

**American River Flood Control District
Central Valley Flood Protection Board Permit Application
Sump 151 Modifications (City of Sacramento)
Staff Report**

Discussion:

The City of Sacramento submitted this encroachment permit application to modify facilities at their Sump 151 Pump Station. The work proposed is to remove and replace approximately 140 ft of one (1) 54" welded steel pipe, 140 ft of one (1) 42" HDPE pipe, 140 ft of one (1) 42" welded steel pipe, 280 ft of two (2) 30" welded steel pipes, and 140 ft of one (1) 16" welded steel pipe. Install positive closure vault at top of levee hinge-point. Replace approximately 2,250 square feet of asphalt paving at the south end of the sump station and bike path.

Sump 151 is located adjacent to the American River North Levee and off Canterbury Road (near Costco).

These modifications are required to upgrade the pipe outfall system at the pump station. The current system does not meet modern U.S. Army Corps of Engineers' standards. The USACE now requires that all pressurized pipes cross the levee at or above the 200-year flood elevation for the adjacent channel and that the pipes each have a positive closure device (shut-off valve) at the waterside crown hinge point. The proposed work will upgrade the facility to meet all State and Federal requirements.

Once the work is complete, it is not anticipated that this work will pose significant operations and maintenance impacts to the District. There will be temporary loss of access and thoroughfare for the District during construction.

Recommendation:

The General Manager recommends that the Board of Trustees endorse the CVFPB permit application.

**APPLICATION FOR A CENTRAL VALLEY FLOOD PROTECTION BOARD
ENCROACHMENT PERMIT**

Application No. _____
(For Office Use Only)

1. Description of proposed work being specific to include all items that will be covered under the issued permit.

Sump 151 Modifications: Remove and replace approximately 140 ft of one (1) 54" welded steel pipe, 140 ft of one (1) 42" HDPE pipe, 140 ft of one (1) 42" welded steel pipe, 280 ft of two (2) 30" welded steel pipes, and 140 ft of one (1) 16" welded steel pipe. Install positive closure vault at top of levee hinge-point. Replace approximately 2,250 square feet of asphalt paving at the south end of the sump station and bike path.

2. Project
Location: Sacramento County, in Section 32
Township: 9N (N) (S), Range: 5E (E) (W), M. D. B. & M.
Latitude: 38.59587 Longitude: -121.45773
Stream: American River, Levee: Right Bank Designated Floodway: American River
APN: See Attachment A

3. Raymond Kong, PE of 1395 35th Ave
Name of Applicant / Land Owner Address
Sacramento CA 95822 (916) 808-1435
City State Zip Code Telephone Number
RKong@cityofsacramento.org
E-mail

4. Ashley Smith, PE of Peterson Brustad Inc.
Name of Applicant's Representative Company
Folsom CA 95630 (916) 608-2212 x 123
City State Zip Code Telephone Number
asmith@pbieng.com
E-mail

5. Endorsement of the proposed project from the Local Maintaining Agency (LMA):

We, the Trustees of American River Flood Control District approve this plan, subject to the following conditions:
Name of LMA

Conditions listed on back of this form Conditions Attached No Conditions

Trustee Date Trustee Date

Trustee Date Trustee Date

APPLICATION FOR A CENTRAL VALLEY FLOOD PROTECTION BOARD ENCROACHMENT PERMIT

6. Names and addresses of adjacent property owners sharing a common boundary with the land upon which the contents of this application apply. If additional space is required, list names and addresses on back of the application form or an attached sheet.

Name	Address	Zip Code
See Attachment A		

7. Has an environmental determination been made of the proposed work under the California Environmental Quality Act of 1970? Yes No Pending

If yes or pending, give the name and address of the lead agency and State Clearinghouse Number:

City of Sacramento
1395 35th Avenue
Sacramento, CA 95822
SCH No. Pending

8. When is the project scheduled for construction? April 2021

9. Please check exhibits accompanying this application.

- A. [checked] Regional and vicinity maps showing the location of the proposed work.
- B. [checked] Drawings showing plan view(s) of the proposed work to include map scale.
- C. [checked] Drawings showing the cross section dimensions and elevations (vertical datum?) of levees, berms, stream banks, flood plain,
- D. [checked] Drawings showing the profile elevations (vertical datum?) of levees, berms, flood plain, low flow, etc.
- E. [checked] A minimum of four photographs depicting the project site.

Signature of Applicant Date

Include any additional information:

A summary of the Project and a description of the proposed methods are provided in Attachment A. Attachment B includes relevant plan sheets which are an excerpt from a larger plan set. Attachment C includes the categorical permission checklist. The intent of this application is to modify the existing encroachment permit. The existing Permit number for Sump 151 is 5365.

Attachment A – Summary of Proposed Work

**CITY OF SACRAMENTO PUMP OUTFALLS PROJECT:
CENTRAL VALLEY FLOOD PROTECTION BOARD ENCROACHMENT PERMIT**

SUMMARY OF PROPOSED WORK

September 15, 2020

INTRODUCTION

As mandated by the Sacramento Area Flood Control Agency (SAFCA) and the U.S. Army Corps of Engineers (USACE), sump station outfalls that penetrate and cross major levees are inspected on a 5-year cycle. The project entails the complete replacement of the pump discharge for three (3) drainage sump station facilities and partial replacement of the pump discharge pipe for five (5) drainage sump station facilities. The following information pertains to a complete replacement sump (Sump 151) that will need an updated Encroachment Permit from the CVFPB.

APN Parcels

Sump	Existing Permit #	APN
151	5365	275-0270-036-0000

ADJACENT PARCELS

All of the parcels adjacent to the Sump to be modified are listed in the table presented below as provided by the Sacramento County Assessor's Office.

APN	Address	Owner	Owner Address	City	Zip
275-0260-007-0000	CANTERBURY RD	SOUTHERN PACIFIC	1400 DOUGLAS ST	OMAHA	68179
275-0260-014-0000	CANTERBURY RD	CITY OF SACRAMENTO	915 I ST FL5	SACRAMENTO	95814
275-0260-015-0000	CANTERBURY RD	CITY OF SACRAMENTO	915 I ST FL5	SACRAMENTO	95814
275-0260-023-0000	CANTERBURY RD	COUNTY OF SACRAMENTO	10361 ROCKINGHAM DR #100	SACRAMENTO	95827
275-0270-035-0000	236 LATHROP WAY	COUNTY OF SACRAMENTO	10361 ROCKINGHAM DR #100	SACRAMENTO	95827
275-0300-008-0000	281 LATHROP WAY	281 LATHROP CAPITAL LLC	2699 AZALEA RD	SACRAMENTO	95864

SITE PHOTOGRAPHS

Attached to this Summary of Proposed Work are photographs showing levee and channel areas representative of proposed work sites.



Figure 1: View of pump station



Figure 2: View of landside levee slope



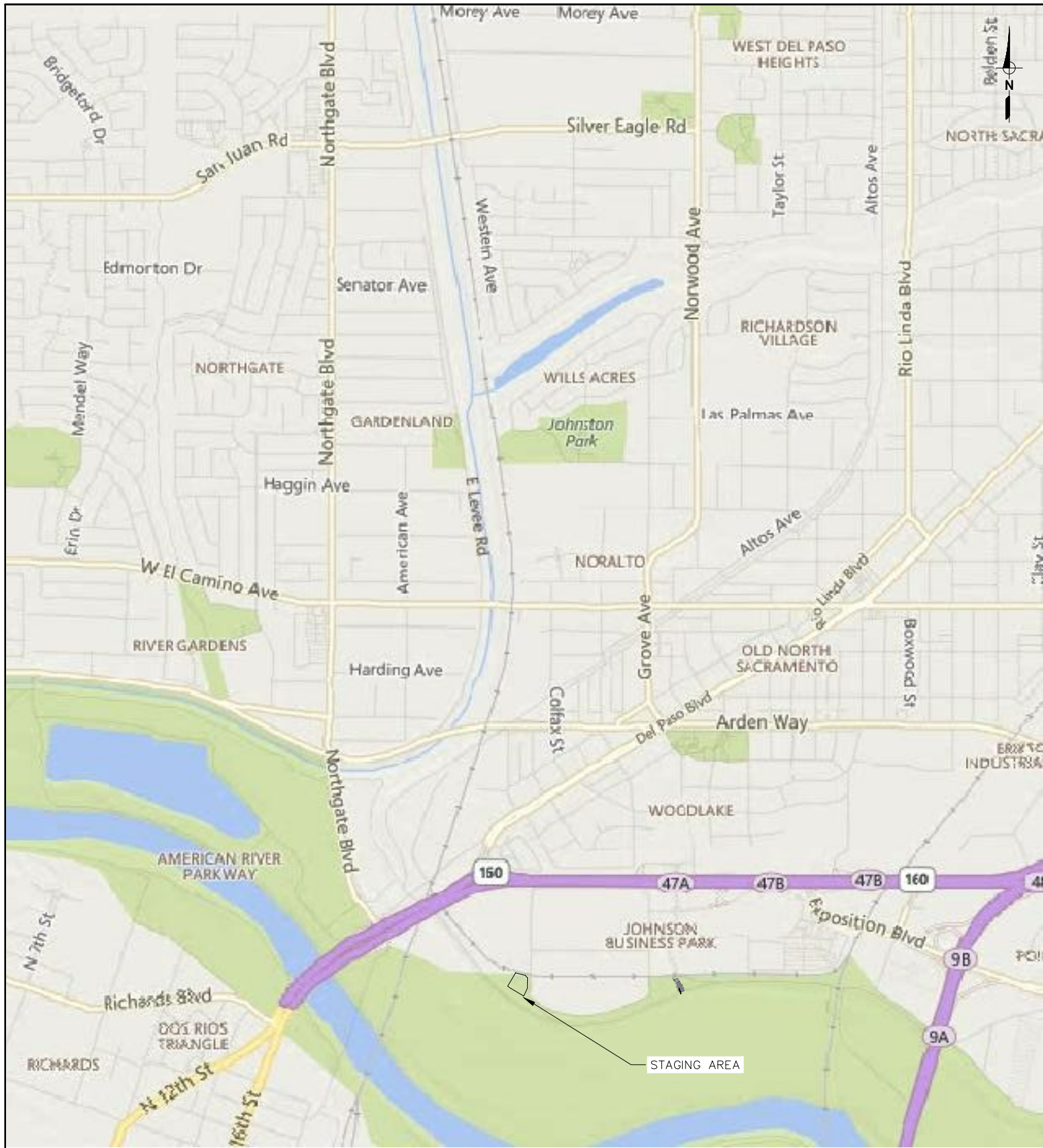
Figure 3: View from crest of Levee facing eastward



Figure 4: View of outfall structure into American River

Attachment B – Plan Sheets

(Excerpt from larger plan set for Pump Outfalls Replacement Project – A)



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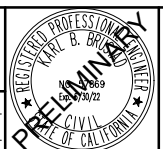
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REVISIONS			
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BENCH MARK	ELEV.	46.60
DESCRIPTION:	SPINDLE	

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H:	NTS
V:	NTS

CITY OF SACRAMENTO			
DEPARTMENT OF UTILITIES			
DRAWN BY:	E. TUTEJA	DESIGNED BY:	B. JENSEN
DATE:	09/15/20	R.C.E. NO.:	C90949 DATE: 03/31/22
		CHECKED BY:	A. SMITH
		R.C.E. NO.:	C86512 DATE: 03/31/21



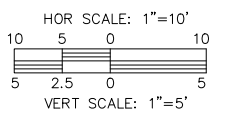
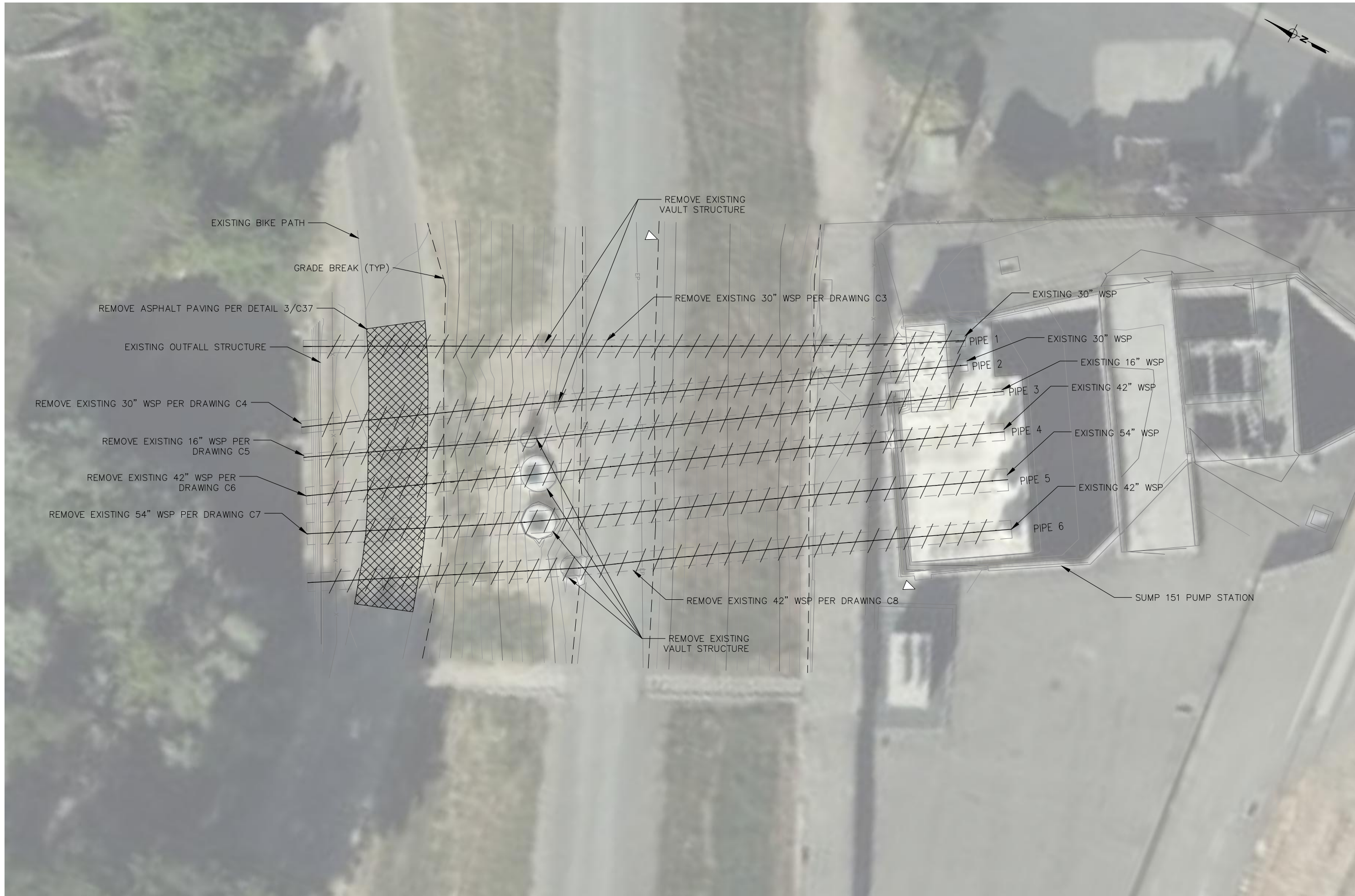
IMPROVEMENT PLANS FOR:
PUMP OUTFALLS REPLACEMENT PROJECT – A
STAGING AREA

65% SUBMITTAL

NO.	63
SHEET	3
OF	47

Page 11

Item 5



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REVISIONS			
NO.	DESCRIPTION	DATE	BY

BENCH MARK	ELEV. 46.60
DESCRIPTION:	
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SCALE:	
H: 1"=10"	
V: 1"=5"	

CITY OF SACRAMENTO
DEPARTMENT OF UTILITIES

DRAWN BY: E. TUTEJA	DESIGNED BY: B. JENSEN	CHECKED BY: A. SMITH
DATE: 09/15/20	R.C.E. NO. C90949 DATE: 03/31/22	R.C.E. NO. C86512 DATE: 03/31/21

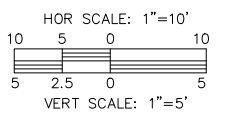
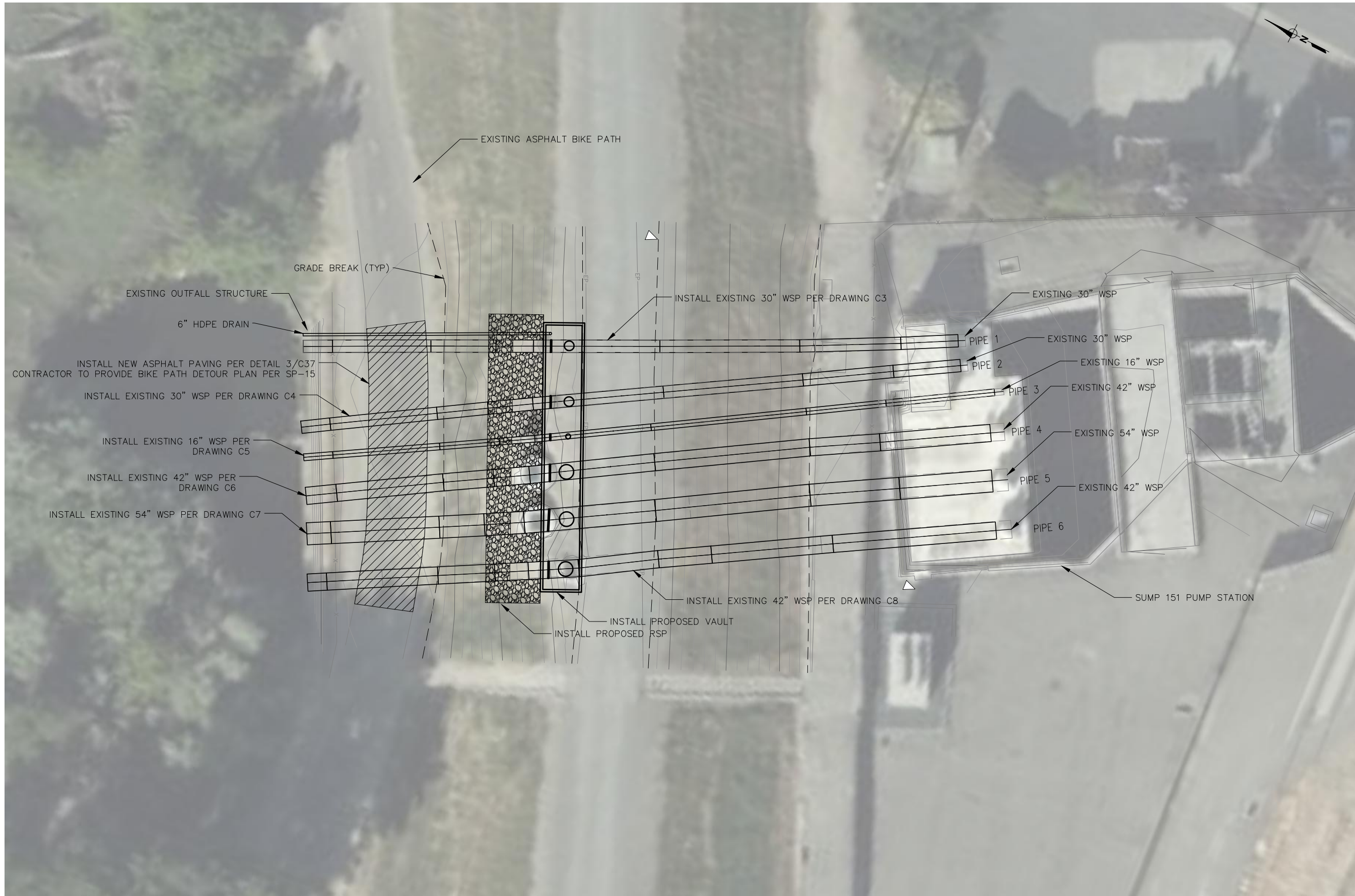


IMPROVEMENT PLANS FOR:
PUMP OUTFALLS REPLACEMENT PROJECT - A
SUMP 151
DEMO PLAN

65% SUBMITTAL

DWG. NO. C1
SHEET 4 OF 47

Page 12



PN: W14130615

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REVISIONS			
NO.	DESCRIPTION	DATE	BY

BENCH MARK	ELEV. 46.60
DESCRIPTION:	
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H: 1"=10"	
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CITY OF SACRAMENTO
DEPARTMENT OF UTILITIES

ON ORIGINAL SCALE DRAWING ADJUST SCALED DIMENSIONS IF THIS DOES NOT SCALE AT 1"

DRAWN BY: E. TUTEJA	DESIGNED BY: B. JENSEN	CHECKED BY: A. SMITH
DATE: 09/15/20	R.C.E. NO. C90949 DATE: 03/31/22	R.C.E. NO. C86512 DATE: 03/31/21



IMPROVEMENT PLANS FOR:

PUMP OUTFALLS REPLACEMENT PROJECT - A

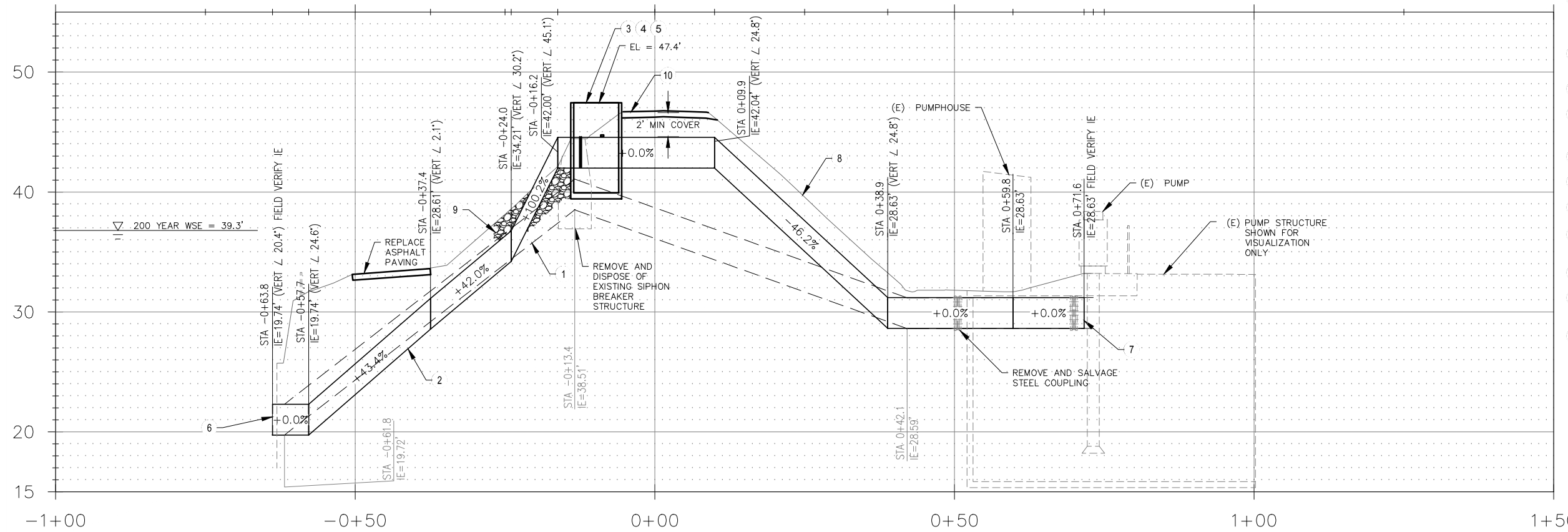
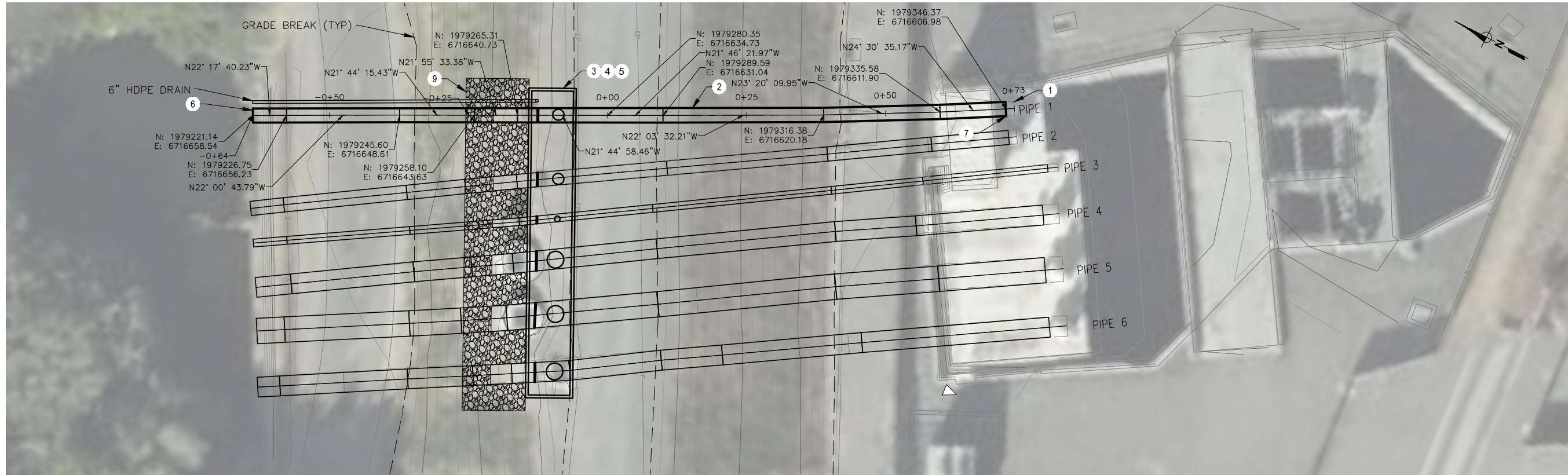
SUMP 151

SITE PLAN

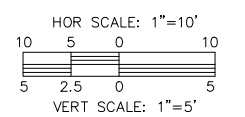
Page 13

DWG. NO.	c2
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OF	47

65% SUBMITTAL



- NOTES:**
- 1 REMOVE AND DISPOSE OF EXISTING 30" WSP AND APPURTENANCES FROM STA -0+63.9 TO STA 0+71.6 PER DETAIL 2/C38
 - 2 INSTALL 30" WSP FROM STA -0+63.9 TO STA 0+71.6 PER DETAIL 3/C38
 - 3 INSTALL 42" FL x FL KNIFE GATE VALVE
 - 4 INSTALL COMBINATION ANTI-SIPHON AND AIR RELIEF VALVE PER DETAIL 3/C35
 - 5 INSTALL ANTI-SIPHON VAULT PER DETAIL 1/C9
 - 6 CONNECT TO EXISTING OUTFALL STRUCTURE PER DETAIL 1/C37
 - 7 CONNECT TO EXISTING STEEL COUPLING
 - 8 RECONSTRUCT LEVEE EMBANKMENT WITH LEVEE FILL MATERIAL PER DETAIL 2/C38
 - 9 INSTALL RSP PER DETAIL 1/C35
 - 10 REPLACE EXISTING AGGREGATE SURFACE COURSE PER DETAIL 4/C37
 - 11 LOCATION OF ALL EXISTING UTILITIES ARE APPROXIMATE IN PLAN AND PROFILE AND ARE BASED ON THE BEST AVAILABLE UTILITY MAPPING PROVIDED BY UTILITY OWNERS, THE CONTRACTOR IS RESPONSIBLE TO POTHOLE ALL EXISTING UTILITIES IN CONFLICT WITH THE PROJECT IN ADVANCE OF CONSTRUCTION TO DETERMINE ACTUAL DEPTH AND LOCATION. DAMAGE TO ANY EXISTING UTILITIES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR



PUMP OUTFALLS REPLACEMENT PROJECT
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REVISIONS			
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BENCH MARK	ELEV. 46.60
DESCRIPTION:	SPINDLE

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H:	1"=10"
V:	1"=5"

CITY OF SACRAMENTO
DEPARTMENT OF UTILITIES

ON ORIGINAL SCALE
DRAWING ADJUST
SCALED DIMENSIONS
IF THIS DOES NOT
SCALE AT 1"

DRAWN BY: E. TUTEJA
DATE: 09/15/20

DESIGNED BY: B. JENSEN
R.C.E. NO. C90949 DATE: 03/31/22

CHECKED BY: A. SMITH
R.C.E. NO. C86512 DATE: 03/31/21



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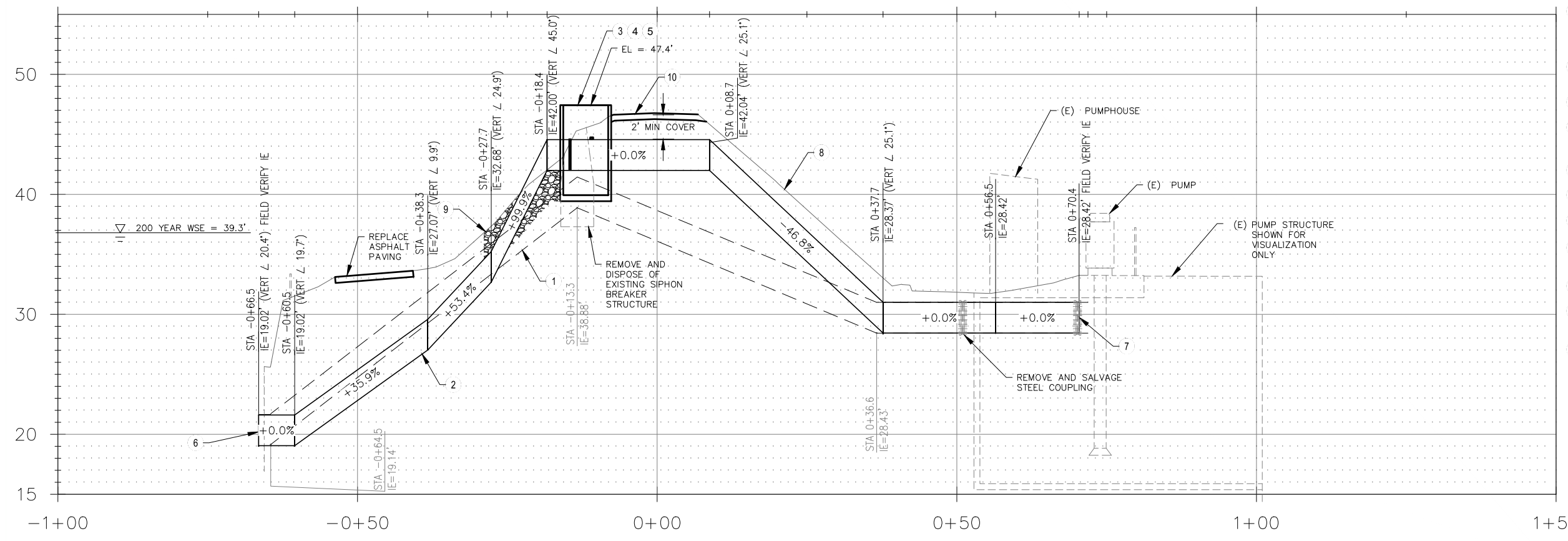
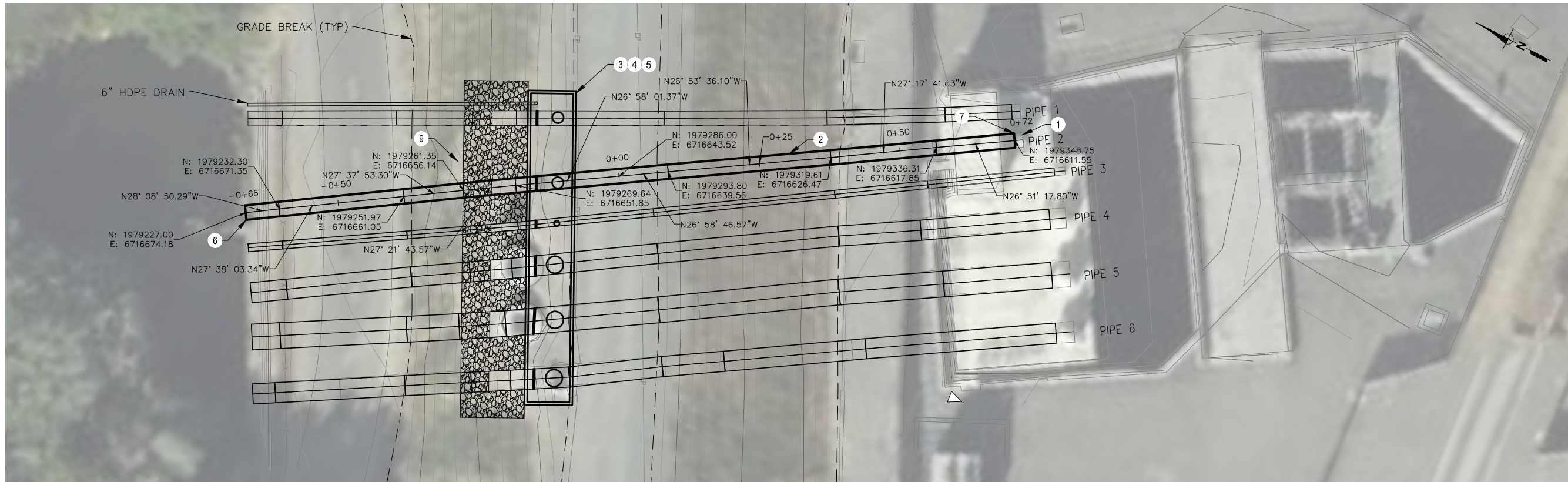
PUMP OUTFALLS REPLACEMENT PROJECT - A
SUMP 151
PLAN AND PROFILE 1 - 30" WSP

Page 14

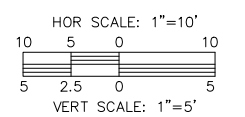
65% SUBMITTAL

DWG. NO.	C3
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OF	47

PN: W14130615



- NOTES:**
- 1 REMOVE AND DISPOSE OF EXISTING 30" WSP AND APPURTENANCES FROM STA -0+66.5 TO STA 0+70.4 PER DETAIL 2/C38
 - 2 INSTALL 30" WSP FROM STA -0+66.5 TO STA 0+70.4 PER DETAIL 3/C38
 - 3 INSTALL 42" FL x FL KNIFE GATE VALVE
 - 4 INSTALL COMBINATION ANTI-SIPHON AND AIR RELIEF VALVE PER DETAIL 3/C35
 - 5 INSTALL ANTI-SIPHON VAULT PER DETAIL 1/C9
 - 6 CONNECT TO EXISTING OUTFALL STRUCTURE PER DETAIL 1/C37
 - 7 CONNECT TO EXISTING STEEL COUPLING
 - 8 RECONSTRUCT LEVEE EMBANKMENT WITH LEVEE FILL MATERIAL PER DETAIL 2/C38
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H:	1" = 10'
V:	1" = 5'

CITY OF SACRAMENTO
DEPARTMENT OF UTILITIES

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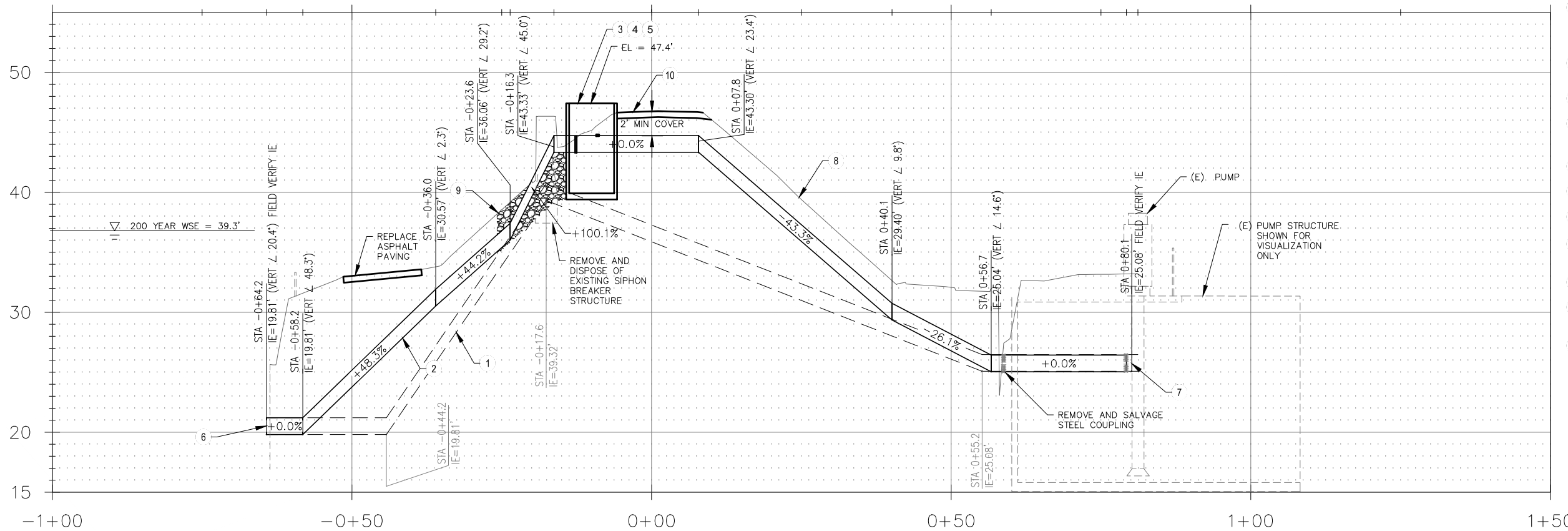
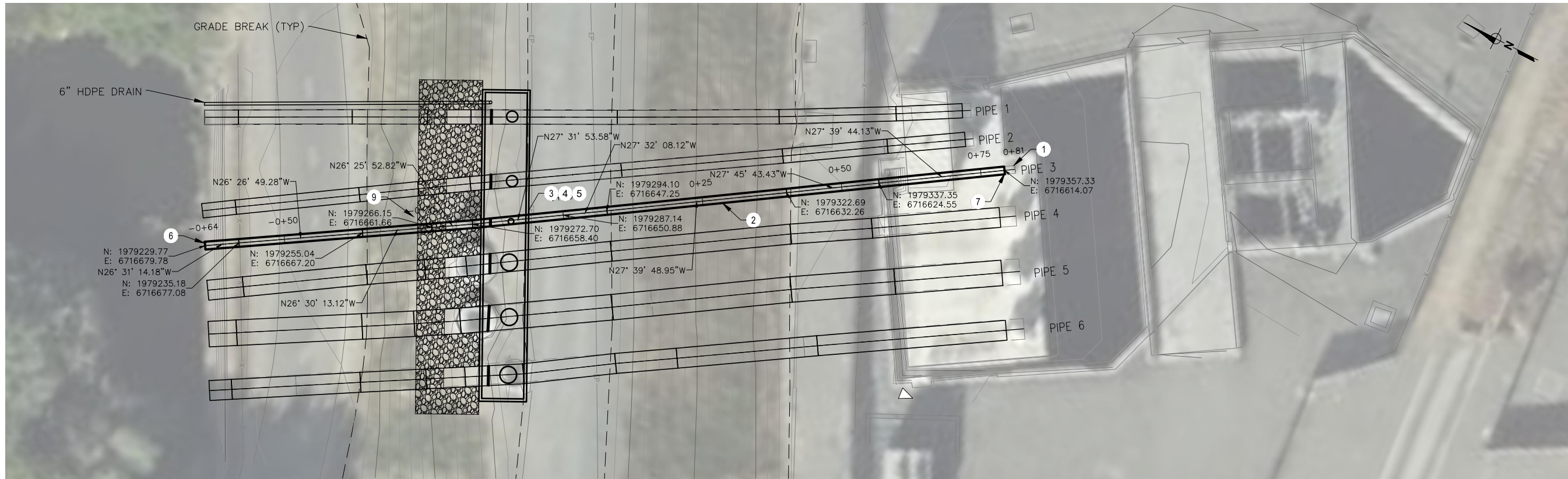
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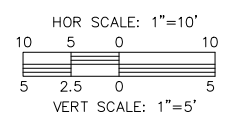
65% SUBMITTAL

IMPROVEMENT PLANS FOR:
PUMP OUTFALLS REPLACEMENT PROJECT - A
SUMP 151
PLAN AND PROFILE 2 - 30" WSP

PN: W14130615	DWG. NO. C4
	SHEET 7 OF 47
	Page 15



- NOTES:**
- 1 REMOVE AND DISPOSE OF EXISTING 16" WSP AND APPURTENANCES FROM STA -0+64.2 TO STA 0+80.1 PER DETAIL 2/C38
 - 2 INSTALL 16" WSP FROM STA -0+64.2 TO STA 0+80.1 PER DETAIL 3/C38
 - 3 INSTALL 42" FL x FL KNIFE GATE VALVE
 - 4 INSTALL COMBINATION ANTI-SIPHON AND AIR RELIEF VALVE PER DETAIL 3/C35
 - 5 INSTALL ANTI-SIPHON VAULT PER DETAIL 1/C9
 - 6 CONNECT TO EXISTING OUTFALL STRUCTURE PER DETAIL 1/C37
 - 7 CONNECT TO EXISTING STEEL COUPLING
 - 8 RECONSTRUCT LEVEE EMBANKMENT WITH LEVEE FILL MATERIAL PER DETAIL 2/C38
 - 9 INSTALL RSP PER DETAIL 1/C35
 - 10 REPLACE EXISTING AGGREGATE SURFACE COURSE PER DETAIL 4/C37
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PN: W14130615

REVISIONS			
NO.	DESCRIPTION	DATE	BY

BENCH MARK	ELEV.	46.60
DESCRIPTION:	SPINDLE	

FIELD BOOK	0000
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V:	1" = 5"

CITY OF SACRAMENTO
DEPARTMENT OF UTILITIES

ON ORIGINAL SCALE DRAWING ADJUST SCALED DIMENSIONS IF THIS DOES NOT SCALE AT 1"

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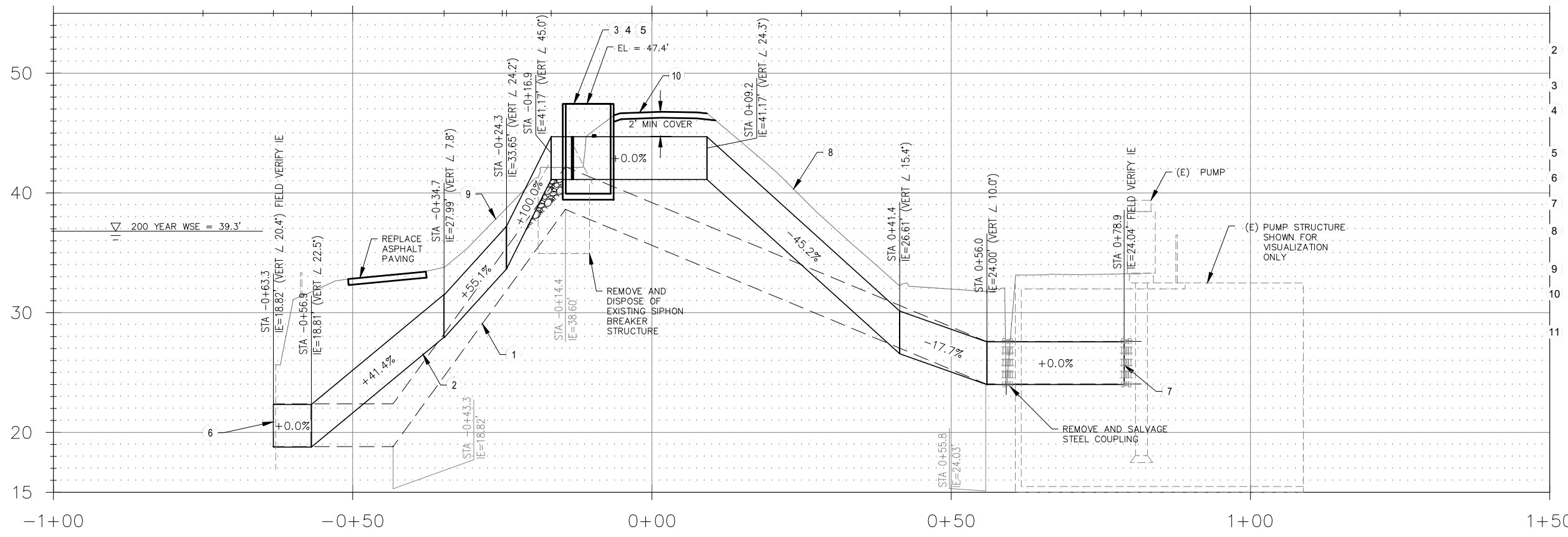
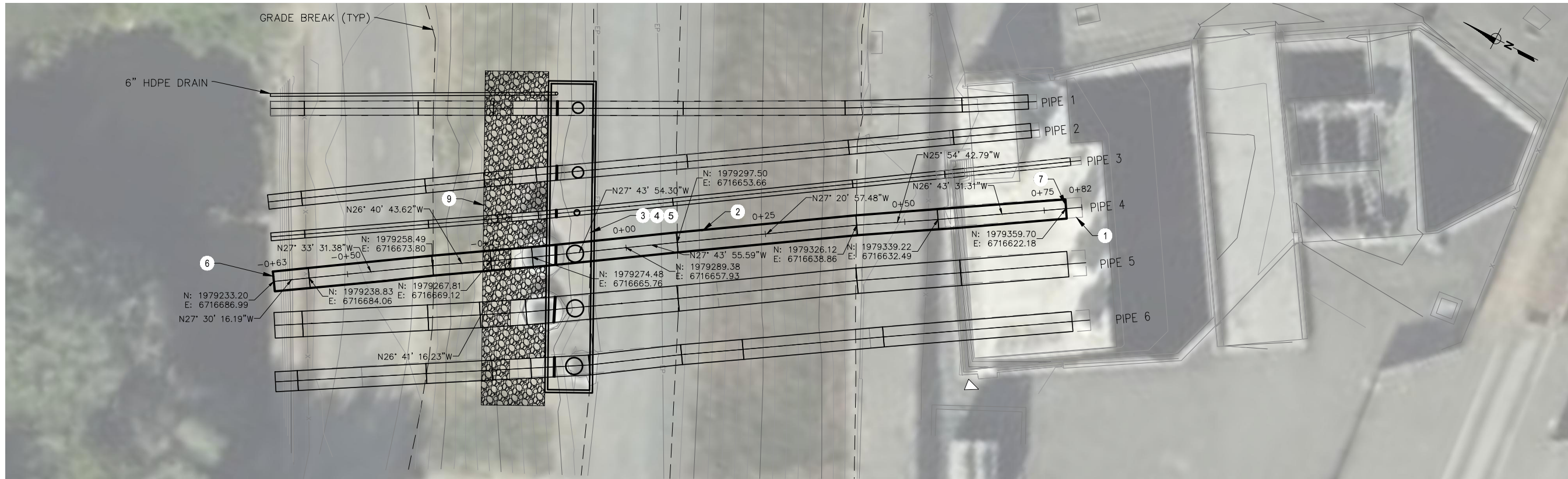
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PUMP OUTFALLS REPLACEMENT PROJECT - A
SUMP 151
PLAN AND PROFILE 3 - 16" WSP

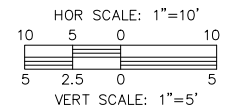
65% SUBMITTAL

PN: W14130615	DWG. NO. C5
	SHEET 8 OF 47

Page 16



- NOTES:**
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 - 2 INSTALL 42" WSP FROM STA -0+63.3 TO STA 0+78.9 PER DETAIL 3/C38
 - 3 INSTALL 42" FL x FL KNIFE GATE VALVE
 - 4 INSTALL COMBINATION ANTI-SIPHON AND AIR RELIEF VALVE PER DETAIL 3/C35
 - 5 INSTALL ANTI-SIPHON VAULT PER DETAIL 1/C9
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 - 7 CONNECT TO EXISTING STEEL COUPLING
 - 8 RECONSTRUCT LEVEE EMBANKMENT WITH LEVEE FILL MATERIAL PER DETAIL 2/C38
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PUMP OUTFALLS REPLACEMENT PROJECT
PN: W14130615

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REVISIONS			
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BENCH MARK	ELEV. 46.60
DESCRIPTION:	SPINDLE

FIELD BOOK	0000
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V:	1"=5"

CITY OF SACRAMENTO
DEPARTMENT OF UTILITIES

ON ORIGINAL SCALE DRAWING ADJUST SCALED DIMENSIONS IF THIS DOES NOT SCALE AT 1"

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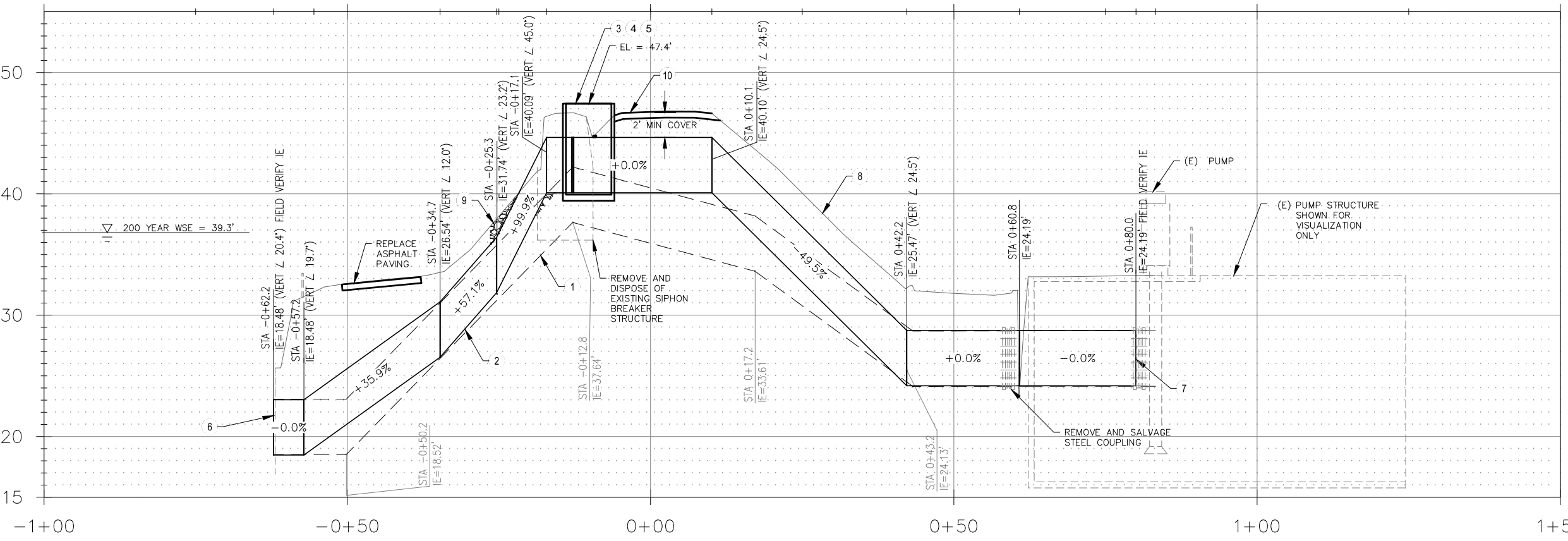
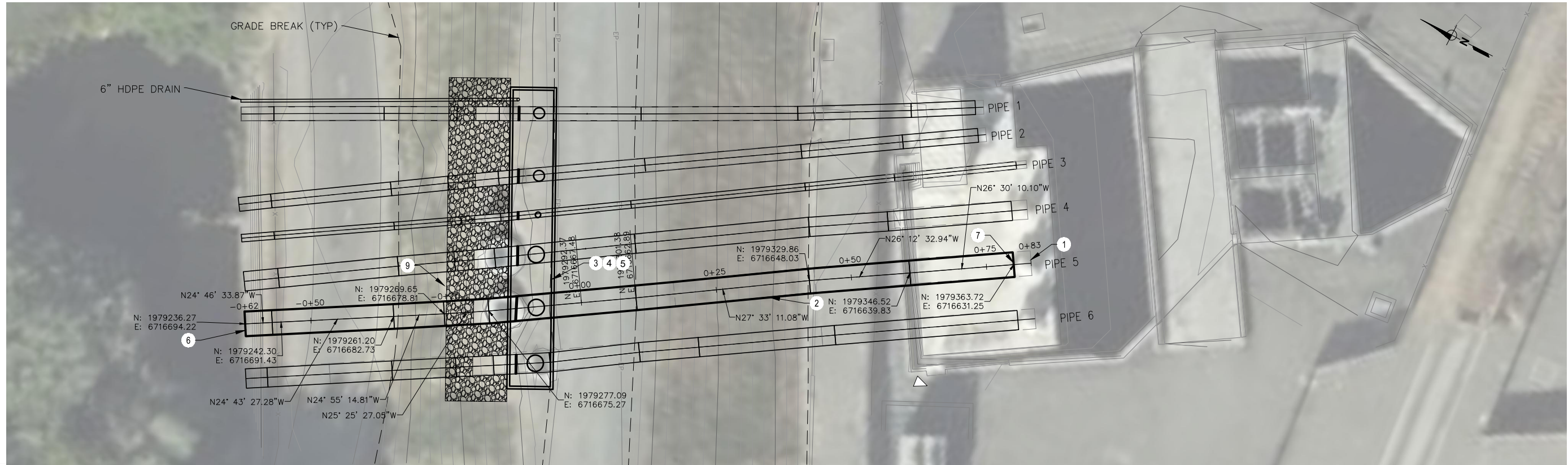


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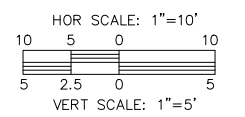
PUMP OUTFALLS REPLACEMENT PROJECT - A
SUMP 151
PLAN AND PROFILE 4 - 42" WSP

65% SUBMITTAL

PN: W14130615	DWG. NO. C6
SHEET 9 OF 47	Page 17



- NOTES:**
- 1 REMOVE AND DISPOSE OF EXISTING 54" WSP AND APPURTENANCES FROM STA -0+62.2 TO STA 0+80.0 PER DETAIL 2/C38
 - 2 INSTALL 54" WSP FROM STA -0+62.2 TO STA 0+80.0 PER DETAIL 3/C38
 - 3 INSTALL 42" FL x FL KNIFE GATE VALVE
 - 4 INSTALL COMBINATION ANTI-SIPHON AND AIR RELIEF VALVE PER DETAIL 3/C35
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BENCH MARK	ELEV.	46.60
DESCRIPTION:	SPINDLE	

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CITY OF SACRAMENTO
DEPARTMENT OF UTILITIES

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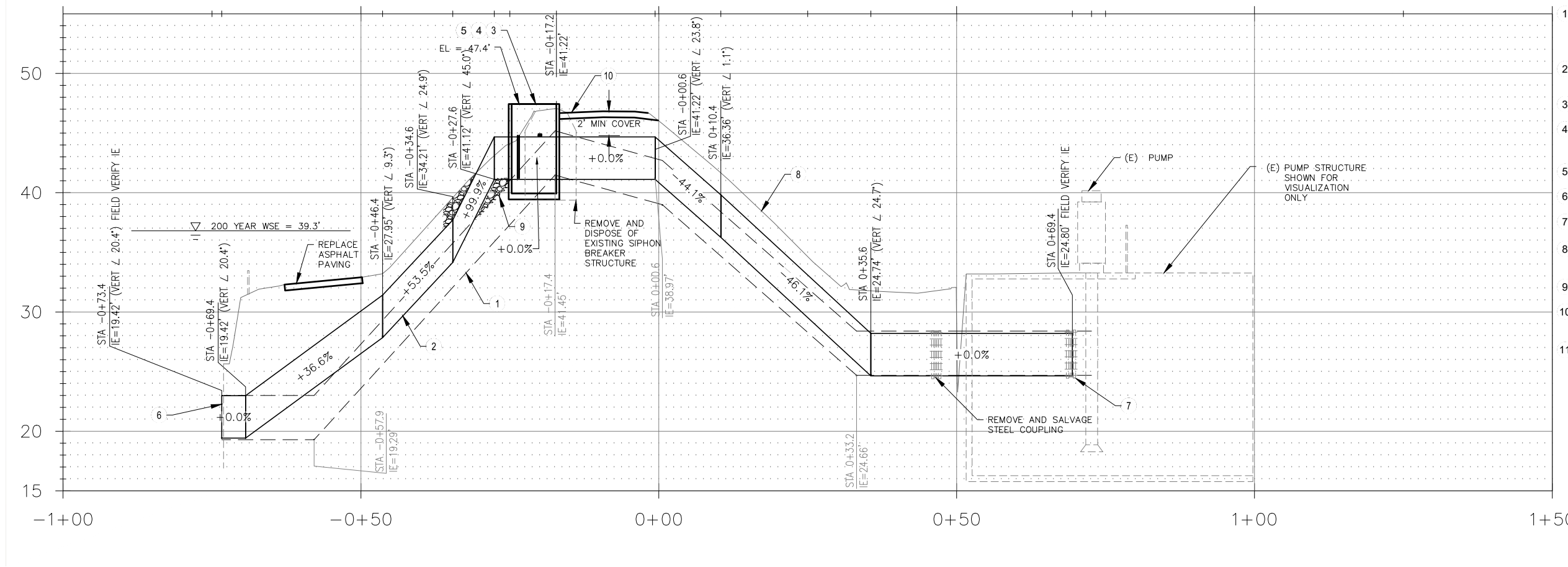
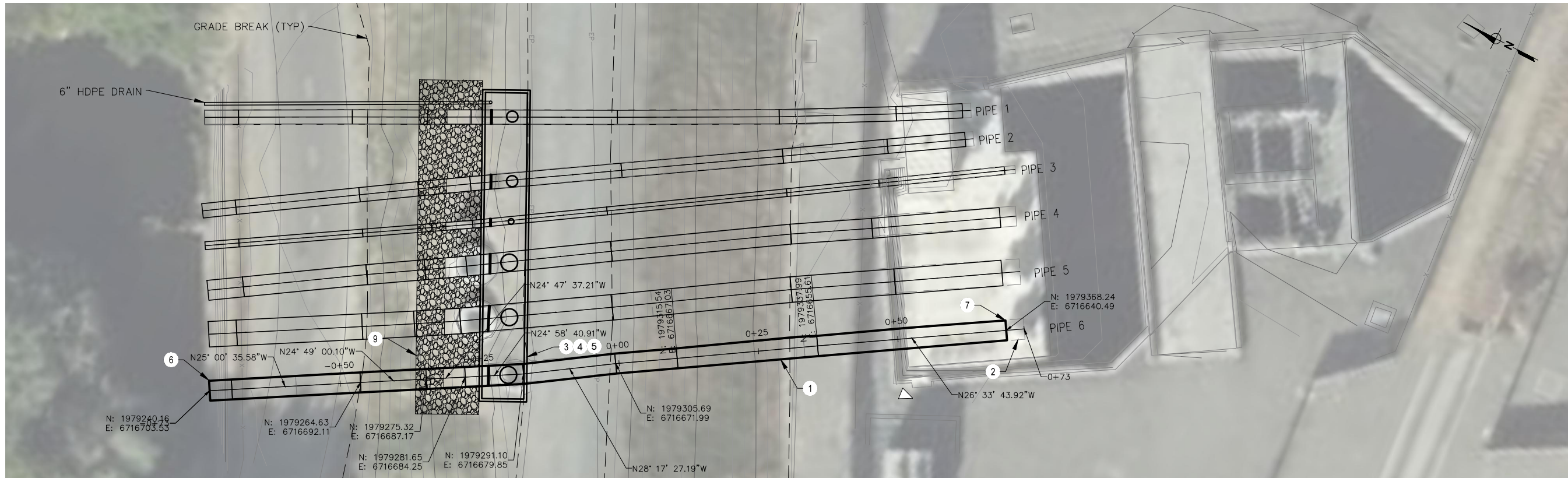
IMPROVEMENT PLANS FOR:

PUMP OUTFALLS REPLACEMENT PROJECT - A
SUMP 151
PLAN AND PROFILE 5 - 54" WSP

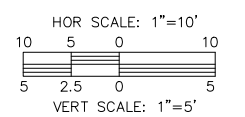
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DWG. NO.	c7
SHEET	10
OF	47

Page 18



- NOTES:**
- REMOVE AND DISPOSE OF EXISTING 42" WSP AND APPURTENANCES FROM STA -0+73.4 TO STA 0+69.4 PER DETAIL 2/C38
 - INSTALL 42" WSP FROM STA -0+73.4 TO STA 0+69.4 PER DETAIL 3/C38
 - INSTALL 42" FL x FL KNIFE GATE VALVE
 - INSTALL COMBINATION ANTI-SIPHON AND AIR RELIEF VALVE PER DETAIL 3/C35
 - INSTALL ANTI-SIPHON VAULT PER DETAIL 1/C9
 - CONNECT TO EXISTING OUTFALL STRUCTURE PER DETAIL 1/C37
 - CONNECT TO EXISTING STEEL COUPLING
 - RECONSTRUCT LEVEE EMBANKMENT WITH LEVEE FILL MATERIAL PER DETAIL 2/C38
 - INSTALL RSP PER DETAIL 1/C35
 - REPLACE EXISTING AGGREGATE SURFACE COURSE PER DETAIL 4/C37
 - LOCATION OF ALL EXISTING UTILITIES ARE APPROXIMATE IN PLAN AND PROFILE AND ARE BASED ON THE BEST AVAILABLE UTILITY MAPPING PROVIDED BY UTILITY OWNERS, THE CONTRACTOR IS RESPONSIBLE TO POTHOLE ALL EXISTING UTILITIES IN CONFLICT WITH THE PROJECT IN ADVANCE OF CONSTRUCTION TO DETERMINE ACTUAL DEPTH AND LOCATION. DAMAGE TO ANY EXISTING UTILITIES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR



PN: W14130615

REVISIONS			
NO.	DESCRIPTION	DATE	BY

BENCH MARK	ELEV. 46.60
DESCRIPTION:	
SPINDLE	

FIELD BOOK	0000
SCALE:	
H:	1"=10"
V:	1"=5"

CITY OF SACRAMENTO
DEPARTMENT OF UTILITIES

ON ORIGINAL SCALE DRAWING ADJUST SCALED DIMENSIONS IF THIS DOES NOT SCALE AT 1"

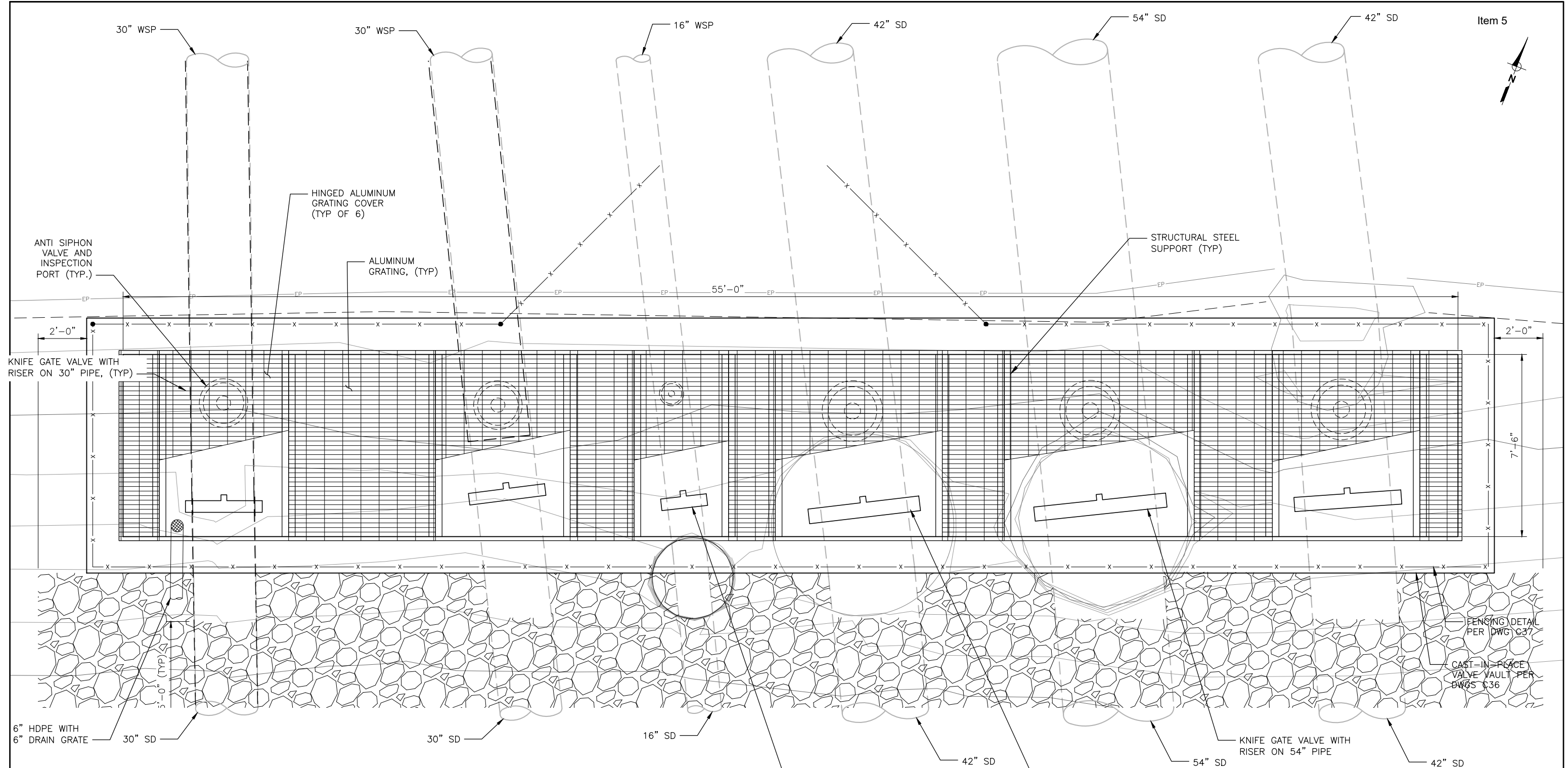
DRAWN BY: E. TUTEJA	DESIGNED BY: B. JENSEN	CHECKED BY: A. SMITH
DATE: 09/15/20	R.C.E. NO. C90949 DATE: 03/31/22	R.C.E. NO. C86512 DATE: 03/31/21



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IMPROVEMENT PLANS FOR:
PUMP OUTFALLS REPLACEMENT PROJECT - A
SUMP 151
PLAN AND PROFILE 6 - 42" WSP

PN: W14130615	DWG. NO. c8
	SHEET 11 OF 47
	Page 19



- NOTES:
1. CUT 60"x7" OPENING IN FIXED ALUMINUM GRATING FOR 54" KNIFE GATE VALVE.
 2. CUT 48"x7" OPENING IN FIXED ALUMINUM GRATING FOR 42" KNIFE GATE VALVE.
 3. CUT 36"x7" OPENING IN FIXED ALUMINUM GRATING FOR 30" KNIFE GATE VALVE.
 4. CUT 22"x7" OPENING IN FIXED ALUMINUM GRATING FOR 16" KNIFE GATE VALVE.

PUMP OUTFALLS REPLACEMENT PROJECT
PN: W14130615

PN: W14130615

REVISIONS			
NO.	DESCRIPTION	DATE	BY

BENCH MARK	ELEV. _____
DESCRIPTION:	

FIELD BOOK	0000
SCALE:	1"=10'
H:	
V:	

CITY OF SACRAMENTO
DEPARTMENT OF UTILITIES

ON ORIGINAL SCALE DRAWING ADJUST SCALED DIMENSIONS IF THIS DOES NOT SCALE AT 1"

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DATE: 09/15/20	R.C.E. NO. C90949 DATE: 03/31/22	R.C.E. NO. C86512 DATE: 03/31/21

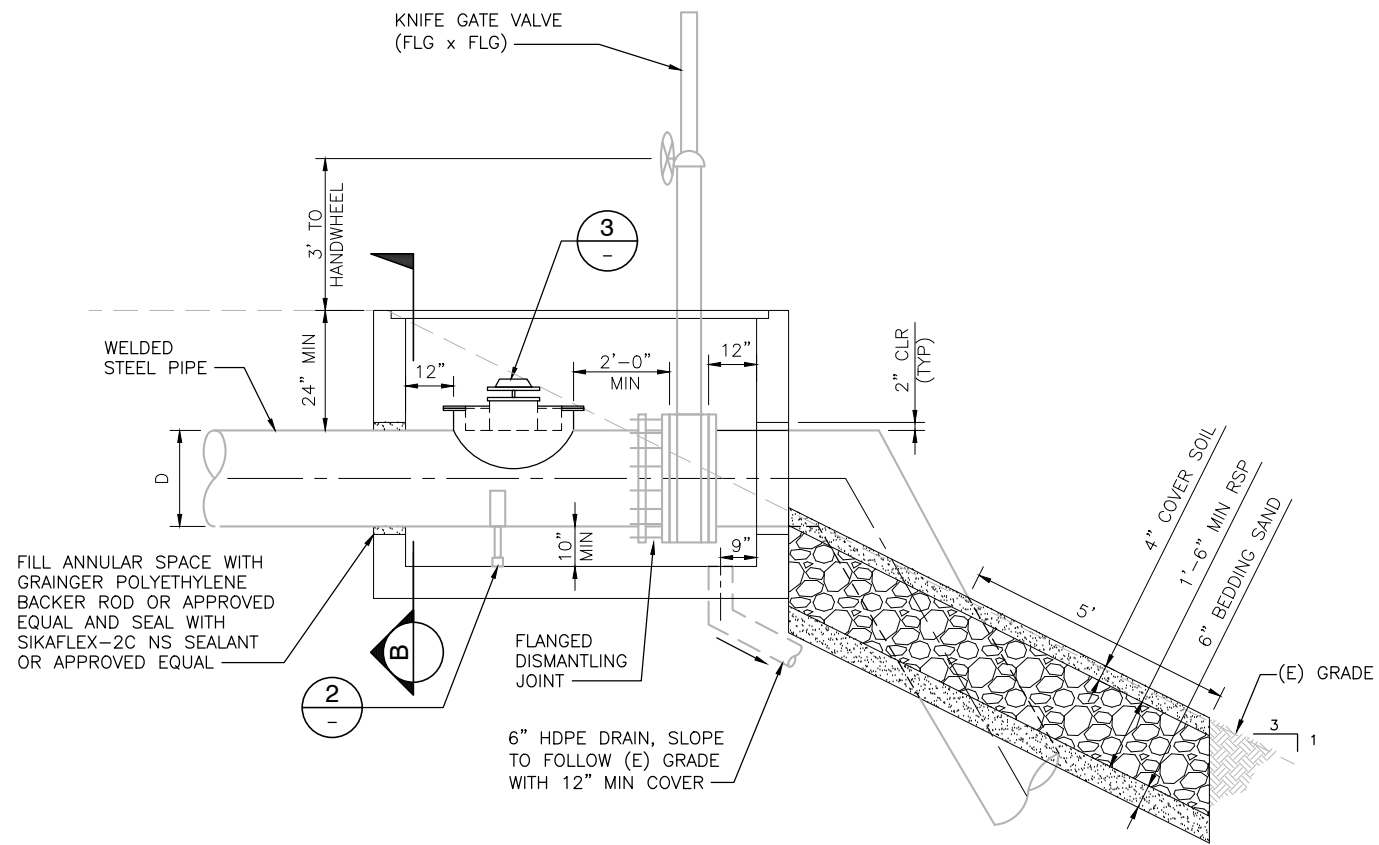


IMPROVEMENT PLANS FOR:
PUMP OUTFALLS REPLACEMENT PROJECT - A
SUMP 151
VAULT DETAIL

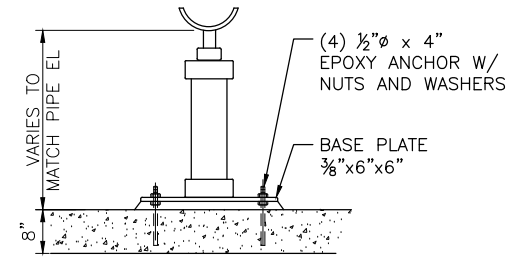
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Page 20

DWG. NO. C9
SHEET 12 OF 47

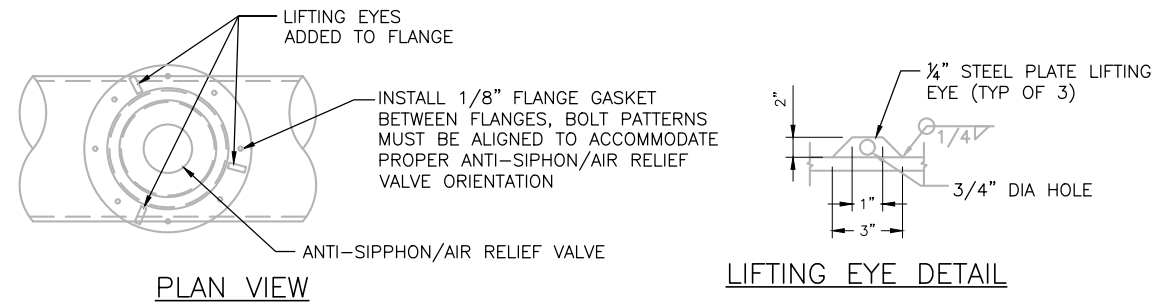


SUMP 155 ANTI SIPHON VAULT DETAIL (1)
NTS



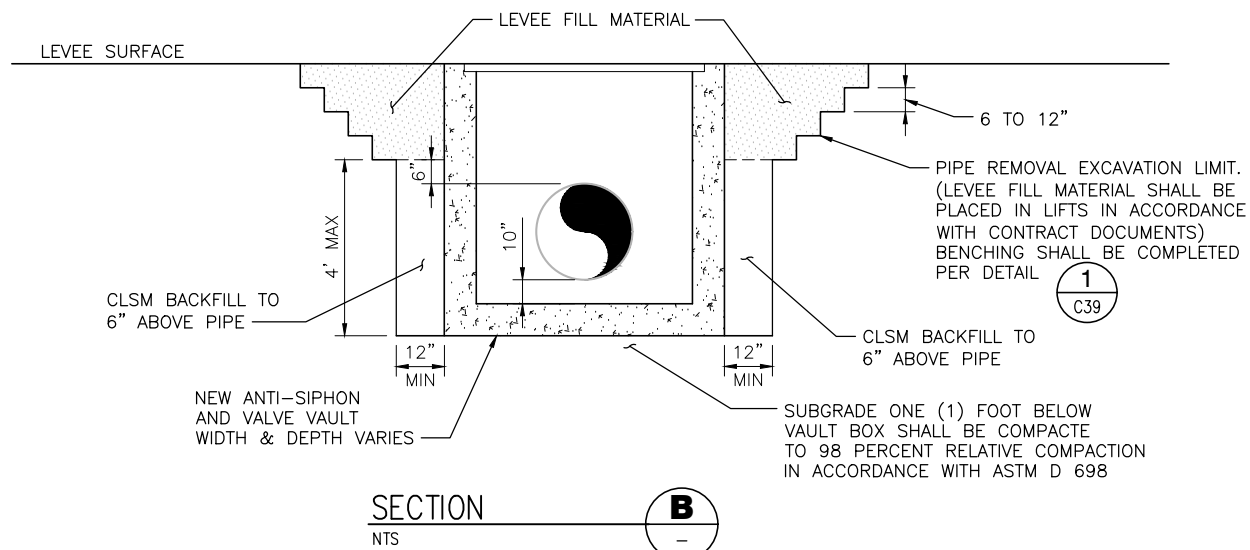
NOTE: PIPE SUPPORT TO BE STANDON S92 OR APPROVED EQUAL

PIPE SUPPORT (2)
NTS

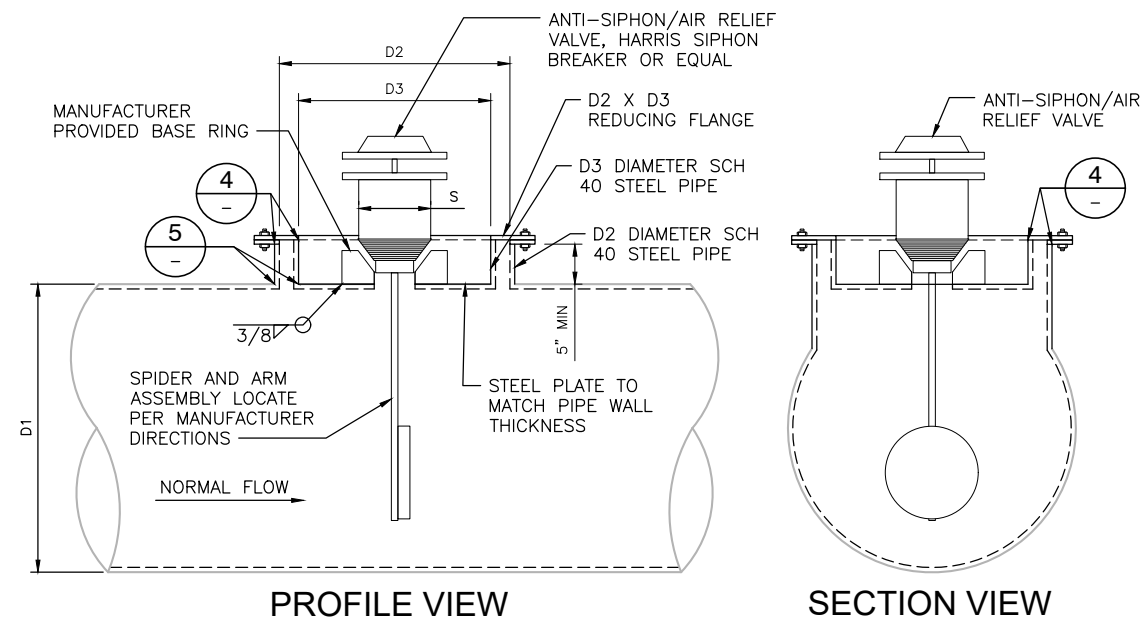


TYPICAL ANTI-SIPHON VALVE SIZE

D1	D2	D3	S	MODEL
16"	12"	10"	3"	HSB-03-A-16
18"	16"	12"	3"	HSB-03-A-18
30"	24"	20"	7"	HSB-07-B-30
36"	30"	24"	5"	HSB-05-A-36
42"	30"	24"	8"	HSB-08-B-42
54"	30"	24"	8"	HSB-08-B-54



SECTION (B)
NTS



PROFILE VIEW

SECTION VIEW

ANTI-SIPHON AND AIR RELIEF VALVE CONNECTION DETAIL (3)
NTS

WELD DETAIL (4)
NTS

WELD DETAIL (5)
NTS

PN: W14130615

NO.	REVISIONS DESCRIPTION	DATE	BY

BENCH MARK DESCRIPTION:	ELEV.

FIELD BOOK	0000
SCALE:	1"
ON ORIGINAL SCALE DRAWING ADJUST SCALED DIMENSIONS IF THIS DOES NOT SCALE AT 1"	

CITY OF SACRAMENTO
DEPARTMENT OF UTILITIES

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 DATE: 09/15/20 R.C.E. NO. C90949 DATE: 03/31/22 R.C.E. NO. C86512 DATE: 03/31/21



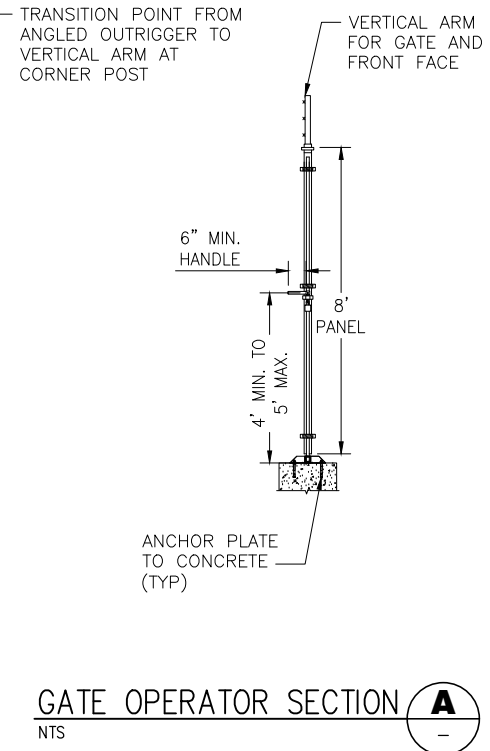
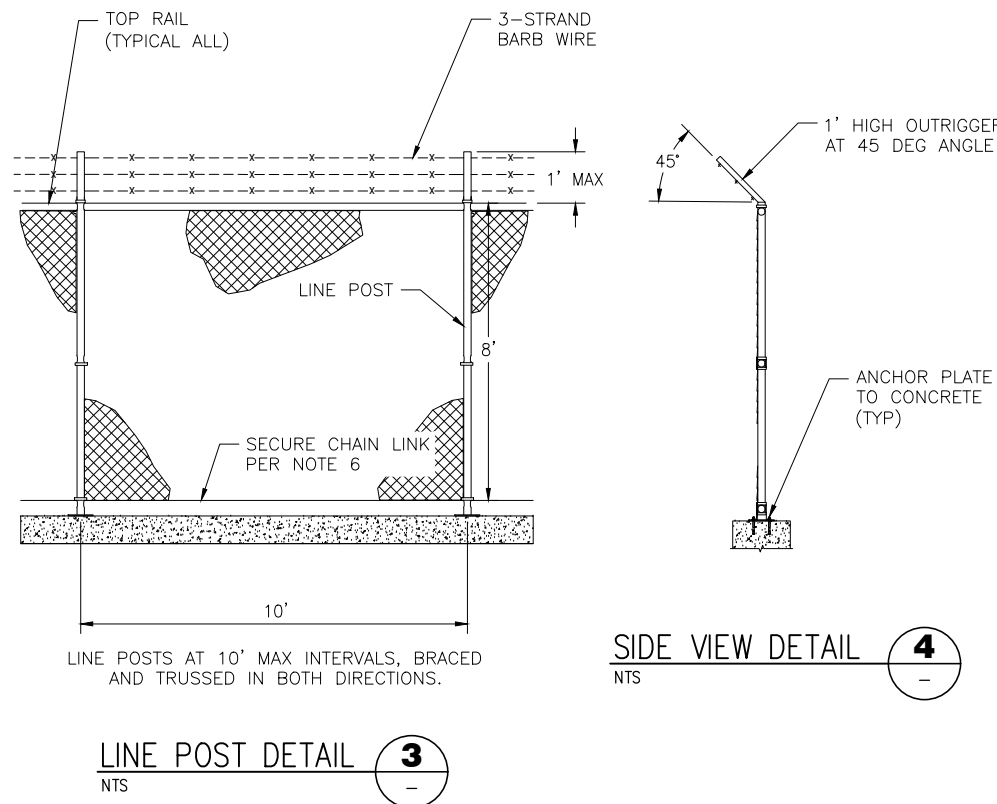
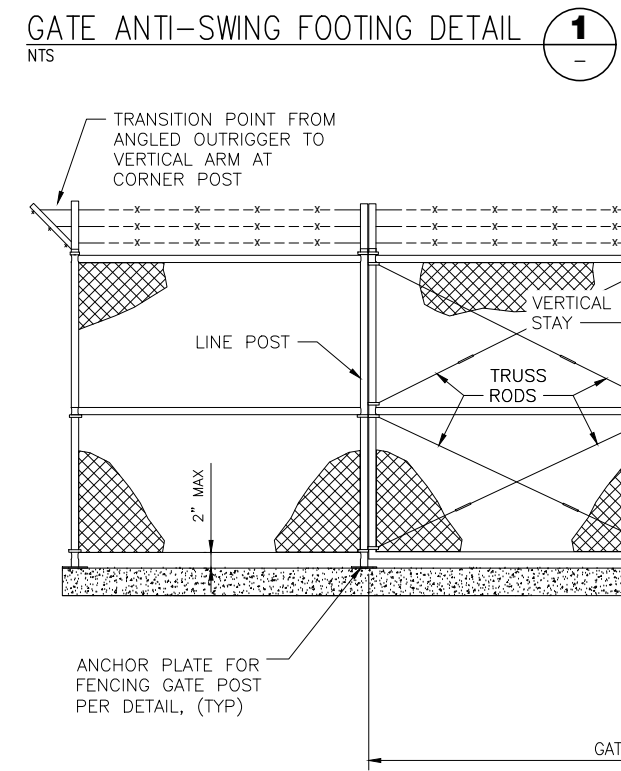
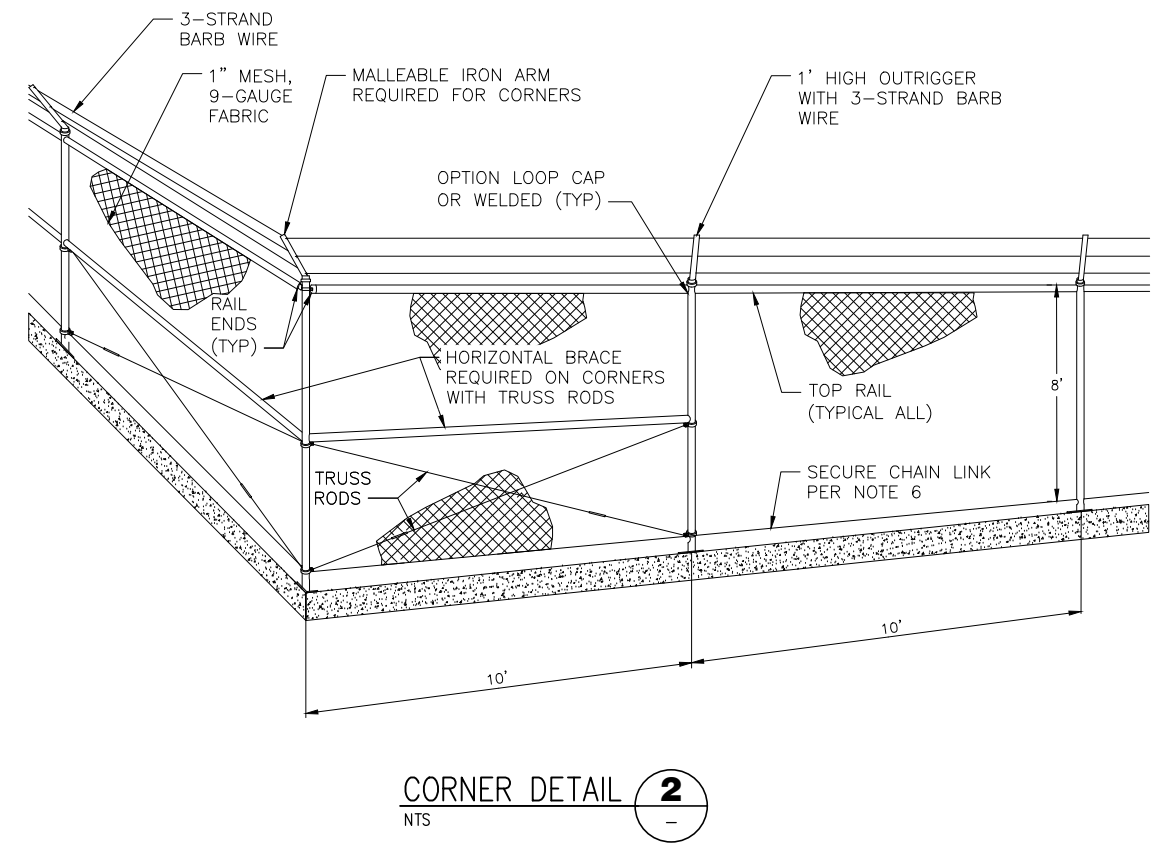
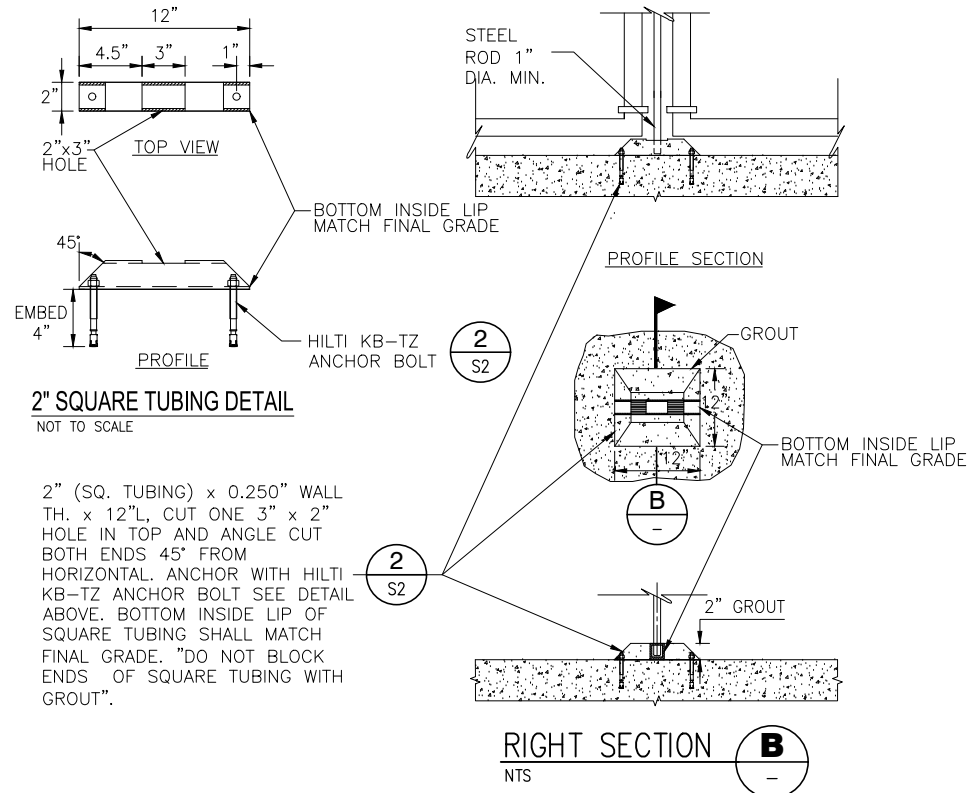
IMPROVEMENT PLANS FOR:
PUMP OUTFALLS REPLACEMENT PROJECT - A
ANTI SIPHON AND VALVE VAULT
SECTION AND DETAILS

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PN: W14130615
DWG. NO. C35
SHEET 38 OF 47
Page 21

GENERAL NOTES:

1. LINE POSTS SHALL BE MIN 2½" O.D. SPACED AT MAX 10' O.C.
2. HORIZONTAL BRACE AND TOP RAIL SIZE SHALL BE MIN 1½" DIA.
3. END, CORNER, AND GATE POSTS SHALL BE MIN 2½" O.D. WITH 1½" O.D. BRACE RAIL, ¾" TRUSS ASSEMBLY, 12-GAUGE TENSION BANDS SECURED AT MAX 12" O.C.
4. GATE FRAME SHALL BE FABRICATED FROM 2½" O.D. OR 2½" SQUARE MEMBERS WELDED AT ALL CORNERS.
5. CHAIN LINK FABRIC SHALL BE SECURED TO LINE POST AND TOP RAIL USING 9-GAUGE TIE WIRE SPACED AT MAX 12" O.C.
6. 2-3/8" SHOULDERED EYE BOLT 3" LENGTH TO ANCHOR TENSION WIRE PER 10' SECTION EVENLY SPACED, SECURED WITH HOG RING CAPTURING FENCE FABRIC AND TENSION WIRE TO MAINTAIN DOWNWARD TENSION ON SECURITY FENCE SYSTEM.
7. PROVIDE "CITY UTILITY FACILITY - NO TRESPASSING" SIGNAGE GATE.



8 FOOT HIGH CHAIN LINK FABRIC WITH ANGLED OUTRIGGER AND 3 STRAND BARB WIRE (OUTSIDE) STANDARD FENCING DETAIL



PN: W14130615

REVISIONS			
NO.	DESCRIPTION	DATE	BY

BENCH MARK DESCRIPTION:	ELEV. _____
FIELD BOOK 0000	SCALE: _____
H: _____	V: _____

ON ORIGINAL SCALE DRAWING ADJUST SCALED DIMENSIONS IF THIS DOES NOT SCALE AT 1"

**CITY OF SACRAMENTO
DEPARTMENT OF UTILITIES**

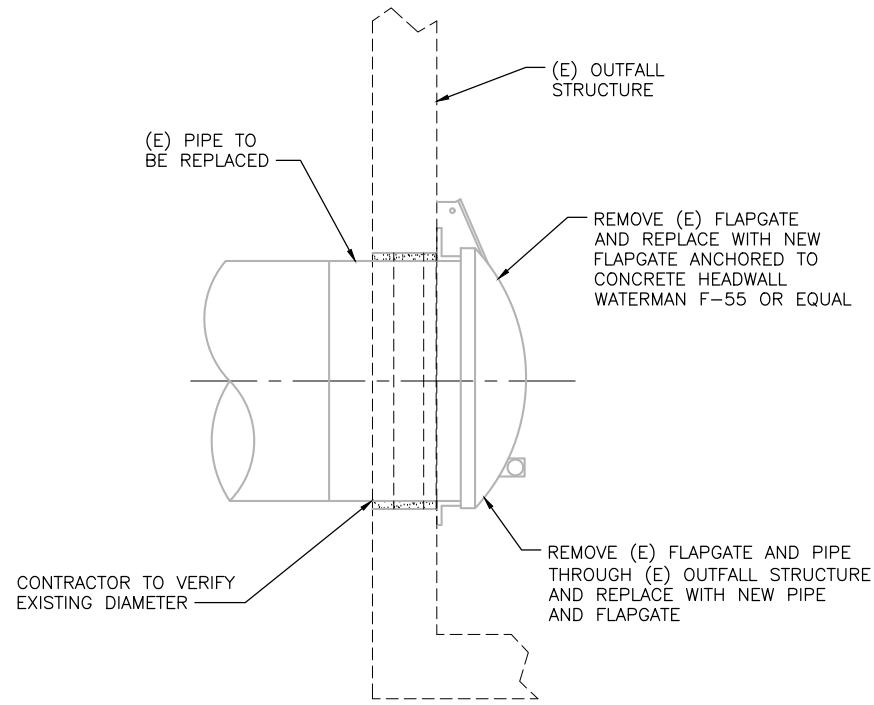
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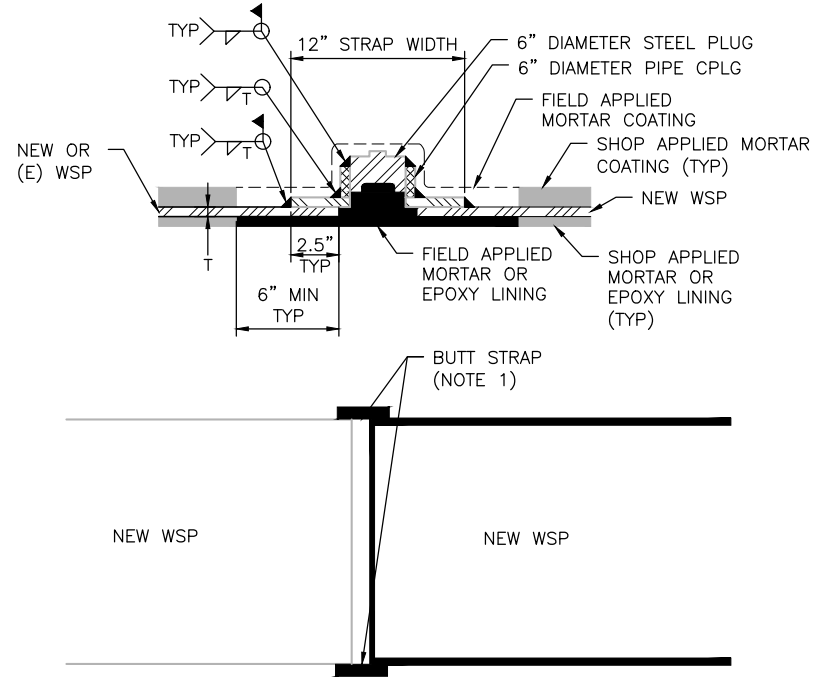
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IMPROVEMENT PLANS FOR:
PUMP OUTFALLS REPLACEMENT PROJECT - A
MISCELLANEOUS VAULT SECURITY DETAILS Page 22

PN: W14130615 DWG. NO. C36 SHEET 39 OF 47

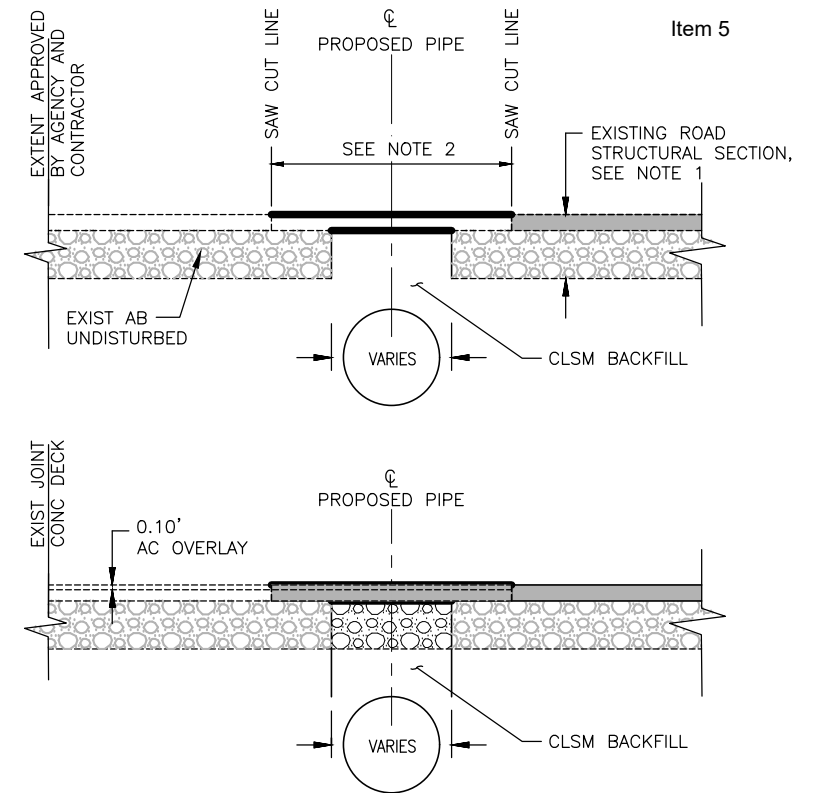


OUTFALL STRUCTURE CONNECTION DETAIL **1**
NTS



NOTES:
1. PROVIDE HAND HOLES AS NEEDED TO INSTALL FIELD LINING. WELD HAND HOLE CLOSED WHEN COMPLETE. HAND HOLES NOT REQUIRED AT OUTLETS IF ACCESSIBLE THROUGH FLAP GATE.

NEW OR EXISTING STEEL
PIPE CONNECTION DETAIL **2**
NTS



TRENCH SECTION AND SEQUENCING **3**
NTS

NOTES:

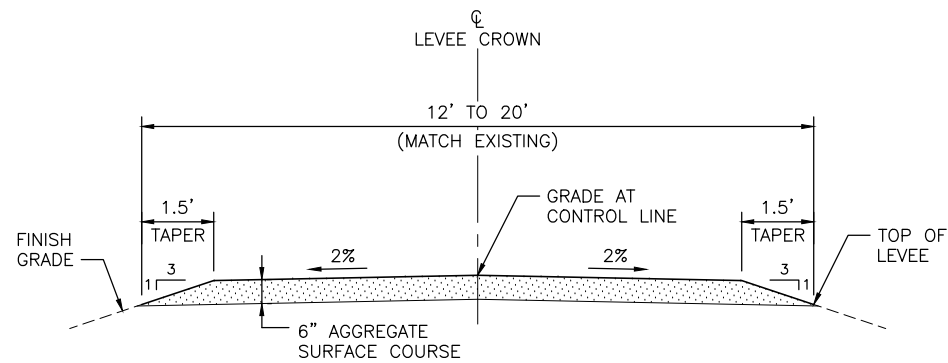
- CONTRACTOR SHALL REPLACE EXISTING PAVEMENT IN KIND. BASED ON LIMITED FIELD INVESTIGATIONS, EXISTING PAVEMENT SECTION ARE ASSUMED 2" AC ON 6" AB
- THE OWNER AND THE CONTRACTOR SHALL JOINTLY DETERMINE THE FINAL WIDTH AND LENGTH OF THE BIKE PATH CROSSING BASED ON FIELD CONDITIONS AND CONSTRUCTION PROCEDURES.
- CONTRACTOR SHALL REMOVE EXISTING BIKE PATH AS NEEDED TO CONSTRUCT PROPOSED PIPE. IMPACTED AREAS SHALL BE REPLACED IN ACCORDANCE WITH CITY OF SACRAMENTO STANDARD DETAIL T-21

CONSTRUCTION SEQUENCE:

- STEP 1: SAWCUT LIMITS 09F TRENCH EXCAVATION TO CLEAN CUT LIMITS. REMOVE EXISTING ASPHALT CONCRETE TO THE MIN EXTENT REQUIRED TO CONSTRUCT PROPOSED PIPE. PROPOSED PIPE SHALL BE CONSTRUCTED A MIN OF 2' FROM FG. TRENCH PLATES SHALL BE PROVIDED TO MAINTAIN ACCESS OVER CUTOFF WALL DURING CONSTRUCTION IN ACCORDANCE WITH THE SPECIFICATIONS.
- STEP 2: PLACE AB TO MATCH EXISTING THICKNESS. PLACE AC OVERLAY FROM EXTENT APPROVED BY AGENCY AND CONTRACTOR TO LIMITS OF SAWCUT. PROVIDE PAVEMENT MARKING AND STRIPING TO MATCH EXISTING.

LEGEND:

EXISTING	PROPOSED
GRIND AND OVERLAY ASPHALT CONCRETE	
AGGREGATE BASE (AB)	
ASPHALT CONCRETE (AC)	



CROWN SURFACING DETAIL **4**
NTS

PUMP OUTFALLS REPLACEMENT PROJECT
PN: W14130615

PUMP OUTFALLS REPLACEMENT PROJECT
PN: W14130615

REVISIONS				BENCH MARK DESCRIPTION:	ELEV. _____	FIELD BOOK 0000	SCALE: 1" = _____
NO.	DESCRIPTION	DATE	BY				

CITY OF SACRAMENTO
DEPARTMENT OF UTILITIES

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DATE: 09/15/20 R.C.E. NO. C90949 DATE: 03/31/22 R.C.E. NO. C86512 DATE: 03/31/21

PRELIMINARY

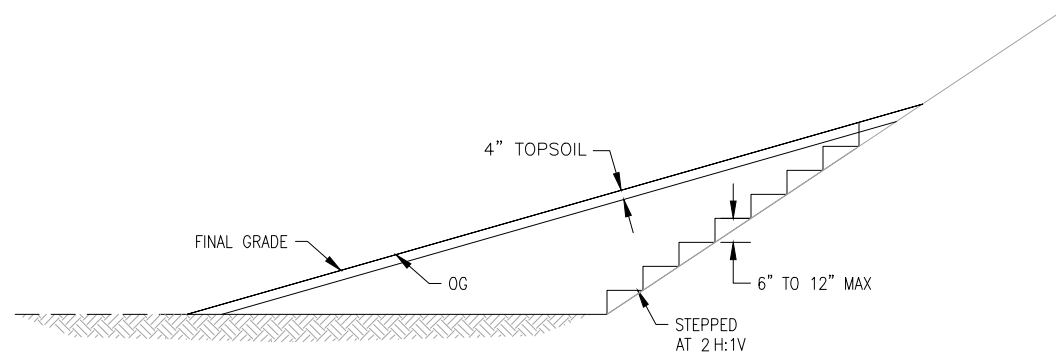
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IMPROVEMENT PLANS FOR:
PUMP OUTFALLS REPLACEMENT PROJECT - A

MISCELLANEOUS DETAILS I

Page 23

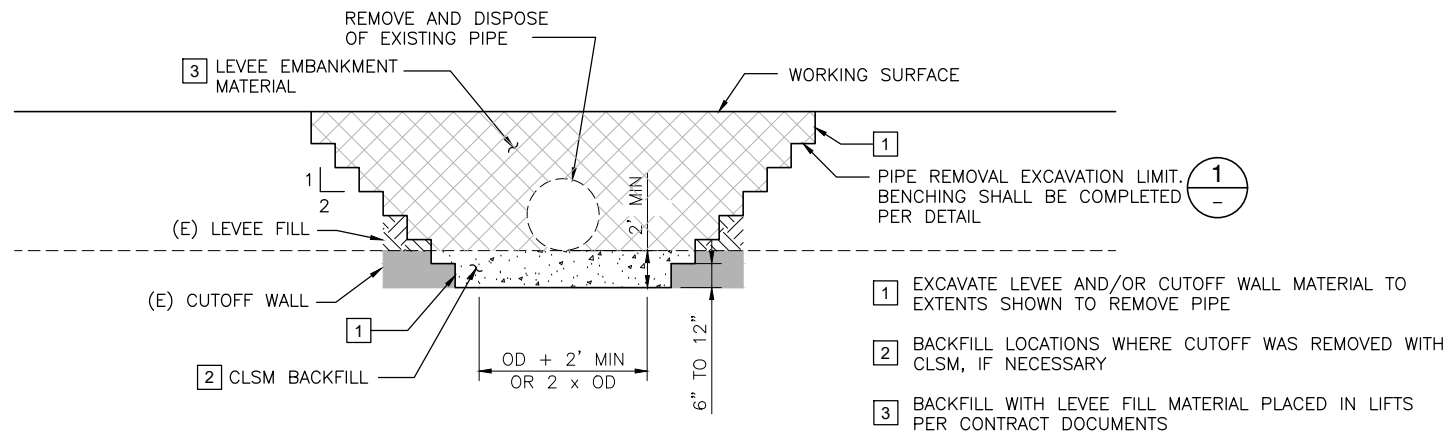
PN: W14130615	DWG. NO. C37
	SHEET 40 OF 47



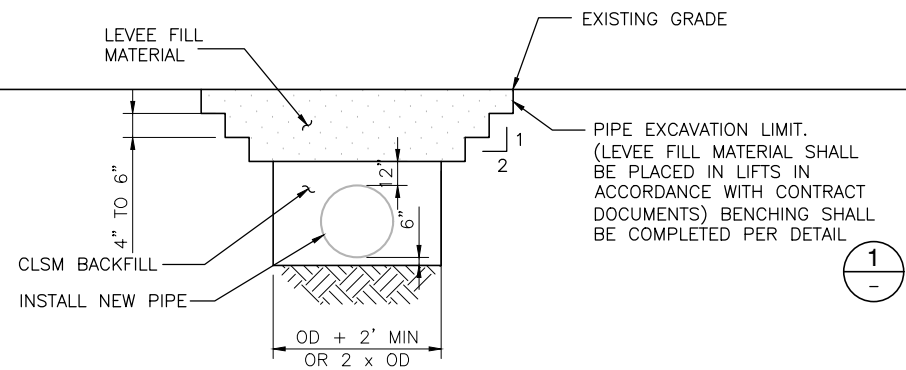
TYPICAL SLOPE BENCHING NOTES:

1. PLACE FILL IN HORIZONTAL LIFTS AGAINST VERTICAL FACES CUT INTO EXISTING LEVEE MATERIAL.
2. THE BOTTOM OF THE KEY TRENCH SHALL BE SCARIFIED TO A DEPTH OF 8 INCHES AND RECOMPACTED TO 95% MAX DENSITY PER ASTM D698.

SLOPE BENCHING (LANDSIDE OR WATERSIDE) DETAIL 1
NTS



TYPICAL REMOVAL OF EXISTING PIPE DETAIL 2
NTS



INSTALLATION OF NEW PIPE DETAIL 3
NTS

PUMP OUTFALLS REPLACEMENT PROJECT
PN: W14130615

PN: W14130615

REVISIONS			
NO.	DESCRIPTION	DATE	BY

BENCH MARK	ELEV.
DESCRIPTION:	

FIELD BOOK	0000
SCALE:	1" = 1'
H:	
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ON ORIGINAL SCALE DRAWING ADJUST SCALED DIMENSIONS IF THIS DOES NOT SCALE AT 1"

CITY OF SACRAMENTO DEPARTMENT OF UTILITIES			
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IMPROVEMENT PLANS FOR:

PUMP OUTFALLS REPLACEMENT PROJECT - A

MISCELLANEOUS DETAILS II

Page 24

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DWG. NO. C38
SHEET 41 OF 47

PN: W14130615

POST-INSTALLED ANCHORS:

- 1. ANCHORS SHALL BE INSTALLED IN ACCORDANCE WITH THE RECOMMENDATIONS GIVEN IN THE MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS (MPI) AND THE RESPECTIVE ICC OR IFPMO REPORT.
A. CONCRETE ANCHORS:
HILTI KWIK-BOLT TZ EXPANSION ANCHORS ESR-1917
HILTI HIT-RE 500 V3 ADHESIVE ANCHORS ESR-3814
2. SPECIAL INSPECTION IS REQUIRED FOR ALL MECHANICAL AND ADHESIVE ANCHORS PER CBC SECTION 1705.3 AND THE REPORTS NOTED ABOVE, UNLESS NOTED OTHERWISE.
3. SEE ANCHOR SCHEDULE(S) AND DETAILS FOR TEST LOAD OR TORQUE VALUES, IN ACCORDANCE WITH CBC SECTION 1901.3.4.4. TESTING OF UNDERCUT ANCHORS THAT ALLOW VISUAL CONFIRMATION OF FULL SET IS NOT REQUIRED.
4. TEST EACH ANCHOR OF DIFFERENT DIAMETER AND EMBEDMENT DEPTH FOR EACH TYPE AND STRENGTH OF CONCRETE PER CBC SECTION 1901.3.4.3 AS FOLLOWS:
A. ANCHORS USED FOR OTHER STRUCTURAL APPLICATIONS SHALL HAVE 100 PERCENT OF THE ANCHORS TENSION TESTED.
B. ANCHORS USED FOR NON-STRUCTURAL APPLICATIONS SUCH AS EQUIPMENT ANCHORAGE SHALL HAVE 50 PERCENT OR ALTERNATE BOLTS IN A GROUP INCLUDING AT LEAST ONE-HALF THE ANCHORS IN EACH GROUP TENSION TESTED.
5. FAILURE/AcCEPTANCE CRITERIA. THE FOLLOWING CRITERIA APPLY FOR THE ACCEPTANCE OF INSTALLED ANCHORS PER CBC SECTION 1901.3.4.5:
A. HYDRAULIC RAM METHOD: THE ANCHOR MUST MAINTAIN THE TEST LOAD FOR 15 SECONDS AND NOT EXHIBIT OBSERVABLE MOVEMENT AT THE APPLICABLE TEST LOAD. FOR WEDGE AND SLEEVE-TYPE ANCHORS, A PRACTICAL WAY TO DETERMINE OBSERVABLE MOVEMENT IS THAT THE WASHER UNDER THE NUT BECOMES LOOSE. DROP-IN ANCHORS ARE ONLY TO BE TESTED WITH THIS METHOD. FOR ADHESIVE ANCHORS, WHERE OTHER THAN BOND IS BEING TESTED, THE TESTING DEVICE SHALL NOT RESTRICT THE CONCRETE SHEAR CONE TYPE FAILURE MECHANISM FROM OCCURRING.
B. TORQUE WRENCH METHOD: THE APPLICABLE TEST TORQUE FOR WEDGE OR SLEEVE-TYPE ANCHORS MUST BE REACHED WITHIN THE FOLLOWING LIMITS, ONE-HALF (1/2) TURN OF THE NUT; ONE QUARTER (1/4) TURN OF THE NUT FOR THE 3/8" SLEEVE ANCHOR ONLY.
C. PER CBC SECTION 1901.3.4.1 IF ANCHOR FAILS TESTING, ALL ANCHORS OF THE SAME CATEGORY, NOT PREVIOUSLY TESTED, SHALL BE TESTED UNTIL 20 CONSECUTIVE ANCHORS PASS THE TEST REQUIREMENTS THEN INITIAL TESTING FREQUENCY SHALL THEN BE RESUMED.
6. WHEN INSTALLING DRILLED-IN ANCHORS IN EXISTING CONCRETE, USE CARE AND CAUTION TO AVOID CUTTING OR DAMAGING EXISTING REINFORCING BARS.
7. THE TESTING OF THE ANCHORS SHALL BE DONE BY THE TESTING LABORATORY IN THE PRESENCE OF THE SPECIAL INSPECTOR AND A REPORT OF THE TEST RESULTS SHALL BE SUBMITTED TO THE GOVERNING AGENCY AND ARCHITECT/STRUCTURAL ENGINEER. TESTING SHALL OCCUR AT MINIMUM OF 24 HOURS AFTER THE INSTALLATION OF THE ANCHORS.
8. APPLY TENSION TEST LOADS TO EXPANSION OR ADHESIVE ANCHORS WITHOUT REMOVING THE NUT IF POSSIBLE. IF NOT POSSIBLE, REPLACE THE NUT WITH A THREADED COUPLER OF THE SAME DIAMETER AND TORQUE TO THE SAME LEVEL AS THE ORIGINAL NUT AND APPLY TEST LOAD.
9. REACTION LOADS FROM TEST FIXTURES SHALL NOT BE APPLIED CLOSE TO THE ANCHOR BEING TESTED.
10. TEST EQUIPMENT IS TO BE CALIBRATED BY AN APPROVED TESTING LABORATORY IN ACCORDANCE WITH STANDARD RECOGNIZED PROCEDURES.

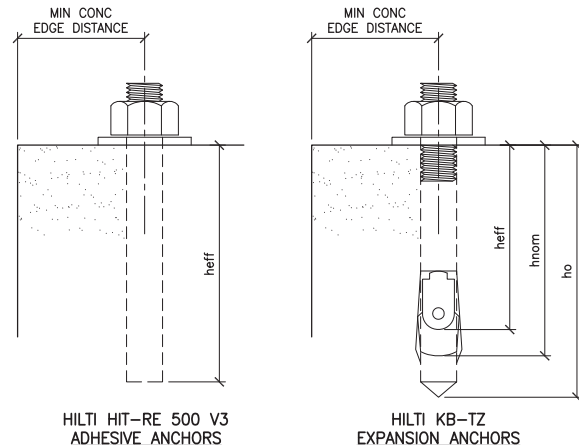


Table for HILTI KB-TZ EXPANSION ANCHORS (ICC-ES ESR-1917) with columns: ANCHOR DIA (INCH), INSTALLATION EMBED (INCH) hnom, EFFECTIVE EMBED (INCH) hef, HOLE DEPTH (INCH) ho, MIN CONC THICKNESS (INCH) h, MIN CONC EDGE DISTANCE (INCH), INSTALLATION TORQUE (FT-LBS). Rows for 1/2 and 5/8 inch anchors.

Table for HILTI HIT-RE 500 V3 ADHESIVE ANCHORS (ICC-ES ESR-3814) with columns: ANCHOR DIA (INCH), EFFECTIVE EMBED (INCH) hef, MIN CONC THICKNESS (INCH) h, MIN CONC EDGE DISTANCE (INCH). Row for 5/8 inch anchor.

POST INSTALLED ANCHOR SCHED

CONCRETE:

- 1. CONCRETE CONSTRUCTION SHALL CONFORM TO THE CODE PER GENERAL NOTES.
2. CONCRETE SHALL BE PLACED IN ACCORDANCE WITH ASTM C94 AND ACI STANDARD 304. IN ADDITION, MAXIMUM FREE FALL OF CONCRETE SHALL BE 4'-0".
3. ALL CONCRETE SHALL BE THOROUGHLY CONSOLIDATED BY SUITABLE MEANS DURING PLACEMENT AND SHALL BE THOROUGHLY WORKED AROUND REINFORCEMENT AND EMBEDDED FIXTURES AND INTO CORNERS OF FORMS.
4. THE MINIMUM 28 DAY STRENGTH SHALL BE PER MIX DESIGN SCHEDULE.
5. CEMENT SHALL CONFORM TO ASTM C150, TYPE I OR II.
6. CONCRETE AGGREGATES:
A. NATURAL SAND AND ROCK AGGREGATES SHALL CONFORM TO ASTM C33.
B. LIGHTWEIGHT AGGREGATES SHALL CONFORM TO ASTM C330.
7. MINERAL ADMIXTURES SHALL COMPLY WITH ASTM C618 CLASS F.
8. LIQUID ADMIXTURES SHALL COMPLY WITH THE FOLLOWING:
A. WATER REDUCERS ASTM C494 TYPE A
B. MID-RANGE WATER REDUCERS ASTM C494 TYPE A & F
C. NON-CHLORIDE ACCELERATORS ASTM C494 TYPE C OR C & E
D. RETARDING ADMIXTURES ASTM C494 TYPE B OR B & D
9. GENERAL:
A. NO PIPES OR DUCT SHALL BE PLACED IN CONCRETE SLABS OR WALLS UNLESS SPECIFICALLY DETAILED.
B. REFER TO ARCHITECTURAL, STRUCTURAL AND MECHANICAL DRAWINGS FOR ALL MOULDS, GROOVES, ORNAMENTS, CLIPS, ETC. TO BE CAST IN CONCRETE.
10. ALL CONSTRUCTION JOINTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH ACI 318 SECTION 26.5.6 AND THE TYPICAL CONSTRUCTION JOINT DETAILS SHOWN ON THE STRUCTURAL DRAWINGS. ALL SURFACES OF CONSTRUCTION JOINTS SHALL BE CLEANED TO REMOVE DUST, CHIPS, OR OTHER FOREIGN MATTER PRIOR TO PLACING THE ADJACENT CONCRETE. THE CONTRACTOR SHALL SUBMIT THE PROPOSED LOCATIONS OF CONSTRUCTION JOINTS TO THE ENGINEER FOR REVIEW BY THE STRUCTURAL ENGINEER BEFORE STARTING CONSTRUCTION.
11. REMOVE ALL DEBRIS AND EXCESS WATER FROM THE FORMS BEFORE PLACING ANY CONCRETE.
12. REINFORCING, DOWELS, BOLTS, ANCHORS, SLEEVES, ETC. TO BE EMBEDDED IN CONCRETE SHALL BE SECURELY POSITIONED AND FREE OF EXCESSIVE SCALE, RUST, DIRT, GREASE, OIL OR ANY OTHER SUBSTANCES THAT WILL IMPAIR BOND WITH CONCRETE. OBTAIN APPROVAL OF ALL AFFECTED TRADES PRIOR TO PLACING CONCRETE.
13. WALLS SHALL BE PLACED IN HORIZONTAL LAYERS OF 2'-0" MAXIMUM DEPTH.
14. CONCRETE IN WALLS, PIERS OR COLUMNS SHALL SET AT LEAST 2 HOURS BEFORE PLACING CONCRETE IN BEAMS, SPANDRELS OR SLABS SUPPORTED THEREON.
15. NO WOOD SPREADERS ALLOWED. NO WOOD STAKES ALLOWED IN AREAS TO BE CONCRETED.
16. CONTRACTOR SHALL PREPARE AND SUBMIT CONCRETE MIX DESIGNS TO THE ARCHITECT/ENGINEER OF RECORD FOR REVIEW PRIOR TO PLACEMENT OF ANY CONCRETE. CONCRETE MIX DESIGNS SHALL BE PER ACI 318 CHAPTER 26 AND ACI 301 SECTION 4. CALCIUM CHLORIDE OR ADMIXTURES WHICH ADD CHLORIDES ARE NOT PERMITTED.
17. NOTIFY THE ENGINEER OF RECORD (AND BUILDING OFFICIAL WHEN REQUIRED) 2 BUSINESS DAYS PRIOR TO PLACING CONCRETE.
18. CAST-IN-PLACE CONCRETE (NON-PRESTRESSED). THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCEMENT:
A. CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH 3"
B. CONCRETE EXPOSED TO EARTH OR WEATHER:
NO. 6 THROUGH NO. 11 BAR 2"
NO. 5 BAR, W31 OR D31 WIRE, AND SMALLER 1 1/2"

SHOP DRAWINGS:

PRIOR TO FABRICATION, SHOP DRAWINGS SHALL BE SUBMITTED FOR REVIEW BY THE STRUCTURAL ENGINEER:

- 1. THE CONTRACTOR AGREES THAT SHOP DRAWING SUBMITTALS PROCESSED BY THE ENGINEER ARE NOT CHANGE ORDERS.
2. THE CONTRACTOR AGREES THAT THE PURPOSE OF SHOP DRAWING SUBMITTALS IS TO DEMONSTRATE TO THE ENGINEER THAT THE CONTRACTOR UNDERSTANDS THE DESIGN INTENT OF THE PROJECT AND COMPLIANCE WITH THE INFORMATION GIVEN IN THE CONTRACT DOCUMENTS BY INDICATING WHICH MATERIAL THE CONTRACTOR INTENDS TO FURNISH AND INSTALL AND BY DETAILING THE FABRICATION AND INSTALLATION METHODS THE CONTRACTOR INTENDS TO USE.
3. THE CONTRACTOR IS RESPONSIBLE FOR DIMENSIONS ON THE SHOP DRAWINGS, WHICH MUST BE CONFIRMED AND CORRELATED AT THE JOB SITE, FOR COORDINATION OF HIS OR HER WORK WITH THAT OF ALL OTHER TRADES AND FOR PERFORMING WORK IN A SAFE AND SATISFACTORY MANNER.
4. THE CONTRACTOR IS RESPONSIBLE FOR MATERIAL QUANTITIES ON THE SHOP DRAWINGS.
5. THE CONTRACTOR IS TO REVIEW AND BE IN AGREEMENT WITH COMMENTS BY THE STRUCTURAL ENGINEER PRIOR TO PROCEEDING WITH FABRICATION.
6. THE SHOP DRAWINGS SHALL BE PREPARED FROM FRESH WORK. REPRODUCTIONS OF THE APPROVED DRAWINGS IS NOT PERMITTED.
7. PRIOR TO SUBMISSION THE CONTRACTOR SHALL REVIEW ALL SUBMITTALS FOR CONFORMANCE WITH THE CONTRACT DOCUMENTS AND SHALL STAMP SUBMITTALS AS BEING "REVIEWED FOR CONFORMANCE".
8. ANY DETAIL ON THE SHOP DRAWING THAT DEVIATES FROM THE CONTRACT DOCUMENTS SHALL BE CLEARLY MARKED WITH THE NOTE "THIS IS A CHANGE". SEE GENERAL NOTES FOR MATERIAL SUBSTITUTIONS.
9. SHOP DRAWINGS OR CALCULATIONS SUBMITTED FOR REVIEW THAT REQUIRE MORE THAN ONE RESUBMITTAL FOR REVIEW SHALL BE BILLED HOURLY FOR SUCH TIME TO THE GENERAL CONTRACTOR. THE THIRD REVIEW WILL NOT PROCEED WITHOUT WRITTEN APPROVAL FROM THE GENERAL CONTRACTOR FOR ADDITIONAL ENGINEERING REVIEW SERVICES.
10. CAD FILES OF APPROVED DRAWINGS WILL NOT BE PROVIDED TO THE CONTRACTOR, SUBCONTRACTOR OR FABRICATOR FOR THE PREPARATION OF SHOP DRAWINGS.
11. SHOP DRAWING REVIEWS DO NOT CONSTITUTE AN APPROVAL FOR PURCHASE OR FABRICATION OF MATERIALS.

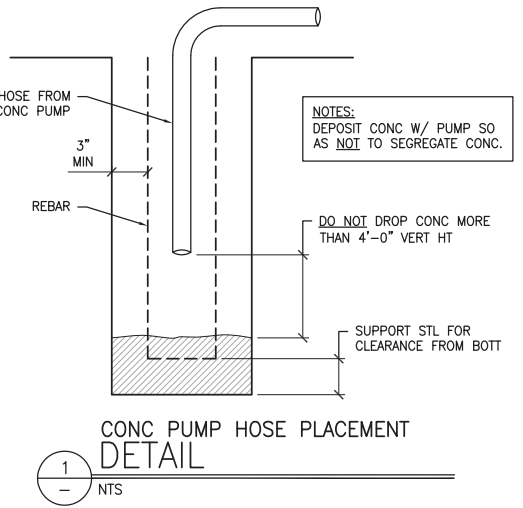
Item 5

- 19. A. ALL BARS SHALL HAVE A CLASS B MINIMUM SPLICE LAP UNO.
SEE REINFORCEMENT LAP SPLICES TABLE.
B. SPLICES IN ADJACENT BARS SHALL BE NOT LESS THAN 5'-0" APART. UNO.
C. DOWEL ALL VERTICAL REINFORCING IN WALLS AND COLUMNS FROM FOUNDATION WITH THE SAME SIZE REINFORCING, UNO.
D. SPLICE CONTINUOUS BARS IN SPANDRELS, GRADE BEAMS, WALL BEAMS, ETC. AS FOLLOWS: TOP BARS AT MID-SPAN, BOTTOM BARS AT CENTERLINE SUPPORT UNO.
20. HORIZONTAL WALL REINFORCING IN DOUBLE LAYER WALLS SHALL BE STAGGERED. USE #2 SPREADERS APPROXIMATELY EVERY THIRD INTERSECTION EACH DIRECTION FOR ALL DOUBLE LAYER WALLS.
21. MINIMUM WALL REINFORCING SHALL BE:
WALL THICKNESS SINGLE LAYER DOUBLE LAYER
7" OR LESS #4 @ 12" OC EA WAY
8" #4 @ 10" OC EA WAY
9" & 10" #4 @ 10" OC EA WAY
11" & 12" #4 @ 12" OC EA WAY
22. REINFORCING STEEL SHALL BE DETAILED, FABRICATED AND INSTALLED IN ACCORDANCE WITH ACI 315. SEE REINFORCING STEEL NOTES FOR ADDITIONAL REQUIREMENTS.
23. FINAL PRODUCT AS INDICATED ON DRAWINGS SHALL COMPLY WITH THE FOLLOWING:
A. ALL CONCRETE SHALL HAVE A "CLASS B" FINISH PER ACI 347 WITH GRADUAL IRREGULARITIES LIMITED TO 1/2" IN 5'-0" AS MEASURED WITH A STRAIGHT EDGE.
B. SURFACE IRREGULARITIES ATTRIBUTABLE TO PLACEMENT AND CONSOLIDATION DEFICIENCIES AS DEFINED IN ACI 309.2R (E.G., BUG HOLES, HONEYCOMB, ETC.) WILL BE REVIEWED BY THE ARCHITECT AND ENGINEER. UNSATISFACTORY WORK SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
C. GRADUAL SURFACE IRREGULARITIES SHALL NOT BE CUMULATIVE.

MIX DESIGN SCHEDULE

Table with columns: TYPE, USE CLASS, STRENGTH f'c MIN @ 28 DAYS (PSI), CONCRETE UNIT WEIGHT (PCF), MAX AGGREGATE SIZE (IN), MAX SLUMP (IN), MAX WATER TO CEMENT RATIO (%), FLY ASH (%) REPLACEMENT (%). Rows for A (SLAB ON GRADE), B (FOUNDATIONS), C (WALLS), D (ELEVATED SLABS).

- FOOTNOTES:
1. ADD WATER REDUCING ADMIXTURES PER SPECIFICATIONS FOR PLACING.
2. FOR HOT WEATHER CONCRETING REFER TO ACI 305R.
3. FOR COLD WEATHER CONCRETING REFER TO ACI 306R.
4. OTHER ADMIXTURES SHALL BE REVIEWED BY THE ENGINEER OF RECORD AND TESTING LABORATORY UPON CONCRETE MIX DESIGN SUBMITTAL.
5. SLUMPS SHALL NOT EXCEED 8 +/- 1/2" WHEN USING MID-RANGE WATER REDUCERS. ADDITIONAL WATER SHALL NOT BE ADDED TO THE CONCRETE ONCE THE TRUCK LEAVES THE BATCH PLANT.
6. MIX DESIGN SHALL NOT BE PROPORTIONED WITHOUT FIELD EXPERIENCE OR TRIAL MIXTURES PER ACI 318, SECTION 26.4.3 WHEN USING MORE THAN 15% FLY ASH REPLACEMENT BY WEIGHT.



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65% SUBMITTAL

Table with 2 columns: NO. and DESCRIPTION. Contains revision entries for REVISIONS and BENCH MARK.

Table with 3 columns: NO., DATE, BY. Contains revision entries for REVISIONS.

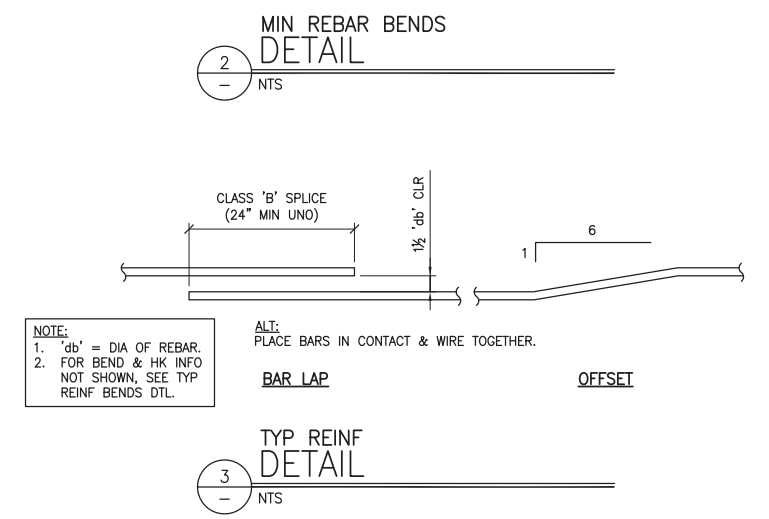
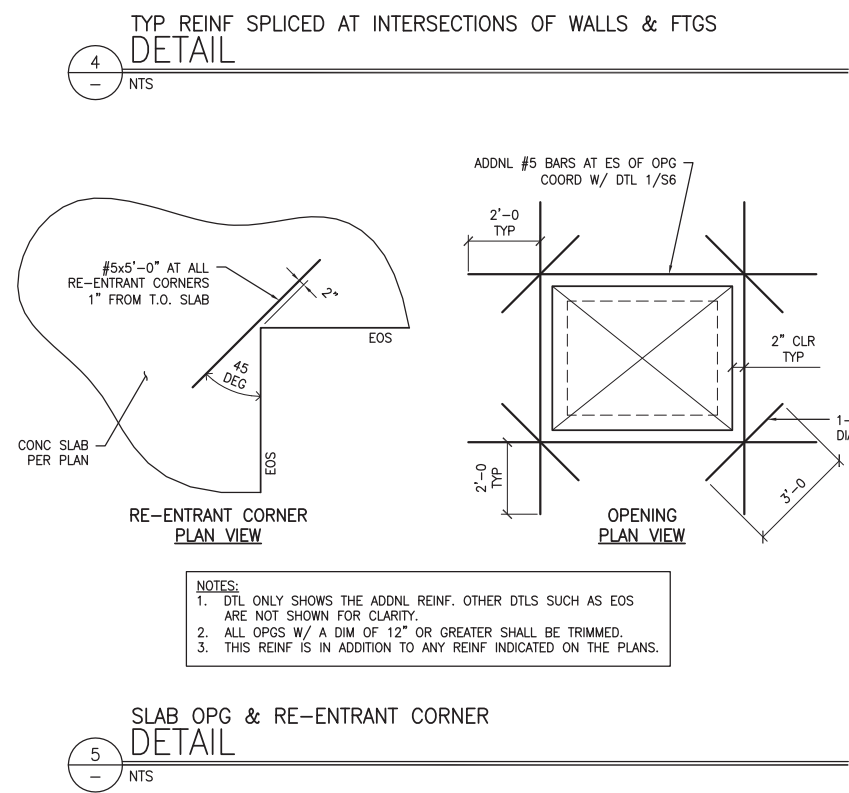
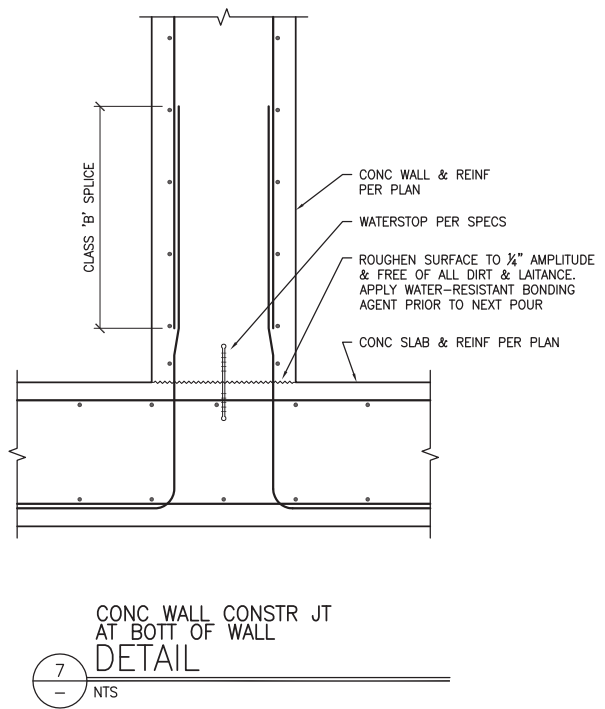
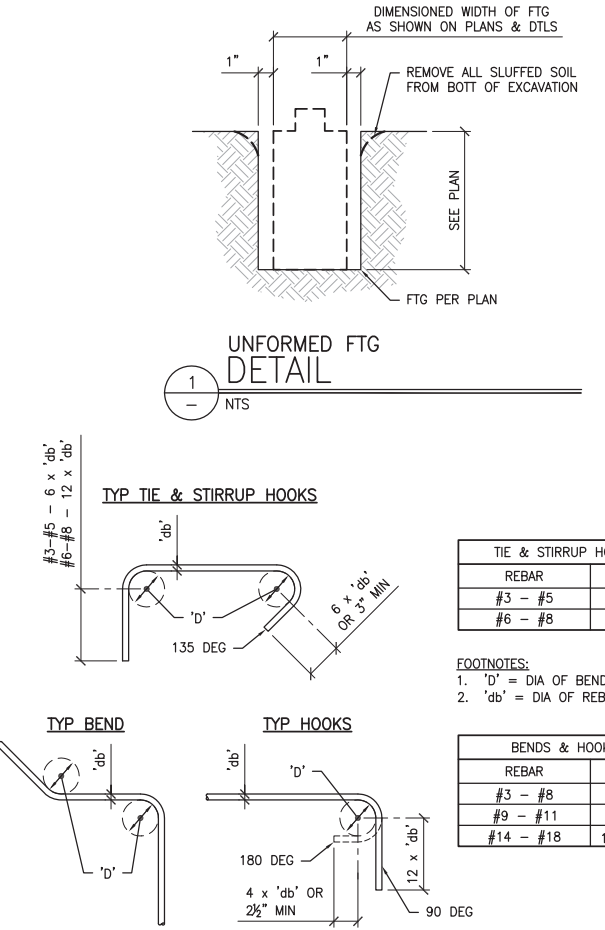
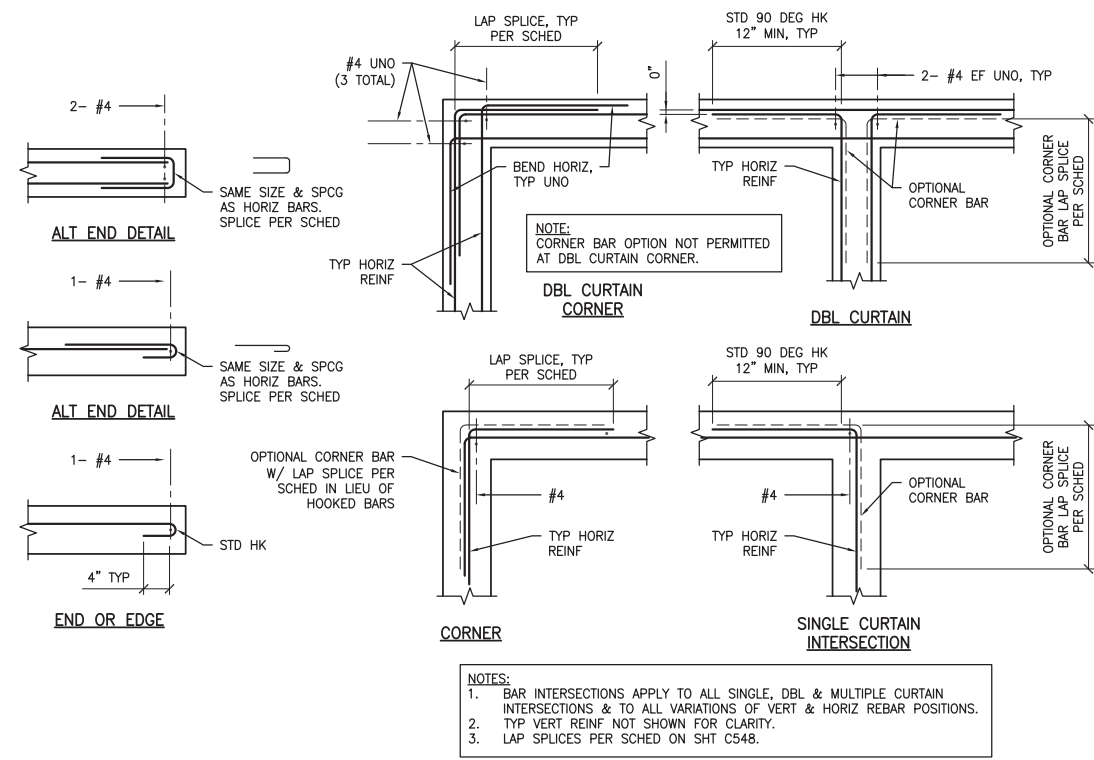
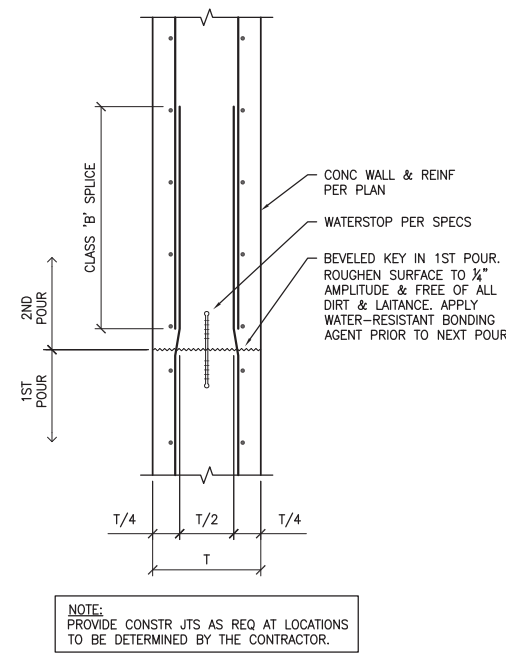
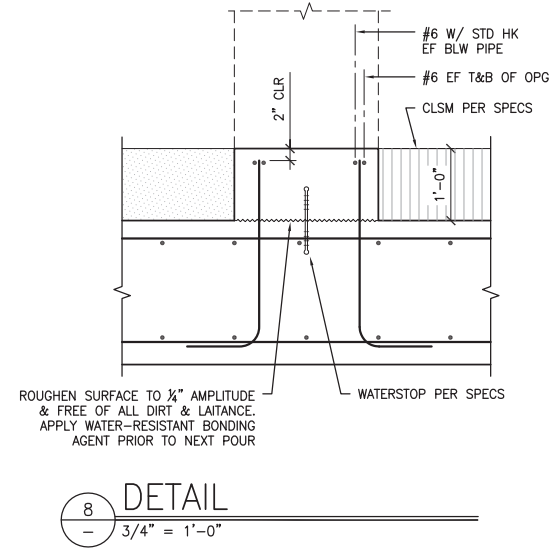
CITY OF SACRAMENTO DEPARTMENT OF UTILITIES. DRAWN BY: E. TUTEJA. DESIGNED BY: B. JENSEN. CHECKED BY: A. SMITH. DATE: 09/15/20. R.C.E. NO. C90949. DATE: 03/31/22. R.C.E. NO. C86512. DATE: 03/31/21.

PRELIMINARY

PUMP OUTFALLS REPLACEMENT PROJECT - A GENERAL STRUCTURAL NOTES & TYPICAL DETAILS Page 26

PUMP OUTFALLS REPLACEMENT PROJECT PN: W14130615

PN: W14130615



L:\Jobs\2020\054 Pump Outfall Replacement Valve Vault\ACAD\STRU\PKG AIS3_PKG A.dwg Times: Sep 14, 2020 02:00pm LogIn: ruzamachom DimScale: 1 LT Scale: 8 PUMP OUTFALLS REPLACEMENT PROJECT P.N: W14130615

P.N: W14130615

REVISIONS			
NO.	DESCRIPTION	DATE	BY

BENCH MARK	ELEV.

FIELD BOOK	SCALE:
0000	ON ORIGINAL SCALE DRAWING ADJUST SCALED DIMENSIONS IF THIS DOES NOT SCALE AT 1"
H:	
V:	

**CITY OF SACRAMENTO
DEPARTMENT OF UTILITIES**

DRAWN BY: E. TUTEJA DESIGNED BY: B. JENSEN CHECKED BY: A. SMITH
 DATE: 09/15/20 R.C.E. NO. C90949 DATE: 03/31/22 R.C.E. NO. C86512 DATE: 03/31/21

PRELIMINARY

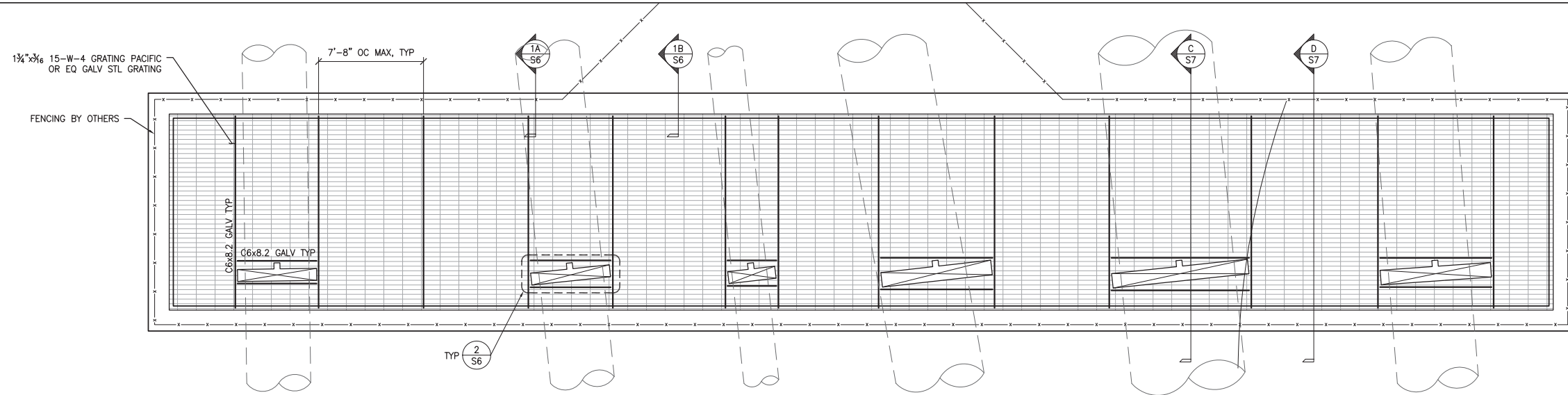
IMPROVEMENT PLANS FOR:
PUMP OUTFALLS REPLACEMENT PROJECT - A
TYPICAL DETAILS - CONCRETE

DWG. NO.	SHEET	OF
53	44	47

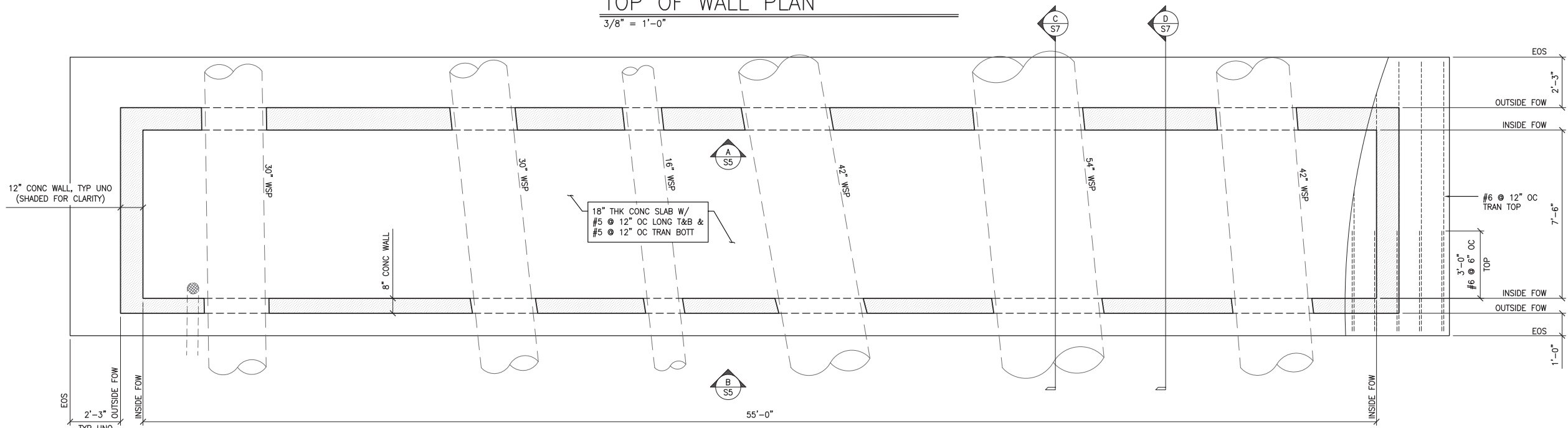
Page 27

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P.N: W14130615



SUMP 151
TOP OF WALL PLAN
3/8" = 1'-0"



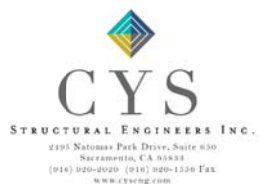
SUMP 151
FOUNDATION PLAN
3/8" = 1'-0"

NOTES

1. SEE DWG S1 & S2 FOR GENERAL NOTES.
2. SEE DWG S3 FOR TYPICAL DETAILS.
3. SEE DWG S5 FOR SECTIONS.
4. SEE OTHER CONSULTANT DWGS FOR UTILITIES THAT WILL AFFECT FTGS & COMPLY W/ TYPICAL DETAILS.



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CYS Job No. 20054

65% SUBMITTAL

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PUMP OUTFALLS REPLACEMENT PROJECT
PN: W14130615

REVISIONS			
NO.	DESCRIPTION	DATE	BY

BENCH MARK DESCRIPTION:	ELEV. _____

FIELD BOOK 0000	SCALE: 1" = 1'
H: _____	ON ORIGINAL SCALE DRAWING ADJUST SCALED DIMENSIONS IF THIS DOES NOT SCALE AT 1"
V: _____	

CITY OF SACRAMENTO DEPARTMENT OF UTILITIES			
DRAWN BY: E. TUTEJA	DESIGNED BY: B. JENSEN	CHECKED BY: A. SMITH	
DATE: 09/15/20	R.C.E. NO. C90949 DATE: 03/31/22	R.C.E. NO. C86512 DATE: 03/31/21	

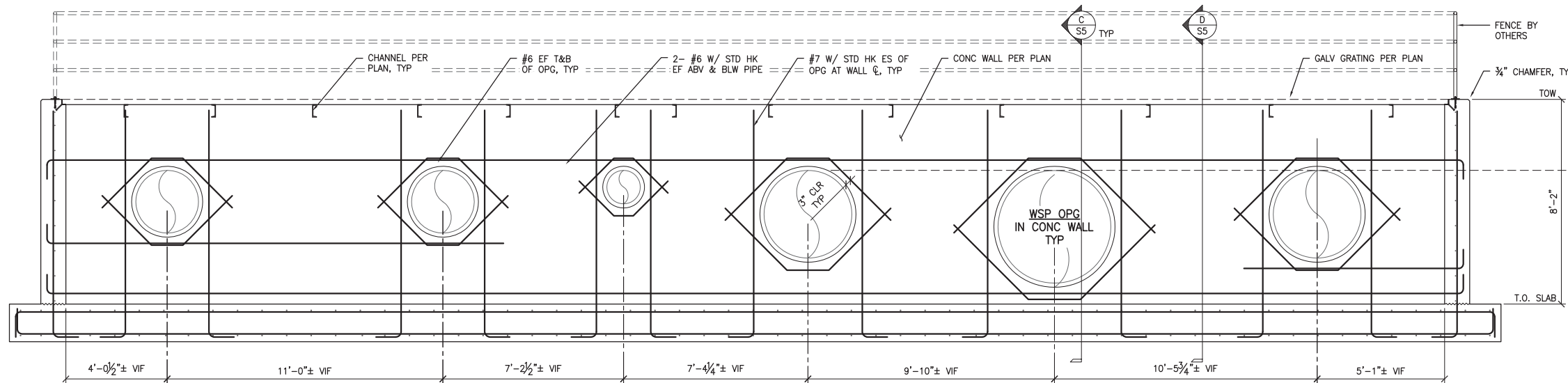
PRELIMINARY

IMPROVEMENT PLANS FOR:
PUMP OUTFALLS REPLACEMENT PROJECT - A
FOUNDATION & FRAMING PLANS
SUMP 151

PN: W14130615	DWG. NO. 54
	SHEET 45 OF 47
	Page 28

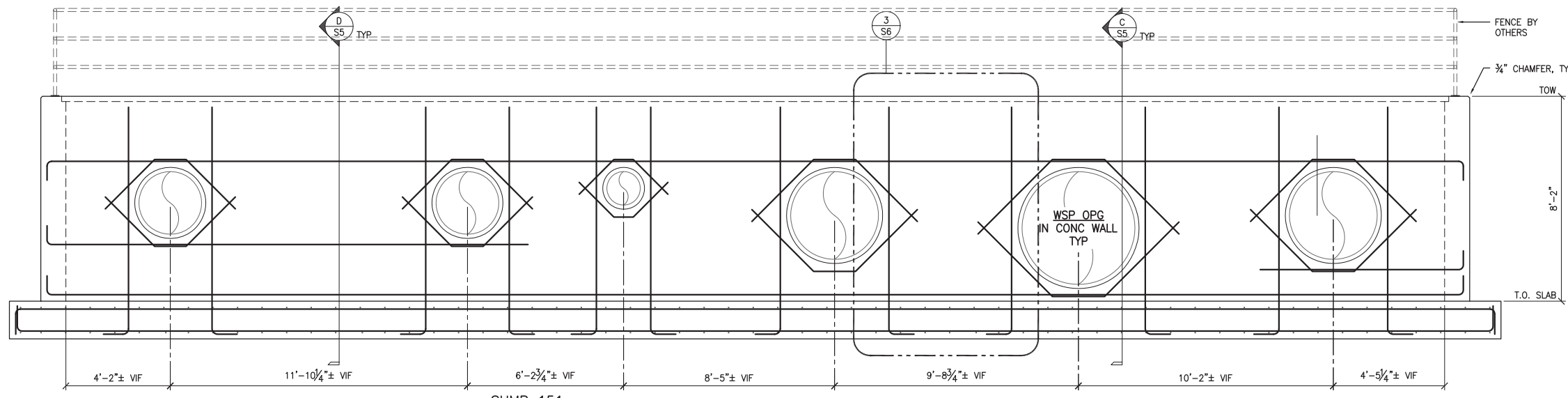
PN: W14130615

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 PN: W14130615



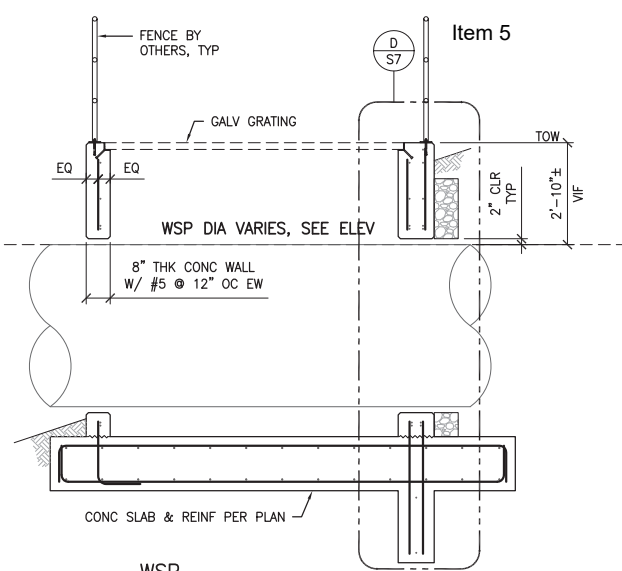
**SUMP 151
 REAR WALL ELEVATION**
 A
 S5 3/8" = 1'-0"

NOTE:
TYP WALL REINF NOT SHOWN FOR CLARITY.

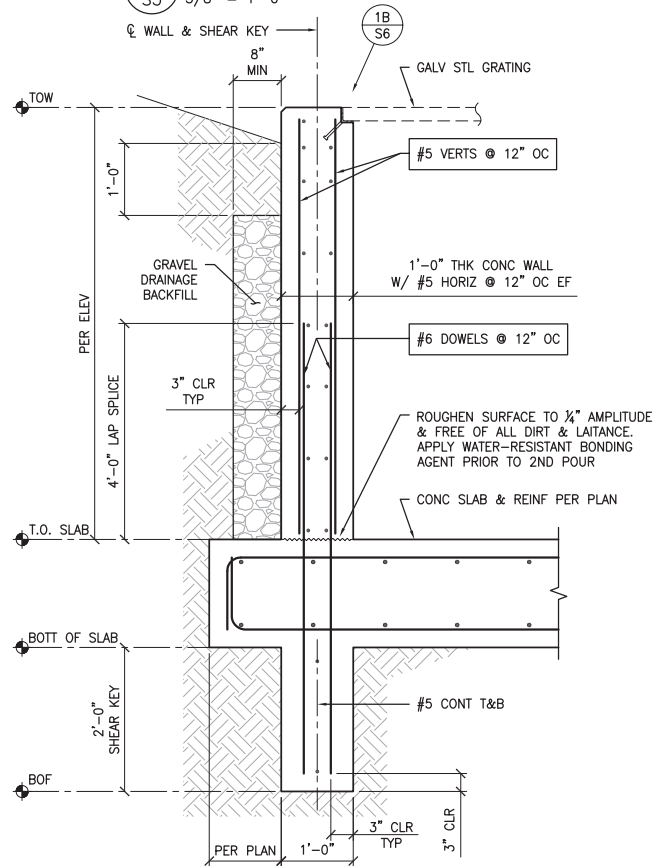


**SUMP 151
 FRONT WALL ELEVATION**
 B
 S5 3/8" = 1'-0"

NOTE:
TYP WALL REINF NOT SHOWN FOR CLARITY.



WSP SECTION
 C
 S5 3/8" = 1'-0"



1'-0" THK WALL SECTION
 D
 S5 3/8" = 1'-0"



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CYS Job No. 20054

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REVISIONS			
NO.	DESCRIPTION	DATE	BY

BENCH MARK	ELEV.

FIELD BOOK 0000
 SCALE: 1" = 1'-0"
 ON ORIGINAL SCALE DRAWING ADJUST SCALED DIMENSIONS IF THIS DOES NOT SCALE AT 1"

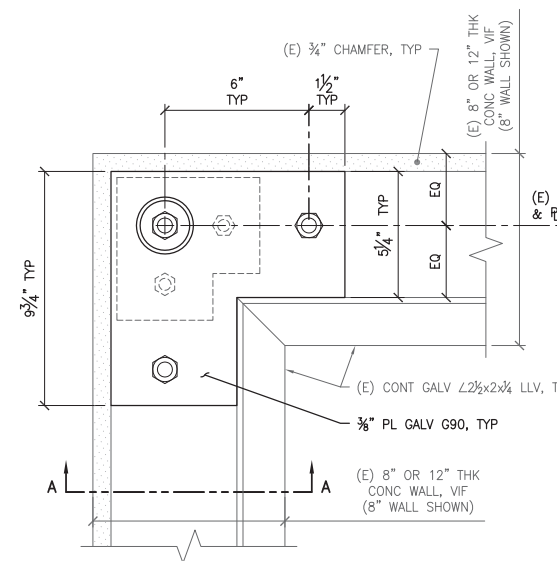
**CITY OF SACRAMENTO
 DEPARTMENT OF UTILITIES**
 DRAWN BY: E. TUTEJA DATE: 09/15/20
 DESIGNED BY: B. JENSEN R.C.E. NO. C90949 DATE: 03/31/22
 CHECKED BY: A. SMITH R.C.E. NO. C86512 DATE: 03/31/21

PRELIMINARY

IMPROVEMENT PLANS FOR:
PUMP OUTFALLS REPLACEMENT PROJECT - A
WALL ELEVATIONS & SECTIONS
SUMP 151

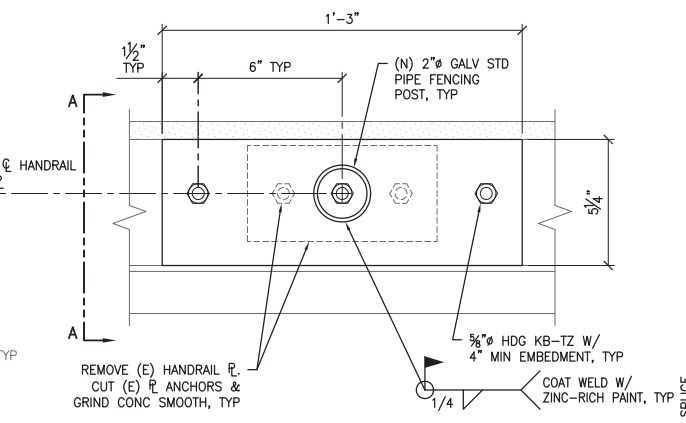
DWG. NO. S5
 SHEET 46 OF 47
 Page 29
 PN: W14130615

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 PN: W14130615



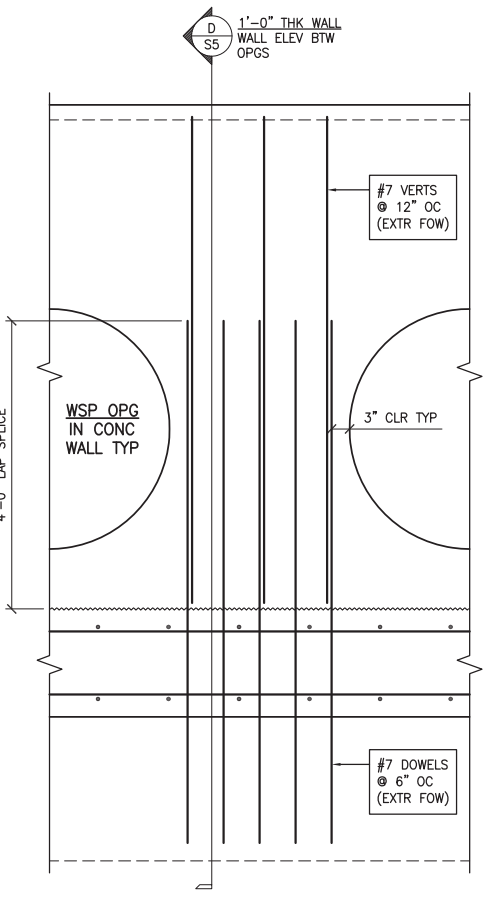
PLAN VIEW

5
S6
3" = 1'-0"

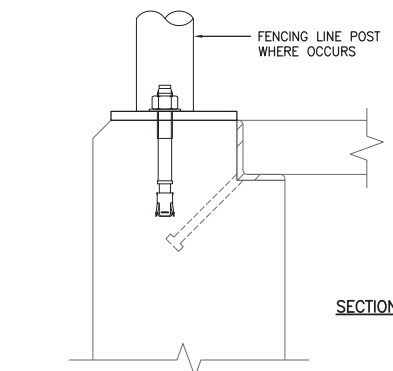


PLAN VIEW

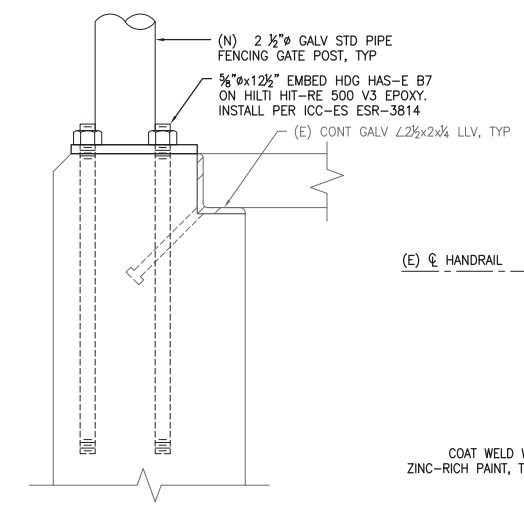
5
S6
3" = 1'-0"



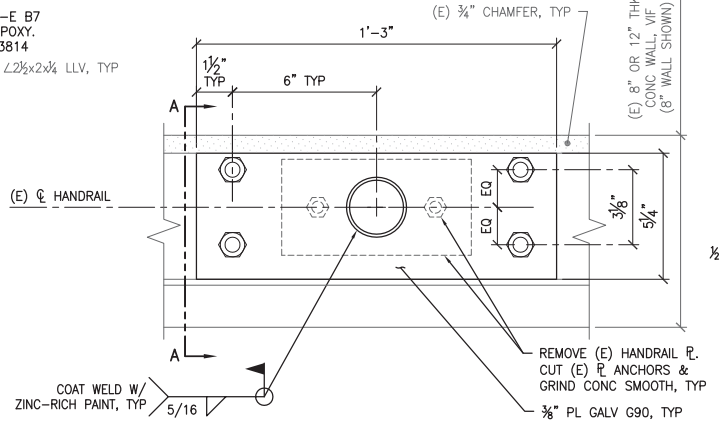
3
S6
3/4" = 1'-0"



SECTION A-A

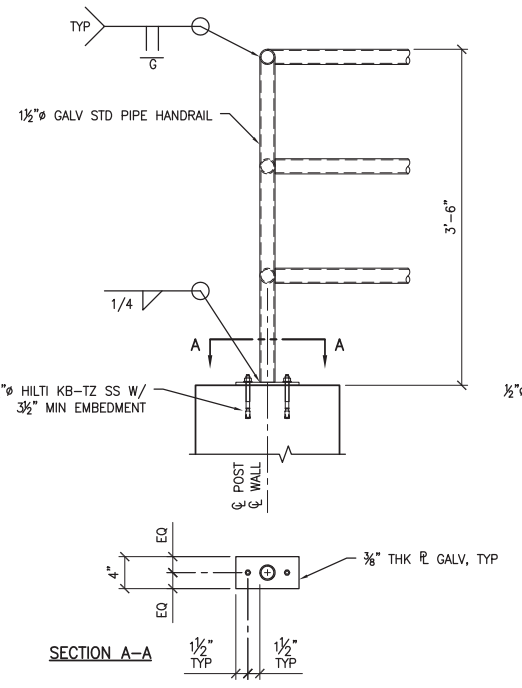


SECTION A-A



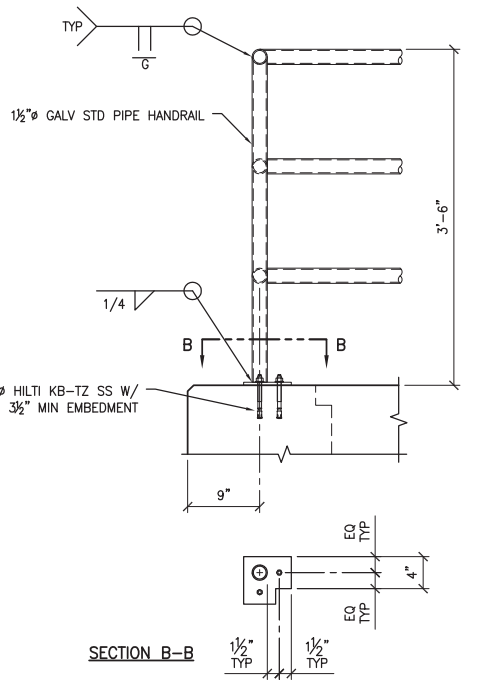
PLAN VIEW

6
S6
3" = 1'-0"

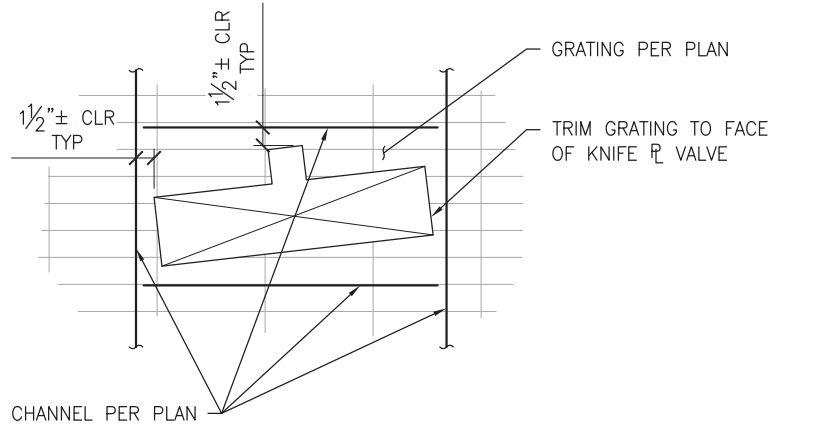


SECTION A-A

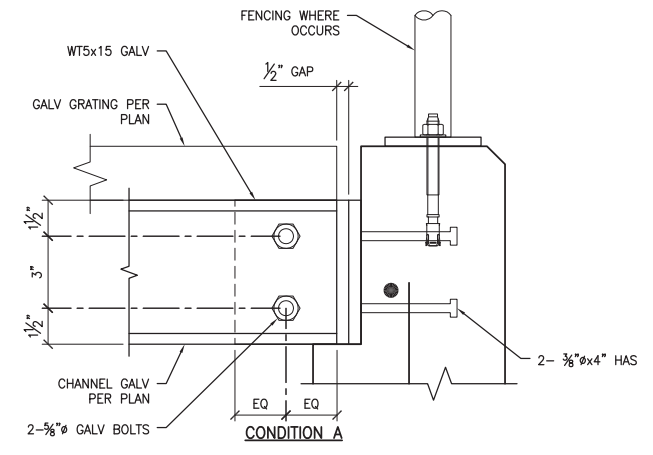
4
S6
3" = 1'-0"



SECTION B-B

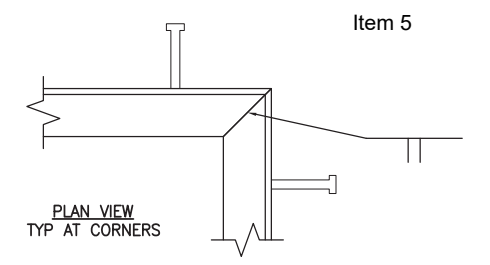


2
S6
1 1/2" = 1'-0"

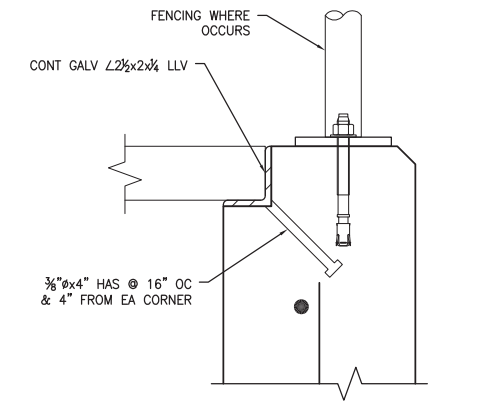


CONDITION A

1
S6
3" = 1'-0"



PLAN VIEW
TYP AT CORNERS



CONDITION B



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CYS Job No. 20054

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REVISIONS			
NO.	DESCRIPTION	DATE	BY

BENCH MARK	ELEV.

FIELD BOOK	SCALE:
0000	1"

CITY OF SACRAMENTO DEPARTMENT OF UTILITIES		
DRAWN BY: E. TUTEJA	DESIGNED BY: B. JENSEN	CHECKED BY: A. SMITH
DATE: 09/15/20	R.C.E. NO. C90949 DATE: 03/31/22	R.C.E. NO. C86512 DATE: 03/31/21

PRELIMINARY

IMPROVEMENT PLANS FOR:
PUMP OUTFALLS REPLACEMENT PROJECT - A
DETAILS

DWG. NO.	SHEET
56	47
	OF
	47

Attachment C – Categorical Permission Checklist

Categorical Permission Alteration Description – 16. Pressurized Pipes

The categorical permission covers the installation, modification, and replacement of pressurized pipes that comply with certain terms and conditions. Particularly, all pressurized pipes must be designed and installed in accordance with current USACE standards. The total area of disturbance, including staging and access areas, must not exceed 5 acres. Pressurized pipes must also be designed to prevent, (1) flotation from uplift, (2) scour or erosion, (3) damage from debris on the waterside, particularly during flood flows, (4) leakage, (5) seepage along proposed pipes, (6) corrosion, and (7) damage from vehicular loads.

All new pressurized pipes should go up and over the levee DWSE. Pressurized pipes passing over or within the freeboard zone of a levee (i.e., above the levee DWSE), should be made of metal, preferably ductile iron or coated steel, suitable for use with flexible couplings.

Backfill under and around (to 1 foot over) the proposed pipe must be controlled low-strength material (CLSM). Pipes that pass above the DWSE must have 2 feet of cover (low permeability or CLSM) to prevent damage by vehicles and equipment. Cover material on the levee crown must be placed at a ratio of 10H:1V, in the upstream/downstream direction of the levee. Pipes on the sides of the levee should be covered with a minimum of 1 foot of low permeability material, compacted in 4- to 6-inch lifts or CLSM to protect them from debris during high water (waterside) or to keep them from interfering with or being damaged by operations or maintenance of the levee (landside). Fill must be free of deleterious materials and construction debris and placed in 4- to 6-inch-thick loose lifts and compacted to not less than 95% of the maximum density at moistures between -2 and +3 percent of optimum moisture content obtained from ASTM D698 (USACE preferred method), or alternately, 90% of the maximum density at moistures between -2 and +3 percent of optimum moisture content obtained from ASTM D1557. At the sponsor and levee maintaining agency's discretion, pipes on the levee slopes may be left exposed.

Only suitable material must be used as levee fill materials. Fill must be free from: roots and other organic matter, contaminated hazardous or toxic material, trash, debris, and frozen materials. Satisfactory fill material must have a plasticity index between 8 and 25, have a liquid limit less than 45, a minimum fines content of 20%, and 100% passing the 3-inch sieve.

Pressurized pipes terminating in the channel require a positive closure device on the waterside that is accessible from the levee crown. Pressurized pipes transporting product completely across or through the federal project easement require positive closure devices located landward of any levees and channel. The positive closure device shall be located within one mile on both sides of the federal project. If the invert of the pipe is over the levee crown, the combination of a pump station on the waterside and a siphon breaker is considered an appropriate means of closure. Pipes located within or beneath a levee must have watertight joints that can accommodate movements resulting from settlement.

All pressurized pipes that cross the levee foundation at a depth less than or equal to two times the height of the levee should be evaluated for uplift. Pipes crossing the surface of the levee must be designed to counteract buoyancy forces of an empty pipe, with water at the DWSE.

Pressurized pipelines running parallel to flood risk management projects should be located at least 15 feet beyond the levee toes. Pipe location and orientation must be clearly marked in the field so they can be easily identified for flood fighting crews.

If appropriate, the requester should prepare an excavation plan demonstrating the effects of excavation on the stability of the embankments.

The site layout should provide adequate access for maintenance vehicles to refill fuel tanks and service/replace pumps, generators, etc. Pressurized pipes must also allow easy access for rapid closure in the event of leakage or rupture.

No plastic pipes (HDPE, PVC, etc.) are allowed in the levee embankment or its foundation unless they are embedded in concrete.

If an electrochemical or chemical reaction between the substratum or groundwater and pipe materials is expected, the pipe and pipe couplings must be protected.

After installation of pressurized pipes, the requester must demonstrate 0% pipe leakage in pipes in the levee. Pipes must be pressure tested to industry standards. Pipes must be regularly inspected, including the interior, if possible, looking for signs of maintenance issues. If an inspection indicates corrosion, alignment sag or heave, or separation at joints, corrective action must be taken as soon as possible to avoid failure. Pipe valves must be periodically inspected and pressure tested to ensure that they are functioning properly. Pressure tests must show no significant loss in pressure. Leaks and other deficiencies must be addressed as soon as possible. All replacement parts must be of equivalent or better quality than those being replaced.

The preferred method for abandoning pipes that pass through or over a levee is complete removal. If removal is not feasible, the pipes and other structures may be filled with a cement/bentonite-based grout or flowable fill. The grout needs to be sufficiently fluid so that it can be pumped to completely fill the pipe leaving no voids.

Categorical Permission Alteration Checklist – 16. Pressurized Pipes

Note: The following checklist is intended for planning purposes only, and includes information that USACE reviewers look for when considering a Section 408 request for pressurized pipes under the Categorical Permission. To be reviewed under the Categorical Permission, the proposed project must adhere to all requirements of the Categorical Permission, including the full alteration description (see previous page). The plans and narrative project description should reflect this information.

1.	<input type="checkbox"/> New Construction	<input checked="" type="checkbox"/> Replacement	<input type="checkbox"/> Modification	<input type="checkbox"/> Authorize Existing
2.	Maximum total area of disturbance is 5 acres:		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
	Reference: [Click to enter document source. Example – plan sheet (p. 4), specs, report.]			
	Comment: <u>Area of disturbance is 0.11 acre.</u>			
3.	Pipes are designed to prevent flotation from uplift, scour or erosion, damage from debris on the waterside (particularly during flood flows), seepage along proposed pipes, corrosion, leakage, and damage from vehicular loads:		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
	Reference: <u>Refer to detail 3 on sheet 41.</u>			
	Comment: [Click to enter rationale, explanation, unique situation, etc.]			
4.	Backfill under and around (to 1 foot over) the proposed pipe must be controlled low-strength material (CLSM):		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
	Reference: <u>Refer to detail 3 on sheet 41</u>			
	Comment: [Click to enter rationale, explanation, unique situation, etc.]			
5.	Pipes passing over the DWSE will have a minimum of 2 feet of cover (low permeability or CLSM):		Yes <input checked="" type="checkbox"/>	N/A <input type="checkbox"/>
	Reference: <u>Refer to profiles on sheets 6-11 in Bid Set A</u>			
	Comment: [Click to enter rationale, explanation, unique situation, etc.]			
6.	If material must be added to the levee crown, the added material must be sloped at a ratio of 10H:1V horizontal to vertical, in the upstream/downstream direction to prevent a “speed bump” effect and facilitate vehicle access:		Yes <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
	Reference: [Click to enter document source. Example – plan sheet (p. 4), specs, report.]			
	Comment: [Click to enter rationale, explanation, unique situation, etc.]			
7.	Fill will be compacted to at least 95% of maximum density as determined by ASTM D698, between -2 and +3% of optimum moisture content:		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
	Reference: <u>Refer to Spec section 31 00 00 3.6B.</u>			
	Comment: [Click to enter rationale, explanation, unique situation, etc.]			
8.	Satisfactory fill material must have a plasticity index between 8 and 25, have a liquid limit less than 45, a minimum fines content of 20%, and 100% passing the 3-inch sieve:		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
	Reference: <u>Refer to Spec section 31 00 00 2.2A.</u>			
	Comment: [Click to enter rationale, explanation, unique situation, etc.]			
9.	All fill will be free of organics or other inappropriate materials:		Yes <input checked="" type="checkbox"/>	N/A <input type="checkbox"/>
	Reference: <u>Refer to Spec section 31 00 00 3.9.B.1.6.</u>			
	Comment: [Click to enter rationale, explanation, unique situation, etc.]			

10.	Pipes terminating in the channel have a positive closure device on the waterside that is accessible from the levee crown:	Yes <input checked="" type="checkbox"/>	N/A <input type="checkbox"/>
	Reference: <u>Refer to profiles on Sheets 6-11 and Detail 1 on Sheet 37 in Bid Set A.</u>		
	Comment: [Click to enter rationale, explanation, unique situation, etc.]		
11.	Pipes transporting product completely across the federal project have a positive closure devices located within 1 mile on both sides of the federal project:	Yes <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
	Reference: [Click to enter document source. Example – plan sheet (p. 4), specs, report.]		
	Comment: [Click to enter rationale, explanation, unique situation, etc.]		
12.	Pipes located within or beneath a levee have watertight joints that can accommodate movements resulting from settlement:	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
	Reference: <u>Refer to detail 2 on Sheet 40</u>		
	Comment: [Click to enter rationale, explanation, unique situation, etc.]		
13.	Pipes crossing the surface of the levee are designed to counteract buoyancy forces of an empty pipe, with water at the DWSE:	Yes <input checked="" type="checkbox"/>	N/A <input type="checkbox"/>
	Reference: <u>Refer to detail 3 on sheet 41</u>		
	Comment: [Click to enter rationale, explanation, unique situation, etc.]		
14.	Pipe location and orientation will be clearly marked in the field:	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
	Reference: [Click to enter document source. Example – plan sheet (p. 4), specs, report.]		
	Comment: <u>Pipe location and orientation can be identified by vault structure and outfall location</u>		
15.	Pipes will allow easy access for rapid closure:	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
	Reference: [Click to enter document source. Example – plan sheet (p. 4), specs, report.]		
	Comment: <u>Positive valve closures on the levee crest will ensure easy access for rapid closure.</u>		
16.	Plastic pipes within the levee embankment or its foundation are embedded in concrete:	Yes <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
	Reference: [Click to enter document source. Example – plan sheet (p. 4), specs, report.]		
	Comment: [Click to enter rationale, explanation, unique situation, etc.]		
17.	If a chemical or electrochemical reaction is expected, the pipe and pipe couplings must be protected:	Yes <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
	Reference: [Click to enter document source. Example – plan sheet (p. 4), specs, report.]		
	Comment: [Click to enter rationale, explanation, unique situation, etc.]		
18.	Any work within the levee embankment or foundation?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
	Reference: [Click to enter document source. Example – plan sheet (p. 4), specs, report.]		
	Comment: [Click to enter rationale, explanation, unique situation, etc.]		
19.	Any work ≤50 feet beneath the channel invert?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
	Reference: [Click to enter document source. Example – plan sheet (p. 4), specs, report.]		
	Comment: [Click to enter rationale, explanation, unique situation, etc.]		
20.	Hydraulic blockage calculation ≥1%?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
	Reference: [Click to enter document source. Example – plan sheet (p. 4), specs, report.]		
	Comment: <u>Rip Rap cross-sectional area below ordinary high watermark is anticipated to be significantly less than the cross-sectional area of Morrison Creek and therefore negligible.</u>		
21.	Hydraulic model used for hydraulic analysis?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
		N/A <input checked="" type="checkbox"/>	

Reference: [Click to enter document source. Example – plan sheet (p. 4), specs, report.]

Comment: [Click to enter rationale, explanation, unique situation, etc.]

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Comment

CP Eligibility Review

<u>Yes</u>	<u>No</u>	<u>Add'l. Info Requested</u>		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Environmental Reviewer: _____	Date: <small>Click date</small> _____
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Engineering Reviewer: _____	Date: <small>Click date</small> _____