Request for Proposal
No. PWG117-FLOOD- 2230
West Fontana Channel
Structural Engineering Services

County of San Bernardino
Flood Control Engineering Division
825 E. Third Street, Rm. 140
San Bernardino, CA 92415-0835
Release Date: October 18, 2016
Deadline Date: November 8, 2016

(Rev 1/30/2015)

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I. INTRODUCTION

A. Proposal Submission

Proposals or bids must be received by the designated date and time. Submit one (1) original, three (3) additional copies, and one (1) CD. Proposals are to be submitted in the following format; be no more than forty (40) pages in length (including all required forms, certifications and statements) and be in "Arial" font with a font size of eleven (11), except for any forms included in the Request for Proposal (RFP). The price proposal component of the Proposal will be submitted in a separate sealed envelope using the same aforementioned format. ELECTRONIC PROPOSALS WILL NOT BE ACCEPTED. Proposals will not be accepted by email or facsimile. Proposals must be submitted in accordance with what is stipulated in Section I and in Section VI, Paragraph B. Paper responses will be accepted at the location identified in the solicitation, by mail or in person to the address listed in Section I, Paragraph G, and will be time/date stamped when received, and can be withdrawn at any time prior to the scheduled deadline for submission of the proposal or bid.

ePro
All Proposers must register with the County of San Bernardino Electronic Procurement Network (ePro) https://epro.sbcounty.gov/epro/. ADDITIONAL NOTE: All Proposers/bidders must register with the ePro system prior to the date and time to receive the bid or proposal, or they will be disqualified. Late or incomplete proposals or bids will not be accepted. System-related issues in ePro shall be directed to Vendor support at ePro.Vendors@buyspeed.com or at (855) 800-5046. For procurement questions involving ePro, please contact the Purchasing Department at (909) 387-2060.

B. Purpose

The San Bernardino County Flood Control District, hereafter referred to as the "District" or "Department", is seeking proposals from interested and qualified Proposers to provide structural engineering services for the proposed West Fontana Channel Project (Project). The West Fontana Channel is a linear flood control channel that is within both the City of Fontana and an unincorporated area of the County of San Bernardino. See "Background" section of this RFP for additional information.

C. Term of Agreement

Specific services to be provided under this RFP are outlined under Section IV, Scope of Work. The Agreement period will be for 4 years or until completion of the construction of the Project, whichever occurs first.

D. Minimum Proposer Requirements

All Proposers must:

1. Have no record of unsatisfactory performance. Proposers who are or have been seriously deficient in current or recent Agreement performance, in the absence of circumstances properly beyond the control of the Proposer, shall be presumed to be unable to meet this requirement.

2. Not be currently under suspension, debarment, voluntary exclusion or determination of ineligibility by any Federal agency; not have been suspended, debarred, voluntarily excluded or determined ineligible by any Federal agency within the past 3 years; not have a proposed debarment pending; not been indicted, convicted, or had a civil judgment rendered against it by a court of competent jurisdiction in any matter involving fraud or official misconduct within the past 3 years. The certification page on Attachment G must be completed and signed by the Proposer.

3. Provide DIR Registration Number for Vendor and all sub-consultants and sub-contractors below. (Dept. include if the Scope of Work is subject to Prevailing Wage)

4. Have the ability to maintain adequate files and records and meet statistical reporting requirements.

5. Have the administrative and fiscal capability to provide and manage the proposed services and to ensure adequate audit trail.

6. Have a minimum of three (3) continuous years of experience providing this type of service.

7. Provide references of a minimum of three (3) other customers, one (1) of which should be a government agency, involving the Proposer's delivery of services that demonstrate the ability of the Proposer to provide Structural Engineering services as outlined in this RFP. All references must have names, titles and phone numbers.

8. Have valid State of California Structural Engineer license or be a licensed Civil Engineer with a minimum of three (3) years' experience specializing structures in the Project Manager's/Project Engineer's (PM/PE) own name(s) (proof of valid licenses must be submitted with the proposal). In addition, the Project team shall include an engineer that has a valid State of California Structural Engineer license (proof of valid licenses must be submitted with the proposal). Proposer must maintain valid applicable licenses during the entire term of the resulting agreement and any time work is being performed pursuant to a contract with the County.

9. If applicable, be registered with the Department of Industrial Relations as required by S.B. 854 (Chapter 28, Statutes of 2014) to work on public works contracts (as defined under the Labor Code).

10. Meet other presentation and participation requirements listed in this RFP.

E. Reserved

F. Questions

Questions regarding the contents of this RFP must be submitted in writing on or **before 5:00 PM Wednesday, October 26, 2016** and directed to the individual listed in Section I, Paragraph G. All questions will be answered and both the question and answer will be posted on the County's Web-Site.

G. Correspondence

All correspondence, **including proposals and questions**, are to be submitted to:

San Bernardino County Flood Control District
Attn: **Erwin Fogerson**
825 E. Third Street, Room 140
San Bernardino, CA 92415-0835
(909) 387-7962 Phone
(909) 387-8130 Fax
efogerson@dpw.sbcounty.gov Email

Proposals must be placed in a sealed envelope, with the words "PROPOSAL ENCLOSED –West Fontana Channel Structural Engineering Services" clearly stated in the lower left-hand corner, and submitted to:

DPW - Front Reception Desk
825 E. Third Street, Room 140
San Bernardino, CA 92415
Phone: (909) 387-7910

The price proposal component of the Proposal must be submitted to the address above inside a separate sealed envelope addressed as specified above. Fax number and e-mail address may be used to submit questions only. **ELECTRONIC PROPOSALS WILL NOT BE ACCEPTED. Proposals will not be accepted by email or facsimile. Proposals must be submitted in accordance with what is**

stipulated in Section I and Section VI, Paragraph B, to the address indicated in Section I, Paragraph G above.

H. Admonition to Proposers

Once this RFP has been issued, the individual identified above is the sole contact point for any inquiries or information relating to this RFP. Failure to adhere to this policy may result in disqualification of the Proposer. All questions regarding this RFP can be presented in writing as indicated in Section I, Paragraph G.

I. Proposal Submission Deadline

Proposals or bids must be received no later than **5:00 PM Tuesday, November 8, 2016.** Postmarks will not be accepted in lieu of actual receipt. Facsimile or electronically transmitted proposals will not be accepted in lieu of actual receipt. Late or incomplete proposals will not be accepted.

II. PROPOSAL TIMELINE

Release of RFP	Tuesday, October 18, 2016
Deadline for Submission of Questions	5:00 PM (PST) Wednesday, October 26, 2016
Mandatory Proposal Conference	None
Deadline for Proposals	5:00 PM(PST) Tuesday, November 8, 2016
Tentative Date for Awarding Agreement	Tuesday, December 6, 2016

III. PROPOSAL CONDITIONS

A. Contingencies

This RFP does not commit the District to award an Agreement. The District reserves the right to accept or reject any or all proposals if the District determines it is in the best interest of the District to do so. The District will notify all Proposers in writing, if the District rejects all proposals. The District also reserves the right to terminate this RFP process at any time.

B. Acceptance or Rejection of Proposals

Proposals shall remain open, valid and subject to acceptance anytime within one hundred eighty (180) days after the proposal opening and up to the end of the Agreement period. The District reserves the right to reject any or all proposals.

C. Evaluation Process

Proposals will be evaluated in compliance with the procedure described in Section VII of this RFP.

D. Modifications

The District reserves the right to issue addenda or amendments to this RFP if the District considers that additional clarifications are needed. Only those Proposers represented at the pre-proposal conference will receive addenda or amendments issued after the Mandatory Pre-proposal Conference.

E. Proposal Submission

To be considered, all proposals must be submitted in the manner set forth in this RFP. It is the Proposer's responsibility to ensure that its proposal arrives on or before the specified time.

F. Incurred Costs

The District is not obligated to pay any costs incurred by Proposers in the preparation of a proposal in response to this RFP. Proposers agree that all costs incurred in developing this proposal are the Proposer's responsibility.

G. Negotiations

The District may require the potential Proposer(s) selected to participate in negotiations. This may include cost, technical, or other clarifications needed to make a decision.

H. Formal Agreement

Proposer will be required to enter into a formal Agreement with the District. This RFP sets forth some of the general provisions which will be included in the final Agreement. In submitting a response to this RFP, Proposer will be deemed to have agreed to each clause unless the proposal identifies an objection and District agrees to a change of language in writing. All objections to any provisions of the final Agreement should be listed on Attachment C – Exceptions to RFP.

I. Use of Proposals Received

All proposals received shall become the property of the District.

J. Final Authority

The final authority to award Agreements as a result of this RFP rests solely with the County of San Bernardino Board of Supervisors (Board) acting as the governing body of the San Bernardino County Flood Control District. In certain situations, the Board may authorize the County of San Bernardino, hereafter referred to as the "County", Chief Executive Officer (CEO) and/or the County Purchasing Agent to award Agreements.

IV. SCOPE OF WORK

A. Background

The District proposes to construct West Fontana Channel Project, in the City of Fontana and in the adjacent unincorporated area of the County. This Project, in general, consists of reinforced concrete rectangular and trapezoidal channels, bio-swale concrete channels, precast and cast-in-place reinforced concrete box culverts designed for both highway and railroad loadings, side drain conduits and related junction structures, transition structures, wingwalls, headwalls, cutoff walls, and various access roadways and ramps. The Location Map and 65 percent complete plans are attached.

B. Scope of work:

Structural design of the following reinforced concrete structures is required:

- Rectangular channels, including transitions (including subdrain system as required)
- Bio-swale channel adjacent and parallel to rectangular channel
- Subdrain system, if required, for trapezoidal concrete channel with adjacent permeable earth bio-swale channel
- Channel access ramps
- Bio-swale access ramps
- Box culverts designed for minimum H20-44 highway loading, including parapets
- Review of design of box culverts designed for Cooper E-80 railroad loading, including parapets
- Headwalls and wingwalls at upstream and downstream ends of Project
- Junction structures for connection of larger reinforced concrete pipe laterals to the rectangular channels and to the box culverts

Design tasks include design of retaining walls, headwalls, wingwalls and L-walls, if used, for stability (sliding, overturning); structural analysis including all applicable loading conditions; structural design of structures which will have dimensions to accomplish the hydraulic, retaining and other functions of the structures shown on the civil plans; structural calculations; determination of hydrostatic uplift forces and design of subdrain systems and/or other means of relieving uplift forces to provide economical structures which resist uplift forces and prevent flotation; structural drawing sheets expressing the structural designs, including tables and sections showing concrete thicknesses, reinforcement, etc.; details of connections between structural elements (i.e., connection between channels and culverts and headwalls, connection between precast and cast-in-place culverts, etc.; detailing of design including channel construction and expansion joints, chamfers, cutoff walls, etc.; drawings of subdrain system.

The District has performed preliminary structural design of reinforced concrete box culverts and reinforced concrete rectangular channels using OCBOX and OCRCD structural design programs. The designs are depicted on the “Reinforced Concrete Box Culvert Structural Details” and “Reinforced Concrete Rectangular Channel Structural Details” drawings of the attached plans. The structural designs and drawings are provided for information only. Some of the drawings to be prepared by the Consultant may be similar in format.

The drawings shall be prepared and submitted using AutoCAD software. Additional related tasks include preparation of Special Provisions for the reinforced concrete structures, and review of related contractor submittals during construction, including shoring design.

The items of work are described as follows:

- Rectangular open channels:

  The rectangular open channels, including at reaches with transitioning widths and/or heights, shall be designed in accordance with the Los Angeles County Flood Control District Structural Design Manual, including all loading cases. The lateral loading imposed by the adjacent railroad tracks shall be determined and included in the design loads.

  The 28-day compressive strength of the invert concrete shall be 5,000 psi.

  Consideration shall be given to use of accelerating admixtures to reduce time required before loads may be applied.

  A subdrain system or other drainage methods shall be designed to provide for an economical rectangular channel design and to prevent flotation of the channel for the Project’s ground water conditions. In addition to usual conditions, the adjacent bio-swale may have a permeable bottom. Water is introduced into the bio-swale from street catch basins, and side drains from adjacent properties. The discharge rates will be provided by the District for design purposes.

  The consultant shall design the most economical channel design for each reach that accomplishes the functional requirements of the channel.

- Bio-swale channel:

  The Project features a bio-swale parallel with and immediately adjacent to the rectangular channel for much of the length of the Project. The bio-swale is essentially an adjacent rectangular channel, which will be planted with appropriate vegetation. The southerly bio-swale channel wall is the northerly main rectangular channel wall. The bio-swale varies in width, as shown on the preliminary plans.

Water is introduced into the bio-swale from street catch basins, and side drains from adjacent properties. The discharge rates will be provided by the District for design purposes. The water may be conveyed between discontinuous bio-swale reaches through pipes.

The elevation of the top of the wall between the rectangular main channel and the bio-swale will be set near the 100-year water surface elevation in the main channel, without freeboard. The slope of the earthen bio-swale invert will be determined by the flow characteristics of the peak flows introduced into the bio-swale. The slopes of the main channel invert, top of wall, and bio-swale invert are not expected to be parallel.
The bio-swale may either have a permeable bottom, or an impermeable bottom. Some reaches of the bio-swale may be permeable and other reaches may be impermeable.

If the bio-swale bottom is permeable, the northerly bio-swale wall may be an L-wall, and rip-rap may be placed at the bottom of the channel under earth fill. The L-wall footing would be oriented to the northerly direction, to provide a permeable bottom. The L-wall shall be designed to resist sliding and overturning, taking into account the saturated soil conditions. Struts at footing elevation between the L-wall and main channel wall at intervals may be considered to preclude sliding of the L-wall. In some channel reaches, limited right-of-way at the northerly side of the channel may preclude the use of this configuration. This configuration is depicted in the attached Figure 1.

Another possible configuration for an impermeable bottom bio-swale is that the northerly bio-swale wall would be a conventional retaining wall. The wall shall be designed to resist sliding and overturning, taking into account the saturated soil conditions. Struts at footing elevation between the wall and main channel wall at intervals may be considered to preclude sliding of the wall. This configuration is shown in the attached Figure 2.

If the bio-swale bottom is impermeable, a rectangular concrete channel section may be used. This configuration is depicted in the attached Figure 3.

Alternatively, an L-wall northerly channel wall may be used, with the L-wall footing oriented to the southerly direction, and a floater slab or cement slurry may be placed to fill the remaining channel width, if any. This configuration is depicted in the attached Figure 4.

The consultant may also propose other configurations. The most economical solution should be used for every channel reach, depending on width and depth of the bio-swale channel. Drains through the bio-swale bottom slab may be required at intervals for impermeable bottom configurations.

The required depth of soil in the bio-swale will be provided by the District.

The Consultant shall submit to the District for approval the preliminary proposed structural design configurations of the bio-swale for every channel reach, and obtain District approval prior to proceeding with final structural design.

- Subdrain system for trapezoidal channel

  The Project features a trapezoidal concrete channel constructed in accordance with the District's standard S.P. 192E, with an adjacent unlined earth bio-swale. The required depth of soil in the bio-swale will be provided by the District. This configuration is depicted in the attached Figure 5.

The Consultant shall evaluate the ground water condition resulting from the adjacent earth bio-swale and design an adequate subdrain system for the bio-swale and/or the channel to alleviate hydrostatic uplift.

- Channel access ramps and bio-swale access ramps:

The Project features concrete paved access ramps to access the channel invert and the bio-swale. The ramps shall be designed for H20-44 loading. The ramps may be designed similarly to a rectangular channel, or with a separate retaining wall and concrete ramp pavement.

- Box culverts designed for highway loading:

The Project features box culverts which shall be designed for H20-44 highway loading. The culvert at sewer line crossing near Oleander Avenue shall be included. The reach of culvert upstream and downstream of Cherry Avenue (Station 24+50 to Station 37+44) shall be included. The culverts shall be of the rises and spans shown on the preliminary plans, including span and rise transitions. Design of parapets shall be included.

The culverts may be cast-in-place or pre-cast on-site or off-set, except the culverts at Beech Avenue and Citrus Avenue which shall be pre-cast. Additionally, a reach of the culvert near the relocated horizontal alignment of the railroad track upstream of Cherry Avenue (approximately Station 34+00 to Station 36+00) may be required to be precast on site or off site. Structural design of precast culverts shall be by the construction contractor. Consultant shall review the structural designs submitted by the construction contractor. The following street crossing box culverts shall be precast on site or off site: Beech Avenue, Citrus Avenue. Stresses induced during lifting shall be included in the structural design of precast culverts. Consideration shall be given to the weight of each length of precast culvert. The culvert shall be placed in an open trench.

The reinforced concrete box culverts shall be designed in accordance with the Los Angeles County Flood Control District Structural Design Manual, including all loading cases. The lateral loading imposed by the adjacent railroad tracks shall be determined and included in the design loads.

Consultant shall evaluate the influence of the Cherry Avenue bridge abutment and piers on the box culvert and on shoring which may be employed. Any additional lateral loads shall be included in the designs of the culverts and shoring. Any special construction considerations or procedures shall be included in requirements in the Special Provisions.

The 28-day compressive strength of the invert concrete shall be 5,000 psi.

For the culvert in the vicinity of Cherry Avenue/Angeles Block, an additional 2 inches of clearance from the invert surface to the reinforcing steel shall be provided as a sacrificial thickness of concrete for erosion.

Consideration shall be given to use of accelerating admixtures to reduce time required before loads may be applied.

- Box culverts designed for railroad loading:

The Project features a box culvert at the rail spur crossing near Lime Avenue which shall be designed for Cooper E80 railroad loading. The culvert shall be of the rise and span shown on the preliminary plans. There shall be a minimum of 3 feet cover from base of rail to top of

culvert. Design of parapets shall be included. The box culvert at the rail spur at Lime Street shall be pre-cast onsite or off-site.

Structural design of precast culverts shall be by the construction contractor. Consultant shall review the structural designs submitted by the construction contractor. The reach at the rail spur crossing near Lime Avenue shall be precast on site or off-site. Stresses induced during lifting shall be included in the structural design. Consideration shall be given to the weight of each length of precast culvert. The culvert shall be placed in an open trench.

The reinforced concrete box culverts shall be designed in accordance with the Los Angeles County Flood Control District Structural Design Manual, including all loading cases. The lateral loading imposed by the adjacent railroad tracks shall be determined and included in the design loads, if applicable.

The 28-day compressive strength of the invert concrete shall be 5,000 psi.

Consideration shall be given to use of accelerating admixtures to reduce time required before loads may be applied.

- Headwalls and wingwalls:

The Project features wingwalls and cutoff wall at the downstream end of the concrete channel, and pipe headwall and wingwalls at the upstream end of the trapezoidal concrete channel.

The preliminary plans identify the downstream wingwalls to be constructed in accordance with 2010 Caltrans Standard Plan D84. The consultant shall verify the adequacy and applicability of the indicated wingwall standard, and provide a structural design for the cutoff wall at the downstream end of the channel, and connection details of connections of the channel, wingwalls, and cutoff wall. If the Consultant does not deem the referenced standard adequate and applicable, Consultant shall provide a structural design for the wingwalls.

The preliminary plans identify a pipe headwall and wingwalls at the upstream end of the trapezoidal channel. The consultant shall verify the adequacy and applicability of 2010 Caltrans Standard Plan D86B for the headwall, and of 2010 Caltrans Standard Plan D84 for the wingwalls, and provide connection details of connections of the channel, wingwalls, headwall, and bio-swale ramp. If the Consultant does not deem the referenced standards adequate and applicable, Consultant shall provide structural designs for the headwall and wingwalls.

Consideration shall be given to use of accelerating admixtures to reduce time required before loads may be applied.

- Junction structures:

The following junctions are based on the preliminary design and are subject to possible revision. Consultant shall evaluate the following junction structure standard designs for their applicability: (connecting to rectangular channel) Corps of Engineers Junction Structure “C” and Junction Structure “D”, SBCFCD SP 220; (connecting to box culvert) SPPWC 333-2. Flap gates are not required at any junction. Consultant may review other standard designs. Consultant shall recommend junction structure standard designs, and provide additional structural design related to their application. Alternatively, Consultant shall provide geometric and structural designs for the junction structures. Junction structures are required for the following connections.

MPD line T-2B, Station 24+00 +/-, at Depot Road (west side Cherry Avenue), 7.0’ diameter RCP into rectangular open channel transition, 30 degree angle of entry;

MPD Line T-2A, Station 26+50 +/-, east side Cherry Avenue, 5.0' diameter RCP into 14' rise RCB transition, 30 degree angle of entry;

MPD line T-1C, Station 38+90 +/-, 5.5' diameter RCP into rectangular open channel transition, 30 degree angle of entry;

MPD line T-1A, Station 52+20 +/-, 4.0' diameter RCP into rectangular open channel, 30 degree angle of entry;

MPD line T-8, Station 65+25 +/-, 6.0' diameter RCP into rectangular open channel transition, 30 degree angle of entry;

MPD line T-7, Station 79+00 +/-, at Beech Avenue, 7.5' diameter RCP into rectangular open channel transition, 30 degree angle of entry;

MPD line T-6, Station 99+20 +/-, at Lime Avenue, 6.0' diameter RCP into rectangular open channel, 30 degree angle of entry;

MPD line T-5, Station 125+40 +/-, at Tokay Avenue, 7.5' diameter RCP into rectangular open channel, 30 degree angle of entry;

MPD line T-4, Station 132+20 +/-, at Citrus Avenue, 6.5' diameter RCP into rectangular open channel transition, 30 degree angle of entry;

MPD Line T-3, Station 146+80 +/-, at Oleander Avenue, 6.0' diameter RCP into rectangular open channel transition, 30 degree angle of entry;

MPD Line T-2, Station 160+25 +/-, at Cypress Avenue, 8.0' diameter RCP into rectangular open channel transition, 30 degree angle of entry

An additional connection at Station 160+25 +/-, at Cypress Avenue, 7.5' diameter RCP into rectangular open channel transition, 30 degree angle of entry

- Special Provisions and Estimates:

Consultant shall prepare sections of the Project Special Provisions for the reinforced concrete structures. The Special Provisions shall reference the 2006 California Department of Transportation (Caltrans) Standard Specifications. Any Caltrans Standard Drawings utilized shall be the 2010 edition, or later with the latest Revisions. The Consultant shall prepare a preliminary and final quantity and cost estimate.

- Submittal review:

The construction contractor will be required to submit design plans and calculations for shoring systems to be used during construction. Consultant shall review the construction contractor submittals, provide comments, and review resubmittals until the shoring design and calculations are acceptable.

The construction contractor will have the option to precast some or all of the box culverts either on site or off site. Some box culverts are required to be precast, either on site or off site. The construction contractor will be required to submit structural designs and calculations for the precast box culverts it proposes to use. Consultant shall review the construction contractor submittals, provide comments, and review resubmittals until the precast box culvert designs and calculations are acceptable.

C. Project Schedule

The Project is scheduled to be under construction by the summer of 2018. In order to meet that time line the Project plans and all associated reports, special provisions and estimates as described in the scope of services of this RFP shall be completed within four (4) months of the notice to proceed. Consultant shall provide services during construction as described in the scope of services.

D. Deliverables

The Consultant shall complete and submit the following deliverable items of work:

1. Structural analysis and preliminary structural design:
   Consultant shall perform structural analysis and preliminary structural design for the various structures. Deliverable shall consist of structural analysis and preliminary structural design calculations and sketches.

2. Develop recommended configurations:
   Consultant shall develop alternative structure configurations and recommend the optimum configurations, and shall recommend standard designs as applicable. Deliverable shall consist of alternative and recommended design configurations with supporting calculations and sketches.

3. Final design:
   Consultant shall perform structural design for the various structures, and perform additional structural design as may be required in conjunction with application of standards, if necessary. Consultant shall submit final calculations and sketches. Consultant shall make recommendations of standard designs to be used. Deliverable shall consist of the final structural calculations and a memorandum summarizing the design assumptions and calculations.

4. Structural drawings, including detailing, special provisions and estimates:
   Consultant shall prepare and submit structural plan sheets using AutoCAD, including details as previously set forth. Deliverable shall consist of final plans, special provisions and quantity estimates.

5. Review of contractor shoring design:
   Consultant shall review the shoring design submitted by the construction contractor. This item of work shall have a budget of 40 hours of work. Deliverable shall consist of formal review comments contained in a memorandum to the District.

6. Review of contractor precast box culvert designs:
   Consultant shall review the precast box culvert designs submitted by the construction contractor. This item of work shall have a budget of 40 hours of work. Deliverable shall consist of formal review comments contained in a memorandum to the District.

7. Additional Services:
   Consultant shall include in the proposal 40 hours for construction oversight and 20 hours for bid phase consultation.

8. Meetings:
   Consultant shall include in the proposal time and expenses to attend four (4) meetings at the District offices.

V. AGREEMENT REQUIREMENTS

In developing the proposal, the Proposer should carefully review the sample Agreement and the contractual requirements listed in Section V and take into consideration the rights, obligations, and costs associated therewith. Any change in the sample Agreement or the contractual requirements in Section V, which the Proposer desires, must be specified in the proposal or the requested change will be deemed to have been waived.

A. General

1. **Legality and Severability**
   The parties' actions under the Agreement shall comply with all applicable laws, rules, regulations, court orders and governmental agency orders. The provisions of this Agreement are specifically made severable. If a provision of the Agreement is terminated or held to be invalid, illegal or unenforceable, the validity, legality and enforceability of the remaining provisions shall remain in full effect.

2. **Representation of the District**
   In the performance of the Agreement, Proposer, its agents and employees, shall act in an independent capacity and not as officers, employees, or agents of the County of San Bernardino Flood Control District.

3. **Relationship of the Parties**
   Nothing contained in this Agreement shall be construed as creating a joint venture, partnership, or employment arrangement between the Parties hereto, nor shall either Party have the right, power or authority to create an obligation or duty, expressed or implied, on behalf of the other Party hereto.

4. **Proposer Primary Contact**
   The Proposer will designate an individual to serve as the primary point of contact for the Agreement. Proposer or designee must respond to District inquires within two (2) business days. Proposer shall not change the primary contact without written notification and acceptance of the District. Proposer will also designate a back-up point of contact in the event the primary contact is not available.

5. **Change of Address**
   Proposer shall notify the District in writing of any change in mailing address within ten (10) business days of the change.

6. **Subcontracting**
   Proposer agrees not to enter into any subcontracting contracts for work contemplated under the Agreement without first obtaining written approval from the District. Any subcontracting shall be subject to the same terms and conditions as Proposer. Proposer shall be fully responsible for the performance and payments of any subcontractor's contract.

7. **Agreement Assignability**
   Without the prior written consent of the District, the Agreement is not assignable by Proposer either in whole or in part.

8. **Agreement Modification**
   Proposer agrees any alterations, variations, modifications, or waivers of the provisions of the Agreement, shall be valid only when reduced to writing, executed and attached to the original Agreement and approved by the person(s) authorized to do so on behalf of Proposer and the District.

9. **Duration of Terms**
   This Agreement, and all of its terms and conditions, shall be binding upon and shall inure to the benefit of the heirs, executors, administrators, successors, and assigns of the respective parties, provided no such assignment is in violation of the provisions of this Agreement.

10. **Time of the Essence**
    Time is of the essence in performance of this Agreement and of each of its provisions.

11. **Strict Performance**
    Failure by a party to insist upon the strict performance of any of the provisions of this Agreement by the other party, or the failure by a party to exercise its rights upon the default of the other party, shall not constitute a waiver of such party's right to insist and demand strict compliance by the other party with the terms of this Agreement thereafter.

12. **Mutual Covenants**
    The parties to this Agreement mutually covenant to perform all of their obligations hereunder, to exercise all discretion and rights granted hereunder, and to give all consents in a reasonable manner consistent with the standards of "good faith" and "fair dealing".

13. **Agreement Exclusivity**
    This is not an exclusive Agreement. The District reserves the right to enter into an agreement with other proposers for the same or similar services. The District does not guarantee or represent that the Proposer will be permitted to perform any minimum amount of work, or receive compensation other than on a per order basis, under the terms of this Agreement.

14. **Termination for Convenience**
    The District for its convenience may terminate this Agreement in whole or in part upon ten (10) calendar day's written notice. Such adjustment shall provide for payment to the Proposer for services rendered and expenses incurred prior to the effective date of termination. Upon receipt of termination notice Proposer shall promptly discontinue services unless the notice directs otherwise. Proposer shall deliver promptly to District and transfer title (if necessary) all completed work, and work in progress, including drafts, documents, plans, forms, data, products, graphics, computer programs and reports.

15. **Attorney Fees and Costs**
    If any legal action is instituted to enforce any party's rights hereunder, each party shall bear its own costs and attorneys' fees, regardless of who is the prevailing party. This paragraph shall not apply to those costs and attorney fees directly arising from a third-party legal action against a party hereto and payable under Part B-1 Indemnification.

16. **Choice of Law**
    This Contract shall be governed by and construed according to the laws of the State of California.

17. **District Representative**
    The Director of Public Works or his/her designee shall represent the District in all matters pertaining to the services to be rendered under this Contract, including termination and assignment of this Contract, and shall be the final authority in all matters pertaining to the Services/Scope of Work by Consultant. The County of San Bernardino Board of Supervisors acting as the governing body of the San Bernardino County Flood Control District must approve all amendments to this Contract.

18. **Venue**
The venue of any action or claim brought by any party to this Agreement will be the Superior Court of California, County of San Bernardino, San Bernardino District. Each party hereby waives any law or rule of the court, which would allow them to request or demand a change of venue. If any action or claim concerning this Agreement is brought by any third-party and filed in another venue, the parties hereto agree to use their best efforts to obtain a change of venue to the Superior Court of California, County of San Bernardino, San Bernardino District.

19. **Fiscal Provisions**
a. The maximum amount of reimbursement/payment under this Agreement shall be subject to availability of other funds to the District. The consideration to be paid to Proposer, as provided herein, shall be in full payment for all Proposer's services and expenses incurred in the performance hereof, including travel and per diem.
b. Consultant shall provide District itemized monthly invoices, in arrears, for services performed under this Agreement within twenty (20) days of the end of the previous month. The District shall make payment to Consultant within sixty (60) working days after receipt of invoice or the resolution of any billing dispute. Invoice must reflect both purchase order number and applicable proposal number to initiate payment. Invoices are to be sent to the ordering department.
c. Proposer shall accept all payments from District via electronic fund transfer (EFT) directly deposited into the Proposer's designated checking or other bank account. Proposer shall promptly comply with directions and accurately complete forms provided by District required to process EFT payments.
d. District is exempt from Federal excise taxes and no payment shall be made for any personal property taxes levied on Proposer or on any taxes levied on employee wages. The District shall only pay for any State or local sales or use taxes on the services rendered or equipment and/or parts supplied to the District pursuant to the Agreement.
e. Costs for services under the terms of this Agreement shall be incurred during the agreement period except as approved by District. Proposer shall not use current year funds to pay prior or future year obligations.
f. Funds made available under this Agreement shall not supplant any federal, state or any government funds intended for services of the same nature as this Agreement. Proposer shall not claim reimbursement or payment from District for, or apply sums received from District with respect to that portion of its obligations that have been paid by another source of revenue. Proposer agrees that it will not use funds received pursuant to this Agreement, either directly or indirectly, as a contribution or compensation for purposes of obtaining funds from another revenue source without prior written approval of the District.

20. **Electronic Fund Transfer Program**
Proposer shall accept all payments from District via electronic funds transfer (EFT) directly deposited into the Proposer's designated checking or other bank account. Proposer shall promptly comply with directions and accurately complete forms provided by District required to process EFT payments.

21. **Licenses, Permits and/or Certifications**
Proposer shall ensure that it has all necessary licenses, permits and/or certifications required by the laws of Federal, State, County, and municipal laws, ordinances, rules and regulations. The Proposer shall maintain these licenses, permits and/or certifications in effect for the duration of this Agreement. Proposer will notify District immediately of loss or suspension of any such licenses, permits and/or certifications. Failure to maintain required licenses, permits and/or certifications may result in immediate termination of this Agreement.

22. **Prevailing Wage Laws**
By its execution of this Contract, Proposer certifies that it is aware of the requirements of California Labor Code Sections 1720 et seq. and 1770 et seq. as well as California Code of Regulations, Title 8, Section 16000 et seq. ("Prevailing Wage Laws"), which require the payment of prevailing wage rates and the performance of other requirements on certain "public works" and "maintenance" projects. Section 1720 of the California Labor Code states in part: "For purposes of this paragraph, 'construction' includes work performed during the design and preconstruction phases of construction including, but not limited to, inspection and land surveying work." If the Services/Scope of Work are being performed as part of an applicable "public works" or "maintenance" project, as defined by the Prevailing Wage Laws, and if the total compensation is $1,000 or more, Proposer agrees to fully comply with such Prevailing Wage Laws. Proposer shall make copies of the prevailing rates of per diem wages for each craft, classification or type of worker needed to execute the Services/Scope of Work available to interested parties upon request, and shall post copies at the Proposer's principal place of business and at the project site. Proposer will also adhere to any other applicable requirements, including but not limited to, those regarding the employment of apprentices, travel and subsistence pay, retention and inspection of payroll records, workers compensation and forfeiture of penalties prescribed in the Labor Code for violations. Proposer shall defend, indemnify and hold the County and District, its elected officials, officers, employees and agents free and harmless from any claims, liabilities, costs, penalties or interest arising out of any failure or alleged failure to comply with Prevailing Wage Laws. See Exhibit A for additional information regarding Prevailing Wage Laws.

23. **Notification Regarding Performance**
In the event of a problem or potential problem that could impact the quality or quantity of work, services, or the level of performance under this Agreement, the Proposer shall notify the District within one (1) working day, in writing <u>and</u> by telephone.

24. **Conflict of Interest**
Proposer shall make all reasonable efforts to ensure that no conflict of interest exists between its officers, employees, or subcontractors and the District or County. Proposer shall make a reasonable effort to prevent employees, Proposers, or members of governing bodies from using their positions for purposes that are, or give the appearance of being motivated by a desire for private gain for themselves or others such as those with whom they have family business, or other ties. Officers, employees, and agents of cities, counties, districts, and other local agencies are subject to applicable conflict of interest codes and state law. In the event the District determines a conflict of interest situation exists, any increase in costs, associated with the conflict of interest situation, may be disallowed, by the County and such conflict may constitute grounds for termination of the Agreement. This provision shall not be construed to prohibit employment of persons with whom Proposer's officers, employees, or agents have family, business, or other ties so long as the employment of such persons does not result in increased costs over those associated with the employment of any other equally qualified applicant.

25. **Improper Consideration**
Proposer shall not offer (either directly or through an intermediary) any improper consideration such as, but not limited to, cash, discounts, service, the provision of travel or entertainment, or any items of value to any officer, employee or agent of the District or County in an attempt to secure favorable treatment regarding this Agreement.

The District, by written notice, may immediately terminate any Agreement if it determines that any improper consideration as described in the preceding paragraph was offered to any officer, employee or agent of the County with respect to the proposal and award process. This prohibition shall apply to any amendment, extension or evaluation process once an Agreement has been awarded.

Proposer shall immediately report any attempt by a District or County officer, employee or agent to solicit (either directly or through an intermediary) improper consideration from Proposer. The report shall be made to the supervisor or manager charged with supervision of the employee or to the County Administrative Office. In the event of a termination under this provision, the District is entitled to pursue any available legal remedies.

26. **Employment of Former District or County Officials**
Proposer agrees to provide or has already provided information on former District or County of San Bernardino administrative officials (as defined below) who are employed by or represent Proposer. The information provided includes a list of former District or county administrative officials who terminated District or county employment within the last five years and who are now officers, principals, partners, associates or members of the business. The information also includes the employment with or representation of Proposer. For purposes of this provision, "county administrative official" is defined as a member of the Board of Supervisors or such officer's staff, Chief Executive Officer or member of such officer's staff, county department or group head, assistant department or group head, or any employee in the Exempt Group, Management Unit or Safety Management Unit.

27. **Improper Influence**
Proposer shall make all reasonable efforts to ensure that no District or County officer or employee, whose position in the District or County enables him/her to influence any award of the Agreement or any competing offer, shall have any direct or indirect financial interest resulting from the award of the Agreement, or shall have any relationship to the Proposer or office or employee of the Proposer.

28. **Material Misstatement/Misrepresentation**
If during the course of the administration of this Agreement, the District determines that Proposer has made a material misstatement or misrepresentation or that materially inaccurate information has been provided to the District, this Agreement may be immediately terminated. If this Agreement is terminated according to this provision, the District is entitled to pursue any available legal remedies.

29. **Inaccuracies or Misrepresentations**
If in the administration of an Agreement, the District determines that Proposer has made a material misstatement, misrepresentation, or omission that materially inaccurate information has been provided to the District during the RFP process, the Agreement may be immediately terminated. In the event of a termination under this provision, the District is entitled to pursue any available legal remedies.

30. **Ownership of Documents**
All documents, data, products, graphics, computer programs, and reports prepared by the Proposer pursuant to this Agreement shall be considered property of the District upon payment for services (and product, if applicable). All such items shall be delivered to the District at the completion of work under this Agreement, subject to the requirements of Section V, Paragraph A, 9 (Termination for Convenience). Unless otherwise directed by the District, Proposer may retain copies of such items.

31. **Copyright**
The District and County shall have a royalty-free, non-exclusive and irrevocable license to publish, disclose, copy, translate, and otherwise use, copyright or patent, now and hereafter, all reports, studies, information, data, statistics, forms, designs, plans, procedures, systems, and any other materials or properties developed under this Agreement including those covered by copyright, and reserves the right to authorize others to use or reproduce such material. All such materials developed under the terms of this Agreement shall acknowledge the San Bernardino County Flood Control District as the funding agency and Proposer as the creator of the publication. No such materials or properties produced in whole or in part under this Agreement shall be subject to private use, copyright or patent right by Proposer in the United States or in any other country without the express written consent of District. Copies of all educational and training materials, curricula, audio/visual aids, printed material, and periodicals, assembled pursuant to this Agreement must be filed with the District prior to publication.

32. **Release of Information**
No news releases, advertisements, public announcements or photographs arising out of this Agreement or Proposer's relationship with District or County may be made or used without prior written approval of the County.

33. **Participation Clause**
The District desires that Municipalities, School Districts, and other Tax Districts within the County of San Bernardino requiring the same services provided herein may at their option and through the County Purchasing agent, avail themselves of this Agreement. Upon notice, in writing, the Proposer agrees to the extension of the terms of a resultant contract with such governmental bodies as though they have been expressly identified in this bid, with the provisions that:
   a. Such governmental body does not have and will not have in force any other contract for like purchases.
   b. Such governmental body does not have under consideration for award any other bids or quotations for like purchases.

34. **Damage to District or County Property, Facilities, Buildings or Grounds**
The Proposer shall repair, or cause to be repaired, at its own cost, all damage to District or County vehicles, facilities, buildings or grounds caused by the willful or negligent acts of Proposer or employees or agents of the Proposer. Such repairs shall be made immediately after Proposer becomes aware of such damage, but in no event later than thirty (30) days after the occurrence.

If the Proposer fails to make timely repairs, the District or County may make any necessary repairs. The Proposer, as determined by the District, for such repairs shall repay all costs incurred by the District or County, by cash payment upon demand or District may deduct such costs from any amounts due to the Proposer from the District.

35. **Air, Water Pollution Control, Safety and Health**
Proposer shall comply with all air pollution control, water pollution, safety and health ordinances and statutes, which apply to the work performed pursuant to this Agreement.

36. **Drug and Alcohol-Free Workplace**
In recognition of individual rights to work in a safe, healthful and productive work place, as a material condition of this Agreement, the Proposer agrees that the Proposer and the Proposer's employees, while performing service for the District, on District or County property, or while using District or County equipment:
a. Shall not be in any way impaired because of being under the influence of alcohol or a drug.
b. Shall not possess an open container of alcohol or consume alcohol or possess or be under the influence of an illegal drug.
c. Shall not sell, offer, or provide alcohol or a drug to another person.

This shall not be applicable to a Proposer or Proposer's employee who, as part of the performance of normal job duties and responsibilities, prescribes or administers medically prescribed drugs.

The Proposer shall inform all employees that are performing service for the District on District or County property, or using District or County equipment, of the District's objective of a safe, healthful and productive work place and the prohibition of drug or alcohol use or impairment from same while performing such service for the District.

The District may terminate for default or breach of this Agreement and any other Agreement the Proposer has with the District, if the Proposer or Proposer's employees are determined by the District not to be in compliance with above.

37. **Notice of Delays**
Except as otherwise provided herein, when either party has knowledge that any actual or potential situation is delaying or threatens to delay the timely performance of this Agreement, that party shall, within twenty-four (24) hours, give notice thereof, including all relevant information with respect thereto, to the other party.

38. **Disclosure of Criminal and Civil Proceedings**
The District reserves the right to request the information described herein from the Proposer selected for Agreement award. Failure to provide the information may result in a disqualification from the selection process and no award of Agreement to the Proposer. The District also reserves the right to obtain the requested information by way of a background check performed by an investigative firm. The selected Proposer also may be requested to provide information to clarify initial responses. Negative information provided or discovered may result in disqualification from the selection process and no award of Agreement.

The selected Proposer may be asked to disclose whether the firm, or any of its partners, principals, members, associates or key employees (as that term is defined herein), within the last ten years, has been indicted on or had charges brought against it or them (if still pending) or convicted of any crime or offense arising directly or indirectly from the conduct of the firm's business, or whether the firm, or any of it partners, principals, members, associates or key employees, has within the last ten years, been indicted on or had charges brought against it or them (if still pending) or convicted of any crime or offense involving financial misconduct or fraud. If the response is affirmative, the Proposer will be asked to describe any such indictments or charges (and the status thereof), convictions and the surrounding circumstances in detail.

In addition, the selected Proposer may also be asked to disclose whether the firm, or any of its partners, principals, members, associates or key employees, within the last ten years, has been the subject of legal proceedings as defined herein arising directly from the provision of services by the firm or those individuals. "Legal proceedings" means any civil actions filed in a court of competent jurisdiction, or any matters filed by an administrative or regulatory body with jurisdiction over the firm or the individuals. If the response is affirmative, the Proposer will be asked to describe any such legal proceedings (and the status and disposition thereof) and the surrounding circumstances in detail.

For purposes of this provision "key employees" includes any individuals providing direct service to the District. "Key employees" do not include clerical personnel providing service at the firm's offices or locations.

39. **Artwork, Proofs and/or Negatives**
All artwork, proofs and/or negatives in either print or digital format for this product are the property of the District. These items must be returned to the District within ten (10) days, upon written notification to the Proposer. In the event of a failure to return the documents, the District is entitled to pursue any available legal remedies. In addition, the Proposer will be barred from all future solicitations, for a period of at least six (6) months.

40. **Environmental Requirements**
In accordance with County Policy 11-08SP, the County as well as the District prefers to acquire and use products with higher levels of post-consumer recycled content. Environmentally preferable goods and materials must perform satisfactorily and be available at a reasonable price. The District requires Proposers to use recycled paper for proposals and for any printed or photocopied material created as a result of an Agreement with the District. The policy also requires Proposers to use both sides of paper sheets for reports submitted to the District whenever practicable.

Although the District has not committed to allowing a cost preference, if two products are equivalent and the cost is feasible the environmentally preferable product would be selected. The intent is to utilize Proposers that reduce environmental impacts in their production and distribution systems whenever fiscally practicable.

To assist the District in meeting the reporting requirements of the California Integrated Waste Management Act of 1989 (AB939), Proposer must be able to annually report the District's environmentally preferable purchases using Attachment I. Service providers are asked to report on environmentally preferable goods and materials used in the provision of their service to the District.

41. **Employment Discrimination**
During the term of the Agreement, Proposer shall not discriminate against any employee or applicant for employment because of race, religious creed, color, national origin, ancestry, physical disability, mental disability, medical condition, genetic information, marital status, sex, gender, gender identity, gender expression, sexual orientation, age, or military and veteran status. Proposer shall comply with Executive Orders 11246, 11375, 11625, 12138, 12432, 12250, 13672, Title VII of the Civil Rights Act of 1964, the California Fair Housing and Employment Act and other application Federal, State and County laws and regulations and policies relating to equal employment and contracting opportunities, including laws and regulations hereafter enacted.

42. **Debarment and Suspension**
The Proposer certifies that neither it nor its principals or subcontracts is presently disbarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any federal department or agency as required by Executive Order 12549.

43. **Informal Dispute Resolution**
In the event the District determines that service is unsatisfactory, or in the event of any other dispute, claim, question or disagreement arising from or relating to this Agreement or breach thereof, the parties hereto shall use their best efforts to settle the dispute, claim, question or disagreement. To this effect, they shall consult and negotiate with each other in good faith and, recognizing their mutual interests, attempt to reach a just and equitable solution satisfactory to both parties.

44. **Iran Contracting Act**
Iran Contracting Act of 2010, Public Contract Code sections 2200 et seq. (Applicable for all Agreements of one million dollars ($1,000,000) or more). In accordance with Public Contract Code section 2204(a), the Proposer certifies that at the time the Agreement is signed, the Proposer signing the Agreement is not identified on a list created pursuant to subdivision (b) of Public Contract Code section 2203 as a person (as defined in Public Contract Code section 2202(e) engaging in investment activities in Iran described in subdivision (a) of Public Contract Code section 2202.5, or as a person described in subdivision (b) of Public Contract Code section 2202.5, as applicable. Proposers are cautioned that making a false certification may subject the Proposer to civil penalties, termination of existing agreement, and ineligibility to bid on a contract for a period of three (3) years in accordance with Public Contract Code section 2205.

45. **Records**
Proposer shall maintain all records and books pertaining to the delivery of services under this Agreement and demonstrate accountability for agreement performance. All records shall be complete and current and comply with all Agreement requirements. Failure to maintain acceptable records shall be considered grounds for withholding of payments for invoices submitted and/or termination of the Agreement.

All records relating to the Proposer's personnel, consultants, subcontractors, Service/Scope of Work and expenses pertaining to this Agreement shall be kept in generally acceptable accounting format. Records should include primary source documents. Fiscal records shall be kept in accordance with Generally Accepted Accounting Principles and must account for all funds, tangible assets, revenue and expenditures. Fiscal records must comply with the appropriate Office of Management and Budget (OMB) Circulars which state the administrative requirements, cost principles and other standards for accountancy.

46. **[RESERVED]**

47. **If applicable* ***Personally Identifiable Information***
Consultant shall protect from unauthorized use or disclosure names and other identifying information concerning persons receiving services pursuant to this Contract, except for statistical information not identifying any participant. The Consultant shall not use or disclose any identifying information for any other purpose other than carrying out the Consultant's obligations under this Contract, except as may be otherwise required by law. This provision will remain in force even after the termination of the Contract.

48. **Additional Term and Condition of the San Bernardino County Flood Control District:**
All of the San Bernardino County Flood Control District's revenues as defined below, have been pledged to secure the payment of the principal and interest on certain bonds and refunding bonds ("Bonds") issued by the San Bernardino County Flood Control District in May 2007. The pledge constitutes a first lien on the revenues for the payment of the Bonds. Any payments under this Agreement are subject to the prior pledge of revenues described above. San Bernardino County Flood Control District payments pursuant to this Agreement will be made to the extent there sufficient funds available after payment of the Bonds. For purposes of this paragraph, "revenues" shall mean all income and revenue received by the San Bernardino County Flood Control District from the operation or ownership of the flood and storm water control and conservation facilities ("Flood Control System") of the San Bernardino County Flood Control District (including but not limited to, all real and personal property, or any interest therein, and all additions, improvements, betterments and extensions thereto), determined in accordance with Generally Accepted Accounting Principles, including all ad valorem property taxes by the San Bernardino County Flood Control District pursuant to Article XIIIA of the Constitution of the State of California and Section 95 et seq. of the California Revenue and Taxation Code, all rents, royalties and license and permit fees and charges received by the San Bernardino County Flood Control District, investment income and all other money howsoever derived by the San Bernardino County Flood from the operation or ownership of the Flood Control System or arising from the Flood Control System, but excluding (a) ad valorem property taxes levied to pay any voter approved general obligation indebtedness of the San Bernardino County Flood Control District, (b assessments levied pursuant to Section 43-7 or Section 43-26.9 of the San Bernardino County Flood Control Act (Cal. Water App. Sect. 43-1 et seq.), and (c) grants, advances or contributions in aid of construction, except to the extent such grants are unrestricted and available for any expenditure of the San Bernardino County Flood Control District.

B. Indemnification and Insurance Requirements

1. **Indemnification**
For "design professional services" as defined in Civil Code section 2782.8, the following indemnification paragraph applies: "Proposer shall defend and indemnify District and County for claims that arise out of, pertain to, or relate to the negligence, recklessness, or willful misconduct of the design professional."

For a "construction contract" as defined in Civil Code section 2783, the following indemnification paragraph applies: "The Consultant agrees to indemnify, defend (with counsel reasonably approved by District) and hold harmless the District and County and its authorized officers, employees, agents and volunteers (Indemnitees) from any and all claims, actions, losses, damages, and/or liability arising out of this Agreement from any cause whatsoever, including the acts, errors or omissions of any person and for any costs or expenses incurred by the Indemnitees on account of any claim except where such indemnification is prohibited by law. This indemnification provision shall apply regardless of the existence or degree of fault of indemnitees. The Consultant's indemnification obligation applies to the Indemnitee's "passive" negligence but does not apply to the Indemnitee's "sole" or "active" negligence" or "willful misconduct" within the meaning of Civil Code Section 2782."

For all other consultant services, the following indemnification paragraph applies: "The Proposer agrees to indemnify, defend (with counsel reasonably approved by District) and hold harmless the District and County and its authorized officers, employees, agents and volunteers from any and all claims, actions, losses, damages and/or liability arising out of this Agreement from any cause whatsoever, including the acts, errors or omissions of any person and for any costs or expenses incurred by the District and County on account of any claim except where such indemnification is prohibited by law. This indemnification provision shall apply regardless of the existence or degree of fault of indemnities. The Proposer indemnification obligation applies to the District and County's "active" as well as "passive" negligence but does not apply to the District's and County's "sole negligence" or "willful misconduct" within the meaning of Civil Code Section 2782."

2. **Basic Insurance Requirements**

Additional Insured

All policies, except for the Workers' Compensation, Errors and Omissions and Professional Liability policies shall contain additional endorsements naming the District and County and its officers, employees, agents and volunteers as additional insured's with respect to liabilities arising out of the performance of services hereunder. The additional insured endorsements shall not limit the scope of coverage for the District and County to vicarious liability but shall allow coverage for the District and County to the full extent provided by the policy. Such additional insured coverage shall be at least as broad as Additional Insured (Form B) endorsement form ISO, CG 2010.11 85.

Waiver of Subrogation Rights

The Proposer shall require the carriers of required coverage's to waive all rights of subrogation against the District and County, its officers, employees, agents, volunteers, contractors, and subcontractors. All general or auto liability insurance coverage provided shall not prohibit the Proposer and Proposer's employees or agents from waiving the right of subrogation prior to a loss or claim. The Proposer hereby waives all rights of subrogation against the District and County.

Policies Primary and Non-Contributory

All policies required above are to be primary and non-contributory with any insurance or self-insurance programs carried or administered by the District.

Severability of Interests

The Proposer agrees to ensure that coverage provided to meet these requirements is applicable separately to each insured and there will be no cross liability exclusions that preclude coverage for suits between the Proposer and the District and County or between the District and County and any other insured or additional insured under the policy.

Proof of Coverage

The Proposer shall furnish certificates of insurance to the District and/or County Department administering the Agreement evidencing the insurance coverage at the time the Agreement is executed, additional endorsements, as required shall be provided prior to the commencement of performance of services hereunder, which certificates shall provide that such insurance shall not be terminated or expire without thirty (30) days written notice to the Department(s) and Proposer shall maintain such insurance from the time Proposer commences performance of services hereunder until the completion of such services. Within fifteen (15) days of the commencement of this Agreement, the Proposer shall furnish a copy of the Declaration page for all applicable policies and will provide complete certified copies of the policies and all endorsements immediately upon request.

Acceptability of Insurance Carrier

Unless otherwise approved by Risk Management, insurance shall be written by insurers authorized to do business in the State of California and with a minimum "Best" Insurance Guide rating of "A-VII".

Deductibles and Self-Insured Retention
Any and all deductibles or self-insured retentions in excess of $10,000 shall be declared to and approved by Risk Management.

Failure to Procure Coverage
In the event that any policy of insurance required under this Agreement does not comply with the requirements, is not procured, or is canceled and not replaced, the District has the right but not the obligation or duty to cancel the Agreement or obtain insurance if it deems necessary and any premiums paid by the District will be promptly reimbursed by the Proposer or District payments to the Proposer(s)/Applicant(s) will be reduced to pay for District purchased insurance.

Insurance Review
Insurance requirements are subject to periodic review by the District. The Director of Risk Management or designee is authorized, but not required, to reduce, waive or suspend any insurance requirements whenever Risk Management determines that any of the required insurance is not available, is unreasonably priced, or is not needed to protect the interest of the District. In addition, if the Department of Risk Management determines that heretofore unreasonably priced or unavailable types of insurance coverage or coverage limits become reasonably priced or available, the Director of Risk Management or designee is authorized, but not required, to change the above insurance requirements to require additional types of insurance coverage or higher coverage limits, provided that any such change is reasonable in light of past claims against the District or County, inflation, or any other item reasonably related to the District's or County's risk.

Any change requiring additional types of insurance coverage or higher coverage limits must be made by amendment to this Agreement. Proposer agrees to execute any such amendment within thirty (30) days of receipt.

Any failure, actual or alleged, on the part of the District or County to monitor or enforce compliance with any of the insurance and indemnification requirements will not be deemed as a waiver of any rights on the part of the District or County.

3. **Insurance Specifications**
The Proposer agrees to provide insurance set forth in accordance with the requirements herein. If the Proposer uses existing coverage to comply with these requirements and that coverage does not meet the specified requirements, the Proposer agrees to amend, supplement or endorse the existing coverage to do so.

Without in anyway affecting the indemnity herein provided and in addition thereto, the Proposer shall secure and maintain throughout the Agreement term the following types of insurance with limits as shown:

Workers' Compensation/Employers Liability
A program of Workers' Compensation insurance or a State-approved Self-Insurance Program in an amount and form to meet all applicable requirements of the Labor Code of the State of California, including Employer's Liability with $250,000 limits, covering all persons including volunteers providing services on behalf of the Proposer and all risks to such persons under this Agreement.

If Proposer has no employees, it may certify or warrant to County and District that it does not currently have any employees or individuals who are defined as "employees" under the Labor Code and the requirement for Workers' Compensation coverage will be waived by the County's Director of Risk Management.

With respect to Proposers that are non-profit corporations organized under California or Federal law, volunteers for such entities are required to be covered by Workers' Compensation insurance.

Commercial/General Liability Insurance
The Proposer shall carry General Liability Insurance covering all operations performed by or on behalf of the Proposer providing coverage for bodily injury and property damage with a combined single limit of not less than one million dollars ($1,000,000), per occurrence. The policy coverage shall include:

a. Premises operations and mobile equipment.
b. Products and completed operations.
c. Broad form property damage (including completed operations)
d. Explosion, collapse and underground hazards.
e. Personal Injury
f. Contractual liability
g. $2,000,000 general aggregate limit

Automobile Liability Insurance
Primary insurance coverage shall be written on ISO Business Auto coverage form for all owned, hired and non-owned automobiles or symbol 1 (any auto). The policy shall have a combined single limit of not less than one million dollars ($1,000,000) for bodily injury and property damage, per occurrence.

If the Proposer is transporting one or more non-employee passengers in performance of Agreement services, the automobile liability policy shall have a combined single limit of two million dollars ($2,000,000) for bodily injury and property damage per occurrence.

If the Proposer owns no autos, a non-owned auto endorsement to the General Liability policy described above is acceptable.

Umbrella Liability Insurance
An umbrella (over primary) or excess policy may be used to comply with limits or other primary coverage requirements. When used, the umbrella policy shall apply to bodily injury/property damage, personal injury/advertising injury and shall include a “dropdown” provision providing primary coverage for any liability not covered by the primary policy. The coverage shall also apply to automobile liability.

Professional Services Requirements

Professional Liability – Professional Liability Insurance with limits of not less than one million ($1,000,000) per claim or occurrence and two million ($2,000,000) aggregate limits

or

Errors and Omissions Liability Insurance with limits of not less than one million ($1,000,000) and two million ($2,000,000) aggregate limits

If insurance coverage is provided on a “claims made” policy, the “retroactive date” shall be shown and must be before the date of the start of the Agreement work. The claims made insurance shall be maintained or “tail” coverage provided for a minimum of five (5) years after Agreement completion.

if applicable* **Environmental Agreements

In addition to the Basic Requirements/Specifications for all Agreements, any agreement that involves the use handling, transportation, storage, abatement, containment or testing of any substance that is potentially toxic or hazardous to the environment, including but not limited to, those listed as hazardous by the United States Department of Transportation or the CAL OSHA "Director's list of Hazardous Substances" or listed as radioactive by the Nuclear Regulatory Commission, shall have the following additional requirements.

a. Environmental Liability Insurance with a combined single limit of not less than five million ($5,000,000) per claim or occurrence and a separate aggregate for the agreement project. The required additional insured endorsement shall protect the District and County without any restrictions.
b. If insurance coverage is provided on a "claims made" policy, the "retroactive date" shall be shown and must be before the date of the start of the agreement work. The claims made insurance shall be maintained or "tail" coverage provided for a minimum of five (5) years after contract completion.

C. Right to Monitor and Audit

1. **Right to Monitor**

The District and County, shall have absolute right to review and audit all records, books, papers, documents, corporate minutes, and other pertinent items as requested, and shall have absolute right to monitor the performance of Proposer in the delivery of services provided under this Agreement. Proposer shall give full cooperation, in any auditing or monitoring conducted. Proposer shall cooperate with the District or County in the implementation, monitoring and evaluation of this Agreement and comply with any and all reporting requirements established by the District or County.

In the event the District determines that Proposer's performance of its duties or other terms of this Agreement are deficient in any manner, District will notify Proposer of such deficiency in writing or orally, provided written confirmation is given five (5) days thereafter. Proposer shall remedy any deficiency within forty-eight (48) hours of such notification, or District at its option, may terminate this Agreement immediately upon written notice, or remedy deficiency and off-set the cost thereof from any amounts due the Proposer under this Agreement or otherwise.

2. **Availability of Records**

All records pertaining to services delivered and all fiscal, statistical and management books and records shall be available for examination and audit by District or County representatives for a period of three years after final payment under the Agreement or until all pending County, State and Federal audits are completed, whichever is later.

D. CORRECTION OF PERFORMANCE DEFICIENCIES

1. Failure by Consultant to comply with any of the provisions, covenants, requirements or conditions of this Agreement shall be a material breach of this Agreement.

2. In the event of a non-cured breach, District may, at its sole discretion and in addition to any other remedies available at law, in equity, or otherwise specified in this Agreement:
   a. Afford Proposer thereafter a time period within which to cure the breach, which period shall be established at the sole discretion of District; and/or
   b. Discontinue reimbursement to Proposer for and during the period in which Proposer is in breach, which reimbursement shall not be entitled to later recovery; and/or
   c. Withhold funds pending duration of the breach; and/or
   d. Offset against any monies billed by Proposer but yet unpaid by District those monies disallowed pursuant to Item "2" of this paragraph; and/or

e. Terminate this Agreement immediately and be relieved of the payment of any consideration to Proposer. In the event of such termination, the District may proceed with the work in any manner deemed proper by the District. The cost to the District shall be deducted from any sum due to the Proposer under this Agreement and the balance, if any, shall be paid by the Proposer upon demand.

VI. PROPOSAL SUBMISSION

A. General

1. All interested and qualified Proposers are invited to submit a proposal for consideration. Submission of a proposal indicates that the Proposer has read and understands the entire RFP, to include all appendixes, attachments, exhibits, schedules, and addendum (as applicable) and all concerns regarding the RFP have been satisfied.

2. Proposals must be submitted in the format described below. Proposals are to be prepared in such a way as to provide a straightforward, concise description of capabilities to satisfy the requirements of this RFP. Expensive bindings, colored displays, promotional materials, etc., are neither necessary nor desired. Proposals are to be no more than forty (40) pages in length (including all required forms, certifications and statements) and be in “Arial” font with a font size of eleven (11), except for any forms included in the Request for Proposal (RFP). Emphasis should be concentrated on conformance to the RFP instructions, responsiveness to the RFP requirements, and on completeness and clarity of content.

3. Proposals must be completed in all respects as required in this section. A proposal may not be considered if it is conditional or incomplete.

4. All information submitted in the proposal or in response to request for additional information is subject to disclosure under the provisions of the California Public Records Act, Government Code Section 6250 et seq. and the following. Proposals may contain financial or other data that constitutes a trade secret. To protect such data from disclosure, Proposer should specifically identify the pages that contain confidential information by properly marking the applicable pages and inserting the following notice on the front of the response:

NOTICE

> The data on pages _____ of this proposal response, identified by an asterisk (*) or marked along the margin with a vertical line, contains information which are trade secrets. We request that such data be used only for the evaluation of our response, but understand that disclosure will be limited to the extent that the District and County of San Bernardino determines is proper under federal, state, and local law.

The proprietary or confidential data shall be readily separable from the Proposal in order to facilitate eventual public inspection of the non-confidential portion of the proposal.

The District assumes no responsibility for disclosure or use of unmarked data for any purpose. In the event disclosure of properly marked data is requested, the Proposer will be advised of the request and may expeditiously submit to the District a detailed statement indicating the reasons it has for believing that the information is exempt from disclosure under federal, state, and local law. The District will exercise care in applying this confidentiality standard but will not be held liable for any damage or injury which may result from any disclosure that may occur.

B. Proposal Presentation

Electronic proposals must be received by the deadline for receipt of proposal specified in Section II, Proposal Timeline.

1. Hand carried proposals may be delivered to the address identified in Section I, Paragraph G, between the hours of 8:00 a.m. and 5:00 p.m., Monday through Friday, excluding holidays observed by the District. Proposers are responsible for informing any commercial delivery service, if used, of all delivery requirements, and for ensuring that the address information appears on the outer wrapper or envelope used by such service.

2. The District reserves the right to reject any and all proposals or portions of proposal or alternates received by reasons of this request, to negotiate separately with any source whatsoever in any manner necessary to serve its interests.

C. Proposal Format

Response to this RFP must be in the form of a proposal package, which must be submitted in the following format:

1. **Cover Page** – Attachment A is to be used as the cover page for the proposal. This form must be fully completed and signed by an authorized officer of the Proposer.

2. **Table of Contents** – All pages of the proposal, including the enclosures, must be clearly and consecutively numbered and correspond to the Table of Contents.

3. **Statement of Experience**

   Include the following in this section of the proposal:

   a. Business name of the prospective Proposer and legal entity such as corporation, partnership, etc.
   b. Number of years the prospective Proposer has been in business under the present business name, as well as related prior business names.
   c. A brief summary of the relevant qualifications and experience in providing the services solicited in this RFP.

4. **Minimum Proposer Requirements**

   Complete, initial, and sign Attachment B.

5. **Exceptions to RFP**

   Complete Attachment C.

6. **Statement of Certification** (Attachment D) **-** Include the following in this section of the Proposal

   a. A statement that the offer made in the proposal is firm and binding for 180 days from the date the proposal is opened and recorded.
   b. A statement that all aspects of the proposal, including the fee proposal, have been determined independently, without consultation with any other prospective Proposer or competitor for the purpose of restricting competition.
   c. A statement that all declarations in the proposal and attachments are true and that this shall constitute a warranty, the falsity of which will entitle the District to pursue any remedy by law.
   d. A statement that the Proposer agrees that all aspects of the RFP and the proposal submitted shall be binding if the proposal is selected and an Agreement awarded.
   e. A statement that the Proposer agrees to provide the District or County with any other information the District or County determines is necessary for an accurate determination of the Proposer's ability to perform the services as proposed; and
   f. A statement that the prospective Proposer, if selected will comply with all applicable rules, laws and regulations.

7. **References**
   Provide three (3) references from other agencies that you have established an Agreement with on a project of this nature, of same or similar size. Provide Contact Name, Address, Phone Number, and dates services were provided on Attachment E.

8. **Proposal Description**
   Provide a detailed description of the proposal being made.
   a. The proposal should address, but is not limited to, all terms in Section IV.
   b. The proposal should include the following:
      i. A brief synopsis of the Proposer's understanding of the District's needs and how the Proposer plans to meet these.
      ii. A concise statement of the services (and product, if applicable) proposed.
      iii. An explanation of any assumptions and/or constraints.

9. **Project Team Organization Chart**
   Project Team Organization Chart shall clearly show the organization of the team and the hierarchy of the members. It must include:
   a. Organizational framework for the proposed Project team.
   b. Company name and key staff name for each role identified in the chart.

10. **Work Plan and Schedule**
    Include the following:
    a. Summary of management/work plan for this Project;
    b. Project schedule (refer to Section IV of this RFP for additional requirements)

11. **Statement of Qualifications**
    Include the following in this section of the proposal:
    a. Number of years the prospective Proposer has been in business under the present business name, as well as related prior business names.
    b. Statement that the Proposer does not have any commitments or potential commitments which may impact the Proposer's ability to perform this Agreement.
    c. A list of references with which Proposer has provided similar services during the last five (5) years. Please include the name, address, and telephone number, and the type of services provided. Please include a contact person who the District can call in order to verify the quality of services your organization/firm has provided.
    d. Resumes of key Project team members.
    e. Provide project profiles that directly relate to this Project in terms of size and scope. The project profiles shall clearly indicate the scope of services Proposer provided for that project.

12. **Licenses, Permits and/or Certifications**
    Provide copies of all licenses, permits and/or certifications as required under Section V, Paragraph A, 21.

13. **Cost**
    Complete proposed pricing on Attachment F and enclose it in a separate sealed envelope to be submitted as part of the proposal.

14. **Employment of Former District and County Officials**
    Provide information on former County of San Bernardino administrative officials (as defined below) who are employed by or represent your business. The information provided must include a list of former county administrative officials who terminated county employment within the last five years and who are now officers, principals, partners, associates or members of the business and should also include the employment and/or representative capacity and the dates these individuals began employment with or representation of your business. For purposes of this section, "county administrative official" is defined as a member of the Board of Supervisors or such officer's staff, Chief Executive Officer or member of such officer's staff, county department or group head, assistant department or group head, or any employee in the Exempt Group, Management Unit or Safety Management Unit.

    Failure to provide this information may result in the response to the request for proposal being deemed non-responsive.

15. **Insurance**
    Submit evidence of ability to insure as stated in Section V, Paragraph B, Indemnification and Insurance Requirements.

VII. PROPOSAL EVALUATION AND SELECTION

A. Initial Review

All proposals will be initially evaluated by Department staff to determine if they meet the following minimum requirements:

1. The proposal must be complete, in the required format, and be in compliance with all the requirements of this RFP.

2. Prospective Proposers must meet the requirements as stated in the Minimum Proposer requirements as outlined in Section I, Paragraph C. Failure to meet all of these requirements will result in a rejected proposal. No proposal shall be rejected, however, if it contains a minor irregularity, defect or variation and if the irregularity, defect or variation is considered by the District to be immaterial or inconsequential, the District may choose to accept the proposal. In such cases the Proposer will be notified of the deficiency in the proposal and given an opportunity to correct the irregularity, defect or variation or the District may elect to waive the deficiency and accept the proposal.

B. Evaluation Committee

The District will establish an Evaluation Committee with responsibility for reviewing all proposals that meet the Minimum Proposer requirements outlined in Section I, Paragraph C and conducting the reviews, evaluations, and scoring described in Section VII. In addition, the Evaluation Committee, may, in its sole discretion, utilize outside experts and financial consulting or reporting services to assist in the evaluation process.

C. Evaluation of Proposals

Proposals meeting the requirements of Section VII, Paragraph A, will be evaluated by the Evaluation Committee as follows:

1. Qualifications Evaluation – The Evaluation Committee will conduct an evaluation of all proposals under the criteria set forth in Section VII, Paragraph D. The Evaluation Committee will rank all proposals and reject any proposals that do not meet the minimum qualifications as stated in this RFP.

2. Fee Proposals – Following a ranking of the proposals, the Evaluation Committee will open all fee proposals. The Evaluation Committee will not alter the ranking of the proposals once the fee proposals have been opened. However, the fee proposals will be used during negotiations with the selected Proposer.

Recommendation – Following the completion of evaluations by the Evaluation Committee and the scoring of Proposals in accordance with this Section, the Evaluation Committee will make a recommendation for award of a Proposal Agreement and Department Staff will enter into negotiations with the Proposer. The final decision to award any Agreement as a result of this RFP process rests solely with the County of San Bernardino Board of Supervisors acting as the governing body of the San Bernardino County Flood Control District. In certain situations, the Board may authorize the County of San Bernardino Chief Executive Officer (CEO) and/or the Purchasing Agent to award Agreements.

D. Evaluation Criteria

1. No proposal shall be rejected if it contains a minor irregularity, defect, or variation if the irregularity, defect or variation is considered by the County (at the County's sole discretion) to be immaterial or inconsequential. In such cases the Proposer will be notified of the deficiency in the proposal and given an opportunity to correct the irregularity, defect or variation, or the County may elect to waive the deficiency and accept the Proposal.

2. The successful Proposer will be selected on the basis of demonstrated competence and on the professional qualifications necessary for the satisfactory performance of the services required. The District will use the following criteria in its evaluation and comparison of proposals submitted. The order in which they appear is not intended to indicate their relative importance. (Departments to edit as needed.)
   a. Responsiveness to RFP including Project understanding
   b. Professional reputation of firm.
   c. Experience with projects similar to those described in this RFP.
   d. Experience with publicly bid projects.
   e. Adequacy of firm's support staff or sub-consultants.
   f. Satisfaction of current/past clients.
   g. Depth and breadth of experience relative to this project.
   h. Proven experience in meeting schedules.
   i. Accuracy of firms cost estimates.
   j. Experience with local approval agencies.

3. The Evaluation Committee may contact any of the Proposer's client references to discuss the Proposer's qualifications and past performance. The results of any such reference checks will be considered in the evaluation and scoring of proposals.

4. The District may also contact any proposer to clarify any response; contact any current users of a proposer's services; solicit information from any available source concerning any aspect of a proposal; request an oral presentation of any or a select few proposers; and seek and review any other information deemed pertinent to the evaluation process.

E. Negotiations

1. Following the evaluation process, the most qualified firm will be selected and negotiations will be held with that firm. If negotiations are not successful, the District will so notify the firm, and commence negotiations with the next rated firm, and so on.

2. After negotiations are complete, the Agreement will be presented to the County of San Bernardino Board of Supervisors, acting as the governing body of the San Bernardino County Flood Control District, for approval. In certain situations, the Board may authorize the County of San Bernardino Chief Executive Officer (CEO) and/or the Purchasing Agent to award Agreements. Once the Board has taken action, the selected Proposer will be notified in writing.

F. Award

Agreement(s) will be awarded based on a competitive selection of proposals received. The contents of the proposal of the successful Proposer will become contractual obligations and failure to accept these obligations in a contractual Agreement may result in cancellation of the award.

G. Disputes Relating to Proposal Process and Award

In the event a dispute arises concerning the proposal process prior to the award of the Agreement, the party wishing resolution of the dispute shall submit a request in writing to the Director of Purchasing. Proposer may appeal the recommended award or denial of award, provided the following stipulations are met:

1. Appeal must be in writing.

2. Must be submitted within ten (10) calendar days of the date of the recommended award or denial of award letters.

An appeal of a denial of award can only be brought on the following grounds:

1. Failure of the District to follow the selection procedures and adhere to requirements specified in the RFP or any addenda or amendments.

2. There has been a violation of conflict of interest as provided by California Government Code Section 87100 et seq.

3. A violation of State or Federal law.

Appeals will not be accepted for any other reasons than those stated above. All appeals must be sent to:

Laurie Rozko, Director
County of San Bernardino
Purchasing Department
777 E. Rialto Avenue
San Bernardino, CA 92415-0760

The County Purchasing Agent shall make a decision concerning the appeal, and notify the Proposer making the appeal, within a reasonable timeframe prior to the tentatively scheduled date for awarding the Agreement. The decision of the County Purchasing Agent shall be deemed final.

ATTACHMENT A – COVER PAGE

PROPOSER'S NAME (*name of firm, entity, or organization*):

_____

_____

FEDERAL EMPLOYER IDENTIFICATION NUMBER:

_____

NAME AND TITLE OF PROPOSER'S CONTACT PERSON:

_____

MAILING ADDRESS:
Street Address: _____

City, State, Zip: _____

TELEPHONE NUMBER: _____

FAX NUMBER: _____

EMAIL ADDRESS: _____

PROPOSER'S ORGANIZATIONAL STRUCTURE
___ Corporation ____ Partnership ____ Proprietorship ___ Joint Venture
___Other (explain): _____

If Corporation, Date Incorporated: _____State Incorporated: _____
States Registered in as foreign corporation:

PROPOSER'S SERVICES OR BUSINESS ACTIVITIES OTHER THAN WHAT THIS RFP REQUESTS:

_____

_____

PROPOSER'S AUTHORIZED SIGNATURE:
The undersigned hereby certifies that this proposal is submitted in response to this solicitation.

SIGNED:_____

DATE: _____

PRINT NAME: _____

TITLE: _____

ATTACHMENT B – MINIMUM PROPOSER REQUIREMENTS

The following requirements apply to all prospective Proposers.

	Requirement	Agree (initial)	Agree with qualification (initial and attach explanation)
1.	Have no record of unsatisfactory performance. Proposers who are or have been seriously deficient in current or recent Agreement performance, in the absence of circumstances properly beyond the control of the Proposer, shall be presumed to be unable to meet this requirement.		
2.	Not be currently under suspension, debarment, voluntary exclusion or determination of ineligibility by any Federal agency; not have been suspended, debarred, voluntarily excluded or determined ineligible by any Federal agency within the past 3 years; not have a proposed debarment pending; not been indicted, convicted, or had a civil judgment rendered against it by a court of competent jurisdiction in any matter involving fraud or official misconduct within the past 3 years. The certification page on Attachment G must be completed and signed by the Proposer.		
3.	Provide DIR Registration Number for Vendor and all sub-consultants and sub-contractors below. (Dept. include if the Scope of Work is subject to Prevailing Wage).		
4.	Have the ability to maintain adequate files and records and meet statistical reporting requirements.		
5.	Have the administrative and fiscal capability to provide and manage the proposed services and to ensure adequate audit trail.		
6.	Have a minimum of three (3) continuous years of experience providing this type of service.		
7.	Provide references of a minimum of three (3) other customers, one (1) of which should be a government agency, involving the Proposer's delivery of services that demonstrate the ability of the Proposer to provide Structural Engineering services as outlined in this RFP. All references must have names, titles and phone numbers.		
8.	Have valid State of California Structural Engineer license or be a licensed Civil Engineer with a minimum of three (3) years experience specializing structures in the Project Manager's/Project Engineer's (PM/PE) own name(s) (proof of valid licenses must be submitted with the proposal). In addition, the Project team shall include an engineer that has a valid State of California Structural Engineer license (proof of valid licenses must be		

	submitted with the proposal). Proposer must maintain valid applicable licenses during the entire term of the resulting agreement and any time work is being performed pursuant to a contract with the County.		
9.	If applicable, be registered with the Department of Industrial Relations as required by S.B. 854 (Chapter 28, Statutes of 2014) to work on public works contracts (as defined under the Labor Code).		
10.	Meet other presentation and participation requirements listed in this RFP.		

If applicable,

Vendor/Sub-Consultant/Sub-Consultant Name	DIR Registration Number

SIGNED_____

PRINT NAME_____

TITLE_____

DATE_____

ATTACHMENT C – EXCEPTIONS TO RFP

PROPOSER NAME _____

ADDRESS _____

TELEPHONE# ( ) _____ FAX # ( ) _____

I have reviewed the RFP, General Agreement Terms and Sample Agreement in their entirety and have the following exceptions: (Please identify and list your exceptions by indicating RFP, the Section or Paragraph number, and Page number, as applicable. Be specific about your objections to content, language, or omissions. Add as many pages as required.)

Name of Authorized Representative _____

Signature of Authorized Representative _____

Date _____

ATTACHMENT D – STATEMENT OF CERTIFICATION

The following statements are incorporated in our response to the District/County of San Bernardino.

	Statement	**Agree (initial)**	**Agree with qualification (initial and attach explanation)**
1.	The offer made in the proposal is firm and binding for 180 days from the date the proposal is opened and recorded.		
2.	All aspects of the proposal, including the fee proposal, have been determined independently, without consultation with any other prospective Proposer or competitor for the purpose of restricting competition.		
3.	All declarations in the proposal and attachments are true and that this shall constitute a warranty, the falsity of which will entitle the District/County to pursue any remedy by law.		
4.	Proposer agrees that all aspects of the RFP and the proposal submitted shall be binding if the proposal is selected and an Agreement awarded.		
5.	Proposer agrees to provide the District/County with any other information the District/County determines is necessary for an accurate determination of the Proposer's ability to perform the services as proposed; and		
6.	Proposer, if selected will comply with all applicable rules, laws and regulations.		

ATTACHMENT E – REFERENCES

Name of Agency	Contact Name/Address	Phone Number	Dates services provided (from/through*)

Provide a minimum of three (3) customer references you have contracted with, providing the same service as requested in this RFP.

*Enter "**Present**" if still providing the services (Example: 10/08/03/present).

ATTACHMENT F – FEE PROPOSAL SHEET(S)

Project No._____

West Fontana Channel Structural Engineering Improvements

Proposer's All-Inclusive Fee $_____
(Including reimbursable expenses, such as travel costs, printing costs, etc.)

Proposed Man Hours for Design _____ Man Hours
(including estimated man hours for agency(ies) reviews)

Proposed Schedule for Design _____ Weeks
(including estimated agency(ies) reviews)

Estimate of all costs $_____

_____
Signature & Title

_____
(Firm)

Proposer must complete this form.

ATTACHMENT G – DEBARMENT AND SUSPENSION CERTIFICATION
TITLE 49, CODE OF FEDERAL REGULATIONS, PART 1200

The Proposer, under penalty of perjury, certifies that, except as noted below, he/she or any other person associated therewith in the capacity of owner, partner, director, officer, manager:

- is not currently under suspension, debarment, voluntary exclusion, or determination of ineligibility by any Federal agency;
- has not been suspended, debarred, voluntarily excluded or determined ineligible by any Federal agency within the past 3 years;
- does not have a proposed debarment pending; and has not been indicted, convicted, or had a civil judgment rendered against it by a court of competent jurisdiction in any matter involving fraud or official misconduct within the past 3 years.

If there are any exceptions to this certification, insert the exceptions in the following space.

_____
_____
_____
_____
_____
_____

Exceptions will be considered in determining Proposer responsibility. For any exception noted above, indicate below to whom it applies, initiating agency, and dates of action.

_____
_____
_____
_____
_____

Notes: Providing false information may result in criminal prosecution or administrative sanctions.

The above certification is part of the Proposal. Signing this Proposal on the signature portion thereof shall also constitute signature of this Certification.

_____	_____	_____
Authorized Signature	*Print Name*	*Date*

_____
Company

ATTACHMENT H – PROPOSAL CHECKLIST

Use this checklist to ensure that all items requested have been included.

Items Completed		**Page (s)**
1.	Attachment A – Cover Page	
2.	Attachment B – Minimum Proposer Requirements	
3.	Attachment C – Exceptions to RFP	
4.	Attachment D – Statement of Certification	
5.	Attachment E – References	
6.	Attachment F – Fee Proposal Sheet **(in separate sealed envelope)**	
7.	Attachment G – Debarment and Suspension Certification	
8.	Attachment H – Proposal Checklist	
9.	Attachment I - Report of Environmentally Preferable Goods and Services	
10.	Licenses/Certifications	

ATTACHMENT I - REPORT OF ENVIRONMENTALLY PREFERABLE GOODS AND SERVICES

County of San Bernardino

Green Purchasing Report from _____ (Proposer)

Account No. _____

MM/DD/YYYY to MM/DD/YYYY

Billing Information			Product Information						Supplier Information	Environmental Information		
PO No.	Invoice or Reference No.	Invoice Date	Product No.	Product Description	Quantity	Price p/unit	No. of units	Total Cost	Manufacturer Name	Green Y/N	Green Attributes (see attachment)	Certifications and/or accreditation (see attachment)

EXAMPLES OF GREEN ATTRIBUTES	EXAMPLES OF CERTIFICATION AND/OR ACCREDITATION
Biobased	Certified Approved Product (AP) Non-Toxic
Biodegradable	Ecologo Certified
Carcinogen-free	Energy Star
Chlorofluorocarbon (CFC)-free	Electronic Product Environmental Assessment Tool (EPEAT) program
Compostable	Forest Stewardship Council Certified
Energy efficiency	Green Seal Certified
Lead-free	Greenguard Certified
Less hazardous	Scientific Certification Systems (SCS)
Low toxicity	
Mercury-free	
Persistent bioaccumulative toxin (PBT)-free	
Rapidly renewable	
Rechargeable	
Recyclable	
Recycled content	
Reduced greenhouse gas emissions	
Reduced packaging	
Refill/refillable	
Remanufactured/refurbished	
Renewable materials	
Responsible forestry	
Upgradeable	
Water efficiency	

EXHIBIT A – PREVAILING WAGE REQUIREMENTS

A. All or a portion of the Scope of Work in the Contract or Purchase Order (as applicable) requires the payment of prevailing wages and compliance with the following requirements.

1. Determination of Prevailing Rates:

Pursuant to Labor Code sections 1770, et seq., the County has obtained from the Director of the Department of Industrial Relations (DIR) pursuant to the California Labor Code, the general prevailing rates of per diem wages and the prevailing rates for holiday and overtime work in the locality in which the Scope of Work is to be performed. Copies of said rates are on file with the County, will be made available for inspection during regular business hours, may be included elsewhere in the specifications for the Scope of Work, and are also available online at www.dir.ca.gov. The wage rate for any classification not listed, but which may be required to execute the Scope of Work, shall be commensurate and in accord with specified rates for similar or comparable classifications for those performing similar or comparable duties. In accordance with Labor Code section 1773.2, the Consultant shall post, at appropriate and conspicuous locations on the jobsite, a schedule showing all applicable prevailing wage rates and shall comply with the requirements of Labor Code sections 1773, et seq.

2. Payment of Prevailing Rates

Each worker of the Consultant, or any subcontractor, engaged in the Scope of Work, shall be paid not less than the general prevailing wage rate, regardless of any contractual relationship which may be alleged to exist between the Consultant or any subcontractor, and such worker.

3. Prevailing Rate Penalty

The Consultant shall, as a penalty, forfeit two hundred dollars ($200.00) to the County for each calendar day or portion thereof, for each worker paid less than the prevailing rates as determined by the Director of the DIR for such work or craft in which such worker is employed by the Consultant or by any subcontractor in connection with the Scope of Work. Pursuant to California Labor Code section 1775, the difference between such prevailing wage rates and the amount paid to each worker for each calendar day, or portion thereof, for which each worker was paid less than the prevailing wage rate, shall be paid to each worker by the Consultant.

4. Ineligible Consultants:

Pursuant to the provisions of Labor Code section 1777.1, the Labor Commissioner publishes and distributes a list of contractors ineligible to perform work as a contractor or subcontractor on a public works project. This list of debarred contractors is available from the DIR website at http://www.dir.ca.gov/Public-Works/PublicWorks.html. Any contract entered into between a contractor and a debarred subcontractor is void as a matter of law. A debarred subcontractor may not receive any public money for performing work as a subcontractor on a public works contract, and any public money that may have been paid to a debarred subcontractor by a contractor on the project shall be returned to the County. The Consultant shall be responsible for the payment of wages to workers of a debarred subcontractor who has been allowed to work on the Scope of Work.

5. Payroll Records:

Pursuant to California Labor Code section 1776, the Consultant and each subcontractor, shall keep accurate certified payroll records, showing the name, address, social security number, work classification, straight time and overtime hours worked each day and week, and the actual per diem wages paid to each journeyman, apprentice, worker or other employee employed by them in connection with the Scope of Work. The payroll records enumerated herein shall be verified by a written declaration made under penalty of perjury that the information contained in the payroll record is true and correct and that the Consultant or subcontractor has complied with the requirements of the California Labor Code sections 1771, 1811, and 1815 for any Scope of Work performed by his or her employees. The payroll records shall be available for inspection at all reasonable hours at the principal office of the Consultant on the following basis:

(1) A certified copy of an employee's payroll record shall be made available for inspection or furnished to such employee or his/her authorized representative on request;

(2) A certified copy of all payroll records shall be made available for inspection or furnished upon request to the County, the Division of Labor Standards Enforcement of the DIR;

(3) A certified copy of payroll records shall be made available upon request to the public for inspection or copies thereof made; provided, however, that a request by the public shall be made through either the County or the Division of Labor Standards Enforcement. If the requested payroll records have not been previously provided to the County or the Division of Labor Standards Enforcement, the requesting party shall, prior to being provided the records, reimburse the cost of preparation by the Consultant, subcontractor and the entity through which the request was made; the public shall not be given access to such records at the principal office of the Consultant;

(4) The Consultant shall file a certified copy of the payroll records with the entity that requested such records within ten (10) days after receipt of a written request; and

(5) Copies provided to the public, by the County or the Division of Labor Standards Enforcement shall be marked or obliterated in such a manner as to prevent disclosure of an individual's name, address and social security number. The name and address of the Consultant or any subcontractor, performing a part of the Scope of Work shall not be marked or obliterated. The Consultant shall inform the County of the location of payroll records, including the street address, city and county and shall, within five (5) working days, provide a notice of a change of location and address.

The Consultant shall have ten (10) days from receipt of the written notice specifying in what respects the Consultant must comply with the above requirements. In the event Consultant does not comply with the requirements of this section within the ten (10) day period, the Consultant shall, as a penalty to the County, forfeit one-hundred dollars ($100.00) for each calendar day, or portion thereof, for each worker, until strict compliance is effectuated. Upon the request of the Division of Labor Standards Enforcement, such penalty shall be withheld from any portion of the payments then due or to become due to the Consultant.

6. Limits on Hours of Work:

Pursuant to California Labor Code section 1810, eight (8) hours of labor shall constitute a legal day's work. Pursuant to California Labor Code section 1811, the time of service of any worker employed at any time by the Consultant or by a subcontractor, upon the Scope of Work or upon any part of the Scope of Work, is limited and restricted to eight (8) hours during any one calendar day and forty (40) hours during any one calendar week, except as provided for under Labor Code section 1815. Notwithstanding the foregoing provisions, work performed by employees of Consultant or any subcontractor, in excess of eight (8) hours per day and forty (40) hours during any one week, shall be permitted upon compensation for all hours worked in excess of eight (8) hours per day at not less than one and one-half (1½) times the basic rate of pay.

7. Penalty for Excess Hours:

The Consultant shall pay to the County a penalty of twenty-five dollars ($25.00) for each worker employed on the Scope of Work by the Consultant or any subcontractor, for each calendar day during which such worker is required or permitted to work more than eight (8) hours in any calendar day and forty (40) hours in any one calendar week, in violation of the provisions of the California Labor Code, unless compensation to the worker so employed by the Consultant is not less than one and one-half (1½) times the basic rate of pay for all hours worked in excess of eight (8) hours per day.

8. Senate Bill 854 (Chapter 28, Statutes of 2014) Requirements:

(1) Consultant shall comply with Senate Bill 854 (signed into law on June 20, 2014). The requirements include, but are not limited to, the following:

a. No contractor or subcontractor may be listed on a bid proposal (submitted on or after March 1, 2015) for a public works project unless registered with the DIR pursuant to Labor Code section 1725.5, with limited exceptions from this requirements for bid purposes only as allowed under Labor Code section 1771.1(a).

b. No contractor or subcontractor may be awarded a contract for public work or perform work on a public works project (awarded on or after April 1, 2015) unless registered with the DIR pursuant to Labor Code section 1725.5.

c. This Project is subject to compliance monitoring and enforcement by the DIR.

d. As required by the DIR, Consultant is required to post job site notices, as prescribed by regulation, regarding compliance monitoring and enforcement by the DIR.

e. Consultants and all subcontractors must submit certified payroll records online to the Labor Commissioner for all new public works projects issued on or after April 1, 2015, and for all public works projects, new or ongoing, on or after January 1, 2016.

a. The certified payroll must be submitted at least monthly to the Labor Commissioner.
b. The County reserves the right to require Consultant and all subcontractors to submit certified payroll records more frequently than monthly to the Labor Commissioner
c. The certified payroll records must be in a format prescribed by the Labor Commissioner.

(2) Labor Code section 1725.5 states the following:
A contractor shall be registered pursuant to this section to be qualified to bid on, be listed in a bid proposal, subject to the requirements of Section 4104 of the Public Contract Code, or engage in the performance of any public work contract that is subject to the requirements of this chapter. For the purposes of this section, "contractor" includes a subcontractor as defined by Section 1722.1.

(a) To qualify for registration under this section, a contractor shall do all of the following:

(1) Beginning July 1, 2014, register with the Department of Industrial Relations in the manner prescribed by the department and pay an initial nonrefundable application fee of three hundred dollars ($300) to qualify for registration under this section and an annual renewal fee on or before July 1 of each year thereafter. The annual renewal fee shall be in a uniform amount set by the Director of Industrial Relations, and the initial registration and renewal fees may be adjusted no more than annually by the director to support the costs specified in Section 1771.3.

(2) Provide evidence, disclosures, or releases as are necessary to establish all of the following:

(A) Workers' Compensation coverage that meets the requirements of Division 4 (commencing with Section 3200) and includes sufficient coverage for any worker whom the contractor employs to perform work that is subject to prevailing wage requirements other than a contractor who is separately registered under this section. Coverage may be evidenced by a current and valid certificate of workers' compensation Insurance or certification of self-insurance required under Section 7125 of the Business and Professions Code.

(B) If applicable, the contractor is licensed in accordance with Chapter 9 (commencing with Section 7000) of the Business and Professions Code.

(C) The contractor does not have any delinquent liability to an employee or the state for any assessment of back wages or related damages, interest, fines, or penalties pursuant to any final judgment, order, or determination by a court or any federal, state, or local administrative agency, including a confirmed arbitration award. However, for purposes of this paragraph, the contractor shall not be disqualified for any judgment, order, or determination that is under appeal, provided that the contractor has secured the payment of any amount eventually found due through a bond or other appropriate means.

(D) The contractor is not currently debarred under Section 1777.1 or under any other federal or state law providing for the debarment of contractors from public works.

(E) The contractor has not bid on a public works contract, been listed in a bid proposal, or engaged in the performance of a contract for public works without being lawfully registered in accordance with this section, within the preceding 12 months or since the effective date of the requirements set forth in subdivision (e), whichever is earlier. If a contractor is found to be in violation of the requirements of this paragraph, the period of disqualification shall be waived if both of the following are true:

(i) The contractor has not previously been found to be in violation of the requirements of this paragraph within the preceding 12 months.

(ii) The contractor pays an additional nonrefundable penalty registration fee of two thousand dollars ($2,000).

(b) Fees received pursuant to this section shall be deposited in the State Public Works Enforcement Fund established by Section 1771.3 and shall be used only for the purposes specified in that section.

(c) A contractor who fails to pay the renewal fee required under paragraph (1) of subdivision (a) on or before the expiration of any prior period of registration shall be prohibited from bidding on or engaging in the performance of any contract for public work until once again registered pursuant to this section. If the failure to pay the renewal fee was inadvertent, the contractor may renew its registration retroactively by paying an additional nonrefundable penalty renewal fee equal to the amount of the renewal fee within 90 days of the due date of the renewal fee.

(d) If, after a body awarding a contract accepts the contractor's bid or awards the contract, the work covered by the bid or contract is determined to be a public work to which Section 1771 applies, either as the result of a determination by the director pursuant to Section 1773.5 or a court decision, the requirements of this section shall not apply, subject to the following requirements:

(1) The body that awarded the contract failed, in the bid specification or in the contract documents, to identify as a public work that portion of the work that the determination or decision subsequently classifies as a public work.

(2) Within 20 days following service of notice on the awarding body of a determination by the Director of Industrial Relations pursuant to Section 1773.5 or a decision by a court that the contract was for public work as defined in this chapter, the contractor and any subcontractors are registered under this section or are replaced by a contractor or subcontractors who are registered under this section.

(3) The requirements of this section shall apply prospectively only to any subsequent bid, bid proposal, contract, or work performed after the awarding body is served with notice of the determination or decision referred to in paragraph (2) of this subdivision.

(e) The requirements of this section shall apply to any bid proposal submitted on or after March 1, 2015, and any contract for public work, as defined in this chapter, entered into on or after April 1, 2015.

(3) Labor Code section 1771.1 states the following:

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

(b) Notice of the requirement described in subdivision (a) shall be included in all bid invitations and public works contracts, and a bid shall not be accepted nor any contract or subcontract entered into without proof of the contractor or subcontractor's current registration to perform public work pursuant to Section 1725.5.

(c) An inadvertent error in listing a subcontractor who is not registered pursuant to Section 1725.5 in a bid proposal shall not be grounds for filing a bid protest or grounds for considering the bid nonresponsive, provided that any of the following apply:

(1) The subcontractor is registered prior to the bid opening.

(2) Within 24 hours after the bid opening, the subcontractor is registered and has paid the penalty registration fee specified in subparagraph (E) of paragraph (2) of subdivision (a) of Section 1725.5.

(3) The subcontractor is replaced by another registered subcontractor pursuant to Section 4107 of the Public Contract Code.

(d) Failure by a subcontractor to be registered to perform public work as required by subdivision (a) shall be grounds under Section 4107 of the Public Contract Code for the contractor, with the consent of the awarding authority, to substitute a subcontractor who is registered to perform public work pursuant to Section 1725.5 in place of the unregistered subcontractor.

(e) The department shall maintain on its Internet Web site a list of contractors who are currently registered to perform public work pursuant to Section 1725.5.

(f) A contract entered into with any contractor or subcontractor in violation of subdivision (a) shall be subject to cancellation, provided that a contract for public work shall not be unlawful, void, or voidable solely due to the failure of the awarding body, contractor, or any subcontractor to comply with the requirements of Section 1725.5 or this section.

(g) This section shall apply to any bid proposal submitted on or after March 1, 2015, and any contract for public work entered into on or after April 1, 2015.

(4) Labor Code section 1771.4 states the following:

(a) All of the following are applicable to all public works projects that are otherwise subject to the requirements of this chapter:

(1) The call for bids and contract documents shall specify that the project is subject to compliance monitoring and enforcement by the Department of Industrial Relations.

(2) The awarding body shall post or require the prime contractor to post job site notices, as prescribed by regulation.

(3) Each contractor and subcontractor shall furnish the records specified in Section 1776 directly to the Labor Commissioner, in the following manner:

(A) At least monthly or more frequently if specified in the contract with the awarding body.

(B) In a format prescribed by the Labor Commissioner.

(4) The department shall undertake those activities it deems necessary to monitor and enforce compliance with prevailing wage requirements.

(b) The Labor Commissioner may exempt a public works project from compliance with all or part of the requirements of subdivision (a) of this section if either of the following occurs:

(1) The awarding body has enforced an approved labor compliance program, as defined in Section 1771.5, on all public works projects under its authority, except those deemed exempt pursuant to subdivision (a) of Section 1771.5, continuously since December 31, 2011.

(2) The awarding body has entered into a collective bargaining agreement that binds all contractors performing work on the project and that includes a mechanism for resolving disputes about the payment of wages.

(c)

(1) The requirements of paragraph (1) of subdivision (a) shall only apply to contracts for public works projects awarded on or after January 1, 2015.

(2) The requirements of paragraph (3) of subdivision (a) shall only apply to the following projects:

(A) Projects that were subject to a requirement to furnish records to the Compliance Monitoring Unit pursuant to Section 16461 of Title 8 of the California Code of Regulations, prior to the effective date of this section.

(B) Projects for which the initial contract is awarded on or after April 1, 2015.

(C) Any other ongoing project in which the Labor Commissioner directs the contractors or subcontractors on the project to furnish records in accordance with paragraph (3) of subdivision (a).

(D) All projects, whether new or ongoing, on or after January 1, 2016.

B. STATE PUBLIC WORKS APPRENTICESHIP REQUIRMENTS

1. State Public Works Apprenticeship Requirements:

The Consultant is responsible for compliance with Labor Code section 1777.5 and the California Code of Regulations, title 8, sections 230 – 230.2 <u>for all apprenticeable occupations</u> (denoted with "#" symbol next to craft name in DIR Prevailing Wage Determination), whether employed by the Consultant, subcontractor, vendor or consultant. Included in these requirements is (1) the Consultant's requirement to provide notification (i.e. DAS-140) to the appropriate apprenticeship committees; (2) pay training fund contributions for each apprenticeable hour employed on the Contract; and (3) utilize apprentices in a minimum ratio of not less than one apprentice hour for each five journeyman hours by completion of Contract work (unless an exception is granted in accordance with Labor Code section 1777.5) or request for the dispatch of apprentices.

Any apprentices employed to perform any of the Scope of Work shall be paid the standard wage to apprentices under the regulations of the craft or trade for which such apprentice is employed, and such individual shall be employed only for the work of the craft or trade to which such individual is registered. Only apprentices, as defined in California Labor Code section 3077, who are in training under apprenticeship standards and written apprenticeship agreements under California Labor Code sections 3070 et seq. are eligible to be employed for the Scope of Work. The employment and training of each apprentice shall be in accordance with the provisions of the apprenticeship standards and apprentice agreements under which such apprentice is training.

2. Compliance with California Labor Code section 1777.5 requires all public works contractors to:

(1) Submit Contract Award Information (DAS-140)

- **a.** Although there are a few exemptions (identified below), all Consultants, regardless of union affiliation, must submit contract award information when performing on a California public works project.
- **b.** The DAS-140 is a notification "announcement" of the Consultant's participation on a public works project—*it is not a request for the dispatch of an apprentice.*
- **c.** Consultants shall submit the contract award information (you may use form DAS 140) within 10 days of the execution of the prime contract or subcontract, but in no event later than the first day in which the Consultant has workers employed on the public work.
- **d.** Consultants who are already approved to train apprentices (i.e. check "Box 1" on the DAS-140) shall only be required to submit the form to their approved program.
- **e.** Consultants who are NOT approved to train apprentices (i.e. those that check either "Box 2" or "Box 3" on the DAS-140) shall submit the DAS-140 TO EACH of the apprenticeship program sponsors in the area of your public works project. For a listing of apprenticeship programs see http://www.dir.ca.gov/Databases/das/pwaddrstart.asp.

(2) Employ Registered Apprentices

- **a.** Labor Code section 1777.5 requires that a contractor performing work in an "apprenticeable" craft must employ one (1) hour of apprentice work for every five (5) hours performed by a journeyman. This ratio shall be met prior to the Consultant's completion of work on the project. "Apprenticeable" crafts are denoted with a pound symbol "#" in front of the craft name on the prevailing wage determination.
- **b.** All Consultants who do not fall within an exemption category (see below) must request for dispatch of an apprentice from an apprenticeship program (for each apprenticeable craft or trade) by giving the program actual notice of at least 72 hours (business days only) before the date on which apprentices are required.
- **c.** Consultants may use the "DAS-142" form for making a request for the dispatch of an apprentice.
- **d.** Consultants who are participating in an approved apprenticeship training program and who did not receive sufficient number of apprentices from their initial request must request dispatch of apprentices from ALL OTHER apprenticeship committees in the project area in order to fulfill this requirement.
- **e.** Consultant should maintain and submit proof (when requested) of its DAS-142 submittal to the apprenticeship committees (e.g. fax transmittal confirmation). A Consultant has met its requirement to employ apprentices only after it has successfully made a dispatch request to all apprenticeship programs in the project area.
- **f.** Only "registered" apprentices may be paid the prevailing apprentice rates and must, at all times work under the supervision of a Journeyman (Cal. Code Regs., tit 8, § 230.1).

(3) Make Training Fund Contributions

- **a.** Consultants performing in apprenticeable crafts on public works projects, must make training fund contributions in the amount established in the prevailing wage rate publication for journeymen and apprentices.
- **b.** Consultants may use the "CAC-2" form for submittal of their training fund contributions.
- **c.** Consultants who do not submit their training fund contributions to an approved apprenticeship training program must submit their contributions to the California Apprenticeship Council (CAC), PO Box 420603, San Francisco, CA 94142-0603.
- **d.** Training fund contributions to the CAC are due and payable on the 15th day of the month for work performed during the preceding month.
- **e.** The "training" contribution amount identified on the prevailing wage determination shall not be paid to the worker, unless the worker falls within one of the exemption categories listed below.

3. Exemptions to Apprenticeship Requirements:

The following are exempt from having to comply with California apprenticeship requirements. These types of contractors <u>do not</u> need to submit a DAS-140, DAS-142, make training fund contributions, or utilize apprentices.

- **a.** When the Consultant holds a sole proprietor license ("Owner-Operator") and no workers were employed by the Consultant. In other words, the contractor performed the entire work from start to finish and worked alone.
- **b.** Consultants performing in non-apprenticeable crafts. "Apprenticeable" crafts are denoted with a pound symbol "#" in front of the craft name on the prevailing wage determination.
- **c.** When the Consultant has a direct contract with the Public Agency that is under $30,000.
- **d.** When the project is 100% federally-funded and the funding of the project does not contain any city, county, and/or state monies (unless the project is administered by a state agency in which case the apprenticeship requirements apply).
- **e.** When the project is a private project not covered by the definition of public works as found in Labor Code section 1720.

4. Exemption from Apprenticeship Ratios:

The Joint Apprenticeship Committee shall have the discretion to grant a certificate, which shall be subject to the approval of the Administrator of Apprenticeship, exempting the Consultant from the 1-to-5 ratio set forth in this Section when it finds that any one of the following conditions are met:

- **a.** Unemployment for the previous three-month period in such area exceeds an average of fifteen percent (15%); or
- **b.** The number of apprentices in training in such area exceeds a ratio of 1-to-5 in relation to journeymen; or
- **c.** The Apprenticeable Craft or Trade is replacing at least one-thirtieth (1/30) of its journeymen annually through apprenticeship training, either on a statewide basis or on a local basis; or
- **d.** If assignment of an apprentice to any work performed under the Contract Documents would create a condition which would jeopardize such apprentice's life or the life, safety or property of fellow employees or the public at large, or if the specific task to which the apprentice is to be assigned is of such a nature that training cannot be provided by a journeyman.

When such exemptions from the 1-to-5 ratio between apprentices and journeymen are granted to an organization which represents contractors in a specific trade on a local or statewide basis, the member contractors will not be required to submit individual applications for approval to local Joint Apprenticeship Committees, provided they are already covered by the local apprenticeship standards.

5. Consultant's Compliance:

The responsibility of compliance with this Section for all Apprenticeable Trades or Crafts is solely and exclusively that of the Consultant. All decisions of the Joint Apprenticeship Committee(s) under this Section are subject to the provisions of California Labor Code section 3081 and penalties are pursuant to Labor Code section 1777.7 and the determination of the Labor Commissioner.

EXHIBIT B – LOCATION MAP

Located on following page

LOCATION MAP

WORK ORDER NO. F01452

Latitude: 34.0955 Longitude: -117.4844

COUNTY OF SAN BERNARDINO

DEPARTMENT OF PUBLIC WORKS

CHANNEL IMPROVEMENT

West Fontana Channel

From Banana Basin to Juniper Ave.

Fontana, California

EXHIBIT C – FIGURES 1 – 5

Located on following page

RECTANGULAR REINFORCED
CONCRETE CHANNEL

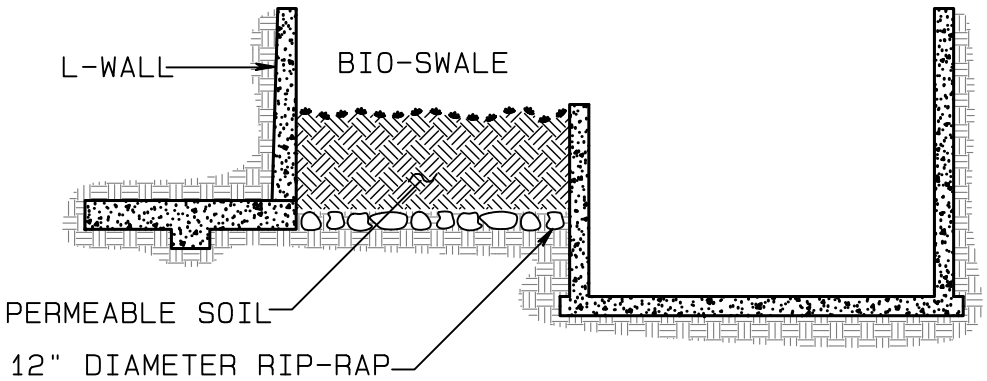


FIGURE 1

NOT TO SCALE

RECTANGULAR REINFORCED
CONCRETE CHANNEL

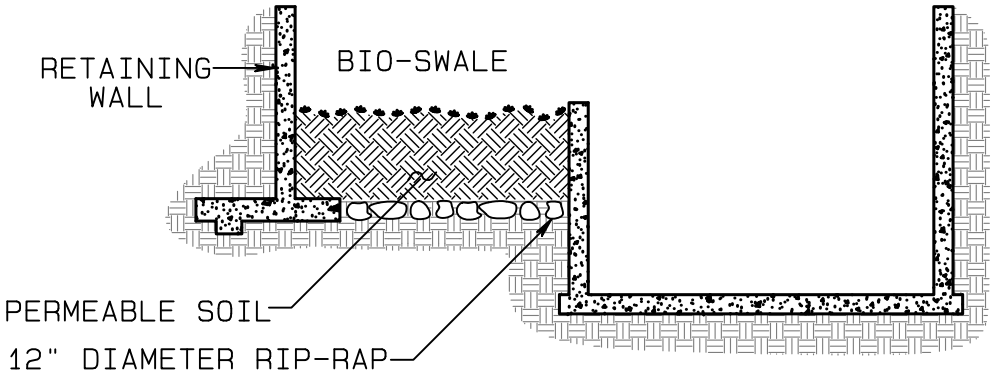


FIGURE 2

NOT TO SCALE

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT

FONTANA DRAINAGE SYSTEM

WEST FONTANA CHANNEL

STRUCTURAL SERVICES REQUEST FOR PROPOSAL

DATE	JULY 2016
SCALE	N/A
FILE NO.	N/A
DRAWING NO.	N/A
SHEET NO.	1 OF 2

RECTANGULAR REINFORCED
CONCRETE CHANNEL

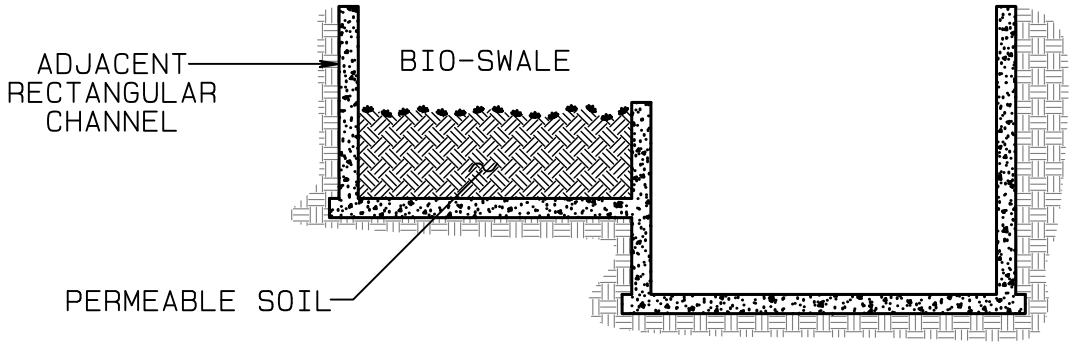


FIGURE 3

NOT TO SCALE

TRAPEZOIDAL REINFORCED
CONCRETE CHANNEL
PER SBCFCD S.P.192E

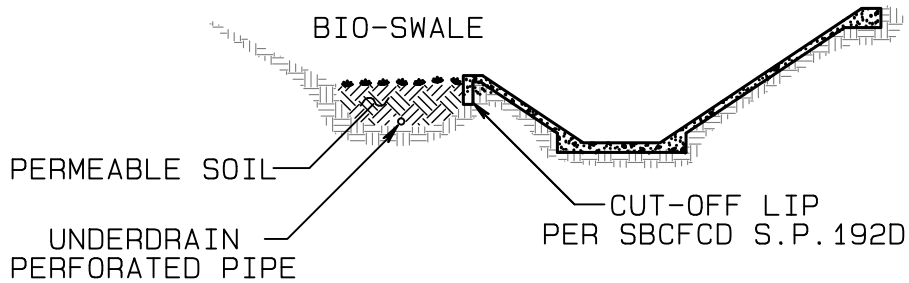


FIGURE 5

NOT TO SCALE

RECTANGULAR REINFORCED
CONCRETE CHANNEL

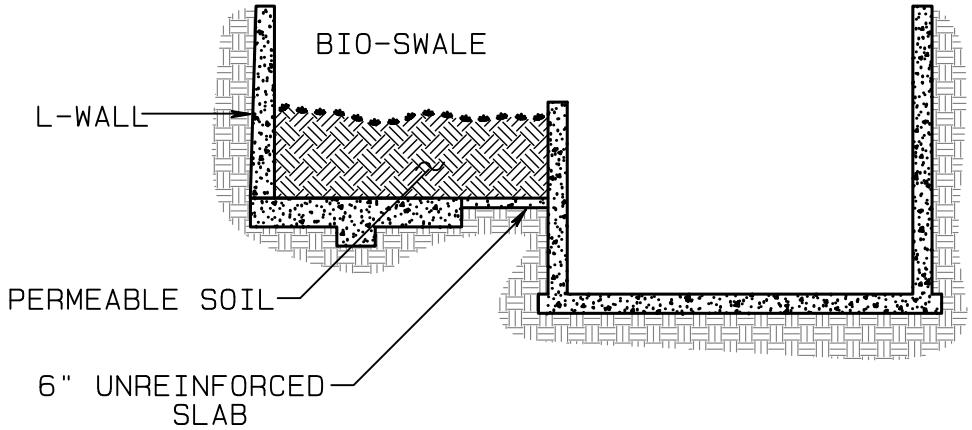


FIGURE 4

NOT TO SCALE

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT		DATE JULY 2016
FONTANA DRAINAGE SYSTEM		SCALE N/A
WEST FONTANA CHANNEL		FILE NO. N/A
STRUCTURAL SERVICES REQUEST FOR PROPOSAL		DRAWING NO. N/A
		SHEET NO. 2 OF 2

EXHIBIT D – 65% SUBMITTAL PLANS

Located on following page

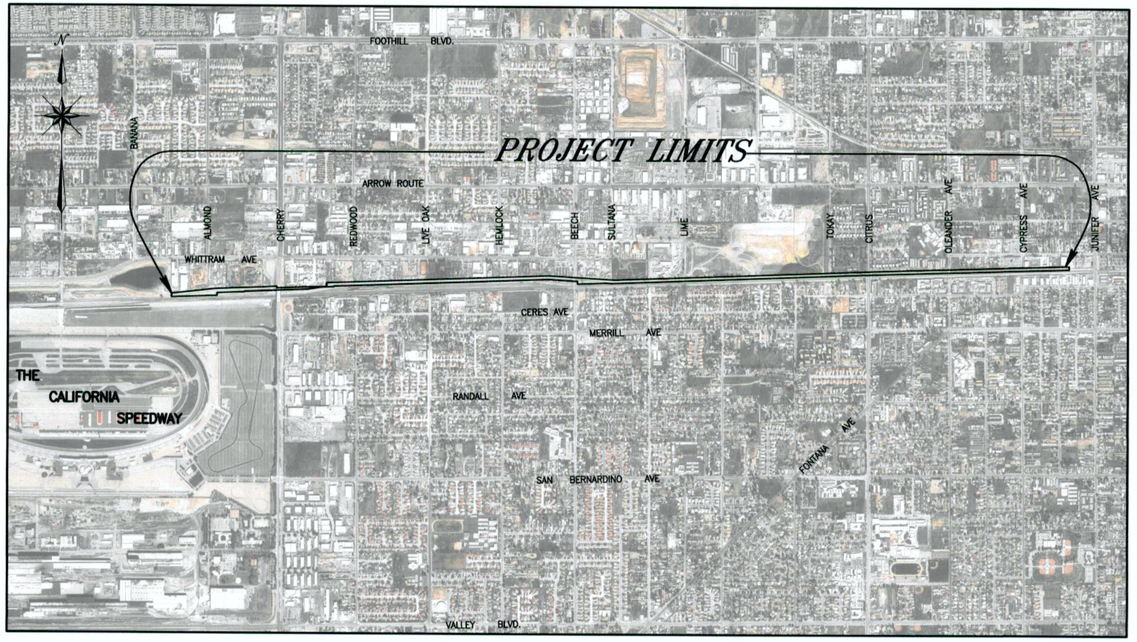
SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT

PLANS FOR IMPROVEMENT ON

WEST FONTANA CHANNEL

LOCATED IN THE CITY OF FONTANA AND UNINCORPORATED SAN BERNARDINO COUNTY

WORK ORDER NO. F01452 SYSTEM NO. 1–809– AND 2–109–



PROJECT LOCATION MAP

NOT TO SCALE

REFERENCES:

BASIS OF BEARING:

BASIS OF BEARING IS THE CENTERLINE OF CACTUS AVENUE BETWEEN HIGHLAND AVENUE AND MARIPOSA DRIVE PER CSFB 4049/652, JL# 8308 BEING N0°29'49"W–GRID

BENCH MARK:

FD SBCO F.C.D. BRASS CAP MON. ±530' N/O BASELINE AVE. AND ±660' W/O CACTUS AVE. PER CSFB 4049/654. ELEVATION = 1361.89'.

NOTICE TO CONTRACTOR:

THE EXISTANCE AND LOCATIONS OF ANY UNDERGROUND UTILITY PIPES OR STRUCTURES SHOWN ON THESE PLANS WERE OBTAINED BY A SEARCH OF AVAILABLE RECORDS. THESE LOCATIONS ARE APPROXIMATE AND SHALL BE CONFIRMED IN THE FIELD BY THE CONTRACTOR, SO THAT ANY NECESSARY ADJUSTMENT CAN BE MADE IN ALIGNMENT AND / OR GRADE OF THE PROPOSED IMPROVEMENT. THE CONTRACTOR IS REQUIRED TO TAKE DUE PRECAUTIONARY MEASURES TO PROTECT ANY UTILITY LINES SHOWN AND ANY OTHER LINES NOT OF RECORD OR NOT SHOWN ON THESE PLANS.

APPROVED BY:

KEVIN BLAKESLEE, FLOOD CONTROL ENGINEER, R.C.E. C53095 DATE

RECOMMENDED FOR AUTHORIZATION BY:

GERRY NEWCOMBE, DIRECTOR OF PUBLIC WORKS DATE

FILE NO.
1–809–
DRAWING NO.
I–1
SHEET NO.
01 OF xx

65% SUBMITTAL

N:\ACTIVE PROJECTS\West Fontana\West Fontana Channel Improvement September 8 2016.pro Sep 8, 2016

SHEET NO.	DESCRIPTION
1	TITLE SHEET, LOCATION MAP, BASIS OF BEARING AND BENCH MARK
2	SHEET INDEX, CONSTRUCTION NOTES
3	GENERAL NOTES, LEGEND, ABBREVIATIONS AND STANDARD PLANS
4	PLAN, PROFILE AND TYPICAL SECTION – BANANA BASIN TO STA. 11+00.00
5	PLAN, PROFILE AND TYPICAL SECTION – STA. 11+00.00 TO STA. 20+00.00
6	PLAN, PROFILE AND TYPICAL SECTION – STA. 20+00.00 TO STA. 29+00.00
7	PLAN, PROFILE AND TYPICAL SECTION – STA. 29+00.00 TO STA. 38+00.00
8	PLAN, PROFILE AND TYPICAL SECTION – STA. 38+00.00 TO STA. 47+00.00
9	PLAN, PROFILE AND TYPICAL SECTION – STA. 47+00.00 TO STA. 56+00.00
10	PLAN, PROFILE AND TYPICAL SECTION – STA. 56+00.00 TO STA. 65+00.00
11	PLAN, PROFILE AND TYPICAL SECTION – STA. 65+00.00 TO STA. 74+00.00
12	PLAN, PROFILE AND TYPICAL SECTION – STA. 74+00.00 TO STA. 83+00.00
13	PLAN, PROFILE AND TYPICAL SECTION – STA. 83+00.00 TO STA. 92+00.00
14	PLAN, PROFILE AND TYPICAL SECTION – STA. 92+00.00 TO STA. 101+00.00
15	PLAN, PROFILE AND TYPICAL SECTION – STA. 101+00.00 TO STA. 110+00.00
16	PLAN, PROFILE AND TYPICAL SECTION – STA. 110+00.00 TO STA. 119+00.00
17	PLAN, PROFILE AND TYPICAL SECTION – STA. 119+00.00 TO STA. 128+00.00
18	PLAN, PROFILE AND TYPICAL SECTION – STA. 128+00.00 TO STA. 137+00.00
19	PLAN, PROFILE AND TYPICAL SECTION – STA. 137+00.00 TO STA. 146+00.00
20	PLAN, PROFILE AND TYPICAL SECTION – STA. 146+00.00 TO STA. 155+00.00
21	PLAN, PROFILE AND TYPICAL SECTION – STA. 155+00.00 TO STA. 164+00.00
22	PLAN, PROFILE AND TYPICAL SECTION – STA. 164+00.00 TO STA. 167+12.89
23	REINFORCED CONCRETE BOX CULVERT – STRUCTURAL DETAILS
24	REINFORCED CONCRETE RECTANGULAR CHANNEL – STRUCTURAL DETAILS
25	PLAN AND PROFILE – LATERALS @ WEST CHERRY AVE (MPD T-2B) AND @ EAST CHERRY AVE (MPD T-2A)
26	PLAN AND PROFILE – LATERALS @ REDWOOD AVE (MPD T-1C) AND @ LIVE AVE (MPD T-1A)
27	PLAN AND PROFILE – LATERALS @ HEMLOCK AVE (MPD T-8) AND @ BEECH AVE (MPD T-7)
28	PLAN AND PROFILE – LATERALS @ LIME AVE (MPD T-6) AND @ TOKAY AVE (MPD T-5)
29	PLAN AND PROFILE – LATERALS @ CITRUS AVE (MPD T-4) AND @ OLEANDER AVE (MPD T-3)
30	PLAN AND PROFILE – LATERALS @ CYPRESS AVE (MPD T-2) AND @ CYPRESS AVE (MPD T-1)

CONSTRUCTION NOTES:

1. PROTECT-IN-PLACE
2. TO BE RELOCATED BY OTHERS
3. TO BE RELOCATED BY THE CONTRACTOR AS DIRECTED BY THE ENGINEER
4. REMOVE AND RECONSTRUCT EXISTING CONCRETED ROCK SLOPE PROTECTION PER PLAN, PROFILE, SECTIONS AND DETAILS
5. CONTRUCT 3.0' WIDE X 8.0' DEEP CONCRETED ROCK CUT-OFF WALL PER PLAN, PROFILE AND DETAIL
6. CONSTRUCT 5.0' DEEP CONCRETE CUT-OFF WALL PER PLAN, PROFILE AND DETAIL
7. CONSTRUCT WINGWALL PER PLAN, DETAILS AND CALTRANS STD. D84, TYPE "B" FLARE ANGLE=90°, H=17 FT
8. CONSTRUCT 26.0' WIDE AND 15.0' HIGH REINFORCED RECTANGULAR CONCRETE CHANNEL (RCC), PROVIDING BIO-SWALE AREA PER PLAN. (STA 5+00.00 TO STA 22+60.00) PROFILE, SECTIONS AND DETAILS
9. INSTALL 6.0' HIGH CHAIN LINK CHANNEL FENCE PER PLAN, DETAIL AND S.B.C.F.C.D. SPEC. DWG. II
10. BREAK EXISTING 24"ø REINFORCED CONCRETE PIPE (RCP) SUFFICIENTLY TO CONSTRUCT NEW 24"ø RCP TO DRAIN TO BIO-SWALE. INVERT ELEVATION AND GRADE TO BE ADJUSTED IN THE FIELD (D=1350)
11. CONSTRUCT 20.0' WIDE ACCESS RAMP TO CHANNEL PER PLAN, PROFILE AND DETAIL
12. CONSTRUCT 20.0' WIDE ACCESS RAMP TO/FROM BIO-SWALE PER PLAN, PROFILE AND DETAIL
13. GRADE MAINTENANCE ACCESS ROAD TO DRAIN AWAY FROM THE CHANNEL PER PLAN
14. REMOVE AND DISPOSE EXISTING DOUBLE DRIVE GATE
15. REMOVE AND DISPOSE EXISTING DOUBLE DRIVE GATE AND RE-INSTALL 15.0' WIDE DOUBLE DRIVE GATE PER S.B.C.F.C.D. SPEC. DWG. I, LOCATION AS DIRECTED BY THE ENGINEER
16. CONSTRUCT BIO-SWALE AREA PER PLAN, PROFILE, SECTIONS AND DETAILS
17. CONSTRUCT 13.0' WIDE ACCESS RAMP TO CHANNEL PER PLAN, PROFILE AND DETAIL
18. CONSTRUCT 26.0' WIDE REINFORCED RECTANGULAR CONCRETE CHANNEL(RCC) WALL HEIGHT TRANSITION STRUCTURE FROM 15.0' TO 16.37' HIGH PER PLAN (STA 22+60.00 TO STA 23+90.00), PROFILE AND DETAILS
19. REMOVE AND DISPOSE EXISTING PIPE GATE AND RE-INSTALL 20.0' WIDE DOUBLE DRIVE GATE PER S.B.C.F.C.D. SPEC. DWG. II, LOCATION AS DIRECTED BY THE ENGINEER
20. REMOVE AND DISPOSE EXISTING PIPE GATE AND RE-INSTALL 15.0' WIDE SINGLE DRIVE GATE PER S.B.C.F.C.D. SPEC. DWG. II, LOCATION AS DIRECTED BY THE ENGINEER
21. CONSTRUCT REINFORCED RECTANGULAR CONCRETE CHANNEL(RCC) TRANSITION STRUCTURE FROM 26.0' TO 24.0' WIDE AND 16.37' TO 17.0' HIGH PER PLAN (STA 23+90.00 TO STA 24+50.00), PROFILE AND DETAILS
22. CONSTRUCT JUNCTION STRUCTURE FOR 7.0'ø REINFORCED CONCRETE PIPE (RCP) PER PLAN, PROFILE AND DETAIL ON SHEET xx
23. INSTALL 7.0'ø REINFORCED CONCRETE PIPE (RCP) TO PROPOSED JUNCTION STRUCTURE (APPROX. 56 L.F.) PER PLAN, PROFILE AND DETAILS
24. CONSTRUCT REINFORCED CONCRETE BULKHEAD FOR 7.0'ø REINFORCED CONCRETE PIPE (RCP) PER RIVERSIDE COUNTY STD. DETAIL M816.
25. SAW CUT, BREAK AND DISPOSE EXISTING AC PAVEMENT AS REQUIRED FOR THE CONSTRUCTION AND INSTALLATION OF THE REINFORCED CONCRETE PIPE (RCP) AND REINFORCED CONCRETE BOX (RCB)
26. REMOVE AND DISPOSE EXISTING 6.0'ø CORRUGATED METAL PIPE (CMP)
27. PLACE 0.5' ASPHALT CONCRETE (TYPE A) OVER 0.35' OF CLASS II AGGREGATE BASE. FINISHED GRADE TO MATCH EXISTING CONDITION PRIOR TO CONSTRUCTION
28. CONSTRUCT 24.0' SPAN AND 14.0' RISE REINFORCED CONCRETE BOX (RCB) PRE-CAST OR CAST-IN-PLACE WITH H-20 LOADING PER PLAN, (STA 24+50.00 TO STA 26+50.00) PROFILE, SECTIONS AND DETAILS. SEE SPECIAL PROVISIONS
29. CONSTRUCT PARAPPET WALL PER PLAN, PROFILE AND DETAIL
30. PLACE NATIVE FILL ON TOP OF REINFORCED CONCRETE BOX (RCB) AND ITS SURROUNDINGS TO MATCH ADJACENT GRADE. TO BE USED AS ACCESS ROAD
31. REMOVE DURING CONSTRUCTION AND RE-INSTALL 6.0' HIGH CHAIN LINK FENCE PER PLAN, DETAIL AND S.B.C.F.C.D. SPEC. DWG. I
32. CONSTRUCT REINFORCED CONCRETE BOX(RCB) TRANSITION STRUCTURE FROM 24.0' SPAN TO 22.0' SPAN AND 14.0' RISE PER PLAN, PROFILE, DETAILS AND 2009 S.P.P.W.C. STD. DWG. 341-1
33. CONSTRUCT JUNCTION STRUCTURE FOR 6.0'ø REINFORCED CONCRETE PIPE (RCP) PER PLAN, PROFILE AND DETAILS ON SHEET xx
34. INSTALL 6.0'ø REINFORCED CONCRETE PIPE (RCP) TO PROPOSED JUNCTION STRUCTURE (APPROX. 48 L.F.) PER PLAN, PROFILE AND DETAILS
35. CONSTRUCT CONCRETE PIPE COLLAR FOR 6.0'ø REINFORCED CONCRETE PIPE PER 2009 S.P.P.W.C. STD. DWG. 380-4, PLAN, PROFILE AND DETAILS
36. CONSTRUCT HEADWALL AND CUT-OFF WALL FOR 6.0'ø REINFORCED CONCRETE PIPE PER 2010 CALTRANS STD. DWG. D-86B, PLAN, PROFILE AND DETAILS
37. CONSTRUCT 6.0' WIDE X 6.0' HIGH REINFORCED CONCRETE RECTANGULAR CHANNEL (RCC) PLAN, PROFILE AND DETAILS
38. CONSTRUCT REINFORCED CONCRETE RECTANGULAR CHANNEL(RCC) TRANSITION STRUCTURE FROM 6.0' TO 9.0' WIDE AND 6.0' TO 4.0' HIGH TO MEET EXISTING CHANNEL PER PLAN, PROFILE AND DETAILS
39. PLACE NATIVE FILL ON TOP OF REINFORCED CONCRETE PIPE (RCP) AND ITS SURROUNDINGS TO MATCH ADJACENT GRADE. TO BE USED AS ACCESS ROAD
40. REMOVE AND DISPOSE EXISTING 8"ø PVC DRAIN AND CONSTRUCT NEW 24"ø REINFORCED CONCRETE PIPE(RCP) TO DRAIN TO REINFORCED CONCRETE BOX (RCB). INVERT ELEVATION AND GRADE TO BE ADJUSTED IN THE FIELD
41. CONSTRUCT 22.0' SPAN AND 14.0' RISE REINFORCED CONCRETE BOX (RCB) PRE-CAST OR CAST-IN-PLACE WITH H-20 LOADING PER PLAN, (STA 27+00.00 TO STA 34+00.00 & STA 36+00.00 TO STA 37+44.82), PROFILE, SECTIONS AND DETAILS. SEE SPECIAL PROVISIONS
42. REMOVE AND DISPOSE EXISTING 5.0'ø CORRUGATED METAL PIPE (CMP)
43. CONSTRUCT 22.0' SPAN AND 14.0' RISE REINFORCED CONCRETE BOX (RCB) PRE-CAST OR CAST-IN-PLACE WITH H-20 AND RAILROAD LATERAL LOADING PER PLAN, (STA 34+00.00 TO STA 36+00.00) PROFILE, SECTIONS AND DETAILS. SEE SPECIAL PROVISIONS
44. CONSTRUCT 10.0' WIDE ACCESS RAMP TO/FROM BIO-SWALE PER PLAN, PROFILE AND DETAIL
45. CONSTRUCT 22.0' WIDE REINFORCED RECTANGULAR CONCRETE CHANNEL(RCC) WALL HEIGHT TRANSITION STRUCTURE FROM 16.5' TO 15.0' PER PLAN (STA 37+44.82 TO STA 38+70.00) PROFILE, SECTIONS AND DETAILS
46. CONSTRUCT 12.5' WIDE ACCESS RAMP TO/FROM BIO-SWALE PER PLAN, PROFILE AND DETAIL
47. CONSTRUCT REINFORCED RECTANGULAR CONCRETE CHANNEL(RCC) TRANSITION STRUCTURE FROM 22.0' TO 19.0' WIDE AND 15.5' TO 15.0' HIGH PER PLAN (STA 38+70.00 TO STA 39+20.00), PROFILE AND DETAILS
48. CONSTRUCT JUNCTION STRUCTURE FOR 5.5'ø REINFORCED CONCRETE PIPE (RCP) PER PLAN, PROFILE AND DETAILS ON SHEET xx
49. INSTALL 5.5'ø REINFORCED CONCRETE PIPE (RCP) TO PROPOSED JUNCTION STRUCTURE (APPROX. 40 L.F.) PER PLAN, PROFILE AND DETAILS
50. CONSTRUCT REINFORCED CONCRETE BULKHEAD FOR 5.5'ø REINFORCED CONCRETE PIPE (RCP) PER RIVERSIDE COUNTY STD. DETAIL M816.
51. CONSTRUCT 19.0' WIDE AND 15.0' HIGH REINFORCED RECTANGULAR CONCRETE CHANNEL (RCC), PROVIDING BIO-SWALE AREA PER PLAN (STA 39+20.00 TO STA 71+00.00) PROFILE, SECTIONS AND DETAILS
52. CONSTRUCT 15.0' WIDE ACCESS RAMP TO CHANNEL PER PLAN, PROFILE AND DETAIL
53. CONSTRUCT JUNCTION STRUCTURE FOR 4.0'ø REINFORCED CONCRETE PIPE (RCP) PER PLAN, PROFILE AND DETAILS ON SHEET xx
54. INSTALL 4.0'ø REINFORCED CONCRETE PIPE (RCP) TO PROPOSED JUNCTION STRUCTURE (APPROX. 48 L.F.) PER PLAN, PROFILE AND DETAILS
55. CONSTRUCT REINFORCED CONCRETE BULKHEAD FOR 4.0'ø REINFORCED CONCRETE PIPE (RCP) PER RIVERSIDE COUNTY STD. DETAIL M816.
56. CONSTRUCT JUNCTION STRUCTURE FOR 6.0'ø REINFORCED CONCRETE PIPE (RCP) PER PLAN, PROFILE AND DETAILS ON SHEET xx
57. INSTALL 6.0'ø REINFORCED CONCRETE PIPE (RCP) TO PROPOSED JUNCTION STRUCTURE (APPROX. 40 L.F.) PER PLAN, PROFILE AND DETAILS
58. CONSTRUCT REINFORCED CONCRETE BULKHEAD FOR 6.0'ø REINFORCED CONCRETE PIPE (RCP) PER RIVERSIDE COUNTY STD. DETAIL M816.
59. CONSTRUCT REINFORCED RECTANGULAR CONCRETE CHANNEL(RCC) TRANSITION STRUCTURE FROM 19.0' TO 20.0' WIDE AND 15.0' TO 17.0' HIGH PROVIDING BIO-SWALE AREA PER PLAN (STA 71+00.00 TO STA 72+00.00), PROFILE AND DETAILS
60. CONSTRUCT 20.0' WIDE AND 17.0' HIGH REINFORCED RECTANGULAR CONCRETE CHANNEL (RCC) PROVIDING BIO-SWALE AREA PER PLAN (STA 72+00.00 TO STA 78+00.00), PROFILE AND DETAILS
61. INSTALL 24"ø REINFORCED CONCRETE PIPE (RCP) CONNECTOR TO DRAIN AT BIO-SWALE (APPROX. 400 L.F.) . INVERT ELEVATION AND GRADE TO BE ADJUSTED IN THE FIELD (D=1350) PER PLAN, PROFILE AND DETAILS
62. CONSTRUCT REINFORCED RECTANGULAR CONCRETE CHANNEL(RCC) TRANSITION STRUCTURE FROM 20.0' TO 19.0' WIDE AND 17.0' TO 18.0' HIGH PER PLAN (STA 78+80.00 TO STA 79+00.00), PROFILE AND DETAILS
63. CONSTRUCT 19.0' WIDE RECTANGULAR CONCRETE CHANNEL(RCC) WALL HEIGHT TRANSITION STRUCTURE FROM 18.0' TO 19.5' HIGH PER PLAN (STA 79+000.00 TO STA 79+30.00), PROFILE AND DETAILS
64. CONSTRUCT JUNCTION STRUCTURE FOR 7.0'ø REINFORCED CONCRETE PIPE (RCP) PER PLAN, PROFILE AND DETAILS ON SHEET xx
65. INSTALL 7.0'ø REINFORCED CONCRETE PIPE (RCP) TO PROPOSED JUNCTION STRUCTURE (APPROX. 65 L.F.) PER PLAN, PROFILE AND DETAILS
66. CONSTRUCT REINFORCED CONCRETE BULKHEAD FOR 7.0'ø REINFORCED CONCRETE PIPE (RCP) PER RIVERSIDE COUNTY STD. DETAIL M816.
67. REMOVE AND DISPOSE EXISTING 3.0'ø CORRUGATED METAL PIPE (CMP)
68. BREAK EXISTING 24"ø REINFORCED CONCRETE PIPE (RCP) SUFFICIENTLY TO CONSTRUCT JUNCTION STRUCTURE TO DRAIN TO RECTANGULAR CONCRETE CHANNEL. INVERT ELEVATION AND GRADE TO BE ADJUSTED IN THE FIELD
69. INSTALL 19.0' SPAN AND 12.0' RISE PRE-CAST REINFORCED CONCRETE BOX (RCB) WITH H-20 LOADING PER PLAN (STA 79+30.00 TO STA 80+10.00), PROFILE, SECTIONS AND DETAILS. SEE SPECIAL PROVISIONS
70. CONSTRUCT 19.0' SPAN REINFORCED CONCRETE BOX(RCB) HEIGHT TRANSITION STRUCTURE FROM 12.0' RISE TO 16.0' RISE PER PLAN(STA 80+10.00 TO STA 80+30.00), PROFILE, DETAILS AND 2009 S.P.P.W.C. STD. DWG. 341-1
71. CONSTRUCT 19.0' WIDE RECTANGULAR CONCRETE CHANNEL(RCC) WALL HEIGHT TRANSITION STRUCTURE FROM 19.5' TO 15.0' HIGH PER PLAN(STA 80+30.00 TO STA 80+70.00), PROFILE AND DETAILS
72. CONSTRUCT RECTANGULAR CONCRETE CHANNEL (RCC) WIDTH TRANSITION STRUCTURE FROM 19.0' TO 18.0' WIDE AND 15.0' HIGH PER PLAN (STA 80+70.00 TO STA 81+10.00), PROFILE AND DETAILS
73. CONSTRUCT 15.0' WIDE ACCESS RAMP TO/FROM BIO-SWALE PER PLAN, PROFILE AND DETAIL
74. CONSTRUCT 18.0' WIDE AND 15.0' HIGH REINFORCED RECTANGULAR CONCRETE CHANNEL (RCC), PROVIDING BIO-SWALE AREA PER PLAN (STA 81+10.00 TO STA 91+50.00), PROFILE, SECTIONS AND DETAILS
75. CONSTRUCT 18.0' WIDE RECTANGULAR CONCRETE CHANNEL(RCC) WALL HEIGHT TRANSITION STRUCTURE FROM 15.0' TO 18.0' HIGH PER PLAN (STA 91+50.00 TO STA 92+50.00), PROFILE AND DETAILS
76. CONSTRUCT 18.0' WIDE AND 18..0' HIGH REINFORCED RECTANGULAR CONCRETE CHANNEL (RCC), PROVIDING BIO-SWALE AREA PER PLAN (STA 92+50.00 TO STA 95+00.00), PROFILE, SECTIONS AND DETAILS
77. REMOVE DURING CONSTRUCTION INTERFERING RAILROAD TRACKS AND TIES PER PLAN (APPROXIMATELY ADJACENT TO STA 95+50.00 TO STA 97+00.00) PROFILE AND DETAILS AND RECONSTRUCT IN KIND TO MATCH EXISTING CONDITON PRIOR TO CONSTRUCTION, BY OTHERS
78. CONSTRUCT 18.0' SPAN AND 12.0' RISE REINFORCED CONCRETE BOX (RCB) PRE-CAST WITH COOPER E-80 LOADING PER PLAN (STA 95+00.00 TO STA 97+50.00), PROFILE, SECTIONS AND DETAILS. SEE SPECIAL PROVISIONS
79. CONSTRUCT 18.0' WIDE AND 16.0' HIGH REINFORCED RECTANGULAR CONCRETE CHANNEL (RCC), PROVIDING BIO-SWALE AREA PER PLAN (STA 97+50.00 TO STA 132+00.00), PROFILE, SECTIONS AND DETAILS
80. CONSTRUCT JUNCTION STRUCTURE FOR 6.0'ø REINFORCED CONCRETE PIPE (RCP) PER PLAN, PROFILE AND DETAILS ON SHEET xx
81. INSTALL 6.0'ø REINFORCED CONCRETE PIPE (RCP) TO PROPOSED JUNCTION STRUCTURE (APPROX. 44 L.F.) PER PLAN, PROFILE AND DETAILS
82. CONSTRUCT REINFORCED CONCRETE BULKHEAD FOR 6.0'ø REINFORCED CONCRETE PIPE (RCP) PER RIVERSIDE COUNTY STD. DETAIL M816.
83. CONSTRUCT JUNCTION STRUCTURE FOR 7.5'ø REINFORCED CONCRETE PIPE (RCP) PER PLAN, PROFILE AND DETAILS ON SHEET xx
84. INSTALL 7.5'ø REINFORCED CONCRETE PIPE (RCP) TO PROPOSED JUNCTION STRUCTURE (APPROX. 44 L.F.) PER PLAN, PROFILE AND DETAILS
85. CONSTRUCT REINFORCED CONCRETE BULKHEAD FOR 7.5'ø REINFORCED CONCRETE PIPE (RCP) PER RIVERSIDE COUNTY STD. DETAIL M816.
86. CONSTRUCT RECTANGULAR CONCRETE CHANNEL (RCC) TRANSITION STRUCTURE FROM 18.0' TO 22.0' WIDE AND 16.0' HIGH PER PLAN (STA 132+00.00 TO STA 132+50.00), PROFILE AND DETAILS
87. CONSTRUCT JUNCTION STRUCTURE FOR 7.0'ø REINFORCED CONCRETE PIPE (RCP) PER PLAN, PROFILE AND DETAILS
88. INSTALL 7.0'ø REINFORCED CONCRETE PIPE (RCP) TO PROPOSED JUNCTION STRUCTURE (APPROX. 60 L.F.) PER PLAN, PROFILE AND DETAILS
89. CONSTRUCT REINFORCED CONCRETE BULKHEAD FOR 7.0'ø REINFORCED CONCRETE PIPE (RCP) PER RIVERSIDE COUNTY STD. DETAIL M816.
90. REMOVE AND DISPOSE EXISTING DOUBLE 3.5'ø CORRUGATED METAL PIPE(CMP)
91. INSTALL 22.0' SPAN AND 8.0' RISE PRE-CAST REINFORCED CONCRETE BOX (RCB) WITH H-20 LOADING PER PLAN (STA 132+50.00 TO STA 133+50.00) PROFILE, SECTIONS AND DETAILS. SEE SPECIAL PROVISIONS
92. CONSTRUCT REINFORCED RECTANGULAR CONCRETE CHANNEL(RCC) TRANSITION STRUCTURE FROM 22.0' TO 12.0' WIDE AND 15.0' HIGH PER PLAN (STA 133+50.00 TO STA 134+00.00), PROFILE AND DETAILS
93. CONSTRUCT 12.0' WIDE AND 15.0' HIGH REINFORCED RECTANGULAR CONCRETE CHANNEL (RCC), PROVIDING BIO-SWALE AREA PER PLAN (STA 134+00.00 TO STA 140+00.00) PROFILE, SECTIONS AND DETAILS
94. CONSTRUCT RECTANGULAR CONCRETE CHANNEL (RCC) TRANSITION STRUCTURE FROM 12.0' TO 14.0' WIDE AND 15.0'-16.0' HIGH PROVIDING BIO-SWALE AREA PER PLAN (STA 140+00.00 TO STA 141+00.00), PROFILE AND DETAILS
95. CONSTRUCT 14.0' WIDE AND 16.0' HIGH REINFORCED RECTANGULAR CONCRETE CHANNEL (RCC), PROVIDING BIO-SWALE AREA PER PLAN (STA 141+00.00 TO STA 146+80.00) PROFILE, SECTIONS AND DETAILS
96. CONSTRUCT REINFORCED RECTANGULAR CONCRETE CHANNEL(RCC) TRANSITION STRUCTURE FROM 14.0' TO 20.0' WIDE AND 16.0' TO 17.0' HIGH PER PLAN (STA 146+80.00 TO STA 147+15.00), PROFILE AND DETAILS
97. CONSTRUCT JUNCTION STRUCTURE FOR 7.0'ø REINFORCED CONCRETE PIPE (RCP) PER PLAN, PROFILE AND DETAILS
98. INSTALL 7.0'ø REINFORCED CONCRETE PIPE (RCP) TO PROPOSED JUNCTION STRUCTURE (APPROX. 48 L.F.) PER PLAN, PROFILE AND DETAILS
99. CONSTRUCT REINFORCED CONCRETE BULKHEAD FOR 7.0'ø REINFORCED CONCRETE PIPE (RCP) PER RIVERSIDE COUNTY STD. DETAIL M816.
100. CONSTRUCT 20.0' SPAN AND 9.0' RISE REINFORCED CONCRETE BOX (RCB) PRE-CAST OR CAST-IN-PLACE WITH H-20 LOADING PER PLAN, (STA 147+15.00 TO STA 147+50.00) PROFILE, SECTIONS AND DETAILS. SEE SPECIAL PROVISIONS
101. CONSTRUCT 20.0' WIDE AND 17.0' HIGH REINFORCED RECTANGULAR CONCRETE CHANNEL (RCC) PER PLAN (STA 147+50.00 TO STA 148+00.00), PROFILE AND DETAILS
102. CONSTRUCT 20.0' WIDE REINFORCED RECTANGULAR CONCRETE CHANNEL(RCC) WALL HEIGHT TRANSITION STRUCTURE FROM 17.0' TO 15.0' HIGH PER PLAN (STA 148+00.00 TO STA 148+50.00), PROFILE. SECTIONS AND DETAILS
103. CONSTRUCT 20.0' WIDE AND 15.0' HIGH REINFORCED RECTANGULAR CONCRETE CHANNEL (RCC) PROVIDING BIO-SWALE AREA PER PLAN (STA 148+50.00 TO STA 160+00.00), PROFILE AND DETAILS
104. CONSTRUCT 10.0' WIDE ACCESS RAMP TO/FROM BIO-SWALE PER PLAN, PROFILE AND DETAIL
105. CONSTRUCT REINFORCED RECTANGULAR CONCRETE CHANNEL(RCC) WIDTH TRANSITION STRUCTURE FROM 20.0' TO 24.0' WIDE AND 15.0' HIGH PER PLAN (STA 160+00.00 TO STA 160+40.00), PROFILE AND DETAILS
106. CONSTRUCT REINFORCED CONCRETE HEADWALL FOR 10.0' SPAN X 7.0' RISE REINFORCED CONCRETE BOX (RCB) AND 12.0' SPAN X 7.0' RISE REINFORCED CONCRETE BOX (RCB) PER PLAN, PROFILE AND DETAILS
107. CONSTRUCT 10.0' SPAN AND 7.0' RISE REINFORCED CONCRETE BOX (RCB) PRE-CAST OR CAST-IN-PLACE WITH H-20 LOADING PER PLAN, (STA 160+40.00 TO STA 161+00.00) PROFILE, SECTIONS AND DETAILS. SEE SPECIAL PROVISIONS
108. CONSTRUCT 12.0' SPAN AND 7.0' RISE REINFORCED CONCRETE BOX (RCB) PRE-CAST OR CAST-IN-PLACE WITH H-20 LOADING PER PLAN, PROFILE, SECTIONS AND DETAILS. SEE SPECIAL PROVISIONS
109. BREAK EXISTING 33"ø REINFORCED CONCRETE PIPE (RCP) SUFFICIENTLY TO CONSTRUCT NEW 33"ø RCP TO DRAIN TO BIO-SWALE. INVERT ELEVATION AND GRADE TO BE ADJUSTED IN THE FIELD (D=1350)
110. INSTALL 33"ø REINFORCED CONCRETE PIPE (RCP) CONNECTOR TO DRAIN AT BIO-SWALE (APPROX. 200 L.F.) . INVERT ELEVATION AND GRADE TO BE ADJUSTED IN THE FIELD (D=1350) PER PLAN, PROFILE AND DETAILS
111. CONSTRUCT REINFORCED CONCRETE BULKHEAD FOR 12.0' SPAN X 7.0' RISE REINFORCED CONCRETE BOX(RCB) PER RIVERSIDE COUNTY STD. DETAIL M816
112. CONSTRUCT 10.0' WIDE RECTANGULAR CONCRETE CHANNEL(RCC) WALL HEIGHT TRANSITION STRUCTURE FROM 15.0' TO 8.63' HIGH PER PLAN (STA 161+00.00 TO STA 163+00.00), PROFILE AND DETAILS
113. CONSTRUCT 12.0' WIDE ACCESS RAMP TO/FROM BIO-SWALE PER PLAN, PROFILE AND DETAIL
114. CONSTRUCT TRANSITION STRUCTURE FROM 8.0' WIDE AND 7.0' HIGH REINFORCED RECTANGULAR CONCRETE CHANNEL (RCC) TO 4.0' WIDE AND 7.0' HIGH REINFORCED TRAPEZOIDAL CONCRETE CHANNEL (1.5:1 SIDE SLOPE), PROVIDING BIO-SWALE AREA PER PLAN, PROFILE AND DETAILS
115. CONSTRUCT 4.0' WIDE X 7.0' HIGH REINFORCED TRAPEZOIDAL CONCRETE CHANNEL (1.5:1 SIDE SLOPE), PROVIDING BIO-SWALE AREA PER S.B.C.F.C.D. STD. DWG. SP 192 E, PLAN, PROFILE AND DETAILS
116. REMOVE AND REPLACE HEADWALL FOR 66"ø RCP PER PLAN, PROFILE AND DETAILS
117. CONSTRUCT 8.0' WIDE ACCESS RAMP TO/FROM BIO-SWALE PER PLAN, PROFILE AND DETAIL

REGISTERED PROFESSIONAL ENGINEER Erwin R. Fogerson 49060 Exp. 9/30/16 CIVIL STATE OF CALIFORNIA

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT 1939 CALIFORNIA

65% SUBMITTAL

REVISIONS

MARK	DATE	DESCRIPTION	BY:

SUBMITTED BY: JON SMITH, P.E. DATE

RECOMMENDED BY: ERWIN FOGERSON, P.E. DATE

APPROVED BY: KEVIN BLAKESLEE, P.E. FLOOD CONTROL ENGINEER DATE

PROJ. ENGR.	DESIGNED BY	REV'D BY	DRAWN BY
JS	DN	EF	DN

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT

SAN SEVAINE CREEK SYSTEM

WEST FONTANA CHANNEL

SHEET INDEX, CONSTRUCTION NOTES

DATE	SEPT 2016
SCALE	AS SHOWN
FILE NO.	1-809-
DRAWING NO.	X-X
SHEET NO.	02 OF xx

N:\ACTIVE PROJECTS\West Fontana\West Fontana Channel Improvement September 8 2016.pro Sep 8, 2016

GENERAL NOTES:

1 SEE "SPECIAL PROVISIONS" FOR ADDITIONAL CONSTRUCTION INFORMATION & DETAILS.

2 IN GENERAL, ALL MATERIALS & CONSTRUCTION METHODS SHALL CONFORM TO THE 2006 EDITION STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS" UNLESS OTHERWISE SPECIFIED.

3 THESE PLANS DEPICT ALL ACTIVE UTILITIES KNOWN BY THE DISTRICT TO EXIST AT THIS TIME. LOCATIONS ARE APPROXIMATE & SHALL BE CONFIRMED BY THE CONTRACTOR PRIOR TO ANY EXCAVATION. OPERATORS OF OVERHEAD UTILITIES SHALL BE NOTIFIED PRIOR TO START OF CONSTRUCTION.

4 THE CONTRACTOR SHALL CALL "UNDERGOUND SERVICE ALERT", 1-800-227-2600 AT LEAST 48 HOURS IN ADVANCE OF ANY WORK WITHIN THE PROJECT AREA TO ALLOW UTILITY OPERATORS TO CHECK & MARK LOCATIONS OF EXISTING FACILITIES.

5 THE CONTRACTOR(S) SHALL COORDINATE CONSTRUCTION WITH ALL UTILITIES AND OTHER IMPROVEMENTS INCLUDING, BUT NOT LIMITED TO GAS, TELEPHONE, ELECTRICAL, DOMESTIC WATER, STORM DRAINAGE, FLOOD CONTROL SYSTEMS, ETC.

6 CONTRACTOR SHALL PROTECT ALL UTILITIES, POLES, SIGNS, AND EXISTING IMPROVEMENTS IN PLACE UNLESS OTHERWISE DIRECTED BY THE ENGINEER OR AS NOTED ON THE PLANS.

7 NO CONCRETE SHALL BE PLACED UNTIL THE FORMS AND REINFORCING STEEL HAS BEEN PLACED, INSPECTED AND APPROVED BY THE FLOOD CONTROL DISTRICT AND DSOD ENGINEER.

8 THE WALLS AND FACES OF ALL EXCAVATIONS, GREATER THAN FIVE (5) FEET IN DEPTH SHALL BE EFFECTIVELY GUARDED BY A SHORING SYSTEM, SLOPING OF THE GROUND OR OTHER EQUIVALENT MEANS. TRENCHES LESS THAN FIVE (5) FEET IN DEPTH SHALL ALSO BE GUARDED WHEN EXAMINATION INDICATES HAZARDOUS GROUND MOVEMENT MAY BE EXPECTED.

9 NO STRUCTURE BACKFILL SHALL TAKE PLACE WITHOUT PRIOR APPROVAL OF THE FLOOD CONTROL DISTRICT AND DSOD ENGINEER.

10 ALL MATERIALS TESTING SHALL BE PROVIDED BY OTHERS IN ACCORDANCE WITH THE NUMBER, LOCATION, AND FREQUENCY REQUIRED BY THE FLOOD CONTROL DISTRICT, AND THE SPECIFICATIONS.

11 ALL EXCAVATION SHALL MEET THE REQUIREMENTS OF OSHA 29, CFR PART 1926, SUB-PART P, EXCAVATIONS.

12 ALL EXCAVATIONS OVER TWENTY (20) FEET IN DEPTH SHALL BE DESIGNED BY A REGISTERED PROFESSIONAL ENGINEER, (OSHA SUB-PART P, APPENDIX TABLE B-1).

13 RECORD DRAWINGS SHALL BE PROVIDED TO THE FLOOD CONTROL DISTRICT AND THE STATE OF CALIFORNIA DIVISION OF SAFETY OF DAMS (D.S.O.D.) BY THE CONTRACTOR.

GENERAL CONSTRUCTION NOTES:

1 THE CONTRACTOR SHALL FURNISH ALL MATERIALS, EQUIPMENT, AND LABOR NECESSARY TO COMPLETE ALL WORK AS INDICATED ON THE CONSTRUCTION DOCUMENTS.

2 THE CONTRACTOR SHALL VISIT THE JOB SITE AND BE RESPONSIBLE FOR REVIEWING CONTRACT DOCUMENTS, FIELD CONDITIONS AND DIMENSIONS, AND FOR CONFIRMING THAT THE WORK MAY BE ACCOMPLISHED AS SHOWN PRIOR TO PROCEEDING WITH CONSTRUCTION.

3 ANY DISCREPANCIES ARE TO BE BROUGHT TO THE ATTENTION OF THE DISTRICT ENGINEER PRIOR TO PROCEEDING WITH THE WORK.

4 THE CONTRACTOR SHALL RECEIVE IN WRITING, AUTHORIZATION TO PROCEED BEFORE STARTING WORK.

5 THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY INDICATED OTHERWISE OR WHERE LOCAL CODES OR REGULATIONS TAKE PRECEDENCE.

6 ALL WORK PERFORMED AND MATERIALS INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES.

7 THE CONTRACTOR SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY. THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS.

8 THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK, USING THE BEST SKILLS AND ATTENTION. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THIS CONTRACT.

9 DETAILS ARE INTENDED TO DEPICT FINAL RESULT OF DESIGN. MINOR MODIFICATIONS MAY BE REQUIRED TO MEET SITE CONDITIONS AND DIMENSIONS, AND SUCH MODIFICATIONS SHALL BE INCLUDED AS PART OF THE WORK.

10 THE CONTRACTOR SHALL MAKE ALL NECESSARY PROVISIONS TO PROTECT EXISTING IMROVEMENTS, ROADWAY, DRAINAGE WAYS, CULVERTS, AND VEGETATION UNTIL SUCH ITEMS ARE TO BE DISTURBED OR REMOVED AS INDICATED ON THE CONSTRUCTION DOCUMENTS.

11 THE CONTRACTOR SHALL KEEP THE JOB SITE AREA CLEAN, HAZARD FREE, AND DISPOSE OF ALL DIRT, DEBRIS, AND RUBBISH. AT COMPLETION OF PROJECT, CONTRACTOR SHALL REMOVE ALL MATERIAL AND EQUIPMENT NOT SPECIFIED AS REMAINING ON THE PROPERTY.

GENERAL REINFORCEMENT NOTES:

DESIGN:

1 REINFORCEMENT SHALL CONFORM TO THE REQUIREMENTS OF ASTM-A615, DEFORMED BARS WITH A SPECIFIED MINIMUM YIELD STRENGTH OF 60,000 PSI.

2 REINFORCING DETAILS SHALL CONFORM TO THE REQUIREMENTS OF ACI 350-06. SPLICE AND EMBEDMENT LENGTHS NOT SHOWN ON THE PLAN SHALL BE ASSUMED TO BE IN TENSION AND SHALL CONFORM TO THE ABOVE REQUIREMENTS.

SYMBOLS & DIMENSIONS:

3 THE SYMBOL ——— INDICATES A LAPPED SPLICE, NOT A BEND IN THE BAR.

4 SPACING OF BARS ARE GIVEN IN INCHES AND ARE MEASURED TO THE CENTERLINE OF THE BARS.

5 CLEAR COVER DIMENSIONS ARE MARKED "CLR."

COVER:

6 REINFORCEMENT SHALL BE PLACED SO THAT THE CLEAR DISTANCE BETWEEN THE FACE OF THE CONCRETE AND THE NEAREST REINFORCEMENT IS AS SHOWN ON THE PLANS. ALL INVERT SLABS SHALL HAVE A CLEAR DISTANCE OF 3-INCHES TOP AND BOTTOM OF SLAB.

BENDS, HOOKS & SPLICES:

7 BAR BENDS, HOOKS, LAP SPLICES AND DEVELOPMENT LENGTHS SHALL CONFORM TO THE REQUIREMENTS OF ACI 350-06.

8 WHEN BARS ARE BENT DUE TO OFFSET LESS THAN 3-INCHES AND RECESSES ARE LESS THAN 3-INCHES DEEP, THE SLOPE OF THE INCLINED PORTION SHALL NOT EXCEED 6:1 (H TO V).

GENERAL REINFORCING NOTES CONTINUED:

9 ALL SPLICES SHALL BE CLASS "B" WITH APPROPRIATE ALLOWANCE FOR BAR SPACING AND DEPTH OF CONCRETE CAST BELOW THE REINFORCEMENT, UNLESS OTHERWISE NOTED.

10 SPLICES SHALL BE LOCATED WHERE SHOWN ON THE PLAN OR AS AUTHORIZED BY THE DISTRICT ENGINEER.

11 NON-CONTACT LAP SPLICES SHALL NOT BE SPACED GREATER THAN ONE-FIFTH THE REQUIRED LENGTH OF LAP OR 6-INCHES.

12 WHEN REINFORCING BARS OF DIFFERENT DIAMETER ARE TO BE SPLICED, THE LENGTH OF THE LAP SHALL BE GOVERNED BY THE DEVELOPMENT LENGTH OF THE LARGER DIAMETER BAR.

13 NO SPLICES WILL BE ALLOWED WITHIN THE BAR DEVELOPMENT LENTH PLUS 6-INCHES OF FOOTING, WALL, INVERT OR SOFFIT.

PLACEMENT:

14 THE FIRST AND LAST BARS IN WALLS AND SLABS ARE TO START AND END AT A MINIMUM OF ONE-HALF THE ADJACENT BAR SPACING.

15 REINFORCEMENT MAY BE ADJUSTED LATERALLY TO MAINTAIN A CLEAR DISTANCE OF AT LEAST 1-INCH BETWEEN THE REINFORCEMENT AND WATERSTOPS, CONDUITS, ANCHOR BOLTS, AND OTHER EMBEDDED MATERIAL.

16 REINFORCEMENT SHALL BE SHIFTED AS APPROVED TO CLEAR RECESSES AND EMBEDDED PIPES, SEALS, AND METALWORK. A MINIMUM CLEARANCE OF 1-INCH SHALL BE PROVIDED BETWEEN REINFORCEMENT AND EMBEDDED ITEMS.

17 REINFORCEMENT AT SMALL OPENINGS (1"-6" MAX.) IN WALLS AND SLABS MAY NOT BE SPREAD APART MORE THAN 1-1/2 TIMES THE BAR SPACING.

18 REINFORCEMENT PARALLEL TO ANCHOR BOLTS OR OTHER EMBEDDED MATERIAL SHALL BE PLACED TO MAINTAIN A CLEAR DISTANCE OF AT LEAST 1-1/3 TIMES THE MAXIMUM AGGREGATE SIZE.

GENERAL CONCRETE NOTES:

DESIGN:

1 CONCRETE FOR USE IN RCB INVERT; RCB INLET & OUTLET STRUCTURE INVERT; SPILLWAY INVERT; SPILLWAY TOE SLAB; AND CUT-OFF WALLS SHALL BE CLASS-1 CONCRETE HAVING A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF NOT LESS THAN 5,000 PSI AND A COMBINED AGGREGATE GRADATION OF 1-1/2 INCH MAXIMUM.

2 CONCRETE FOR USE IN SPILLWAY CHUTE MUD SLAB SHALL BE CLASS-1 CONCRETE HAVING A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF NOT LESS THAN 5,000 PSI AND A COMBINED AGGREGATE GRADATION OF EITHER 1-1/2 INCH OR 1-INCH MAXIMUM.

3 CONCRETE FOR USE IN RCB WALLS, DECK & PARAPET; RCB INLET & OUTLET STRUCTURE WALLS; SPILLWAY WALLS; RETAINING WALLS & FOOTINGS; RCP OUTLET STRUCTURES & HEADWALLS; RCP JUNCTION STRUCTURES; AND DRAINAGE INLET STRUCTURES SHALL BE CLASS-1 CONCRETE HAVING A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF NOT LESS THAN 4,000 PSI AND A COMBINED AGGREGATE GRADATION OF 1-INCH MAXIMUM.

4 CONCRETE FOR USE IN REINFORCED CONCRETE SLOPE PROTECTION, CAP & ACCESS RAMPS SHALL BE CLASS-2 CONCRETE HAVING A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF NOT LESS THAN 3,600 PSI AND A COMBINED AGGREGATE GRADATION OF 1-INCH MAXIMUM.

5 CONCRETE FOR USE IN V-DITCH; CROSS GUTTER AND SPILLWAY STAIRS SHALL BE CLASS- 2 CONCRETE HAVING A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF NOT LESS THAN 3,250 PSI AND A COMBINED AGGREGATE GRADATION OF 1-INCH MAXIMUM.

6 CONCRETE FOR USE IN METAL FENCE POST FOOTINGS AND METAL HANDRAIL FOOTINGS SHALL BE PRODUCED FROM COMMERCIAL QUALITY AGGREGATES AND SHALL CONTAIN NOT LESS THAN 470 POUNDS OF CEMENT PER CUBIC YARD.

7 MAXIMUM SLUMP FOR STRUCTURAL CONCRETE SHALL BE 4-INCHES. DELIVERED PLANT MIX SHALL HAVE A 3-INCH SLUMP. THE DISTRICT ENGINEER MAY PERMIT THE CONTRACTOR TO ADD WATER IN THE FIELD DUE TO HOT WEATHER, PUMPING, OR OTHER REASONS.

8 CONCTRETE FOR USE IN CONCRETED ROCK SLOPE PROTECTION SHALL BE CLASS-3 CONCRETE HAVING A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF NOT LESS THAN 2,500 PSI AND A COMBINED AGGREGATE GRADATION OF 1-INCH MAXIMUM. THE WATER CONTENT SHALL BE SUCH AS TO PERMIT GRAVITY FLOW INTO ROCK VOIDS WITH LIMITED SPADING & BROOMING. THE AMOUNT OF WATER USED SHALL BE SUBJECT TO DISTRICT ENGINEER'S APPROVAL.

9 AIR-ENTRAINING ADMIXTURE SHALL BE INCORPORATED INTO ALL STRUCTURAL CONCRETE TO PRODUCE AN AIR CONTENT OF 6% PLUS OR MINUS 1.5%.

10 CHAMFER ALL EDGES OF PERMANENTLY EXPOSED CONCRETE SURFACES WITH A 45 DEGREE BEVEL (3/4-INCH BY 3/4-INCH), UNLESS OTHERWISE DIRECTED.

FORMS:

11 FORMS FOR EXPOSED CONCRETE SURFACES SHALL BE DESIGNED AND CONSTRUCTED SO THAT THE FORMED CONCRETE SURFACE DOES NOT UNDULATE EXCESSIVELY. EXPOSED CONCRETE SURFACES FOR WALLS, INVERTS, SOFFITS AND PARAPETS SHALL NOT DEVIATE FROM PLANNED LINES AND GRADES MORE THAN 1/2-INCH IN 10-FEET NOR BY MORE THAN 1-INCH OVER THE ENTIRE HEIGHT OF WALL OR SPAN OF SOFFIT.

12 THE CONTRACTOR'S ATTENTION IS DIRECTED TO CALTRANS STANDARD PLAN B3-5 "APPROXIMATE WALL OFFSET VALUES". THE CONTRACTOR SHALL SUBMIT, TO THE ENGINEER FOR APPROVAL, HIS PLAN TO COMPENSATE FOR ANTICIPATED WALL DEFLECTION CAUSED BY BACKFILL AND COMPACTION.

EMBEDDED MATERIALS:

13 PRIOR TO PLACING ANY CONCRETE CARE SHALL BE TAKEN TO ENSURE THAT ALL EMBEDDED ITEMS AND BURIED MATERIAL BELOW FINISHED CONCRETE SURFACE ARE IN POSITION AND SECURELY FASTENED IN PLACE. ALL WATERSTOPS SHALL BE SUPPORTED SO THAT THEY REMAIN IN THE CORRECT POSITION AND ARE PROTECTED FROM DAMAGE DURING CONCRETE PLACEMENT.

14 WATERSTOPS ARE TO BE MADE CONTINUOUS BY SPLICING AND CONNECTING TO OTHER WATERSTOPS PER MANUFACTURER'S RECOMMENDATIONS.

PLACING CONCRETE:

15 PRIOR TO PLACEMENT OF CONCRETE, FORMS AND REINFORCEMENT SHALL BE INSPECTED AND APPROVED BY DISTRICT ENGINEER AND DSOD.

16 CONCRETE SHALL BE PLACED CONTINUOUSLY BETWEEN JOINTS SHOWN ON THE PLANS. NO STOPPAGE OF CONCRETE PLACEMENT WILL BE ALLOWED BETWEEN PLANNED JOINTS.

17 DROP CHUTES SHALL BE USED FOR DROPS GREATER THAN 5-FEET.

18 CONCRETE SHALL BE PLACED AT SUCH A RATE THAT ALL CONCRETE IN THE SAME LIFT IS PLACED ON PLASTIC CONCRETE.

19 EACH LIFT OF CONCRETE SHALL BE CONSOLIDATED BY MEANS OF HIGH FREQUENCY 2-INCH DIAMETER INTERNAL VIBRATORS.

20 CONCRETE SHALL NOT BE PLACED DURING RAIN, FREEZING, HOT, DRY OR WINDY WEATHER UNLESS MEASURES APPROVED BY THE DISTRICT ENGINEER ARE TAKEN TO PREVENT DAMAGE TO THE CONCRETE.

FINISH:

21 EXPOSED CONCRETE SURFACES SHALL HAVE A STEEL TROWEL, BROOM FINISH.

22 VISIBLE PORTIONS OF FORMED STRUCTURES SHALL HAVE AN "ORDINARY SURFACE FINISH".

GENERAL REINFORCING NOTES CONTINUED:

CURING:

23 NEWLY PLACED CONCRETE SHALL BE CURED BY WATER METHOD, CURING COMPOUND METHOD, WATERPROOF MEMBRAME METHOD, OR FORMS IN PLACE METHOD AS DESCRIBED IN SECTION 90-7 CURING CONCRETE" OF THE STATE OF CALIFORNIA STANDARD SPECIFICATIONS DATED MAY 2006.

STRUCTURE BACKFILL:

24 VEHICLES WITH A WEIGHT IN EXCESS OF 1,000 POUNDS WILL NOT BE ALLOWED ON ANY SPAN UNTIL AFTER THE CONCRETE HAS ATTAINED A COMPRESSIVE STRENGTH OF AT LEAST 2,400 PSI. VEHICLES WITH A WEIGHT IN EXCESS OF 4,000 POUNDS WILL NOT BE ALLOWED ON ANY SPAN UNTIL THE CONCRETE HAS ATTAINED A COMPRESSIVE STRENGTH OF AT LEAST 3,200 PSI OR HAS ATTAINED AN AGE OF 28-DAYS, WHICHEVER OCCURS FIRST.

25 STRUCTURE BACKFILL SHALL NOT COMMENCE UNTIL THE STRUCTURE HAS BEEN INSPECTED BY THE DISTRICT ENGINEER AND APPROVED FOR BACKFILL.

26 STRUCTURE BACKFILL (DAM EMBANKMENT) SHALL NOT BE PLACED ADJACENT TO ANY STRUCTURE UNTIL THE CONCRETE HAS DEVELOPED A COMPRESSIVE STRENGTH OF AT LEAST 2,500 PSI OR UNTIL CONCRETE HAS BEEN IN PLACE FOR 28-DAYS.

27 NO BACKFILL SHALL BE DEPOSITED AGAINST THE WALLS OR DECK OF ANY CAST-IN-PLACE STRUCTURE UNTIL THE CONCRETE HAS DEVELOPED A COMPRESSIVE STRENGTH OF AT LEAST 2,500 PSI OR UNTIL CONCRETE HAS BEEN IN PLACE FOR 28-DAYS, WHICHEVER OCCURS FIRST.

28 BACKFILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS AND SHALL BE BROUGHT UP UNIFORMLY ON ALL SIDES OF THE STRUCTURE.

29 THE BACKFILL MATERIAL COMPACTION SHALL BE PERFORMED WITH THE USE OF HAND OPERATED POWER TAMPERS AS APPROVED BY THE DISTRICT ENGINEER. THE USE OF HEAVY COMPACTION EQUIPMENT WILL NOT BE ALLOWED WITHIN FIVE (5) FEET OF STRUCTURES.

30 BACKFILL MATERIAL WITHIN TWO (2) FEET OF ANY STRUCTURE SHALL CONTAIN NO PARTICLES GREATER THAN THREE (3) INCHES, IN ADDITION, NO MORE THAN 15% OF THE FILL PARTICLES SHALL BE LARGER THAN 1-1/2-INCHES WITHIN TWO (2) FEET OF STRUCTURES.

MISC. IRON & STEEL NOTES:

DESIGN:

1 MISCELLANEOUS METALWORK, EXCEPT BAR REINFORCING STEEL, (INCLUDING BARS, PLATES, ANGLES, PIPE, TUBE, GRATING, STEPS, BOLTS, WASHERS, NUTS, INSERTS, ANCHORS AND OTHER EMBEDDED ITEMS) USED IN CONJUNCTION WITH THE PLANNED STRUCTURES SHALL CONFORM TO THE PROVISIONS IN SECTION 75 "MISCELLANEOUS METAL" OF THE STATE OF CALIFORNIA STANDARD SPECIFICATIONS DATED MAY 2006.

WELDING:

2 ALL MATERIAL SHALL BE FABRICATED STRAIGHT, TRUE AND FREE FROM ALL TWISTS AND WARPS.

3 WELDING DESIGN BASED UPON AWS STRUCTURAL WELDING CODE D1.1-80.

4 ALL WELDS SHALL CONFORM TO THE REQUIREMENTS OF AWS STANDARDS, LATEST EDITION, AND AS MODIFIED IN THE AISC MANUAL OF STEEL CONSTRUCTION, 9TH EDITION, ALLOWABLE STRESS DESIGN.

PROTECTION:

5 ALL EXPOSED AND EMBEDDED METALWORK SHALL BE GALVANIZED.

GRADING NOTES:

1 UNLESS OTHERWISE DIRECTED BY THE DISTRICT ENGINEER, NO GRADING WILL BE ALLOWED OUTSIDE OF THE PROJECT LIMITS.

2 ALL PROPERTY CORNERS SHALL BE CLEARLY DELINEATED IN THE FIELD PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION OR GRADING.

3 DURING ROUGH GRADING OPERATIONS AND PRIOR TO CONSTRUCTION OF PERMANENT DRAINAGE STRUCTURES, TEMPORARY DRAINAGE CONTROL SHALL BE PROVIDED BY THE CONTRACTOR TO PREVENT PONDING OF WATER AND DAMAGE TO ADJACENT PROPERTIES.

4 CONTRACTOR SHALL BE RESPONSIBLE FOR DEVELOPMENT, APPROVAL BY DISTRICT, AND CONTINUOUS MAINTENANCE OF A STORM WATER POLLUTION PREVENTION PLAN (SWPPP). APPROVED BMP'S SHALL BE IN PLACE PRIOR TO START OF ANY GRADING OR CONSTRUCTION OPERATIONS. CONTRACTOR'S "QSD" & "QSP" SHALL BE RESPONSIBLE FOR IMPLEMENTATION, MAINTENANCE, INSPECTION AND REPORTING, UPLOADING OF SWPPP AND ANY REVISIONS ASSOCIATED WITH THE SWPPP.

5 DUST SHALL BE CONTROLLED BY WATERING OR OTHER APPROVED METHODS.

6 CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING, MAINTAINING, AND REMOVING MEASURES NECESSARY TO PROTECT THE PROJECT AGAINST THE INTRUSION OF WATER, NCLUDING BUT NOT LIMITED TO STORM WATER, GROUND WATER, MIU, AND ANY FLOWS CARRYING DELETERIOUS MATTER. PRIOR TO START OF WORK CONTRACTOR SHALL SUBMIT A PLAN SHOWING PROPOSED METHODS OF DE-WATERING TO THE DISTRICT ENGINEER FOR DISTRICT AND DSOD APPROVAL.

7 NO FILL SHALL BE PLACED ON EXISTING GROUND UNTIL THE GROUND HAS BEEN CLEARED AND GRUBBED AND IS FREE OF WEEDS, BUSHES TREES, ROOTS DEBRIS, TOP SOIL, AND OTHER DELETERIOUS MATERIAL.

8 DAM FOUNDATION SHALL BE INSPECTED AND APPROVED BY DISTRICT ENGINEER, GEOTECHNICAL ENGINEER, AND DSOD PRIOR TO RECIEVING ANY PLACEMENT OF DAM EMBANKMENT.

9 MAXIMUM GRADIENT FOR TEMPORARY CUT SLOPES SHALL BE 1.5:1.

10 CONTRACTOR SHALL PROVIDE TEMPORARY BROW DITCH TO CONTROL DRAINAGE ALONG TOPS OF TEMPORARY CUT SLOPES.

11 MINIMUM BROW DITCH SLOPE SHALL BE 1% FOR SLOPES LESS THAN 10-FEET AND 2% FOR SLOPES GREATER THAN 10-FEET. MINIMUM DEPTH OF BROW DITCHES SHALL BE 2-FEET AND OFFSET 3-FEET FROM TOP OF SLOPES.

12 ALL EXISTING DRAINAGE COURSES AND CULVERTS ON THE PROJECT, ENTERING OR EXITING THE PROJECT MUST CONTINUE TO FUNCTION FOR THE DURATION OF PROJECT CONSTRUCTION, ESPECIALLY DURING STORM EVENTS. PROTECTIVE MEASURES AND TEMPORARY PROVISIONS SHALL BE IMPLEMENTED BY THE CONTRACTOR TO PROTECT ADJOINING PROPERTIES FROM FLOODING DURING CONSTRUCTION OF THE PROJECT.

LEGEND OF MAP SYMBOLS FOR PLANS:

SHOULDER OF SLOPE
CHAIN LINK FENCE (PER DRAWING FCD-2)
CONSTRUCTION LIMITS/MATCH LINE
ALIGNMENT/CENTERLINE
EXISTING GROUND
FINISHED GRADE
FLOWLINE
INTERCEPTOR DITCH PER
PAVED ROAD
POWER POLE
PRINCIPAL SURVEY CONTROL POINT
R/W OR EASMENT LINE
TREE OR BUSH
1350 MAJOR CONTOUR LINES
MINOR CONTOUR LINES
ROCK/COBBLE
CONCRETE
COMPACTED SOIL
CONCRETED ROCK/CONCRETED ROCK SLOPE PROTECTION
EXCAVATION
EMBANKMENT
NO. 3 BACKING OR PERMEABLE MATERIAL (PER NOTE)
TYPE "A" ASPHALT CONCRETE PAVEMENT 0.25' THICK, 3/4" MAX. MED. GRADING PG-64-10
STRUCTURE BACKFILL

STANDARD PLANS:

STD. NO.	DESCRIPTION
S.P.P.W.C.	
333-2	JUNCTION STRUCTURE - PIPE TO RCB
341-1	TRANSITION STRUCTURE
380-4	CONCRETE PIPE COLLAR
SP 360-2	SLOPED PROTECTION BARRIER
CALTRANS	
D73	DRAINAGE INLETS
D74C	DRAINAGE INLET DETAILS
D77A	DRAINAGE INLET GRATE DETAILS
D84	BOX CULVERT WINGWALLS
D86-B	PIPE CULVERT HEADWALLS, ENDWALLS AND WARPED WINGWALLS
RIVERSIDE COUNTY	
M816	REINFORCED CONCRETE BULKHEAD
S.B.C.F.C.D.	
S.P. 192 E	TYPICAL CHANNEL LINING DETAIL-CONCRETE PAVED
SPEC. DWG. I	6.0' CHAIN LINK BOUNDARY FENCE & GATE
SPEC. DWG. II	6.0' CHAIN LINK CHANNEL FENCE & GATE

ABBREVIATIONS:

AB	AGGREGATE BASE
AC	ASPHALT CONCRETE
APPROX	APPROXIMATE
AVE	AVENUE
BC	BEGIN CURVE
BHH	BECKER HAMMER TEST HOLE
BVC	BEGIN VERTICAL CURVE
CRSP	CONCRETED ROCK SLOPE PROTECTION
CMP	CORRUGATED METAL PIPE
CHAN	CHANNEL
CONC	CONCRETE
CL	CENTERLINE/CONTROL LINE
DOG (20')	DOUBLE DRIVE GATE (20' CLEAR OPENING)
DIA	DIAMETER
DS	DOWNSTREAM
DWG	DRAWING
E	EAST, EASTING
EC	END CURVE
EL, ELEV	ELEVATION
E'LY	EASTERLY
EVC	END VERTICAL CURVE
EX, EXIST	EXISTING
FB	FREEBOARD
FG	FINISH GRADE
FL	FLOW LINE
GA	GAUGE
GR	GRADE
GB	GRADE BREAK
H	HEIGHT
HDPE PIPE	HIGH DENSITY POLYETHYLENE PIPE
HT	HEIGHT
INV	INVERT
L	LENGTH
LAT	LATERAL
LOL	LAYOUT LINE
LONG	LONGITUDINAL
LT	LEFT OF (PERPENDICULAR ALIGNMENT OFFSET)
MAX	MAXIMUM
MIN	MINIMUM
MPD	MASTER PLAN OF DRAINAGE
N	NORTH, NORTHING
NE	NORTHEAST
NIC	NOT IN CONTRACT
NW	NORTHWEST
OC	ON CENTER
OG	ORIGINAL GRADE
PCC	POURED CONCRETE
PVC	POLYVINYL CHLORIDE PIPE
PROP	PROPOSED
PIP	PROTECT IN PLACE
R	RADIUS
RCC	REINFORCED CONCRETE CHANNEL
RCB	REINFORCED CONCRETE BOX CULVERT
RCP	REINFORCED CONCRETE PIPE
RT	RIGHT OF (PERPENDICULAR ALIGNMENT OFFSET)
ROW, R/W	RIGHT OF WAY
RSP	ROCK SLOPE PROTECTION
S	SLOPE
SE	SOUTHEAST
SHT	SHEET
SBCFCD	SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT
SPEC	SPECIFICATION
SPPWC	STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION
SIM	SIMILAR
SP	STANDARD PLAN (CALTRANS, 1992)
SRMP	SPIRAL RIB METAL PIPE
STA	STATION
SW	SOUTHWEST
T	TANGENT
TCE	TEMPORARY CONSTRUCTION EASEMENT
TP	TEST PIT
TRANS	TRANSITION
TW	TOP OF WALL
TYP	TYPICAL
US	UPSTREAM
VAR	VARIES
VPI	VERTICAL POINT OF INTERSECTION
W	WIDTH, WEST
WFC	WEST FONTANA CHANNEL
W/	WITH
W'LY	WESTERLY
WS	WATER SURFACE
YR	YEAR

65% SUBMITTAL

REGISTERED PROFESSIONAL ENGINEER Erwin R. Fogerson 49060 Exp. 9/30/16 CIVIL STATE OF CALIFORNIA

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT 1939 CALIFORNIA

REVISIONS

MARK	DATE	DESCRIPTION	BY:

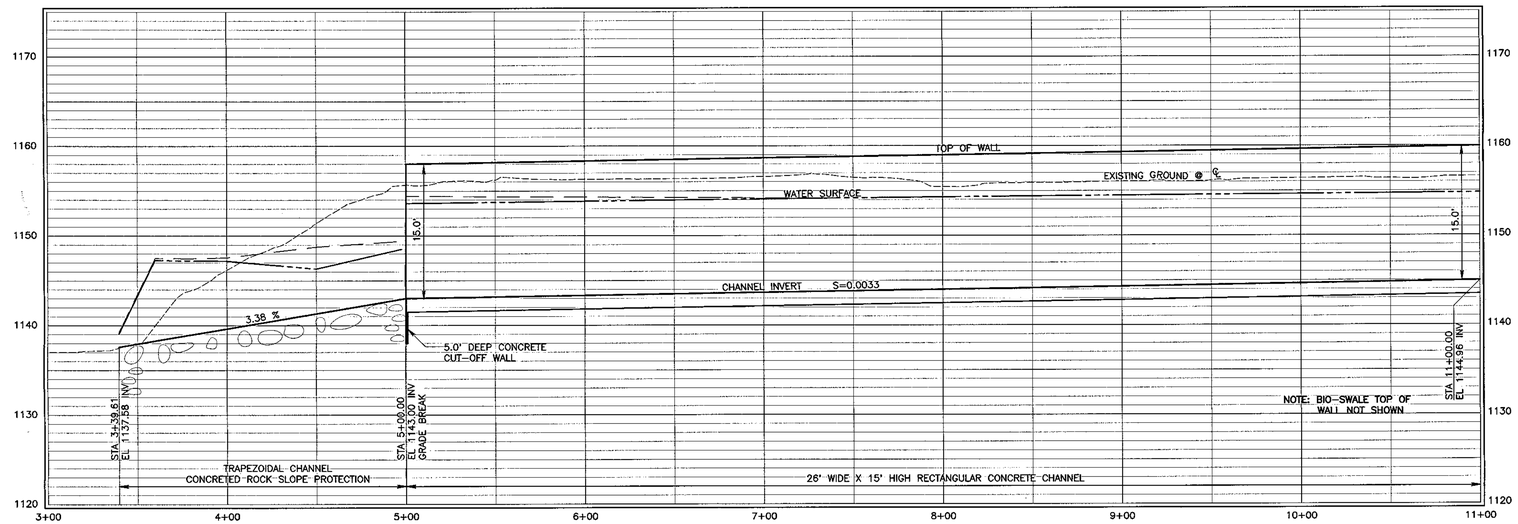
SUBMITTED BY: JON SMITH, P.E. — DATE
RECOMMENDED BY: ERWIN FOGERSON, P.E. — DATE
APPROVED BY: KEVIN BLAKESLEE, P.E. FLOOD CONTROL ENGINEER — DATE

PROJ. ENGR.	DESIGNED BY	REV'D BY	DRAWN BY
JS	DN	EF	DN

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT
SAN SEVAINE CREEK SYSTEM
WEST FONTANA CHANNEL
GENERAL NOTES, LEGEND, ABBREVIATIONS STANDARD PLANS

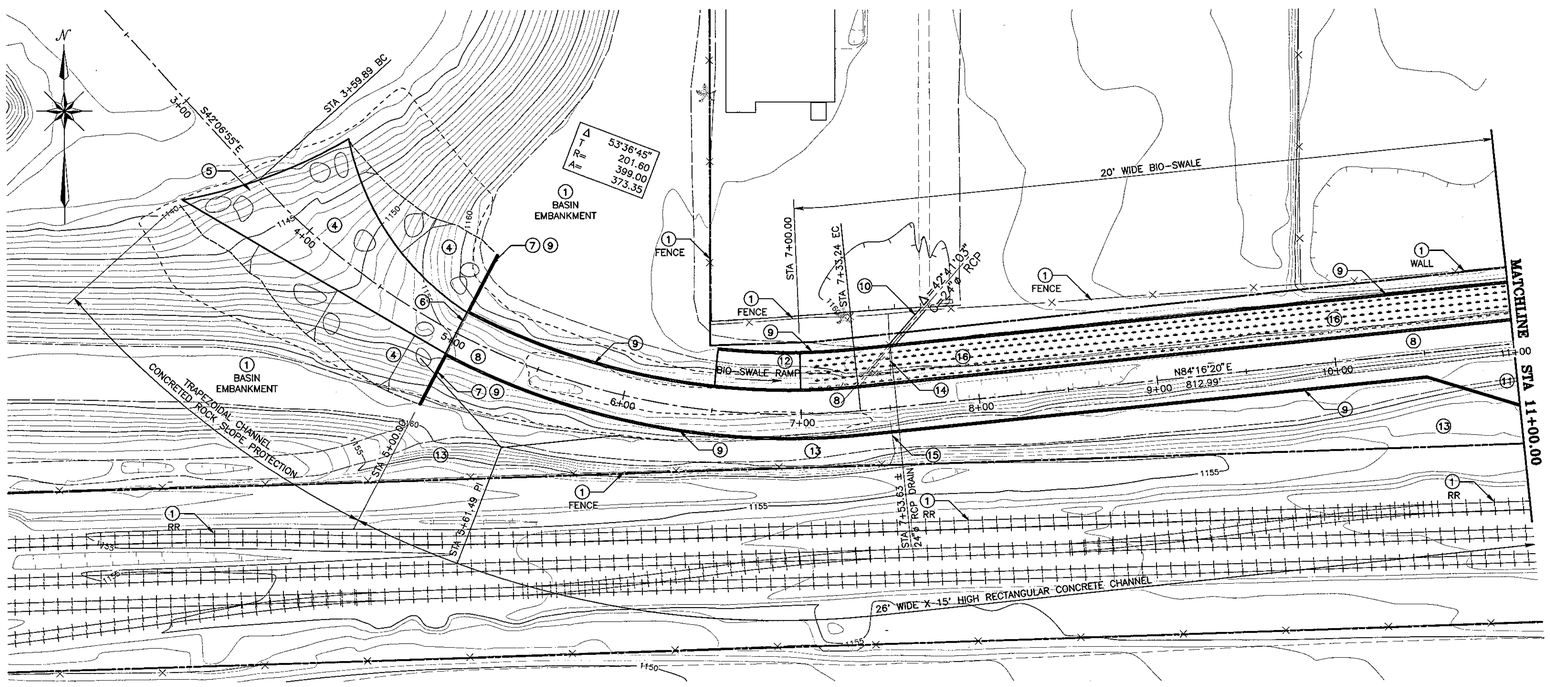
DATE: SEPT 2016
SCALE: AS SHOWN
FILE NO.: 1-809-
DRAWING NO.: X-X
SHEET NO.: 03 OF xx

H:\ACTIVE PROJECTS\West Fontana\West Fontana Channel Improvement September 8 2016.pno Sep 8, 2016



PROFILE

HORIZONTAL SCALE 1" = 40'
VERTICAL SCALE 1" = 8'



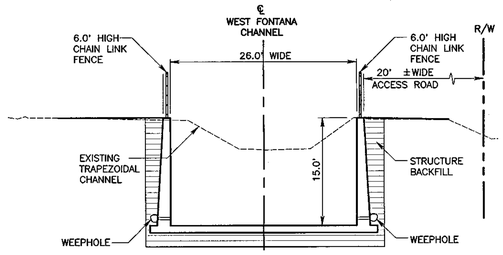
PLAN

SCALE 1" = 40'

GRAPHIC SCALE 1" = 40'
0 40 80 120

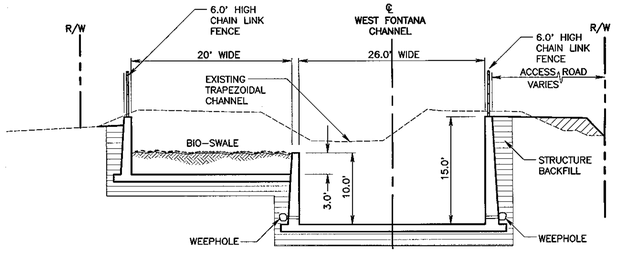
CONSTRUCTION NOTES:

1. PROTECT-IN-PLACE
4. REMOVE AND RECONSTRUCT EXISTING CONCRETED ROCK SLOPE PROTECTION PER PLAN, PROFILE, SECTIONS AND DETAILS
5. CONTRUCT 3.0' WIDE X 8.0' DEEP CONCRETED ROCK CUT-OFF WALL PER PLAN, PROFILE AND DETAIL
6. CONSTRUCT 5.0' DEEP CONCRETE CUT-OFF WALL PER PLAN, PROFILE AND DETAIL
7. CONSTRUCT WINGWALL PER PLAN, DETAILS AND CALTRANS STD. D84, TYPE "B" FLARE ANGLE=90°, H=17 FT
8. CONSTRUCT 26.0' WIDE AND 15.0' HIGH REINFORCED RECTANGULAR CONCRETE CHANNEL (RCC), PROVIDING BIO-SWALE AREA PER PLAN. (STA 5+00.00 TO STA 22+60.00) PROFILE, SECTIONS AND DETAILS
9. INSTALL 6.0' HIGH CHAIN LINK CHANNEL FENCE PER PLAN, DETAIL AND S.B.C.F.C.D. SPEC. DWG. II
10. BREAK EXISTING 24"ø REINFORCED CONCRETE PIPE (RCP) SUFFICIENTLY TO CONSTRUCT NEW 24"ø RCP TO DRAIN TO BIO-SWALE. INVERT ELEVATION AND GRADE TO BE ADJUSTED IN THE FIELD (D=1350)
11. CONSTRUCT 20.0' WIDE ACCESS RAMP TO CHANNEL PER PLAN, PROFILE AND DETAIL
12. CONSTRUCT 20.0' WIDE ACCESS RAMP TO/FROM BIO-SWALE PER PLAN, PROFILE AND DETAIL
13. GRADE MAINTENANCE ACCESS ROAD TO DRAIN AWAY FROM THE CHANNEL PER PLAN
14. REMOVE AND DISPOSE EXISTING DOUBLE DRIVE GATE
15. REMOVE AND DISPOSE EXISTING DOUBLE DRIVE GATE AND RE-INSTALL 15.0' WIDE DOUBLE DRIVE GATE PER S.B.C.F.C.D. SPEC. DWG. I, LOCATION AS DIRECTED BY THE ENGINEER
16. CONSTRUCT BIO-SWALE AREA PER PLAN, PROFILE, SECTIONS AND DETAILS



TYPICAL SECTION REINFORCED CONCRETE CHANNEL

SCALE: 1" = 10'



TYPICAL SECTION REINFORCED CONCRETE CHANNEL (BIO-SWALE AREA)

SCALE: 1" = 10'

65% SUBMITTAL

REGISTERED PROFESSIONAL ENGINEER Erwin R. Fogerson 49060 Exp. 9/30/16 CIVIL STATE OF CALIFORNIA

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT 1939 CALIFORNIA

REVISIONS			
MARK	DATE	DESCRIPTION	BY:

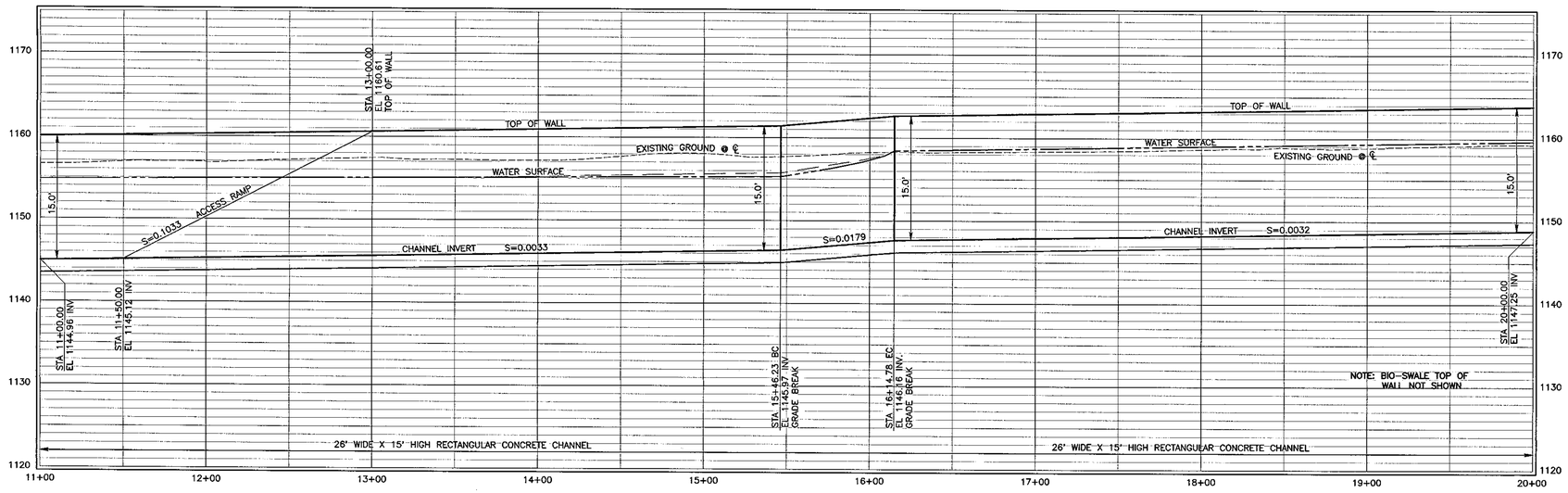
SUBMITTED BY: JON SMITH, P.E. DATE
RECOMMENDED BY: ERWIN FOGERSON, P.E. DATE
APPROVED BY: KEVIN BLAKESLEE, P.E. FLOOD CONTROL ENGINEER DATE

PROJ. ENGR.	DESIGNED BY	REV'D BY	DRAWN BY
JS	DN	EF	DN

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT
SAN SEVAINE CREEK SYSTEM
WEST FONTANA CHANNEL
BANANA BASIN TO STA. 11+00.00

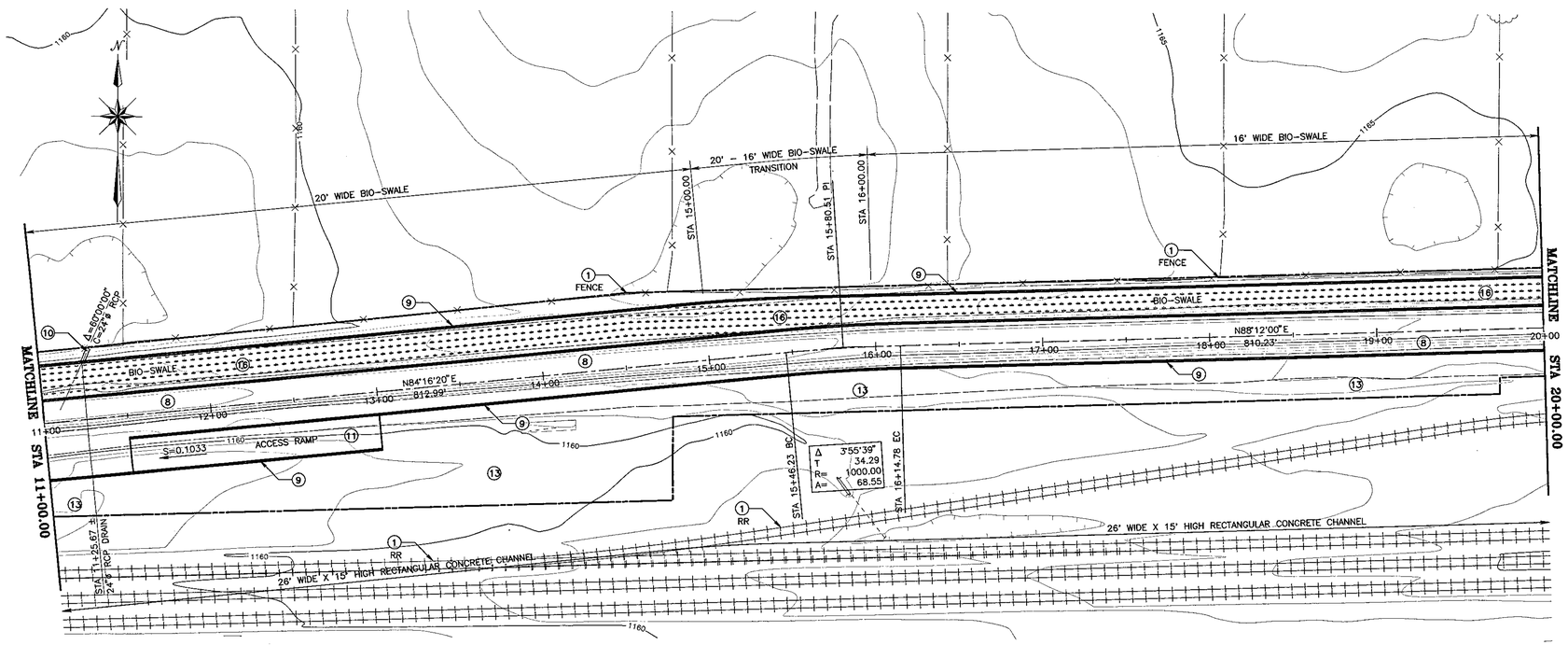
DATE: SEPT 2016
SCALE: AS SHOWN
FILE NO.: 1-809-
DRAWING NO.:
SHEET NO.: 04 OF xx

N:\ACTIVE PROJECTS\West Fontana\West Fontana Channel Improvement September 8 2016.pro Sep 8, 2016



PROFILE

HORIZONTAL SCALE 1"= 40'
VERTICAL SCALE 1"= 8'



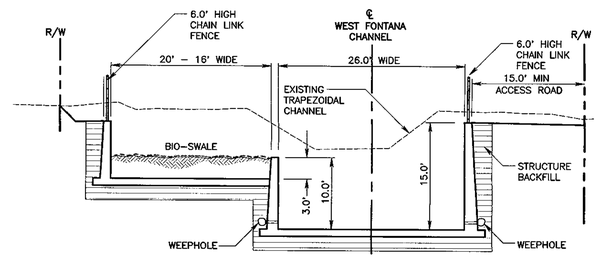
PLAN

SCALE 1"= 40'

GRAPHIC SCALE 1"= 40'
0 40 80 120

CONSTRUCTION NOTES:

1. PROTECT-IN-PLACE
8. CONSTRUCT 26.0' WIDE AND 15.0' HIGH REINFORCED RECTANGULAR CONCRETE CHANNEL (RCC), PROVIDING BIO-SWALE AREA PER PLAN. (STA 5+00.00 TO STA 22+60.00) PROFILE, SECTIONS AND DETAILS
9. INSTALL 6.0' HIGH CHAIN LINK CHANNEL FENCE PER PLAN, DETAIL AND S.B.C.F.C.D. SPEC. DWG. II
10. BREAK EXISTING 24"ø REINFORCED CONCRETE PIPE (RCP) SUFFICIENTLY TO CONSTRUCT NEW 24"ø RCP TO DRAIN TO BIO-SWALE. INVERT ELEVATION AND GRADE TO BE ADJUSTED IN THE FIELD (D=1350)
11. CONSTRUCT 20.0' WIDE ACCESS RAMP TO CHANNEL PER PLAN, PROFILE AND DETAIL
13. GRADE MAINTENANCE ACCESS ROAD TO DRAIN AWAY FROM THE CHANNEL PER PLAN
16. CONSTRUCT BIO-SWALE AREA PER PLAN, PROFILE, SECTIONS AND DETAILS



TYPICAL SECTION RECTANGULAR CONCRETE CHANNEL (BIO-SWALE AREA)

SCALE: 1" = 10'

65% SUBMITTAL

REGISTERED PROFESSIONAL ENGINEER Erwin R. Fogerson 49060 Exp. 9/30/16 CIVIL STATE OF CALIFORNIA

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT 1939 CALIFORNIA

REVISIONS			
MARK	DATE	DESCRIPTION	BY:

SUBMITTED BY: JON SMITH, P.E. DATE
RECOMMENDED BY: ERWIN FOGERSON, P.E. DATE
APPROVED BY: KEVIN BLAKESLEE, P.E. FLOOD CONTROL ENGINEER DATE

PROJ. ENGR.	DESIGNED BY	REV'D BY	DRAWN BY
JS	DN	EF	DN

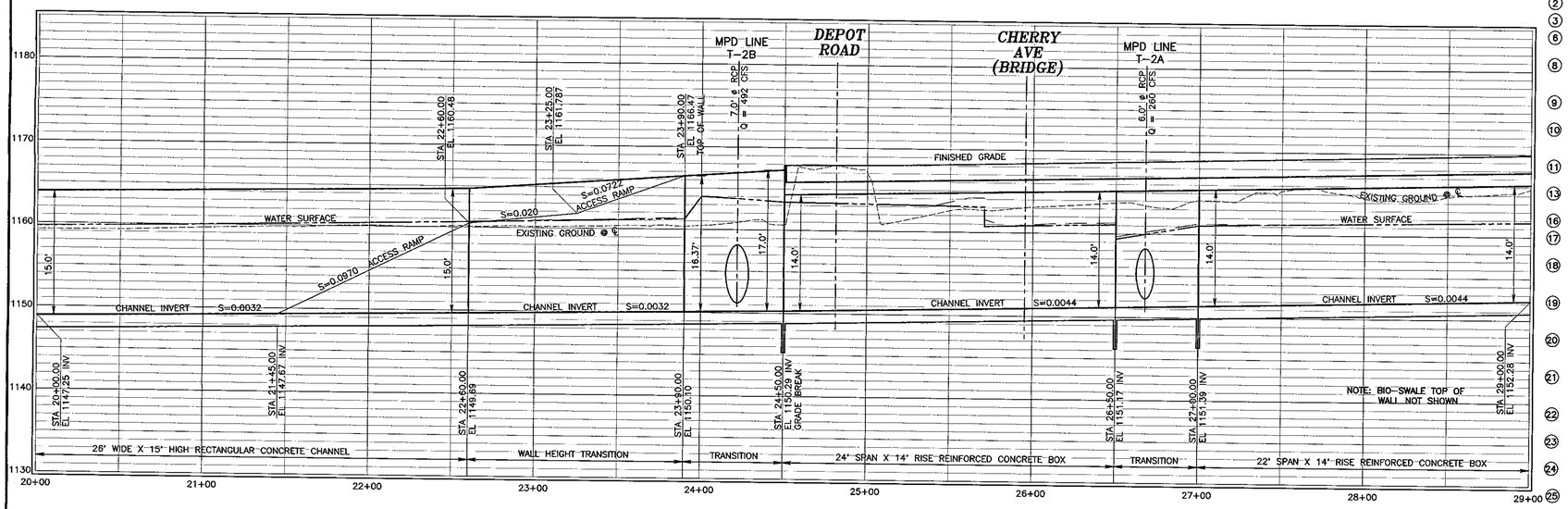
SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT

SAN SEVAINE CREEK SYSTEM
WEST FONTANA CHANNEL

STA. 11+00.00 TO STA. 20+00.00

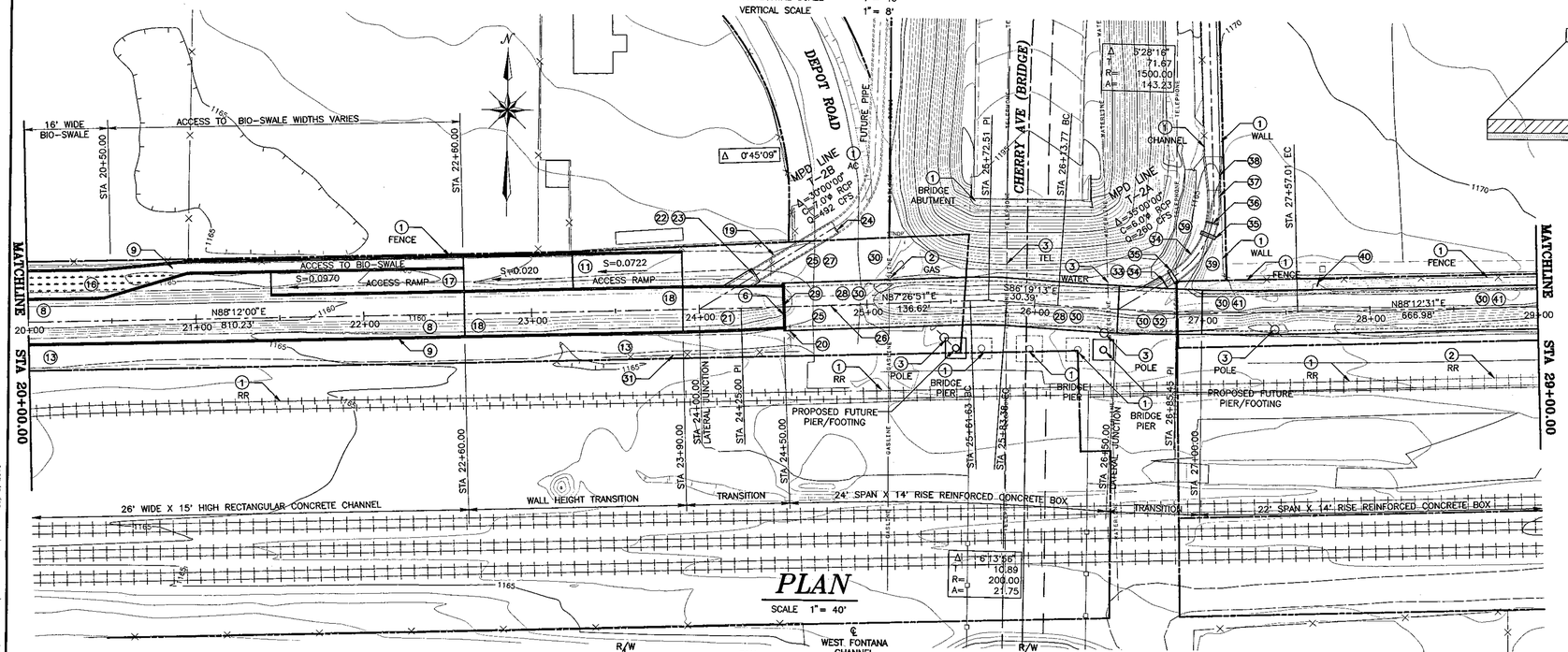
DATE: SEPT 2016
SCALE: AS SHOWN
FILE NO.: 1-809-
DRAWING NO.:
SHEET NO.: 05 OF xx

N:\ACTIVE PROJECTS\West Fontana\West Fontana Channel Improvement September 8 2016.pro Sep 8, 2016



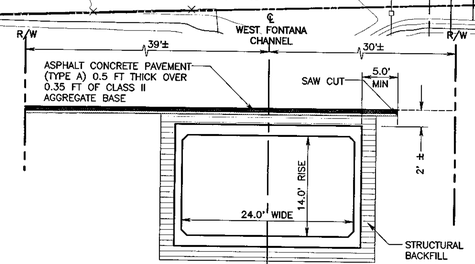
PROFILE

HORIZONTAL SCALE 1" = 40'
VERTICAL SCALE 1" = 8'



PLAN

SCALE 1" = 40'

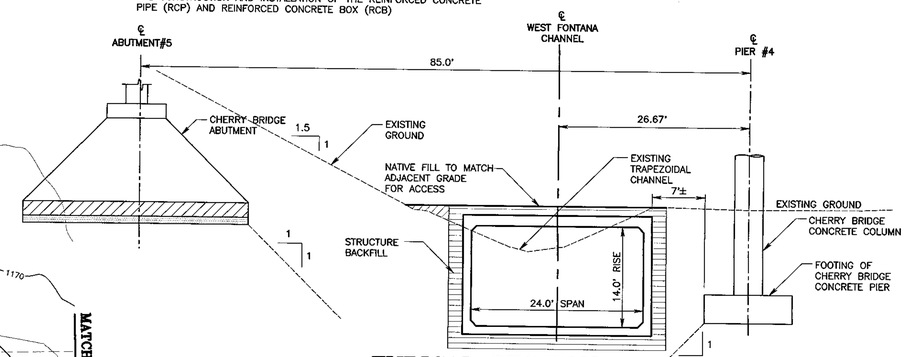


TYPICAL SECTION REINFORCED CONCRETE BOX (CROSSING DEPOT ROAD)

SCALE: 1" = 10'

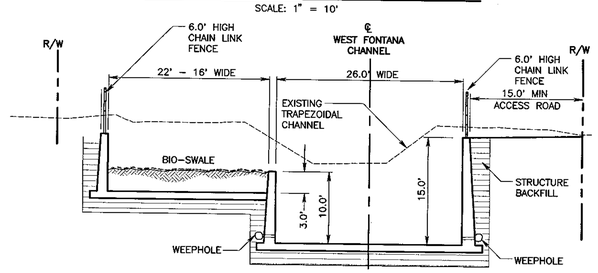
CONSTRUCTION NOTES:

1. PROTECT-IN-PLACE
2. TO BE RELOCATED BY OTHERS
3. TO BE RELOCATED BY THE CONTRACTOR AS DIRECTED BY THE ENGINEER
6. CONSTRUCT 5.0' DEEP CONCRETE CUT-OFF WALL PER PLAN, PROFILE AND DETAIL
8. CONSTRUCT 26.0' WIDE AND 15.0' HIGH REINFORCED RECTANGULAR CONCRETE CHANNEL (RCC), PROVIDING BIO-SWALE AREA PER PLAN. (STA 5+00.00 TO STA 22+60.00) PROFILE, SECTIONS AND DETAILS
9. INSTALL 6.0' HIGH CHAIN LINK CHANNEL FENCE PER PLAN, DETAIL AND S.B.C.F.C.D. SPEC. DWG. II
10. BREAK EXISTING 24"ø REINFORCED CONCRETE PIPE (RCP) SUFFICIENTLY TO CONSTRUCT NEW 24"ø RCP TO DRAIN TO BIO-SWALE. INVERT ELEVATION AND GRADE TO BE ADJUSTED IN THE FIELD (D=1350)
11. CONSTRUCT 20.0' WIDE ACCESS RAMP TO CHANNEL PER PLAN, PROFILE AND DETAIL
13. GRADE MAINTENANCE ACCESS ROAD TO DRAIN AWAY FROM THE CHANNEL PER PLAN
16. CONSTRUCT BIO-SWALE AREA PER PLAN, PROFILE, SECTIONS AND DETAILS
17. CONSTRUCT 13.0' WIDE ACCESS RAMP TO CHANNEL PER PLAN, PROFILE AND DETAIL
18. CONSTRUCT 26.0' WIDE REINFORCED RECTANGULAR CONCRETE CHANNEL(RCC) WALL HEIGHT TRANSITION STRUCTURE FROM 15.0' TO 16.37' HIGH PER PLAN (STA 22+60.00 TO STA 23+90.00), PROFILE AND DETAILS
19. REMOVE AND DISPOSE EXISTING PIPE GATE AND RE-INSTALL 20.0' WIDE DOUBLE DRIVE GATE PER S.B.C.F.C.D. SPEC. DWG. II, LOCATION AS DIRECTED BY THE ENGINEER
20. REMOVE AND DISPOSE EXISTING PIPE GATE AND RE-INSTALL 15.0' WIDE SINGLE DRIVE GATE PER S.B.C.F.C.D. SPEC. DWG. II, LOCATION AS DIRECTED BY THE ENGINEER
21. CONSTRUCT REINFORCED RECTANGULAR CONCRETE CHANNEL(RCC) TRANSITION STRUCTURE FROM 26.0' TO 24.0' WIDE AND 16.37' TO 17.0' HIGH PER PLAN (STA 23+90.00 TO STA 24+50.00), PROFILE AND DETAILS
22. CONSTRUCT JUNCTION STRUCTURE FOR 7.0'ø REINFORCED CONCRETE PIPE (RCP) PER PLAN, PROFILE AND DETAIL ON SHEET xx
23. INSTALL 7.0'ø REINFORCED CONCRETE PIPE (RCP) TO PROPOSED JUNCTION STRUCTURE (APPROX. 56 L.F.) PER PLAN, PROFILE AND DETAILS
24. CONSTRUCT REINFORCED CONCRETE BULKHEAD FOR 7.0'ø REINFORCED CONCRETE PIPE (RCP) PER RIVERSIDE COUNTY STD. DETAIL M816.
25. SAW CUT, BREAK AND DISPOSE EXISTING AC PAVEMENT AS REQUIRED FOR THE CONSTRUCTION AND INSTALLATION OF THE REINFORCED CONCRETE PIPE (RCP) AND REINFORCED CONCRETE BOX (RCB)
26. REMOVE AND DISPOSE EXISTING 6.0'ø CORRUGATED METAL PIPE (CMP)
27. PLACE 0.5' ASPHALT CONCRETE (TYPE A) OVER 0.35' OF CLASS II AGGREGATE BASE. FINISHED GRADE TO MATCH EXISTING CONDITION PRIOR TO CONSTRUCTION
28. CONSTRUCT 24.0' SPAN AND 14.0' RISE REINFORCED CONCRETE BOX (RCB) PRE-CAST OR CAST-IN-PLACE WITH H-20 LOADING PER PLAN, (STA 24+50.00 TO STA 26+50.00) PROFILE, SECTIONS AND DETAILS. SEE SPECIAL PROVISIONS
29. CONSTRUCT PARAPPET WALL PER PLAN, PROFILE AND DETAIL
30. PLACE NATIVE FILL ON TOP OF REINFORCED CONCRETE BOX (RCB) AND ITS SURROUNDINGS TO MATCH ADJACENT GRADE. TO BE USED AS ACCESS ROAD
31. REMOVE DURING CONSTRUCTION AND RE-INSTALL 6.0' HIGH CHAIN LINK FENCE PER PLAN, DETAIL AND S.B.C.F.C.D. SPEC. DWG. I
32. CONSTRUCT REINFORCED CONCRETE BOX(RCB) TRANSITION STRUCTURE FROM 24.0' SPAN TO 22.0' SPAN AND 14.0' RISE PER PLAN, PROFILE, DETAILS AND 2009 S.P.P.W.C. STD. DWG. 341-1
33. CONSTRUCT JUNCTION STRUCTURE FOR 6.0'ø REINFORCED CONCRETE PIPE (RCP) PER PLAN, PROFILE AND DETAILS ON SHEET xx
34. INSTALL 6.0'ø REINFORCED CONCRETE PIPE (RCP) TO PROPOSED JUNCTION STRUCTURE (APPROX. 48 L.F.) PER PLAN, PROFILE AND DETAILS
35. CONSTRUCT CONCRETE PIPE COLLAR FOR 6.0'ø REINFORCED CONCRETE PIPE PER 2009 S.P.P.W.C. STD. DWG. 380-4, PLAN, PROFILE AND DETAILS
36. CONSTRUCT HEADWALL AND CUT-OFF WALL FOR 6.0'ø REINFORCED CONCRETE PIPE PER 2010 CALTRANS STD. DWG. D-86B, PLAN, PROFILE AND DETAILS
37. CONSTRUCT 6.0' WIDE X 6.0' HIGH REINFORCED CONCRETE RECTANGULAR CHANNEL (RCC) PLAN, PROFILE AND DETAILS
38. CONSTRUCT REINFORCED CONCRETE RECTANGULAR CHANNEL(RCC) TRANSITION STRUCTURE FROM 6.0' TO 9.0' WIDE AND 6.0' TO 4.0' HIGH TO MEET EXISTING CHANNEL PER PLAN, PROFILE AND DETAILS
39. PLACE NATIVE FILL ON TOP OF REINFORCED CONCRETE PIPE (RCP) AND ITS SURROUNDINGS TO MATCH ADJACENT GRADE. TO BE USED AS ACCESS ROAD
40. REMOVE AND DISPOSE EXISTING 8"ø PVC DRAIN AND CONSTRUCT NEW 24"ø REINFORCED CONCRETE PIPE(RCP) TO DRAIN TO REINFORCED CONCRETE BOX (RCB). INVERT ELEVATION AND GRADE TO BE ADJUSTED IN THE FIELD
41. CONSTRUCT 22.0' SPAN AND 14.0' RISE REINFORCED CONCRETE BOX (RCB) PRE-CAST OR CAST-IN-PLACE WITH H-20 LOADING PER PLAN, (STA 27+00.00 TO STA 34+00.00 & STA 36+00.00 TO STA 37+44.82), PROFILE, SECTIONS AND DETAILS. SEE SPECIAL PROVISIONS



TYPICAL SECTION REINFORCED CONCRETE BOX UNDER CHERRY AVE, BRIDGE

SCALE: 1" = 10'



TYPICAL SECTION RECTANGULAR CONCRETE CHANNEL (BIO-SWALE AREA)

SCALE: 1" = 10'

65% SUBMITTAL

REGISTERED PROFESSIONAL ENGINEER Erwin R. Fogerson 49060 Exp. 9/30/16 CIVIL STATE OF CALIFORNIA

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT 1939 CALIFORNIA

REVISIONS			
MARK	DATE	DESCRIPTION	BY:

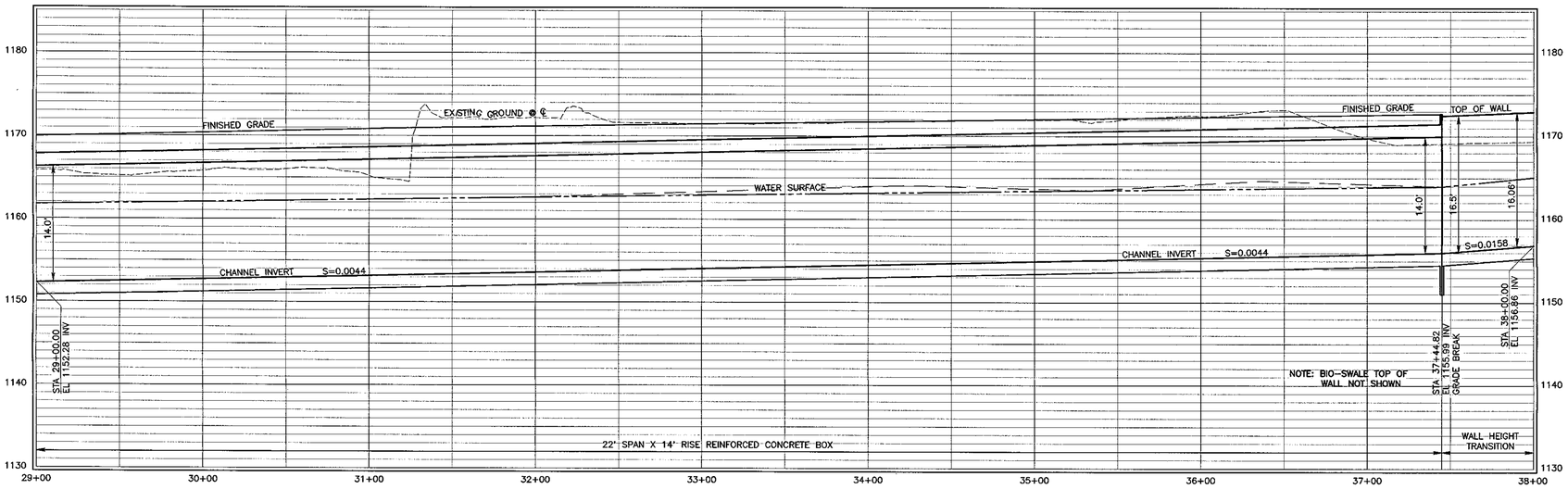
SUBMITTED BY: JON SMITH, P.E. DATE
RECOMMENDED BY: ERWIN FOGERSON, P.E. DATE
APPROVED BY: KEVIN BLAKESLEE, P.E. FLOOD CONTROL ENGINEER DATE

PROJ. ENGR.	DESIGNED BY	REV'D BY	DRAWN BY
JS	DN	EF	DN

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT
SAN SEVAINE CREEK SYSTEM
WEST FONTANA CHANNEL
STA. 20+00.00 TO STA. 29+00.00

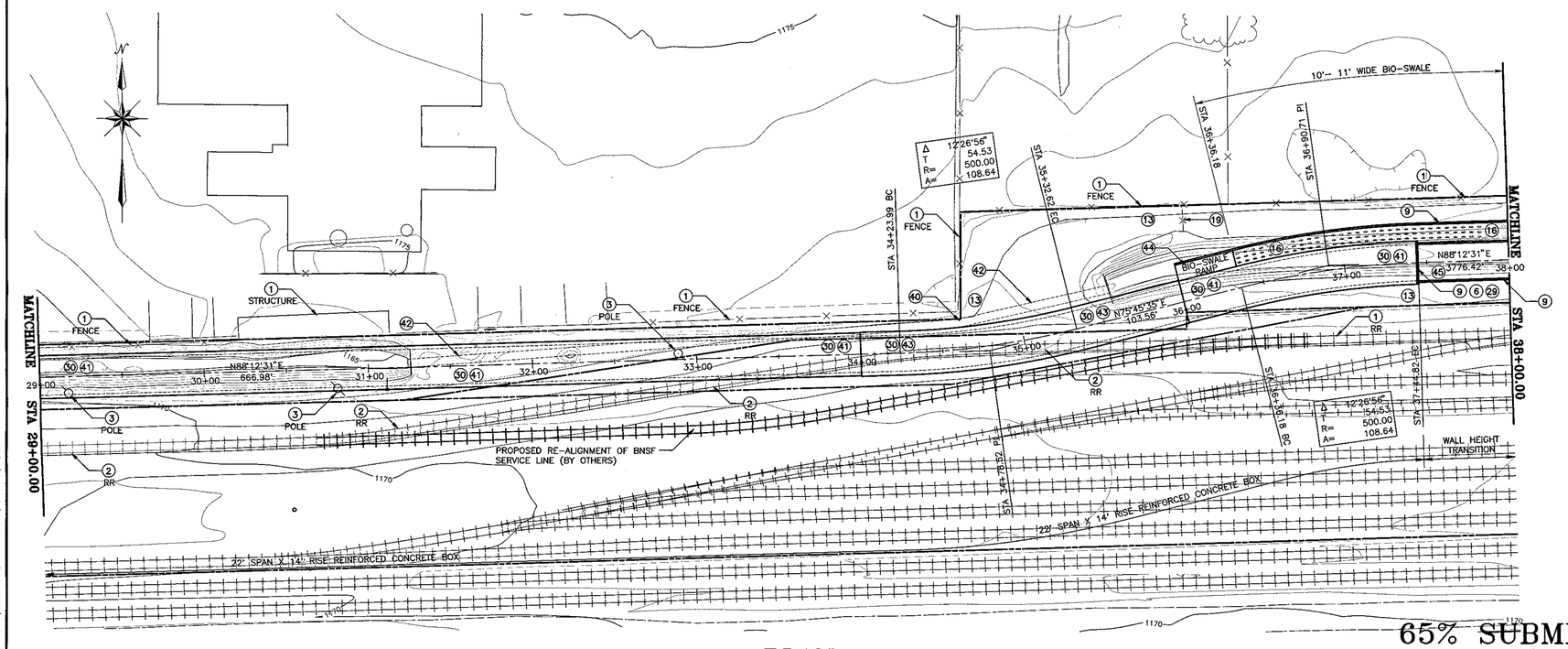
DATE: SEPT 2016
SCALE: AS SHOWN
FILE NO.: 1-809-
DRAWING NO.:
SHEET NO.: 06 OF xx

N:\ACTIVE PROJECTS\West Fontana\West Fontana Channel Improvement September 8 2016.pro Sep 8, 2016



PROFILE

HORIZONTAL SCALE 1" = 40'
VERTICAL SCALE 1" = 8'



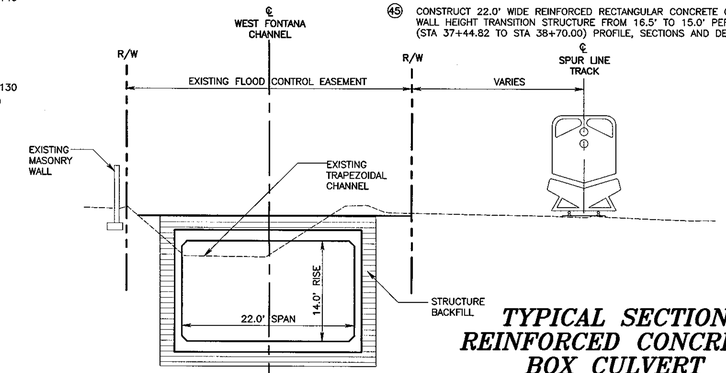
PLAN

SCALE 1" = 40'

GRAPHIC SCALE 1" = 40'
0 40 80 120

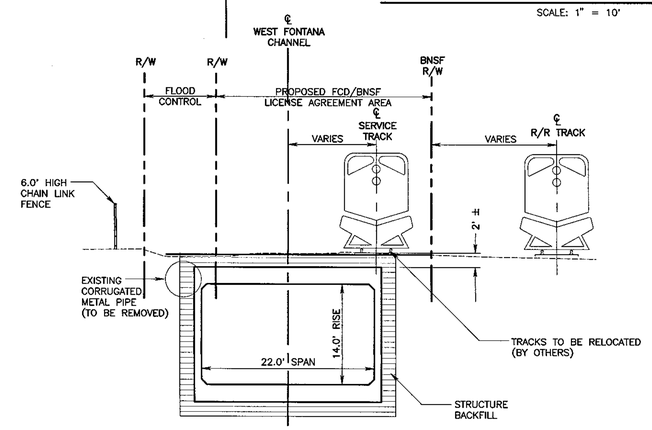
CONSTRUCTION NOTES:

1. PROTECT-IN-PLACE
2. TO BE RELOCATED BY OTHERS
3. TO BE RELOCATED BY THE CONTRACTOR AS DIRECTED BY THE ENGINEER
9. INSTALL 6.0' HIGH CHAIN LINK CHANNEL FENCE PER PLAN, DETAIL AND S.B.C.F.C.D. SPEC. DWG. II
6. CONSTRUCT 5.0' DEEP CONCRETE CUT-OFF WALL PER PLAN, PROFILE AND DETAIL
13. GRADE MAINTENANCE ACCESS ROAD TO DRAIN AWAY FROM THE CHANNEL PER PLAN
16. CONSTRUCT BIO-SWALE AREA PER PLAN, PROFILE, SECTIONS AND DETAILS
19. REMOVE AND DISPOSE EXISTING PIPE GATE AND RE-INSTALL 20.0' WIDE DOUBLE DRIVE GATE PER S.B.C.F.C.D. SPEC. DWG. II, LOCATION AS DIRECTED BY THE ENGINEER
29. CONSTRUCT PARAPPET WALL PER PLAN, PROFILE AND DETAIL
30. PLACE NATIVE FILL ON TOP OF REINFORCED CONCRETE BOX (RCB) AND ITS SURROUNDINGS TO MATCH ADJACENT GRADE. TO BE USED AS ACCESS ROAD
40. REMOVE AND DISPOSE EXISTING 8"ø PVC DRAIN AND CONSTRUCT NEW 24"ø REINFORCED CONCRETE PIPE(RCP) TO DRAIN TO REINFORCED CONCRETE BOX (RCB). INVERT ELEVATION AND GRADE TO BE ADJUSTED IN THE FIELD
41. CONSTRUCT 22.0' SPAN AND 14.0' RISE REINFORCED CONCRETE BOX (RCB) PRE-CAST OR CAST-IN-PLACE WITH H-20 LOADING PER PLAN, (STA 27+00.00 TO STA 34+00.00 & STA 36+00.00 TO STA 37+44.82), PROFILE, SECTIONS AND DETAILS. SEE SPECIAL PROVISIONS
42. REMOVE AND DISPOSE EXISTING 5.0'ø CORRUGATED METAL PIPE (CMP)
43. CONSTRUCT 22.0' SPAN AND 14.0' RISE REINFORCED CONCRETE BOX (RCB) PRE-CAST OR CAST-IN-PLACE WITH H-20 AND RAILROAD LATERAL LOADING PER PLAN, (STA 34+00.00 TO STA 36+00.00) PROFILE, SECTIONS AND DETAILS. SEE SPECIAL PROVISIONS
44. CONSTRUCT 10.0' WIDE ACCESS RAMP TO/FROM BIO-SWALE PER PLAN, PROFILE AND DETAIL
45. CONSTRUCT 22.0' WIDE REINFORCED RECTANGULAR CONCRETE CHANNEL(RCC) WALL HEIGHT TRANSITION STRUCTURE FROM 16.5' TO 15.0' PER PLAN (STA 37+44.82 TO STA 38+70.00) PROFILE, SECTIONS AND DETAILS



TYPICAL SECTION REINFORCED CONCRETE BOX CULVERT

SCALE: 1" = 10'



TYPICAL SECTION REINFORCED CONCRETE BOX CULVERT (UNDER THE BNSF SERVICE LINE)

SCALE: 1" = 10'

65% SUBMITTAL

REGISTERED PROFESSIONAL ENGINEER Erwin R. Fogerson 49060 Exp. 9/30/16 CIVIL STATE OF CALIFORNIA

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT 1939 CALIFORNIA

REVISIONS			
MARK	DATE	DESCRIPTION	BY:

SUBMITTED BY: JON SMITH, P.E. DATE
RECOMMENDED BY: ERWIN FOGERSON, P.E. DATE
APPROVED BY: KEVIN BLAKESLEE, P.E. FLOOD CONTROL ENGINEER DATE

PROJ. ENGR.	DESIGNED BY	REV'D BY	DRAWN BY
JS	DN	EF	DN

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT

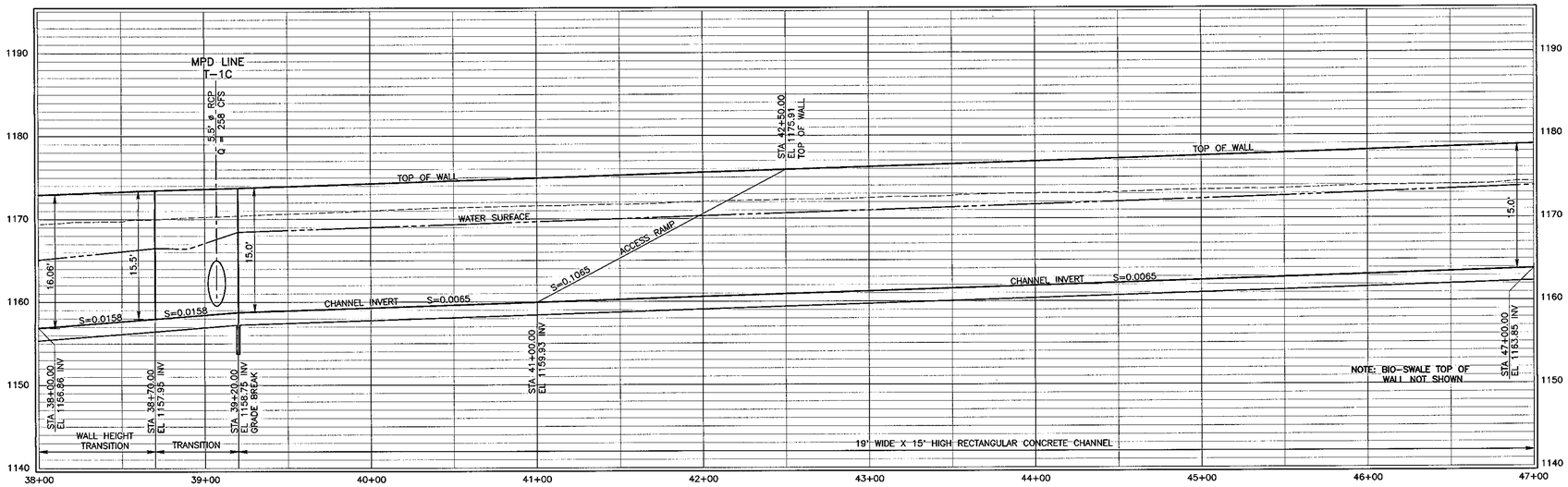
SAN SEVAINE CREEK SYSTEM

WEST FONTANA CHANNEL

STA. 29+00.00 TO STA. 38+00.00

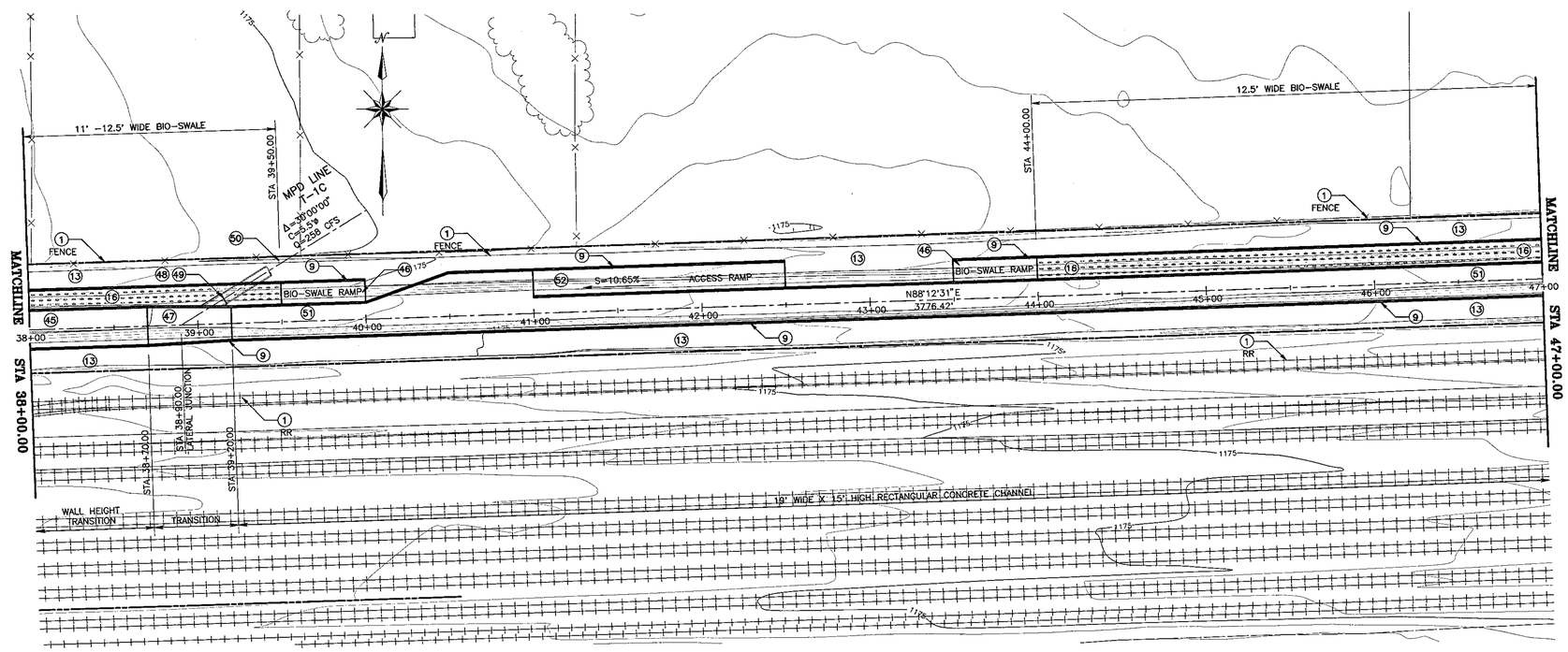
DATE	SEPT 2016
SCALE	AS SHOWN
FILE NO.	1-809-
DRAWING NO.	
SHEET NO.	07 OF xx

K:\ACTIVE PROJECTS\West Fontana\West Fontana Channel Improvement, September 8 2016.pwo Sep 8, 2016



PROFILE

HORIZONTAL SCALE 1" = 40'
VERTICAL SCALE 1" = 8'



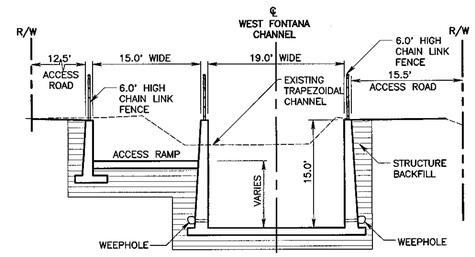
PLAN

SCALE 1" = 40'

GRAPHIC SCALE 1" = 40'
0 40 80 120

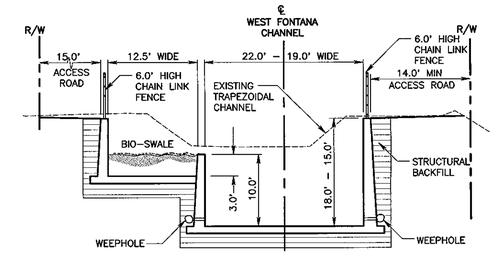
CONSTRUCTION NOTES:

1. PROTECT-IN-PLACE
9. INSTALL 6.0' HIGH CHAIN LINK CHANNEL FENCE PER PLAN, DETAIL AND S.B.C.F.C.D. SPEC. DWG. II
13. GRADE MAINTENANCE ACCESS ROAD TO DRAIN AWAY FROM THE CHANNEL PER PLAN
16. CONSTRUCT BIO-SWALE AREA PER PLAN, PROFILE, SECTIONS AND DETAILS
45. CONSTRUCT 22.0' WIDE REINFORCED RECTANGULAR CONCRETE CHANNEL(RCC) WALL HEIGHT TRANSITION STRUCTURE FROM 16.5' TO 15.0' PER PLAN (STA 37+44.82 TO STA 38+70.00) PROFILE, SECTIONS AND DETAILS
46. CONSTRUCT 12.5' WIDE ACCESS RAMP TO/FROM BIO-SWALE PER PLAN, PROFILE AND DETAIL
47. CONSTRUCT REINFORCED RECTANGULAR CONCRETE CHANNEL(RCC) TRANSITION STRUCTURE FROM 22.0' TO 19.0' WIDE AND 15.5' TO 15.0' HIGH PER PLAN (STA 38+70.00 TO STA 39+20.00), PROFILE AND DETAILS
48. CONSTRUCT JUNCTION STRUCTURE FOR 5.5'ø REINFORCED CONCRETE PIPE (RCP) PER PLAN, PROFILE AND DETAILS ON SHEET xx
49. INSTALL 5.5'ø REINFORCED CONCRETE PIPE (RCP) TO PROPOSED JUNCTION STRUCTURE (APPROX. 40 L.F.) PER PLAN, PROFILE AND DETAILS
50. CONSTRUCT REINFORCED CONCRETE BULKHEAD FOR 5.5'ø REINFORCED CONCRETE PIPE (RCP) PER RIVERSIDE COUNTY STD. DETAIL M816.
51. CONSTRUCT 19.0' WIDE AND 15.0' HIGH REINFORCED RECTANGULAR CONCRETE CHANNEL (RCC), PROVIDING BIO-SWALE AREA PER PLAN (STA 39+20.00 TO STA 71+00.00) PROFILE, SECTIONS AND DETAILS
52. CONSTRUCT 15.0' WIDE ACCESS RAMP TO CHANNEL PER PLAN, PROFILE AND DETAIL



TYPICAL SECTION REINFORCED CONCRETE CHANNEL (WITH ACCESS RAMP)

SCALE: 1" = 10'



TYPICAL SECTION REINFORCED CONCRETE CHANNEL (BIO-SWALE AREA)

SCALE: 1" = 10'

65% SUBMITTAL

REGISTERED PROFESSIONAL ENGINEER Erwin R. Fogerson 49060 Exp. 9/30/16 CIVIL STATE OF CALIFORNIA

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT 1939 CALIFORNIA

REVISIONS

MARK	DATE	DESCRIPTION	BY:

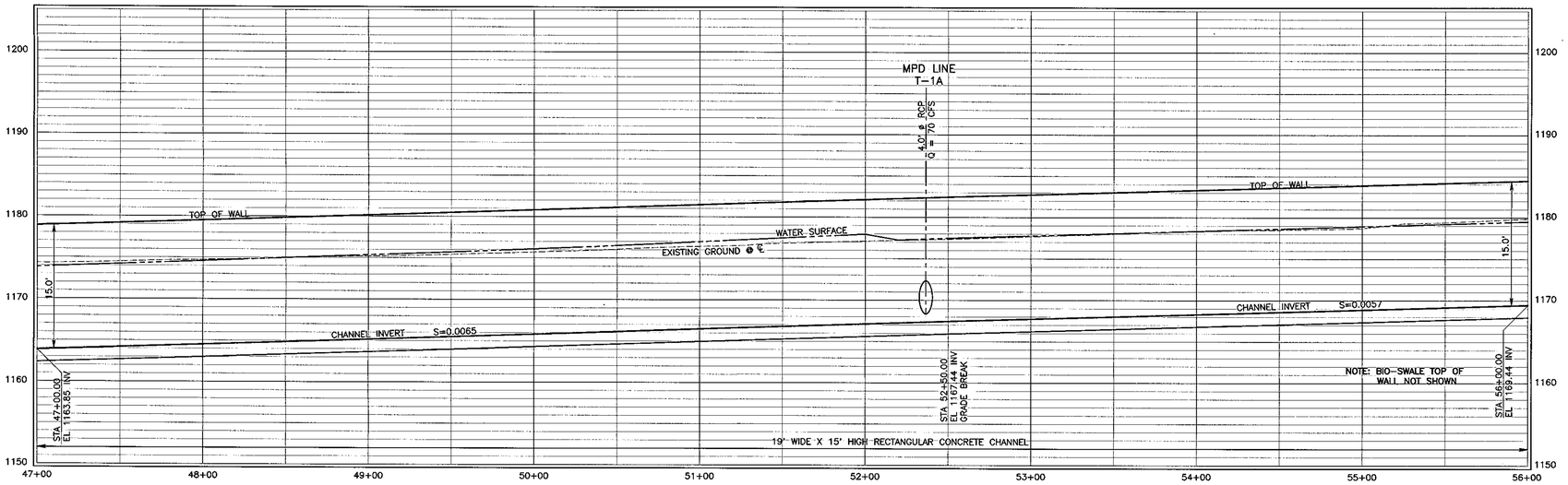
SUBMITTED BY: JON SMITH, P.E. DATE
RECOMMENDED BY: ERWIN FOGERSON, P.E. DATE
APPROVED BY: KEVIN BLAKESLEE, P.E. FLOOD CONTROL ENGINEER DATE

PROJ. ENGR.	DESIGNED BY	REV'D BY	DRAWN BY
JS	DN	EF	DN

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT
SAN SEVAINE CREEK SYSTEM
WEST FONTANA CHANNEL
STA. 38+00.00 TO STA. 47+00.00

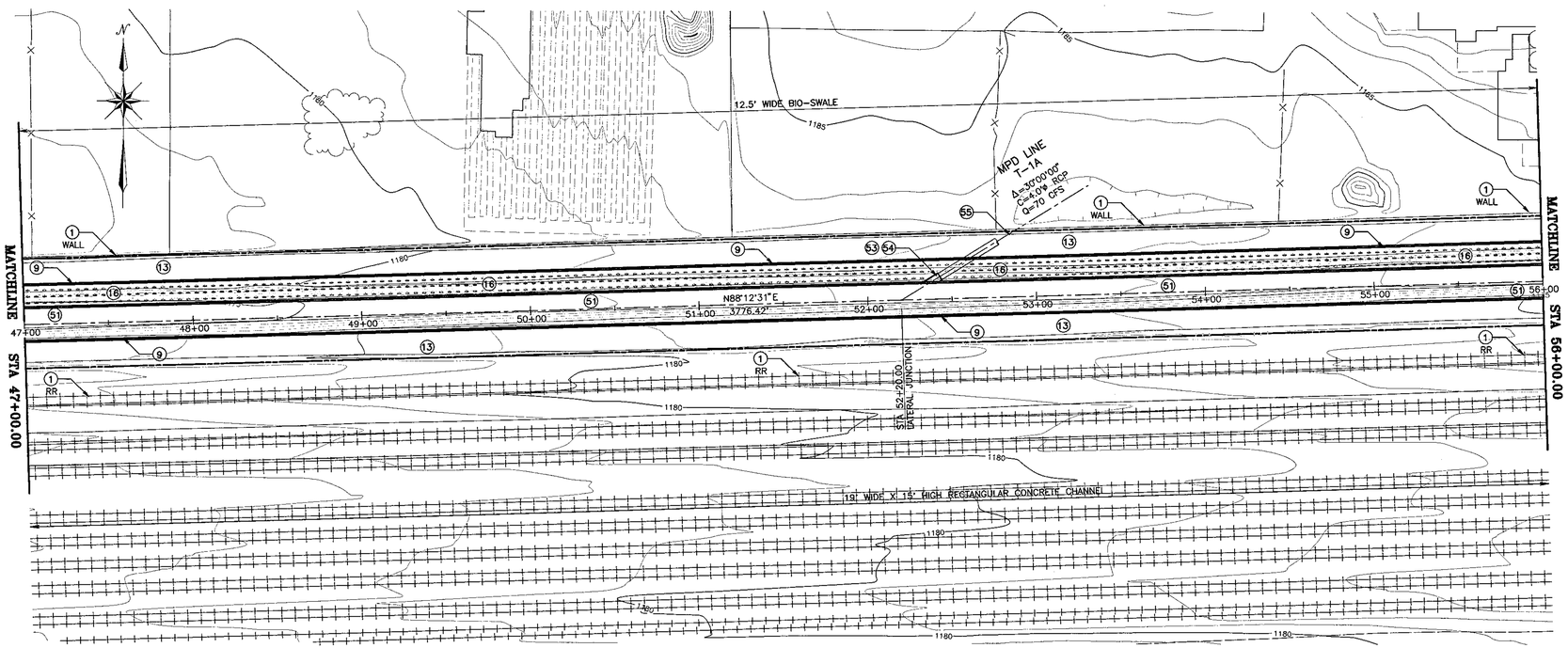
DATE: SEPT 2016
SCALE: AS SHOWN
FILE NO.: 1-809-
DRAWING NO.:
SHEET NO.: 08 OF xx

N:\ACTIVE PROJECTS\West Fontana\West Fontana Channel Improvement September 8 2016.pro Sep 8, 2016



PROFILE

HORIZONTAL SCALE 1" = 40'
VERTICAL SCALE 1" = 8'



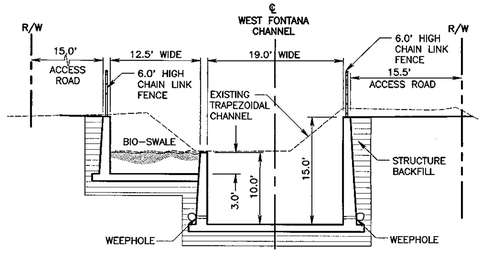
PLAN

SCALE 1" = 40'

GRAPHIC SCALE 1" = 40'
0 40 80 120

CONSTRUCTION NOTES:

1. PROTECT-IN-PLACE
9. INSTALL 6.0' HIGH CHAIN LINK CHANNEL FENCE PER PLAN, DETAIL AND S.B.C.F.C.D. SPEC. DWG. II
13. GRADE MAINTENANCE ACCESS ROAD TO DRAIN AWAY FROM THE CHANNEL PER PLAN
16. CONSTRUCT BIO-SWALE AREA PER PLAN, PROFILE, SECTIONS AND DETAILS
51. CONSTRUCT 19.0' WIDE AND 15.0' HIGH REINFORCED RECTANGULAR CONCRETE CHANNEL (RCC), PROVIDING BIO-SWALE AREA PER PLAN (STA 39+20.00 TO STA 71+00.00) PROFILE, SECTIONS AND DETAILS
53. CONSTRUCT JUNCTION STRUCTURE FOR 4.0'ø REINFORCED CONCRETE PIPE (RCP) PER PLAN, PROFILE AND DETAILS ON SHEET xx
54. INSTALL 4.0'ø REINFORCED CONCRETE PIPE (RCP) TO PROPOSED JUNCTION STRUCTURE (APPROX. 48 L.F.) PER PLAN, PROFILE AND DETAILS
55. CONSTRUCT REINFORCED CONCRETE BULKHEAD FOR 4.0'ø REINFORCED CONCRETE PIPE (RCP) PER RIVERSIDE COUNTY STD. DETAIL M816.



TYPICAL SECTION REINFORCED CONCRETE CHANNEL (BIO-SWALE AREA)

SCALE: 1" = 10'

65% SUBMITTAL

REGISTERED PROFESSIONAL ENGINEER
Erwin R. Fogerson
49060
Exp. 9/30/16
CIVIL
STATE OF CALIFORNIA

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT
1939
CALIFORNIA

REVISIONS			
MARK	DATE	DESCRIPTION	BY:

SUBMITTED BY: JON SMITH, P.E. DATE
RECOMMENDED BY: ERWIN FOGERSON, P.E. DATE
APPROVED BY: KEVIN BLAKESLEE, P.E. FLOOD CONTROL ENGINEER DATE

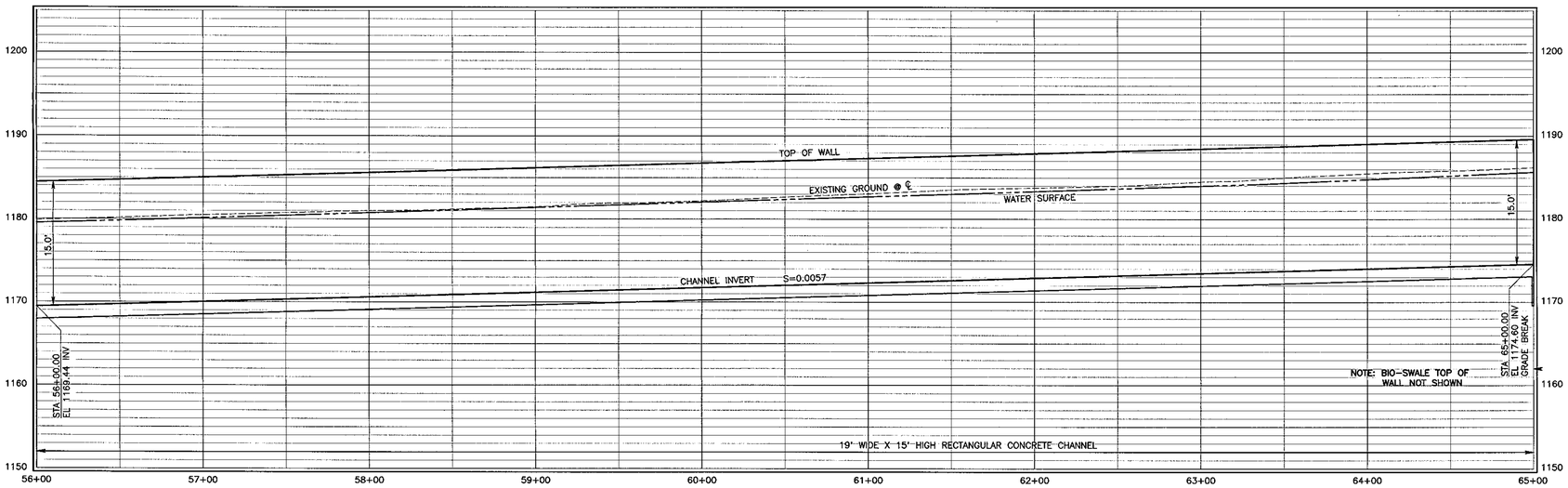
PROJ. ENGR.	DESIGNED BY	REV'D BY	DRAWN BY
JS	DN	EF	DN

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT

SAN SEVAINE CREEK SYSTEM
WEST FONTANA CHANNEL
STA. 47+00.00 TO STA. 56+00.00

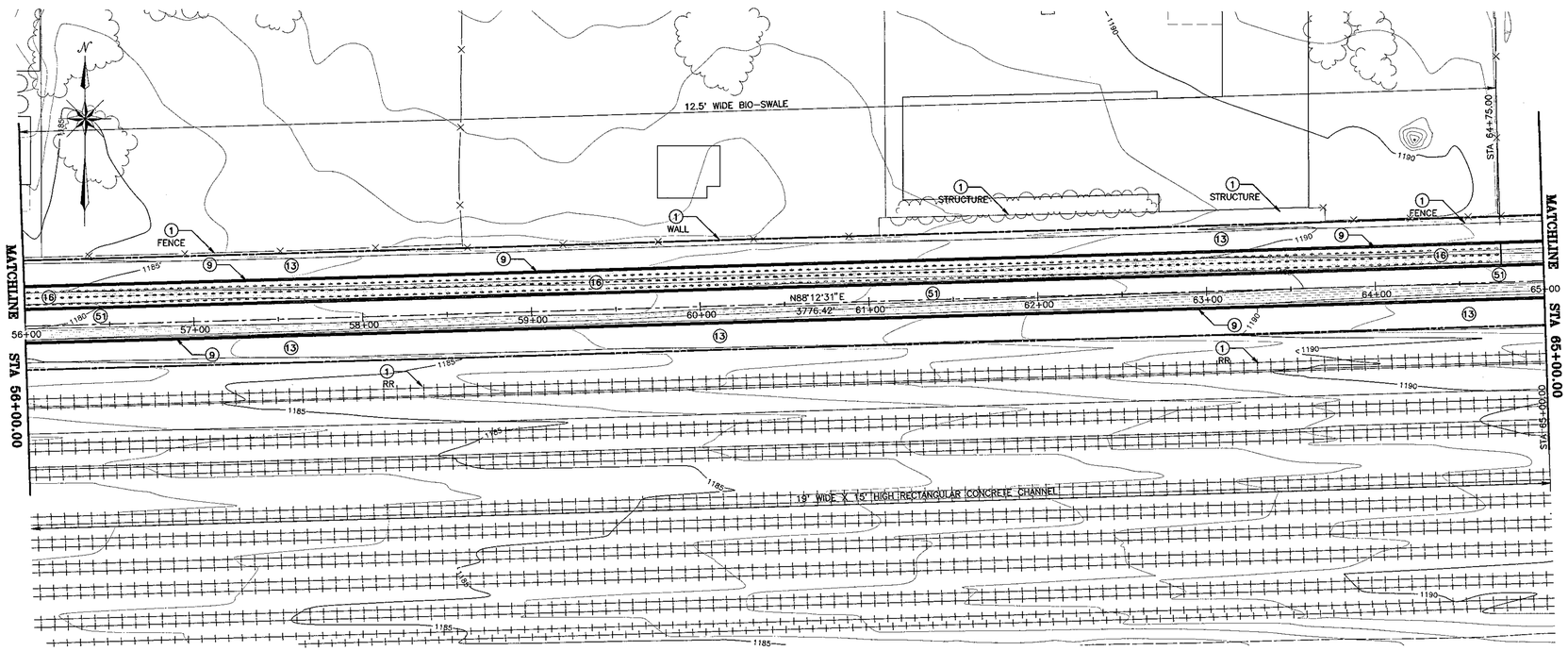
DATE	SEPT 2016
SCALE	AS SHOWN
FILE NO.	1-809-
DRAWING NO.	
SHEET NO.	09 OF xx

N:\ACTIVE PROJECTS\West Fontana\West Fontana Channel Improvement September 8 2016.pro Sep 8, 2016



PROFILE

HORIZONTAL SCALE 1" = 40'
VERTICAL SCALE 1" = 8'



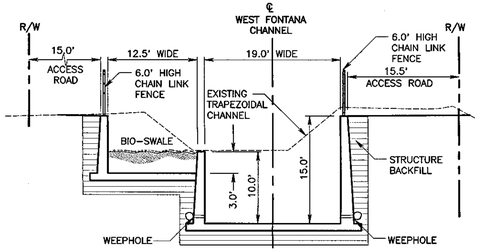
PLAN

SCALE 1" = 40'

GRAPHIC SCALE 1" = 40'
0 40 80 120

CONSTRUCTION NOTES:

1. PROTECT-IN-PLACE
9. INSTALL 6.0' HIGH CHAIN LINK CHANNEL FENCE PER PLAN, DETAIL AND S.B.C.F.C.D. SPEC. DWG. II
13. GRADE MAINTENANCE ACCESS ROAD TO DRAIN AWAY FROM THE CHANNEL PER PLAN
16. CONSTRUCT BIO-SWALE AREA PER PLAN, PROFILE, SECTIONS AND DETAILS
51. CONSTRUCT 19.0' WIDE AND 15.0' HIGH REINFORCED RECTANGULAR CONCRETE CHANNEL (RCC), PROVIDING BIO-SWALE AREA PER PLAN (STA 39+20.00 TO STA 71+00.00) PROFILE, SECTIONS AND DETAILS



TYPICAL SECTION REINFORCED CONCRETE CHANNEL (BIO-SWALE AREA)

SCALE: 1" = 10'

65% SUBMITTAL

REGISTERED PROFESSIONAL ENGINEER Erwin R. Fogerson 49060 Exp. 9/30/16 CIVIL STATE OF CALIFORNIA

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT 1939 CALIFORNIA

REVISIONS			
MARK	DATE	DESCRIPTION	BY:

SUBMITTED BY: JON SMITH, P.E. DATE
RECOMMENDED BY: ERWIN FOGERSON, P.E. DATE
APPROVED BY: KEVIN BLAKESLEE, P.E. FLOOD CONTROL ENGINEER DATE

PROJ. ENGR.	DESIGNED BY	REV'D BY	DRAWN BY
JS	DN	EF	DN

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT

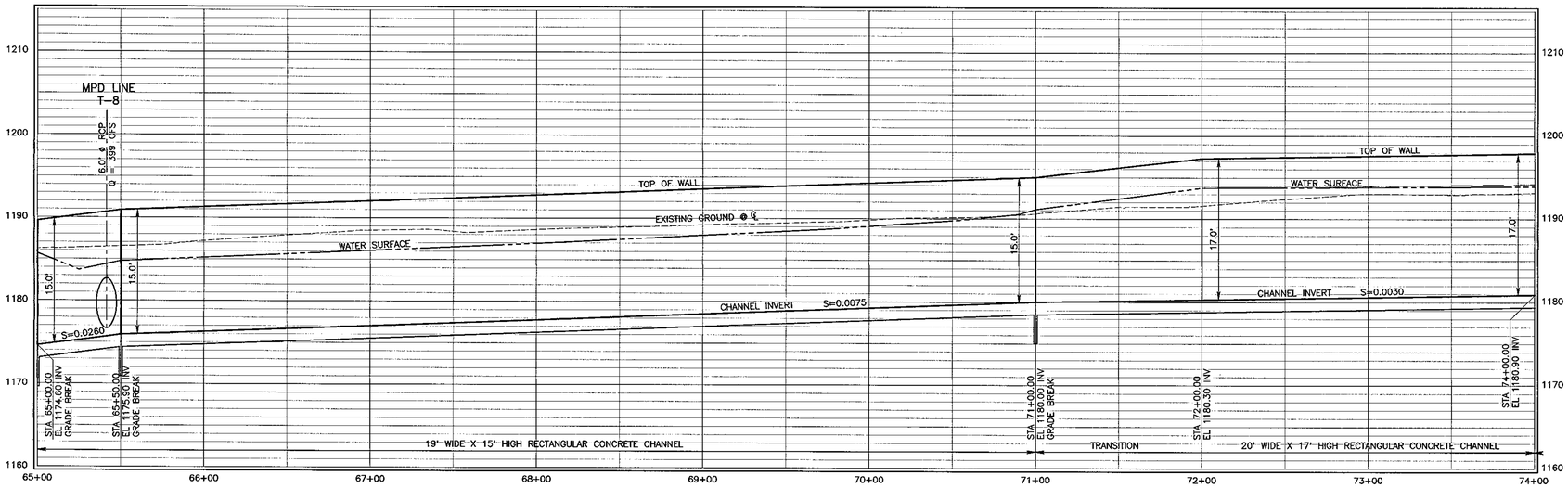
SAN SEVAINE CREEK SYSTEM

WEST FONTANA CHANNEL

STA. 56+00.00 TO STA. 65+00.00

DATE	SEPT 2016
SCALE	AS SHOWN
FILE NO.	1-809-
DRAWING NO.	
SHEET NO.	10 OF xx

N:\ACTIVE PROJECTS\West Fontana\West Fontana Channel Improvement September 8 2016.pro Sep 8, 2016

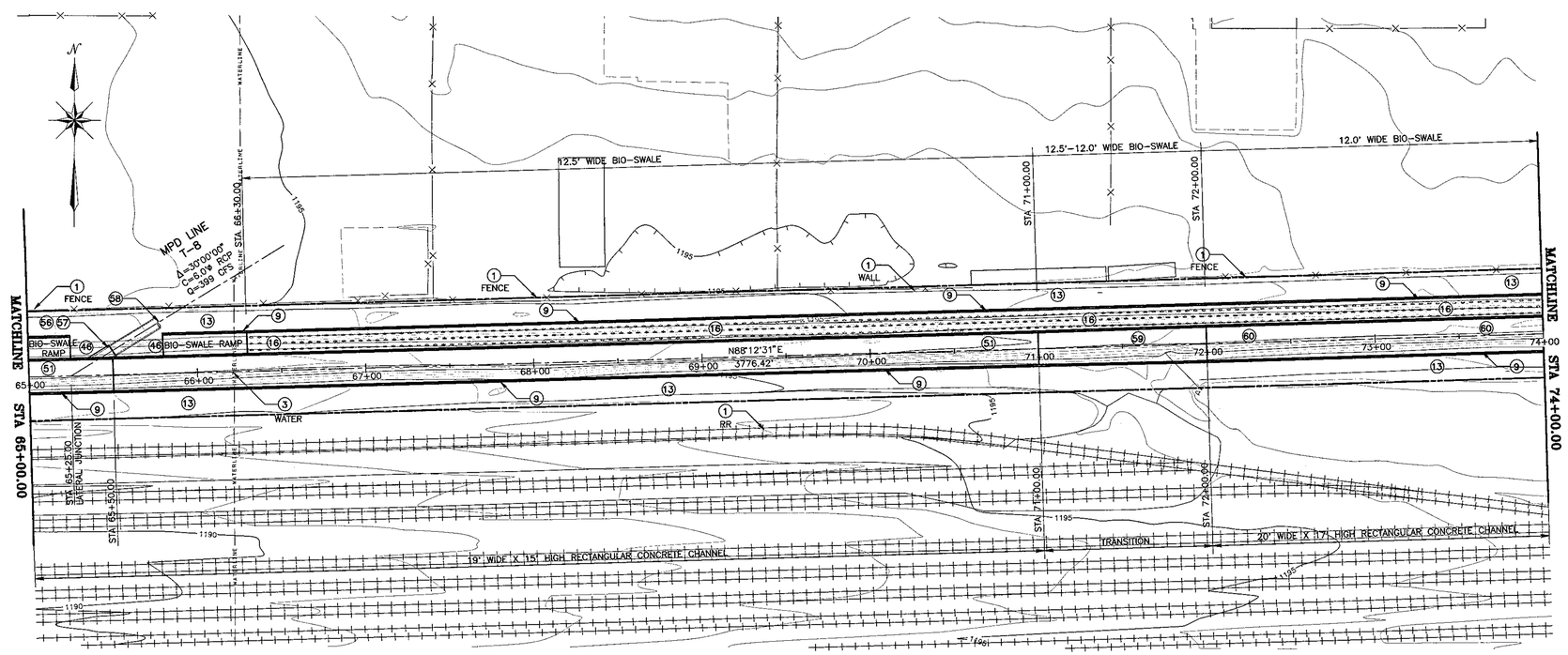


PROFILE

HORIZONTAL SCALE 1" = 40'
VERTICAL SCALE 1" = 8'

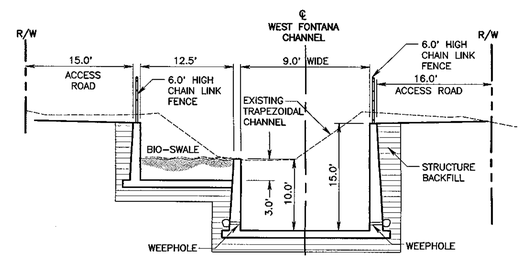
CONSTRUCTION NOTES:

1. PROTECT-IN-PLACE
3. TO BE RELOCATED BY THE CONTRACTOR AS DIRECTED BY THE ENGINEER
9. INSTALL 6.0' HIGH CHAIN LINK CHANNEL FENCE PER PLAN, DETAIL AND S.B.C.F.C.D. SPEC. DWG. II
13. GRADE MAINTENANCE ACCESS ROAD TO DRAIN AWAY FROM THE CHANNEL PER PLAN
16. CONSTRUCT BIO-SWALE AREA PER PLAN, PROFILE, SECTIONS AND DETAILS
46. CONSTRUCT 12.5' WIDE ACCESS RAMP TO/FROM BIO-SWALE PER PLAN, PROFILE AND DETAIL
51. CONSTRUCT 19.0' WIDE AND 15.0' HIGH REINFORCED RECTANGULAR CONCRETE CHANNEL (RCC), PROVIDING BIO-SWALE AREA PER PLAN (STA 39+20.00 TO STA 71+00.00) PROFILE, SECTIONS AND DETAILS
56. CONSTRUCT JUNCTION STRUCTURE FOR 6.0'ø REINFORCED CONCRETE PIPE (RCP) PER PLAN, PROFILE AND DETAILS ON SHEET xx
57. INSTALL 6.0'ø REINFORCED CONCRETE PIPE (RCP) TO PROPOSED JUNCTION STRUCTURE (APPROX. 40 L.F.) PER PLAN, PROFILE AND DETAILS
58. CONSTRUCT REINFORCED CONCRETE BULKHEAD FOR 6.0'ø REINFORCED CONCRETE PIPE (RCP) PER RIVERSIDE COUNTY STD. DETAIL M816.
59. CONSTRUCT REINFORCED RECTANGULAR CONCRETE CHANNEL(RCC) TRANSITION STRUCTURE FROM 19.0' TO 20.0' WIDE AND 15.0' TO 17.0' HIGH PROVIDING BIO-SWALE AREA PER PLAN (STA 71+00.00 TO STA 72+00.00), PROFILE AND DETAILS
60. CONSTRUCT 20.0' WIDE AND 17.0' HIGH REINFORCED RECTANGULAR CONCRETE CHANNEL (RCC) PROVIDING BIO-SWALE AREA PER PLAN (STA 72+00.00 TO STA 78+00.00), PROFILE AND DETAILS



PLAN

SCALE 1" = 40'



TYPICAL SECTION REINFORCED CONCRETE CHANNEL (BIO-SWALE AREA)

SCALE: 1" = 10'

GRAPHIC SCALE 1" = 40'
0 40 80 120

REGISTERED PROFESSIONAL ENGINEER
Erwin R. Fogerson
49060
Exp. 9/30/16
CIVIL
STATE OF CALIFORNIA

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT
1939
CALIFORNIA

REVISIONS			
MARK	DATE	DESCRIPTION	BY:

SUBMITTED BY: JON SMITH, P.E. DATE
RECOMMENDED BY: ERWIN FOGERSON, P.E. DATE
APPROVED BY: KEVIN BLAKESLEE, P.E. FLOOD CONTROL ENGINEER DATE

PROJ. ENGR.	DESIGNED BY	REV'D BY	DRAWN BY
JS	DN	EF	DN

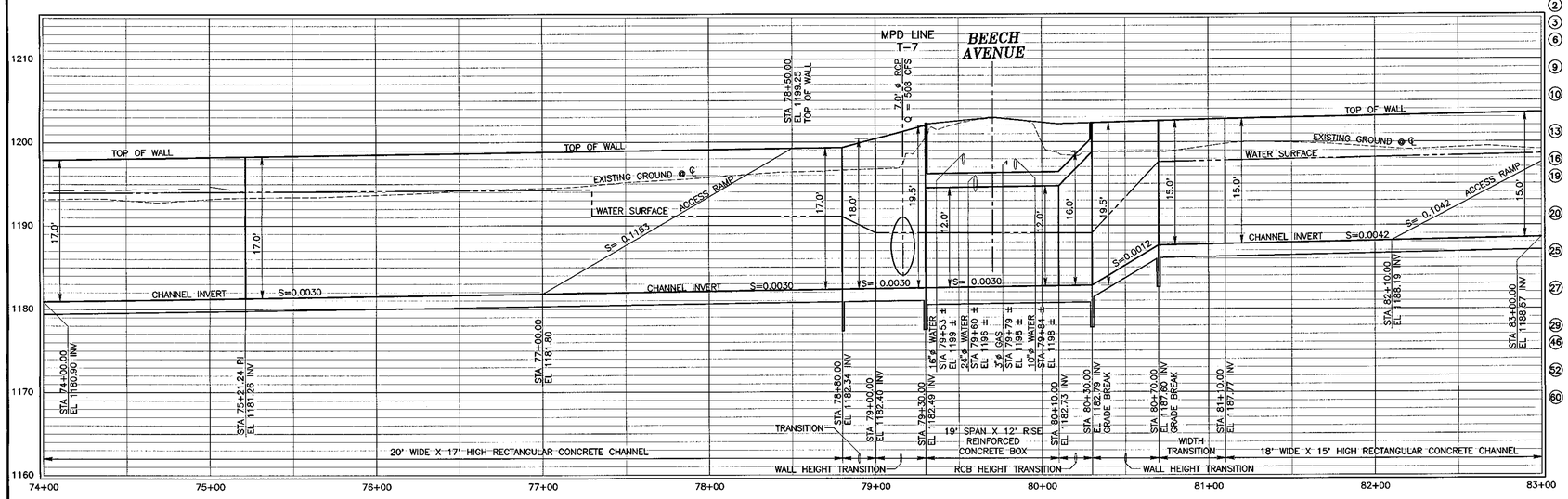
SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT

SAN SEVAINE CREEK SYSTEM
WEST FONTANA CHANNEL
STA .65+00.00 TO STA. 74+00.00

DATE: SEPT 2016
SCALE: AS SHOWN
FILE NO.: 1-809-
DRAWING NO.:
SHEET NO.: 11 OF xx

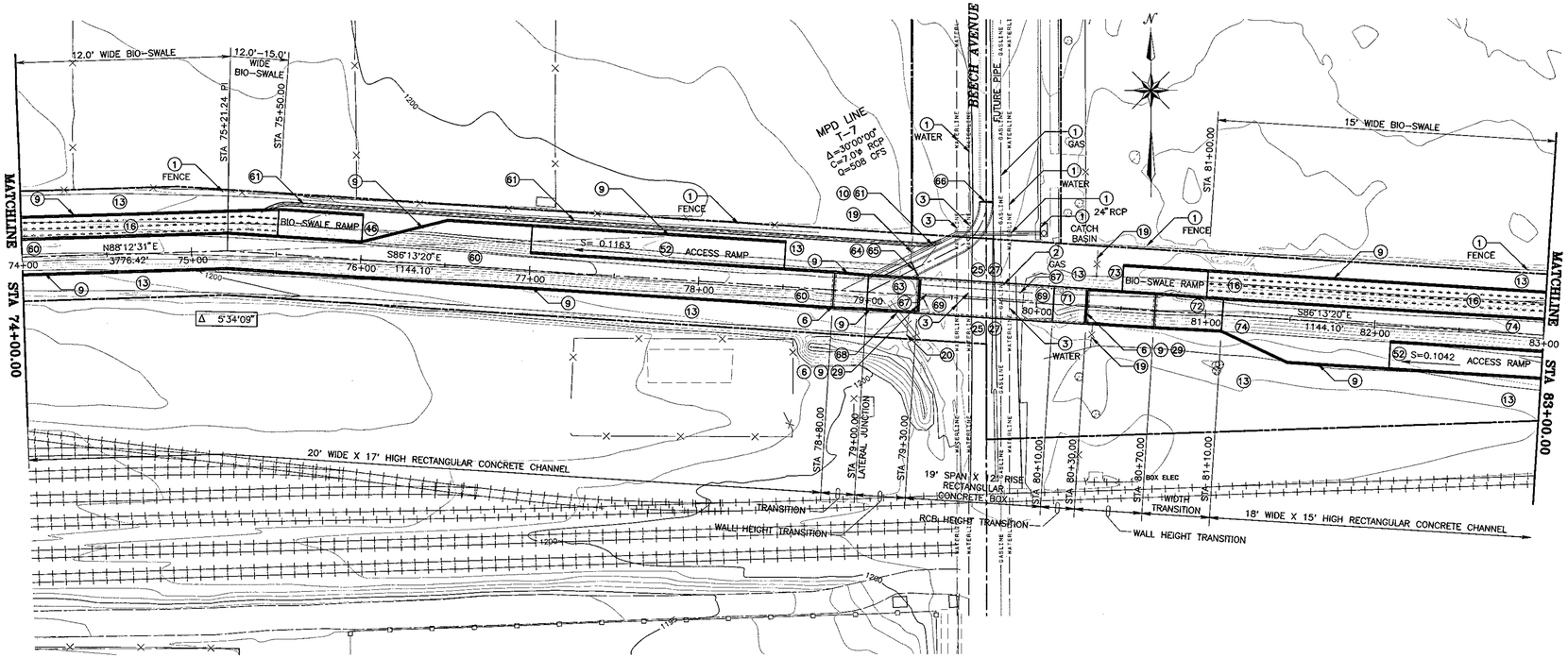
65% SUBMITTAL

N:\ACTIVE PROJECTS\West Fontana\West Fontana Channel Improvement September 8 2016.pro Sep 8, 2016



PROFILE

HORIZONTAL SCALE 1" = 40'
VERTICAL SCALE 1" = 8'



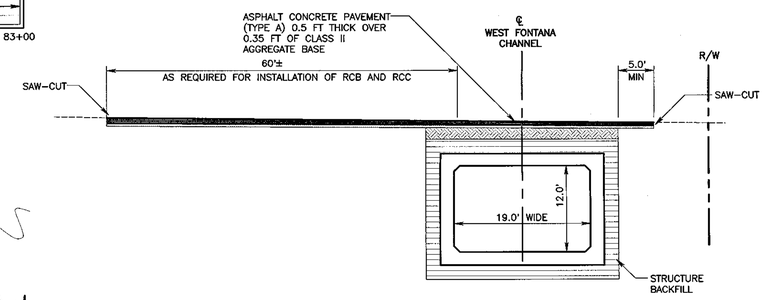
PLAN

SCALE 1" = 40'

GRAPHIC SCALE 1" = 40'
0 40 80 120

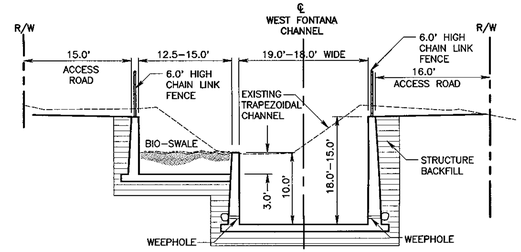
CONSTRUCTION NOTES:

1. PROTECT-IN-PLACE
2. TO BE RELOCATED BY OTHERS
3. TO BE RELOCATED BY THE CONTRACTOR AS DIRECTED BY THE ENGINEER
6. CONSTRUCT 5.0' DEEP CONCRETE CUT-OFF WALL PER PLAN, PROFILE AND DETAIL
9. INSTALL 6.0' HIGH CHAIN LINK CHANNEL FENCE PER PLAN, DETAIL AND S.B.C.F.C.D. SPEC. DWG. II
10. BREAK EXISTING 24"ø REINFORCED CONCRETE PIPE (RCP) SUFFICIENTLY TO CONSTRUCT NEW 24"ø RCP TO DRAIN TO BIO-SWALE. INVERT ELEVATION AND GRADE TO BE ADJUSTED IN THE FIELD (D=1350)
13. GRADE MAINTENANCE ACCESS ROAD TO DRAIN AWAY FROM THE CHANNEL PER PLAN
16. CONSTRUCT BIO-SWALE AREA PER PLAN, PROFILE, SECTIONS AND DETAILS
19. REMOVE AND DISPOSE EXISTING PIPE GATE AND RE-INSTALL 20.0' WIDE DOUBLE DRIVE GATE PER S.B.C.F.C.D. SPEC. DWG. II, LOCATION AS DIRECTED BY THE ENGINEER
20. REMOVE AND DISPOSE EXISTING PIPE GATE AND RE-INSTALL 15.0' WIDE SINGLE DRIVE GATE PER S.B.C.F.C.D. SPEC. DWG. II, LOCATION AS DIRECTED BY THE ENGINEER
25. SAW CUT, BREAK AND DISPOSE EXISTING AC PAVEMENT AS REQUIRED FOR THE CONSTRUCTION AND INSTALLATION OF THE REINFORCED CONCRETE PIPE (RCP) AND REINFORCED CONCRETE BOX (RCB)
27. PLACE 0.5' ASPHALT CONCRETE (TYPE A) OVER 0.35' OF CLASS II AGGREGATE BASE. FINISHED GRADE TO MATCH EXISTING CONDITION PRIOR TO CONSTRUCTION
29. CONSTRUCT PARAPPET WALL PER PLAN, PROFILE AND DETAIL
46. CONSTRUCT 12.5' WIDE ACCESS RAMP TO/FROM BIO-SWALE PER PLAN, PROFILE AND DETAIL
52. CONSTRUCT 15.0' WIDE ACCESS RAMP TO CHANNEL PER PLAN, PROFILE AND DETAIL
60. CONSTRUCT 20.0' WIDE AND 17.0' HIGH REINFORCED RECTANGULAR CONCRETE CHANNEL (RCC) PROVIDING BIO-SWALE AREA PER PLAN (STA 72+00.00 TO STA 78+00.00), PROFILE AND DETAILS
61. INSTALL 24"ø REINFORCED CONCRETE PIPE (RCP) CONNECTOR TO DRAIN AT BIO-SWALE (APPROX. 400 L.F.) . INVERT ELEVATION AND GRADE TO BE ADJUSTED IN THE FIELD (D=1350) PER PLAN, PROFILE AND DETAILS
62. CONSTRUCT REINFORCED RECTANGULAR CONCRETE CHANNEL(RCC) TRANSITION STRUCTURE FROM 20.0' TO 19.0' WIDE AND 17.0' TO 18.0' HIGH PER PLAN (STA 78+80.00 TO STA 79+00.00), PROFILE AND DETAILS
63. CONSTRUCT 19.0' WIDE RECTANGULAR CONCRETE CHANNEL(RCC) WALL HEIGHT TRANSITION STRUCTURE FROM 18.0' TO 19.5' HIGH PER PLAN (STA 79+000.00 TO STA 79+30.00), PROFILE AND DETAILS
64. CONSTRUCT JUNCTION STRUCTURE FOR 7.0'ø REINFORCED CONCRETE PIPE (RCP) PER PLAN, PROFILE AND DETAILS ON SHEET xx
65. INSTALL 7.0'ø REINFORCED CONCRETE PIPE (RCP) TO PROPOSED JUNCTION STRUCTURE (APPROX. 65 L.F.) PER PLAN, PROFILE AND DETAILS
66. CONSTRUCT REINFORCED CONCRETE BULKHEAD FOR 7.0'ø REINFORCED CONCRETE PIPE (RCP) PER RIVERSIDE COUNTY STD. DETAIL M816.
67. REMOVE AND DISPOSE EXISTING 3.0'ø CORRUGATED METAL PIPE (CMP)
68. BREAK EXISTING 24"ø REINFORCED CONCRETE PIPE (RCP) SUFFICIENTLY TO CONSTRUCT JUNCTION STRUCTURE TO DRAIN TO RECTANGULAR CONCRETE CHANNEL. INVERT ELEVATION AND GRADE TO BE ADJUSTED IN THE FIELD
69. INSTALL 19.0' SPAN AND 12.0' RISE PRE-CAST REINFORCED CONCRETE BOX (RCB) WITH H-20 LOADING PER PLAN (STA 79+30.00 TO STA 80+10.00), PROFILE, SECTIONS AND DETAILS. SEE SPECIAL PROVISIONS
70. CONSTRUCT 19.0' SPAN REINFORCED CONCRETE BOX(RCB) HEIGHT TRANSITION STRUCTURE FROM 12.0' RISE TO 16.0' RISE PER PLAN(STA 80+10.00 TO STA 80+30.00), PROFILE, DETAILS AND 2009 S.P.P.W.C. STD. DWG. 341-1
71. CONSTRUCT 19.0' WIDE RECTANGULAR CONCRETE CHANNEL(RCC) WALL HEIGHT TRANSITION STRUCTURE FROM 19.5' TO 15.0' HIGH PER PLAN(STA 80+30.00 TO STA 80+70.00), PROFILE AND DETAILS
72. CONSTRUCT RECTANGULAR CONCRETE CHANNEL (RCC) WIDTH TRANSITION STRUCTURE FROM 19.0' TO 18.0' WIDE AND 15.0' HIGH PER PLAN (STA 80+70.00 TO STA 81+10.00), PROFILE AND DETAILS
73. CONSTRUCT 15.0' WIDE ACCESS RAMP TO/FROM BIO-SWALE PER PLAN, PROFILE AND DETAIL
74. CONSTRUCT 18.0' WIDE AND 15.0' HIGH REINFORCED RECTANGULAR CONCRETE CHANNEL (RCC), PROVIDING BIO-SWALE AREA PER PLAN (STA 81+10.00 TO STA 91+50.00), PROFILE, SECTIONS AND DETAILS



TYPICAL SECTION REINFORCED CONCRETE BOX

SCALE: 1" = 10'



TYPICAL SECTION REINFORCED CONCRETE CHANNEL (BIO-SWALE AREA)

SCALE: 1" = 10'

65% SUBMITTAL

REGISTERED PROFESSIONAL ENGINEER Erwin R. Fogerson 49060 Exp. 9/30/16 CIVIL STATE OF CALIFORNIA

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT 1939 CALIFORNIA

REVISIONS			
MARK	DATE	DESCRIPTION	BY:

SUBMITTED BY: JON SMITH, P.E. DATE
RECOMMENDED BY: ERWIN FOGERSON, P.E. DATE
APPROVED BY: KEVIN BLAKESLEE, P.E. FLOOD CONTROL ENGINEER DATE

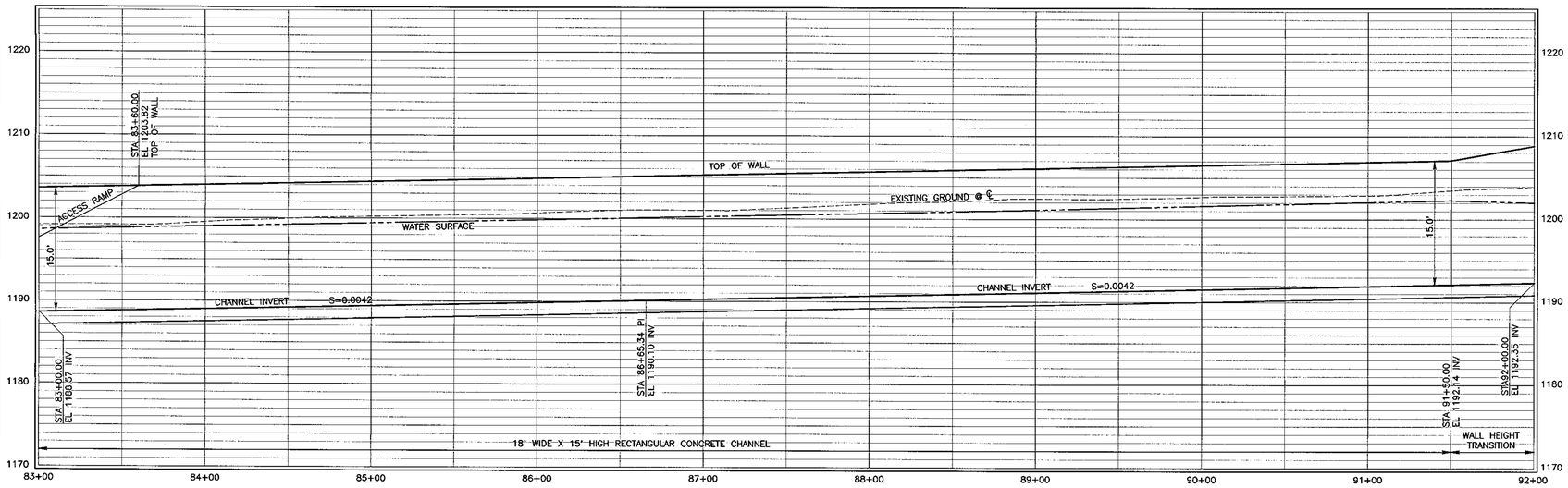
PROJ. ENGR.	DESIGNED BY	REV'D BY	DRAWN BY
JS	DN	EF	DN

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT

SAN SEVAINE CREEK SYSTEM
WEST FONTANA CHANNEL
STA. 74+00.00 TO STA. 83+00.00

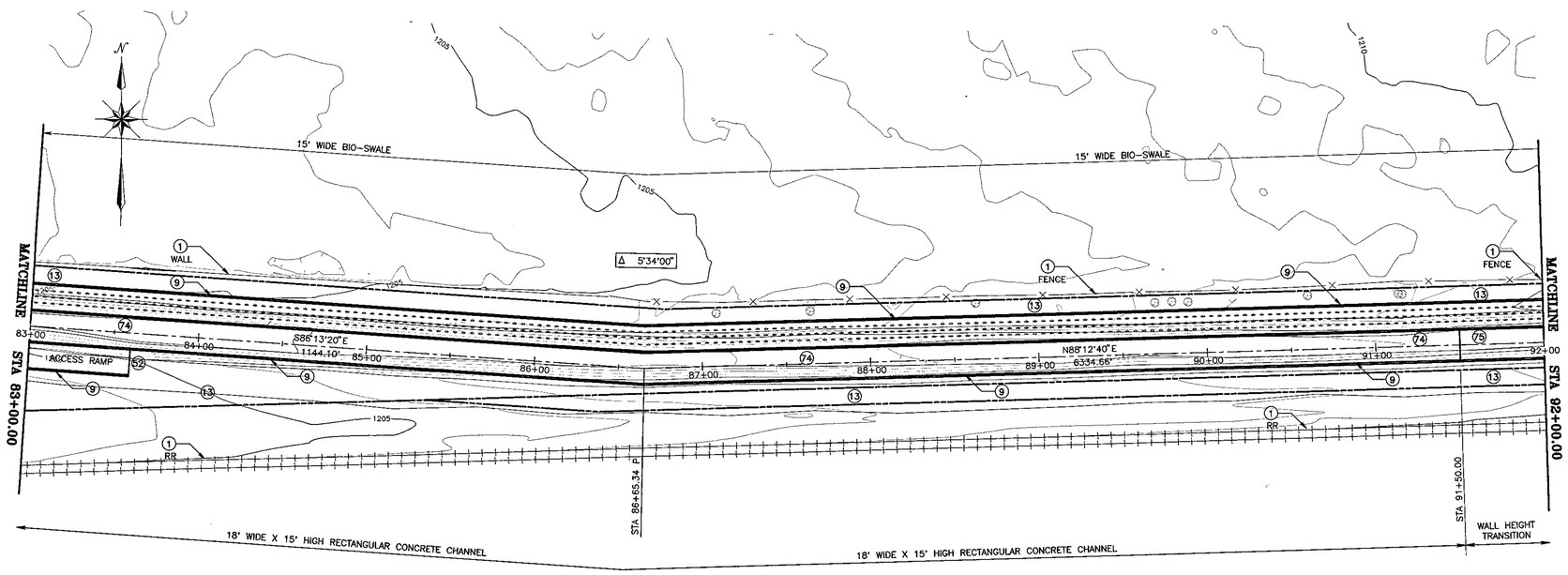
DATE: SEPT 2016
SCALE: AS SHOWN
FILE NO.: 1-809-
DRAWING NO.:
SHEET NO.: 12 OF xx

H:\ACTIVE PROJECTS\West Fontana\West Fontana Channel Improvement September 8 2016.pro Sep 8, 2016



PROFILE

HORIZONTAL SCALE 1"= 40'
VERTICAL SCALE 1"= 8'



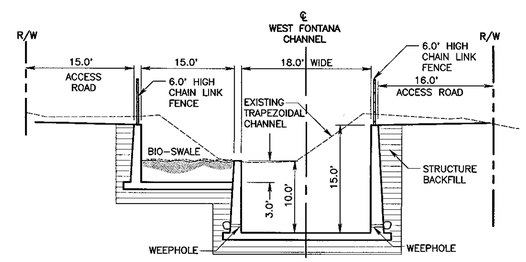
PLAN

SCALE 1"= 40'

GRAPHIC SCALE 1"= 40'
0 40 80 120

CONSTRUCTION NOTES:

1. PROTECT-IN-PLACE
9. INSTALL 6.0' HIGH CHAIN LINK CHANNEL FENCE PER PLAN, DETAIL AND S.B.C.F.C.D. SPEC. DWG. II
13. GRADE MAINTENANCE ACCESS ROAD TO DRAIN AWAY FROM THE CHANNEL PER PLAN
16. CONSTRUCT BIO-SWALE AREA PER PLAN, PROFILE, SECTIONS AND DETAILS
52. CONSTRUCT 15.0' WIDE ACCESS RAMP TO CHANNEL PER PLAN, PROFILE AND DETAIL
74. CONSTRUCT 18.0' WIDE AND 15.0' HIGH REINFORCED RECTANGULAR CONCRETE CHANNEL (RCC), PROVIDING BIO-SWALE AREA PER PLAN (STA 81+10.00 TO STA 91+50.00), PROFILE, SECTIONS AND DETAILS
75. CONSTRUCT 18.0' WIDE RECTANGULAR CONCRETE CHANNEL(RCC) WALL HEIGHT TRANSITION STRUCTURE FROM 15.0' TO 18.0' HIGH PER PLAN (STA 91+50.00 TO STA 92+50.00), PROFILE AND DETAILS



TYPICAL SECTION REINFORCED CONCRETE CHANNEL (BIO-SWALE AREA)

SCALE: 1" = 10'

65% SUBMITTAL

REGISTERED PROFESSIONAL ENGINEER Erwin R. Fogerson 49060 Exp. 9/30/16 CIVIL STATE OF CALIFORNIA

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT 1939 CALIFORNIA

REVISIONS			
MARK	DATE	DESCRIPTION	BY:

SUBMITTED BY: JON SMITH, P.E. DATE
RECOMMENDED BY: ERWIN FOGERSON, P.E. DATE
APPROVED BY: KEVIN BLAKESLEE, P.E. FLOOD CONTROL ENGINEER DATE

PROJ. ENGR.	DESIGNED BY	REV'D BY	DRAWN BY
JS	DN	EF	DN

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT

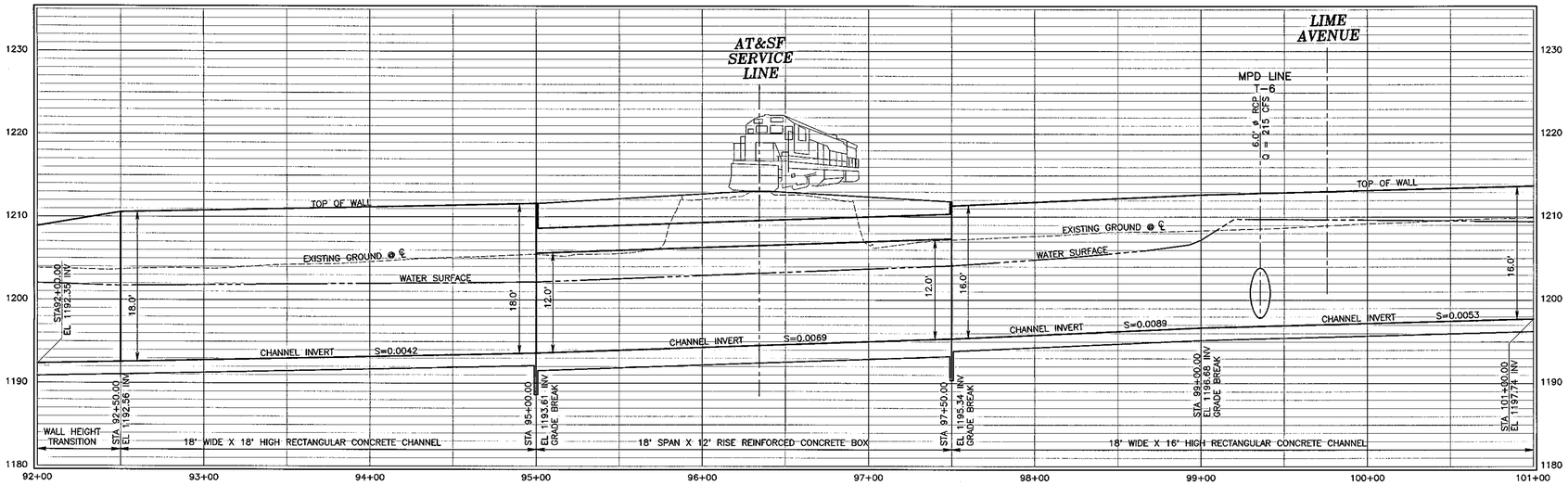
SAN SEVAINE CREEK SYSTEM

WEST FONTANA CHANNEL

STA. 83+00.00 TO STA. 92+00.00

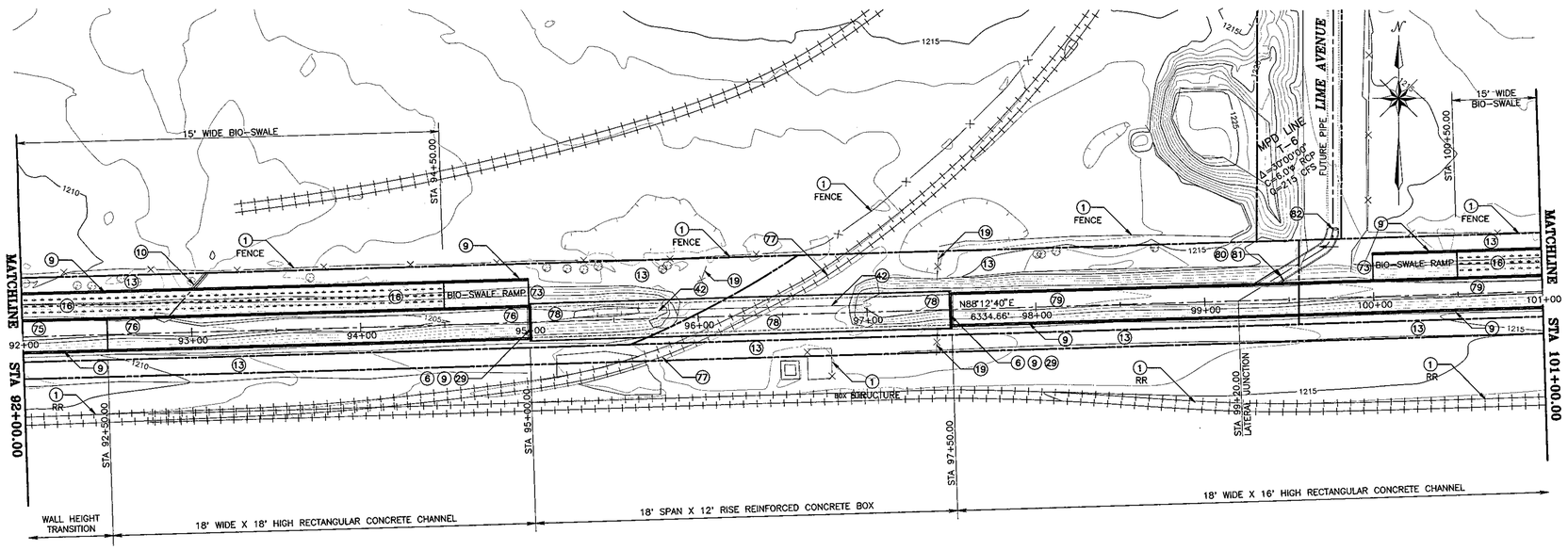
DATE	SEPT 2016
SCALE	AS SHOWN
FILE NO.	1-809-
DRAWING NO.	
SHEET NO.	13 OF xx

N:\ACTIVE PROJECTS\West Fontana\West Fontana Channel Improvement September 8 2016.pro Sep 8, 2016



PROFILE

HORIZONTAL SCALE 1" = 40'
VERTICAL SCALE 1" = 8'



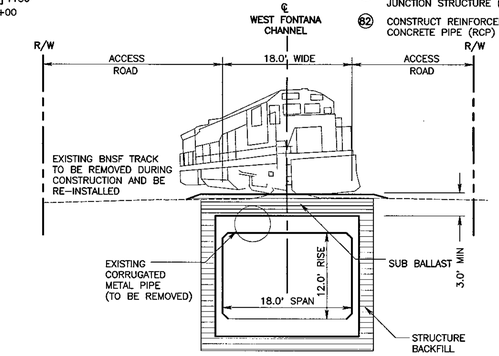
PLAN

SCALE 1" = 40'

GRAPHIC SCALE 1" = 40'
0 40 80 120

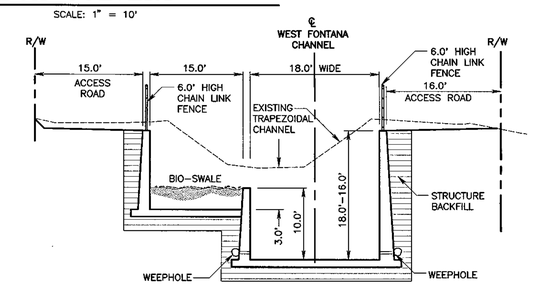
CONSTRUCTION NOTES:

1. PROTECT-IN-PLACE
6. CONSTRUCT 5.0' DEEP CONCRETE CUT-OFF WALL PER PLAN, PROFILE AND DETAIL
9. INSTALL 6.0' HIGH CHAIN LINK CHANNEL FENCE PER PLAN, DETAIL AND S.B.C.F.C.D. SPEC. DWG. II
10. BREAK EXISTING 24"ø REINFORCED CONCRETE PIPE (RCP) SUFFICIENTLY TO CONSTRUCT NEW 24"ø RCP TO DRAIN TO BIO-SWALE. INVERT ELEVATION AND GRADE TO BE ADJUSTED IN THE FIELD (D=1350)
13. GRADE MAINTENANCE ACCESS ROAD TO DRAIN AWAY FROM THE CHANNEL PER PLAN
16. CONSTRUCT BIO-SWALE AREA PER PLAN, PROFILE, SECTIONS AND DETAILS
19. REMOVE AND DISPOSE EXISTING PIPE GATE AND RE-INSTALL 20.0' WIDE DOUBLE DRIVE GATE PER S.B.C.F.C.D. SPEC. DWG. II, LOCATION AS DIRECTED BY THE ENGINEER
29. CONSTRUCT PARAPPET WALL PER PLAN, PROFILE AND DETAIL
42. REMOVE AND DISPOSE EXISTING 5.0'ø CORRUGATED METAL PIPE (CMP)
73. CONSTRUCT 15.0' WIDE ACCESS RAMP TO/FROM BIO-SWALE PER PLAN, PROFILE AND DETAIL
75. CONSTRUCT 18.0' WIDE RECTANGULAR CONCRETE CHANNEL(RCC) WALL HEIGHT TRANSITION STRUCTURE FROM 15.0' TO 18.0' HIGH PER PLAN (STA 91+50.00 TO STA 92+50.00), PROFILE AND DETAILS
76. CONSTRUCT 18.0' WIDE AND 18..0' HIGH REINFORCED RECTANGULAR CONCRETE CHANNEL (RCC), PROVIDING BIO-SWALE AREA PER PLAN (STA 92+50.00 TO STA 95+00.00), PROFILE, SECTIONS AND DETAILS
77. REMOVE DURING CONSTRUCTION INTERFERING RAILROAD TRACKS AND TIES PER PLAN (APPROXIMATELY ADJACENT TO STA 95+50.00 TO STA 97+00.00) PROFILE AND DETAILS AND RECONSTRUCT IN KIND TO MATCH EXISTING CONDITON PRIOR TO CONSTRUCTION, BY OTHERS
78. CONSTRUCT 18.0' SPAN AND 12.0' RISE REINFORCED CONCRETE BOX (RCB) PRE-CAST WITH COOPER E-80 LOADING PER PLAN (STA 95+00.00 TO STA 97+50.00), PROFILE, SECTIONS AND DETAILS. SEE SPECIAL PROVISIONS
79. CONSTRUCT 18.0' WIDE AND 16.0' HIGH REINFORCED RECTANGULAR CONCRETE CHANNEL (RCC), PROVIDING BIO-SWALE AREA PER PLAN (STA 97+50.00 TO STA 132+00.00), PROFILE, SECTIONS AND DETAILS
80. CONSTRUCT JUNCTION STRUCTURE FOR 6.0'ø REINFORCED CONCRETE PIPE (RCP) PER PLAN, PROFILE AND DETAILS ON SHEET xx
81. INSTALL 6.0'ø REINFORCED CONCRETE PIPE (RCP) TO PROPOSED JUNCTION STRUCTURE (APPROX. 44 L.F.) PER PLAN, PROFILE AND DETAILS
82. CONSTRUCT REINFORCED CONCRETE BULKHEAD FOR 6.0'ø REINFORCED CONCRETE PIPE (RCP) PER RIVERSIDE COUNTY STD. DETAIL M816.



TYPICAL SECTION REINFORCED CONCRETE BOX CULVERT

SCALE: 1" = 10'



TYPICAL SECTION REINFORCED CONCRETE CHANNEL (BIO-SWALE AREA)

SCALE: 1" = 10'

65% SUBMITTAL

REGISTERED PROFESSIONAL ENGINEER Erwin R. Fogerson 49060 Exp. 9/30/16 CIVIL STATE OF CALIFORNIA

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT 1939 CALIFORNIA

REVISIONS			
MARK	DATE	DESCRIPTION	BY:

SUBMITTED BY: JON SMITH, P.E. DATE
RECOMMENDED BY: ERWIN FOGERSON, P.E. DATE
APPROVED BY: KEVIN BLAKESLEE, P.E. FLOOD CONTROL ENGINEER DATE

PROJ. ENGR.	DESIGNED BY	REV'D BY	DRAWN BY
JS	DN	EF	DN

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT

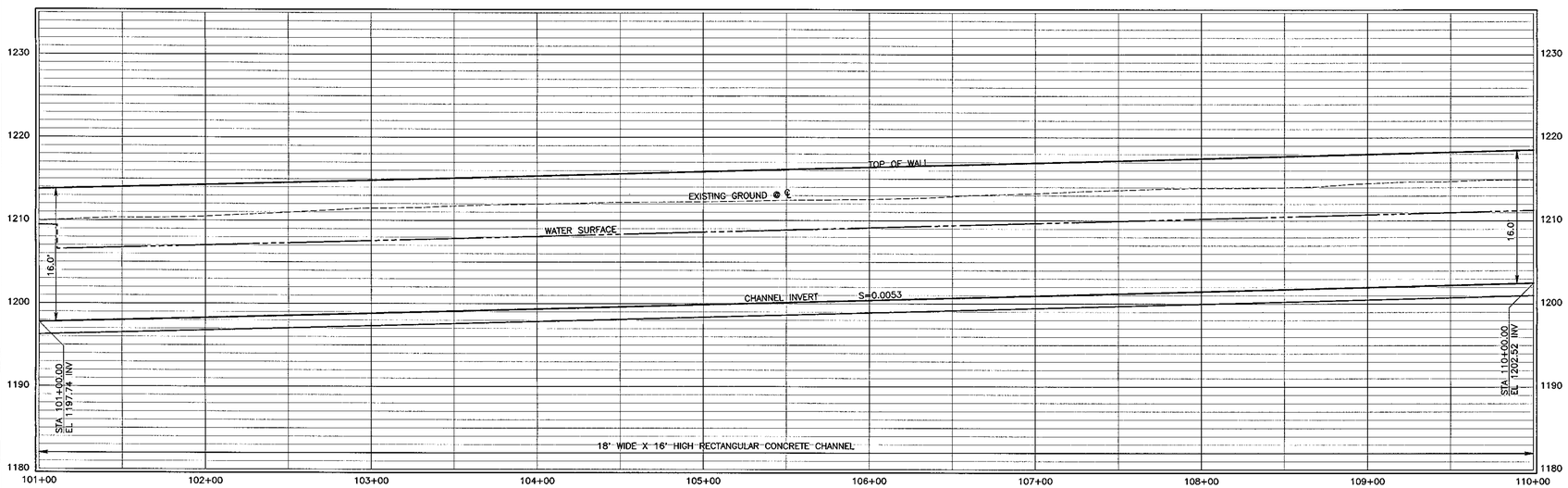
SAN SEVAINE CREEK SYSTEM

WEST FONTANA CHANNEL

STA. 92+00.00 TO STA. 101+00.00

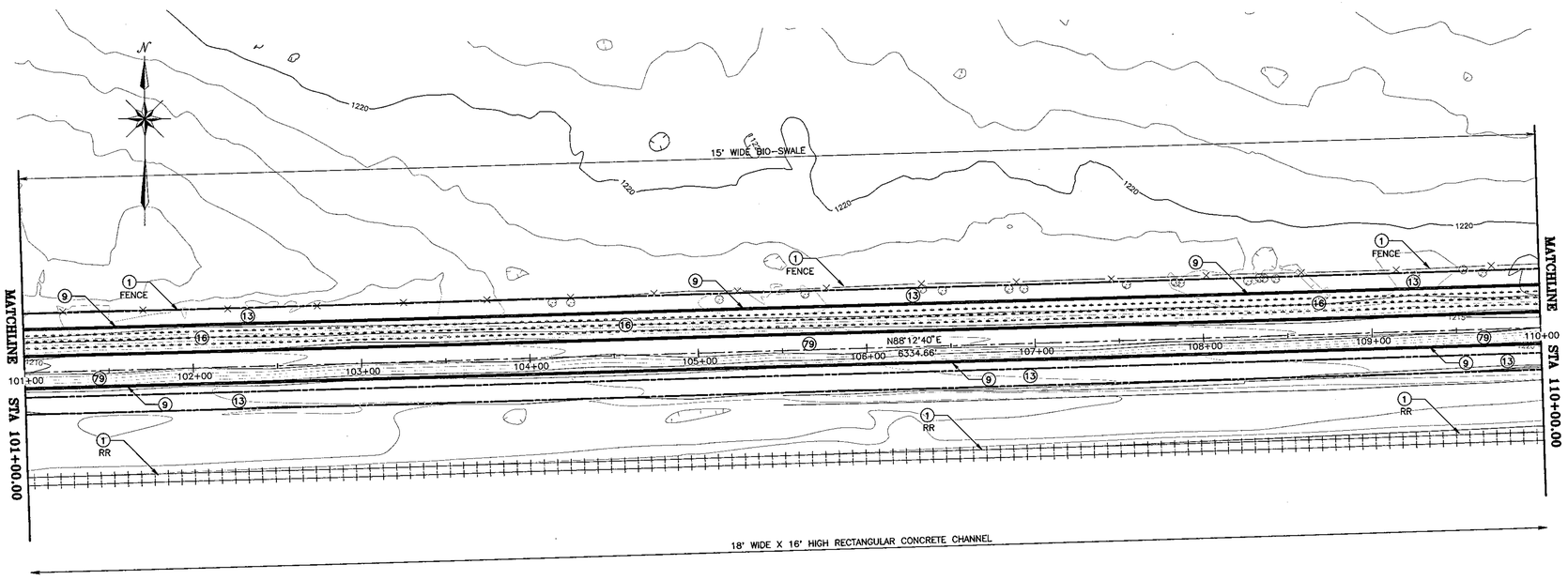
DATE	SEPT 2016
SCALE	AS SHOWN
FILE NO.	1-809-6
DRAWING NO.	
SHEET NO.	14 OF xx

N:\ACTIVE PROJECTS\West Fontana\West Fontana Channel Improvement September 8 2016.pro Sep 8, 2016



PROFILE

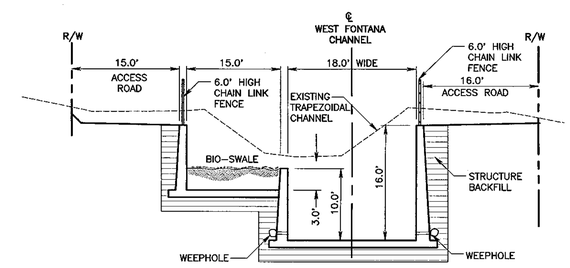
HORIZONTAL SCALE 1"= 40'
VERTICAL SCALE 1"= 8'



PLAN

SCALE 1"= 40'

GRAPHIC SCALE 1"= 40'
0 40 80 120



TYPICAL SECTION REINFORCED CONCRETE CHANNEL (BIO-SWALE AREA)

SCALE: 1" = 10'

CONSTRUCTION NOTES:

1. PROTECT-IN-PLACE
9. INSTALL 6.0' HIGH CHAIN LINK CHANNEL FENCE PER PLAN, DETAIL AND S.B.C.F.C.D. SPEC. DWG. II
13. GRADE MAINTENANCE ACCESS ROAD TO DRAIN AWAY FROM THE CHANNEL PER PLAN
16. CONSTRUCT BIO-SWALE AREA PER PLAN, PROFILE, SECTIONS AND DETAILS
79. CONSTRUCT 18.0' WIDE AND 16.0' HIGH REINFORCED RECTANGULAR CONCRETE CHANNEL (RCC), PROVIDING BIO-SWALE AREA PER PLAN (STA 97+50.00 TO STA 132+00.00), PROFILE, SECTIONS AND DETAILS

65% SUBMITTAL

REGISTERED PROFESSIONAL ENGINEER Erwin R. Fogerson 49060 Exp. 9/30/16 CIVIL STATE OF CALIFORNIA

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT 1939 CALIFORNIA

REVISIONS			
MARK	DATE	DESCRIPTION	BY:

SUBMITTED BY: JON SMITH, P.E. DATE
RECOMMENDED BY: ERWIN FOGERSON, P.E. DATE
APPROVED BY: KEVIN BLAKESLEE, P.E. FLOOD CONTROL ENGINEER DATE

PROJ. ENGR.	DESIGNED BY	REV'D BY	DRAWN BY
JS	DN	EF	DN

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT

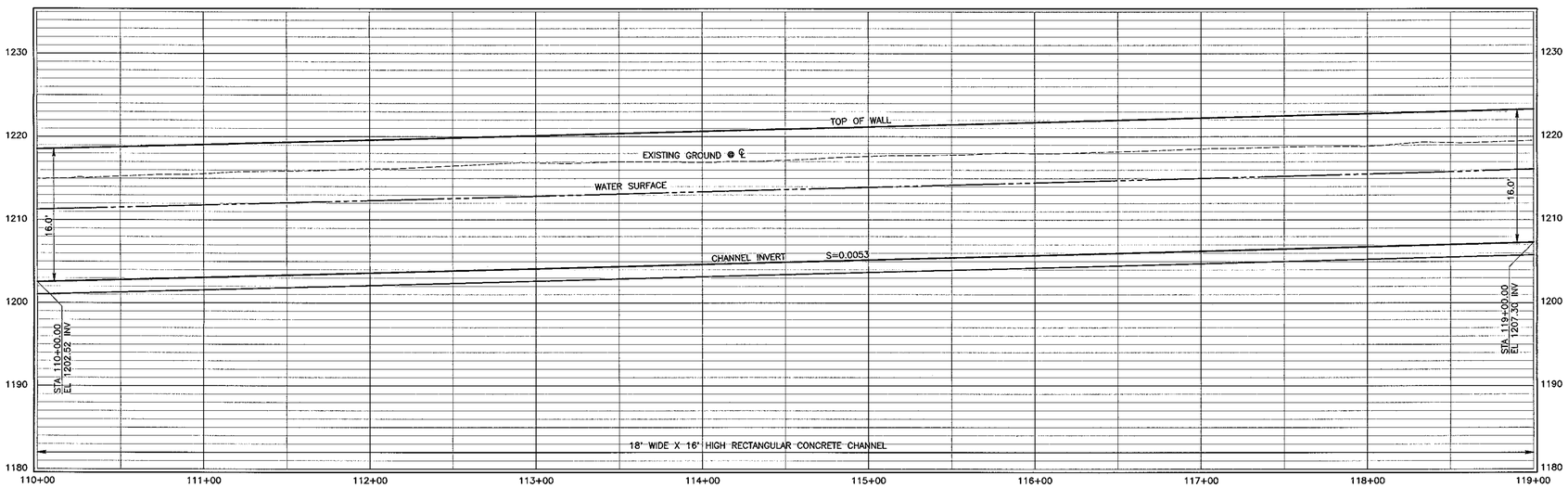
SAN SEVAINE CREEK SYSTEM

WEST FONTANA CHANNEL

STA. 101+00.00 TO STA. 110+00.00

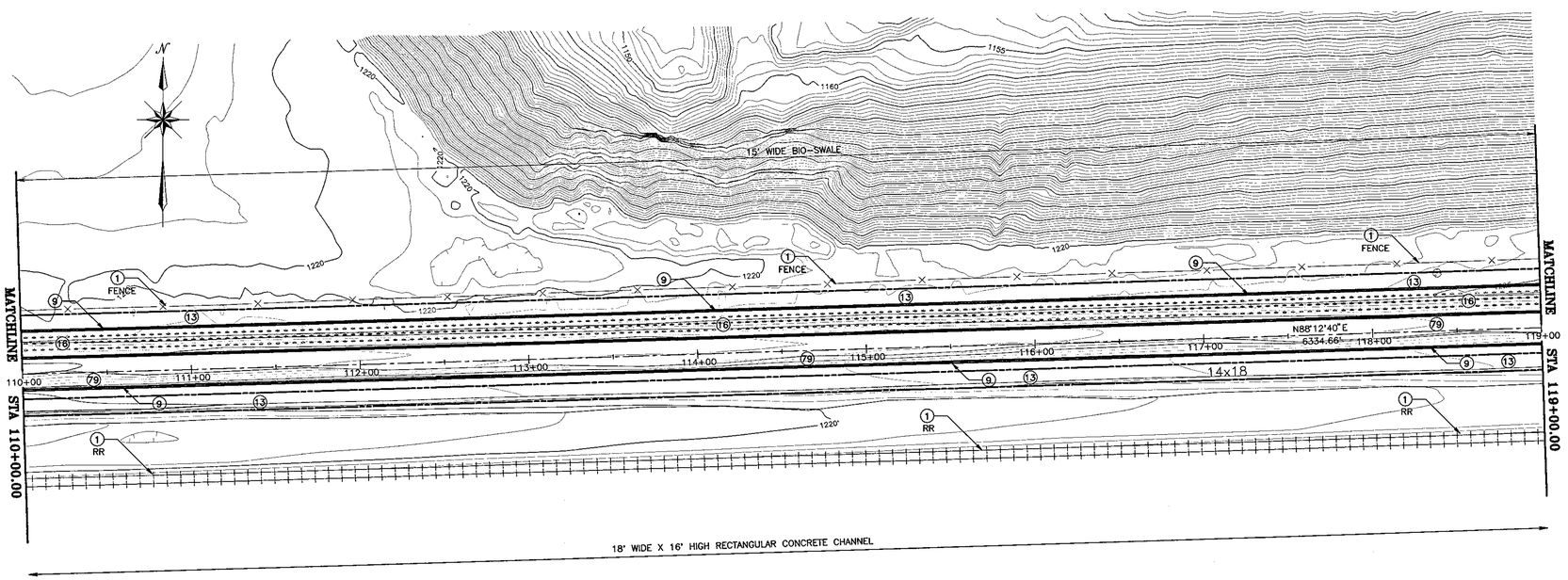
DATE: SEPT 2016
SCALE: AS SHOWN
FILE NO.: 1-809-6
DRAWING NO.:
SHEET NO.: 15 OF xx

N:\ACTIVE PROJECTS\West Fontana\West Fontana Channel Improvement September 8 2016.pro Sep 8, 2016



PROFILE

HORIZONTAL SCALE 1"= 40'
VERTICAL SCALE 1"= 8'



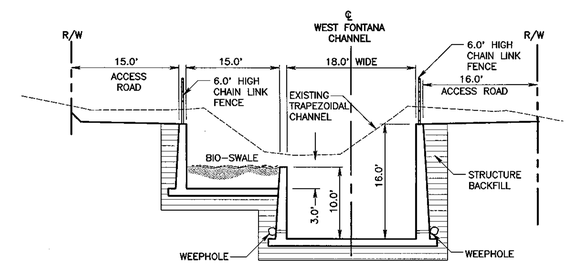
PLAN

SCALE 1"= 40'

GRAPHIC SCALE 1"= 40'
0 40 80 120

CONSTRUCTION NOTES:

1. PROTECT-IN-PLACE
9. INSTALL 6.0' HIGH CHAIN LINK CHANNEL FENCE PER PLAN, DETAIL AND S.B.C.F.C.D. SPEC. DWG. II
13. GRADE MAINTENANCE ACCESS ROAD TO DRAIN AWAY FROM THE CHANNEL PER PLAN
16. CONSTRUCT BIO-SWALE AREA PER PLAN, PROFILE, SECTIONS AND DETAILS
79. CONSTRUCT 18.0' WIDE AND 16.0' HIGH REINFORCED RECTANGULAR CONCRETE CHANNEL (RCC), PROVIDING BIO-SWALE AREA PER PLAN (STA 97+50.00 TO STA 132+00.00), PROFILE, SECTIONS AND DETAILS



TYPICAL SECTION REINFORCED CONCRETE CHANNEL (BIO-SWALE AREA)

SCALE: 1" = 10'

65% SUBMITTAL

REGISTERED PROFESSIONAL ENGINEER Erwin R. Fogerson 49060 Exp. 9/30/16 CIVIL STATE OF CALIFORNIA

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT 1939 CALIFORNIA

REVISIONS			
MARK	DATE	DESCRIPTION	BY:

SUBMITTED BY: JON SMITH, P.E. DATE
RECOMMENDED BY: ERWIN FOGERSON, P.E. DATE
APPROVED BY: KEVIN BLAKESLEE, P.E. FLOOD CONTROL ENGINEER DATE

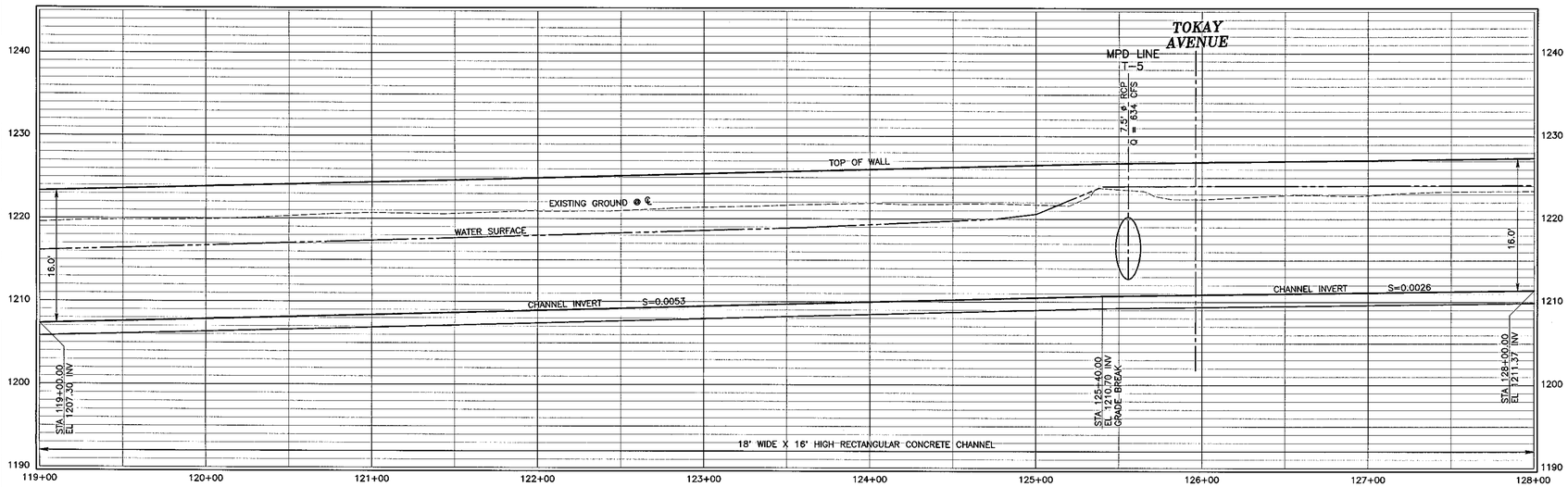
PROJ. ENGR.	DESIGNED BY	REV'D BY	DRAWN BY
JS	DN	EF	DN

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT

SAN SEVAINE CREEK SYSTEM
WEST FONTANA CHANNEL
STA. 110+00.00 TO STA. 119+00.00

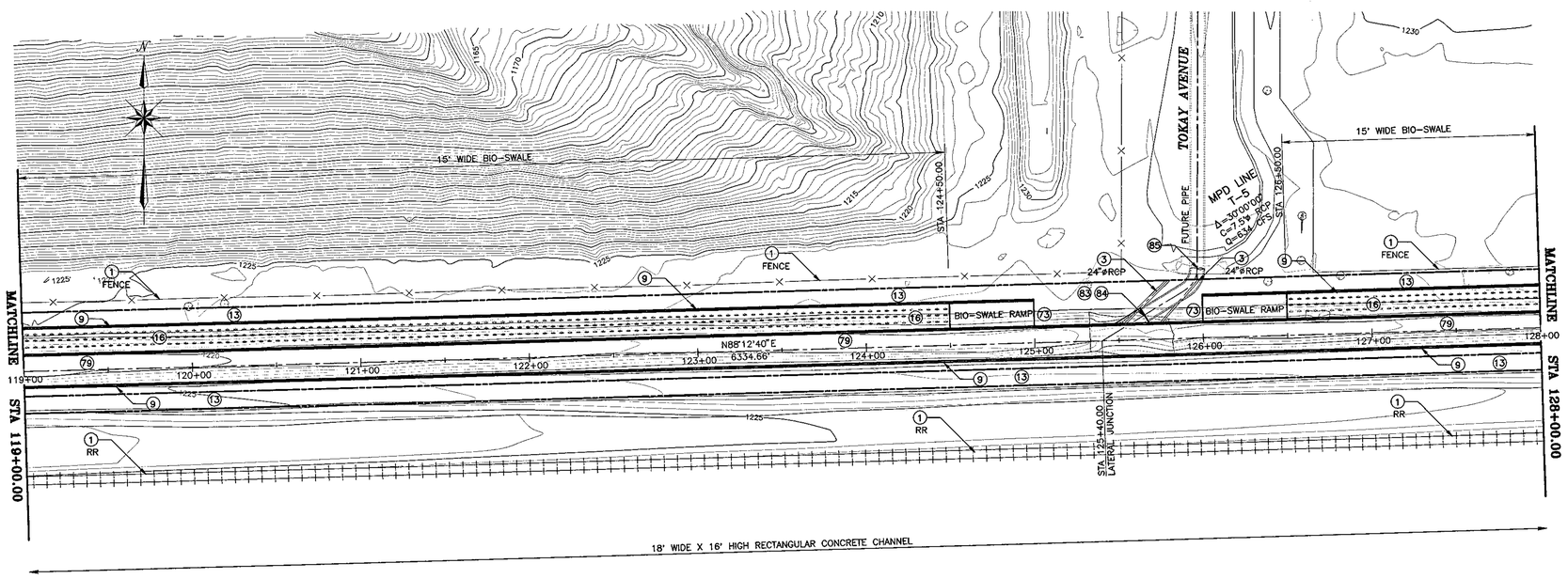
DATE	SEPT 2016
SCALE	AS SHOWN
FILE NO.	1-809-6
DRAWING NO.	
SHEET NO.	16 OF xx

N:\ACTIVE PROJECTS\West Fontana\West Fontana Channel Improvement, September 8 2016.pro Sep 8, 2016



PROFILE

HORIZONTAL SCALE 1" = 40'
VERTICAL SCALE 1" = 8'



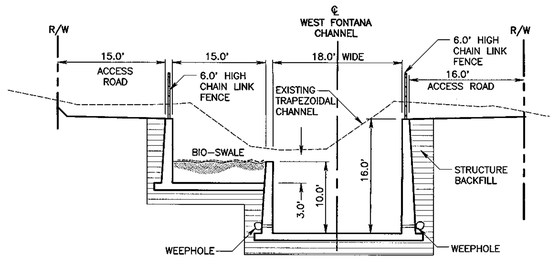
PLAN

SCALE 1" = 40'

GRAPHIC SCALE 1" = 40'
0 40 80 120

CONSTRUCTION NOTES:

1. PROTECT-IN-PLACE
3. TO BE RELOCATED BY THE CONTRACTOR AS DIRECTED BY THE ENGINEER
9. INSTALL 6.0' HIGH CHAIN LINK CHANNEL FENCE PER PLAN, DETAIL AND S.B.C.F.C.D. SPEC. DWG. II
13. GRADE MAINTENANCE ACCESS ROAD TO DRAIN AWAY FROM THE CHANNEL PER PLAN
16. CONSTRUCT BIO-SWALE AREA PER PLAN, PROFILE, SECTIONS AND DETAILS
73. CONSTRUCT 15.0' WIDE ACCESS RAMP TO/FROM BIO-SWALE PER PLAN, PROFILE AND DETAIL
79. CONSTRUCT 18.0' WIDE AND 16.0' HIGH REINFORCED RECTANGULAR CONCRETE CHANNEL (RCC), PROVIDING BIO-SWALE AREA PER PLAN (STA 97+50.00 TO STA 132+00.00), PROFILE, SECTIONS AND DETAILS
83. CONSTRUCT JUNCTION STRUCTURE FOR 7.5'ø REINFORCED CONCRETE PIPE (RCP) PER PLAN, PROFILE AND DETAILS ON SHEET xx
84. INSTALL 7.5'ø REINFORCED CONCRETE PIPE (RCP) TO PROPOSED JUNCTION STRUCTURE (APPROX. 44 L.F.) PER PLAN, PROFILE AND DETAILS
85. CONSTRUCT REINFORCED CONCRETE BULKHEAD FOR 7.5'ø REINFORCED CONCRETE PIPE (RCP) PER RIVERSIDE COUNTY STD. DETAIL M816.



TYPICAL SECTION REINFORCED CONCRETE CHANNEL (BIO-SWALE AREA)

SCALE: 1" = 10'

65% SUBMITTAL

REGISTERED PROFESSIONAL ENGINEER Erwin R. Fogerson 49060 Exp. 9/30/16 CIVIL STATE OF CALIFORNIA

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT 1939 CALIFORNIA

REVISIONS			
MARK	DATE	DESCRIPTION	BY:

SUBMITTED BY: JON SMITH, P.E. DATE
RECOMMENDED BY: ERWIN FOGERSON, P.E. DATE
APPROVED BY: KEVIN BLAKESLEE, P.E. FLOOD CONTROL ENGINEER DATE

PROJ. ENGR.	DESIGNED BY	REV'D BY	DRAWN BY
JS	DN	EF	DN

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT

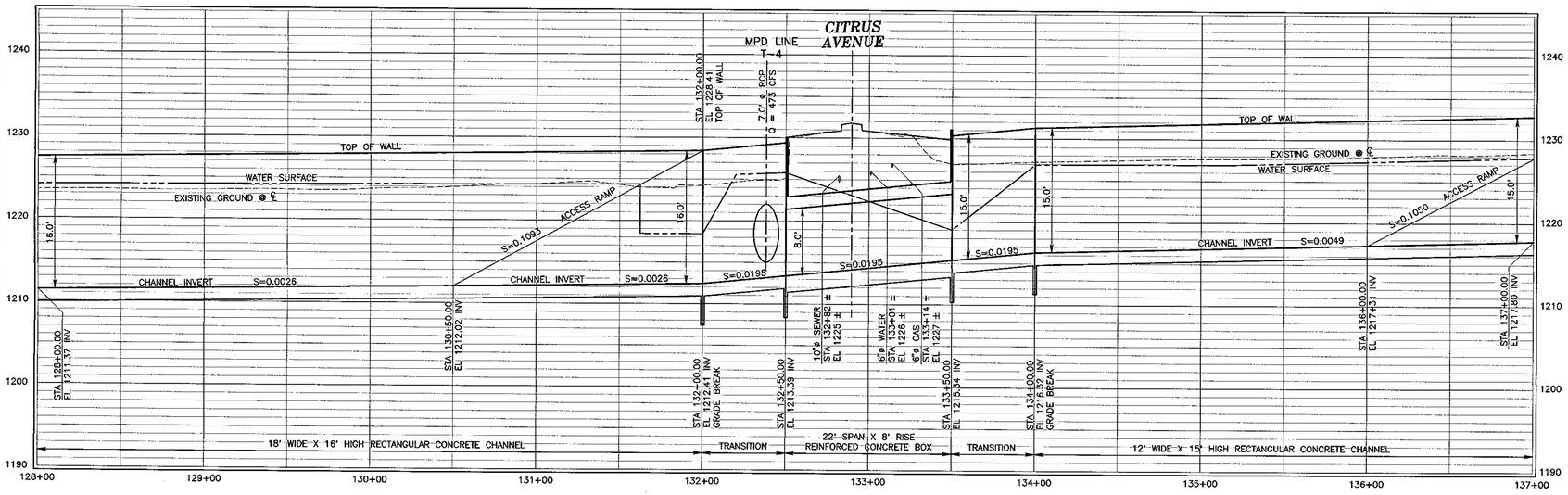
SAN SEVAINE CREEK SYSTEM

WEST FONTANA CHANNEL

STA. 119+00.00 TO STA. 128+00.00

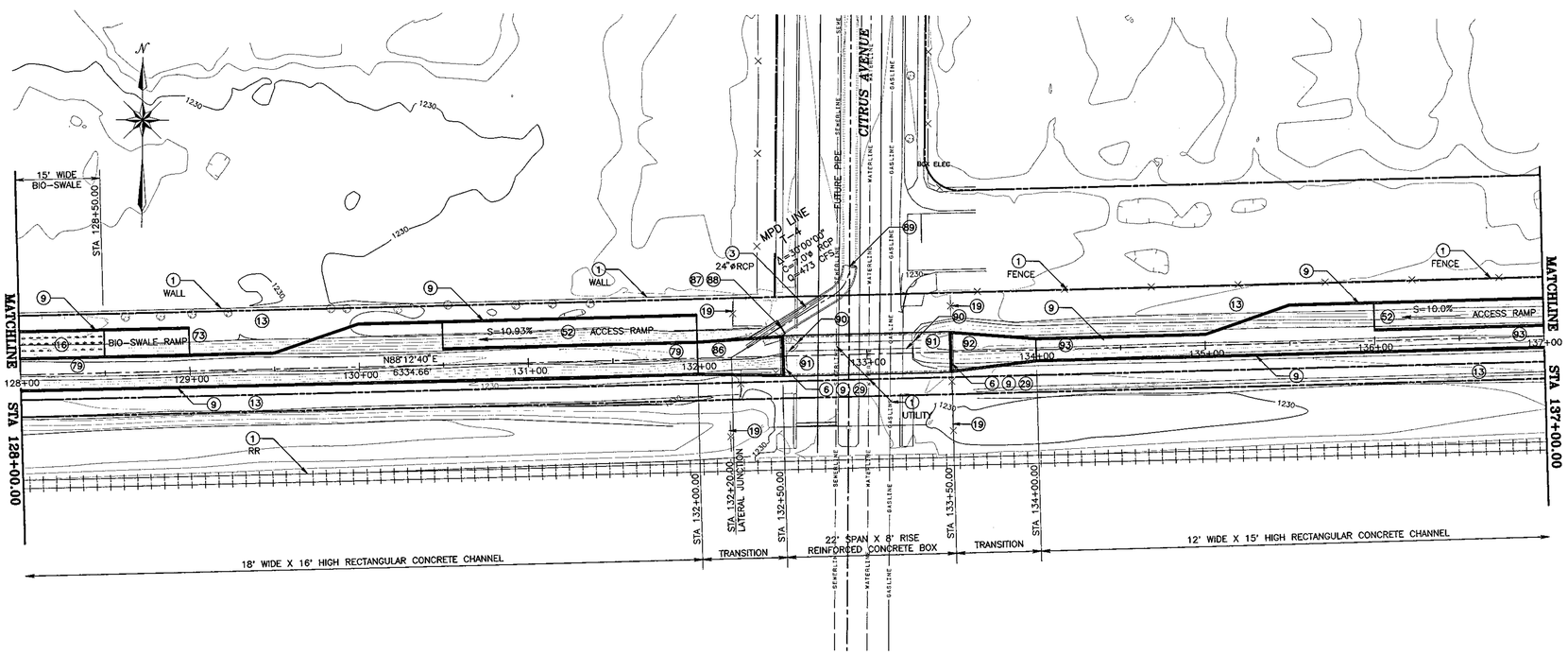
DATE	SEPT 2016
SCALE	AS SHOWN
FILE NO.	1-809-6
DRAWING NO.	
SHEET NO.	17 OF xx

N:\ACTIVE PROJECTS\West Fontana\West Fontana Channel Improvement September 8 2016.pro Sep. 8, 2016



PROFILE

HORIZONTAL SCALE 1" = 40'
VERTICAL SCALE 1" = 8'



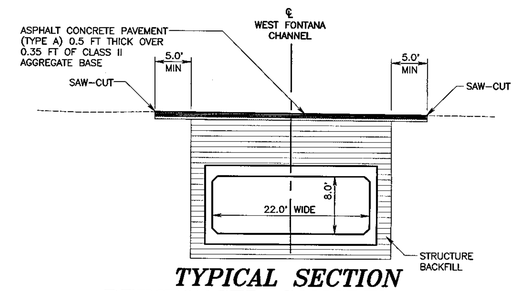
PLAN

SCALE 1" = 40'

GRAPHIC SCALE 1" = 40'
0 40 80 120

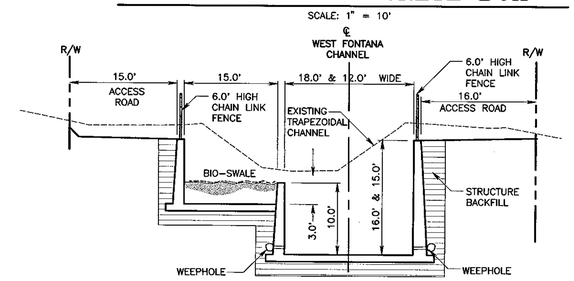
CONSTRUCTION NOTES:

1. PROTECT-IN-PLACE
3. TO BE RELOCATED BY THE CONTRACTOR AS DIRECTED BY THE ENGINEER
6. CONSTRUCT 5.0' DEEP CONCRETE CUT-OFF WALL PER PLAN, PROFILE AND DETAIL
9. INSTALL 6.0' HIGH CHAIN LINK CHANNEL FENCE PER PLAN, DETAIL AND S.B.C.F.C.D. SPEC. DWG. II
13. GRADE MAINTENANCE ACCESS ROAD TO DRAIN AWAY FROM THE CHANNEL PER PLAN
16. CONSTRUCT BIO-SWALE AREA PER PLAN, PROFILE, SECTIONS AND DETAILS
19. REMOVE AND DISPOSE EXISTING PIPE GATE AND RE-INSTALL 20.0' WIDE DOUBLE DRIVE GATE PER S.B.C.F.C.D. SPEC. DWG. II, LOCATION AS DIRECTED BY THE ENGINEER
29. CONSTRUCT PARAPPET WALL PER PLAN, PROFILE AND DETAIL
52. CONSTRUCT 15.0' WIDE ACCESS RAMP TO CHANNEL PER PLAN, PROFILE AND DETAIL
73. CONSTRUCT 15.0' WIDE ACCESS RAMP TO/FROM BIO-SWALE PER PLAN, PROFILE AND DETAIL
79. CONSTRUCT 18.0' WIDE AND 16.0' HIGH REINFORCED RECTANGULAR CONCRETE CHANNEL (RCC), PROVIDING BIO-SWALE AREA PER PLAN (STA 97+50.00 TO STA 132+00.00), PROFILE, SECTIONS AND DETAILS
86. CONSTRUCT RECTANGULAR CONCRETE CHANNEL (RCC) TRANSITION STRUCTURE FROM 18.0' TO 22.0' WIDE AND 16.0' HIGH PER PLAN (STA 132+00.00 TO STA 132+50.00), PROFILE AND DETAILS
87. CONSTRUCT JUNCTION STRUCTURE FOR 7.0'ø REINFORCED CONCRETE PIPE (RCP) PER PLAN, PROFILE AND DETAILS
88. INSTALL 7.0'ø REINFORCED CONCRETE PIPE (RCP) TO PROPOSED JUNCTION STRUCTURE (APPROX. 60 L.F.) PER PLAN, PROFILE AND DETAILS
89. CONSTRUCT REINFORCED CONCRETE BULKHEAD FOR 7.0'ø REINFORCED CONCRETE PIPE (RCP) PER RIVERSIDE COUNTY STD. DETAIL M816.
90. REMOVE AND DISPOSE EXISTING DOUBLE 3.5'ø CORRUGATED METAL PIPE(CMP)
91. INSTALL 22.0' SPAN AND 8.0' RISE PRE-CAST REINFORCED CONCRETE BOX (RCB) WITH H-20 LOADING PER PLAN (STA 132+50.00 TO STA 133+50.00) PROFILE, SECTIONS AND DETAILS. SEE SPECIAL PROVISIONS
92. CONSTRUCT REINFORCED RECTANGULAR CONCRETE CHANNEL(RCC) TRANSITION STRUCTURE FROM 22.0' TO 12.0' WIDE AND 15.0' HIGH PER PLAN (STA 133+50.00 TO STA 134+00.00), PROFILE AND DETAILS
93. CONSTRUCT 12.0' WIDE AND 15.0' HIGH REINFORCED RECTANGULAR CONCRETE CHANNEL (RCC), PROVIDING BIO-SWALE AREA PER PLAN (STA 134+00.00 TO STA 140+00.00) PROFILE, SECTIONS AND DETAILS



TYPICAL SECTION REINFORCED CONCRETE BOX

SCALE: 1" = 10'



TYPICAL SECTION REINFORCED CONCRETE CHANNEL (BIO-SWALE AREA)

SCALE: 1" = 10'

65% SUBMITTAL

REGISTERED PROFESSIONAL ENGINEER
Erwin R. Fogerson
49060
Exp. 9/30/16
CIVIL
STATE OF CALIFORNIA

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT 1939 CALIFORNIA

REVISIONS

MARK	DATE	DESCRIPTION	BY:

SUBMITTED BY: JON SMITH, P.E. DATE
RECOMMENDED BY: ERWIN FOGERSON, P.E. DATE
APPROVED BY: KEVIN BLAKESLEE, P.E. FLOOD CONTROL ENGINEER DATE

PROJ. ENGR.	DESIGNED BY	REV'D BY	DRAWN BY
JS	DN	EF	DN

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT

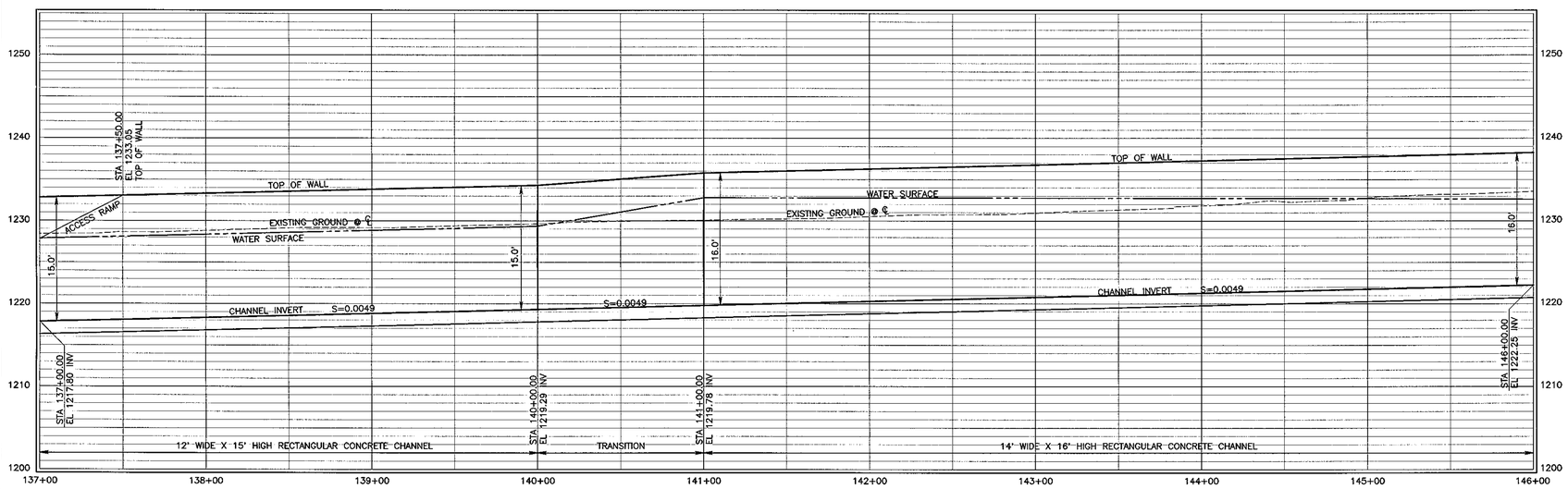
SAN SEVAINE CREEK SYSTEM

WEST FONTANA CHANNEL

STA. 128+00.00 TO STA. 137+00.00

DATE: SEPT 2016
SCALE: AS SHOWN
FILE NO.: 1-809-6
DRAWING NO.:
SHEET NO.: 18 OF xx

H:\ACTIVE PROJECTS\West Fontana\West Fontana Channel Improvement September 8 2016.pro Sep 8, 2016

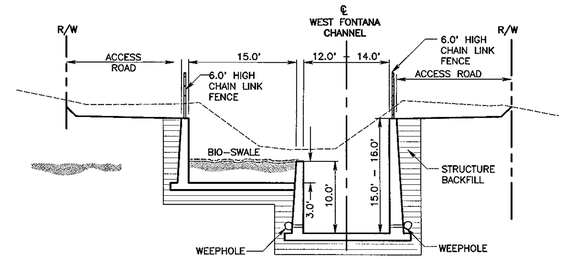


PROFILE

HORIZONTAL SCALE 1"= 40'
VERTICAL SCALE 1"= 8'

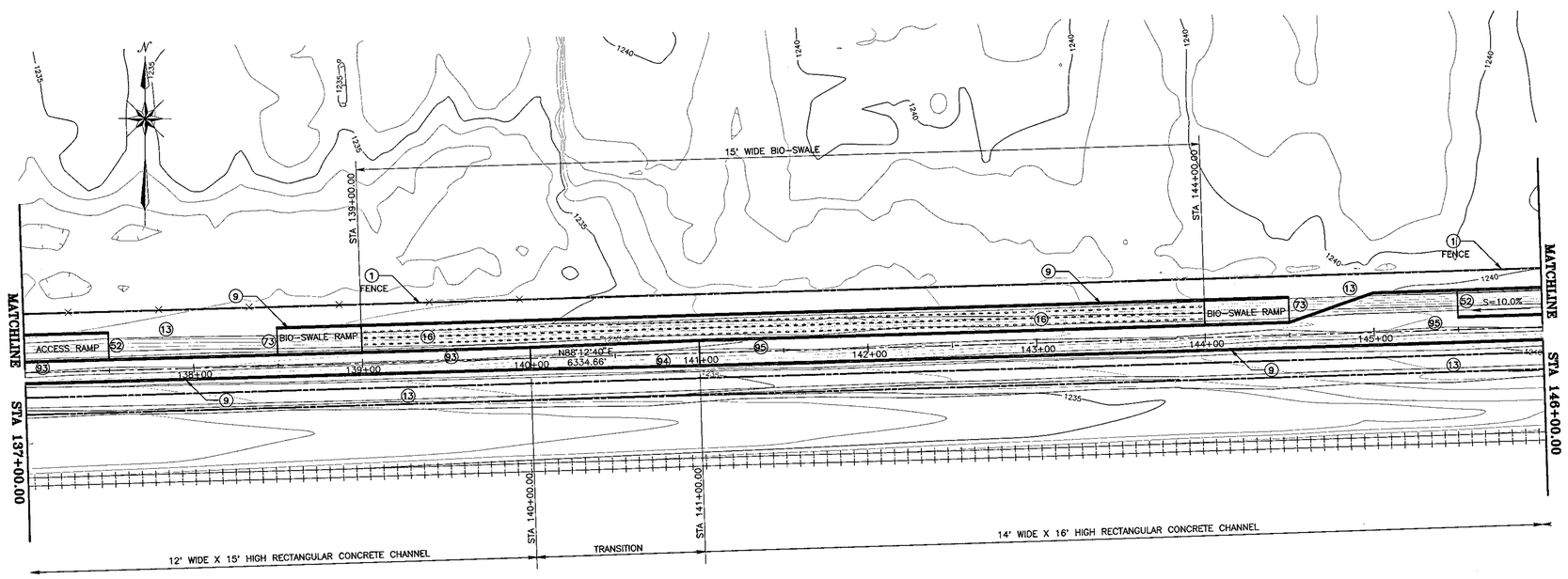
CONSTRUCTION NOTES:

1. PROTECT-IN-PLACE
6. CONSTRUCT 5.0' DEEP CONCRETE CUT-OFF WALL PER PLAN, PROFILE AND DETAIL
9. INSTALL 6.0' HIGH CHAIN LINK CHANNEL FENCE PER PLAN, DETAIL AND S.B.C.F.C.D. SPEC. DWG. II
13. GRADE MAINTENANCE ACCESS ROAD TO DRAIN AWAY FROM THE CHANNEL PER PLAN
16. CONSTRUCT BIO-SWALE AREA PER PLAN, PROFILE, SECTIONS AND DETAILS
52. CONSTRUCT 15.0' WIDE ACCESS RAMP TO CHANNEL PER PLAN, PROFILE AND DETAIL
73. CONSTRUCT 15.0' WIDE ACCESS RAMP TO/FROM BIO-SWALE PER PLAN, PROFILE AND DETAIL
93. CONSTRUCT 12.0' WIDE AND 15.0' HIGH REINFORCED RECTANGULAR CONCRETE CHANNEL (RCC), PROVIDING BIO-SWALE AREA PER PLAN (STA 134+00.00 TO STA 140+00.00) PROFILE, SECTIONS AND DETAILS
94. CONSTRUCT RECTANGULAR CONCRETE CHANNEL (RCC) TRANSITION STRUCTURE FROM 12.0' TO 14.0' WIDE AND 15.0'-16.0' HIGH PROVIDING BIO-SWALE AREA PER PLAN (STA 140+00.00 TO STA 141+00.00), PROFILE AND DETAILS
95. CONSTRUCT 14.0' WIDE AND 16.0' HIGH REINFORCED RECTANGULAR CONCRETE CHANNEL (RCC), PROVIDING BIO-SWALE AREA PER PLAN (STA 141+00.00 TO STA 146+80.00) PROFILE, SECTIONS AND DETAILS



TYPICAL SECTION REINFORCED CONCRETE CHANNEL (BIO-SWALE AREA)

SCALE: 1" = 10'



PLAN

SCALE 1"= 40'

GRAPHIC SCALE 1"= 40'
0 40 80 120

65% SUBMITTAL

REGISTERED PROFESSIONAL ENGINEER Erwin R. Fogerson 49060 Exp. 9/30/16 CIVIL STATE OF CALIFORNIA

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT 1939 CALIFORNIA

REVISIONS			
MARK	DATE	DESCRIPTION	BY:

SUBMITTED BY: JON SMITH, P.E. DATE
RECOMMENDED BY: ERWIN FOGERSON, P.E. DATE
APPROVED BY: KEVIN BLAKESLEE, P.E. FLOOD CONTROL ENGINEER DATE

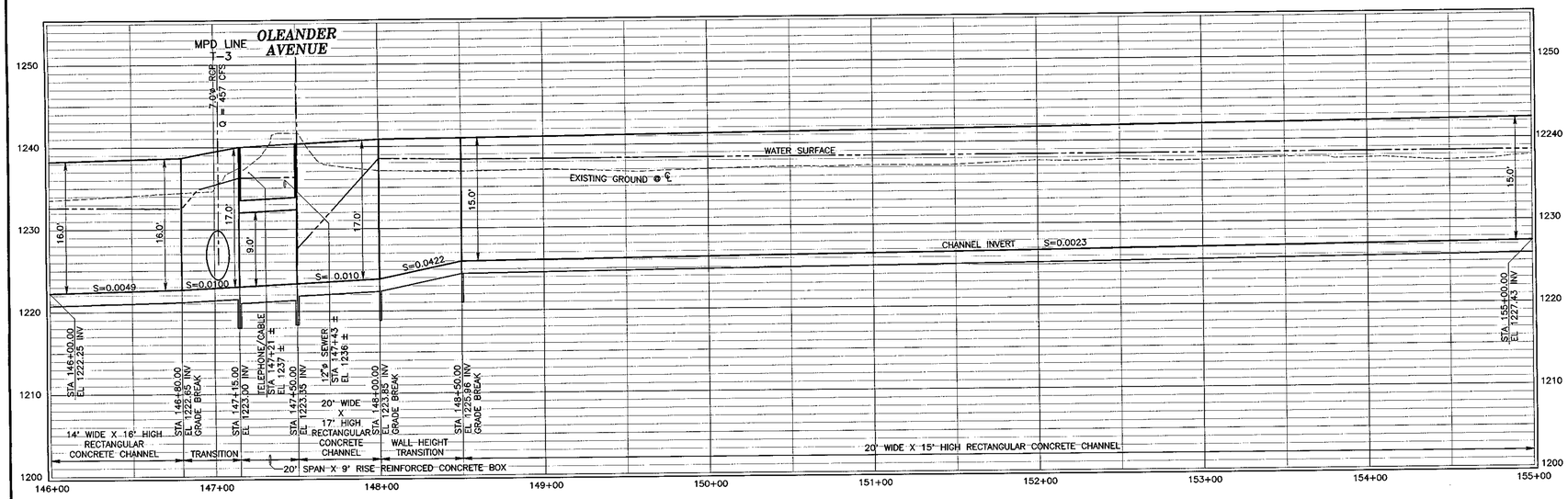
PROJ. ENGR.	DESIGNED BY	REV'D BY	DRAWN BY
JS	DN	EF	DN

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT

SAN SEVAINE CREEK SYSTEM
WEST FONTANA CHANNEL
STA. 137+00.00 TO STA. 146+00.00

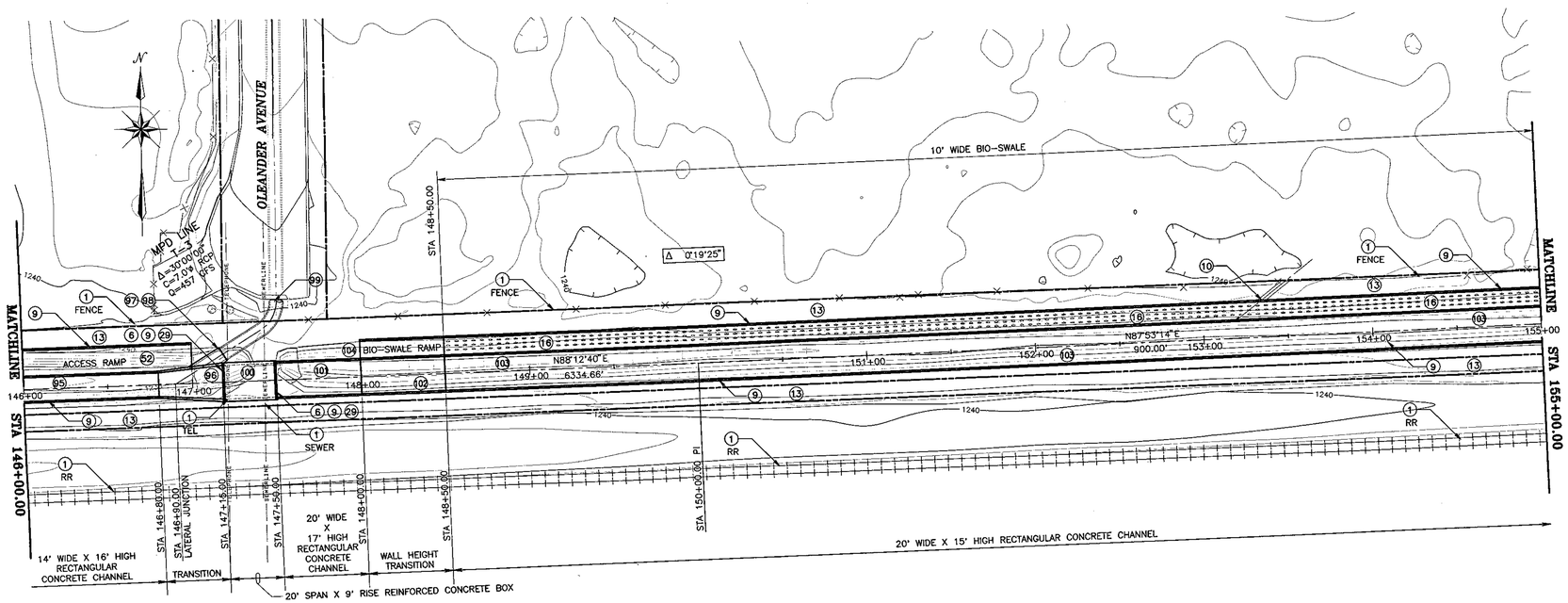
DATE: SEPT 2016
SCALE: AS SHOWN
FILE NO.: 1-809-6
DRAWING NO.:
SHEET NO.: 19 OF xx

N:\ACTIVE PROJECTS\West Fontana\West Fontana Channel improvement September 8 2016.pro Sep 8, 2016



PROFILE

HORIZONTAL SCALE 1" = 40'
VERTICAL SCALE 1" = 8'



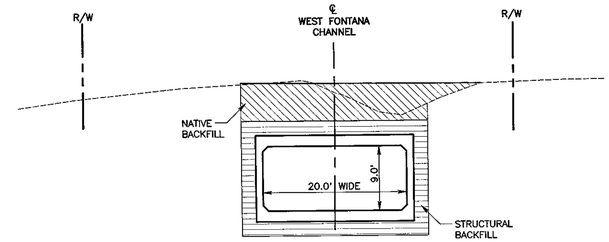
PLAN

SCALE 1" = 40'

GRAPHIC SCALE 1" = 40'
0 40 80 120

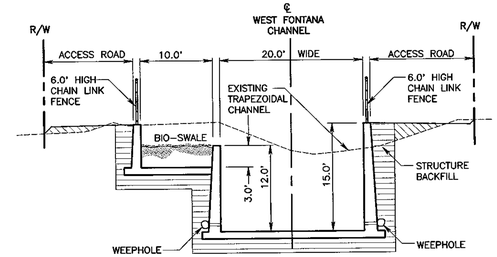
CONSTRUCTION NOTES:

1. PROTECT-IN-PLACE
6. CONSTRUCT 5.0' DEEP CONCRETE CUT-OFF WALL PER PLAN, PROFILE AND DETAIL
9. INSTALL 6.0' HIGH CHAIN LINK CHANNEL FENCE PER PLAN, DETAIL AND S.B.C.F.C.D. SPEC. DWG. II
10. BREAK EXISTING 24"ø REINFORCED CONCRETE PIPE (RCP) SUFFICIENTLY TO CONSTRUCT NEW 24"ø RCP TO DRAIN TO BIO-SWALE. INVERT ELEVATION AND GRADE TO BE ADJUSTED IN THE FIELD (D=1350)
13. GRADE MAINTENANCE ACCESS ROAD TO DRAIN AWAY FROM THE CHANNEL PER PLAN
16. CONSTRUCT BIO-SWALE AREA PER PLAN, PROFILE, SECTIONS AND DETAILS
29. CONSTRUCT PARAPPET WALL PER PLAN, PROFILE AND DETAIL
52. CONSTRUCT 15.0' WIDE ACCESS RAMP TO CHANNEL PER PLAN, PROFILE AND DETAIL
73. CONSTRUCT 15.0' WIDE ACCESS RAMP TO/FROM BIO-SWALE PER PLAN, PROFILE AND DETAIL
95. CONSTRUCT 14.0' WIDE AND 16.0' HIGH REINFORCED RECTANGULAR CONCRETE CHANNEL (RCC), PROVIDING BIO-SWALE AREA PER PLAN (STA 141+00.00 TO STA 146+80.00) PROFILE, SECTIONS AND DETAILS
96. CONSTRUCT REINFORCED RECTANGULAR CONCRETE CHANNEL(RCC) TRANSITION STRUCTURE FROM 14.0' TO 20.0' WIDE AND 16.0' TO 17.0' HIGH PER PLAN (STA 146+80.00 TO STA 147+15.00), PROFILE AND DETAILS
97. CONSTRUCT JUNCTION STRUCTURE FOR 7.0'ø REINFORCED CONCRETE PIPE (RCP) PER PLAN, PROFILE AND DETAILS
98. INSTALL 7.0'ø REINFORCED CONCRETE PIPE (RCP) TO PROPOSED JUNCTION STRUCTURE (APPROX. 48 L.F.) PER PLAN, PROFILE AND DETAILS
99. CONSTRUCT REINFORCED CONCRETE BULKHEAD FOR 7.0'ø REINFORCED CONCRETE PIPE (RCP) PER RIVERSIDE COUNTY STD. DETAIL M816.
100. CONSTRUCT 20.0' SPAN AND 9.0' RISE REINFORCED CONCRETE BOX (RCB) PRE-CAST OR CAST-IN-PLACE WITH H-20 LOADING PER PLAN, (STA 147+15.00 TO STA 147+50.00) PROFILE, SECTIONS AND DETAILS. SEE SPECIAL PROVISIONS
101. CONSTRUCT 20.0' WIDE AND 17.0' HIGH REINFORCED RECTANGULAR CONCRETE CHANNEL (RCC) PER PLAN (STA 147+50.00 TO STA 148+00.00), PROFILE AND DETAILS
102. CONSTRUCT 20.0' WIDE REINFORCED RECTANGULAR CONCRETE CHANNEL(RCC) WALL HEIGHT TRANSITION STRUCTURE FROM 17.0' TO 15.0' HIGH PER PLAN (STA 148+00.00 TO STA 148+50.00), PROFILE. SECTIONS AND DETAILS
103. CONSTRUCT 20.0' WIDE AND 15.0' HIGH REINFORCED RECTANGULAR CONCRETE CHANNEL (RCC) PROVIDING BIO-SWALE AREA PER PLAN (STA 148+50.00 TO STA 160+00.00), PROFILE AND DETAILS
104. CONSTRUCT 10.0' WIDE ACCESS RAMP TO/FROM BIO-SWALE PER PLAN, PROFILE AND DETAIL



TYPICAL SECTION REINFORCED CONCRETE BOX

SCALE: 1" = 10'



TYPICAL SECTION REINFORCED CONCRETE CHANNEL (BIO-SWALE AREA)

SCALE: 1" = 10'

65% SUBMITTAL

REGISTERED PROFESSIONAL ENGINEER Erwin R. Fogerson 49060 Exp. 9/30/16 CIVIL STATE OF CALIFORNIA

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT 1939 CALIFORNIA

REVISIONS			
MARK	DATE	DESCRIPTION	BY:

SUBMITTED BY: JON SMITH, P.E. DATE
RECOMMENDED BY: ERWIN FOGERSON, P.E. DATE
APPROVED BY: KEVIN BLAKESLEE, P.E. FLOOD CONTROL ENGINEER DATE

PROJ. ENGR.	DESIGNED BY	REV'D BY	DRAWN BY
JS	DN	EF	DN

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT

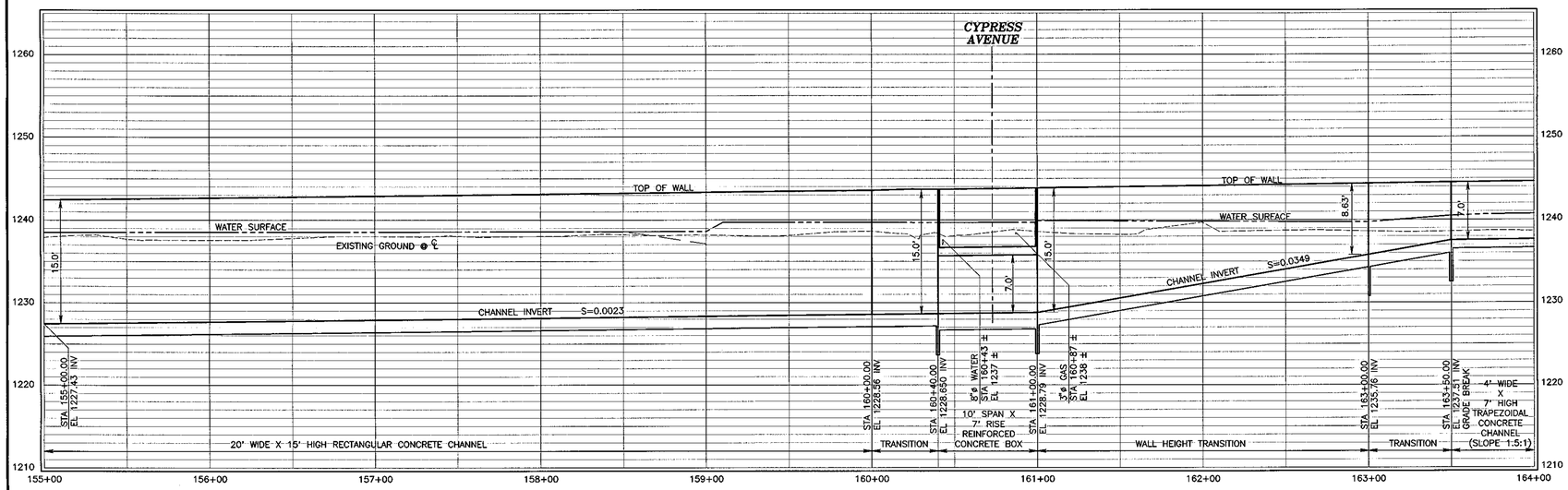
SAN SEVAINE CREEK SYSTEM

WEST FONTANA CHANNEL

STA. 146+00.00 TO STA. 155+00.00

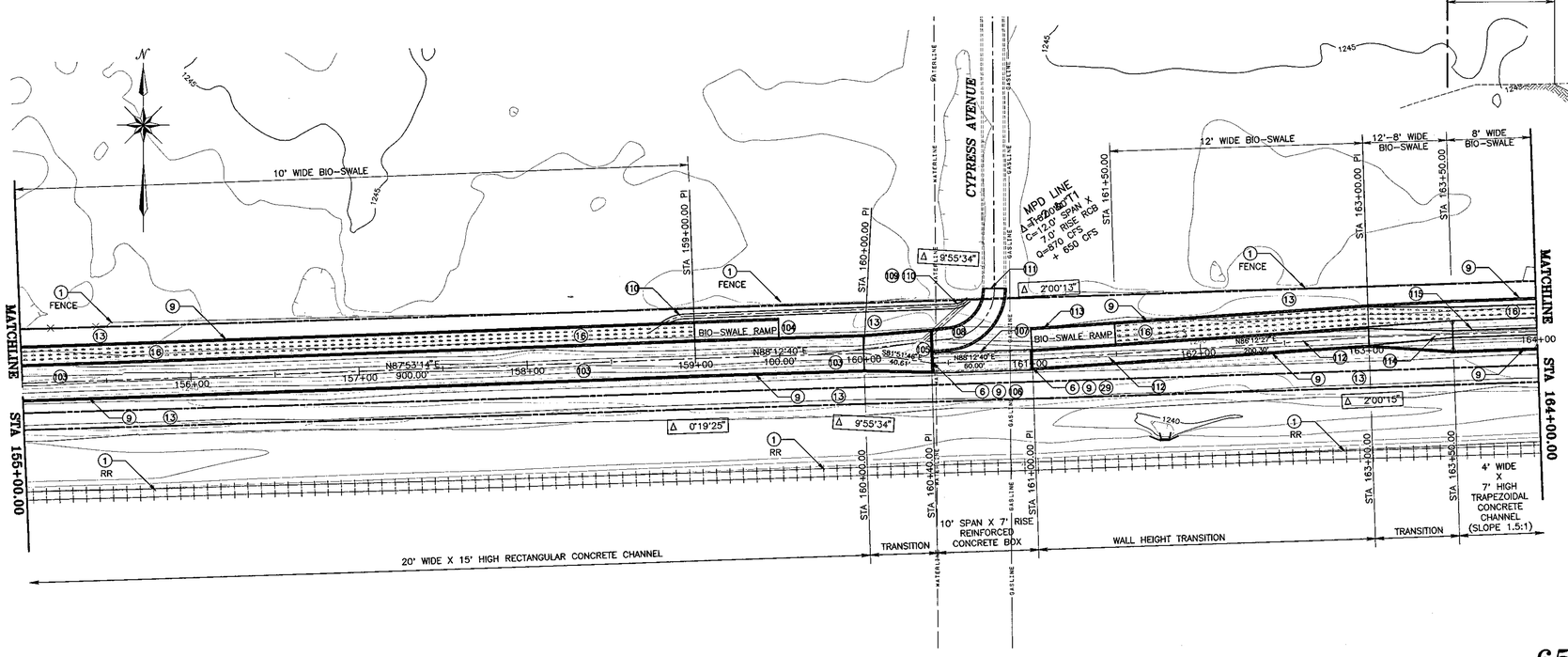
DATE: SEPT 2016
SCALE: AS SHOWN
FILE NO.: 1-809-6
DRAWING NO.:
SHEET NO.: 20 OF xx

N:\ACTIVE PROJECTS\West Fontana\West Fontana Channel Improvement September 8 2016.pro Sep 8, 2016



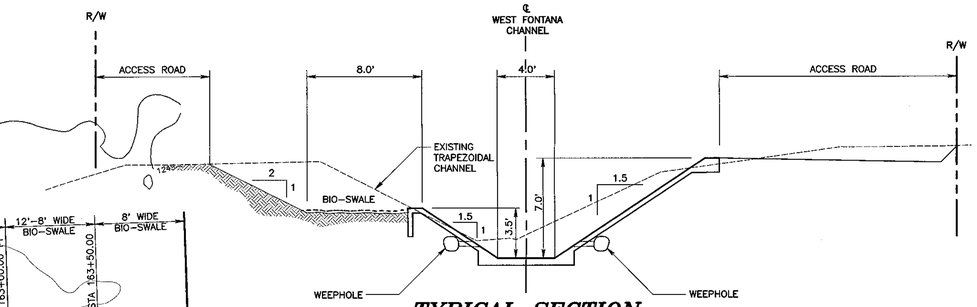
PROFILE

HORIZONTAL SCALE 1" = 40'
VERTICAL SCALE 1" = 8'



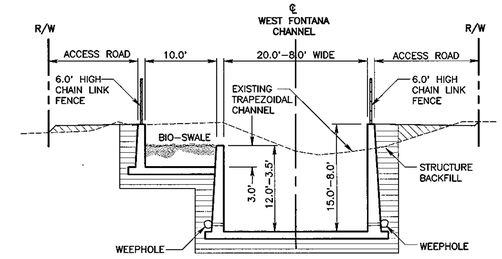
PLAN

SCALE 1" = 40'



TYPICAL SECTION TRAPEZOIDAL CONCRETE CHANNEL (BIO-SWALE AREA)

SCALE: 1" = 5'



TYPICAL SECTION REINFORCED CONCRETE CHANNEL (BIO-SWALE AREA)

SCALE: 1" = 10'

CONSTRUCTION NOTES:

1. PROTECT-IN-PLACE
9. INSTALL 6.0' HIGH CHAIN LINK CHANNEL FENCE PER PLAN, DETAIL AND S.B.C.F.C.D. SPEC. DWG. II
13. GRADE MAINTENANCE ACCESS ROAD TO DRAIN AWAY FROM THE CHANNEL PER PLAN
16. CONSTRUCT BIO-SWALE AREA PER PLAN, PROFILE, SECTIONS AND DETAILS
29. CONSTRUCT PARAPPET WALL PER PLAN, PROFILE AND DETAIL
103. CONSTRUCT 20.0' WIDE AND 15.0' HIGH REINFORCED RECTANGULAR CONCRETE CHANNEL (RCC) PROVIDING BIO-SWALE AREA PER PLAN (STA 148+50.00 TO STA 160+00.00), PROFILE AND DETAILS
105. CONSTRUCT REINFORCED RECTANGULAR CONCRETE CHANNEL(RCC) WIDTH TRANSITION STRUCTURE FROM 20.0' TO 24.0' WIDE AND 15.0' HIGH PER PLAN (STA 160+00.00 TO STA 160+40.00), PROFILE AND DETAILS
106. CONSTRUCT REINFORCED CONCRETE HEADWALL FOR 10.0' SPAN X 7.0' RISE REINFORCED CONCRETE BOX (RCB) AND 12.0' SPAN X 7.0' RISE REINFORCED CONCRETE BOX (RCB) PER PLAN, PROFILE AND DETAILS
107. CONSTRUCT 10.0' SPAN AND 7.0' RISE REINFORCED CONCRETE BOX (RCB) PRE-CAST OR CAST-IN-PLACE WITH H-20 LOADING PER PLAN, (STA 160+40.00 TO STA 161+00.00) PROFILE, SECTIONS AND DETAILS. SEE SPECIAL PROVISIONS
108. CONSTRUCT 12.0' SPAN AND 7.0' RISE REINFORCED CONCRETE BOX (RCB) PRE-CAST OR CAST-IN-PLACE WITH H-20 LOADING PER PLAN, PROFILE, SECTIONS AND DETAILS. SEE SPECIAL PROVISIONS
109. BREAK EXISTING 33"ø REINFORCED CONCRETE PIPE (RCP) SUFFICIENTLY TO CONSTRUCT NEW 33"ø RCP TO DRAIN TO BIO-SWALE. INVERT ELEVATION AND GRADE TO BE ADJUSTED IN THE FIELD (D=1350)
110. INSTALL 33"ø REINFORCED CONCRETE PIPE (RCP) CONNECTOR TO DRAIN AT BIO-SWALE (APPROX. 200 L.F.) . INVERT ELEVATION AND GRADE TO BE ADJUSTED IN THE FIELD (D=1350) PER PLAN, PROFILE AND DETAILS
111. CONSTRUCT REINFORCED CONCRETE BULKHEAD FOR 12.0' SPAN X 7.0' RISE REINFORCED CONCRETE BOX(RCB) PER RIVERSIDE COUNTY STD. DETAIL M816
112. CONSTRUCT 10.0' WIDE RECTANGULAR CONCRETE CHANNEL(RCC) WALL HEIGHT TRANSITION STRUCTURE FROM 15.0' TO 8.63' HIGH PER PLAN (STA 161+00.00 TO STA 163+00.00), PROFILE AND DETAILS
113. CONSTRUCT 12.0' WIDE ACCESS RAMP TO/FROM BIO-SWALE PER PLAN, PROFILE AND DETAIL
114. CONSTRUCT TRANSITION STRUCTURE FROM 8.0' WIDE AND 7.0' HIGH REINFORCED RECTANGULAR CONCRETE CHANNEL (RCC) TO 4.0' WIDE AND 7.0' HIGH REINFORCED TRAPEZOIDAL CONCRETE CHANNEL (1.5:1 SIDE SLOPE), PROVIDING BIO-SWALE AREA PER PLAN, PROFILE AND DETAILS
115. CONSTRUCT 4.0' WIDE X 7.0' HIGH REINFORCED TRAPEZOIDAL CONCRETE CHANNEL (1.5:1 SIDE SLOPE), PROVIDING BIO-SWALE AREA PER S.B.C.F.C.D. STD. DWG. SP 192 E, PLAN, PROFILE AND DETAILS

65% SUBMITTAL

REGISTERED PROFESSIONAL ENGINEER Erwin R. Fogerson 49060 Exp. 9/30/16 CIVIL STATE OF CALIFORNIA

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT 1939 CALIFORNIA

GRAPHIC SCALE 1" = 40' (0, 40, 80, 120)

REVISIONS			
MARK	DATE	DESCRIPTION	BY:

SUBMITTED BY: JON SMITH, P.E. DATE
RECOMMENDED BY: ERWIN FOGERSON, P.E. DATE
APPROVED BY: KEVIN BLAKESLEE, P.E. FLOOD CONTROL ENGINEER DATE

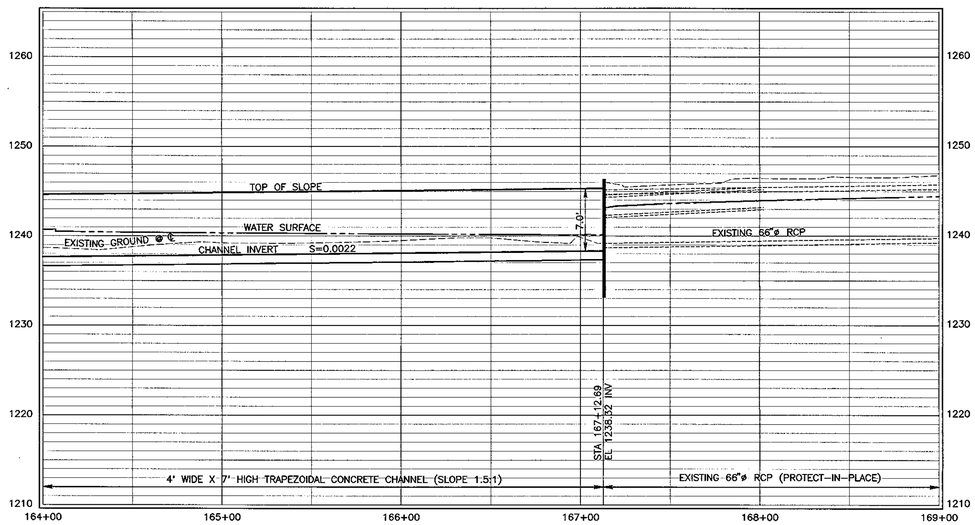
PROJ. ENGR.	DESIGNED BY	REV'D BY	DRAWN BY
JS	DN	EF	DN

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT

SAN SEVAINE CREEK SYSTEM
WEST FONTANA CHANNEL
STA. 155+00.00 TO STA. 164+00.00

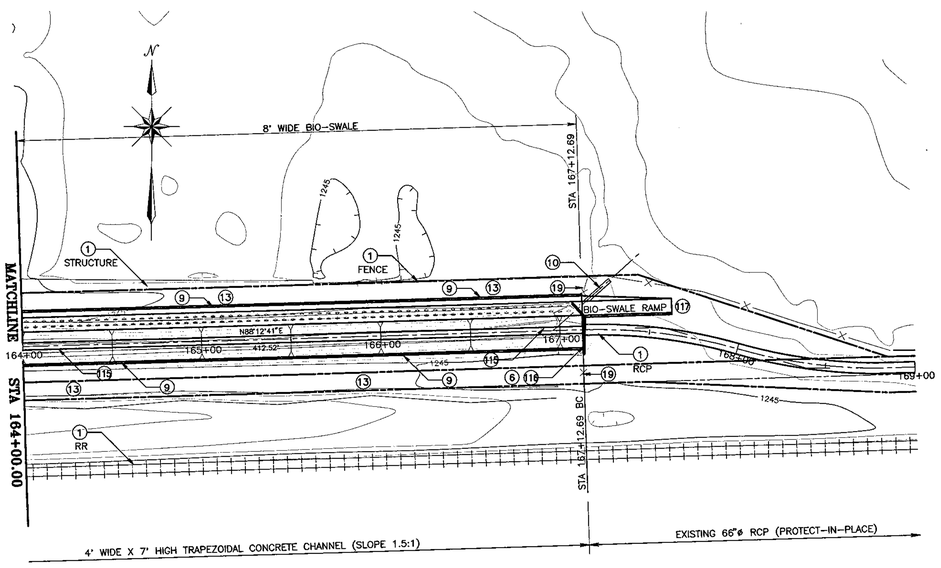
DATE: SEPT 2016
SCALE: AS SHOWN
FILE NO.: 1-809-6
DRAWING NO.:
SHEET NO.: 21 OF xx

N:_ACTIVE PROJECTS\West Fontana\West Fontana Channel improvement September 9, 2016.pro Sep 9, 2016



PROFILE

HORIZONTAL SCALE 1" = 40'
VERTICAL SCALE 1" = 8'



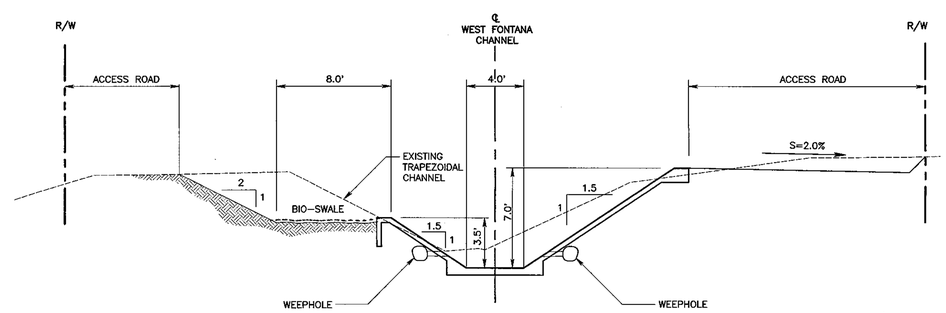
PLAN

SCALE 1" = 40'

GRAPHIC SCALE 1" = 40'
0 40 80 120

CONSTRUCTION NOTES:

1. PROTECT-IN-PLACE
6. CONSTRUCT 5.0' DEEP CONCRETE CUT-OFF WALL PER PLAN, PROFILE AND DETAIL
9. INSTALL 6.0' HIGH CHAIN LINK CHANNEL FENCE PER PLAN, DETAIL AND S.B.C.F.C.D. SPEC. DWG. II
10. BREAK EXISTING 24"ø REINFORCED CONCRETE PIPE (RCP) SUFFICIENTLY TO CONSTRUCT NEW 24"ø RCP TO DRAIN TO BIO-SWALE. INVERT ELEVATION AND GRADE TO BE ADJUSTED IN THE FIELD (D=1350)
13. GRADE MAINTENANCE ACCESS ROAD TO DRAIN AWAY FROM THE CHANNEL PER PLAN
19. REMOVE AND DISPOSE EXISTING PIPE GATE AND RE-INSTALL 20.0' WIDE DOUBLE DRIVE GATE PER S.B.C.F.C.D. SPEC. DWG. II, LOCATION AS DIRECTED BY THE ENGINEER
119. CONSTRUCT 4.0' WIDE X 7.0' HIGH REINFORCED TRAPEZOIDAL CONCRETE CHANNEL (1.5:1 SIDE SLOPE), PROVIDING BIO-SWALE AREA PER S.B.C.F.C.D. STD. DWG. SP 192 E, PLAN, PROFILE AND DETAILS
116. REMOVE AND REPLACE HEADWALL FOR 66"ø RCP PER PLAN, PROFILE AND DETAILS
117. CONSTRUCT 8.0' WIDE ACCESS RAMP TO/FROM BIO-SWALE PER PLAN, PROFILE AND DETAIL



TYPICAL SECTION TRAPEZOIDAL CONCRETE CHANNEL (BIO-SWALE AREA)

SCALE: 1" = 5'

65% SUBMITTAL

REGISTERED PROFESSIONAL ENGINEER Erwin R. Fogerson 49060 Exp. 9/30/16 CIVIL STATE OF CALIFORNIA

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT 1939 CALIFORNIA

REVISIONS			
MARK	DATE	DESCRIPTION	BY:

SUBMITTED BY: JON SMITH, P.E. DATE
RECOMMENDED BY: ERWIN FOGERSON, P.E. DATE
APPROVED BY: KEVIN BLAKESLEE, P.E. FLOOD CONTROL ENGINEER DATE

PROJ. ENGR.	DESIGNED BY	REV'D BY	DRAWN BY
JS	DN	EF	DN

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT

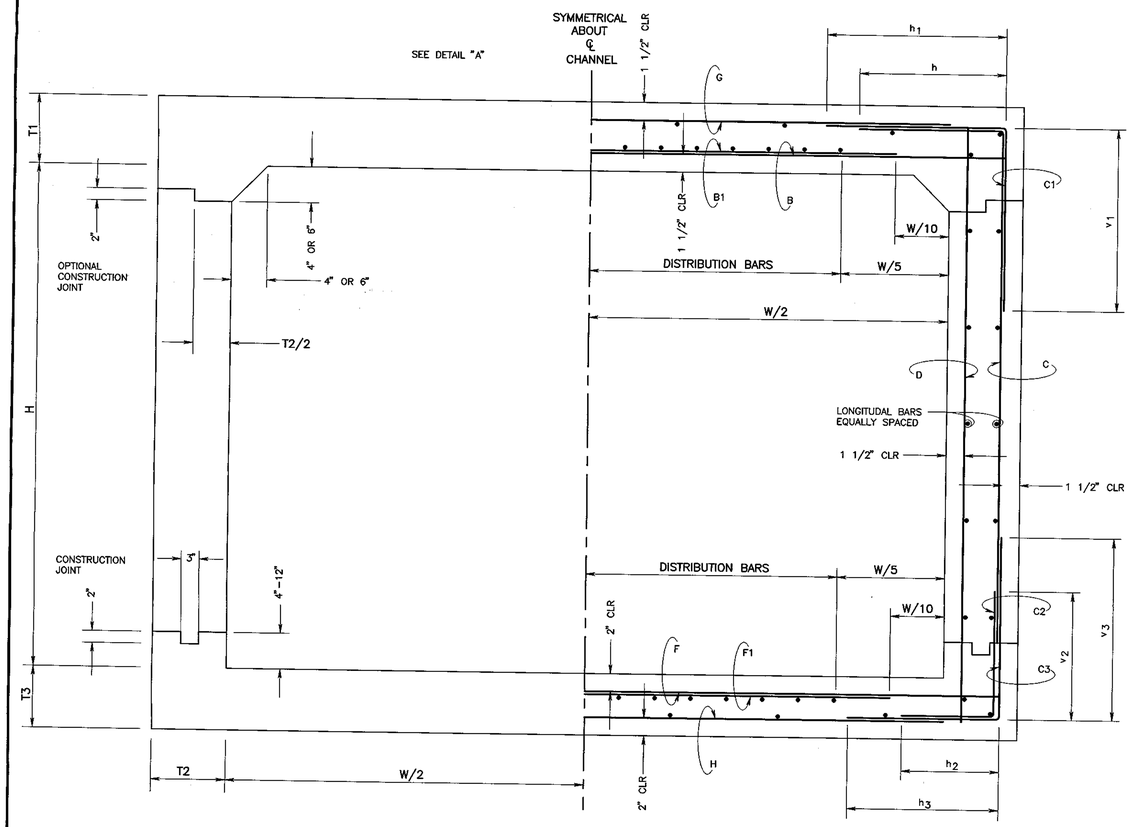
SAN SEVAINE CREEK SYSTEM

WEST FONTANA CHANNEL

STA. 164+00.00 TO STA. 167+12.69

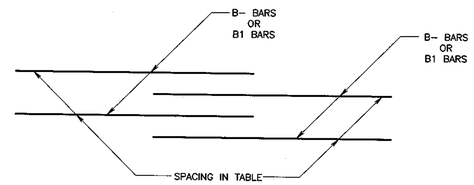
DATE	SEPT 2016
SCALE	AS SHOWN
FILE NO.	1-809-6
DRAWING NO.	
SHEET NO.	22 OF xx

A:\ACTIVE PROJECTS\West Fontana\West Fontana Channel Improvement September 8 2016.pro Sep 16, 2016

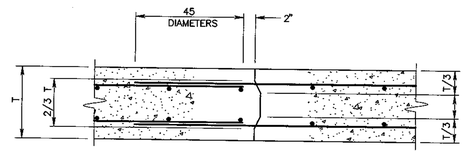


TYPICAL SECTION
REINFORCED CONCRETE BOX

NOT TO SCALE



DETAIL "A"



TRANSVERSE EXPANSION JOINT DETAIL

NOT TO SCALE

GENERAL STRUCTURAL NOTES

1. DIMENSION FROM FACE OF CONCRETE TO STEEL SHALL BE 2" CLEAR UNLESS OTHERWISE SHOWN.
2. CONCRETE DIMENSIONS SHALL BE MEASURED HORIZONTALLY OR VERTICALLY ON THE PROFILE, AND PARALLEL TO OR AT RIGHT ANGLES (OR RADIALLY) TO CENTERLINE OF CONDUIT ON THE PLAN EXCEPT AS OTHERWISE SHOWN.
3. LONGITUDINAL STEEL SHALL BE LAPPED 24 BAR DIAMETERS AT SPLICES. TRANSVERSE STEEL SHALL BE LAPPED 45 BAR DIAMETERS AT SPLICES.
4. TRANSVERSE CONSTRUCTION JOINTS SHALL NOT BE PLACED WITHIN 30 INCHES OF MANHOLE OR JUNCTION STRUCTURE OPENINGS.
5. TRANSVERSE CONSTRUCTION JOINTS IN WALLS AND SLABS SHALL BE IN THE SAME PLANE. NO STAGGERING OF JOINTS WILL BE PERMITTED. TRANSVERSE CONSTRUCTION JOINTS SHALL BE NORMAL OR RADIAL TO THE CENTERLINE OF CONSTRUCTION.
6. THE TRANSVERSE REINFORCING STEEL SHALL TERMINATE ONE AND ONE-HALF INCHES FROM THE CONCRETE SURFACES UNLESS OTHERWISE SHOWN ON THE STRUCTURAL DETAILS.
7. EXPOSED EDGES OF CONCRETE MEMBERS SHALL BE ROUNDED OR BEVELED.
8. NO SPLICES IN TRANSVERSE STEEL REINFORCEMENT WILL BE PERMITTED OTHER THAN SHOWN ON THE DRAWINGS WITHOUT APPROVAL OF THE ENGINEER. NO MORE THAN TWO SPLICES WILL BE PERMITTED IN ANY LONGITUDINAL BAR BETWEEN TRANSVERSE JOINTS. SPLICES SHALL BE STAGGERED.
9. LONGITUDINAL STEEL SHALL BE CONTINUOUS AND EXTEND THROUGH ALL CONSTRUCTION JOINTS.
10. UNLESS OTHERWISE SHOWN ON THE DRAWING, TRANSVERSE JOINT KEYWAYS (IN BOTH SLABS AND WALLS), AS DETAILED, SHALL BE PLACED AT THE END OF EACH POUR, BUT THE SPACING THEREOF SHALL NOT EXCEED 50 FEET OR BE LESS THAN 10 FEET. ALL CONSTRUCTION JOINTS IN BOTTOM SLAB, TOP SLAB, AND SIDE WALLS SHALL BE IN THE SAME PLANE. NO STAGGERING OF JOINTS WILL BE PERMITTED.
11. UNLESS OTHERWISE SHOWN ON THE DETAILS, IN CURVED SECTIONS TRANSVERSE BARS SHALL BE PLACED RADIALLY. STRAIGHT TRANSVERSE BARS IN TOP AND BOTTOM SLABS SHALL BE SPACED AS SHOWN ON THE TYPICAL SECTIONS; SPACING SHALL BE AT THE CENTERLINE OF CONSTRUCTION FOR SINGLE-BARREL BOXES. STRAIGHT BARS AND L-BARS IN WALLS SHALL BE SPACED AS SHOWN ON THE TYPICAL SECTION, WITH THE SPACING MEASURED BETWEEN THE VERTICAL LEGS OF BARS.
12. AT THE BEGINNING AND ENDING OF ALL POURS, A CURTAIN OF REINFORCEMENT COMPOSED OF B, C, C2, D, F, G, AND H BARS SHALL BE PLACED THREE INCHES FROM THE TRANSVERSE CONSTRUCTION JOINT.
13. THE VERTICAL WALL STEEL IN THE INTERIOR FACE OF WALLS MAY BE SPLICED AT THE CONSTRUCTION JOINT AT THE BASE OF THE WALL. THE SPLICE SHALL BE 45 BAR DIAMETERS IN LENGTH.
14. IN ALL SECTIONS LAP C AND C2 BARS. THE VERTICAL LENGTH OF C AND C2 BARS HAS BEEN CALCULATED FOR A FOUR-INCH STARTER WALL. IF THE HEIGHT OF THE STARTER WALL IS VARIED, THE VERTICAL LENGTH OF THE C AND C2 BARS SHALL BE VARIED CORRESPONDINGLY SO AS TO MAINTAIN A 45 DIAMETER LAP BETWEEN THE TWO BARS. THE LAPS SHALL BE BASED ON THE SMALLER BAR.
15. CONCRETE QUANTITIES ARE BASED ON A SIX-BY-SIX INCH FILLET AND THE STEEL QUANTITIES DO NOT INCLUDE ANY OPTIONAL SPLICES.
16. IF WALL THICKNESS IS SIX INCHES, PLACE REINFORCEMENT AT THE CENTERLINE OF THE WALL

STRUCTURAL DESIGN CRITERIA FOR REINFORCED BOX

LOADS

LATERAL EARTH LOAD (EXTERNAL) = 62.5 psf EFP
LIVE LOAD = H-20 / E-80
LATERAL WATER LOAD (INTERNAL) = 40 psf EFP

CONCRETE STRENGTH

fc' = 5,000 psi (min.) @ 28 days

REINFORCING BAR STRENGTH

fs = 24,000 psi

REINFORCED CONCRETE BOX CULVERT

SECTION DATA

CONDITION NO.	DESCRIPTION	STATION LIMITS FROM – TO	DESIGN COVER (FEET)	SIZE (FEET) W	SIZE (FEET) H	THICKNESS (INCHES) T1	T2	T3
1	24'X14' RCB (H-20)	24+50.00 – 26+50.00	2.0'	24.0'	14.0'	23.50"	26.25"	22.75"
2	TRANSITION (H-20)	26+50.00 – 27+00.00	2.0'	24.0'–22.0'	14.0'	23.50"	26.25"	22.75"
3	22'X14' RCB (H-20)	27+00.00 – 34+00.00	2.0'	22.0'	14.0'	21.75"	25.25"	21.25"
4	22'X14' RCB (E-80) RAILROAD LATERAL LOADING	34+00.00 – 36+00.00	2.0'	22.0'	14.0'	21.75"	29.00"	29.50"
5	22'X14' RCB (H-20)	36+00.00 – 37+44.82	2.0'	22.0'	14.0'	21.75"	25.25"	21.25"
6	19'X12' RCB (H-20)	79+30.00 – 80+10.00	4.5'	19.0'	12.0'	20.25'	23.00'	2[illegible]
7	18'X12' RCB (E-80)	95+00.00 – 97+50.00	3.8'	18.0'	12.0'	28.25'	24.50'	2[illegible]
6	22'X 8' RCB (H-20)	132+50.00 –133+50.00	8.3'	22.0'	8.0'	27.75'	17.75'	3[illegible]
9	20'X 9' RCB (H-20)	146+80.00 –147+50.00	6.8'	20.0'	9.0'	20.25'	23.00'	22.25'

STEEL REINFORCEMENT SCHEDULE

CONDITION NO.	B BAR NUMBER and SPACING	B HORIZ. LENGTH	B1 BAR NUMBER and SPACING	B1 HORIZ. LENGTH	C BAR NUMBER and SPACING	C HORIZ. LENGTH	C VERTICAL LENGTH	C1 BAR NUMBER and SPACING	C1 HORIZ. LENGTH	C1 VERTICAL LENGTH	C2 BAR NUMBER and SPACING	C2 HORIZ. LENGTH	C2 VERTICAL LENGTH	C3 BAR NUMBER and SPACING	C3 HORIZ. LENGTH	C3 VERTICAL LENGTH
1	#9 @ 13"O.C.	28' 1.5"	#7 @ 13"O.C.	14' 3.5"	#6 @ 8"O.C.	9' 9.0"	15' 3.5"	#8 @ 8"O.C.	5' 10.0"	4' 10.5"	#6 @ 8"O.C.	9' 9.0"	4' 8.0"	#8 @ 8"O.C.	6' 2.0"	4' 3.0"
2	#9 @ 13"O.C.	28' 1.5"	#7 @ 13"O.C.	14' 3.5"	#6 @ 8"O.C.	9' 9.0"	15' 3.5"	#8 @ 8"O.C.	5' 10.0"	4' 10.5"	#6 @ 8"O.C.	9' 9.0"	4' 8.0"	#8 @ 8"O.C.	6' 2.0"	4' 3.0"
3	#7 @ 10"O.C.	25' 11.5"	#6 @ 10"O.C.	13' 7.0"	#6 @ 9"O.C.	9' 2.0"	15' 2.0"	#8 @ 9"O.C.	5' 7.5"	4' 6.0"	#7 @ 9"O.C.	9' 5.5"	4' 6.5"	#8 @ 9"O.C.	5' 4.5"	4' 1.5"
4	#7 @ 10"O.C.	26' 7.5"	#6 @ 10"O.C.	13' 5.5"	#6 @ 9"O.C.	9' 6.0"	15' 2.0"	#8 @ 9"O.C.	5' 11.0"	4' 7.0"	#6 @ 9"O.C.	10' 1.5"	5' 2.5"	#6 @ 9"O.C.	6' 5.5"	4' 2.5"
5	#7 @ 10"O.C.	25' 11.5"	#6 @ 10"O.C.	13' 7.0"	#6 @ 9"O.C.	9' 2.0"	15' 2.0"	#8 @ 9"O.C.	5' 7.5"	4' 6.0"	#7 @ 9"O.C.	9' 5.5"	4' 6.5"	#8 @ 9"O.C.	5' 4.5"	4' 1.5"
6	PRE-CAST	[illegible]	REQUIRED	9.5"	STRUCTURAL	[illegible]	[illegible]	7' 7.5"	4' 5.0"	[illegible]	DESIGN	[illegible]	[illegible]	BY	[illegible]	8.0"
7	PRE-CAST	[illegible]	REQUIRED	3.0"	STRUCTURAL	[illegible]	[illegible]	7' 4.5"	5' 8.5"	[illegible]	DESIGN	[illegible]	[illegible]	BY	[illegible]	11.0"
6	PRE-CAST	[illegible]	REQUIRED	0.0"	STRUCTURAL	[illegible]	[illegible]	4' 8.5"	4' 6.5"	[illegible]	DESIGN	[illegible]	[illegible]	BY	[illegible]	9.5"
9	#7 @ 8"O.C.	24' 2.0"	#5 @ 8"O.C.	12' 9.0"	#5 @ 9"O.C.	8' 5.5"	10' 4.0"	#7 @ 9"O.C.	5' 5.5"	4' 11.0"	#5 @ 9"O.C.	8' 5.5"	4' 6.5"	#7 @ 9"O.C.	5' 4.5"	4' 3.0"

CONDITION NO.	D BAR NUMBER and SPACING	D VERTICAL LENGTH	F BAR NUMBER and SPACING	F HORIZ. LENGTH	F1 BAR NUMBER and SPACING	F1 HORIZ. LENGTH	G BAR NUMBER and SPACING	G HORIZ. LENGTH	H BAR NUMBER and SPACING	H HORIZ. LENGTH	#4 LONGITUDAL BARS INVERT	WALL	TOP	TOTAL
1	#8 @ 10"O.C.	17' 7.5"	#9 @ 16"O.C.	28' 1.5"	#8 @ 16"O.C.	15' 0.5"	#6 @ 8"O.C.	12' 0.0"	#6 @ 8"O.C.	12' 0.0"	38	36	54	128
2	#8 @ 10"O.C.	17' 7.5"	#9 @ 16"O.C.	28' 1.5"	#8 @ 16"O.C.	15' 0.5"	#6 @ 8"O.C.	12' 0.0"	#6 @ 8"O.C.	12' 0.0"	38	36	54	128
3	#8 @ 8"O.C.	17' 4.0"	#9 @ 19"O.C.	25' 11.5"	#8 @ 19"O.C.	13' 9.0"	#6 @ 9"O.C.	11' 0.0"	#7 @ 9"O.C.	11' 0.0"	35	36	47	118
4	#8 @ 10"O.C.	18' 0.5"	#6 @ 19"O.C.	26' 7.5"	#8 @ 19"O.C.	17' 2.0"	#6 @ 9"O.C.	11' 0.0"			32	36	47	115
5	#8 @ 8"O.C.	17' 4.0"	#9 @ 19"O.C.	25' 11.5"	#8 @ 19"O.C.	13' 9.0"	#6 @ 9"O.C.	11' 0.0"	#7 @ 9"O.C.	11' 0.0"	35	36	47	118
6	[illegible]	[illegible]	[illegible]	22' [illegible]	[illegible]	18' [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	30	32	30	92
7	[illegible]	[illegible]	[illegible]	21' [illegible]	[illegible]	9' [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	30	32	30	92
6	[illegible]	[illegible]	[illegible]	24' [illegible]	[illegible]	8' [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	34	20	34	88
9	#4 @ 18"O.C.	13' 3.0"	#9 @ 12"O.C.	24' 2.0"	#6 @ 12"O.C.	13' 9.5"	#5 @ 9"O.C.	10' 0.0"	#5 @ 9"O.C.	10' 0.0"	32	24	32	88

65% SUBMITTAL

REGISTERED PROFESSIONAL ENGINEER Erwin R. Fogerson 49060 Exp. 9/30/16 CIVIL STATE OF CALIFORNIA

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT 1939 CALIFORNIA

REVISIONS

MARK	DATE	DESCRIPTION	BY:

SUBMITTED BY: JON SMITH, P.E. DATE
RECOMMENDED BY: ERWIN FOGERSON, P.E. DATE
APPROVED BY: KEVIN BLAKESLEE, P.E. FLOOD CONTROL ENGINEER DATE

PROJ. ENGR.	DESIGNED BY	REV'D BY	DRAWN BY
JS	DB	JS	DN

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT

SAN SEVAINE CREEK SYSTEM
WEST FONTANA CHANNEL

REINFORCED CONCRETE BOX CULVERT STRUCTURAL DETAILS

DATE: SEPT 2016
SCALE: AS SHOWN
FILE NO.: 1-809-
DRAWING NO.:
SHEET NO.: 23 OF xx

N:\ACTIVE PROJECTS\West Fontana\West Fontana Channel Improvement September 8 2016.pro Sep 8, 2016

REINFORCED CONCRETE RECTANGULAR "U" CHANNEL

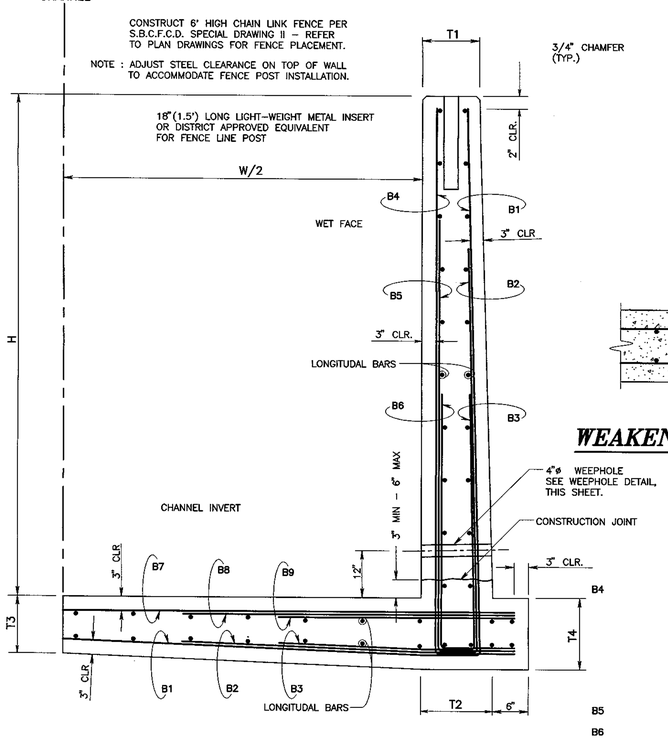
SECTION DATA

SECTION	DESCRIPTION	STATION LIMITS FROM – TO	SIZE (FEET) W	SIZE (FEET) H	THICKNESS (INCHES) T1	T2	T3	T4
1	RECTANGULAR CHANNEL	5+00.00 – 22+60.00	26.0'	15.0'	12"	15.25"	12"	15.25"
2	WALL HEIGHT TRANSITION	22+60.00 – 23+90.00	26.0'	15.0'–16.4'	12"	16.50"	12"	16.50"
3	CHANNEL TRANSITION	23+90.00 – 24+50.00	26.0'–24.0'	16.4'–17.0'	12"	17.25"	12"	17.25"
4	WALL HEIGHT TRANSITION	37+44.82 – 38+70.00	22.0'	16.5'–15.5'	12"	16.75"	12"	16.75"
5	CHANNEL TRANSITION	38+70.00 – 39+20.00	22.0'–19.0'	15.0'	12"	15.25"	12"	15.25"
6	RECTANGULAR CHANNEL	39+20.00 – 74+00.00	19.0'	15.0'	12"	15.25"	12"	15.25"
7	WALL HEIGHT TRANSITION	74+00.00 – 75+21.24	19.0'	15.0'–16.0'	12"	16.25"	12"	16.25"
8	RECTANGULAR CHANNEL	75+21.24 – 78+80.00	19.0'	16.0'	12"	16.25"	12"	16.25"
9	WALL HEIGHT TRANSITION	78+80.00 – 79+30.00	19.0'	16.0'–18.0'	12"	18.25"	12"	18.25"
10	CHANNEL TRANSITION	80+10.00 – 81+10.00	19.0'–18.0'	16.5'–15.0'	12"	16.75"	12"	16.75"
11	RECTANGULAR CHANNEL	81+10.00 – 91+50.00	18.0'	15.0'	12"	15.25"	12"	15.25"
12	WALL HEIGHT TRANSITION	91+50.00 – 92+50.00	18.0'	15.0'–18.0'	12"	18.25"	12"	18.25"
13	RECTANGULAR CHANNEL	92+50.00 – 95+00.00	18.0'	18.0'	12"	18.25"	12"	18.25"
14	RECTANGULAR CHANNEL	97+50.00 –132+00.00	18.0'	16.0'	12"	16.25"	12"	16.25"
15	CHANNEL TRANSITION	132+00.00 –132+50.00	18.0'–22.0'	16.0'	12"	16.25"	12"	16.25"
16	CHANNEL TRANSITION	133+50.00 –134+00.00	22.0'–12.0'	15.0'	12"	15.25"	12"	15.25"
17	RECTANGULAR CHANNEL	134+00.00 –140+00.00	12.0'	15.0'	12"	15.25"	12"	15.25"
18	CHANNEL TRANSITION	140+00.00 –141+00.00	12.0'–14.0'	15.0'–16.0'	12"	16.25"	12"	16.25"
19	RECTANGULAR CHANNEL	141+00.00 –146+80.00	14.0'	16.0'	12"	16.25"	12"	16.25"
20	CHANNEL TRANSITION	146+80.00 –147+15.00	14.0'–20.0'	16.0'–17.0'	12"	17.25"	12"	17.25"
21	RECTANGULAR CHANNEL	147+50.00 –148+00.00	20.0'	17.0'	12"	17.25"	12"	17.25"
22	WALL HEIGHT TRANSITION	148+00.00 –148+50.00	20.0'	17.0'–15.0'	12"	17.25"	12"	17.25"
23	RECTANGULAR CHANNEL	148+50.00 –158+50.00	20.0'	15.0'	12"	15.25"	12"	15.25"
24	CHANNEL TRANSITION	158+50.00 –159+00.00	20.0'–12.0'	15.0'–14.0'	12"	15.25"	12"	15.25"
25	RECTANGULAR CHANNEL	159+00.00 –160+00.00	12.0'	14.0'	12"	14.25"	12"	14.25"
26	CHANNEL TRANSITION	160+00.00 –160+50.00	12.0'– 8.0'	14.0'–13.0'	12"	14.25"	12"	14.25"
27	WALL HEIGHT TRANSITION	160+50.00 –163+00.00	8.0'	13.0'– 8.0'	12"	12"	12"	12"
28	CHANNEL TRANSITION***	163+00.00 –163+50.00	8.0'– 4.0'	8.0'– 7.0'	12"	12"	12"	12"
	RECTANGULAR CHANNEL	MPD T–2A LATERAL	6.0'	6.0'	12"	12"	12"	12"
	CHANNEL TRANSITION	MPD T–2A LATERAL	6.0'– 9.0'	6.0'– 4.0'	12"	12"	12"	12"

STEEL REINFORCEMENT SCHEDULE

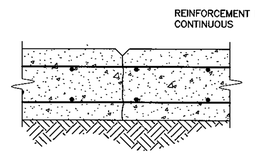
SECTION	B1 BAR NUMBER and SPACING	B1 HORIZ. LENGTH	B1 VERTICAL LENGTH	B2 BAR NUMBER and SPACING	B2 HORIZ. LENGTH	B2 VERTICAL LENGTH	B3 BAR NUMBER and SPACING	B3 HORIZ. LENGTH	B3 VERTICAL LENGTH	B4 BAR NUMBER and SPACING	B4 HORIZ. LENGTH	B4 VERTICAL LENGTH
1	#5 @ 9" O.C.	15' 2.50"*	15' 10.25"	#7 @ 9" O.C.	7' 10.25"	10' 4.00"	#7 @ 9" O.C.	4' 7.50"	4' 8.75"	#4 @ 15" O.C.	1' 4.25"	15' 10.25"
2	#7 @ 11" O.C.	12' 4.75"	17' 4.50"	#8 @ 11" O.C.	7' 7.50"	9' 3.25"	#8 @ 11" O.C.	4' 8.00"	4' 8.00"	#4 @ 16" O.C.	1' 5.50"	17' 4.50"
3	#6 @ 10" O.C.	13' 8.25"	18' 0.25"	#8 @ 10" O.C.	8' 6.50"	10' 10.75"	#8 @ 10" O.C.	5' 2.50"	5' 3.00"	#4 @ 12" O.C.	1' 6.25"	18' 0.25"
4	#7 @ 11" O.C.	13' 9.50"*	17' 5.75"	#8 @ 11" O.C.	7' 7.50"	9' 3.75"	#8 @ 11" O.C.	4' 8.50"	4' 8.50"	#4 @ 16" O.C.	1' 5.75"	17' 5.75"
5	#5 @ 9" O.C.	13' 2.50"*	15' 10.25"	#7 @ 9" O.C.	7' 7.75"	10' 4.00"	#7 @ 9" O.C.	4' 7.00"	4' 8.75"	#4 @ 15" O.C.	1' 4.25"	15' 10.25"
6	#5 @ 9" O.C.	11' 8.50"*	15' 10.25"	#7 @ 9" O.C.	7' 8.25"	10' 4.00"	#7 @ 9" O.C.	4' 7.00"	4' 8.75"	#4 @ 15" O.C.	1' 4.25"	15' 10.25"
7	#6 @ 10" O.C.	12' 0.25"*	16' 11.25"	#7 @ 10" O.C.	7' 11.50"	9' 10.50"	#8 @ 10" O.C.	5' 2.50"	5' 4.50"	#4 @ 17" O.C.	1' 5.25"	16' 11.25"
8	#6 @ 10" O.C.	12' 0.25"*	16' 11.25"	#7 @ 10" O.C.	7' 11.50"	9' 10.50"	#8 @ 10" O.C.	5' 2.50"	5' 4.50"	#4 @ 17" O.C.	1' 5.25"	16' 11.25"
9	#7 @ 10" O.C.	12' 5.00"*	19' 1.25"	#8 @ 10" O.C.	9' 4.00"	10' 2.25"	#8 @ 10" O.C.	5' 6.50"	5' 4.25"	#4 @ 12" O.C.	1' 7.25"	19' 1.25"
10	#7 @ 11" O.C.	12' 3.50"*	17' 5.75"	#8 @ 11" O.C.	7' 10.50"	9' 3.75"	#8 @ 11" O.C.	4' 9.00"	4' 8.50"	#4 @ 16" O.C.	1' 5.75"	17' 5.75"
11	#6 @ 10" O.C.	11' 5.25"*	15' 10.25"	#6 @ 10" O.C.	7' 2.50"	9' 0.00"	#8 @ 10" O.C.	5' 2.25"	5' 6.25"	#4 @ 15" O.C.	1' 4.25"	15' 10.25"
12	#8 @ 10" O.C.	12' 1.75"*	19' 1.25"	#7 @ 10" O.C.	8' 6.50"	8' 8.50"	#8 @ 10" O.C.	5' 5.75"	5' 4.25"	#4 @ 12" O.C.	1' 7.25"	19' 1.25"
13	#8 @ 10" O.C.	12' 1.75"*	19' 1.25"	#7 @ 10" O.C.	8' 6.50"	8' 8.50"	#8 @ 10" O.C.	5' 5.75"	5' 4.25"	#4 @ 12" O.C.	1' 7.25"	19' 1.25"
14	#6 @ 10" O.C.	11' 6.25"*	16' 11.25"	#7 @ 10" O.C.	8' 2.25"	9' 10.50"	#8 @ 10" O.C.	5' 3.25"	5' 4.50"	#4 @ 17" O.C.	1' 5.25"	16' 11.25"
15	#6 @ 10" O.C.	13' 6.25"*	16' 11.25"	#7 @ 10" O.C.	7' 9.25"	9' 10.50"	#8 @ 10" O.C.	5' 2.00"	5' 4.50"	#4 @ 17" O.C.	1' 5.25"	16' 11.25"
16	#5 @ 9" O.C.	13' 2.50"*	15' 10.25"	#7 @ 9" O.C.	7' 7.50"	10' 4.00"	#7 @ 9" O.C.	4' 7.00"	4' 8.75"	#4 @ 15" O.C.	1' 4.25"	15' 10.25"
17	#7 @ 13" O.C.	8' 8.00"*	15' 10.25"	#8 @ 13" O.C.	8' 10.75"	8' 10.75"	#8 @ 13" O.C.	5' 9.75"	4' 5.75"	#4 @ 15" O.C.	1' 4.25"	15' 10.25"
18	#6 @ 9" O.C.	9' 6.25"*	16' 11.25"	#7 @ 9" O.C.	9' 9.00"	9' 4.75"	#7 @ 9" O.C.	5' 5.25"	4' 9.50"	#4 @ 17" O.C.	1' 5.25"	16' 11.25"
19	#6 @ 9" O.C.	9' 6.25"*	16' 11.25"	#7 @ 9" O.C.	9' 9.00"	9' 4.75"	#7 @ 9" O.C.	5' 5.25"	4' 9.50"	#4 @ 17" O.C.	1' 5.25"	16' 11.25"
20	#6 @ 9" O.C.	12' 7.25"*	18' 0.25"	#7 @ 9" O.C.	8' 4.75"	10' 3.50"	#8 @ 9" O.C.	5' 6.00"	5' 7.00"	#4 @ 12" O.C.	1' 6.25"	18' 0.25"
21	#6 @ 9" O.C.	12' 7.25"*	18' 0.25"	#7 @ 9" O.C.	8' 4.75"	10' 3.50"	#8 @ 9" O.C.	5' 6.00"	5' 7.00"	#4 @ 12" O.C.	1' 6.25"	18' 0.25"
22	#6 @ 9" O.C.	12' 7.25"*	18' 0.25"	#7 @ 9" O.C.	8' 4.75"	10' 3.50"	#8 @ 9" O.C.	5' 6.00"	5' 7.00"	#4 @ 12" O.C.	1' 6.25"	18' 0.25"
23	#5 @ 9" O.C.	12' 2.50"*	15' 10.25"	#7 @ 9" O.C.	7' 8.00"	10' 4.00"	#7 @ 9" O.C.	4' 7.00"	4' 8.75"	#4 @ 15" O.C.	1' 4.25"	15' 10.25"
24	#5 @ 9" O.C.	12' 2.50"*	15' 10.25"	#7 @ 9" O.C.	7' 8.00"	10' 4.00"	#7 @ 9" O.C.	4' 7.00"	4' 8.75"	#4 @ 15" O.C.	1' 4.25"	15' 10.25"
25	#5 @ 11" O.C.	8' 1.50"*	14' 9.25"	#7 @ 11" O.C.	8' 7.00"*	10' 5.25"	#8 @ 11" O.C.	5' 10.50"	5' 1.75"	#4 @ 17" O.C.	1' 3.25"	14' 9.25"
26	#5 @ 11" O.C.	8' 1.50"	14' 9.25"	#7 @ 11" O.C.	8' 7.00"	10' 5.25"	#8 @ 11" O.C.	5' 10.50"	5' 1.75"	#4 @ 17" O.C.	1' 3.25"	14' 9.25"
27	#4 @ 6" O.C.	5' 8.25"	13' 6.00"	#6 @ 6" O.C.	6' 2.00"	7' 10.25"	#5 @ 6" O.C.	4' 1.75"	3' 1.00"	#4 @ 17" O.C.	1' 0.00"	13' 6.00"
28	#4 @ 16" O.C.	5' 8.25"	8' 6.00"	#5 @ 16" O.C.	5' 11.25"	6' 0.00"	#5 @ 16" O.C.	4' 0.50"	3' 0.50"	#4 @ 18" O.C.	1' 0.00"	8' 6.00"
	#4 @ 18" O.C.	4' 8.25"	6' 6.00"	#4 @ 18" O.C.	4' 8.25"	4' 3.25"	#4 @ 18" O.C.	4' 8.25"	2' 4.00"	#4 @ 18" O.C.	1' 0.00"	6' 6.00"
	#4 @ 18" O.C.	6' 2.25"	4' 6.00"	#4 @ 18" O.C.	3' 5.25"	2' 3.25"	#0 @ 18" O.C.	0' 0.00"	0' 0.00"	#4 @ 18" O.C.	1' 0.00"	4' 6.00"

SECTION	B5 BAR NUMBER and SPACING	B5 HORIZ. LENGTH	B5 VERTICAL LENGTH	B6 BAR NUMBER and SPACING	B6 HORIZ. LENGTH	B6 VERTICAL LENGTH	B7 BAR NUMBER and SPACING	B7 HORIZ. LENGTH	B8 BAR NUMBER and SPACING	B8 HORIZ. LENGTH	B9 BAR NUMBER and SPACING	B9 HORIZ. LENGTH	LONGITUDAL BARS BAR NUMBER and SPACING	SLAB	WALL	HEEL	TOTAL
1	#6 @ 15" O.C.	1' 4.25"	8' 8.75"	#7 @ 15" O.C.	1' 4.25"	4' 9.50"	#4 @ 9" O.C.	14' 7.25"**	#5 @ 9" O.C.	10' 2.25"	#5 @ 9" O.C.	7' 0.00"	#4 @ 12" O.C.	58	60	4	122
2	#7 @ 16" O.C.	1' 5.50"	10' 3.50"	#8 @ 16" O.C.	1' 5.50"	5' 5.00"	#5 @ 11" O.C.	14' 8.50"	#6 @ 11" O.C.	10' 10.50"	#6 @ 11" O.C.	7' 4.50"	#5 @ 18" O.C.	38	44	4	86
3	#6 @ 12" O.C.	1' 6.25"	10' 1.25"	#7 @ 12" O.C.	1' 6.25"	5' 7.75"	#7 @ 16" O.C.	14' 9.25"	#7 @ 16" O.C.	10' 5.00"	#7 @ 16" O.C.	7' 5.75"	#4 @ 11" O.C.	62	76	4	142
4	#7 @ 16" O.C.	1' 5.75"	10' 4.75"	#8 @ 16" O.C.	1' 5.75"	5' 5.75"	#8 @ 17" O.C.	12' 8.75"**	#6 @ 17" O.C.	9' 7.50"	#7 @ 17" O.C.	7' 4.25"	#5 @ 18" O.C.	34	44	4	82
5	#6 @ 15" O.C.	1' 4.25"	8' 8.75"	#7 @ 15" O.C.	1' 4.25"	4' 9.50"	#5 @ 9" O.C.	12' 7.25"**	#4 @ 9" O.C.	9' 0.25"	#5 @ 9" O.C.	7' 0.25"	#4 @ 12" O.C.	50	60	4	114
6	#6 @ 15" O.C.	1' 4.25"	8' 8.75"	#7 @ 15" O.C.	1' 4.25"	4' 9.50"	#8 @ 17" O.C.	11' 1.25"**	#5 @ 17" O.C.	8' 4.25"	#6 @ 17" O.C.	6' 6.00"	#4 @ 12" O.C.	44	60	4	108
7	#7 @ 17" O.C.	1' 5.25"	10' 0.50"	#8 @ 17" O.C.	1' 5.25"	5' 3.50"	#8 @ 14" O.C.	11' 2.25"**	#4 @ 14" O.C.	8' 11.25"	#6 @ 14" O.C.	7' 4.50"	#4 @ 12" O.C.	44	64	4	112
8	#7 @ 17" O.C.	1' 5.25"	10' 0.50"	#8 @ 17" O.C.	1' 5.25"	5' 3.50"	#8 @ 14" O.C.	11' 2.25"**	#4 @ 14" O.C.	8' 11.25"	#6 @ 14" O.C.	7' 4.50"	#4 @ 12" O.C.	44	64	4	112
9	#7 @ 12" O.C.	1' 7.25"	11' 1.00"	#7 @ 12" O.C.	1' 7.25"	5' 7.75"	#5 @ 11" O.C.	11' 4.25"**	#8 @ 11" O.C.	11' 4.25"**	#5 @ 11" O.C.	8' 1.75"	#5 @ 16" O.C.	34	56	4	94
10	#7 @ 16" O.C.	1' 5.75"	10' 4.75"	#8 @ 16" O.C.	1' 5.75"	5' 5.75"	#8 @ 11" O.C.	11' 2.75"**	#4 @ 11" O.C.	8' 1.25"	#4 @ 11" O.C.	6' 3.25"	#5 @ 18" O.C.	30	44	4	78
11	#6 @ 15" O.C.	1' 4.25"	8' 8.75"	#7 @ 15" O.C.	1' 4.25"	4' 9.50"	#7 @ 11" O.C.	10' 7.25"**	#4 @ 11" O.C.	7' 9.00"	#4 @ 11" O.C.	5' 10.00"	#4 @ 12" O.C.	42	60	4	106
12	#7 @ 12" O.C.	1' 7.25"	11' 1.00"	#7 @ 12" O.C.	1' 7.25"	5' 7.75"	#6 @ 11" O.C.	10'10.25"**	#8 @ 11" O.C.	10'10.25"**	#4 @ 11" O.C.	7' 4.25"	#5 @ 16" O.C.	32	56	4	92
13	#7 @ 12" O.C.	1' 7.25"	11' 1.00"	#7 @ 12" O.C.	1' 7.25"	5' 7.75"	#6 @ 11" O.C.	10'10.25"**	#8 @ 11" O.C.	10'10.25"**	#4 @ 11" O.C.	7' 4.25"	#5 @ 16" O.C.	32	56	4	92
14	#7 @ 17" O.C.	1' 5.25"	10' 0.50"	#8 @ 17" O.C.	1' 5.25"	5' 3.50"	#5 @ 12" O.C.	10' 8.25"**	#7 @ 12" O.C.	10' 8.25"**	#5 @ 12" O.C.	7' 1.75"	#4 @ 12" O.C.	42	64	4	110
15	#7 @ 17" O.C.	1' 5.25"	10' 0.50"	#8 @ 17" O.C.	1' 5.25"	5' 3.50"	#7 @ 15" O.C.	12' 8.25"**	#5 @ 15" O.C.	9' 7.25"	#7 @ 15" O.C.	7' 8.75"	#4 @ 12" O.C.	50	64	4	118
16	#6 @ 15" O.C.	1' 4.25"	8' 8.75"	#7 @ 15" O.C.	1' 4.25"	4' 9.50"	#5 @ 9" O.C.	12' 7.25"**	#4 @ 9" O.C.	9' 0.25"	#5 @ 9" O.C.	7' 0.25"	#4 @ 12" O.C.	50	60	4	114
17	#6 @ 15" O.C.	1' 4.25"	8' 8.75"	#7 @ 15" O.C.	1' 4.25"	4' 9.50"	#8 @ 11" O.C.	7' 7.25"**	#4 @ 11" O.C.	7' 7.25"	#4 @ 11" O.C.	7' 7.25"	#4 @ 12" O.C.	30	60	4	94
18	#7 @ 17" O.C.	1' 5.25"	10' 0.50"	#8 @ 17" O.C.	1' 5.25"	5' 3.50"	#8 @ 15" O.C.	8' 8.25"**	#6 @ 15" O.C.	8' 8.25"**	#6 @ 15" O.C.	8' 8.25"**	#4 @ 12" O.C.	34	64	4	102
19	#7 @ 17" O.C.	1' 5.25"	10' 0.50"	#8 @ 17" O.C.	1' 5.25"	5' 3.50"	#8 @ 15" O.C.	8' 8.25"**	#6 @ 15" O.C.	8' 8.25"**	#6 @ 15" O.C.	8' 8.25"**	#4 @ 12" O.C.	34	64	4	102
20	#6 @ 12" O.C.	1' 6.25"	10' 1.25"	#7 @ 12" O.C.	1' 6.25"	5' 7.75"	#8 @ 12" O.C.	11' 9.25"	#5 @ 12" O.C.	9' 2.50"	#5 @ 12" O.C.	6' 8.25"	#4 @ 11" O.C.	50	76	4	130
21	#6 @ 12" O.C.	1' 6.25"	10' 1.25"	#7 @ 12" O.C.	1' 6.25"	5' 7.75"	#8 @ 12" O.C.	11' 9.25"	#5 @ 12" O.C.	9' 2.50"	#5 @ 12" O.C.	6' 8.25"	#4 @ 11" O.C.	50	76	4	130
22	#6 @ 12" O.C.	1' 6.25"	10' 1.25"	#7 @ 12" O.C.	1' 6.25"	5' 7.75"	#8 @ 12" O.C.	11' 9.25"	#5 @ 12" O.C.	9' 2.50"	#5 @ 12" O.C.	6' 8.25"	#4 @ 11" O.C.	50	76	4	130
23	#6 @ 15" O.C.	1' 4.25"	8' 8.75"	#7 @ 15" O.C.	1' 4.25"	4' 9.50"	#7 @ 15" O.C.	11' 7.25"**	#5 @ 15" O.C.	8' 9.00"	#6 @ 15" O.C.	6' 8.75"	#4 @ 12" O.C.	46	60	4	110
24	#6 @ 15" O.C.	1' 4.25"	8' 8.75"	#7 @ 15" O.C.	1' 4.25"	4' 9.50"	#7 @ 15" O.C.	11' 7.25"**	#5 @ 15" O.C.	8' 9.00"	#6 @ 15" O.C.	6' 8.75"	#4 @ 12" O.C.	46	60	4	110
25	#6 @ 17" O.C.	1' 3.25"	8' 0.75"	#7 @ 17" O.C.	1' 3.25"	4' 4.75"	#4 @ 13" O.C.	7' 6.25"**	#6 @ 13" O.C.	7' 6.25"**	#6 @ 13" O.C.	7' 6.25"**	#4 @ 13" O.C.	26	52	4	82
26	#6 @ 17" O.C.	1' 3.25"	8' 0.75"	#7 @ 17" O.C.	1' 3.25"	4' 4.75"	#4 @ 13" O.C.	7' 6.25"**	#6 @ 13" O.C.	7' 6.25"**	#6 @ 13" O.C.	7' 6.25"**	#4 @ 13" O.C.	26	52	4	82
27	#6 @ 17" O.C.	1' 0.00"	6' 11.50"	#7 @ 17" O.C.	1' 0.00"	3' 9.25"	#6 @ 18" O.C.	5' 3.00"**	#6 @ 18" O.C.	5' 3.00"**	#7 @ 18" O.C.	5' 3.00"**	#4 @ 16" O.C.	16	40	4	60
28	#0 @ 18" O.C.	1' 0.00"	8' 6.00"	#4 @ 18" O.C.	1' 0.00"	2' 0.50"	#4 @ 8" O.C.	5' 3.00"**	#0 @ 8" O.C.	0' 0.00"	#0 @ 14" O.C.	0' 0.00"	#4 @ 16" O.C.	16	24	4	44
	#0 @ 18" O.C.	0' 0.00"	0' 0.00"	#0 @ 18" O.C.	0' 0.00"	0' 0.00"	#4 @ 14" O.C.	4' 3.00"**	#0 @ 14" O.C.	0' 0.00"	#0 @ 14" O.C.	0' 0.00"	#4 @ 16" O.C.	12	16	4	32
	#0 @ 18" O.C.	0' 0.00"	0' 0.00"	#0 @ 18" O.C.	0' 0.00"	0' 0.00"	#4 @ 18" O.C.	5' 9.00"**	#0 @ 18" O.C.	0' 0.00"	#0 @ 18" O.C.	0' 0.00"	#4 @ 16" O.C.	16	24	4	44



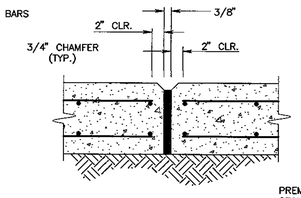
TYPICAL CHANNEL SECTION

NOT TO SCALE
(SEE SCHEDULE ABOVE)



CONSTRUCTION JOINT DETAIL

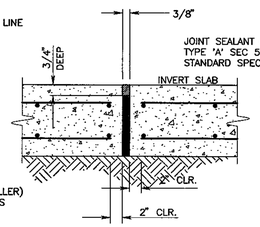
NOT TO SCALE



NOTE:
LOCATE TRANSVERSE EXPANSION JOINTS AT 50.00' MAXIMUM SPACING ALONG OPEN CHANNEL AND AT LOCATIONS SHOWN ON THE PLANS.

PREMOLDED EXPANSION JOINT FILLER (3/8" ASPHALTIC FILLER) SECURE TO CONCRETE WITH 1/4" CONCRETE NAILS. HEADS TO BE FLUSH WITH PREMOLDED MATERIAL.

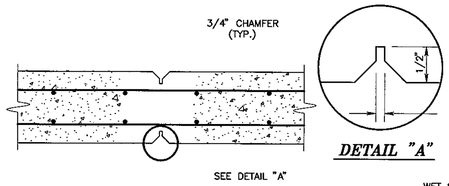
VERTICAL EXPANSION JOINT



HORIZONTAL EXPANSION JOINT

TRANSVERSE EXPANSION JOINT DETAIL

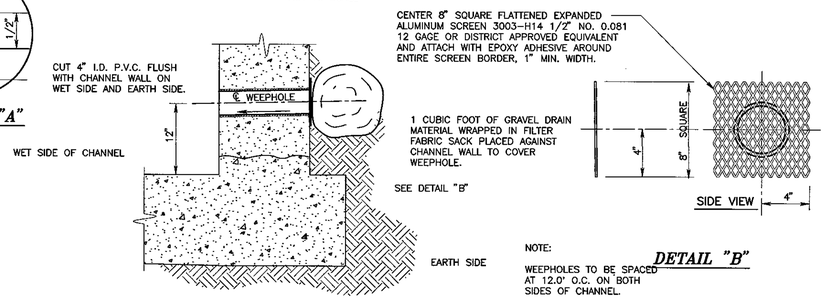
NOT TO SCALE



DETAIL "A"

WEAKENED PLANE FOR WALLS

NOT TO SCALE

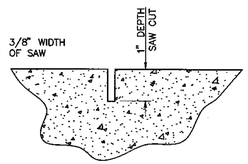


NOTE:
WEEPHOLES TO BE SPACED AT 12.0' O.C. ON BOTH SIDES OF CHANNEL.

DETAIL "B"

WEEPHOLE DETAIL

NOT TO SCALE



NOTE:
SPACING OF WEAKENED PLANE JOINTS SHALL NOT EXCEED 12.5' MAX. JOINTS IN WALLS & SLAB ARE TO BE IN THE SAME PLANE.

WEAKENED PLANE FOR INVERT SLAB

NOT TO SCALE

65% SUBMITTAL

STRUCTURAL DESIGN CRITERIA FOR REINFORCED CHANNEL

LOADS

LATERAL EARTH LOAD (INWARD) = 62.5 psf EFP
LIVE LOAD (HS20–44) = 19.2 kips @ 2 feet from wall
LATERAL WATER LOAD (OUTWARD) = 40 psf EFP

CONCRETE STRENGTH

fc' = 4,000 psi (min.) @ 28 days
fc = 1,800 psi

REINFORCING BAR STRENGTH

fs = 24,000 psi

STEEL LAYOUT NOTES

- THE LENGTH GIVEN INCLUDES ENOUGH STEEL TO LAP AND SPLICE BARS AT THE CENTER OF THE CHANNEL. IF NONE OF THE BARS IN ONE FACE OF THE SLAB EXTEND TO THE CENTER THE LONGITUDINAL BARS THAT WOULD HAVE BEEN TIED TO THOSE BARS MUST BE ATTACHED TO THE BARS ON THE OTHER FACE.

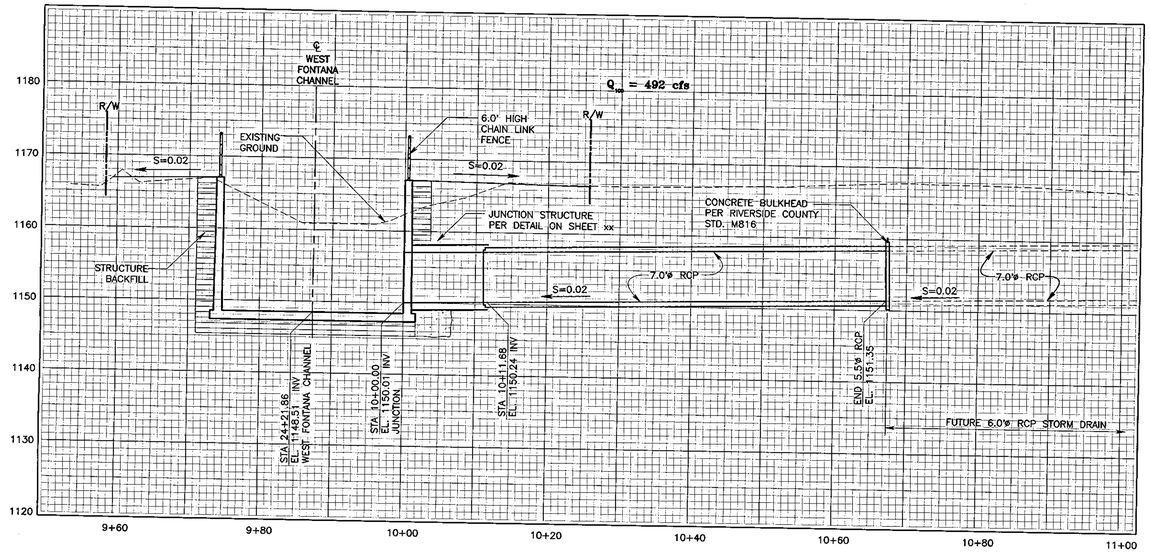
** ONE CONTINUOUS BAR TWICE THIS LENGTH SHOULD BE PLACED THE WIDTH OF THE CHANNEL

*** CHANNEL TRANSITION OF SECTION 28, FROM REINFORCED CONCRETE RECTANGULAR CHANNEL TO REINFORCED CONCRETE TRAPEZOIDAL CHANNEL

GENERAL STRUCTURAL NOTES

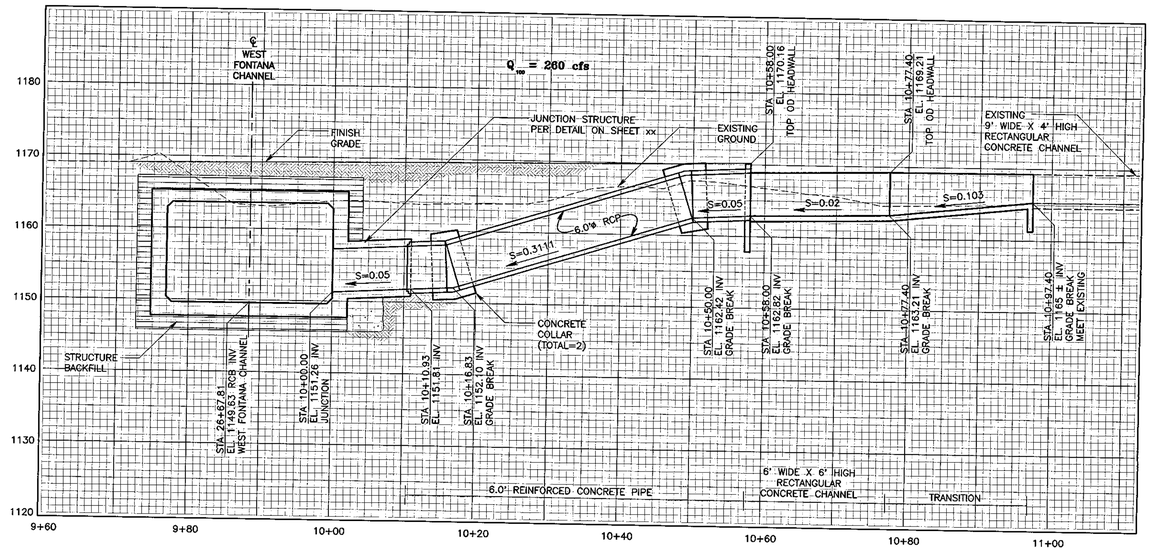
1. DIMENSIONS FROM FACE OF CONCRETE TO STEEL, SHALL BE 2 INCHES CLEAR UNLESS OTHERWISE SHOWN.
2. ADJUST VERTICAL LENGTHS OF REINFORCING BARS FOR CHANNEL WALL HEIGHT TRANSITIONS TO MAINTAIN 2" CLR FROM TOP OF WALLS.
3. CONCRETE DIMENSIONS SHALL BE MEASURED HORIZONTALLY OR VERTICALLY ON THE PROFILE AND PARALLEL TO OR AT RIGHT ANGLES (OR RADIALLY) TO CENTERLINE OF CHANNEL ON THE PLAN, EXCEPT AS SHOWN OTHERWISE.
4. EXPOSED EDGES OF CONCRETE MEMBERS SHALL BE 3/4" CHAMFER.
5. ALL REINFORCING STEEL SHALL CONFORM TO A.S.T.M. A615 GRADE 60.
6. STEEL QUANTITIES DO NOT INCLUDE ANY OPTIONAL SPLICES.
7. WHEN TESTED WITH A 10 – FOOT STRAIGHT EDGE, LAID ON THE SURFACES, THE TOP AND THE EXPOSED FACE(S) OF THE WALLS, SHALL NOT VARY MORE THAN 0.02 FOOT AND 0.04 FOOT RESPECTIVELY, FROM THE EDGE OF THE STRAIGHT EDGE.
8. LONGITUDINAL STEEL SHALL BE CONTINUOUS AND EXTEND THROUGH ALL CONSTRUCTION JOINTS, UNLESS OTHERWISE SPECIFIED, LONGITUDINAL STEEL SHALL BE LAPPED 24 BAR DIAMETERS AT SPLICES. SPLICES SHALL BE STAGGERED.
9. ALL TRANSVERSE JOINTS IN BOTH SLAB AND WALLS SHALL BE KEYED AS DETAILED, SPACING SHALL BE AS INDICATED ON THE PLANS, AND MEASURED ALONG THE CENTERLINE OF CONSTRUCTION UNLESS OTHERWISE SHOWN ON THE DRAWINGS. ALL TRANSVERSE JOINTS IN WALLS AND SLABS SHALL BE IN THE SAME PLAN. NO STAGGERING OF JOINTS WILL BE PERMITTED. TRANSVERSE JOINTS SHALL BE NORMAL OR RADIAL TO THE CENTERLINE OF CONSTRUCTION.
10. TRANSVERSE CONSTRUCTION JOINTS SHALL NOT BE PLACED WITHIN 30 INCHES OF JUNCTION STRUCTURE OPENINGS.
11. UNLESS OTHERWISE SHOWN ON THE DRAWINGS, IN CURVED SECTIONS, THE MAXIMUM SPACING OF BARS, SHALL NOT EXCEED THAT SHOWN ON THE TYPICAL SECTIONS. STEEL SHALL BE PLACED RADIALLY FROM THE MAXIMUM SPACING, WITH THE SPACING MEASURED BETWEEN THE VERTICAL LEGS OF THE BARS.
12. NO SPLICES IN TRANSVERSE STEEL REINFORCEMENT WILL BE PERMITTED OTHER THAN THAT SHOWN ON THE DRAWING, WITHOUT APPROVAL OF THE ENGINEER.
13. LONGITUDINAL STEEL SHALL TERMINATE TWO INCHES FROM TRANSVERSE EXPANSION JOINTS.
14. EPOXY ADHESIVE FOR WEEPHOLE SCREEN SHALL CONFORM TO THE LATEST EDITION OF THE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS, SECTION 95–2.04, "RAPID SET EPOXY ADHESIVE FOR PAVEMENT MARKERS."
15. GRAVEL DRAIN MATERIAL, AND FILTER FABRIC FOR WEEPHOLES, SHALL CONFORM TO THE LATEST EDITION OF THE CALIFORNIA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS AND THE PROJECT SPECIAL PROVISIONS.

REGISTERED PROFESSIONAL ENGINEER Erwin R. Fogerson 49060 Exp. 9/30/16 CIVI



PROFILE

SCALE 1" = 10'



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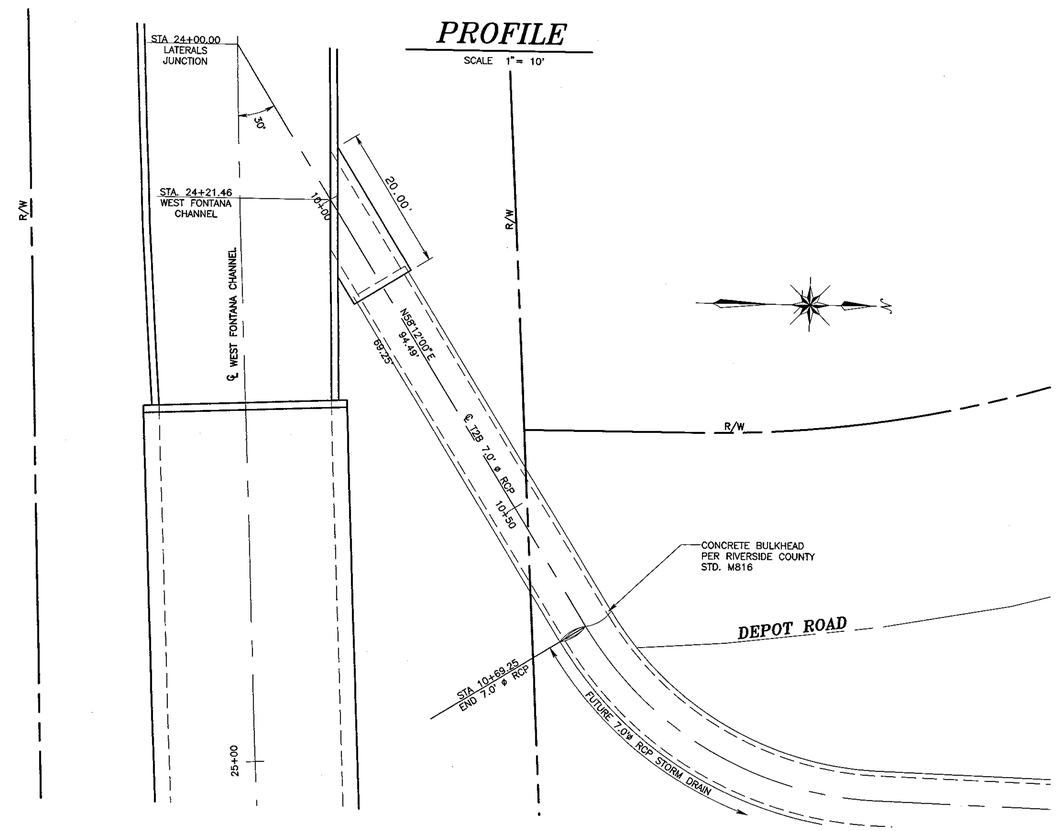
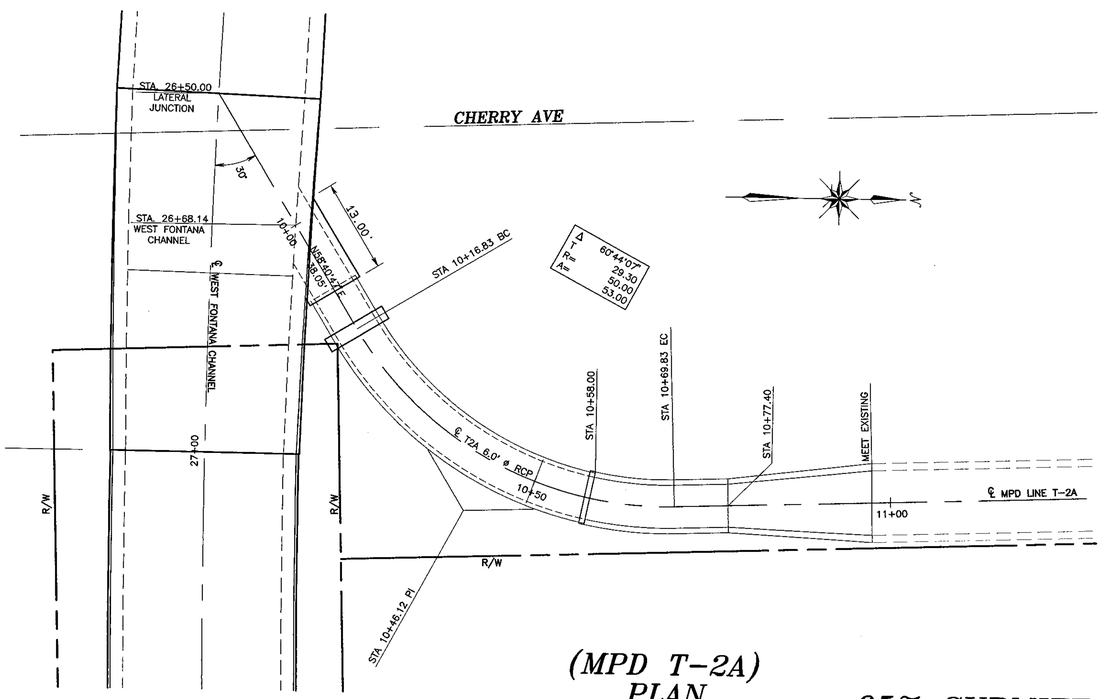


(MPD T-2B) PLAN

SCALE 1" = 10'



(MPD T-2A) PLAN

SCALE 1" = 10'

65% SUBMITTAL

GRAPHIC SCALE 1" = 10'
0 10 20 30

REGISTERED PROFESSIONAL ENGINEER Erwin R. Fogerson 49060 Exp. 9/30/16 CIVIL STATE OF CALIFORNIA

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT 1939 CALIFORNIA

REVISIONS			
MARK	DATE	DESCRIPTION	BY:

SUBMITTED BY: JON SMITH, P.E. DATE

RECOMMENDED BY: ERWIN FOGERSON, P.E. DATE

APPROVED BY: KEVIN BLAKESLEE, P.E. FLOOD CONTROL ENGINEER DATE

PROJ. ENGR.	DESIGNED BY	REV'D BY	DRAWN BY
JS	DN	EF	DN

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT

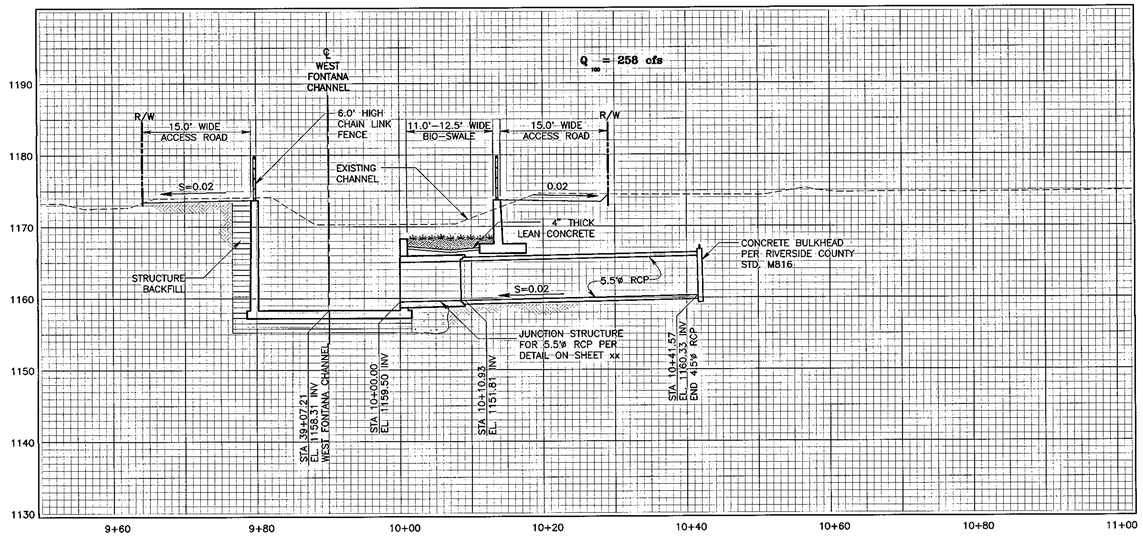
SAN SEVAINE CREEK SYSTEM

WEST FONTANA CHANNEL

PLAN & PROFILE
LATERALS
@WEST CHERRY AVE (MPD T-2B)
@EAST CHERRY AVE (MPD T-2A)

DATE: AUG 2016
SCALE: AS SHOWN
FILE NO.: 1-809-
DRAWING NO.:
SHEET NO.: 25 OF XX

S:\F0145\-- West Fontana Channel\DESIGN (DO NOT TOUCH!!)\W West Fontana Channel Improvement July 2016.pro Sep 8, 2016



PROFILE

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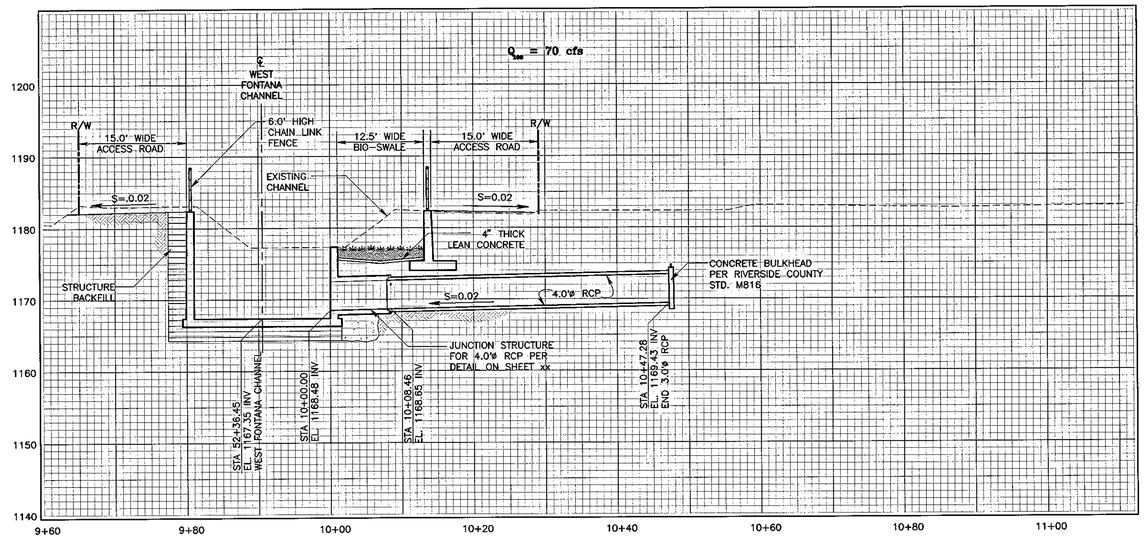

PROFILE

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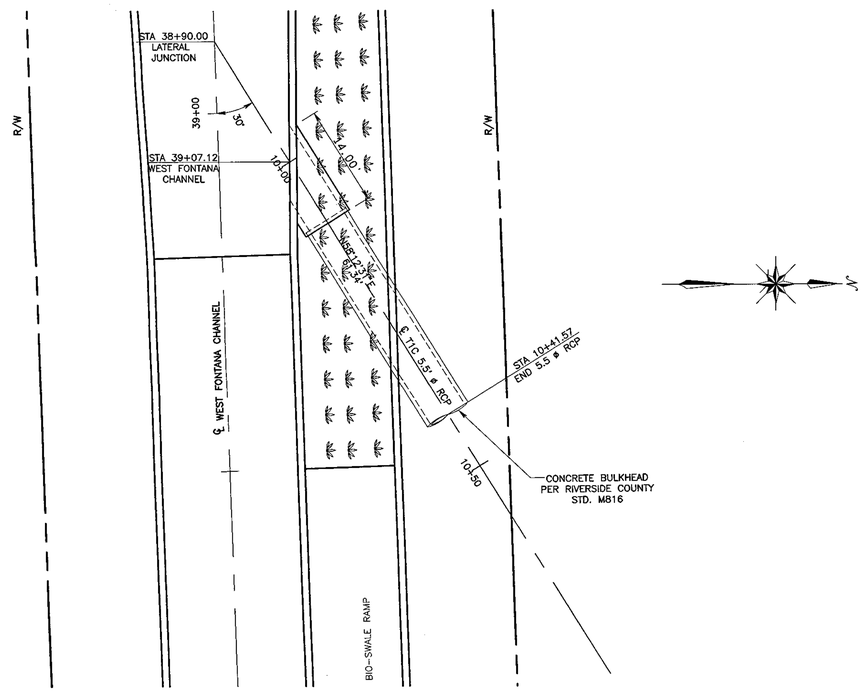
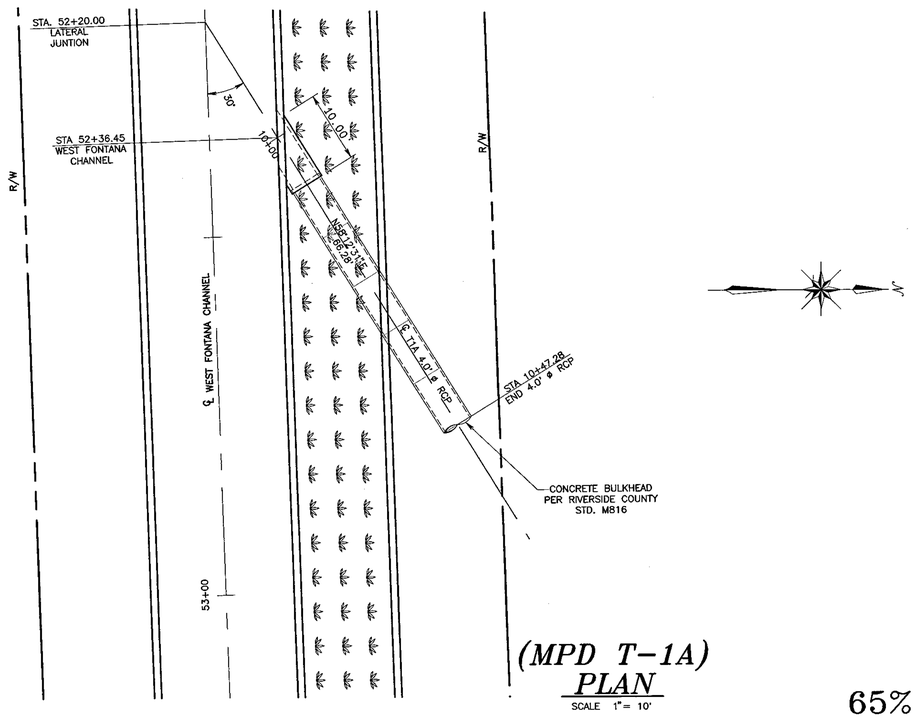


(MPD T-1C) PLAN

SCALE 1"= 10'



(MPD T-1A) PLAN

SCALE 1"= 10'

GRAPHIC SCALE 1"= 10'
0 10 20 30

65% SUBMITTAL

REGISTERED PROFESSIONAL ENGINEER Erwin R. Fogerson 49060 Exp. 9/30/16 CIVIL STATE OF CALIFORNIA

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT 1939 CALIFORNIA

REVISIONS			
MARK	DATE	DESCRIPTION	BY:

SUBMITTED BY: JON SMITH, P.E. DATE

RECOMMENDED BY: ERWIN FOGERSON, P.E. DATE

APPROVED BY: KEVIN BLAKESLEE, P.E. FLOOD CONTROL ENGINEER DATE

PROJ. ENGR.	DESIGNED BY	REV'D BY	DRAWN BY
JS	DN	EF	DN

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT

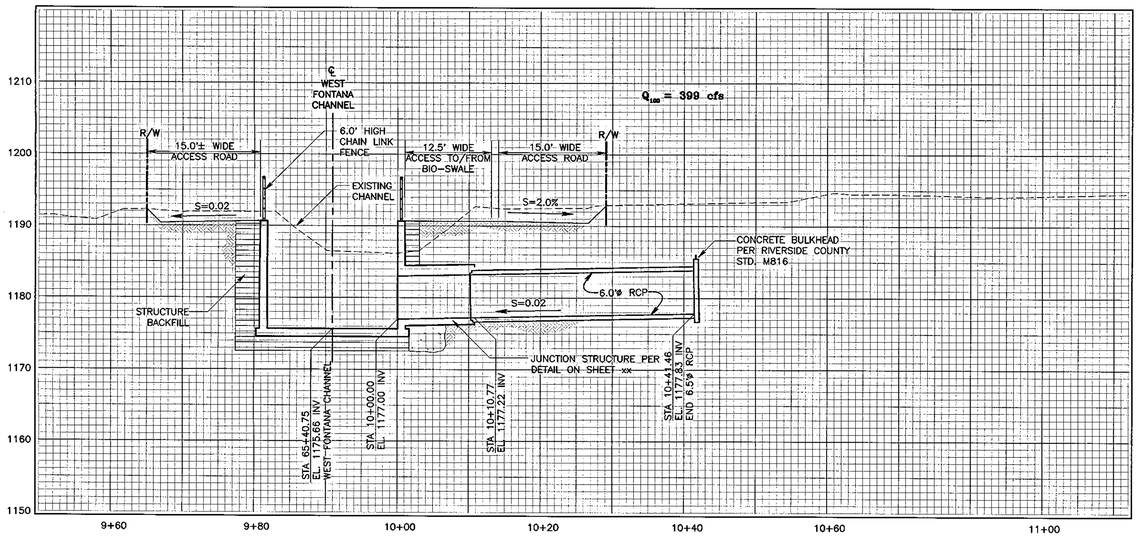
SAN SEVAINE CREEK SYSTEM

WEST FONTANA CHANNEL

PLAN & PROFILE
LATERALS
@REDWOOD AVE (MPD T-1C)
@LIVE AVE (MPD T-1A)

DATE	AUG 2016
SCALE	AS SHOWN
FILE NO.	1-809-
DRAWING NO.	
SHEET NO.	26 OF XX

S:\701452- West Fontana Channel\DESIGN (DO NOT TOUCH!!!)\W West Fontana Channel Improvement July 2016.pro Sep 8, 2016



PROFILE

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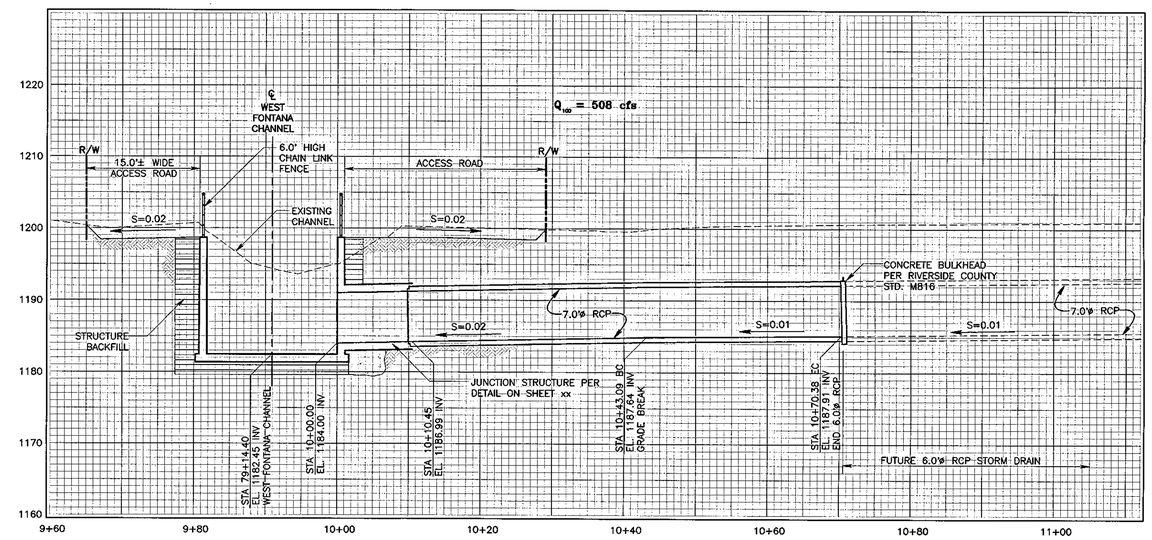

PROFILE

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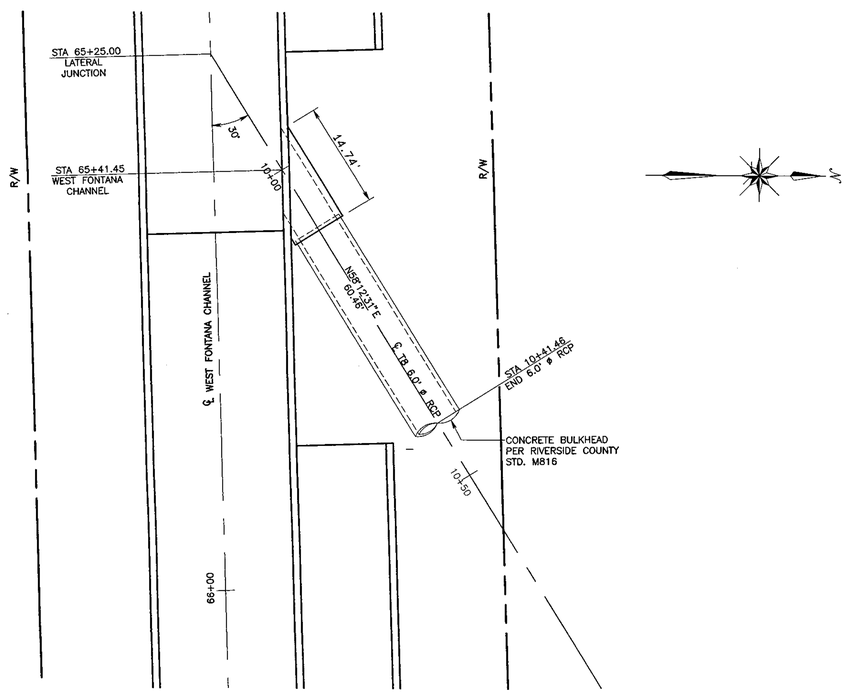

(MPD T-8) PLAN

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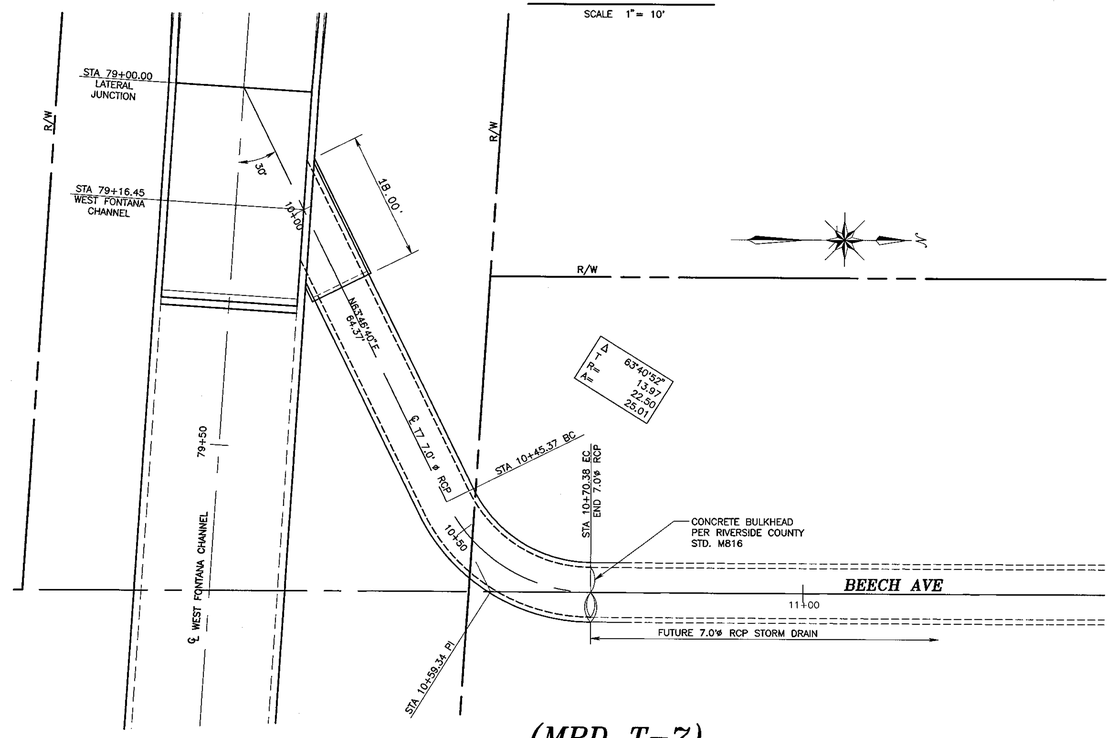

(MPD T-7) PLAN

SCALE 1"= 10'

65% SUBMITTAL

GRAPHIC SCALE 1"= 10'
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REGISTERED PROFESSIONAL ENGINEER Erwin R. Fogerson 49060 Exp. 9/30/16 CIVIL STATE OF CALIFORNIA

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT 1939 CALIFORNIA

REVISIONS			
MARK	DATE	DESCRIPTION	BY:

SUBMITTED BY: JON SMITH, P.E. DATE

RECOMMENDED BY: ERWIN FOGERSON, P.E. DATE

APPROVED BY: KEVIN BLAKESLEE, P.E. FLOOD CONTROL ENGINEER DATE

PROJ. ENGR.	DESIGNED BY	REV'D BY	DRAWN BY
JS	DN	EF	DN

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT

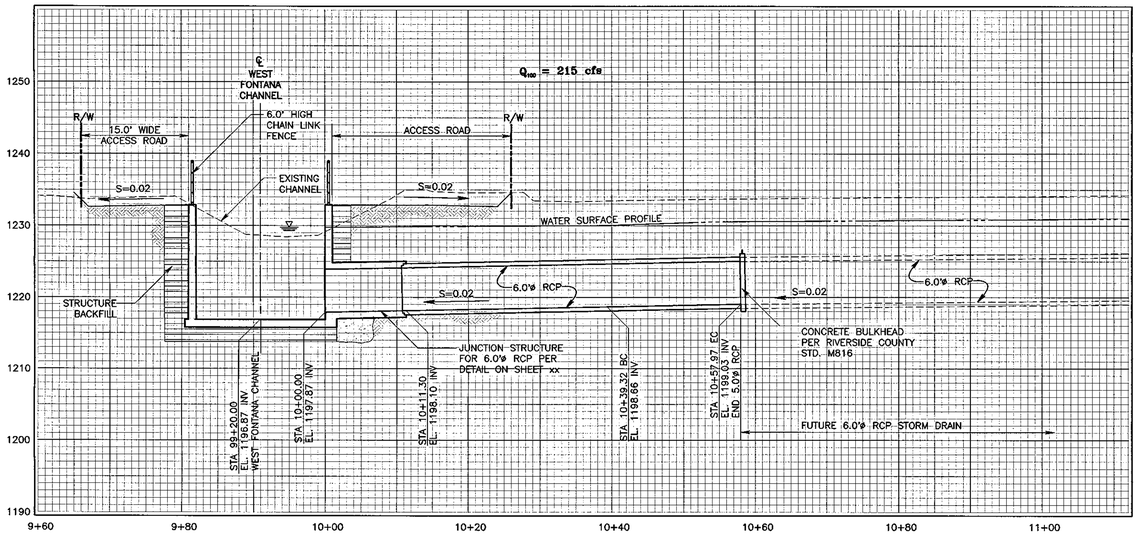
SAN SEVAINE CREEK SYSTEM

WEST FONTANA CHANNEL

PLAN & PROFILE
LATERALS
@HEMLOCK AVE (MPD T-8)
@BEECH AVE (MPD T-7)

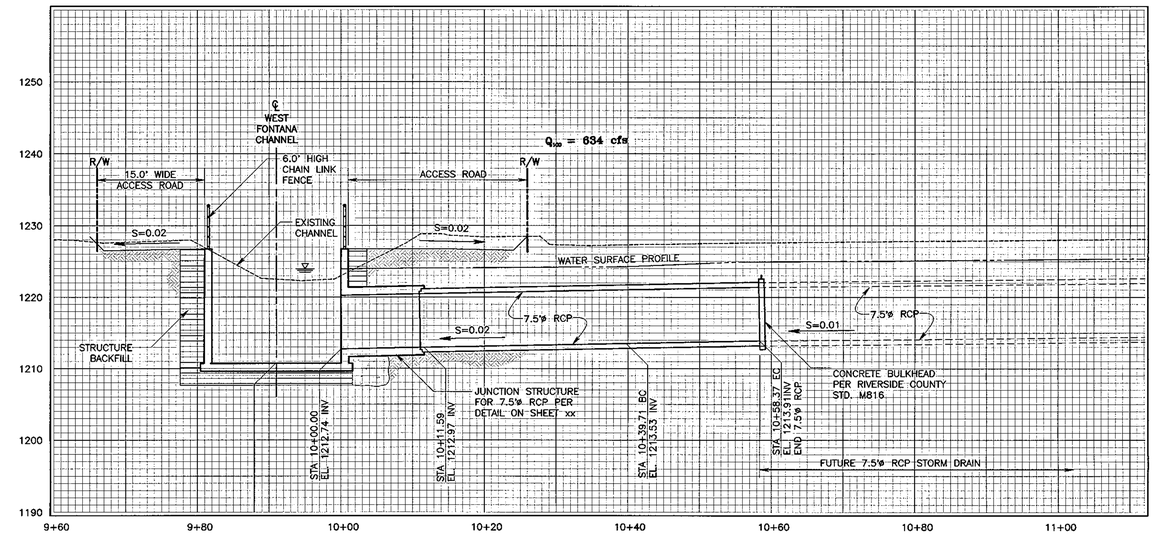
DATE	AUG 2016
SCALE	AS SHOWN
FILE NO.	1-809-
DRAWING NO.	
SHEET NO.	27 OF XX

S:\01452- West Fontana Channel\DESIGN (DO NOT TOUCH!!!)\W West Fontana Channel improvement July 2016.pro Sep 8, 2016



PROFILE

SCALE 1"= 10'



PROFILE

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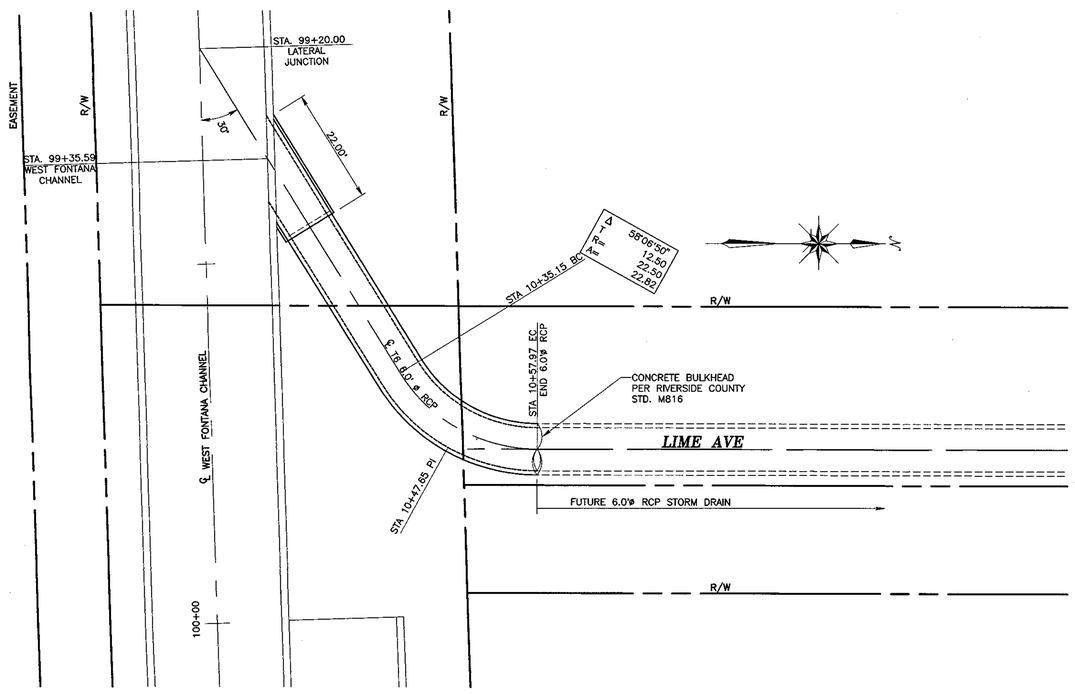
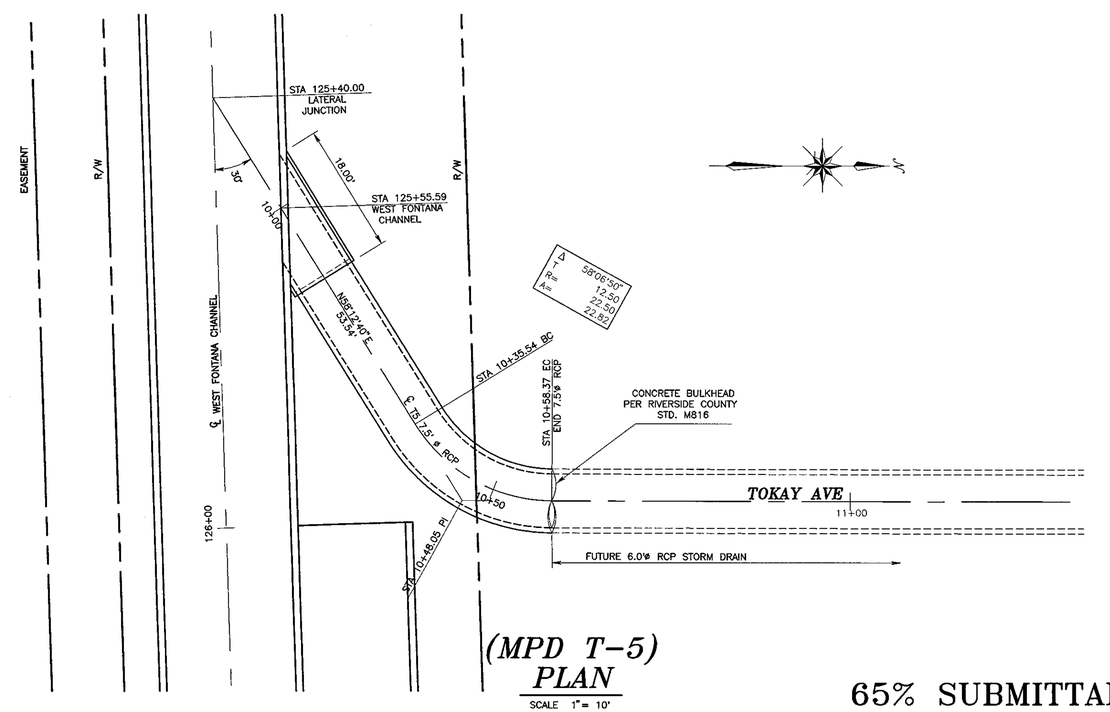


(MPD T-6) PLAN

SCALE 1"= 10'



(MPD T-5) PLAN

SCALE 1"= 10'

65% SUBMITTAL

GRAPHIC SCALE 1"= 10'
0 10 20 30

REGISTERED PROFESSIONAL ENGINEER Erwin R. Fogerson 49060 Exp. 9/30/16 CIVIL STATE OF CALIFORNIA

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT 1939 CALIFORNIA

REVISIONS			
MARK	DATE	DESCRIPTION	BY:

SUBMITTED BY: JON SMITH, P.E. DATE

RECOMMENDED BY: ERWIN FOGERSON, P.E. DATE

APPROVED BY: KEVIN BLAKESLEE, P.E. FLOOD CONTROL ENGINEER DATE

PROJ. ENGR.	DESIGNED BY	REV'D BY	DRAWN BY
JS	DN	EF	DN

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT

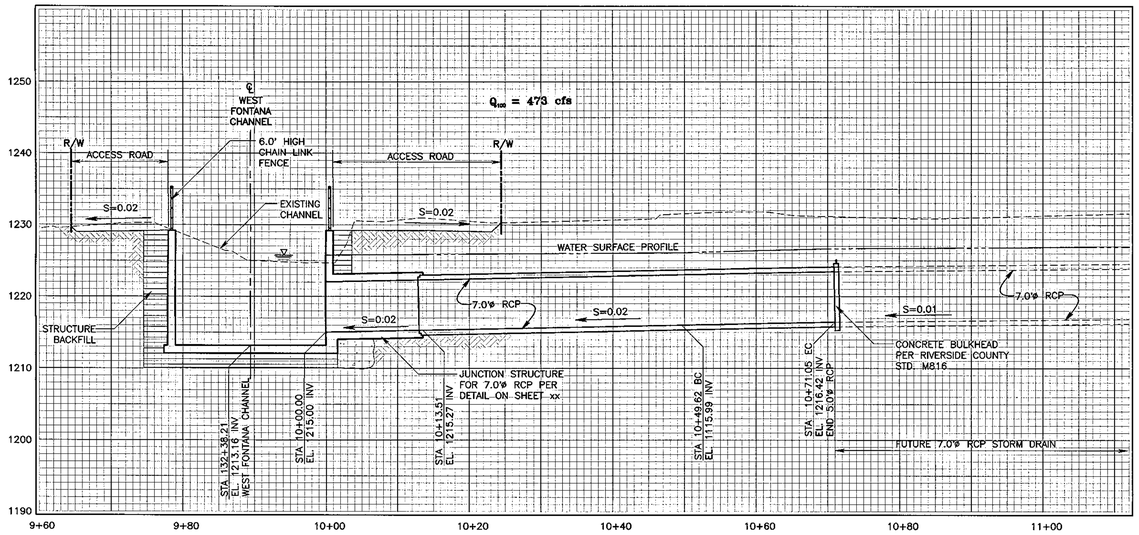
SAN SEVAINE CREEK SYSTEM

WEST FONTANA CHANNEL

PLAN & PROFILE
LATERALS
@LIME AVE (MPD T-6)
@TOKAY AVE (MPD T-5)

DATE: AUG 2016
SCALE: AS SHOWN
FILE NO.: 1-809-
DRAWING NO.:
SHEET NO.: 28 OF XX

S:\FD1452- West Fontana Channel\DESIGN (DO NOT TOUCH!)\WF West Fontana Channel Improvement July 2016.pro Sep 6, 2016



PROFILE

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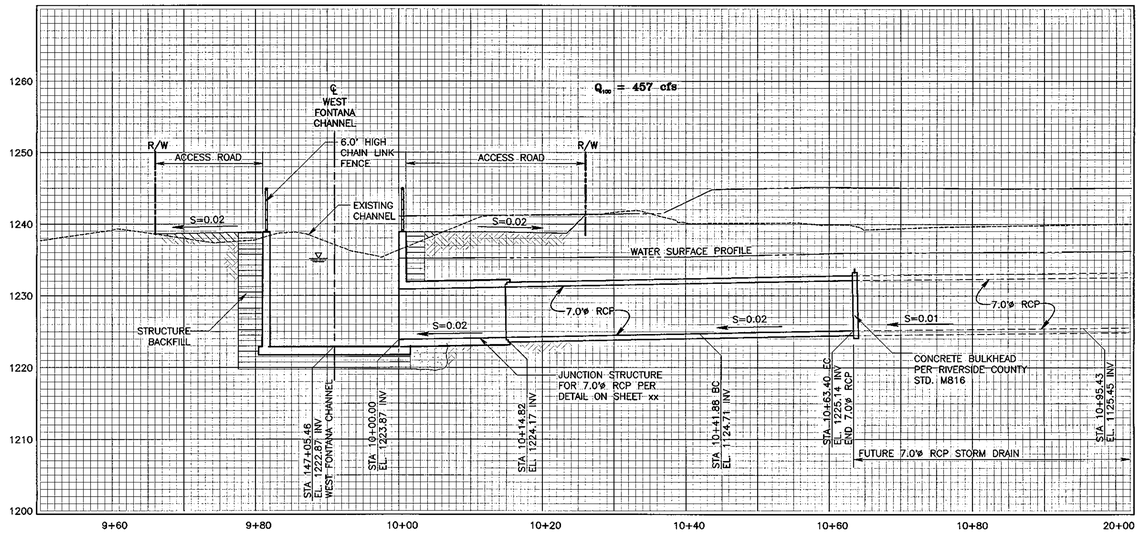

PROFILE

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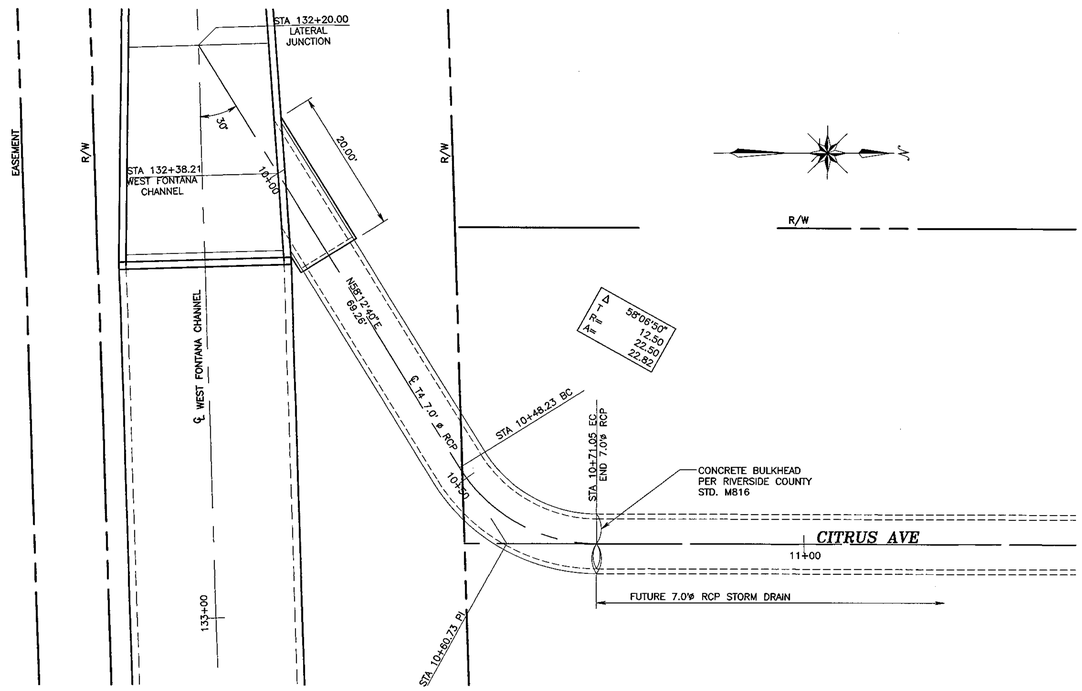
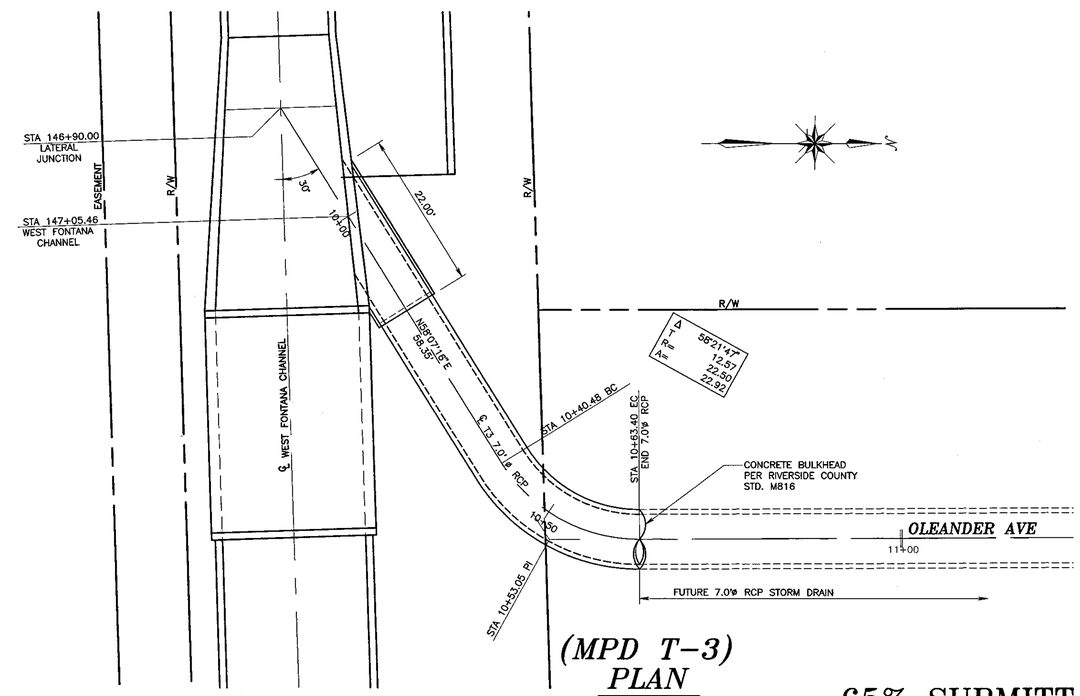


(MPD T-4) PLAN

SCALE 1"= 10'



(MPD T-3) PLAN

SCALE 1"= 10'

65% SUBMITTAL

GRAPHIC SCALE 1"= 10'
0 10 20 30

REGISTERED PROFESSIONAL ENGINEER Erwin R. Fogerson 49060 Exp. 9/30/16 CIVIL STATE OF CALIFORNIA

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT 1939 CALIFORNIA

REVISIONS			
MARK	DATE	DESCRIPTION	BY:

SUBMITTED BY: JON SMITH, P.E. DATE

RECOMMENDED BY: ERWIN FOGERSON, P.E. DATE

APPROVED BY: KEVIN BLAKESLEE, P.E. FLOOD CONTROL ENGINEER DATE

PROJ. ENGR.	DESIGNED BY	REV'D BY	DRAWN BY
JS	DN	EF	DN

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT

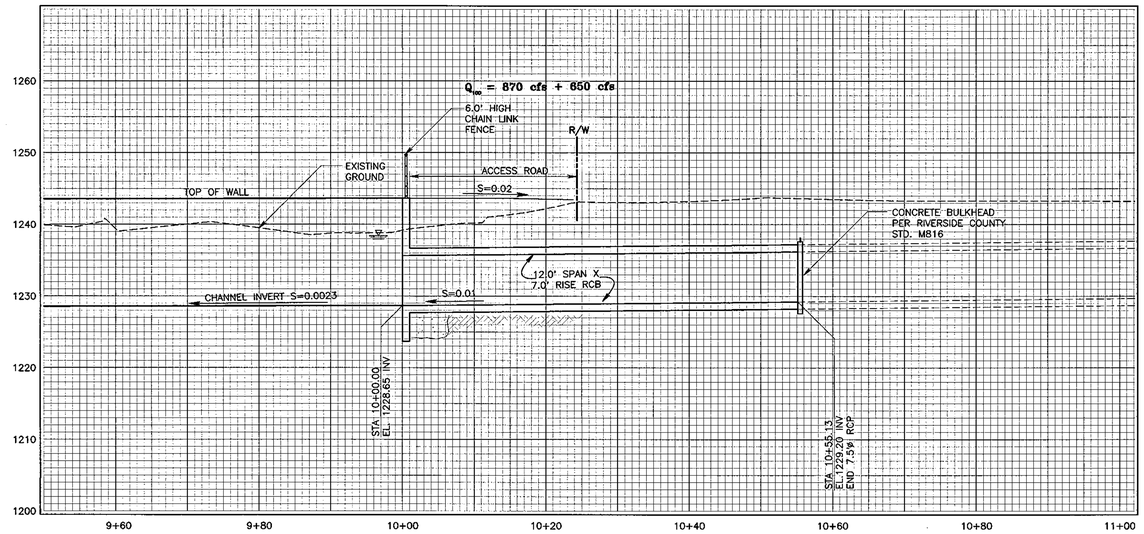
SAN SEVAINE CREEK SYSTEM

WEST FONTANA CHANNEL

PLAN & PROFILE
LATERALS
@CITRUS AVE (MPD T-4)
@OLEANDER AVE (MPD T-3)

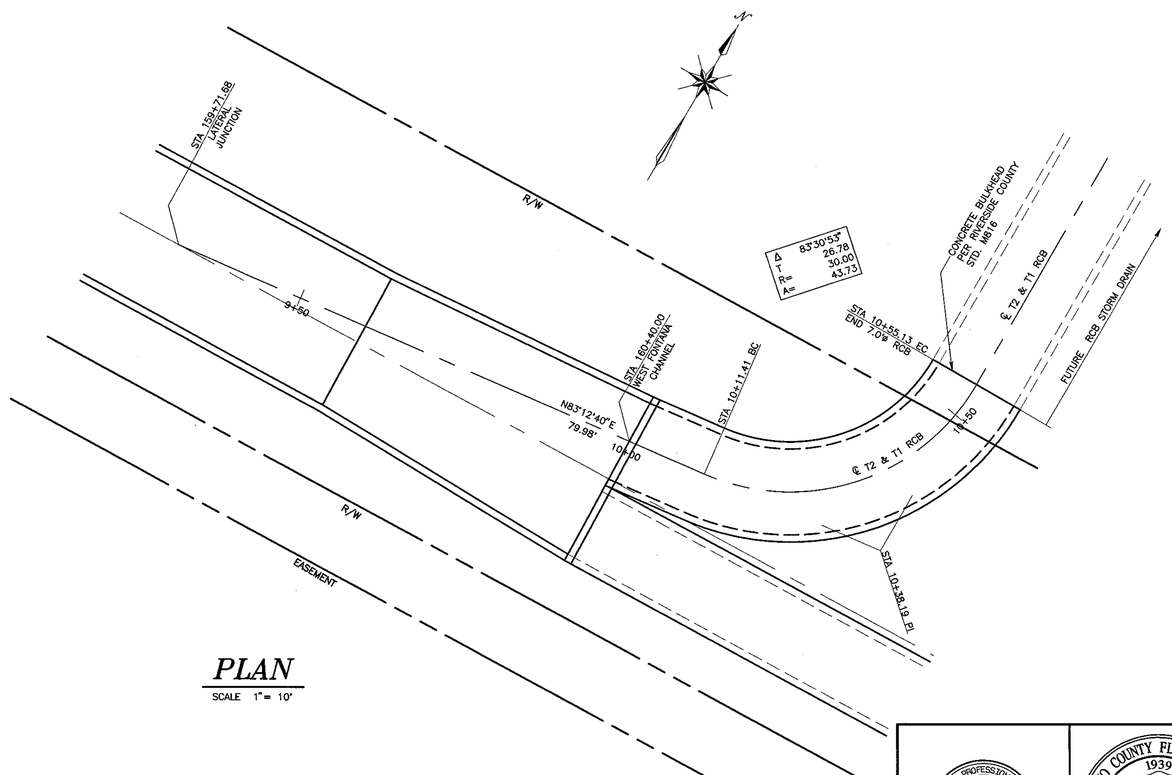
DATE	AUG 2016
SCALE	AS SHOWN
FILE NO.	1-809-
DRAWING NO.	
SHEET NO.	29 OF XX

S:\701452- West Fontana Channel\DESIGN (DO NOT TOUCH!!)\W West Fontana Channel Improvement July 2016.pro Sep 8, 2016



PROFILE

SCALE 1" = 10'



PLAN

SCALE 1" = 10'

GRAPHIC SCALE 1" = 20'

0 20 40 60

65% SUBMITTAL

REGISTERED PROFESSIONAL ENGINEER Erwin R. Fogerson 49060 Exp. 9/30/16 CIVIL STATE OF CALIFORNIA

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT 1939 CALIFORNIA

REVISIONS			
MARK	DATE	DESCRIPTION	BY:

SUBMITTED BY: JON SMITH, P.E. DATE

RECOMMENDED BY: ERWIN FOGERSON, P.E. DATE

APPROVED BY: KEVIN BLAKESLEE, P.E. FLOOD CONTROL ENGINEER DATE

PROJ. ENGR.	DESIGNED BY	REV'D BY	DRAWN BY
JS	DN	EF	DN

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT

SAN SEVAINE CREEK SYSTEM

WEST FONTANA CHANNEL

PLAN & PROFILE
LATERALS
@CYPRESS AVE (MPD T-2)
@CYPRESS AVE (MPD T-1)

DATE	AUG 2016
SCALE	AS SHOWN
FILE NO.	1-809-
DRAWING NO.	
SHEET NO.	30 OF XX

S:\701452- West Fontana Channel\DESIGN (DO NOT TOUCH!!)\HV West Fontana Channel improvement July 2016.pre Sep 8, 2016