



**SAN BERNARDINO COUNTY
SOLID WASTE MANAGEMENT DIVISION**
222 West Hospitality Lane, 2nd Floor
San Bernardino, CA 92415-0017

ADDENDUM NO. 3

**TO THE PLANS AND BID DOCUMENTS FOR THE UNIT 4 PHASE 2
COMPOSITE LINER CONSTRUCTION PROJECT
AT THE MID-VALLEY SANITARY LANDFILL
in Rialto, California**

January 26, 2026

~~**BID OPEN: 10:00AM JANUARY 29, 2026**~~

BID OPEN: 10:00AM FEBRUARY 10, 2026

The following changes and/or additions shall be made to the Plans and Bid Documents for the Unit 4 Phase 2 Composite Liner Construction Project at the Mid Valley Sanitary Landfill. All other requirements of the Plans and Bid Documents shall remain the same.

The following changes shall be made part of the Contract Documents, and the Bidder should acknowledge receipt thereof on the Bid Proposal.

I. GENERAL

1. Deadline for questions related to Addendum No. 3 has been extended to **Thursday, January 29, 2026, at 12:00PM. Only** questions related to Addendum No. 3 will be answered.
2. Attachment 1 - Summary of changes has been added to this Addendum No. 3 to summarize the modifications/changes to the Bid Documents.

II. AMEND THE SPECIAL PROVISIONS AS FOLLOWS:

1. Replace page 1, paragraph one with the following:

Notice is hereby given that San Bernardino County, Department of Public Works – Solid Waste Management Division on behalf of the Board of Supervisors of San Bernardino County, California will receive sealed bids **no later than 10:00 a.m. on Tuesday, February 10, 2026** at the Department of Public Works, Solid Waste Management Division, 222 W. Hospitality Lane, 2nd Floor, San Bernardino, California, 92415-0017, at which time the bids will be publicly opened and declared for the **Unit 4 Phase 2 Composite Liner Construction Project at the Mid-Valley Sanitary Landfill in Rialto, California**. Bids received after this time will not be considered.

2. **BID PROPOSAL CHECKLIST**, Delete and replace in its entirety Bid Proposal Checklist and Assembly Pages 3 and 4 with the revised Bid Proposal Checklist and Assembly Pages 3A and 4A included in this Addendum as Attachment 2.

3. **BID SCHEDULE**, delete and replace in its entirety Bid Schedule Pages 22-1 thru 22-5 with the Bid Schedule Pages 22-1A thru 22-5A included in this Addendum as Attachment 3. Bids must be submitted on these sheets or will be deemed non-responsive.

4. Section 1 – General Terms and Conditions, Subsection 1.8 - Time of Completion/Liquidated Damages; Extension of Time, delete and replace second paragraph as follows:

In accordance with Government Code Section 53069.85, Contractor agrees to forfeit and pay to County the sum of Six Thousand Dollars (\$6,000) per day for each working day that completion of the project (all sequences) is delayed beyond the specified 300 working days. Additional Liquidated Damage assessments of Six Thousand Dollars (\$6,000) per day for each working day should each of the Project Milestones not be completed within the specified number of working days from the date of the Notice to Proceed:

5. Section 1 – General Terms and Conditions, Subsection 1.9 Sequencing of Work, Page 8, delete and replace Sequences 1, 2B and 3 Description of Work, with the revised text below.

- Sequence 1 (West Slopes and Notherly Entrance Facility Improvements – Approximately 7 acres).
- Sequences 2B and 3 (East, North Slopes, Southerly Entrance Facility Improvements, and BMP Basin – Approximately 30 acres).

In addition, amend anywhere within the Contract Documents to include the Northern Entrance Facility Improvements (Bypass Lane, 6" AC over 12" CMB Pavement Section, Concrete BMP Feature, Signage, Northern Striping, and

Miscellaneous Civil Improvement) with **Sequence 1** of the Contract Sequencing of Work Plan.

6. Section 2E Leachate Collection and Removal System, Subsection 2.1.2 Sieve Analysis, delete and replace LCRS Bench/Road Collector Gravel table with revised table below:

U.S. STANDARD SIEVE	PERCENT PASSING BY WEIGHT
1/2 inch	100
3/8 inch	85-100
No. 4	0-30
No. 8	0-10
No. 200	0-2

7. Section 2H – Geotextile, Subsection 3.3.3 Seams, delete and replace paragraph 1 of with the revised paragraph below.

All geotextile seams shall be formed by welding, or by mating the edges of the geotextile panels, and sewing together with continuous stitches located a minimum of 3 inches from the mated edges. A 2-thread, double-locked stitch shall be used (4 stitches per inch). Sewing procedures shall conform to the latest procedures recommended by the geotextile manufacturer. Spot sewing shall not be allowed. Seams shall provide seam strength which equals or exceeds 60 percent of the specified material strength when tested in accordance with ASTM D4595 (material strength) and ASTM D4884 (seam strength).

8. Section 2K - Miscellaneous Civil Improvements, delete and replace in its entirety with the revised Section 2K-Miscellaneous Civil Improvements included in this Addendum as Attachment 5. Modifications are also provided in track changes format.

9. Appendix A of the Special Provisions is being modified to include the Construction Quality Assurance (CQA) Plan for Earthwork and Geosynthetic Elements for the Project. A copy of the CQA Plan is included in this Addendum as Attachment 6.

III. **PROJECT PLANS REVISIONS**

1. Delete and replace Plan Sheet 1, Sheet 3, Sheet 20, Sheet 21, Sheet 22, Sheet 28 and Sheet 34, included in Attachment 4 to this Addendum No. 3.

2. Add new Sheet 21A to plan set to add details related to the bypass lane improvements, included in Attachment 4 to Addendum No. 3.

IV. PROJECT QUESTIONS AND ANSWERS

The following additional question(s) have been received by the bidders:

Q1. Is there a certain percentage of the contract value that the prime contractor must self-perform?

A1. The SSPWC, Section 3 – Control of the Work, Subsection 3-2-Self Performance states that Contractor shall perform with its own organization contract work amounting to at least 50 percent of the contract price except that any designated “specialty items” may be performed by subcontract.

Q2. Section 11.2.1.4 GL and AL Insurance Limits for Large Const. Projects – Does this mean if we have a \$20M bid, do we need to have \$40M GL & AL insurance limits?

A2: Please refer to General Conditions (blue pages) Section 11.2.1.4 of the project’s Special Provisions for specific information about the General Liability (GL) and Automobile Liability (AL) Insurance Limits for larger construction projects. Based on the example given, for a project of \$20M it will require limits of no less than two times the total estimated cost of the project in GL and AL.

Q3. I’ll be submitting the bid documents in person, so I’ll need to print the documents. The bid documents are yellow pages; I would prefer not to use our printer ink to print documents in yellow. Can you provide the bid forms on white pages, please?

A3: Printing on white paper is acceptable.

Q4. Can we use the imported low perm material (Item 11) for protective soil cover (Items 35 & 36)?

A4: Import material that meets the requirements described in Technical Specifications Section 2J Protective Soil Cover subsection 2.0 Material shall be approved for use.

Appendix C1 of the Technical Specifications “Vulcan Pond Silts Investigation for Unit 4 Phase 2 Liner LPM Mid-Valley Sanitary Landfill, San Bernardino County, California (Geo-Logic Associates, March 28, 2025)” summarizes laboratory test reports for the Bid Item 11 approved Low-permeability Material source.

Q5. We are a subcontractor and specialize in the supply and installation of geosynthetics, and we are looking forward to submitting a proposal for the

liner scope of the referenced project. Could you please share with us the list of plan holders for this project?

A5: The plan-holders list for this project is available on E-Pro, Addendum No. 1.

Q6. Reference Bid Item 57 and Plan Sheet 20 (note 42) please clarify if the asphalt to be installed in the front entrance should be 6" thick as indicated in the schedule of values or 4" thick as shown on the plans.

A6. The asphalt pavement at the front entrance shall be constructed at a thickness of 4"AC over 8" CMB, revised from the previously indicated thickness of 6"AC, in accordance with reissued Sheet 20 and modifications to reissued Section 2K, Subsection 4.8, Shoulder Paving, with Addendum No. 3.

Q7. The Bid Proposal Checklist and Assembly include the following items marked with one asterisk: Performance Bond Form, Labor and Materials Bond Form, and Contractor's Affidavit and Final Release. These documents are not typically submitted at the time of bid. Can you please confirm whether these forms are required to be included with the bid proposal submission?

A7. See Section II, No. 2 Bid Proposal Checklist of Addendum 3 and Attachment No. 2.

Q8. Please confirm the required limits for the Builder's Risk coverage detailed in the Standard Contract, Section 5.3.2, Subsection F.

A8. Confirmed, a minimum "Best" Insurance Guide rating of "A- VII" is required.

Q9. The Specifications do not contain a CQA Plan for Liner Installation (Appendix A). Please prove the CQA plan if available.

A9. See Section II, No. 9 of Addendum 3 and Attachment No. 6.

Q10. Page 8 of the Technical Specifications indicates that the liquidated damages are \$6,000 per day for each calendar day. However, page 4 of 16 of the Standard Contract indicates \$6,000 per day for each working day. Please advise if liquidated damages are to be assessed for each calendar day or each workday that the project is delayed or the project milestones are delayed.

A10. See Section II, No. 4 of Addendum 3.

Q11. Page 11, Section XVII in the Instruction to Bidders references a schedule to be submitted by the Contractor. Is this schedule to be submitted with the bid or once the job is awarded?

A11. As a clarification, the schedule being referred to in Section XVII Schedule, of the Instruction to Bidders, applies to the successful bidder and is submitted once the job is awarded.

Q12. On the List of Subcontractors Form, please clarify if the "portion of work" column should list the description of work, amount, or the percent of total contract.

A12. In this section (four lines provided), Bidders must describe the work the subcontractor will provide, i.e. electrical, asphalt paving, etc. There is a separate line that specifies the percentage of work of the total contract that each subcontractor will provide.

Q13. Will the contractor be responsible for preparing and submitting a SWPP Plan for the project?

A13. Yes, Contractor is responsible for preparing and submitting a SWPP Plan for the project. Please refer to the Technical Specifications, Section 2B - Construction Support Tasks, Subsection 1.4 - Storm Water Pollution Control Compliance – Construction Activities Stormwater Management Plan for specific requirements.

Q14. There are only 2 sheets provided for the list of subcontractors with only 4 slots to fill in. What will happen if we have more than 4 subcontractors?

A14. Print additional copies of Page 29 and label them 29A, 29B and so forth.

Q15. Can we stage materials (HDPE Liner/Pipes et.) at the bottom of the hole?

A15. Available space at the bottom of Unit 4 is limited. Limited staging of materials may be possible; however, all staging activities shall be coordinated with and approved by the Engineer. The Contractor shall be solely responsible for the protection of all materials until final acceptance of the Project.

Q16. Could you please confirm whether striping plans or specifications are available for Item #60?

A16. Striping improvements are shown on reissued Sheets 20 and 21 as well as details on reissued Sheet 28. Striping is attributed to Construction Notes 57, 67, 70 and 71 on these reissued sheets. The Technical Specifications for Bid Item 60

are provided in reissued Section 2K, added Subsection 4.69 Site Striping Improvements.

Q17. Please clarify where Item 62, “Splashwall,” is shown on the front entrance plans.

A17. Splashwalls was removed from the Entrance Facility Area Plans. The Technical Specifications were modified to replace Measurement and Payment Bid Item as specified in reissued Section 2K, Subsection 4.12, Shoulder Paving – 6-Inch Asphalt Concrete over 12-Inch CMB (Per Detail 3/28).

Q18. Please clarify what Items 66 & 67 include. If the flume, cut off wall, asphalt over Class 2 base, and rip rap are separate items?

A18. Bid Item 66 Downdrain A Outlet and Bid Item 67 Downdrain B Outlet have been removed from the Technical Specifications and Bid Schedule and replaced with Bypass Lane Improvements and Temporary Traffic Control, respectively. In Addition, the Technical Specifications were modified to replace subject Measurement and Payment Bid Items.

Q19. Please clarify for Bid Item 103 that the detail called out 9/40 should be replaced by 8/40.

A19. Bid Item 103 was updated to reference detail 8/40.

Q20. On Sheet 34 (Unit 3 BMP Line A Profile), the 48-inch downdrain is shown tying in flush at the RCB flowline. Given that the RCB is only 2 feet tall, please clarify how this connection is intended to be constructed. Specifically, is a concrete anchor or transition required to support the remaining pipe height as it tapers into the RCB?

A20. See updated Sheet 34 reissued as part of Addendum #3. The existing downdrain flume is 4' wide, 2' tall and is intended to be placed approximately 2' into the proposed RCB per construction note 39. No additional anchor is required. The reinstalled flume shall be installed with salvaged joint restrains and channel joints.

Q21. On Sheet 26, Detail 3/26 calls out wrapped Gravel. What type of gravel is to be used here?

A21. LCRS Bench/Road Collector Gravel, which is described in Technical Specifications Section 2E LCRS, is to be used in the Wrapped Gravel Corridor.

Q22. For Bid Item 47, what ratio should we assume for the blend of 12" oversized/CMB for bidding purposes?

A22. The upper 3-inches of the Lined Access Road driving surface shall consist of compacted CMB in accordance with the SSPWC. The lower 9 inches of the driving surface may consist of either (1) a blend of processed on-site oversize material and CMB, or (2) a full-depth section of compacted CMB, at the Contractor's discretion.

The Engineer assumes the Contractor may elect to either (a) process and screen on-site soils (Bid Item 9) to generate protective cover soils and usable oversize material for Bid Item 47, or (b) import all protective cover soils (Bid Items 35 or 36) and all CMB for the lined access road section (Bid Item 47). The Contractor's bid shall reflect its selected approach and any cost efficiencies available using identified on-site materials.

Q23. According to Spec on 2E-2 for the LCRS Bench/Road collection gravel it shows the gradation for 3/8-inch sieve as 20-100% passing. Is this correct?

A23. See Section II, No. 6 of Addendum No. 3.

Q24. Sheet 41, Detail 7 references Construction Note 50 for a Catch Basin. Please clarify how this work is to be paid, as no corresponding bid item is identified in the contract documents. Additionally, please confirm the intended configuration of the catch basin. Is a connector pipe provided to convey runoff from the catch basin, or is the catch basin intended to function solely as a sump to hold standing water?

A24. The catch basin is to be paid under Bid Item 75, Miscellaneous Site Work – Unit 3 BMP Area in accordance with reissued section 2K. All modifications to the Unit 3 BMP LCRS Storage Facility (per Sheet 38) are to be paid under Bid Item 75.

Q25. Sheet 40, Detail 7 references the concrete spillway. Please clarify how this work is to be paid, as no corresponding bid item is identified in the contract documents.

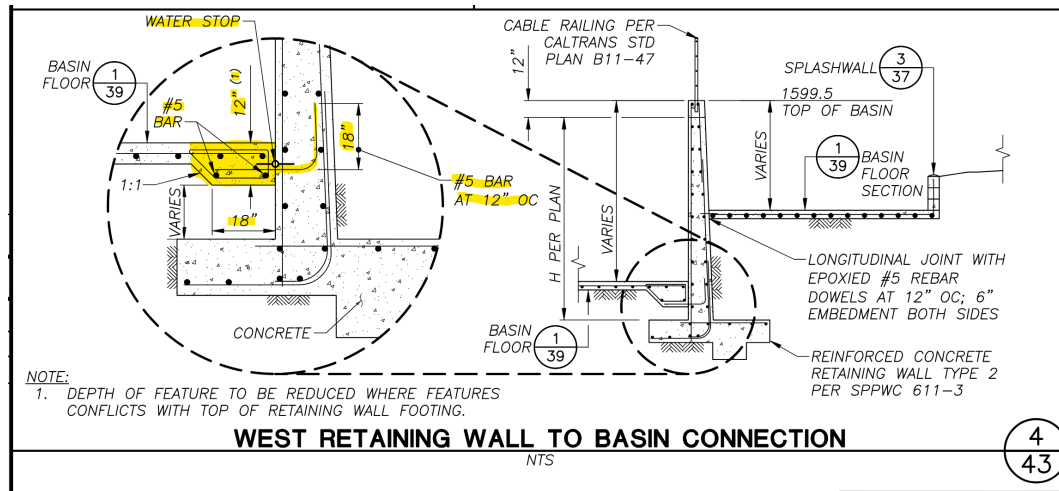
A25. Basin Spillway "Notch" shall be paid in Bid Item 98. The 2' x 12' spillway notch is to be formed into the retaining wall from station 11+17.47 to station 11+29.47 per Detail 5 on sheet 43.

Q26. Please clarify where Bid Item 101 is located?

A26. Bid Item 101, Reinforced Concrete Retaining Wall is located from station 12+07.24 to Station 12+17.24 on detail 5/43.

Q27. Please clarify for Bid Item 120 what is supposed to be included?

A27. Bid Item 120 includes all work and incidentals required to establish a connection between the basin floor and the west retaining wall. See the annotated detail below for further clarification.



Q28. The General and Technical Provisions, Section 2M, Sub section 1.3, outlines the required LFG Extraction systems experience for the Contractor. Does the Contractor need to submit documentation demonstrating this experience as part of the bid proposal?

A28. Yes, Bidders must submit documentation at the time of bid proving the contractor's minimum qualifications listed in Section 2M - Landfill Gas System.

Q29. As mentioned in the Pre-Bid Meeting and Job Walk, there are existing trailers and other miscellaneous items that are to be removed/relocated as part of the project. Where does this removal/relocation get paid?

A29. Temporary removal, salvaging, and subsequent replacement (in-kind) of the existing County office trailer and containers to the Unit 1 Top Deck Area as shown on the plans are paid for per Bid Item 53 Miscellaneous Site Work – Entrance Facility Area and as described in the Technical Specifications reissued Section 2K Miscellaneous Civil Improvements subsection 4 Measurement and Payment, Item 4.6.

Q30. Note 4 on the project plans calls out an existing gas line to be removed/salvaged along the entrance facility entrance on Plan Sheets 20 and 21. Where is this removal to be paid? Also, Sheet 20 calls for the gas line along the north shoulder of the entrance to be removed, but there are no callouts on Sheet 21 of the project plans for that same gas line to be removed.

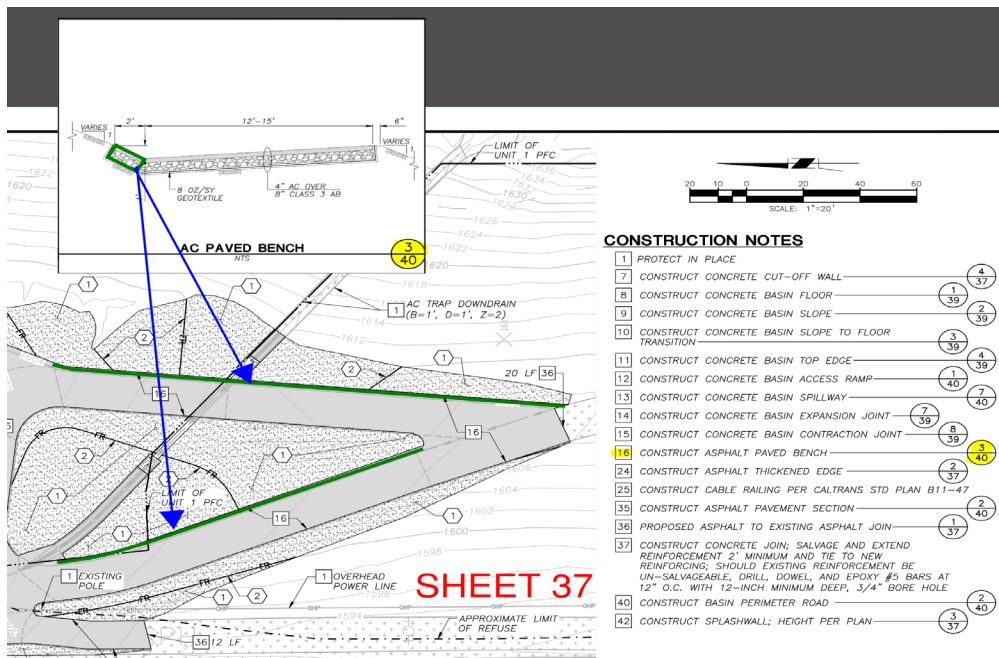
A30. The contract lump sum price paid for the subject demolition and removal is per Bid Item 52 Clearing, Grubbing, and Demolition – Entrance Facility Area and as described in the Technical Specifications Section 2C Clearing, Grubbing, and Demolition subsection 4 Measurement and Payment, Item 4.2.

Q31. There are a variety of Note 4 callouts to Demolish, Remove or Salvage per Plan miscellaneous items around the site. Where do all these removals get paid?

A31. The contract lump sum price paid for the demolition, removal, and salvaging is per Respective Clearing, Grubbing, and Demolition Bid Items (Items 6, 52, and 74) and as described in the Technical Specifications Section 2C Clearing, Grubbing, and Demolition subsection 4 Measurement and Payment.

Q32. On Sheets 32 and 37 of the project plans, it is unclear what the limits of Note 16 are for the AC Paved Trench along the west side of the basin. Please advise.

A32. Please see detail below of Sheet 37 for clarification.



Q33. The Interface Shear Testing frequencies and testing requirements (wet vs dry) are not clear in 2F of the Technical Specifications, please clarify the required frequency for testing.

A33. Interface shear strength testing shall be conducted at a rate of one per 200,000 square feet distributed semi-evenly throughout geosynthetic production lots. One-half of the required tests shall be conducted under dry conditions and one-half under wet conditions. Test results shall be evaluated separately by

condition (dry and wet); averaging the two conditions. This results in approximately six tests under wet conditions and six tests under dry conditions, with each test performed at the specified normal loads.

If you have any questions, please contact Diana Torres at (909) 386-8767 or you may contact me at (909) 386-9017.



Johnny D. Gayman, P.E.
Engineering Manager

01/26/2026

Date

ATTACHMENT 1 TO ADDENDUM NO. 3
SUMMARY OF CHANGES

Mid Valley Sanitary Landfill
Unit 4 Phase 2 Composite Liner Construction Project
Addendum #3

1) BID SCHEDULE

- Update Bid Item 57 and modify description to “Shoulder Paving – 4” AC over 8” CMB (Per Detail 1/28)” and quantity to 88,500 SF.
- Modify Bid Item 62 to Shoulder Paving – 6” AC over 12” CMB (Per Detail 3/28) with quantity of 24,500 SF.
- Modify Bid Item 66 to Bypass Lane Improvements with quantity of 1.0 LS.
- Modify Bid Item 67 to Temporary Traffic Control with quantity of 1.0 LS.
- Update Bid Item 88 and modify description to “Construct Asphalt Pavement Section (Per Details 2/40 and 3/40)”.
- Update Bid Items 98-101 to reference “(Per Detail 5/43)”.
- Update Bid Item 103 to reference “(Per Detail 8/40)”.
- Add new Bid Item 122 Entrance Facility Signage Improvements with quantity of 1.0 T&M with Unit price of \$30,000.00.

2) CONSTRUCTION DRAWINGS

- Reissue Sheet 1
- Reissue Sheet 3
- Reissue Sheet 20
- Reissue Sheet 21
- Issue New Sheet 21A
- Reissue Sheet 22
- Reissue Sheet 28
- Reissue Sheet 34

3) TECHNICAL SPECIFICATIONS

MODIFY SECTION 1 GENERAL PROVISIONS AS FOLLOWS

Delete and Replace Paragraph 2 Subsection 1.8 Time of Completion/Liquidated Damages; Extension of Time

In accordance with Government Code Section 53069.85, Contractor agrees to forfeit and pay to County the sum of Six Thousand Dollars (\$6,000) per day for each working day that

Mid Valley Sanitary Landfill
Unit 4 Phase 2 Composite Liner Construction Project
Addendum #3

completion of the project (all sequences) is delayed beyond the specified 300 working days. Additional Liquidated Damage assessments of Six Thousand Dollars (\$6,000) per day for each working day should each of the following Project Milestones (sequencing as defined in section 1.9) not be completed within the specified number of working days from the date of the Notice to Proceed:

Amend Anywhere in the Contract Documents to include the Northern Entrance Facility Improvements (Bypass Lane, 6" AC over 12" CMB Pavement Section, Concrete BMP Feature, Signage, Northern Striping, and Miscellaneous Civil Improvement) with Sequence 1 of the Contract Sequencing of Work Plan.

Delete and Replace Sequence 1 Description of work in Section 1 General Terms and Conditions, Subsection 1.9 as follows

Sequence 1 (West Slopes and Northerly Entrance Facility Improvements – Approximately 7 acres):

Delete and Replace Sequence 2B and 3 Description of work in Section 1 General Terms and Conditions, Subsection 1.9 as follows

Sequence 2B and 3 (East, North Slopes, Southerly Entrance Facility Improvements, and BMP Basin – Approximately 30 acres):

MODIFY SECTION 2H GEOTEXTILES AS FOLLOWS

Delete and Replace Paragraph 1 Subsection 3.3.3 Seams

Seams shall provide seam strength which equals or exceeds 60 percent of the specified material strength when tested in accordance with ASTM D4595 (material strength) and ASTM D4884 (seam strength).

DELETE AND REPLACE FULL SECTION 2K MISCELLANEOUS CIVIL IMPROVEMENTS

Modifications to Technical Specifications reissued Section 2K provided in Track Changes Format and provided as an attachment to Addendum #3.

**ATTACHMENT 2 TO ADDENDUM NO. 3
REVISED BID PROPOSAL CHECKLIST**

BID PROPOSAL CHECKLIST AND ASSEMBLY

IMPORTANT

Failure to Properly Complete Bid Package May Result in Rejection of Bid

<u>TITLE AND PAGE(S)</u>	<u>CHECK BOX IF DONE/SUBMITTED</u>
REGISTERED AS A VENDOR IN THE EPRO SYSTEM PRIOR TO DATE AND TIME TO RECEIVE BID - Yellow Page 6	<input type="checkbox"/>
IF SUBMITTING BID THROUGH EPRO, ORIGINAL BID SECURITY SUBMITTED IN A SEPARATE SEALED ENVELOPE LABELED "BID BOND" WITH THE PROJECT TITLE AND NUMBER AND NAME OF BIDDER MARKED ON OUTSIDE OF ENVELOPE TO SAN BERNARDINO COUNTY, DEPARTMENT OF PUBLIC WORKS-SOLID WASTE MANAGEMENT DIVISION. MUST BE RECEIVED ON OR BEFORE THE TIME SET FOR THE OPENING OF BIDS. - Yellow Page 6	<input type="checkbox"/>
IF SUBMITTING A BID THROUGH EPRO, SCAN AND ATTACH TO YOUR QUOTE THE FULLY EXECUTED BID PROPOSAL DOCUMENT - Yellow Page 6	<input type="checkbox"/>
BIDDER'S QUALIFICATIONS – Yellow Pages 14-16*	<input type="checkbox"/>
BIDDER INFORMATION IS COMPLETE AND CORRECT	<input type="checkbox"/>
BID (Must be signed) – Yellow Pages 17-20*	<input type="checkbox"/>
CORRECTIONS OR CHANGES TO THE BID DOCUMENTS FOR BIDDER ERRORS ARE INITIALIZED	<input type="checkbox"/>
BID PROPOSAL IS SIGNED BY AUTHORIZED REPRESENTATIVE - Yellow Page 20	<input type="checkbox"/>
ADDENDA ACKNOWLEDGEMENT – Yellow Page 20*	<input type="checkbox"/>
REPLACEMENT BID SHEETS FOR ADDENDA ARE SUBSTITUTE IN SEQUENCE, IF APPLICABLE	<input type="checkbox"/>
BID SCHEDULE – Yellow Pages 21-end*	<input type="checkbox"/>

UNIT COST IS ENTERED FOR ALL BID ITEMS
(OR ALTERNATE BID ITEMS)

BID BOND/ SECURITY:*

BID BOND (See Instructions to Bidders) – Yellow Pages 23-24
OR

BID SECURITY (See Instructions to Bidders) – Yellow Page 25

CONTRACTOR’S LICENSING STATEMENT – Yellow Page 27*

LIST OF SUBCONTRACTORS – Yellow Page 28-29**

NON-COLLUSION DECLARATION FOR PRINCIPAL – Yellow Page 30*

NON-COLLUSION DECLARATION FOR SUBCONTRACTORS –
Yellow Page 31***

PERFORMANCE BOND FORM
Yellow Pages 32-33

LABOR AND MATERIALS BOND FORM
Yellow Pages 34-35

CONTRACTOR’S AFFIDAVIT AND FINAL RELEASE
Yellow Page 36

CARB – CONTRACTOR CERTIFICATION FORM
Yellow Pages 39*

CARB – LIST OF SUBCONTRACTORS FORM
Yellow Pages 40-41*

* *IF NOT COMPLETED AND SUBMITTED WITH BID, BID WILL BE DECLARED
NONRESPONSIVE*

** *IF NOT COMPLETED AND SUBMITTED WITH BID, CONTRACTOR IS REQUIRED
TO COMPLETE ALL WORK, EXCEPT AS OTHERWISE PROVIDED IN THE BID
PACKAGE*

****MUST BE SUBMITTED NO LATER THAN FOUR WORKING DAYS AFTER BID
OPENING OR BID WILL BE DECLARED NONRESPONSIVE*

ATTACHMENT 3 TO ADDENDUM NO. 3
REVISED BID SCHEDULE

**ADDENDUM #3 REVISED BID SCHEDULE
MID VALLEY SANITARY LANDFILL UNIT 4 PHASE 2 COMPOSITE
LINER CONSTRUCTION PROJECT**

Const Note	Item No.	Description	QTY	Unit	Unit Price	Item Total
-	1	Mobilization/Demobilization	1.0	LS		
-	2	Construction Support Tasks	1.0	LS		
-	3	Stormwater Compliance Tasks	1.0	LS		
-	4	Construction Survey	1.0	LS		
-	5	Waste Removal and Relocation	75,000.0	DLR	\$1.00	\$75,000.00
COMBINED PROJECT BASE BID ITEMS SUBTOTAL:						\$0
UNIT 4 PHASE 2 GWPS BID ITEMS						
Const Note	Item No.	Description	QTY	Unit	Unit Price	Item Total
2, 3, 4, 37, 38	6	Clearing, Grubbing, and Demolition - Unit 4 Phase 2 Area	1.0	LS		
-	7	Miscellaneous Site Work - Unit 4 Phase 2 Area	1.0	LS		
5	8	Unclassified Excavation to Fill - Unit 4 Phase 2 Area	6,500	CY		
5	9	Unclassified Excavation to Stockpile - Unit 4 Phase 2 Area	19,000	CY		
5	10	Temporary Earthen Ramps for Construction Access	600,000.0	DLR	\$1.00	\$600,000.00
9, 10	11	Import and Place Low Permeability Material Soil - Slope, Bench, and Access Road (Per Detail 5/25)	165,000	CY		
11	12	Subgrade Surface Preparation for Geosynthetics	1,980,000	SF		
-	13	Re-work Low Permeability Barrier Layer	125,000.0	DLR	\$1.00	\$125,000.00
12	14	60-mil HDPE Geomembrane (Textured Both Sides) – Slope, Bench, and Access Road (Per Detail 1/25)	2,305,000	SF		
12	15	Geosynthetic Clay Liner (GCL) - Slope, Bench, and Access Road (Per Detail 1/25)	2,305,000	SF		
12	16	60-mil HDPE Geomembrane (Single Sided Textured) – Slope, Bench, and Access Road (Per Detail 1/25)	2,305,000	SF		
12	17	16 oz/sy Geotextile – Slope, Bench, and Access Road (Per Detail 1/25)	2,305,000	SF		
54	18	Protective Plastic Cover and Wind Ballast - Slope (Per Detail 1/25)	2,000,000	SF		
13	19	Intermediate Bench/Road Anchor Trench (Per Detail 3/25)	6,000	LF		
17	20	Join Existing Composite Liner Section at Existing Paved Access Road Hinge (Per Detail 4/25)	575	LF		
18	21	Join Existing Composite Liner Section at LCRS Slurry Downrain (Per Detail 5/25)	600	LF		
19	22	Join Existing Composite Liner Section at Existing Paved Access Road Termination (Per Detail 1/26)	35	LF		
20	23	Join Existing Composite Liner Section at Existing Top (Bench 4) Anchor Trench Termination (Per Detail 1/29)	5,700	LF		
21	24	Join Existing LCRS/LFG Riser	26	EA		
23	25	Typical Liner Termination at Top Bench/Road (Per Detail 1/27)	4,150	LF		
24	26	Liner Termination at Northeast Perimeter (Per Detail 1/28)	1,900	LF		

**ADDENDUM #3 REVISED BID SCHEDULE
MID VALLEY SANITARY LANDFILL UNIT 4 PHASE 2 COMPOSITE
LINER CONSTRUCTION PROJECT**

25	27	Liner Termination at West Channel (Per Detail 2/28)	1,750	LF		
26	28	Liner Termination at South Basin (Per Detail 2/29)	710	LF		
36	29	24" Solid HDPE SDR 17 LFG Header, Air, and Condensate Forcemain Pipes in Common Trench (Per Detail 4/28)	9,250	LF		
36	30	12" Solid HDPE SDR 17 Molded Reducer Tee Fitting with Flange Adapter and Blind Flange (Per Detail 5/28)	50	EA		
59	31	Construct In-Line Condensate Sump (Per Detail 5/29)	5	EA		
36	32	Compressed Air Line Isolation and Blow Off Valve (Per Detail 1/45)	9	EA		
36	33	Condensate Forcemain Dual Contained Cleanout Risers (Per Detail 2/45)	9	EA		
39	34	Transition from Paved Access Road Section to Lined Access Road Section (Per Detail 4/29)	40	LF		
12	35	Protective Soil Cover – Slope, First 12' Vertical (Per Detail 2/25)	145,000	SF		
12	36	Protective Soil Cover – Bench and Access Road (Per Detail 2/25)	350,000	SF		
15, 16	37	6" Solid HDPE SDR 17 LCRS Slope Riser Pipe (Per Detail 5/27)	6,000	LF		
31	38	6" Solid HDPE SDR 17 LCRS Slope Riser Pipe (Per Detail 5/27)	5,950	LF		
28, 30	39	LCRS Bench/Road Collector (Per Detail 3/26)	21,750	LF		
7, 14	40	LCRS Bench Crossing and Interceptor Berm (Per Detail 5/26)	18	EA		
7, 14	41	LCRS Bench Crossing and Interceptor Berm - Existing Bench 4 (Per Detail 5/26)	3	EA		
32	42	LCRS Pipe Junctions (Per Detail 7/27)	1.0	LS		
27	43	Slope Riser Pipe Termination Support - Above Ground (Per Detail 2/27)	24	EA		
27	44	Slope Riser Pipe Termination Support - On-Grade (Per Detail 2/27)	16	EA		
34	45	LCRS Storm Drain at Bench Crossing (Per Detail 6/27)	1,500	LF		
29	46	Wrapped Gravel Infiltration Corridor (Per Detail 3/26)	1,600	LF		
35	47	Lined Access Road Driving Surface - 12" Thick Oversized Rock with CMB (Per Detail 2/26)	64,000	SF		
41	48	West Basin Access Road - 6" Crushed Miscellaneous Base with Non-Woven Geotextile Underlay (Per Detail 2/28)	26,500	SF		
46	49	Class V Rip Rap Per SSPWC Section 200-1.6	115	SF		
47	50	Class III Rip Rap Per SSPWC Section 200-1.6	700	SF		
-	51	Landfill Gas System Modifications During Construction	100,000.0	DLR	\$1.00	\$100,000.00

UNIT 4 PHASE 2 GWPS BASE BID ITEMS SUBTOTAL:

ENTRANCE FACILITY CONSTRUCTION BID ITEMS

Const Note	Item No.	Description	QTY	Unit	Unit Price	Item Total
2, 3	52	Clearing, Grubbing, and Demolition - Entrance Facility Area	1.0	LS		

**ADDENDUM #3 REVISED BID SCHEDULE
MID VALLEY SANITARY LANDFILL UNIT 4 PHASE 2 COMPOSITE
LINER CONSTRUCTION PROJECT**

-	53	Miscellaneous Site Work - Entrance Facility Area	1.0	LS		
5	54	Unclassified Excavation to Fill - Entrance Facility Area	2,750	CY		
5	55	Unclassified Excavation to Stockpile - Entrance Facility Area	4,750	CY		
37	56	Saw Cut Existing AC Pavement	3,250	LF		
42	57	Shoulder Paving - 4" AC over 8" CMB (Per Detail 1/28)	88,500	SF		
42	58	Class 1 Flexible Post Delineator per Caltrans Std. Plan A-73C (Per Detail 1/28)	50	EA		
43	59	Type D2-6 Mountable Curb per SPPWC Std. Plan 121-2 (Per Detail 3/28)	1,350	LF		
57	60	Site Striping Improvements	1.0	LS		
44	61	Concrete Trapezoidal Channel (Per Detail 4/23)	3,200	SF		
66	62	Shoulder Paving - 6" AC over 12" CMB (Per Detail 3/28)	24,500	SF		
47	63	Class III Rip Rap Per SSPWC Section 200-1.6	35	SF		
49	64	Concrete Cut-off Wall (Per Detail 8/28)	100	LF		
-	65	Entrance Facility Inlet Structure (Per Sheet 23)	1.0	LS		
-	66	Bypass Lane Improvements	1.0	LS		
-	67	Temporary Traffic Control	1.0	LS		
51	68	Flume Downdrain Extension (Per Detail 9/28)	2	EA		
52	69	6' Wrought Iron Fence (Per Detail 5/22)	700	LF		
53	70	Wrought Iron Gate (Per Detail 5/22)	1.0	EA		
64	71	Protect Existing Power Pole (SCE)	11	EA		
65	72	Protect Existing Power Pole (Private)	10	EA		
48	73	Site Entry Sign/Monument (Per Detail 1/22)	1.0	LS		
-	122	Entrance Facility Sign Improvements	30,000.0	DLR	\$1.00	\$30,000.00
ENTRANCE FACILITY CONSTRUCTION BASE BID ITEMS SUBTOTAL:						\$0
UNIT 3 BMP CONSTRUCTION BID ITEMS						
Const Note	Item No.	Description	QTY	Unit	Unit Price	Item Total
2, 3	74	Clearing, Grubbing, and Demolition - Unit 3 BMP Area	1.0	LS		
-	75	Miscellaneous Site Work - Unit 3 BMP Area	1.0	LS		
41	76	Exploratory Potholing	1.0	LS		
5	77	Unclassified Excavation to Fill - Unit 3 BMP Area	1,900	CY		

**ADDENDUM #3 REVISED BID SCHEDULE
MID VALLEY SANITARY LANDFILL UNIT 4 PHASE 2 COMPOSITE
LINER CONSTRUCTION PROJECT**

5	78	Unclassified Excavation to Stockpile - Unit 3 BMP Area	500	CY		
6	79	Basin Subdrain (Per Detail 9/39)	690	LF		
7	80	Concrete Cut-Off Wall (Per Detail 4/37)	100	LF		
8	81	Concrete Basin Floor (Per Detail 1/39)	8,850	SF		
9	82	Concrete Basin Slope (Per Detail 2/39)	4,400	SF		
10	83	Concrete Basin Slope to Floor Transition (Per Detail 3/39)	245	LF		
11	84	Concrete Basin Top Edge (Per Detail 4/39)	225	LF		
12	85	Concrete Basin Access Ramp (Per Detail 1/40)	830	SF		
14	86	Expansion Joint - Concrete Basin (Per Detail 7/39)	1.0	LS		
15	87	Contraction Joint - Concrete Basin (Per Detail 8/39)	1.0	LS		
16, 35, 40	88	Construct Asphalt Pavement Section (Per Details 2/40 and 3/40)	15,400	SF		
17, 18	89	36" CHDPE - Riser Outlet (Per Detail 6/41)	1.0	LS		
19	90	Geocomposite Basin Underdrain (Per Detail 5/39)	565	LF		
20	91	8" Permanent Skimmer (Per Details 3/41 & 1/42)	2	EA		
20	92	8" Permanent Skimmer Hanging Apparatus (Per Details 3/41 & 1/42)	2	EA		
21	93	Skimmer Support Frame (Per Detail 2/42)	1.0	EA		
22	94	6" SDR 17 Solid HDPE Skimmer Outlet Pipe (Per Detail 2/41)	15	LF		
23	95	Install Winch and Winch Stand (Per Detail 4/41)	2	EA		
24	96	AC Thickened Edge (Per Detail 2/37)	95	LF		
25	97	Construct Cable Railing per Caltrans Std Plan B11-47	400	LF		
26	98	Reinforced Concrete Retaining Wall (H=12') Type 2 Per SPPWC 611-3 (Per Detail 5/43)	125	LF		
26	99	Reinforced Concrete Retaining Wall (H=10') Type 2 Per SPPWC 611-3 (Per Detail 5/43)	25	LF		
26	100	Reinforced Concrete Retaining Wall (H=7') Type 2 Per SPPWC 611-3 (Per Detail 5/43)	30	LF		
26	101	Reinforced Concrete Retaining Wall (H=4') Type 2 Per SPPWC 611-3 (Per Detail 5/43)	10	LF		
27	102	Install Reinforced Concrete Box Per SPPWC Std Plan 390-1	100	LF		
28	103	Construct 24" Below Grade Pipe (Per Detail 8/40)	195	LF		

**ADDENDUM #3 REVISED BID SCHEDULE
MID VALLEY SANITARY LANDFILL UNIT 4 PHASE 2 COMPOSITE
LINER CONSTRUCTION PROJECT**

29	104	24" CHDPE Pipe to Concrete Basin Junction Structure (Per Detail 6/40)	1.0	LS		
30	105	Concrete Headwall w/ Warped Wing Walls Per Caltrans Std Plan D86B (L=6', H=3')	4	EA		
31	106	AC Trapezoidal Downdrain (B=1', D=1', Z=2) (Per Detail 5/40)	95	LF		
32	107	Offline Kraken Filter w/ 30" Filter Cartridges Model KFOV0406 (4'x6')	1.0	LS		
33	108	12" CHDPE Outlet Pipe (Per Detail 9/40)	50	LF		
34	109	Pipe Bollard (Per Detail 5/41)	6	EA		
36	110	AC Paving Join (Per Detail 1/37)	40	LF		
37	111	Concrete Basin Join; Salvage and Extend Reinforcement 2' minimum and Tie to New Basin Reinforcing; Should Existing Reinforcement be Un-Salvageable, Drill, Dowel, and Epoxy #5 Bars at 12" O.C. with 12" minimum deep, 3/4" Bore Hole	35	LF		
38	112	Subdrain Junction (Per Detail 11/39)	10	EA		
39	113	Reinstall Salvaged McCarthy Flume Downdrain and Lap 2' Into Reinforced Concrete Box	20	LF		
42	114	8" Thick Reinforced Concrete Wall; Splash Wall (Per Detail 3/37)	190	LF		
43	115	24" Drop Inlet (Per Detail 4/40)	1.0	EA		
44	116	Join 4" Solid HDPE Basin Subdrain Pipe to Existing 36" CHDPE Pipe (Per Detail 6/41)	1.0	EA		
45	117	Construct LCRS Winch System Pad and Retaining Wall (Per Detail 1/43)	55	LF		
46	118	Construct North Retaining Wall (Per Detail 2/43)	15	LF		
47	119	Construct Wall Over Line A (Per Detail 3/43)	8	LF		
48	120	West Retaining Wall to Basin Connection (Per Detail 4/43)	175	LF		
49	121	Construct 12" Thick Reinforced Concrete Wall Along Top of Access Road; Height Per Plan	15	LF		
UNIT 3 BPM CONSTRUCTION BASE BID ITEMS SUBTOTAL:						
COMBINED PROJECT BASE BID ITEMS SUBTOTAL:						
UNIT 4 PHASE 2 GWPS BASE BID ITEMS SUBTOTAL:						
ENTRANCE FACILITY CONSTRUCTION BASE BID ITEMS SUBTOTAL:						
UNIT 3 BPM CONSTRUCTION BASE BID ITEMS SUBTOTAL:						
TOTAL PROJECT BASE BID =						

SWMD reserves the right to delete any specific item on the bid schedule in its entirety. Should SWMD elect not to proceed with a specified item of work, it will be deleted from the contract.

The Project will be bid on a UNIT PRICE basis, and quantities are to be VERIFIED by the Bidders. Final determination of quantities and associated costs for each progress payment will be subject to approval by the Construction Manager. The Contractor shall have no claim for compensation, or loss of profit, as a result of the deletion or reduction in quantities.

THE AWARD OF THIS CONTRACT WILL BE BASED ON THE LOWEST RESPONSIBLE BID TOTAL.

ATTACHMENT 4 TO ADDENDUM NO. 3
REVISED PLAN SHEETS 1, 3, 20, 21 22, 28 34
&
NEW SHEET 21A

SAN BERNARDINO COUNTY DEPARTMENT OF PUBLIC WORKS

SOLID WASTE MANAGEMENT DIVISION

UNIT 4 PHASE 2 COMPOSITE LINER CONSTRUCTION PROJECT AT THE MID-VALLEY SANITARY LANDFILL

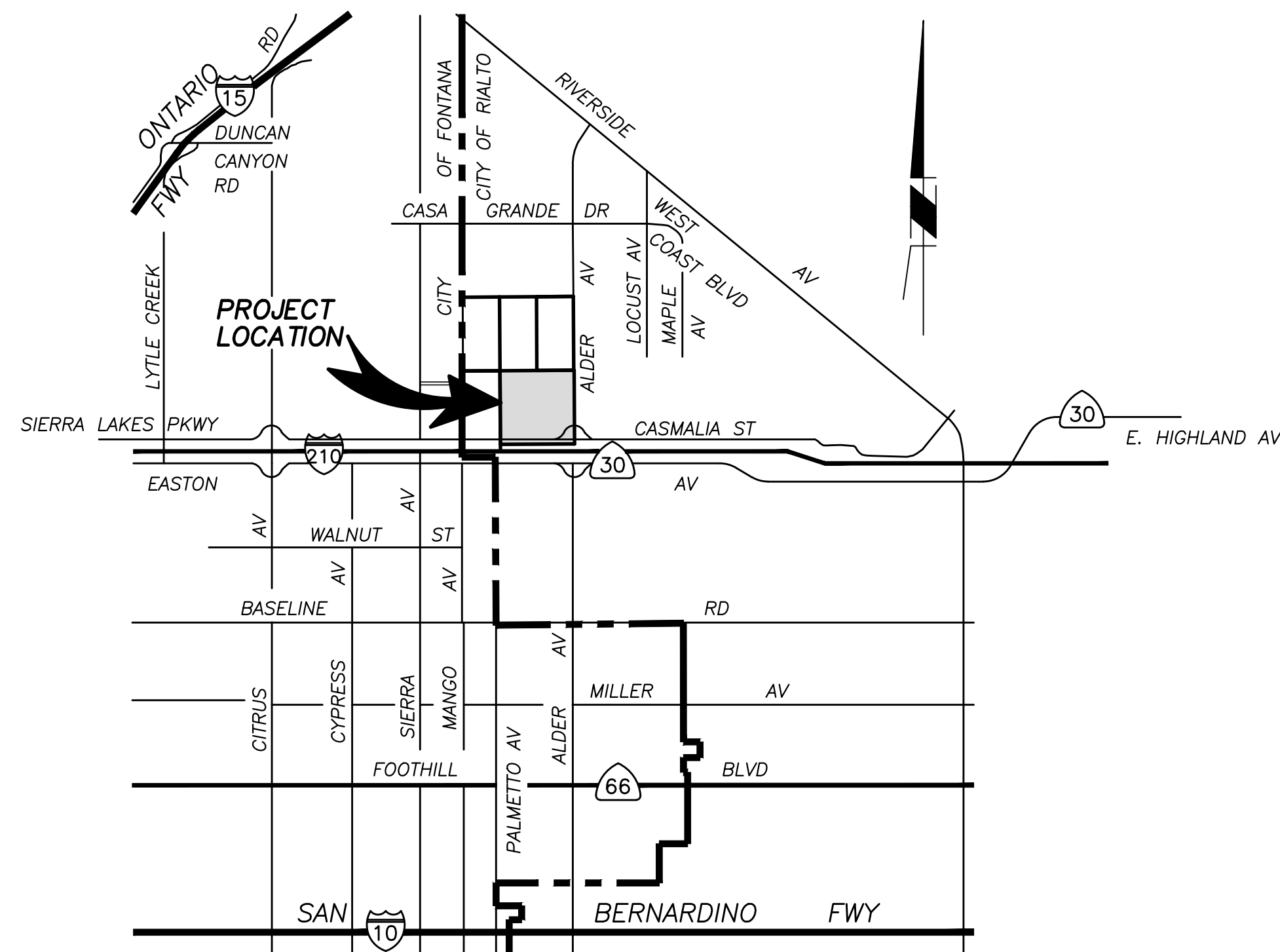


BENCHMARK

SEE SHEET NO. 2 FOR HORIZONTAL AND VERTICAL CONTROL

NOTICE TO CONTRACTOR

1. THE EXISTENCE AND LOCATION OF 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.
2. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO MAKE EXACT DETERMINATION AS THE LOCATION OF ALL EXISTING UTILITIES. FORTY-EIGHT (48) HOURS PRIOR TO ANY EXCAVATION, THE CONTRACTOR SHALL NOTIFY UNDERGROUND SERVICE ALERT AT 811 AND SHALL PROVIDE THE CONSTRUCTION MANAGER WITH VERIFICATION NUMBERS ISSUED.
3. THE FACT THAT ANY UTILITY FACILITY IS SHOWN OR NOT SHOWN UPON THE PLANS SHALL NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY UNDER SECTION 8-1.10 "UTILITY AND NON-HIGHWAY FACILITIES," OF THE STATE STANDARD SPECIFICATIONS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY, PURSUANT THERETO, TO ASCERTAIN THE LOCATION OF ANY UTILITY FACILITY WHICH MAY BE SUBJECT TO DAMAGE BY REASON OF THE CONTRACTOR'S OPERATIONS.
4. REGARDING SIGNED DRAWING VERSUS ELECTRONIC COPY: SHOULD THE CONTRACTOR OR CONTRACTOR'S SURVEYOR FIND A CONTOUR LABEL OR ELEVATION DISCREPANCY BETWEEN THE SIGNED DRAWING AND THE ELECTRONIC VERSION (WHICH HAVE BEEN PROVIDED AS A COURTESY FOR EASE OF CONSTRUCTION STAKING), THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF THE DISCREPANCY SO THAT THE DISCREPANCY MAY BE RESOLVED, PRIOR TO CONSTRUCTION.



LOCATION MAP

NOT TO SCALE

SAN BERNARDINO COUNTY

APPROVED BY: _____

NOEL CASTILLO, PE C78044, DIRECTOR OF PUBLIC WORKS

DATE _____

INDEX OF SHEETS

SHEET NO	DESCRIPTION
1	TITLE SHEET
2	SITE PLAN, SHEET INDEX AND CONTROL POINTS
3	CONSTRUCTION AND GENERAL NOTES
4	SITE IMPROVEMENTS AND SEQUENCING PLAN
5	EXISTING CONDITIONS AND SUBGRADE PLAN WEST
6	EXISTING CONDITIONS AND SUBGRADE PLAN CENTRAL (NORTH)
7	EXISTING CONDITIONS AND SUBGRADE PLAN NORTHEAST
8	EXISTING CONDITIONS AND SUBGRADE PLAN SOUTHWEST
9	EXISTING CONDITIONS AND SUBGRADE PLAN CENTRAL (SOUTH)
10	LOW-PERMEABILITY MATERIAL GRADING PLAN WEST
11	LOW-PERMEABILITY MATERIAL GRADING PLAN CENTRAL (NORTH)
12	LOW-PERMEABILITY MATERIAL GRADING PLAN NORTHEAST
13	LOW-PERMEABILITY MATERIAL GRADING PLAN SOUTHWEST
14	LOW-PERMEABILITY MATERIAL GRADING PLAN CENTRAL (SOUTH)
15	LINER AND LCRS PLAN WEST
16	LINER AND LCRS PLAN CENTRAL (NORTH)
17	LINER AND LCRS PLAN NORTHEAST
18	LINER AND LCRS PLAN SOUTHWEST
19	LINER AND LCRS PLAN CENTRAL (SOUTH)
20	ENTRANCE FACILITY IMPROVEMENTS EAST
21	ENTRANCE FACILITY IMPROVEMENTS WEST
21A	ENTRANCE FACILITY IMPROVEMENTS BYPASS LANE
22	ENTRANCE FACILITY DETAIL SHEET
23	ENTRANCE FACILITY DETAIL SHEET
24	DETAIL SHEET
25	DETAIL SHEET
26	DETAIL SHEET
27	DETAIL SHEET
28	DETAIL SHEET
29	DETAIL SHEET
30	UNIT 3 BMP SITE PLAN AND NOTES
31	UNIT 3 BMP DEMOLITION PLAN
32	UNIT 3 BMP GRADING PLAN
33	UNIT 3 BMP SUBDRAIN PLAN
34	UNIT 3 BMP LINE A PROFILE
35	UNIT 3 BMP LINE B PROFILE
36	UNIT 3 BMP LINE C PROFILE AND BASIN OUTLETS
37	UNIT 3 BMP PAVING AND CONCRETE PLAN
38	UNIT 3 BMP LCRS STORAGE FACILITY PROCESS CONTROL SCHEME
39	UNIT 3 BMP BASIN DETAIL SHEET
40	UNIT 3 BMP BASIN DETAIL SHEET
41	UNIT 3 BMP BASIN DETAIL SHEET
42	UNIT 3 BMP BASIN DETAIL SHEET
43	UNIT 3 BMP BASIN DETAIL SHEET
44	LANDFILL GAS IMPROVEMENT PLANS
45	LANDFILL GAS IMPROVEMENT DETAILS

DIAL BEFORE YOU DIG TWO WORKING DAYS BEFORE YOU DIG

TOLL FREE 811 A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

CIVIL IMPROVEMENTS PREPARED BY:

800-C SOUTH ROCHESTER AVE.
ONTARIO, CALIFORNIA. 91761



PREPARED UNDER THE RESPONSIBLE CHARGE OF _____

DATE 09/29/2025

DATE 09/29/2025

MARK	CHANGES	RESIDENT ENGINEER	DATE
	NO CHANGES		

FIELD CHANGES

CONSTRUCTION NOTES

- 1 PROTECT IN PLACE
- 2 CLEAR AND GRUB
- 3 TO BE REMOVED / RELOCATED BY OTHERS
- 4 DEMOLISH; REMOVE OR SALVAGE PER PLAN
- 5 EXCAVATE OR FILL TO SUBGRADE CONTOURS PER PLAN
- 6 CONSTRUCT BENCH SUBGRADE SECTION PER 1/24
- 7 CONSTRUCT BENCH CROSSING SUBGRADE SWALE PER 4/24
- 8 CONSTRUCT TYPICAL TOP ANCHOR TRENCH SUBGRADE SECTION PER 2/24 OR 3/24
- 9 PLACE LPM BARRIER LAYER TO CONTOURS PER PLAN
- 10 TRANSITION NEW LPM TO EXISTING (UNIT 4 PHASE 1) LPM PER 4/25
- 11 PREPARE LPM SURFACE FOR GEOSYNTHETICS PLACEMENT
- 12 CONSTRUCT TYPICAL COMPOSITE LINER SECTION PER 1/25 2/25
- 13 CONSTRUCT INTERMEDIATE BENCH/ROAD ANCHOR TRENCH PER 3/25
- 14 CONSTRUCT LCRS BENCH CROSSING AND INTERCEPTOR BERM PER 5/26
- 15 CONSTRUCT 6" SOLID HDPE LCRS RISER PIPE PER 5/27
- 16 CONSTRUCT LCRS PIPE JUNCTION PER 5/26
- 17 JOIN EXISTING COMPOSITE LINER SECTION AT EXISTING PAVED ACCESS ROAD HINGE 4/25
- 18 JOIN EXISTING COMPOSITE LINER SECTION AT EXISTING LCRS SLURRY DOWNDRAIN PER 5/25
- 19 JOIN EXISTING COMPOSITE LINER SECTION AT EXISTING PAVED ACCESS ROAD TERMINATION 1/26
- 20 JOIN EXISTING COMPOSITE LINER SECTION AT EXISTING TOP (BENCH 4) ANCHOR TRENCH TERMINATION 1/29
- 21 JOIN EXISTING LCRS/LFG RISER PER 5/26
- 22 CAP PIPE
- 23 CONSTRUCT TYPICAL LINER TERMINATION AT TOP BENCH/ROAD PER 1/27
- 24 CONSTRUCT TYPICAL LINER TERMINATION AT NORTHEAST PERIMETER PER 1/28
- 25 CONSTRUCT TYPICAL LINER TERMINATION AT WEST CHANNEL PER 2/28
- 26 CONSTRUCT TYPICAL LINER TERMINATION AT SOUTH BASIN PER 2/29
- 27 CONSTRUCT TYPICAL SOLID RISER PIPE SUPPORT SECTION PER 2/27
- 28 CONSTRUCT 6" SLOTTED HDPE LCRS BENCH COLLECTOR PER 3/26
- 29 CONSTRUCT WRAPPED GRAVEL INFILTRATION CORRIDOR 3/26
- 30 CONSTRUCT 6" SLOTTED HDPE LCRS ACCESS ROAD COLLECTOR PER 2/26
- 31 CONSTRUCT 4" SOLID HDPE LFG RISER PIPE PER 5/27
- 32 CONNECT LFG RISER TO LCRS BENCH COLLECTOR PER 7/27
- 33 EXTEND HDPE RISER PIPE ACROSS BENCH/ROAD PER 3/25
- 34 CONSTRUCT LCRS BENCH CROSSING STORM DRAIN PER 6/27
- 35 CONSTRUCT LINED ACCESS ROAD SECTION PER 2/26
- 36 CONSTRUCT 24" SOLID HDPE LFG HEADER IN ANCHOR TRENCH 4/28
- 37 SAW CUT EXISTING AC PAVEMENT 3/22
- 38 REMOVE EXISTING AC PAVEMENT, CRUSH/PROCESS AND TRANSPORT TO STOCKPILE LOCATION PER PLAN
- 39 TRANSITION FROM AC PAVEMENT ACCESS ROAD SECTION TO LINED ACCESS ROAD SECTION 4/29
- 40 REGRADE/RE-USE BASE MATERIAL TO ACCOMMODATE PROPOSED SUBGRADE GRADES
- 41 CONSTRUCT 6" THICK CMB AGGREGATE BASE ROAD SECTION 2/28

CONSTRUCTION NOTES (CONT'D)

- 42 CONSTRUCT 4" AC OVER 8" CMB SHOULDER SECTION PER 1/28 OR 3/28
- 43 CONSTRUCT TYPE D2-6 MOUNTABLE CURB PER SSPWC STD PLAN 121-2 3/28
- 44 CONSTRUCT CONCRETE RECTANGULAR CHANNEL PER 4/23
- 45 CONSTRUCT SPLASHWALL PER 7/28
- 46 INSTALL CLASS V RIP RAP PER SSPWC SECTION 200-1.6
- 47 INSTALL CLASS III RIP RAP PER SSPWC SECTION 200-1.6
- 48 CONSTRUCT SITE ENTRY MONUMENT 1/22
- 49 CONSTRUCT CONCRETE CUT-OFF WALL PER 8/28
- 50 CONSTRUCT CONCRETE APRON AND INLET STRUCTURE PER 1/23
- 51 INSTALL FLUME DOWNDRAIN EXTENSION PER 9/28
- 52 INSTALL 6' WROUGHT IRON FENCE 5/22
- 53 INSTALL WROUGHT IRON ENTRANCE GATE
- 54 CONSTRUCT PROTECTIVE PLASTIC COVER AND HDPE GEOTEXTILE BALLAST 1/25 2/25
- 55 INSTALL PIPE BOLLARD PER 2/22
- 56 INSTALL CLASS 1 FLEXIBLE POST (TYPE F; FLEXIBLE BASE; SURFACE MOUNTED) PER CAL TRANS STD PLAN A73C

CONTRACTOR RESPONSIBILITIES

- THE CONTRACTOR SHALL BE RESPONSIBLE TO MAINTAIN THE CONSTRUCTION SITE AND ALL HAUL ROUTES IN ACCORDANCE WITH THE CURRENT REQUIREMENTS OF THE COUNTY AND THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION.
- THE ENGINEER HAS DEVELOPED THE HORIZONTAL AND VERTICAL ELEVATIONS TO "BEST FIT" THE EXISTING CONDITIONS. AFTER CONSTRUCTION STAKING, AND PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL IMMEDIATELY INFORM THE ENGINEER OF ANY POTENTIAL CONFLICTS WITH ANY EXISTING FEATURES OR UTILITIES WITHIN THE CONSTRUCTION LIMITS. DEVIATION FROM THE DESIGN WILL ONLY BE ALLOWED WITH PRIOR APPROVAL OF THE PROJECT ENGINEER.
- THE ENGINEER HAS ENDEAVORED TO SHOW ON THE PLANS ALL KNOWN UNDERGROUND AND OVERHEAD UTILITIES. THE PRESENTATION OF EXISTING UTILITIES IS NOT WARRANTED TO BE EITHER COMPLETE OR EXACT IN HORIZONTAL POSITION OR ELEVATION. THE CONTRACTOR SHALL DETERMINE OR VERIFY UTILITY HORIZONTAL AND VERTICAL LOCATIONS PRIOR TO CONSTRUCTION. ANY FOUND DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER IN WRITING.
- IT IS THE CONTRACTORS RESPONSIBILITY TO FIELD VERIFY THE LOCATIONS AND DEPTHS OF ALL EXISTING UTILITIES AS NEEDED TO PERFORM THE WORK. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO PROTECT THE UTILITIES FROM DAMAGE DURING CONSTRUCTION ACTIVITIES. ANY DAMAGE TO UTILITIES CAUSED BY CONSTRUCTION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR AT NO ADDITIONAL COST TO THE OWNER.
- COORDINATION, COOPERATION AND VERIFICATION WITH ALL AFFECTED UTILITY COMPANIES SHALL INCLUDE, BUT IS NOT LIMITED TO, UNDERSTANDING THE CONCERNS FOR UTILITY PROTECTION, OPERATIONS, AND ANY SPECIAL REQUIREMENTS OF THE UTILITY COMPANY. THE CONTRACTOR SHALL TAKE RESPONSIBILITY FOR KNOWLEDGE OF BURIED UTILITY CONFLICTS, BE AWARE OF THE COST ASSOCIATED WITH BURIED UTILITIES AND BID THE PROJECT ACCORDINGLY.
- THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE EXISTING BUILDINGS, SIDEWALKS AND PAVEMENT HORIZONTAL AND VERTICAL LOCATIONS PRIOR TO CONSTRUCTION. ANY DISCREPANCIES FOUND SHALL BE BROUGHT TO THE ATTENTION OF THE PROJECT ENGINEER IN WRITING.
- THE CONTRACTOR SHALL PROTECT ALL EXISTING IMPROVEMENTS WHICH WILL REMAIN IN-PLACE OR RESTORE TO ORIGINAL CONDITION AT THE CONTRACTORS EXPENSE IF DAMAGE OCCURS AS A RESULT OF CONSTRUCTION ACTIVITIES OR NEGLIGENCE.
- PROPERTY PINS, BENCHMARKS, CONTROL POINTS, SECTION AND QUARTER CORNERS FOUND WITHIN THE CONSTRUCTION AREA SHALL BE PRESERVED. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROTECT THESE MONUMENTS. IF A MONUMENT IS DISTURBED, A CALIFORNIA LICENSED LAND SURVEYOR SHALL REPLACE THE MONUMENT AT THE CONTRACTOR'S EXPENSE.
- THE CONTRACTOR SHALL PROVIDE ALL DEMOLITION AND REMOVAL INCIDENTAL TO OR REQUIRED FOR NEW CONSTRUCTION WHETHER OR NOT SPECIFICALLY NOTED IN THE APPROVED PLANS OR SPECIFICATIONS.
- ALL WORK INCLUDING, BUT NOT LIMITED TO, TRENCH EXCAVATIONS SHALL BE PERFORMED IN ACCORDANCE WITH CURRENT OSHA REGULATIONS.
- USE WRITTEN DIMENSIONS. DO NOT USE SCALED DIMENSIONS. WHERE NO DIMENSION IS PROVIDED, CONSULT THE ENGINEER FOR CLARIFICATION BEFORE PROCEEDING WITH THE WORK.
- THE CONTRACTOR IS RESPONSIBLE FOR IMPLEMENTING JOB SITE SAFETY AND CONSTRUCTION PROCEDURES IN ACCORDANCE WITH NATIONAL, STATE, AND LOCAL SAFETY REQUIREMENTS. THE DESIGN, ADEQUACY AND SAFETY OF ERECTION BRACING, SHORING, TEMPORARY SUPPORTS, ETC IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND HAS NOT BEEN CONSIDERED BY THE ENGINEER.
- CONTRACTOR SHALL PROTECT THE ENVIRONMENTAL CONTROL SYSTEM INCLUDING GROUNDWATER MONITORING WELLS, PROBES, AND ALL OTHER SAMPLING POINTS SHOWN ON THE DRAWINGS AND SHALL MAKE THE LOCATIONS AVAILABLE FOR MONITORING BY SWMD AND ITS CONSULTANTS. REPAIR AND/OR REPLACEMENT OF ANY PROBES, GROUNDWATER WELL DAMAGED AND/OR DESTROYED DURING CONSTRUCTION ACTIVITIES IS THE RESPONSIBILITY OF THE CONTRACTOR.

GENERAL NOTES

- FINAL COMPACTION REPORTS ARE REQUIRED FOR ALL FILL MATERIAL PER THE CONTRACT MANUAL.
- CONTRACTOR SHALL COORDINATE WITH THE COUNTY TO PROVIDE CONTINUED ACCESS AND FULL FUNCTION OF THE EXISTING LANDFILL ACCESS ROAD AND ADJACENT FACILITIES.
- IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO CONDUCT THEIR OWN SITE INVESTIGATION TO IDENTIFY AND UNDERSTAND THE SUBJECT AS SHOWN OR STATED ON THESE PLAN SHEETS AND TO DETERMINE ANY AND ALL SITE WORK INCIDENTAL TO THIS PROJECT THAT IS NOT SPECIFICALLY SHOWN OR STATED WITHIN THE PROJECT DRAWINGS.
- CONTRACTOR SHALL REMOVE ALL EXISTING MATERIALS AS SHOWN ON THESE PLAN SHEETS AS WELL AS ANY UNSUITABLE MATERIALS DISCOVERED DURING THE CONTRACTOR'S SITE INVESTIGATION AND DURING CONSTRUCTION ACTIVITIES.
- CONTRACTOR IS TO PRESERVE ALL EXISTING TREES AND/OR VEGETATION OUTSIDE OF CONSTRUCTION LIMITS; UNLESS OTHERWISE NOTED.
- CONTRACTOR SHALL ESTABLISH A TRAFFIC CONTROL PLAN CONSISTENT WITH THE CURRENT EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) AND CA DOT GUIDELINES WORK ZONE SAFETY.

CONSTRUCTION NOTES (CONT'D)

- 57 INSTALL DETAIL 27B RIGHT EDGE LINE PER CA MUTCD FIGURE 3A-106 (CA)
- 58 TYPICAL IN-LINE LFG CONDENSATE SUMP 5/29
- 59 TIE INTO EXISTING 24" BLIND FLANGE VIA 24" FLANGE CONNECTION 8/27
- 60 TIE-IN 2" HDPE SDR 9 COMPRESSED AIR LINE TO EXISTING COMPRESSED AIR LINE VIA FLANGE CONNECTION 8/27
- 61 TIE-IN 2"x4" HDPE SDR 11 CONDENSATE FORCEMAIN TO EXISTING 2"x4" CONDENSATE FORCEMAIN VIA TEE OR FLANGE CONNECTION 8/27
- 62 BELOW GRADE BUTTERFLY VALVE 3/45
- 63 CONSTRUCT CORRUGATED METAL PIPE ROAD CROSSING 4/45 4/49
- 64 INSTALL POLE PROTECTIVE BARRIER PER SCE UNDERGROUND STRUCTURE STANDARDS DETAIL NO. MC 830
- 65 INSTALL CONCRETE BLOCK BARRIERS TO PROTECT EXISTING POWER POLE (PRIVATE) 2/22
- 66 CONSTRUCT 6" AC OVER 12" CMB AC PAVEMENT SECTION PER 3/28
- 67 INSTALL 4-INCH WHITE LANE LINE PER DETAIL 8 OF MUTCD FIGURE 3A-102 (CA)
- 68 CONSTRUCT BYPASS LANE 8" THICK CMB OVER 8 OZ/SY GEOTEXTILE PER 1/21A 2/21A

CONSTRUCTION NOTES (CONT'D)

- 69 INSTALL AC DIKE PER CAL TRANS STD PLAN A87B; TYPE D; CASE C-2 FILL
- 70 INSTALL STOP SIGN, STOP, AND STOP BAR PER SSPWC STD PLAN 172-0
- 71 INSTALL NO PARKING STRIPING; DETAIL 38A PER MUTCD FIGURE 3A-112 (CA) @ 45° ANGLE

CONSTRUCTION NOTES (CONT'D)

- 72 INSTALL METAL BEAM GUARDRAIL PER CAL TRANS STD PLAN A77L1 AND METAL BEAM GUARDRAIL END TREATMENT TYPE 11A PER CAL TRANS STD PLAN A77P1
- 73 INSTALL 12" THICK (MIN) CLASS III ROCK SLOPE PROTECTION OVER 12 OZ/SY GEOTEXTILE; PLACEMENT METHOD B PER 1/21A

LEGEND

---	APPROXIMATE PROPERTY BOUNDARY	---	PROPOSED SLOPE LINER JOIN
---	APPROXIMATE LIMIT OF EXISTING REFUSE	---	PROPOSED INTERMEDIATE ANCHOR TRENCH
---	RIGHT OF WAY	---	PROPOSED LCRS BENCH COLLECTOR
---	ENERGY PLANT LEASE AREA	---	PROPOSED LCRS SLOPE RISER PIPE
---	EXISTING GRADE CONTOUR	---	PROPOSED LCRS STORM DRAIN PIPE
---	EXISTING FENCE	---	PROPOSED LFG EVACUATION RISER
---	EXISTING GROUNDWATER TREATMENT SYSTEM	---	EXISTING CONCRETE
---	EXISTING OVERHEAD ELECTRICAL LINE	---	EXISTING AC PAVEMENT
---	EXISTING LFG LINE	---	PROPOSED CONCRETE
---	EXISTING LINER LIMIT	---	AGGREGATE BASE ROAD
---	EXISTING POWER POLE	---	PROPOSED AC PAVEMENT
---	PROPOSED DAYLIGHT LINE	---	PROPOSED BASE ROAD
---	PROPOSED GRADE CONTOUR	---	AVAILABLE CONTRACTOR STAGING AREA
---	PROPOSED TOP OR TOE OF SLOPE	---	SOIL PROCESSING/ STOCKPILE AREA
---	PROPOSED RIDGE LINE	---	PROPOSED BENCH CROSSING
---	PROPOSED FLOWLINE	---	PROPOSED CENTERLINE/STATION
---	PROPOSED DIRECTION AND RATE OF SLOPE	---	CONTROL POINT
---	PROPOSED FINISHED BENCH	---	DETAIL NUMBER
---	PROPOSED CUT/FILL TRANSITION	---	SHEET SHOWN ON
---	PROPOSED LINER LIMIT	---	BALL VALVE
---	EXISTING LFG WELLS	---	CHECK VALVE
---	EXISTING LFG PROBES (VARIES)	---	FLANGE CONNECTION
---	EXISTING LFG SUMP	---	
---	PROPOSED LFG SUMP	---	
---	PROPOSED MANUAL BUTTERFLY VALVE	---	
---	PROPOSED CMP ROAD CROSSING	---	
---	PVC END CAP	---	

ABBREVIATIONS

AB	AS-BUILT	GB	GRADE BREAK	RGS	RIGID GALVANIZED STEEL
AC	ASPHALT CONCRETE	GW	GROUNDWATER	SCE	SOCAL EDISON
BC	BEGINNING OF CURVE	HDPE	HIGH DENSITY POLYETHYLENE	SG	SUBGRADE
BVC	BEGINNING OF VERTICAL CURVE	HP	HIGH POINT	STA	STATION
BF	BOTTOM OF FOOTING	INV	INVERT	STD	STANDARD
CF	CUBIC FOOT	LCRS	LEACHATE COLLECTION AND REMOVAL SYSTEM	SWMD	SOLID WASTE MANAGEMENT DIVISION
CHDPE	CORRUGATED HDPE	LF	LINEAR FOOT	TCH	TOP OF CHANNEL
CL	CENTERLINE	LFG	LANDFILL GAS	TCS	TRIPLE COMPOSITE SYSTEM
CLSM	CONTROLLED LOW STRENGTH MATERIAL	LP	LOW POINT	TG	TOP OF GRATE
CMB	CRUSHED MISCELLANEOUS BASE	LPM	LOW-PERMEABILITY MATERIAL	TP	TOP OF PIPE
CMP	CORRUGATED METAL PIPE	MIN	MINIMUM	TS	TOP OF SLOPE
DIA	DIAMETER	MSL	MEAN SEA LEVEL	TW	TOP OF WALL
DCS	DOUBLE COMPOSITE SYSTEM	MW	MONITORING WELL	TYP	TYPICAL
EP	EDGE OF PAVEMENT	OC	ON CENTER	VC	VERTICAL CURVE
ELEV	ELEVATION	OD	OUTSIDE DIAMETER	(E)	EXISTING
EC	END OF CURVE	PCC	PORTLAND CONCRETE CEMENT	(P)	PROPOSED
EVC	END OF VERTICAL CURVE	PI	POINT OF INFLECTION		
EG	EXISTING GRADE	PT	POINT		
FF	FINISHED FLOOR	PRVC	POINT OF REVERSING VERTICAL CURVE		
FL	FLOW LINE	PSC	PROTECTIVE SOIL COVER		
FS	FINISHED SURFACE	PVI	POINT OF VERTICAL INFLECTION		

DATE	
REVISIONS	
MARK	

DATE	09/29/25
REVISIONS	
ISSUED WITH ADDENDUM #3	
ISSUED FOR BID	

MARK	CHANGES	RESIDENT ENGINEER	DATE
	NO CHANGES		
FIELD CHANGES			

PREPARED BY:

SWT Engineering Civil & Environmental

800-C SOUTH ROCHESTER AVENUE
ONTARIO, CALIFORNIA 91761

REGISTERED PROFESSIONAL ENGINEER
C 89995
CIVIL
STATE OF CALIFORNIA

09/29/2025

PREPARED UNDER THE SUPERVISION OF

SAN BERNARDINO COUNTY

DEPARTMENT OF PUBLIC WORKS

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DMW	BMR/AJT	BMR	
SUBMITTED BY	CHIEF ENGINEER	DATE	
	DEPUTY DIRECTOR	DATE	

MID-VALLEY SANITARY LANDFILL

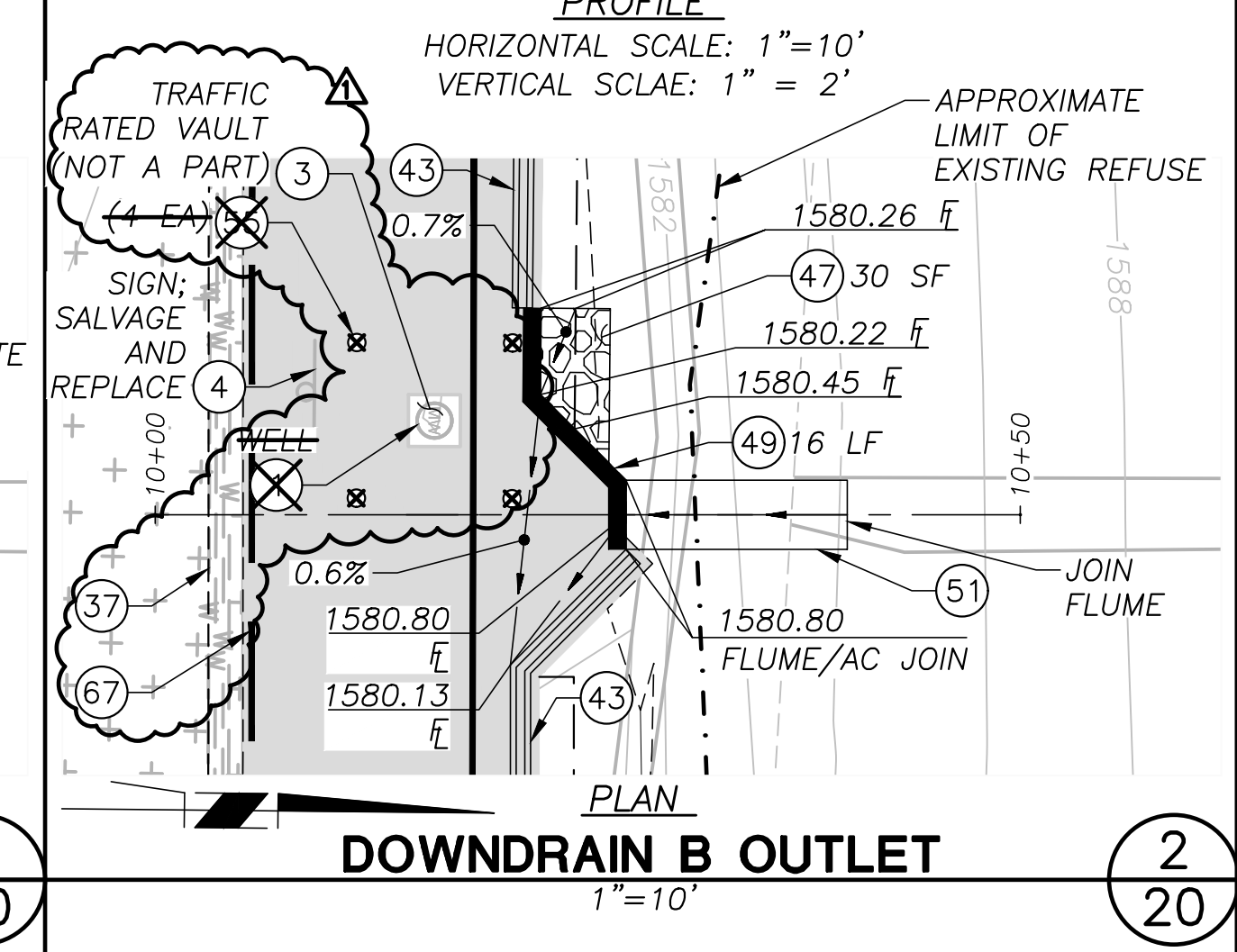
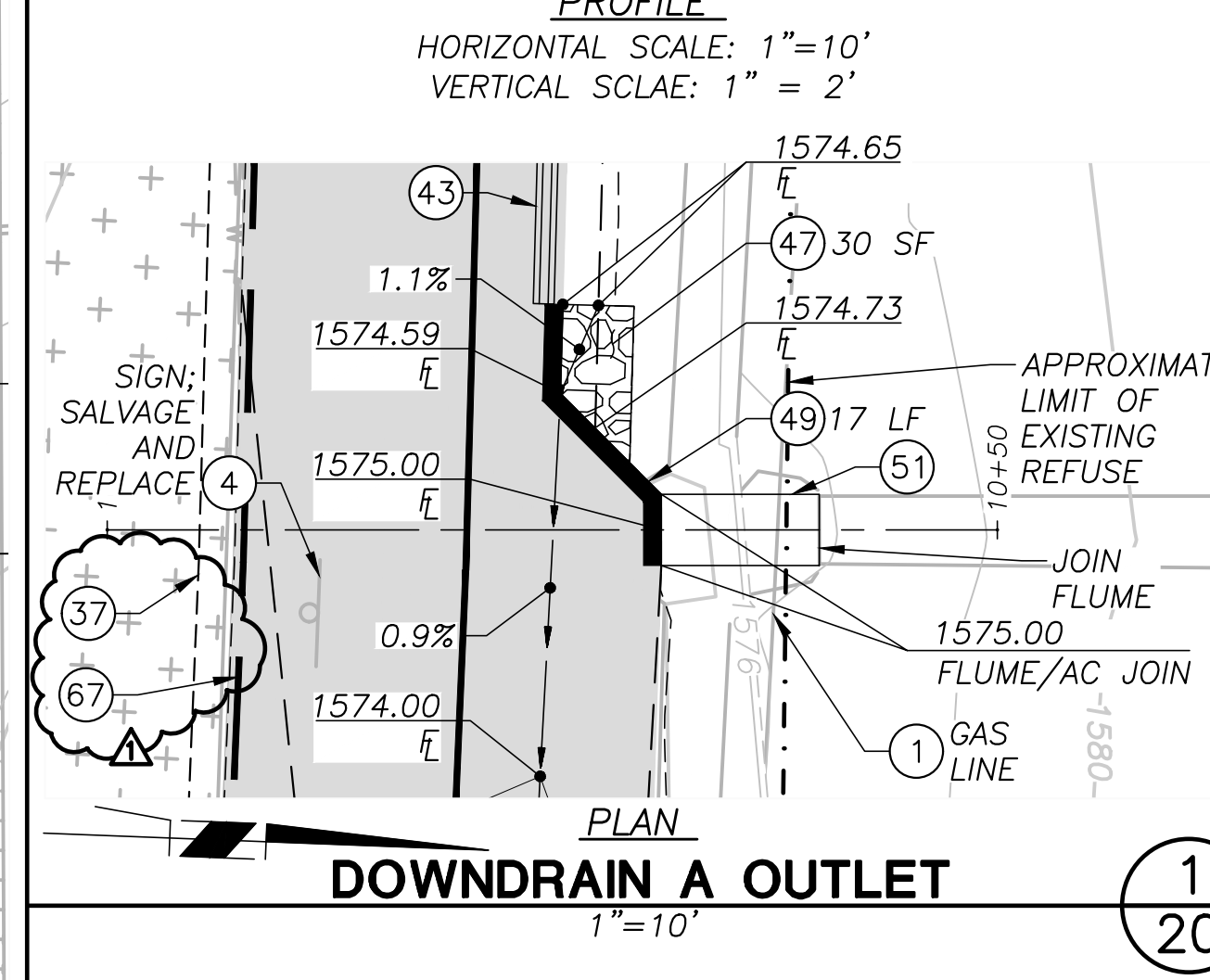
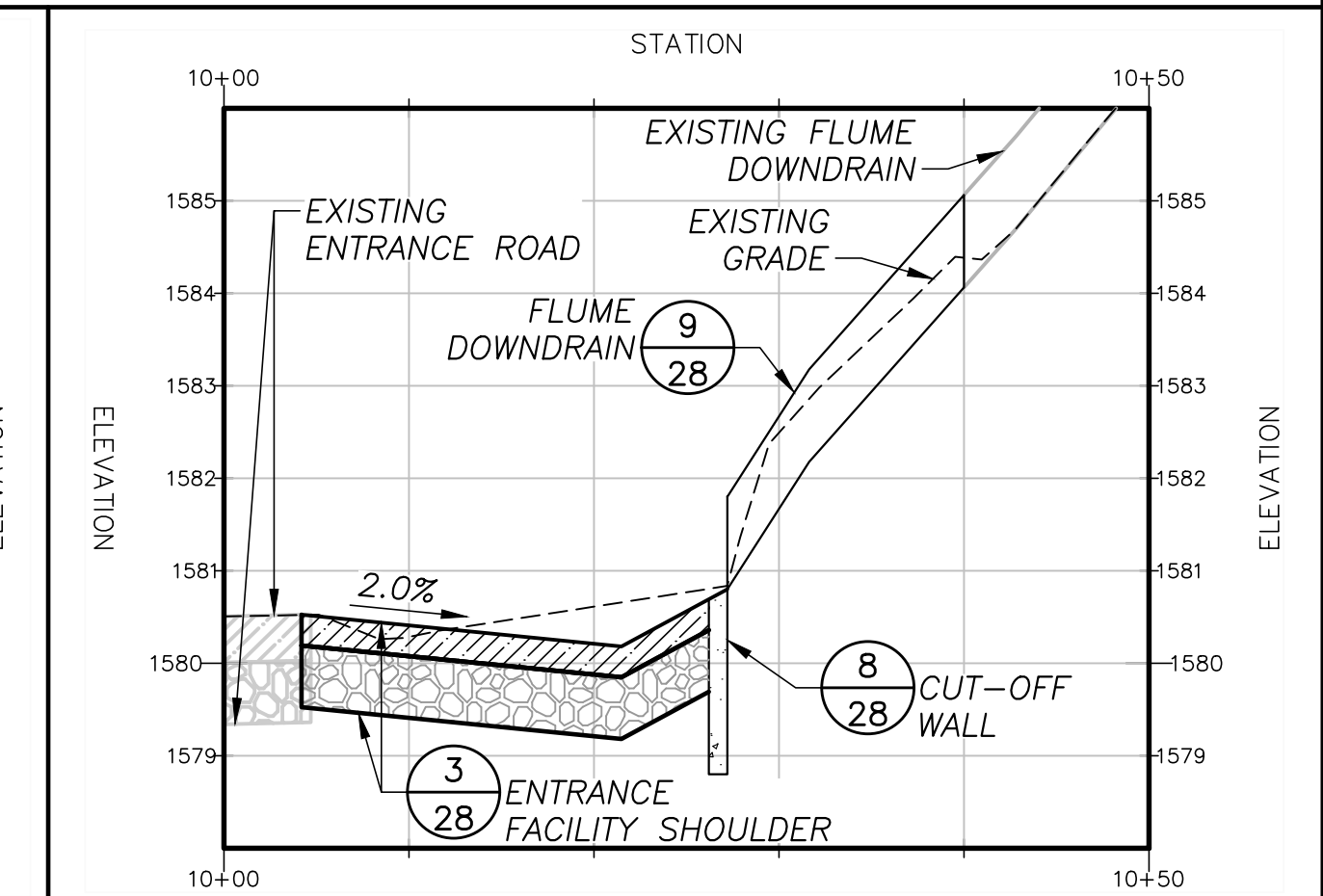
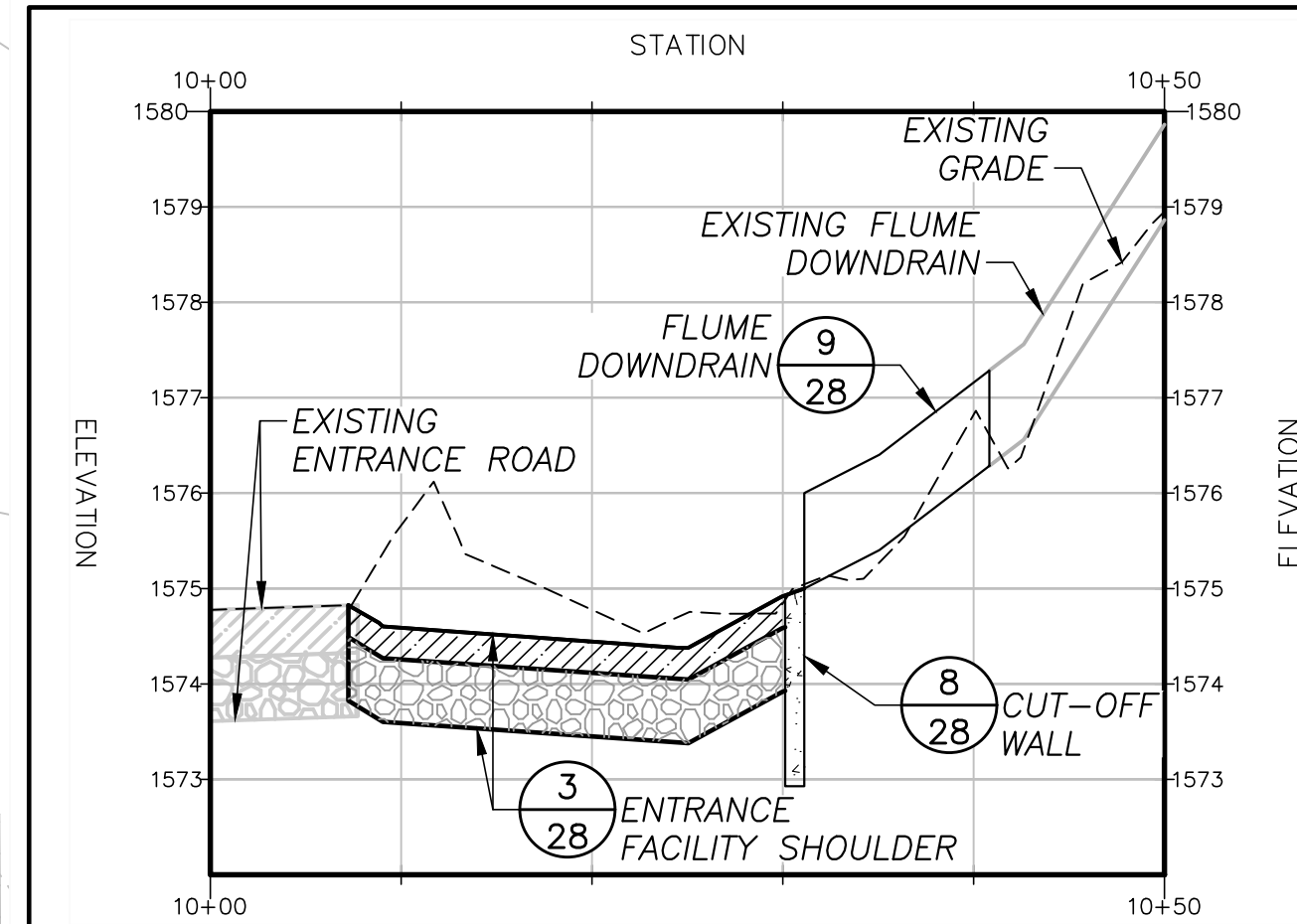
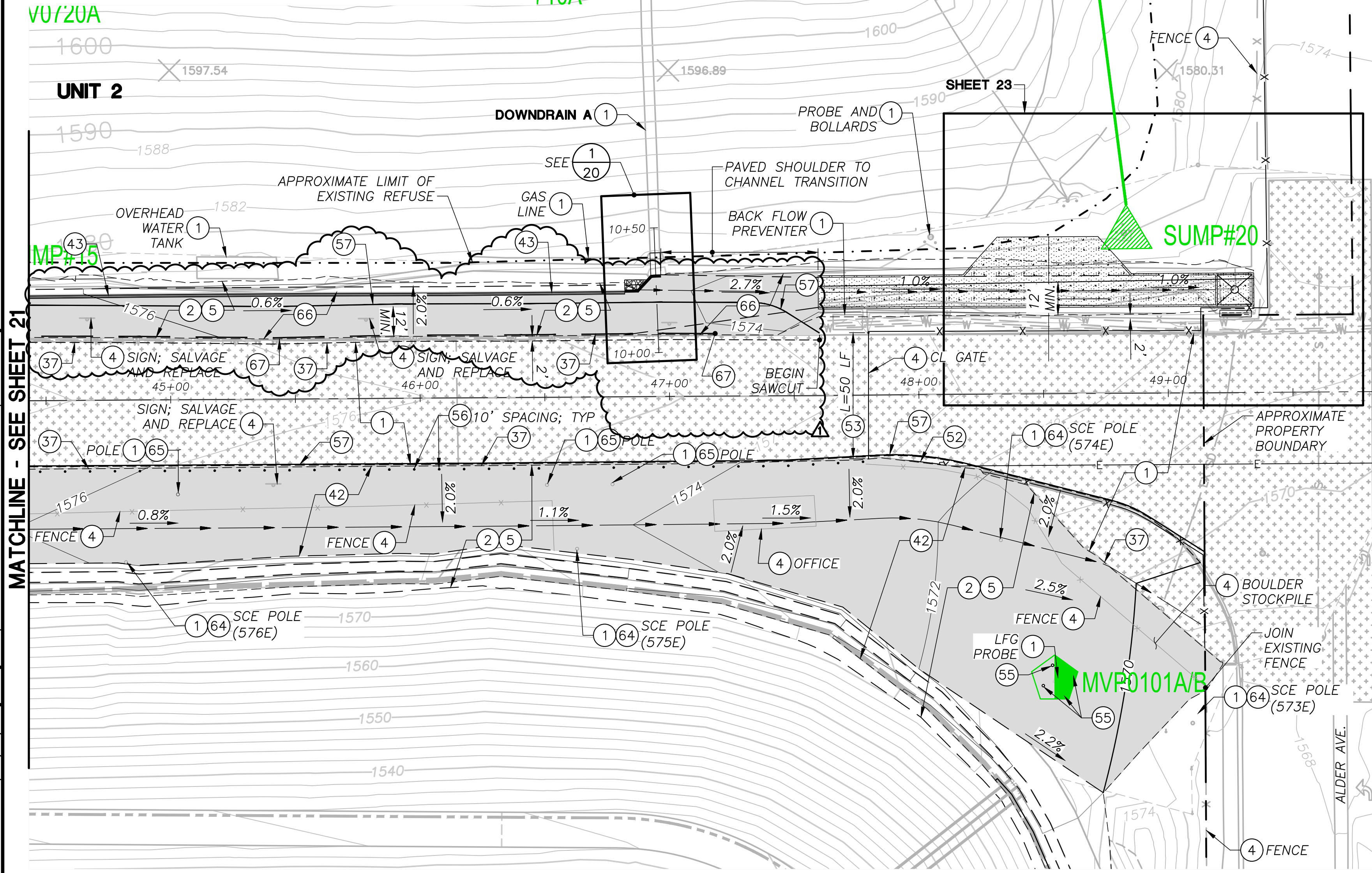
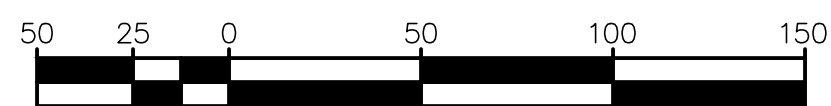
UNIT 4 PHASE 2 COMPOSITE LINER CONSTRUCTION PROJECT

CONSTRUCTION AND GENERAL NOTES

DATE	DWG. NO.	SCALE	SHT. NO.	TOT. SHTS.
09-25		AS SHOWN	3	45

CONSTRUCTION NOTES

- ① PROTECT IN PLACE
- ② CLEAR AND GRUB
- ③ TO BE REMOVED / RELOCATED BY OTHERS
- ④ DEMOLISH; REMOVE OR SALVAGE PER PLAN
- ⑤ EXCAVATE OR FILL TO SUBGRADE CONTOURS PER PLAN
- ③⑦ SAW CUT EXISTING AC PAVEMENT
- ④② CONSTRUCT 4" AC OVER 8" CMB SHOULDER SECTION PER
- ④③ CONSTRUCT TYPE D2-6 MOUNTABLE CURB PER SPPWC STD PLAN 121-2
- ④⑦ INSTALL CLASS III RIP RAP PER SPPWC SECTION 200-1.6
- ④⑨ CONSTRUCT CONCRETE CUT-OFF WALL PER
- ⑤① INSTALL FLUME DOWNDRAIN EXTENSION PER
- ⑤② INSTALL 6" WROUGHT IRON FENCE
- ⑤③ INSTALL WROUGHT IRON GATE
- ⑤⑤ INSTALL PIPE BOLLARD PER
- ⑤⑥ INSTALL CLASS 1 FLEXIBLE POST (TYPE F; FLEXIBLE BASE; SURFACE MOUNTED) PER CAL TRANS STD PLAN A73C
- ⑤⑦ INSTALL DETAIL 27B RIGHT EDGE LINE PER CA MUTCD FIGURE 3A-106 (CA)
- ⑥④ INSTALL POLE PROTECTIVE BARRIER PER SCE UNDERGROUND STRUCTURE STANDARDS DETAIL NO. MC 830
- ⑥⑤ INSTALL CONCRETE BLOCK BARRIERS TO PROTECT EXISTING POWER POLE (PRIVATE)
- ⑥⑥ CONSTRUCT 6" AC OVER 12" CMB AC PAVEMENT SECTION PER
- ⑥⑦ INSTALL 4-INCH WHITE LANE LINE PER DETAIL 8 OF MUTCD FIGURE 3A-102 (CA)



DATE	
REVISIONS	
MARK	

DATE	09/29/25
REVISIONS	
MARK	

NOTES:
 1. SUBGRADE GRADING PER SHEET 7
 2. LPM GRADING PER SHEET 12
 3. LCRS IMPROVEMENTS PER SHEET 17

DATE OF TOPOGRAPHY: DECEMBER 28, 2022

MARK	CHANGES	RESIDENT ENGINEER	DATE
	NO CHANGES		
FIELD CHANGES			

PREPARED BY:
SWT Engineering Civil & Environmental
 800-C SOUTH ROCHESTER AVENUE
 ONTARIO, CALIFORNIA 91761

DATE: 09/29/2025

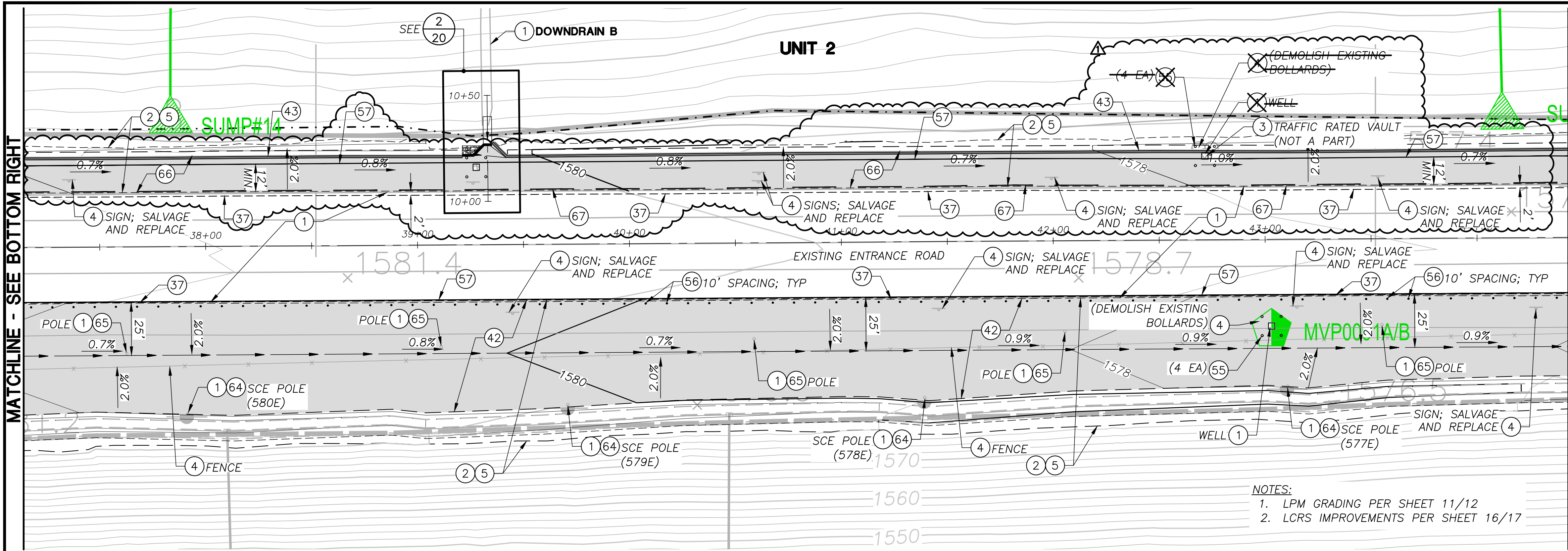
SAN BERNARDINO COUNTY
 DEPARTMENT OF PUBLIC WORKS

DRAWN BY: DMW
 DESIGNED BY: BMR/AJT
 PROJ. ENGR.: BMR

RECOMMENDED / APPROVED BY: _____
 CHIEF ENGINEER _____ DATE _____
 DEPUTY DIRECTOR _____ DATE _____

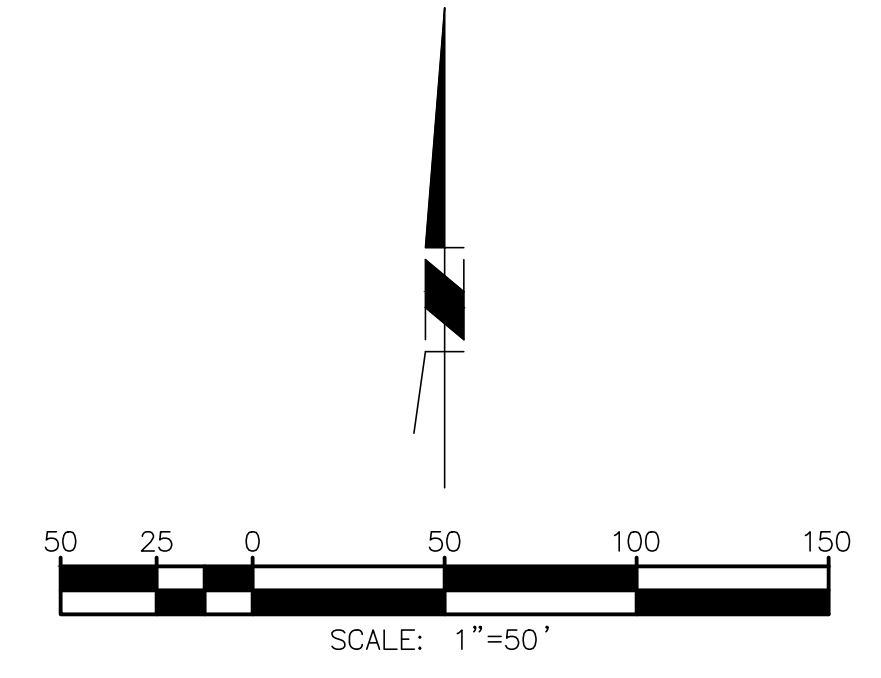
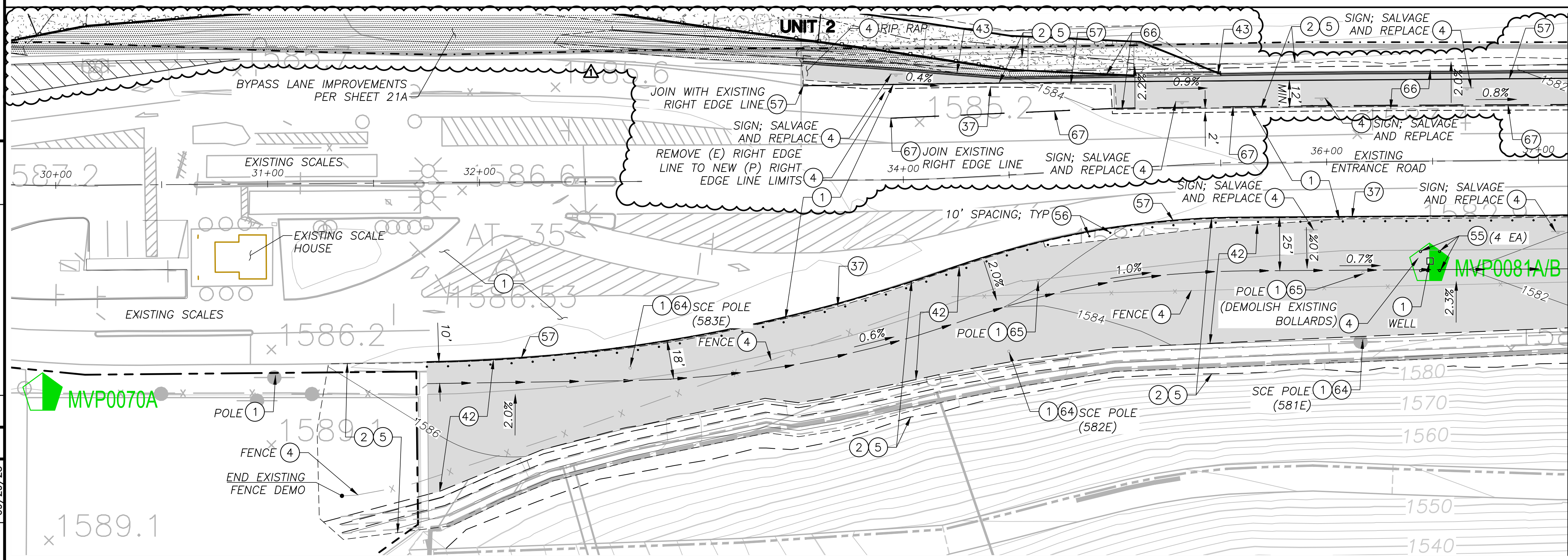
MID-VALLEY SANITARY LANDFILL
 UNIT 4 PHASE 2 COMPOSITE LINER
 CONSTRUCTION PROJECT
 ENTRANCE FACILITY IMPROVEMENTS EAST

DATE	DWG NO.	SCALE	SHT. NO.	TOT. SHT'S.
09-25		AS SHOWN	20	45



- ### CONSTRUCTION NOTES
- ① PROTECT IN PLACE
 - ② CLEAR AND GRUB
 - ③ TO BE REMOVED / RELOCATED BY OTHERS
 - ④ DEMOLISH; REMOVE OR SALVAGE PER PLAN
 - ⑤ EXCAVATE OR FILL TO SUBGRADE CONTOURS PER PLAN
 - ③⑦ SAW CUT EXISTING AC PAVEMENT
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 - ⑥⑥ CONSTRUCT 6" AC OVER 12" CMB AC PAVEMENT SECTION PER
 - ⑥⑦ INSTALL 4-INCH WHITE LANE LINE PER DETAIL 8 OF MUTCD FIGURE 3A-102 (CA)

NOTES:
 1. LPM GRADING PER SHEET 11/12
 2. LCRS IMPROVEMENTS PER SHEET 16/17



NOTES:
 1. LPM GRADING PER SHEET 12
 2. LCRS IMPROVEMENTS PER SHEET 17

MARK	CHANGES	RESIDENT ENGINEER	DATE
	NO CHANGES		

FIELD CHANGES

PREPARED BY:

SWT Engineering Civil & Environmental
 800-C SOUTH ROCHESTER AVENUE
 ONTARIO, CALIFORNIA 91761

PREPARED UNDER THE SUPERVISION OF

DATE: 09/29/2025

SAN BERNARDINO COUNTY
 DEPARTMENT OF PUBLIC WORKS

DRAWN BY: DMW DESIGNED BY: BMR/AJT PROJ. ENGR.: BMR

SUBMITTED BY: _____

RECOMMENDED / APPROVED BY: _____

CHIEF ENGINEER: _____ DATE: _____

DEPUTY DIRECTOR: _____ DATE: _____

MID-VALLEY SANITARY LANDFILL
 UNIT 4 PHASE 2 COMPOSITE LINER
 CONSTRUCTION PROJECT

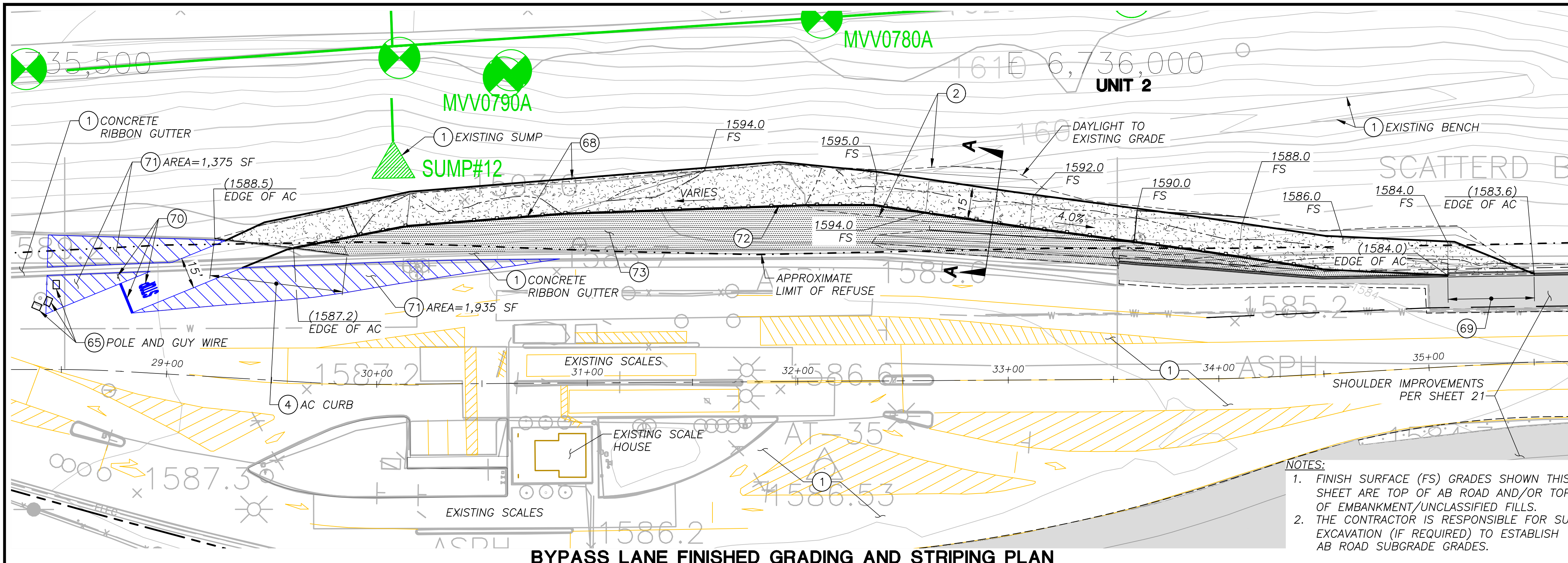
ENTRANCE FACILITY IMPROVEMENTS WEST

DATE: 09-25	DWG. NO.:	SCALE: AS SHOWN	SHT. NO.: 21	TOT. SHT'S.: 45
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MARK	REVISIONS	DATE

MARK	REVISIONS	DATE

ISSUED WITH ADDENDUM #3
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BYPASS LANE FINISHED GRADING AND STRIPING PLAN

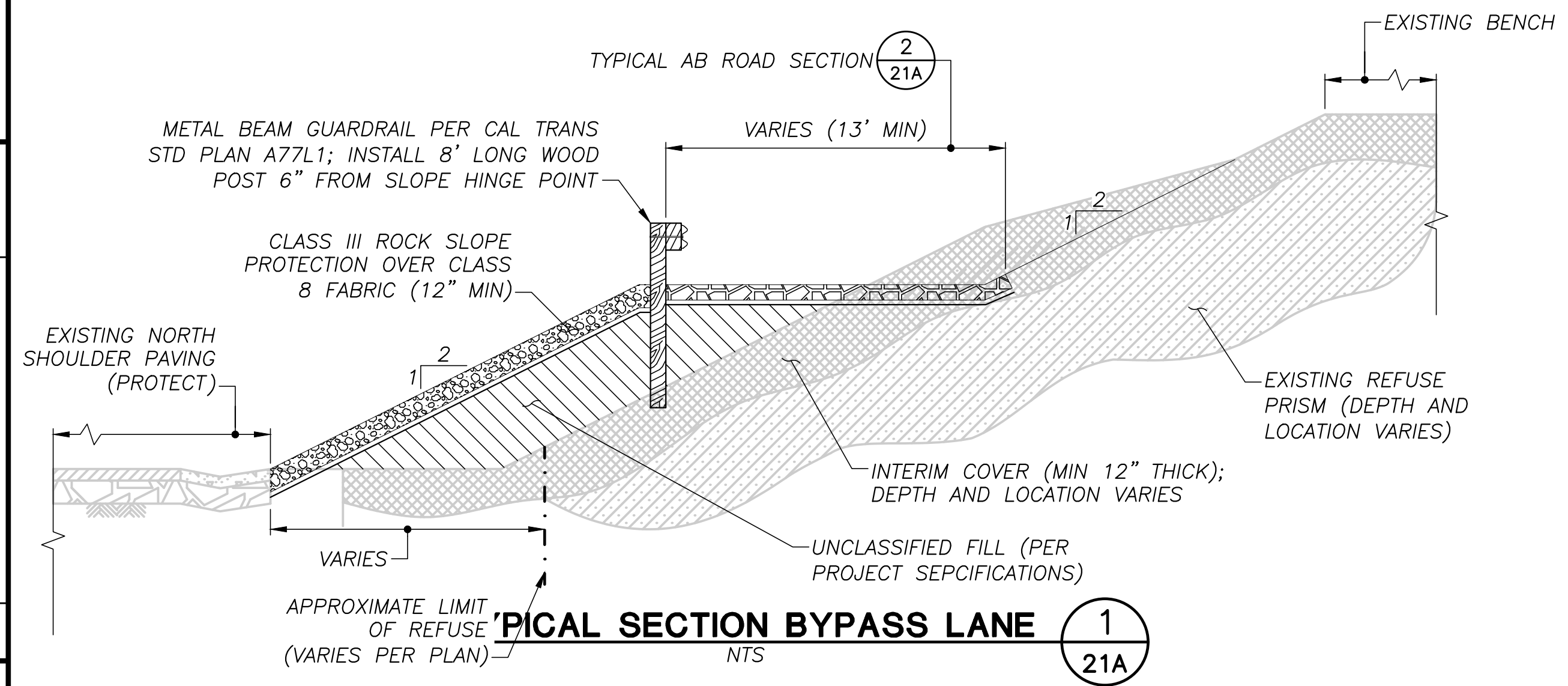
NOTES:
 1. FINISH SURFACE (FS) GRADES SHOWN THIS SHEET ARE TOP OF AB ROAD AND/OR TOP OF EMBANKMENT/UNCLASSIFIED FILLS.
 2. THE CONTRACTOR IS RESPONSIBLE FOR SUB EXCAVATION (IF REQUIRED) TO ESTABLISH AB ROAD SUBGRADE GRADES.

CONSTRUCTION NOTES

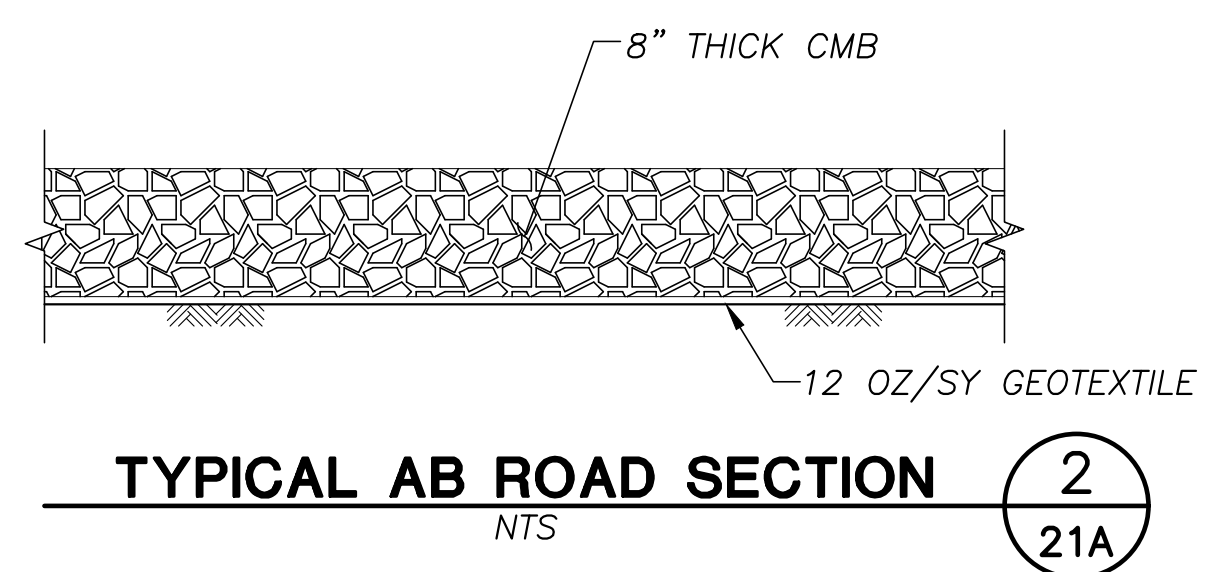
- ① PROTECT IN PLACE
- ② CLEAR AND GRUB
- ④ DEMOLISH; REMOVE OR SALVAGE PER PLAN
- ⑤ EXCAVATE OR FILL TO SUBGRADE CONTOURS PER PLAN
- ⑥⑤ INSTALL CONCRETE BLOCK BARRIERS TO PROTECT EXISTING POWER POLE (PRIVATE) ②
22
- ⑥⑧ CONSTRUCT BYPASS LANE 8" THICK CMB OVER 8 OZ/SY GEOTEXTILE PER ① ②
21A 21A
- ⑥⑨ INSTALL AC DIKE PER CAL TRANS STD PLAN A87B; TYPE D; CASE C-2 FILL
- ⑦⑩ INSTALL STOP SIGN, STOP, AND STOP BAR PER SSPWC STD PLAN 172-0
- ⑦① INSTALL NO PARKING STRIPING; DETAIL 38A PER MUTCD FIGURE 3A-112 (CA) @ 45° ANGLE
- ⑦② INSTALL METAL BEAM GUARDRAIL PER CAL TRANS STD PLAN A77L1 AND METAL BEAM GUARDRAIL END TREATMENT TYPE 11A PER CAL TRANS STD PLAN A77P1
- ⑦③ INSTALL 12" THICK (MIN) CLASS III ROCK SLOPE PROTECTION OVER 12 OZ/SY GEOTEXTILE; PLACEMENT METHOD B PER ①
21A

LEGEND

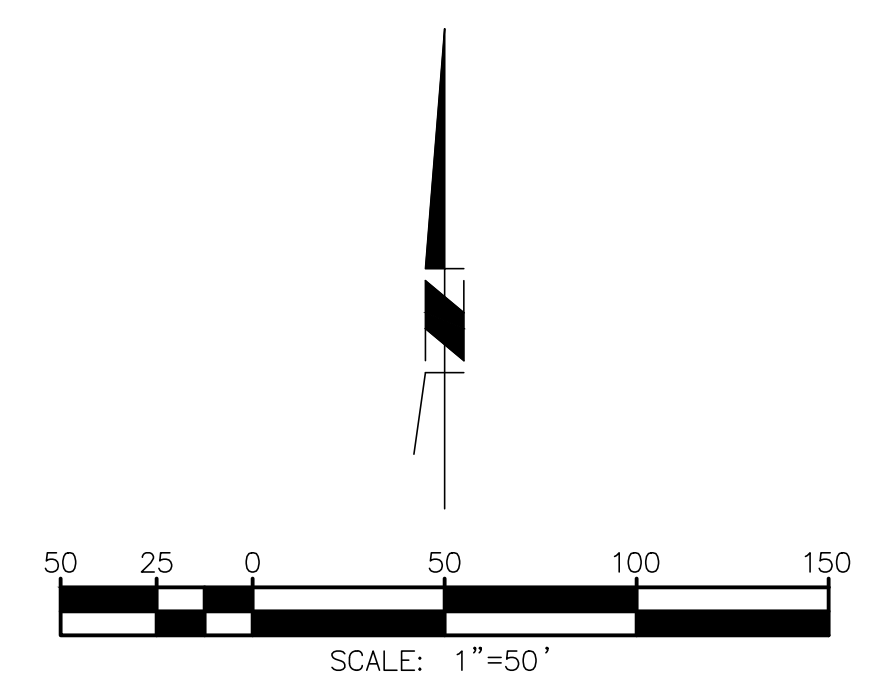
- APPROXIMATE LIMIT OF EXISTING REFUSE
- 1650— EXISTING GRADE CONTOUR
- 1650— PROPOSED GRADE CONTOUR
- EXISTING STRIPING
- PROPOSED STRIPING CHANNELIZING DASHED LINE
- PROPOSED STRIPING RIGHT EDGE LINE
- [Pattern] PROPOSED AB ROAD
- [Pattern] PROPOSED ROCK SLOPE PROTECTION



TYPICAL SECTION BYPASS LANE



TYPICAL AB ROAD SECTION



MARK	REVISIONS	DATE

MARK	REVISIONS	DATE

MARK	CHANGES	RESIDENT ENGINEER	DATE

PREPARED BY:
SWT Engineering Civil & Environmental
 800-C SOUTH ROCHESTER AVENUE
 ONTARIO, CALIFORNIA 91761

REGISTERED PROFESSIONAL ENGINEER
 BRIAN M. REYES
 C 89995
 CIVIL
 STATE OF CALIFORNIA
 09/29/2025

SAN BERNARDINO COUNTY
 DEPARTMENT OF PUBLIC WORKS

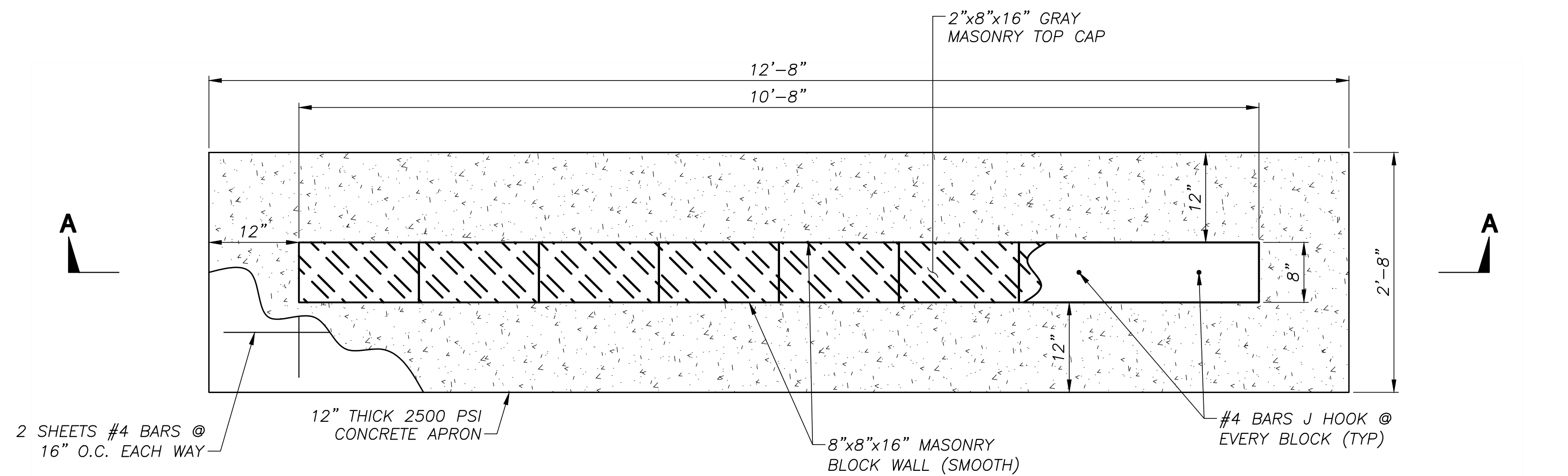
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SUBMITTED BY: _____ CHIEF ENGINEER: _____ DATE: _____

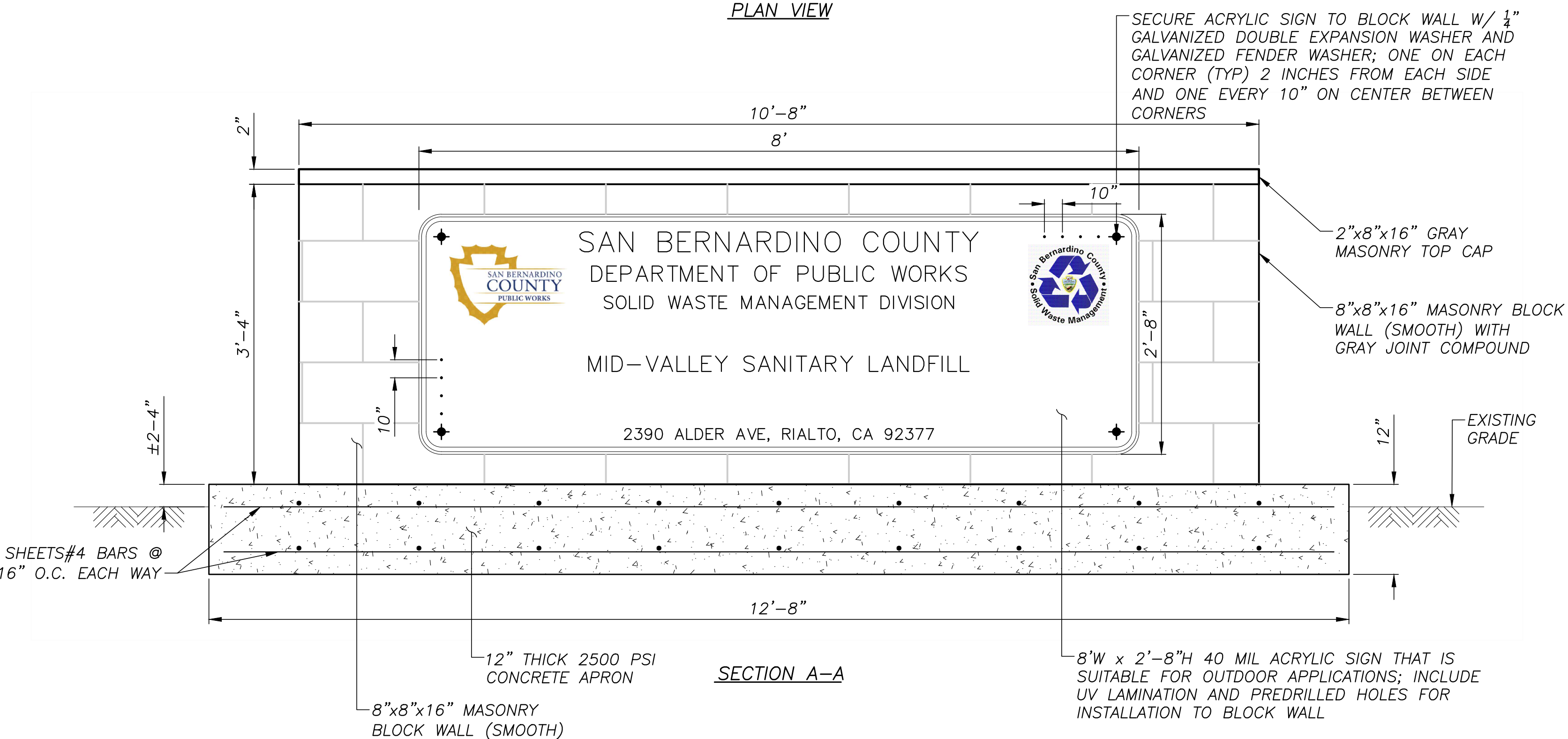
PROJECT MANAGER: _____ DATE: _____ DEPUTY DIRECTOR: _____ DATE: _____

MID-VALLEY SANITARY LANDFILL
 UNIT 4 PHASE 2 COMPOSITE LINER
 CONSTRUCTION PROJECT
 ENTRANCE FACILITY IMPROVEMENTS
 BYPASS LANE

DATE	DWG. NO.	SCALE	SHT. NO.	TOT. SHT'S.
09-25		AS SHOWN	21A	45



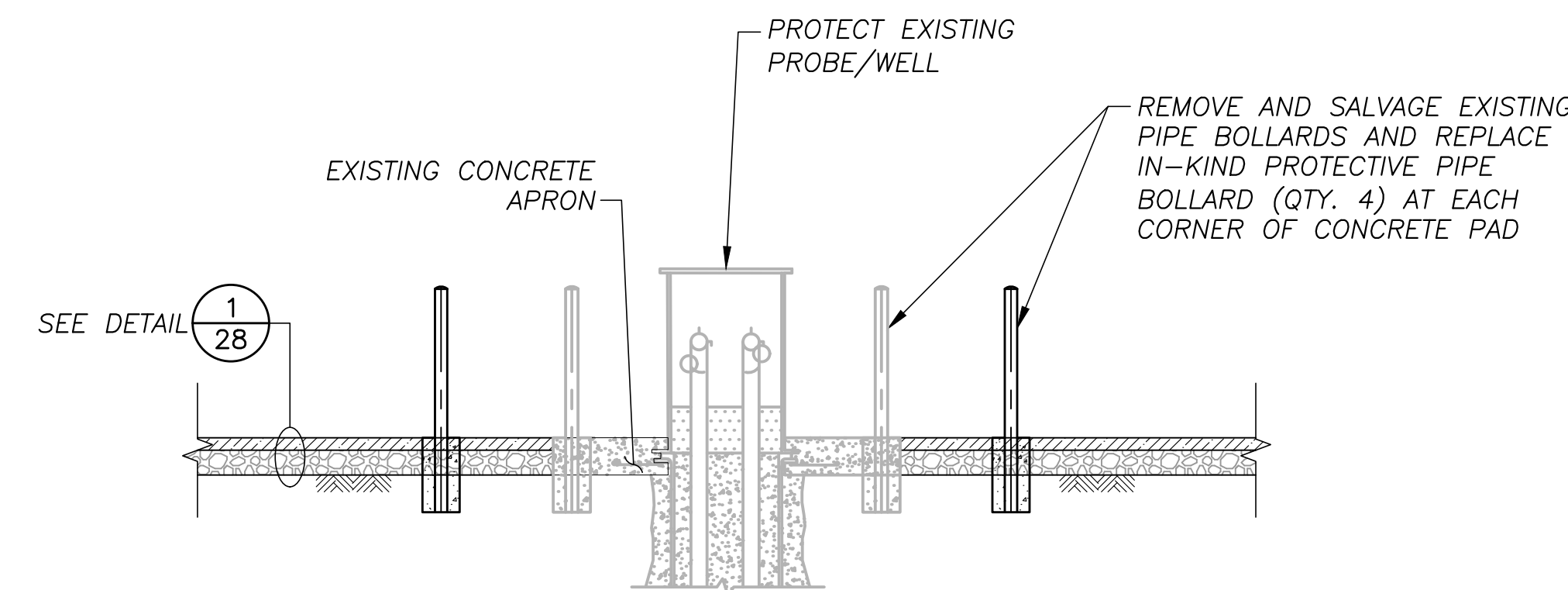
PLAN VIEW



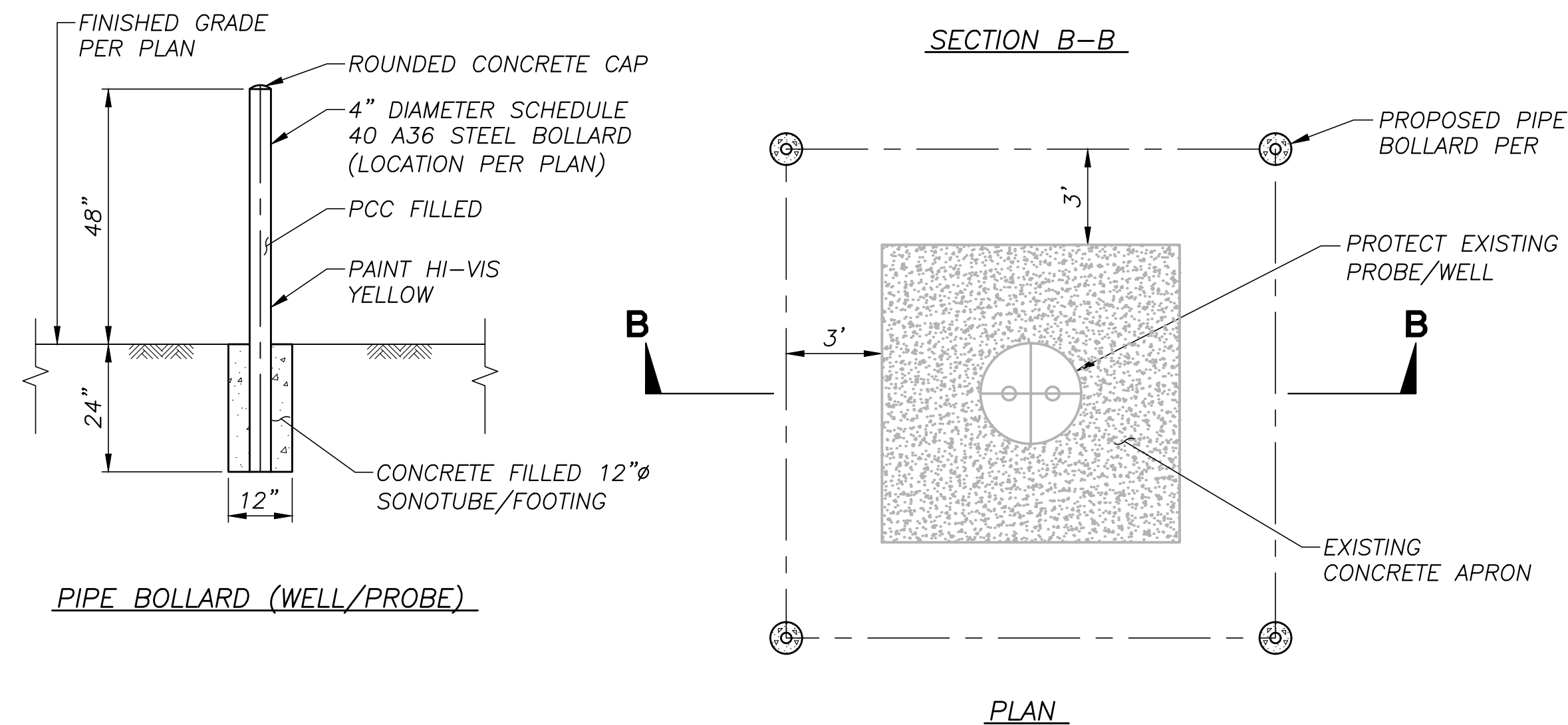
SITE ENTRY SIGN/MONUMENT

NTS

1
22



SECTION B-B

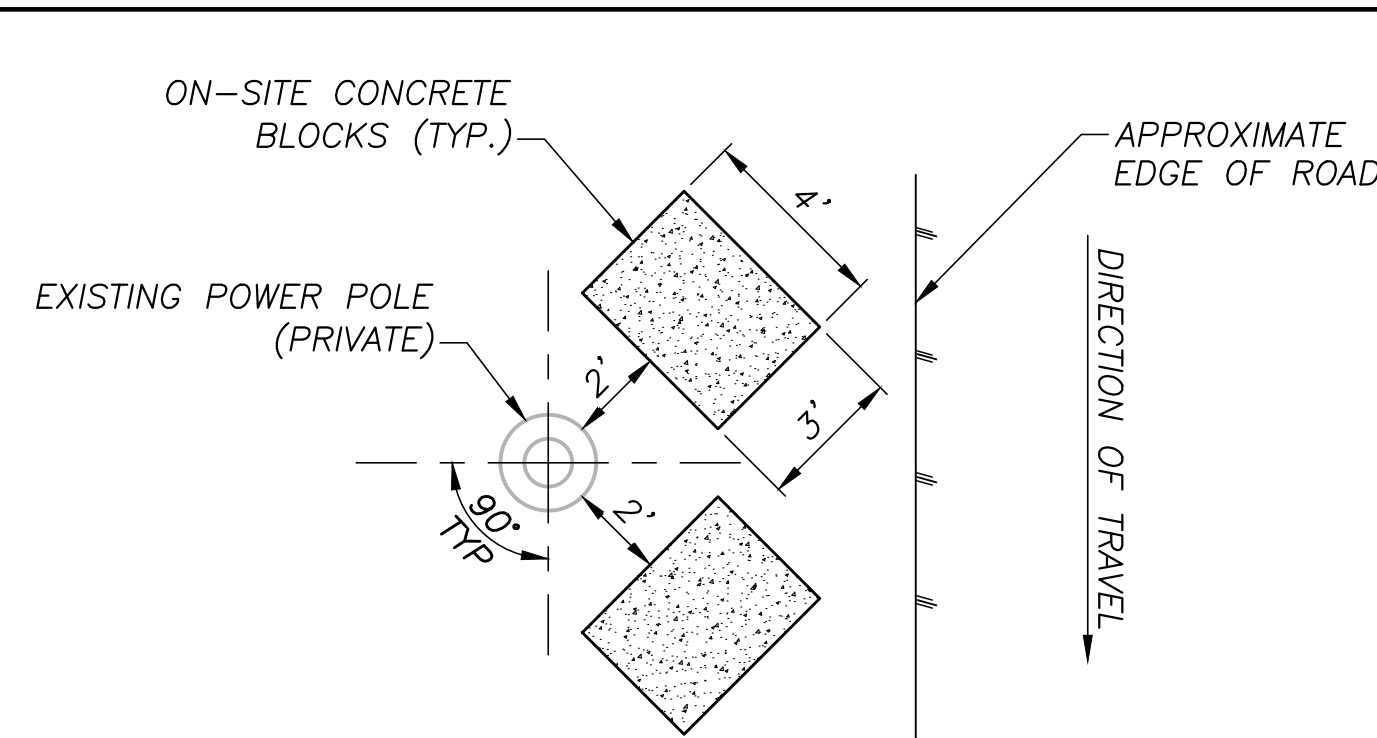


PLAN

PROTECT EXISTING PROBE/WELL

NTS

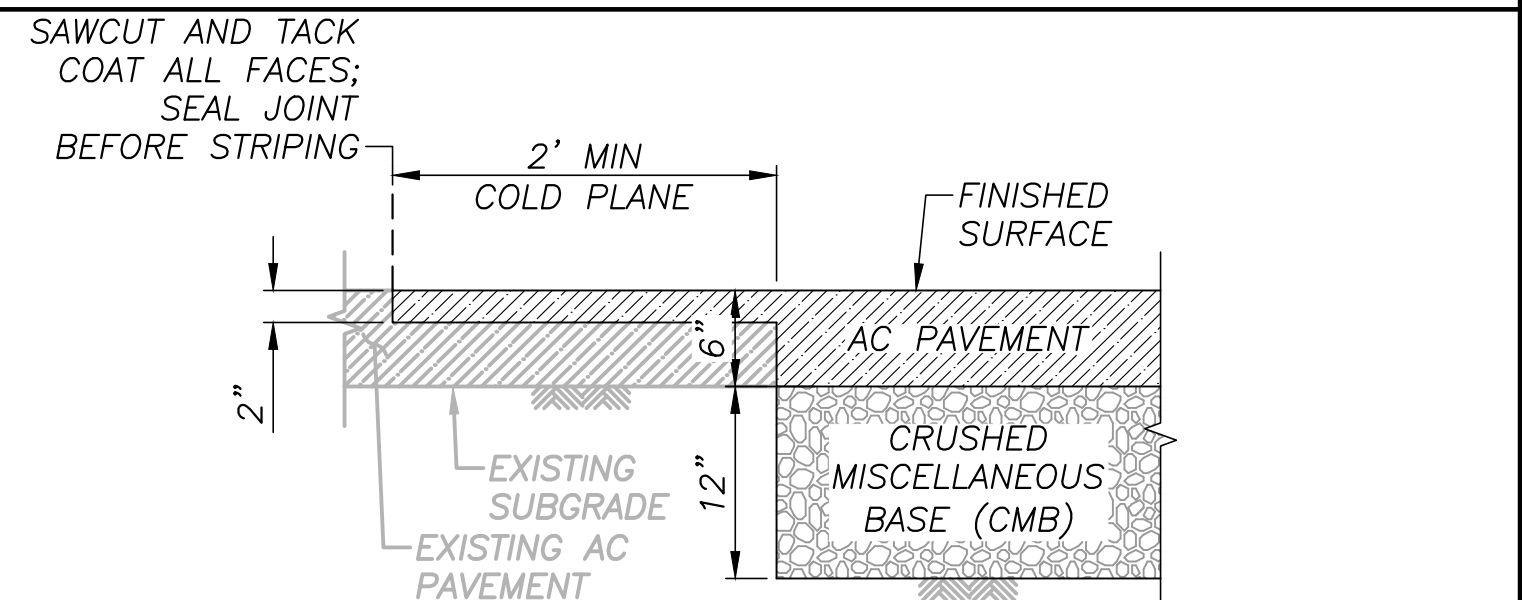
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PROTECT EXISTING POWER POLE (PRIVATE)

NTS

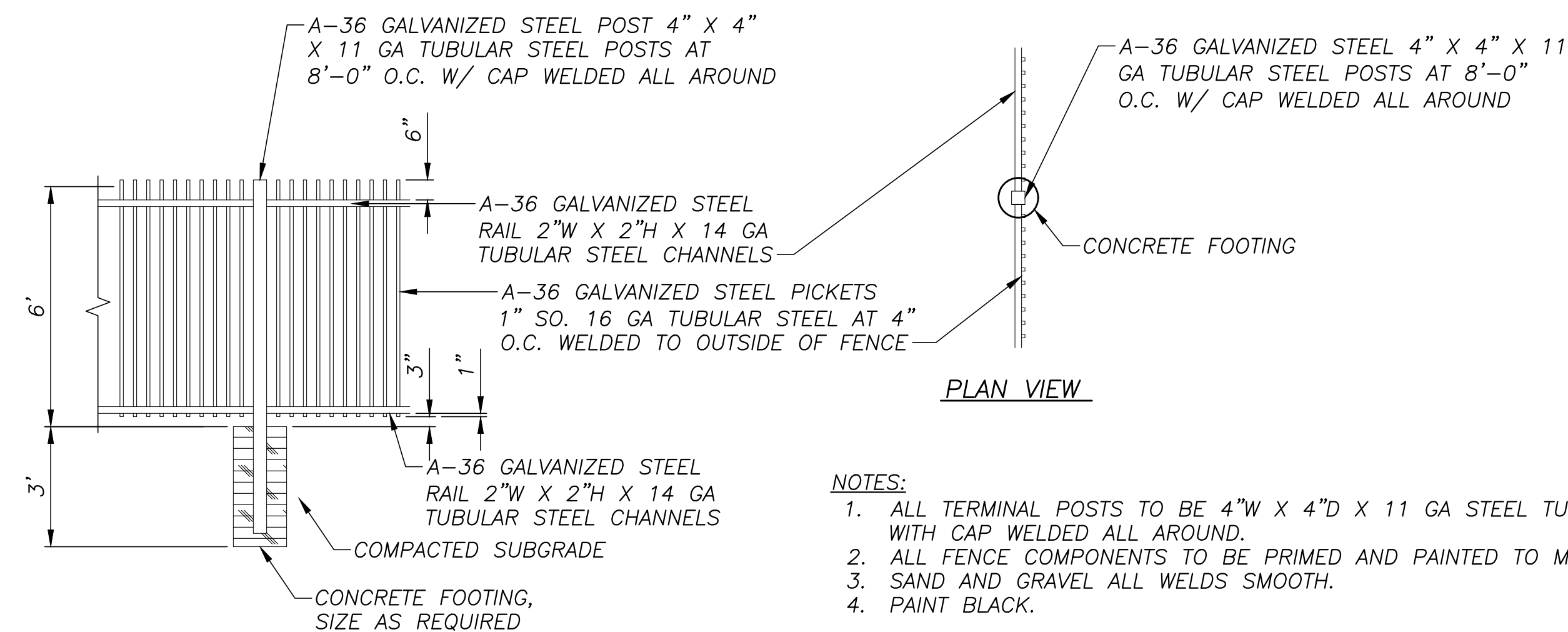
2
22



SAWCUT AND JOIN TO EXISTING AC PAVEMENT

NTS

3
22



PLAN VIEW

WROUGHT IRON FENCE DETAIL

NTS

5
22

- NOTES:
- CONCRETE BLOCKS FOR POWER POLE PROTECTION ARE STORED ON SITE AT THE UNIT 1 TOP DECK AND AVAILABLE FOR CONTRACTOR USE AT NO ADDITIONAL COST FOR MATERIALS. SEE SITE PLAN FOR APPROXIMATE LOCATION.
 - CONTRACTOR IS RESPONSIBLE FOR TRANSPORTING AND PLACING BLOCKS FROM THE EXISTING STORAGE AREA TO THE PROPOSED POWER POLES AS DESCRIBED IN THIS DETAIL.

MARK	CHANGES	RESIDENT ENGINEER	DATE
	NO CHANGES		

FIELD CHANGES

PREPARED BY:
SWT Engineering
Civil & Environmental
800-C SOUTH ROCHESTER AVENUE
ONTARIO, CALIFORNIA 91761



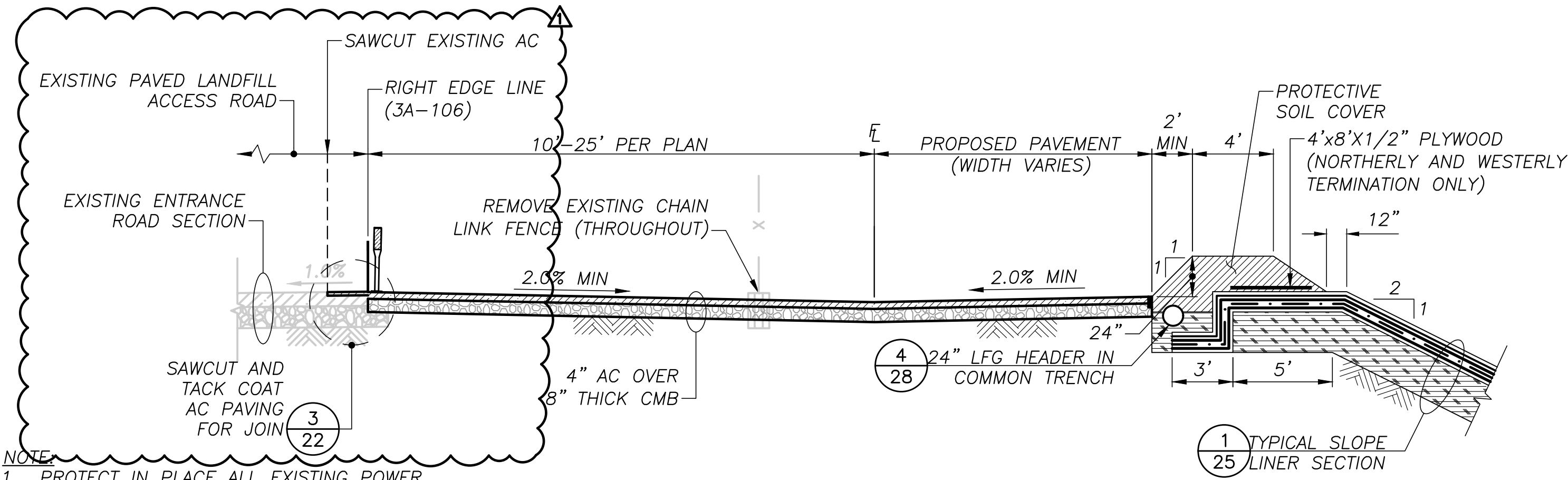
09/29/2025

SAN BERNARDINO COUNTY
DEPARTMENT OF PUBLIC WORKS

DRAWN BY DMW	DESIGNED BY BMR/AJT	PROJ. ENGR. BMR	RECOMMENDED / APPROVED BY
SUBMITTED BY	CHIEF ENGINEER	DATE	
PROJECT MANAGER	DEPUTY DIRECTOR	DATE	

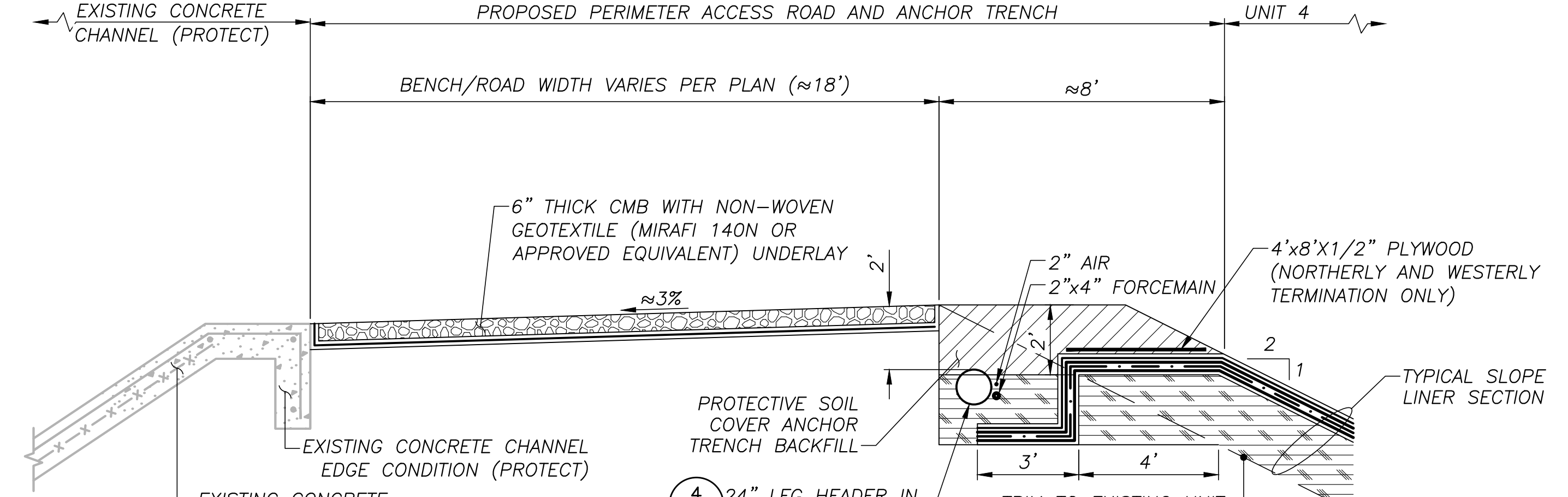
MID-VALLEY SANITARY LANDFILL
UNIT 4 PHASE 2 COMPOSITE LINER
CONSTRUCTION PROJECT
ENTRANCE FACILITY DETAIL SHEET

DATE 09-25	DWG NO.	SCALE AS SHOWN	SHT. NO. 22	TOT. SHT'S. 45
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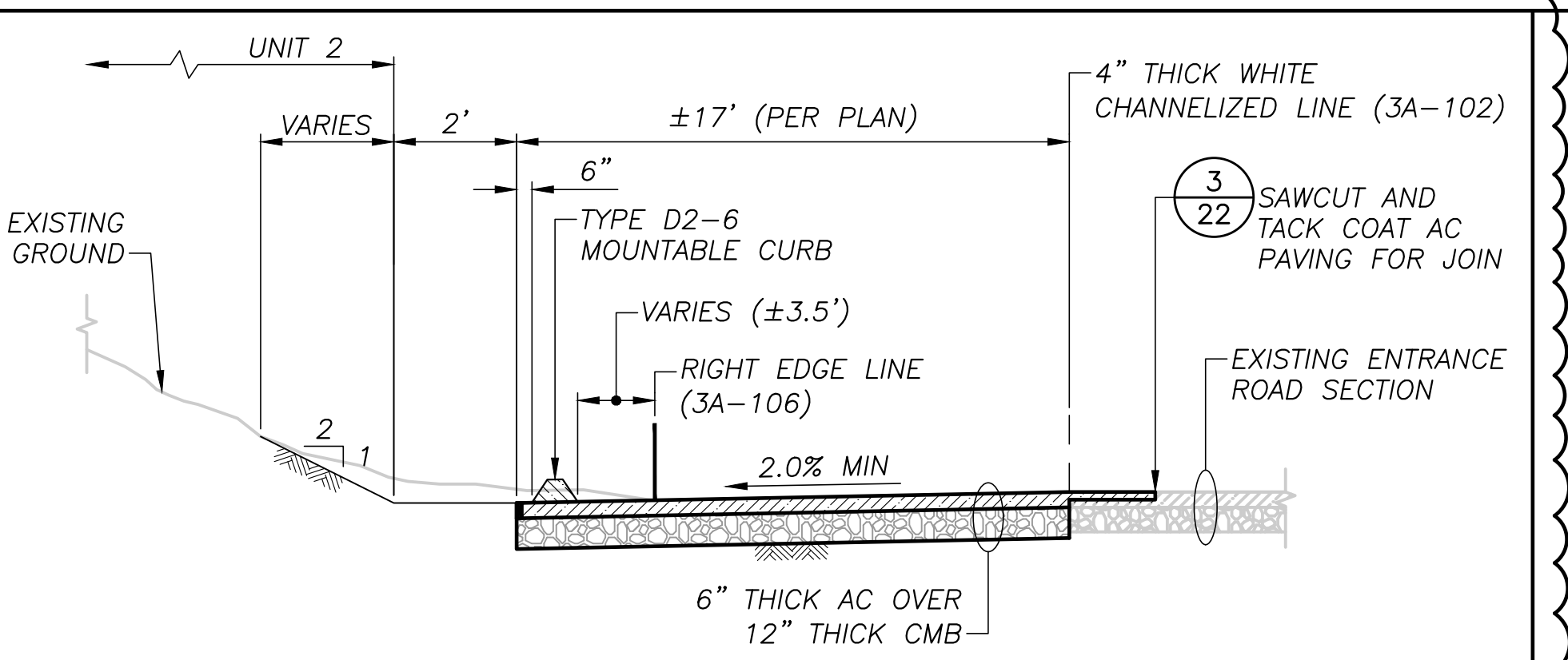
TYPICAL NORTH PERIMETER TERMINATION SECTION

1
28



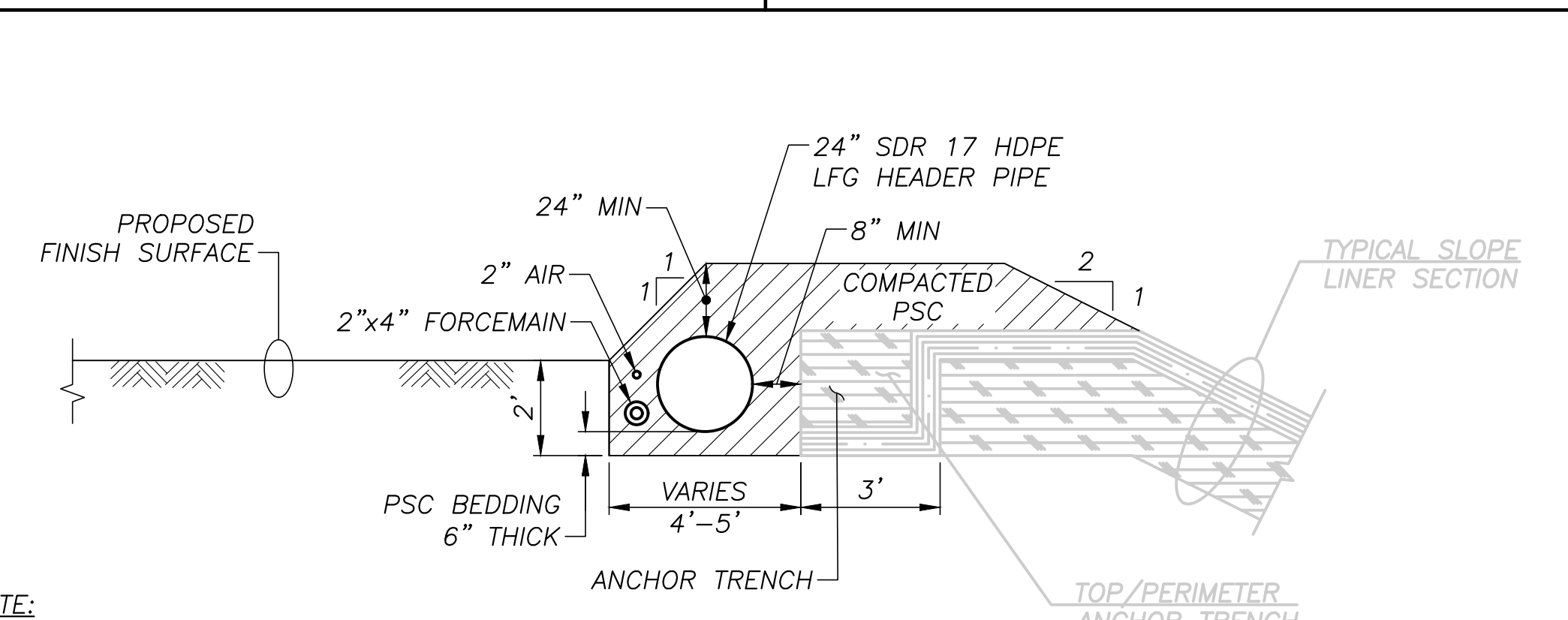
TYPICAL WEST PERIMETER TERMINATION SECTION

2
28



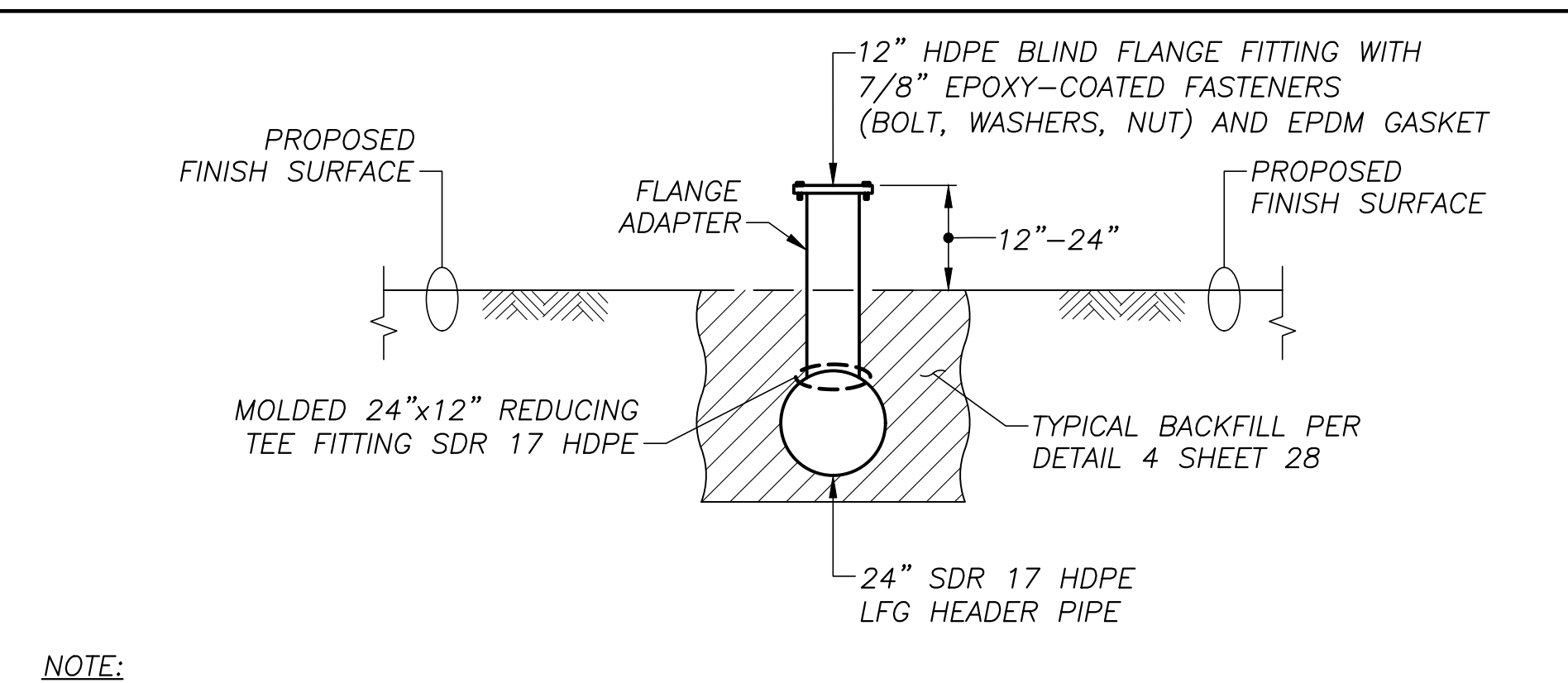
ENTRANCE FACILITY SHOULDER NORTH - SECTION

3
28



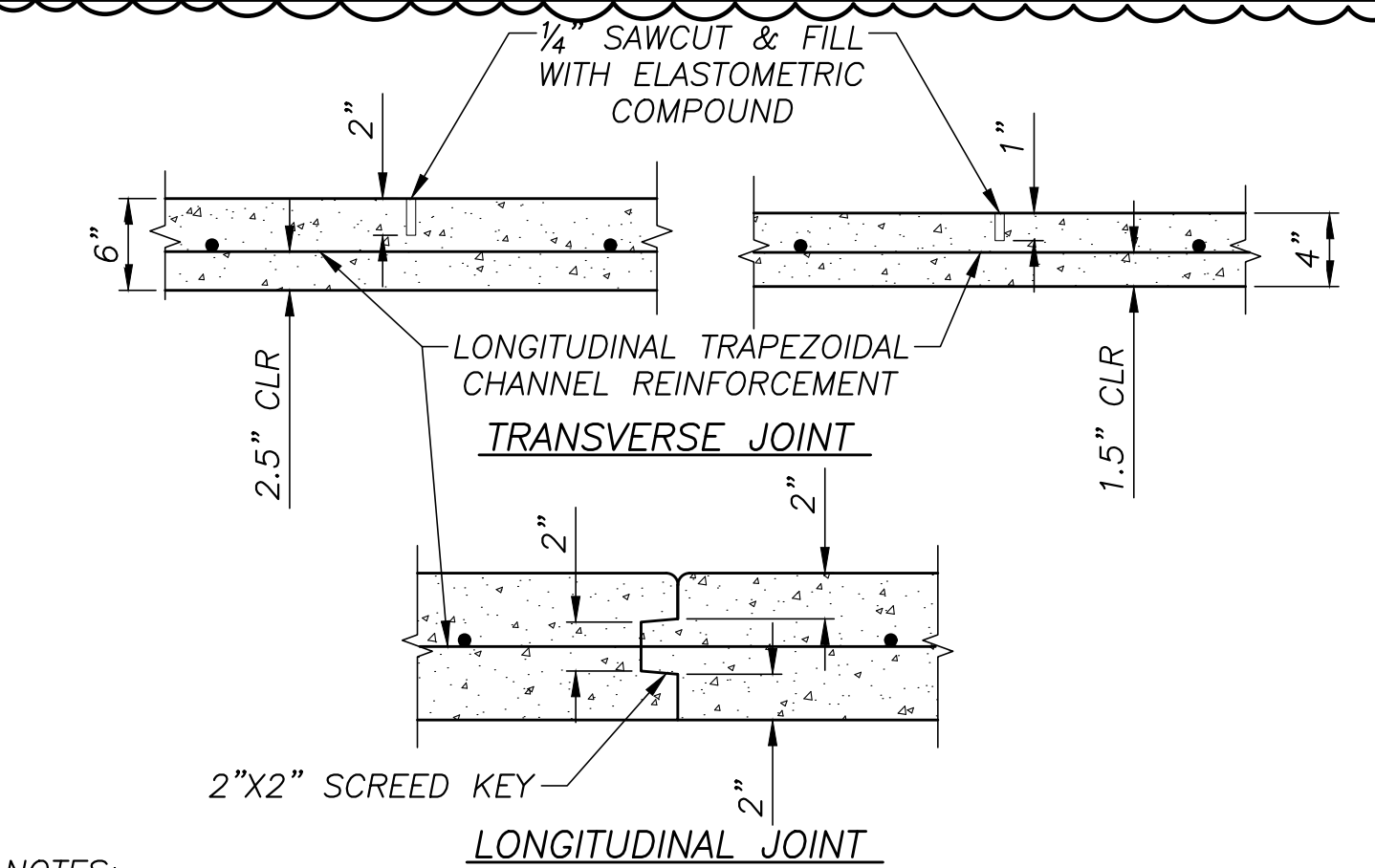
TYPICAL LFG HEADER, AIR, FORCEMAIN IN COMMON TRENCH

4
28



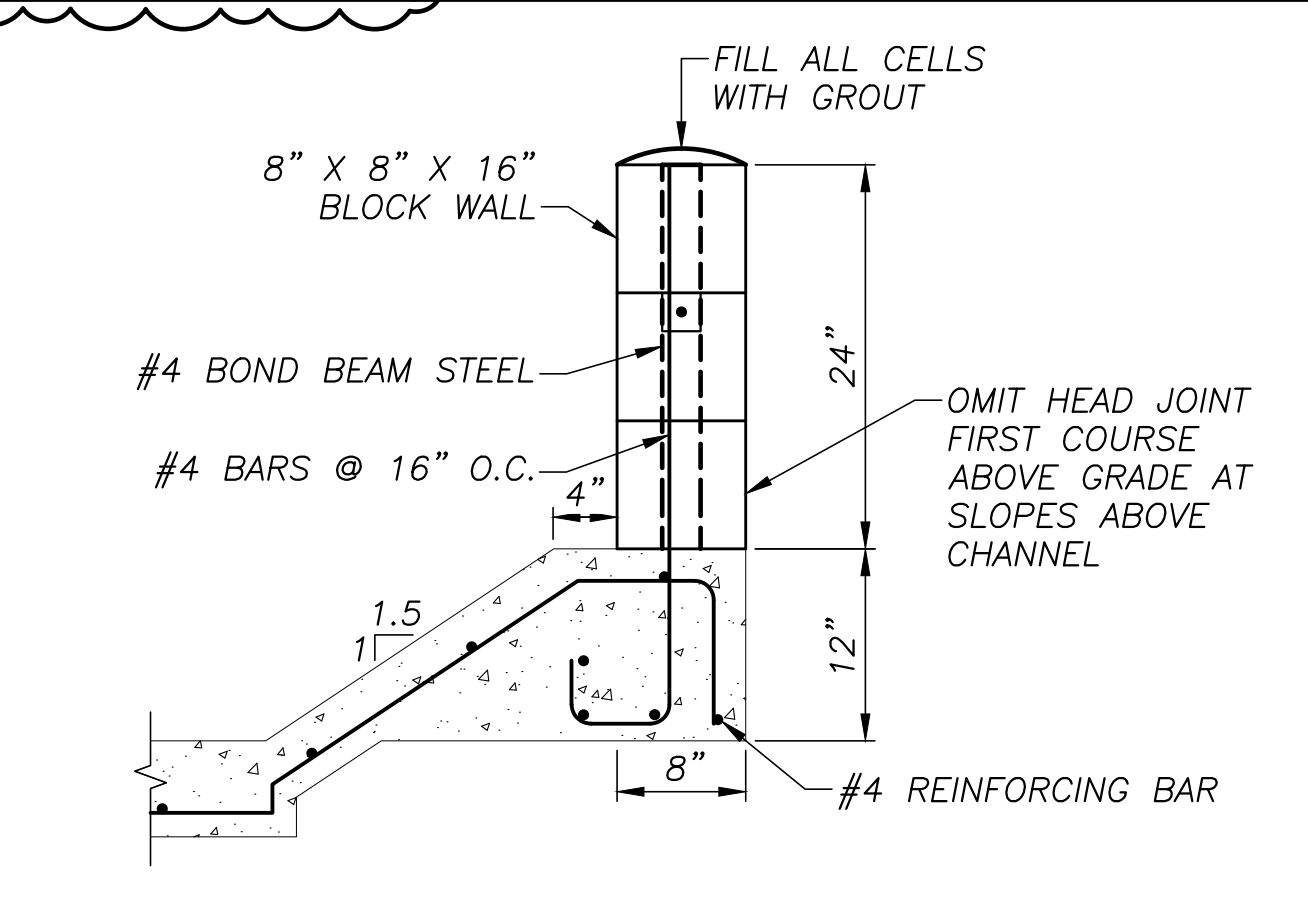
LFG HEADER STUB UP

5
28



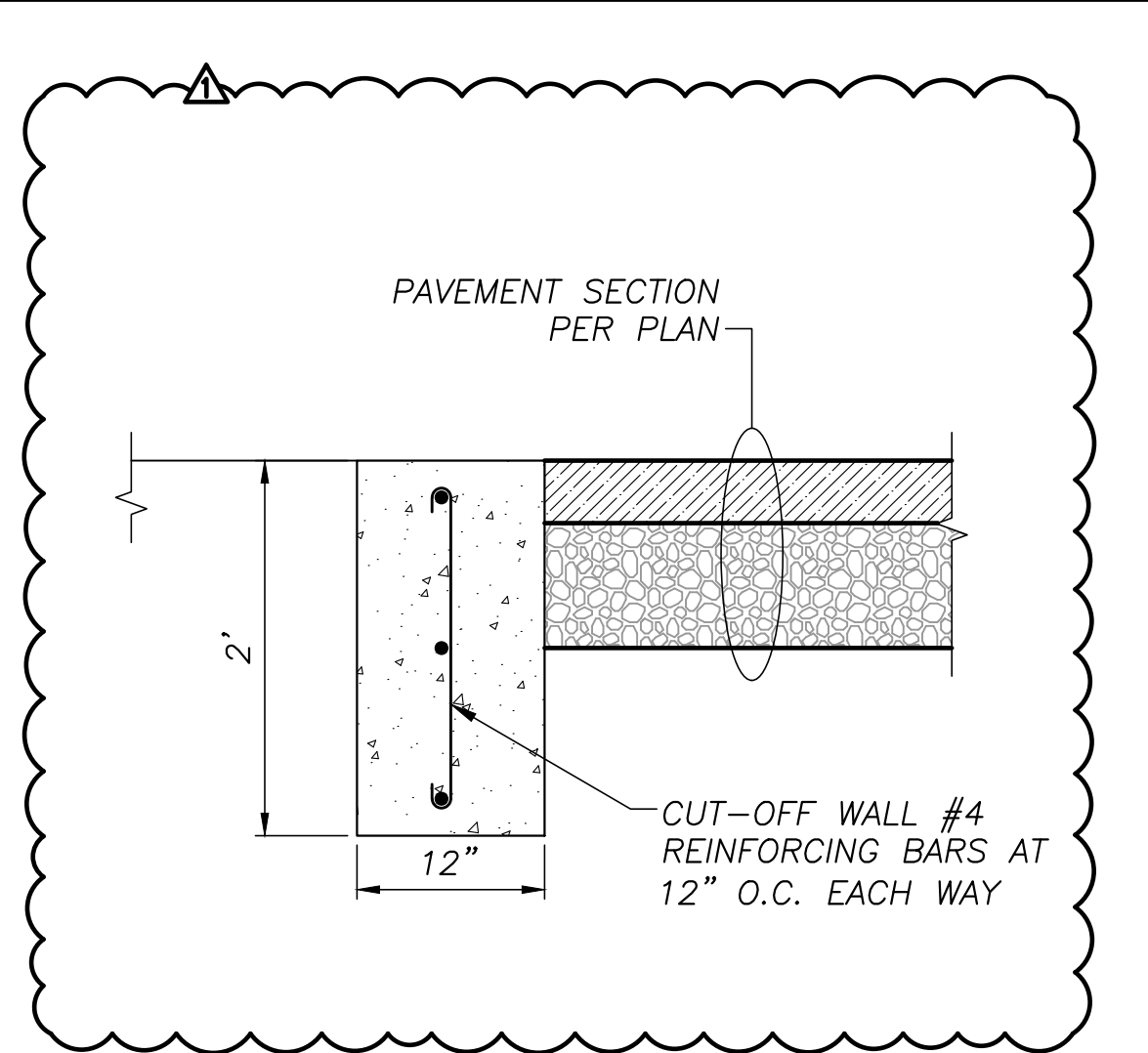
TRANSVERSE AND LONGITUDINAL JOINT

6
28



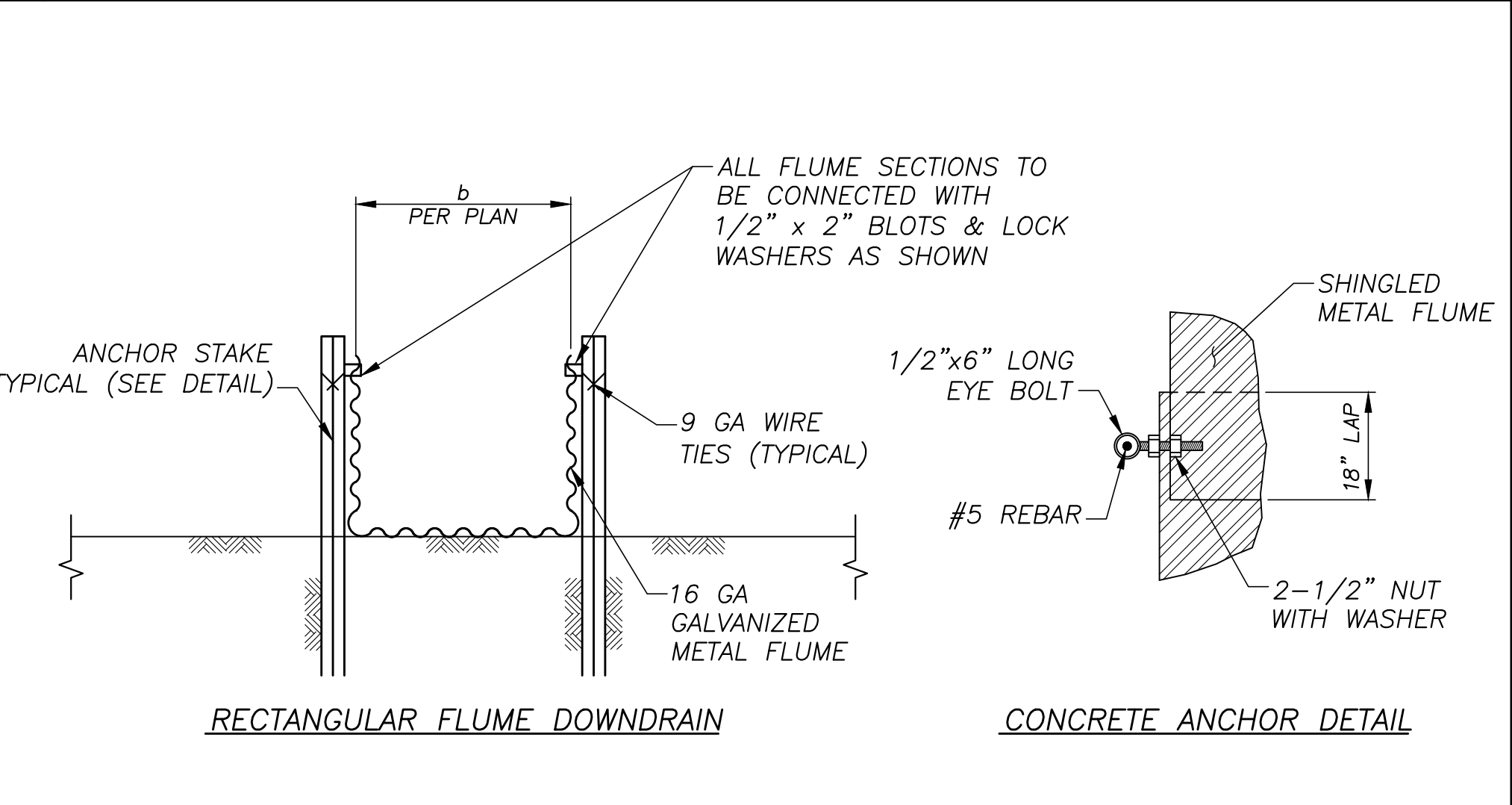
SPLASH WALL

7
28



CONCRETE CUT-OFF WALL

8
28



RECTANGULAR FLUME DOWNDRAIN

9
28

NOTES:
1. SAWCUT TRANSVERSE WEAKENED PLANE AT JOINTS IN THE INVERT AND SIDE SLOPES OF THE CHANNEL AT 15" O.C.
2. THE FIRST AND LAST JOINTS SHALL BE PLACED 15' FROM CUT-OFF WALL.
3. JOINTS SHALL BE 1/4" MAXIMUM WIDE TO A DEPTH OF WITHIN 1/2" OF THE REINFORCEMENT.

NOTE:
1. CAST IN PLACE CONCRETE MAY BE SUBSTITUTED FOR THE BLOCK WALL.

DATE	REVISIONS

DATE	REVISIONS
09/29/25	ISSUED WITH ADDENDUM #3 ISSUED FOR BID

MARK	CHANGES	RESIDENT ENGINEER	DATE
	NO CHANGES		
FIELD CHANGES			

PREPARED BY:
SWT Engineering Civil & Environmental
800-C SOUTH ROCHESTER AVENUE
ONTARIO, CALIFORNIA 91761

REGISTERED PROFESSIONAL ENGINEER
C 89895
CIVIL
STATE OF CALIFORNIA
09/29/2025

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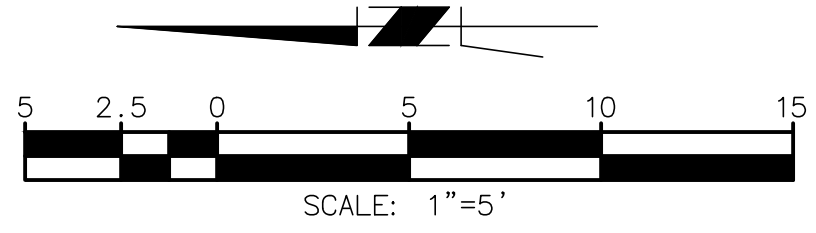
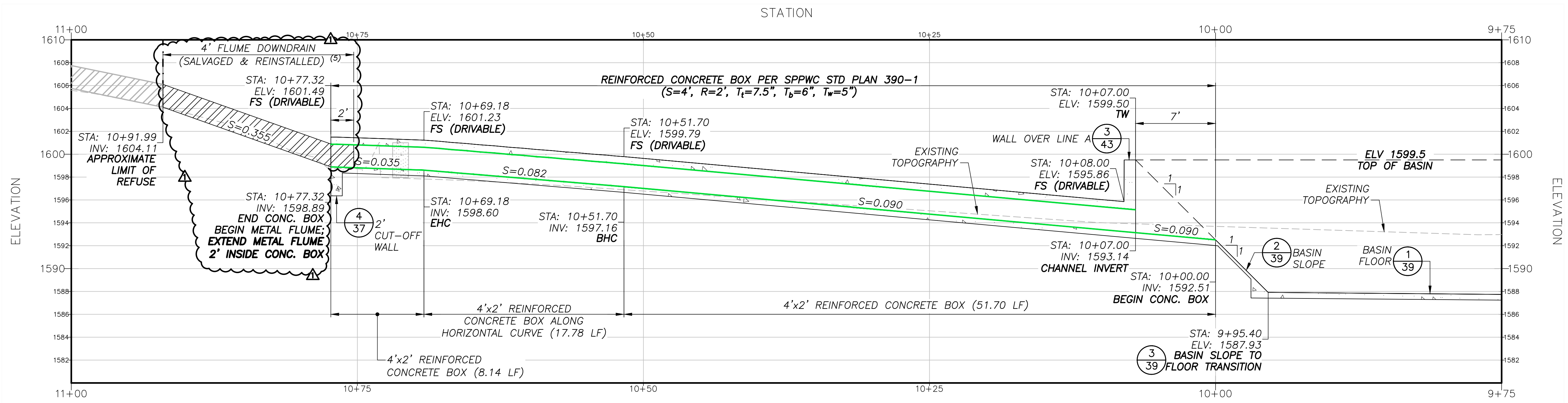
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DEPARTMENT OF PUBLIC WORKS

DRAWN BY: DMW
DESIGNED BY: BMR/AJT
PROJ. ENGR.: BMR
RECOMMENDED / APPROVED BY: _____
SUBMITTED BY: _____
CHIEF ENGINEER: _____ DATE: _____
DEPUTY DIRECTOR: _____ DATE: _____

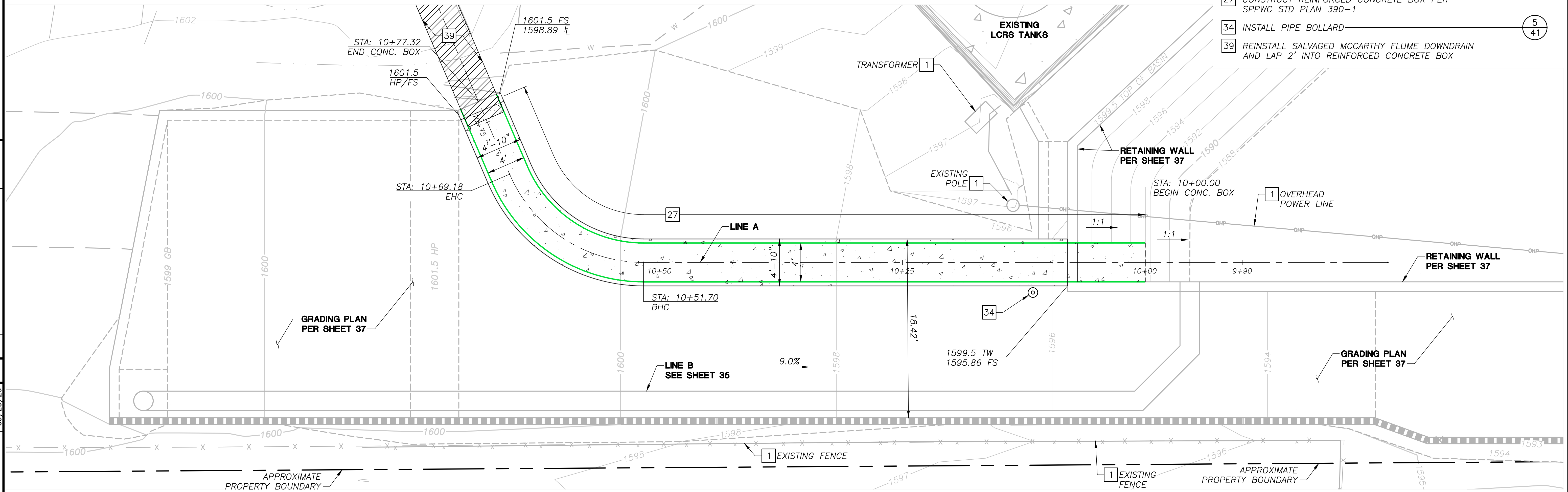
MID-VALLEY SANITARY LANDFILL
UNIT 4 PHASE 2 COMPOSITE LINER CONSTRUCTION PROJECT

DETAIL SHEET

DATE	DWG NO.	SCALE	SHT. NO.	TOT. SHT'S.
09-25		AS SHOWN	28	45



- CONSTRUCTION NOTES**
- 1 PROTECT IN PLACE
 - 27 CONSTRUCT REINFORCED CONCRETE BOX PER SPPWC STD PLAN 390-1
 - 34 INSTALL PIPE BOLLARD
 - 39 REINSTALL SALVAGED MCCARTHY FLUME DOWNDRAIN AND LAP 2' INTO REINFORCED CONCRETE BOX



- NOTES:**
- SEE SHEET 30 FOR LEGEND.
 - SEE SHEET 32 FOR GRADING PLAN.
 - SEE SHEET 37 FOR PAVING AND CONCRETE PLAN.
 - SEE SHEET 43 FOR BASIN WALL PLAN, PROFILE, AND DETAILS.
 - REINSTALL METAL FLUME DOWNDRAIN WITH SALVAGED JOINT RESTRAINTS AND CHANNEL JOINTS.

MARK	CHANGES	RESIDENT ENGINEER	DATE
	NO CHANGES		

FIELD CHANGES

PREPARED BY:

SWT Engineering Civil & Environmental
 800-C SOUTH ROCHESTER AVENUE
 ONTARIO, CALIFORNIA 91761

DATE: 09/29/2025

PREPARED UNDER THE SUPERVISION OF

SAN BERNARDINO COUNTY
DEPARTMENT OF PUBLIC WORKS

DRAWN BY: DMW DESIGNED BY: BMR/AJT PROJ. ENGR.: BMR

SUBMITTED BY: _____

RECOMMENDED / APPROVED BY: _____

CHIEF ENGINEER: _____ DATE: _____

DEPUTY DIRECTOR: _____ DATE: _____

MID-VALLEY SANITARY LANDFILL
UNIT 4 PHASE 2 COMPOSITE LINER
CONSTRUCTION PROJECT
UNIT 3 BMP
LINE A PROFILE

DATE: 09-25	DWG. NO.:	SCALE: AS SHOWN	SHT. NO.: 34	TOT. SHT'S.: 45
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MARK	REVISIONS	DATE

MARK	REVISIONS	DATE

DATE OF TOPOGRAPHY: MARCH 5, 2025 AND JANUARY 4, 2024

ATTACHMENT 5 TO ADDENDUM NO. 3
REVISED SECTION 2K

SECTION 2K

MISCELLANEOUS CIVIL IMPROVEMENTS

1.0 GENERAL

This section sets forth the requirements for miscellaneous civil improvements indicated on the Plans.

1.1 Work Included

In general, miscellaneous civil improvements shall include:

- ◆ Construction of Portland Cement Concrete (PCC) drainage improvements;
- ◆ Placement of Reinforcing Steel;
- ◆ Construction of Concrete Trapezoidal Channel;
- ◆ Construction of various Concrete Inlets/Outlets to/from Storm Drain Piping;
- ◆ Construction of Concrete Cut-off walls;
- ◆ Placement of Crushed Miscellaneous Base material;
- ◆ AC Paving including Dikes, Berms, Thickened Edges, Trapezoidal Channels, Channel Transitions, and Curb(s)
- ◆ Construct Below Grade Pipe;
- ◆ Construct 24-inch Pipe to Basin Wall Junction Structure;
- ◆ Construction of Pipe Bollard;
- ◆ Construction of 8-inch-thick Concrete Wall;
- ◆ Construct Concrete Box Channel;
- ◆ Construct Headwall with Warped Wing Walls;
- ◆ Construct 4-inch Channel Subdrain;
- ◆ Install Offline Kraken Filter System;
- ◆ Construct 36-inch Riser;
- ◆ Install Riser Inlet Bar Guards;
- ◆ The construction of the Unit 3 BMP Basin which includes;
 - ◆ Construct 4-Inch Basin Subdrain
 - ◆ Construct Basin Subdrain Junction Structures
 - ◆ Construct Basin Geocomposite Underdrain
 - ◆ Construct Concrete Basin Floor
 - ◆ Construct Concrete Basin Slope
 - ◆ Construct Concrete Basin Slope to Floor Transition
 - ◆ Construct Concrete Basin Top Edge
 - ◆ Construct Concrete Basin Access Ramp
 - ◆ Construct Concrete Basin Expansion Joint
 - ◆ Construct Concrete Basin Contraction Joint
 - ◆ Construct Concrete Basin Wet Well
 - ◆ Construct Concrete Basin Riser Vault
 - ◆ Construct Concrete Retaining Wall;
- ◆ Basin Skimmer/Skimmer Support Winch System and Appurtenances (Includes All Items Identified Below and Their Corresponding Appurtenances):
 - ◆ 6-Inch Flexible PVC Pipe

- ◆ 6-Inch PVC Pipe
- ◆ 2-Inch PVC Pipe
- ◆ Winch Stand
- ◆ Stainless Steel Winch
- ◆ Steel Skimmer Support Frame
- ◆ Concrete Footing for Steel Skimmer Support Frame
- ◆ Skimmer Hanging Apparatus
- ◆ 3/16-Inch Diameter Stainless Steel Wire Rope
- ◆ 8-Inch Faircloth Skimmer (High Capacity)
- ◆ Skimmer Outlet Manifold Extension with Pipe Supports; Connect to 6-Inch Skimmer Discharge Lines with Camlock Fittings
- ◆ Type B Metal Hand Railing per SPPWC Std Plan 606-4

1.2 **Submittals Required**

The Contractor shall thoroughly review the Specifications and identify all required project submittals. The submittals listed below are intended as a general summary of the submittal items contained in this section. This submittal list does not release the Contractor from the responsibility of identifying and providing all information requested.

- ◆ Portland Cement Concrete (PCC) mix designs;
- ◆ Certificates of Compliance for reinforcing steel;
- ◆ Certificates of Compliance for welded wire mesh;
- ◆ Certificates of Compliance for curing compound;
- ◆ Certificates of Compliance for HDPE Pipe;
- ◆ Asphalt Concrete (AC) mix designs;
- ◆ Screed Key Manufacturer's Product Data;
- ◆ Shop Drawings for Galvanized Steel Fabrication for Hand Railing;
- ◆ Pipe Material Certificates of Compliance;
- ◆ Subdrain Gravel Certificates of Compliance;
- ◆ Geocomposite Underdrain Certificates of Compliance;
- ◆ Geotextile Certificates of Compliance;
- ◆ Gradation, Certificate of Compliance for crushed miscellaneous base material.
- ◆ Flexible Post Delineators;
- ◆ Joint Sealant Manufacturer's Product Data/ Certificates of Compliance;
- ◆ Trench shoring, trench shoring plan, and work plan for installation of deep CHDPE Pipe Connection/Extension;
- ◆ Grout mix design;
- ◆ Certificate of compliance – masonry materials;
- ◆ Rip Rap Certification of Compliance
- ◆ Pipe Material (CMP, HDPE, PVC) Certificates of Compliance;
- ◆ Certificates of Compliance for Skimmer System;
- ◆ Certificates of Compliance for Winches, SST Cable, Pulleys.

2.0 MATERIALS

2.1 Portland Cement Concrete (PCC)

PCC shall be furnished in accordance with the requirements of Section 201-1 of the SSPWC. Portland Cement shall conform with the requirements of Section 201-1.2.4.1 of the SSPWC. Unless otherwise authorized by the Engineer or indicated on the drawings, or specified herein, PCC shall conform to the type of construction as reflected in Table 201-1.3.3 of the SSPWC per relevant type of construction. The Contractor shall submit proposed PCC mix designs, for the approval of the Engineer, a minimum of 14 days prior to the intended use on the project.

TYPE OF CONSTRUCTION	CONCRETE CLASS
Basin Floor, Basin Slopes, Basin Ramp, Retaining Walls, Channels, Transition Structures, Inlet Structures, Skimmer Footing, Pipe Bollard Footings, Cutoff Walls, Concrete around LFG Road Crossing	660-C-4000P

2.2 Reinforcing Steel

Reinforcing steel for concrete structures shall be furnished in accordance with Section 201-2 of the SSPWC, and shall conform to ASTM A615 Grade 60, unless otherwise shown. The Contractor shall submit Certificates of Compliance representative of the reinforcing steel to be used on the project.

2.3 Curing Compound

Curing compounds for concrete improvements shall conform to the requirements of Section 201-4 of the SSPWC, Type 1-D or Type 2. The Contractor shall submit a Certificate of Compliance for the proposed curing compound to be used.

2.4 Reinforcing Bar Epoxy

Epoxy for reinforcing bars shall conform to the requirements of ASTM C881-02 for bonding reinforcing bars to concrete. The epoxy surrounding the reinforced bar shall be placed in accordance with the applicable portions of Section 214-7 of the SSPWC.

2.5 Asphalt Concrete Pavement (AC)

Asphalt Concrete (AC) shall be furnished in accordance with the applicable requirements of Section 203-1 and Section 203-6 of the SSPWC and shall conform to the table below. Where indicated on the Plans, AC pavement shall be placed against a redwood header in conformance with Section 302.5.5 of the SSPWC.

AC FEATURE	COMPOSITION/GRADATION	PERFORMANCE GRADE ASPHALT BINDER
Roadway Base Course	Type B	PG 70-10
Roadway Finished Surface	Type D2	PG 70-10
Roadway Shoulders	Type B or Type D2	PG 70-10
Dikes / Curbing	Type B or Type D2	PG 70-10

AC mix designs shall be submitted for the Engineer's review and approval.

2.6 Crushed Miscellaneous Base Material (CMB)

CMB shall conform to the requirements of Section 200-2.4 of the SSPWC. The Contractor shall submit a Certificate of Compliance indicating that the proposed material meets the gradation requirements of the Standard Specifications.

2.7 Corrugated Smooth Interior Wall HDPE Pipe

HDPE pipe and fittings shall be furnished in accordance with the requirements of Section 207-18 of the SSPWC, and shall be exterior corrugated, interior smooth walled, and of the diameter shown on the Drawings. All pipe and fittings shall comply with the requirements for test methods, dimensions and markings found in AASHTO Designations M 252 and M 294. Pipes and fittings shall be made from virgin PE compounds which conform to Cell Class 324420C, as defined and described in ASTM D 3350.

All joints shall be watertight, with bell and spigot joints supplied as recommended by the Manufacturer. All elbows, fittings, and other appurtenances required for installation shall have bell and spigot joints with angles for proper fit determined by the Contractor and shall consist of HDPE.

2.8 Flexible Post Delineators

The Flexible Post Delineators shall be furnished in accordance with the requirements of the Cal Trans Standard Plan A-73C - Class 1 and per Section 82 Signs and Markers of the Caltrans Standard Specifications.

2.9 Steel Pipe and Concrete for Pipe Bollards

Steel pipe for Pipe Bollards shall be 4-inch diameter Schedule 40 circular steel pipe. Bollards shall be painted with Iron-Oxide Primer and finished with High-Vis Yellow Paint. Concrete shall be the same strength as the nearest adjacent concrete placement.

2.10 Masonry Materials

Masonry units shall comply with Subsection 202-2.2 of the SSPWC. Block color shall be Beige or Tan. Mortar, grout, and water shall comply with Subsection 202-2.3 of the SSPWC.

2.11 Stone for Riprap

Stone for Rip Rap Pads shall conform to the requirements of Section 200-1.6 and shall be Class III and Class IV as indicated on the Drawings. The Contractor shall submit a Certificate of Compliance for the material intended for use. Geotextile underlay below the stone shall be include for all rip rap pads as described in the Standard Specifications.

2.12 Solid and Perforated HDPE Pipe and Fittings – Basin and Channel Subdrain

Solid and Perforated HDPE Pipe and fittings for Basin and Channel Subdrain shall consist of HDPE, smooth walled (non-corrugated), solid pipe conforming to requirements of Section 207-19 of the SSPWC. Subdrain pipe and fittings for the perimeter channel subdrain shall consist of 4-inch diameter perforated (SDR 17) HDPE pipe with perforations as designated on the construction drawings.

2.12.1 Physical Properties

HDPE pipe shall meet the following minimum specifications:

TEST	TEST METHOD	UNIT	REQUIREMENTS
Density*	ASTM D-1505	g/cc	0.955
Melt Flow Index (1)	ASTM D-1238 Condition E	g/10 min	13
Tensile Properties	ASTM D-638	psi psi %	3,300 @ yield 4,500 @ break ≥800 elongation @ break
Flexural Modulus (2)	ASTM D-790	psi	120,000
Environmental Stress Crack Resistance	ASTM D 1693	hrs	≥10,000 (3) ≥5,000 (4)
(1) 190° C/21600g (2) 2% Secant-Method 1 (3) Condition B, 10% (4) Condition C			

The Contractor shall submit two (2) samples of each type of piping proposed for use. The submittal shall also include manufacturer's catalog cut sheets, manufacturer's quality control test results, and a Certificate of Compliance for each class of pipe. The submittal shall be provided to the Engineer at least 15 working days prior to intended use.

2.13 Non-Woven Geotextile

2.13.1 General

Non-woven geotextile materials shall be new, first quality products designed and manufactured in North America. Geotextile for the channel and basin subdrain may be from the Contractor's supplier, provided all manufacturer's roll certification documentation is available, submitted, and accepted as a project submittal. Non-woven geotextile shall be mildew, insect and rodent

resistant, and needle free. Geotextile shall be suitable and durable for the intended application as satisfactorily demonstrated by similar and prior applications. Geotextile shall be 100-percent polyester or polypropylene (with the exception of inhibitors and/or carbon black added for UV resistance), non-woven and needle-punched materials. Polypropylene materials shall be UV stabilized.

2.13.2 Physical Properties

Geotextile shall meet or exceed the following minimum average roll values (weakest principle direction):

GEOTEXTILE MANUFACTURING QUALITY ASSURANCE (MQA)						
PHYSICAL PROPERTY	TEST METHOD	FREQUENCY	UNITS	REQUIREMENT		
				8 oz Filter	12 oz. Filter	16 oz. Cushion
Weight (mass/unit area)	ASTM D-5261	100,000 ft ² or 1 per lot	oz/yd ²	8*	12*	16
Trapezoidal Tear	ASTM D-4533	100,000 ft ² or 1 per lot	lbs	80	115	145
Puncture (CBR) strength	ASTM D-6241	100,000 ft ² or 1 per lot	lbs	700	800	900
Permittivity	ASTM D-4491	100,000 ft ² or 1 per lot	sec ⁻¹	1.2	0.8	N/A
Grab Tensile	ASTM D-4632	100,000 ft ² or 1 per lot	lbs	230	300	370
Grab Elongation	ASTM D-4632	100,000 ft ² or 1 per lot	%	N/A	50	50
AOS	ASTM D-4751	100,000 ft ² or 1 per lot	U.S. Standard Sieve	70	100	N/A
UV Resistance	ASTM D-4355	See Note (2)	% strength retained	N/A	N/A	70
Notes:						
1. * - Minimum values.						
2. Evaluation to be on 2.0-inch strip tensile specimens after 500 hours exposure.						

There are no construction quality assurance testing requirements for the channel or basin subdrain geotextile or for the asphalt paving geotextile.

2.14 Structural Concrete Notes – Basin Skimmer Support

- ◆ All concrete shall attain a minimum compressive strength of 4000 psi at 28 days, unless noted otherwise on plans. See also sulfate content notes.
- ◆ Aggregates shall be natural sand and rock conforming to ASTM C33.
- ◆ Dry-pack shall be composed of one part Portland cement to not more than three parts sand.
- ◆ All conventional foundations are designed for an EI of less than or equal to 50, unless specifically noted otherwise on plans,
- ◆ Refer to ACI 318-05 Table 4.3.1 for requirements when concrete is exposed to sulfate containing solutions.
- ◆ Reinforcing Steel: all bars, unless indicated otherwise, shall be ASTM A15, Grade 60.

2.15 Structural Steel Notes – Basin Skimmer Support

All fabrication & erection shall conform to the latest standards of the American Institute of Steel Construction (AISC) specifications for structural steel buildings.

Structural steel shall conform to the following ASTM Specifications:

TYPE	ASTM SPECIFICATION
W-SHAPE	A992 OR A572 GRADE 50
PLATES & BAR	A36
STEEL PIPE	A53 GRADE B
MACHINE BOLTS	A325, A490, F1852, F2280
NUTS	A563, A194
WASHERS	F436
ANCHOR RODS	F1 554 - A36

All steel exposed to weather shall be hot dip galvanized after fabrication in compliance with ASTM al 23. All field welds on galvanized steel shall be treated with zinc-rich paint in compliance with ASTM A780.

All steel fabrication shall be performed in a shop approved by the governing jurisdiction department of building & safety.

The structural steel fabricator shall provide a set of shop fabrication drawings for approval to the Engineer of Record. The fabricator shall not fabricate the steel until the Engineer of Record has approved the shop drawings.

All welding shall be in conformance with the latest AISC & American Welding Society (AWS) standards. All welding shall be performed using a shielded arc process using approved electrodes conforming to AWS specification e70xx (low hydrogen). Weld material shall comply with AWS certification and possess a Charpy V-Notch toughness of 20 ft-lbs at -20 degrees Fahrenheit. welding shall be performed by only AWS certified welders.

A written welding procedure specification (WPS) per AWS D1. Welding must be developed by the fabricator/erector and reviewed by the Engineer of Record and the building department.

The contractor shall be responsible for all erection aids and joint preparations that include, but are not limited to, erection angles, lift holes and other aids, welding procedures, required root openings, root face dimensions, groove angles, backing bars, copes, surface roughness and unequal parts.

Contractor is also referred to Structural Calculations by ISE (Attachment 2F) for the Skimmer Support Structure.

All steel surfaces shall be galvanized after fabrication.

2.16 Stainless Steel Winch

Stainless steel winches for lifting skimmers shall be spur gear hand winches Model No. M4312PBSS by Thern Winch Company, or approved equivalent.

2.17 Skimmer

Skimmers shall be 8-inch High Flow Permanent Faircloth Skimmer, manufactured by JW Faircloth and Son, Inc., or approved equivalent.

2.18 Wire Rope

Wire rope shall be 304 stainless steel wire rope of diameter shown on Construction Drawings, or approved equivalent.

2.19 Skimmer Hanging Apparatus

Skimmer hanging apparatus fittings and fasteners shall be stainless steel, galvanized steel, or a non-corrosive material. Pulley shall be Tuf-tug flat mount block, 3-inch sheave, 2000 lb. load capacity or equivalent, able to accept cable size shown on Construction Drawings, and swivel parallel to the direction of pull. Pulley shall be protected against corrosion. Dimensions and types shall be per Construction Drawing details or approved equivalent. The Contractor is to provide specification of fixture prior to installation for approval when exact size of fixture is not noted on construction drawings.

2.20 Cable Railing

Cable Railing shall be furnished in accordance with the requirements of Section 83 -Railings and Barriers of the Caltrans Standard Specifications (2024 edition).

2.20.1 Materials

Pipe for posts and braces shall be standard steel pipe or pipe complying with Caltrans Standard Specifications (2024 edition). Section 80-3.02b.

Truss rods, post tops, cable clamps, eye bolts, thimbles, and other required fittings shall be commercial- quality steel, malleable iron, or wrought iron. Post tops shall be watertight. The eye of the eye bolts shall be either drop forged or formed with a complete penetration weld. The eye must develop 100 percent bolt strength.

Turnbuckles shall:

1. Be commercially available;
2. Have jaw or eye ends;
3. Have a minimum breaking strength of 2,700 lbs.; and
4. Be steel pipe type or drop-forged steel.

Crimped sleeve clamps and stop sleeve clamps shall:

1. Be nonferrous metal;
2. Develop the strength of the cable; and
3. Be the same color as the cable.

Cables shall:

1. Be wire strand or rope;

2. Have a minimum diameter of 1/4 inch;
3. Have a minimum breaking strength of 1,800 lbs.; and
4. Be galvanized under federal specification RR-W-410.

Chains shall:

1. Be commercial quality; and
2. Be galvanized.

2.21 Precast Reinforced Concrete Box

Precast Reinforced Concrete Box shall comply with Section 216 of the SSPWC. The bedding and backfill material shall comply with Section 217 of the SSPWC. The Contractor shall submit Certificates of Compliance representative of the Precast Reinforced Concrete Box to be used on the project.

2.22 Thermoplastic Material for Traffic Striping and Markings

Thermoplastic Material for Traffic Striping and Markings shall conform to the requirements of Section 214-5 of the SSPWC. The Contractor shall submit a Certificate of Compliance for the proposed Thermoplastic Material for Traffic Striping and Markings to be used.

2.23 Metal Barriers

Metal Barriers shall be furnished in accordance with the requirements of the Cal Trans Standard Specification per Section 83 Railings and Barriers and per Cal Trans Standard Plans A77L1, A77M1, A77N1, A77N3, and A77P1.

2.24 Road Signs

Road Signs shall be furnished in accordance with the requirements of the Cal Trans Standard Specification per Section 82 Signs and Markers and per Cal Trans Standard Plans RS4, RS5, and RS6.

3.0 EXECUTION

3.1 Portland Cement Concrete (PCC)

The proposed improvements shall be excavated to the lines and grades indicated on the Construction Drawings, accounting for or adjusting down to subgrade for the proposed thickness of reinforced concrete section(s). Reinforcement and PCC shall be placed in accordance with the applicable portions of Section 303 of the SSPWC, and the referenced Detail or referenced Standard Plan.

Air Placed Concrete (APC) shall conform to the requirements of Section 303-2 of the SSPWC, Method B. The Contractor shall submit the proposed mix design for the approval of the Engineer.

3.2 Asphalt Concrete Pavement (AC)

AC pavement shall be constructed to the lines and grades indicated on the Construction Drawings and in accordance with Section 302-5 of the SSPWC.

3.3 Crushed Miscellaneous Base Material (CMB)

CMB shall be placed to the line and grades indicated on the Construction Drawings and in accordance with the provisions of Section 301-2 of the SSPWC.

The material shall be compacted to a minimum relative compaction of 92 percent minimum (based on ASTM D 1557) in accordance with Section 211 of the SSPWC.

3.4 Masonry Materials

Splash walls, or other masonry improvements, shall be constructed in accordance with Section 303-4 of the SSPWC.

3.5 Corrugated Smooth Interior Walled HDPE Pipe With Bell and Spigot Ends

Corrugated HDPE pipe shall be installed in accordance with the requirements of Section 306 of the SSPWC. Pipe bedding shall conform to Section 306-6. Trench backfill shall conform to Section 306-12. Flooding, or jetting, of bedding material and/or backfill will not be permitted. Backfill above the pipe zone shall be compacted to a minimum of 90 percent of the maximum dry density as determined by ASTM D 1557.

3.6 Gravel Placement

Gravel for Subdrain piping shall be placed to the dimensions and/or quantity indicated on the Drawings. Care shall be exercised so as not to contaminate the gravel and to not damage the geotextile during the placement operations.

The Contractor shall submit to the Engineer a plan which indicates the proposed sequence of work, estimated schedule, method of depth verification, both during and after installation, and the type of equipment to be utilized in the gravel placement operation.

3.7 Riprap

Riprap shall be placed in accordance with the applicable requirements of Section 300-11 of the SSPWC. Geotextile for Riprap shall be installed as detailed on the Drawings. Prior to installation, the receiving surface shall be cleaned of loose material and any sharp objects or protrusions that may damage the geotextile

Geotextile shall be sewn or welded in accordance with Section 2H of these Technical Specifications and as detailed on the Plans.

Contractor shall take precautions to protect the geotextile during placement of the gravel. Any portion of the geotextile damaged during the project will be repaired or replaced at Contractor's expense.

3.8 Solid and Perforated HDPE Pipe and Fittings for Basin and Channel Sub Drain; Subdrain Outlet Pipe

3.8.1 Collection System Piping

Installation of the Channel Subdrain shall conform to the lines, grades, details, and notes shown on the Drawings, and as referenced in these Specifications.

3.8.2 Pipe Installation

Sub-Drain shall be placed on a 2-inch-thick bedding layer composed of approved Sub-Drain gravel with the perforations/slots positioned as indicated on the Drawings.

Pipe shall be installed in a manner so as to provide for expansion and contraction as recommended by the manufacturer. The pipe shall lay free on the base with no induced strain. Where there is evidence of induced pipe strain, the Contractor shall be required to eliminate the strain. The Contractor shall also remove and replace any fitting which induces a torque or strain to the pipe.

The Contractor shall run a (dry) mandrel or brush through all subdrain pipes, to remove burrs and cuttings produced during the slotting or cutting process prior to pipe assembly. This operation shall be done in a designated area over a tarp, where all cuttings/burrs can be removed from the subdrain area, and properly disposed. The purpose of this operation is to eliminate HDPE shavings, cutting or burrs from entering the subdrain, and to prevent the burrs or shavings from being transported within the subdrain and subdrain drainage gravel, to the downstream stormwater basin or subdrain outlet.

Pipe shall be cut (off the lined area or over a tarp) in a manner so as to ensure square ends, burr and cuttings removals). Burrs at cut ends shall be removed prior to installation so that a smooth unobstructed flow will be obtained, and so that these materials do not enter the subdrain system. Installation of HDPE fittings and joints shall conform to manufacturer's recommendations.

Slotted HDPE pipe may be joined with compatible couplings secured with round head self-tapping screws, flexible band seal couplings, or butt fusion welded. No glues or adhesives shall be used for any piping. Solid HDPE pipe of the next pipe size diameter may be used as a "slip coupling" for slotted pipe, provided the OD to ID annular space, pipe overlap and installation method, is approved by the Engineer (for Channel Sub Drains). Solid HDPE Pipe shall be butt-fusion welded.

All pipe ends shall have an HDPE cap; all caps shall be welded unless otherwise indicated on the Plans.

Pipe and fittings shall be held firmly in position and protected from damage while drainage gravel or backfill is being placed. All pipe and fittings shall be clean upon installation and kept so during the progress of the work.

Any pipe that becomes either partially or fully clogged and/or damaged before final acceptance shall be cleaned/repared to the satisfaction of the Engineer, and/or replaced at the Contractor's expense.

3.9 Structural Steel Fabrication - Steel Skimmer Support Structure and Winch Stand

Structural steel fabrication shall conform to the requirements of the structural calculations pursuant to Section 304 – Metal Fabrication and Construction of the SSPWC. All welded connections shall be in accordance with the applicable provisions of the structural welding code. All steel surfaces shall be galvanized after fabrication. Pulleys shall be attached to steel skimmer support structure with bolts per manufactures recommendations. Stainless Steel Winch shall be aligned with pulley on Steel Skimmer Support Structure prior to being joined to winch stand.

3.10 Skimmer

Skimmers shall be installed according to the manufacturer's instructions and the horizontal and vertical orientation shown on the Construction Drawings. Skimmers shall be joined to wire rope in the manner shown on the Construction Drawings.

3.11 Skimmer Hanging Apparatus

The skimmer hanging apparatus shall be constructed to the dimensions indicated on the Construction Drawings. All fittings and fasteners shall be joined together per manufacturer's recommendations. Pulley shall be aligned with appropriate winch prior to being bolted to Steel Skimmer Support Structure.

3.12 Cable Railing

Tension the cables to provide taut railings between posts. Install thimble at each cable loop. For cable railing installed over concrete basin top edge, contractor shall first drill, dowel, and epoxy bolts at each proposed fence post location. Holes shall be made without damaging adjacent concrete.

Place posts with welded steel plate at bolts; plumb the post vertically and tighten nuts. Posts shall be plumb when operation is completed.

3.13 Precast Reinforced Concrete Box

Precast Reinforced Concrete Box shall be placed in accordance with the requirements of Subsection 306-10.1 of the SSPWC. The Backfill shall comply with the applicable requirements of Section 306-12 of the SSPWC.

3.14 Thermoplastic Material for Traffic Striping and Markings

Thermoplastic Material for Traffic Striping and Markings shall be placed in accordance with Section 314-4.4 of the SSPWC. Existing roadway striping to be removed prior to placement of Traffic Striping per Section 214-2 of the SSPWC. Thermoplastic Material for Traffic Striping and Markings shall be placed to extent per plan and as directed by the Engineer.

3.15 Metal Barriers

Metal Barriers shall be furnished in accordance with the requirements of the Cal Trans Standard Specification per Section 83 Railings and Barriers and per Cal Trans Standard Plans A77L1, A77M1, A77N1, A77N3, and A77P1.

3.16 Road Signs

Road Signs shall be furnished in accordance with the requirements of the Cal Trans Standard Specification per Section 82 Signs and Markers; per Cal Trans Standard Plans RS1, RS4, RS5, and RS6; and per plan.

4.0 MEASUREMENT AND PAYMENT

The contract unit price for each of the following civil and drainage improvements shall include full compensation for all labor, material and equipment required to construct the improvements in accordance with the Construction Plans, Specifications, and manufacturer's recommendations. Quantities installed beyond the limits indicated on the Plans will not be compensated unless previously authorized by the Engineer.

4.1 Miscellaneous Site Work – Unit 4 Phase 2 Area – Item No. 7

The contract LS paid for Miscellaneous Site Work – Unit 4 Area shall include site preparation, site improvements, removal, restoration, assembly of work removed or salvaged during the course of the project, final cleanup, and all other work or incidentals not specifically identified within this or other bid items to complete all work and improvements identified within the plans. Include all parts, materials, labor, equipment and incidental items necessary for the completion of this work as required and as indicated in the plans and Contract Documents.

This bid items shall also include:

- Provide all exploratory potholing and trenching as is related the temporary or permanent removal of structures, containers, poles, etc;
- Removal and salvaging (if applicable) of existing dead man power pole, camera/light, electrical junction box, electrical feeder wire and conduit, and all other items associate with the County's existing camera pole in the disturbance area;
- Temporary removal, salvaging (including safe storage), and replacement in-kind of existing 10-foot high chain link fence in the southwest corner of the Unit 4 Phase 2 area that is needed to provide available space for composite liner system construction. Contractor is also responsible replacement of foundation/footers if altered during construction activities;
- All incidental items to properly complete the job that may not have been specifically identified

The final pay quantities will be determined through field verification that the work has been completed in accordance with the Plans and these Technical Specifications. Interim progress payments will be based on the Engineer's evaluation of the estimated percentage of work completed during the subject period.

4.2 Lined Access Road Driving Surface - 12" Thick Oversized Rock with CMB (Per Detail 2/26) – Item No. 47

The contract unit price paid per SF of Lined Access Road Driving Surface - 12" Thick Oversized Rock with CMB shall include all layout, grading, subgrade compaction, asphalt concrete, crushed miscellaneous base, geotextile, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per square foot of Lined Access Road Driving Surface - 12" Thick Oversized Rock with CMB installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per SF of the complete and accepted Lined Access Road Driving Surface - 12" Thick Oversized Rock with CMB. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.3 West Basin Access Road - 6" Crushed Miscellaneous Base with Non-Woven Geotextile Underlay (Per Detail 2/28) – Item No. 48

The contract unit price paid per SF of West Basin Access Road - 6" Crushed Miscellaneous Base with Non-Woven Geotextile Underlay shall include all layout, grading, subgrade compaction, asphalt concrete, crushed miscellaneous base, geotextile, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per square foot of West Basin Access Road - 6" Crushed Miscellaneous Base with Non-Woven Geotextile Underlay installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per SF of the complete and accepted West Basin Access Road - 6" Crushed Miscellaneous Base with Non-Woven Geotextile Underlay. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.4 Class V Rip Rap Per SSPWC Section 200-1.6 – Item No. 49

The contract unit price paid per SF of Class V Rip Rap Per SSPWC Section 200-1.6 shall include all layout, grading, subgrade compaction, geotextile underlay per SSPWC, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per square foot of Class V Rip Rap Per SSPWC Section 200-1.6 installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per SF of the complete and accepted Class V Rip Rap Per SSPWC Section 200-1.6. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.5 Class III Rip Rap Per SSPWC Section 200-1.6 – Item No. 50

The contract unit price paid per SF of Class III Rip Rap Per SSPWC Section 200-1.6 shall include all layout, grading, subgrade compaction, geotextile underlay per SSPWC, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per square foot of Class III Rip Rap Per SSPWC Section 200-1.6 installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per SF of the complete and accepted Class III Rip Rap Per SSPWC Section 200-1.6. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.6 Miscellaneous Site Work – Entrance Facility Area – Item No. 53

The contract lump sum paid for Miscellaneous Site Work – Entrance Facility Area shall include site preparation, site improvements, removal, restoration, assembly of work removed or salvaged during the course of the project, final cleanup, and all other work or incidentals not specifically identified within this or other bid items to complete all work and improvements identified within the plans. Include all parts, materials, labor, equipment and incidental items necessary for the completion of this work as required and as indicated in the plans and Contract Documents.

This bid items shall also include:

- Coordination and impacts affiliated with sequencing of work as defined within the Technical and Special Provisions, includes any temporary fencing, staging, or other incidentals

affiliated with sequencing of the work;

- Provide all exploratory potholing and trenching as is related the temporary or permanent removal of structures/containers, pavement placement (including excavation to subgrade grades);
- Provide, as needed, temporary fencing for uninterrupted site security during perimeter fencing and pavement operations;
- Temporary Removal and salvaging of existing County Offices Trailer (mobile office unit) and containers located at the northeast corner of the Unit 4 Phase 2 Work Area;
- Include disconnection of all utilities connected to the office trailer prior to moving and protecting in place all existing utility stub ups for relocation of office trailer and containers in the same location (in-kind);
- Include means for proper transportation, temporary storage / protection, and subsequent relocation to original location of existing County Office Trailer and containers after Entrance Facility Paving operations are completed;
- Removal of existing gravel bag / crushed rock stockpiles adjacent to the site entrance and disposal of the piles at the active landfill area, for disposal or as directed by SWMD;
- County Office Trailer Relocation and associated tasks are to be included in Sequence 3, the contractor is responsible for coordinating with SWMD prior to beginning this relocation and replacement work, no decommissioning of the office trailer shall commence without prior approval from SWMD;
- Protection of existing monitoring well/probe and supply/install of 8 EA new pipe bollards for protection of existing environmental control system as described on the plans;
- All incidental items to properly complete the job that may not have been specifically identified.

The final pay quantities will be determined through field verification that the work has been completed in accordance with the Plans and these Technical Specifications. Interim progress payments will be based on the Engineer's evaluation of the estimated percentage of work completed during the subject period.

4.7 Saw Cut Existing AC Pavement – Item No. 56

The contract unit price paid per LF of Saw Cut Existing AC Pavement shall include all layout, excavation, asphalt, grading, backfill and compaction, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per linear foot of Saw Cut Existing AC Pavement installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per LF of the complete and accepted Saw Cut Existing AC Pavement. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.8 Shoulder Paving – 4-Inch AC over 8-Inch CMB (Per Detail 1/28) – Item No. 57

The contract unit price paid per SF of 4-Inch-Thick AC Paving over 8-Inch CMB shall include all layout, grading, subgrade compaction, asphalt concrete, crushed miscellaneous base,

geotextile, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per square foot of 4-Inch Thick AC Paving over 8-Inch CMB installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per SF of the complete and accepted 4-Inch-Thick AC Paving over 8-Inch CMB. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.9 Class 1 Flexible Post Delineator per Caltrans Std. Plan A-73C (Per Detail 1/28) – Item No. 58

The contract unit price paid for EA Class 1 Flexible Post Delineator per Caltrans Std. Plan A-73C, shall include full compensation for furnishing all materials, labor, tools, equipment, and incidentals and for doing all the work involved in construction of the Class 1 Flexible Post Delineator per Caltrans Std. Plan A-73C complete in place, including all materials, layout, epoxy, installation and other appurtenances as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

Payment for the completed and accepted quantities will be at the contract unit price bid per EA of the complete and accepted Class 1 Flexible Post Delineator. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.10 Type D2-6 Mountable Curb per SPPWC Std. Plan 121-2 (Per Detail 3/28) – Item No. 59

The contract unit price paid per LF of Type D2-6 Mountable Curb per SPPWC Std. Plan 121-2 shall include all layout, excavation, asphalt, trenching, grading, backfill and compaction, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per linear foot of Type D2-6 Mountable Curb per SPPWC Std. Plan 121-2 installed.

Payment for the complete and accepted quantities will be at the contract unit price bid per LF of the complete and accepted Type D2-6 Mountable Curb per SPPWC Std. Plan 121-2. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.11 Concrete Trapezoidal Channel (Per Detail 4/23) – Item No. 61

The contract unit price paid per SF of Concrete Trapezoidal Channel shall include all layout, excavation, asphalt, trenching, grading, backfill and compaction, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per linear foot of Concrete Trapezoidal Channel installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per SF of the complete and accepted Concrete Trapezoidal Channel. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.12 Shoulder Paving – 6-Inch AC over 12-Inch CMB (Per Detail 3/28) – Item No. 62

The contract unit price paid per SF of Shoulder Paving – 6-Inch AC over 12-Inch CMB shall include all layout, grading, subgrade compaction, asphalt concrete, crushed miscellaneous base, geotextile, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor’s unit price per square foot of Shoulder Paving – 6-Inch AC over 12-Inch CMB installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per SF of the complete and accepted Shoulder Paving – 6-Inch AC over 12-Inch CMB. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period. Shoulder Paving – 6-Inch AC over 12-Inch CMB placed beyond the limits indicated on the drawings will not be compensated unless the work has been authorized by the Engineer.

4.13 Class III Rip Rap (Per SSPWC Section 200-1.6) – Item No. 63

The contract unit price paid per SF of Class III Rip Rap Per SSPWC Section 200-1.6 shall include all layout, grading, subgrade compaction, geotextile underlay per SSPWC, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor’s unit price per square foot of Class III Rip Rap Per SSPWC Section 200-1.6 installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per SF of the complete and accepted Class III Rip Rap Per SSPWC Section 200-1.6. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.14 Concrete Cut-off Wall (Per Detail 8/28) – Item No. 64

The contract unit price paid per LF of Concrete Cut-off Wall shall include all layout, grading, concrete, reinforcement, backfill and compaction, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor’s unit price per linear foot of Concrete Cut-off Wall installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per LF of the complete and accepted Concrete Cut-Off Wall. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.15 Entrance Facility Inlet Structure (Per Sheet 23) – Item No. 65

The contract LS paid for Entrance Facility Inlet Structure shall include full compensation for furnishing all labor, tools, equipment, and incidentals and for doing all work involved in Entrance Facility Inlet Structure, and/or other operations incidental and required to complete Entrance Facility Inlet Structure, and as shown on the Plans, as specified in the Standard Specifications and these Technical Specifications, and as directed by the Engineer.

The final pay quantities will be determined through field verification that the work has been completed in accordance with the Plans and these Technical Specifications. Interim progress payments will be based on the Engineer’s evaluation of the estimated percentage of work completed during the subject period.

4.16 Bypass Lane Improvements – Item No. 66

The contract unit price paid per lump sum of Bypass Lane Improvements shall include all layout, grading, subgrade compaction, crushed miscellaneous base, geotextile, metal beam guard rail, asphalt concrete, rock slope protection, rock slope protection fabric, concrete block barriers, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per lump sum of Bypass Lane Improvements installed.

This bid items shall also include:

- Approximately 0.31 AC of Clearing and Grubbing including approximately 65 LF of existing 8" AC Curb Demolition;
- Approximately 115 Cubic Yards of Unclassified Excavation to subgrade grades;
- Approximately 75 Cubic Yards of Unclassified Fill to subgrade grades;
- Any Waste Removal and Relocation associated with establishment of the Bypass Lane will be paid for under Bid Item 5 Waste Removal and Relocation;
- Approximately 45 LF of AC Dike per Cal Trans STD Plan A87B; Type D; Case C-2 Fill;
- Approximately 500 LF of Metal Beam Guardrail per Caltrans STD Plans A77L1, A77M1, A77N1, and A77N3; with Metal Beam Guardrail End Treatment Type 11A per Cal Trans STD Plan A77P1;
- 3 EA of Concrete Block Barriers to protect existing power pole (Private) per Detail 2/22;
- Approximately 9,845 SF of Bypass Lane 8" thick CMB over 12 oz/sy Geotextile per Details 1/21A and 2/21A;
- Supply and Placement of approximately 7,865 SF of 12" Thick (Min) Class III Rock Slope Protection and RSP Fabric; Placement Method B per Detail 1/21A.

Payment for the completed and accepted quantities will be at the contract unit price bid per lump sum of the complete and accepted Bypass Lane Improvements. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period. Bypass Lane Improvements placed beyond the limits indicated on the drawings will not be compensated unless the work has been authorized by the Engineer.

4.17 Temporary Traffic Control – Item No. 67

The contract unit price paid per lump sum of Temporary Traffic Control shall include conformity to Section 601 of the SSPWC and Part 6 of the California MUTCD and shall include a temporary traffic control plan that is required to be prepared by the contractor and submitted as a Working Drawing during necessary parts of the contract work. The Bid Item also includes all labor, materials, and incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per lump sum of Temporary Traffic Control.

Payment for the completed and accepted quantities will be at the contract unit price bid per lump sum of the complete and accepted Temporary Traffic Control. Interim progress payments will be

based on the CM evaluation of the estimated percentage of work completed during the subject period. Temporary Traffic Controls performed beyond the limits indicated on the drawings will not be compensated unless the work has been authorized by the Engineer.

4.18 Flume Downdrain Extension (Per Detail 9/28) – Item No. 68

The contract unit price paid for EA Flume Downdrain Extension, shall include full compensation for furnishing all materials, labor, tools, equipment, and incidentals and for doing all the work involved in construction of the Flume Downdrain Extension complete in place, including all materials, layout, epoxy, installation and other appurtenances as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

Payment for the completed and accepted quantities will be at the contract unit price bid per EA of the complete and accepted Flume Downdrain Extension. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.19 6-Foot Wrought Iron Fence (Per Detail 5/22) – Item No. 69

The contract unit price paid per LF of 6-Foot Wrought Iron Fence shall include all layout, excavation, asphalt, trenching, grading, backfill and compaction, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per linear foot of 6-Foot Wrought Iron Fence installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per LF of the complete and accepted 6-Foot Wrought Iron Fence. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.20 Wrought Iron Gate (Per Detail 5/22) – Item No. 70

The contract unit price paid for EA Wrought Iron Gate, shall include full compensation for furnishing all materials, labor, tools, equipment, and incidentals and for doing all the work involved in construction of the Wrought Iron Gate complete in place, including all materials, layout, epoxy, installation and other appurtenances as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

The final pay quantities will be determined through field verification that the work has been completed in accordance with the Plans and these Technical Specifications. Interim progress payments will be based on the Engineer's evaluation of the estimated percentage of work completed during the subject period.

4.21 Protect Existing Power Pole (SCE) – Item No. 71

The contract unit price paid for EA Protect Existing Power Pole (SCE), shall include full compensation for furnishing all materials, labor, tools, equipment, and incidentals and for doing all the work involved in protecting of the Existing Power Pole (SCE) in place with protective barriers/bollards as described in Southern California Edison's (SCE) UGS MC 830, including all excavation/trenching, materials, layout, installation and other appurtenances as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer. This Bid Item shall also include protection of guy wires for applicable SCE poles.

The final pay quantities will be determined through field verification that the work has been completed in accordance with the Plans and these Technical Specifications. Interim progress payments will be based on the Engineer's evaluation of the estimated percentage of work completed during the subject period.

4.22 Protect Existing Power Pole (Private) – Item No. 72

The contract unit price paid for EA Protect Existing Power Pole (Private), shall include full compensation for furnishing all materials, labor, tools, equipment, and incidentals and for doing all the work involved in protecting of the Existing Power Pole (Private) in place with concrete blocks as described in Plans, including all excavation/trenching, materials (on-site concrete blocks), layout, installation and other appurtenances as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer. This Bid Item shall also include protection of guy wires for applicable Private poles.

The final pay quantities will be determined through field verification that the work has been completed in accordance with the Plans and these Technical Specifications. Interim progress payments will be based on the Engineer's evaluation of the estimated percentage of work completed during the subject period.

4.23 Site Entry Sign/Monument (Per Detail 1/22) – Item No. 73

The contract LS paid for Site Entry Sign/Monument shall include full compensation for furnishing all labor, tools, equipment, and incidentals and for doing all work involved in Site Entry Sign/Monument, and/or other operations incidental and required to complete Site Entrance Sign, and as shown on the Plans, as specified in the Standard Specifications and these Technical Specifications, and as directed by the Engineer.

The final pay quantities will be determined through field verification that the work has been completed in accordance with the Plans and these Technical Specifications. Interim progress payments will be based on the Engineer's evaluation of the estimated percentage of work completed during the subject period.

4.24 Miscellaneous Site Work – Unit 3 BMP Area – Item No. 75

The contract LS paid for Miscellaneous Site Work – Unit 3 BMP Area shall include site preparation, site improvements, removal, restoration, assembly of work removed or salvaged during the course of the project, final cleanup, and all other work or incidentals not specifically identified within this or other bid items to complete all work and improvements identified within the plans. Include all parts, materials, labor, equipment and incidental items necessary for the completion of this work as required and as indicated in the plans and Contract Documents.

This bid items shall also include:

- Coordination and impacts affiliated with sequencing of work as defined within the Technical and Special Provisions, includes any temporary fencing, staging, or other incidentals affiliated with sequencing of the work;
- All items associated with the Unit 3 BMP Existing LCRS Storage Facility system modifications including:
 - Removal and reinstallation of the carbon filter canister and associated vent lines, connections, fittings, valves and other appurtenances;

- Removal and reinstallation of existing leachate load-out equipment including J-stand, 3” PVC line, 3” flexible house line, fittings, connections, pumps, and other appurtenances;
- Construction of the proposed catch basin below J-stand including excavation, compaction, concrete, rebar, formwork, concrete joint sealant, and other appurtenances;
- Removal and reinstallation of the load-out pad catch basin sump pump and discharge line into proposed catch basin;
- New piping and plumbing improvements where salvaged material is inadequate for reinstallation including piping, mounting hardware, fittings, joints, and other appurtenances for improvements shown on Sheet 38.
- Supply and install approximately 5 EA surface mount flexible post delineators per Caltrans Standard Drawing No A-73C at all above ground LCRS/LFG Rider Termination supports per Detail 2 on Sheet 40;
- All incidental items to properly complete the job that may not have been specifically identified.

The final pay quantities will be determined through field verification that the work has been completed in accordance with the Plans and these Technical Specifications. Interim progress payments will be based on the Engineer’s evaluation of the estimated percentage of work completed during the subject period.

4.25 Exploratory Potholing – Item No. 76

The contract LS paid for Exploratory Potholing shall include full compensation for furnishing all labor, tools, equipment, and incidentals and for doing all work involved in Exploratory Potholing, and/or other operations incidental and required to complete Exploratory Potholing, and as shown on the Plans, as specified in the Standard Specifications and these Technical Specifications, and as directed by the Engineer.

The final pay quantities will be determined through field verification that the work has been completed in accordance with the Plans and these Technical Specifications. Interim progress payments will be based on the Engineer’s evaluation of the estimated percentage of work completed during the subject period.

4.26 Basin Subdrain (Per Detail 9/39) – Item No. 79

The contract unit price paid per LF of Basin Subdrain shall include all layout, excavation, asphalt, trenching, grading, backfill and compaction, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor’s unit price per linear foot of Basin Subdrain installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per LF of the complete and accepted Basin Subdrain. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.27 Concrete Cut-Off Wall (Per Detail 4/37) – Item No. 80

The contract unit price paid per LF of Concrete Cut-off Wall shall include all layout, grading, concrete, reinforcement, backfill and compaction, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor’s unit price per linear foot of Concrete Cut-off Wall

installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per LF of the complete and accepted Concrete Cut-Off Wall. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.28 Concrete Basin Floor (Per Detail 1/39) – Item No. 81

The contract unit price paid per SF of Concrete Basin Floor shall include all layout, grading, subgrade compaction, asphalt concrete, crushed miscellaneous base, geotextile, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per square foot of Concrete Basin Floor installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per SF of the complete and accepted Concrete Basin Floor. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.29 Concrete Basin Slope (Per Detail 2/39) – Item No. 82

The contract unit price paid per SF of Concrete Basin Slope shall include all layout, grading, subgrade compaction, asphalt concrete, crushed miscellaneous base, geotextile, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per square foot of Concrete Basin Slope installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per SF of the complete and accepted Concrete Basin Slope. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.30 Concrete Basin Slope to Floor Transition (Per Detail 3/39) – Item No. 83

The contract unit price paid per LF of Concrete Basin Slope to Floor Transition shall include all layout, grading, concrete, reinforcement, backfill and compaction, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per linear foot of Concrete Basin Slope to Floor Transition installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per LF of the complete and accepted Concrete Basin Slope to Floor Transition. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.31 Concrete Basin Top Edge (Per Detail 4/39) – Item No. 84

The contract unit price paid per LF of Concrete Basin Top Edge shall include all layout, grading, concrete, reinforcement, backfill and compaction, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per linear foot of Concrete Basin Top Edge installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per LF of the complete and accepted Concrete Basin Top Edge. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.32 Concrete Basin Access Ramp (Per Detail 1/40) – Item No. 85

The contract unit price paid per SF of Concrete Basin Access Ramp shall include all layout, grading, subgrade compaction, asphalt concrete, crushed miscellaneous base, geotextile, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per square foot of Concrete Basin Access Ramp installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per SF of the complete and accepted Concrete Basin Access Ramp. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.33 Expansion Joint – Concrete Basin (Per Detail 7/39) – Item No. 86

The contract LS paid for Expansion Joint – Concrete Basin shall include full compensation for furnishing all labor, tools, equipment, and incidentals and for doing all work involved in Expansion Joint – Concrete Basin, and/or other operations incidental and required to complete Expansion Joint – Concrete Basin, and as shown on the Plans, as specified in the Standard Specifications and these Technical Specifications, and as directed by the Engineer.

The final pay quantities will be determined through field verification that the work has been completed in accordance with the Plans and these Technical Specifications. Interim progress payments will be based on the Engineer's evaluation of the estimated percentage of work completed during the subject period.

4.34 Contraction Joint – Concrete Basin (Per Detail 8/39) – Item No. 87

The contract LS paid for Contraction Joint – Concrete Basin shall include full compensation for furnishing all labor, tools, equipment, and incidentals and for doing all work involved in Contraction Joint – Concrete Basin, and/or other operations incidental and required to complete Contraction Joint – Concrete Basin, and as shown on the Plans, as specified in the Standard Specifications and these Technical Specifications, and as directed by the Engineer.

The final pay quantities will be determined through field verification that the work has been completed in accordance with the Plans and these Technical Specifications. Interim progress payments will be based on the Engineer's evaluation of the estimated percentage of work completed during the subject period.

4.35 AC Paved Bench (Per Detail 3/40) – Item No. 88

The contract unit price paid per SF of AC Paved Bench shall include all layout, grading, subgrade compaction, asphalt concrete, crushed miscellaneous base, geotextile, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per square foot of AC Paved Bench installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per SF of the complete and accepted AC Paved Bench. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.36 36-Inch CHDPE – Riser Outlet (Per Detail 6/41) – Item No. 89

The contract LS paid for 36-Inch HDPE – Riser Outlet shall include full compensation for

furnishing all labor, tools, equipment, and incidentals and for doing all work involved in 36-Inch HDPE – Riser Outlet, and/or other operations incidental and required to complete 36-Inch HDPE – Riser Outlet, and as shown on the Plans, as specified in the Standard Specifications and these Technical Specifications, and as directed by the Engineer.

The final pay quantities will be determined through field verification that the work has been completed in accordance with the Plans and these Technical Specifications. Interim progress payments will be based on the Engineer's evaluation of the estimated percentage of work completed during the subject period.

4.37 Geocomposite Basin Underdrain (Per Detail 5/39) – Item No. 90

The contract unit price paid per LF of Geocomposite Basin Underdrain shall include all layout, grading, concrete, reinforcement, backfill and compaction, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per linear foot of Geocomposite Basin Underdrain installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per LF of the complete and accepted Geocomposite Basin Underdrain. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.38 8-Inch Permanent Skimmer (Per Details 3/41 & 1/42) – Item No. 91

The contract unit price paid for EA 8-Inch Permanent Skimmer, shall include full compensation for furnishing all materials, labor, tools, equipment, and incidentals and for doing all the work involved in construction of the 8-Inch Permanent Skimmer complete in place, including all materials, layout, epoxy, installation and other appurtenances as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

The final pay quantities will be determined through field verification that the work has been completed in accordance with the Plans and these Technical Specifications. Interim progress payments will be based on the Engineer's evaluation of the estimated percentage of work completed during the subject period.

4.39 8-Inch Permanent Skimmer Hanging Apparatus (Per Details 3/41 & 1/42) – Item No. 92

The contract unit price paid for EA 8-Inch Permanent Skimmer Hanging Apparatus, shall include full compensation for furnishing all materials, labor, tools, equipment, and incidentals and for doing all the work involved in construction of the 8-Inch Permanent Skimmer Hanging Apparatus complete in place, including all materials, layout, epoxy, installation and other appurtenances as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

The final pay quantities will be determined through field verification that the work has been completed in accordance with the Plans and these Technical Specifications. Interim progress payments will be based on the Engineer's evaluation of the estimated percentage of work completed during the subject period.

4.40 Skimmer Support Frame (Per Detail 2/42) – Item No. 93

The contract unit price paid for EA Skimmer Support Frame, shall include full compensation for

furnishing all materials, labor, tools, equipment, and incidentals and for doing all the work involved in construction of the Skimmer Support Frame complete in place, including all materials, layout, epoxy, installation and other appurtenances as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

The final pay quantities will be determined through field verification that the work has been completed in accordance with the Plans and these Technical Specifications. Interim progress payments will be based on the Engineer's evaluation of the estimated percentage of work completed during the subject period.

4.41 6-Inch SDR 17 Solid HDPE Skimmer Outlet Pipe (Per Detail 2/41) – Item No. 94

The contract price paid per LF for 6-Inch SDR 17 Solid HDPE Skimmer Outlet Pipe shall include full compensation for furnishing all labor, tools, equipment, and incidentals and for doing all the work involved in 6-Inch SDR 17 Solid HDPE Skimmer Outlet Pipe, complete in place, including all pipe, fittings, end caps, geotextile restraints, and other appurtenances as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

Final pay quantities shall be determined from the approved Record Drawings indicating the actual lineal footage of 6-Inch SDR 17 Solid HDPE Skimmer Outlet Pipe installed. 6-Inch SDR 17 Solid HDPE Skimmer Outlet Pipe installed beyond the limits indicated on the Plans will not be compensated unless the work has been authorized by the Engineer.

4.42 Install Winch and Winch Stand (Per Detail 4/41) – Item No. 95

The contract unit price paid for EA Winch and Winch Stand, shall include full compensation for furnishing all materials, labor, tools, equipment, and incidentals and for doing all the work involved in construction of the Winch and Winch Stand complete in place, including all materials, layout, epoxy, installation and other appurtenances as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

The final pay quantities will be determined through field verification that the work has been completed in accordance with the Plans and these Technical Specifications. Interim progress payments will be based on the Engineer's evaluation of the estimated percentage of work completed during the subject period.

4.43 AC Thickened Edge (Per Detail 2/37) – Item No. 96

The contract unit price paid per LF of AC Thickened Edge shall include all layout, excavation, asphalt, grading, backfill and compaction, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per linear foot of Thickened Edge installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per LF of the complete and accepted AC Thickened Edge. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.44 Construct Cable Railing per Caltrans Std. Plan B11-47 – Item No. 97

The contract unit price paid per LF of Cable Railing per Caltrans Std. Plan B11-47 shall include all layout, excavation, asphalt, trenching, grading, backfill and compaction, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per linear foot of

Cable Railing per Caltrans Std. Plan B11-47 installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per LF of the complete and accepted Cable Railing per Caltrans Std. Plan B11-47. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.45 Reinforced Concrete Retaining Wall (H=12-Foot) Type 2 Per SPPWC 611-3 (Per Detail 5/43) – Item No. 98

The contract unit price paid by the LF of Reinforced Concrete Retaining Wall (Type 2 per SPPWC Std. Plan 611-3; H=12') and shall include all layout, excavation, concrete, reinforcement, grading, backfill and compaction, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per LF of Reinforced Concrete Retaining Wall (Type 2 per SPPWC Std. Plan 611-3; H=12') installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per LF of the complete and accepted Reinforced Concrete Retaining Wall (Type 2 per SPPWC Std. Plan 611-3; H=12'). Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.46 Reinforced Concrete Retaining Wall (H=10-Foot) Type 2 Per SPPWC 611-3 (Per Detail 5/43) – Item No. 99

The contract unit price paid by the LF of Reinforced Concrete Retaining Wall (Type 2 per SPPWC Std. Plan 611-3; H=10') and shall include all layout, excavation, concrete, reinforcement, grading, backfill and compaction, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per LF of Reinforced Concrete Retaining Wall (Type 2 per SPPWC Std. Plan 611-3; H=10') installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per LF of the complete and accepted Reinforced Concrete Retaining Wall (Type 2 per SPPWC Std. Plan 611-3; H=10'). Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.47 Reinforced Concrete Retaining Wall (H=7-Foot) Type 2 Per SPPWC 611-3 (Per Detail 5/43) – Item No. 100

The contract unit price paid by the LF of Reinforced Concrete Retaining Wall (Type 2 per SPPWC Std. Plan 611-3; H=7') and shall include all layout, excavation, concrete, reinforcement, grading, backfill and compaction, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per LF of Reinforced Concrete Retaining Wall (Type 2 per SPPWC Std. Plan 611-3; H=7') installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per LF of the complete and accepted Reinforced Concrete Retaining Wall (Type 2 per SPPWC Std. Plan 611-3; H=7'). Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.48 Reinforced Concrete Retaining Wall (H=4-Foot) Type 2 Per SPPWC 611-3 (Per

Detail 5/43) – Item No. 101

The contract unit price paid by the LF of Reinforced Concrete Retaining Wall (Type 2 per SPPWC Std. Plan 611-3; H=4') and shall include all layout, excavation, concrete, reinforcement, grading, backfill and compaction, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per LF of Reinforced Concrete Retaining Wall (Type 2 per SPPWC Std. Plan 611-3; H=4') installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per LF of the complete and accepted Reinforced Concrete Retaining Wall (Type 2 per SPPWC Std. Plan 611-3; H=4'). Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.49 Install Reinforced Concrete Box (Per SPPWC Std. Plan 390-1; (S=4', R=2', T_t=7.5", T_b=6", T_w=5") – Item No. 102

The contract unit price paid by the LF of Reinforced Concrete Box (Per SPPWC Std. Plan 390-1; (S=4', R=2', T_t=7.5", T_b=6", T_w=5")) and shall include all layout, excavation, concrete, reinforcement, grading, backfill and compaction, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per LF of Reinforced Concrete Box (Per SPPWC Std. Plan 390-1; (S=4', R=2', T_t=7.5", T_b=6", T_w=5")) installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per LF of the complete and accepted 4'x2' Precast Reinforced Concrete Box (Per SPPWC Std. Plan 390-1; S=4', R=2', T_t=7.5", T_b=6", T_w=5"). Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.50 Construct 24-Inch Below Grade Pipe (Per Detail 8/40) – Item No. 103

The contract price paid per LF for 24-Inch Below Grade Pipe shall include full compensation for furnishing all labor, tools, equipment, and incidentals and for doing all the work involved in 24-Inch Below Grade Pipe, complete in place, including all pipe, fittings, end caps, geotextile restraints, and other appurtenances as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

Final pay quantities shall be determined from the approved Record Drawings indicating the actual lineal footage of 24-Inch Below Grade Pipe installed. 24-Inch Below Grade Pipe installed beyond the limits indicated on the Plans will not be compensated unless the work has been authorized by the Engineer.

4.51 24-Inch CHDPE Pipe to Concrete Basin Junction Structure (Per Detail 6/40) – Item No. 104

The contract LS paid for 24-Inch CHDPE Pipe to Concrete Basin Junction Structure shall include full compensation for furnishing all labor, tools, equipment, and incidentals and for doing all the work involved in 24-Inch CHDPE Pipe to Concrete Basin Junction Structure, complete in place, including all pipe, fittings, end caps, geotextile restraints, and other appurtenances as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

Final pay quantities shall be determined from the approved Record Drawings indicating the LS

of 24-Inch CHDPE Pipe to Concrete Basin Junction Structure installed. 24-Inch CHDPE Pipe to Concrete Basin Junction Structure installed beyond the limits indicated on the Plans will not be compensated unless the work has been authorized by the Engineer.

4.52 Concrete Headwall w/ Warped Wing Walls Per Caltrans Std. Plan D86B (L=6-Foot, H=3-Foot) – Item No. 105

The contract unit price paid per EA of Headwall with Warped Wing Walls Per Caltrans Std. Plan D86B shall include all layout, excavation, trenching, grading, backfill and compaction, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per each Headwall with Warped Wingwalls installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per EA of the complete and accepted Headwall with Warped Wing Walls Per Caltrans Std. Plan D86B. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.53 AC Trapezoidal Downdrain (B=1-Foot, D=1-Foot, Z=2-Foot) (Per Detail 5/40) – Item No. 106

The contract unit price paid per LF of AC Trapezoidal Downdrain shall include all layout, excavation, asphalt, trenching, grading, backfill and compaction, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per linear foot of downdrain installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per LF of the complete and accepted AC Trapezoidal Downdrain. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.54 Offline Kraken Filter w/ 30-Inch Filter Cartridges Model KFOV0406 (4-Foot X 6-Foot) – Item No. 107

The contract LS paid of KFOV0406 (4'x6') Offline Kraken Filter System with (23) 30" Filter Cartridges shall include all layout, excavation, trenching, grading, manhole risers, manhole covers, filter cartridges, pipe stubs, bedding, backfill and compaction, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the unit price per Kraken Filter System installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per EA of the complete and accepted KFOV0406 (4'x6') Offline Kraken Filter System with (23) 30" Filter Cartridges. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.55 12-Inch CHDPE Outlet Pipe (Per Detail 9/40) – Item No. 108

The contract price per LF of 12-Inch CHDPE Outlet Pipe shall provide full compensation for all labor, tools, equipment, and incidentals required to complete the work. This includes furnishing and installing the pipe in place with all fittings, end caps, geotextile restraints, and related appurtenances, as shown on the plans, specified in the Standard Specifications, and these Special Provisions, and as directed by the Engineer.

Final pay quantities shall be determined from the approved Record Drawings indicating the

actual lineal footage of 12-Inch CHDPE Outlet Pipe installed. The contract price paid per LF for 12-Inch CHDPE Outlet Pipe installed beyond the limits indicated on the Plans will not be compensated unless the work has been authorized by the Engineer.

4.56 Pipe Bollard (Per Detail 5/41) – Item No. 109

The contract unit price paid per EA of Pipe Bollard shall include all layout, excavation, grading, steel pipe, concrete, backfill and compaction, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per each Pipe Bollard installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per EA of the complete and accepted Pipe Bollards. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.57 AC Paving Join (Per Detail 1/37) – Item No. 110

The contract unit price paid per LF of AC Paving Join shall include all layout, excavation, asphalt, trenching, grading, backfill and compaction, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per linear foot of AC Paving Join installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per LF of the complete and accepted AC Paving Join. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.58 Concrete Basin Join; Salvage and Extend Reinforcement 2-Foot Minimum and Tie to New Basin Reinforcing; Should Existing Reinforcement be Un-Salvageable, Drill, Dowel, and Epoxy #5 Bars at 12-Inch O.C. with 12-Inch Minimum Deep, 3/4-Inch Bore Hole – Item No. 111

The contract unit price paid per LF of Concrete Basin Join; Salvage and Extend Reinforcement 2-Foot minimum and Tie to New Basin Reinforcing shall include all layout, grading, concrete, reinforcement, backfill and compaction, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per linear foot of Concrete Basin Join; Salvage and Extend Reinforcement 2-Foot minimum and Tie to New Basin Reinforcing installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per LF of the complete and accepted Concrete Basin Join; Salvage and Extend Reinforcement 2-Foot minimum and Tie to New Basin Reinforcing. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.59 Subdrain Junction (Per Detail 11/39) – Item No. 112

The contract unit price paid per EA of Subdrain Junction shall include all layout, excavation, grading, steel pipe, concrete, backfill and compaction, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per each Subdrain Junction installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per EA of the complete and accepted Subdrain Junction. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.60 Reinstall Salvaged McCarthy Flume Downdrain and Lap 2-Foot Into Reinforced Concrete Box – Item No. 113

The contract unit price paid per LF of Flume Downdrain and Lap 2-Foot Into Reinforced Concrete Box shall include all layout, grading, concrete, reinforcement, backfill and compaction, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per linear foot of Flume Downdrain and Lap 2-Foot Into Reinforced Concrete Box installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per LF of the complete and accepted Flume Downdrain and Lap 2-Foot Into Reinforced Concrete Box. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.61 8-Inch-Thick Reinforced Concrete Wall; Splash Wall (Per Detail 3/37) – Item No. 114

The contract unit price paid per LF of Splash Wall; Length and Height Per Plan shall include all layout, grading, concrete, concrete masonry units, reinforcement, grout, backfill and compaction, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per linear foot of Splash Wall installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per LF of the complete and accepted Splash Wall; Length and Height Per Plan. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.62 24-Inch Drop Inlet (Per Detail 4/40) – Item No. 115

The contract unit price paid per EA of 24-Inch Drop Inlet shall include all layout, excavation, grading, steel pipe, concrete, backfill and compaction, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per each 24-Inch Drop Inlet installed.

Payment for the complete and accepted quantities will be at the contract unit price bid per EA of the complete and accepted 24-Inch Drop Inlet. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.63 Join 4-Inch Solid HDPE Basin Subdrain Pipe to Existing 36-Inch CHDPE Pipe (Per Detail 6/41) – Item No. 116

The contract unit price paid per EA of 4-Inch Solid HDPE Basin Subdrain Pipe to Existing 36-Inch CHDPE Pipe shall include all layout, excavation, grading, steel pipe, concrete, backfill and compaction, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per each 4-Inch Solid HDPE Basin Subdrain Pipe to Existing 36-Inch CHDPE Pipe installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per EA of the complete and accepted 4-Inch Solid HDPE Basin Subdrain Pipe to Existing 36-Inch CHDPE Pipe. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.64 Construct LCRS Winch System Pad and Retaining Wall (Per Detail 1/43) – Item No. 117

The contract unit price paid per LF of LCRS Winch System Pad and Retaining Wall shall include all layout, grading, concrete, concrete masonry units, reinforcement, grout, backfill and compaction, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per linear foot of LCRS Winch System Pad and Retaining Wall installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per LF of the complete and accepted LCRS Winch System Pad and Retaining Wall. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.65 Construct North Retaining Wall (Per Detail 2/43) – Item No. 118

The contract unit price paid per LF of North Retaining Wall shall include all layout, grading, concrete, concrete masonry units, reinforcement, grout, backfill and compaction, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per linear foot of North Retaining Wall installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per LF of the complete and accepted North Retaining Wall. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.66 Construct Wall Over Line A (Per Detail 3/43) – Item No. 119

The contract unit price paid by the LF of Wall Over Line A and shall include all layout, excavation, concrete, reinforcement, grading, backfill and compaction, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per LF of Wall Over Line A installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per LF of the complete and accepted Wall Over Line A. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.67 West Retaining Wall to Basin Connection (Per Detail 4/43) – Item No. 120

The contract unit price paid by the LF of West Retaining Wall to Basin Connection and shall include all layout, excavation, concrete, reinforcement, grading, backfill and compaction, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per LF of West Retaining Wall to Basin Connection installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per LF the complete and accepted West Retaining Wall to Basin Connection. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.68 Construct 12-Inch Thick Reinforced Concrete Wall Along Top of Access Road; Height Per Plan – Item No. 121

The contract unit price paid by the LF of 12” Thick Reinforced Concrete Retaining Wall and shall include all layout, excavation, concrete, reinforcement, grading, backfill and compaction, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor’s unit price per LF of 12” Thick Reinforced Concrete Retaining Wall installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per LF of the complete and accepted 12” Thick Reinforced Concrete Retaining Wall. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.69 Site Striping Improvements – Item No. 60

The contract unit price paid per lump sump of Site Striping Improvements shall include all labor, materials, tools, and equipment for doing all the work involved in Site Striping Improvements complete with all layout, markings, street sweeping, paint, spraying, and/or other incidentals and appurtenances required to complete the work in accordance with the details on the drawings and the requirements of these specifications.

This bid items shall also include:

- Obliterate approximately 150 LF of existing Right Edge Line;
- Approximately 3,350 LF of Detail 27B Right Edge Line per CA MUTCD Figure 3A-106 (CA);
- Approximately 1,325 LF of 4-Inch White Lane Line per Detail 8 CA MUTCD Figure 3A-102 (CA);
- 1 EA of Stop Sign, Stop Pavement Markings, and Stop Bar per SSPWC STD Plan 172-0;
- Approximately 3,310 SF of 8-Inch White Line per Detail 38A CA MUTCD Figure 3A-112 (CA) at 45 degrees and 5-feet on center for the No Parking Areas.

Payment for the completed and accepted quantities will be at the contract unit price bid per lump sum of the complete and accepted Site Striping Improvements. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period. Site Striping Improvements placed beyond the limits indicated on the drawings will not be compensated unless the work has been authorized by the Engineer.

4.70 Entrance Facility Sign Improvements – Item No. 122

The contract unit price paid on a time and materials basis per Greenbook published rates and prevailing wages and include all layout, excavation, grading, backfill and compaction, concrete, sign, post, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor’s unit price paid on a time and material basis for the installation of the Entrance Facility Sign Improvements. Existing Signs are to be relocated and new Signs may need to be created as a part of this bid item. Final quantity and placement of the Entrance Facility Sign Improvements shall be per the Engineer and/or the Owner during construction.

Payment for the completed and accepted quantities will be at the contract unit price bid paid on a time and materials basis of the complete and accepted Entrance Facility Sign Improvements. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period. Entrance Facility Sign Improvements placed beyond the limits indicated on the drawings will not be compensated unless the work has been authorized by the Engineer.

END OF SECTION 2K

SECTION 2K

MISCELLANEOUS CIVIL IMPROVEMENTS

1.0 GENERAL

This section sets forth the requirements for miscellaneous civil improvements indicated on the Plans.

1.1 Work Included

In general, miscellaneous civil improvements shall include:

- ◆ Construction of Portland Cement Concrete (PCC) drainage improvements;
- ◆ Placement of Reinforcing Steel;
- ◆ Construction of Concrete Trapezoidal Channel;
- ◆ Construction of various Concrete Inlets/Outlets to/from Storm Drain Piping;
- ◆ Construction of Concrete Cut-off walls;
- ◆ Placement of Crushed Miscellaneous Base material;
- ◆ AC Paving including Dikes, Berms, Thickened Edges, Trapezoidal Channels, Channel Transitions, and Curb(s)
- ◆ Construct Below Grade Pipe;
- ◆ Construct 24-inch Pipe to Basin Wall Junction Structure;
- ◆ Construction of Pipe Bollard;
- ◆ Construction of 8-inch-thick Concrete Wall;
- ◆ Construct Concrete Box Channel;
- ◆ Construct Headwall with Warped Wing Walls;
- ◆ Construct 4-inch Channel Subdrain;
- ◆ Install Offline Kraken Filter System;
- ◆ Construct 36-inch Riser;
- ◆ Install Riser Inlet Bar Guards;
- ◆ The construction of the Unit 3 BMP Basin which includes;
 - ◆ Construct 4-Inch Basin Subdrain
 - ◆ Construct Basin Subdrain Junction Structures
 - ◆ Construct Basin Geocomposite Underdrain
 - ◆ Construct Concrete Basin Floor
 - ◆ Construct Concrete Basin Slope
 - ◆ Construct Concrete Basin Slope to Floor Transition
 - ◆ Construct Concrete Basin Top Edge
 - ◆ Construct Concrete Basin Access Ramp
 - ◆ Construct Concrete Basin Expansion Joint
 - ◆ Construct Concrete Basin Contraction Joint
 - ◆ Construct Concrete Basin Wet Well
 - ◆ Construct Concrete Basin Riser Vault
 - ◆ Construct Concrete Retaining Wall;
- ◆ Basin Skimmer/Skimmer Support Winch System and Appurtenances (Includes All Items Identified Below and Their Corresponding Appurtenances):
 - ◆ 6-Inch Flexible PVC Pipe

- ◆ 6-Inch PVC Pipe
- ◆ 2-Inch PVC Pipe
- ◆ Winch Stand
- ◆ Stainless Steel Winch
- ◆ Steel Skimmer Support Frame
- ◆ Concrete Footing for Steel Skimmer Support Frame
- ◆ Skimmer Hanging Apparatus
- ◆ 3/16-Inch Diameter Stainless Steel Wire Rope
- ◆ 8-Inch Faircloth Skimmer (High Capacity)
- ◆ Skimmer Outlet Manifold Extension with Pipe Supports; Connect to 6-Inch Skimmer Discharge Lines with Camlock Fittings
- ◆ Type B Metal Hand Railing per SPPWC Std Plan 606-4

1.2 Submittals Required

The Contractor shall thoroughly review the Specifications and identify all required project submittals. The submittals listed below are intended as a general summary of the submittal items contained in this section. This submittal list does not release the Contractor from the responsibility of identifying and providing all information requested.

- ◆ Portland Cement Concrete (PCC) mix designs;
- ◆ Certificates of Compliance for reinforcing steel;
- ◆ Certificates of Compliance for welded wire mesh;
- ◆ Certificates of Compliance for curing compound;
- ◆ Certificates of Compliance for HDPE Pipe;
- ◆ Asphalt Concrete (AC) mix designs;
- ◆ Screed Key Manufacturer's Product Data;
- ◆ Shop Drawings for Galvanized Steel Fabrication for Hand Railing;
- ◆ Pipe Material Certificates of Compliance;
- ◆ Subdrain Gravel Certificates of Compliance;
- ◆ Geocomposite Underdrain Certificates of Compliance;
- ◆ Geotextile Certificates of Compliance;
- ◆ Gradation, Certificate of Compliance for crushed miscellaneous base material.
- ◆ Flexible Post Delineators;
- ◆ Joint Sealant Manufacturer's Product Data/ Certificates of Compliance;
- ◆ Trench shoring, trench shoring plan, and work plan for installation of deep CHDPE Pipe Connection/Extension;
- ◆ Grout mix design;
- ◆ Certificate of compliance – masonry materials;
- ◆ Rip Rap Certification of Compliance
- ◆ Pipe Material (CMP, HDPE, PVC) Certificates of Compliance;
- ◆ Certificates of Compliance for Skimmer System;
- ◆ Certificates of Compliance for Winches, SST Cable, Pulleys.

2.0 MATERIALS

2.1 Portland Cement Concrete (PCC)

PCC shall be furnished in accordance with the requirements of Section 201-1 of the SSPWC. Portland Cement shall conform with the requirements of Section 201-1.2.4.1 of the SSPWC. Unless otherwise authorized by the Engineer or indicated on the drawings, or specified herein, PCC shall conform to the type of construction as reflected in Table 201-1.3.3 of the SSPWC per relevant type of construction. The Contractor shall submit proposed PCC mix designs, for the approval of the Engineer, a minimum of 14 days prior to the intended use on the project.

TYPE OF CONSTRUCTION	CONCRETE CLASS
Basin Floor, Basin Slopes, Basin Ramp, Retaining Walls, Channels, Transition Structures, Inlet Structures, Skimmer Footing, Pipe Bollard Footings, Cutoff Walls, Concrete around LFG Road Crossing	660-C-4000P

2.2 Reinforcing Steel

Reinforcing steel for concrete structures shall be furnished in accordance with Section 201-2 of the SSPWC, and shall conform to ASTM A615 Grade 60, unless otherwise shown. The Contractor shall submit Certificates of Compliance representative of the reinforcing steel to be used on the project.

2.3 Curing Compound

Curing compounds for concrete improvements shall conform to the requirements of Section 201-4 of the SSPWC, Type 1-D or Type 2. The Contractor shall submit a Certificate of Compliance for the proposed curing compound to be used.

2.4 Reinforcing Bar Epoxy

Epoxy for reinforcing bars shall conform to the requirements of ASTM C881-02 for bonding reinforcing bars to concrete. The epoxy surrounding the reinforced bar shall be placed in accordance with the applicable portions of Section 214-7 of the SSPWC.

2.5 Asphalt Concrete Pavement (AC)

Asphalt Concrete (AC) shall be furnished in accordance with the applicable requirements of Section 203-1 and Section 203-6 of the SSPWC and shall conform to the table below. Where indicated on the Plans, AC pavement shall be placed against a redwood header in conformance with Section 302.5.5 of the SSPWC.

AC FEATURE	COMPOSITION/GRADATION	PERFORMANCE GRADE ASPHALT BINDER
Roadway Base Course	Type B	PG 70-10
Roadway Finished Surface	Type D2	PG 70-10
Roadway Shoulders	Type B or Type D2	PG 70-10
Dikes / Curbing	Type B or Type D2	PG 70-10

AC mix designs shall be submitted for the Engineer's review and approval.

2.6 Crushed Miscellaneous Base Material (CMB)

CMB shall conform to the requirements of Section 200-2.4 of the SSPWC. The Contractor shall submit a Certificate of Compliance indicating that the proposed material meets the gradation requirements of the Standard Specifications.

2.7 Corrugated Smooth Interior Wall HDPE Pipe

HDPE pipe and fittings shall be furnished in accordance with the requirements of Section 207-18 of the SSPWC, and shall be exterior corrugated, interior smooth walled, and of the diameter shown on the Drawings. All pipe and fittings shall comply with the requirements for test methods, dimensions and markings found in AASHTO Designations M 252 and M 294. Pipes and fittings shall be made from virgin PE compounds which conform to Cell Class 324420C, as defined and described in ASTM D 3350.

All joints shall be watertight, with bell and spigot joints supplied as recommended by the Manufacturer. All elbows, fittings, and other appurtenances required for installation shall have bell and spigot joints with angles for proper fit determined by the Contractor and shall consist of HDPE.

2.8 Flexible Post Delineators

The Flexible Post Delineators shall be furnished in accordance with the requirements of the Cal Trans Standard Plan A-73C - Class 1 and per Section 82 Signs and Markers of the Caltrans Standard Specifications.

2.9 Steel Pipe and Concrete for Pipe Bollards

Steel pipe for Pipe Bollards shall be 4-inch diameter Schedule 40 circular steel pipe. Bollards shall be painted with Iron-Oxide Primer and finished with High-Vis Yellow Paint. Concrete shall be the same strength as the nearest adjacent concrete placement.

2.10 Masonry Materials

Masonry units shall comply with Subsection 202-2.2 of the SSPWC. Block color shall be Beige or Tan. Mortar, grout, and water shall comply with Subsection 202-2.3 of the SSPWC.

2.11 Stone for Riprap

Stone for Rip Rap Pads shall conform to the requirements of Section 200-1.6 and shall be Class III and Class IV as indicated on the Drawings. The Contractor shall submit a Certificate of Compliance for the material intended for use. Geotextile underlay below the stone shall be include for all rip rap pads as described in the Standard Specifications.

2.12 Solid and Perforated HDPE Pipe and Fittings – Basin and Channel Subdrain

Solid and Perforated HDPE Pipe and fittings for Basin and Channel Subdrain shall consist of HDPE, smooth walled (non-corrugated), solid pipe conforming to requirements of Section 207-19 of the SSPWC. Subdrain pipe and fittings for the perimeter channel subdrain shall consist of 4-inch diameter perforated (SDR 17) HDPE pipe with perforations as designated on the construction drawings.

2.12.1 Physical Properties

HDPE pipe shall meet the following minimum specifications:

TEST	TEST METHOD	UNIT	REQUIREMENTS
Density*	ASTM D-1505	g/cc	0.955
Melt Flow Index (1)	ASTM D-1238 Condition E	g/10 min	13
Tensile Properties	ASTM D-638	psi psi %	3,300 @ yield 4,500 @ break ≥800 elongation @ break
Flexural Modulus (2)	ASTM D-790	psi	120,000
Environmental Stress Crack Resistance	ASTM D 1693	hrs	≥10,000 (3) ≥5,000 (4)
(1) 190° C/21600g (2) 2% Secant-Method 1 (3) Condition B, 10% (4) Condition C			

The Contractor shall submit two (2) samples of each type of piping proposed for use. The submittal shall also include manufacturer's catalog cut sheets, manufacturer's quality control test results, and a Certificate of Compliance for each class of pipe. The submittal shall be provided to the Engineer at least 15 working days prior to intended use.

2.13 Non-Woven Geotextile

2.13.1 General

Non-woven geotextile materials shall be new, first quality products designed and manufactured in North America. Geotextile for the channel and basin subdrain may be from the Contractor's supplier, provided all manufacturer's roll certification documentation is available, submitted, and accepted as a project submittal. Non-woven geotextile shall be mildew, insect and rodent

resistant, and needle free. Geotextile shall be suitable and durable for the intended application as satisfactorily demonstrated by similar and prior applications. Geotextile shall be 100-percent polyester or polypropylene (with the exception of inhibitors and/or carbon black added for UV resistance), non-woven and needle-punched materials. Polypropylene materials shall be UV stabilized.

2.13.2 Physical Properties

Geotextile shall meet or exceed the following minimum average roll values (weakest principle direction):

GEOTEXTILE MANUFACTURING QUALITY ASSURANCE (MQA)						
PHYSICAL PROPERTY	TEST METHOD	FREQUENCY	UNITS	REQUIREMENT		
				8 oz Filter	12 oz. Filter	16 oz. Cushion
Weight (mass/unit area)	ASTM D-5261	100,000 ft ² or 1 per lot	oz/yd ²	8*	12*	16
Trapezoidal Tear	ASTM D-4533	100,000 ft ² or 1 per lot	lbs	80	115	145
Puncture (CBR) strength	ASTM D-6241	100,000 ft ² or 1 per lot	lbs	700	800	900
Permittivity	ASTM D-4491	100,000 ft ² or 1 per lot	sec ⁻¹	1.2	0.8	N/A
Grab Tensile	ASTM D-4632	100,000 ft ² or 1 per lot	lbs	230	300	370
Grab Elongation	ASTM D-4632	100,000 ft ² or 1 per lot	%	N/A	50	50
AOS	ASTM D-4751	100,000 ft ² or 1 per lot	U.S. Standard Sieve	70	100	N/A
UV Resistance	ASTM D-4355	See Note (2)	% strength retained	N/A	N/A	70
Notes:						
1. * - Minimum values.						
2. Evaluation to be on 2.0-inch strip tensile specimens after 500 hours exposure.						

There are no construction quality assurance testing requirements for the channel or basin subdrain geotextile or for the asphalt paving geotextile.

2.14 Structural Concrete Notes – Basin Skimmer Support

- ◆ All concrete shall attain a minimum compressive strength of 4000 psi at 28 days, unless noted otherwise on plans. See also sulfate content notes.
- ◆ Aggregates shall be natural sand and rock conforming to ASTM C33.
- ◆ Dry-pack shall be composed of one part Portland cement to not more than three parts sand.
- ◆ All conventional foundations are designed for an EI of less than or equal to 50, unless specifically noted otherwise on plans,
- ◆ Refer to ACI 318-05 Table 4.3.1 for requirements when concrete is exposed to sulfate containing solutions.
- ◆ Reinforcing Steel: all bars, unless indicated otherwise, shall be ASTM A15, Grade 60.

2.15 Structural Steel Notes – Basin Skimmer Support

All fabrication & erection shall conform to the latest standards of the American Institute of Steel Construction (AISC) specifications for structural steel buildings.

Structural steel shall conform to the following ASTM Specifications:

TYPE	ASTM SPECIFICATION
W-SHAPE	A992 OR A572 GRADE 50
PLATES & BAR	A36
STEEL PIPE	A53 GRADE B
MACHINE BOLTS	A325, A490, F1852, F2280
NUTS	A563, A194
WASHERS	F436
ANCHOR RODS	F1 554 - A36

All steel exposed to weather shall be hot dip galvanized after fabrication in compliance with ASTM al 23. All field welds on galvanized steel shall be treated with zinc-rich paint in compliance with ASTM A780.

All steel fabrication shall be performed in a shop approved by the governing jurisdiction department of building & safety.

The structural steel fabricator shall provide a set of shop fabrication drawings for approval to the Engineer of Record. The fabricator shall not fabricate the steel until the Engineer of Record has approved the shop drawings.

All welding shall be in conformance with the latest AISC & American Welding Society (AWS) standards. All welding shall be performed using a shielded arc process using approved electrodes conforming to AWS specification e70xx (low hydrogen). Weld material shall comply with AWS certification and possess a Charpy V-Notch toughness of 20 ft-lbs at -20 degrees Fahrenheit. welding shall be performed by only AWS certified welders.

A written welding procedure specification (WPS) per AWS D1. Welding must be developed by the fabricator/erector and reviewed by the Engineer of Record and the building department.

The contractor shall be responsible for all erection aids and joint preparations that include, but are not limited to, erection angles, lift holes and other aids, welding procedures, required root openings, root face dimensions, groove angles, backing bars, copes, surface roughness and unequal parts.

Contractor is also referred to Structural Calculations by ISE (Attachment 2F) for the Skimmer Support Structure.

All steel surfaces shall be galvanized after fabrication.

2.16 Stainless Steel Winch

Stainless steel winches for lifting skimmers shall be spur gear hand winches Model No. M4312PBSS by Thern Winch Company, or approved equivalent.

2.17 Skimmer

Skimmers shall be 8-inch High Flow Permanent Faircloth Skimmer, manufactured by JW Faircloth and Son, Inc., or approved equivalent.

2.18 Wire Rope

Wire rope shall be 304 stainless steel wire rope of diameter shown on Construction Drawings, or approved equivalent.

2.19 Skimmer Hanging Apparatus

Skimmer hanging apparatus fittings and fasteners shall be stainless steel, galvanized steel, or a non-corrosive material. Pulley shall be Tuf-tug flat mount block, 3-inch sheave, 2000 lb. load capacity or equivalent, able to accept cable size shown on Construction Drawings, and swivel parallel to the direction of pull. Pulley shall be protected against corrosion. Dimensions and types shall be per Construction Drawing details or approved equivalent. The Contractor is to provide specification of fixture prior to installation for approval when exact size of fixture is not noted on construction drawings.

2.20 Cable Railing

Cable Railing shall be furnished in accordance with the requirements of Section 83 -Railings and Barriers of the Caltrans Standard Specifications (2024 edition).

2.20.1 Materials

Pipe for posts and braces shall be standard steel pipe or pipe complying with Caltrans Standard Specifications (2024 edition). Section 80-3.02b.

Truss rods, post tops, cable clamps, eye bolts, thimbles, and other required fittings shall be commercial- quality steel, malleable iron, or wrought iron. Post tops shall be watertight. The eye of the eye bolts shall be either drop forged or formed with a complete penetration weld. The eye must develop 100 percent bolt strength.

Turnbuckles shall:

1. Be commercially available;
2. Have jaw or eye ends;
3. Have a minimum breaking strength of 2,700 lbs.; and
4. Be steel pipe type or drop-forged steel.

Crimped sleeve clamps and stop sleeve clamps shall:

1. Be nonferrous metal;
2. Develop the strength of the cable; and
3. Be the same color as the cable.

Cables shall:

1. Be wire strand or rope;

2. Have a minimum diameter of 1/4 inch;
3. Have a minimum breaking strength of 1,800 lbs.; and
4. Be galvanized under federal specification RR-W-410.

Chains shall:

1. Be commercial quality; and
2. Be galvanized.

2.21 Precast Reinforced Concrete Box

Precast Reinforced Concrete Box shall comply with Section 216 of the SSPWC. The bedding and backfill material shall comply with Section 217 of the SSPWC. The Contractor shall submit Certificates of Compliance representative of the Precast Reinforced Concrete Box to be used on the project.

2.22 Thermoplastic Material for Traffic Striping and Markings

Thermoplastic Material for Traffic Striping and Markings shall conform to the requirements of Section 214-5 of the SSPWC. The Contractor shall submit a Certificate of Compliance for the proposed Thermoplastic Material for Traffic Striping and Markings to be used.

2.23 Metal Barriers

Metal Barriers shall be furnished in accordance with the requirements of the Cal Trans Standard Specification per Section 83 Railings and Barriers and per Cal Trans Standard Plans A77L1, A77M1, A77N1, A77N3, and A77P1.

2.24 Road Signs

Road Signs shall be furnished in accordance with the requirements of the Cal Trans Standard Specification per Section 82 Signs and Markers and per Cal Trans Standard Plans RS4, RS5, and RS6.

3.0 EXECUTION

3.1 Portland Cement Concrete (PCC)

The proposed improvements shall be excavated to the lines and grades indicated on the Construction Drawings, accounting for or adjusting down to subgrade for the proposed thickness of reinforced concrete section(s). Reinforcement and PCC shall be placed in accordance with the applicable portions of Section 303 of the SSPWC, and the referenced Detail or referenced Standard Plan.

Air Placed Concrete (APC) shall conform to the requirements of Section 303-2 of the SSPWC, Method B. The Contractor shall submit the proposed mix design for the approval of the Engineer.

3.2 Asphalt Concrete Pavement (AC)

AC pavement shall be constructed to the lines and grades indicated on the Construction Drawings and in accordance with Section 302-5 of the SSPWC.

3.3 Crushed Miscellaneous Base Material (CMB)

CMB shall be placed to the line and grades indicated on the Construction Drawings and in accordance with the provisions of Section 301-2 of the SSPWC.

The material shall be compacted to a minimum relative compaction of 92 percent minimum (based on ASTM D 1557) in accordance with Section 211 of the SSPWC.

3.4 Masonry Materials

Splash walls, or other masonry improvements, shall be constructed in accordance with Section 303-4 of the SSPWC.

3.5 Corrugated Smooth Interior Walled HDPE Pipe With Bell and Spigot Ends

Corrugated HDPE pipe shall be installed in accordance with the requirements of Section 306 of the SSPWC. Pipe bedding shall conform to Section 306-6. Trench backfill shall conform to Section 306-12. Flooding, or jetting, of bedding material and/or backfill will not be permitted. Backfill above the pipe zone shall be compacted to a minimum of 90 percent of the maximum dry density as determined by ASTM D 1557.

3.6 Gravel Placement

Gravel for Subdrain piping shall be placed to the dimensions and/or quantity indicated on the Drawings. Care shall be exercised so as not to contaminate the gravel and to not damage the geotextile during the placement operations.

The Contractor shall submit to the Engineer a plan which indicates the proposed sequence of work, estimated schedule, method of depth verification, both during and after installation, and the type of equipment to be utilized in the gravel placement operation.

3.7 Riprap

Riprap shall be placed in accordance with the applicable requirements of Section 300-11 of the SSPWC. Geotextile for Riprap shall be installed as detailed on the Drawings. Prior to installation, the receiving surface shall be cleaned of loose material and any sharp objects or protrusions that may damage the geotextile

Geotextile shall be sewn or welded in accordance with Section 2H of these Technical Specifications and as detailed on the Plans.

Contractor shall take precautions to protect the geotextile during placement of the gravel. Any portion of the geotextile damaged during the project will be repaired or replaced at Contractor's expense.

3.8 Solid and Perforated HDPE Pipe and Fittings for Basin and Channel Sub Drain; Subdrain Outlet Pipe

3.8.1 Collection System Piping

Installation of the Channel Subdrain shall conform to the lines, grades, details, and notes shown on the Drawings, and as referenced in these Specifications.

3.8.2 Pipe Installation

Sub-Drain shall be placed on a 2-inch-thick bedding layer composed of approved Sub-Drain gravel with the perforations/slots positioned as indicated on the Drawings.

Pipe shall be installed in a manner so as to provide for expansion and contraction as recommended by the manufacturer. The pipe shall lay free on the base with no induced strain. Where there is evidence of induced pipe strain, the Contractor shall be required to eliminate the strain. The Contractor shall also remove and replace any fitting which induces a torque or strain to the pipe.

The Contractor shall run a (dry) mandrel or brush through all subdrain pipes, to remove burrs and cuttings produced during the slotting or cutting process prior to pipe assembly. This operation shall be done in a designated area over a tarp, where all cuttings/burrs can be removed from the subdrain area, and properly disposed. The purpose of this operation is to eliminate HDPE shavings, cutting or burrs from entering the subdrain, and to prevent the burrs or shavings from being transported within the subdrain and subdrain drainage gravel, to the downstream stormwater basin or subdrain outlet.

Pipe shall be cut (off the lined area or over a tarp) in a manner so as to ensure square ends, burr and cuttings removals). Burrs at cut ends shall be removed prior to installation so that a smooth unobstructed flow will be obtained, and so that these materials do not enter the subdrain system. Installation of HDPE fittings and joints shall conform to manufacturer's recommendations.

Slotted HDPE pipe may be joined with compatible couplings secured with round head self-tapping screws, flexible band seal couplings, or butt fusion welded. No glues or adhesives shall be used for any piping. Solid HDPE pipe of the next pipe size diameter may be used as a "slip coupling" for slotted pipe, provided the OD to ID annular space, pipe overlap and installation method, is approved by the Engineer (for Channel Sub Drains). Solid HDPE Pipe shall be butt-fusion welded.

All pipe ends shall have an HDPE cap; all caps shall be welded unless otherwise indicated on the Plans.

Pipe and fittings shall be held firmly in position and protected from damage while drainage gravel or backfill is being placed. All pipe and fittings shall be clean upon installation and kept so during the progress of the work.

Any pipe that becomes either partially or fully clogged and/or damaged before final acceptance shall be cleaned/repared to the satisfaction of the Engineer, and/or replaced at the Contractor's expense.

3.9 Structural Steel Fabrication - Steel Skimmer Support Structure and Winch Stand

Structural steel fabrication shall conform to the requirements of the structural calculations pursuant to Section 304 – Metal Fabrication and Construction of the SSPWC. All welded connections shall be in accordance with the applicable provisions of the structural welding code. All steel surfaces shall be galvanized after fabrication. Pulleys shall be attached to steel skimmer support structure with bolts per manufactures recommendations. Stainless Steel Winch shall be aligned with pulley on Steel Skimmer Support Structure prior to being joined to winch stand.

3.10 Skimmer

Skimmers shall be installed according to the manufacturer's instructions and the horizontal and vertical orientation shown on the Construction Drawings. Skimmers shall be joined to wire rope in the manner shown on the Construction Drawings.

3.11 Skimmer Hanging Apparatus

The skimmer hanging apparatus shall be constructed to the dimensions indicated on the Construction Drawings. All fittings and fasteners shall be joined together per manufacturer's recommendations. Pulley shall be aligned with appropriate winch prior to being bolted to Steel Skimmer Support Structure.

3.12 Cable Railing

Tension the cables to provide taut railings between posts. Install thimble at each cable loop. For cable railing installed over concrete basin top edge, contractor shall first drill, dowel, and epoxy bolts at each proposed fence post location. Holes shall be made without damaging adjacent concrete.

Place posts with welded steel plate at bolts; plumb the post vertically and tighten nuts. Posts shall be plumb when operation is completed.

3.13 Precast Reinforced Concrete Box

Precast Reinforced Concrete Box shall be placed in accordance with the requirements of Subsection 306-10.1 of the SSPWC. The Backfill shall comply with the applicable requirements of Section 306-12 of the SSPWC.

3.14 Thermoplastic Material for Traffic Striping and Markings

[Thermoplastic Material for Traffic Striping and Markings shall be placed in accordance with Section 314-4.4 of the SSPWC. Existing roadway striping to be removed prior to placement of Traffic Striping per Section 214-2 of the SSPWC. Thermoplastic Material for Traffic Striping and Markings shall be placed to extent per plan and as directed by the Engineer.](#)

3.15 Metal Barriers

[Metal Barriers shall be furnished in accordance with the requirements of the Cal Trans Standard Specification per Section 83 Railings and Barriers and per Cal Trans Standard Plans A77L1, A77M1, A77N1, A77N3, and A77P1.](#)

3.16 Road Signs

[Road Signs shall be furnished in accordance with the requirements of the Cal Trans Standard Specification per Section 82 Signs and Markers; per Cal Trans Standard Plans RS1, RS4, RS5, and RS6; and per plan.](#)

4.0 MEASUREMENT AND PAYMENT

The contract unit price for each of the following civil and drainage improvements shall include full compensation for all labor, material and equipment required to construct the improvements in accordance with the Construction Plans, Specifications, and manufacturer's recommendations. Quantities installed beyond the limits indicated on the Plans will not be compensated unless previously authorized by the Engineer.

4.1 Miscellaneous Site Work – Unit 4 Phase 2 Area – Item No. 7

The contract LS paid for Miscellaneous Site Work – Unit 4 Area shall include site preparation, site improvements, removal, restoration, assembly of work removed or salvaged during the course of the project, final cleanup, and all other work or incidentals not specifically identified within this or other bid items to complete all work and improvements identified within the plans. Include all parts, materials, labor, equipment and incidental items necessary for the completion of this work as required and as indicated in the plans and Contract Documents.

This bid items shall also include:

- Provide all exploratory potholing and trenching as is related the temporary or permanent removal of structures, containers, poles, etc;
- Removal and salvaging (if applicable) of existing dead man power pole, camera/light, electrical junction box, electrical feeder wire and conduit, and all other items associate with the County's existing camera pole in the disturbance area;
- Temporary removal, salvaging (including safe storage), and replacement in-kind of existing 10-foot high chain link fence in the southwest corner of the Unit 4 Phase 2 area that is needed to provide available space for composite liner system construction. Contractor is also responsible replacement of foundation/footers if altered during construction activities;
- All incidental items to properly complete the job that may not have been specifically identified

The final pay quantities will be determined through field verification that the work has been completed in accordance with the Plans and these Technical Specifications. Interim progress payments will be based on the Engineer's evaluation of the estimated percentage of work completed during the subject period.

4.2 Lined Access Road Driving Surface - 12" Thick Oversized Rock with CMB (Per Detail 2/26) – Item No. 47

The contract unit price paid per SF of Lined Access Road Driving Surface - 12" Thick Oversized Rock with CMB shall include all layout, grading, subgrade compaction, asphalt concrete, crushed miscellaneous base, geotextile, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per square foot of Lined Access Road Driving Surface - 12" Thick Oversized Rock with CMB installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per SF of the complete and accepted Lined Access Road Driving Surface - 12" Thick Oversized Rock with CMB. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.3 West Basin Access Road - 6" Crushed Miscellaneous Base with Non-Woven Geotextile Underlay (Per Detail 2/28) – Item No. 48

The contract unit price paid per SF of West Basin Access Road - 6" Crushed Miscellaneous Base with Non-Woven Geotextile Underlay shall include all layout, grading, subgrade compaction, asphalt concrete, crushed miscellaneous base, geotextile, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per square foot of West Basin Access Road - 6" Crushed Miscellaneous Base with Non-Woven Geotextile Underlay installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per SF of the complete and accepted West Basin Access Road - 6" Crushed Miscellaneous Base with Non-Woven Geotextile Underlay. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.4 Class V Rip Rap Per SSPWC Section 200-1.6 – Item No. 49

The contract unit price paid per SF of Class V Rip Rap Per SSPWC Section 200-1.6 shall include all layout, grading, subgrade compaction, geotextile underlay per SSPWC, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per square foot of Class V Rip Rap Per SSPWC Section 200-1.6 installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per SF of the complete and accepted Class V Rip Rap Per SSPWC Section 200-1.6. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.5 Class III Rip Rap Per SSPWC Section 200-1.6 – Item No. 50

The contract unit price paid per SF of Class III Rip Rap Per SSPWC Section 200-1.6 shall include all layout, grading, subgrade compaction, geotextile underlay per SSPWC, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per square foot of Class III Rip Rap Per SSPWC Section 200-1.6 installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per SF of the complete and accepted Class III Rip Rap Per SSPWC Section 200-1.6. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.6 Miscellaneous Site Work – Entrance Facility Area – Item No. 53

The contract lump sum paid for Miscellaneous Site Work – Entrance Facility Area shall include site preparation, site improvements, removal, restoration, assembly of work removed or salvaged during the course of the project, final cleanup, and all other work or incidentals not specifically identified within this or other bid items to complete all work and improvements identified within the plans. Include all parts, materials, labor, equipment and incidental items necessary for the completion of this work as required and as indicated in the plans and Contract Documents.

This bid items shall also include:

- Coordination and impacts affiliated with sequencing of work as defined within the Technical and Special Provisions, includes any temporary fencing, staging, or other incidentals

affiliated with sequencing of the work;

- Provide all exploratory potholing and trenching as is related the temporary or permanent removal of structures/containers, pavement placement (including excavation to subgrade grades);
- Provide, as needed, temporary fencing for uninterrupted site security during perimeter fencing and pavement operations;
- Temporary Removal and salvaging of existing County Offices Trailer (mobile office unit) and containers located at the northeast corner of the Unit 4 Phase 2 Work Area;
- Include disconnection of all utilities connected to the office trailer prior to moving and protecting in place all existing utility stub ups for relocation of office trailer and containers in the same location (in-kind);
- Include means for proper transportation, temporary storage / protection, and subsequent relocation to original location of existing County Office Trailer and containers after Entrance Facility Paving operations are completed;
- Removal of existing gravel bag / crushed rock stockpiles adjacent to the site entrance and disposal of the piles at the active landfill area, for disposal or as directed by SWMD;
- County Office Trailer Relocation and associated tasks are to be included in Sequence 3, the contractor is responsible for coordinating with SWMD prior to beginning this relocation and replacement work, no decommissioning of the office trailer shall commence without prior approval from SWMD;
- ~~Removal, salvaging, and replacement of existing County Offices Building and containers to the Unit 1 Top Deck Area as shown on the plans;~~
- ~~Removal of boulder stockpile adjacent to the site entrance and placement of the boulders at the Unit 1 Top Deck Area as shown on the plans;~~
- Protection of existing monitoring well/probe and supply/install of 16-8 EA new pipe bollards for protection of existing environmental control system as described on the plans;
- ~~Temporary removal, salvaging (and safe storage), and replacement in-kind of all existing signs along the entrance facility improvements/disturbance area;~~
- All incidental items to properly complete the job that may not have been specifically identified.

The final pay quantities will be determined through field verification that the work has been completed in accordance with the Plans and these Technical Specifications. Interim progress payments will be based on the Engineer's evaluation of the estimated percentage of work completed during the subject period.

4.7 Saw Cut Existing AC Pavement – Item No. 56

The contract unit price paid per LF of Saw Cut Existing AC Pavement shall include all layout, excavation, asphalt, grading, backfill and compaction, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per linear foot of Saw Cut Existing AC Pavement installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per LF of the complete and accepted Saw Cut Existing AC Pavement. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

~~4.8 Shoulder Paving – 6-Inch AC over 8-Inch Class II Base – Item No. 57~~

~~The contract unit price paid per SF of 6-Inch Thick AC Paving over 8-Inch Crushed Miscellaneous Base shall include all layout, grading, subgrade compaction, asphalt concrete, crushed miscellaneous base, geotextile, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per square foot of 6-Inch Thick AC Paving over 8-Inch Crushed Miscellaneous Base installed.~~

~~Payment for the completed and accepted quantities will be at the contract unit price bid per SF of the complete and accepted 6-Inch Thick AC Paving over 8-Inch Crushed Miscellaneous Base. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.~~

4.8 Shoulder Paving – 4-Inch AC over 8-Inch CMB (Per Detail 1/28) – Item No. 57

The contract unit price paid per SF of 4-Inch-Thick AC Paving over 8-Inch CMB shall include all layout, grading, subgrade compaction, asphalt concrete, crushed miscellaneous base, geotextile, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per square foot of 4-Inch Thick AC Paving over 8-Inch CMB installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per SF of the complete and accepted 4-Inch-Thick AC Paving over 8-Inch CMB. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.9 Class 1 Flexible Post Delineator per Caltrans Std. Plan A-73C (Per Detail 1/28) – Item No. 58

The contract unit price paid for EA Class 1 Flexible Post Delineator per Caltrans Std. Plan A-73C, shall include full compensation for furnishing all materials, labor, tools, equipment, and incidentals and for doing all the work involved in construction of the Class 1 Flexible Post Delineator per Caltrans Std. Plan A-73C complete in place, including all materials, layout, epoxy, installation and other appurtenances as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

Payment for the completed and accepted quantities will be at the contract unit price bid per EA of the complete and accepted Class 1 Flexible Post Delineator. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.10 Type D2-6 Mountable Curb per SPPWC Std. Plan 121-2 (Per Detail 3/28) – Item No. 59

The contract unit price paid per LF of Type D2-6 Mountable Curb per SPPWC Std. Plan 121-2 shall include all layout, excavation, asphalt, trenching, grading, backfill and compaction, and/or

all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per linear foot of Type D2-6 Mountable Curb per SPPWC Std. Plan 121-2 installed.

Payment for the complete and accepted quantities will be at the contract unit price bid per LF of the complete and accepted Type D2-6 Mountable Curb per SPPWC Std. Plan 121-2. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.11 Concrete Trapezoidal Channel (Per Detail 4/23) – Item No. 61

The contract unit price paid per SF of Concrete Trapezoidal Channel shall include all layout, excavation, asphalt, trenching, grading, backfill and compaction, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per linear foot of Concrete Trapezoidal Channel installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per SF of the complete and accepted Concrete Trapezoidal Channel. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

~~**4.12 Splashwall (Per Detail 7/28) – Item No. 62**~~

~~The contract unit price paid per LF of Splash Wall; Length and Height Per Plan shall include all layout, grading, concrete, concrete masonry units, reinforcement, grout, backfill and compaction, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per linear foot of Splash Wall installed.~~

~~Payment for the completed and accepted quantities will be at the contract unit price bid per LF of the complete and accepted Splash Wall; Length and Height Per Plan. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.~~

4.12 Shoulder Paving – 6-Inch AC over 12-Inch CMB (Per Detail 3/28) – Item No. 62

The contract unit price paid per SF of Shoulder Paving – 6-Inch AC over 12-Inch CMB shall include all layout, grading, subgrade compaction, asphalt concrete, crushed miscellaneous base, geotextile, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per square foot of Shoulder Paving – 6-Inch AC over 12-Inch CMB installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per SF of the complete and accepted Shoulder Paving – 6-Inch AC over 12-Inch CMB. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period. Shoulder Paving – 6-Inch AC over 12-Inch CMB placed beyond the limits indicated on the drawings will not be compensated unless the work has been authorized by the Engineer.

4.13 Class III Rip Rap (Per SSPWC Section 200-1.6) – Item No. 63

The contract unit price paid per SF of Class III Rip Rap Per SSPWC Section 200-1.6 shall include all layout, grading, subgrade compaction, geotextile underlay per SSPWC, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per square foot of Class III Rip Rap Per SSPWC Section 200-1.6 installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per SF of the complete and accepted Class III Rip Rap Per SSPWC Section 200-1.6. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.14 Concrete Cut-off Wall (Per Detail 8/28) – Item No. 64

The contract unit price paid per LF of Concrete Cut-off Wall shall include all layout, grading, concrete, reinforcement, backfill and compaction, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per linear foot of Concrete Cut-off Wall installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per LF of the complete and accepted Concrete Cut-Off Wall. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.15 Entrance Facility Inlet Structure (Per Sheet 23) – Item No. 65

The contract LS paid for Entrance Facility Inlet Structure shall include full compensation for furnishing all labor, tools, equipment, and incidentals and for doing all work involved in Entrance Facility Inlet Structure, and/or other operations incidental and required to complete Entrance Facility Inlet Structure, and as shown on the Plans, as specified in the Standard Specifications and these Technical Specifications, and as directed by the Engineer.

The final pay quantities will be determined through field verification that the work has been completed in accordance with the Plans and these Technical Specifications. Interim progress payments will be based on the Engineer's evaluation of the estimated percentage of work completed during the subject period.

~~**4.16 Downdrain A Outlet (Per Detail 1/20) – Item No. 66**~~

~~The contract LS paid for Downdrain A Outlet shall include full compensation for furnishing all labor, tools, equipment, and incidentals and for doing all work involved in Downdrain A Outlet, and/or other operations incidental and required to complete Downdrain A Outlet, and as shown on the Plans, as specified in the Standard Specifications and these Technical Specifications, and as directed by the Engineer.~~

~~The final pay quantities will be determined through field verification that the work has been completed in accordance with the Plans and these Technical Specifications. Interim progress payments will be based on the Engineers evaluation of the estimated percentage of work completed during the subject period.~~

4.16 Bypass Lane Improvements – Item No. 66

The contract unit price paid per lump sum of Bypass Lane Improvements shall include all layout, grading, subgrade compaction, crushed miscellaneous base, geotextile, metal beam guard rail, asphalt concrete, rock slope protection, rock slope protection fabric, concrete block barriers, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per lump sum of Bypass Lane Improvements installed.

This bid items shall also include:

- Approximately 0.31 AC of Clearing and Grubbing including approximately 65 LF of existing 8" AC Curb Demolition;
- Approximately 115 Cubic Yards of Unclassified Excavation to subgrade grades;
- Approximately 75 Cubic Yards of Unclassified Fill to subgrade grades;
- Any Waste Removal and Relocation associated with establishment of the Bypass Lane will be paid for under Bid Item 5 Waste Removal and Relocation;
- Approximately 45 LF of AC Dike per Cal Trans STD Plan A87B; Type D; Case C-2 Fill;
- Approximately 500 LF of Metal Beam Guardrail per Caltrans STD Plans A77L1, A77M1, A77N1, and A77N3; with Metal Beam Guardrail End Treatment Type 11A per Cal Trans STD Plan A77P1;
- 3 EA of Concrete Block Barriers to protect existing power pole (Private) per Detail 2/22;
- Approximately 9,845 SF of Bypass Lane 8" thick CMB over 12 oz/sy Geotextile per Details 1/21A and 2/21A;
- Supply and Placement of approximately 7,865 SF of 12" Thick (Min) Class III Rock Slope Protection and RSP Fabric; Placement Method B per Detail 1/21A.

Payment for the completed and accepted quantities will be at the contract unit price bid per lump sum of the complete and accepted Bypass Lane Improvements. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period. Bypass Lane Improvements placed beyond the limits indicated on the drawings will not be compensated unless the work has been authorized by the Engineer.

~~4.17 Downdrain B Outlet (Per Detail 2/20) – Item No. 67~~

~~The contract LS paid for Downdrain B Outlet shall include full compensation for furnishing all labor, tools, equipment, and incidentals and for doing all work involved in Downdrain B Outlet, and/or other operations incidental and required to complete Downdrain B Outlet, and as shown on the Plans, as specified in the Standard Specifications and these Technical Specifications, and as directed by the Engineer.~~

~~The final pay quantities will be determined through field verification that the work has been completed in accordance with the Plans and these Technical Specifications. Interim progress payments will be based on the Engineer's evaluation of the estimated percentage of work completed during the subject period.~~

4.17 Temporary Traffic Control – Item No. 67

The contract unit price paid per lump sum of Temporary Traffic Control shall include conformity to Section 601 of the SSPWC and Part 6 of the California MUTCD and shall include a temporary traffic control plan that is required to be prepared by the contractor and submitted as a Working Drawing during necessary parts of the contract work. The Bid Item also includes all labor, materials, and incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor’s unit price per lump sum of Temporary Traffic Control.

Payment for the completed and accepted quantities will be at the contract unit price bid per lump sum of the complete and accepted Temporary Traffic Control. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period. Temporary Traffic Controls performed beyond the limits indicated on the drawings will not be compensated unless the work has been authorized by the Engineer.

4.18 Flume Downdrain Extension (Per Detail 9/28) – Item No. 68

The contract unit price paid for EA Flume Downdrain Extension, shall include full compensation for furnishing all materials, labor, tools, equipment, and incidentals and for doing all the work involved in construction of the Flume Downdrain Extension complete in place, including all materials, layout, epoxy, installation and other appurtenances as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

Payment for the completed and accepted quantities will be at the contract unit price bid per EA of the complete and accepted Flume Downdrain Extension. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.19 6-Foot Wrought Iron Fence (Per Detail 5/22) – Item No. 69

The contract unit price paid per LF of 6-Foot Wrought Iron Fence shall include all layout, excavation, asphalt, trenching, grading, backfill and compaction, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor’s unit price per linear foot of 6-Foot Wrought Iron Fence installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per LF of the complete and accepted 6-Foot Wrought Iron Fence. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.20 Wrought Iron Gate (Per Detail 5/22) – Item No. 70

The contract unit price paid for EA Wrought Iron Gate, shall include full compensation for furnishing all materials, labor, tools, equipment, and incidentals and for doing all the work involved in construction of the Wrought Iron Gate complete in place, including all materials, layout, epoxy, installation and other appurtenances as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

The final pay quantities will be determined through field verification that the work has been completed in accordance with the Plans and these Technical Specifications. Interim progress payments will be based on the Engineer’s evaluation of the estimated percentage of work completed during the subject period.

4.21 Protect Existing Power Pole (SCE) – Item No. 71

The contract unit price paid for EA Protect Existing Power Pole (SCE), shall include full compensation for furnishing all materials, labor, tools, equipment, and incidentals and for doing all the work involved in protecting of the Existing Power Pole (SCE) in place with protective barriers/bollards as described in Southern California Edison's (SCE) UGS MC 830, including all excavation/trenching, materials, layout, installation and other appurtenances as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer. This Bid Item shall also include protection of guy wires for applicable SCE poles.

The final pay quantities will be determined through field verification that the work has been completed in accordance with the Plans and these Technical Specifications. Interim progress payments will be based on the Engineer's evaluation of the estimated percentage of work completed during the subject period.

4.22 Protect Existing Power Pole (Private) – Item No. 72

The contract unit price paid for EA Protect Existing Power Pole (Private), shall include full compensation for furnishing all materials, labor, tools, equipment, and incidentals and for doing all the work involved in protecting of the Existing Power Pole (Private) in place with concrete blocks as described in Plans, including all excavation/trenching, materials (on-site concrete blocks), layout, installation and other appurtenances as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer. This Bid Item shall also include protection of guy wires for applicable Private poles.

The final pay quantities will be determined through field verification that the work has been completed in accordance with the Plans and these Technical Specifications. Interim progress payments will be based on the Engineer's evaluation of the estimated percentage of work completed during the subject period.

4.23 Site Entry Sign/Monument (Per Detail 1/22) – Item No. 73

The contract LS paid for Site Entry Sign/Monument shall include full compensation for furnishing all labor, tools, equipment, and incidentals and for doing all work involved in Site Entry Sign/Monument, and/or other operations incidental and required to complete Site Entrance Sign, and as shown on the Plans, as specified in the Standard Specifications and these Technical Specifications, and as directed by the Engineer.

The final pay quantities will be determined through field verification that the work has been completed in accordance with the Plans and these Technical Specifications. Interim progress payments will be based on the Engineer's evaluation of the estimated percentage of work completed during the subject period.

4.24 Miscellaneous Site Work – Unit 3 BMP Area – Item No. 75

The contract LS paid for Miscellaneous Site Work – Unit 3 BMP Area shall include site preparation, site improvements, removal, restoration, assembly of work removed or salvaged during the course of the project, final cleanup, and all other work or incidentals not specifically identified within this or other bid items to complete all work and improvements identified within the plans. Include all parts, materials, labor, equipment and incidental items necessary for the completion of this work as required and as indicated in the plans and Contract Documents.

This bid items shall also include:

- Coordination and impacts affiliated with sequencing of work as defined within the Technical and Special Provisions, includes any temporary fencing, staging, or other incidentals affiliated with sequencing of the work;
- All items associated with the Unit 3 BMP Existing LCRS Storage Facility system modifications including:
 - Removal and reinstallation of the carbon filter canister and associated vent lines, connections, fittings, valves and other appurtenances;
 - Removal and reinstallation of existing leachate load-out equipment including J-stand, 3” PVC line, 3” flexible house line, fittings, connections, pumps, and other appurtenances;
 - Construction of the proposed catch basin below J-stand including excavation, compaction, concrete, rebar, formwork, concrete joint sealant, and other appurtenances;
 - Removal and reinstallation of the load-out pad catch basin sump pump and discharge line into proposed catch basin;
 - New piping and plumbing improvements where salvaged material is inadequate for reinstallation including piping, mounting hardware, fittings, joints, and other appurtenances for improvements shown on Sheet 38.
 - Supply and install approximately 5 EA surface mount flexible post delineators per Caltrans Standard Drawing No A-73C at all above ground LCRS/LFG Rider Termination supports per Detail 2 on Sheet 40;
 - All incidental items to properly complete the job that may not have been specifically identified.

The final pay quantities will be determined through field verification that the work has been completed in accordance with the Plans and these Technical Specifications. Interim progress payments will be based on the Engineer’s evaluation of the estimated percentage of work completed during the subject period.

4.25 Exploratory Potholing – Item No. 76

The contract LS paid for Exploratory Potholing shall include full compensation for furnishing all labor, tools, equipment, and incidentals and for doing all work involved in Exploratory Potholing, and/or other operations incidental and required to complete Exploratory Potholing, and as shown on the Plans, as specified in the Standard Specifications and these Technical Specifications, and as directed by the Engineer.

The final pay quantities will be determined through field verification that the work has been

completed in accordance with the Plans and these Technical Specifications. Interim progress payments will be based on the Engineer's evaluation of the estimated percentage of work completed during the subject period.

4.26 Basin Subdrain (Per Detail 9/39) – Item No. 79

The contract unit price paid per LF of Basin Subdrain shall include all layout, excavation, asphalt, trenching, grading, backfill and compaction, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per linear foot of Basin Subdrain installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per LF of the complete and accepted Basin Subdrain. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.27 Concrete Cut-Off Wall (Per Detail 4/37) – Item No. 80

The contract unit price paid per LF of Concrete Cut-off Wall shall include all layout, grading, concrete, reinforcement, backfill and compaction, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per linear foot of Concrete Cut-off Wall installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per LF of the complete and accepted Concrete Cut-Off Wall. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.28 Concrete Basin Floor (Per Detail 1/39) – Item No. 81

The contract unit price paid per SF of Concrete Basin Floor shall include all layout, grading, subgrade compaction, asphalt concrete, crushed miscellaneous base, geotextile, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per square foot of Concrete Basin Floor installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per SF of the complete and accepted Concrete Basin Floor. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.29 Concrete Basin Slope (Per Detail 2/39) – Item No. 82

The contract unit price paid per SF of Concrete Basin Slope shall include all layout, grading, subgrade compaction, asphalt concrete, crushed miscellaneous base, geotextile, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per square foot of Concrete Basin Slope installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per SF of the complete and accepted Concrete Basin Slope. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.30 Concrete Basin Slope to Floor Transition (Per Detail 3/39) – Item No. 83

The contract unit price paid per LF of Concrete Basin Slope to Floor Transition shall include all layout, grading, concrete, reinforcement, backfill and compaction, and/or all other operations,

equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per linear foot of Concrete Basin Slope to Floor Transition installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per LF of the complete and accepted Concrete Basin Slope to Floor Transition. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.31 Concrete Basin Top Edge (Per Detail 4/39) – Item No. 84

The contract unit price paid per LF of Concrete Basin Top Edge shall include all layout, grading, concrete, reinforcement, backfill and compaction, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per linear foot of Concrete Basin Top Edge installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per LF of the complete and accepted Concrete Basin Top Edge. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.32 Concrete Basin Access Ramp (Per Detail 1/40) – Item No. 85

The contract unit price paid per SF of Concrete Basin Access Ramp shall include all layout, grading, subgrade compaction, asphalt concrete, crushed miscellaneous base, geotextile, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per square foot of Concrete Basin Access Ramp installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per SF of the complete and accepted Concrete Basin Access Ramp. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.33 Expansion Joint – Concrete Basin (Per Detail 7/39) – Item No. 86

The contract LS paid for Expansion Joint – Concrete Basin shall include full compensation for furnishing all labor, tools, equipment, and incidentals and for doing all work involved in Expansion Joint – Concrete Basin, and/or other operations incidental and required to complete Expansion Joint – Concrete Basin, and as shown on the Plans, as specified in the Standard Specifications and these Technical Specifications, and as directed by the Engineer.

The final pay quantities will be determined through field verification that the work has been completed in accordance with the Plans and these Technical Specifications. Interim progress payments will be based on the Engineer's evaluation of the estimated percentage of work completed during the subject period.

4.34 Contraction Joint – Concrete Basin (Per Detail 8/39) – Item No. 87

The contract LS paid for Contraction Joint – Concrete Basin shall include full compensation for furnishing all labor, tools, equipment, and incidentals and for doing all work involved in Contraction Joint – Concrete Basin, and/or other operations incidental and required to complete Contraction Joint – Concrete Basin, and as shown on the Plans, as specified in the Standard Specifications and these Technical Specifications, and as directed by the Engineer.

The final pay quantities will be determined through field verification that the work has been completed in accordance with the Plans and these Technical Specifications. Interim progress payments will be based on the Engineer's evaluation of the estimated percentage of work completed during the subject period.

4.35 AC Paved Bench (Per Detail 3/40) – Item No. 88

The contract unit price paid per SF of AC Paved Bench shall include all layout, grading, subgrade compaction, asphalt concrete, crushed miscellaneous base, geotextile, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per square foot of AC Paved Bench installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per SF of the complete and accepted AC Paved Bench. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.36 36-Inch CHDPE – Riser Outlet (Per Detail 6/41) – Item No. 89

The contract LS paid for 36-Inch HDPE – Riser Outlet shall include full compensation for furnishing all labor, tools, equipment, and incidentals and for doing all work involved in 36-Inch HDPE – Riser Outlet, and/or other operations incidental and required to complete 36-Inch HDPE – Riser Outlet, and as shown on the Plans, as specified in the Standard Specifications and these Technical Specifications, and as directed by the Engineer.

The final pay quantities will be determined through field verification that the work has been completed in accordance with the Plans and these Technical Specifications. Interim progress payments will be based on the Engineer's evaluation of the estimated percentage of work completed during the subject period.

4.37 Geocomposite Basin Underdrain (Per Detail 5/39) – Item No. 90

The contract unit price paid per LF of Geocomposite Basin Underdrain shall include all layout, grading, concrete, reinforcement, backfill and compaction, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per linear foot of Geocomposite Basin Underdrain installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per LF of the complete and accepted Geocomposite Basin Underdrain. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.38 8-Inch Permanent Skimmer (Per Details 3/41 & 1/42) – Item No. 91

The contract unit price paid for EA 8-Inch Permanent Skimmer, shall include full compensation for furnishing all materials, labor, tools, equipment, and incidentals and for doing all the work involved in construction of the 8-Inch Permanent Skimmer complete in place, including all materials, layout, epoxy, installation and other appurtenances as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

The final pay quantities will be determined through field verification that the work has been completed in accordance with the Plans and these Technical Specifications. Interim progress payments will be based on the Engineer's evaluation of the estimated percentage of work

completed during the subject period.

4.39 8-Inch Permanent Skimmer Hanging Apparatus (Per Details 3/41 & 1/42) – Item No. 92

The contract unit price paid for EA 8-Inch Permanent Skimmer Hanging Apparatus, shall include full compensation for furnishing all materials, labor, tools, equipment, and incidentals and for doing all the work involved in construction of the 8-Inch Permanent Skimmer Hanging Apparatus complete in place, including all materials, layout, epoxy, installation and other appurtenances as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

The final pay quantities will be determined through field verification that the work has been completed in accordance with the Plans and these Technical Specifications. Interim progress payments will be based on the Engineer's evaluation of the estimated percentage of work completed during the subject period.

4.40 Skimmer Support Frame (Per Detail 2/42) – Item No. 93

The contract unit price paid for EA Skimmer Support Frame, shall include full compensation for furnishing all materials, labor, tools, equipment, and incidentals and for doing all the work involved in construction of the Skimmer Support Frame complete in place, including all materials, layout, epoxy, installation and other appurtenances as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

The final pay quantities will be determined through field verification that the work has been completed in accordance with the Plans and these Technical Specifications. Interim progress payments will be based on the Engineer's evaluation of the estimated percentage of work completed during the subject period.

4.41 6-Inch SDR 17 Solid HDPE Skimmer Outlet Pipe (Per Detail 2/41) – Item No. 94

The contract price paid per LF for 6-Inch SDR 17 Solid HDPE Skimmer Outlet Pipe shall include full compensation for furnishing all labor, tools, equipment, and incidentals and for doing all the work involved in 6-Inch SDR 17 Solid HDPE Skimmer Outlet Pipe, complete in place, including all pipe, fittings, end caps, geotextile restraints, and other appurtenances as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

Final pay quantities shall be determined from the approved Record Drawings indicating the actual lineal footage of 6-Inch SDR 17 Solid HDPE Skimmer Outlet Pipe installed. 6-Inch SDR 17 Solid HDPE Skimmer Outlet Pipe installed beyond the limits indicated on the Plans will not be compensated unless the work has been authorized by the Engineer.

4.42 Install Winch and Winch Stand (Per Detail 4/41) – Item No. 95

The contract unit price paid for EA Winch and Winch Stand, shall include full compensation for furnishing all materials, labor, tools, equipment, and incidentals and for doing all the work involved in construction of the Winch and Winch Stand complete in place, including all materials, layout, epoxy, installation and other appurtenances as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

The final pay quantities will be determined through field verification that the work has been completed in accordance with the Plans and these Technical Specifications. Interim progress

payments will be based on the Engineer's evaluation of the estimated percentage of work completed during the subject period.

4.43 AC Thickened Edge (Per Detail 2/37) – Item No. 96

The contract unit price paid per LF of AC Thickened Edge shall include all layout, excavation, asphalt, grading, backfill and compaction, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per linear foot of Thickened Edge installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per LF of the complete and accepted AC Thickened Edge. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.44 Construct Cable Railing per Caltrans Std. Plan B11-47 – Item No. 97

The contract unit price paid per LF of Cable Railing per Caltrans Std. Plan B11-47 shall include all layout, excavation, asphalt, trenching, grading, backfill and compaction, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per linear foot of Cable Railing per Caltrans Std. Plan B11-47 installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per LF of the complete and accepted Cable Railing per Caltrans Std. Plan B11-47. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.45 Reinforced Concrete Retaining Wall (H=12-Foot) Type 2 Per SPPWC 611-3 (Per Detail 45/43) – Item No. 98

The contract unit price paid by the LF of Reinforced Concrete Retaining Wall (Type 2 per SPPWC Std. Plan 611-3; H=12') and shall include all layout, excavation, concrete, reinforcement, grading, backfill and compaction, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per LF of Reinforced Concrete Retaining Wall (Type 2 per SPPWC Std. Plan 611-3; H=12') installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per LF the complete and accepted Reinforced Concrete Retaining Wall (Type 2 per SPPWC Std. Plan 611-3; H=12'). Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.46 Reinforced Concrete Retaining Wall (H=10-Foot) Type 2 Per SPPWC 611-3 (Per Detail 45/43) – Item No. 99

The contract unit price paid by the LF of Reinforced Concrete Retaining Wall (Type 2 per SPPWC Std. Plan 611-3; H=10') and shall include all layout, excavation, concrete, reinforcement, grading, backfill and compaction, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per LF of Reinforced Concrete Retaining Wall (Type 2 per SPPWC Std. Plan 611-3; H=10') installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per LF of the complete and accepted Reinforced Concrete Retaining Wall (Type 2 per SPPWC Std. Plan

611-3; H=10'). Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.47 Reinforced Concrete Retaining Wall (H=7-Foot) Type 2 Per SPPWC 611-3 (Per Detail 45/43) – Item No. 100

The contract unit price paid by the LF of Reinforced Concrete Retaining Wall (Type 2 per SPPWC Std. Plan 611-3; H=7') and shall include all layout, excavation, concrete, reinforcement, grading, backfill and compaction, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per LF of Reinforced Concrete Retaining Wall (Type 2 per SPPWC Std. Plan 611-3; H=7') installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per LF of the complete and accepted Reinforced Concrete Retaining Wall (Type 2 per SPPWC Std. Plan 611-3; H=7'). Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.48 Reinforced Concrete Retaining Wall (H=4-Foot) Type 2 Per SPPWC 611-3 (Per Detail 45/43) – Item No. 101

The contract unit price paid by the LF of Reinforced Concrete Retaining Wall (Type 2 per SPPWC Std. Plan 611-3; H=4') and shall include all layout, excavation, concrete, reinforcement, grading, backfill and compaction, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per LF of Reinforced Concrete Retaining Wall (Type 2 per SPPWC Std. Plan 611-3; H=4') installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per LF of the complete and accepted Reinforced Concrete Retaining Wall (Type 2 per SPPWC Std. Plan 611-3; H=4'). Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.49 Install Reinforced Concrete Box (Per SPPWC Std. Plan 390-1; (S=4', R=2', T_t=7.5", T_b=6", T_w=5")) – Item No. 102

The contract unit price paid by the LF of Reinforced Concrete Box (Per SPPWC Std. Plan 390-1; (S=4', R=2', T_t=7.5", T_b=6", T_w=5")) and shall include all layout, excavation, concrete, reinforcement, grading, backfill and compaction, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per LF of Reinforced Concrete Box (Per SPPWC Std. Plan 390-1; (S=4', R=2', T_t=7.5", T_b=6", T_w=5")) installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per LF of the complete and accepted 4'x2' Precast Reinforced Concrete Box (Per SPPWC Std. Plan 390-1; S=4', R=2', T_t=7.5", T_b=6", T_w=5"). Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.50 Construct 24-Inch Below Grade Pipe (Per Detail 98/40) – Item No. 103

The contract price paid per LF for 24-Inch Below Grade Pipe shall include full compensation for furnishing all labor, tools, equipment, and incidentals and for doing all the work involved in 24-Inch Below Grade Pipe, complete in place, including all pipe, fittings, end caps, geotextile

restraints, and other appurtenances as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

Final pay quantities shall be determined from the approved Record Drawings indicating the actual lineal footage of 24-Inch Below Grade Pipe installed. 24-Inch Below Grade Pipe installed beyond the limits indicated on the Plans will not be compensated unless the work has been authorized by the Engineer.

4.51 24-Inch CHDPE Pipe to Concrete Basin Junction Structure (Per Detail 6/40) – Item No. 104

The contract LS paid for 24-Inch CHDPE Pipe to Concrete Basin Junction Structure shall include full compensation for furnishing all labor, tools, equipment, and incidentals and for doing all the work involved in 24-Inch CHDPE Pipe to Concrete Basin Junction Structure, complete in place, including all pipe, fittings, end caps, geotextile restraints, and other appurtenances as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

Final pay quantities shall be determined from the approved Record Drawings indicating the LS of 24-Inch CHDPE Pipe to Concrete Basin Junction Structure installed. 24-Inch CHDPE Pipe to Concrete Basin Junction Structure installed beyond the limits indicated on the Plans will not be compensated unless the work has been authorized by the Engineer.

4.52 Concrete Headwall w/ Warped Wing Walls Per Caltrans Std. Plan D86B (L=6-Foot, H=3-Foot) – Item No. 105

The contract unit price paid per EA of Headwall with Warped Wing Walls Per Caltrans Std. Plan D86B shall include all layout, excavation, trenching, grading, backfill and compaction, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per each Headwall with Warped Wingwalls installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per EA of the complete and accepted Headwall with Warped Wing Walls Per Caltrans Std. Plan D86B. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.53 AC Trapezoidal Downdrain (B=1-Foot, D=1-Foot, Z=2-Foot) (Per Detail 5/40) – Item No. 106

The contract unit price paid per LF of AC Trapezoidal Downdrain shall include all layout, excavation, asphalt, trenching, grading, backfill and compaction, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per linear foot of downdrain installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per LF of the complete and accepted AC Trapezoidal Downdrain. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.54 Offline Kraken Filter w/ 30-Inch Filter Cartridges Model KFOV0406 (4-Foot X 6-Foot) – Item No. 107

The contract LS paid of KFOV0406 (4'x6') Offline Kraken Filter System with (23) 30" Filter

Cartridges shall include all layout, excavation, trenching, grading, manhole risers, manhole covers, filter cartridges, pipe stubs, bedding, backfill and compaction, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the unit price per Kraken Filter System installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per EA of the complete and accepted KFOV0406 (4'x6') Offline Kraken Filter System with (23) 30" Filter Cartridges. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.55 12-Inch CHDPE Outlet Pipe (Per Detail 9/40) – Item No. 108

The contract price per LF of 12-Inch CHDPE Outlet Pipe shall provide full compensation for all labor, tools, equipment, and incidentals required to complete the work. This includes furnishing and installing the pipe in place with all fittings, end caps, geotextile restraints, and related appurtenances, as shown on the plans, specified in the Standard Specifications, and these Special Provisions, and as directed by the Engineer.

Final pay quantities shall be determined from the approved Record Drawings indicating the actual lineal footage of 12-Inch CHDPE Outlet Pipe installed. The contract price paid per LF for 12-Inch CHDPE Outlet Pipe installed beyond the limits indicated on the Plans will not be compensated unless the work has been authorized by the Engineer.

4.56 Pipe Bollard (Per Detail 5/41) – Item No. 109

The contract unit price paid per EA of Pipe Bollard shall include all layout, excavation, grading, steel pipe, concrete, backfill and compaction, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per each Pipe Bollard installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per EA of the complete and accepted Pipe Bollards. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.57 AC Paving Join (Per Detail 1/37) – Item No. 110

The contract unit price paid per LF of AC Paving Join shall include all layout, excavation, asphalt, trenching, grading, backfill and compaction, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per linear foot of AC Paving Join installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per LF of the complete and accepted AC Paving Join. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.58 Concrete Basin Join; Salvage and Extend Reinforcement 2-Foot Minimum and Tie to New Basin Reinforcing; Should Existing Reinforcement be Un-Salvageable, Drill, Dowel, and Epoxy #5 Bars at 12-Inch O.C. with 12-Inch Minimum Deep, 3/4-Inch Bore Hole – Item No. 111

The contract unit price paid per LF of Concrete Basin Join; Salvage and Extend Reinforcement 2-Foot minimum and Tie to New Basin Reinforcing shall include all layout, grading, concrete, reinforcement, backfill and compaction, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per linear foot of Concrete Basin Join; Salvage and Extend Reinforcement 2-Foot minimum and Tie to New Basin Reinforcing installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per LF of the complete and accepted Concrete Basin Join; Salvage and Extend Reinforcement 2-Foot minimum and Tie to New Basin Reinforcing. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.59 Subdrain Junction (Per Detail 11/39) – Item No. 112

The contract unit price paid per EA of Subdrain Junction shall include all layout, excavation, grading, steel pipe, concrete, backfill and compaction, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per each Subdrain Junction installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per EA of the complete and accepted Subdrain Junction. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.60 Reinstall Salvaged McCarthy Flume Downdrain and Lap 2-Foot Into Reinforced Concrete Box – Item No. 113

The contract unit price paid per LF of Flume Downdrain and Lap 2-Foot Into Reinforced Concrete Box shall include all layout, grading, concrete, reinforcement, backfill and compaction, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per linear foot of Flume Downdrain and Lap 2-Foot Into Reinforced Concrete Box installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per LF of the complete and accepted Flume Downdrain and Lap 2-Foot Into Reinforced Concrete Box. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.61 8-Inch-Thick Reinforced Concrete Wall; Splash Wall (Per Detail 3/37) – Item No. 114

The contract unit price paid per LF of Splash Wall; Length and Height Per Plan shall include all layout, grading, concrete, concrete masonry units, reinforcement, grout, backfill and compaction, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per linear foot of Splash Wall installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per LF of the complete and accepted Splash Wall; Length and Height Per Plan. Interim progress payments

will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.62 24-Inch Drop Inlet (Per Detail 4/40) – Item No. 115

The contract unit price paid per EA of 24-Inch Drop Inlet shall include all layout, excavation, grading, steel pipe, concrete, backfill and compaction, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per each 24-Inch Drop Inlet installed.

Payment for the complete and accepted quantities will be at the contract unit price bid per EA of the complete and accepted 24-Inch Drop Inlet. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.63 Join 4-Inch Solid HDPE Basin Subdrain Pipe to Existing 36-Inch CHDPE Pipe (Per Detail 6/41) – Item No. 116

The contract unit price paid per EA of 4-Inch Solid HDPE Basin Subdrain Pipe to Existing 36-Inch CHDPE Pipe shall include all layout, excavation, grading, steel pipe, concrete, backfill and compaction, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per each 4-Inch Solid HDPE Basin Subdrain Pipe to Existing 36-Inch CHDPE Pipe installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per EA of the complete and accepted 4-Inch Solid HDPE Basin Subdrain Pipe to Existing 36-Inch CHDPE Pipe. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.64 Construct LCRS Winch System Pad and Retaining Wall (Per Detail 1/43) – Item No. 117

The contract unit price paid per LF of LCRS Winch System Pad and Retaining Wall shall include all layout, grading, concrete, concrete masonry units, reinforcement, grout, backfill and compaction, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per linear foot of LCRS Winch System Pad and Retaining Wall installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per LF of the complete and accepted LCRS Winch System Pad and Retaining Wall. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.65 Construct North Retaining Wall (Per Detail 2/43) – Item No. 118

The contract unit price paid per LF of North Retaining Wall shall include all layout, grading, concrete, concrete masonry units, reinforcement, grout, backfill and compaction, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per linear foot of North Retaining Wall installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per LF of the complete and accepted North Retaining Wall. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.66 Construct Wall Over Line A (Per Detail 3/43) – Item No. 119

The contract unit price paid by the LF of Wall Over Line A and shall include all layout, excavation, concrete, reinforcement, grading, backfill and compaction, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per LF of Wall Over Line A installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per LF of the complete and accepted Wall Over Line A. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.67 West Retaining Wall to Basin Connection (Per Detail 4/43) – Item No. 120

The contract unit price paid by the LF of West Retaining Wall to Basin Connection and shall include all layout, excavation, concrete, reinforcement, grading, backfill and compaction, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per LF of West Retaining Wall to Basin Connection installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per LF of the complete and accepted West Retaining Wall to Basin Connection. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.68 Construct 12-Inch Thick Reinforced Concrete Wall Along Top of Access Road; Height Per Plan – Item No. 121

The contract unit price paid by the LF of 12" Thick Reinforced Concrete Retaining Wall and shall include all layout, excavation, concrete, reinforcement, grading, backfill and compaction, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price per LF of 12" Thick Reinforced Concrete Retaining Wall installed.

Payment for the completed and accepted quantities will be at the contract unit price bid per LF of the complete and accepted 12" Thick Reinforced Concrete Retaining Wall. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period.

4.69 Site Striping Improvements – Item No. 60

The contract unit price paid per lump sum of Site Striping Improvements shall include all labor, materials, tools, and equipment for doing all the work involved in Site Striping Improvements complete with all layout, markings, street sweeping, paint, spraying, and/or other incidentals and appurtenances required to complete the work in accordance with the details on the drawings and the requirements of these specifications.

This bid items shall also include:

- Obliterate approximately 150 LF of existing Right Edge Line;
- Approximately 3,350 LF of Detail 27B Right Edge Line per CA MUTCD Figure 3A-106 (CA);

- Approximately 1,325 LF of 4-Inch White Lane Line per Detail 8 CA MUTCD Figure 3A-102 (CA);
- 1 EA of Stop Sign, Stop Pavement Markings, and Stop Bar per SSPWC STD Plan 172-0;
- Approximately 3,310 SF of 8-Inch White Line per Detail 38A CA MUTCD Figure 3A-112 (CA) at 45 degrees and 5-feet on center for the No Parking Areas.

Payment for the completed and accepted quantities will be at the contract unit price bid per lump sum of the complete and accepted Site Striping Improvements. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period. Site Striping Improvements placed beyond the limits indicated on the drawings will not be compensated unless the work has been authorized by the Engineer.

4.70 Entrance Facility Sign Improvements – Item No. 122

The contract unit price paid on a time and materials basis per Greenbook published rates and prevailing wages and include all layout, excavation, grading, backfill and compaction, concrete, sign, post, and/or all other operations, equipment, or materials incidental items required to complete the work to the limits indicated on the Drawings and shall be included in the Contractor's unit price paid on a time and material basis for the installation of the Entrance Facility Sign Improvements. Existing Signs are to be relocated and new Signs may need to be created as a part of this bid item. Final quantity and placement of the Entrance Facility Sign Improvements shall be per the Engineer and/or the Owner during construction.

Payment for the completed and accepted quantities will be at the contract unit price bid paid on a time and materials basis of the complete and accepted Entrance Facility Sign Improvements. Interim progress payments will be based on the CM evaluation of the estimated percentage of work completed during the subject period. Entrance Facility Sign Improvements placed beyond the limits indicated on the drawings will not be compensated unless the work has been authorized by the Engineer.

END OF SECTION 2K

ATTACHMENT 6 TO ADDENDUM NO. 3
CQA PLAN FOR EARTHWORK AND GEOSYNTHETIC
ELEMETS OF THE UNIT 4 PHASE 2 COMPOSITE
LINER SYSTEM

Construction Quality Assurance (CQA) Plan for Earthwork and Geosynthetic Elements of the Unit 4 Phase 2 Composite Liner System

Mid-Valley Sanitary Landfill
County of San Bernardino, California

Prepared For:



County of San Bernardino
Solid Waste Management Division
222 W. Hospitality Lane, 2nd Floor
San Bernardino, California 92408

Prepared by

Geo-Logic
ASSOCIATES

Geo-Logic Associates
2777 East Guasti Road, Suite 1
Ontario, California 91761
(909) 626-2282

December 2025

Certification

This Construction Quality Assurance Plan was prepared in accordance with generally accepted professional geotechnical engineering and hydrogeologic principles and practices. This Construction Quality Assurance Plan makes no other warranties, either expressed or implied as to the professional advice or data included in it. This Construction Quality Assurance Plan has not been prepared for use by parties or projects other than those named or described herein. It may not contain sufficient information for other parties or purposes.

GEO-LOGIC ASSOCIATES



Tom Runyan
CQA/Field Services Manager
trunyan@geo-logic.com
21760 Van Buren Blvd., Suite 101
Riverside, CA 92508



Luis A. Mariscal, PE
Senior Engineer
lmariscal@geo-logic.com
2777 East Guasti Road, Suite 3
Ontario, CA 91761



Robbie M. Warner, PE, GE
Principal Geotechnical Engineer
rwarner@geo-logic.com
2777 East Guasti Road, Suite 3
Ontario, CA 91761



Date signed: December 19, 2025

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1. INTRODUCTION

A Construction Quality Assurance (CQA) program consists of selected observation, testing, inspection and documentation of a final construction product in order to provide the Owner and reviewing agencies an independent assessment and certification that the end product is of the specified quality of materials and workmanship and was constructed in accordance with the Project Drawings and Specifications. Because of possible conflicts of interest, the Contractor cannot undertake the CQA function directly. Rather, CQA inspection and testing is to be performed by an independent and objective authority with a single team of quality assurance inspection professionals.

A Construction Quality Control (CQC) program consists of selected tests and inspections performed by the Contractor during production which can assist the Contractor in producing the quality product required. While the CQC function is the sole responsibility of the Contractor, the Project Manager may, at his/her discretion, provide information regarding the ongoing CQA monitoring for the Contractor's use in implementing his/her CQC function. Release of the CQA data to the Contractor would be for convenience only and would, in no way, relieve the Contractor from the responsibility to fulfill the project requirements.

The composite liner groundwater protection system proposed for Unit 4 Phase 2 at the Mid-Valley Sanitary Landfill consists of individual discrete layers of earthen and geosynthetic materials which will function as a unit to form the containment system for the waste management area. As proposed, the composite liner system will consist of individual discrete members including, from bottom to top: prepared subgrade; low-permeability material; primary high-density polyethylene (HDPE) geomembrane liner placed over the low-permeability material layer; geosynthetic clay liner (GCL); secondary HDPE geomembrane placed over the GCL; 16-ounce non-woven cushion geotextile; a leachate collection and recovery system (on benches only); and a two-foot thick protective soil cover layer.

Each of these components functions as an integral part of the composite liner system and, consequently, must become a finished product during the course of construction. As a result, it is important that each layer or component of the composite liner be completed to the design specifications prior to construction of successive or overlying layers. Because it would not be possible to effectively perform CQA functions for all layers of the composite liner system if CQA observation and testing were deferred until after construction of this system, it is necessary to conduct an ongoing CQA program during construction.

This document presents the Construction Quality Assurance (CQA) Plan for installation of the earthwork and geosynthetic components of the composite liner system for the Unit 4 Phase 2

area at the Mid-Valley Sanitary Landfill in San Bernardino County, California. This CQA Plan is based on the Construction Drawings and Technical Specifications prepared by SWT Engineering (SWT) dated September 2025. This CQA Plan is to be used in conjunction with the Unit 4 Phase 2 Composite Liner Construction Project Construction Drawings and Technical Specifications prepared for the Mid-Valley Sanitary Landfill.

This CQA Plan includes:

- A Quality Assurance Program to be implemented during earthwork and geosynthetic material construction, including field observation, laboratory and field testing, and acceptance criteria for constructed work;
- Recording and documentation procedures to be employed for demonstrating that the constructed earthwork and geosynthetic liner components meet the requirements of the Project Construction Drawings and Technical Specifications;
- Lines of communication, responsibilities and roles of the Construction Quality Assurance team and other related Project Personnel.

1.1 PROJECT REQUIREMENTS

In order to satisfy the requirements established by the governing regulatory agencies, the following composite liner system design has been selected for the Unit 4 Phase 2 Groundwater Protection System Composite Liner area.

In slope and Bench areas the liner system will be composed of the following elements:

- Subgrade prepared to the requirements of the Project Documents;
- A minimum 26-inch-thick compacted low-permeability material liner yielding a permeability of $< 1.0 \times 10^{-6}$ cm/sec;
- A 60-mil-thick double-sided textured HDPE geomembrane;
- A geosynthetic clay liner (GCL);
- A 60-mil-thick single-sided textured HDPE geomembrane with the textured side placed down;
- A sixteen (16) ounce non-woven geotextile placed immediately on top of the geomembrane;
- A minimum two- (2) foot-thick protective soil cover (operations layer) composed of select soil materials. Said materials shall be screened to exclude particles in excess of one-inch in maximum dimension and placed to the depths and limits shown on the Plans

- A protective plastic cover (UV protection)/wind ballast placed over geosynthetics not covered by protective soil cover.

All materials used to construct the composite liner system must meet or exceed the criteria established in this CQA document and the Construction Drawings and Technical Specifications. Any deviation from these criteria must be pre-approved by the Design Engineer and the CQA Consultant.

2. RESPONSIBLE PARTIES AND DEFINITIONS

2.1 RESPONSIBLE PARTIES

The responsible parties for all Unit 4 Phase 2 Composite Liner Groundwater Protection System construction activities at the Mid-Valley Sanitary Landfill, as set forth herein, are as follows:

Owner:

County of San Bernardino Solid Waste Management Division
222 W. Hospitality Lane, 2nd Floor
San Bernardino, California 92415
Phone: (909) 386-9017
Contact: Mr. Johnny Gayman, PE

Landfill Operator:

Athens Services, Inc.
222 W. Hospitality Lane, 2nd Floor
San Bernardino, California 92415
Phone:
Contact:

Design Engineer:

SWT Engineering, Inc.
800-C South Rochester Avenue
Ontario, California 91761
Phone: (909) 390-1328
Contact: Mr. Brian Reyes

Construction Manager:

To Be Determined

CQA Consultant:

To Be Determined

2.2 DEFINITIONS

"Construction Manager" - Person(s) or firm(s) authorized by the County of San Bernardino Solid Waste Management Division to manage and oversee the administration of the Construction Contract. The Construction Manager shall be responsible for evaluating lines and grades (survey control) for the individual liner elements as well as verification of payment request, submittal acceptance, and change orders.

"Construction Quality Assurance (CQA)" - The protocols to be followed in evaluating the adequacy of the Contractor's work with regard to all elements of earthworks and geosynthetics construction with the exception of line and grade (survey) control. Said work shall include, but need not be limited to, all CQA activities delineated herein and in the Technical Specifications except concrete and/or structure construction, surveying, and other non-geotechnical work items. CQA is to be provided by a party independent of the Contractor.

"Contractor" - The firm responsible for all elements of construction of the containment system. In this regard, the Contractor's responsibilities include but are not limited to: preparation of subgrade and supporting surfaces (generally soil) for the geosynthetic installation; installation of the geosynthetics; and placing earth and granular materials over the installed geosynthetic systems. The Contractor is further responsible for all activities of Subcontractors including but not limited to the geosynthetics Subcontractor.

"County" – County of San Bernardino, Department of Public Works, Solid Waste Management Division.

"CQA Consultant" - An independent party or firm responsible for observing, testing, and documenting activities related to quality assurance for all geotechnical and geosynthetic aspects of construction except for concrete sampling & testing and survey control. All completed geotechnical work is subject to approval by the CQA Consultant.

"CQA Manager" - The individual serving under the direction of the CQA Officer and responsible for managing day to day geotechnical and geosynthetics Construction Quality Assurance (CQA).

"CQA Monitors" - The individuals working under the direction of the CQA Manager who are routinely involved in the construction process. Such personnel include "Technicians", "Field Engineers" and "Field Geologists" representing the CQA Consultant. CQA Monitors, who are responsible for CQA of geosynthetics and earthwork, shall be experienced in landfill construction monitoring, geosynthetic material installation, engineered fill construction and testing, and compaction testing during grading operations.

"CQA Officer" - Geological/geotechnical professional licensed as a Civil Engineer, Geotechnical Engineer, or Certified Engineering Geologist in the State of California who, under the employ of the CQA Consultant, is responsible for earthwork and geosynthetics observation, monitoring, testing, and documentation.

"Design Engineer" - The firm responsible for the design and preparation of the Construction Drawings and Technical Specifications, including the containment system, that fulfills the regulatory and operational requirements of the permitting agencies and Owner, respectively. The Design Engineer, also known as the Engineer, is also responsible to modify or change the design if unexpected or unanticipated site conditions are encountered during construction.

"Geosynthetics" - A generic classification given to synthetic (man-made plastic and fabric) materials used in geotechnical and construction applications. Included are geomembrane or flexible membrane liners (HDPEs), geotextiles, geosynthetic clay liner (GCL), geonets, geogrids, geocomposites and geocells. At the Mid-Valley Sanitary Landfill, the term geosynthetics is used to refer to the HDPE, GCL, and geotextiles.

"Geosynthetic Subcontractor" - The firm responsible for handling, storing, placing, seaming, and other aspects of the installation of the geosynthetics included in the composite liner system.

"Independent Testing Laboratory" - The firm responsible for conducting selected tests of materials and/or products used for the project, such as conformance and destructive seam testing. The laboratory shall be independent of the County, Manufacturer, Contractor, Geosynthetics Subcontractor and any party involved with the manufacture and/or installation of any product to be tested.

"Project Documents" - Project Documents include all Construction Drawings, Record Drawings, Technical Specifications, CQA Plans, Health and Safety Plans, Project Schedules, and Contractor Submittals.

"Project Drawings and Specifications" - All project related Drawings and Specifications including Construction Drawings, Technical Specifications, Design Modifications, and Record Drawings.

"Project Manager" - The County's designated representative responsible for the Project.

"Quality Assurance" - Actions taken by the Owner or his representative necessary to evaluate whether the earthen and geosynthetic materials and workmanship meet the requirements of the Project Drawings and Specifications.

"Quality Control" - Actions taken by the Contractor, Subcontractors and/or Liner Manufacturer(s) to ensure that the earthen and geosynthetic materials and workmanship meet the requirements of the Project Drawings and Specifications.

"Standard Specifications for Public Works Construction" (SSPWC)" - Referenced technical specification document, 2024 Edition, and all subsequent amendments, supplements and additions, by the American Public Works Association.

"Work" - All tools, equipment, supervision, labor, and materials or supplies necessary to complete the project as specified in the Project Technical Specifications and as shown on the Project Construction Drawings.

3. CQA CONSULTANT

The CQA Consultant for composite liner system construction will be composed of a team of field personnel with specific experience in the inspection and CQA monitoring of earthwork and geosynthetic materials specifically related to landfill liner construction. The principal categories of personnel assigned by the CQA Consultant to this team are presented below.

3.1 CQA Officer

The CQA Officer shall be a representative of the CQA Consultant and shall have overall responsibility for all project geotechnical and geosynthetic CQA activities.

Geological/geotechnical professional licensed as a Civil Engineer, Geotechnical Engineer, or Certified Engineering Geologist in the State of California who, under the employ of the CQA Consultant, is responsible for earthwork and geosynthetics observation, monitoring, testing, and documentation.

The CQA Officer will be responsible for reviewing all earthwork or geosynthetic issues which may arise during construction. The CQA Officer's approval will be required for any earthwork or geosynthetic material modifications or for any design modifications which may impact the performance of earthen or geosynthetic materials.

3.2 CQA MANAGER

The CQA Manager will serve as the CQA Officer's on-site representative. All CQA functions will be his/her direct responsibility except concrete construction and survey control. All coordination, reporting and issues related to non-compliance will be directed through the

Construction Manager. In addition, he/she will participate with the County, Engineer and CQA Officer in all decisions related to design issues which arise during the course of construction.

The CQA Manager shall be responsible for overall review, observation, sampling, and testing of activities utilized for Construction Quality Assurance (CQA). Specific duties of the CQA Manager include:

- Review of all designs, Project Drawings and Specifications, and Project Documents;
- Implementation of the CQA program including: assignment and management of all CQA personnel; review of all field reports; and review of all CQA related issues;
- Review of design changes and coordination of such changes with the Design Engineer;
- Serving as the on-site representative of the CQA Officer;
- Familiarization of all CQA Monitors with the site and the CQA requirements of the project;
- Attendance at all CQA related meetings (i.e., preconstruction, progress, and special meetings as required);
- Review of all Liner Manufacturer and Liner Subcontractor certifications and documentation and development of appropriate recommendations;
- Designation of a senior CQA Monitor to act on his/her behalf at the site while he/she is absent and operations are ongoing;
- Notation of any on-site activities that could result in damage to the geosynthetics;
- Review of the Liner Subcontractor's personnel qualifications for conformance with project requirements;
- Oversight of the ongoing preparation of "As-Built" Plan(s), a.k.a. Record Drawings;
- Review of all CQA Monitors daily reports and logs;
- Reporting to the Construction Manager and logging in his/her daily report any relevant observations reported to him by the CQA Monitors;
- Oversight of the marking, packaging and shipping of all laboratory test samples;
- Review of the results of laboratory testing and presentation of appropriate recommendations;
- Preparation of a monthly summary of CQA activities;
- Reporting of any unresolved deviations from the CQA Plan to the Construction Manager; and
- Preparation of the final certification report for all completed geotechnical and geosynthetic construction activities. The final certification report shall be signed by the CQA Manager and signed and stamped by the CQA Officer.

3.3 CQA MONITORS

3.3.1 FIELD GEOLOGIST/FIELD ENGINEER

Although geologic mapping of the Unit 4 Phase 2 area excavation has already been performed, the CQA Consultant shall employ a Field Geologist for other as-needed mapping of newly exposed geologic conditions and/or other geologic assessment or monitoring. The Field Geologist will be licensed by the State of California as a geologist or certified engineering geologist. The Field Geologist's role for CQA activities for earthwork will include the following:

- Observation, mapping, and evaluation of all new excavations, cut/fill contacts, and geologic features with potential to impact the project; and
- Mapping and inspection of any buttress excavations or fill keyways.

The CQA Consultant may also employ Field Engineers. As representatives of the CQA Consultant, CQA activities of Field Engineers and/or Field Geologists may be responsible for evaluating whether earthen and/or geosynthetic materials conform to the requirements of the Project Drawings and Specifications. Duties of the Field Engineer/Field Geologist may include the following:

- Subgrade inspection, review, testing and documentation.
- Review of the adequacy of all clearing, grubbing, stripping and preparation of areas to receive fill.
- Monitoring and evaluation of any soil blending, mixing and processing operations.
- Evaluation of the engineering characteristics of the processed and constructed earth materials.

3.3.2 CQA MONITORS

CQA Monitors will be representatives of the CQA Consultant and will continuously observe all grading and geosynthetic operations to provide a basis for concluding that construction is carried out in conformance with the Project Drawings and Specifications. The duties of the CQA Monitors include monitoring, observing and testing all earthwork as well as monitoring, logging and documenting all geosynthetic installation operations.

The operations to be monitored observed and/or tested for the earthwork include:

- Observation of subgrade surface preparation.
- Verification that liner soils are derived from appropriate sources.
- Visual evaluation of the soil physical properties for consistency with the Project Drawings and Specifications.

- Evaluation of all moisture conditioning and processing operations to evaluate uniformity of material and moisture content.
- Evaluation of the constructed engineered fill material for conformance with the Project Drawings and Specifications.
- Identification of deleterious materials or other deficiencies in soil characteristics to minimize the possibility that these materials are incorporated into the composite liner system.
- Monitoring of activities for the removal and/or disaggregation of all oversize material.
- Observation of uniformity of coverage of compaction equipment, especially at fill edges, turnaround areas and on slope faces.
- Monitoring of lift thickness.
- Observation of the active fill pad at the beginning of each grading day and establishment of requirements for wetting/drying and/or processing of exposed surfaces prior to placement of additional fill.
- Undertaking field tests including but not limited to field moisture/density testing at the minimum frequencies noted herein or at any time that a deficiency is suspected.
- Recovery of samples for laboratory testing.
- Selection of locations for destructive test sampling;
- Confirmation that the test results are in accordance with the Technical Specifications (including retests of any previously failed areas).

The operations to be observed and monitored for all geosynthetics include:

- Material delivery.
- Unloading and on-site transport and storage.
- Placement/deployment operations.
- Joining and/or seaming operations.
- Repair operations.
- Specifically, the seaming operations to be monitored include:
 - Trial seams.
 - Seam preparation.
 - Seaming.
 - Non-destructive seam testing.
 - Sampling for destructive seam testing.
 - Laboratory test sample marking.
 - Repair operations.
 - Reviewing the final certification of seams.

In addition to these specific duties, the CQA Monitors shall be responsible for:

- Observing the condition of geosynthetic materials as placed.
- Selecting samples for conformance testing by the Independent Testing Laboratory.
- Marking samples for conformance testing.
- Notation of any on-site activities that could result in damage to the geosynthetics.

All observations shall be reported in a timely manner to the Construction Manager.

3.4 INDEPENDENT TESTING LABORATORY

The Independent Testing Laboratory shall be certified by the Geosynthetic Accreditation Institute (GAI) in the specific tests to be performed and will perform all conformance testing of geosynthetics and all destructive laboratory testing of field seams.

4. MEETINGS

In order to facilitate construction of the composite liner system, close coordination between the Construction Manager, Design Engineer, CQA Consultant, Contractor, Liner Subcontractor and CQA personnel is essential. To this end the following meetings will be scheduled.

4.1 PRE-CONSTRUCTION MEETINGS

A Pre-construction Meeting will be held at the site. At a minimum, the meeting shall be attended by the County (or designated representative), the Construction Manager, the Design Engineer, the Geotechnical Consultant (or designated representative), the Contractor and appropriate CQA staff.

Specific items to be considered at this meeting will include:

- Any appropriate modifications to the CQA requirements.
- Development of a format for site specific documentation.
- Review of the responsibilities of each party.
- Review of the lines of authority and communication.
- Review of work area security and safety protocol.
- Review of the procedures for project documentation and reporting, and distribution of documents and reports.
- Review of procedures for submittals, change orders and extra work efforts.

- Review of the Contractor's proposed methods of construction, (including equipment), with specific emphasis on methods of select grading, soil mixing, stockpiling, processing, moisture conditioning and compaction.
- Review of the procedures for field and laboratory CQA testing.
- Establishment of procedures for correcting and documenting construction deficiencies.
- Conducting an initial site inspection to discuss work areas, stockpile areas, mixing tables, laydown areas, access roads, haul roads, and related items.
- Review of the project schedule.

The meeting shall be documented by the Construction Manager and minutes shall be distributed to all parties.

4.2 WEEKLY PROGRESS MEETINGS

Progress Meetings shall be held weekly. At a minimum, these meetings shall be attended by the County (or designated representative), the Construction Manager, the CQA Manager and/or the CQA Monitors, and the Contractor. Weekly progress meetings shall be documented by the Construction Manager or his/her representative and minutes shall be distributed to all parties. The purpose of these meetings is to:

- Discuss any health and safety related issues.
- Review scheduled work activities.
- Discuss project related problems.
- Review laboratory and field test data.
- Discuss the Contractor's personnel and equipment assignments.
- Review the previous week's activities and accomplishments.

4.3 SPECIAL MEETINGS

Special meetings will be conducted as required to discuss any problems or deficiencies. At a minimum, these meetings will be attended by the County (or designated representative), Construction Manager, appropriate CQA staff and the Contractor. If correction of a problem requires a design modification, the Design Engineer and the CQA Officer will also be present. The purpose of these meetings is to:

- Define and discuss any problems or deficiencies in the Project.
- Review possible corrective actions or solutions.
- Implement an action plan to resolve the problems or deficiencies.

Special meetings shall be documented by the Construction Manager or his/her representative and minutes shall be distributed to all parties.

4.4 GEOSYNTHETIC MATERIAL PRE-INSTALLATION MEETING

A Geosynthetic Material Pre-installation Meeting may be held at the site before installation of the geosynthetics. At a minimum, the meeting shall be attended by the Construction Manager, the Design Engineer, the Contractor, the Liner Subcontractor, and CQA staff. The Pre-Installation Meeting will not be conducted until all Manufacturer Certifications required by the Technical Specifications and this document are received, reviewed and approved.

Specific items to be addressed at this meeting include:

- Submittal and review of relevant documents.
- Development of a format for site specific documentation.
- Definition of the responsibilities of each party.
- Definition of lines of authority and communication.
- Review of work area security and safety protocol.
- Definition of methods for documenting and reporting, including distributions.
- Selection of welding equipment and procedures.
- A field welded seam(s) demonstration.
- Identification of testing equipment and procedures, including peel and shear tests, and procedures for communicating laboratory test results.
- Identification of procedures for correcting and documenting construction deficiencies.
- A site inspection to discuss storage areas, work areas, stockpile areas, laydown areas, access roads, haul roads, and related items.
- Review of the project schedule.

The meeting shall be documented by the Construction Manager, and meeting minutes shall be distributed to all parties.

4.5 DAILY PROGRESS MEETINGS (if necessary)

Daily Progress Meetings may be held in the field before the start of work each day. At a minimum, these meetings shall be attended by the CQA Manager or his/her representative, CQA Monitors, the Contractor, and the Liner Subcontractor. The purpose of these meetings is to:

- Review and coordinate scheduled work activities between the CQA Monitors and the Liner Subcontractor's crew.
- Discuss any problems.
- Review test data.
- Discuss the Liner Subcontractor's personnel and equipment assignments for the day.
- Review the previous day's activities, accomplishments and/or deficiencies.

4.6 MANUFACTURING PLANT VISIT(S)

The Liner Subcontractor shall make arrangements with the Liner Manufacturer(s) to allow the CQA Manager or his/her designee to visit the geosynthetics manufacturing plant(s) during manufacture of the liner material for this project and to observe manufacturing methods and quality control of manufactured materials. If appropriate, the CQA Manager or his/her designee shall review the manufacturing process, quality control, laboratory facilities and testing procedures.

During the plant visit, those visiting shall:

- Observe that the geosynthetic properties presented in the Liner Manufacturer's certification documents meet the Technical Specifications.
- Verify that the measurements of properties by the Liner Manufacturer are properly documented and test methods used are acceptable.
- Spot inspect some of the geomembrane rolls and verify that they are free of holes, blisters, or any sign of contamination by foreign matter.
- Review packaging and transportation procedures to verify that these procedures are not damaging the geosynthetics.
- Observe that roll packages have a label indicating the name of the Liner Manufacturer, type of geosynthetic, its roll/panel number and other required information.
- Verify that extrusion rods and/or beads are derived from the same base resin type as the geomembrane.

5. CQA MONITORING FOR EARTH MATERIALS

5.1 GENERAL

Construction of the composite liner system shall be performed in accordance with the Project Drawings and Specifications and shall be continuously observed, and routinely sampled and tested by the CQA Monitors for the physical parameters described in this section.

Earth materials for construction of the Phase 2 liner will include, unclassified engineered fill, low-permeability material placed as engineered fill, anchor trench backfill, and protective cover soil. The testing frequency presented herein is a minimum. Additional tests will be conducted by the CQA Monitor for retests and at any time that in the opinion of the CQA Monitor, additional testing is required and/or a deficiency is suspected. Retests of previously failed areas will be performed at the discretion of the CQA Monitor when, in his/her opinion, sufficient reworking of the area has been performed to warrant a retest.

5.2 UNCLASSIFIED ENGINEERED FILL

Unclassified engineered fills will be placed at the locations indicated on the Drawings to bring the composite liner system subgrade to the design line and grade. Unclassified engineered fill will be generated from the Phase 2 excavation, or on-site borrow areas and/or stockpiles as indicated on the Drawings, processed to remove particles in excess of 6-inches, moisture conditioned to ± 2 percent of optimum moisture content, and compacted in 6-to 8-inch lifts to a minimum of 90 percent density when compared to the maximum dry density (ASTM D-1557). Unclassified engineered fill placed on slope areas shall be properly keyed into the existing subgrade materials to provide an adequate bond between the fill and underlying subgrade materials.

5.3 LOW-PERMEABILITY MATERIAL PLACEMENT

The low-permeability material layer of the composite liner system will be constructed of approved Vulcan Pond Silts or an approved optional alternate source as detailed in Section 2D of the Technical Specifications. Approved low-permeability material shall be screened, dried, and/or moisture conditioned until uniformly-blended material characteristics and moisture conditioning are attained. Only material from the approved tested source will be allowed for import to the site, this will be confirmed and approved per the table below. Field and laboratory testing for moisture content, in-place dry density, and engineering properties during construction of the low-permeability material compacted fill layer of the liner system will be completed according to the following minimum schedule:

Low-Permeability Material Fill Testing Type and Frequency

Test Description	Test Designation	Minimum Test Frequency	Passing Criteria
Processed Moisture Content	ASTM D4643 (microwave) or ASTM D2216 (oven)	Two per construction day	+2% to +4% of optimum moisture content
Moisture-Density Relationship	ASTM D1557	One per 10,000 cubic yards (CY) or per change in material type	NA
In-Place Moisture-Density (Nuclear Method)	ASTM D6938	One per 1,000 cubic yards placed	min. 95% relative density
In-Place Density and Moisture Content (Sand-Cone or Drive Ring)	ASTM D1556 or ASTM D2937	One per 10,000 cubic yards placed or 10 percent of nuclear gauge tests	min. 95% relative density
Particle Size Analysis	ASTM D422	One per 5,000 CY (conducted on samples collected for permeability testing)	<1", CL classification
Atterberg Limits	ASTM D4318	One per 5,000 CY (conducted on samples collected for permeability testing)	LL≤50 ; 10≤PI≤50
Laboratory Permeability	ASTM D5084	One per 5,000 cubic yards placed	< 1x10 ⁻⁶ cm/sec
BAT Permeability ⁽¹⁾		One per 2,500 cubic yards placed	< 1x10 ⁻⁶ cm/sec
Visual Inspection / Clod Size	ASTM D2488	Daily Continuous Visual Observation	<1", CL classification

Note 1: BAT tests to be performed if, due to disturbance and sample collection, the in-situ laboratory sample (ASTM D5084) do not meet minimum requirements.

Anchor trench backfill shall be composed of the same low-permeability compacted fill soils with the exception that anchor trench backfill soils will only be evaluated for in-place moisture content and density. No soils or materials other than those obtained from the designated borrow source and/or approved by the CQA Consultant are to be used in liner construction.

5.4 LEACHATE COLLECTION AND RECOVERY SYSTEM

Following installation of the geomembrane liner and cushion geotextile, a leachate collection and recovery system (LCRS) will be constructed in the Phase 2 area. The LCRS will consist of 4- and 6-inch diameter HDPE collection pipes (solid and slotted), geotextile fabric, LCRS collection gravel and Landfill Gas Evacuation (LFG) system. The gravel for the LCRS will consist of clean, hard, durable, uniform product, free of limestone, organic, and other deleterious material. As stated in Section 2E of the Technical Specifications, the Contractor shall identify the potential gravel source and provide Certificates of Compliance, signed by a State of California-licensed Civil Engineer or Geotechnical Engineer, that the proposed aggregate materials meet the following gradation requirements, below.

LCRS Bench/Road Collector Gravel Gradation Requirements

U.S. Standard Sieve (ASTM C136)	Percent Passing by Weight
1/2 inch	100
3/8 inch	20-100
No. 4	0-30
No. 8	0-10
No. 200	0-2

The LCRS gravel shall have a minimum permeability of 1.0×10^{-1} cm/sec when tested in accordance with ASTM D2434. The LCRS gravel will also be tested for aggregate carbonate content (ASTM D3042) and durability (ASTM C131) and must meet the following minimum requirements.

LCRS Bench/Road Collector Gravel Conformance Testing

Test	Requirement
Permeability (ASTM D 2434)	Minimum of 1×10^{-1} cm/sec
Aggregate Carbonate Content (ASTM D3042)	Less than 5% Carbonate Content by Weight @ pH = 4.0
L.A. Abrasion (ASTM C131)	Less than 50 % loss after 500 revolutions

5.5 PROTECTIVE COVER SOIL

Once the geosynthetic material components of the composite liner system are complete and approved by the Engineer, a two-foot thick layer of protective cover soil will be placed to the depths and limits shown on the plans and specifications. Protective cover soils shall be

generated from on-site excavations, stockpiles, and/or borrow areas, imported, as identified on the Construction Drawings, and screened to exclude particles in excess of 1-inch in the maximum dimension.

5.6 ACCEPTANCE CRITERIA

5.6.1 GENERAL

Where test results indicate that the lift thickness, maximum particle size, homogeneity of material, moisture content, or density, of any portion of the work is below the project requirements, that particular portion shall be retested and/or reworked or replaced until the required condition has been attained and the resulting product meets or exceeds the requirements of the Technical Specifications. No additional fill shall be placed over an area until the existing fill has been tested horizontally and vertically and determined by the CQA Monitor to meet the Project Earthwork Specifications. The area to be reworked will be verified by survey if in the opinion of the CQA Monitor conditions warrant.

5.6.2 MOISTURE CONTENT AND DENSITY

If, in the opinion of the CQA Manager or the CQA Monitor, engineered fill materials including the low-permeability material, unclassified fill, or anchor trench backfill, which have been placed and/or are ready to be placed, do not visually have a uniform and homogeneous moisture content throughout the material in question, these materials will be removed, without testing, and will be reprocessed and/or reworked until, in the opinion of the CQA Manager or his/her designated representative, they meet the Technical Specifications.

For all fill materials placed, if test results indicate a relative dry density of less than that required, or a moisture content outside the limits specified, then the area will be considered inadequate and will be reworked. Any reworked areas will be retested by the CQA Monitor to verify the reworked area meets the density and moisture content requirements.

The following table lists the minimum moisture/density requirements for engineered fill materials placed. The in-place moisture content and dry density requirements are relative to the maximum dry density and optimum moisture content as determined by ASTM D1557.

Compaction Requirements for Engineered Fill Materials

Fill Type	(ASTM D1557)	
	Minimum Relative Density	Moisture Content
Low-Permeability Material/ Anchor Trench Backfill	95%	2% to 4% above optimum moisture
Unclassified Fill	90%	± 2% of optimum moisture content
Protective Cover Soil	85%	± 3% of optimum moisture content

5.6.3 PERMEABILITY

If a laboratory permeability test completed in the low-permeability material layer results in a value exceeding the defined maximum of 1.0×10^{-6} cm/sec (i.e. faster) for the slope liner section, two additional tests of the same type will be taken in the immediate vicinity. At the discretion of the CQA Consultant, BAT permeability tests may be taken in lieu of failed laboratory tests to expedite the CQA testing procedure. If either of the additional tests fail to meet the minimum requirements, the area represented by the test will be considered inadequate and will be removed or reprocessed and recompacted.

5.6.4 LIFT THICKNESS AND PROCESSING

If at any time the CQA Monitor observes an uncompacted lift thickness in excess of the specified thickness for the fill type or observes material being placed without meeting the requirements for processing, stockpiling and curing, the Contractor shall immediately discontinue placing additional fills in that area. For an over thick lift, the Contractor shall immediately blade the surface to reduce the lift thickness to the Technical Specifications prior to compaction. If inadequately mixed materials are placed, the Contractor shall immediately remove these materials and return them to the stockpile/processing area where they will be reprocessed.

5.6.5 GEOMEMBRANE SUBGRADE

The CQA Monitor and the geomembrane installation Contractor will observe and approve the geomembrane subgrade prior to geosynthetic material deployment. The finish surface shall be free of abrupt breaks, sharp objects, or other foreign material which may damage the overlying

geomembrane. The subgrade shall be unyielding, smooth and uniform and the surface shall not be pebbly or tracked and rutted by equipment.

Immediately prior to geomembrane deployment, all subgrade surfaces, will be proof-rolled with a steel drum roller weighting not less than 200 pounds per linear inch of drum width. Geomembrane deployment shall not proceed until the surface has been approved by the CQA Monitor and accepted by the geomembrane installation Contractor.

5.7 DEMONSTRATION FILL – LOW-PERMEABILITY MATERIAL TEST PAD

The Test Pad will be constructed prior to actual liner construction to evaluate both the low-permeability material proposed for liner construction and the Contractor's equipment and methods for constructing and maintaining the integrity of the low-permeability material layer. The Test Pad will be constructed by the Contractor selected to complete liner construction and as specified in Section 2D of the Technical Specifications. Construction of the Test Pad shall be completed a minimum of two weeks prior to actual low-permeability liner construction. The Contractor shall construct the Test Pad using the same LPM, earthwork equipment and Specifications to be used for liner construction. Soil sampling will be performed by the CQA Monitor(s) during and after construction of the Test Pad to provide data regarding soil properties obtainable using the proposed design and construction methods. All criteria for Test Pad construction, including low-permeability material processing, amount of compaction, moisture content, etc., will be the same as those required and anticipated for actual liner construction.

The purpose of the Test Pads is: 1) to evaluate the performance of the construction equipment to be used for soil blending, processing, placement and maintaining the low-permeability material layer under actual construction conditions; 2) to evaluate the field performance of the low-permeability material through laboratory and field tests; and 3) to develop a database of test results and performance standards prior to full-scale liner construction in order to substantiate the Construction Specifications.

The Test Pad will measure roughly 100 feet by 20 feet (or "equipment width," at minimum) and will consist of a 26-inch-thick section of blended, processed, moisture conditioned and compacted low-permeability material, placed on a slope area. The Test Pad shall be constructed using methods, materials, and equipment to be employed during construction of the actual low-permeability layer. Processed low-permeability materials will be placed in six- to eight-inch lifts. Construction will be continuously observed and tested by the CQA Monitor(s).

The testing frequency used in construction and monitoring of the Test Pad will be more stringent than that to be maintained during construction of the actual liner. Minimum testing requirements for the Test Pad construction will include:

1. Full-time observation.
2. Density tests (ASTM D1556, or D6938) taken at a rate of at least one (1) test per 10 cubic yards of fill placed or one (1) per 8-inches of fill thickness. At a minimum, ten (10) in-place moisture/density tests will be completed.
3. At least one (1) maximum density tests (ASTM D1557) will be completed.
4. Two (2) laboratory permeability tests on relatively undisturbed samples (ASTM D5084) will be conducted.
5. One (1) Atterberg Limit tests (ASTM D4318) and one (1) grain-size analyses (ASTM D422) will be completed.

In-situ BAT tests will be required if, due to disturbance and sample collection, the in-situ laboratory tubes do not meet minimum requirements.

6. CQA MONITORING FOR GEOSYNTHETICS

6.1 GEOMEMBRANE (HDPE)

Delivery of geomembrane to the site will not be allowed until all required documentation and/or certifications are approved by the Construction Manager and the CQA Manager. It is the responsibility of the Contractor/Subcontractor to ensure that all required documentation and/or certifications are approved prior to shipment.

6.1.1 HDPE MANUFACTURING

Prior to the delivery of any geosynthetic material, the Liner Manufacturer shall provide the Construction Manager with the following:

- A properties sheet for the rolls to be delivered including all specified properties measured using test methods indicated in the specifications.
- The sampling procedure and results of testing.
- A certification for each roll stating that property values given in the properties sheet are guaranteed by the Liner Manufacturer.
- Attachment F-1 of Technical Specifications.

The CQA Manager shall verify that:

- The property values certified by the Liner Manufacturer meet the Technical Specifications.
- The measurements of properties by the Liner Manufacturer are properly documented and that the test methods used are acceptable.

Prior to shipment, the Liner Manufacturer shall provide the Construction Manager with a quality control certificate for each roll of geomembrane. The quality control certificate(s) shall be signed by a responsible person employed by the Liner Manufacturer and shall include:

- Lot and roll numbers and identification.
- Sampling procedures and results of quality control tests. At a minimum, results shall be given for those properties identified in the Technical Specifications.

The CQA Manager shall:

- Verify that the quality control certificates have been provided at the specified frequency for all rolls, and that each certificate identifies the rolls related to it.
- Review the quality control certificates and verify that the certified roll properties meet the specifications.

6.1.2 GEOMEMBRANE DELIVERY

Prior to delivery, all individual roll manufacturer certifications required by this document and/or the Technical Specifications must be received and approved by the Construction Manager. Delivery of any unapproved roll will not be allowed and unapproved rolls will be transported off-site at the Contractors expense.

6.1.2.1 *Transportation and Handling*

All transportation and on-site handling of the geomembrane is the responsibility of the Contractor and Liner Subcontractor.

The CQA Monitor shall observe the handling equipment used on the site and provide comment on whether it poses any risk of damage to the geomembrane. The CQA Monitor will also observe the Contractor and Liner Subcontractor personnel's handling of the geomembrane and provide comment on whether appropriate care is being taken. Finally, the CQA Monitor shall verify that all documentation required upon delivery has been received.

Upon delivery at the site, the Contractor, Liner Subcontractor and the CQA Monitor shall complete a surface observation of all rolls for defects and damage. This inspection shall be

conducted without unrolling rolls unless defects or damage are found or suspected. The CQA Manager shall report the following to the Construction Manager:

- Rolls, or portions thereof, which should be rejected and removed from the site because they have severe flaws.
- Rolls which visually include minor repairable flaws.

Any damaged rolls shall be rejected and removed from the site or be stored at a location separate from accepted rolls as designated by the Construction Manager. All rolls which do not have proper Liner Manufacturer's documentation shall be removed from the site at the Contractors expense until all required documentation has been received and approved.

A log of all HDPE received shall be maintained by the CQA Monitor(s).

6.1.2.2 Geomembrane Storage

The Contractor and Liner Subcontractor shall be responsible for storage of the HDPE on-site and shall ensure the storage is consistent with the Manufacturer's recommendations. The Contractor shall coordinate with the County to ensure that storage space is provided in a location (or several locations) such that on-site transportation and handling are minimized. Storage space shall be protected by the Contractor and Liner Subcontractor from theft, vandalism, and damage from actions of man, weather, animals and other sources. The CQA Monitors shall observe that the materials are not stored directly on the ground and storage of the HDPE is completed in a fashion that protects against damage.

6.1.3 HDPE CONFORMANCE TESTING

6.1.3.1 HDPE Conformance Tests

Prior to shipment of the HDPE, the Contractor or Liner Subcontractor shall ensure that conformance samples are obtained and forwarded to the Independent Testing Laboratory at the frequency required for testing to ensure conformance with the Technical Specifications. All conformance samples will be obtained in the presence of the CQA Monitor or his/her designated representative.

At a minimum, conformance tests will include determination of the following characteristics for the HDPE:

- Density (ASTM D1505A)
- Thickness (ASTM D5994)
- Tear Resistance (ASTM D1004 Die C)
- Carbon black content (ASTM D1603)
- Carbon Black Dispersion (ASTM D5596)

- Tensile characteristics (yield strength, elongation at yield, break strength, elongation at break) (ASTM D6693)
- Puncture resistance (ASTM D4833)
- Asperity Height (GM-12)
- Interface Direct Shear (per Section 2F-2.2.3 of Technical Specifications)

Where optional procedures are noted in the test method, the requirements of the Technical Specifications shall prevail.

6.1.3.2 Sampling and Testing Frequency

Unless otherwise specified, conformance samples shall be taken and tested at a rate of one per lot or one per 100,000 square feet, whichever results in the greater number of tests.

6.1.3.3 Sampling Procedures

Samples shall be taken across the entire width of the roll and shall not include the first three feet. Unless otherwise specified, samples shall be 3 ft. long by the roll width. The engineer shall mark the machine direction on the samples with an arrow, and the Liner Manufacturer's roll identification number.

6.1.3.4 Test Results

The results of Conformance Testing shall be submitted to the CQA Manager who shall examine all conformance test results and report any non-conformance to the Construction Manager, the Contractor and the Lining Subcontractor.

The CQA Manager shall examine all results from the laboratory conformance testing. All specimens tested shall pass the requirements as described in Sections 2F and 2G of the Technical Specifications. If any specimen fails, the entire sample shall be considered as a failure and rejected. In this event, the material represented by the sample shall be considered nonconformant with the Specifications, and the material rejected for use on the project.

All conformance test results must be approved by the Construction Manager prior to the HDPE represented by the test being approved for deployment/installation. The decision of the Construction Manager shall be final.

6.1.4 HDPE INSTALLATION

6.1.4.1 *Earthwork*

Surface Preparation

The Contractor shall be responsible for preparing the supporting soil according to the Technical Specifications.

Prior to liner installation, the Contractor and Liner Subcontractor shall verify and the Construction Manager and CQA Monitor shall observe that:

- All lines and grades have been checked by survey and approved by the Construction Manager.
- The subgrade has been prepared in accordance with the Technical Specifications.
- The surface has been rolled and compacted to be free of surface irregularities, loose soil, and protrusions.
- The supporting soil surfaces do not contain stones or other sharp protrusions which could damage the HDPE.
- There are no excessively soft areas which could result in HDPE damage.
- All construction stakes, hubs or other items used for grade control and/or verification have been removed.
- The Liner Subcontractor has certified in writing that the surface on which the HDPE will be installed is acceptable.

The certificate of acceptance shall be given by the Liner Subcontractor to the Contractor and the Construction Manager prior to commencement of HDPE installation in the area under consideration. The CQA Monitors shall have a copy of this certificate before installation of HDPE commences in any given area.

After the supporting surface has been accepted by the Contractor and Liner Subcontractor, it shall be the Contractor and Liner Subcontractor's responsibility to indicate to the Construction Manager any change in the supporting soil condition that may require repair work. If the Construction Manager concurs with the Contractor and Liner Subcontractor, then the Construction Manager shall coordinate the repair of the supporting surface. The subject area will also be observed by the CQA Monitors who shall have the authority to reject an area even after it has been accepted by the Contractor and Liner Subcontractor.

Anchor Trench

Anchor trenches shall be excavated to the lines and widths shown on the Project Drawings, prior to HDPE placement. The CQA Monitors shall observe that the anchor trenches have been constructed according to the project documents.

Slightly rounded corners shall be provided where the HDPE adjoins the trench so as to avoid sharp bends in the HDPE. No loose soil shall be allowed to underlie the HDPE in the anchor trench.

Anchor trench backfill shall consist of select low-permeability soils screened to exclude particles in excess of 1-inch and shall be compacted to at least 95 percent relative compaction at +2-4% above optimum moisture content (ASTM D1557) as outlined in the Specifications.

Care shall be taken when backfilling the trenches to prevent any damage to the geosynthetics. The CQA Monitors shall observe the backfilling operation and advise the Construction Manager of any problems.

6.1.4.2 HDPE Placement

Field Panel Identification

A field panel (sheet) is a discrete and integral area of HDPE which is to be seamed in the field along the edges to other field panels (i.e., a field panel is a roll or a single portion of a single roll). The Contractor or Liner Subcontractor shall assign each panel over 25 sq. feet. an identification code which shall be agreed to and used by the CQA Monitors, Construction Manager, Contractor and the Liner Subcontractor. The Contractor or Liner Subcontractor shall locate the code with identifying roll number near the middle of panels less than 50 feet in length and at both ends of any panel over 50 feet in length. The CQA Monitors shall establish a chart showing correspondence between roll numbers, certification reports, and the panel identification code. The field panel identification code shall be used for all Geotechnical CQA records. An HDPE panel placement log will be maintained by the CQA Monitors.

Field Panel Placement

The CQA Monitors shall record the identification code, location and date of installation of each field panel.

During panel placement, the CQA Monitors shall:

- Verify that field panels are installed in general accordance with the panel layout plan, as approved or modified by the Construction Manager/Engineer.
- Observe the panel surface as it is deployed and record all panel defects and disposition of the defects. All repairs are to be made in accordance with the Specifications.
- Observe that the equipment used does not damage the HDPE by handling, trafficking, leakage of hydrocarbons, or by other means.
- Observe that the surface beneath the HDPE has not deteriorated since previous acceptance.
- Observe that there are no stones, construction debris, or other items beneath the HDPE which could cause damage.
- Observe that the HDPE is not dragged across an unprepared surface. If the HDPE is dragged across an unprepared surface, it shall be inspected for scratches and repaired or rejected, if necessary.
- Observe that the method used to unroll the panels does not cause scratches or crimps in the HDPE and does not damage the supporting soil surface.
- Record weather conditions including temperature, wind, and humidity. The HDPE shall not be deployed in the presence of excess moisture (fog, dew, mist, etc.), high winds and extreme temperatures as determined by the CQA Manager.
- Observe that people working during the installation of HDPE do not smoke, wear shoes which could damage the HDPE, or engage in activities which could damage the HDPE.
- Observe that the method used to deploy the panel minimizes wrinkles and that the panels are anchored to prevent movement by the wind.
- Observe that direct contact with the HDPE is minimized; (i.e., the HDPE is protected by geotextiles, extra HDPE, or other suitable materials, in areas where excessive traffic may be expected).

The CQA Monitors shall inform the Contractor, the Liner Subcontractor and the Construction Manager if the above conditions are not met.

After placement and prior to seaming, the CQA Monitors shall inspect each panel for damage. The CQA Monitors shall advise the Construction Manager which panels, or portions of panels, should be rejected, repaired, or accepted. Damaged panels or portions of damaged panels which have been rejected shall be marked and their removal from the work area recorded by the CQA Monitors.

6.1.4.3 *Field Seaming*

The Contractor shall provide the Construction Manager and CQA Manager with a seam and panel layout plan and shall update this plan daily as the job proceeds. No panels shall be seamed until the panel layout plan has been approved by the Construction Manager. A seam numbering system shall be agreed to by the CQA Monitors, Construction Manager, Contractor and Liner Subcontractor prior to the start of seaming operations.

Prior to seaming, each seaming apparatus (welder) shall be tested in accordance with the Specifications to determine if the equipment is functioning properly. The CQA Monitors shall observe all trial weld operations and record the results. It is important that the trial welds be completed under conditions similar to those under which the panels will be seamed. If at any time the CQA Monitor believes that an operator or seaming apparatus is not functioning properly, a test shall be performed on a trial weld. If there are large changes in temperature, humidity, or wind speed, the trial weld test shall be repeated. Laboratory tests may be carried out at the discretion of the CQA Monitors to verify field test results.

During seaming operations the CQA Monitors shall observe that:

- The Liner Subcontractor has the number of welders and spare parts agreed to in the pre-construction meeting.
- Equipment used for seaming will not damage the HDPE.
- The extruder is purged prior to beginning a seam until all the heat-degraded extrudate is removed (extrusion welding only).
- Seam grinding has been completed less than 1 hour before seam welding (extrusion welding only).
- The ambient temperature measured 6 inches above the HDPE surface is between 40 and 105 degrees Fahrenheit and relative humidity is less than 80 percent.
- The end of welds more than 5 minutes old, are ground to expose new material before restarting a weld (extrusion welding only).
- The weld is free of dust and other debris.
- For cross seams, the seam is ground to a smooth incline prior to welding.
- The seams are overlapped in a downgradient direction with a minimum overlap of 4 inches.
- No solvents or adhesives are present in the seam area.
- The procedure used to temporarily hold the panels together does not damage the panels and does not preclude Geotechnical CQA testing.
- The panels are being seamed in accordance with the Project Drawings and Specifications using approved equipment with gauges giving applicable temperatures.

- There is no free moisture in the weld area.
- The electric generator is placed on a smooth base such that no damage occurs to the HDPE.
- A smooth insulating plate or fabric is placed beneath the hot welding apparatus after use.
- The geomembrane is protected from damage in heavily trafficked areas.
- The CQA Monitors shall log all appropriate temperatures and conditions, and shall log and report to the CQA Manager any non-compliance.

Trial Seams

Trial seam samples are not removed from installed seams, but are made along side the seaming work area by the Liner Subcontractor using a fragment of the same HDPE sheet and the same installation procedures as for the HDPE installation itself. As such, they are considered non-destructive samples. Such trial seams shall be made at the beginning of each seaming period (start of day, mid-day, and anytime the equipment is shut down or the seaming operation is suspended for more than 1/2 hour) for each piece of seaming equipment used that day. In addition, each welder shall make at least one trial seam each day. Trial seams shall be made under the same conditions as those anticipated for actual seams.

The trial seam sample shall be at least 3 ft. long by 1 ft. plus the seam width wide (after seaming) with the seam centered lengthwise. Seam overlap shall be as per the Specifications.

Two opposite specimens, each 1 inch wide, shall be cut from the trial seam sample by the Contractor and/or Liner Subcontractor. Under the observation of a CQA Monitor, the specimens shall be tested by the Liner Subcontractor in shear and peel using a field tensiometer to verify that seams satisfy peel and tensile strength requirements. If a specimen fails, the seaming equipment and seamer shall not be accepted and shall not be used for seaming until the deficiencies are corrected and two consecutive successful full trial welds are achieved. After completing a successful trial/non-destructive sample, the Contractor and/or Liner Subcontractor shall provide a remnant from the sample and mark the welder number, date, time, ambient temperature, welder temperature, and speed and submit it to the CQA Monitor who will assign an identification number and enter the information on the non-destructive sample form.

The results of field tests carried out on trial seams shall be documented by the CQA Monitors.

General Seaming Procedure

Unless otherwise specified, the general seaming procedure to be used by the Contractor and/or Liner Subcontractor shall be as follows:

- All HDPE seams shall be overlapped a minimum of four (4) inches.

- "Fishmouths" or wrinkles at the seam overlaps shall be cut along the ridge of the wrinkle in order to achieve a flat overlap. The cut "fishmouths" or wrinkles shall be seamed and any portion where the overlap is inadequate shall then be patched with an oval or round patch of the same HDPE extending a minimum of 6 inches beyond the cut in all directions. All corners of the patch shall be rounded with a 1-inch minimum radius.
- Adjacent to anchor trenches, seaming shall extend up the panels a minimum of 12 inches past the crest of the anchor trench.
- All cross seams shall be offset at least two feet from the cross seam of the adjacent panel and be extrusion or wedge welded where they intersect.

The CQA Monitors shall observe that the above seaming procedures are followed, and shall inform the Construction Manager if they are not.

6.1.5 CONSTRUCTION TESTING

6.1.5.1 *Non-destructive Seam Testing*

The Contractor and/or Liner Subcontractor shall non-destructively test all field seams over their full length using a vacuum test unit, spark detector, or an air pressure test (for double wedge fusion seams only), as described below. The purpose of non-destructive tests is to check the continuity of seams. It does not provide any information on seam strength. Continuity testing shall be carried out as the seaming work progresses, not at the completion of field seaming.

Visual Inspection

All seams shall be visually evaluated by the Contractor and/or Liner Subcontractor as the installation progresses and again at completion of the installation. Defective and questionable sections shall be clearly marked and repaired as necessary.

Vacuum Box Testing

If the fillet weld, extrusion lap weld or single hot-wedge fusion lap weld technique is used to weld seams, the Contractor and/or Liner Subcontractor shall further test all seams and repairs in the HDPE by vacuum box. The vacuum box shall be an American Vacuum Seam Tester, Series A100 as manufactured by American Parts and Service Company, Alhambra, California, or an approved equal. All vacuum box testing shall be done in the presence of the CQA Monitor. The area to be tested shall be cleaned of all dust, debris, dirt and other foreign matter. A soap solution shall be applied to the test area with a brush, paint roller or spray bottle and a minimum vacuum of 10 inches of mercury (Hg) (5 psi) shall be induced and held a minimum of 15 seconds to visually inspect and mark for repair any suspicious areas as evidenced by bubbles in the soap solution.

Spark Testing

If the fillet weld is used to weld seams, the Contractor and/or Liner Subcontractor may, in lieu of vacuum box testing, test all seams and repairs in the HDPE liner by using a high voltage spark detector, similar to Tinker and Rasor Holiday Detector (Model AP-W). The setting of the detector shall be 20,000 volts. In order to conduct this test, all seams to be tested shall be provided with 24-30 gauge copper wire properly embedded in the seams and grounded. All spark testing shall be done in the presence of the CQA Monitor. All defective areas shall be marked for repair.

Air Pressure Test

If the double hot-wedge welding technique is used, the Contractor and/or Liner Subcontractor shall further test all seams in the HDPE lining by using the air pressure test which consists of inserting a needle with gauge in the air space between welds. Air shall be pumped to a minimum of 30 psi and a maximum of 35 psi within the weld void and held for at least 5 minutes. If the pressure loss exceeds 2 psi within the weld void during air pressure testing, the outside weld edge (not free edge) shall be sprayed with a soap solution and visually examined for bubbles. If no bubbles appear, the problem is with the inside weld and the seam is acceptable. If any bubbles appear, the defect shall be repaired by extrusion welding and tested by vacuum box or spark detector.

If pressure loss is not more than 2 psi, the opposite end of the seam will be punctured to release the air. If a blockage is present, it will be located and tests on both sides of the blockage will be completed. All penetration holes created during testing shall be sealed by patching and extrusion welding.

Responsibilities of the CQA Monitors

The CQA Monitor/Manager shall:

- Observe and record the continuity of all testing.
- Record the location, seam/panel number, date, time, equipment number, CQA Monitor name, test number, welding technician's name, weld, sheet and ambient temperatures and results of all testing.
- Mark the failed areas with a waterproof marker compatible with the lining material and inform the Contractor and/or Liner Subcontractor and the Construction Manager of any required repairs.
- Observe that all testing is completed in accordance with the Technical Specifications.

- Observe that all repairs are completed and tested in accordance with the Technical Specifications.

6.1.5.2 Destructive Seam Testing

Destructive seam tests shall be performed at selected locations. The purpose of these tests is to evaluate seam strength. Seam strength testing shall be done as the seaming work progresses, not at the completion of all field seaming.

Destructive sampling involves samples which have been removed from the installed field seams by the Contractor/Liner Subcontractor. Test locations shall be determined at the discretion of the CQA Monitors, and the Contractor/Liner Subcontractor shall not be informed in advance of the locations where the seam samples will be made or will be removed.

Destructive samples shall be shipped by the Contractor/Liner Subcontractor to the Independent Testing Laboratory. All costs associated with the collection, repair, shipping and testing of destructive samples will be borne by the Contractor/Liner Subcontractor.

A minimum of one destructive sample per 500 feet of field seam shall be obtained. This average frequency will be used for the entire installation with the actual frequency of samples based on performance as determined by the CQA Manager.

Additional samples may be removed if the CQA Monitor observes a suspect seam.

6.1.5.3 Sampling Procedures

Samples shall be made or removed by the Contractor/Liner Subcontractor at locations selected by the CQA Monitors as the seaming operation progresses. The CQA Monitor shall:

- Observe making and/or removal of samples.
- Marking each sample with an identifying number which contains the seam number.
- Record sample location on the panel layout drawing and enter the information on a Destructive Sample Log Form.
- Record the sample location, date and time taken, weather conditions, and reason the sample was made and/or taken (e.g., random sample, visual appearance, result of a previous failure, etc.).
- Mark sample identifying number on HDPE adjacent to the location where the sample was taken.

All holes in the HDPE resulting from destructive seam sampling shall be immediately repaired in accordance with repair procedures described herein. The continuity of the new seams in the repaired area shall be tested according to procedures described herein.

6.1.5.4 *Size of Samples*

Two types of samples shall be made or removed at each location. First, two samples shall be removed for field testing. Each of these samples shall be 1 inch wide with a length of 12 inches plus the seam width. For destructive sampling, the sample shall be taken perpendicular to the seam and the distance between these two samples shall be 38 inches. Samples designated for laboratory testing shall be that portion of seam located between the two samples taken for field testing. The samples for laboratory testing shall be 36 inches long with a width of 12 inches plus the seam width. The seam shall be centered lengthwise. The samples for laboratory testing shall be cut into three equal parts and distributed as follows:

- One part for the Independent Testing Laboratory for testing.
- One part to the Contractor/Liner Subcontractor.
- One part to the Construction Manager for archive storage.

6.1.5.5 *Field Testing*

The two 1-inch-wide samples shall be tested in the field for peel adhesion and bonded seam strength (shear) by the Contractor/Liner Subcontractor, and shall not fail in the seam. If one or both of the samples fails in either peel or shear, the Contractor/Liner Subcontractor can, at his/her discretion, (1) reconstruct or cap strip the seam between passed test locations, or (2) take two additional test samples 10 feet on either side of the point of the failed test and repeat this procedure. If the second test passes, the Contractor/Liner Subcontractor shall reconstruct or cap strip the same between the two passed test locations. If subsequent tests fail, the procedure is repeated until the length of the poor quality seam is established. Repeated failures indicate that either the seaming equipment and/or operator is not performing properly, and appropriate action shall be taken.

6.1.5.6 *Laboratory Testing*

Once the field tests have passed, a sample shall be recovered from between passing field sample locations for testing by the Independent Testing Laboratory. Destructive test samples shall be packaged and shipped to the laboratory by the Contractor/Liner Subcontractor and will be handled in a manner which will not damage the test sample. The Construction Manager will be responsible for storing the archive samples.

Destructive seam samples will be tested by the Independent Testing Laboratory in accordance with ASTM D6392. Destructive seam testing shall include peel adhesion and bonded seam strength (shear). At least five specimens each shall be tested for peel and shear. The minimum seam strength and related property test values, which are informed by Geosynthetic Institute Standard Specification GRI-GM19a, are presented in in Section 2F of the Technical

Specifications. Per GRI-GM19a, the shear percent break elongation should exceed the specified values, and the peel separation (or incursion) should not exceed the specified values. For different seaming methods in shear and peel, five out of five specimens shall result in acceptable locus-of-break pattern break codes per their description in ASTM D6392. The following are unacceptable break codes:

- Wedge/Fusion Weld: AD and AD-Brk > 25%
- Extrusion/Fillet Weld: AD1, AD2, and AD-WLD (unless strength is achieved).

The Independent Testing Laboratory shall provide test results within 24 hours after receipt of samples for testing. Certified test results shall be provided within 5 days. The CQA Monitor shall document all test results on the appropriate forms and shall immediately notify the CQA Manager, Construction Manager, and/or Contractor/Liner Subcontractor in the event of a failed test.

For destructive samples which have failed, corrective measures shall include a rerun of the weld test using the same sample. If the second test passes, the CQA Monitor may assume an error was made in the first test and the field seam may be accepted. If the second test fails, the Contractor/Liner Subcontractor shall reconstruct or cap strip the field seam between any two previous passed seam locations which include the failed seam or shall go on both sides of the failed seam location (10-feet minimum), take another sample each side, and test both in the independent laboratory.

If both samples pass, the Contractor/Liner Subcontractor shall reconstruct or cap strip the field seam between the two passing locations. If either fails, the Contractor/Liner Subcontractor shall repeat the process of taking samples for testing by the Independent Testing Laboratory. In all cases, acceptable field seams must be bounded by two passed test locations. In cases involving more than 50 feet of reconstructed or cap stripped seam, the reconstructed or cap stripped seam shall also be tested. The results of the Independent Testing Laboratory govern seam acceptance. In no case shall field testing of installed seams be used for final acceptance.

The Contractor/Liner Subcontractor's laboratory test results shall be presented to the CQA Manager for comments.

6.1.6 DEFECTS AND REPAIRS

6.1.6.1 Identification

All seams and non-seam areas of the HDPE shall be examined by the CQA Monitors for identification of defects, holes, blisters, undispersed raw materials and any sign of contamination by foreign matter. Because light reflected by the HDPE helps to detect defects, the surface of

the HDPE shall be clean at the time of examination. The HDPE surface shall be cleaned by the Contractor/Liner Subcontractor if the amount of dust or mud inhibits examination.

Each suspect location as identified by the CQA Monitors, both in seam and non-seam areas, shall be non-destructively tested using the methods described herein, as appropriate. Each location which fails the nondestructive testing shall be marked by the CQA Monitor and then repaired and re-tested by the Contractor/Liner Subcontractor. Work shall not proceed with any materials which will cover locations which have been repaired until laboratory test results with passing values have been obtained.

6.1.6.2 Repair Procedures

Any portion of the HDPE with a flaw or which fails a nondestructive or destructive test shall be repaired in accordance with the Specifications. The CQA Monitor shall locate and describe all repairs on the appropriate forms. Repair procedures include:

- Patching - used to repair large holes, tears, large panel defects, and destructive sample locations which are less than 25 sq. feet in total area.
- Extrusion - used to repair relatively small defects in panels and seams.
- Capping - used to repair failed welds or liner seams where welds cannot be non-destructively tested.
- Removal - used to replace areas with large defects where the preceding methods are not appropriate. Also used to remove excess material (wrinkles) from the installed HDPE.

6.1.6.3 Seam Test Summary

Documentation of all nondestructive and destructive seam testing results, including repairs, shall be summarized by the CQA Monitor on the appropriate forms.

6.1.7 WRINKLES

When placing soil or drain materials over the HDPE, temperature changes or creep may cause wrinkles to develop in the HDPE. Any wrinkles which can fold over shall be repaired either by cutting out excess material or, if possible, allowing the HDPE to contract due to temperature reduction. In no case shall material be placed over the HDPE which could result in the HDPE folding. All folded HDPE shall be removed. No material shall be placed in areas where liner is not in contact with the supporting subgrade.

6.1.8 ANCHOR TRENCH

The anchor trench shall be adequately drained to prevent ponding or softening of the adjacent soils while the trench is open. The anchor trench shall be backfilled and compacted as outlined in the Specifications. Fill soils shall consist of low-permeability soil essentially free of organic

and deleterious material and approved by the CQA Monitor and Construction Manager. The material shall have a maximum particle size of 1 inch.

Care shall be taken when backfilling the trenches to prevent any damage to the geosynthetics. The CQA Monitor shall observe the bottom of the trenches prior to fill placement to ensure they are free of loose and disturbed materials. The

CQA Monitor shall also observe the backfilling and compaction operation, and shall notify the CQA Manager and the Construction Manager of work performed not in accordance with the Technical Specifications.

6.1.9 HDPE ACCEPTANCE

The Contractor/Liner Subcontractor shall retain all ownership and responsibility for the HDPE until acceptance by the Owner. The HDPE shall be accepted by the Owner when:

- The installation is finished and approved.
- All seams have been inspected and approved.
- All required laboratory tests have been completed and approved.
- All required Contractor/Liner Subcontractor supplied documentation has been received and approved.
- All record drawings have been completed and approved.

6.1.10 LINER MATERIALS

The CQA procedures indicated in this section are intended to allow the installation of materials in contact with the geosynthetics without causing damage to the HDPE.

Important points for Quality Assurance of materials in contact with HDPE include:

- A geotextile or drainage medium approved by the Construction Manager shall be installed above the HDPE.
- Equipment used for placing soil shall not be driven directly on the HDPE/geotextile.
- In heavily trafficked areas, such as access ramps, soil thickness should be at least three (3) feet over the geosynthetics.
- Placement of soils, gravels, sand or other types of earth materials on top of the HDPE/geotextile shall not be performed until all destructive and nondestructive testing has been performed and accepted.

- Placement of overlying earth materials shall be performed in a manner to minimize wrinkles. Equipment operators shall be briefed on methods of placement relative to thermal expansion and contraction of the HDPE.
- Soil material(s) placed on top of the HDPE/geotextile shall be stockpiled and displaced off the stockpile to create a cascading effect of the material on top of the HDPE/geotextile.

The CQA Monitors shall inform the CQA Manager if the above conditions are not fulfilled.

6.2 GEOSYNTHETIC CLAY LINER (GCL)

The Contractor/GCL Manufacturer shall provide the Construction Manager with the following documentation:

- A properties sheet for geotextile and bentonite materials which includes all specified properties measured using test methods indicated in the Technical Specifications.
- Certificates for raw bentonite and geotextile materials which indicate that materials provided meet or exceed all applicable specification requirements.
- Manufacturer's Quality Control Certificates.
- Conformance Test Results.
- Internal shear strength certificate in accordance with specification requirements.
- A panel placement plan.

The CQA Manager shall verify that:

- The property values certified by the GCL Manufacturer meet or exceed the Technical Specifications.
- The measurement of properties by the GCL Manufacturer are properly documented and the test methods used are acceptable.

Prior to shipment, the Contractor/GCL Manufacturer shall provide the Construction Manager with a quality control certificate for each GCL roll which is intended for use on the project. The quality control certificate(s) shall be signed by a responsible person employed by the Manufacturer, and shall include roll numbers and identification.

The CQA Manager shall:

- Verify that the quality control certificates have been provided at the specified frequency for all rolls, and that each certificate identifies the rolls to be delivered.
- Review the quality control certificates and verify that the certified roll properties meet the Technical Specifications.

6.2.1 GCL DELIVERY

The Contractor/GCL Subcontractor shall submit for approval by the Construction Manager, method(s) for handling and storage of GCL material(s) prior to installation. The CQA Monitor shall observe that:

- Equipment used to unload the rolls will not damage the material.
- Care is used to unload the rolls.
- All GCL rolls shall be wrapped in plastic to prevent hydration.
- All documentation required by the specifications has been received.

Upon delivery at the site, the CQA Monitor(s) shall conduct a surface inspection of all rolls for defects and damage. This inspection shall be conducted without unrolling rolls unless defects or damage are found or suspected. The CQA Monitor(s) shall report to the Construction Manager and CQA Manager any rolls, or portions thereof, which should be rejected and removed from the site because of severe flaws. These rolls shall be clearly marked as rejected.

Any damaged rolls shall be rejected and removed from the site or stored at a location, designated by the Construction Manager separate from accepted rolls. All rolls which do not have proper documentation from the Manufacturer shall also be stored at a separate location until all documentation has been received and approved. A log of the GCL material(s) received shall be maintained by the CQA Monitor(s).

The Construction Manager shall designate storage space in a location (or several locations) on-site. Storage space shall be protected by the Contractor from theft, vandalism, damage from the actions of Manufacturer, weather, animals and other sources. The CQA Monitor(s) shall observe that the materials are stored in accordance with Manufacturers recommendations and are protected against damage pursuant to ASTM D5888.

6.2.2 GCL CONFORMANCE TESTING

6.2.2.1 Tests

Prior to delivery of the GCL material(s), the CQA Monitor shall ensure that the Contractor obtains and forwards samples to the approved Independent Testing Laboratory for testing of conformance with the design specifications. Conformance tests, including interface direct shear, will be performed as detailed in the Technical Specifications. As a minimum, the following tests will be performed to ensure that GCL materials are in conformance with the design specifications.

- Mass per Unit Area (ASTM D5993)

- Grab Strength (ASTM D6768)
- Hydraulic Conductivity or Index Flux at 10 psi effective confining stress (ASTM D5887)
- Peel Strength (ASTM D6496)

Where optional procedures are noted in the test method, the requirements of the specifications shall prevail. Updated or alternative test methods may be used to determine the physical properties of the GCL materials at the discretion of the Construction Manager.

The results of Conformance Testing will be documented by the CQA Manager.

6.2.2.2 *Sampling Procedures*

Samples shall be taken across the entire width of the roll(s) and shall not include the first three feet. Unless otherwise specified, samples shall be three (3) feet long by the roll width. The CQA Monitor shall mark the machine direction on the samples with an arrow, and the Manufacturers roll identification number.

6.2.2.3 *Test Results*

The CQA Manager shall examine all results from the laboratory conformance testing. All specimens tested shall pass the requirements as described in Section 2G of the Technical Specifications. If any specimen fails, the entire sample shall be considered as a failure and rejected. In this event, the GCL material represented by the sample shall be considered non-conformant with the specifications, and corrective measures shall be implemented. At the contractor's option, additional conformance samples representing that lot may be tested to evaluate physical properties of other rolls within that lot and to isolate the non-conformant materials. If only one conformance test fails, the roll that yielded the failure will be rejected and subsequent conformance samples from the same 5,000 or 30,000 square yards or lot will be obtained. If subsequent conformance samples fail the entire lot or 30,000 square yards represented by the test will be rejected for use on the project. If subsequent conformance tests pass, only the rolls which yielded a failure will be rejected for use on the project. The decision of the Construction Manager shall be final.

6.2.3 **GCL INSTALLATION**

6.2.3.1 *Surface Preparation*

Prior to installation, the Construction Manager and CQA Monitor(s) shall observe that:

- All lines and grades have been verified by the project surveyor and all construction stakes and hubs have been removed.

- The subgrade has been prepared in accordance with the Technical Specifications and the supporting surface does not contain rocks or irregular surfaces which could damage the GCL.
- There are no excessive soft spots or ponded water which could result in damage to the GCL.
- The Contractor/GCL Subcontractor has certified in writing that the surface on which the GCL will be installed is acceptable.
- The Contractor/GCL Subcontractor shall give each GCL panel an identification number which shall be agreed to and used by the CQA Monitor(s) and the Contractor/GCL Subcontractor. The CQA Monitor shall establish a chart showing correspondence between roll numbers, certification reports and panel numbers.

During panel placement, the CQA Monitor(s) shall:

- Observe the GCL as it is placed and record all defects and disposition of the defects (panel rejects, patch installed, etc.). All repairs are to be made in accordance with the Technical Specifications.
- Observe that Manufacturer's defects do not exceed that allowed by the Technical Specifications.
- Observe that equipment used does not damage the GCL by handling, traffic, leakage of hydrocarbons, or other means.
- Observe that people working during installation of the GCL do not smoke, wear shoes that could damage the GCL, or engage in other activities that could damage the GCL.
- Observe that the GCL is anchored to prevent movement by the wind.
- Observe that adjacent panels of GCL are overlapped a minimum of twelve (12) inches on longitudinal seams, and two-(2) foot on butt seams and the proper amount and type of bentonite is installed along the full length of all seams.
- Heat-leistered with a leistering gun (no open flames).
- Place granular bentonite between seams at a rate of ¼ pound per lineal foot.
- Observe that the number of panels deployed are covered and protected from moisture at the end of the work day.

The CQA Monitor(s) shall inform both the Contractor/GCL Subcontractor and the Construction Manager if the above minimum conditions are not met.

The Contractor/GCL Subcontractor shall provide the Construction Manager with a panel layout plan, and shall update this plan daily as the job proceeds. No GCL shall be placed until the panel layout plan has been approved by the Construction Manager. During panel placement, the CQA Monitor(s) shall also observe the following:

- That GCL material is cut with an approved GCL cutter, and is not torn or ripped.
- The bentonite to be used on all seams meets the requirements of the Technical Specifications.
- That the panels are overlapped and sealed in accordance with the Project Drawings and Specifications.

6.2.4 REPAIRS

Any necessary repairs to the GCL shall be made with approved GCL material, using approved overlaps, materials, equipment and techniques. Patches shall overlap the edges of holes or tears a minimum of 18 inches in all directions and be heat-leistered (no open flames).

6.3 GEOTEXTILES

The Contractor/Liner Manufacturer shall provide the Construction Manager with the following documentation:

- A properties sheet which includes all specified properties measured using test methods indicated in the specifications.
- A description of the sampling procedure and appropriate test results.
- A certification that values given in the properties sheet are guaranteed by the Liner Manufacturer.

The CQA Manager shall verify that:

- The property values certified by the Liner Manufacturer meet or exceed the Technical Specifications.
- The measurement of properties by the Liner Manufacturer are properly documented and the test methods used are acceptable.

Prior to shipment, the Contractor/Liner Manufacturer shall provide the Construction Manager with a quality control certificate for each roll of geotextile. The quality control certificate shall be signed by a responsible person employed by the Liner Manufacturer, and shall include roll number and identification.

The CQA Manager shall:

- Verify that the quality control certificates have been provided at the specified frequency for all rolls, and that each certificate identifies the rolls to be delivered.
- Review the quality control certificates and verify that the certified roll properties meet the Technical Specifications.

6.3.1 GEOTEXTILE DELIVERY

The Contractor/Liner Subcontractor shall submit for approval by the Construction Manager, method(s) for handling and storage of geotextile material(s) prior to installation. The CQA Monitor shall observe that:

- Equipment used to unload the rolls will not damage the geotextile.
- Care is used to unload the rolls.
- All geotextile rolls shall be wrapped in plastic to prevent UV degradation.
- All documentation required by the Specifications has been received and approved.

Upon delivery to the site, the CQA Monitors shall conduct a surface inspection of all rolls for defects and damage. This inspection shall be conducted without unrolling rolls unless defects or damage are found or suspected. The CQA Monitors shall indicate to the CQA Manager any rolls, or portions thereof, which should be rejected and removed from the site because they have severe flaws. These rolls shall be clearly marked as rejected.

Any damaged rolls shall be rejected and removed from the site or stored at a location, designated by the Construction Manager separate from accepted rolls. All rolls which do not have proper documentation from the manufacturer shall also be stored at a separate location until all documentation has been received and approved. A log of the geotextile material(s) received shall be maintained by the CQA Monitor(s).

The Construction Manager shall designate storage space in a location (or several locations) on-site. Storage space shall be protected by the Contractor from theft, vandalism, damage from the actions of man, weather, animals and other sources. The CQA Monitors shall observe that the material is not stored directly on the ground and that storage of the geotextile provides protection against damage pursuant to ASTM D4873.

6.3.2 GEOTEXTILE CONFORMANCE TESTING

6.3.2.1 Tests

Prior to delivery of the geotextile, the CQA Monitor shall ensure that samples are obtained and forwarded to an Independent Laboratory for testing of conformance with the design specifications. As a minimum, the following tests will be performed to ensure that geotextile materials are in conformance with the design specifications.

For Cushion Geotextiles:

- Mass per Unit Area (ASTM D5261)
- Grab Tensile Tests (ASTM D4632)

- Puncture Strength (ASTM D6241)
- Trapezoidal Tear (ASTM D4533)
- UV Resistance (ASTM D7328)

For Filter Geotextiles:

- Mass per Unit Area (ASTM D5261)
- Grab Tensile Tests (ASTM D4632)
- Puncture Strength (ASTM D6241)
- Trapezoidal Tear (ASTM D4533)
- Permittivity (ASTM D4491)
- Apparent Opening Size (ASTM D4751)

Where optional procedures are noted in the test method, the requirements of the Technical Specifications shall prevail. Updated or alternative ASTM Test Methods may be used to determine the physical properties of the geotextile materials at the discretion of the Construction Manager.

The results of Conformance Testing will be documented by the CQA Manager

6.3.2.2 *Sampling Procedures*

Samples shall be taken across the entire width of the roll and shall not include the first three feet. Unless otherwise specified, samples shall be three feet long by the roll width. The engineer shall mark the machine direction on the samples with an arrow, and the Manufacturer's roll identification number.

Unless otherwise specified, samples shall be taken at a rate of one per lot or one per 100,000 square feet, whichever results in the greater number of samples.

6.3.2.3 *Test Results*

The CQA Manager shall examine all results from the laboratory conformance testing. All specimens tested shall pass the requirements as described in Section 2H of the Technical Specifications. If any specimen fails, the entire sample shall be considered as a failure and rejected. In this event, the geotextile material represented by the sample shall be considered nonconformant with the Specifications, and corrective measures shall be implemented. At the contractor's option, additional conformance samples representing that lot may be tested to evaluate physical properties of other rolls within that lot and to isolate the non-conformant materials. If only one conformance test fails, the roll that yielded the failure will be rejected and subsequent conformance samples from the same 100,000 square feet or lot will be obtained. If subsequent conformance samples fail the entire lot or 100,000 square feet represented by the

test will be rejected for use on the project. If subsequent conformance tests pass, only the rolls which yielded a failure will be rejected for use on the project. The decision of the Construction Manager shall be final.

6.3.3 GEOTEXTILE INSTALLATION

6.3.3.1 *Surface Preparation*

Prior to installation, the Construction Manager and CQA Monitors shall observe that:

- All lines and grades have been verified.
- The subgrade has been prepared in accordance with the Technical Specifications and the supporting surface does not contain rocks or irregular surfaces which could damage the geotextile.
- There are no excessively soft areas which could result in damage to the geotextile.
- All construction stakes and hubs have been removed.
- The Contractor/Liner Subcontractor has certified in writing that the surface on which the geotextile will be installed is acceptable.

6.3.3.2 *Placement*

The Contractor/Subcontractor shall give each geotextile panel an identification number which shall be agreed to and used by the CQA Monitors and the Contractor/Liner Subcontractor. The CQA Monitor shall establish a chart showing correspondence between roll numbers, certification reports, and panel numbers.

During panel placement, the CQA Monitor shall:

- Observe the geotextile as it is placed and record all defects and disposition of the defects (panel rejected, patch installed, etc.). All repairs are to be made in accordance with the Technical Specifications.
- Observe that equipment used does not damage the geotextile by handling, traffic, leakage of hydrocarbons, or other means;
- Observe that people working during installation of geotextile do not smoke, wear shoes that could damage the geotextile, or engage in other activities that could damage the geotextile
- Observe that the geotextile is anchored to prevent movement by the wind.
- Observe that adjacent panels of geotextile are overlapped a minimum of 18 inches where the fabric is not seamed (welded or sewn). When seamed, a three-inch minimum overlap will be required.
- Observe that a minimum of 1 destructive seam strength sample is obtained from each material (i.e., 12-ounce and 16-ounce) used for this project.

The CQA Monitors shall inform both the Contractor/Liner Subcontractor and the CQA Manager if the above minimum conditions are not met.

The Contractor/Liner Subcontractor shall provide the Construction Manager with a panel layout plan, and shall update this plan daily as the job proceeds. No geotextile shall be placed until the panel layout plan has been approved by the Construction Manager. During geotextile placement, the CQA Monitors shall observe that:

- The geotextile is cut only with an approved geotextile cutter, and is not torn or ripped.
- The thread and sewing machinery meet the Project requirements (if sewing is the elected method of joining panels).
- The panels are being overlapped or joined in accordance with the Project Drawings and Specifications.
- Any roll of geotextile with a tear exceeding 10 percent of roll width is removed and replaced.

6.3.4 REPAIRS

Any necessary repairs to the geotextile shall be made with the geotextile material itself, using approved overlaps or sewing systems, equipment and techniques. The patch size shall be 24 inches or larger in all directions than the area to be patched and all corners shall be rounded.

6.4 PROTECTIVE PLASTIC COVER AND HDPE GEOTEXTILE BALLAST SYSTEM

The protective plastic cover (PPC) or Reinforced Landfill Cover (RLC) as specified in Section 2I of the Project Drawings and Specifications along with the HDPE geotextile ballast system serves to minimize the infiltration of precipitation within inactive portions of the landfill into the underlying leachate collection system of the Unit 4 Phase 2 Groundwater Protection System Composite Liner at the Mid-Valley Sanitary Landfill. The Contractor/Liner Manufacturer shall provide the Construction Manager with the following submittals:

- Protective plastic cover and HDPE Geotextile Ballast Manufacturer Product Data, which will include, production list, certified test data of both these materials (plastic cover material and HDPE geotextile ballast materials);
- Independent testing laboratory GAI Certification;
- Certificate of Conformance and Samples;
- Shipping, Handling, & Storage Procedures;
- Seam Samples (as necessary);
- Installation procedures, including seam and repairs;

- Installation procedures and panel layout (as necessary);
- Performance warranty with a UV HDPE Ballast System;
- Contractors Installation Quality Control Procedures;
- Installation Drawings (as-built, as necessary); and
- Manufacturer's Quality Control Plan.

Prior to shipment, all PPC and HDPE Geotextile Ballast materials for the Unit 4 Phase 2 Mid-Valley Sanitary Landfill shall be provided to the Contractor/Liner Manufacturer to confirm all material submittals requirements are met, including accredited geosynthetics testing laboratory results data for RLC materials as noted in Section 2I of the Technical Specifications (refer to Table 2.1.2 and Table 2.1.3 of Section 2I of the Technical Specifications). The quality control certificate shall be signed by a responsible person employed by the Liner Manufacturer, and shall include roll number and identification.

The CQA Manager shall:

- Verify that the quality control certificates have been provided at the specified frequency for all rolls, and that each certificate identifies the rolls to be delivered.
- Review the quality control certificates and verify that the certified roll properties meet the Technical Specifications.

6.4.1 PROTECTIVE PLASTIC AND HDPE GEOTEXTILE BALLAST MATERIALS DELIVERY

The Contractor/Liner Subcontractor shall submit for approval by the Construction Manager, method(s) for handling and storage of protective plastic cover and HDPE ballast material(s) prior to installation. The CQA Monitor shall observe that:

- Equipment used to unload the rolls will not damage these materials.
- Care is used to unload the rolls.
- All documentation required by the Technical Specifications - Section 2I has been received and approved.

Upon delivery to the site, the CQA Monitors shall conduct a surface inspection of all rolls for defects and damage. This inspection shall be conducted without unrolling rolls unless defects or damage are found or suspected. The CQA Monitors shall indicate to the CQA Manager any rolls, or portions thereof, which should be rejected and removed from the site because they have severe flaws. Any damaged rolls shall be rejected and removed from the site or stored at a location, designated by the Construction Manager separate from accepted rolls. All rolls which

do not have proper documentation from the manufacturer shall also be stored at a separate location until all documentation has been received and approved. A log of the PPC and HDPE ballast material(s) received shall be maintained by the CQA Monitor(s).

The Construction Manager shall designate storage space in a location (or several locations) on-site. Storage space shall be protected by the Contractor from theft, vandalism, damage from the actions of man, weather, animals and other sources. The CQA Monitors shall observe that the material is not stored directly on the ground and that storage of the PPC and HDPE ballast materials are protected against damage pursuant to ASTM D4873.

6.4.2 PPC AND HDPE BALLAST INSTALLATION

6.4.2.1 *Surface Preparation*

Prior to installation, the Construction Manager and CQA Monitors shall observe that:

- All lines and grades have been verified.
- The underlying materials has been prepared in accordance with the Technical Specifications and the supporting surface does not contain rocks or irregular surfaces which could damage these PPC and HDPE ballast materials.

6.4.2.2 *Placement*

Placement of the PPC and HDPE Ballast materials shall follow the protocols as outlined in Section 2I of the Technical Specifications, as detailed in Sections 3.1 & 3.2.

6.5 MISCELLANEOUS CIVIL IMPROVEMENTS

During the construction of the Unit 4 Phase 2 Groundwater Protection System Composite Liner project at the Mid-Valley Sanitary Landfill, the CQA consultant may be required to provide miscellaneous civil improvement field testing including asphalt concrete, crush miscellaneous base, and miscellaneous concrete structures as noted in Section 2K of the Technical Specifications. The CQA Manager shall document that all Geotechnical CQA requirements have been addressed and satisfied.

The CQA Consultant will provide AC/Aggregate Base/Concrete QA activities during construction as prescribed in the Greenbook SSPWC.

6.5.1 PORTLAND CEMENT CONCRETE (PCC)

The contractor shall submit the proposed mix design for the approval by the construction manager. The construction of PCC components in this project must follow the relevant procedures as identified in Section 2K of the Technical Specifications. The construction of PCC

components in this project will be placed per project drawings and specifications in accordance with SSPWC Section 201-1. PCC shall be placed with applicable portions SSPWC Section 303.

6.5.2 ASPHALT CONCRETE (AC) PAVEMENT

The contractor shall submit the proposed mix design for the approval by the construction manager for the AC pavement. Asphalt concrete (AC) shall meet the requirements of SSPWC Section 203-1 paving asphalt & 203-6 asphalt concrete.

The AC will be placed per the construction plans and project drawings and in accordance with SSPWC Section 302-5. The construction of AC components in this project must follow the relevant procedures as identified in Section 2K of the Technical Specifications, including Section 2.5.

6.5.3 CRUSH MISCELLANEOUS BASE (CMB)

The contractor shall submit the certificate of compliance indicating that the proposed material meets the gradation requirements of SSPWC Section 200-2.4 for the approval by the construction manager for the CMB. The CMB will be placed to the lines and grades indicated on the construction plans and project drawings and in accordance with provisions of SSPWC Section 301-2. The materials shall be compacted to a minimum relative density of 95% per ASTM D 1557, in accordance with SSPWC Section 211.

The placement of CMB materials shall follow the relevant procedures as identified in Section 2K of the Technical Specifications, including Section 3.3.

7. DOCUMENTATION

The Geotechnical CQA Plan depends on thorough monitoring and documentation of all construction activities. Therefore, the CQA Manager shall document that all Geotechnical CQA requirements have been addressed and satisfied. Documentation shall consist of daily reports, construction problem reports, photographs, design and specification revisions, and a certification report.

7.1 DAILY REPORTS

Daily reports shall consist of field notes, summary of the daily meeting with the Contractor/Liner Subcontractor, observation and data sheets and construction problem reports. This information shall be submitted daily to the CQA Manager for review and approval. The summary of the daily meeting with the Contractor/Liner Subcontractor shall include:

- Date, project name, and location.

- Names of parties attending.
- Scheduled activities.
- Items discussed.
- Signature of CQA Monitor.

7.2 OBSERVATION AND TEST DATA REPORTS

Observation and test data reports shall include:

- Date, project name, and location.
- Weather data.
- A reduced scale site plan showing work areas, including sample and test locations.
- A description of ongoing construction.
- A summary of test results identified as passing, failing, or, in the event of a failed test, retest.
- Test equipment calibrations, if applicable.
- A summary of decisions regarding acceptance of the work and/or corrective actions taken.
- The signature of the CQA Monitor.

A summary of observation and test data reports shall be submitted on a schedule mutually agreeable to the Construction Manager and CQA Manager.

7.3 CONSTRUCTION PROBLEM REPORTS

These reports identify and document construction problems and solutions. They are intended to document problems involving significant rework, and are not intended to document problems which are easily corrected unless the problems are recurring. Each report shall include:

- A detailed description of the problem.
- The location and cause of the problem
- The solution to the problem.
- The personnel involved.
- Signatures of the CQA Manager and Construction Manager.

7.4 DESIGN AND SPECIFICATION REVISIONS

Design and specification revisions may be required during construction. In such cases, the CQA Manager shall notify the Construction Manager. Design and specification revisions shall become official only after written approval of the Construction Manager.

7.5 PHOTOGRAPHS

Construction activities will be photographed, including significant problems and remedial actions. The photographs will be identified by location, time, date, and photographer.

7.6 AS-BUILT PLANS

As-built plans shall be prepared by the Contractor/Subcontractor from surveying and base maps prepared by a Registered Land Surveyor. The CQA Monitors shall observe on a daily basis that the "As-Built" plans include:

- Dimensions of all field panels;
- Location of each panel relative to the surveyor's plan;
- Identification of all panels and seams (including manufacturer's roll identification numbers);
- Location of all patches and repairs;
- Location of all nondestructive and destructive test sampling; and
- Identification of problems or unusual conditions.

7.7 FINAL CQA CERTIFICATION REPORT

The Unit 4 Phase 2 Liner Construction Project is designed to be constructed in three (3) sequences to minimize the impact to ongoing landfill operations which, at the discretion of the owner, may require two interim beneficial occupancy reports for submittal to the regulatory agency in addition to the final CQA certification report. In other words, completion of one interim report each may be required for Sequence 1 and Sequence 2 prior to completion of the final CQA certification report. Each beneficial occupancy CQA certification report shall be signed by the CQA Manager and signed and stamped by the CQA Officer, a Civil Engineer or Certified Engineering Geologist licensed by the State of California.

As a minimum, each interim beneficial occupancy CQA certification report shall include:

- A summary of all construction activities completed for the construction sequence;
- Laboratory and field test results for the completed construction sequence;
- Observation and test data sheets for the completed construction sequence;
- Sampling and testing location plans for the completed construction sequence;

- A description of significant construction problems and the solutions of these problems for the completed construction sequence; and
- A list of revisions from the construction plans and specifications, and the justification for these revisions for the completed construction sequence.

At completion of the work, the CQA Officer shall submit a final CQA certification report. This report shall contain a statement of compliance that the work was performed in compliance with the Project Drawings and Specifications, and that CQA observations, testing, and documentation have been performed in accordance with this CQA Plan.

As a minimum, the final CQA certification report shall include:

- A summary of all construction activities;
- Laboratory and field test results;
- Observation and test data sheets;
- Sampling and testing location plans;
- A description of significant construction problems and the solutions of these problems;
- A list of revisions from the construction plans and specifications, and the justification for these revisions;

The final CQA certification report shall be signed by the CQA Manager and signed and stamped by the CQA Officer, a Civil Engineer or Certified Engineering Geologist licensed by the State of California.