSPORT IT. REINFORCING AND FORMS SHALL NOT BE VIBRATED.

6.

WHERE INDICATED ON THE PLANS, THE CONTRACTOR SHALL INSTALL A HYDROPHILIC WATERSTOP – SIKA HYDROTITE CJ-0725-3K-ADH OR SIKA HYDROTITE CJ-1020-2K-ADH OR APPROVED EQUAL.

CONCRETE NOTES (CONTINUED):

7.

PVC FLAT-RIBBED WATERSTOPS ARE REQUIRED AT ALL COLD JOINTS AND AT ANY OTHER LOCATIONS INDICATED ON THE PLANS. PVC FLAT-RIBBED WATERSTOPS SHALL BE SIKA MODEL 786, SIKA MODEL 646, OR APPROVED EQUAL.

8.

ALL SLURRY-SAND SHALL BE 1.5-SACK OR AS INDICATED ON THE PLANS.

9.

PRIOR TO THE PLACEMENT OF CONCRETE, THE ENGINEER SHALL VISUALLY INSPECT AND APPROVE ALL STEEL REINFORCING, FORMS, HYDROPHILIC OR OTHER WATERSTOPS, AND ANY OTHER ITEM OR ASPECT THAT IN HIS OPINION MAY AFFECT THE QUALITY, STRENGTH, OR EFFECTIVENESS OF REINFORCED CONCRETE STRUCTURES. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE WITH THE ENGINEER TO SCHEDULE VISUAL INSPECTIONS.

REINFORCING STEEL NOTES

1.

ALL BARS FOR REINFORCEMENT SHALL BE DEFORMED INTERMEDIATE-GRADE STEEL CONFORMING TO ASTM A615 OR ASTM A706, GRADE 60.

2.

DO NOT BEND OR STRAIGHTEN STEEL IN ANY MANNER THAT WILL INJURE THE MATERIAL. DO NOT USE ANY BARS WITH KINKS OR BENDS NOT SHOWN ON THE DRAWINGS. HEATING REBAR TO BEND IT OR CUTTING REBAR WITH A CUTTING TORCH WILL NOT BE ALLOWED.

MAKE BENDS FOR TIES AROUND A PIN HAVING A DIAMETER NOT LESS THAN TWICE THE MINIMUM THICKNESS OF THE BAR. MAKE BENDS FOR OTHER BARS AROUND A PIN HAVING A DIAMETER OF AT LEAST SIX (6) TIMES THE BAR DIAMETER.

3.

BEFORE THE START OF CONCRETE PLACEMENT, ACCURATELY PLACE ALL STEEL REINFORCEMENT, POSITIVELY SECURING AND SUPPORTING IT BY CONCRETE BLOCKS, METAL CHAIRS OR SPACERS, OR BY METAL HANGERS.

REINFORCING BARS SHALL BE STRAIGHT, EXCEPT FOR BENDS AROUND CORNERS OR WHERE BENDS ARE DETAILED ON THE PLANS.

SPICES IN REINFORCING STEEL SHALL BE LAPPED A MINIMUM OF FORTY (40) BAR DIAMETERS FOR #8 AND SMALLER AND A MINIMUM OF SIXTY (60) BAR DIAMETERS FOR #9, #10, #11 IN CONCRETE, OR A MINIMUM OF 24", WHICHEVER IS GREATER.

REINFORCING STEEL SHALL BE IN-PLACE AND SHALL BE INSPECTED AND APPROVED BY THE ENGINEER PRIOR TO THE PLACEMENT OF ANY CONCRETE.

REINFORCED CONCRETE PIPING NOTES

1.

ALL PIPE SHALL BE PROVIDED AND INSTALLED PER KERN DELTA WATER DISTRICT (KDWD) REQUIREMENTS.

2.

REINFORCED CONCRETE PIPE SHALL BE 42" ASTM C361, C25 (MINIMUM) WITH DOUBLE GASKET CONSTRUCTION AND TEST PORTS. THE PIPE MUST BE LOW-HEAD WATERTIGHT PRESSURE PIPE. A CERTIFICATE OF COMPLIANCE IS REQUIRED BEFORE INSTALLATION.

3.

EACH PIPE JOINT SHALL BE LEAK/PRESSURE TESTED PER ASTM C361 AND CERTIFIED BY THE MANUFACTURER PRIOR TO DELIVERY.

4.

ALL RUBBER GASKET JOINT RINGS SHALL BE CHECKED WITH A GAUGE ALL THE WAY AROUND THE PIPE AFTER THE JOINT HAS BEEN ASSEMBLED TO DETERMINE THAT THE GASKET HAS BEEN PROPERLY LOCATED AND SEATED. IMPROPERLY MADE JOINTS SHALL BE PULLED APART AND PROPERLY REMADE TO THE SATISFACTION OF THE ENGINEER.

5.

JOINTS SHALL BE PRESSURE TESTED FOR WATER-TIGHTNESS AS PIPE IS LAID AT 120% OF DESIGN PRESSURE (13 PSI). THE PRESSURE GAUGE MUST CONTINUOUSLY READ A CONSTANT PRESSURE GREATER THAN OR EQUAL TO 13 PSI FOR A MINIMUM OF 2 MINUTES.

6.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR DEWATERING ALL TRENCHES. IF TRENCHES OR PIPING BECOME DAMAGED DUE TO WATER INFILTRATION, IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR THE TRENCH AND/OR PIPING TO THE SATISFACTION OF THE ENGINEER AT THE CONTRACTOR'S EXPENSE.

7.

ELEVATIONS SHOWN ON PROFILES ARE PIPE INVERTS. SUBTRACT THE WALL THICKNESS TO OBTAIN THE BOTTOM OF PIPE/SUBGRADE ELEVATION.

8.

TOLERANCES FOR PIPE GRADE AND ALIGNMENT: −0.1' TO +0.1' VERTICALLY AND −0.2' TO +0.2' HORIZONTALLY FROM DESIGN.

9.

BACKFILL SHALL BE PLACED AND COMPACTED IN 6-INCH LIFTS IN SUCH A WAY TO CREATE UNIFORM SUPPORT ALL AROUND THE PIPE. PARTICULAR ATTENTION SHALL BE GIVEN TO SUPPORT AT THE HAUNCHES OF THE PIPE: RCP SHALL BE BACKFILLED WITH 1.5-SACK (MINIMUM) SLURRY SAND UP TO THE SPRINGLINE. COMPACTION SHALL BE TO A MINIMUM OF 95% PER ASTM D698.

RIP-RAP NOTES

1.

RIP-RAP SHALL BE CLEAN CONCRETE OR ROCK NO LARGER THAN 16 INCHES IN THE LARGEST DIMENSION, WITHOUT STEEL REINFORCEMENT, WOOD, RUBBISH OR OTHER DELETERIOUS MATERIALS. RIP RAP SHALL BE PLACED IN AN ORDERLY FASHION TO THE DIMENSIONS SPECIFIED SO AS TO PRODUCE A UNIFORM FINISHED APPEARANCE WITHOUT LARGE VOIDS OR SHARP PROTRUSIONS. RIP-RAP SHALL BE SOUND, DENSE AND DURABLE WITH A BULK SPECIFIC GRAVITY OF NOT LESS THAN 2.5. RIP-RAP SHALL BE ANGULAR TO SUB-ROUNDED IN SHAPE WITH THE GREATEST DIMENSION NOT GREATER THAN THREE TIMES THE LEAST DIMENSION. THE RIP-RAP SHALL CONFORM TO THE GRADING LIMITS GIVEN BELOW UNLESS OTHERWISE SPECIFIED.

PERCENT PASSING	SIZE, INCHES
100	16
50	10
10	6

STRUCTURAL STEEL NOTES

1.

ALL STRUCTURAL STEEL SHALL BE STAINLESS, ASTM TYPE 304 OR ASTM TYPE 316, INCLUDING STRUCTURAL SHAPES, BOLTS, NUTS, WASHERS, ETC., UNLESS OTHERWISE INDICATED. ANY NON-STAINLESS STEEL UTILIZED MUST BE HOT-DIP GALVANIZED AFTER FABRICATION PER ASTM A123.

2.

BOLTS (INCLUDING ANCHOR BOLTS), NUTS, AND WASHERS SHALL ALL BE ASTM TYPE 304 OR ASTM TYPE 316 STAINLESS STEEL.

BOLTS FOR CONNECTIONS SHALL CONFORM TO THE STANDARDS OF ASTM A325N. IF BOLTS ARE USED TO CONNECT DISSIMILAR METALS, THE BOLTS SHALL CONFORM TO ASTM A193.

WASHERS MUST BE INSTALLED WITH NUTS AND BOLTS. WASHERS AND NUTS MUST BE OF THE SAME MATERIAL AS THE BOLTS.

THE LENGTH OF EACH BOLT SHALL BE SUCH THAT THE BOLT EXTENDS THROUGH THE ENTIRE NUT, BUT NO MORE THAN 1/2-INCH BEYOND THE NUT.

3.

WALKWAY WELDED BAR GRATING SHALL BE McNICHOLS GHB SERIES OR APPROVED EQUAL, STAINLESS STEEL TYPE 304 OR HOT-DIP GALVANIZED.

4.

GALVANIZED STEEL SHALL FIRST BE CUT, MANUFACTURED, WELDED, WELDS GROUND AND FINISHED, ETC. PRIOR TO HOT DIP GALVANIZING. GALVANIZED ITEMS SHALL NOT BE MODIFIED IN ANY WAY THAT REMOVES, DAMAGES OR COMPROMISES THE GALVANIZED SURFACE.

5.

STEEL WITH DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED OR REPLACED AT THE DISCRETION OF THE ENGINEER AT NO ADDITIONAL COST TO THE DISTRICT. REPAIR OF GALVANIZED SURFACES SHALL BE WITH GALVANOX REPAIR COMPOUND (AS MANUFACTURED BY SUBOX, INC.), Z.R.C. COLD GALVANIZING COMPOUND (AS MANUFACTURED BY ZRC PRODUCTS CO.), OR APPROVED EQUAL. SUCH REPAIRS SHALL BE CONDUCTED PER ASTM A780.

INTER BASIN STRUCTURE NOTES

1.

5' WIDE REINFORCED CONCRETE BOXES WITH 36" OR 48" HDPE PIPE STUBS SHALL BE KERN DELTA GRAVITY DIVERSION BOXES WITH BOARD SLIDE CONTROL BY BRIGGS MANUFACTURING. (OR APPROVED EQUIVALENT).

HDPE PIPE NOTES

1.

HDPE PIPE – ADS OR HANCOR RIBBED WATERTIGHT, LOW-HEAD IRRIGATION PIPE (OR APPROVED EQUIVALENT).

NOTE:

THESE NOTES ARE MEANT TO BE COMPLEMENTARY TO THE PLANS AND SPECIFICATIONS. IN THE EVENT OF ANY DISCREPANCY, THE PLANS AND SPECIFICATIONS WILL GOVERN.

NOTE:

NO MATERIAL OR DEBRIS SHALL BE BURNED WITHIN THE WORK SITE, EXCEPT AS DIRECTED OR APPROVED BY THE ENGINEER.

NOTE:

CONTRACTOR TO USE EXTREME CAUTION WHEN WORKING IN THE VICINITY OF OVERHEAD HIGH VOLTAGE POWER LINES AND BURIED OIL AND GAS PIPELINES.

REV. DATE DESCRIPTION

DATE: OCTOBER 10, 2022

SCALE: AS NOTED

DRAWN BY: A. TAYLOR

CHECKED BY: W. ZEIDERS

FILE NAME: OLD RIVER – BASE

KERN DELTA WATER DISTRICT
OLD RIVER GROUNDWATER
RECHARGE FACILITY
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