

**ALA WAI CANAL FLOOD RISK MANAGEMENT STUDY
O'AHU, HAWAII**

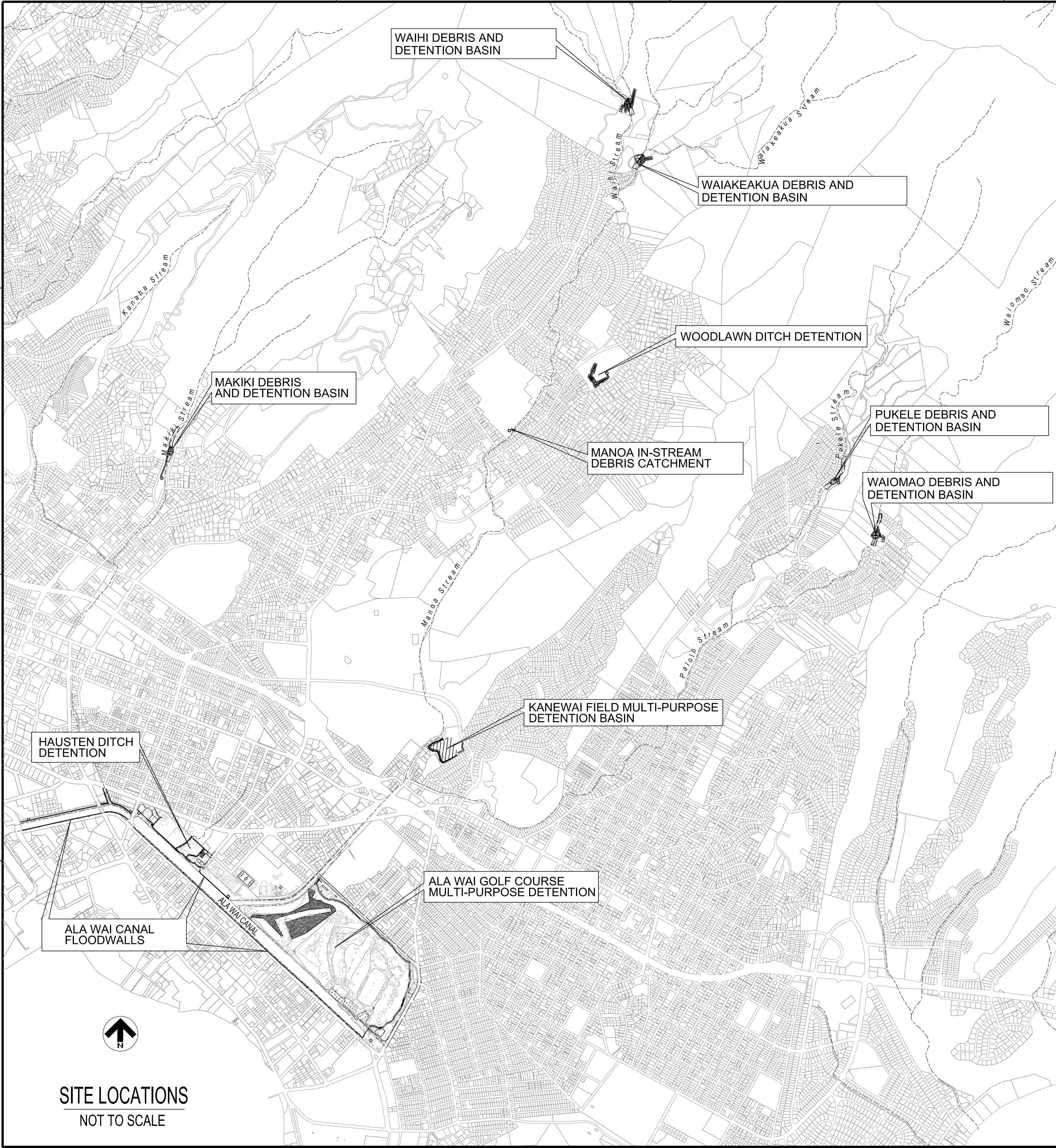
**FINAL FEASIBILITY STUDY REPORT WITH INTEGRATED
ENVIRONMENTAL IMPACT STATEMENT**

**APPENDIX I
DESIGN DRAWINGS**

- | | |
|-----------|----------------------------------|
| I1 | Design Drawings |
| I2 | Design GIS |
| I3 | Subsurface Utility Report |
| I4 | Design Documentation |

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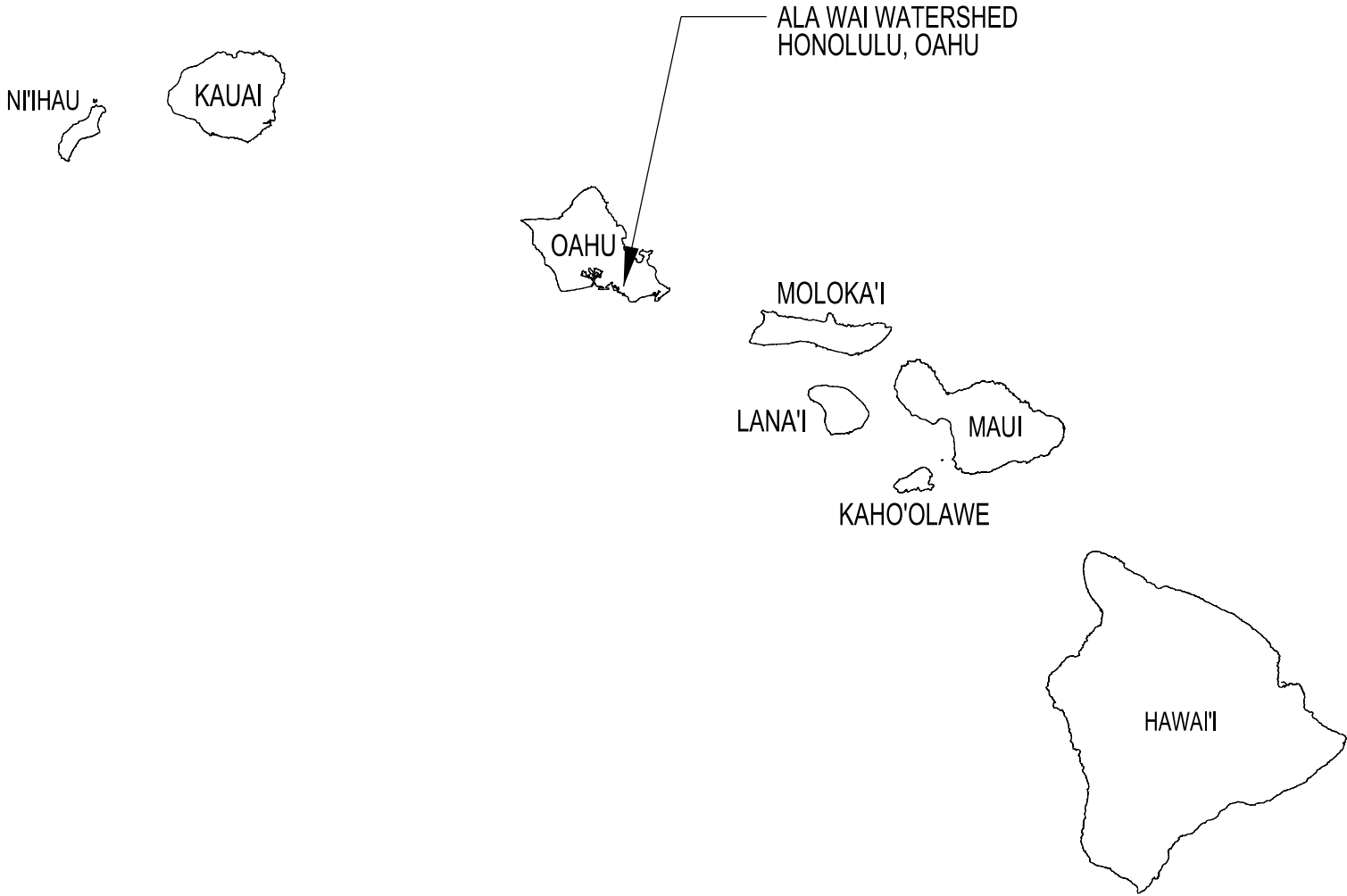


SITE LOCATIONS
NOT TO SCALE

ALA WAI CANAL PROJECT

HONOLULU, OAHU, HI

PROJECT TITLE



VICINITY MAP

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PROJECT LOCATION

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 US Army Corps of Engineers Honolulu District		DATE		DATE	
DESIGNED BY:		REVISION:		DESCRIPTION	
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ALA WAI CANAL PROJECT		SITE LOCATIONS & VICINITY MAP			
SHEET IDENTIFICATION G-001		SHEET 1 OF 31			

ALA WAI CANAL PROJECT INDEX TO DRAWINGS

SHT. NO	SHT. REF. NO.	DESCRIPTION
1	G-001	SITE LOCATIONS, PROJECT LOCATION AND VICINITY MAP
2	G-002	INDEX TO DRAWINGS
3	C-101	ALA WAI CANAL FLOODWALLS, SITE PLAN
4	C-102	HAUSTEN DITCH DETENTION, SITE PLAN
5	C-103	ALA WAI GOLF COURSE MULTI-PURPOSE DETENTION, PLAN
6	C-104	ALA WAI UPPER LEFT BANK PLAN
7	C-105	ALA WAI UPPER END PLAN
8	C-106	KALAKAUA AVE AND ALA WAI BLVD PLAN
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11	C-302	WAIKEAKUA DEBRIS AND DETENTION BASIN, PLAN AND SECTIONS
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13	C-306	KANEWAI FIELD MULTI-PURPOSE DETENTION BASIN, PLAN AND SECTIONS
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15	C-309	ALA WAI CANAL MIDDLE AND LOWER RIGHT BANK, PROFILE AND SECTION
16	C-310	ALA WAI CANAL MIDDLE AND LOWER LEFT BANK, PROFILE AND SECTION
17	C-311	ALA WAI CANAL UPPER LEFT BANK, PROFILE
18	C-313	PUKELE DEBRIS AND DETENTION BASIN, PLAN AND SECTIONS
19	C-315	MAKIKI DEBRIS AND DETENTION BASIN, PLAN AND SECTIONS
20	C-316	HAUSTEN DITCH DETENTION FLOODWALLS AND BERM, PROFILE AND SECTIONS
21	C-317	ALA WAI GOLF COURSE MULTI-PURPOSE DETENTION, PROFILE AND SECTION
22	C-318	MANOA IN-STREAM DEBRIS CATCHMENT, PLAN AND SECTIONS
23	C-401	HAUSTEN BRIDGE CONCRETE WALL, PLAN, SECTION AND ELEVATION
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30	A-301	PUMP STATION 1 - SECTIONS
31	A-302	PUMP STATION 2 - SECTIONS

GENERAL NOTES:

1. EXISTING CONDITIONS MAY VARY FROM THOSE SHOWN ON THESE PLANS. THE CONTRACTOR SHALL VERIFY EXISTING CONDITIONS AND ADJUST WORK PLAN ACCORDINGLY PRIOR TO BEGINNING CONSTRUCTION.
2. COORDINATE SYSTEM: NAD 1983 (HARN), HAWAII ZONE 3 (US FEET)
3. PROVIDE FENCING TO MAINTAIN SECURITY AND SAFETY AT ALL TIMES.
4. UNLESS SHOWN OTHERWISE, ALL DISTURBED AREAS NOT RECEIVING A HARD SURFACE SHALL BE COVERED WITH GRASS.
5. CONTRACTOR SHALL SUBMIT A COMPLETE SOIL EROSION CONTROL PLAN FOR REGULATORY APPROVAL. CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTING AND MAINTAINING EROSION CONTROL DEVICES DURING CONSTRUCTION. CONTRACTOR SHALL TAKE ALL OTHER MEASURES TO POSITIVELY PRECLUDE EROSION MATERIALS FROM LEAVING THE SITE.
6. EXISTING UNDERGROUND UTILITIES OBTAINED FROM AS-BUILTS AND FROM FIELD SURVEYS. CONTRACTOR SHALL POT HOLE AND FIELD VERIFY DEPTH AND LOCATION PRIOR TO EXCAVATION AND PROTECT ALL EXISTING UTILITIES DURING CONSTRUCTION.
7. THE CONTRACTOR SHALL VERIFY AND CHECK ALL DIMENSIONS AND DETAILS SHOWN ON THE DRAWINGS PRIOR TO THE START OF CONSTRUCTION. ANY DISCREPANCY SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE CONTRACTING OFFICER FOR CLARIFICATION BEFORE PROCEEDING WITH CONSTRUCTION.
8. THERE WILL BE A FLOODWARNING SYSTEM INSTALLED FOR THIS PROJECT.
9. ANY ITEMS OF HISTORICAL OR ARCHEOLOGICAL VALUE OBSERVED DURING CONSTRUCTION ACTIVITIES SHALL BE REPORTED IMMEDIATELY TO THE CONTRACTING OFFICER, AND THE CONTRACTOR SHALL CEASE ALL ACTIVITIES THAT MAY RESULT IN THE DESTRUCTION OF SUCH RESOURCES IN ACCORDANCE WITH THE SPECIAL CONTRACT REQUIREMENTS.
10. PROVIDE PERMANENT FENCING AROUND DETENTION BASIN MEASURES TO PROVIDE SECURITY AND SAFETY.

GENERAL ABBREVIATIONS

A.C. AVE	ASHPALT CONCRETE AVENUE	NTS	NOT TO SCALE
BLVD	BOULEVARD	O.C. O&M	ON CENTER OPERATIONS AND MAINTENANCE
CONC	CONCRETE	PL	PLACE
DIA	DIAMETER	RB	RIGHT BANK
EL EXIST	ELEVATION EXISTING	RCP RD	REINFORCED CONCRETE PIPE ROAD
FT	FOOT, FEET	SQ ST STA	SQUARE STREET STATION
IN INV	INCH, INCHES INVERT	THK TMK TYP	THICK TAX MAP KEY TYPICAL
LB	LEFT BANK		
MAX MSL	MAXIMUM MEAN SEA LEVEL	W.S. YR	WATER SURFACE YEAR

SYMBOLS

&	AND
@	AT
⌒	CENTER LINE
'	FOOT, FEET
"	INCH, INCHES



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General Notes & Attachments			
Index Of Drawings			

ALA WAI CANAL PROJECT

INDEX OF DRAWINGS, GENERAL NOTES
ABBREVIATIONS & SYMBOLS

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IDENTIFICATION
G-002
SHEET 2 OF 31

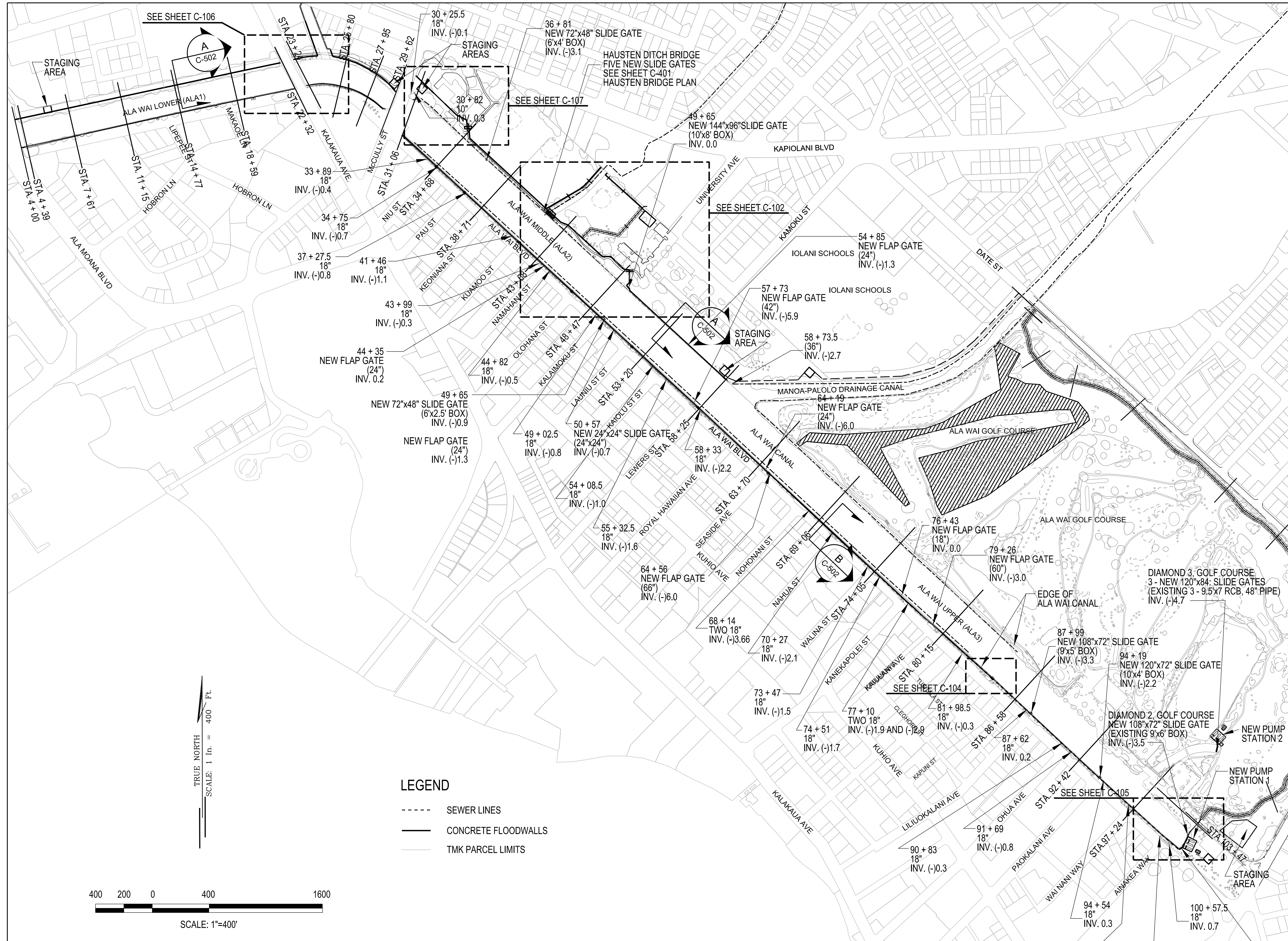
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SITE PLAN ALA WAI CANAL FLOODWALLS

ALA WAI CANAL INTERIOR DRAINAGE TABLE

CULVERT NAME	STATION	SIZE & TYPE	NOTES
DIAMOND 2, GOLF COURSE	102+45.5	108"x72" SLIDE GATE	PUMP STATION 1
DIAMOND 1, ALA WAI BLVD	101+75	144"x96" SLIDE GATE	
DIAMOND 3, GOLF COURSE	96+67	3 - 120"x84" SLIDE GATES	PUMP STATION 2
	100+57.5	18" FLAP GATE	INV. 0.7
	99+72.5	18" FLAP GATE	INV. 0.6
	96+80	18" FLAP GATE	INV. (-)0.3
	94+54	18" FLAP GATE	INV. 0.3
	94+19	120"x72" SLIDE GATE	INV. (-)2.2
	91+69	18" FLAP GATE	INV. (-)0.8
	90+83	18" FLAP GATE	INV. (-)0.3
	87+99	108"x72" SLIDE GATE	INV. (-)3.3
	87+62	18" FLAP GATE	INV. 0.2
	81+98.5	18" FLAP GATE	INV. (-)0.3
	79+26	60" FLAP GATE	INV. (-)3.0
	77+10	TWO 18" FLAP GATES	INV. (-)1.9 AND (-)2.9
	76+43	18" FLAP GATE	INV. 0.0
	74+51	18" FLAP GATE	INV. (-)1.7
	73+47	18" FLAP GATE	INV. (-)1.5
	70+27	18" FLAP GATE	INV. (-)2.1
	68+14	TWO 18" FLAP GATES	INV. (-)3.7
	64+56	66" FLAP GATE	INV. (-)6.0
	64+19	24" FLAP GATE	INV. (-)6.0
	58+73.5, RB	36" FLAP GATE	INV. (-)2.7
	58+33	18" FLAP GATE	INV. (-)2.2
	57+73	42" FLAP GATE	INV. (-)5.9
	55+32.5	18" FLAP GATE	INV. (-)5.6
	54+08.5	18" FLAP GATE	INV. (-)1.0
	54+85, RB	24" FLAP GATE	INV. (-)1.3
	50+57	24"x24" SLIDE GATE	INV. (-)0.7
	49+65, RB	144"x96" SLIDE GATE	INV. 0.0, PUMP STATION 3
	49+65	72"x48" SLIDE GATE & 24" FLAP GATE	INV. (-)1.3 & (-)0.9
	49+02.5	18" FLAP GATE	INV. (-)0.8
	44+82	18" FLAP GATE	INV. (-)0.5
	44+35	24" FLAP GATE	INV. 0.2
	43+99	18" FLAP GATE	INV. (-)0.3
HAUSTEN DITCH BRIDGE	42+10	4 - SLIDE GATES	SEE SHEET C-401
	41+46	18" FLAP GATE	INV. (-)1.1
	37+27.5	18" FLAP GATE	INV. (-)0.8
	36+81, RB	72"x48" SLIDE GATE	INV. (-)3.1
	34+75	18" FLAP GATE	INV. (-)0.7
	33+89	18" FLAP GATE	INV. (-)0.4
	30+82, RB	10" FLAP GATE	INV. 0.3
	30+25.5, RB	18" FLAP GATE	INV. (-)0.1

NOTES:

- SEE SHEET C-309 FOR THE RIGHT BANK (MOUNTAIN SIDE) PROFILE OF ALA WAI MIDDLE (ALA2) AND ALA WAI LOWER (ALA1).
- SEE SHEET C-310 FOR THE LEFT BANK (OCEAN SIDE) PROFILE OF ALA WAI MIDDLE (ALA2) AND ALA WAI LOWER (ALA1).
- SEE SHEET C-311 FOR THE LEFT BANK (OCEAN SIDE) PROFILE OF ALA WAI UPPER (ALA3).
- SEE SHEET C-103 FOR ALA WAI GOLF COURSE MULTI-PURPOSE DETENTION PLAN.



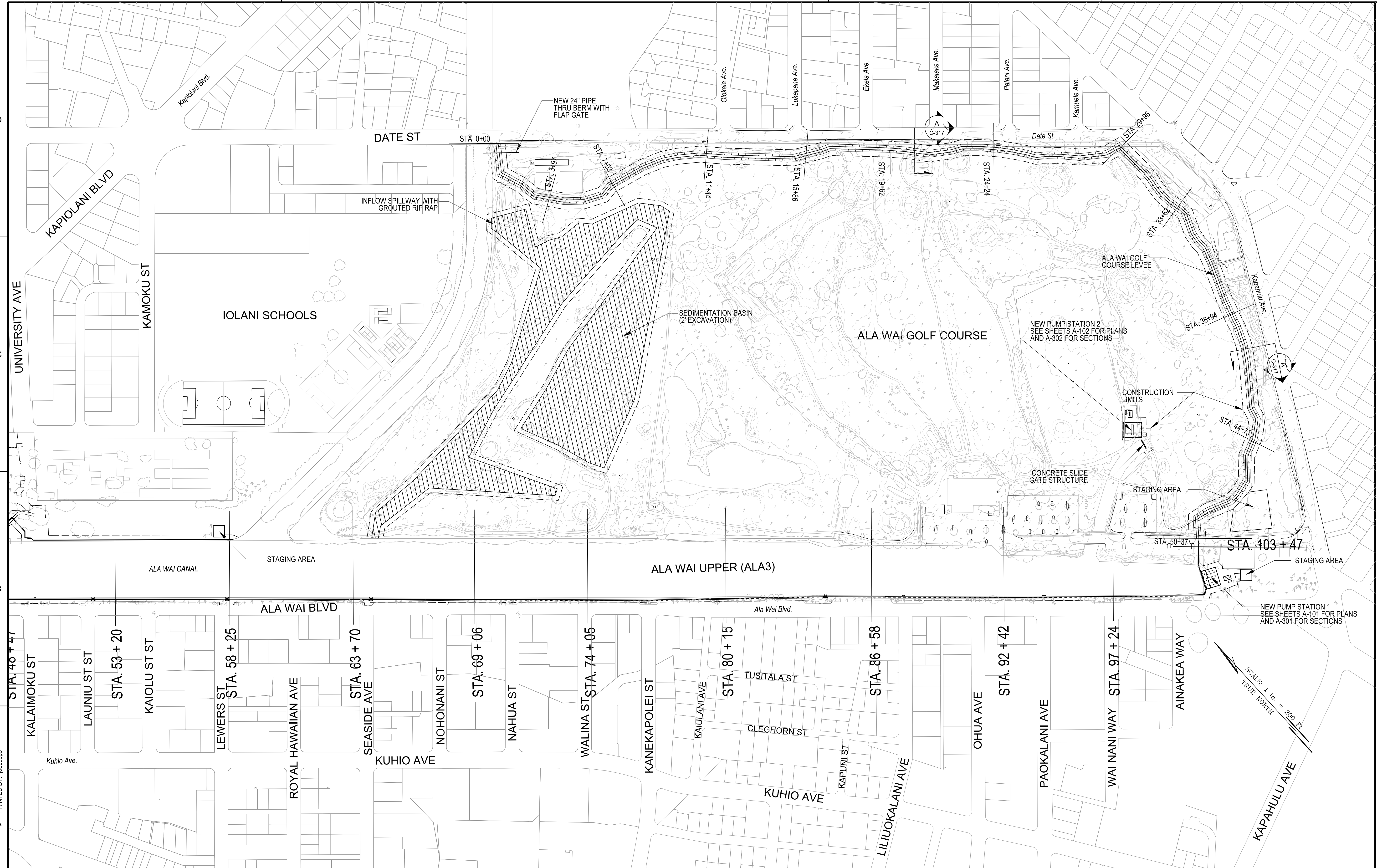
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ALA WAI CANAL PROJECT	ALA WAI LOWER, MIDDLE & UPPER FLOODWALLS
SITE PLAN	

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SHEET 3 OF 31



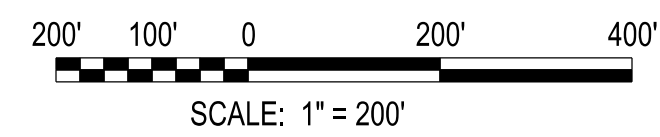
NOTES:

1. STAGING AREA WILL HAVE GEOTEXTILE AND 3" OF SURGE MATERIAL.
2. SEE SHEET C-317 FOR THE ALA WAI GOLF COURSE MULTI-PURPOSE DETENTION, PROFILE AND SECTION.

ALA WAI GOLF COURSE MULTI-PURPOSE DETENTION

PLAN

SCALE: 1"=200'

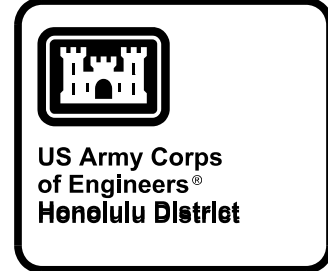
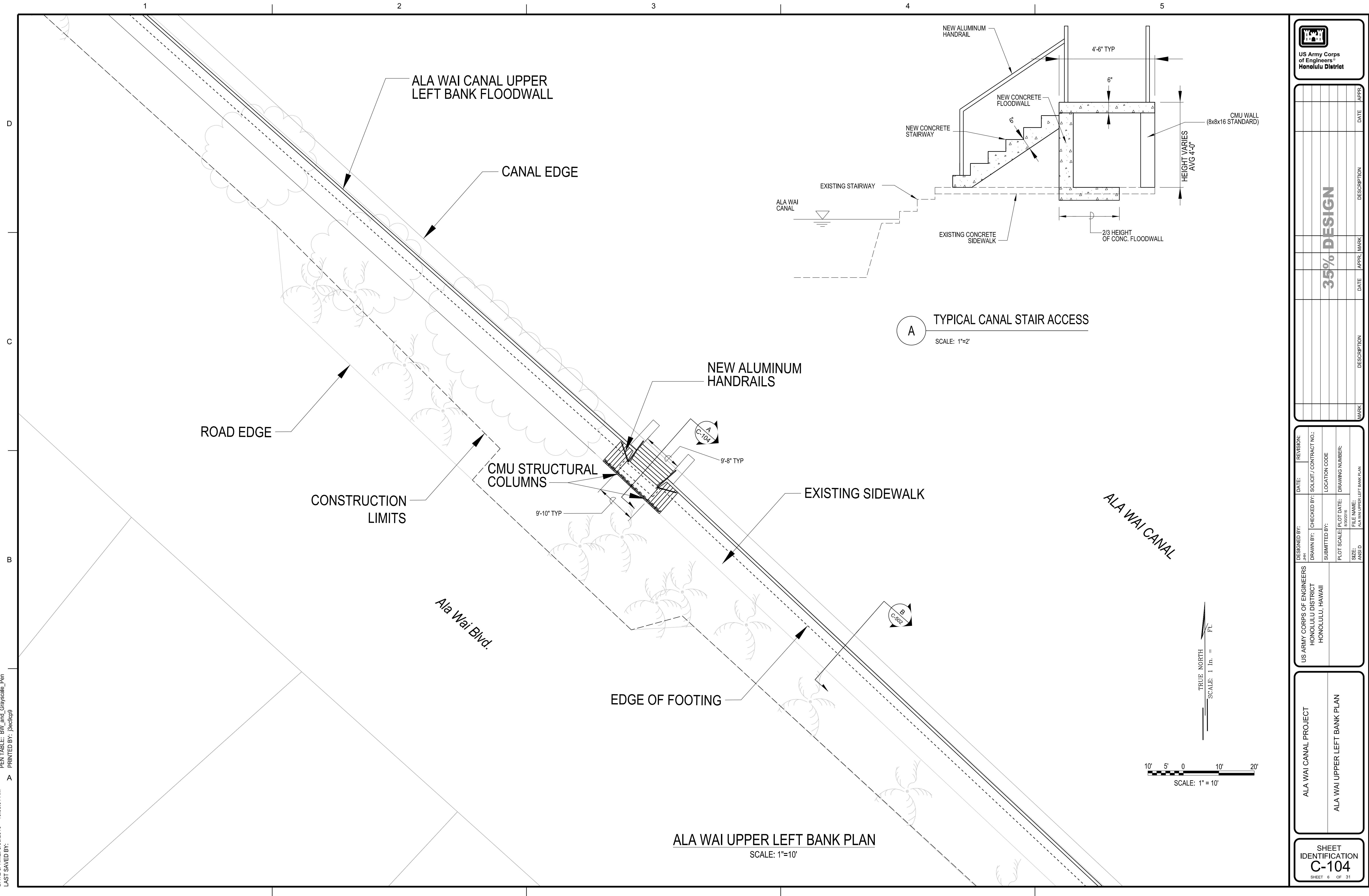
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ALA WAI CANAL PROJECT

ALA WAI GOLF COURSE MULTIPURPOSE DETENTION
PLAN

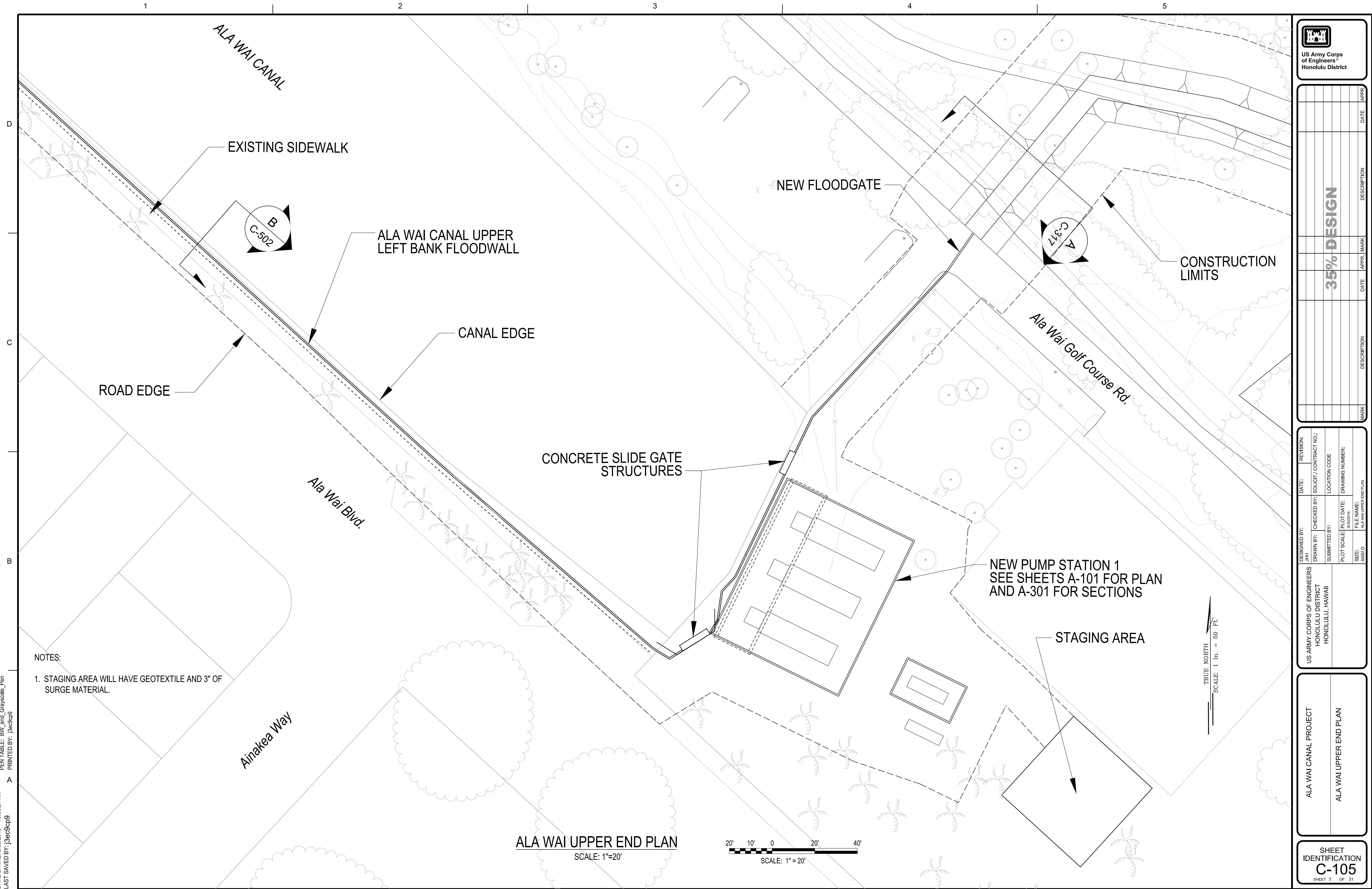
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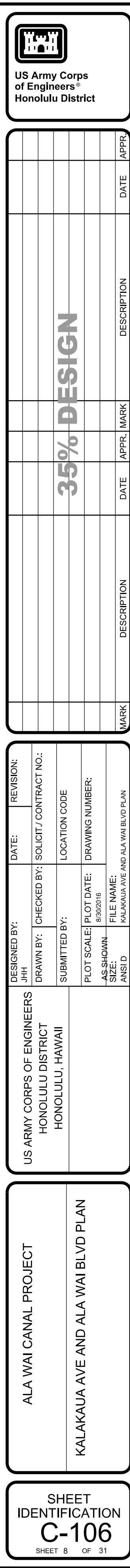
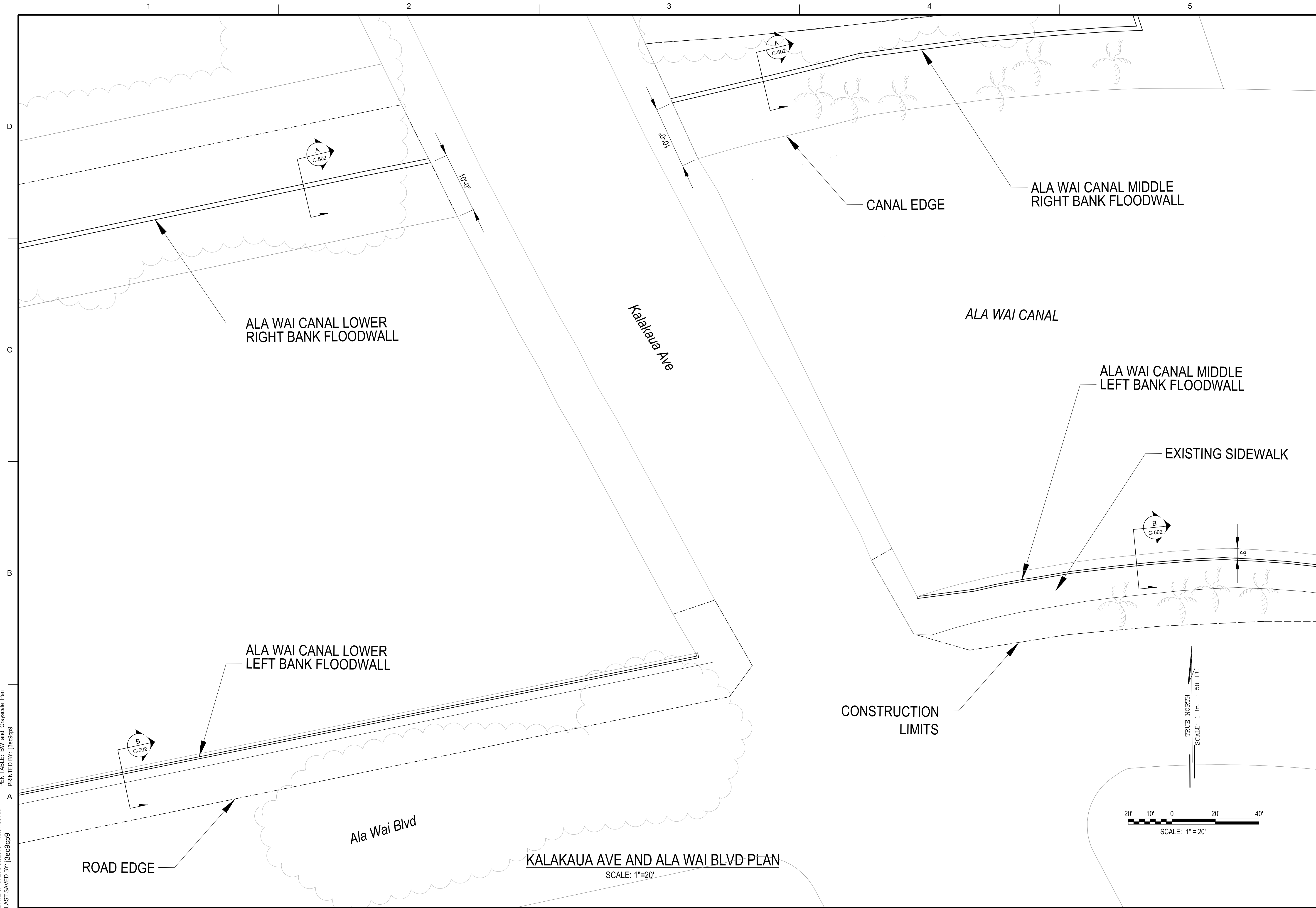
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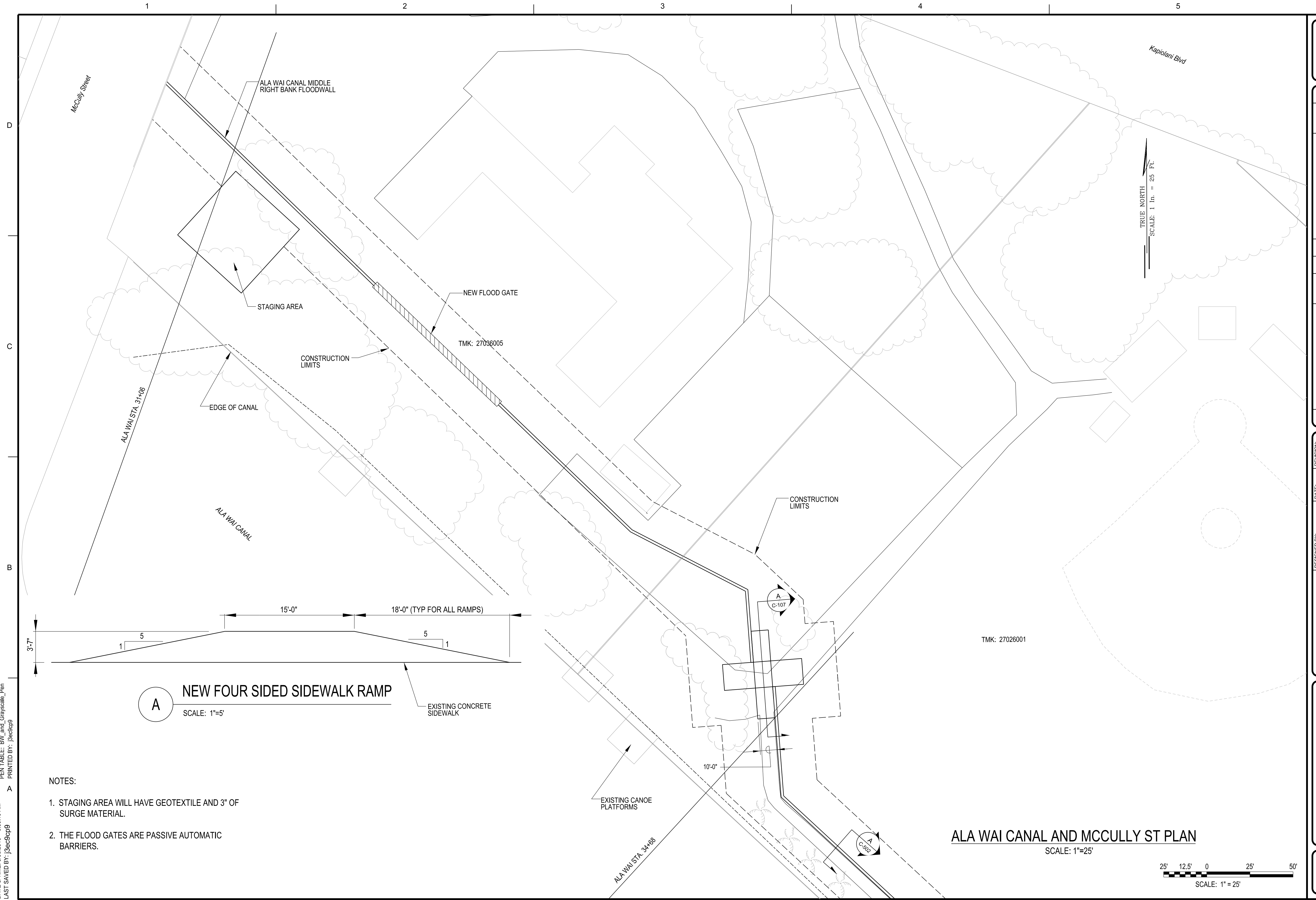
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ALA WAI CANAL PROJECT	ALA WAI UPPER LEFT BANK PLAN
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SHEET 6 OF 31







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ALA WAI CANAL PROJECT

ALA WAI CANAL AND MCCULLY ST

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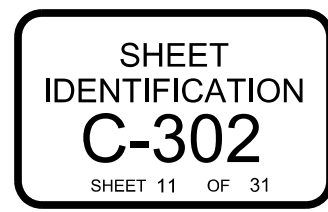
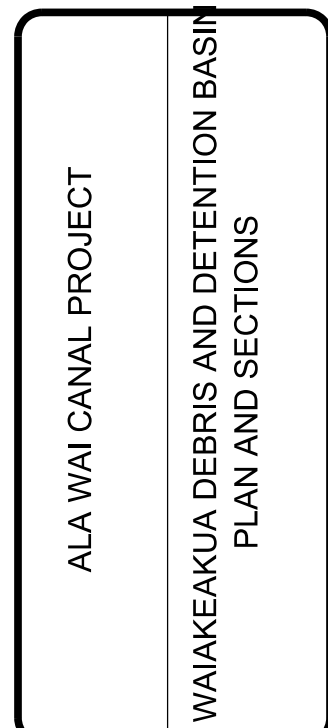
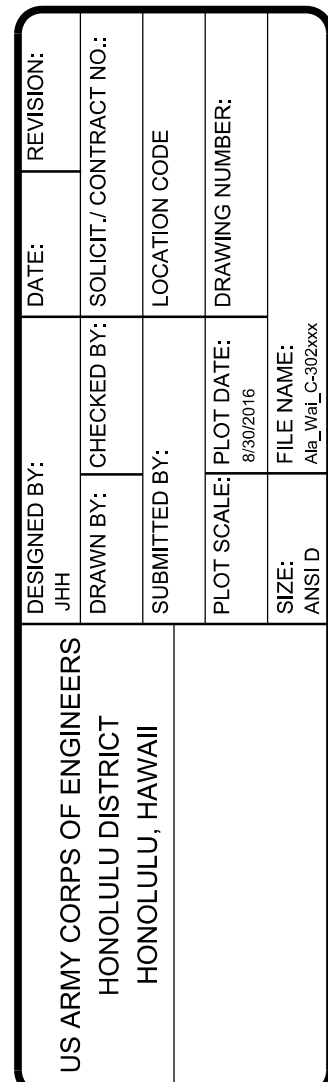
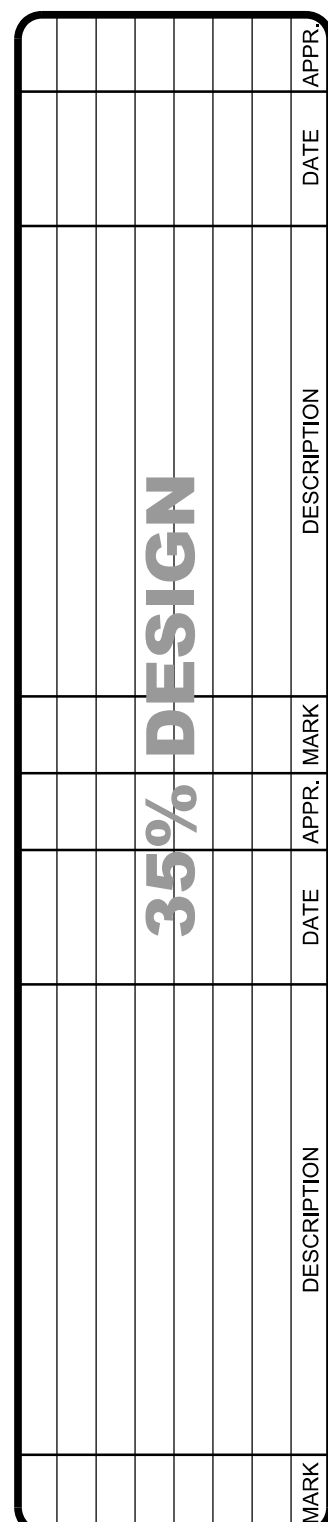
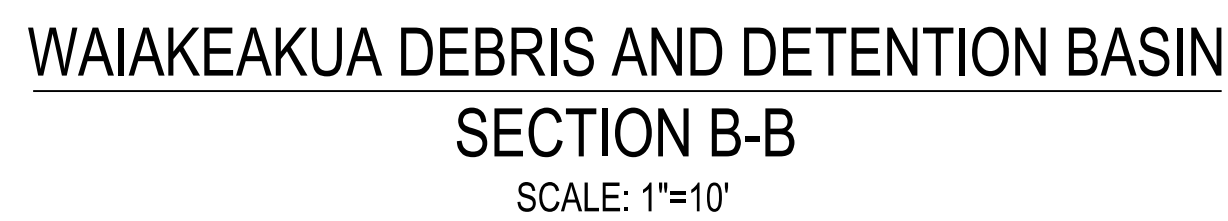
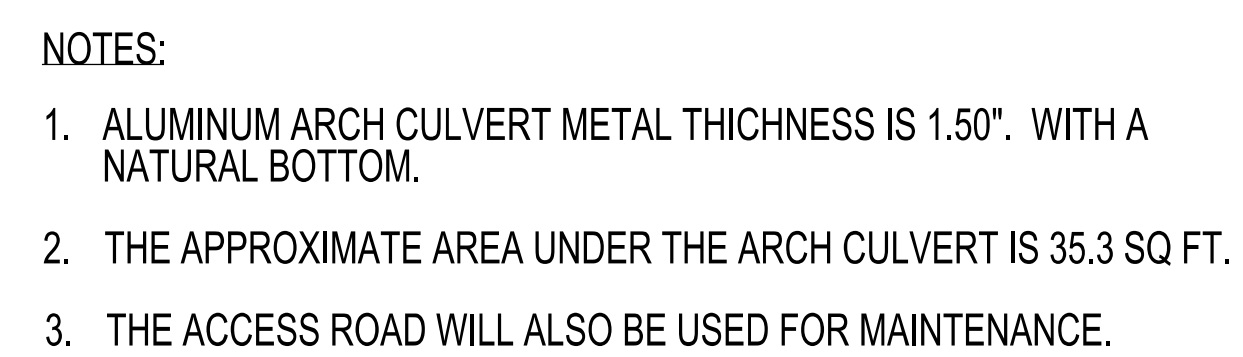
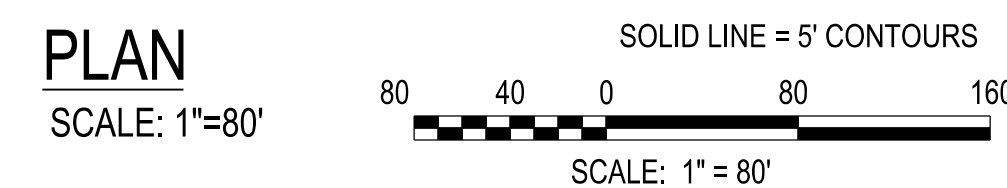
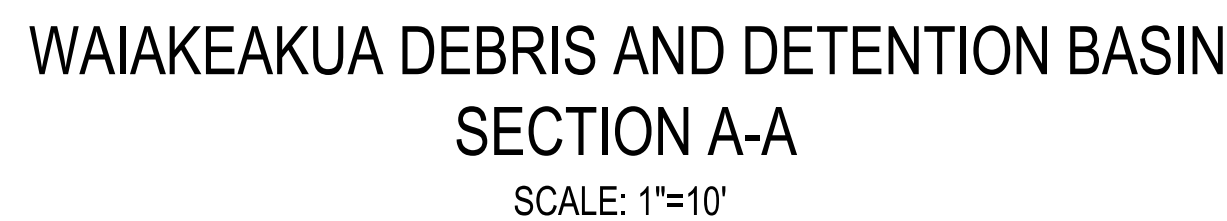
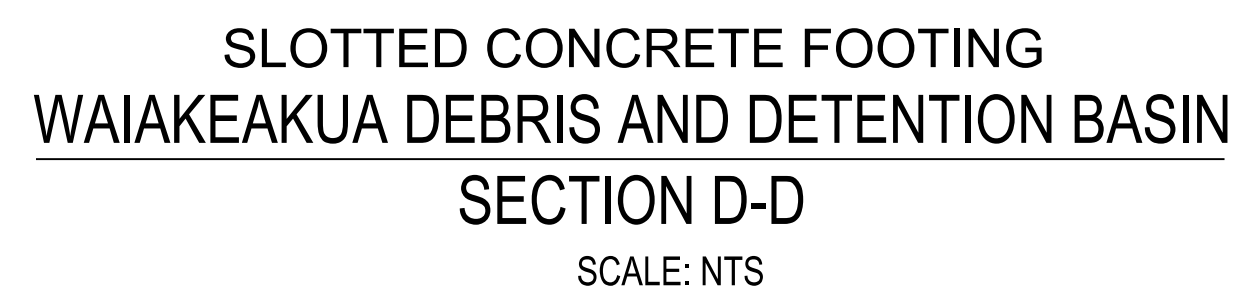
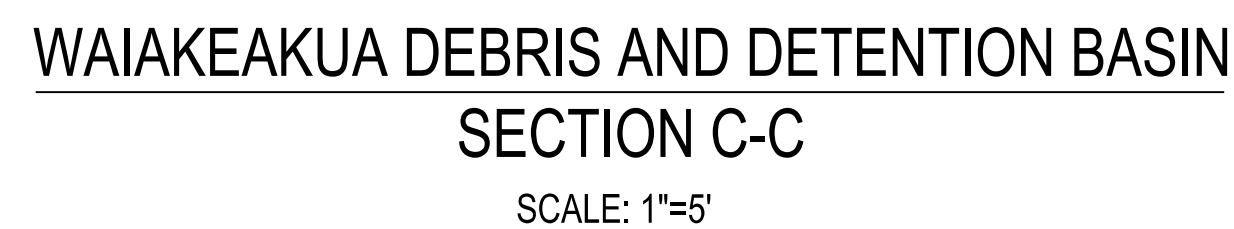


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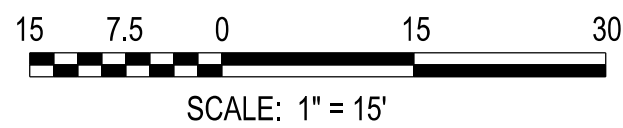
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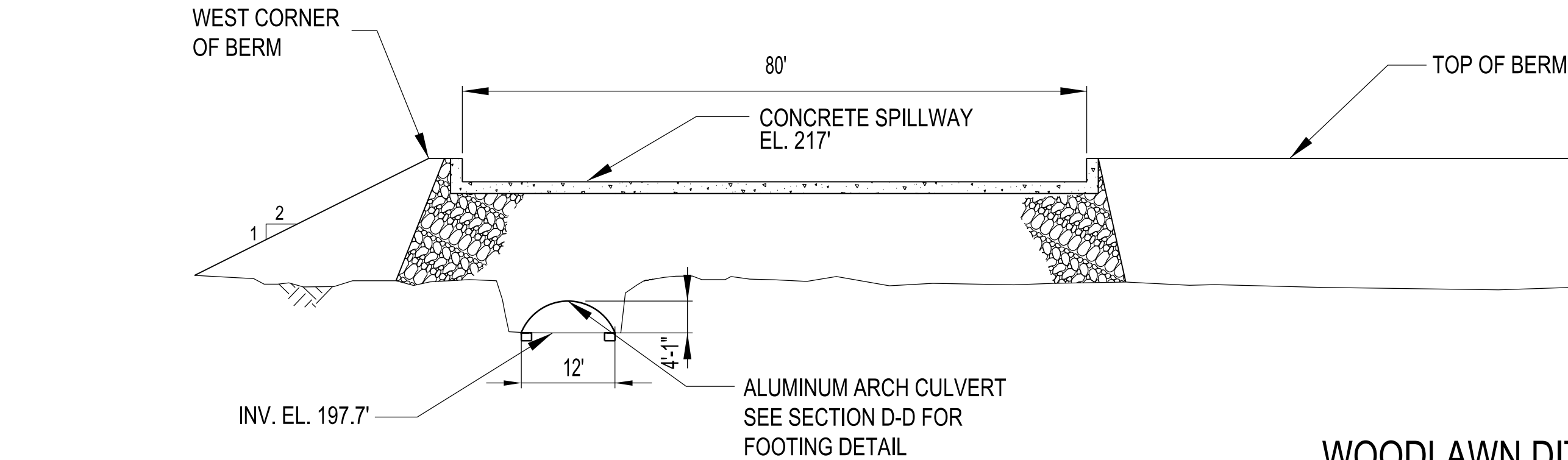


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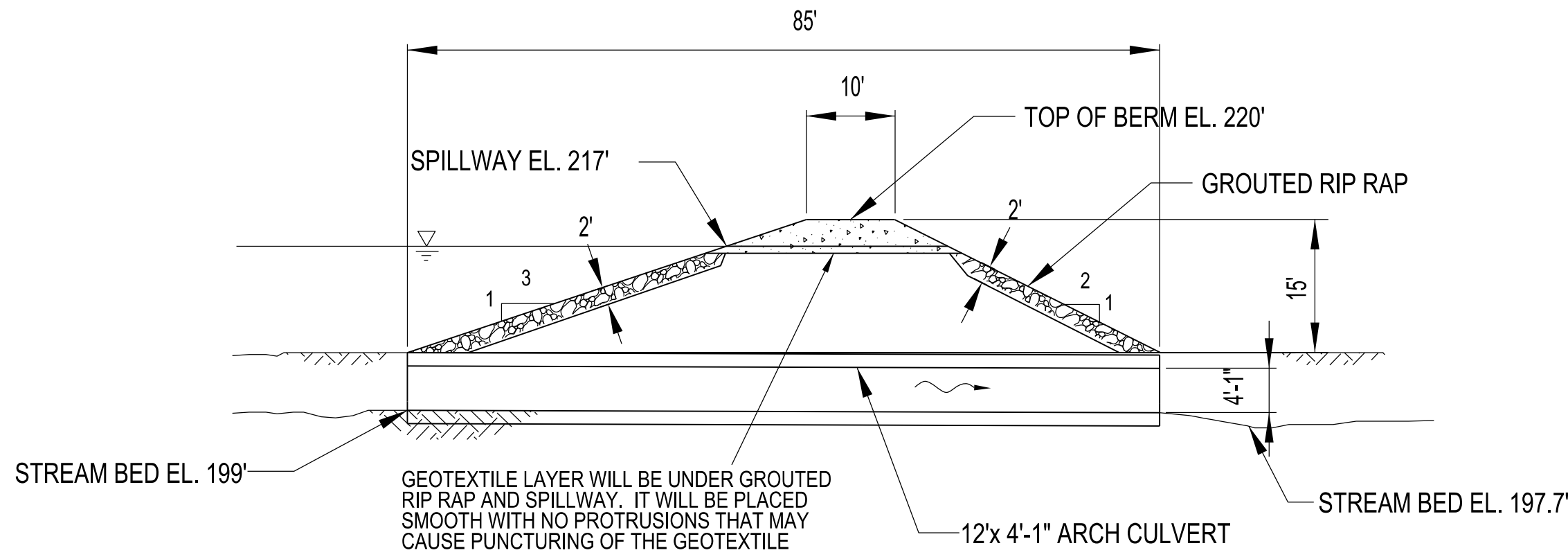
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Note: All elevations are feet MSL

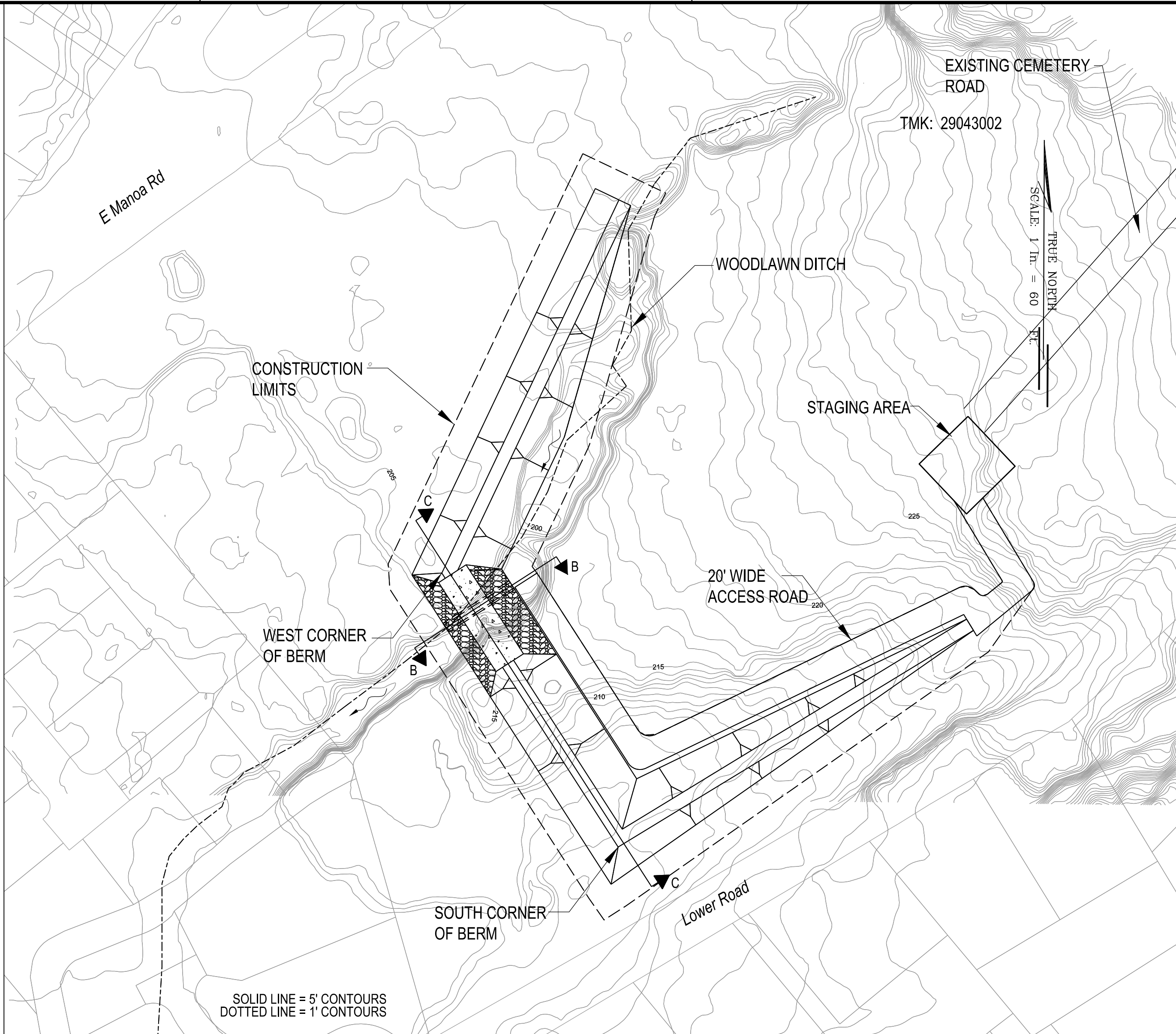
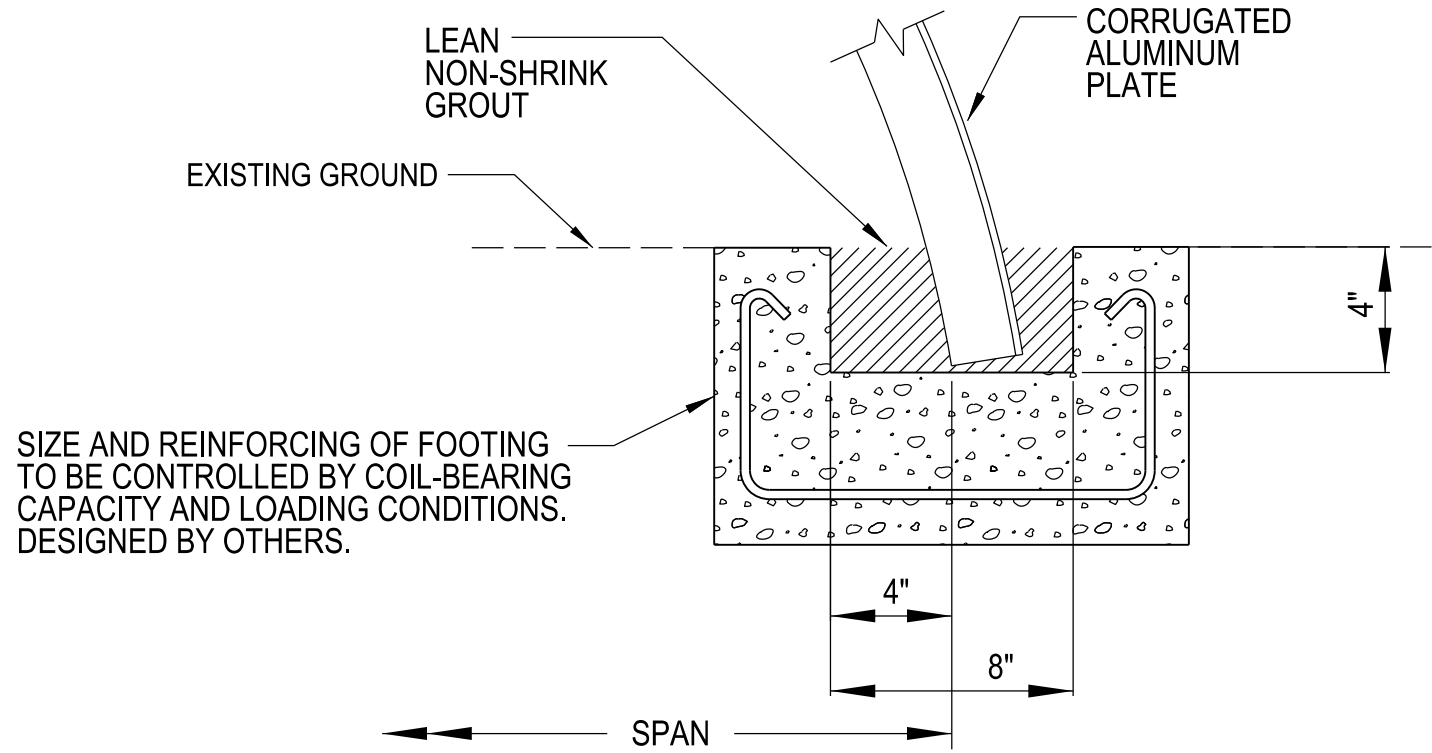


WOODLAWN DITCH DETENTION BASIN
SECTION C-C
SCALE: 1"=15'



WOODLAWN DITCH DETENTION BASIN
SECTION B-B
SCALE: 1"=15'

SLOTTED CONCRETE FOOTING
WOODLAWN DITCH DETENTION BASIN
SECTION D-D
SCALE: NTS



PLAN
SCALE: 1"=60'

NOTES:

1. ALUMINUM ARCH CULVERT METAL THICKNESS IS 1.50". WITH A NATURAL BOTTOM.
2. THE APPROXIMATE AREA UNDER THE ARCH CULVERT IS 35.3 SQ. FT.



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35% DESIGN

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CHECKED BY: J3ec9cp9

DATE: 8/30/2016

REVISION: 1

LOCATION CODE: 0115194

CONTRACT NO.: 115194

DESIGN NUMBER: 115194

FILE NAME: Woodlawn Ditch Detention Basin

SIZE: ANSI D

ALA WAI CANAL PROJECT

WOODLAWN DITCH
DETENTION BASIN
PLAN AND SECTIONS

SHEET
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C-305

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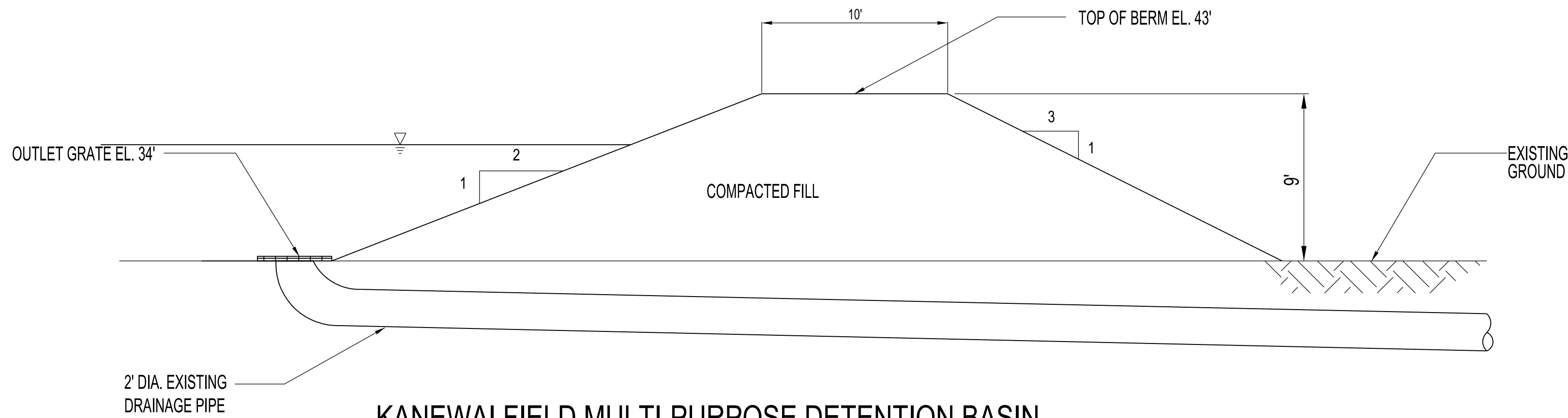
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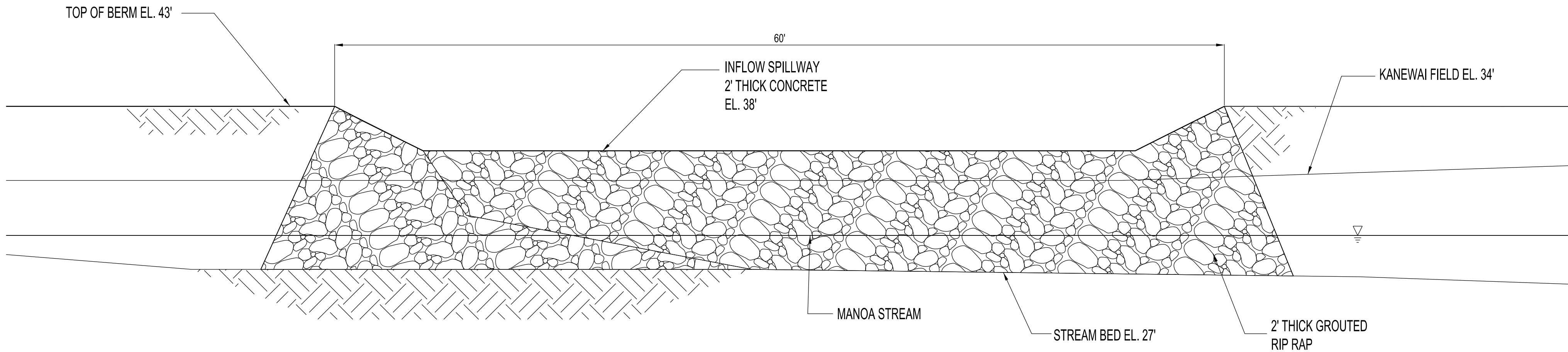
A



KANEWAI FIELD MULTI-PURPOSE DETENTION BASIN

SECTION A-A

SCALE: 1" = 5'



KANEWAI FIELD MULTI-PURPOSE DETENTION BASIN

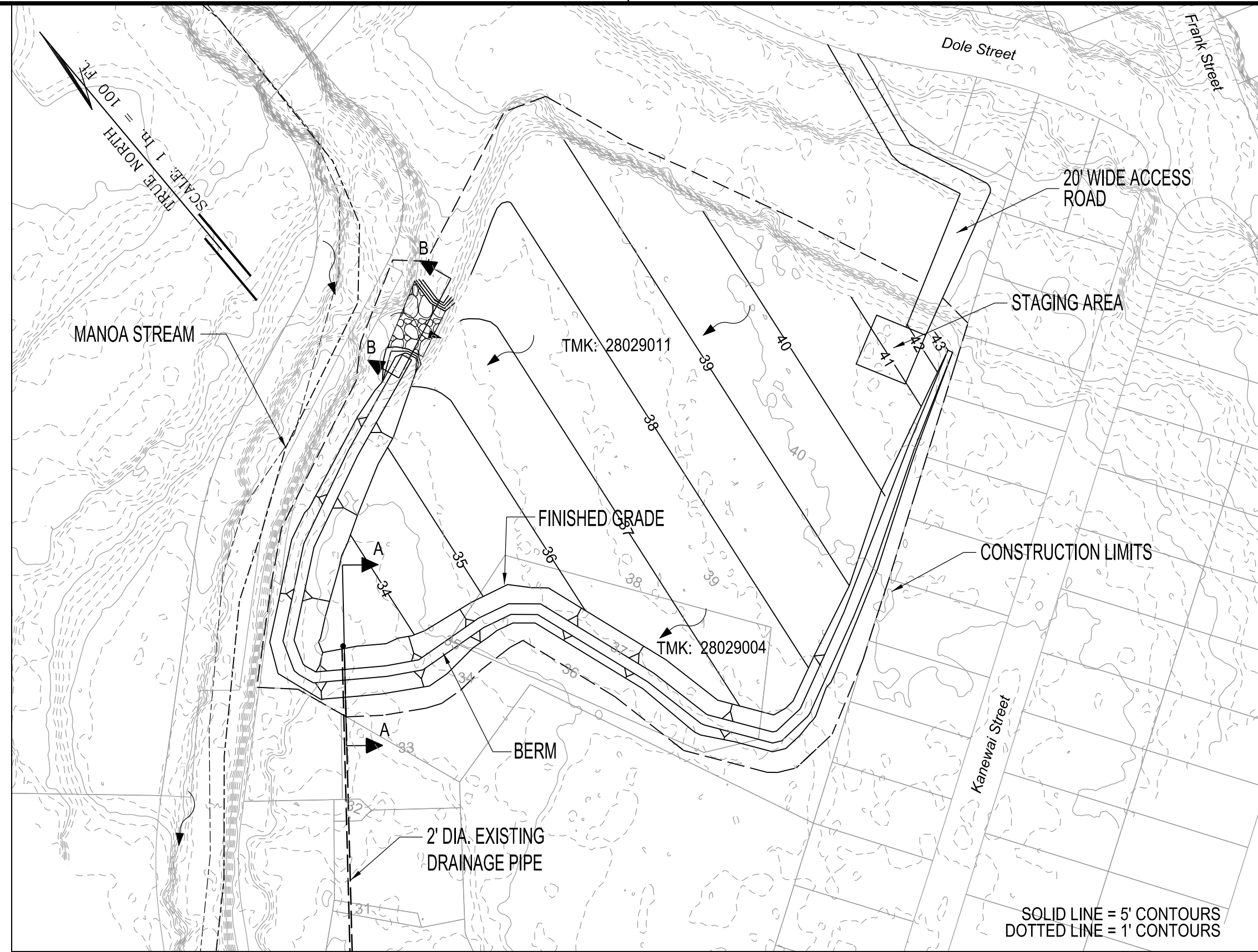
SECTION B-B

SCALE: 1" = 5'



SCALE: 1" = 5'

Note: All elevations are feet MSL



PLAN

SCALE: 1" = 100'



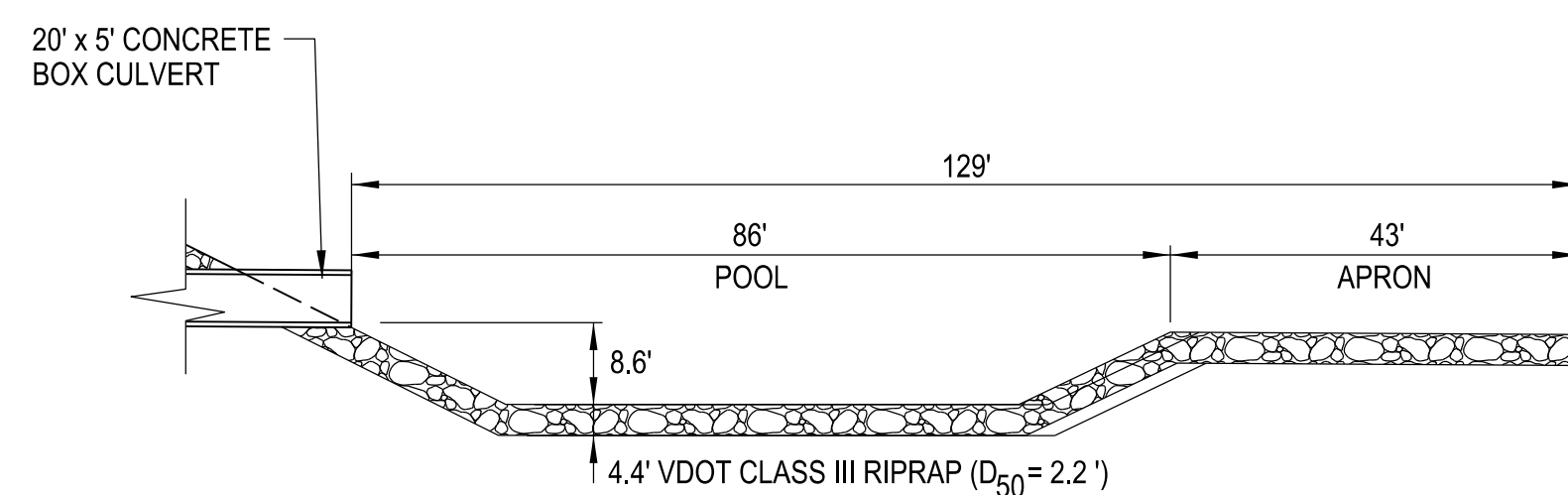
US Army Corps
of Engineers®
Honolulu District

35% DESIGN

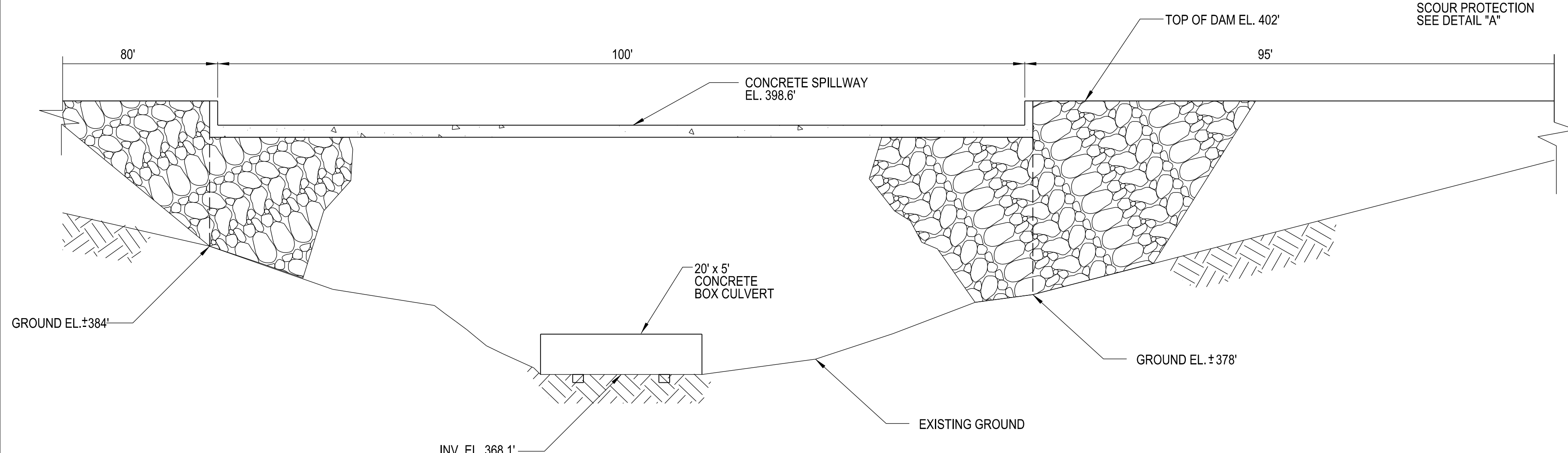
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SIZE:	FILE NAME:		
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ALA WAI CANAL PROJECT
KANEWAI FIELD MULTI-PURPOSE DETENTION BASIN PLAN AND SECTIONS

SHEET IDENTIFICATION C-306
SHEET 13 OF 31



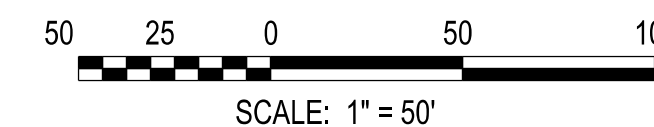
A RIPRAP DISSIPATION & SCOUR PROTECTION DETAIL
C-308 SCALE: 1"=20'



SCALE: 1" = 10'

NOTES:

1. THE ACCESS ROAD WILL ALSO BE USED FOR MAINTENANCE.



ALA WAI CANAL PROJECT WAIOMAO DEBRIS AND DETENTION BASIN	US ARMY CORPS OF ENGINEERS HONOLULU DISTRICT HONOLULU, HAWAII		DESIGNED BY: JHH	DATE:	REVISION:
	DRAWN BY: SUBMITTED BY:		CHECKED BY:	SOLICIT / CONTRACT NO.:	LOCATION CODE
PLOT SCALE:		PILOT DATE:	DRAWING NUMBER:		

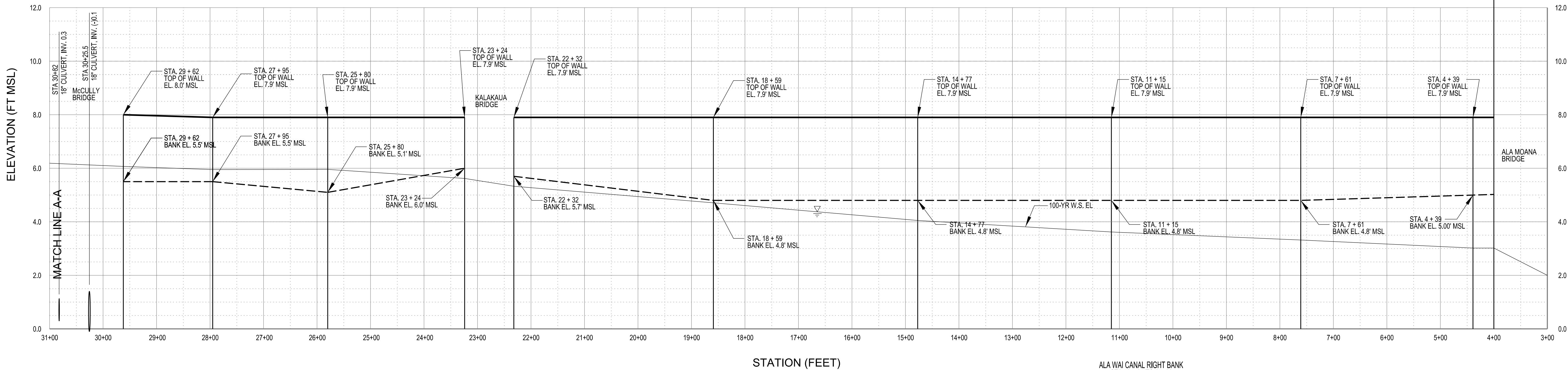
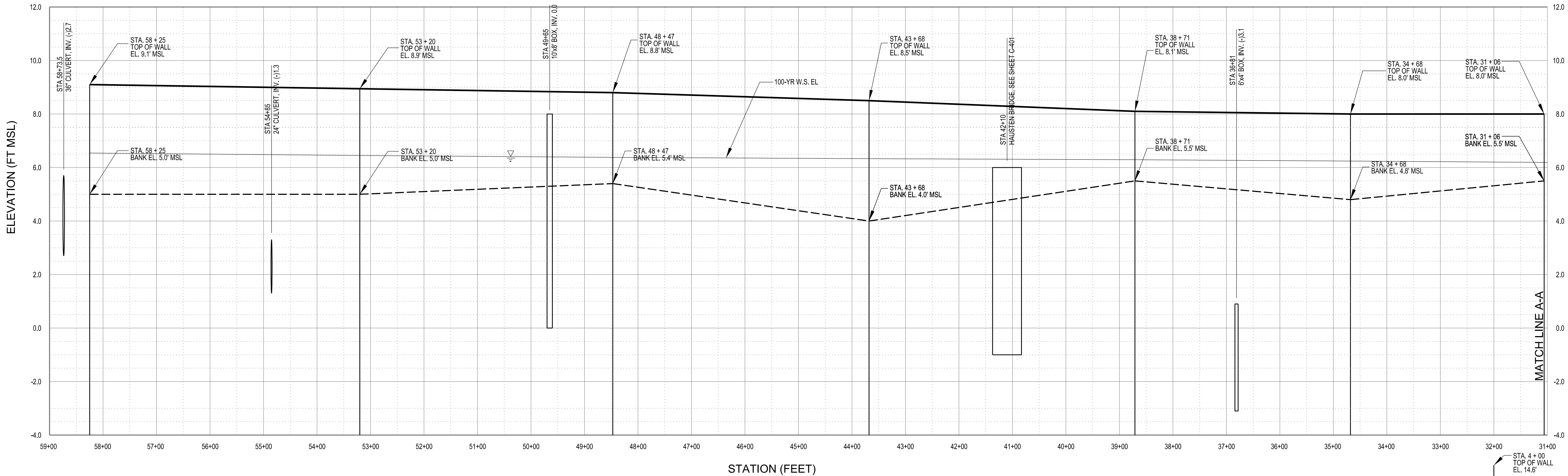
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D

C

B

A



PROFILE

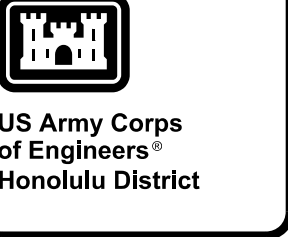
A1 ALA WAI MIDDLE (ALA2) AND LOWER (ALA1) RIGHT BANK FLOODWALLS

SCALE:
HORIZONTAL: 1" = 100'
VERTICAL: 1" = 2'



ALA WAI CANAL RIGHT BANK STA 58 + 25 TO 25+80		
STATION	WALL HEIGHT (FT)	FINISHED WALL ELEVATION (FT MSL)
58 + 25	4.1	9.1
53 + 20	3.9	8.9
48 + 47	3.4	8.8
43 + 68	4.5	8.5
38 + 71	2.6	8.1
34 + 68	3.2	8.0
31 + 06	2.5	8.0
MCCLULLY BRIDGE		
29 + 62	2.5	8.0
27 + 95	2.4	7.9
25 + 80	2.8	7.9

ALA WAI CANAL RIGHT BANK STA 23 + 24 TO 4 + 00		
STATION	WALL HEIGHT (FT)	FINISHED WALL ELEVATION (FT MSL)
23 + 24	1.9	7.9
KALAKAUA BRIDGE		
22 + 32	2.2	7.9
18 + 59	3.1	7.9
14 + 77	3.1	7.9
11 + 15	3.1	7.9
7 + 61	3.1	7.9
4 + 39	2.9	7.9
4 + 00	2.9	7.9



DESIGNED BY:	DATE:	REVISION:	SOLICIT / CONTRACT NO.:
JMH			
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SUBMITTED BY:	PLOT SCALE:	PLOT DATE:	DRAWING NUMBER:
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US ARMY CORPS OF ENGINEERS HONOLULU DISTRICT HONOLULU, HAWAII	DESCRIPTION	DATE	APPR.	MARK

ALA WAI CANAL PROJECT	DESCRIPTION	DATE	APPR.	MARK

SHEET IDENTIFICATION
C-309
SHEET 15 OF 31

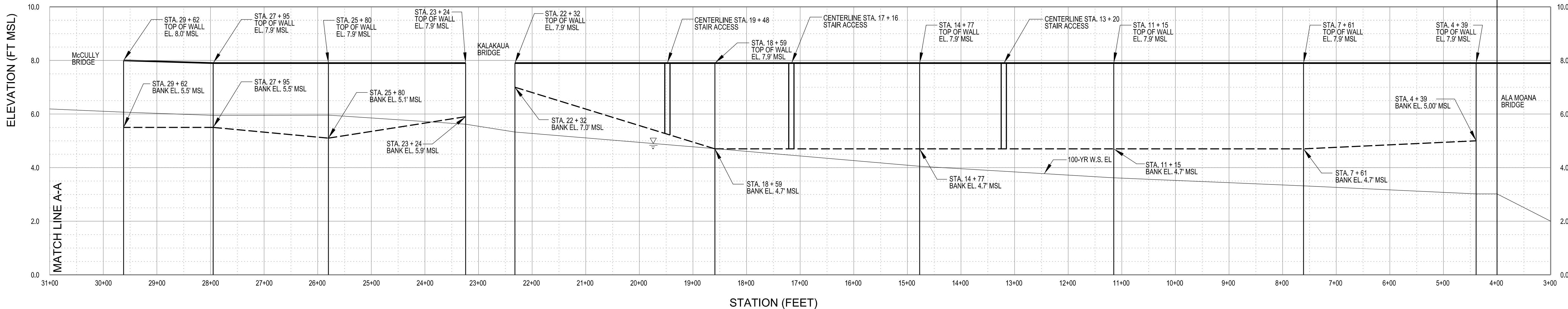
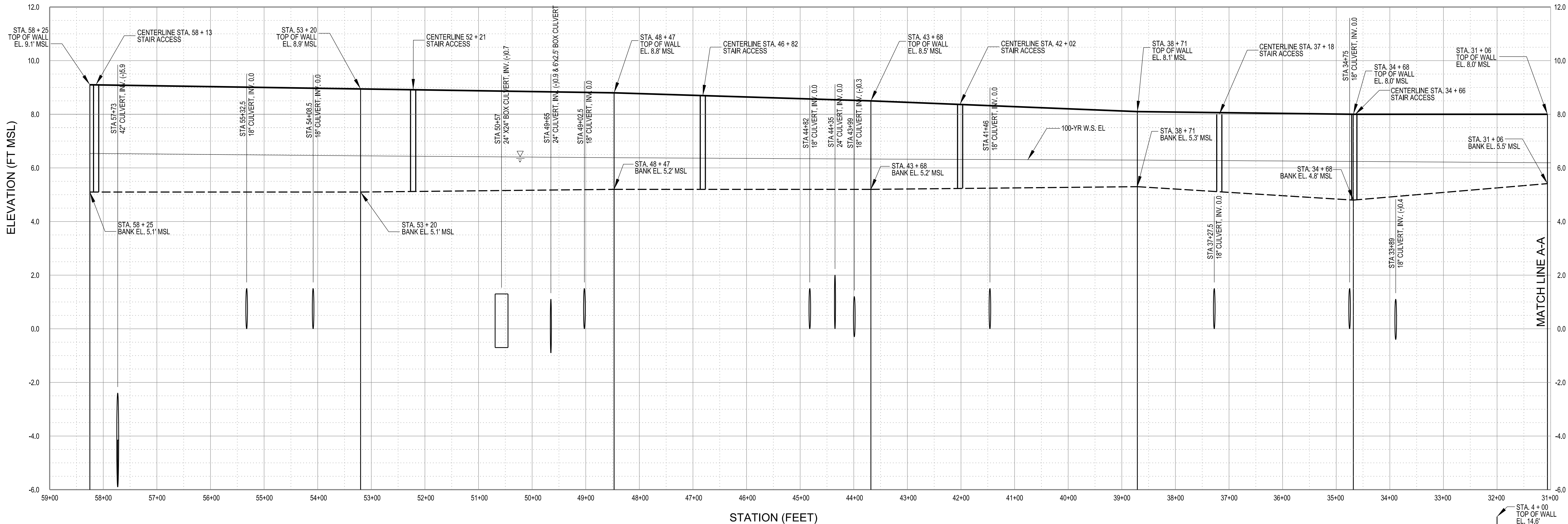
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D

C

B

A



PROFILE

A1 ALA WAI CANAL MIDDLE (ALA2) AND LOWER (ALA1) LEFT BANK FLOODWALLS

SCALE:
HORIZONTAL: 1" = 100'
VERTICAL: 1" = 2'



NOTES:

- SEE DETAIL "B" ON SHEET C-502 FOR ALA WAI CANAL MIDDLE (ALA2) TYPICAL LEFT BANK CONCRETE FLOODWALL SECTION.
- ALA WAI CANAL LOWER (ALA1) IS FROM STATION 23+24 TO STATION 3+70.

ALA WAI CANAL LEFT BANK
STA TO 58+25 TO 25+80

STATION	WALL HEIGHT (FT)	FINISHED WALL ELEVATION (FT MSL)
58 + 25	4.0	9.1
53 + 20	3.8	8.9
48 + 47	3.6	8.8
43 + 68	3.3	8.5
38 + 71	2.8	8.1
34 + 68	3.2	8.0
31 + 06	2.5	8.0
MOCCULLY BRIDGE		
29 + 62	2.5	8.0
27 + 95	2.4	7.9
25 + 80	2.8	7.9

ALA WAI CANAL LEFT BANK
STA TO 23+24 TO 4+00

STATION	WALL HEIGHT (FT)	FINISHED WALL ELEVATION (FT MSL)
23 + 24	2.0	7.9
KALAKAUA BRIDGE		
22 + 32	0.9	7.9
18 + 59	3.2	7.9
14 + 77	3.2	7.9
11 + 15	3.2	7.9
7 + 61	3.2	7.9
4 + 39	2.9	7.9
4 + 00	2.9	7.9



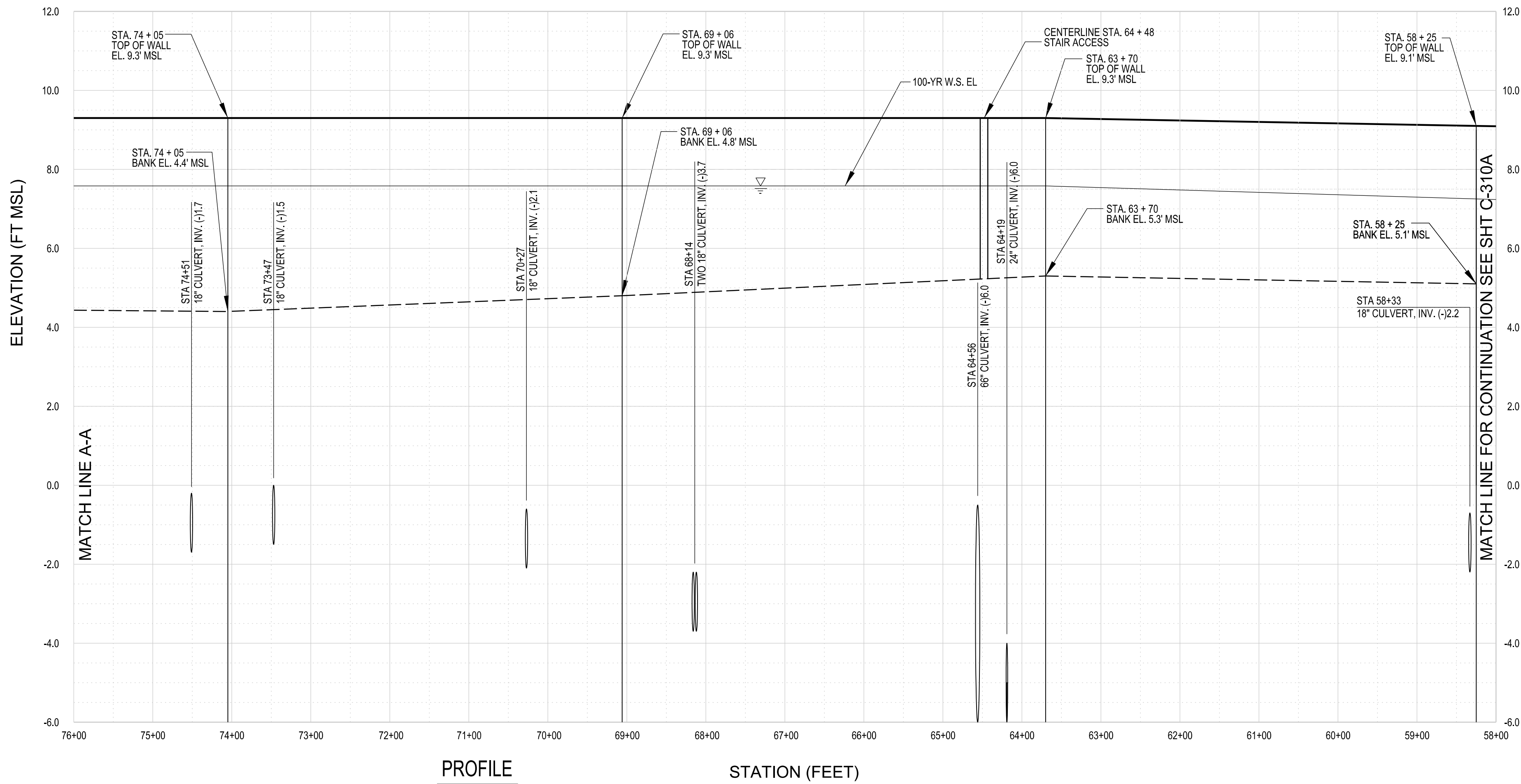
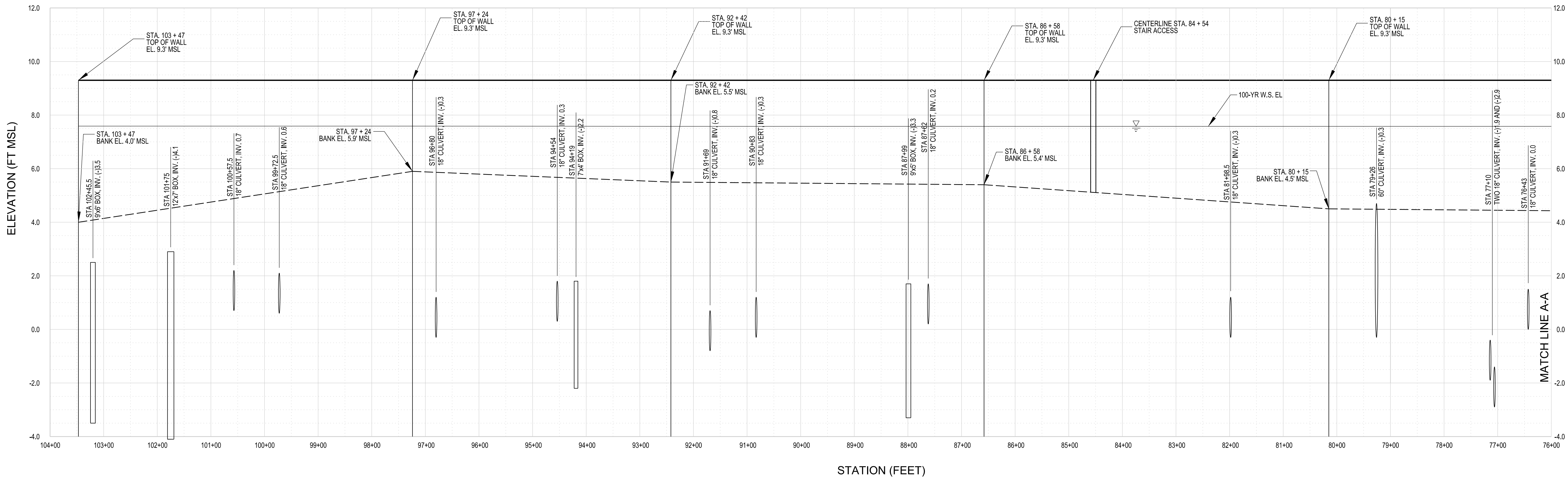
US Army Corps
of Engineers
Honolulu District

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DESIGNED BY: JPH	REVISION: DATE:	SUBMITTED BY: JPH	LOCATION CODE
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ALA WAI CANAL PROJECT
ALA WAI MIDDLE & LOWER LEFT BANK FLOODWALLS
PROFILE AND SECTION

SHEET
IDENTIFICATION
C-310
SHEET 16 OF 31



PROFILE

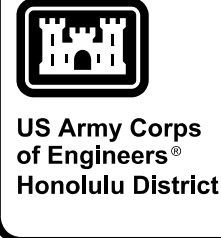
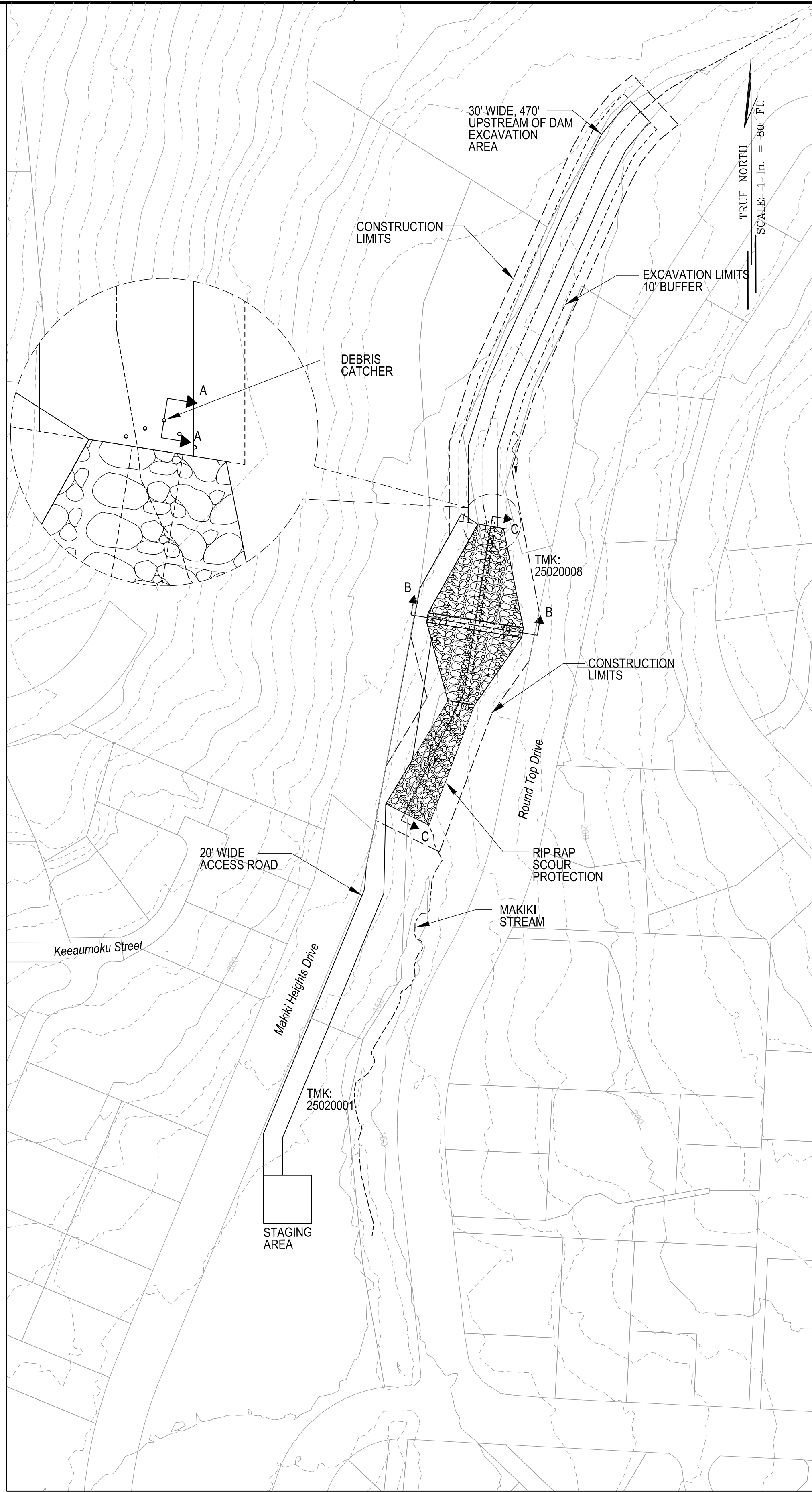
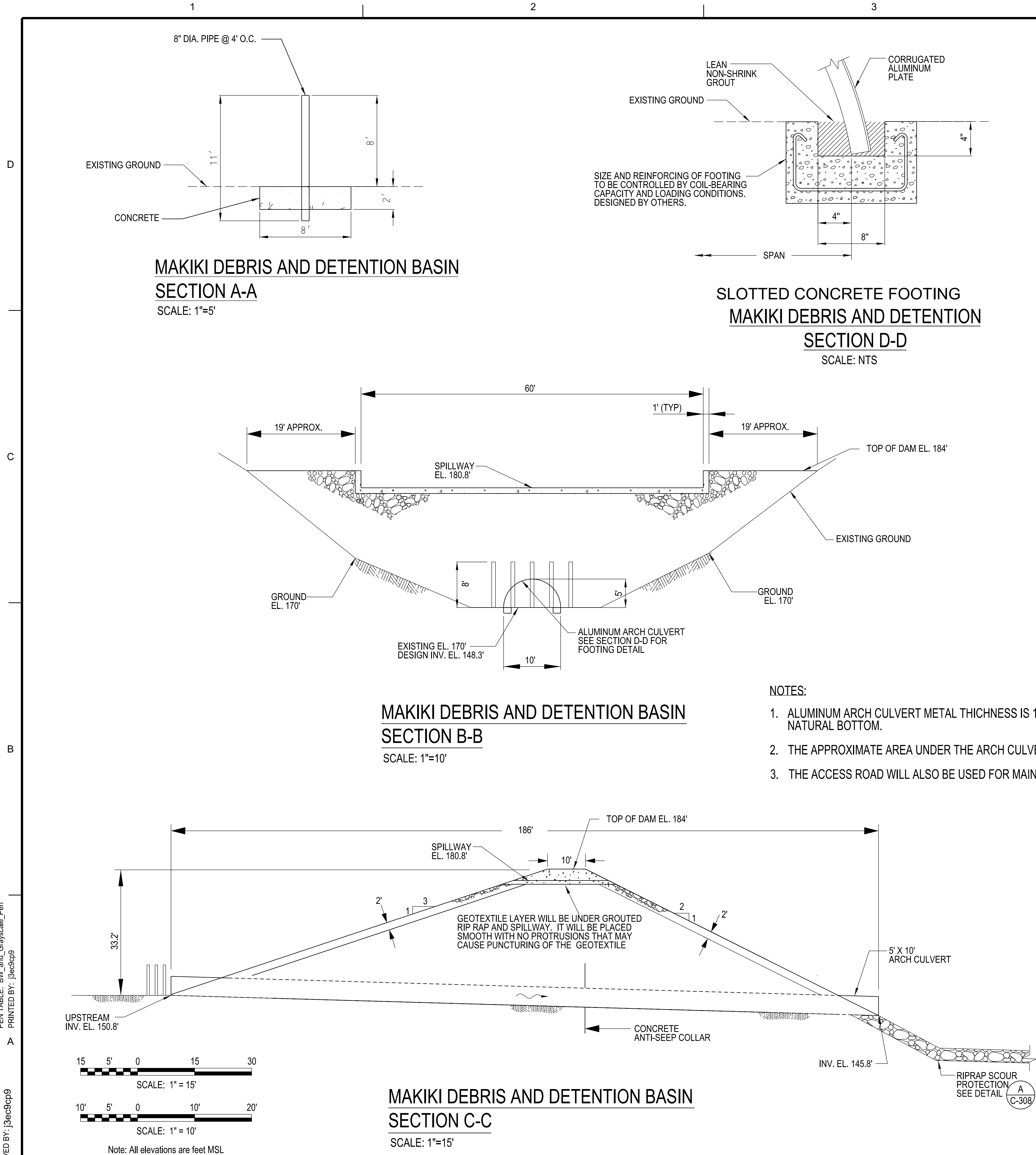
ALA WAI CANAL UPPER (ALA3) LEFT BANK FLOODWALLS

SCALE:
HORIZONTAL: 1" = 100'
VERTICAL: 1" = 2'

STATION	WALL HEIGHT (FT)	FINISHED WALL ELEVATION (FT MSL)
103 + 47	5.3	9.3
97 + 24	3.4	9.3
92 + 42	3.8	9.3
86 + 58	3.9	9.3
80 + 15	4.8	9.3
74 + 05	4.9	9.3
69 + 06	4.5	9.3
63 + 70	4.0	9.3
58 + 25	4.0	9.1



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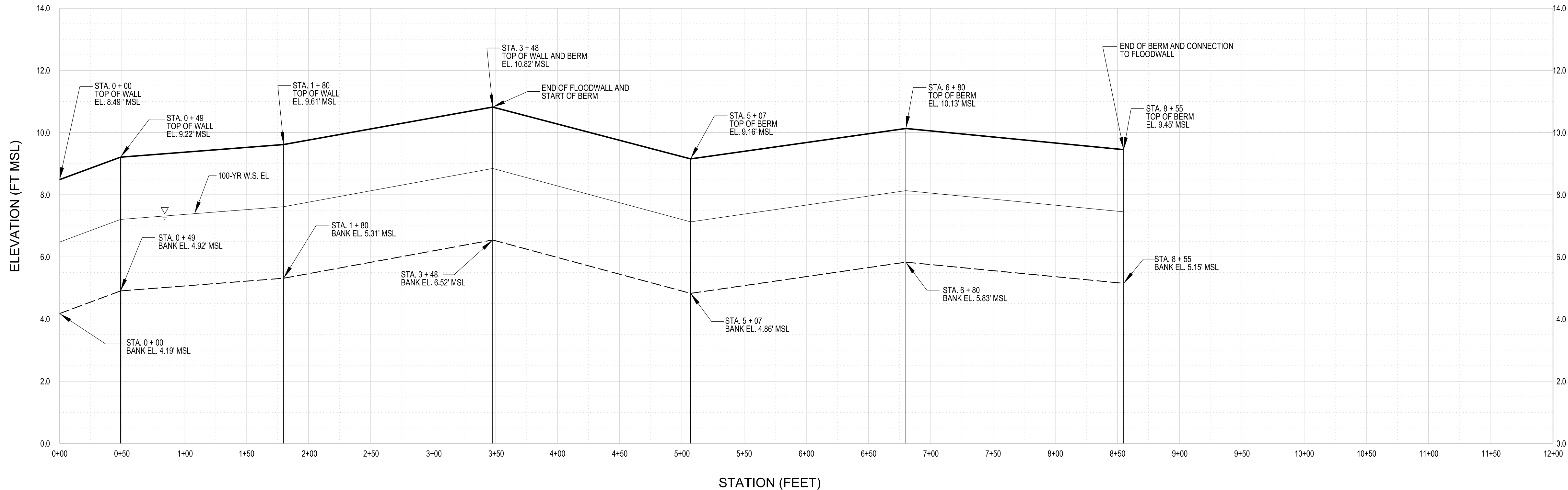
US Army Corps
of Engineers
Honolulu District

REVISION	DATE	DESCRIPTION	APPR.	DATE	APPR.
35% DESIGN					

DESIGNED BY: JPH	REVISION: DATE	CHECKED BY: SOLICIT / CONTRACT NO.	LOCATION CODE	DRAWING NUMBER:
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US ARMY CORPS OF ENGINEERS HONOLULU DISTRICT HONOLULU, HAWAII	ALA WAI CANAL PROJECT MAKIKI DEBRIS AND DETENTION BASIN PLAN AND SECTIONS
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SHEET IDENTIFICATION C-315	SHEET 19 OF 31
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PROFILE

HAUSTEN DITCH LEFT BANK FLOODWALL AND BERM

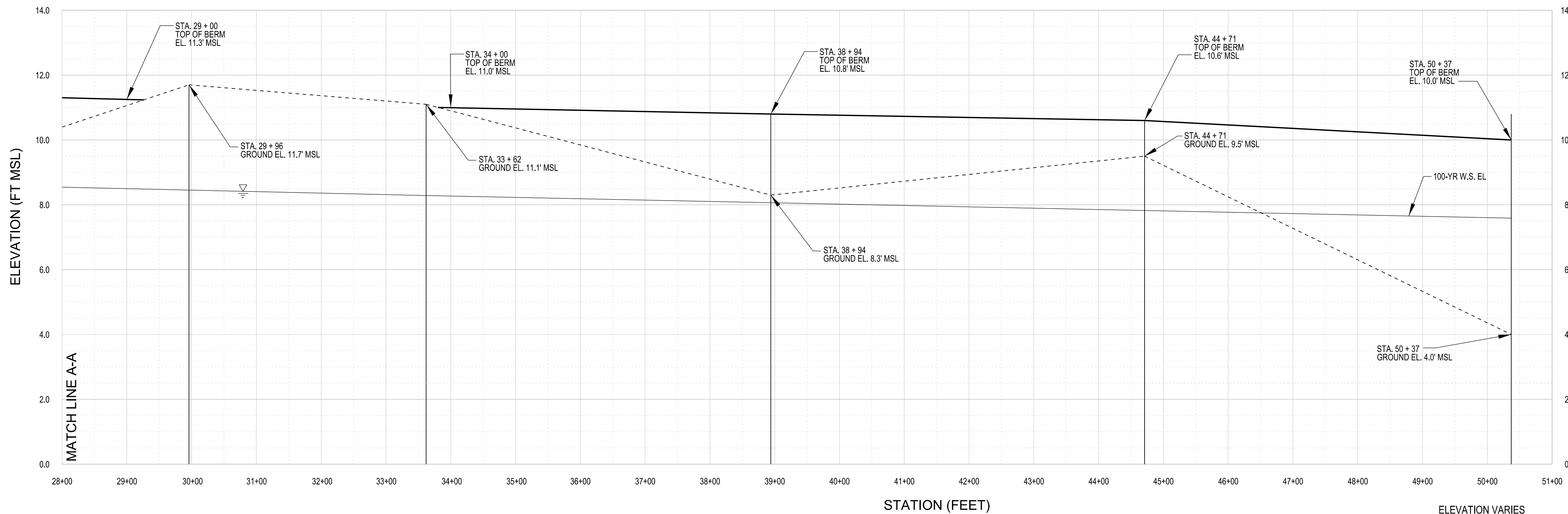
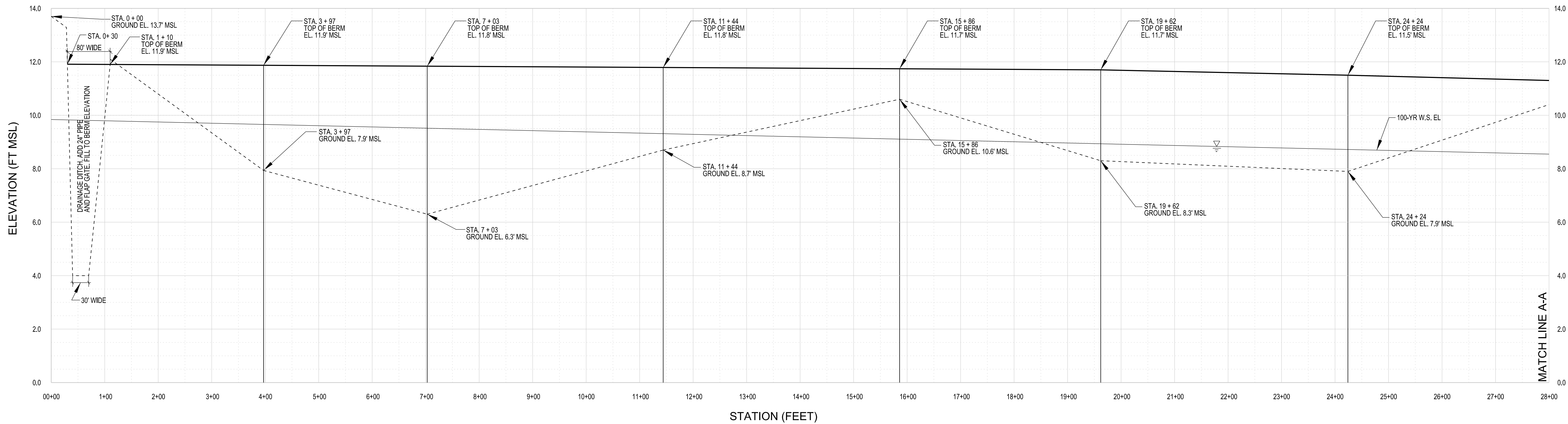
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VERTICAL: 1" = 2'



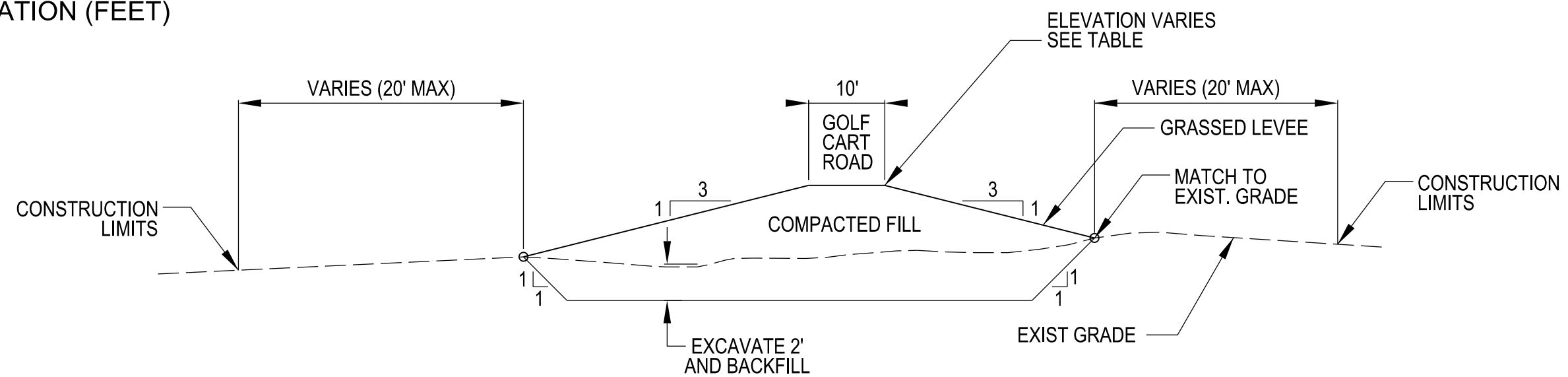
STATION	WALL HEIGHT (FT)	FINISHED WALL ELEVATION (FT MSL)
0 + 00	4.30	8.49
0 + 49	4.30	9.22
1 + 80	4.30	9.61
3 + 48	4.30	10.82
END OF FLOODWALL AND START OF BERM		
3 + 48	4.30	10.82
5 + 07	4.30	9.16
6 + 80	4.30	10.13
8 + 55	4.30	9.45

HAUSTEN DITCH LEFT BANK
FLOODWALL AND BERM
STA TO 0+00 TO 11+65

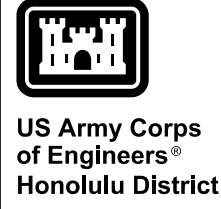
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STATION	WALL HEIGHT (FT)	FINISHED WALL ELEVATION (FT MSL)
0 + 00	-	-
3 + 97	4.0	11.9
7 + 03	5.5	11.8
11 + 44	3.1	11.8
15 + 86	1.1	11.7
19 + 62	3.4	11.7
24 + 24	3.6	11.5
29 + 96	-	-
33 + 62	-	-
38 + 94	2.5	10.8
44 + 71	1.1	10.6
50 + 37	6.0	10.0



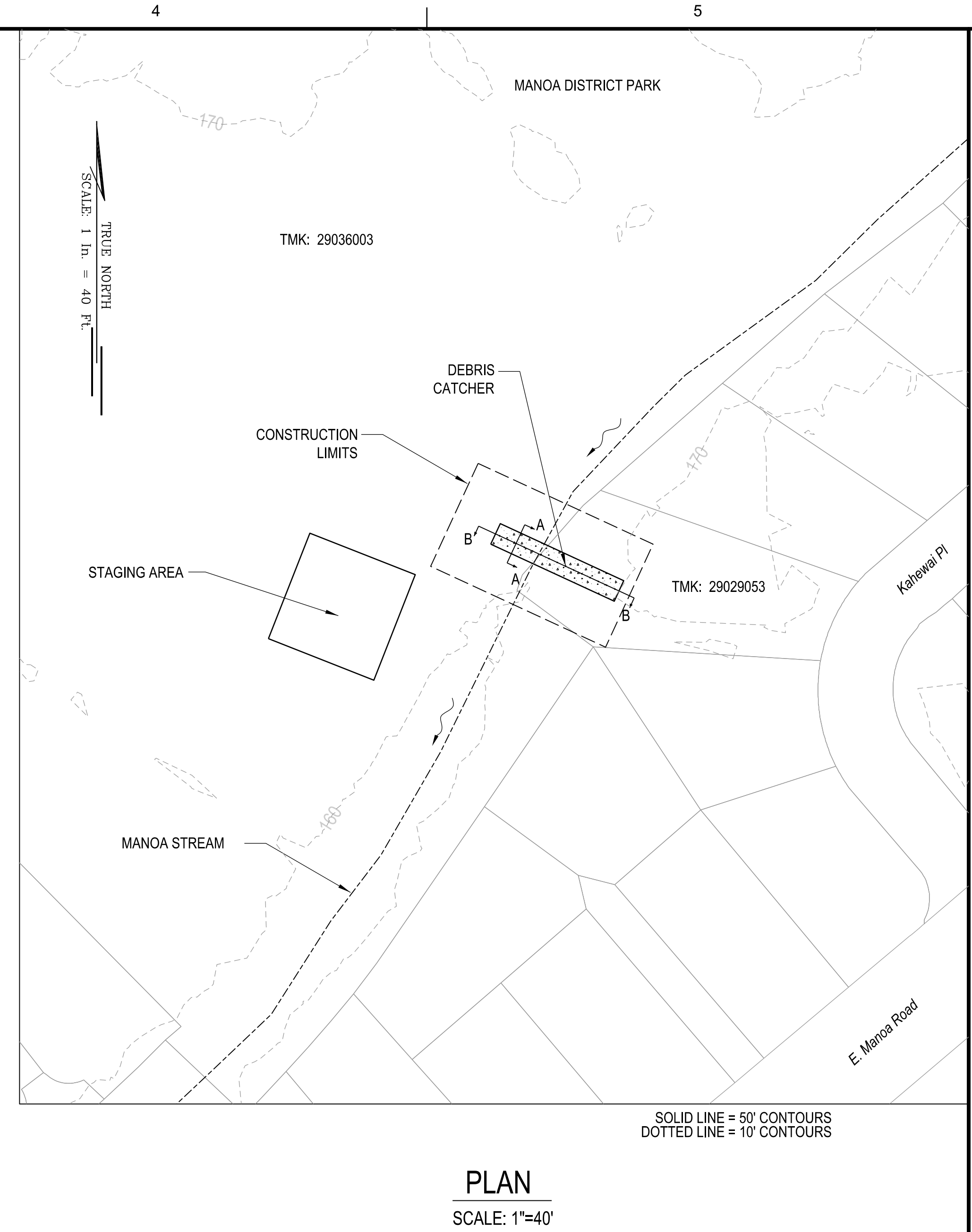
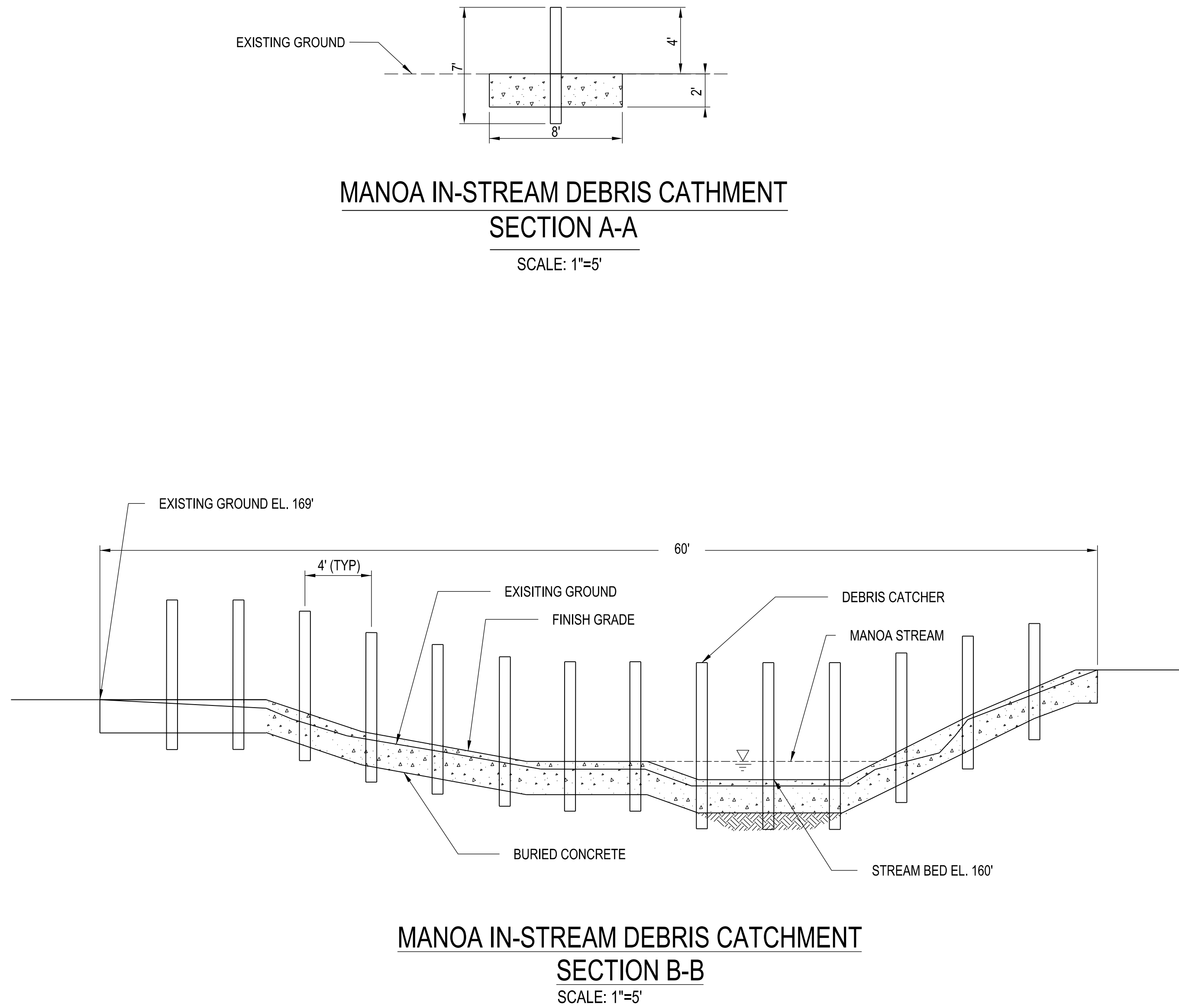
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NOT TO SCALE

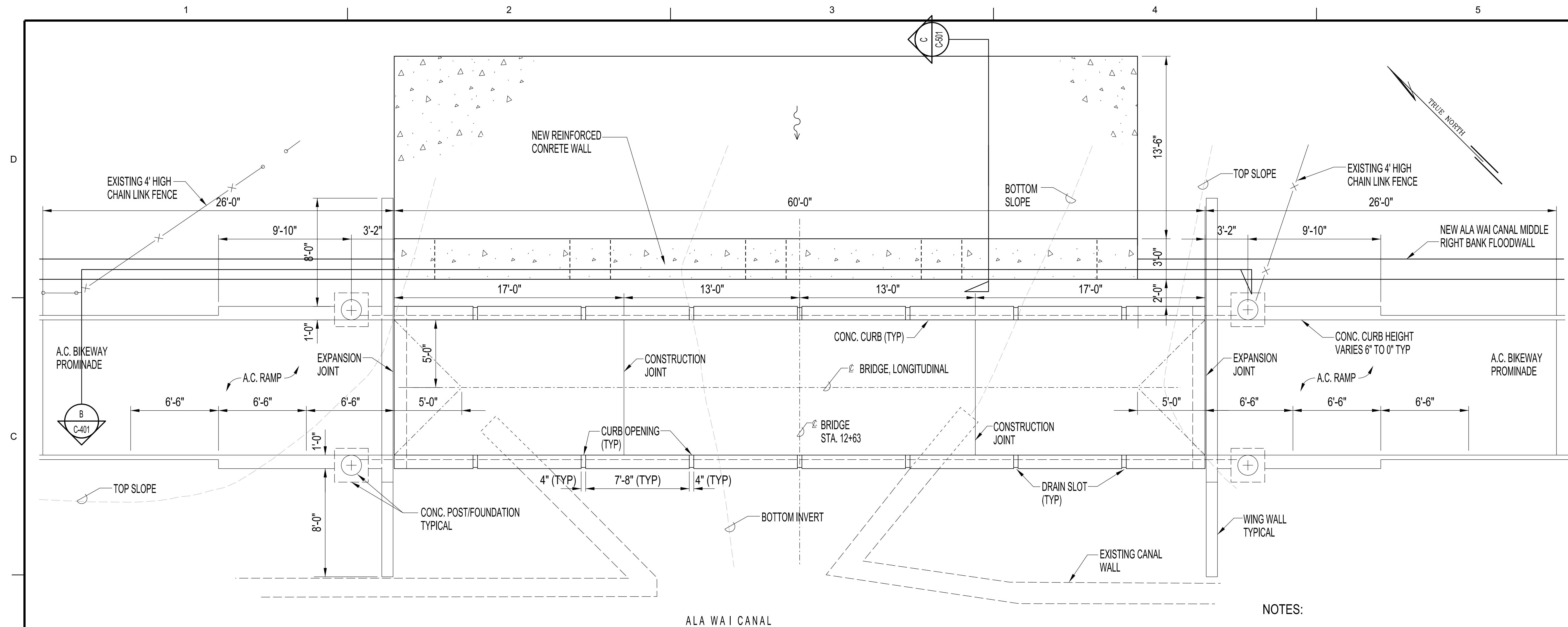
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U.S. ARMY CORPS OF ENGINEERS HONOLULU DISTRICT HONOLULU, HAWAII	DESIGNED BY:	DATE:	REVISION:
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	SUBMITTED BY:	CHECKED BY:	LOCATION CODE
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	DATE:	PLOT NAME:	
	ANALYST:	AVALANCH SOLT. COURSE MULTIPURPOSE DETE	

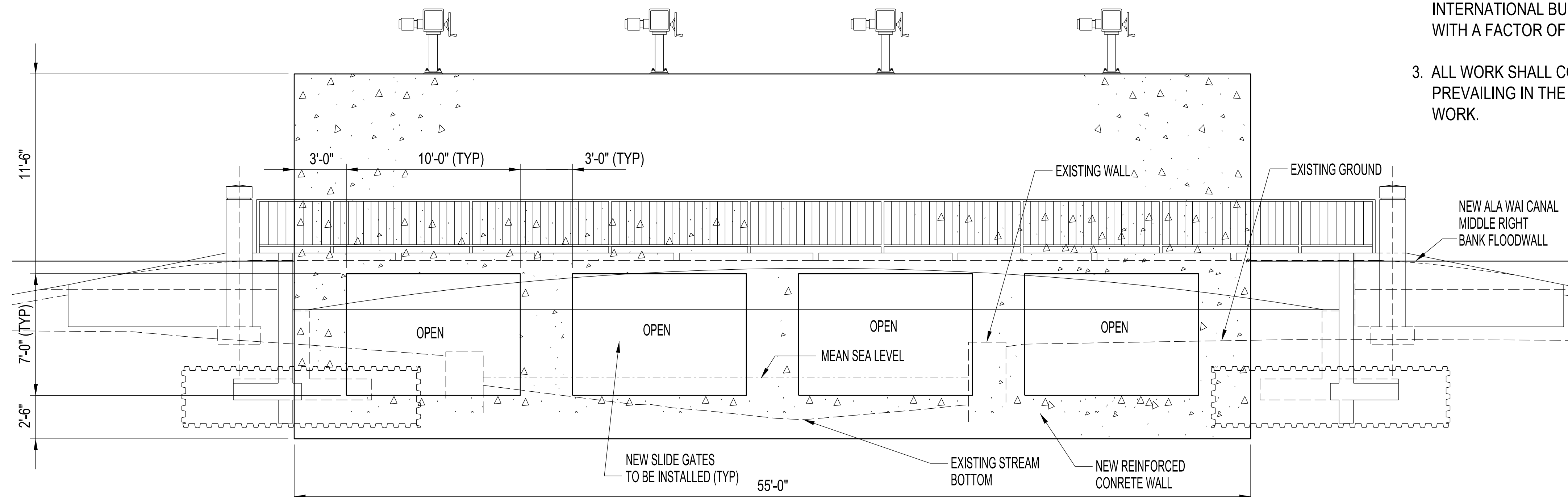
ALA WAI CANAL PROJECT	ALA WAI GOLF COURSE LEVEE PROFILE AND SECTION
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SHEET
IDENTIFICATION
C-317
SHEET 21 OF 31

[illegible]



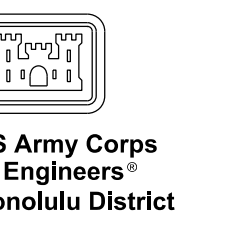
PLAN
SCALE: 1/4"=1'



B ELEVATION
SCALE: 1/4"=1'

NOTES:

1. SEE SHEET C-501 FOR THE SLIDE GATE DETAIL.
2. THE NEW CONCRETE WALL SHALL CONFORM TO THE 2012 INTERNATIONAL BUILDING CODE (IBC) AND EM 1110-2-2502 WITH A FACTOR OF SAFETY OF AT LEAST 1.5.
3. ALL WORK SHALL CONFORM TO THE BEST PRACTICE PREVAILING IN THE VARIOUS TRADES COMPRISING THE WORK.



35% DESIGN

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US ARMY CORPS OF ENGINEERS HONOLULU DISTRICT HONOLULU, HAWAII	DESIGNED BY:	DATE:	REVISION:
	DRAWN BY:	CHECKED BY:	SOLICIT/ CONTRACT NO.:
	SUBMITTED BY:	LOCATION CODE	
	PLOT SCALE:	PLOT DATE: 6/30/2016	DRAWING NUMBER:
SIZE: ANSI D		FILE NAME: HAUSTEN BRIDGE PLAN & SECTIONS	

HAUSTEN BRIDGE CONCRETE WALL
PLAN, SECTION AND ELEVATION

SHEET
IDENTIFICATION
C-401
SHEET 23 OF 31

STRUCTURAL NOTES:

1. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS AND REPORT ANY DISCREPANCIES IN WRITING TO THE CONTRACTING OFFICER BEFORE COMMENCING WORK.
2. DETAILS SHOWN ON THE DRAWINGS SHALL BE TYPICAL FOR ALL SIMILAR CONDITIONS.

CONSTRUCTION NOTES:

1. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR METHODS OF CONSTRUCTION, WORKMANSHIP, AND JOB SAFETY INCLUDING FALSEWORK, BRACING, AND OTHER TEMPORARY ITEMS USED FOR THE CONSTRUCTION OF THIS PROJECT.
2. THE CONTRACTOR SHALL NOTIFY THE CONTRACTING OFFICER AT LEAST 48 HOURS IN ADVANCE FOR INSPECTION OF EXCAVATIONS AND ALL CONCRETE POURS.
3. CHAMFER ALL EXPOSED EDGES 1/2" UNLESS OTHERWISE NOTED.
4. THE LOCATION OF EMBEDDED ITEMS SHALL BE COORDINATED WITH OTHER TRADES BEFORE CONCRETE POURS.

CONCRETE NOTES:

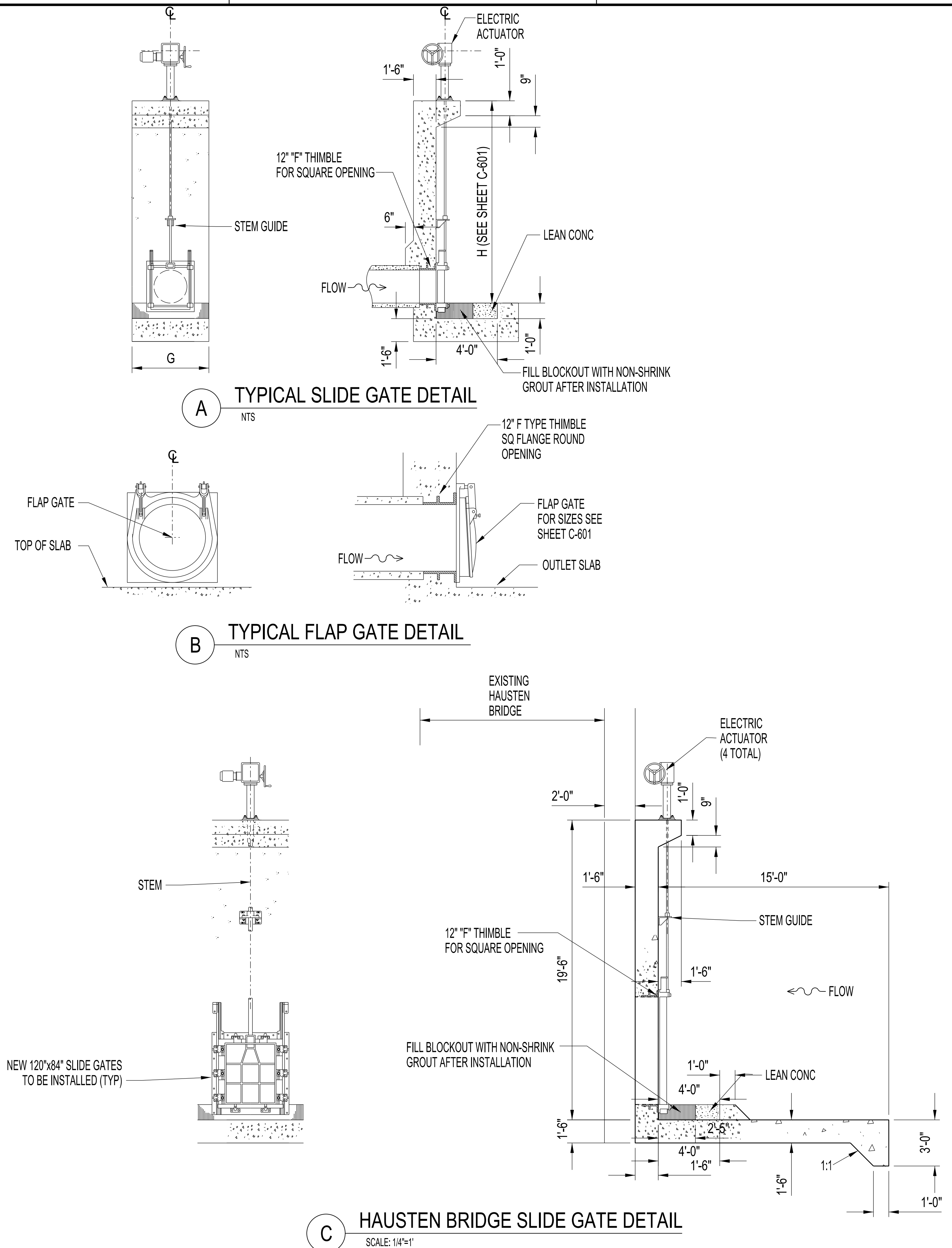
1. UNLESS OTHERWISE SHOWN, CONSTRUCTION JOINTS SHALL BE LOCATED BY THE CONTRACTOR SUBJECT TO APPROVAL BY THE CONTRACTING OFFICER. THEY SHALL BE SO LOCATED AS TO LEAST IMPAIR THE STRENGTH OF THE STRUCTURE AND TO MINIMIZE SHRINKAGE STRESSES. PROVIDE DOWELS AS DIRECTED AND THOROUGHLY CLEAN AND ROUGHEN SURFACES BEFORE PROCEEDING WITH THE NEXT POUR.

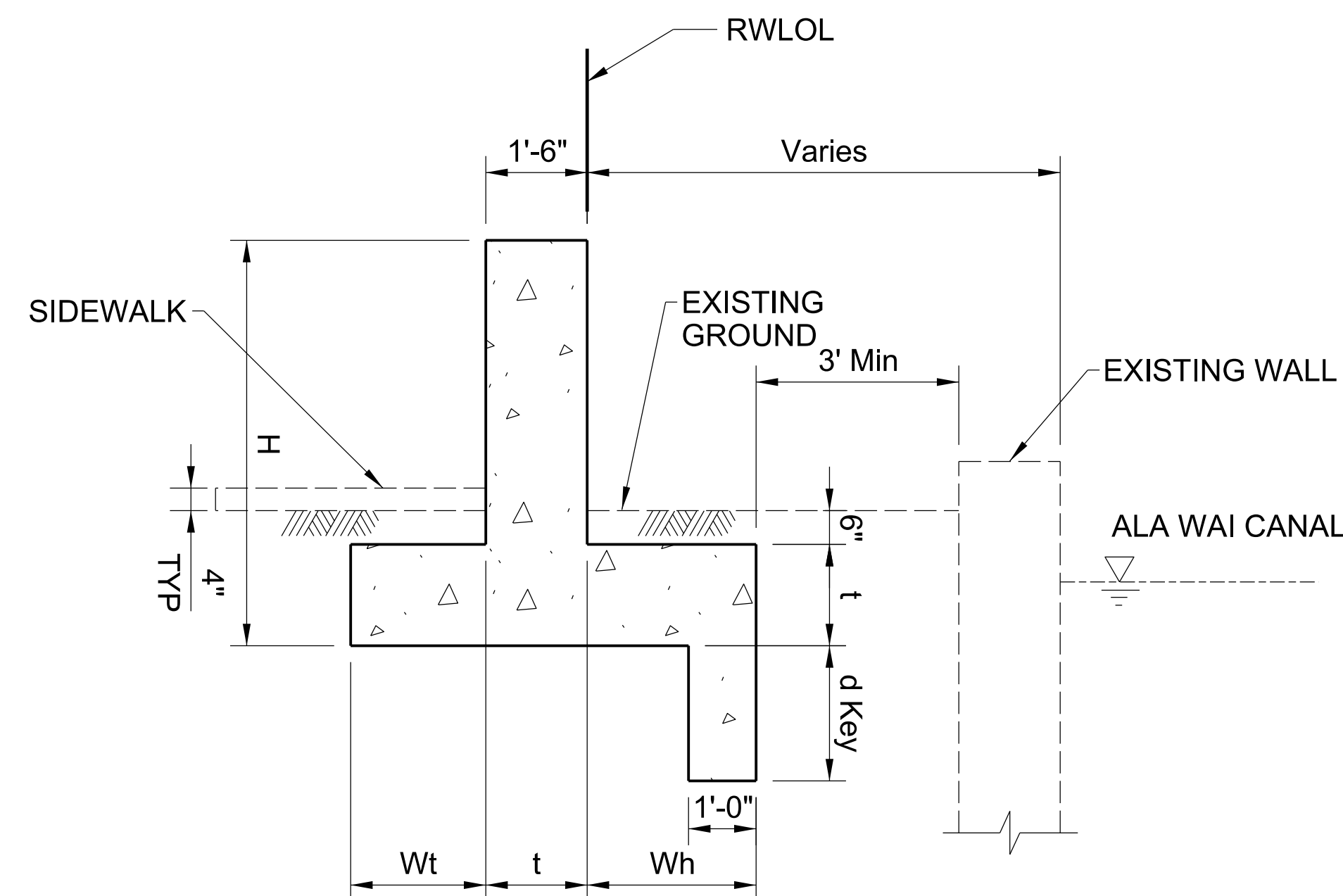
REINFORCING STEEL NOTES:

1. DOWELS SHALL BE THE SAME SIZE AND SPACING AND SHALL BE IN THE SAME PLANE AS THE BARS TO WHICH THEY ARE SPLICED UNLESS OTHERWISE SHOWN.
2. MINIMUM CONCRETE COVER:

CONCRETE DEPOSITED ON OR AGAINST EARTH.....3"

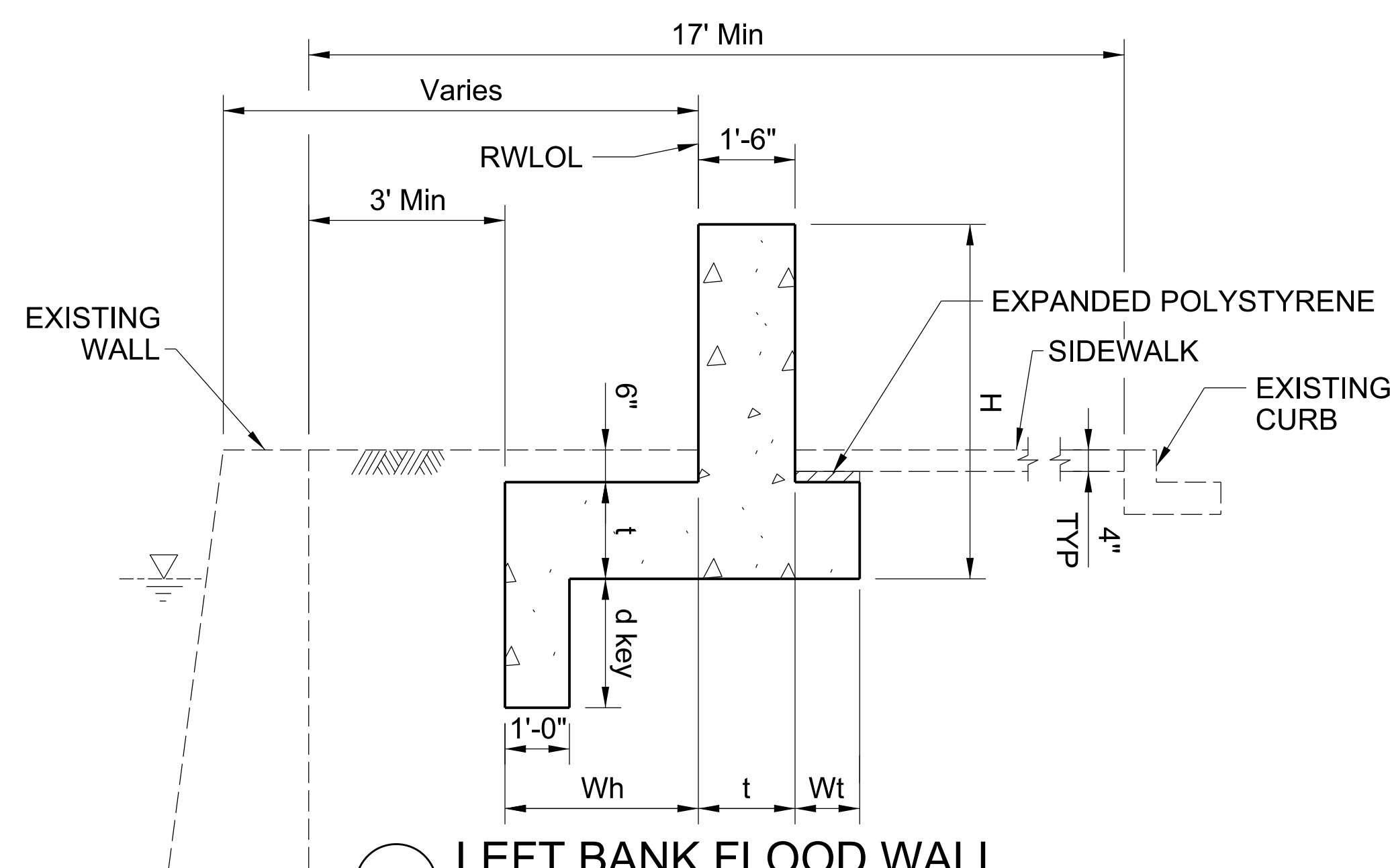
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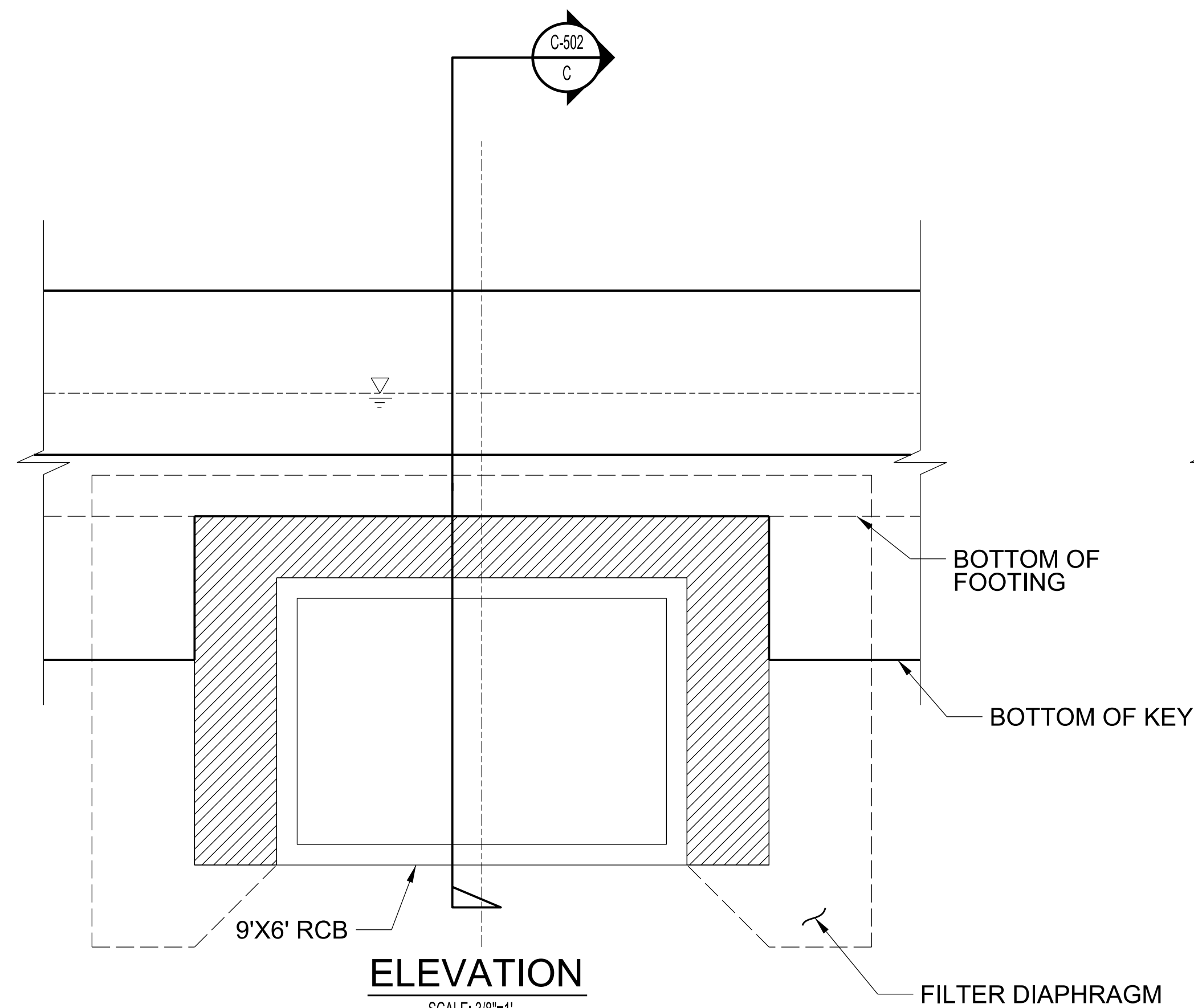
A RIGHT BANK FLOOD WALL
SCALE: 1/2"=1'

LOCATION	H max	d key	t	Wt	Wh
4+00 TO 20+00 RIGHT	5.1	2	1.5	1	2.5
20+00 TO 31+00 RIGHT	4	1	1.5	1	1
31+00 TO 40+00 RIGHT	6	2	1.5	2.5	2.5
40+00 TO 59+00 RIGHT	7.4	3	1.5	3.5	4



LEFT BANK FLOOD WALL
SCALE: 1/2"=1'

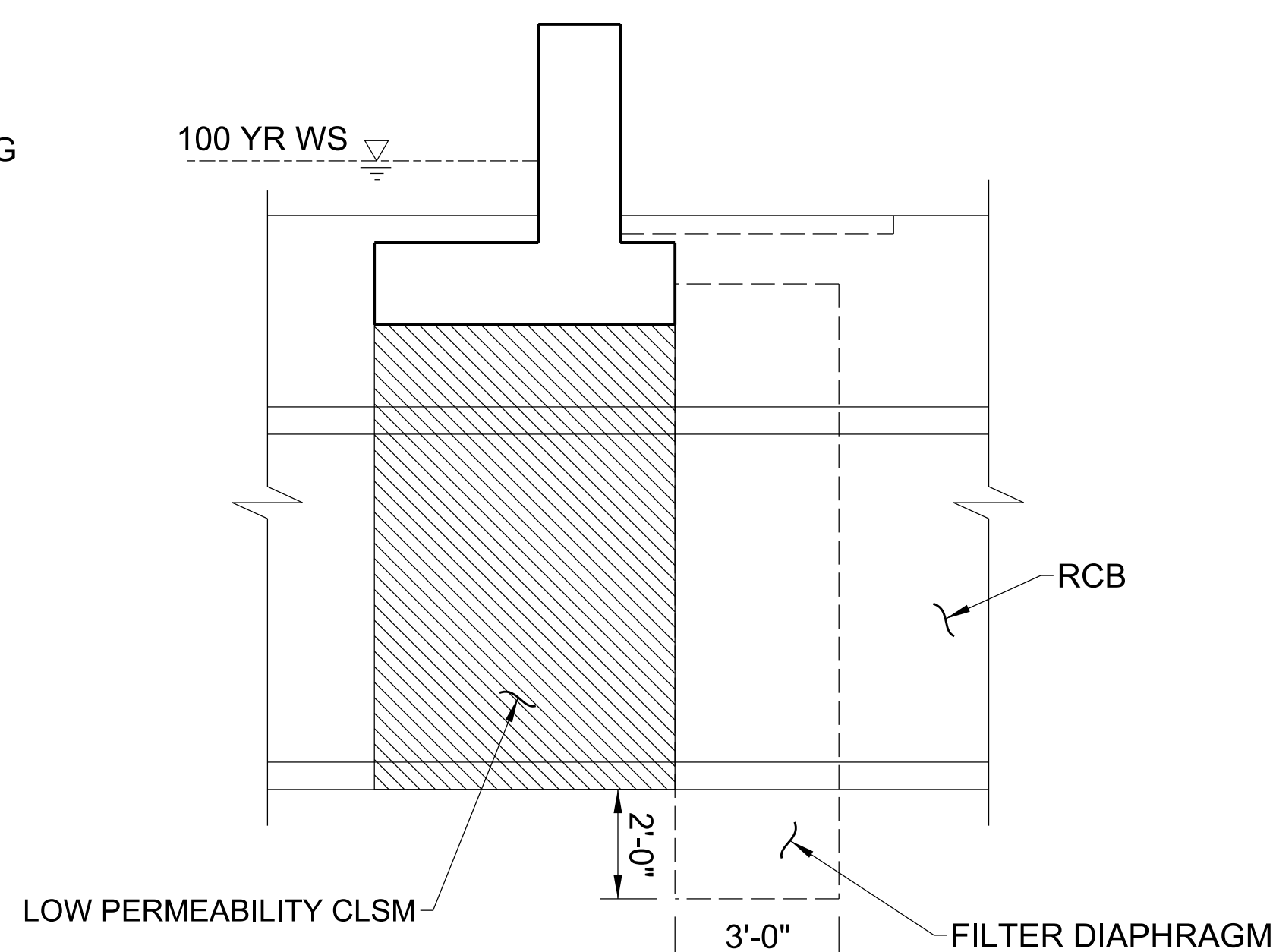
LOCATION	H max	d key	t	W/t	Wh
4+00 TO 20+00 LEFT	5.2	2	1.5	1	2.5
20+00 to 31+00 LEFT	4	1	1.5	1	1
31+00 to 42+00 LEFT	6	2	1.5	2.5	2.5
42+00 to 67+00 LEFT	7	3	1.5	3	3.5
67+00 to 84+00 LEFT	7.6	3	1.5	3.5	4
84+00 to 101+40 LEFT	7	3	1.5	3	3.5
101+40 to 103+47 LEFT	8	3	1.5	4	4.5



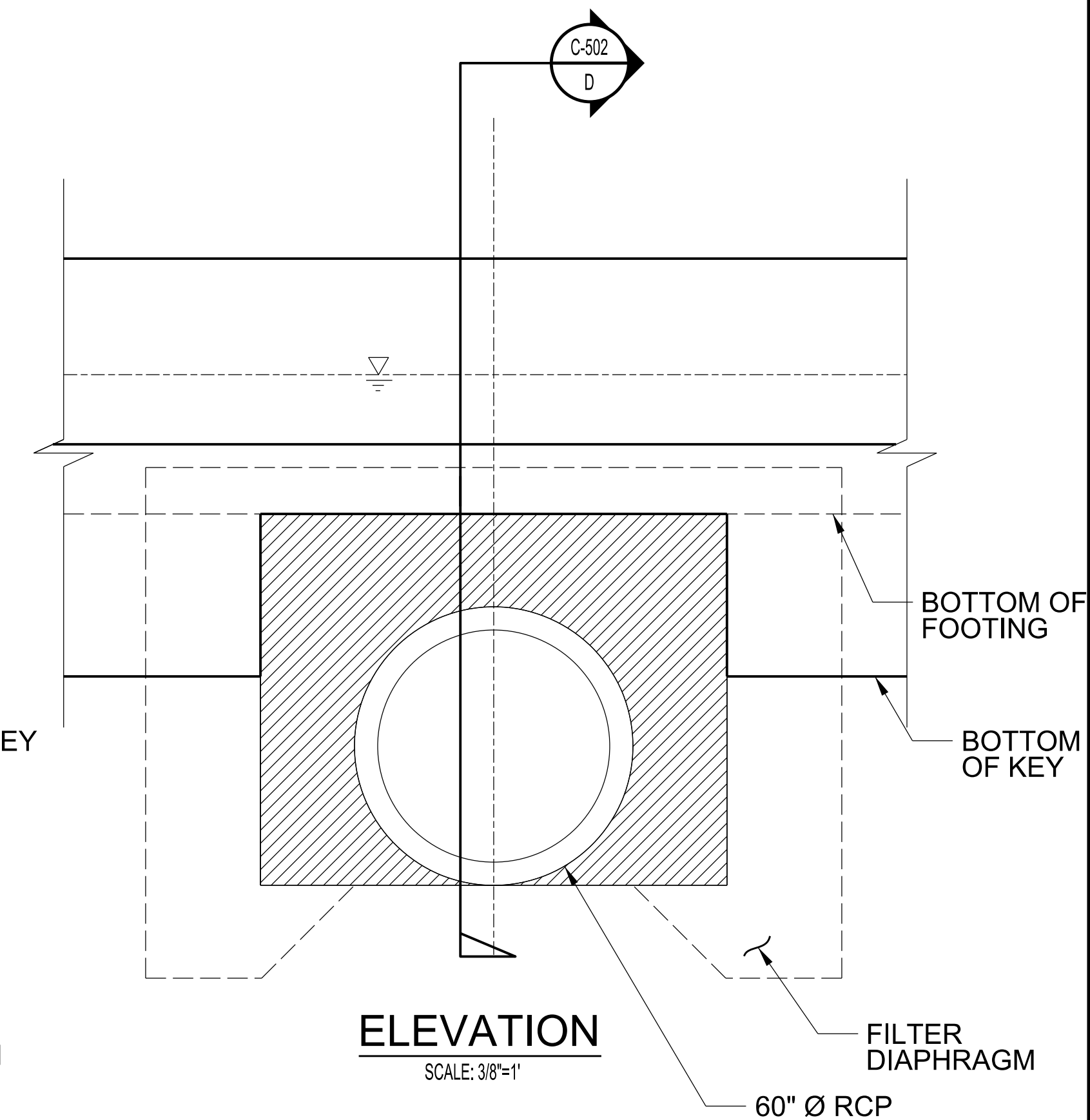
ELEVATION
SCALE: 3/8"=1'

NOTE:

1. FILTER DIAPHRAGM CONSISTS OF TRENCH WITH IMPORTED SAND TO PREVENT PIPING AT UTILITY PENETRATIONS.

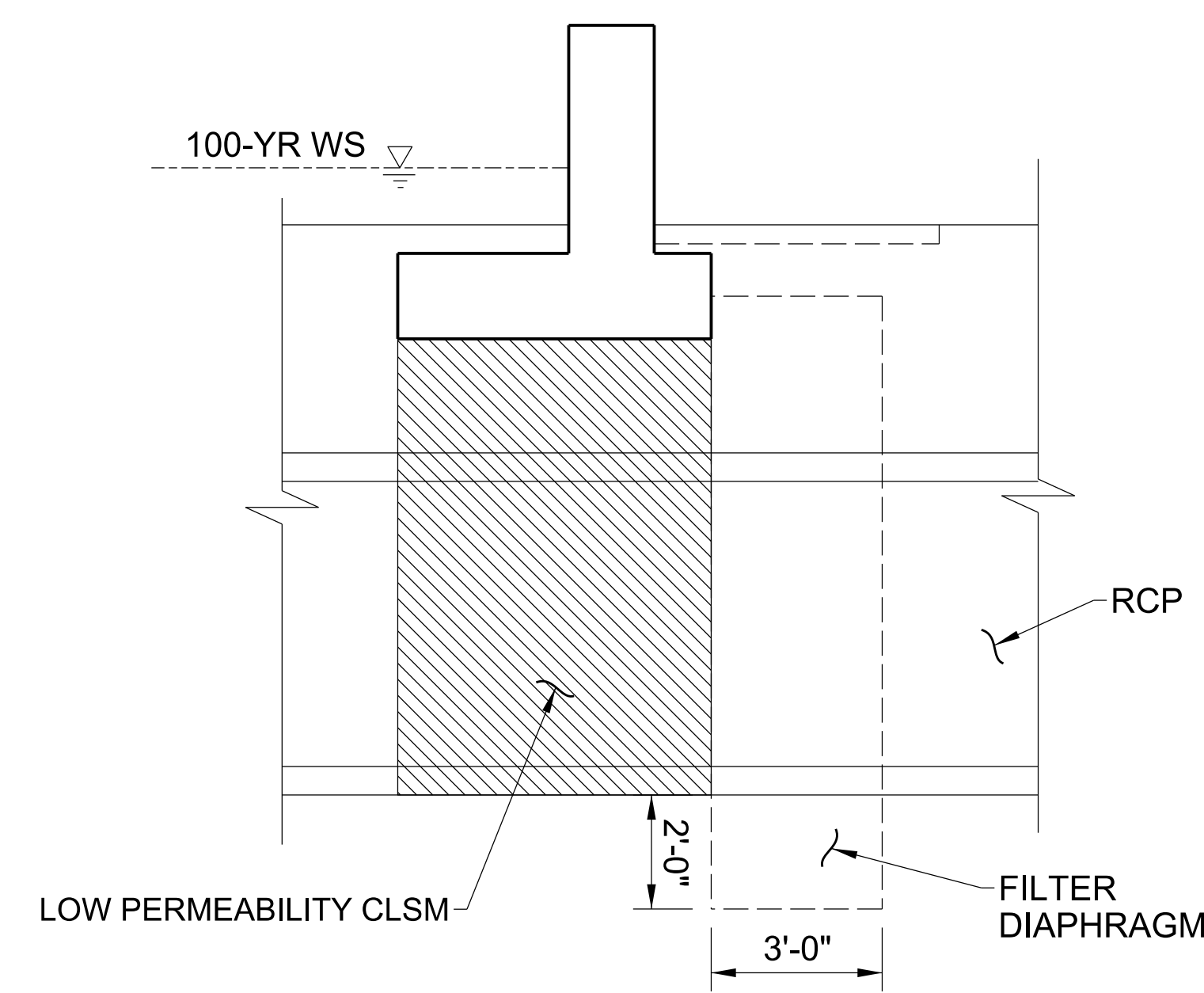


C SECTION
SCALE: 3/8"=1'
FLOOD WALL OVER BOX CULVERT (TYP)



ELEVATION
SCALE: 3/8"=1'

— FILTER
DIAPHRAGM
RCP



SECTION
SCALE: 3/8"=1'
FLOOD WALL OVER PIPE CULVERT (TYP)



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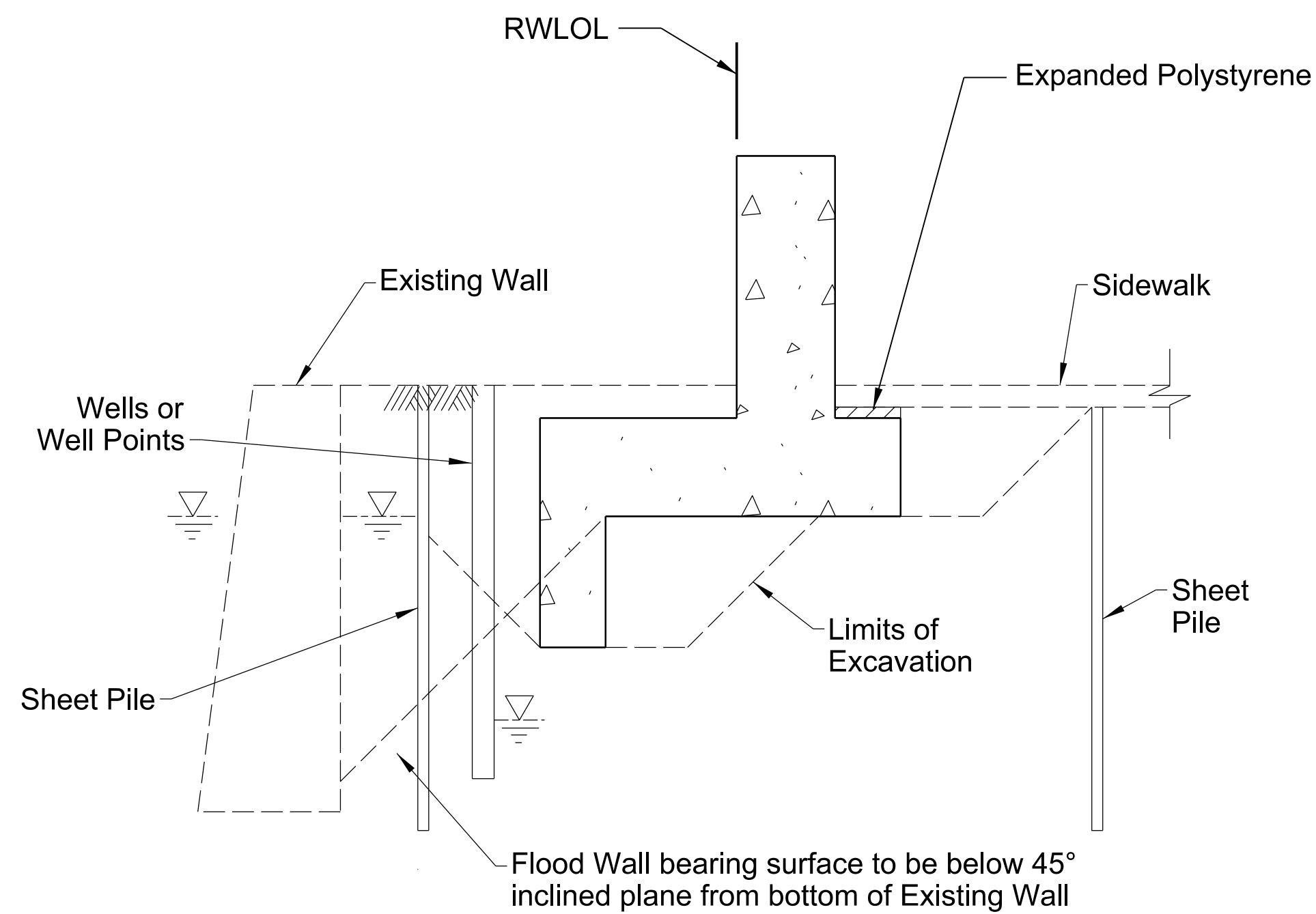
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US ARMY CORPS OF ENGINEERS HONOLULU DISTRICT HONOLULU, HAWAII	REMOVED BY:	DATE:	REVISION:
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	P. WALKER		
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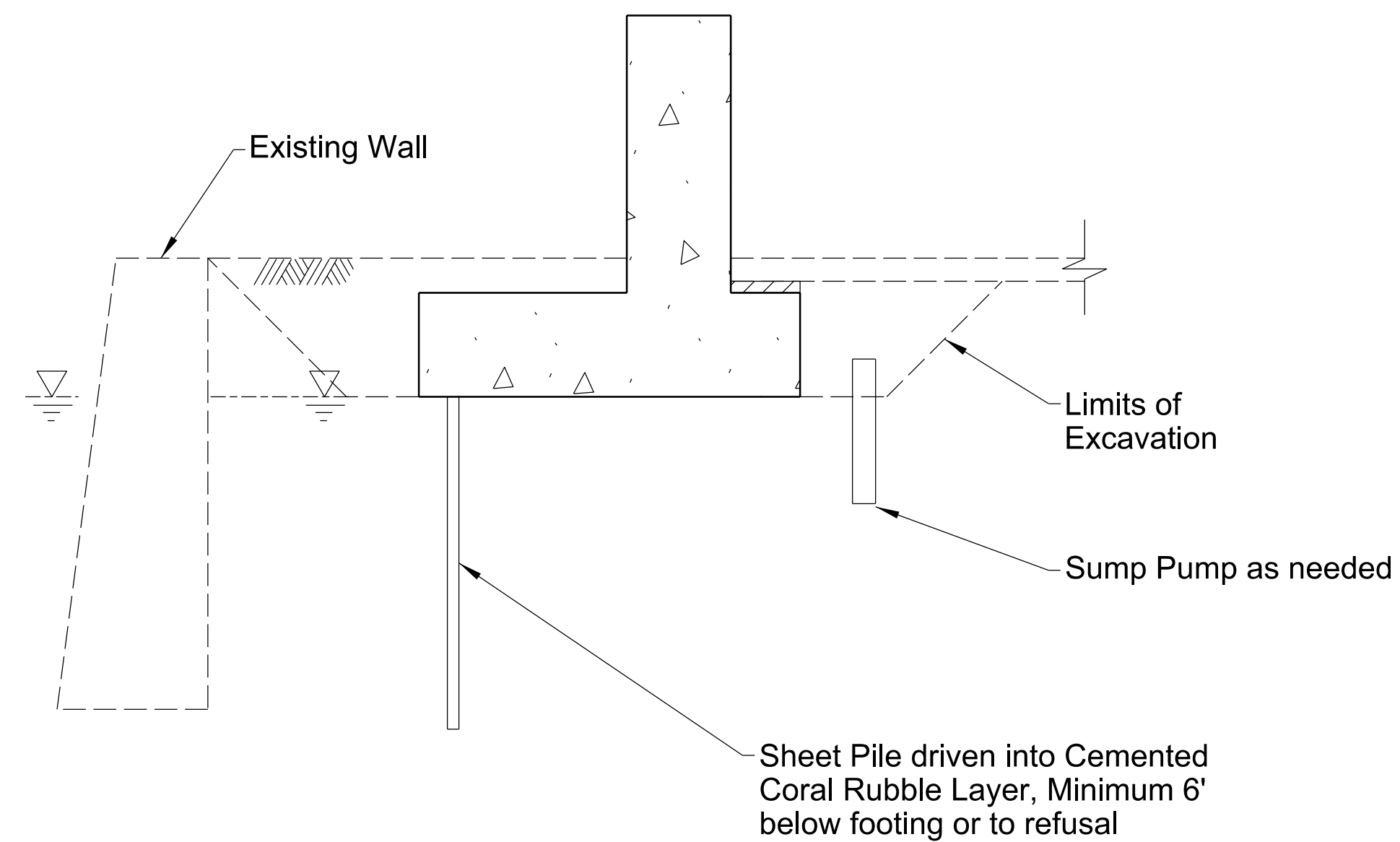
ALA WAI CANAL PROJECT

FLOOD WALL
DETAIL S

SHEET
IDENTIFICATION
C-502
SHEET 25 OF 31



OPTION 1



OPTION 2

CONCEPTUAL DEWATERING REQUIREMENTS FOR LEFT BANK FLOOD WALL

SCALE: 1/2"=1'

NOTES:

1. Native soil is subject to caving, and groundwater table must be lowered below the excavation to allow dry construction.
2. Dewatering to construct a concrete key will likely require a positive groundwater cutoff system in addition to pumping from wells or well-points installed inside the positive groundwater cutoff limits.
3. At culvert penetrations, dewatering with more closely spaced deep well systems will be required, because sheet piles cannot be used.



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[illegible]

		DRAWING NO:	SHEET NO:	SHEET NAME:	PROJECT NAME:	FLOOD WALL DESIGN	ANSI D	AS SHOWN	PLOT SCALE:	PLOT DATE:	SUBMITTED BY:	CHECKED BY:	DRAWN BY:	P WALKER	SOLICIT/ CONTRACT NO.:	LOCATION CODE	DRAWING NUMBER:

ALA WAI CANAL PROJECT I

DETAILS

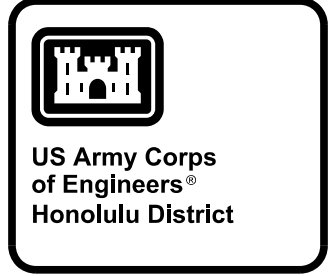
SHEET
IDENTIFICATION
C-503
SHEET 26 OF 31

SCHEDULE OF SLIDE GATES ALONG THE ALA WAI CANAL

[illegible]

GENERAL NOTES:

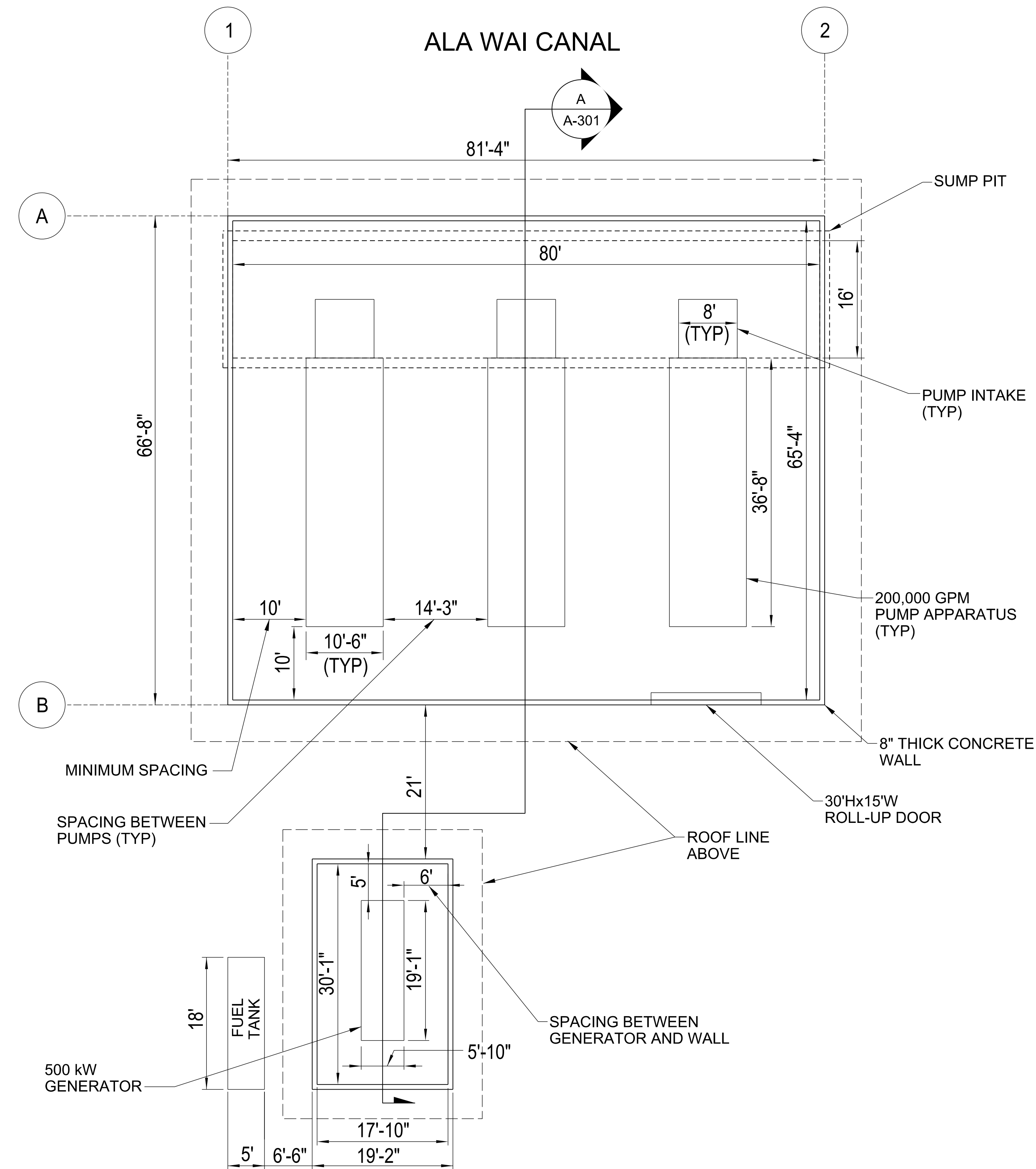
1. SEE SHEET C-501 FOR THE SLIDE GATE DETAIL.

[illegible]

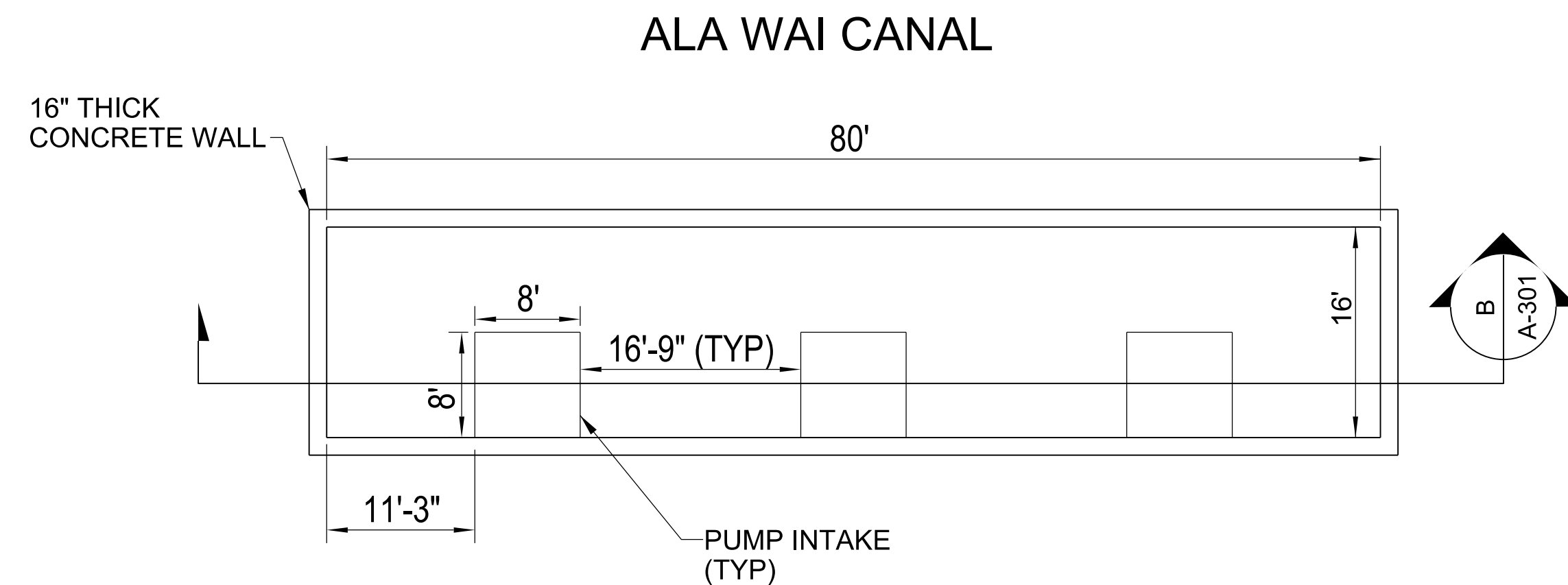
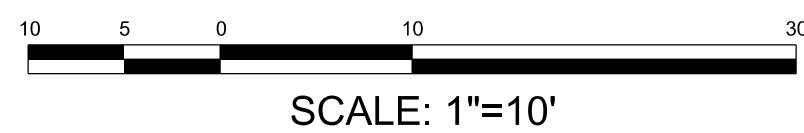
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	DRAWN BY:	CHECKED BY:	SOLICIT / CONTRACT NO.:
	SUBMITTED BY:		LOCATION CODE
	PILOT SCALE:	PILOT DATE:	DRAWING NUMBER:
	SIZE:	FILE NAME:	
ANSI D			SCHEDULE OF SLIDE GATES

ALA WAI WATERSHED PROJECT	SCHEDULE OF SLIDE GATES
---------------------------	-------------------------

SHEET
IDENTIFICATION
C-601
SHEET 27 OF 31



PUMP STATION 1 - FLOOR PLAN



SUMP PIT - FLOOR PLAN

SCALE: 1"=10'

- TYPICAL NOTES FOR ALL PUMP STATIONS:

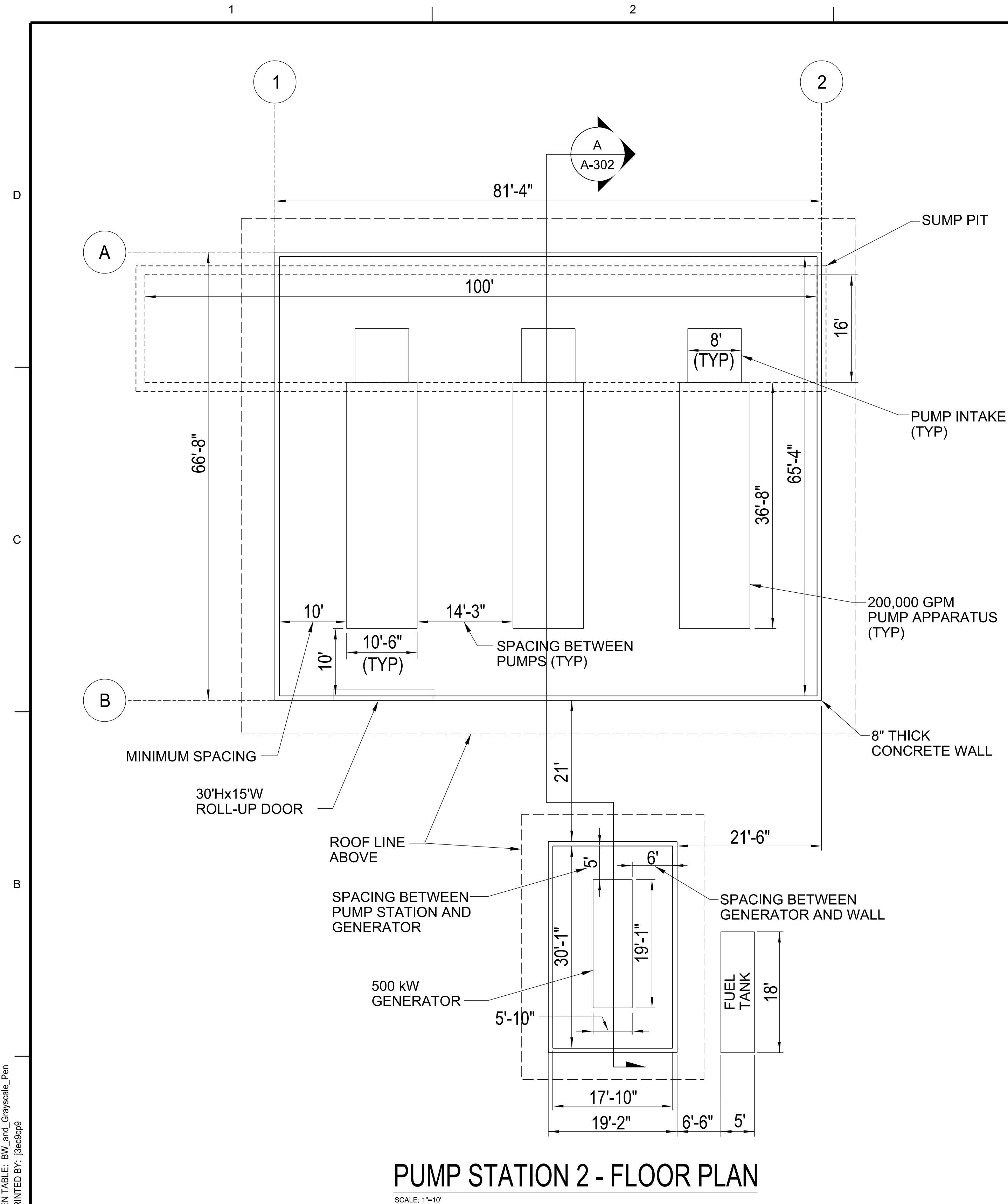
1. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE CODES AND BUILDING REGULATIONS HAVING JURISDICTION OVER THIS PROJECT.
2. THE NEW CONCRETE WALL SHALL CONFORM TO THE 2012 INTERNATIONAL BUILDING CODE (IBC) AND EM 1110-2-3104.
3. ALL WORK SHALL CONFORM TO THE BEST PRACTICE PREVAILING IN THE VARIOUS TRADES COMPRISING THE WORK.

[illegible]

US ARMY CORPS OF ENGINEERS HONOLULU DISTRICT HONOLULU, HAWAII	APPROVED BY:		DATE:	REVISION:
	DRAWN BY:	CHECKED BY:	SOLICIT/ CONTRACT NO.:	
	SUBMITTED BY:	LOCATION CODE		
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	SIZE:	8/20/98		
	FILE NAME:			
	ANSI D	PAPER STANDARD, PLAN		

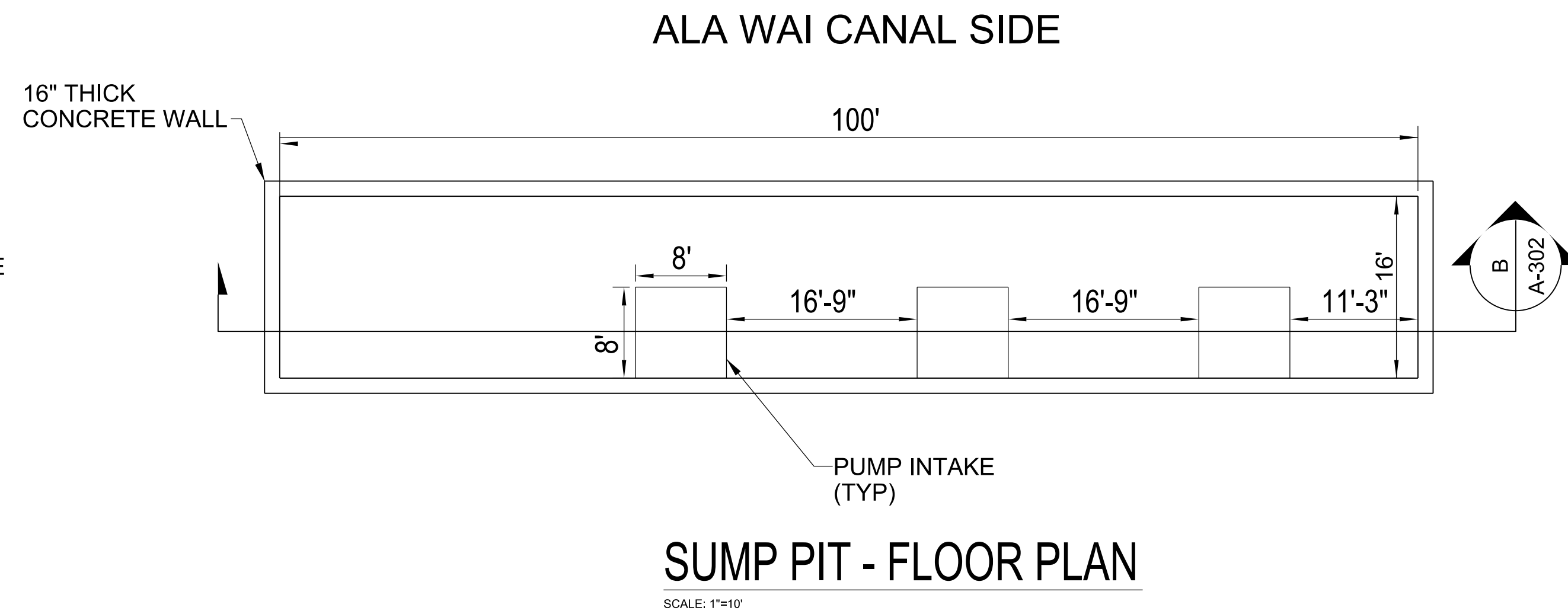
ALA WAI CANAL PROJECT	PUMP STATION 1 - FLOOR PLAN
-----------------------	-----------------------------

SHEET
IDENTIFICATION
A-101
SHEET 28 OF 31



PUMP STATION 2 - FLOOR PLAN

SCALE: 1"=10'



SUMP PIT - FLOOR PLAN

SCALE: 1"=10'

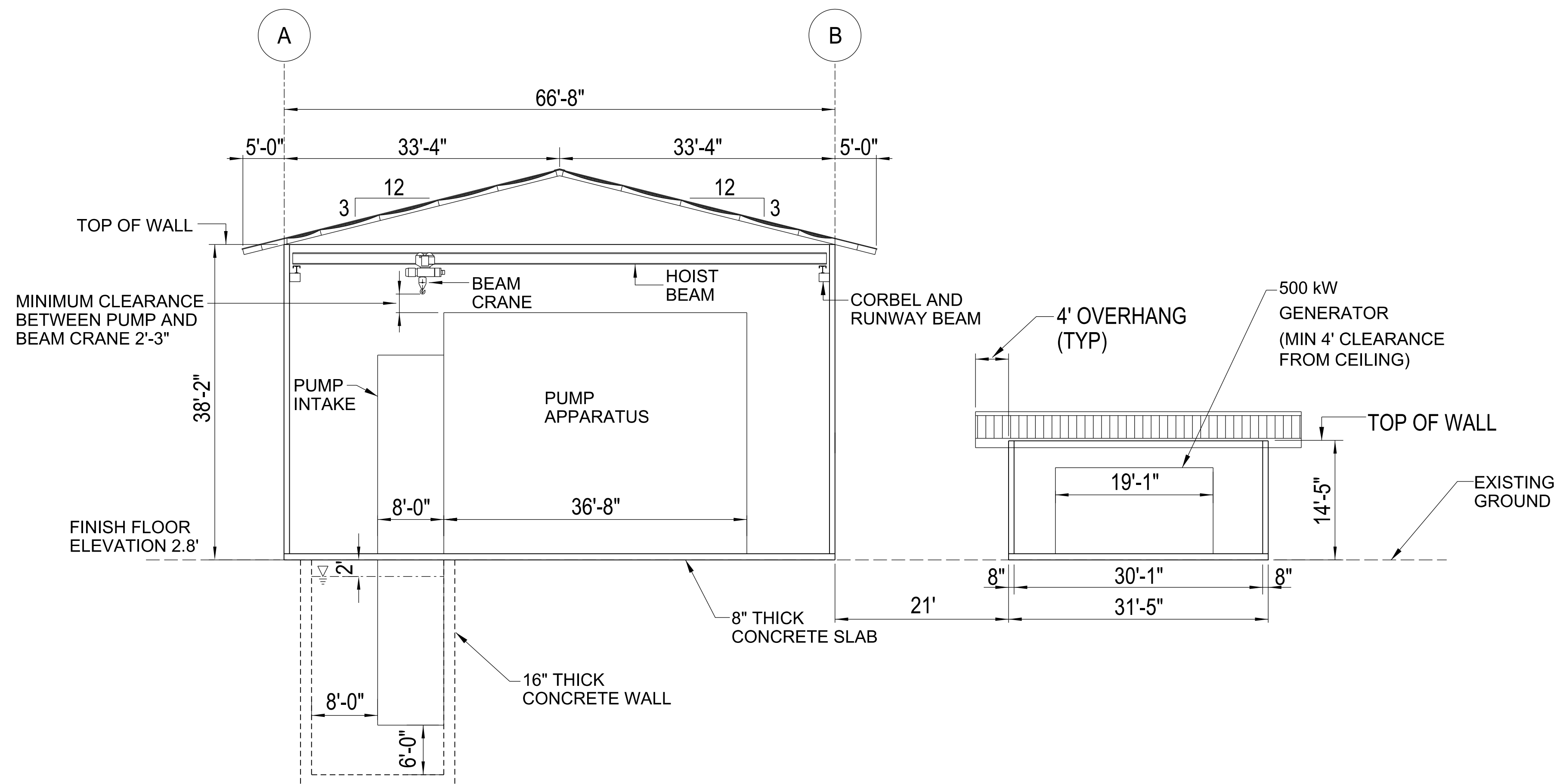
NOTES:

1. SEE TYPICAL PUMP STATION NOTES ON SHEET A-101.

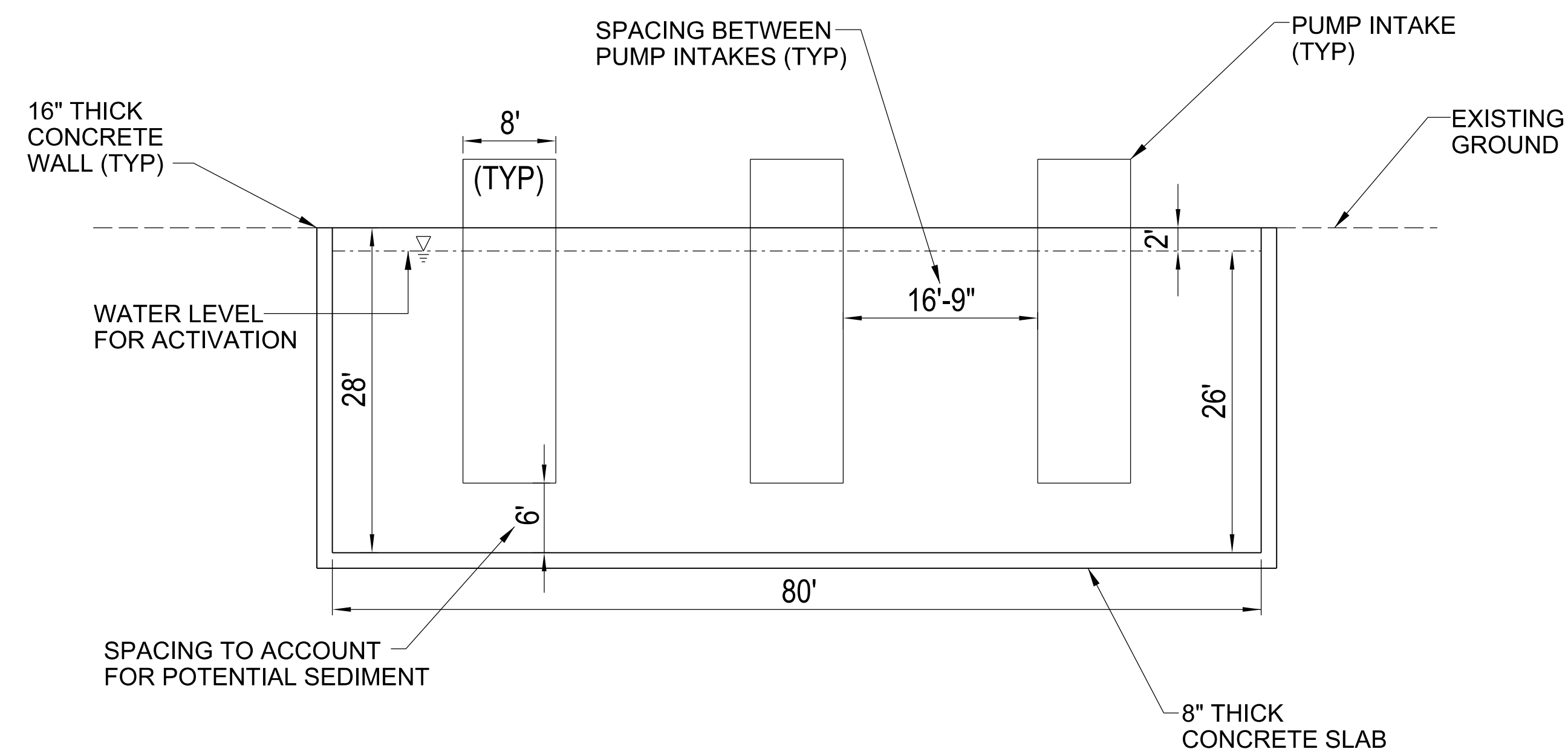
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US ARMY CORPS OF ENGINEERS HONOLULU DISTRICT HONOLULU, HAWAII	DESIGNED BY:	DATE:	REVISION:
	DRAWN BY:	CHECKED BY:	SOLICIT/ CONTRACT NO.:
	SUBMITTED BY:	LOCATION CODE	
	SIZE:	PLOT SCALE:	DRAWING NUMBER:
	ANSI D:	PLOT DATE:	
	FILE NAME:		
	PUMP STATION 2, PLAN		

ALA WAI CANAL PROJECT	PUMP STATION 2 - FLOOR PLAN
-----------------------	-----------------------------



PUMP STATION 1 - SECTION



B **PUMP SUMP PIT SECTION**
SCALE: 1"=10'



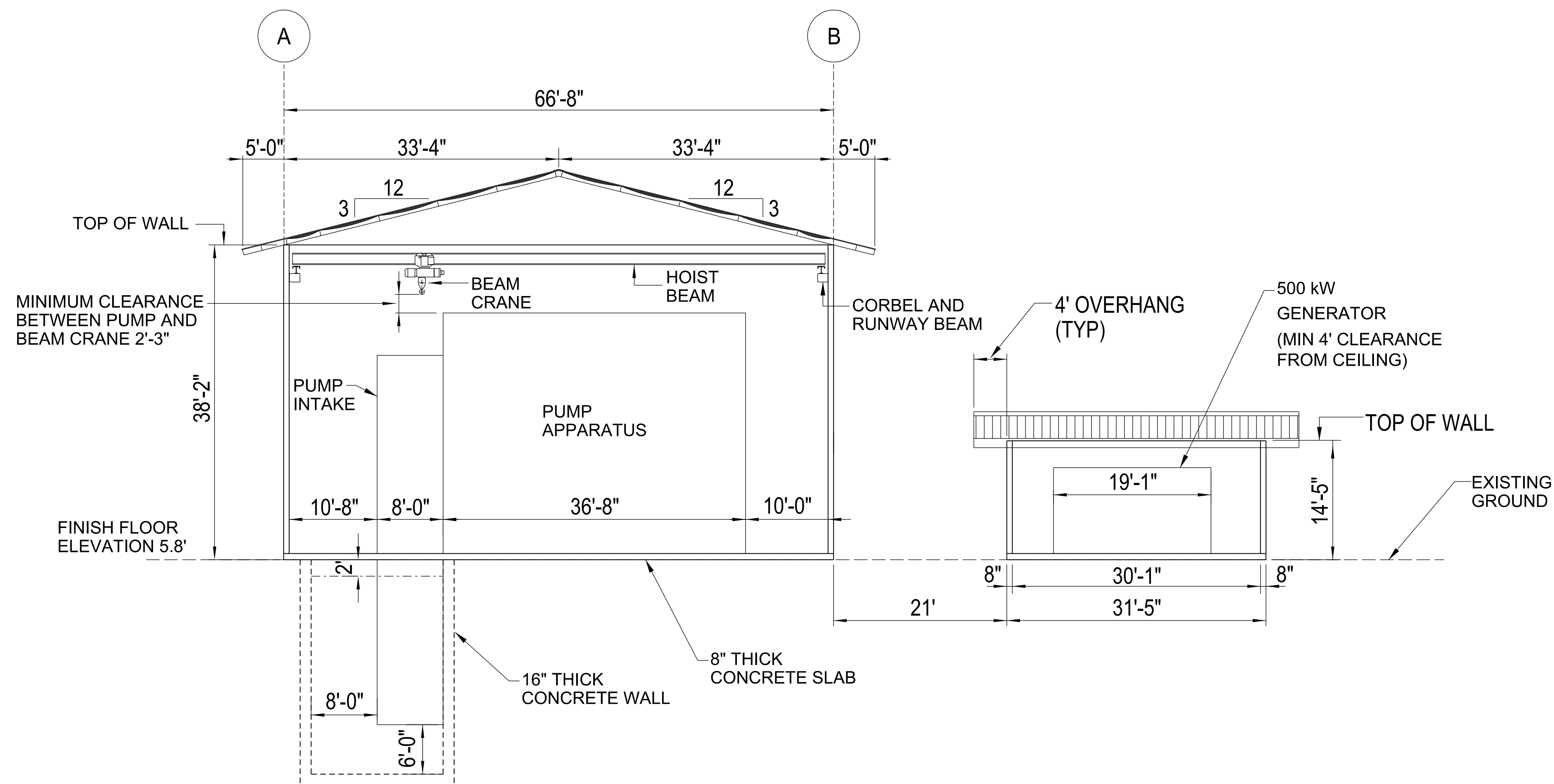
**US Army Corps
of Engineers®
Honolulu District**

[illegible]

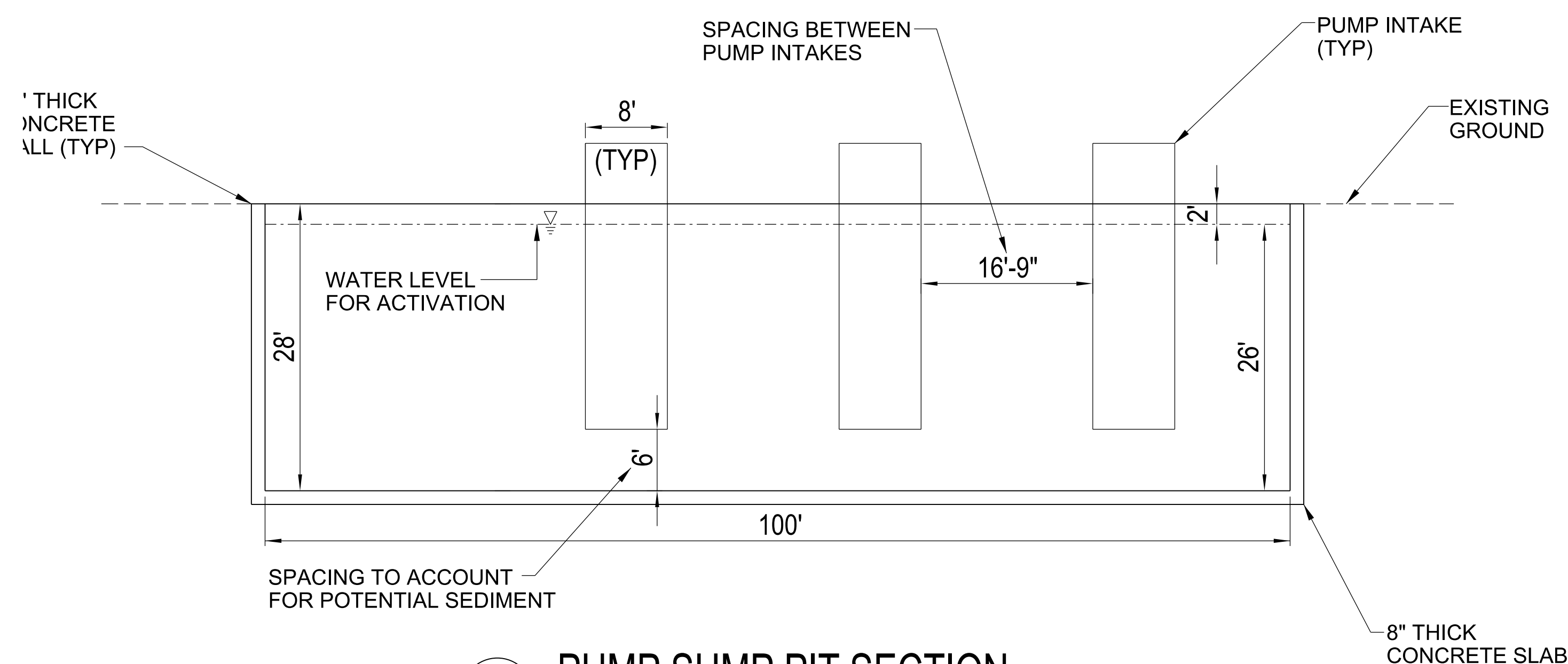
US ARMY CORPS OF ENGINEERS HONOLULU DISTRICT HONOLULU, HAWAII	DESIGNED BY:	DATE:	REVISION:
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	SUBMITTED BY:		LOCATION CODE
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SIZE:	FILE NAME:		SECTION:
8/30/2016			

ALA WAI CANAL PROJECT
PUMP STATION 1 - SECTIONS

SHEET
IDENTIFICATION
A-301
SHEET 30 OF 31



PUMP STATION 2 - SECTION



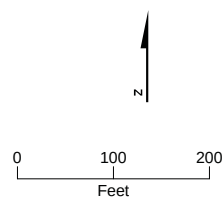
B **PUMP SUMP PIT SECTION**
SCALE: 1"=10'





LEGEND

-  Stream
-  Compensatory Mitigation Measure



VICINITY MAP



FIGURE 4
Compensatory Mitigation Measures
 Ala Wai Canal Project
 O'ahu, Hawai'i



- NOTES:
1. LOCATION OF A STAGING AREA WILL BE DETERMINED, IF NEEDED.
 2. IF EQUIPMENT, MATERIALS AND/OR ACCESS IS PROVIDED VIA THE BRIDGE, THEN A PARTIAL LANE CLOSURE AND TRAFFIC CONTRL MAY BE REQUIRED.



ACCESS AND STAGING PLAN
1"=50'



FILE: 878125
MODEL NAME: 878125
DRAWN BY: 878125
LAST SAVED BY: 878125
PLOT/DRAWN: 878125
PEN TABLE: 878125
PRINTED BY: 878125

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NO.	DATE	DESCRIPTION	DATE	DESCRIPTION
1				
2				
3				
4				
5				
6				
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9				
10				

DESIGNED BY: 878125
CHECKED BY: 878125
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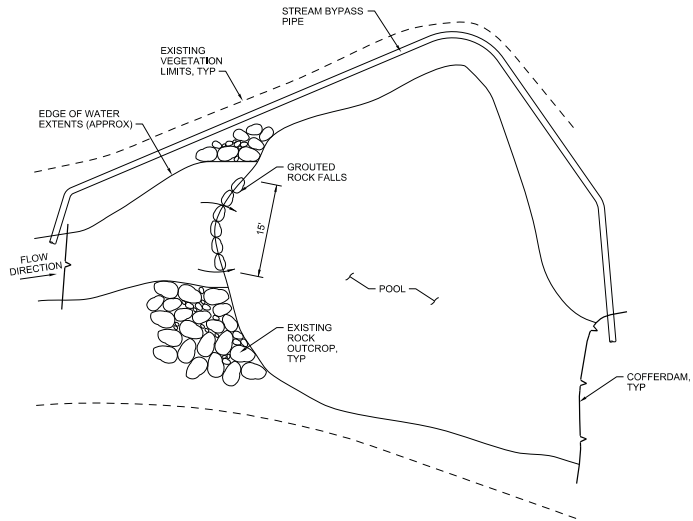
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US ARMY CORPS OF ENGINEERS
HONOLULU, HAWAII

CHM HILL, INC.
1132 86th AVE
HONOLULU, HI 96813

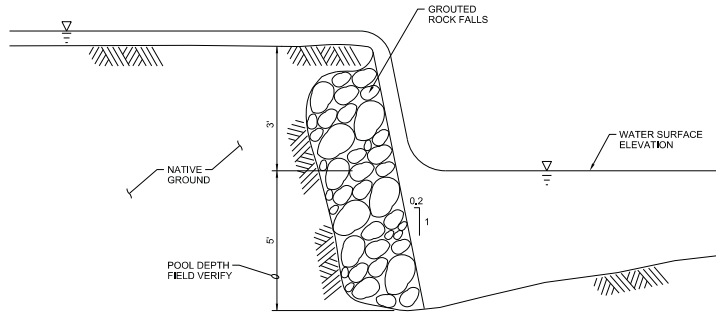
ALA WAI CANAL PROJECT
MITIGATION MEASURES
MANOA STREAM FALLS 7 AND 8
ACCESS AND STAGING PLAN

SHEET IDENTIFICATION
C-106



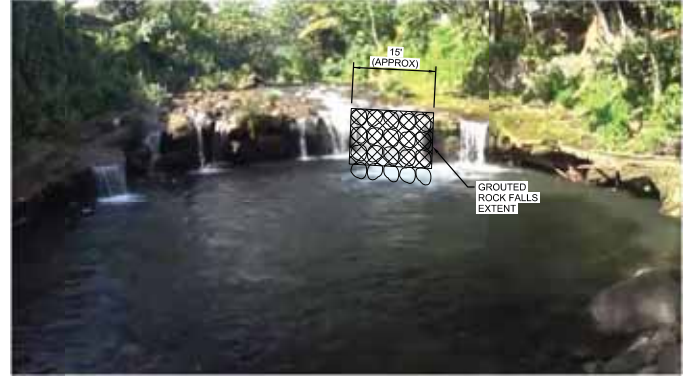
PLAN

NTS



SECTION

NOTE:
DIMENSIONS ARE APPROXIMATED BASED ON FIELD PHOTO.



NOTE:
DIMENSIONS ARE APPROXIMATED BASED ON FIELD PHOTO.

SITE PHOTO



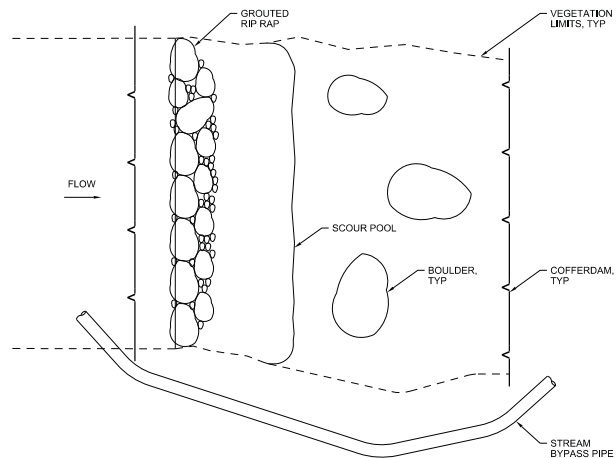
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10% DESIGN

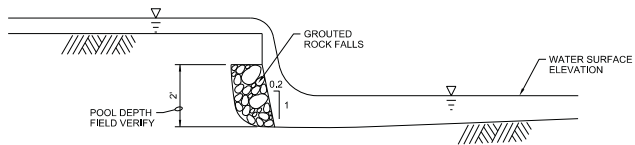
US ARMY CORPS OF ENGINEERS HONOLULU DISTRICT HONOLULU, HAWAII	DESIGNED BY: L. WATSON	CHECKED BY: J. YOUNG	DATE: 4/2/84	REVISION: 001
CH2M HILL, INC. 1132 BISHOP STREET, SUITE 1100 HONOLULU, HI 96813	SUBMITTED BY: J. YOUNG	LOCATION CODE	DRAWING NUMBER:	
	FILE NAME: ASSTO			

MITIGATION MEASURES

SHEET
IDENTIFICATION
C-107
SHEET 10 OF 14



PLAN
1"=5'



SECTION
1"=2'



NOTE:
DIMENSIONS ARE APPROXIMATE BASED ON FIELD PHOTO.

SITE PHOTO

[illegible]