

1

2

3



4

SHEET LIST TABLE		
SHEET NUMBER	DRAWING NUMBER	SHEET TITLE
		GENERAL
1	G-0001	COVER SHEET
2	G-0002	SHEET INDEX AND NOTES
		SITES RESERVOIR CIVIL
3	CS-0701	RESERVOIR CLEARING AND DEMOLITION PLAN
4	CS-0702	GAS WELL PLUG
5	CS-0801	POTENTIAL BORROW SOURCES
		ROADS & BRIDGES
6	CR-101	ROAD MODIFICATION PLAN
7	CR-102	PROPOSED NORTHERN TEMPORARY BYPASS ROAD
8	CR-200	SITES LODOGA ROAD RELOCATION SHEET INDEX
9	CR-201	SITES LODOGA ROAD RELOCATION PLAN AND PROFILE STA. 10+00 TO STA. 36+00
10	CR-202	SITES LODOGA ROAD RELOCATION PLAN AND PROFILE STA. 36+00 TO STA. 62+00
11	CR-203	SITES LODOGA ROAD RELOCATION PLAN AND PROFILE STA. 62+00 TO STA. 90+00
12	CR-204	SITES LODOGA ROAD RELOCATION PLAN AND PROFILE STA. 90+00 TO STA. 118+00
13	CR-205	SITES LODOGA ROAD RELOCATION PLAN AND PROFILE STA. 118+00 TO STA. 146+00
14	CR-206	SITES LODOGA ROAD RELOCATION PLAN AND PROFILE STA. 146+00 TO STA. 174+00
15	CR-207	SITES LODOGA ROAD RELOCATION PLAN AND PROFILE STA. 174+00 TO STA. 202+00
16	CR-208	SITES LODOGA ROAD RELOCATION PLAN AND PROFILE STA. 202+00 TO STA. 230+00
17	CR-209	SITES LODOGA ROAD RELOCATION PLAN AND PROFILE STA. 230+00 TO STA. 258+00
18	CR-210	SITES LODOGA ROAD RELOCATION PLAN AND PROFILE STA. 258+00 TO STA. 286+00
19	CR-211	SITES LODOGA ROAD RELOCATION PLAN AND PROFILE STA. 286+00 TO STA. 314+00
20	CR-212	SITES LODOGA ROAD RELOCATION PLAN AND PROFILE STA. 314+00 TO STA. 331+96
21	CR-301	TYPICAL ROAD CROSS SECTIONS
22	CR-302	SOUTH BRIDGE NO. 1 AND 2 TYPICAL SECTION
23	CR-401	SOUTH BRIDGE NO. 1 GENERAL PLAN AND ELEVATION
24	CR-402	SOUTH BRIDGE NO. 2 GENERAL PLAN AND ELEVATION
		PARKS AND RECREATIONAL AREAS
25	PR-101	PARKS AND RECREATIONAL AREAS OVERVIEW
		DAMS
26	CM-100	EMBANKMENTS AND SADDLE DAMS LOCATION PLAN
27	CM-101	SITES DAM PLAN
28	CM-301	SITES DAM SECTION A-A
29	CM-302	SITES DAM SECTION B-B
30	CM-303	SITES DAM SECTION C-C
31	CM-501	SITES DAM GROUTING DETAILS
32	CM-502	SITES DAM FOUNDATION SURFACE TREATMENT
33	CG-101	GOLDEN GATE DAM PLAN
34	CG-301	GOLDEN GATE DAM SECTION A-A
35	CG-302	GOLDEN GATE DAM SECTION B-B
36	CG-303	GOLDEN GATE DAM SECTION C-C
37	CG-304	GOLDEN GATE DAM SECTION D-D
38	CG-501	GOLDEN GATE DAM GROUTING DETAIL
39	CS-101	SADDLE DAMS PLAN
40	CS-102	SADDLE DAMS PLAN, DAM NO. 1 AND 2
41	CS-103	SADDLE DAMS PLAN, DAM NO. 3
42	CS-104	SADDLE DAMS PLAN, DAM NO. 4, 5, AND 6
43	CS-105	SADDLE DAMS PLAN, DAM NO. 7, 8, AND 9
44	CS-301	SADDLE DAMS TYPICAL SECTIONS, DAM NO. 1, 2, 4, AND 9
45	CS-302	SADDLE DAMS TYPICAL SECTIONS, DAM NO. 3, 5, 6, 7, AND 8
46	CS-501	SIGNAL SPILLWAY DETAILS, SADDLE DAM NO. 6
47	CH-101	HOLHOUSE RESERVOIR PLAN
48	CH-102	HOLHOUSE RESERVOIR PLAN INLET OUTLET STRUCTURE PLAN
49	CH-301	FUNKS CREEK AND ABUTMENT AREA EMBANKMENT CROSS SECTIONS
50	CH-501	HOLHOUSE RESERVOIR ELEVATION AND DETAILS

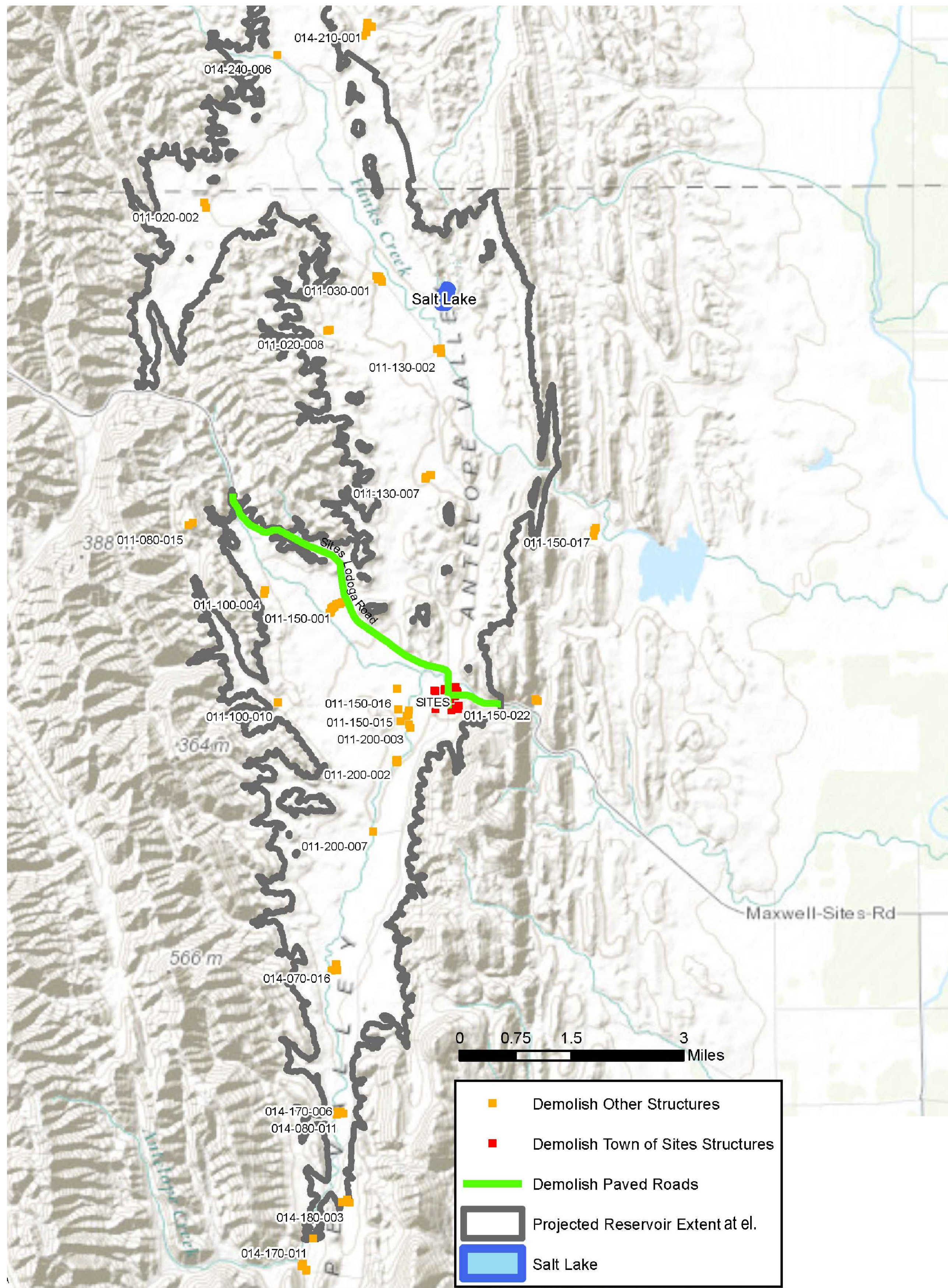
DELEVAN & TRR PIPELINE		
51	CP-100	DELEVAN AND TRR OVERALL PLAN AND PROFILE
52	CP-101	DELEVAN AND TRR PIPELINE INDEX SHEET
53	CP-201	DELEVAN PIPELINE PLAN AND PROFILE STA. 167+36 TO STA. 208+00
54	CP-202	DELEVAN PIPELINE PLAN AND PROFILE STA. 208+00 TO STA. 256+00
55	CP-203	DELEVAN PIPELINE PLAN AND PROFILE STA. 256+00 TO STA. 300+00
56	CP-204	DELEVAN PIPELINE PLAN AND PROFILE STA. 300+00 TO STA. 356+00
57	CP-205	DELEVAN PIPELINE PLAN AND PROFILE STA. 356+00 TO STA. 414+00
58	CP-206	DELEVAN PIPELINE PLAN AND PROFILE STA. 414+00 TO STA. 472+00
59	CP-207	DELEVAN PIPELINE PLAN AND PROFILE STA. 472+00 TO STA. 532+00
60	CP-208	DELEVAN PIPELINE PLAN AND PROFILE STA. 532+00 TO STA. 592+00
61	CP-209	DELEVAN PIPELINE PLAN AND PROFILE STA. 592+00 TO STA. 652+00
62	CP-210	DELEVAN PIPELINE PLAN AND PROFILE STA. 652+00 TO STA. 712+00
63	CP-211	DELEVAN PIPELINE PLAN AND PROFILE STA. 712+00 TO STA. 772+00
64	CP-212	DELEVAN PIPELINE PLAN AND PROFILE STA. 772+00 TO STA. 832+00
65	CP-213	DELEVAN PIPELINE PLAN AND PROFILE STA. 832+00 TO STA. 892+00
66	CP-301	DELEVAN AND TRR TYPICAL PIPE CROSS SECTIONS
67	CP-501	DELEVAN PIPELINE BORE AND JACK DETAILS
68	CP-502	DELEVAN PIPELINE MANHOLE AND BLOWOFF STRUCTURE DETAILS
69	CP-503	DELEVAN AND TRR TYPICAL MANHOLE AND AIR VALVE DETAILS
70	CP-504	DELEVAN AND TRR PIPELINE TYPICAL CROSS CANAL DETAILS
71	CP-505	DELEVAN AND TRR PIPELINE NATURAL GAS PIPELINE RE-CONSTRUCTION
72	CP-506	DELEVAN AND TRR PIPELINE PIPE DETAILS
73	CP-507	DELEVAN AND TRR PIPELINE CATHODIC PROTECTION
74	CP-508	DELEVAN AND TRR PIPELINE CATHODIC PROTECTION INSTALLATION
75	CP-701	DELEVAN AND TRR PIPELINE DEWATERING
		TERMINAL REGULATING RESERVOIR (TRR)
76	CT-101	TERMINAL REGULATING RESERVOIR PLAN
77	CT-301	TRR PUMP-GENERATION FACILITY FLOOR PLAN
78	CT-302	TRR PUMP-GENERATION FACILITY TRANSVERSE SECTION 620 CFS UNIT
79	CT-303	TRR INLET AND GCID FLOW CONTROL DIVERSION STRUCTURES
80	CT-304	TRR 200-CFS SPILLWAY AND 150-CFS OUTLET WORKS
81	CT-305	TRR BASIN TYPICAL SECTIONS
82	CT-306	TRR 200 CFS SPILLWAY
		SITES INLET OUTLET STRUCTURE
83	CI-101	INLET-OUTLET TUNNEL PLAN
84	CI-201	INLET-OUTLET TUNNEL PROFILE
85	CI-501	MULTI-LEVEL INLET-OUTLET TOWER STRUCTURE DETAILS
86	CI-502	MULTI-LEVEL INLET-OUTLET TOWER STRUCTURE AND TUNNEL DETAILS
		PUMP GENERATING PLANTS
87	CF-101	DELEVAN INTAKE PUMPING-GENERATING PLANT AND FISH SCREEN STRUCTURE SITE PLAN
88	CF-102	DELEVAN INTAKE PUMPING-GENERATING PLANT AND FISH SCREEN STRUCTURE TOP PLAN
89	CF-103	DELEVAN INTAKE PUMPING-GENERATING PLANT AND FISH SCREEN STRUCTURE LOWER LEVEL PLAN
90	CF-301	DELEVAN INTAKE PUMPING-GENERATING PLANT AND FISH SCREEN STRUCTURE ACCESS ROAD PILE PLAN AND SECTION
91	CF-302	DELEVAN INTAKE PUMPING-GENERATING PLANT AND FISH SCREEN STRUCTURE TYPICAL FISH SCREEN BAY SECTION
92	CF-303	DELEVAN INTAKE PUMPING-GENERATING PLANT AND FISH SCREEN STRUCTURE FISH SCREEN SIDE ELEVATION
93	CF-304	DELEVAN INTAKE PUMPING-GENERATING PLANT AND FISH SCREEN STRUCTURE SEDIMENT REMOVAL PIPING SECTIONS
94	CF-305	DELEVAN INTAKE PUMPING-GENERATING PLANT AND FISH SCREEN STRUCTURE SEDIMENT REMOVAL PIPING SECTIONS
95	CF-306	DELEVAN INTAKE PUMPING-GENERATING PLANT AND FISH SCREEN STRUCTURE LONGITUDINAL SECTION
96	CF-307	DELEVAN INTAKE PUMPING-GENERATING PLANT AND FISH SCREEN STRUCTURE CENTRIFUGAL PUMPS
97	CF-308	DELEVAN INTAKE PUMPING-GENERATING PLANT AND FISH SCREEN STRUCTURE AIR CHAMBER PLANT AND ELEVATION

98	CN-101	SITES PUMPING-GENERATING PLANT SITE PLAN
99	CN-201	SITES PUMPING-GENERATING PLANT SITE PLAN
100	CN-202	SITES PUMPING-GENERATING PLANT SITE PLAN
101	CN-301	SITES PUMPING-GENERATING PLANT PLAN AND SECTION
102	CN-302	SITES PUMPING-GENERATING PLANT CROSS SECTION
		ELECTRICAL
103	E-101	SITES TRANSMISSION LINE PLAN
104	E-102	SITES-TRR AND DELEVAN TRANSMISSION PLAN DETAILS
105	E-103	SITES PUMPING-GENERATING PLANT ELECTRICAL SITE PLAN
106	E-104	SITES PUMPING-GENERATING PLANT SWITCHYARD PLAN
107	E-105	DELEVAN PUMPING-GENERATING PLANT SWITCHYARD PLAN
108	E-106	DELEVAN PUMPING-GENERATING PLANT FLOOR PLAN
109	E-107	DELEVAN PUMPING-GENERATING PLANT SITE PLAN
110	E-501	TRANSMISSION TOWER, POLES TYPICAL DETAILS
111	E-601	SITES SWITCHYARD SINGLE LINE DIAGRAM
112	E-602	DELEVAN SWITCHYARD SINGLE LINE DIAGRAM
113	E-603	TRR SWITCHYARD SINGLE LINE DIAGRAM
		APPENDIX AND REFERENCES
114	B-100	APPENDIX
115	B-101	DELEVAN & TRR PIPELINE BORING LOCATION MAP
116	B-301	DELEVAN & TRR PIPELINE BORING LOGS 1 OF 4
117	B-302	DELEVAN & TRR PIPELINE BORING LOGS 2 OF 4
118	B-303	DELEVAN & TRR PIPELINE BORING LOGS 3 OF 4
119	B-304	DELEVAN & TRR PIPELINE BORING LOGS 4 OF 4
120	B-305	DELEVAN- TRR PIPELINE GEOLOGIC CROSS SECTION
121	B-1101	SITES DAM EXPLORATION AND GEOLOGIC MAP 1 OF 2
122	B-1102	SITES DAM EXPLORATION AND GEOLOGIC MAP 2 OF 2
123	B-1301	SITES DAM GEOLOGIC SECTION 1 OF 2
124	B-1302	SITES DAM GEOLOGIC SECTION 2 OF 2
125	B-2101	GOLDEN GATE DAM EXPLORATION & GEOLOGIC MAP 1 OF 10
126	B-2102	GOLDEN GATE DAM EXPLORATION & GEOLOGIC MAP 2 OF 10
127	B-2103	GOLDEN GATE DAM EXPLORATION & GEOLOGIC MAP 3 OF 10
128	B-2105	GOLDEN GATE DAM EXPLORATION & GEOLOGIC MAP 5 OF 10
129	B-2104	GOLDEN GATE DAM EXPLORATION & GEOLOGIC MAP 4 OF 10
130	B-2106	GOLDEN GATE DAM EXPLORATION & GEOLOGIC MAP 6 OF 10
131	B-2107	GOLDEN GATE DAM EXPLORATION & GEOLOGIC MAP 7 OF 10
132	B-2108	GOLDEN GATE DAM EXPLORATION & GEOLOGIC MAP 8 OF 10
133	B-2109	GOLDEN GATE DAM EXPLORATION & GEOLOGIC MAP 9 OF 10
134	B-2110	GOLDEN GATE DAM EXPLORATION & GEOLOGIC MAP 10 OF 10
135	B-2301	GOLDEN GATE DAM GEOLOGIC CROSS SECTION 1 OF 1
136	B-2302	GOLDEN GATE DAM GEOLOGIC CROSS SECTION 1 OF 2
137	B-2303	GOLDEN GATE DAM GEOLOGIC CROSS SECTION 2 OF 2
138	B-2304	GOLDEN GATE DAM GEOLOGIC CROSS SECTION OUTLET TUNNEL 1 OF 2
139	B-2305	GOLDEN GATE DAM GEOLOGIC CROSS SECTION OUTLET TUNNEL 2 OF 2
140	B-3101	SADDLE DAMS 1 & 2 GEOLOGIC MAP
141	B-3102	SADDLE DAM 3 PLAN AND PROFILE
142	B-3103	SADDLE DAMS 4, 5 & 6 GEOLOGIC MAP
143	B-3104	SADDLE DAMS 7, 8 & 9 GEOLOGIC MAP
144	B-3301	SADDLE DAMS 1 & 2 GEOLOGIC SECTIONS
145	B-3302	SADDLE DAMS 4, 5 & 6 GEOLOGIC SECTIONS
146	B-4301	INLET-OUTLET GEOLOGIC SECTIONS

PLOTTED BY: BARNHART, DENNIS - August 7, 2017 - 3:45:16 PM
 DRAWING: G:\S\PA\FEASIBILITY_AECOM\900 WORK\6-CAD\006-CIVIL\20-SHEETS\00-GENERAL\G002.DWG

DESIGNED		APPROVAL RECOMMENDED			REVIEWED	DATE		WSIP APPLICATION ATTACHMENT A4.A		SPEC NO.
DRAWN		APPROVAL BY			MIKE FORREST	08/04/2017		SHEET INDEX AND		DRAWING NO.
CHECKED		ESTIMATE LEVEL			MIKE FORREST			AND NOTES		REV. SHEET NO.
A3-A	08/01/2017	COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)	WSIP	JB	M. FORREST	FEASIBILITY				2

1
2
3
4



STRUCTURES TO BE DEMOLISHED										
APN	HOUSE	MOBILE HOME	SEPTIC SYSTEM	GROUNDWATER WELL	BARN	GARAGE/SHOP	SHED	SILLO	WATER TOWER	OTHER*
TOWN OF SITES	12	1	13	13	2	3	9			1
011-020-002				1	1		1			
011-020-008				1	2					
011-030-001	1		1	1	1	1	1	1		
011-080-015	1		1	1	1					
011-100-004	1		1	1	5			5		
011-100-010				1	1					
011-130-002				1	2		1			
011-130-007	1		1	1	1		2			
011-150-001	1		1	1	2			1		
011-150-015	1		1	1	2		2			
011-150-016				1				1		
011-150-017				1	1		1			1
011-150-022		1	1	1	1		1			
011-200-002	1		1	1			3			
011-200-003				1						
011-200-007				1	1					
014-070-016	1		1	1			3	3		
014-080-011	1		1	1						
014-170-006				1			1		1	
014-170-011	2		2	2	1	1	1			
014-180-003	1		1	1	1	1				
014-210-001	2		2	2	1	2	1			
014-240-006				1						
TOTAL	26	2	28	38	31	8	27	11	1	2

* UNIDENTIFIED STRUCTURES AND WELL PUMP ENCLOSURES

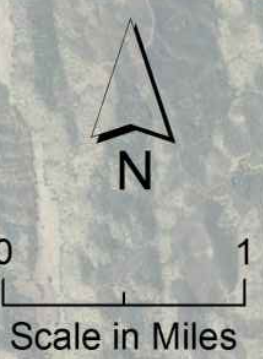
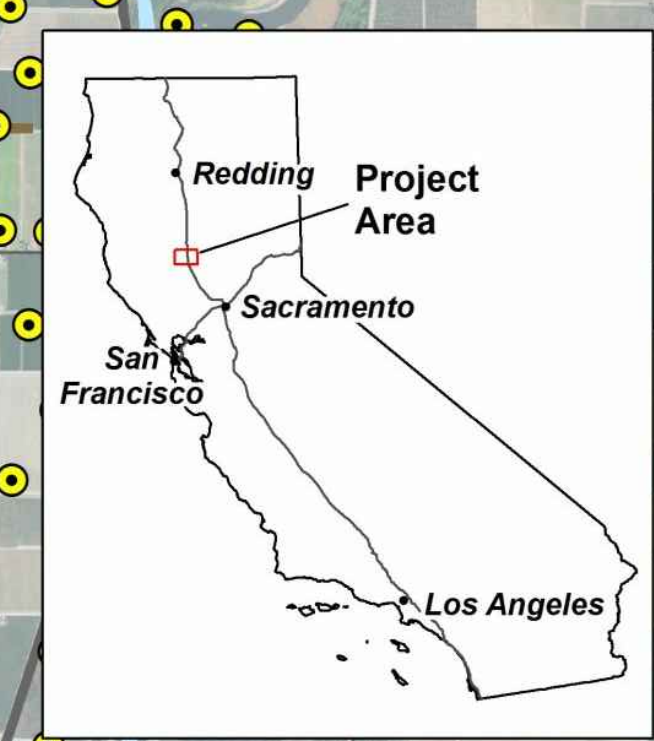
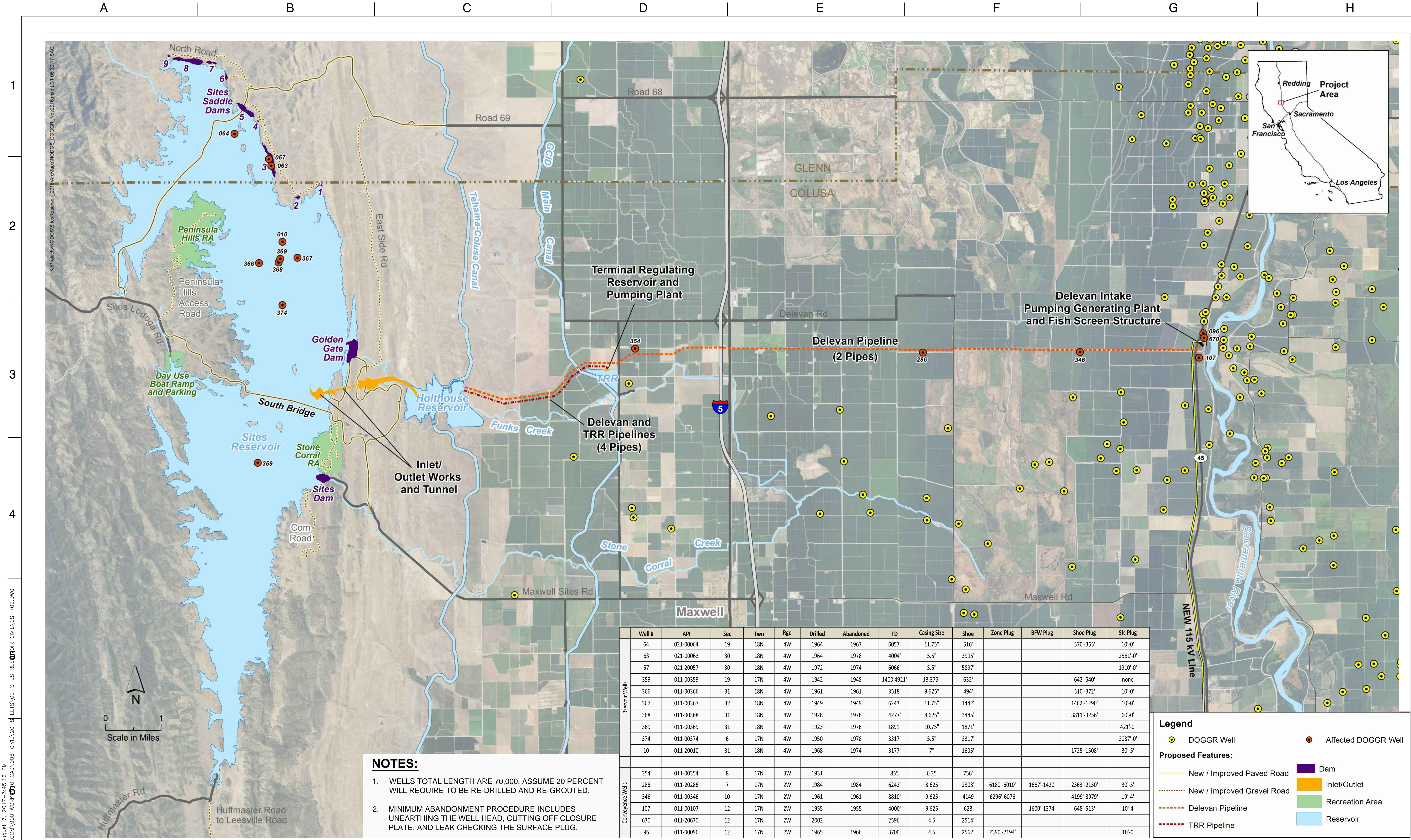
OTHER ITEMS TO BE DEMOLISHED		
ITEM	COUNT	UNIT
MAXWELL SITES & SITES LOGODA ROADS, ASPHALT PAVED	20,840	FEET
HUFFMASTER ROAD, ASPHALT PAVED	740	FEET
STANDING TIMBER	700	ACRES
METAL FENCING, WITH AND WITHOUT BARBED WIRE	40	MILES
UNDERGROUND STORAGE TANKS (UST), OIL-FILLED	15	UST
NATURAL SPRING CAPS AT SALT LAKE (ONE IN LAKE; TWO UPSTREAM)	3	CAPS

NOTES:

- ASPHALT CONCRETE PAVEMENT TO BE REMOVED WITHIN THE LIMITS OF THE RESERVOIR BELOW EL.540.
- ALL METAL FENCING (WITH AND WITHOUT BARBED WIRE) AND FENCE POSTS TO BE REMOVED WITHIN THE LIMITS OF THE RESERVOIR BELOW EL.540.
- TABULATED STRUCTURES HAVE NOT BEEN VISUALLY INSPECTED.
- STRUCTURES IDENTIFIED FROM 2013 GROUND SURVEY BY DWR.
- STRUCTURES AND OTHER FACILITIES AND ITEMS TO BE DEMOLISHED SHALL BE REMOVED AND PROPERLY DISPOSED OF AT LANDFILLS LICENSED TO RECEIVE THE DEMOLITION WASTE. BURNING OR BURIAL ON SITE WILL NOT BE PERMITTED.
- ONE SEPTIC SYSTEM ASSUMED TO EXIST FOR EVERY HOUSE AND MOBILE HOME. SEPTIC SYSTEMS TO BE ABANDONED IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS.
- ONE GROUNDWATER WELL ASSUMED TO EXIST FOR EVERY OCCUPIED PARCEL OR HABITABLE DWELLING ON AN OCCUPIED PARCEL. GROUNDWATER WELLS TO BE PLUGGED AND ABANDONED IN ACCORDANCE WITH DWR WATER WELL STANDARDS SECTION 23, BULLETIN 74-90.
- STANDING TIMBER QUANTITY BASED ON DWR ESTIMATE OF REMAINING TIMBER.
- ONE UNDERGROUND STORAGE TANK (UST) ASSUMED FOR EVERY TWO BARN STRUCTURES. UST TO BE REMOVED OR ABANDONED IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS.
- EACH NATURAL SPRING AT SALT LAKE TO BE CAPPED AND GROUTED WITH 4' X 4', 1-FOOT THICK CONCRETE SLAB.

PLOTTED BY: BARNHART, DENNIS - August 7, 2017 - 3:45:16 PM
 DRAWING: G:\S\RA\PA\FEASIBILITY_AECOM\900 WORK\0-CAD\006-CIVIL\20-SHEETS\02-SITES RES\09-CIVIL\CS-701.DWG

DESIGNED J. BARNES				APPROVAL RECOMMENDED			REVIEWED MIKE FORREST REG. CE. NO. 27855		DATE 08/04/2017		WSIP APPLICATION ATTACHMENT A4.A				SPEC. NO.	
DRAWN S. QAZI				APPROVAL BY			APPROVAL RECOMMENDED MIKE FORREST REG. CE. NO. 27855						DRAWING NO. CS-701			
CHECKED M. FORREST				ESTIMATE LEVEL FEASIBILITY		APPROVED JOE BARNES REG. CE. NO. 40105		RESERVOIR CLEARING AND DEMOLITION PLAN				REV. SHEET NO. 3				
A3-A		08/01/2017		COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)				WSIP		JB						
REV		DATE		DESCRIPTION				SUB.		APPD						



- NOTES:**
1. WELLS TOTAL LENGTH ARE 70,000. ASSUME 20 PERCENT WILL REQUIRE TO BE RE-DRILLED AND RE-GROUTED.
 2. MINIMUM ABANDONMENT PROCEDURE INCLUDES UNEARTHING THE WELL HEAD, CUTTING OFF CLOSURE PLATE, AND LEAK CHECKING THE SURFACE PLUG.

Well #	API	Sec	Twn	Rge	Drilled	Abandoned	TD	Casing Size	Shoe	Zone Plug	BFW Plug	Shoe Plug	Sfc Plug
64	021-00064	19	18N	4W	1964	1967	6057'	11.75"	516'			570'-365'	10'-0"
63	021-00063	30	18N	4W	1964	1978	4004'	5.5"	3995'				2561'-0"
57	021-20057	30	18N	4W	1972	1974	6066'	5.5"	5897'				1910'-0"
359	011-00359	19	17N	4W	1942	1948	1400'4921'	13.375"	632'			642'-540'	none
366	011-00366	31	18N	4W	1961	1961	3518'	9.625"	494'			510'-372'	10'-0"
367	011-00367	32	18N	4W	1949	1949	6243'	11.75"	1442'			1462'-1290'	10'-0"
368	011-00368	31	18N	4W	1928	1976	4277'	8.625"	3445'			3811'-3256'	60'-0"
369	011-00369	31	18N	4W	1923	1976	1891'	10.75"	1871'				421'-0"
374	011-00374	6	17N	4W	1950	1978	3317'	5.5"	3317'				2037'-0"
10	011-20010	31	18N	4W	1968	1974	3177'	7"	1605'			1725'-1508'	30'-5"
354	011-00354	8	17N	3W	1931		855'	6.25"	756'				
286	011-20286	7	17N	2W	1984	1984	6242'	8.625"	2303'	6180'-6010'	1667'-1420'	2363'-2150'	30'-5"
346	011-00346	10	17N	2W	1961	1961	8810'	9.625"	4149'	6296'-6076'		4199'-3979'	19'-4"
107	011-00107	12	17N	2W	1955	1955	4000'	9.625"	628'		1600'-1374'	648'-513'	10'-4"
670	011-20670	12	17N	2W	2002		2596'	4.5"	2514'				
96	011-00096	12	17N	2W	1965	1966	3700'	4.5"	2562'	2390'-2194'			10'-0"

Legend

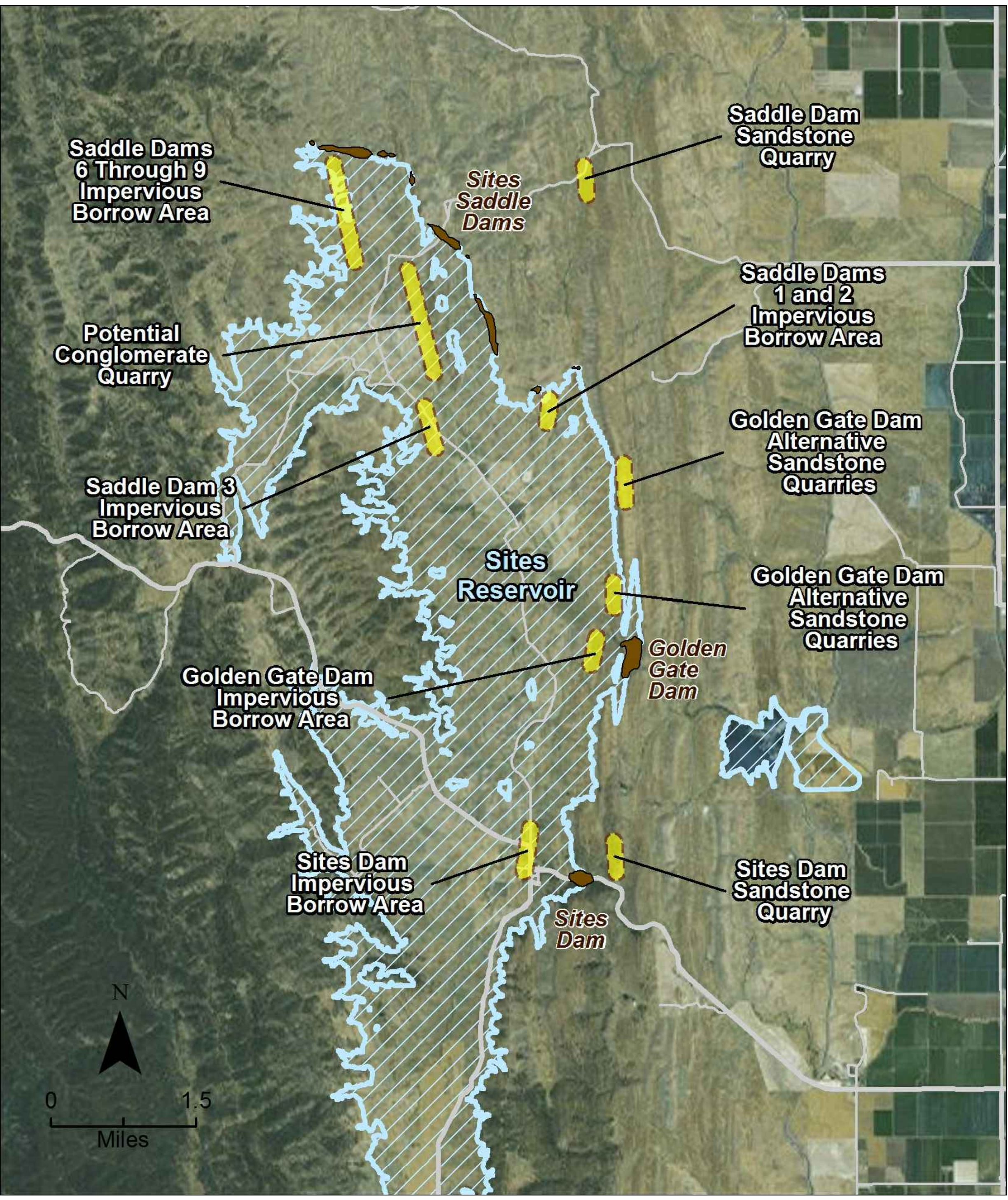
- DOGGR Well
- Affected DOGGR Well
- New / Improved Paved Road
- New / Improved Gravel Road
- - - Delevan Pipeline
- - - TRR Pipeline
- Dam
- Inlet/Outlet
- Recreation Area
- Reservoir

DESIGNED J. BARNES		APPROVAL RECOMMENDED		AECOM MICHAEL FORREST REG. CE. NO. 27855 APPROVAL RECOMMENDED MICHAEL FORREST REG. CE. NO. 27855 APPROVED JOE BARNES REG. CE. NO. 40105	DATE 08/04/2017	WSIP APPLICATION ATTACHMENT A4.A			SPEC. NO.
DRAWN S. QAZI		APPROVAL BY				GAS WELL PLUGGING			DRAWING NO. CS-702
CHECKED M. FORREST		ESTIMATE LEVEL FEASIBILITY		SITES		REV. SHEET NO. 4			
A3-A	08/01/2017	COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)	WSIP	JB					

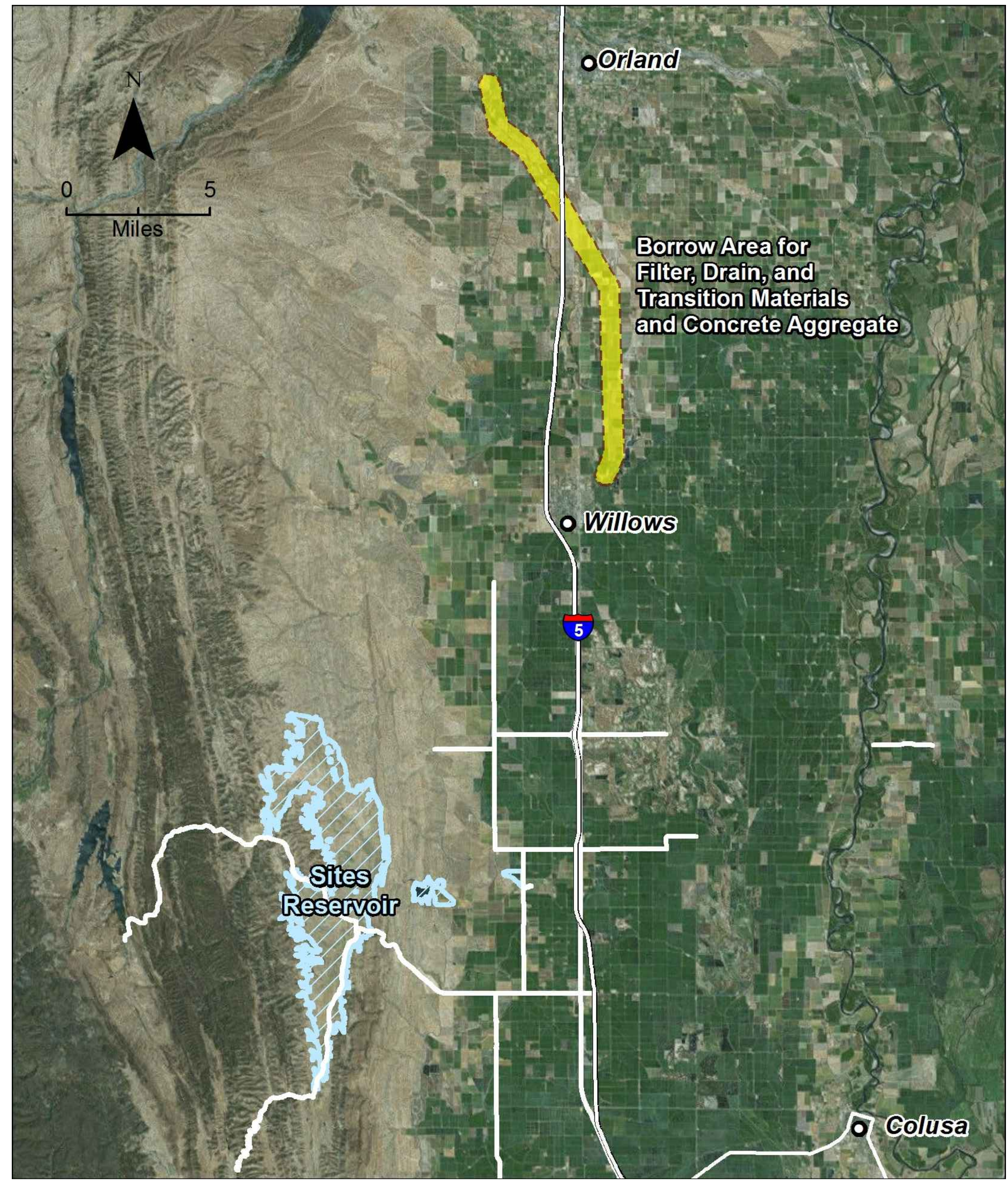
PLOTTED BY: BARNHART, DENNIS - August 7, 2017 - 3:45:16 PM
 DRAWING: G:\SR\PA\FEASIBILITY_AECOM\900 WORK\0-CAD\006-CIVIL\20-SHEETS\02-SITES RESERVOIR CIVIL CS-702.DWG
 K:\Projects\MOBOS\SitesReservoir_2017\Map\MOBOS_DOGGR_Nov2016.mxd LCT:06.30.17.SAC

NOTES:
 1. SEE EMBANKMENT AND SADDLE DAM PLAN DRAWINGS FOR CONSTRUCTION QUANTITY ESTIMATES.

1
2
3
4



INTERNAL PROJECT BORROW SITES



EXTERNAL PROJECT BORROW SITES

DESIGNED	J. BARNES	APPROVAL RECOMMENDED	
DRAWN	S. QAZI	APPROVAL BY	
CHECKED	M. FORREST	ESTIMATE LEVEL	FEASIBILITY
REV	DATE	DESCRIPTION	SUB. APPD
A3-A	08/01/2017	COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)	WSIP JB

DESIGNED	J. BARNES	APPROVAL RECOMMENDED	
DRAWN	S. QAZI	APPROVAL BY	
CHECKED	M. FORREST	ESTIMATE LEVEL	FEASIBILITY

AECOM	REVIEWED	DATE
	MIKE FORREST	08/04/2017
	REG. CE. NO. 27855	
	APPROVAL RECOMMENDED	
	MIKE FORREST	
	REG. CE. NO. 27855	
	APPROVED	
	JOE BARNES	
	REG. CE. NO. 40105	



WSIP APPLICATION ATTACHMENT A4.A
 POTENTIAL BORROW SOURCES

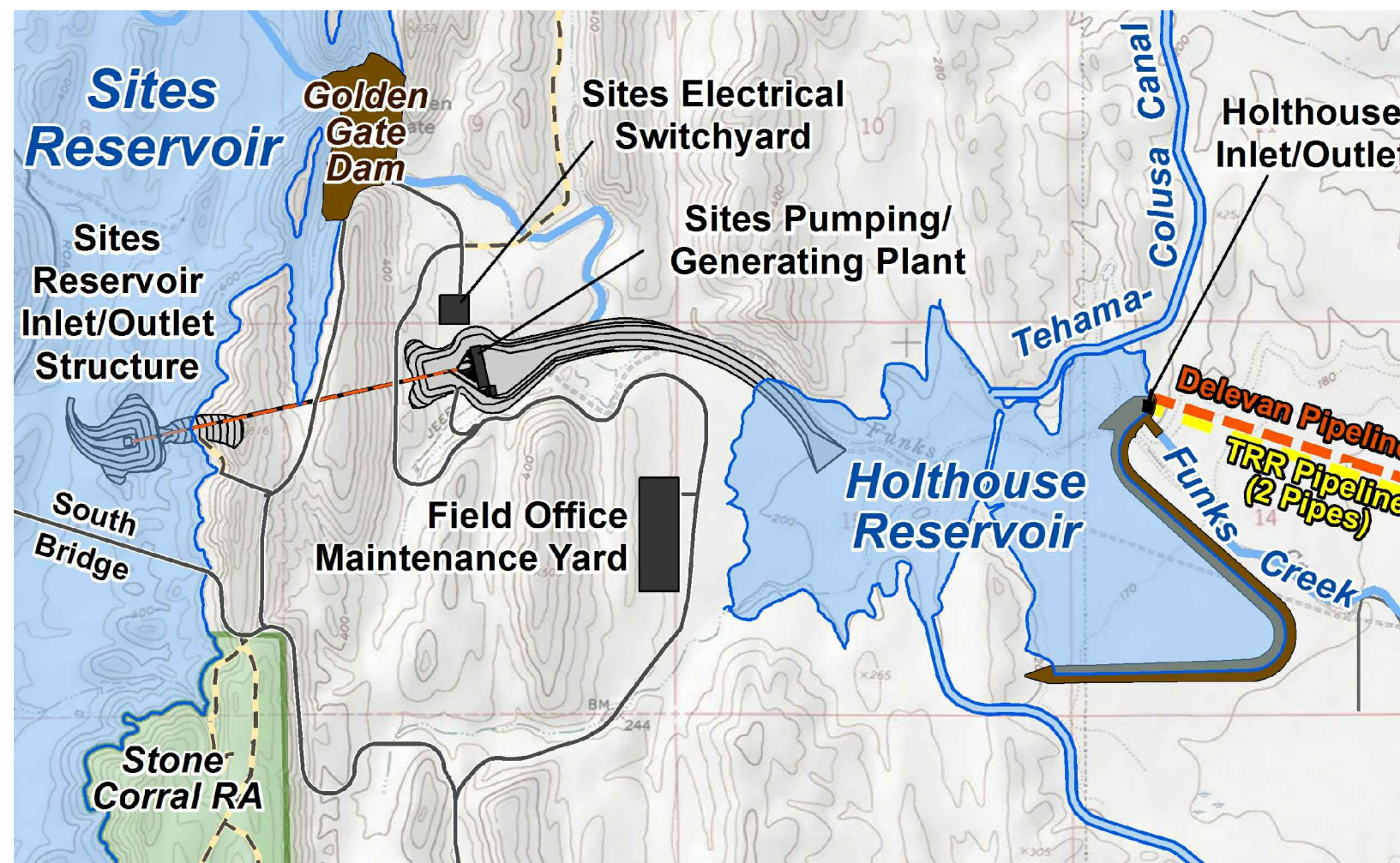
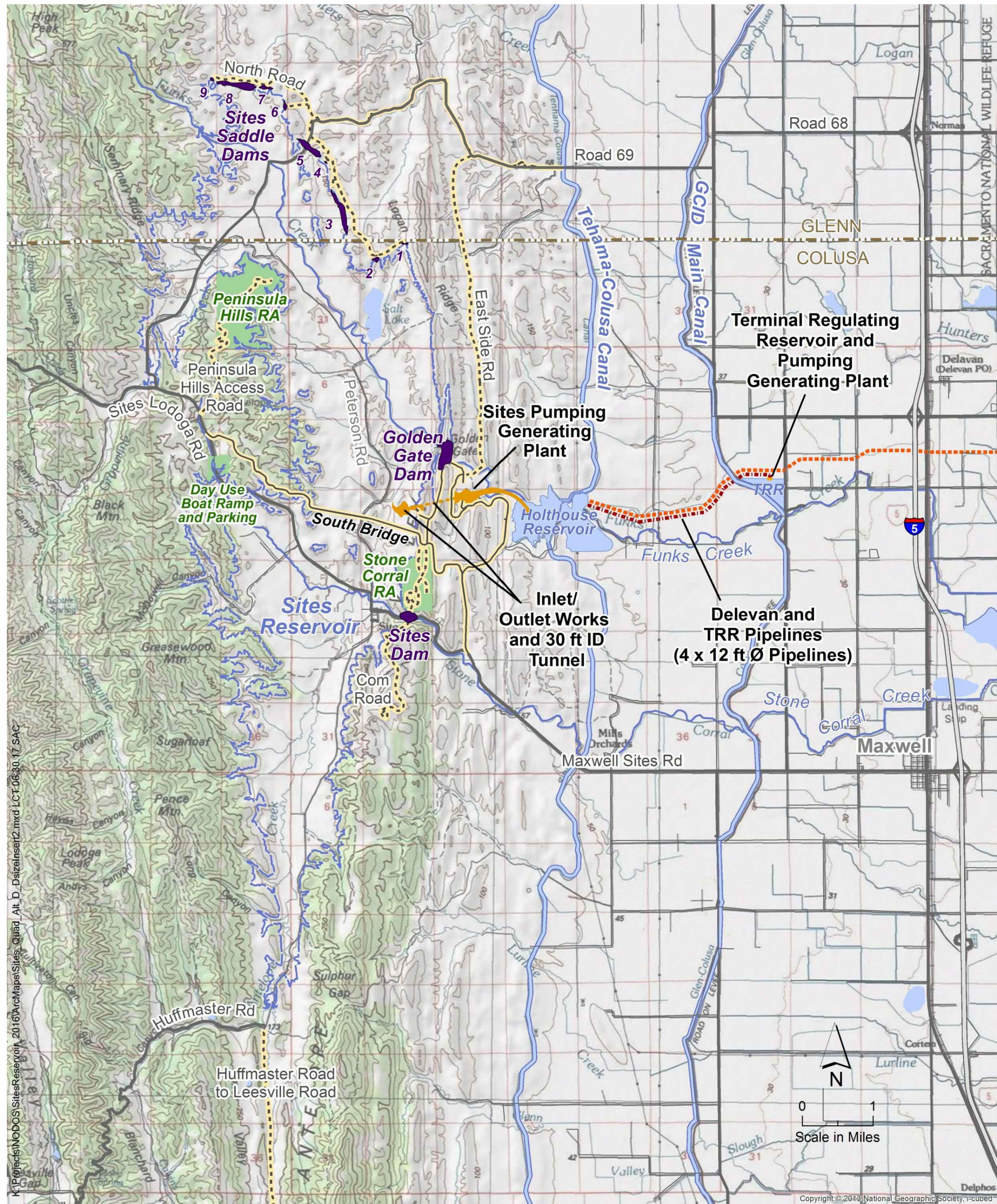
SPEC NO.	
DRAWING NO.	CS-801
REV.	SHEET NO.
	5

1

2

3

4



- NOTES:
- ROAD ARRANGEMENTS SHOWN ASSUME THE SOUTH BRIDGE WILL BE CONSTRUCTED EARLY. IF SOUTH BRIDGE CONSTRUCTION IS SCHEDULED LATER IN THE PROJECT, ADDITIONAL TEMPORARY ROADS AND PAVING MAY BE NEEDED TO MAINTAIN ACCESS ALONG SITES LODOGA ROAD.
 - SEE DRAWING CR-0601 AND CR0602 FOR ESTIMATED PUBLIC AND PRIVATE ROAD CONSTRUCTION QUANTITIES.
 - SEE DRAWING CR-0201 FOR AVAILABLE ROAD PROFILES.
 - SEE DRAWING CR-0301 FOR TYPICAL ROAD CROSS SECTIONS.

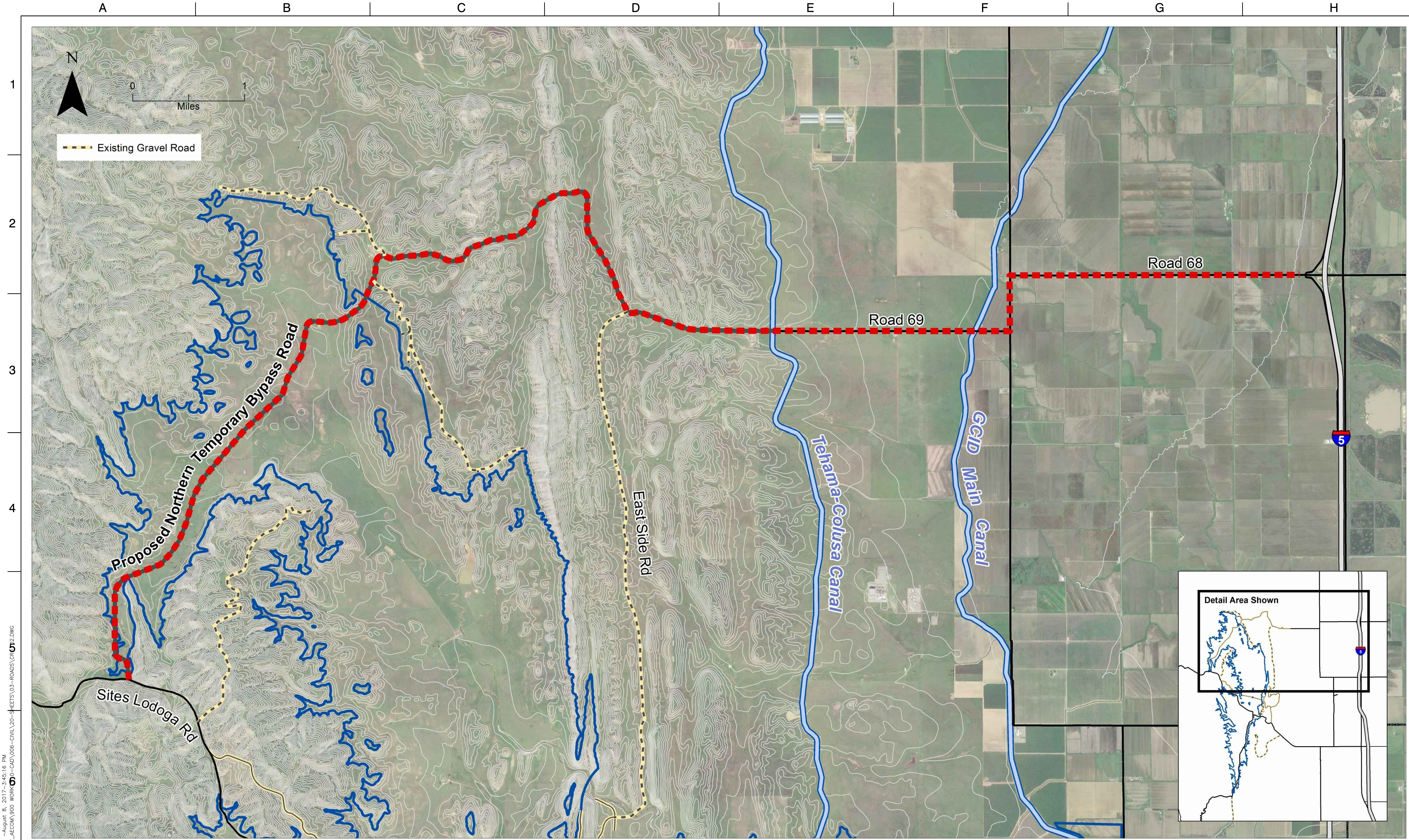
ROAD SEGMENT DESCRIPTION

	SUM OF LENGTH (MILES)			
	GRAVEL	ASPHALT	BRIDGE	TOTAL
PUBLIC ACCESS	19.73	11.46	1.57	32.76
Com Road				
Sites Dam to Communication Tower	1.00			1.00
Eastside Road				
Field Office and Maintenance Yard Access to Pump/Gen Access		0.93		0.93
Golden Gate Dam/Electrical Substation Access Roads to Property North of Golden Gate Dam	1.52			1.52
Maxwell Sites Road to Stone Corral Road		1.12		1.12
Property North of Golden Gate Dam to North Road	3.63			3.63
Pump/Gen Access to Golden Gate Dam/Electrical Substation Access Roads		0.95		0.95
Stone Corral Road to Field Office and Maintenance Yard		1.09		1.09
North Road				
Road 69 at TCC to Saddle Dam Road	4.69			4.69
Saddle Dam Road to Saddle Dam 9	1.84			1.84
Peninsula Road				
Sites Lodoga Road to Peninsula Hills Recreation Area	0.94			0.94
Peninsula Hills Recreation Area Roads	1.00			1.00
South Bridge				
South Bridge			1.57	1.57
South Bridge East Approach				
Stone Corral Rec Road to South Bridge		0.28		0.28
South Bridge West Approach				
South Bridge to Sites Lodoga Road		2.25		2.25
Stone Corral Road				
Eastside Road to South Bridge East Approach		1.39		1.39
South Bridge East Approach to Stone Corral Recreation Area		0.26		0.26
Sulphur Gap Road				
Huffmaster to Leesville Road	4.85			4.85
Maxwell Sites Road to Lurline Road		3.45		3.45
PRIVATE ACCESS	0.58	1.47	0.00	16.85
Golden Gate Access Roads				
Eastside Road to bottom of Golden Gate Dam		0.26		0.26
Eastside Road to Electrical Substation		0.12		0.12
Eastside Road to Field Office and Maintenance Yard		0.04		0.04
Eastside Road to Pump/Gen Plant		0.18		0.18
South Bridge East Approach to Inlet/Outlet Tower		0.11		0.11
South Bridge East Approach to top of Golden Gate Dam		0.75		0.75
Saddle Dam Access Roads				
North Road to Saddle Dam 6		0.28		0.28
Saddle Dam Road to Saddle Dam 2		0.03		0.03
Saddle Dam Road to Saddle Dam 3		0.16		0.16
Saddle Dam Road to Saddle Dam 5		0.11		0.11
Temporary Northern Access				
Saddle Dam Road to Sites Lodoga				14.80
GRAND TOTALS	20.30	12.93	1.57	49.61

PLAN - ROADS
NTS

PLOTTED BY: BARNHART, DENNIS - August 7, 2017 - 3:45:16 PM
 DRAWING: G:\S\PA\FEASIBILITY_AECOM\900 WORK\0-CAD\006-CIVIL\20-SHEETS\03-ROADS\CR011.DWG
 K:\Projects\000000\Sites Reservoir\2016\Drawings\Sites Reservoir\A.D. DeLevan\2.mxd LCT0630.17.SAC
 6

DESIGNED J. BARNES	APPROVAL RECOMMENDED		REVIEWED MIKE FORREST REG. CE. NO. 27855	DATE 08/04/2017		WSIP APPLICATION ATTACHMENT A4.A ROAD MODIFICATION PLAN	SPEC. NO.
DRAWN S. QAZI	APPROVAL BY		APPROVAL RECOMMENDED SAMI KALANTARI REG. CE. NO. 63891				DRAWING NO. CR-101
CHECKED M. FORREST	ESTIMATE LEVEL FEASIBILITY		APPROVED JOE BARNES REG. CE. NO. 40105				REV. SHEET NO. 6
A3-A	08/01/2017	COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)	WSIP	JB			



PLOTTED BY: BARNHART, DENNIS - August 6, 2017 - 3:45:16 PM
 DRAWING: G:\SR\PA\FEASIBILITY_AECOM\900 WORK\0-CAD\006-CIVIL\20-SHEETS\03-ROADS\CR102.DWG

DESIGNED	S. QAZI
DRAWN	S. QAZI
CHECKED	M. FORREST
DATE	08/01/2017
DESCRIPTION	COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)
SUB.	WSIP
APPD	JB

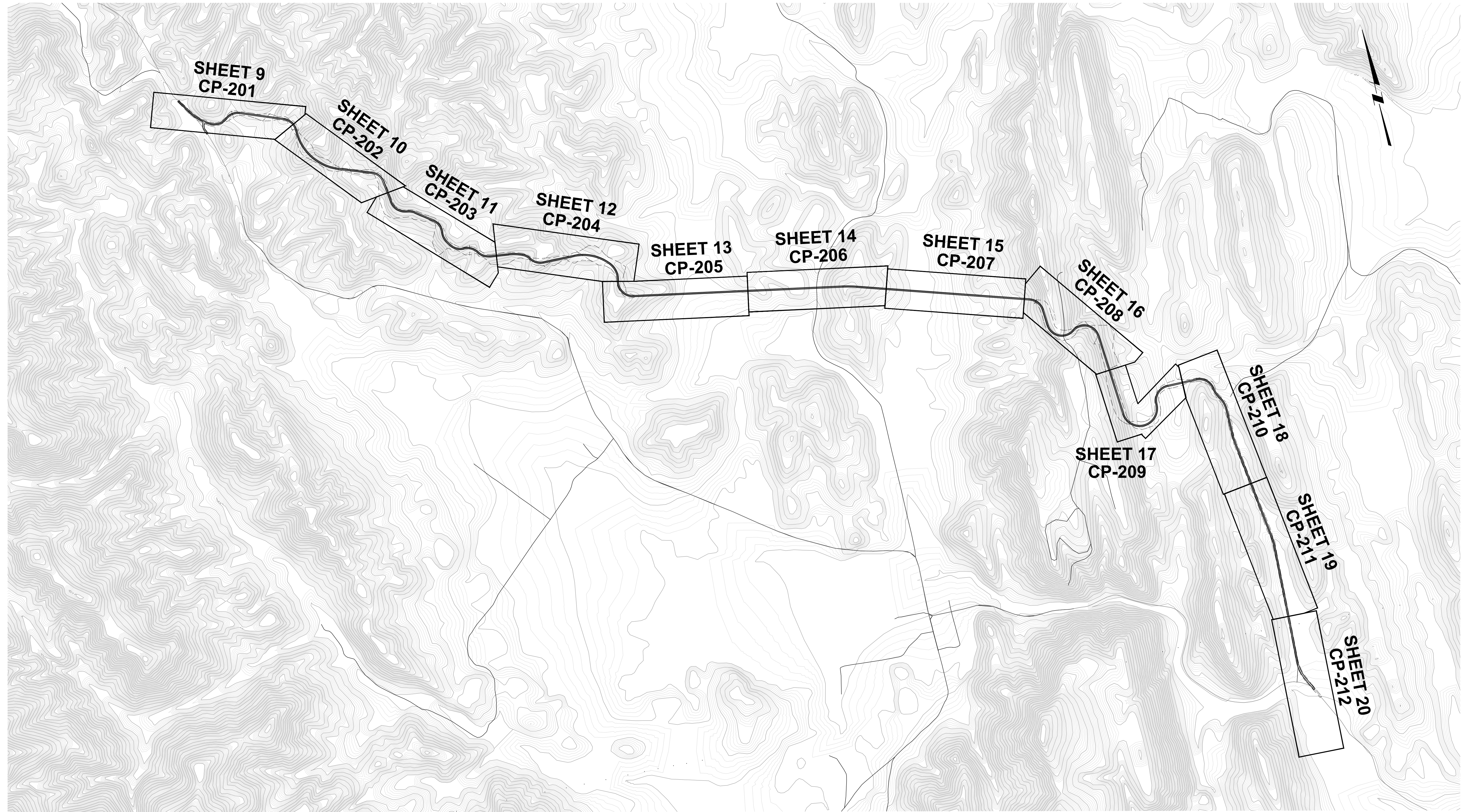
APPROVAL RECOMMENDED	
APPROVAL BY	
ESTIMATE LEVEL	FEASIBILITY

AECOM <small>AECOM Technical Services, Inc. 2020 L Street, Suite 300 Sacramento, CA 95811 T 916-414-5800 F 916-414-1557 www.aecom.com</small>	REVIEWED	DATE
	MIKE FORREST	08/04/2017
	REG. CE. NO. 27855	
	APPROVAL RECOMMENDED	
	SAMI KALANTARI	
	REG. CE. NO. 63891	
	APPROVED	
	JOE BARNES	
	REG. CE. NO. 40105	



WSIP APPLICATION ATTACHMENT A4.A
**PROPOSED NORTHERN
 TEMPORARY BYPASS ROAD**

SPEC NO.	
DRAWING NO.	CR-102
REV.	SHEET NO. 7



PLAN
SCALE: 1" = 1000'

PLOTTED BY: BARNHART, DENNIS --August 7, 2017-- 3:45:16 PM
 DRAWING: G:\SR\PA\FEASIBILITY_AECOM\900 WORK\910-CAD\006-CIVIL\20-SHEETS\10-SOUTH BRIDGE CR-200.DWG

REV	DATE	DESCRIPTION	SUB.	APPD
A3-A	08/01/2017	COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)	WSIP	JB

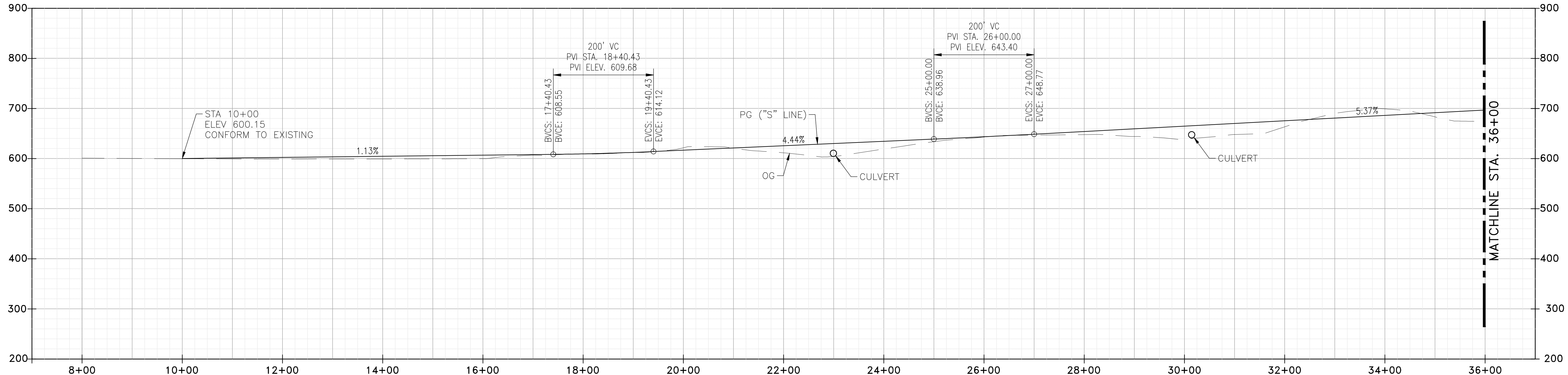
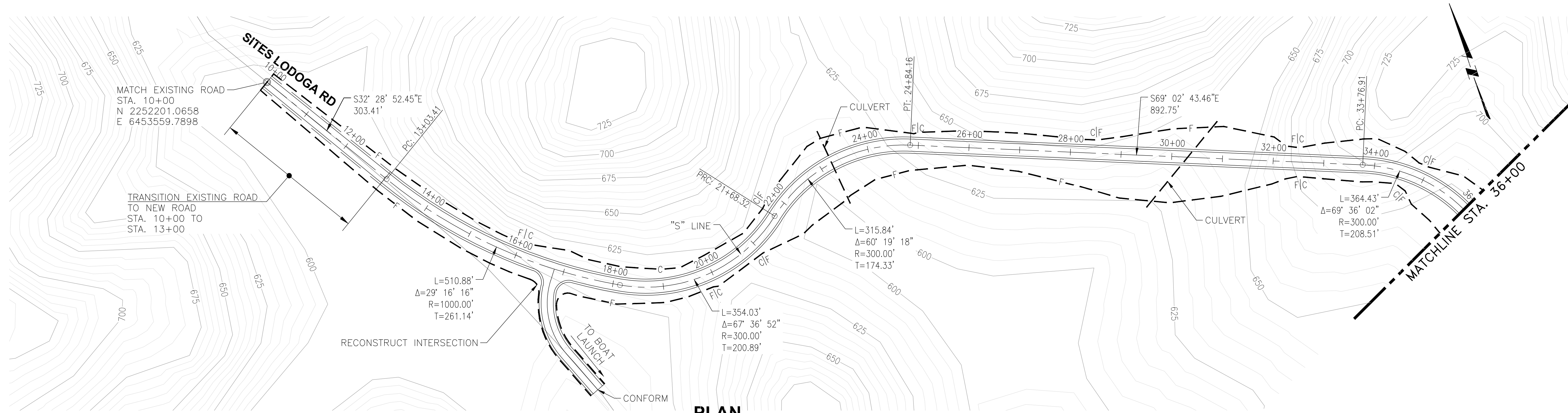
DESIGNED S. KALANTARI	APPROVAL RECOMMENDED
DRAWN N. KARUNATILAKA	APPROVAL BY
CHECKED M. FORREST	ESTIMATE LEVEL FEASIBILITY

AECOM <small>AECOM Technical Services, Inc. 2020 L Street, Suite 300 Sacramento, Ca 95811 T 916-414-5800 F 916-414-1557 www.aecom.com</small>	REVIEWED MIKE FORREST REG. CE. NO. 27855	DATE 08/04/2017
	APPROVAL RECOMMENDED SAMI KALANTARI REG. CE. NO. 63891	
	APPROVED JOE BARNES REG. CE. NO. 40105	



WSIP APPLICATION ATTACHMENT A4.A SITES LODOGA ROAD RELOCATION SHEET INDEX	
--	--

SPEC NO.	
DRAWING NO.	CR-200
REV.	SHEET NO. 8



PLOTTED BY: BARNHART, DENNIS - August 7, 2017 - 3:45:16 PM
 DRAWING: G:\SR\PA\FEASIBILITY_AECOM\900 WORK\910-CAD\006-CIVIL\20-SHEETS\10-SOUTH BRIDGE\CR-201.DWG

REV	DATE	DESCRIPTION	SUB.	APPD
A3-A	08/01/2017	COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)	WSIP	JB

DESIGNED S. KALANTARI	APPROVAL RECOMMENDED
DRAWN N. KARUNATILAKA	APPROVAL BY
CHECKED M. FORREST	ESTIMATE LEVEL FEASIBILITY

AECOM

REVIEWED
MIKE FORREST
REG. CE. NO. 27855

DATE
08/04/2017

APPROVAL RECOMMENDED
SAMI KALANTARI
REG. CE. NO. 63891

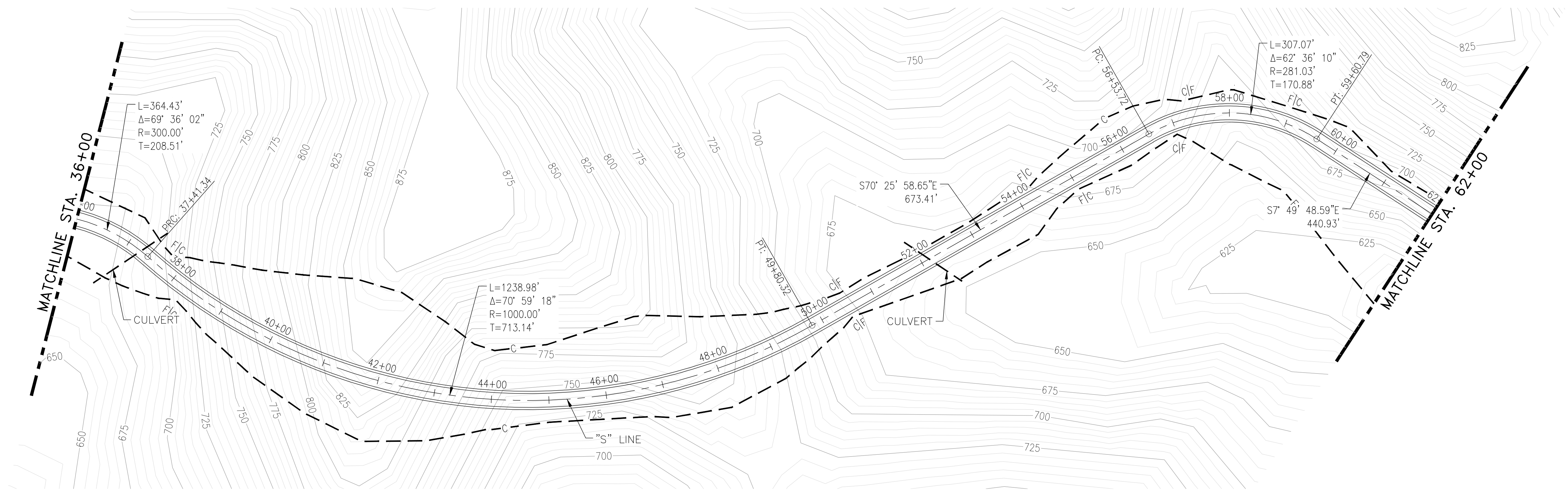
APPROVED
JOE BARNES
REG. CE. NO. 40105

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
T 916-414-5800 F 916-414-1557
www.aecom.com

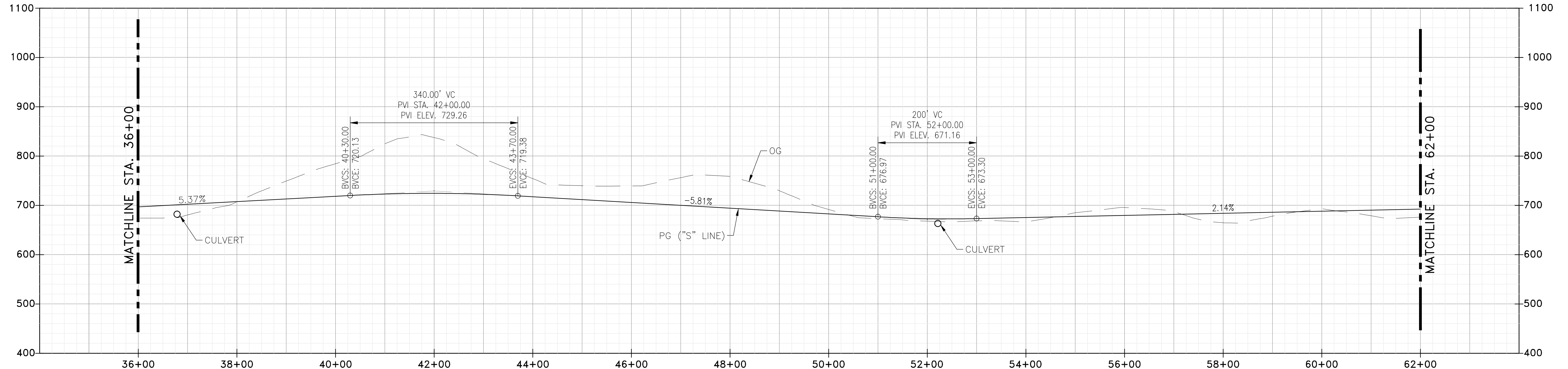


WSIP APPLICATION ATTACHMENT A4.A
SITES LODOGA ROAD RELOCATION
PLAN AND PROFILE
 STA. 10+00 TO STA. 36+00

SPEC NO.	
DRAWING NO.	CR-201
REV.	SHEET NO. 9



PLAN
SCALE: 1" = 100'



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

PLOTTED BY: BARNHART, DENNIS - August 7, 2017 - 3:45:16 PM
 DRAWING: G:\SRIPA\FEASIBILITY_AECOM\900 WORK\910-CAD\006-CIVIL\20-SHEETS\10-SOUTH BRIDGE\CR-202.DWG

DESIGNED	S. KALANTARI
DRAWN	N. KARUNATILAKA
CHECKED	M. FORREST
DATE	08/01/2017
DESCRIPTION	COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)
SUB.	WSIP
APPD	JB

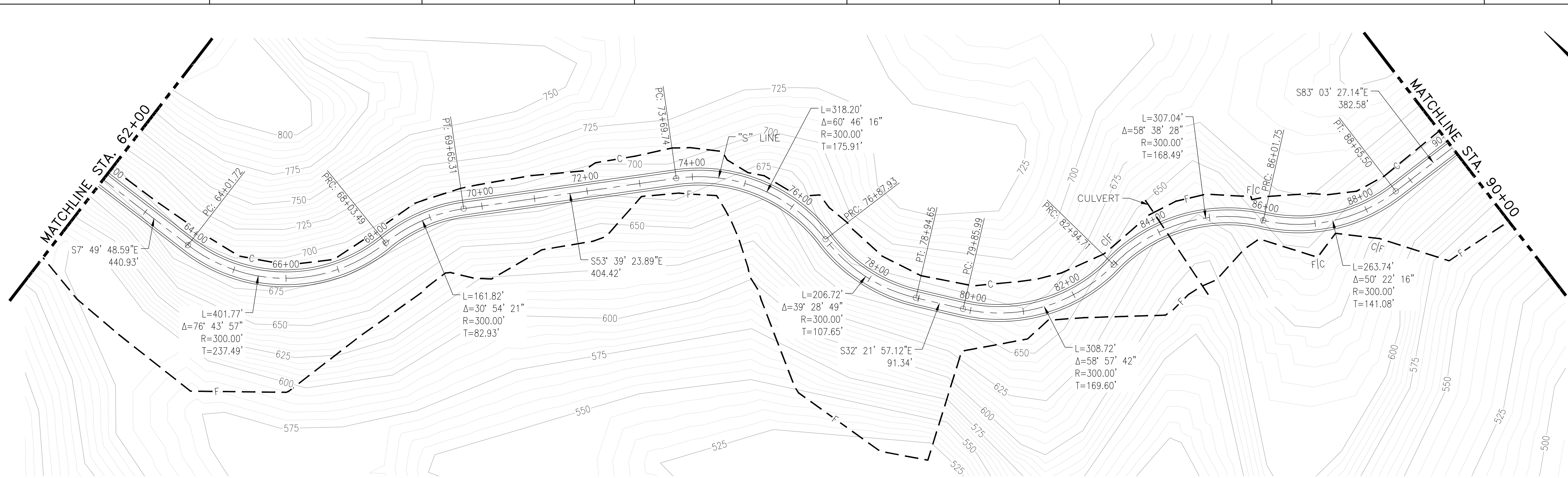
APPROVAL RECOMMENDED	
APPROVAL BY	
ESTIMATE LEVEL	FEASIBILITY

 <small>AECOM Technical Services, Inc. 2020 L Street, Suite 300 Sacramento, CA 95811 T 916-414-5800 F 916-414-1557 www.aecom.com</small>	REVIEWED	DATE
	MIKE FORREST	08/04/2017
	REG. CE. NO. 27855	
	APPROVAL RECOMMENDED	
	SAMI KALANTARI	
	REG. CE. NO. 63891	
	APPROVED	
	JOE BARNES	
	REG. CE. NO. 40105	

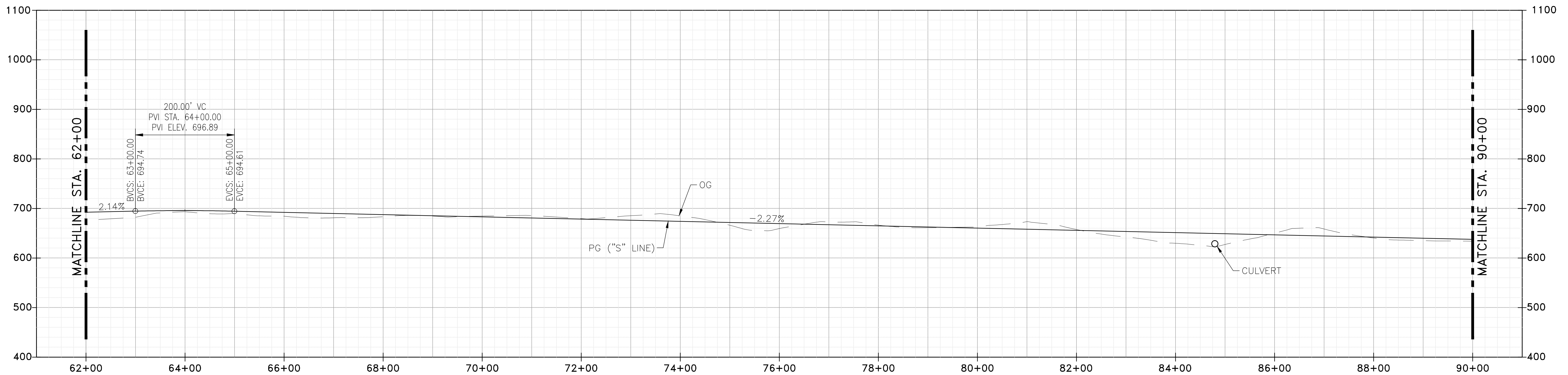


WSIP APPLICATION ATTACHMENT A4.A
SITES LODOGA ROAD RELOCATION
PLAN AND PROFILE
STA. 36+00 TO STA. 62+00

SPEC NO.	
DRAWING NO.	CR-202
REV.	SHEET NO.
	10



PLAN
SCALE: 1" = 100'



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

PLOTTED BY: BARNHART, DENNIS - August 7, 2017 - 3:45:16 PM
 DRAWING: G:\S\SLIPA\FEASIBILITY_AECOM\900 WORK\910-CAD\006-CIVIL\20-SHEETS\10-SOUTH BRIDGE\CR-203.DWG

REV	DATE	DESCRIPTION	SUB.	APPD
A3-A	08/01/2017	COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)	WSIP	JB

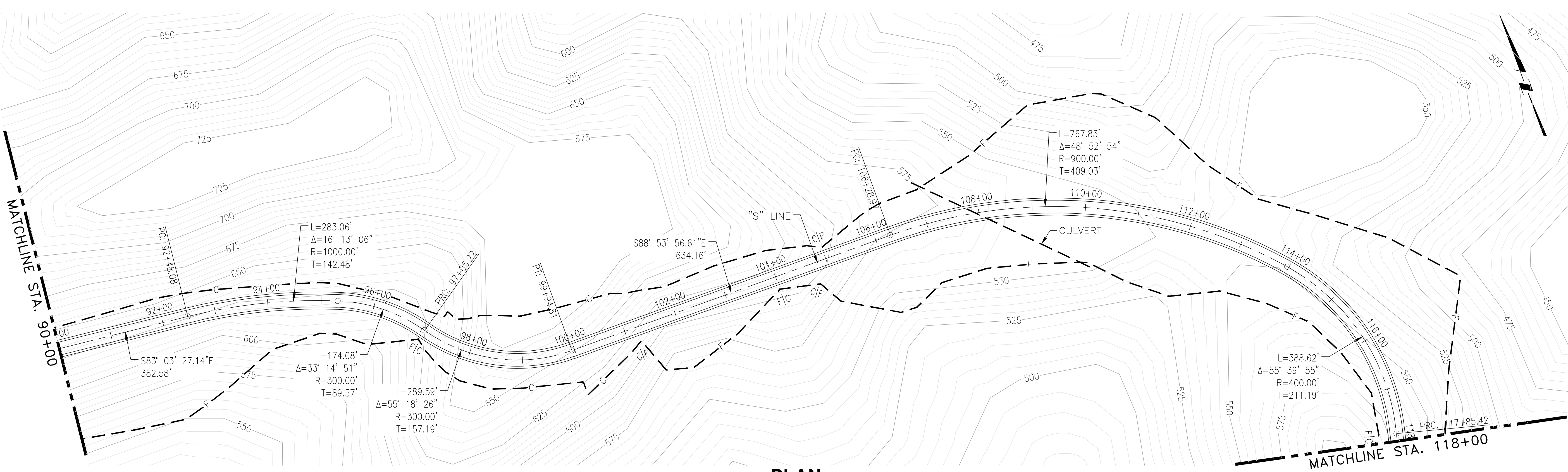
DESIGNED S. KALANTARI	APPROVAL RECOMMENDED
DRAWN N. KARUNATILAKA	APPROVAL BY
CHECKED M. FORREST	ESTIMATE LEVEL FEASIBILITY

AECOM <small>AECOM Technical Services, Inc. 2020 L Street, Suite 300 Sacramento, CA 95811 T 916-414-5800 F 916-414-1557 www.aecom.com</small>	REVIEWED MIKE FORREST REG. CE. NO. 27855	DATE 08/04/2017
	APPROVAL RECOMMENDED SAMI KALANTARI REG. CE. NO. 63891	
	APPROVED JOE BARNES REG. CE. NO. 40105	

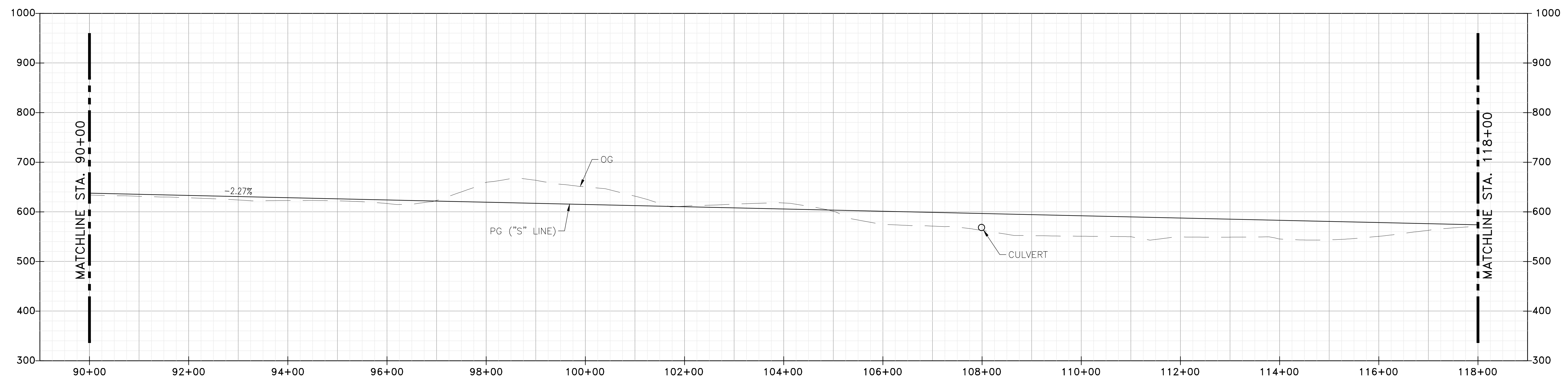


WSIP APPLICATION ATTACHMENT A4.A
SITES LODOGA ROAD RELOCATION
PLAN AND PROFILE
STA. 62+00 TO STA. 90+00

SPEC. NO.	
DRAWING NO.	CR-203
REV.	SHEET NO. 11



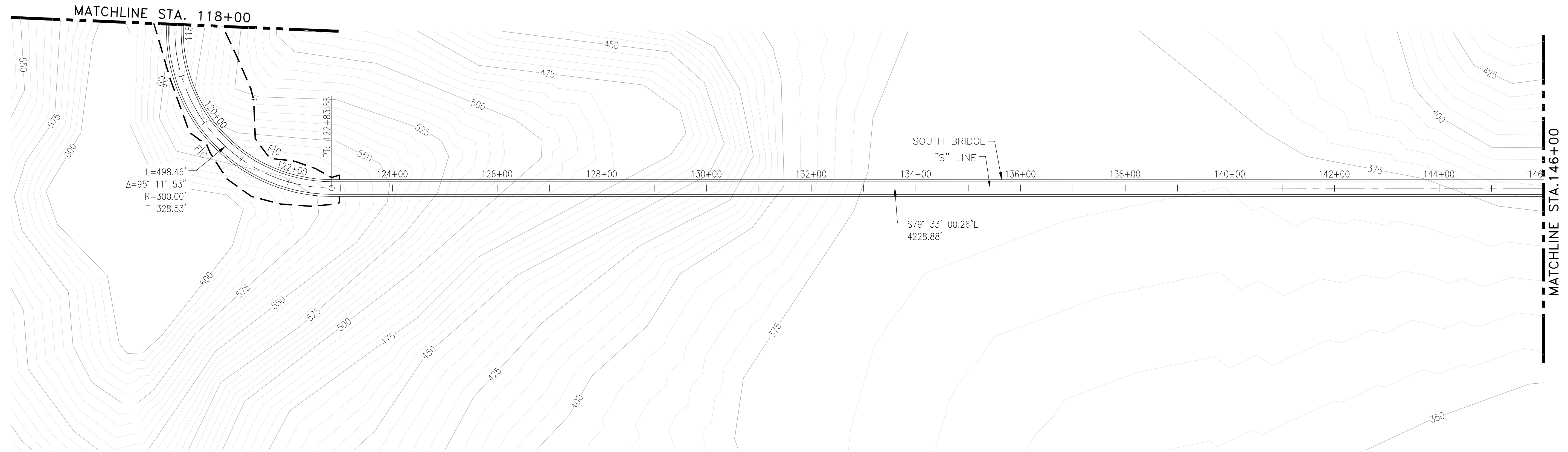
PLAN
SCALE: 1" = 100'



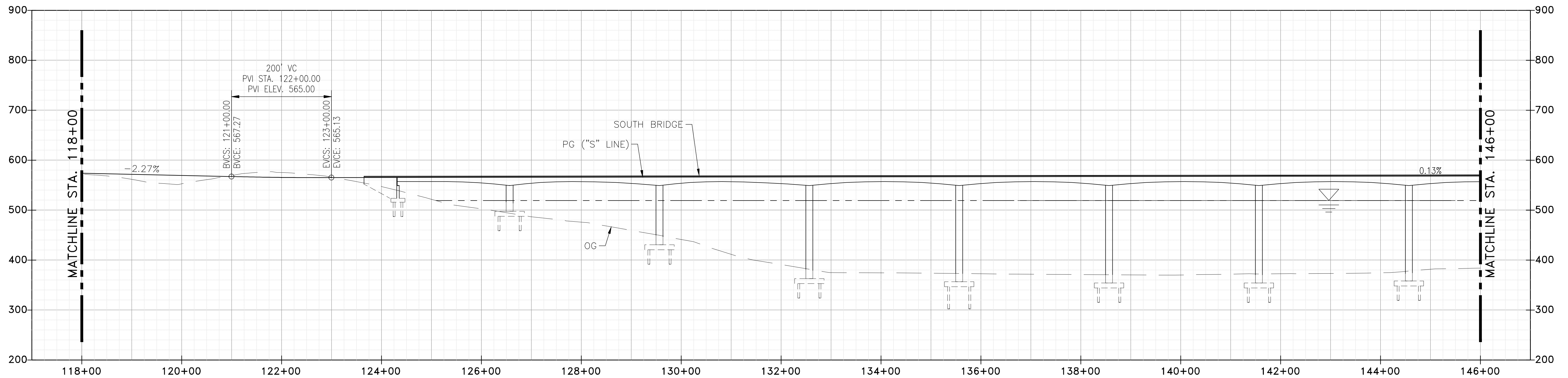
PROFILE
HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 100'

PLOTTED BY: BARNHART, DENNIS - August 7, 2017 - 3:45:16 PM
 DRAWING: G:\SRIPA\FEASIBILITY_AECOM\900 WORK\910-CAD\006-CIVIL\20-SHEETS\10-SOUTH BRIDGE\CR-204.DWG

DESIGNED S. KALANTARI		APPROVAL RECOMMENDED			REVIEWED MIKE FORREST	DATE 08/04/2017		WSIP APPLICATION ATTACHMENT A4.A		SPEC. NO.
DRAWN N. KARUNATILAKA		APPROVAL BY			REG. CE. NO. 27855 APPROVAL RECOMMENDED SAMI KALANTARI REG. CE. NO. 63891	SITES LODOGA ROAD RELOCATION PLAN AND PROFILE STA. 90+00 TO STA. 118+00		DRAWING NO. CR-204		
CHECKED M. FORREST		ESTIMATE LEVEL FEASIBILITY		APPROVED JOE BARNES				REV.	SHEET NO.	
A3-A 08/01/2017 COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)				REG. CE. NO. 40105					12	



PLAN
SCALE: 1" = 100'



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

PLOTTED BY: BARNHART, DENNIS - August 7, 2017 - 3:45:16 PM
 DRAWING: G:\SR\PA\FEASIBILITY_AECOM\900 WORK\910-CAD\006-CIVIL\20-SHEETS\10-SOUTH BRIDGE\CR-205.DWG

DESIGNED	S. KALANTARI
DRAWN	N. KARUNATILAKA
CHECKED	M. FORREST
DATE	08/01/2017
DESCRIPTION	COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)
SUB.	WSIP
APPD	JB

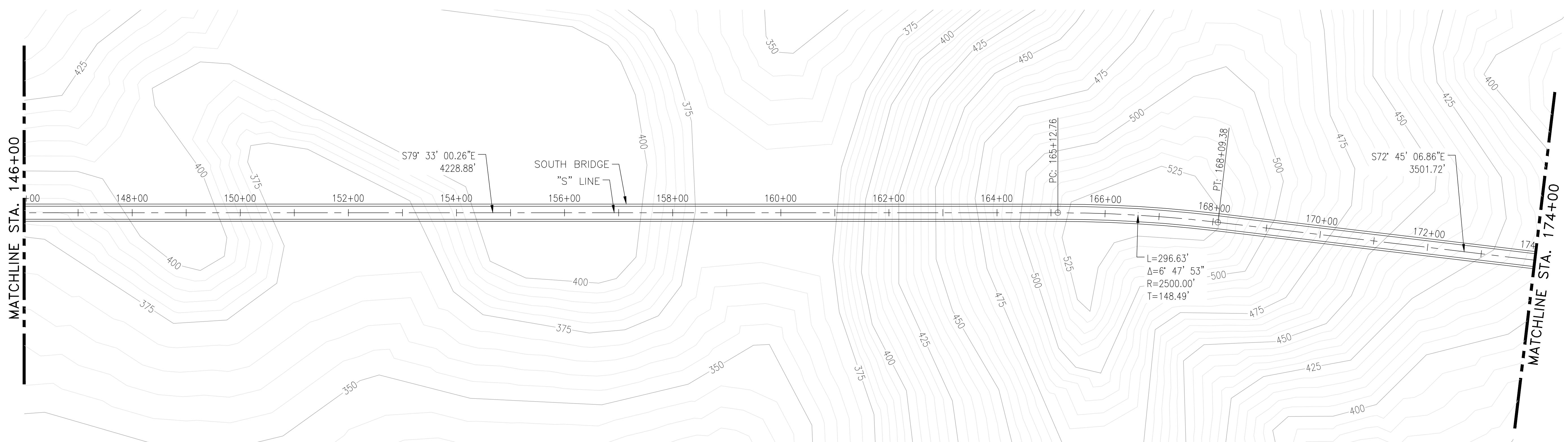
APPROVAL RECOMMENDED	
APPROVAL BY	
ESTIMATE LEVEL	FEASIBILITY

AECOM <small>AECOM Technical Services, Inc. 2020 L Street, Suite 300 Sacramento, Ca 95811 T 916-414-5800 F 916-414-1557 www.aecom.com</small>	REVIEWED	DATE
	MIKE FORREST	08/04/2017
	REG. CE. NO. 27855	
	APPROVAL RECOMMENDED	
	SAMI KALANTARI	
	REG. CE. NO. 63891	
	APPROVED	
	JOE BARNES	
	REG. CE. NO. 40105	

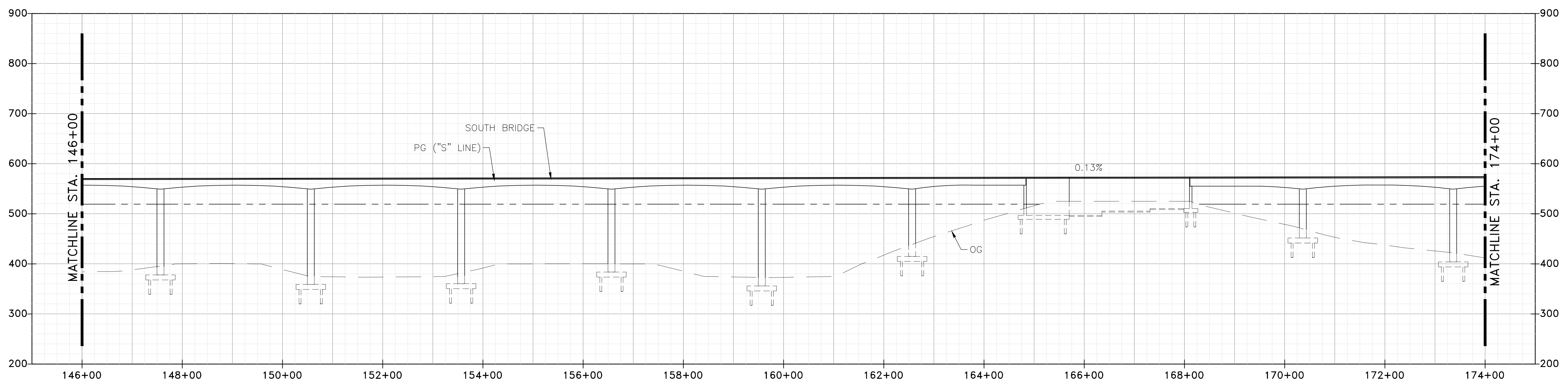


WSIP APPLICATION ATTACHMENT A4.A
SITES LODOGA ROAD RELOCATION
PLAN AND PROFILE
STA. 118+00 TO STA. 146+00

SPEC. NO.	
DRAWING NO.	CR-205
REV.	SHEET NO.
	13



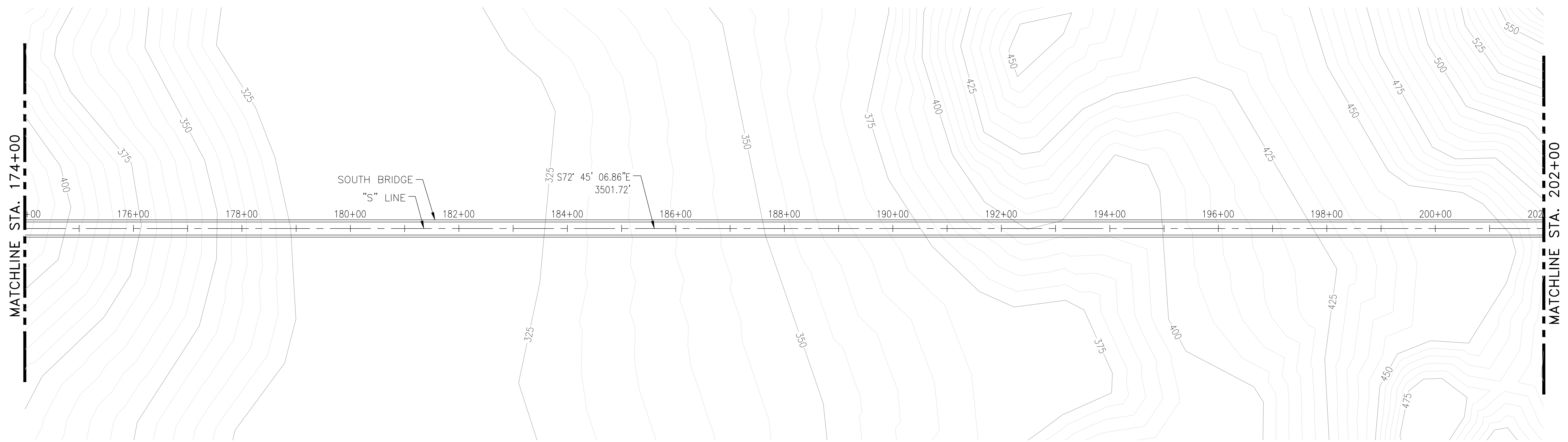
PLAN
SCALE: 1" = 100'



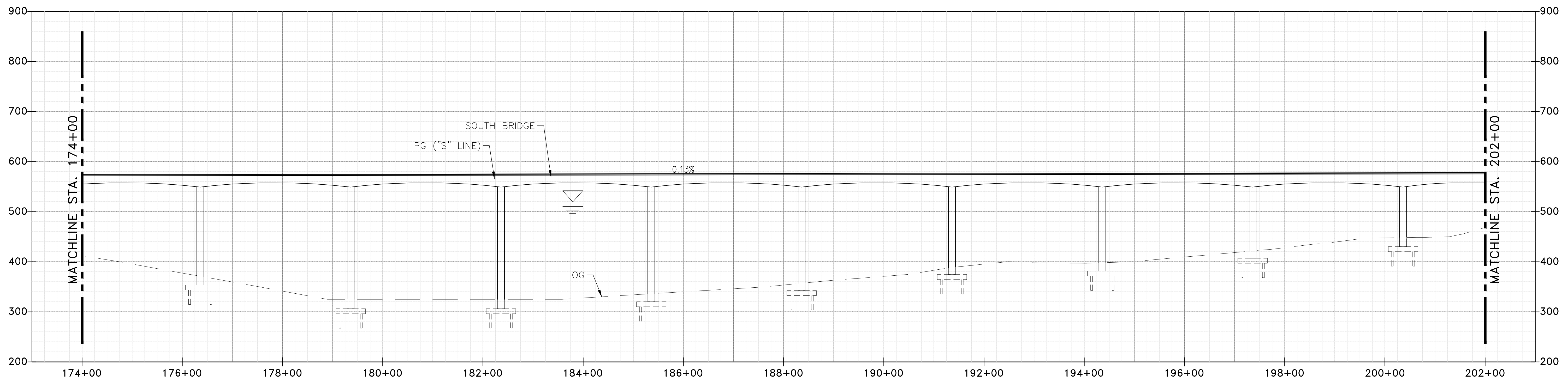
PROFILE
HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 100'

PLOTTED BY: BARNHART, DENNIS -- August 7, 2017 -- 3:45:16 PM
 DRAWING: G:\SR\PA\FEASIBILITY_AECOM\900 WORK\910-CAD\006-CIVIL\20-SHEETS\10-SOUTH BRIDGE\CR-206.DWG

DESIGNED S. KALANTARI		APPROVAL RECOMMENDED			REVIEWED MIKE FORREST	DATE 08/04/2017		WSIP APPLICATION ATTACHMENT A4.A SITES LODOGA ROAD RELOCATION PLAN AND PROFILE STA. 146+00 TO STA. 174+00		SPEC. NO.
DRAWN N. KARUNATILAKA		APPROVAL BY								DRAWING NO. CR-206
CHECKED M. FORREST		ESTIMATE LEVEL FEASIBILITY				REV. SHEET NO. 14				
A3-A 08/01/2017 COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)	WSIP	JB		AECOM Technical Services, Inc. 2020 L Street, Suite 300 Sacramento, CA 95811 T 916-414-5800 F 916-414-1557 www.aecom.com						



PLAN
SCALE: 1" = 100'



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

PLOTTED BY: BARNHART, DENNIS - August 7, 2017 - 3:45:16 PM
 DRAWING: G:\SRIPA\FEASIBILITY_AECOM\900 WORK\910-CAD\006-CIVIL\20-SHEETS\10-SOUTH BRIDGE\CR-207.DWG

DESIGNED	S. KALANTARI
DRAWN	N. KARUNATILAKA
CHECKED	M. FORREST
APPROVAL RECOMMENDED	
APPROVAL BY	
ESTIMATE LEVEL	FEASIBILITY

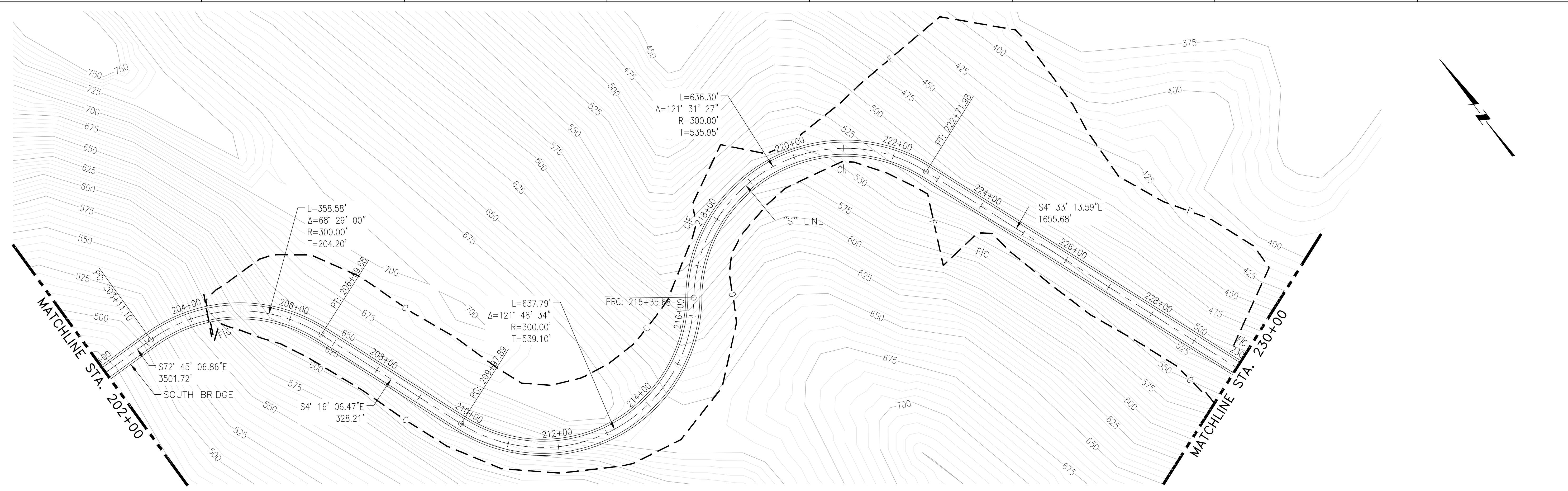
DESIGNED	S. KALANTARI
DRAWN	N. KARUNATILAKA
CHECKED	M. FORREST
APPROVAL RECOMMENDED	
APPROVAL BY	
ESTIMATE LEVEL	FEASIBILITY

REVIEWED	MIKE FORREST	DATE	08/04/2017
REG. CE. NO.	27855		
APPROVAL RECOMMENDED	SAMI KALANTARI		
REG. CE. NO.	63891		
APPROVED	JOE BARNES		
REG. CE. NO.	40105		

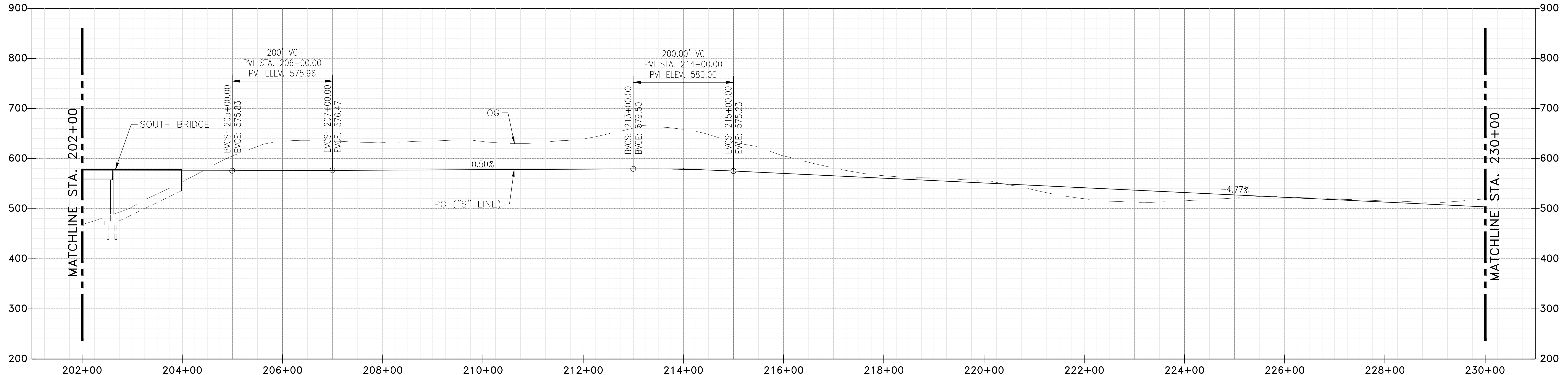


WSIP APPLICATION ATTACHMENT A4.A
 SITES LODOGA ROAD RELOCATION
 PLAN AND PROFILE
 STA. 174+00 TO STA. 202+00

SPEC. NO.	
DRAWING NO.	CR-207
REV.	SHEET NO.
	15



PLAN
SCALE: 1" = 100'



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

PLOTTED BY: BARNHART, DENNIS -- August 7, 2017 -- 3:45:16 PM
 DRAWING: G:\SR\PA\FEASIBILITY_AECOM\900 WORK\910-CAD\006-CIVIL\20-SHEETS\10-SOUTH BRIDGE\CR-208.DWG

DESIGNED	S. KALANTARI
DRAWN	N. KARUNATILAKA
CHECKED	M. FORREST
DATE	08/01/2017
DESCRIPTION	COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)
SUB.	WSIP
APPD	JB

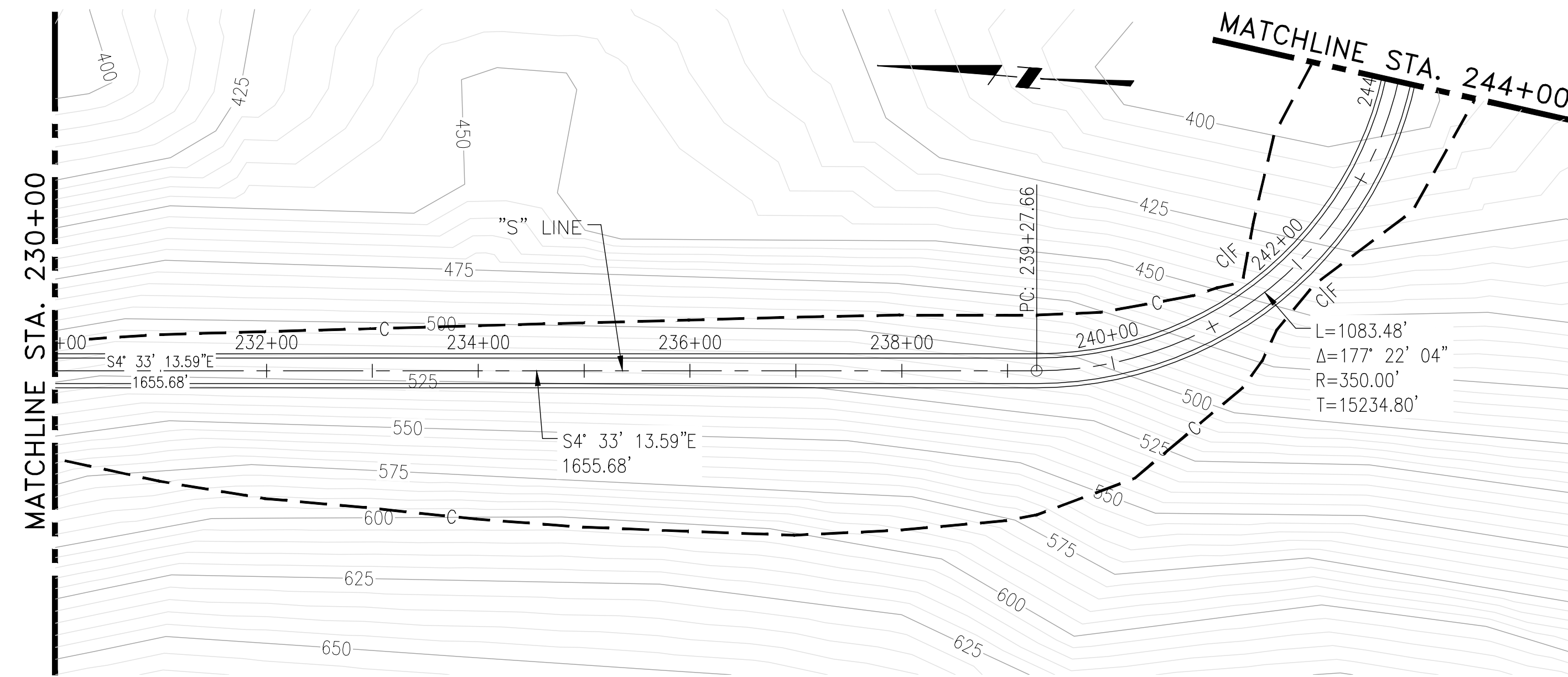
APPROVAL RECOMMENDED	
APPROVAL BY	
ESTIMATE LEVEL	FEASIBILITY

AECOM <small>AECOM Technical Services, Inc. 2020 L Street, Suite 300 Sacramento, CA 95811 T 916-414-5800 F 916-414-1557 www.aecom.com</small>	REVIEWED	DATE
	MIKE FORREST	08/04/2017
	REG. CE. NO. 27855	
	APPROVAL RECOMMENDED	
	SAMI KALANTARI	
	REG. CE. NO. 63891	
	APPROVED	
	JOE BARNES	
	REG. CE. NO. 40105	

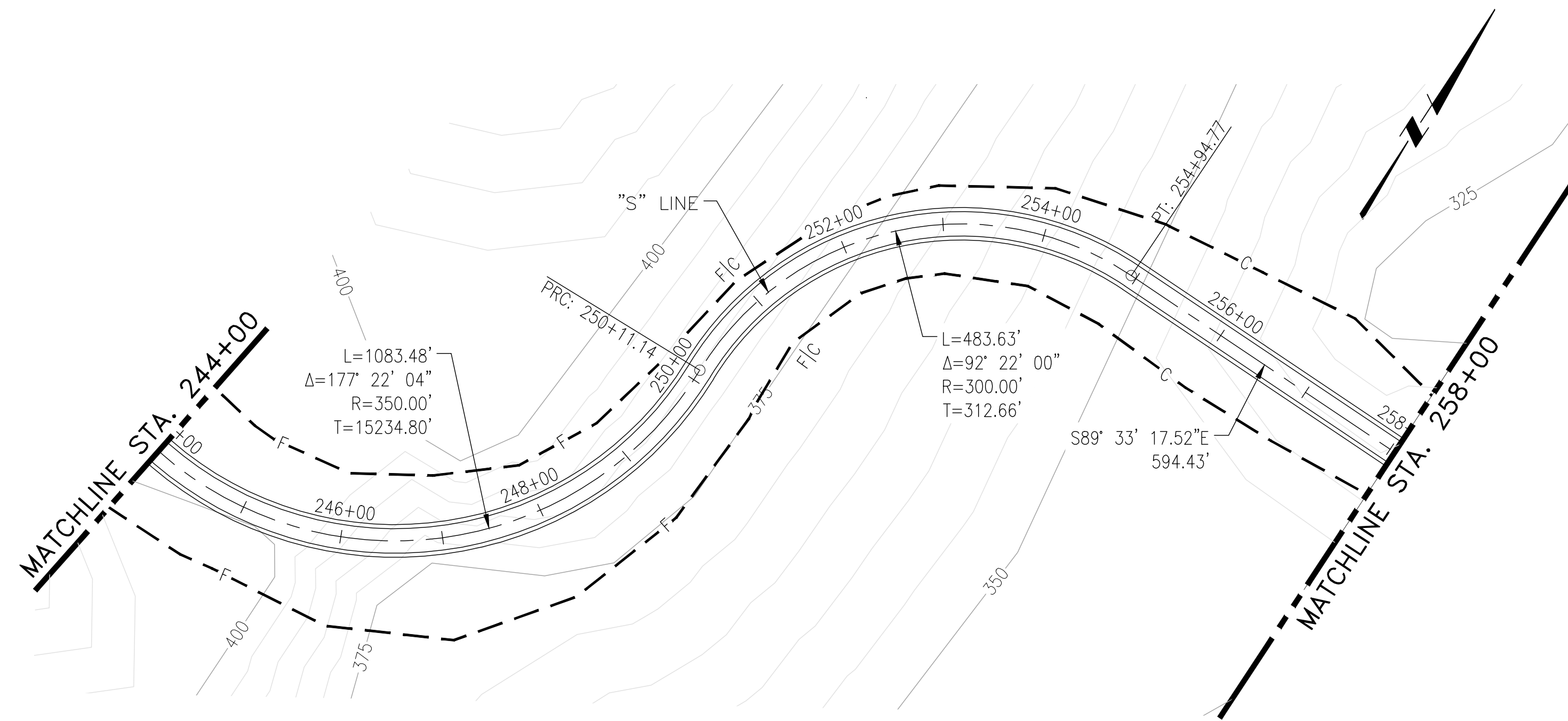


WSIP APPLICATION ATTACHMENT A4.A
SITES LODOGA ROAD RELOCATION
PLAN AND PROFILE
STA. 202+00 TO STA. 230+00

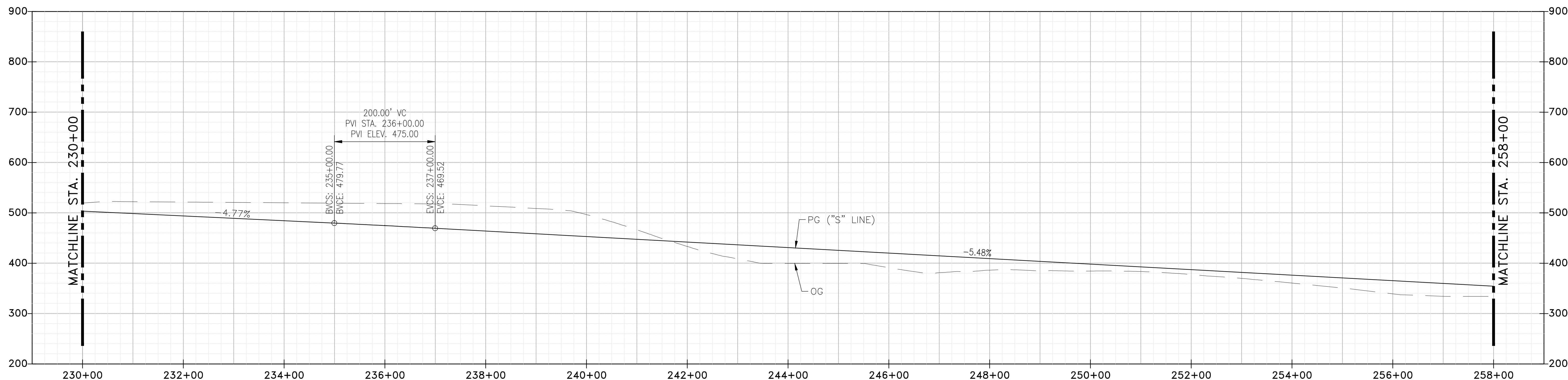
SPEC. NO.	
DRAWING NO.	CR-208
REV.	SHEET NO.
	16



PLAN
SCALE: 1" = 100'



PLAN
SCALE: 1" = 100'



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

PLOTTED BY: BARNHART, DENNIS - August 7, 2017 - 3:45:16 PM
 DRAWING: G:\SR\PA\FEASIBILITY_AECOM\900 WORK\910-CAD\006-CIVIL\20-SHEETS\10-SOUTH BRIDGE\CR-209.DWG

DESIGNED	S. KALANTARI
DRAWN	N. KARUNATILAKA
CHECKED	M. FORREST
DATE	08/01/2017
DESCRIPTION	COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)
SUB.	WSIP
APPD	JB

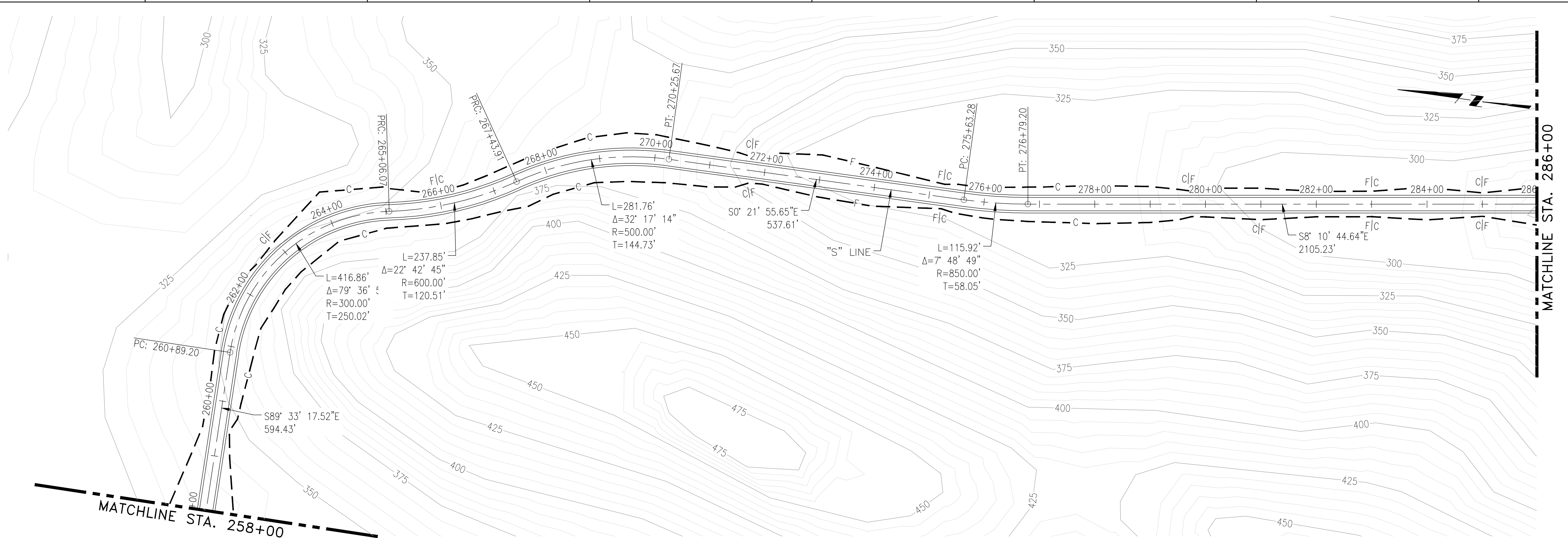
APPROVAL RECOMMENDED	
APPROVAL BY	
ESTIMATE LEVEL	FEASIBILITY

	REVIEWED	DATE
	MIKE FORREST	08/04/2017
	REG. CE. NO. 27855	
	APPROVAL RECOMMENDED	
APPROVED JOE BARNES REG. CE. NO. 40105		

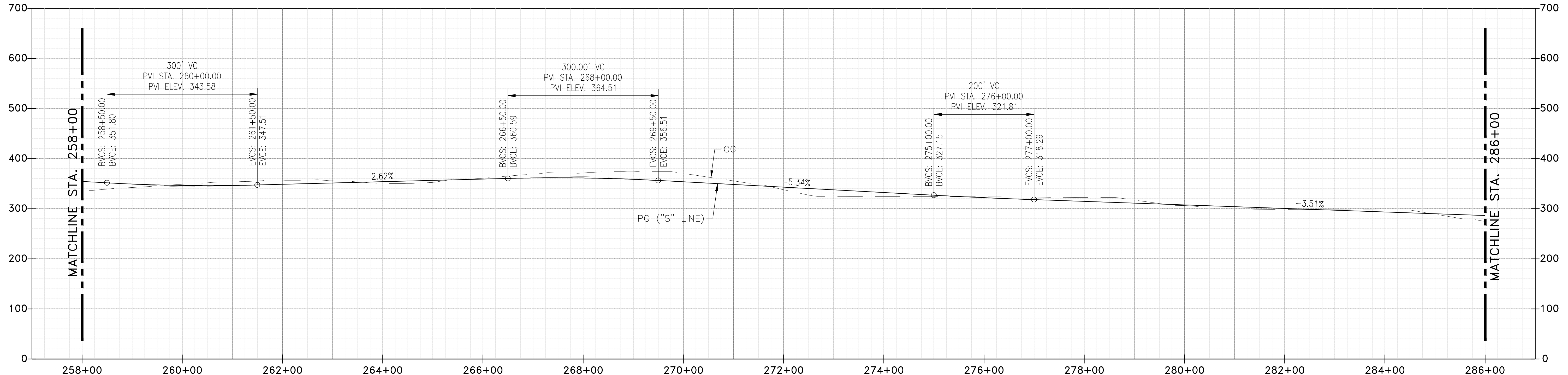


WSIP APPLICATION ATTACHMENT A4.A
 SITES LODOGA ROAD RELOCATION
 PLAN AND PROFILE
 STA. 230+00 TO STA. 258+00

SPEC NO.	
DRAWING NO.	CR-209
REV.	SHEET NO.
	17



PLAN
SCALE: 1" = 100'



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

PLOTTED BY: BARNHART, DENNIS - August 7, 2017 - 3:45:16 PM
 DRAWING: G:\SR\PA\FEASIBILITY_AECOM\900 WORK\910-CAD\006-CIVIL\20-SHEETS\10-SOUTH BRIDGE\CR-210.DWG

DESIGNED	S. KALANTARI
DRAWN	N. KARUNATILAKA
CHECKED	M. FORREST
DATE	08/01/2017
DESCRIPTION	COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)
SUB.	WSIP
APPD	JB

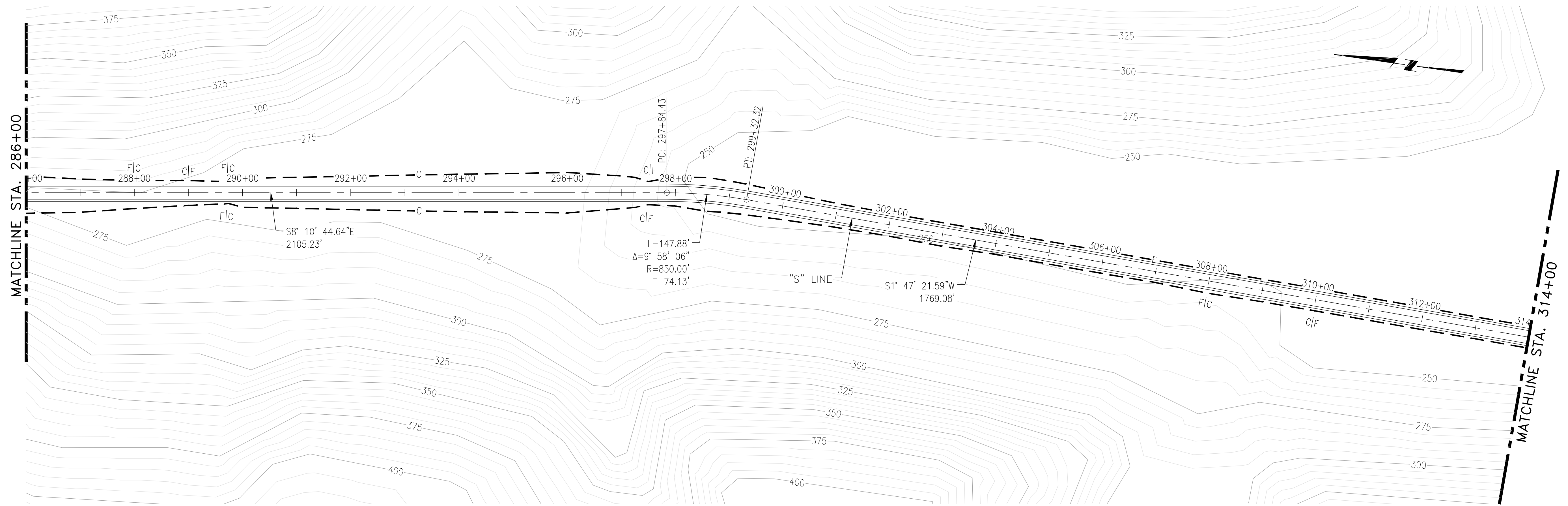
APPROVAL RECOMMENDED	
APPROVAL BY	
ESTIMATE LEVEL	FEASIBILITY

 <small>AECOM Technical Services, Inc. 2020 L Street, Suite 300 Sacramento, CA 95811 T 916-414-5800 F 916-414-1557 www.aecom.com</small>	REVIEWED	DATE
	MIKE FORREST	08/04/2017
	REG. CE. NO. 27855	
	APPROVAL RECOMMENDED	
	SAMI KALANTARI	
	REG. CE. NO. 63891	
	APPROVED	
	JOE BARNES	
	REG. CE. NO. 40105	

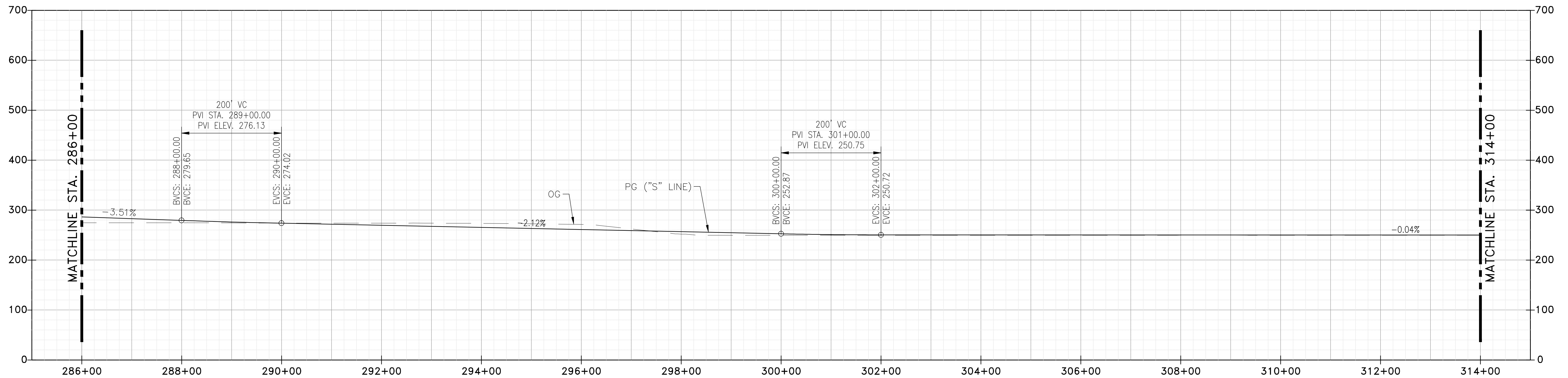


WSIP APPLICATION ATTACHMENT A4.A
SITES LODOGA ROAD RELOCATION
PLAN AND PROFILE
STA. 258+00 TO STA. 286+00

SPEC. NO.	
DRAWING NO.	CR-210
REV.	SHEET NO.
	18



PLAN
SCALE: 1" = 100'



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

PLOTTED BY: BARNHART, DENNIS - August 7, 2017 - 3:45:16 PM
 DRAWING: G:\SR\PA\FEASIBILITY_AECOM\900 WORK\910-CAD\006-CIVIL\20-SHEETS\10-SOUTH BRIDGE\CR-211.DWG

DESIGNED	S. KALANTARI
DRAWN	N. KARUNATILAKA
CHECKED	M. FORREST
DATE	08/01/2017
COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)	
WSIP	JOB
SUB.	APPD

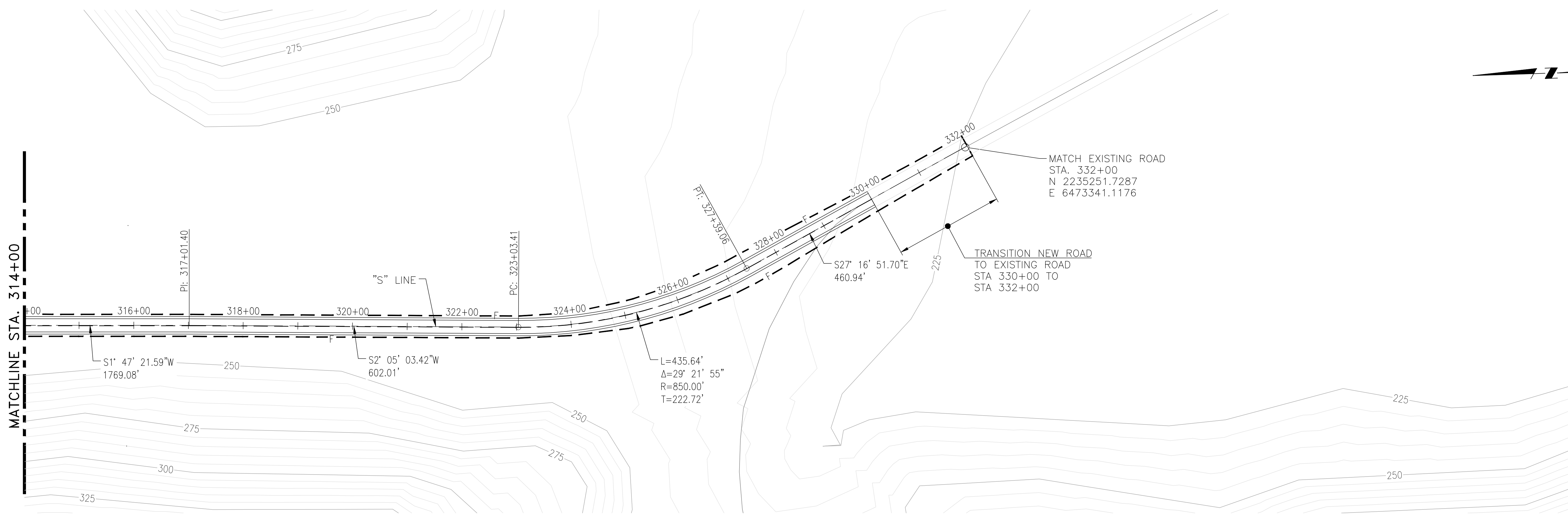
APPROVAL RECOMMENDED	
APPROVAL BY	
ESTIMATE LEVEL	FEASIBILITY

AECOM	REVIEWED	DATE
MIKE FORREST	MIKE FORREST	08/04/2017
REG. CE. NO. 27855	APPROVAL RECOMMENDED	
SAMI KALANTARI	APPROVED	
REG. CE. NO. 63891	JOE BARNES	
	REG. CE. NO. 40105	

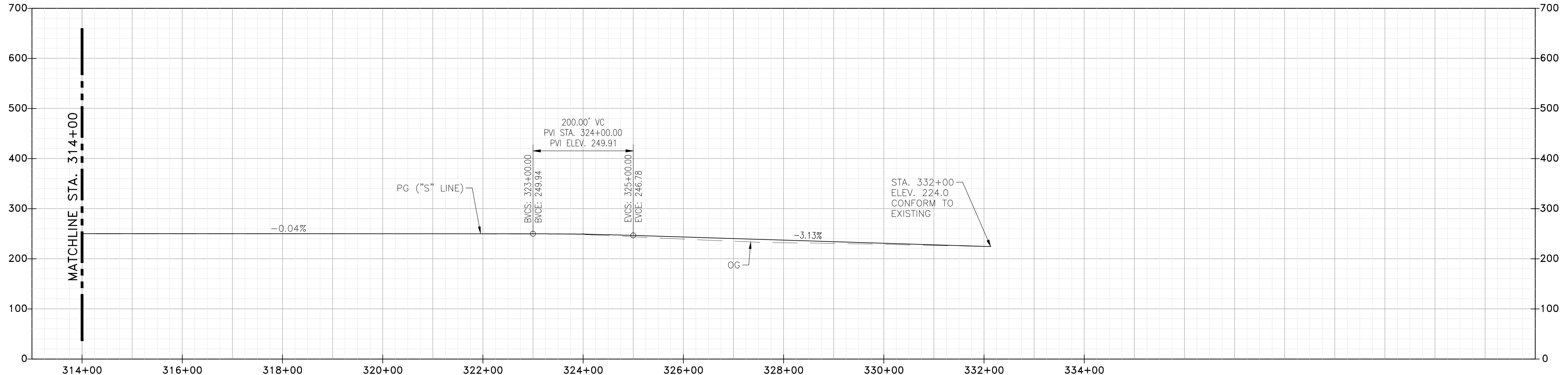


WSIP APPLICATION ATTACHMENT A4.A
SITES LODOGA ROAD RELOCATION
PLAN AND PROFILE
STA. 286+00 TO STA. 314+00

SPEC. NO.	
DRAWING NO.	CR-211
REV.	SHEET NO.
	19



PLAN
SCALE: 1" = 100'



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

PLOTTED BY: BARNHART, DENNIS - August 7, 2017 - 3:45:16 PM
 DRAWING: G:\SRIPA\FEASIBILITY_AECOM\900 WORK\910-CAD\006-CIVIL\20-SHEETS\10-SOUTH BRIDGE\CR-212.DWG

DESIGNED	S. KALANTARI
DRAWN	N. KARUNATILAKA
CHECKED	M. FORREST
ESTIMATE LEVEL	FEASIBILITY
APPROVAL RECOMMENDED	
APPROVAL BY	

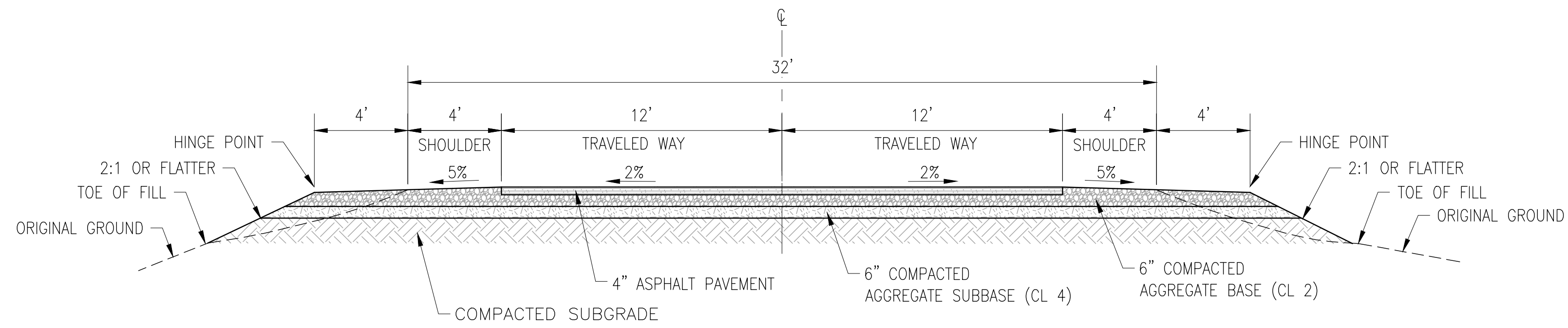
DESIGNED	S. KALANTARI
DRAWN	N. KARUNATILAKA
CHECKED	M. FORREST
ESTIMATE LEVEL	FEASIBILITY
APPROVAL RECOMMENDED	
APPROVAL BY	

	REVIEWED MIKE FORREST REG. CE. NO. 27855 APPROVAL RECOMMENDED SAMI KALANTARI REG. CE. NO. 63891 APPROVED JOE BARNES REG. CE. NO. 40105	DATE 08/04/2017
--	--	--------------------

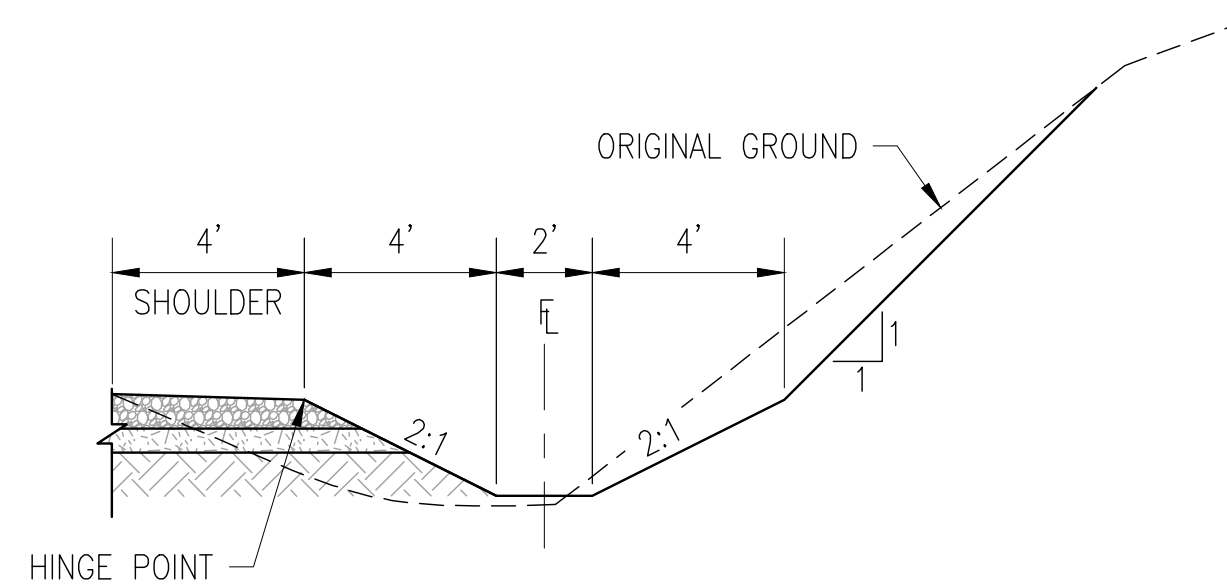


WSIP APPLICATION ATTACHMENT A4.A
SITES LODOGA ROAD RELOCATION
PLAN AND PROFILE
 STA. 314+00 TO STA. 331+96

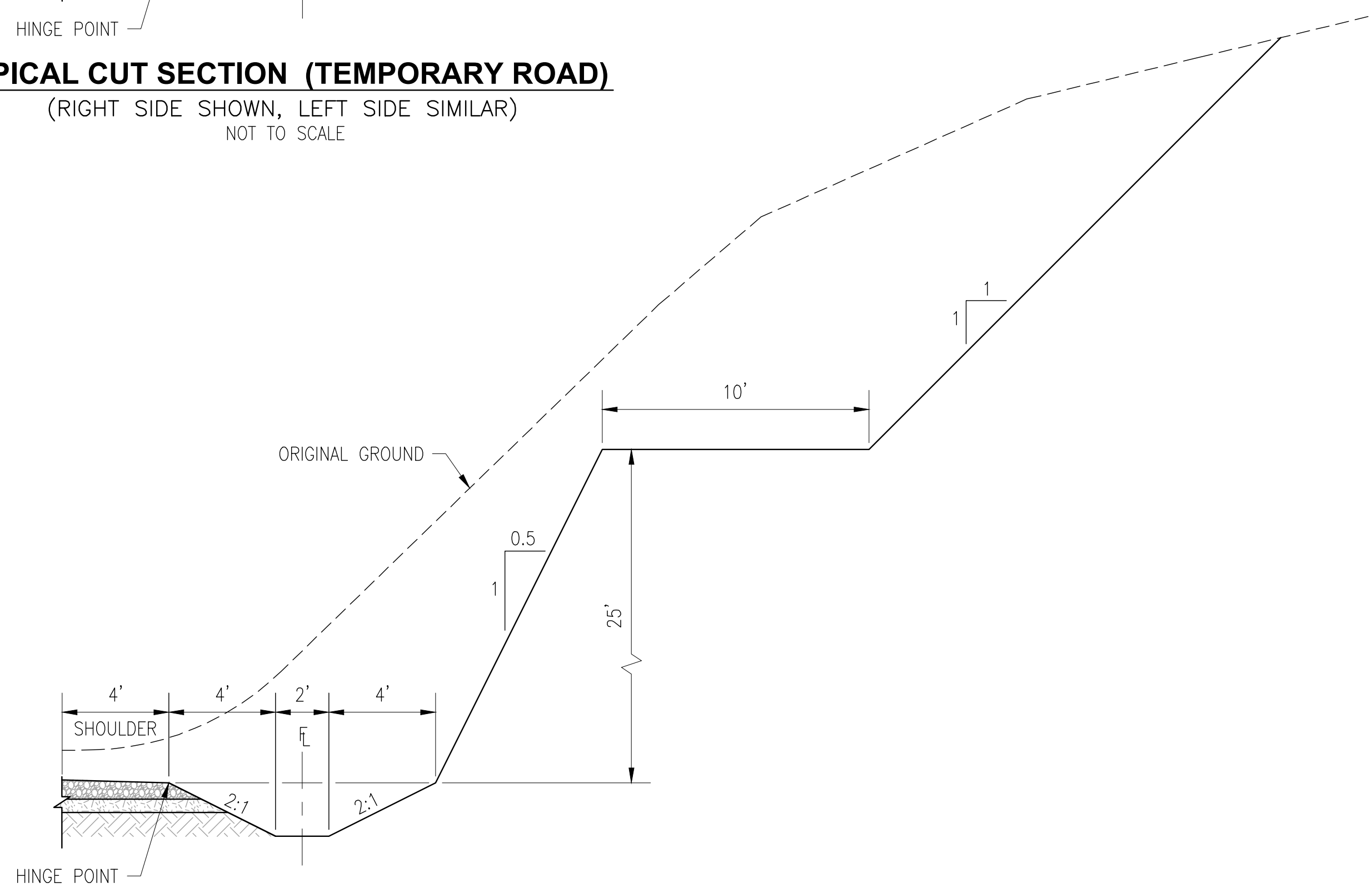
SPEC. NO.	
DRAWING NO.	CR-212
REV.	SHEET NO.
	20



TYPICAL ROAD SECTION
NOT TO SCALE



TYPICAL CUT SECTION (TEMPORARY ROAD)
(RIGHT SIDE SHOWN, LEFT SIDE SIMILAR)
NOT TO SCALE



TYPICAL CUT SECTION (SITES LODOGA ROAD)
(RIGHT SIDE SHOWN, LEFT SIDE SIMILAR)
NOT TO SCALE

PLOTTED BY: BARNHART, DENNIS - August 7, 2017 - 3:45:16 PM
 DRAWING: G:\S\PA\FEASIBILITY_AECOM\900 WORK\910-CAD\006-CIVIL\20-SHEETS\10-SOUTH BRIDGE\CR-301.DWG

REV	DATE	DESCRIPTION	SUB.	APPD
A3-A	08/01/2017	COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)	WSIP	JB

DESIGNED	S. KALANTARI	APPROVAL RECOMMENDED	
DRAWN	N. KARUNATILAKA	APPROVAL BY	
CHECKED	M. FORREST	ESTIMATE LEVEL	FEASIBILITY

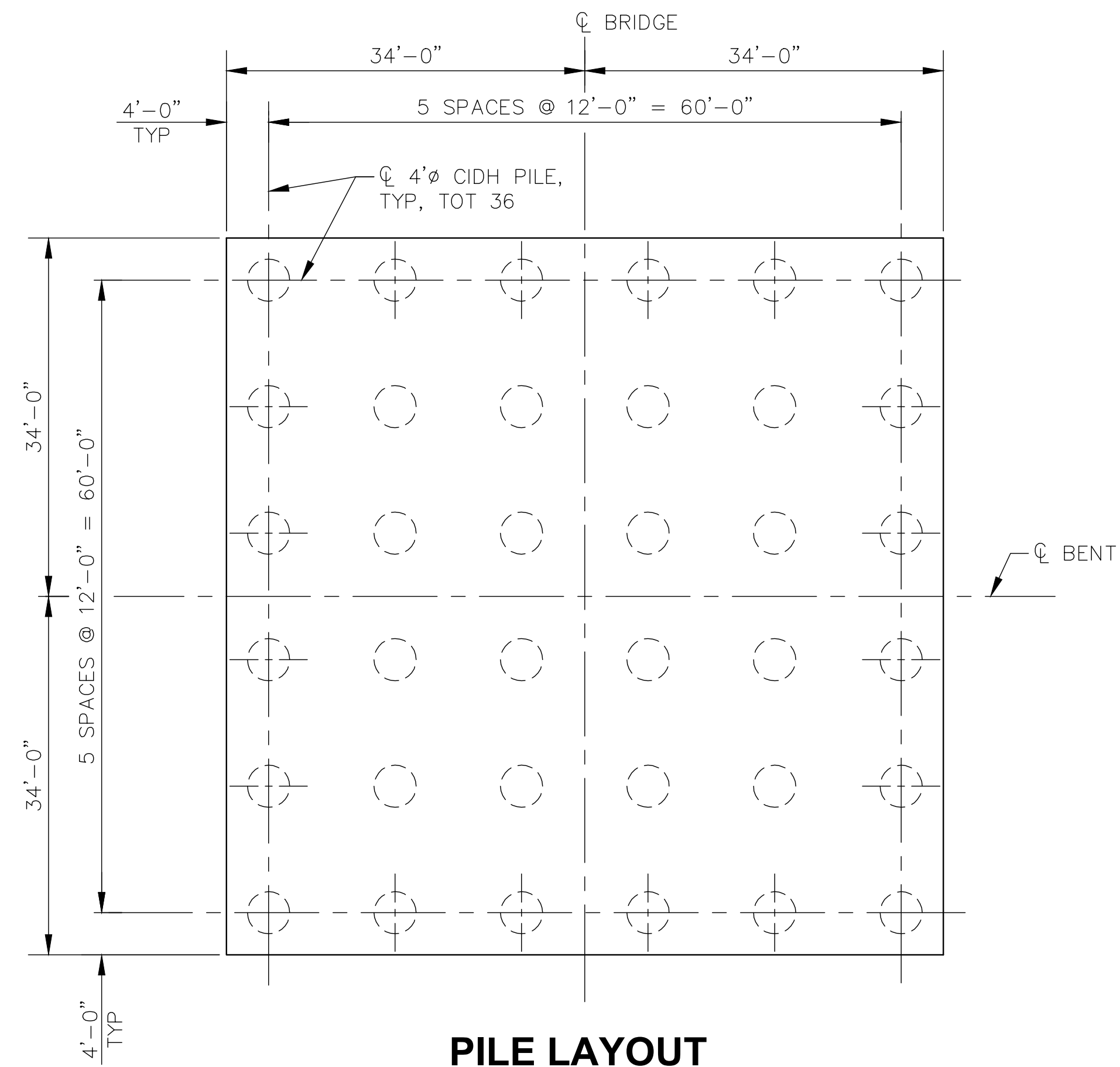
AECOM <small>AECOM Technical Services, Inc. 2020 L Street, Suite 300 Sacramento, Ca 95811 T 916-414-5800 F 916-414-1557 www.aecom.com</small>	REVIEWED	DATE
	MIKE FORREST	08/04/2017
	REG. CE. NO. 27855	
	APPROVAL RECOMMENDED	
	SAMI KALANTARI	
	REG. CE. NO. 63891	
	APPROVED	
	JOE BARNES	
	REG. CE. NO. 40105	



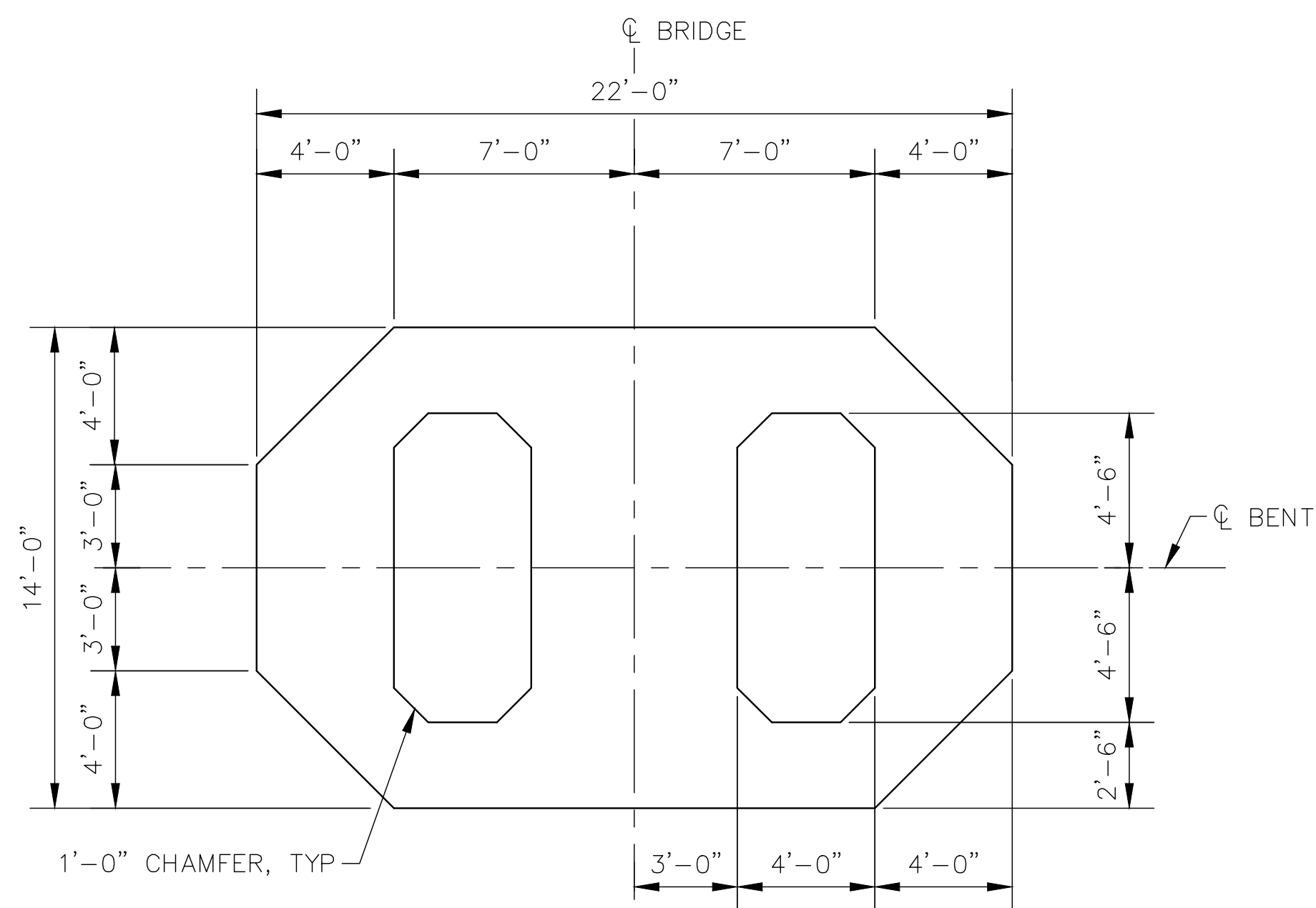
WSIP APPLICATION ATTACHMENT A4.A

TYPICAL ROAD CROSS SECTIONS

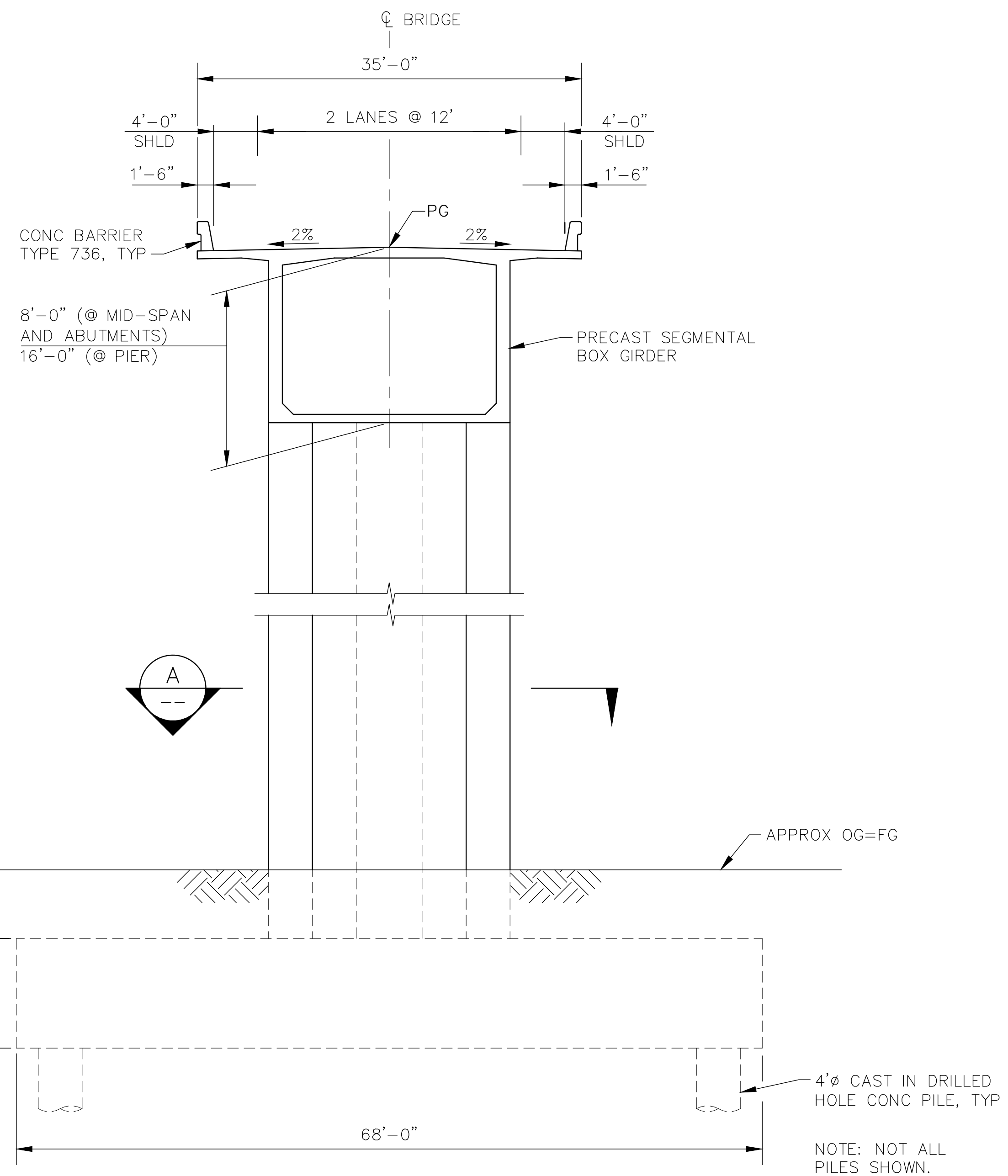
SPEC NO.	
DRAWING NO.	CR-301
REV.	SHEET NO.
	21



PILE LAYOUT
NO SCALE



SECTION A
NO SCALE



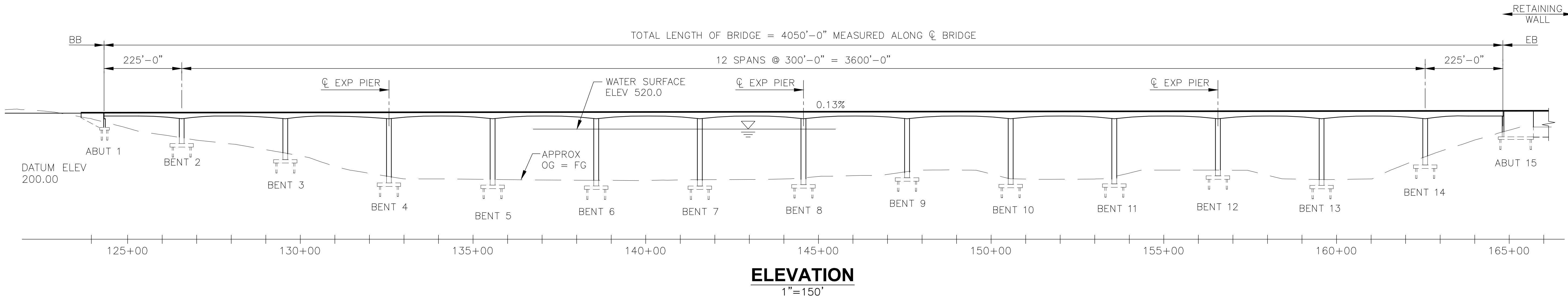
TYPICAL SECTION
1/8" = 1'-0"

PLOTTED BY: BARNHART, DENNIS -- August 7, 2017 -- 3:45:16 PM
 DRAWING: G:\S\PA\FEASIBILITY_AECOM\900 WORK\910-CAD\006-CIVIL\20-SHEETS\10-SOUTH BRIDGE\CR-302.DWG

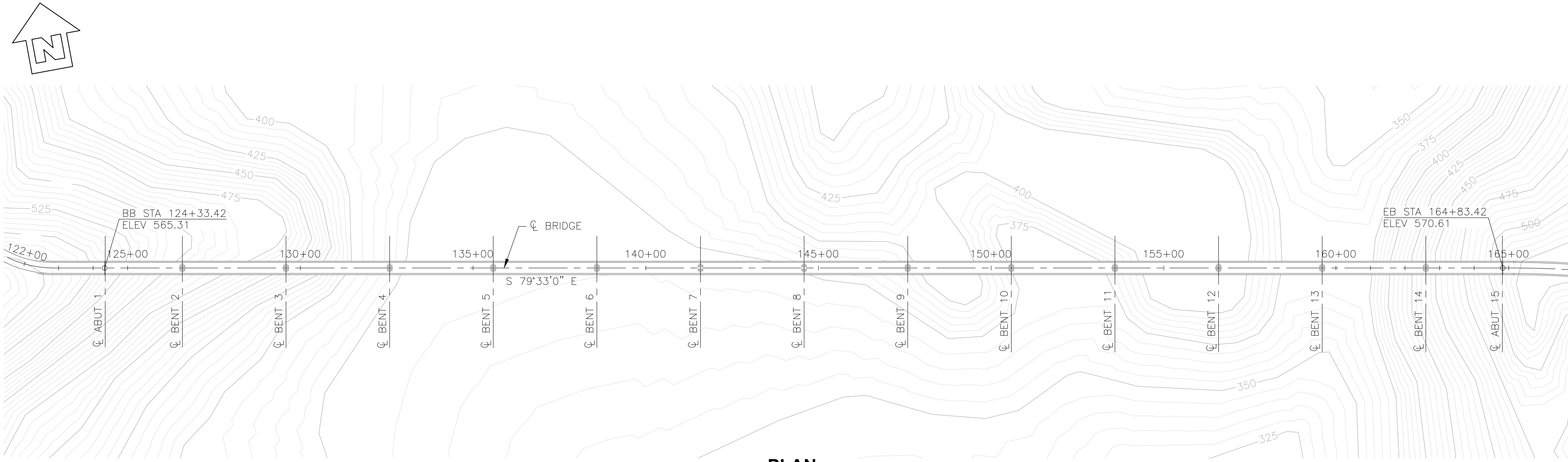
DESIGNED B. CARTER		APPROVAL RECOMMENDED			REVIEWED MIKE FORREST	DATE 08/04/2017		WSIP APPLICATION ATTACHMENT A4.A		SPEC. NO.
DRAWN T. WALTZ		APPROVAL BY			REG. CE. NO. 27855	SOUTH BRIDGE NO.1 AND 2		DRAWING NO. CR-302		REV.
CHECKED M. FORREST		ESTIMATE LEVEL FEASIBILITY		APPROVAL RECOMMENDED SYED KAZMI	TYPICAL SECTION			SHEET NO. 22		
A3-A		08/01/2017		COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)		WSIP		JOB		
REV	DATE	DESCRIPTION		SUB.	APPD					

STA 121+00.00 ELEV 567.27 -2.27% 200' VC STA 123+00.00 ELEV 565.13 +0.13% STA 205+00.00 ELEV 575.83 200' VC STA 207+00.00 ELEV 576.47 +0.50%

PROFILE
NO SCALE



ELEVATION
1"=150'



PLAN
1" = 150'

PLOTTED BY: BARNHART, DENNIS - August 7, 2017 - 3:45:16 PM
 DRAWING: G:\S\PA\FEASIBILITY_AECOM\900 WORK\910-CAD\006-CIVIL\20-SHEETS\10-SOUTH BRIDGE\CR-401.DWG

DESIGNED	B. CARTER
DRAWN	T. WALTZ
CHECKED	M. FORREST
ESTIMATE LEVEL	FEASIBILITY
APPROVAL RECOMMENDED	
APPROVAL BY	
APPROVED	

DESIGNED	B. CARTER
DRAWN	T. WALTZ
CHECKED	M. FORREST
ESTIMATE LEVEL	FEASIBILITY
APPROVAL RECOMMENDED	
APPROVAL BY	
APPROVED	

DESIGNED	B. CARTER
DRAWN	T. WALTZ
CHECKED	M. FORREST
ESTIMATE LEVEL	FEASIBILITY
APPROVAL RECOMMENDED	
APPROVAL BY	
APPROVED	

REVIEWED	MIKE FORREST	DATE	08/04/2017
REG. CE. NO.	27855		
APPROVAL RECOMMENDED	SYED KAZMI		
REG. CE. NO.	48356		
APPROVED	JOE BARNES		
REG. CE. NO.	40105		

WSIP APPLICATION ATTACHMENT A4.A

SOUTH BRIDGE NO. 1

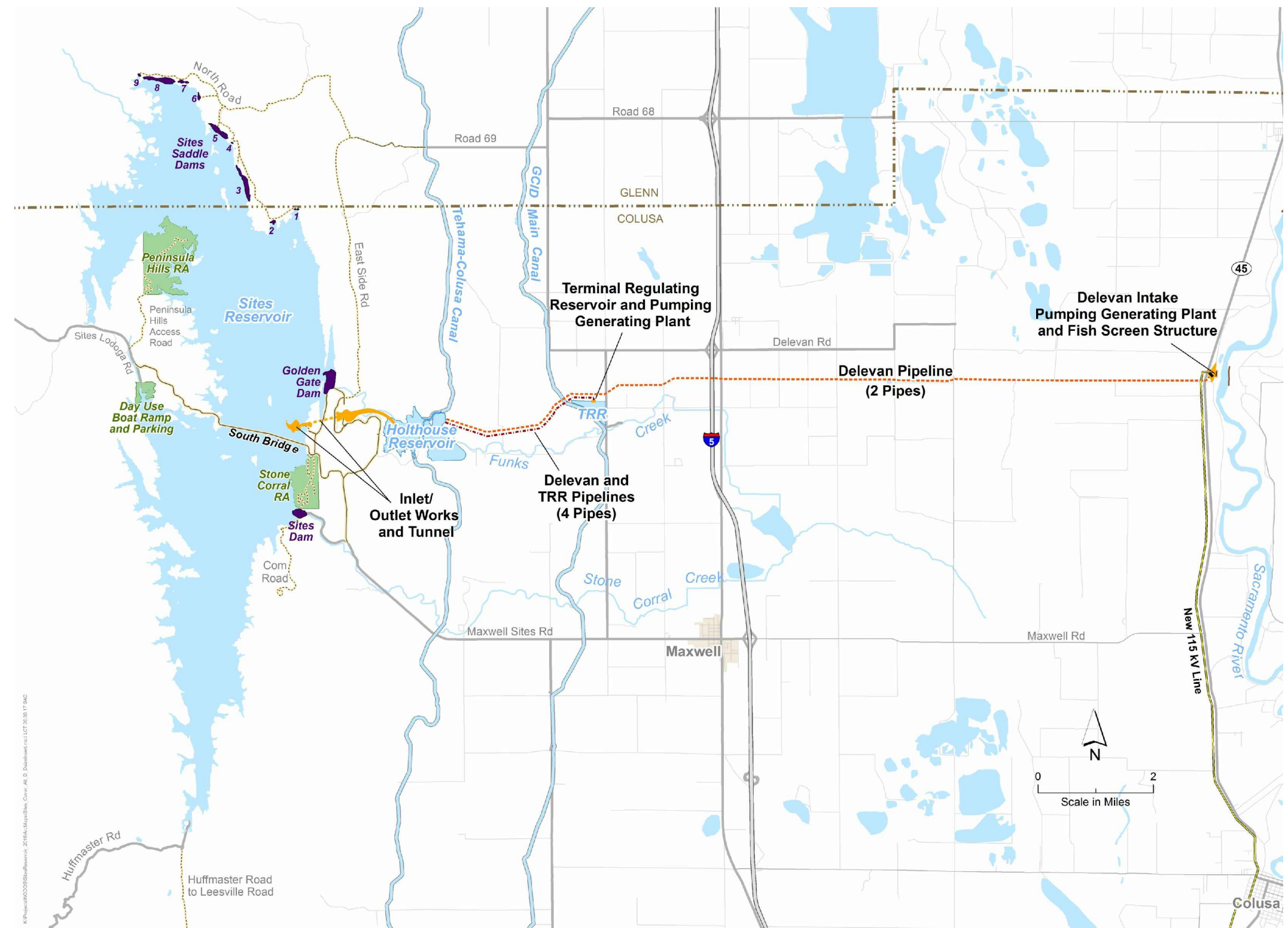
GENERAL PLAN AND ELEVATION

SPEC. NO.	
DRAWING NO.	CR-401
REV.	SHEET NO.
	23

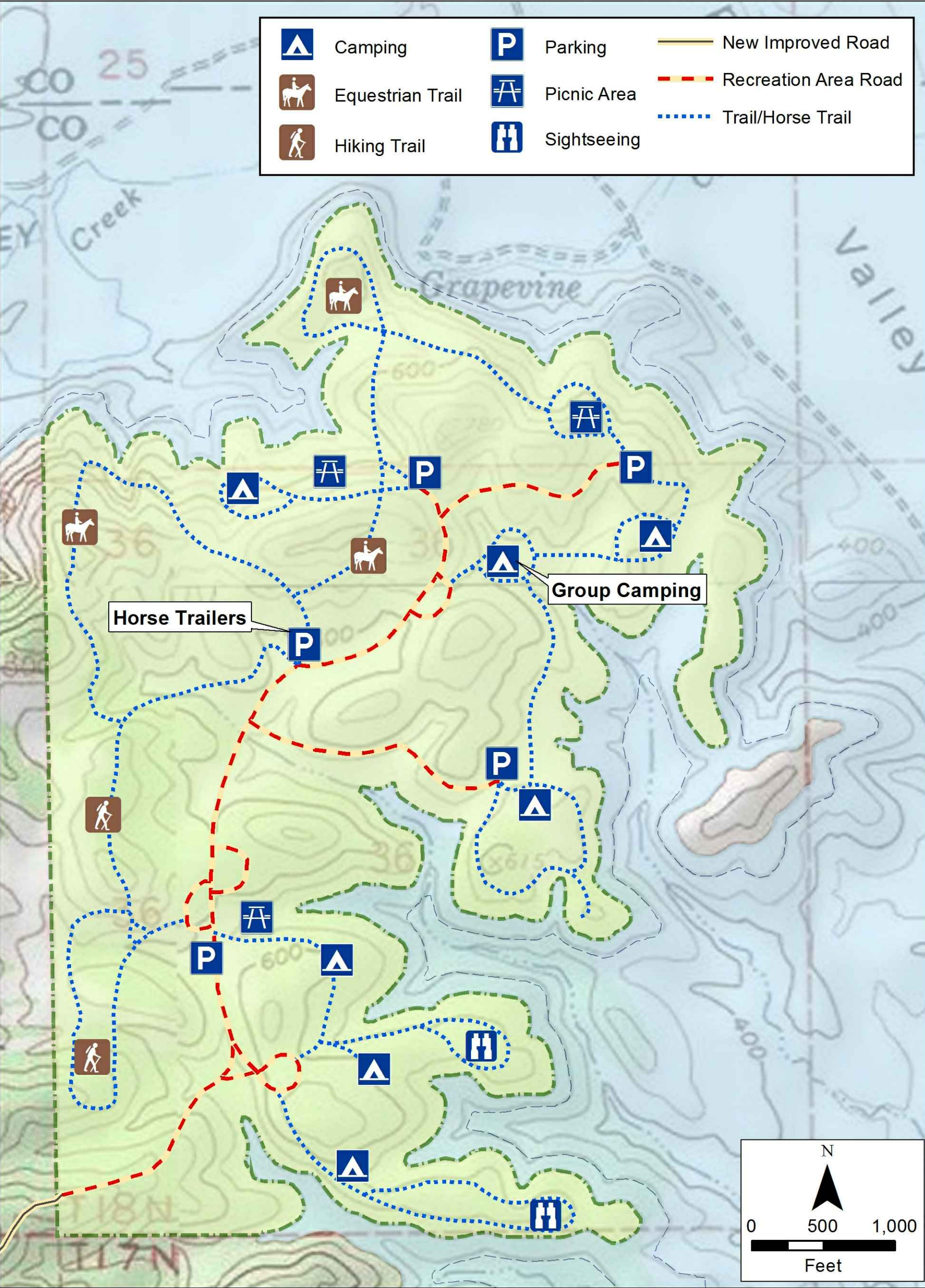


AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
T 916-414-5800 F 916-414-1557
www.aecom.com

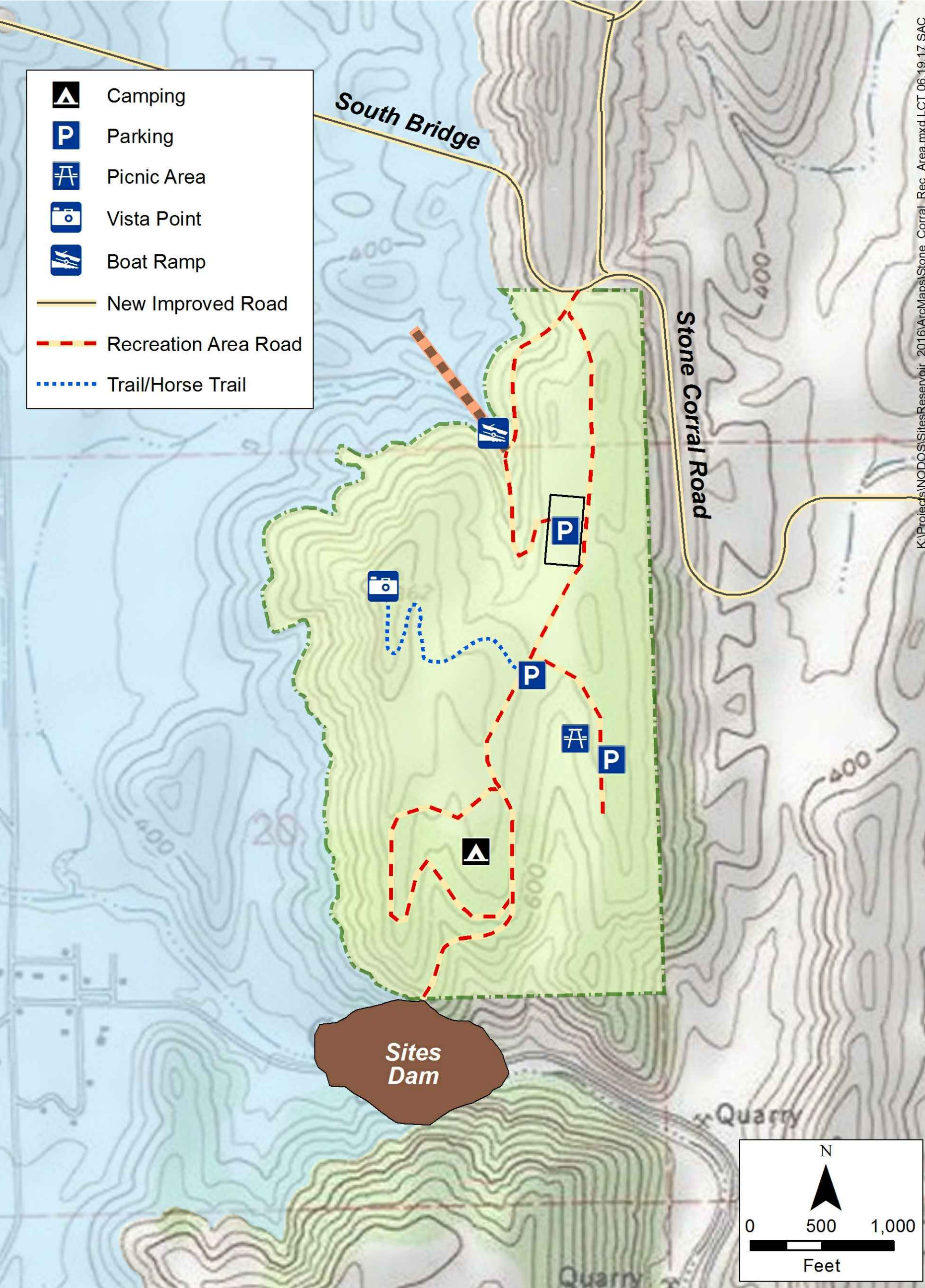
PLOTTED BY: BARNHART, DENNIS -- August 7, 2017 -- 3:45:16 PM
 DRAWING: G:\S\PA\FEASIBILITY_AECOM\900 WORK\00-CAD\006-CIVIL\20-SHEETS\04-PARKS & RECREATIONAL AREAS\PR-101.DWG
 REV DATE DESCRIPTION SUB. APPD



RECREATIONAL AREA OVERVIEW



PENINSULA HILLS RECREATIONAL AREA



STONE CORRAL RECREATIONAL AREA

DESIGNED L. MURRAY		APPROVAL RECOMMENDED			REVIEWED MIKE FORREST REG. CE. NO. 27855	DATE 08/04/2017		WSIP APPLICATION ATTACHMENT A4.A		SPEC. NO.
DRAWN L. MURRAY		APPROVAL BY			APPROVAL RECOMMENDED LOREN MURRAY REG. CE. NO. 42663			PARK AND RECREATIONAL AREAS		DRAWING NO. PR-101
CHECKED M. FORREST		ESTIMATE LEVEL FEASIBILITY			APPROVED JOE BARNES REG. CE. NO. 40105			OVERVIEW		REV. SHEET NO. 25
A3-A	08/01/2017	COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)		WSIP	JB					

GENERAL NOTES:

MATERIALS FOR DAM CONSTRUCTION

THE MATERIAL DESCRIPTIONS PROVIDED BELOW ARE SUMMARIZED FROM DWR MATERIAL INVESTIGATION AND DAM DESIGN REPORTS. NOTE THAT THE ZONE DESIGNATIONS FOR THE SADDLE DAMS DIFFER IN SOME RESPECTS FROM THE ZONE DESIGNATIONS FOR SITES AND GOLDEN GATE DAMS. WHILE ZONE DESIGNATIONS DIFFER, MATERIALS ARE GENERALLY THE SAME. MATERIAL ZONES ARE INDICATED ON THE VARIOUS DAM SECTION DRAWINGS.

SITES AND GOLDEN GATE DAMS.

1. ZONE 1 – IMPERVIOUS CORE MATERIAL WILL BE COMPRISED OF LOW TO MEDIUM PLASTICITY CLAYS (CL), WITH LESSER AMOUNTS OF HIGH PLASTICITY CLAYS (CH) AND CLAYEY SANDS (SC). THE IMPERVIOUS MATERIAL WILL BE OBTAINED FROM A DESIGNATED BORROW AREA UPSTREAM OF THE DAM IN THE RESERVOIR AND FROM REQUIRED EXCAVATION AREAS FOR THE DAM EMBANKMENT, APPURTENANT STRUCTURES, AND FUNKS RESERVOIR ENLARGEMENT. HAUL DISTANCES WILL BE LESS THAN 1 MILE. PROCESSING OF THE IMPERVIOUS MATERIAL, BEYOND NORMAL DISKING AND MOISTURE CONDITIONING IN THE DESIGNATED BORROW AREAS, WILL NOT BE REQUIRED.
2. ZONE 2 – FILTER, DRAIN, AND TRANSITION MATERIALS CONSISTING OF FRESH ROCK PROCESSED TO VARIOUS SIZES TO MEET FILTER COMPATIBILITY AND HYDRAULIC CONDUCTIVITY REQUIREMENTS. ON-SITE VENADO SANDSTONE OF THE CORTINA FORMATION MAY NOT BE SUITABLE FOR USE AS THESE EMBANKMENT MATERIALS. THEREFORE, IT IS ASSUMED THAT THE FILTER, DRAIN, AND TRANSITION MATERIALS WILL BE IMPORTED FROM THE CLOSEST OFF-SITE SAND AND GRAVEL SOURCE. THE CLOSEST SOURCE IS AN OLD ABANDONED CHANNEL ON STONY CREEK BETWEEN ORLAND AND WILLOWS, APPROXIMATELY 35 ROAD MILES FROM THE GOLDEN GATE DAM SITE. THE SOURCE HAS AN ESTIMATED MATERIAL AVAILABILITY OF 160 MILLION CUBIC YARDS THAT FAR EXCEEDS THE CONSTRUCTION REQUIREMENT. IT IS ASSUMED THE QUARRY IS UNDEVELOPED AND DEVELOPMENT OF THE QUARRY AND SUPPLY AND SETUP OF ALL CRUSHING, SCREENING, AND WASHING FACILITIES WILL BE NECESSARY. QUARRY DEVELOPMENT COST SHOULD BE A PART OF THE MATERIAL SUPPLY COST ESTIMATE FOR PROVIDING ZONE 2 AND OTHER PROCESSED MATERIAL.
3. ZONE 3 – SHELL MATERIAL WILL BE COMPRISED OF PROCESSED CLEAN ROCKFILL WITH MAXIMUM PARTICLE SIZE UP TO 30-INCH. THE SHELL MATERIAL WILL BE OBTAINED FROM FRESH VENADO SANDSTONE OF THE CORTINA FORMATION FROM A QUARRY DEVELOPED IN THE RIDGE ON THE EAST SIDE OF THE RESERVOIR IN NEAR VICINITY OF THE DAM SITE WITH HAUL DISTANCES OF LESS THAN 1 MILE. QUARRY OPERATIONS WILL REQUIRE DRILLING AND BLASTING WITH SELECTIVE PROCESSING TO PRODUCE THE REQUIRED PARTICLE SIZES AND GRADATION.
4. ZONE 4 – RANDOM MATERIAL COMPRISED OF MATERIALS UNSUITABLE FOR USE AS CLEAN ROCKFILL. RANDOM MATERIAL WILL CONSIST OF WEATHERED SANDSTONE, MUDSTONE, SLOPEWASH, ETC. OBTAINED FROM EXCAVATION FOR THE DAM FOUNDATION, APPURTENANT STRUCTURES, AND THE ROCKFILL QUARRY. HAUL DISTANCES WILL BE LESS THAN 1 MILE AND PROCESSING WILL NOT BE REQUIRED.

SADDLE DAMS

1. ZONE 1 – IMPERVIOUS CORE MATERIAL COMPRISED OF LOW TO MEDIUM PLASTICITY CLAYS (CL), WITH LESSER AMOUNTS OF HIGH PLASTICITY CLAYS (CH) AND CLAYEY SANDS (SC). THE IMPERVIOUS MATERIAL WILL BE OBTAINED FROM DESIGNATED BORROW AREAS UPSTREAM OF THE DAMS IN THE RESERVOIR WITH HAUL DISTANCES OF LESS THAN 1 MILE. PROCESSING OF THE IMPERVIOUS MATERIAL, BEYOND NORMAL DISKING AND MOISTURE CONDITIONING IN THE DESIGNATED BORROW AREAS, WILL NOT BE REQUIRED.
2. ZONE 2 – RANDOM SHELL MATERIAL COMPRISED PREDOMINATELY OF MUDSTONE FROM THE BOXER FORMATION. RANDOM MATERIAL WILL BE OBTAINED FROM DESIGNATED BORROW AREAS UPSTREAM OF THE DAMS IN THE RESERVOIR AND FROM REQUIRED FOUNDATION EXCAVATION FOR THE DAM EMBANKMENTS WITH HAUL DISTANCES OF LESS THAN 1 MILE. PROCESSING OF THE RANDOM SHELL MATERIALS WILL NOT BE REQUIRED.
3. ZONE 3 – UPSTREAM SHELL MATERIAL AND RIPRAP CONSISTING OF PROCESSED CLEAN ROCKFILL UP TO 30-INCH MAXIMUM PARTICLE SIZE. THE ROCKFILL AND RIPRAP WILL BE OBTAINED FROM FRESH VENADO SANDSTONE OF THE CORTINA FORMATION FROM A QUARRY DEVELOPED IN THE RIDGE ON THE EAST SIDE OF THE RESERVOIR APPROXIMATELY 3 TO 4 MILES FROM THE SADDLE DAM SITES. QUARRY OPERATIONS WILL REQUIRE DRILLING AND BLASTING WITH SELECTIVE PROCESSING TO PRODUCE THE REQUIRED PARTICLE SIZES AND GRADATION.
4. ZONE 4 – FILTER AND DRAIN MATERIALS CONSISTING OF SAND AND GRAVEL PROCESSED TO VARIOUS SIZES TO MEET FILTER COMPATIBILITY AND HYDRAULIC CONDUCTIVITY REQUIREMENTS. IT IS ASSUMED THAT THE FILTER AND DRAIN MATERIALS WILL BE IMPORTED FROM THE CLOSEST OFF-SITE SAND AND GRAVEL SOURCE TO ENSURE CONSERVATIVE ESTIMATION OF MATERIAL COSTS. THE CLOSEST OFF-SITE SOURCE IS AN OLD ABANDONED CHANNEL ON STONY CREEK BETWEEN ORLAND AND WILLOWS, APPROXIMATELY 30 ROAD MILES FROM THE SADDLE DAM SITES. THE SOURCE HAS AN ESTIMATED MATERIAL AVAILABILITY OF 160 MILLION CUBIC YARDS THAT FAR EXCEEDS THE CONSTRUCTION REQUIREMENT. IT IS ASSUMED THE QUARRY IS UNDEVELOPED AND DEVELOPMENT OF THE QUARRY AND SUPPLY AND SETUP OF ALL CRUSHING, SCREENING, AND WASHING FACILITIES WILL BE NECESSARY. QUARRY DEVELOPMENT COST SHOULD BE A PART OF THE MATERIAL SUPPLY COST ESTIMATE FOR PROVIDING ZONE 4 AND OTHER PROCESSED MATERIAL.

FOUNDATION OBJECTIVES AND FOUNDATION GROUTING

GOLDEN GATE DAM

1. TO MEET THE FOUNDATION OBJECTIVES, RECENT AND OLDER ALLUVIUM, DECOMPOSED, AND INTENSELY WEATHERED BEDROCK WILL BE EXCAVATED FROM THE ENTIRE FOOTPRINT OF GOLDEN GATE DAM TO OBTAIN A MODERATELY WEATHERED BEDROCK SURFACE. IN ADDITION, MODERATELY WEATHERED BEDROCK WILL BE EXCAVATED FROM THE IMPERVIOUS CORE FOOTPRINT DOWN TO THE TOP OF SLIGHTLY WEATHERED AND/OR FRESH BEDROCK SURFACE. EXCAVATION WILL BE PERFORMED BY THE USE OF HEAVY EQUIPMENT BUT MAY REQUIRE SOME BLASTING IN THE HARDER SANDSTONE.
2. WATER PRESSURE TEST DATA INDICATES SOME AREAS OF HIGHER HYDRAULIC CONDUCTIVITY IN THE UPPER PORTION OF THE DAM FOUNDATION. CONSOLIDATION AND CURTAIN GROUTING WAS INCLUDED IN THE DAM DESIGN TO REDUCE SEEPAGE THROUGH THE DAM FOUNDATION. THE GROUT PROGRAM WILL CONSIST OF A 2-ROW GROUT CURTAIN WITH 1-ROW OF CONSOLIDATION HOLES UPSTREAM AND ONE ROW DOWNSTREAM OF THE CURTAIN HOLES. THE ROWS WILL

PARALLEL THE DAM CENTERLINE AND BE SPACED 10 FEET APART. IN ADDITION, A 40-FOOT WIDE BY 3-FEET THICK GROUT CAP IS INCLUDED TO PREVENT SURFACE LEAKAGE OF GROUT DURING GROUTING OF THE UPPER STAGE.

3. EACH ROW OF CONSOLIDATION AND CURTAIN GROUT HOLES WILL CONSIST OF MANDATORY PRIMARY AND SECONDARY HOLES SPACED AT 10-FOOT CENTERS. IN ADDITION, IT WAS ASSUMED THAT TERTIARY HOLES, SPLIT SPACED BETWEEN THE PRIMARY AND SECONDARY HOLES, WILL BE REQUIRED OVER HALF THE LENGTH OF THE DAM TO MEET GROUT CLOSURE CRITERIA. CONSISTENT WITH DAM FOUNDATION GROUTING PRACTICES, THE DRILLING DEPTH OF CONSOLIDATION HOLES WAS ESTIMATED TO BE ONE QUARTER THE HEIGHT OF THE DAM, TOGETHER WITH A MINIMUM DEPTH OF 50 FEET. ADDITIONALLY, THE DRILLING DEPTH OF CURTAIN HOLES WAS ESTIMATED TO BE ONE HALF THE HEIGHT OF THE DAM, TOGETHER WITH A MINIMUM DEPTH OF 100 FEET.
4. VERIFICATION TESTING WILL BE CONDUCTED TO A DEPTH EQUIVALENT TO THE CURTAIN GROUT HOLES. VERIFICATION HOLES WILL BE DRILLED BETWEEN THE CURTAIN GROUT ROWS, ALONG THE DAM CENTERLINE. THESE HOLES ARE ASSUMED TO HAVE AN AVERAGE HOLE SPACING OF 75 FEET.
5. IN ADDITION TO THE GROUTING PROGRAM DESCRIBED HERE, ADDITIONAL GROUTING AND/OR TREATMENT OF SPECIAL FEATURES SUCH AS THE GG-2 FAULT WILL LIKELY BE REQUIRED. COST ESTIMATE FOR GROUTING TO INCLUDE APPROPRIATE ALLOWANCE FOR SUCH TREATMENT.

SITES DAM

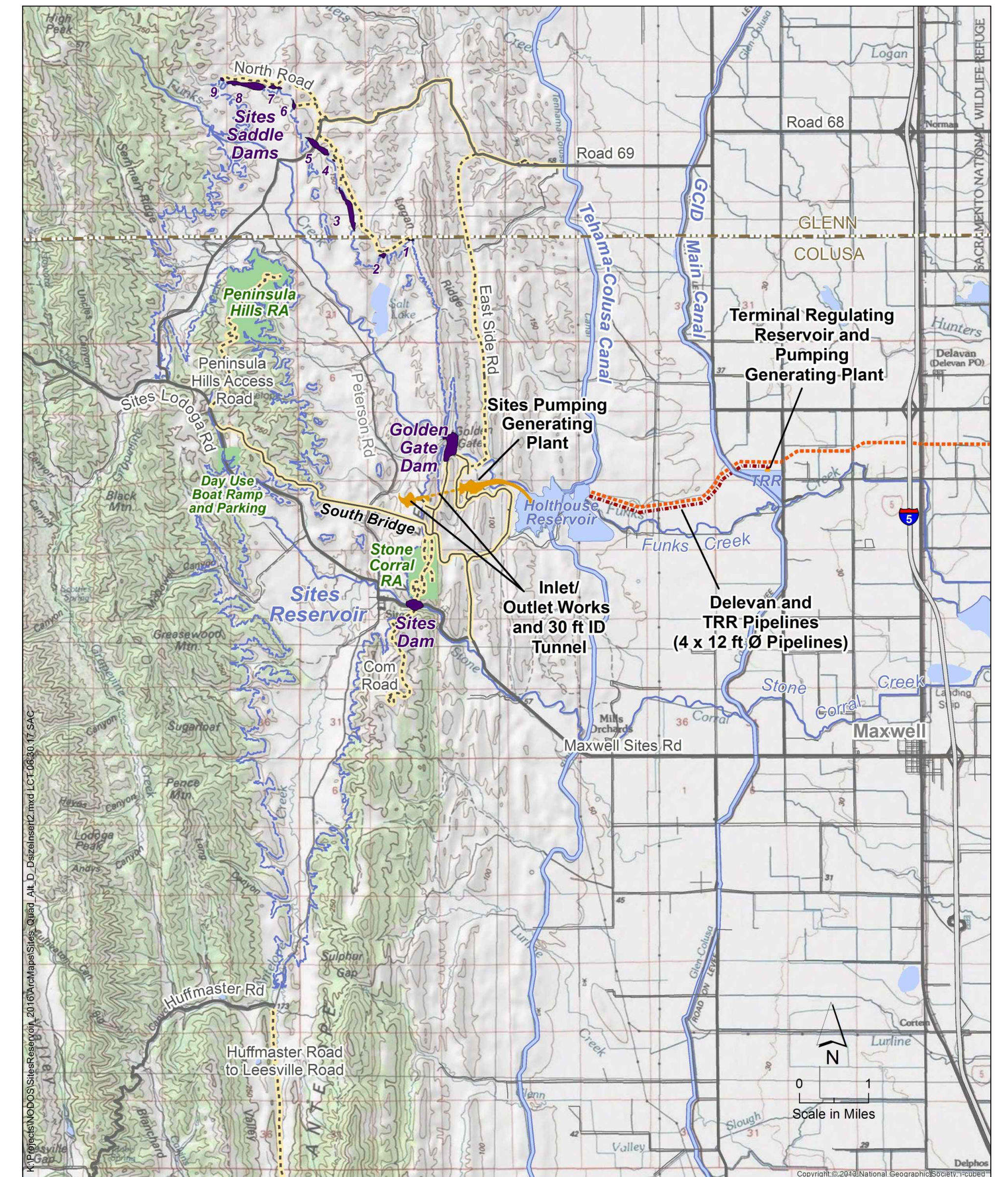
1. SIMILAR TO GOLDEN GATE DAM, MODERATELY WEATHERED BEDROCK IS CONSIDERED TO BE A SUITABLE FOUNDATION SURFACE FOR THE SHELL, TRANSITION, FILTER, AND DRAIN MATERIALS FOR SITES DAM. IN ADDITION, SLIGHTLY WEATHERED TO FRESH BEDROCK IS CONSIDERED TO BE A SUITABLE FOUNDATION SURFACE FOR THE CENTRAL IMPERVIOUS CORE MATERIAL.
2. THE GROUTING PROGRAM FOR SITES DAM IS ASSUMED TO BE THE SAME AS PRESENTED ABOVE FOR GOLDEN GATE DAM.
3. ADDITIONAL GROUTING AND/OR TREATMENT OF SPECIAL FEATURES SUCH AS THE S-2 FAULT WILL LIKELY BE REQUIRED. COST ESTIMATE FOR GROUTING TO INCLUDE APPROPRIATE ALLOWANCE FOR SUCH TREATMENT.

SADDLE DAMS

1. BEDROCK UNDERLYING THE SADDLE DAM FOOTPRINTS IS THE BOXER FORMATION THAT IS PREDOMINATELY MUDSTONE WITH SILTSTONE, SANDSTONE, AND CONGLOMERATE.
2. BASED UPON GEOLOGIC CHARACTERIZATION AND VISUAL OBSERVATION OF LIMITED AMOUNTS OF DRILL CORE, INTENSELY WEATHERED BEDROCK IS CONSIDERED TO BE A SUITABLE FOUNDATION SURFACE FOR THE SHELL (ZONE 3), RANDOM (ZONE 2), FILTER (ZONE 4), AND DRAIN MATERIALS (ZONE 4). IN ADDITION, MODERATELY WEATHERED BEDROCK IS CONSIDERED TO BE A SUITABLE FOUNDATION SURFACE FOR THE CENTRAL IMPERVIOUS CORE MATERIAL (ZONE 1).
3. COLLUVIUM AND DECOMPOSED BEDROCK WILL BE EXCAVATED FROM THE ENTIRE FOOTPRINT OF THE SADDLE DAMS TO OBTAIN AN INTENSELY WEATHERED BEDROCK SURFACE. IN ADDITION, INTENSELY WEATHERED BEDROCK WILL BE EXCAVATED FROM THE IMPERVIOUS CORE FOOTPRINT TO OBTAIN A MODERATELY WEATHERED BEDROCK SURFACE.
4. EXCAVATION AND FOUNDATION SHAPING CAN BE PERFORMED FAIRLY EASILY WITH THE USE OF HEAVY EQUIPMENT DUE TO THE RELATIVELY LOW STRENGTH OF THE BOXER FORMATION BEDROCK.
6. GROUTING WAS NOT INCLUDED IN THE FOUNDATION DESIGN OF THE SMALL SADDLE DAMS (NOS. 1, 2, 4, AND 9) SINCE A RELATIVELY LARGE PORTION OF THESE DAMS IS FREEBOARD. FOUNDATION SEEPAGE WAS NOT CONSIDERED TO BE SIGNIFICANT FOR THE SMALL SADDLE DAMS DUE TO THE RELATIVELY LOW HEAD AND LONG FLOW PATH BELOW THE CORE TRENCH.
7. SINCE DWR WATER PRESSURE TEST DATA INDICATES THAT SOME AREAS OF HIGHER HYDRAULIC CONDUCTIVITY OCCUR IN THE DAM FOUNDATIONS, CURTAIN GROUTING WAS INCLUDED IN THE DESIGN OF THE LARGE SADDLE DAMS (NO. 3, 5, 6, 7, AND 8) TO REDUCE SEEPAGE THROUGH THE DAM FOUNDATIONS.
8. THE GROUT PROGRAM WILL ALSO INCLUDE A 20-FOOT WIDE BY 3-FEET THICK GROUT CAP TO PREVENT SURFACE LEAKAGE OF GROUT DURING GROUTING OF THE UPPER STAGE. FOUNDATION GROUTING WILL CONSIST OF A 2 ROW VERTICAL GROUT CURTAIN SPACED 10 FEET APART PARALLEL TO THE DAM CENTERLINE. EACH ROW OF CURTAIN GROUT HOLES WILL CONSIST OF MANDATORY PRIMARY AND SECONDARY HOLES SPACED AT 10-FOOT CENTERS. IN ADDITION, IT WAS ASSUMED THAT TERTIARY HOLES, SPLIT SPACED BETWEEN THE PRIMARY AND SECONDARY HOLES, WILL BE REQUIRED OVER HALF THE LENGTH OF THE DAMS TO MEET GROUT CLOSURE CRITERIA. THE DRILLING DEPTH OF CURTAIN HOLES WAS ESTIMATED TO BE ONE HALF THE HEIGHT OF THE DAM, OR A MINIMUM DEPTH OF 30 FEET.
9. SINCE WATER PRESSURE TESTING IN THE EXPLORATION HOLES INDICATES THAT THE ROCK VARIES FROM FAIRLY TIGHT TO HAVING A RELATIVELY HIGH HYDRAULIC CONDUCTIVITY, GROUT TAKES IN THE CURTAIN HOLES WERE ESTIMATED AT 0.2 SACKS OF CEMENT PER LINEAR FOOT OF GROUT HOLE. THIS ESTIMATE CORRESPONDS TO TYPICAL GROUT TAKES OBSERVED DURING CONSTRUCTION OF OTHER DAM PROJECTS WITH SIMILAR FOUNDATION CONDITIONS.
10. THE GROUTING QUANTITY ESTIMATES ALSO INCLUDED VERIFICATION TESTING AS PART OF THE GROUTING PROGRAM. VERIFICATION HOLES WILL BE DRILLED BETWEEN THE CURTAIN GROUT ROWS, ALONG THE DAM CENTERLINE WITH AN AVERAGE HOLE SPACING OF 75 FEET COMMENSURATE WITH TYPICAL SPACING USED FOR OTHER DAM FOUNDATION GROUTING PROGRAMS. VERIFICATION TESTING WILL BE CONDUCTED TO A DEPTH EQUIVALENT TO THE CURTAIN GROUT HOLES.
11. ADDITIONAL GROUTING AND/OR TREATMENT OF SPECIAL FEATURES WILL LIKELY BE REQUIRED

SADDLE DAM SPECIAL FOUNDATION TREATMENT (SOIL-BENTONITE SLURRY CUTOFF WALLS)

1. NOTE THAT SADDLE DAMS 2, 3, AND 5 INCORPORATE A SOIL-BENTONITE SLURRY CUTOFF WALL AS PART OF THE FOUNDATION TREATMENT AT ABUTMENTS. SEE SADDLE DAM PLAN DRAWINGS FOR NOTES REGARDING CUTOFF WALL CONSTRUCTION REQUIREMENTS.



PLAN - EMBANKMENT AND SADDLE DAMS

NTS

REFERENCE NOTES:

- FOR SITES DAM SEE DWG CM-101.
- FOR GOLDEN GATE DAM PLAN SEE DWG CG-101.
- FOR SADDLE DAMS SEE DWG CS-401.

PLOTTED BY: BARNHART, DENNIS -- August 7, 2017 -- 3:45:16 PM
DRAWING: G:\S\PA\FEASIBILITY_AECOM\900 WORK\06-CAD\006-CIVIL\20-SHEETS\05-DAMS\CM-DWG

DESIGNED	D. HUGHES	APPROVAL RECOMMENDED		REVIEWED	MIKE FORREST	DATE	08/04/2017
DRAWN	N. KARUNATILAKA	APPROVAL BY		REG. CE. NO.	27855		
CHECKED	M. FORREST	ESTIMATE LEVEL	FEASIBILITY	APPROVAL RECOMMENDED	MIKE FORREST		
				REG. CE. NO.	27855		
				APPROVED	JOE BARNES		
				REG. CE. NO.	40105		

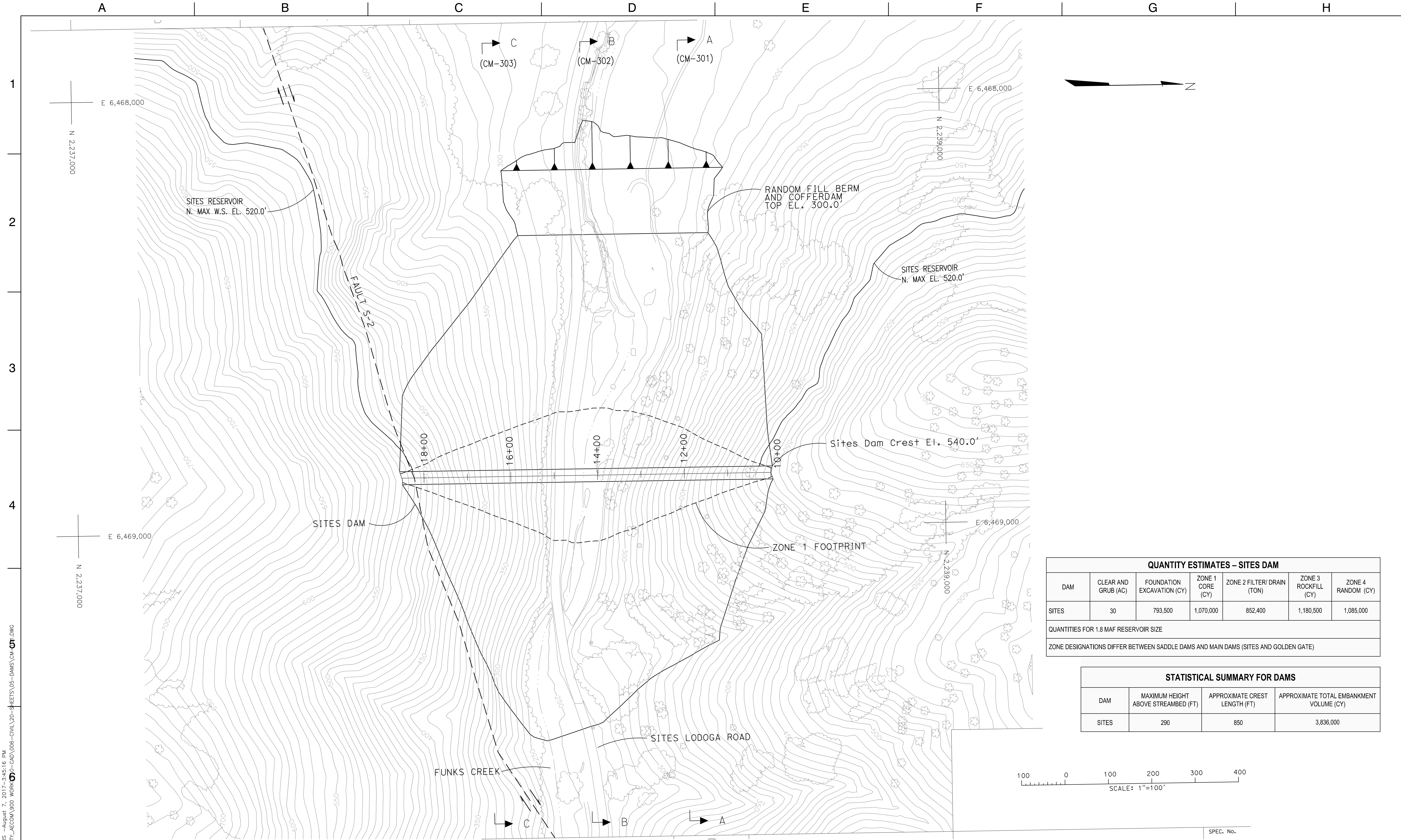
A3-A	08/01/2017	COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)	WSIP	JB
REV	DATE	DESCRIPTION	SUB.	APPD

WSIP APPLICATION ATTACHMENT A4.A
EMBANKMENTS AND SADDLE DAMS
LOCATION PLAN

SPEC NO.	
DRAWING NO.	CM-100
REV.	SHEET NO.
	26



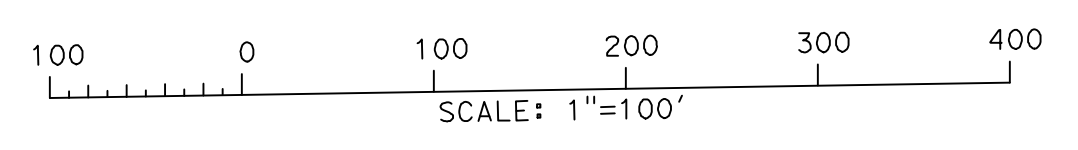
AECOM
 AECOM Technical Services, Inc.
 2020 L Street, Suite 300
 Sacramento, CA 95811
 T 916-414-5800 F 916-414-1557
 www.aecom.com



QUANTITY ESTIMATES - SITES DAM						
DAM	CLEAR AND GRUB (AC)	FOUNDATION EXCAVATION (CY)	ZONE 1 CORE (CY)	ZONE 2 FILTER/ DRAIN (TON)	ZONE 3 ROCKFILL (CY)	ZONE 4 RANDOM (CY)
SITES	30	793,500	1,070,000	852,400	1,180,500	1,085,000

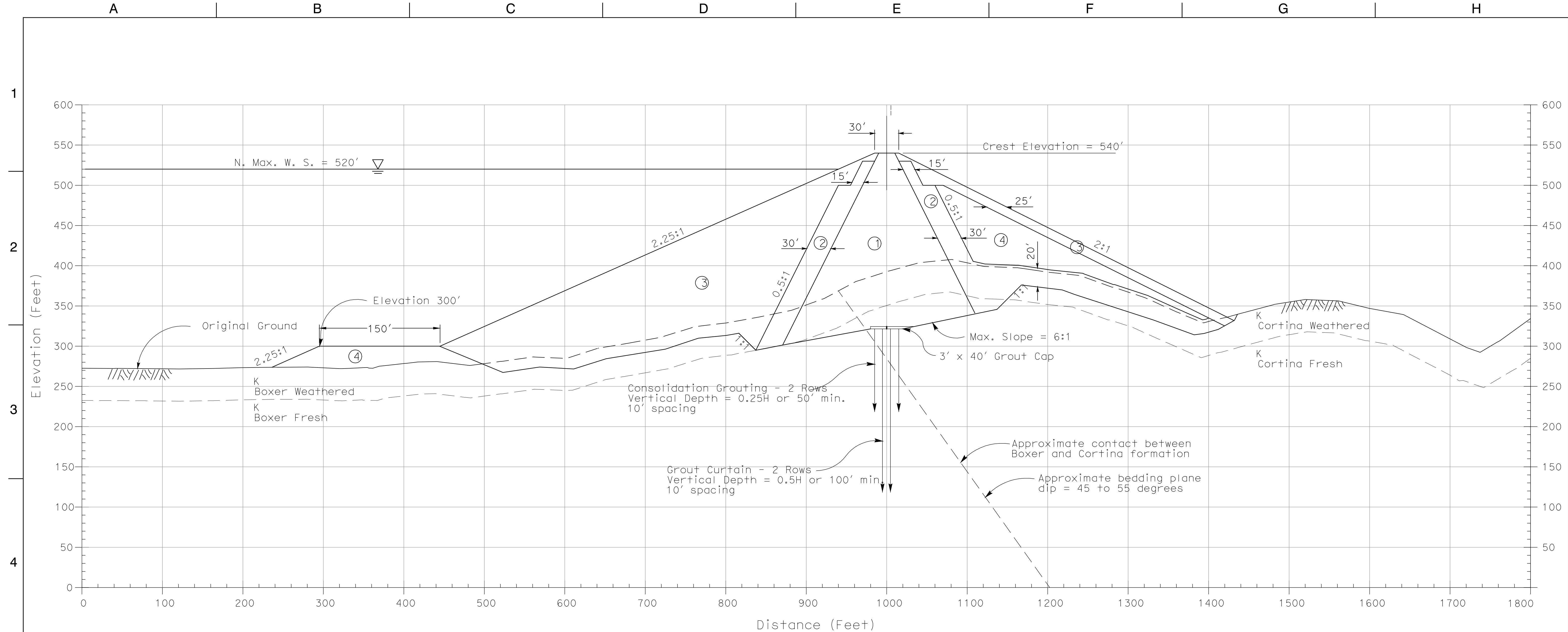
QUANTITIES FOR 1.8 MAF RESERVOIR SIZE
 ZONE DESIGNATIONS DIFFER BETWEEN SADDLE DAMS AND MAIN DAMS (SITES AND GOLDEN GATE)

STATISTICAL SUMMARY FOR DAMS			
DAM	MAXIMUM HEIGHT ABOVE STREAMBED (FT)	APPROXIMATE CREST LENGTH (FT)	APPROXIMATE TOTAL EMBANKMENT VOLUME (CY)
SITES	290	850	3,836,000



PLOTTED BY: BARNHART, DENNIS - August 7, 2017 - 3:45:16 PM
 DRAWING: G:\SR\PA\FEASIBILITY_AECOM\900 WORK\6-SHEETS\05-DAMS\CM-101.DWG
 SPEC. No.

DESIGNED D. HUGHES		APPROVAL RECOMMENDED			REVIEWED MIKE FORREST REG. CE. NO. 27855 APPROVAL RECOMMENDED MIKE FORREST REG. CE. NO. 27855 APPROVED JOE BARNES REG. CE. NO. 40105	DATE 08/04/2017	WSIP APPLICATION ATTACHMENT A4.A				SPEC. NO.
DRAWN N. KARUNATILAKA		APPROVAL BY					SITES DAM PLAN				DRAWING NO. CM-101
CHECKED M. FORREST		ESTIMATE LEVEL FEASIBILITY					REV. SHEET NO. 27				
A3-A	08/01/2017	COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)		WSIP	JB						
REV	DATE	DESCRIPTION		SUB.	APPD						



SECTION A-A - STA. 12+00
Scale: 1" = 60'

NOTES

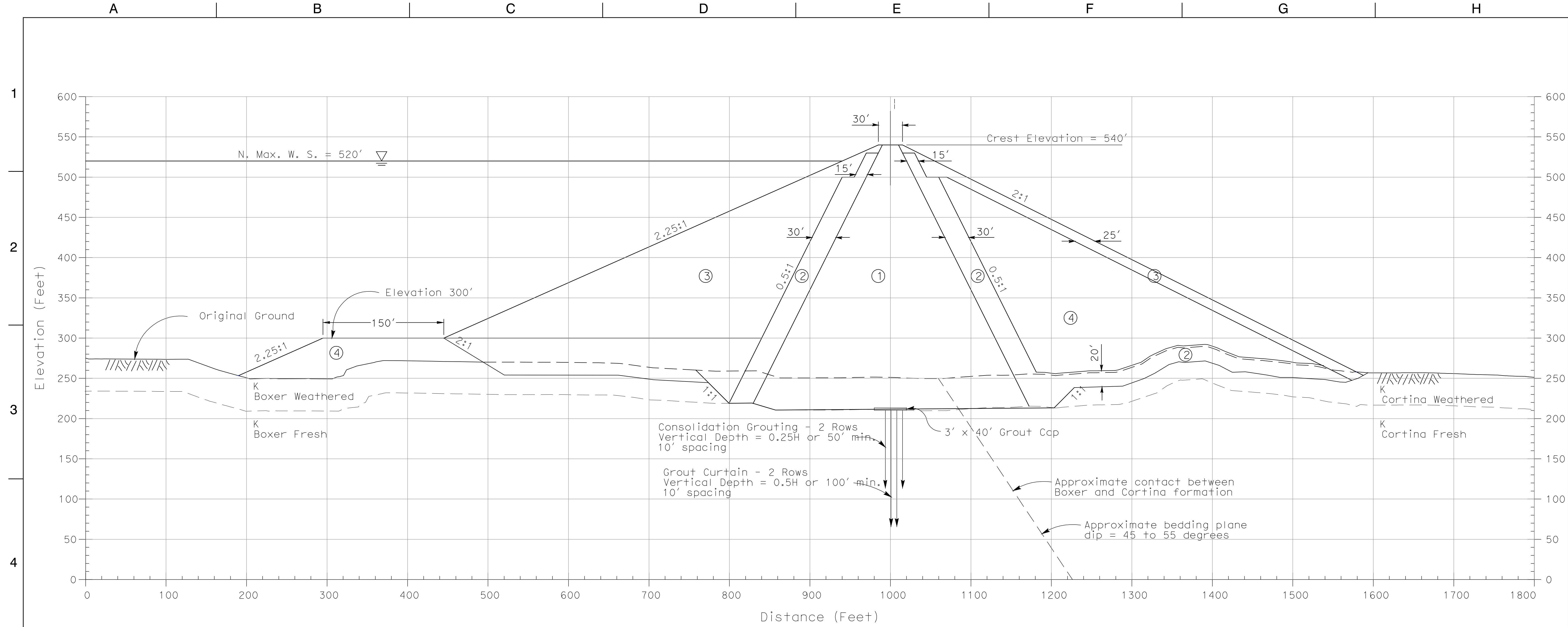
1. Embankment section presented is preliminary and is based upon feasibility level geologic exploration and materials investigation, testing and evaluation programs.
2. Embankment zones are as follows:
 - ZONE ① Core
 - ZONE ② Upstream and Downstream Filter, Drain, and Transition
 - ZONE ③ Rockfill and Riprap
 - ZONE ④ Random
3. H = Height of Dam

NOTES

1. FOR GROUTING QUANTITY ESTIMATE SEE SHEET CM-501.
2. FOUNDATION TREATMENT - CLEAN AND SLUSH GROUT FOUNDATION SURFACES UNDER CORE ZONE 1 AND FILTER/DRAIN ZONE 2. STITCH GROUT AT FAULTS.

PLOTTED BY: BARNHART, DENNIS - August 7, 2017 - 3:45:16 PM
 DRAWING: G:\S\PA\FEASIBILITY_AECOM\900 WORK\6-SHEETS\05-DAMS\CM-301.DWG
 6

				DESIGNED D. HUGHES	APPROVAL RECOMMENDED	 <small>AECOM Technical Services, Inc. 2020 L Street, Suite 300 Sacramento, Ca 95811 T 916-414-5800 F 916-414-1557 www.aecom.com</small>	REVIEWED MIKE FORREST REG. CE. NO. 27855	DATE 08/04/2017	 SITES DAM SECTION A-A		SPEC NO.
				DRAWN N. KARUNATILAKA	APPROVAL BY		APPROVAL RECOMMENDED MIKE FORREST REG. CE. NO. 27855				DRAWING NO. CM-301
				CHECKED M. FORREST	ESTIMATE LEVEL FEASIBILITY		APPROVED JOE BARNES REG. CE. NO. 40105		WSIP APPLICATION ATTACHMENT A4.A		REV. SHEET NO. 28
A3-A	08/01/2017	COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)	WSIP	JB							SECTION A-A
REV	DATE	DESCRIPTION	SUB.	APPD					A B C D E F G H		



SECTION B-B - STA. 14+25

Scale: 1" = 60'

NOTES

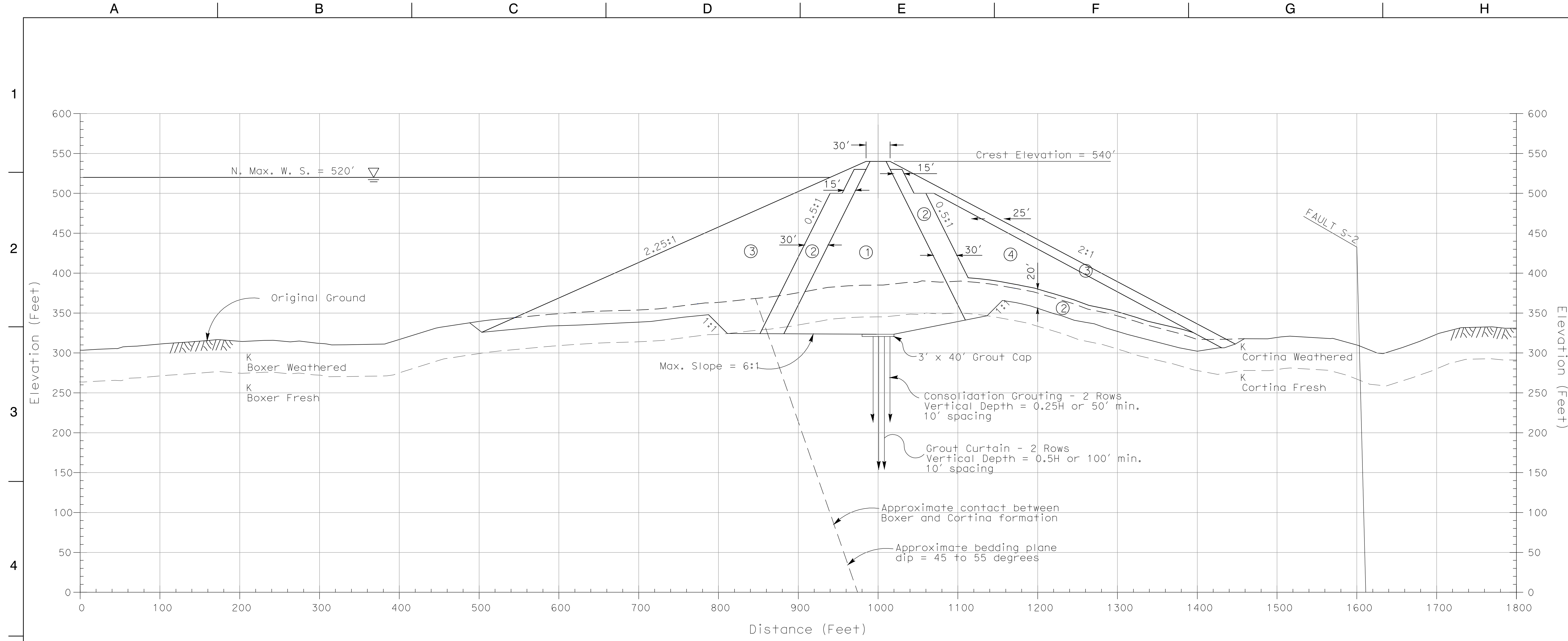
- Embankment section presented is preliminary and is based upon feasibility level geologic exploration and materials investigation, testing and evaluation programs.
- Embankment zones are as follows:
 - ZONE ① Core
 - ZONE ② Upstream and Downstream Filter, Drain, and Transition
 - Transition ZONE ③ Rockfill and Riprap
 - ZONE ④ Rockfill and Riprap
 - ZONE Random
- H = Height of Dam

NOTES

- FOR GROUTING QUANTITY ESTIMATE SEE SHEET CM-501.
- FOUNDATION TREATMENT - CLEAN AND SLUSH GROUT FOUNDATION SURFACES UNDER CORE ZONE 1 AND FILTER/DRAIN ZONE 2. STITCH GROUT AT FAULTS.

PLOTTED BY: BARNHART, DENNIS - August 7, 2017 - 3:45:16 PM
 DRAWING: G:\S\A\A\FEASIBILITY_AECOM\900 WORK\6-SHEETS\05-DAMS\CM-302.DWG

DESIGNED D. HUGHES		APPROVAL RECOMMENDED			REVIEWED MIKE FORREST	DATE 08/04/2017			WSIP APPLICATION ATTACHMENT A4.A		SPEC NO.
DRAWN N. KARUNATILAKA		APPROVAL BY			REG. CE. NO. 27855 APPROVAL RECOMMENDED MIKE FORREST REG. CE. NO. 27855 APPROVED JOE BARNES REG. CE. NO. 40105	SITES DAM SECTION B-B			DRAWING NO. CM-302		
CHECKED M. FORREST		ESTIMATE LEVEL FEASIBILITY		AECOM Technical Services, Inc. 2020 L Street, Suite 300 Sacramento, CA 95811 T 916-414-5800 F 916-414-1557 www.aecom.com		REV. SHEET NO. 29					
REV	DATE	DESCRIPTION		SUB.	APPD						



SECTION C-C STA. 16+50
Scale: 1" = 60'

NOTES

- Embankment section presented is preliminary and is based upon feasibility level geologic exploration and materials investigation, testing and evaluation programs.
- Embankment zones are as follows:
 ZONE ① Core
 ZONE ② Upstream and Downstream Filter, Drain, and Transition
 ZONE ③ Rockfill and Riprap
 ZONE ④ Random
- H = Height of Dam

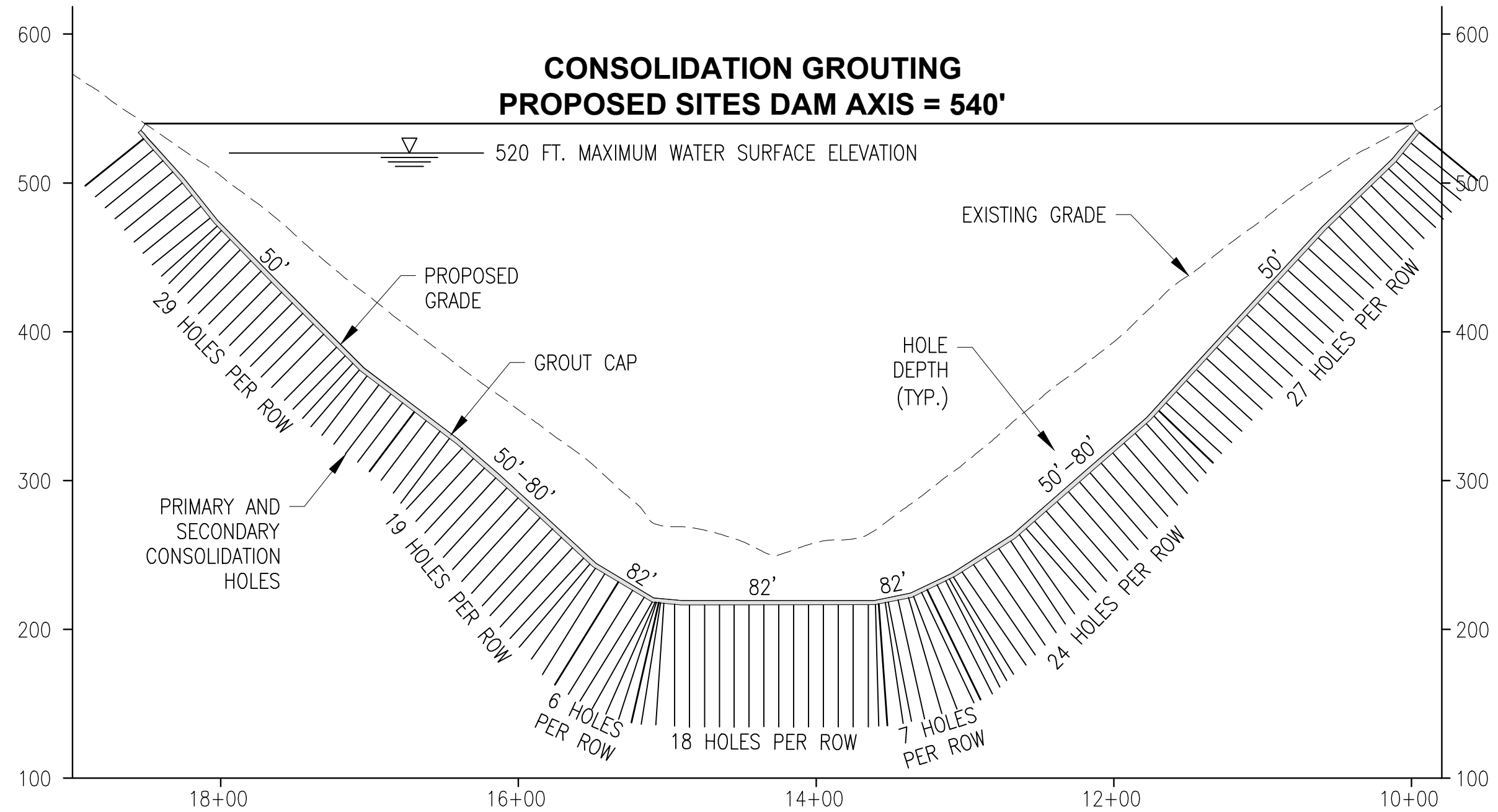
NOTES

- FOR GROUTING QUANTITY ESTIMATE SEE SHEET CM-501.
- FOUNDATION TREATMENT - CLEAN AND SLUSH GROUT FOUNDATION SURFACES UNDER CORE ZONE 1 AND FILTER/DRAIN ZONE 2. STITCH GROUT AT FAULTS.

PLOTTED BY: BARNHART, DENNIS - August 7, 2017 - 3:45:16 PM
 DRAWING: G:\S\PA\FEASIBILITY_AECOM\900 WORK\6-SHEETS\05-DAMS\CM-303.DWG
 6

				DESIGNED D. HUGHES	APPROVAL RECOMMENDED		REVIEWED MIKE FORREST	DATE 08/04/2017		WSIP APPLICATION ATTACHMENT A4.A		SPEC. NO.
				DRAWN N. KARUNATILAKA	APPROVAL BY		 <small>AECOM Technical Services, Inc. 2020 L Street, Suite 300 Sacramento, Ca 95811 T 916-414-5800 F 916-414-1557 www.aecom.com</small>	 <small>REG. CE. NO. 27855</small> APPROVAL RECOMMENDED MIKE FORREST <small>REG. CE. NO. 27855</small> APPROVED JOE BARNES <small>REG. CE. NO. 40105</small>		SITES DAM SECTION C-C		DRAWING NO. CM-303
				CHECKED M. FORREST	ESTIMATE LEVEL FEASIBILITY			REV.		SHEET NO. 30		
A3-A	08/01/2017	COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)	WSIP	JB								
REV	DATE	DESCRIPTION	SUB.	APPD								

1

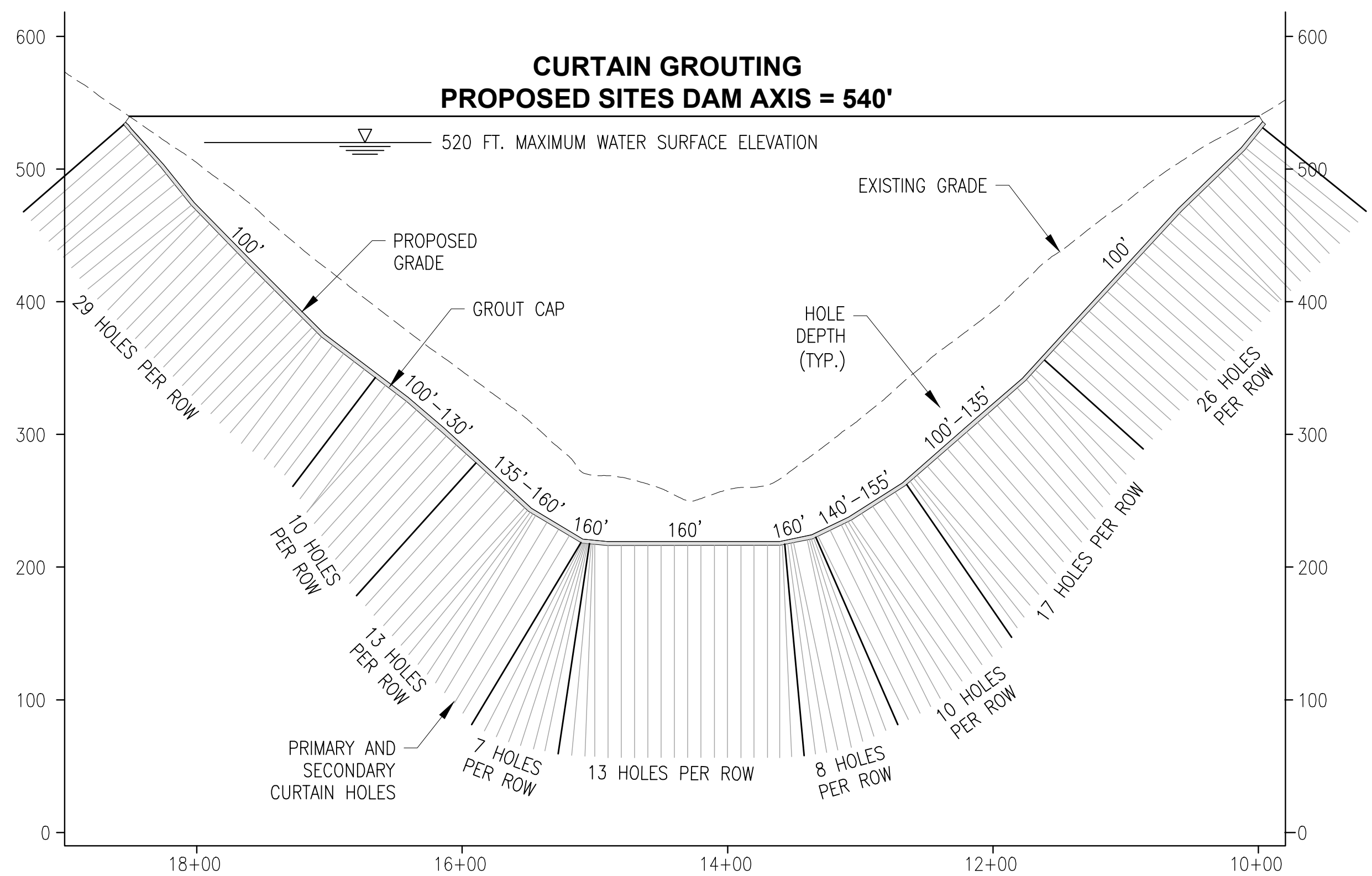


2

3

CONSOLIDATION GROUTING
 1"=80'

4



CURTAIN GROUTING
 1"=80'

NOTES: SITES DAM AND GOLDEN GATE DAM

- 2 ROWS CONSOLIDATED GROUTING EACH DAM.
- 2 ROWS CURTAIN GROUTING EACH DAM.
- 10 FEET SPACING CONSOLIDATION AND CURTAIN GROUTING HOLES.
- DRILLING DEPTH OF CURTAIN HOLES IS ESTIMATED TO BE HALF THE HEIGHT OF THE DAM OR 100 FEET, WHICHEVER IS GREATER.
- DRILLING DEPTH OF CONSOLIDATION HOLES IS ESTIMATED TO BE ONE-QUARTER OF THE HEIGHT OF THE DAME OR 50 FEET, WHICHEVER IS GREATER.
- CONTINGENCY INCLUDED ALLOWANCE FOR GROUTING ABOVE NORMAL MAX. W.S. EL. 520'.
- TERTIARY GROUTING HOLES ARE ASSUMED ONE-HALF THE LENGTH OF FOUNDATION.
- VERIFICATION TESTING WILL BE CONDUCTED ALONG THE CENTERLINE EVERY 75 FEET TO A DEPTH EQUIVALENT TO CURTAIN HOLES.
- CEMENT QUANTITIES BASED ON 0.75 SACKS PER LINEAR FOOT.

SITES DAM GROUT TABLE

CALCULATED PER PLAN							TOTAL WITH 25% CONTINGENCY		
CONCRETE CAP VOLUME (CU. YD.)	LENGTH OF PRIMARY AND SECONDARY CURTAIN HOLES (FT)	LENGTH OF TERTIARY CURTAIN HOLES (FT)	LENGTH OF PRIMARY AND SECONDARY CONSOLIDATION HOLES	VERIFICATION GROUTING HOLES (FEET)	GROUTING CEMENT QUANTITY (BAGS)	NUMBER OF HOOKUPS FOR ALL HOLES	HOOKUPS FOR ALL HOLES	TOTAL LENGTH FOR ALL HOLES (FEET)	TOTAL GROUTING CEMENT QUANTITY (BAGS)
4,955	33,080	16,540	16,274	1,950	50,883	674	843	84,805	63,604

PLOTTED BY: BARNHART, DENNIS -- August 7, 2017 -- 3:45:16 PM
 DRAWING: G:\SR\PA\FEASIBILITY_AECOM\900 WORK\0-CAD\006-CIVIL\20-SHEETS\05-DAMS\CM-501.DWG
 6

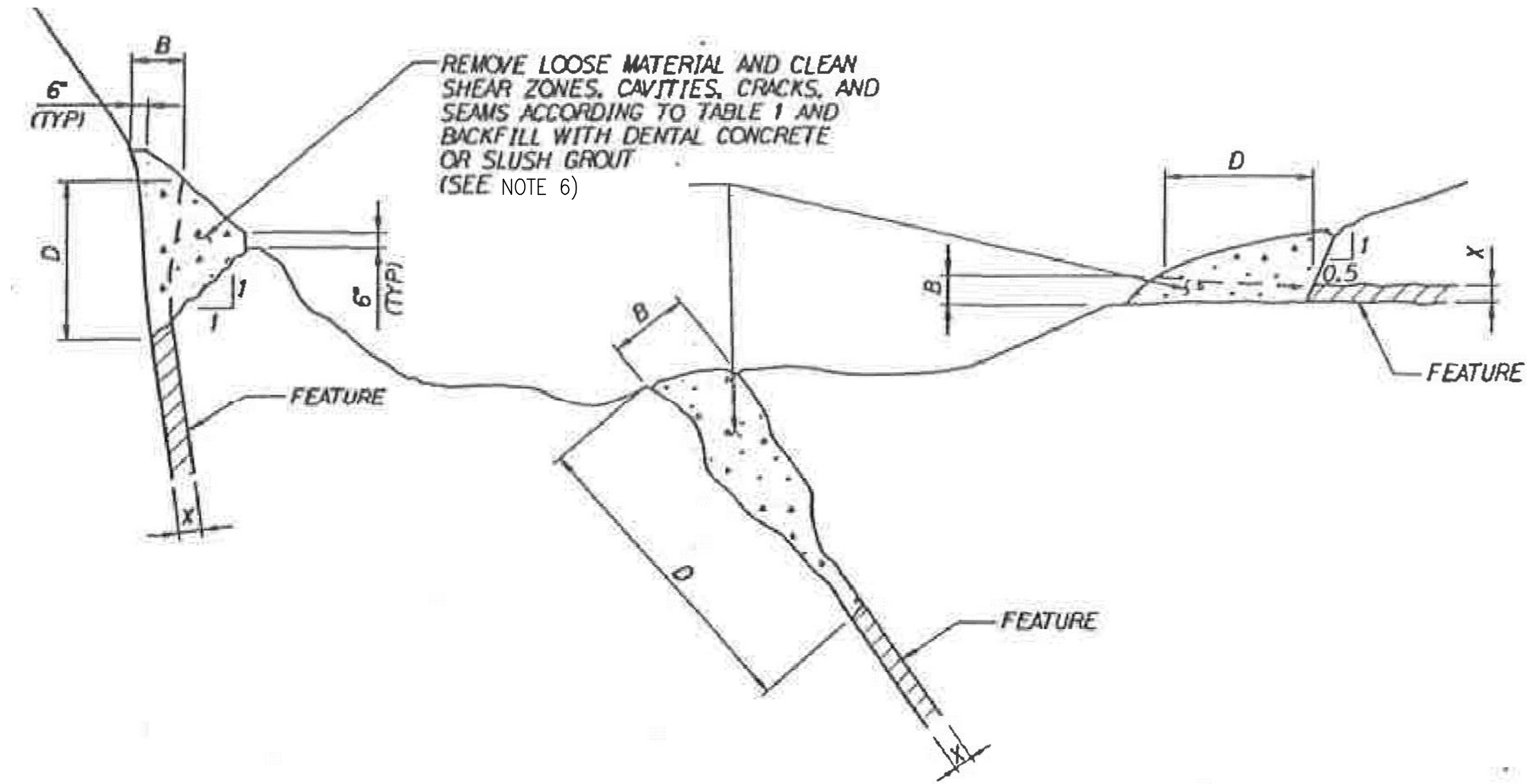
DESIGNED D. HUGHES				APPROVAL RECOMMENDED		AECOM REG. CE. NO. 27855 APPROVAL RECOMMENDED MIKE FORREST REG. CE. NO. 27855 APPROVED JOE BARNES REG. CE. NO. 40105	DATE 08/04/2017		WSIP APPLICATION ATTACHMENT A4.A			SPEC NO.
DRAWN N. KARUNATILAKA				APPROVAL BY			Sites			DRAWING NO. CM-501		
CHECKED M. FORREST				ESTIMATE LEVEL FEASIBILITY		SITES DAM GROUTING DETAILS			REV.	SHEET NO. 31		
A3-A	08/01/2017	COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)	WSIP	JB								
REV	DATE	DESCRIPTION	SUB.	APPD								

1

2

3

4

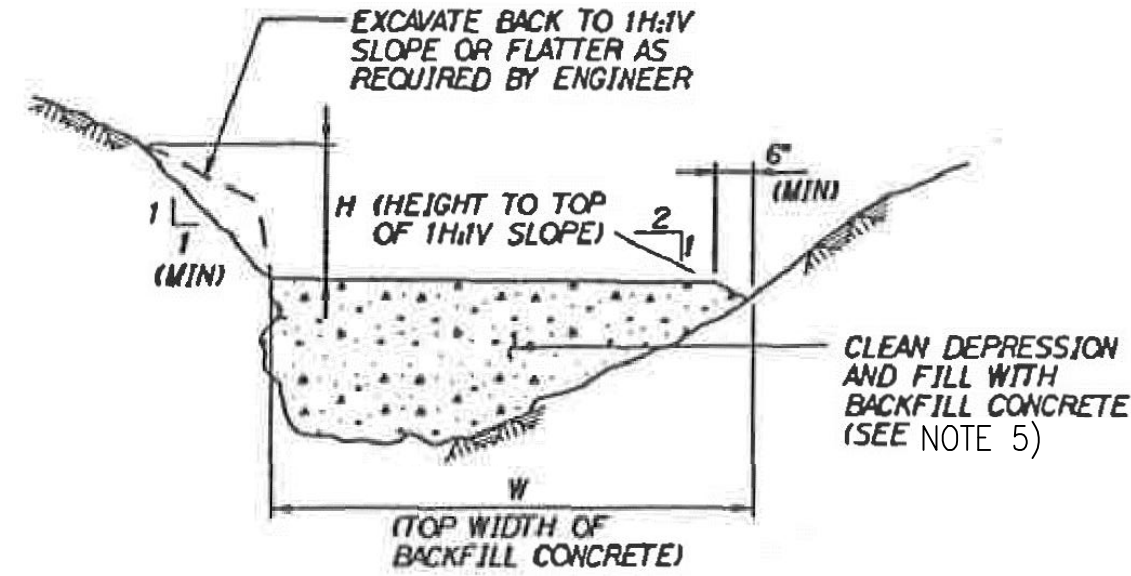


DENTAL TREATMENT OF SHEAR ZONES, CAVITIES, CRACKS, AND SEAMS IN CORE TRENCH
NTS

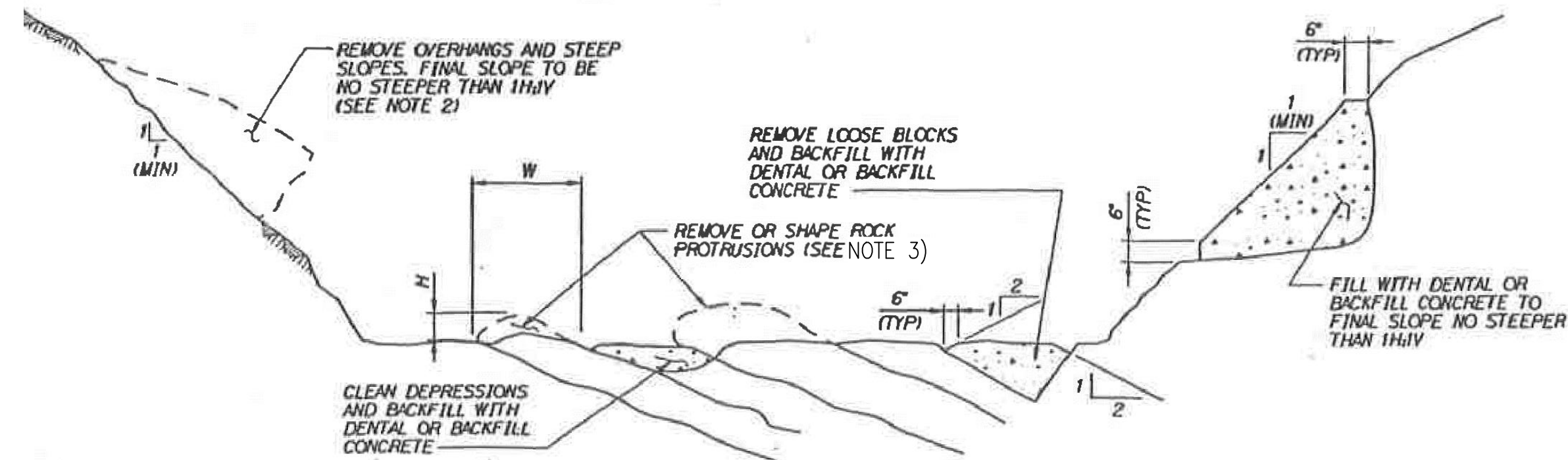
NOTES:

1. THE TREATMENT AND SHAPING DETAILS SHOWN ARE GUIDELINES. CONTRACTOR SHALL PERFORM UNRIPPABLE ROCK EXCAVATION, SHAPING, TREATMENT AND CLEANUP. THE DAM FOUNDATION WILL BE GEOLOGICALLY MAPPED BY THE ENGINEER.
2. REMOVE OVERHANGS AND STEEP SLOPES IN BOTH LONGITUDINAL AND TRANSVERSE DIRECTIONS, SO THAT THE FINAL SLOPE IS NO STEEPER THAN 1H:1V.
3. REMOVE OR SHAPE LOCAL ROCK PROTRUSIONS, IN BOTH LONGITUDINAL AND TRANSVERSE DIRECTIONS, WITH HEIGHT (H) GREATER THAN 2-FEET, SO THAT THE RATIO OF WIDTH (W) TO HEIGHT (H) IS GREATER THAN 2.
4. THE BASE OF THE CORE TRENCH SHALL BE EXCAVATED BELOW THE LIMITS OF COMMON EXCAVATION TO REDUCE EXCESSIVE UPSTREAM-TO-DOWNSTREAM DOWNWARD SLOPE. IN THOSE AREAS WHERE THE UNRIPPABLE ROCK EXCAVATION SURFACE OR THE COMMON EXCAVATION II SURFACE SLOPES DOWNWARD IN THE DOWNSTREAM DIRECTION, THE MAXIMUM ELEVATION DIFFERENCE IN ANY TRANSVERSE SECTION SHALL NOT EXCEED 10 FEET.

THE BASE OF THE CORE TRENCH SHALL BE EXCAVATED SO THAT THE SLOPES ARE NOT STEEPER THAN THE FOLLOWING REQUIREMENTS:
TRANSVERSE SLOPES: 4:1 DOWNWARD IN UPSTREAM-TO-DOWNSTREAM DIRECTION
2:1 UPWARD IN UPSTREAM-TO-DOWNSTREAM DIRECTION.
LONGITUDINAL SLOPES: 2:1
5. FILL WITH BACKFILL CONCRETE UNTIL RATIO OF W TO H IS GREATER THAN 3 AND W IS AT LEAST 6 FEET, OR AS OTHERWISE REQUIRED BY ENGINEER.
6. EXTEND DENTAL TREATMENT OF SHEAR ZONES 20 FEET UPSTREAM AND DOWNSTREAM OF THE CORE TRENCH WHERE SHEAR ZONES, CAVITIES, CRACKS AND SEAMS EXTEND BEYOND THE CORE TRENCH.



BACKFILL CONCRETING AND SHAPING IN CORE TRENCH
NTS



LOCAL SURFACE TREATMENT AND SHAPING IN CORE TRENCH

PLOTTED BY: BARNHART, DENNIS -- August 7, 2017 -- 3:45:16 PM
 DRAWING: G:\SR\PA\FEASIBILITY_AECOM\900 WORK\6-SHEETS\05-DAMS\CM-502.DWG
 6

DESIGNED	D. HUGHES	APPROVAL RECOMMENDED	
DRAWN	N. KARUNATILAKA	APPROVAL BY	
CHECKED	M. FORREST	ESTIMATE LEVEL	FEASIBILITY
REV	DATE	DESCRIPTION	SUB. APPD
A3-A	08/01/2017	COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)	WSIP JB

DESIGNED	D. HUGHES	APPROVAL RECOMMENDED	
DRAWN	N. KARUNATILAKA	APPROVAL BY	
CHECKED	M. FORREST	ESTIMATE LEVEL	FEASIBILITY

AECOM	REVIEWED	DATE
MIKE FORREST	MIKE FORREST	08/04/2017
REG. CE. NO. 27855	APPROVAL RECOMMENDED	
MIKE FORREST	MIKE FORREST	
REG. CE. NO. 27855	APPROVED	
JOE BARNES	JOE BARNES	
REG. CE. NO. 40105		

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
T 916-414-5800 F 916-414-1557
www.aecom.com

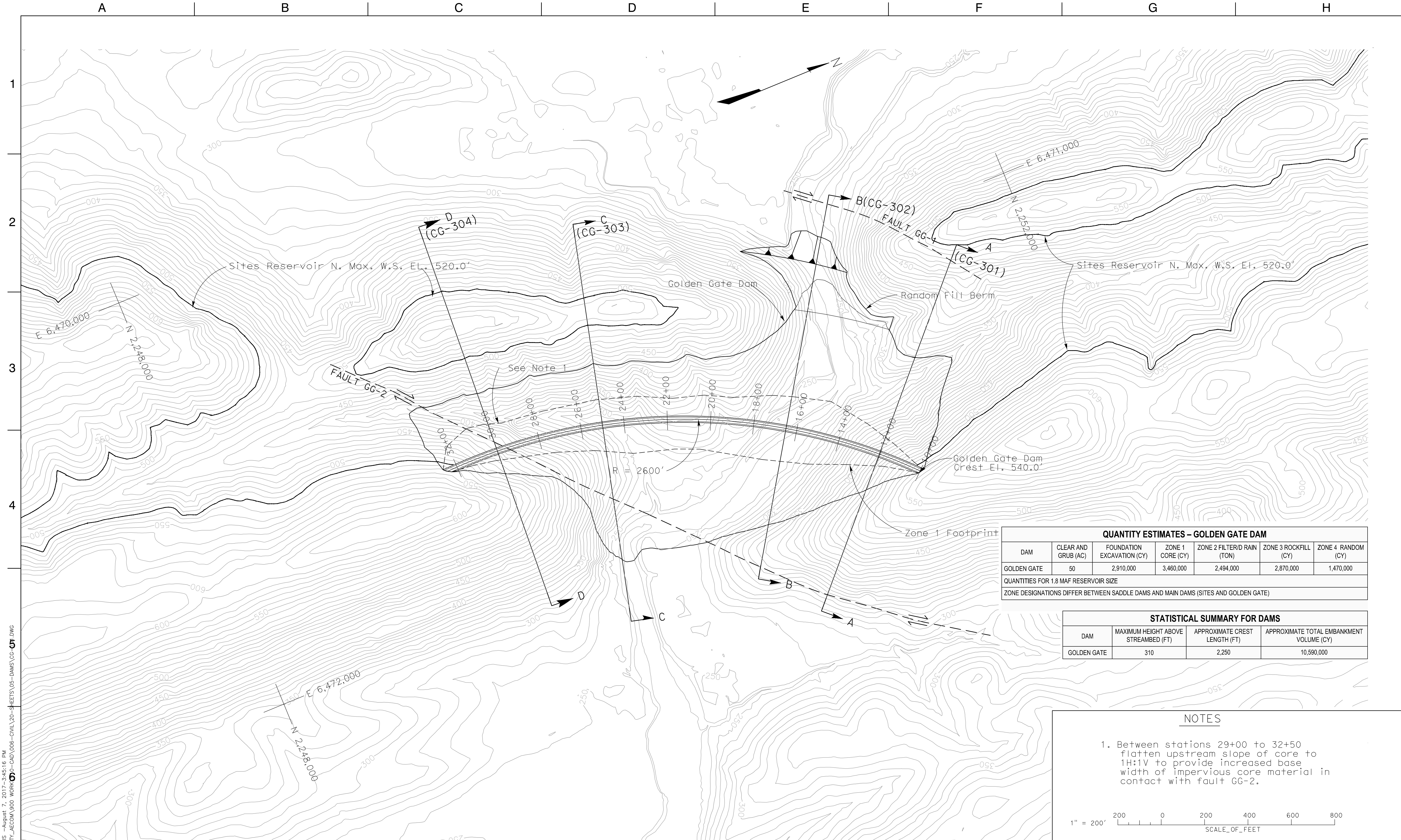


WSIP APPLICATION ATTACHMENT A4.A

SITES DAM

FOUNDATION SURFACE TREATMENT

SPEC NO.	
DRAWING NO.	CM-502
REV.	SHEET NO.
	32



QUANTITY ESTIMATES - GOLDEN GATE DAM						
DAM	CLEAR AND GRUB (AC)	FOUNDATION EXCAVATION (CY)	ZONE 1 CORE (CY)	ZONE 2 FILTER/DRAIN (TON)	ZONE 3 ROCKFILL (CY)	ZONE 4 RANDOM (CY)
GOLDEN GATE	50	2,910,000	3,460,000	2,494,000	2,870,000	1,470,000
QUANTITIES FOR 1.8 MAF RESERVOIR SIZE						
ZONE DESIGNATIONS DIFFER BETWEEN SADDLE DAMS AND MAIN DAMS (SITES AND GOLDEN GATE)						

STATISTICAL SUMMARY FOR DAMS			
DAM	MAXIMUM HEIGHT ABOVE STREAMBED (FT)	APPROXIMATE CREST LENGTH (FT)	APPROXIMATE TOTAL EMBANKMENT VOLUME (CY)
GOLDEN GATE	310	2,250	10,590,000

NOTES

1. Between stations 29+00 to 32+50 flatten upstream slope of core to 1H:1V to provide increased base width of impervious core material in contact with fault GG-2.

1" = 200'

PLOTTED BY: BARNHART, DENNIS - August 7, 2017 - 3:45:16 PM
 DRAWING: G:\S\PA\FEASIBILITY_AECOM\900 WORK\0-CAD\006-CIVIL\20-SHEETS\05-DAMS\CG-01.DWG

A3-A	08/01/2017	COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)	WSIP	JB
REV	DATE	DESCRIPTION	SUB.	APPD

DESIGNED	D. HUGHES	APPROVAL RECOMMENDED	
DRAWN	N. KARUNATILAKA	APPROVAL BY	
CHECKED	M. FORREST	ESTIMATE LEVEL	FEASIBILITY

AECOM

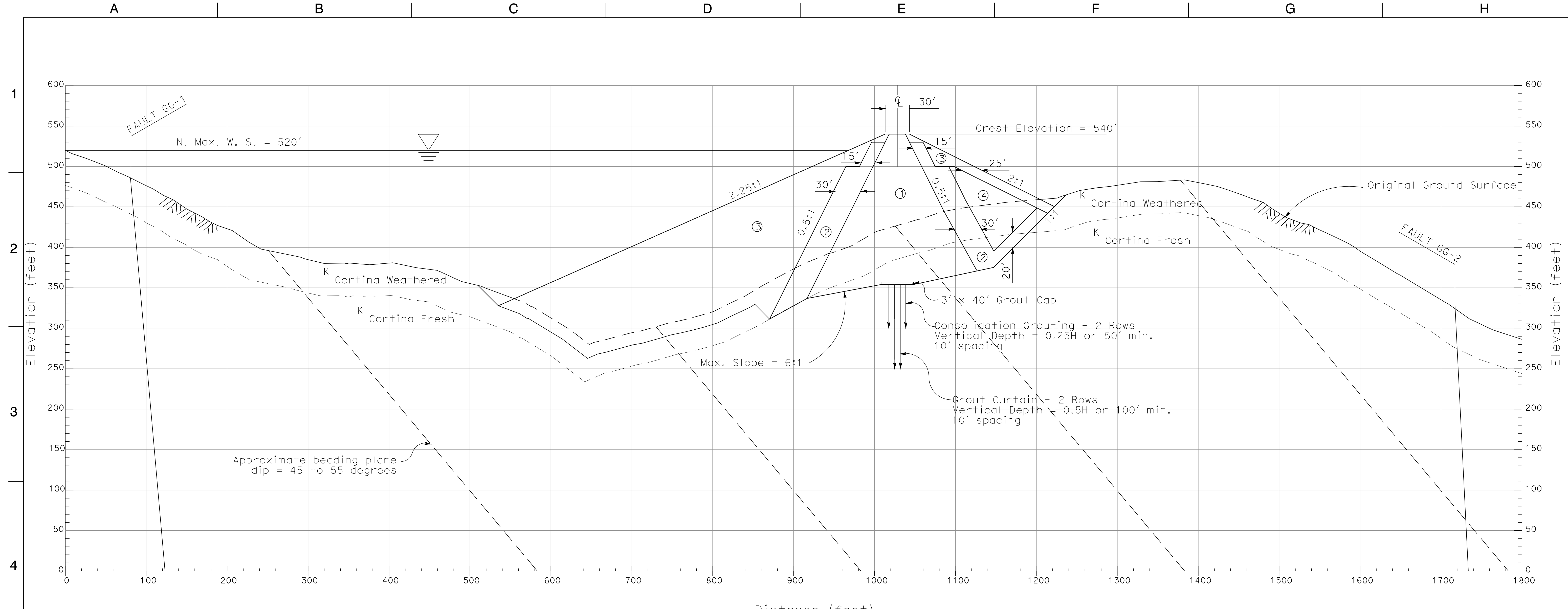
REVIEWED: MIKE FORREST
 REG. CE. NO. 27855
 APPROVAL RECOMMENDED: MIKE FORREST
 REG. CE. NO. 27855
 APPROVED: JOE BARNES
 REG. CE. NO. 40105

DATE: 08/04/2017
AECOM Technical Services, Inc.
 2020 L Street, Suite 300
 Sacramento, CA 95811
 T 916-414-5800 F 916-414-1557
 www.aecom.com



WSIP APPLICATION ATTACHMENT A4.A
GOLDEN GATE DAM
PLAN

SPEC. NO.
 DRAWING NO. CG-101
 REV. SHEET NO. 33



SECTION A-A STA 12+00
Scale: 1" = 60'

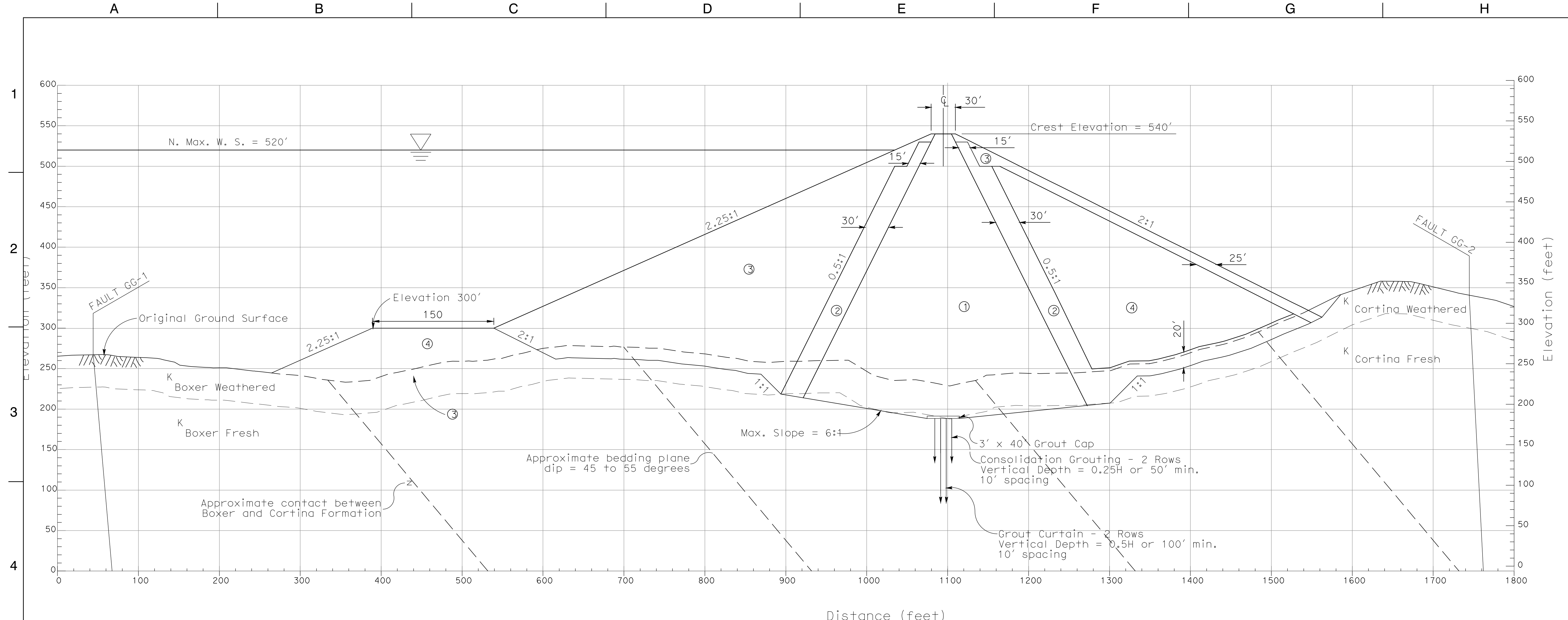
NOTES

- Embankment section presented is preliminary and is based upon feasibility level geologic exploration and materials investigation, testing and evaluation programs.
- Embankment zones are as follows:
 - ZONE ① Core
 - ZONE ② Upstream and Downstream Filter, Drain, and Transition
 - ZONE ③ Rockfill and Riprap
 - ZONE ④ Random
- H = Height of Dam

- NOTES:
- FOR GROUTING QUANTITY ESTIMATE SEE DRAWING CG-501.
 - CLEAN AND SLUSH GROUT FOUNDATION SURFACES UNDER CORE ZONE 1 AND FILTER/DRAIN ZONE 2. STITCH GROUT AT FAULTS.
 - FOUNDATION TREATMENTS AS NEEDED IN ACCORDANCE WITH DRAWING CM-502.

PLOTTED BY: BARNHART, DENNIS - August 7, 2017 - 3:45:16 PM
 DRAWING: G:\S\PA\FEASIBILITY_AECOM\900 WORK\6-SHEETS\05-DAMS\CG-301.DWG

DESIGNED D. HUGHES		APPROVAL RECOMMENDED			REVIEWED MIKE FORREST REG. CE. NO. 27855	DATE 08/04/2017	WSIP APPLICATION ATTACHMENT A4.A		SPEC NO.
DRAWN N. KARUNATILAKA		APPROVAL BY				APPROVAL RECOMMENDED MIKE FORREST REG. CE. NO. 27855	GOLDEN GATE DAM		DRAWING NO. CG-301
CHECKED M. FORREST		ESTIMATE LEVEL FEASIBILITY		APPROVED JOE BARNES REG. CE. NO. 40105		SECTION A-A		REV. SHEET NO. 34	
A3-A	08/01/2017	COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)	WSIP	JB					
REV	DATE	DESCRIPTION	SUB.	APPD					



NOTES

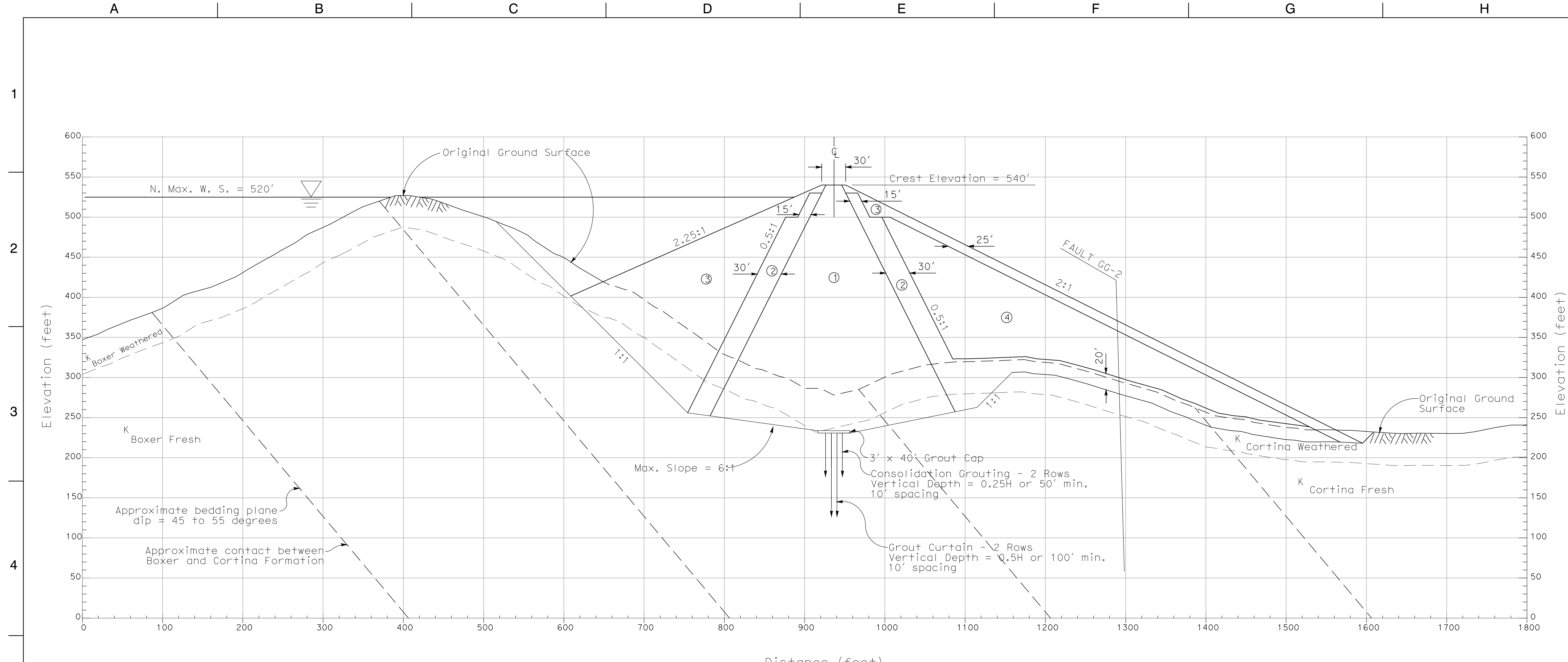
1. Embankment section presented is preliminary and is based upon feasibility level geologic exploration and materials investigation, testing and evaluation programs.
2. Embankment zones are as follows:
 - ZONE ① Core
 - ZONE ② Upstream and Downstream Filter, Drain, and Transition
 - ZONE ③ Rockfill and Riprap
 - ZONE ④ Random
3. H = Height of Dam

SECTION B-B STA 16+40
Scale: 1" = 60'

- NOTES:**
1. FOR GROUTING QUANTITY ESTIMATE SEE DRAWING CG-501.
 2. CLEAN AND SLUSH GROUT FOUNDATION SURFACES UNDER CORE ZONE 1 AND FILTER/DRAIN ZONE 2. STITCH GROUT AT FAULTS.
 3. FOUNDATION TREATMENTS AS NEEDED IN ACCORDANCE WITH DRAWING CM-502.

PLOTTED BY: BARNHART, DENNIS - August 7, 2017 - 3:45:16 PM
 DRAWING: G:\S\PA\FEASIBILITY_AECOM\900 WORK\6-CAD\006-CIVIL\20-SHEETS\05-DAMS\CG-302.DWG

DESIGNED D. HUGHES				APPROVAL RECOMMENDED						REVIEWED MIKE FORREST REG. CE. NO. 27855 APPROVAL RECOMMENDED MIKE FORREST REG. CE. NO. 27855 APPROVED JOE BARNES REG. CE. NO. 40105		DATE 08/04/2017		WSIP APPLICATION ATTACHMENT A4.A				SPEC NO.	
DRAWN N. KARUNATILAKA				APPROVAL BY						GOLDEN GATE DAM				DRAWING NO.					
CHECKED M. FORREST				ESTIMATE LEVEL FEASIBILITY										CG-302					
A3-A 08/01/2017 COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)				WSIP JB				AECOM Technical Services, Inc. 2020 L Street, Suite 300 Sacramento, CA 95811 T 916-414-5800 F 916-414-1557 www.aecom.com		SECTION B-B				REV. SHEET NO.					
REV DATE DESCRIPTION SUB. APPD				A B C D E F G H				35											



NOTES

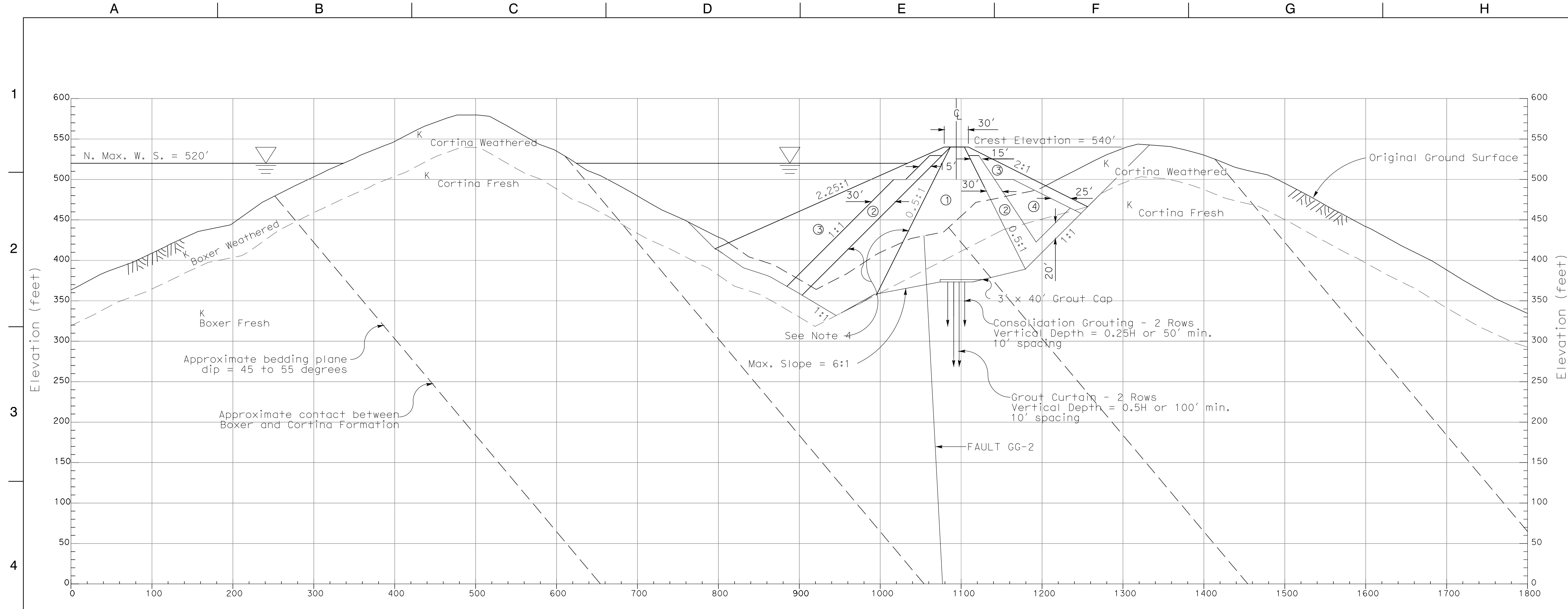
- Embankment section presented is preliminary and is based upon feasibility level geologic exploration and materials investigation, testing and evaluation programs.
- Embankment zones are as follows:
 ZONE ① Core
 ZONE ② Upstream and Downstream Filter, Drain, and Transition
 ZONE ③ Rockfill and Riprap
 ZONE ④ Random
- H = Height of Dam

SECTION C-C - STA. 25+00
 Scale: 1" = 60'

- NOTES:**
- FOR GROUTING QUANTITY ESTIMATE SEE DRAWING CG-501.
 - CLEAN AND SLUSH GROUT FOUNDATION SURFACES UNDER CORE ZONE 1 AND FILTER/DRAIN ZONE 2. STITCH GROUT AT FAULTS.
 - FOUNDATION TREATMENTS AS NEEDED IN ACCORDANCE WITH DRAWING CM-502.

PLOTTED BY: BARNHART, DENNIS - August 7, 2017 - 3:45:16 PM
 DRAWING: G:\S\PA\FEASIBILITY_AECOM\900 WORK\6-SHEETS\05-DAMS\CG-303.DWG

DESIGNED D. HUGHES		APPROVAL RECOMMENDED			REVIEWED MIKE FORREST	DATE 08/04/2017		WSIP APPLICATION ATTACHMENT A4.A		SPEC NO.
DRAWN N. KARUNATILAKA		APPROVAL BY			REG. CE. NO. 27855 APPROVAL RECOMMENDED MIKE FORREST REG. CE. NO. 27855			GOLDEN GATE DAM		DRAWING NO. CG-303
CHECKED M. FORREST		ESTIMATE LEVEL FEASIBILITY		APPROVED JOE BARNES REG. CE. NO. 40105		SECTION C-C		REV. SHEET NO. 36		
REV	DATE	DESCRIPTION				SUB.	APPD			



SECTION D-D - STA 30+00
Scale: 1" = 60'

NOTES

- Embankment section presented is preliminary and is based upon feasibility level geologic exploration and materials investigation, testing and evaluation programs.
- Embankment zones are as follows:
 ZONE ① Core
 ZONE ② Upstream and Downstream Filter, Drain, and Transition
 ZONE ③ Rockfill and Riprap
 ZONE ④ Random
- H = Height of Dam
- Between Stations 29+00 to 32+50 flatten upstream slope of core to 1H:1V to provide increased base width of impervious core material in contact with fault GG-2.

NOTES:

- FOR GROUTING QUANTITY ESTIMATE SEE DRAWING CG-501.
- CLEAN AND SLUSH GROUT FOUNDATION SURFACES UNDER CORE ZONE 1 AND FILTER/DRAIN ZONE 2. STITCH GROUT AT FAULTS.
- FOUNDATION TREATMENTS AS NEEDED IN ACCORDANCE WITH DRAWING CM-502.

PLOTTED BY: BARNHART, DENNIS - August 7, 2017 - 3:45:16 PM
 DRAWING: G:\S\PA\FEASIBILITY_AECOM\900 WORK\CG-304\CG-304-CAD\006-CIVIL\20-SHEETS\05-DAMS\CG-304.DWG

DESIGNED D. HUGHES		APPROVAL RECOMMENDED			REVIEWED MIKE FORREST REG. CE. NO. 27855	DATE 08/04/2017			WSIP APPLICATION ATTACHMENT A4.A		SPEC. NO.
DRAWN N. KARUNATILAKA		APPROVAL BY			APPROVAL RECOMMENDED MIKE FORREST REG. CE. NO. 27855				GOLDEN GATE DAM		DRAWING NO. CG-304
CHECKED M. FORREST		ESTIMATE LEVEL FEASIBILITY		APPROVED JOE BARNES REG. CE. NO. 40105			SECTION D-D		REV.	SHEET NO. 37	
A3-A	08/01/2017	COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)	WSIP	JB							
REV	DATE	DESCRIPTION	SUB.	APPD							

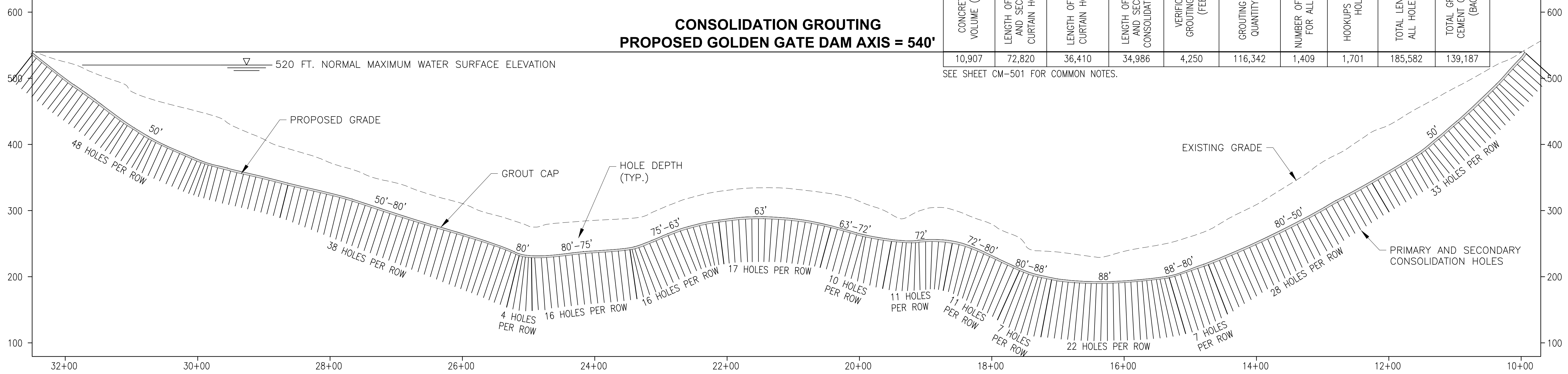
NOTES:
 1. SEE SHEET G-003 FOR GROUTING NOTES.

GOLDEN GATE DAM GROUT TABLE

CONCRETE CAP VOLUME (CU. YD.)	LENGTH OF PRIMARY AND SECONDARY CURTAIN HOLES (FT)	LENGTH OF TERTIARY CURTAIN HOLES (FT)	LENGTH OF PRIMARY AND SECONDARY CONSOLIDATION HOLES	VERIFICATION GROUTING HOLES (FEET)	GROUTING CEMENT QUANTITY (BAGS)	NUMBER OF HOOKUPS FOR ALL HOLES	TOTAL WITH 25% CONTINGENCY		
							HOOKUPS FOR ALL HOLES	TOTAL LENGTH FOR ALL HOLES (FEET)	TOTAL GROUTING CEMENT QUANTITY (BAGS)
10,907	72,820	36,410	34,986	4,250	116,342	1,409	1,701	185,582	139,187

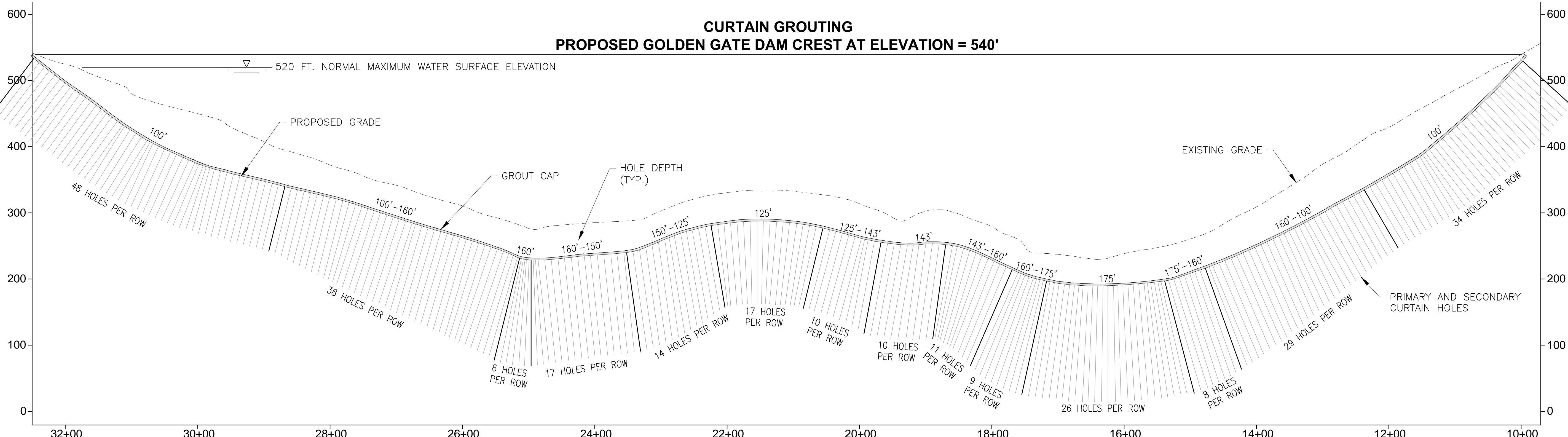
SEE SHEET CM-501 FOR COMMON NOTES.

**CONSOLIDATION GROUTING
 PROPOSED GOLDEN GATE DAM AXIS = 540'**



CONSOLIDATION GROUTING
 1
 1"=80'

**CURTAIN GROUTING
 PROPOSED GOLDEN GATE DAM CREST AT ELEVATION = 540'**



CURTAIN GROUTING
 2
 1"=80'

PLOTTED BY: BARNHART, DENNIS - August 7, 2017 - 3:45:16 PM
 DRAWING: G:\SRIPA\FEASIBILITY_AECOM\900 WORK\6-SHEETS\05-DAMS\CG-01.DWG

DESIGNED	D. HUGHES
DRAWN	N. KARUNATILAKA
CHECKED	M. FORREST
DATE	08/01/2017
DESCRIPTION	COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)
SUB.	WSIP
APPD	JB

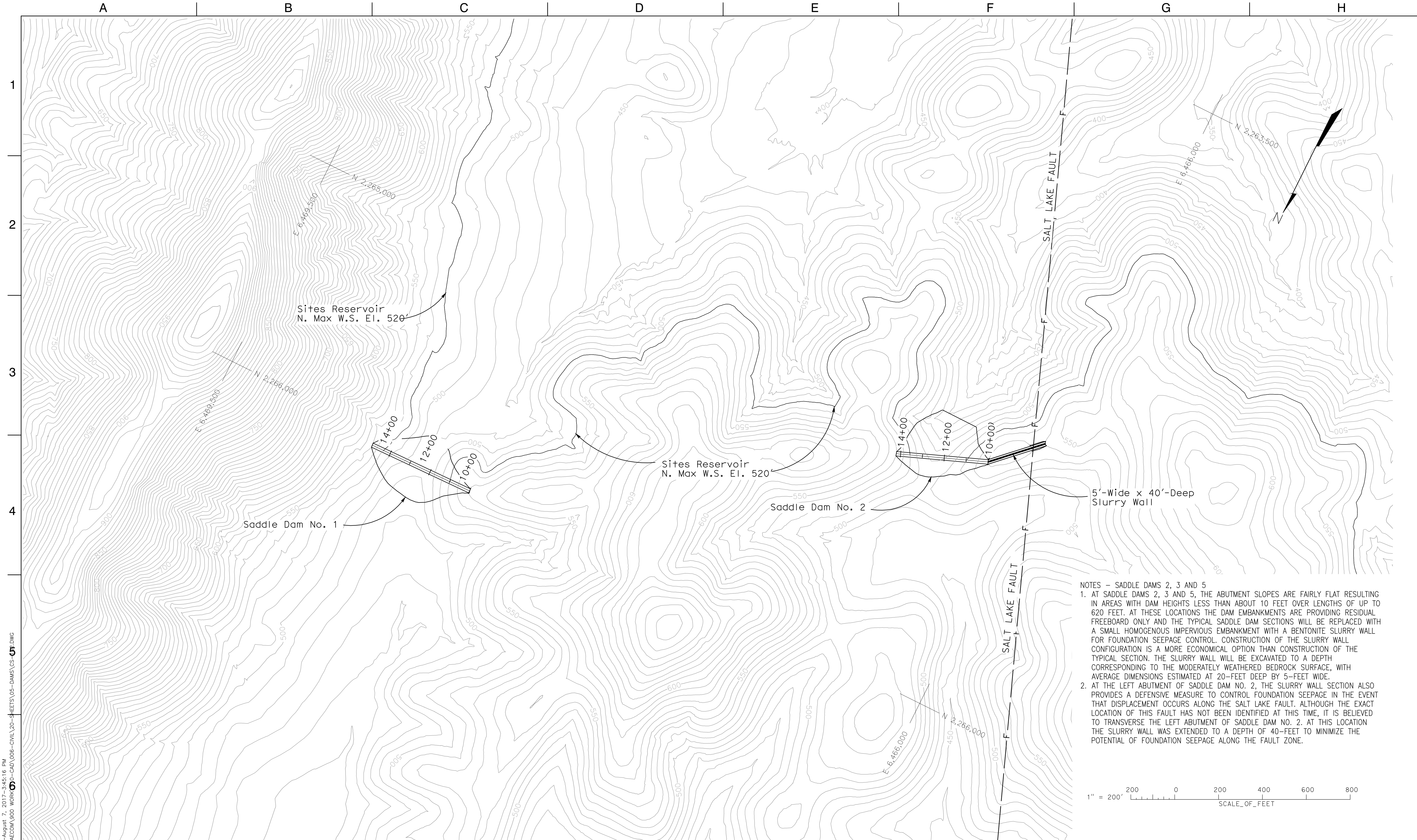
APPROVAL RECOMMENDED	
APPROVAL BY	
ESTIMATE LEVEL	FEASIBILITY

AECOM	REVIEWED	DATE
	MIKE FORREST	08/04/2017
	REG. CE. NO. 27855	
	APPROVAL RECOMMENDED	
	MIKE FORREST	
	REG. CE. NO. 27855	
	APPROVED	
	JOE BARNES	
	REG. CE. NO. 40105	



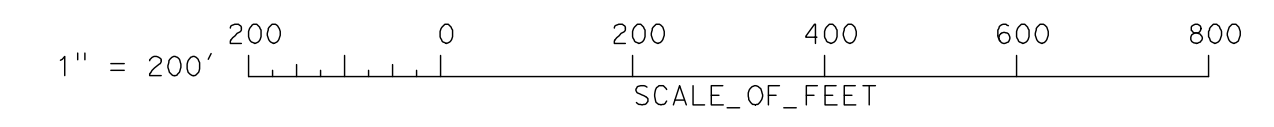
WSIP APPLICATION ATTACHMENT A4.A
**GOLDEN GATE DAM
 GROUTING DETAIL**

SPEC NO.	
DRAWING NO.	CG-501
REV.	SHEET NO.
	38



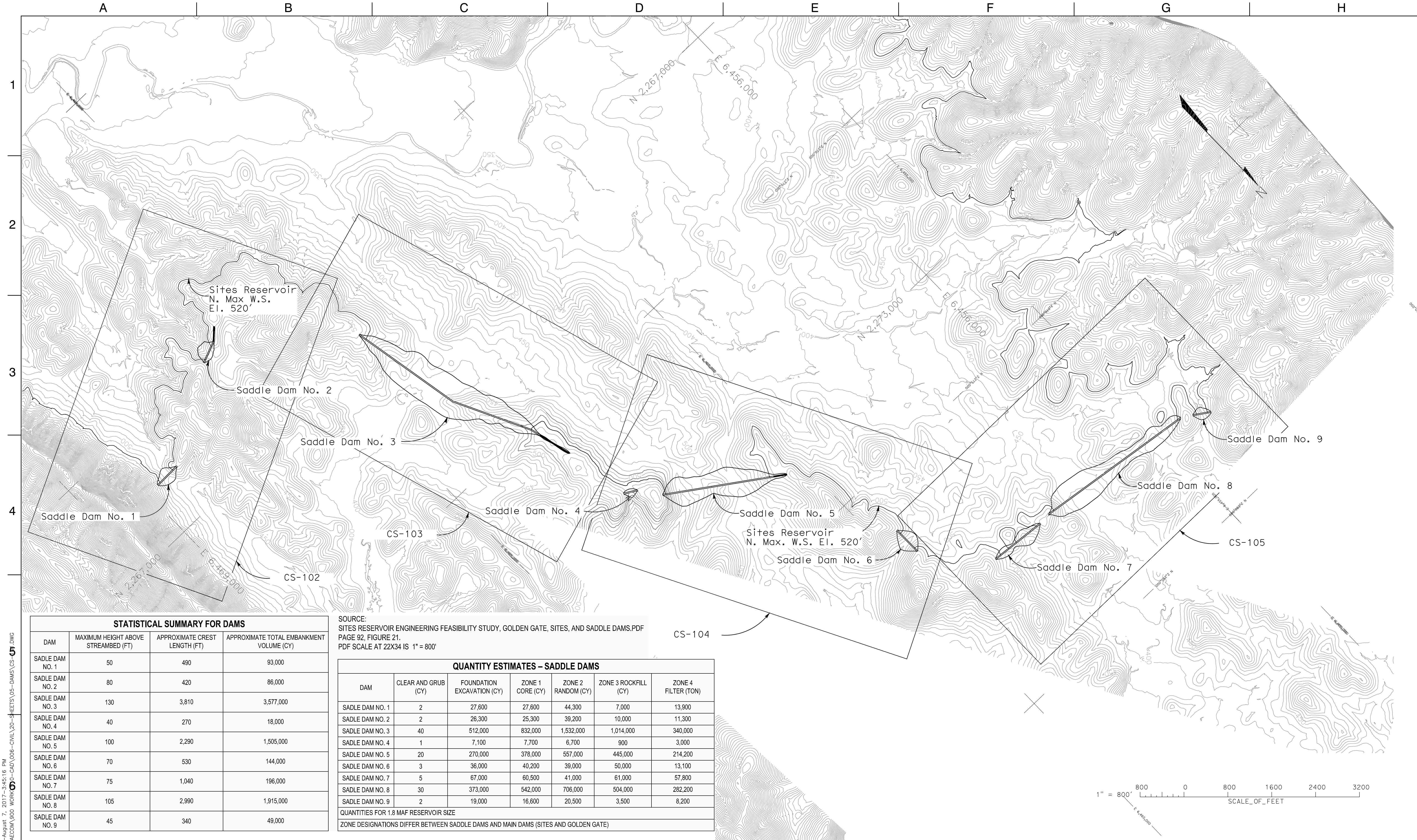
NOTES - SADDLE DAMS 2, 3 AND 5

1. AT SADDLE DAMS 2, 3 AND 5, THE ABUTMENT SLOPES ARE FAIRLY FLAT RESULTING IN AREAS WITH DAM HEIGHTS LESS THAN ABOUT 10 FEET OVER LENGTHS OF UP TO 620 FEET. AT THESE LOCATIONS THE DAM EMBANKMENTS ARE PROVIDING RESIDUAL FREEBOARD ONLY AND THE TYPICAL SADDLE DAM SECTIONS WILL BE REPLACED WITH A SMALL HOMOGENOUS IMPERVIOUS EMBANKMENT WITH A BENTONITE SLURRY WALL FOR FOUNDATION SEEPAGE CONTROL. CONSTRUCTION OF THE SLURRY WALL CONFIGURATION IS A MORE ECONOMICAL OPTION THAN CONSTRUCTION OF THE TYPICAL SECTION. THE SLURRY WALL WILL BE EXCAVATED TO A DEPTH CORRESPONDING TO THE MODERATELY WEATHERED BEDROCK SURFACE, WITH AVERAGE DIMENSIONS ESTIMATED AT 20'-FEET DEEP BY 5'-FEET WIDE.
2. AT THE LEFT ABUTMENT OF SADDLE DAM NO. 2, THE SLURRY WALL SECTION ALSO PROVIDES A DEFENSIVE MEASURE TO CONTROL FOUNDATION SEEPAGE IN THE EVENT THAT DISPLACEMENT OCCURS ALONG THE SALT LAKE FAULT. ALTHOUGH THE EXACT LOCATION OF THIS FAULT HAS NOT BEEN IDENTIFIED AT THIS TIME, IT IS BELIEVED TO TRANSVERSE THE LEFT ABUTMENT OF SADDLE DAM NO. 2. AT THIS LOCATION THE SLURRY WALL WAS EXTENDED TO A DEPTH OF 40'-FEET TO MINIMIZE THE POTENTIAL OF FOUNDATION SEEPAGE ALONG THE FAULT ZONE.



PLOTTED BY: BARNHART, DENNIS - August 7, 2017 - 3:45:16 PM
 DRAWING: G:\SR\PA\FEASIBILITY\AECOM\900\WORK\0-CAD\006-CIVIL\20-SHEETS\05-DAMS\05-DWG

DESIGNED D. HUGHES		APPROVAL RECOMMENDED			REVIEWED MIKE FORREST REG. CE. NO. 27855	DATE 08/04/2017	WSIP APPLICATION ATTACHMENT A4.A		SPEC. NO.
DRAWN N. KARUNATILAKA		APPROVAL BY				APPROVAL RECOMMENDED MIKE FORREST REG. CE. NO. 27855		SADDLE DAMS PLAN, DAMS NO. 1 AND 2	
CHECKED M. FORREST		ESTIMATE LEVEL FEASIBILITY		<small>AECOM Technical Services, Inc. 2020 L Street, Suite 300 Sacramento, CA 95811 T 916-414-5800 F 916-414-1557 www.aecom.com</small>					REV. SHEET NO. 40
A3-A	08/01/2017	COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)	WSIP	JB					
REV	DATE	DESCRIPTION	SUB.	APPD					



STATISTICAL SUMMARY FOR DAMS

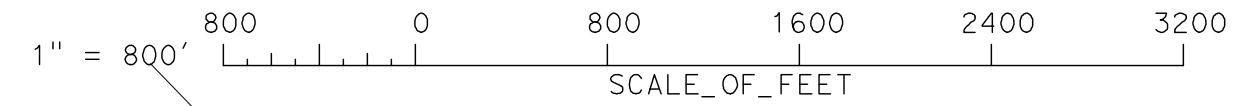
DAM	MAXIMUM HEIGHT ABOVE STREAMBED (FT)	APPROXIMATE CREST LENGTH (FT)	APPROXIMATE TOTAL EMBANKMENT VOLUME (CY)
SADLE DAM NO. 1	50	490	93,000
SADLE DAM NO. 2	80	420	86,000
SADLE DAM NO. 3	130	3,810	3,577,000
SADLE DAM NO. 4	40	270	18,000
SADLE DAM NO. 5	100	2,290	1,505,000
SADLE DAM NO. 6	70	530	144,000
SADLE DAM NO. 7	75	1,040	196,000
SADLE DAM NO. 8	105	2,990	1,915,000
SADLE DAM NO. 9	45	340	49,000

SOURCE: SITES RESERVOIR ENGINEERING FEASIBILITY STUDY, GOLDEN GATE, SITES, AND SADDLE DAMS.PDF PAGE 92, FIGURE 21. PDF SCALE AT 22X34 IS 1" = 800'

QUANTITY ESTIMATES - SADDLE DAMS

DAM	CLEAR AND GRUB (CY)	FOUNDATION EXCAVATION (CY)	ZONE 1 CORE (CY)	ZONE 2 RANDOM (CY)	ZONE 3 ROCKFILL (CY)	ZONE 4 FILTER (TON)
SADLE DAM NO. 1	2	27,600	27,600	44,300	7,000	13,900
SADLE DAM NO. 2	2	26,300	25,300	39,200	10,000	11,300
SADLE DAM NO. 3	40	512,000	832,000	1,532,000	1,014,000	340,000
SADLE DAM NO. 4	1	7,100	7,700	6,700	900	3,000
SADLE DAM NO. 5	20	270,000	378,000	557,000	445,000	214,200
SADLE DAM NO. 6	3	36,000	40,200	39,000	50,000	13,100
SADLE DAM NO. 7	5	67,000	60,500	41,000	61,000	57,800
SADLE DAM NO. 8	30	373,000	542,000	706,000	504,000	282,200
SADLE DAM NO. 9	2	19,000	16,600	20,500	3,500	8,200

QUANTITIES FOR 1.8 MAF RESERVOIR SIZE
ZONE DESIGNATIONS DIFFER BETWEEN SADDLE DAMS AND MAIN DAMS (SITES AND GOLDEN GATE)



PLOTTED BY: BARNHART, DENNIS - August 7, 2017 - 3:45:16 PM
 DRAWING: G:\S\PA\FEASIBILITY_AECOM\900 WORK\0-CAD\006-CIVIL\20-SHEETS\05-DAMS\CS-101.DWG

DESIGNED D. HUGHES		APPROVAL RECOMMENDED			REVIEWED MIKE FORREST REG. CE. NO. 27855	DATE 08/04/2017		WSIP APPLICATION ATTACHMENT A4.A		SPEC. NO.
DRAWN N. KARUNATILAKA		APPROVAL BY			APPROVAL RECOMMENDED MIKE FORREST REG. CE. NO. 27855			SADDLE DAMS		DRAWING NO. CS-101
CHECKED M. FORREST		ESTIMATE LEVEL FEASIBILITY		APPROVED JOE BARNES REG. CE. NO. 40105		PLAN		REV. SHEET NO. 39		
A3-A	08/01/2017	COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)		WSIP	JB					
REV	DATE	DESCRIPTION		SUB.	APPD					



PLOTTED BY: BARNHART, DENNIS - August 7, 2017 - 3:45:16 PM
 DRAWING: G:\SR\PA\FEASIBILITY_AECOM\900 WORK\0-CAD\006-CIVIL\20-SHEETS\05-DAMS\CS-01.DWG

DESIGNED	D. HUGHES
DRAWN	N. KARUNATILAKA
CHECKED	M. FORREST
DATE	08/01/2017
DESCRIPTION	COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)
SUB.	WSIP
APPD	JB

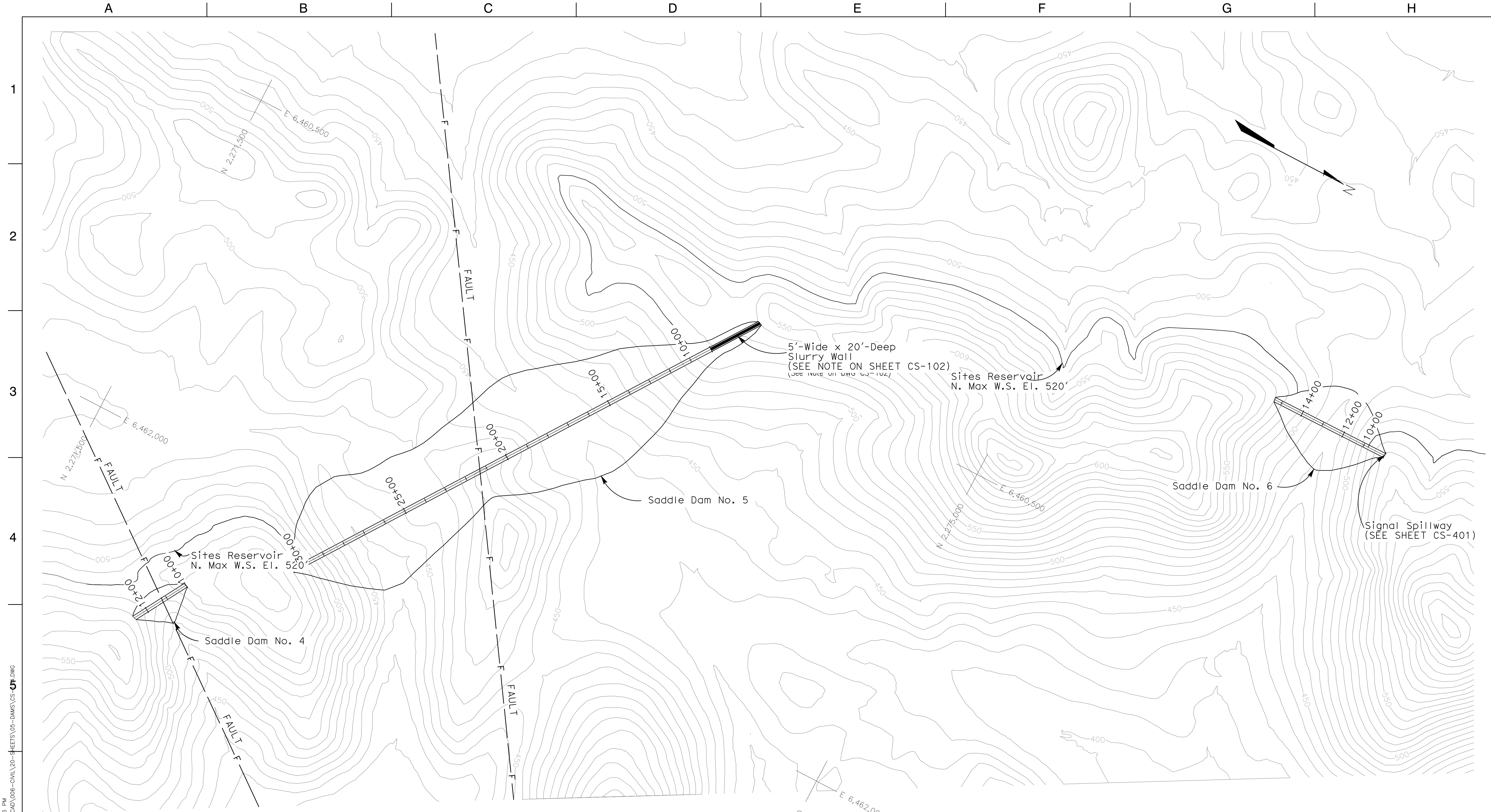
APPROVAL RECOMMENDED	
APPROVAL BY	
ESTIMATE LEVEL	FEASIBILITY

 <small>AECOM Technical Services, Inc. 2020 L Street, Suite 300 Sacramento, Ca 95811 T 916-414-5800 F 916-414-1557 www.aecom.com</small>	REVIEWED	DATE
	MIKE FORREST	08/04/2017
	REG. CE. NO. 27855	
	APPROVAL RECOMMENDED	
	MIKE FORREST	
	REG. CE. NO. 27855	
	APPROVED	
	JOE BARNES	
	REG. CE. NO. 40105	



WSIP APPLICATION ATTACHMENT A4.A
SADDLE DAMS PLAN,
DAM NO. 3

SPEC NO.	
DRAWING NO.	CS-103
REV.	SHEET NO.
	41



5'-Wide x 20'-Deep Slurry Wall
(SEE NOTE ON SHEET CS-102)
(771-104 001 000 000 000)

Sites Reservoir
N. Max W.S. El. 520'

Saddle Dam No. 5

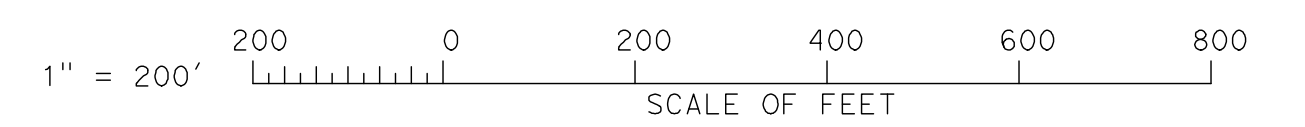
Saddle Dam No. 6

Signal Spillway
(SEE SHEET CS-401)

Sites Reservoir
N. Max W.S. El. 520'

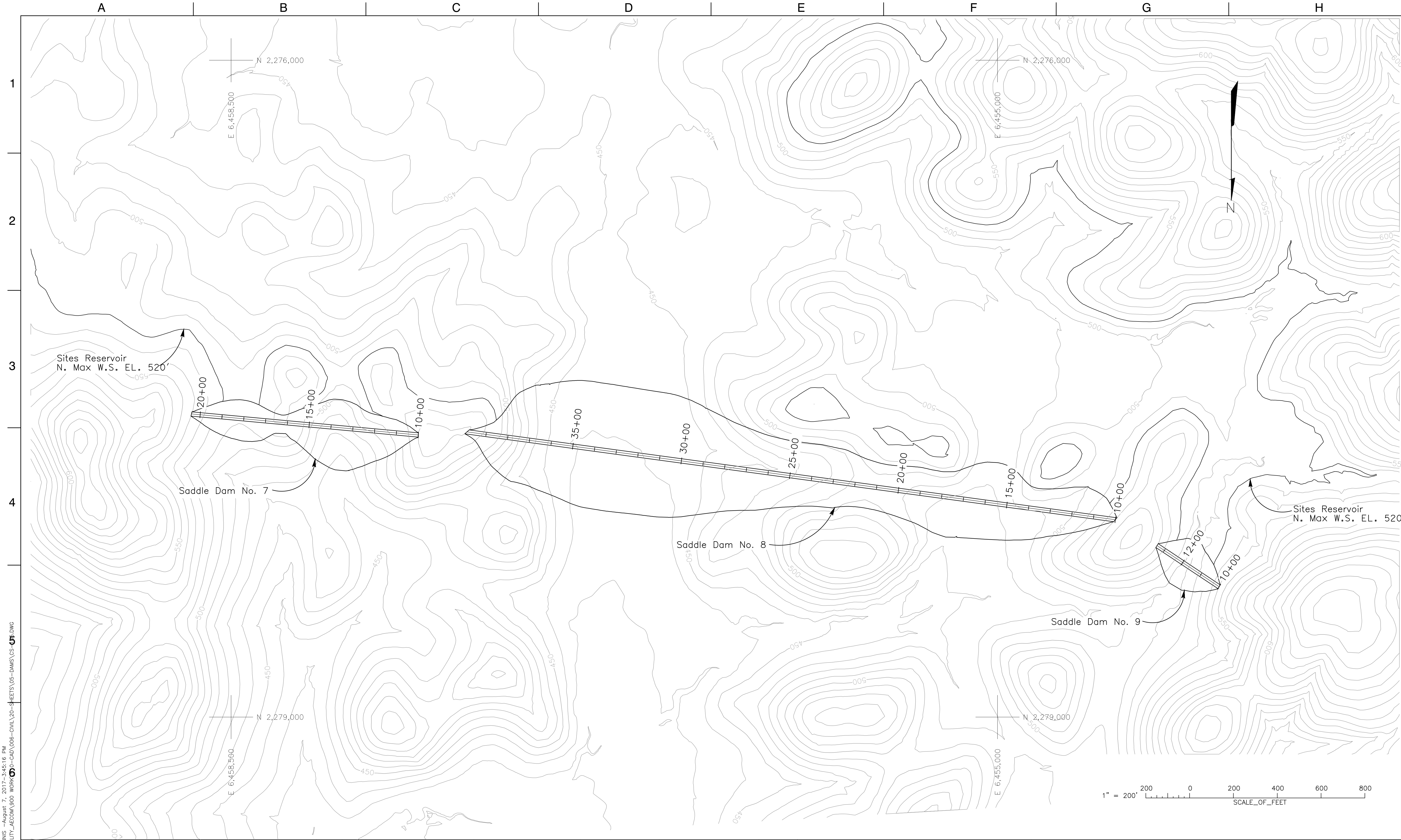
Saddle Dam No. 4

SOURCE:
SITES RESERVOIR ENGINEERING FEASIBILITY STUDY, GOLDEN GATE, SITES,
AND SADDLE DAMS.PDF PAGE 95, FIGURE 24.
PDF SCALE AT 22X34 IS 1" = 200'



PLOTTED BY: BARNHART, DENNIS - August 7, 2017 - 3:45:16 PM
 DRAWING: G:\S\RA\PA\FEASIBILITY_AECOM\900 WORK\6-SHEETS\05-DAMS\CS-104.DWG

DESIGNED D. HUGHES		APPROVAL RECOMMENDED			REVIEWED MIKE FORREST REG. CE. NO. 27855	DATE 08/04/2017		WSIP APPLICATION ATTACHMENT A4.A		SPEC. NO.
DRAWN N. KARUNATILAKA		APPROVAL BY			APPROVAL RECOMMENDED MIKE FORREST REG. CE. NO. 27855			SADDLE DAMS PLAN, DAM NO. 4, 5, AND 6		DRAWING NO. CS-104
CHECKED M. FORREST		ESTIMATE LEVEL FEASIBILITY		APPROVED JOE BARNES REG. CE. NO. 40105				REV. SHEET NO. 42		
A3-A	08/01/2017	COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)		WSIP	JB					
REV	DATE	DESCRIPTION		SUB.	APPD					



PLOTTED BY: BARNHART, DENNIS -- August 7, 2017 -- 3:45:16 PM
 DRAWING: G:\SRIPA\FEASIBILITY_AECOM\900 WORK\0-CAD\006-CIVIL\20-SHEETS\05-DAMS\CS-05.DWG

DESIGNED	D. HUGHES
DRAWN	N. KARUNATILAKA
CHECKED	M. FORREST
DATE	08/01/2017
DESCRIPTION	COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)
SUB.	WSIP
APPD	JB

APPROVAL RECOMMENDED	
APPROVAL BY	
ESTIMATE LEVEL	FEASIBILITY

 <small>AECOM Technical Services, Inc. 2020 L Street, Suite 300 Sacramento, CA 95811 T 916-414-5800 F 916-414-1557 www.aecom.com</small>	REVIEWED	MIKE FORREST	DATE	08/04/2017
	REG. CE. NO.	27855		
	APPROVAL RECOMMENDED	MIKE FORREST		
	REG. CE. NO.	27855		
	APPROVED	JOE BARNES		
	REG. CE. NO.	40105		



WSIP APPLICATION ATTACHMENT A4.A
SADDLE DAMS PLAN,
DAM NO. 7, 8, AND 9

SPEC NO.	
DRAWING NO.	CS-105
REV.	SHEET NO.
	43

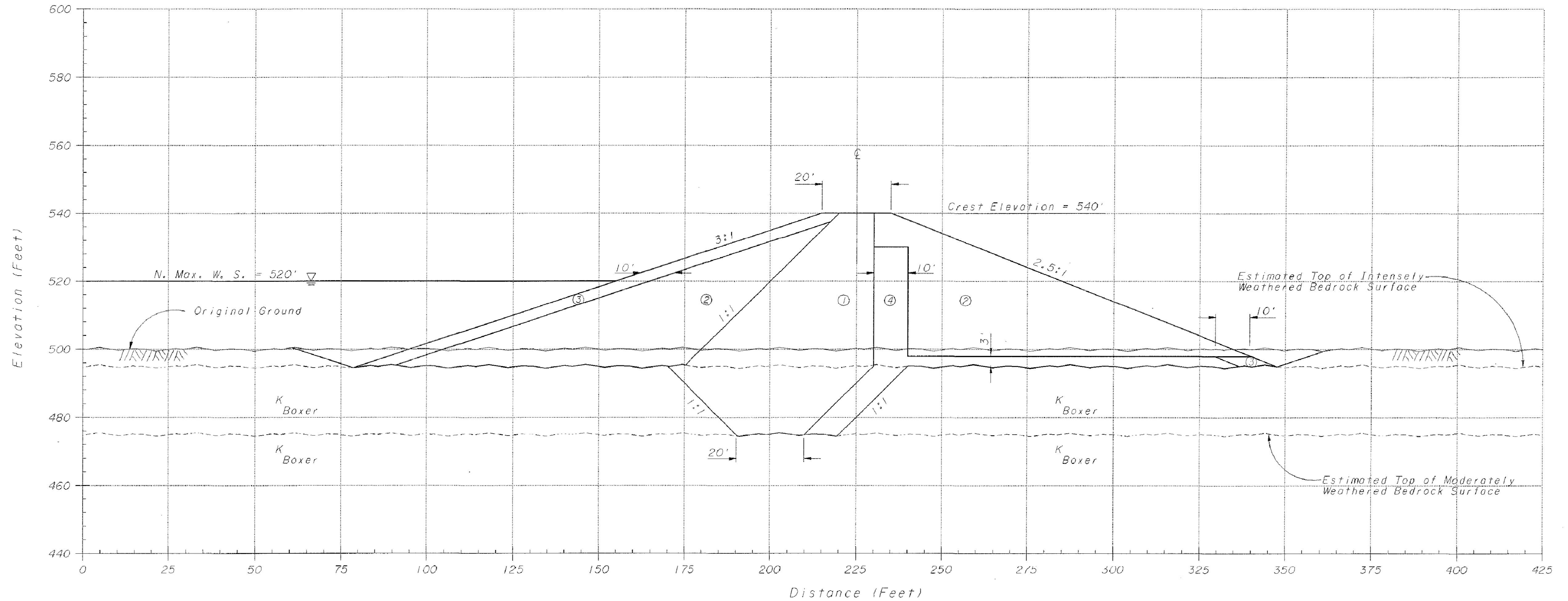
A B C D E F G H

1

2

3

4



NOTES

- Embankment section presented is preliminary and is based upon feasibility level geologic exploration and materials investigation, testing, and evaluation programs.
- Embankment zones are as follows:
 ZONE ① Core
 ZONE ② Random, Predominately Mudstone
 ZONE ③ Riprap
 ZONE ④ Filter

**TYPICAL SECTION
 SADDLE DAM NOS. 1, 2, 4, AND 9**

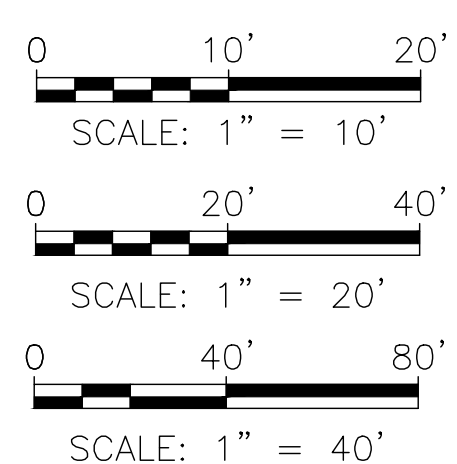
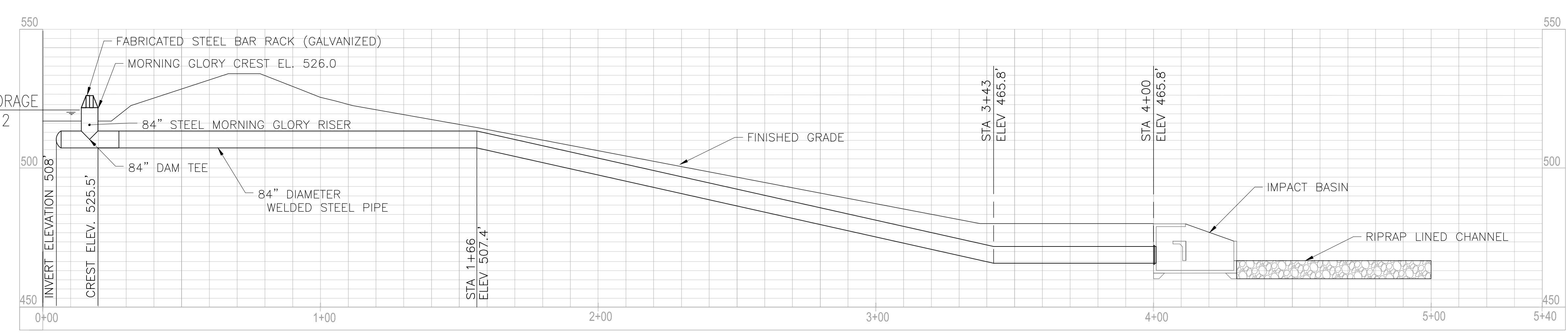
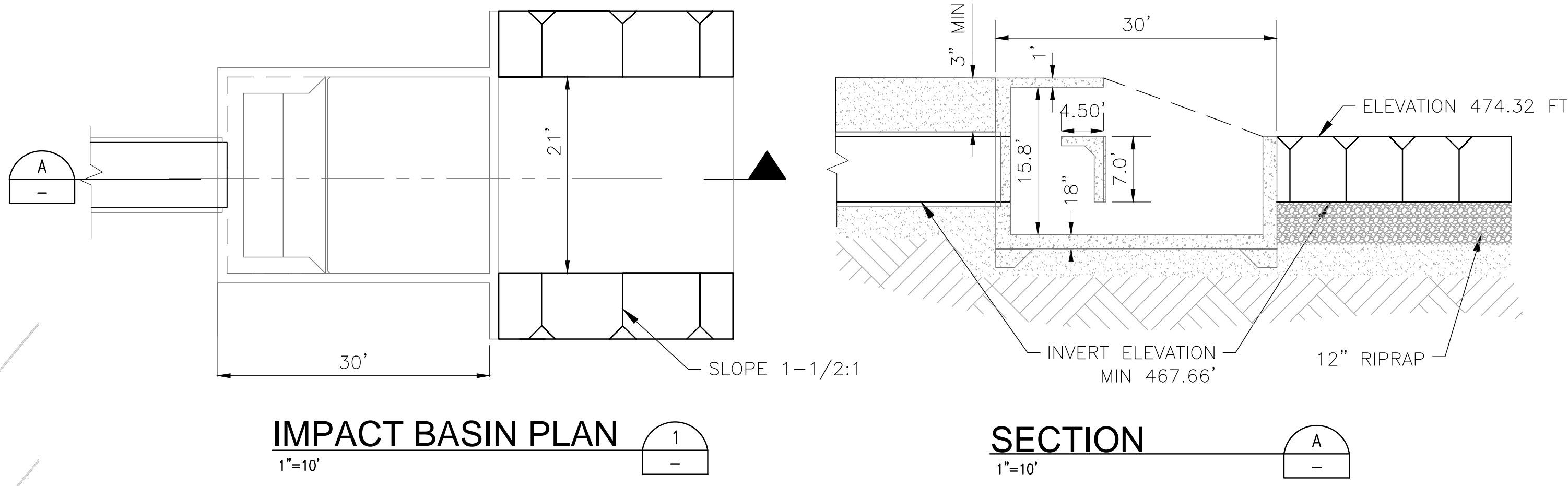
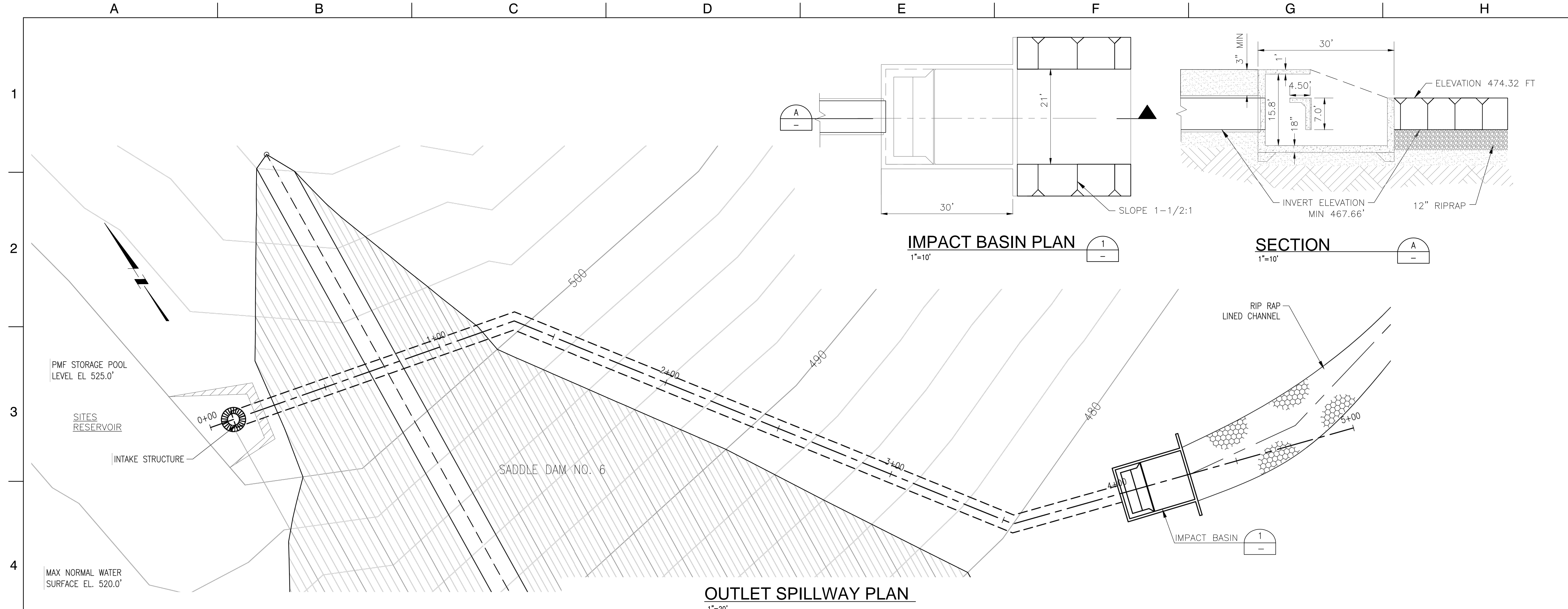
Scale: 1" = 15'



PLOTTED BY: BARNHART, DENNIS - August 7, 2017 - 3:45:16 PM
 DRAWING: G:\SR\PA\FEASIBILITY_AECOM\900 WORK\6-SHEETS\05-DAMS\CS-301.DWG

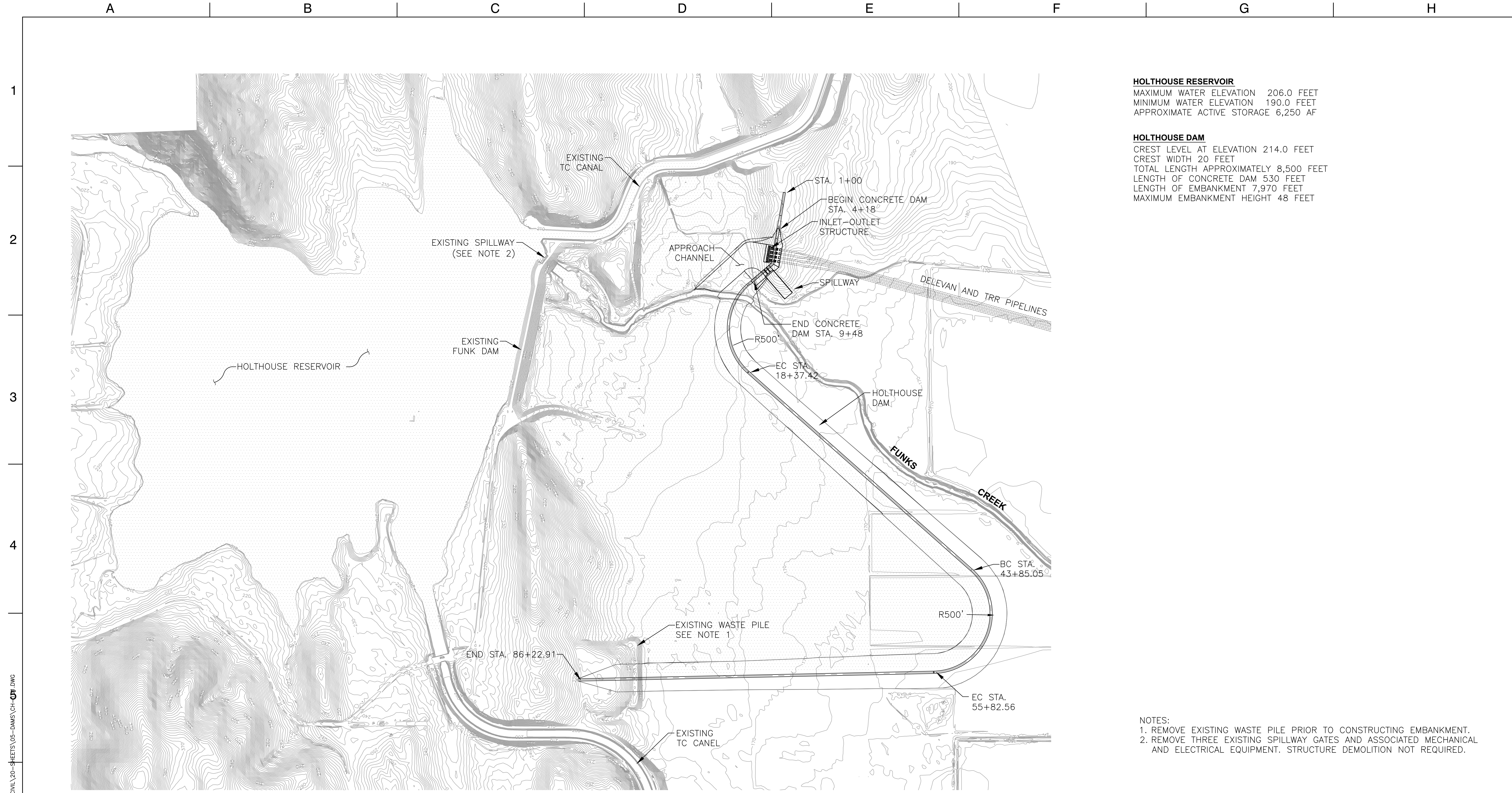
DESIGNED D. HUGHES		APPROVAL RECOMMENDED			REVIEWED MIKE FORREST	DATE 08/04/2017		WSIP APPLICATION ATTACHMENT A4.A		SPEC. NO.
DRAWN N. KARUNATILAKA		APPROVAL BY			REG. CE. NO. 27855 APPROVAL RECOMMENDED MIKE FORREST REG. CE. NO. 27855			SADDLE DAMS TYPICAL SECTIONS, DAM NO. 1, 2, 4, AND 9		DRAWING NO. CS-301
CHECKED M. FORREST		ESTIMATE LEVEL FEASIBILITY		APPROVED JOE BARNES REG. CE. NO. 40105				REV.	SHEET NO. 44	
A3-A	08/01/2017	COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)		WSIP	JB					
REV	DATE	DESCRIPTION		SUB.	APPD					

A B C D E F G H



PLOTTED BY: BARNHART, DENNIS - August 7, 2017 - 3:45:16 PM
 DRAWING: G:\S\A\FA\FEASIBILITY_AECOM\900 WORK\06-CAD\006-CIVIL\20-SHEETS\05-DAMS\CS-01.DWG

DESIGNED D. HUGHES		APPROVAL RECOMMENDED			REVIEWED MIKE FORREST REG. CE. NO. 27855 APPROVAL RECOMMENDED MIKE FORREST REG. CE. NO. 27855 APPROVED JOE BARNES REG. CE. NO. 40105	DATE 08/04/2017	WSIP APPLICATION ATTACHMENT A4.A		SPEC NO.
DRAWN N. KARUNATILAKA		APPROVAL BY					SIGNAL SPILLWAY DETAILS		DRAWING NO. CS-501
CHECKED M. FORREST		ESTIMATE LEVEL FEASIBILITY					SADDLE DAM NO. 6		REV. SHEET NO. 46
A3-A	08/01/2017	COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)		WSIP	JB				
REV	DATE	DESCRIPTION		SUB.	APPD				



HOLTHOUSE RESERVOIR
 MAXIMUM WATER ELEVATION 206.0 FEET
 MINIMUM WATER ELEVATION 190.0 FEET
 APPROXIMATE ACTIVE STORAGE 6,250 AF

HOLTHOUSE DAM
 CREST LEVEL AT ELEVATION 214.0 FEET
 CREST WIDTH 20 FEET
 TOTAL LENGTH APPROXIMATELY 8,500 FEET
 LENGTH OF CONCRETE DAM 530 FEET
 LENGTH OF EMBANKMENT 7,970 FEET
 MAXIMUM EMBANKMENT HEIGHT 48 FEET

PLAN - HOLTHOUSE RESERVOIR
 SCALE: 1" = 400'

NOTES:
 1. REMOVE EXISTING WASTE PILE PRIOR TO CONSTRUCTING EMBANKMENT.
 2. REMOVE THREE EXISTING SPILLWAY GATES AND ASSOCIATED MECHANICAL AND ELECTRICAL EQUIPMENT. STRUCTURE DEMOLITION NOT REQUIRED.

PLOTTED BY: BARNHART, DENNIS - August 7, 2017 - 3:45:16 PM
 DRAWING: G:\SR\PA\FEASIBILITY_AECOM\900 WORK\05-CAD\006-CIVIL\20-SHEETS\05-DAMS\CH-101.DWG

DESIGNED D. HUGHES		APPROVAL RECOMMENDED			REVIEWED MIKE FORREST	DATE 08/04/2017			WSIP APPLICATION ATTACHMENT A4.A		SPEC NO.
DRAWN N. KARUNATILAKA		APPROVAL BY			REG. CE. NO. 27855				HOLTHOUSE RESERVOIR PLAN		DRAWING NO. CH-101
CHECKED M. FORREST		ESTIMATE LEVEL FEASIBILITY		 <small>AECOM Technical Services, Inc. 2020 L Street, Suite 300 Sacramento, Ca 95811 T 916-414-5800 F 916-414-1557 www.aecom.com</small>	APPROVED JOE BARNES			REV.	SHEET NO.		
REV	DATE	DESCRIPTION		SUB.	APPD						47



PLOTTED BY: BARNHART, DENNIS - August 7, 2017 - 3:45:16 PM
 DRAWING: C:\SR\IP\A\FEASIBILITY_AECOM\900 WORK\00-CAD\006-CIVIL\20-SHEETS\05-DAMS\CH-102.DWG

REV	DATE	DESCRIPTION	SUB.	APPD.
A3-A	08/01/2017	COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(c)(5)(D)	WSIP	JB

DESIGNED D. HUGHES	APPROVAL RECOMMENDED
DRAWN N. KARUNATILAKA	APPROVAL BY
CHECKED M. FORREST	ESTIMATE LEVEL FEASIBILITY

AECOM <small>AECOM Technical Services, Inc. 2020 L Street, Suite 300 Sacramento, Ca 95811 T 916-414-8800 F 916-414-1557 www.aecom.com</small>	REVIEWED MIKE FORREST REG. CE. NO. 27855	DATE 08/04/2017
	APPROVAL RECOMMENDED MIKE FORREST REG. CE. NO. 27855	
	APPROVED JOE BARNES REG. CE. NO. 40105	



WSIP APPLICATION ATTACHMENT A4.A
HOLTHOUSE RESERVOIR
INLET OUTLET STRUCTURE PLAN

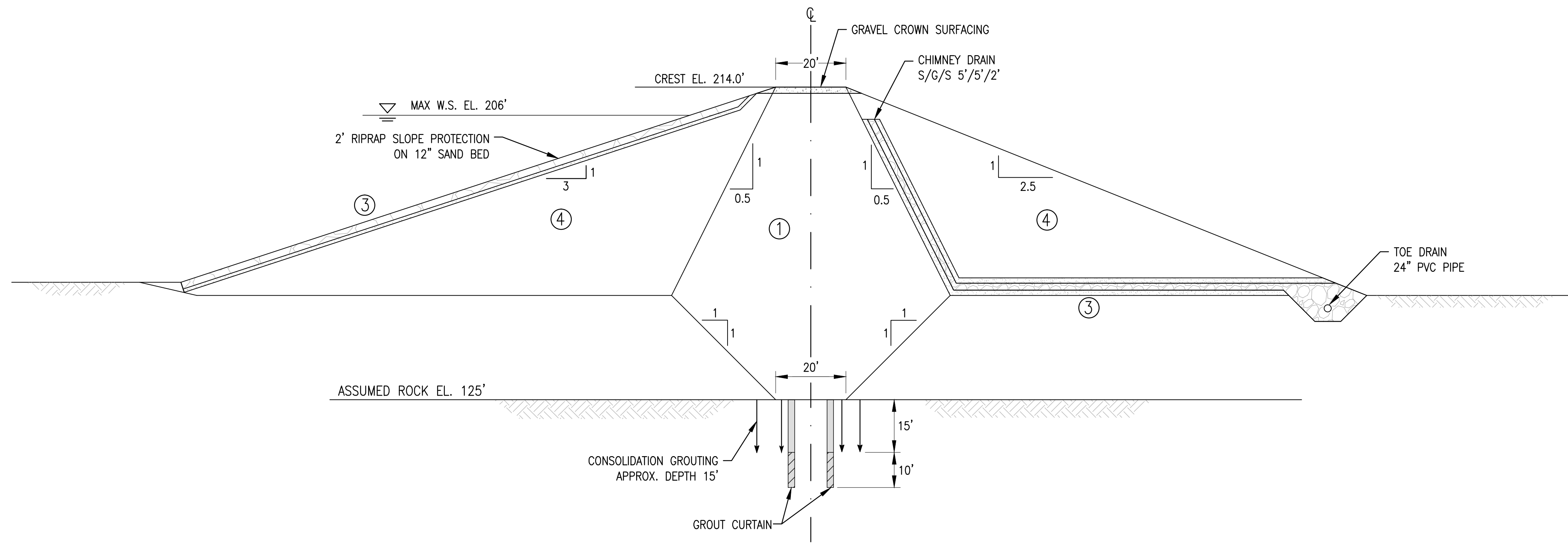
SPEC NO.	
DRAWING NO.	CH-102
REV.	SHEET NO.
	48

1

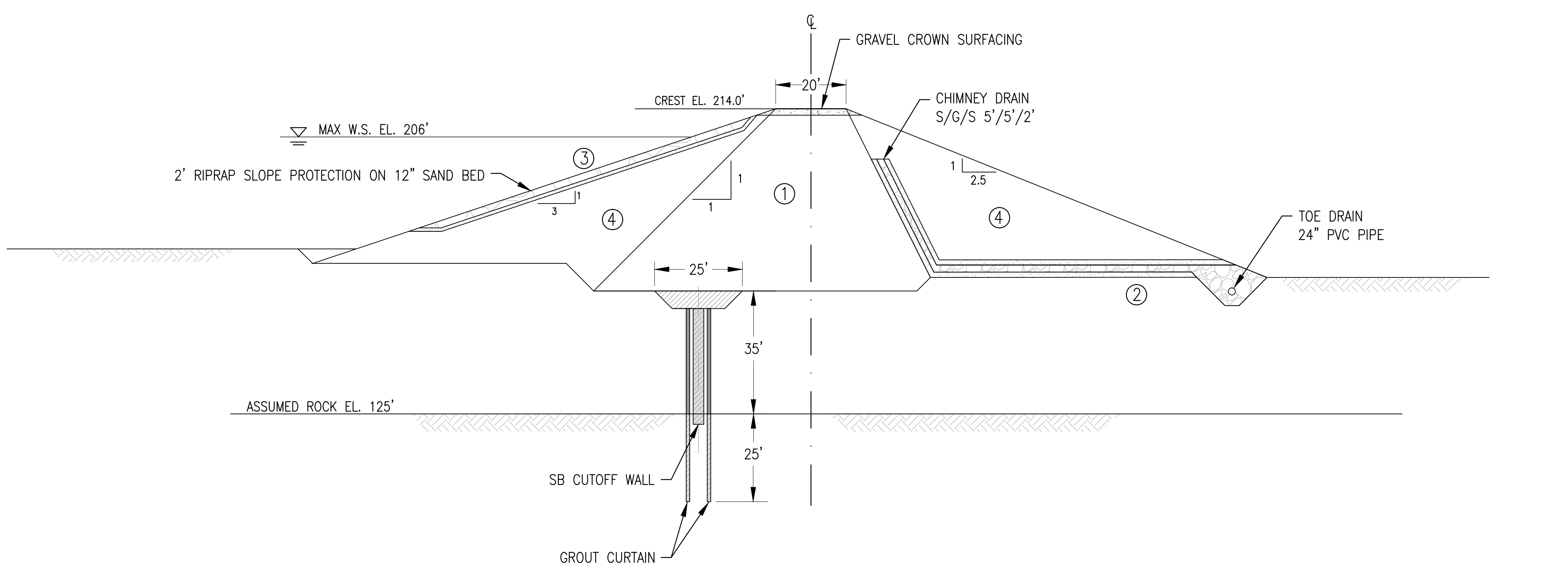
2

3

4



TYPICAL SECTION ON SHALLOW ROCK NTS



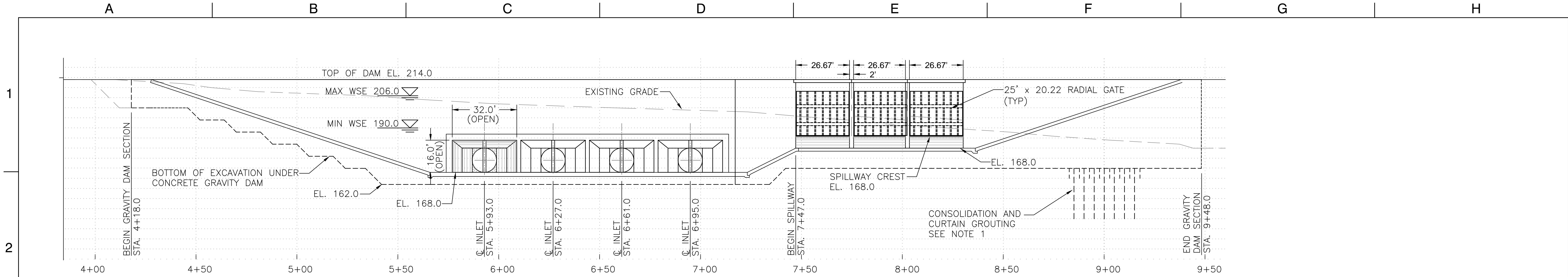
TYPICAL SECTION ON DEEP ROCK NTS

NOTES:

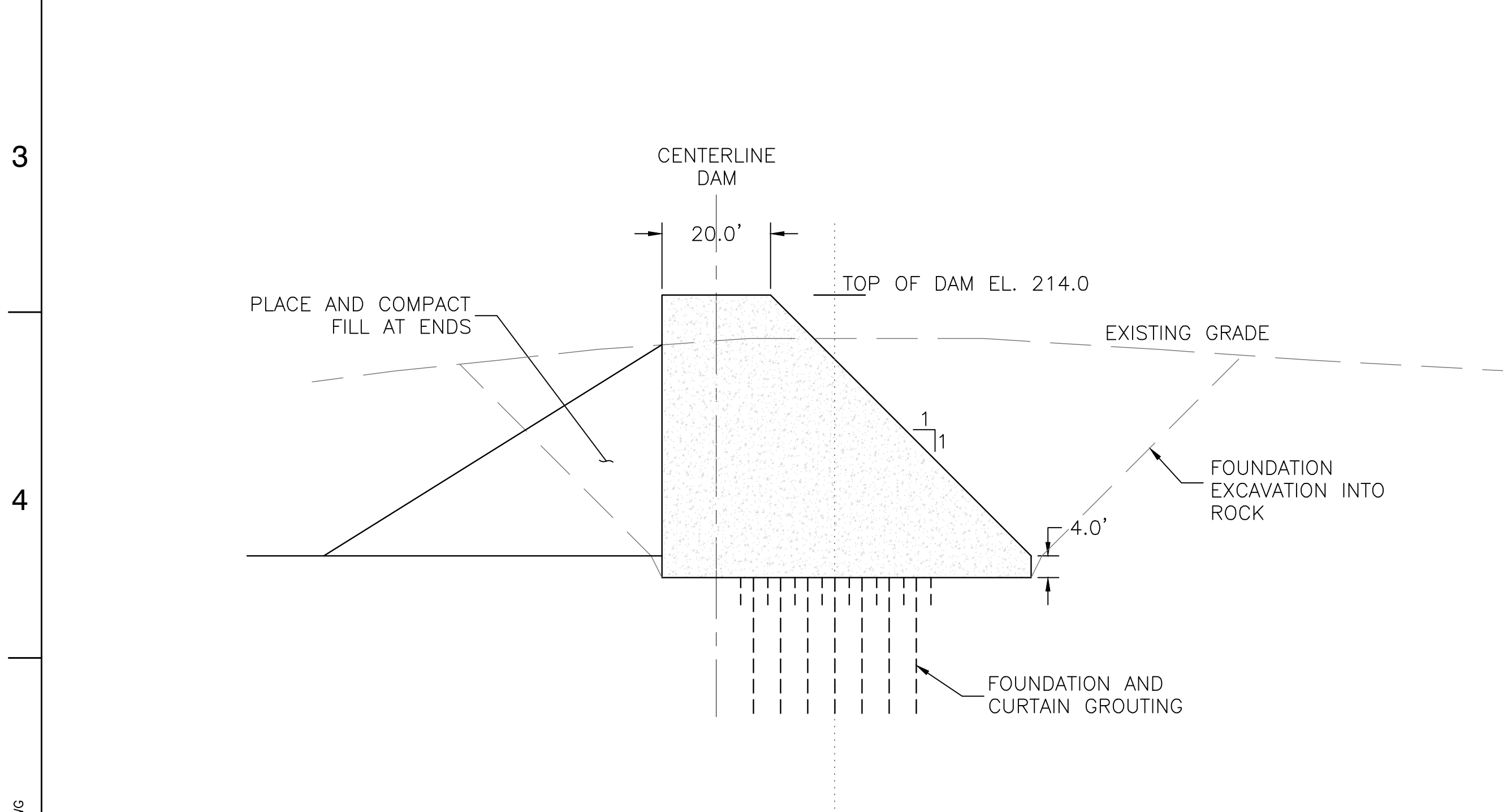
1. EMBANKMENT ZONES ARE AS FOLLOWS:
 - ZONE ① CLAY CORE
 - ZONE ② UPSTREAM AND DOWNSTREAM FILTER, DRAIN AND TRANSITION
 - ZONE ③ SAND BED AND RIPRAP
 - ZONE ④ SHELL, LOCAL BORROW SM, SC
2. BORROW FROM DELEVAN AND TRR PIPELINE EXCAVATION, REUSE OF EXISTING EMBANKMENT MATERIAL.
3. LOCAL BORROW SM, SC, REUSE OF EXISTING EMBANKMENT MATERIAL.
4. TWO ROWS OF GROUT CURTAIN AS DETAILED, X-PATTERN, HOLES INCLINED AT OPPOSING 15 DEGREE ANGLES, EXTENDING TO APPROXIMATELY 25' BELOW ROCK SURFACE.

PLOTTED BY: BARNHART, DENNIS - August 7, 2017 - 3:45:16 PM
 DRAWING: G:\SRIPA\FEASIBILITY_AECOM\900 WORK\0-CAD\006-CIVIL\20-SHEETS\05-DAMS\CH-301.DWG

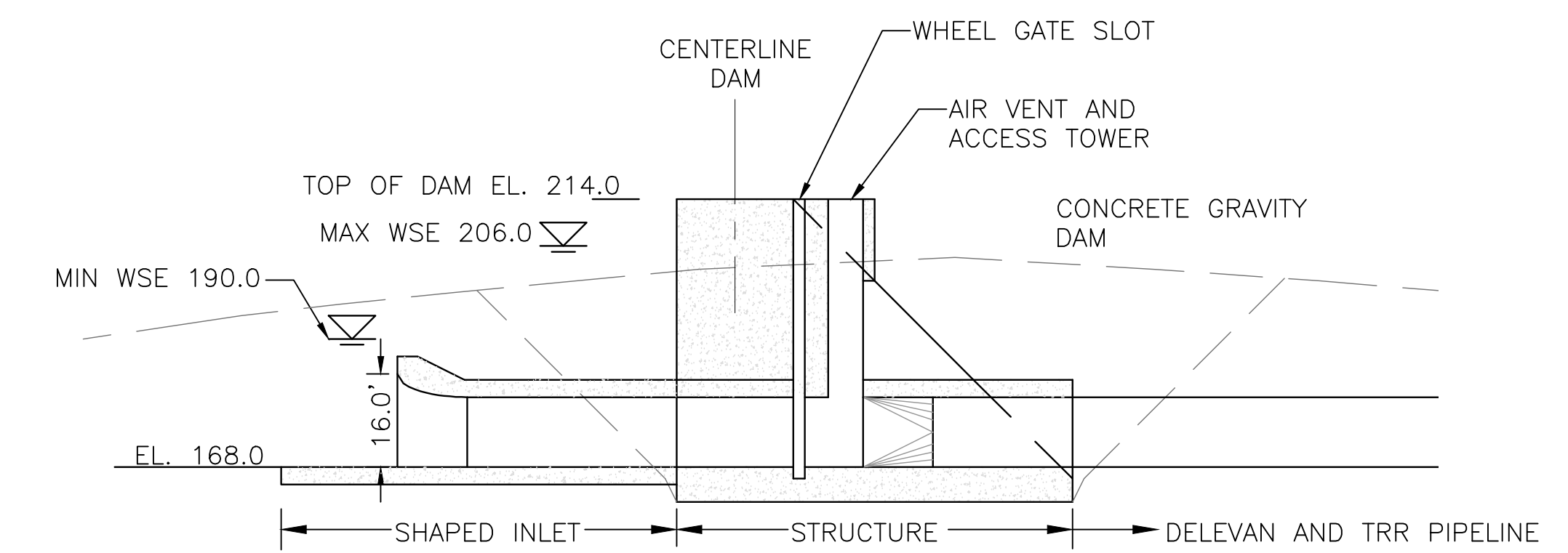
				DESIGNED D. HUGHES	APPROVAL RECOMMENDED	 AECOM Technical Services, Inc. 2020 L Street, Suite 300 Sacramento, Ca 95811 T 916-414-5800 F 916-414-1557 www.aecom.com	REVIEWED MIKE FORREST REG. CE. NO. 27855	DATE 08/04/2017	WSIP APPLICATION ATTACHMENT A4.A FUNKS CREEK AND ABUTMENT AREA EMBANKMENT CROSS SECTIONS		SPEC NO.
				DRAWN N. KARUNATILAKA	APPROVAL BY		APPROVAL RECOMMENDED MIKE FORREST REG. CE. NO. 27855				DRAWING NO. CH-301
				CHECKED M. FORREST	ESTIMATE LEVEL FEASIBILITY	APPROVED JOE BARNES REG. CE. NO. 40105				REV.	SHEET NO. 49
A3-A	08/01/2017	COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)	WSIP	JB							



ELEVATION - INLET-OUTLET STRUCTURE
NTS



TYPICAL GRAVITY DAM SECTION
NTS

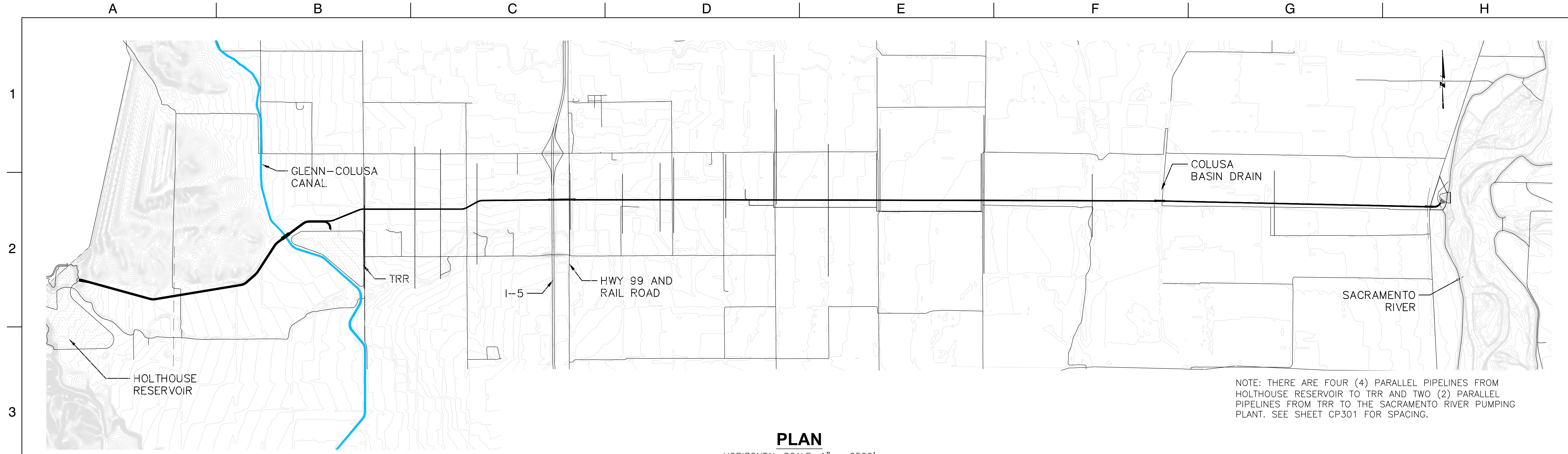


TYPICAL PIPE ENTRANCE
NTS

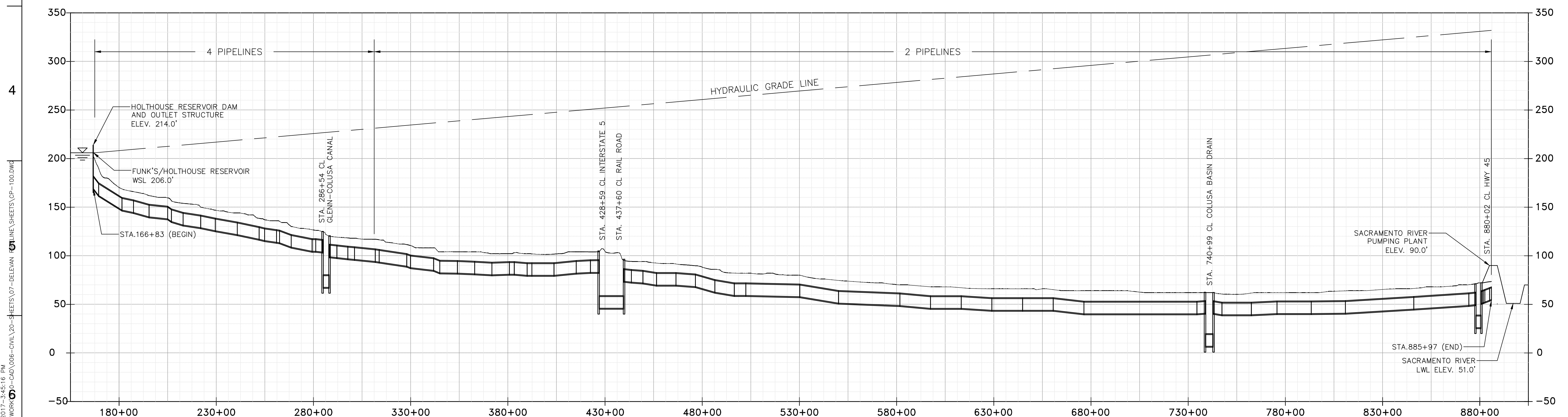
NOTES:
1. CURTAIN AND CONSOLIDATION GROUTING REQUIRED UNDER FULL LENGTH OF GRAVITY DAM SECTION. MATCH GRAVITY DAM GROUTING WITH GROUTING IN ADJACENT EARTH EMBANKMENTS UNDEER CORE ZONE FOR CONTINUITY.

PLOTTED BY: BARNHART, DENNIS - August 7, 2017 - 3:45:16 PM
 DRAWING: G:\SR\PA\FEASIBILITY_AECOM\900 WORK\05-CAD\006-CIVIL\20-SHEETS\05-DAMS\CH-01.DWG

DESIGNED D. HUGHES		APPROVAL RECOMMENDED			REVIEWED MIKE FORREST REG. CE. NO. 27855	DATE 08/04/2017	WSIP APPLICATION ATTACHMENT A4.A		SPEC. NO.
DRAWN N. KARUNATILAKA		APPROVAL BY				APPROVAL RECOMMENDED MIKE FORREST REG. CE. NO. 27855	HOLTHOUSE RESERVOIR ELEVATION AND DETAILS		DRAWING NO. CH-501
CHECKED M. FORREST		ESTIMATE LEVEL FEASIBILITY		APPROVED JOE BARNES REG. CE. NO. 40105				REV.	SHEET NO. 50
REV	DATE	DESCRIPTION		SUB.	APPD				



NOTE: THERE ARE FOUR (4) PARALLEL PIPELINES FROM HOLTHOUSE RESERVOIR TO TRR AND TWO (2) PARALLEL PIPELINES FROM TRR TO THE SACRAMENTO RIVER PUMPING PLANT. SEE SHEET CP301 FOR SPACING.



PLOTTED BY: BARNHART, DENNIS - August 7, 2017 - 3:45:16 PM
 DRAWING: G:\S\PA\FEASIBILITY_AECOM\900 WORK\0-CAD\006-CIVIL\20-SHEETS\07-DELEVAN\CP-100.DWG
 G:\S\PA\FEASIBILITY_AECOM\900 WORK\0-CAD\006-CIVIL\20-SHEETS\07-DELEVAN\CP-100.DWG

DESIGNED	D. DEUTSCHER	APPROVAL RECOMMENDED	
DRAWN	M. WONG	APPROVAL BY	
CHECKED	M. FORREST	ESTIMATE LEVEL	FEASIBILITY
REV	DATE	DESCRIPTION	SUB. APPD
A3-A	08/01/2017	COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)	WSIP JB

DESIGNED	D. DEUTSCHER	APPROVAL RECOMMENDED	
DRAWN	M. WONG	APPROVAL BY	
CHECKED	M. FORREST	ESTIMATE LEVEL	FEASIBILITY

AECOM	REVIEWED	DATE
MIKE FORREST	08/04/2017	
REG. CE. NO. 27855		
APPROVAL RECOMMENDED		
DWAYNE DEUTSCHER		
REG. CE. NO. 34557		
APPROVED		
JOE BARNES		
REG. CE. NO. 40105		

AECOM Technical Services, Inc.
 2020 L Street, Suite 300
 Sacramento, Ca 95811
 T 916-414-5800 F 916-414-1557
 www.aecom.com



WSIP APPLICATION ATTACHMENT A4.A
**DELEVAN AND TRR PIPELINE OVERALL
 PLAN AND PROFILE**

SPEC. NO.	
DRAWING NO.	CP-100
REV.	SHEET NO.
	51

A

B

C

D

E

F

G

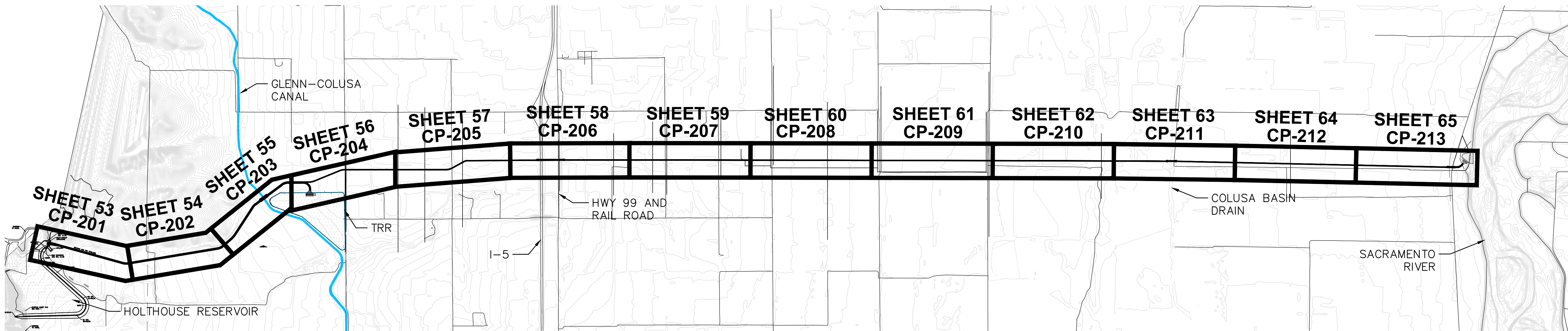
H

1

2

3

4



PLAN

HORIZONTAL SCALE: 1" = 2500'

PLOTTED BY: BARNHART, DENNIS -- August 7, 2017 -- 3:45:16 PM
DRAWING: G:\SR\PA\FEASIBILITY_AECOM\900 WORK\6-DELEVAN\20-SHEETS\07-DELEVAN\CP-101.DWG

DESIGNED	D. DEUTSCHER	APPROVAL RECOMMENDED	
DRAWN	M. WONG	APPROVAL BY	
CHECKED	M. FORREST	ESTIMATE LEVEL	FEASIBILITY
REV	DATE	DESCRIPTION	SUB. APPD
A3-A	08/01/2017	COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)	WSIP JB

DESIGNED	D. DEUTSCHER	APPROVAL RECOMMENDED	
DRAWN	M. WONG	APPROVAL BY	
CHECKED	M. FORREST	ESTIMATE LEVEL	FEASIBILITY

 <small>AECOM Technical Services, Inc. 2020 L Street, Suite 300 Sacramento, CA 95811 T 916-414-5800 F 916-414-1557 www.aecom.com</small>	REVIEWED	MIKE FORREST	DATE	08/04/2017
		REG. CE. NO. 27855		
	APPROVAL RECOMMENDED	DWAYNE DEUTSCHER		
		REG. CE. NO. 34557		
	APPROVED	JOE BARNES		
		REG. CE. NO. 40105		



WSIP APPLICATION ATTACHMENT A4.A
DELEVAN AND TRR PIPELINE INDEX
SHEET

SPEC NO.	
DRAWING NO.	CP-101
REV.	SHEET NO.
	52

A

B

C

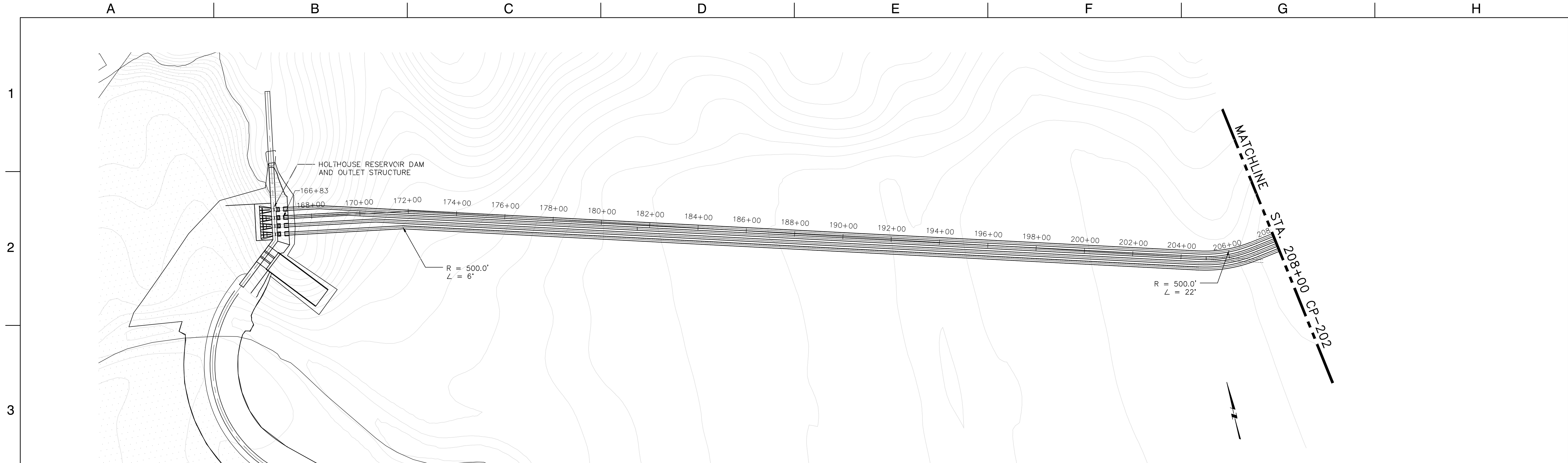
D

E

F

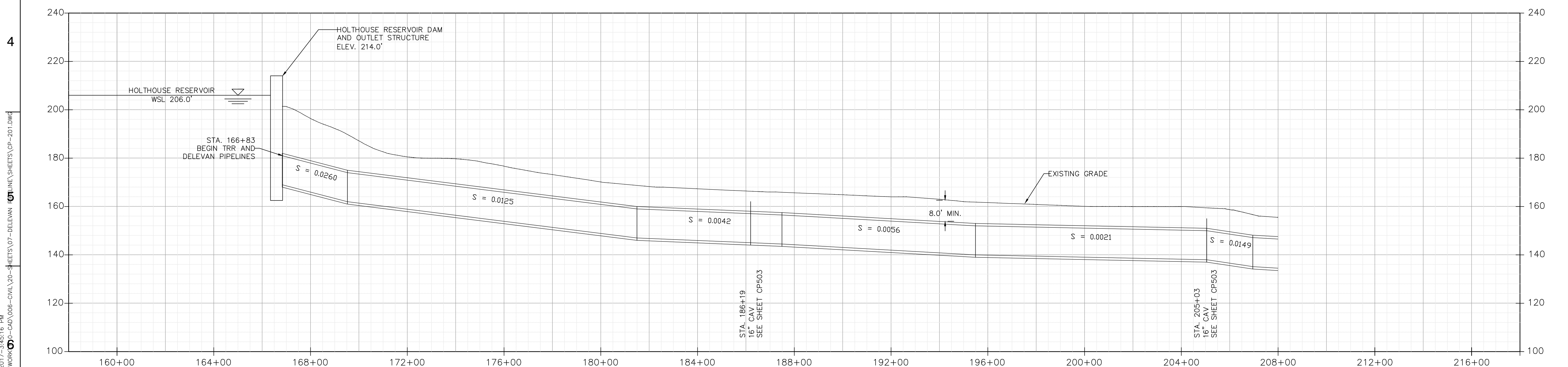
G

H



PLAN
HORIZONTAL SCALE: 1" = 200'

NOTE: SEE SHEET CP-301 FOR PIPELINE SPACING.



PROFILE
HORIZONTAL SCALE: 1" = 200'
VERTICAL SCALE: 1" = 20'

PLOTTED BY: BARNHART, DENNIS - August 7, 2017 - 3:45:16 PM
 DRAWING: G:\SR\PA\FEASIBILITY_AECOM\900 WORK\0-CAD\006-CIVIL\20-SHEETS\07-DELEVAN\CP-201.DWG
 6

DESIGNED	D. DEUTSCHER
DRAWN	M. WONG
CHECKED	M. FORREST
DATE	08/01/2017
DESCRIPTION	COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)
SUB.	WSIP
APPD	JB

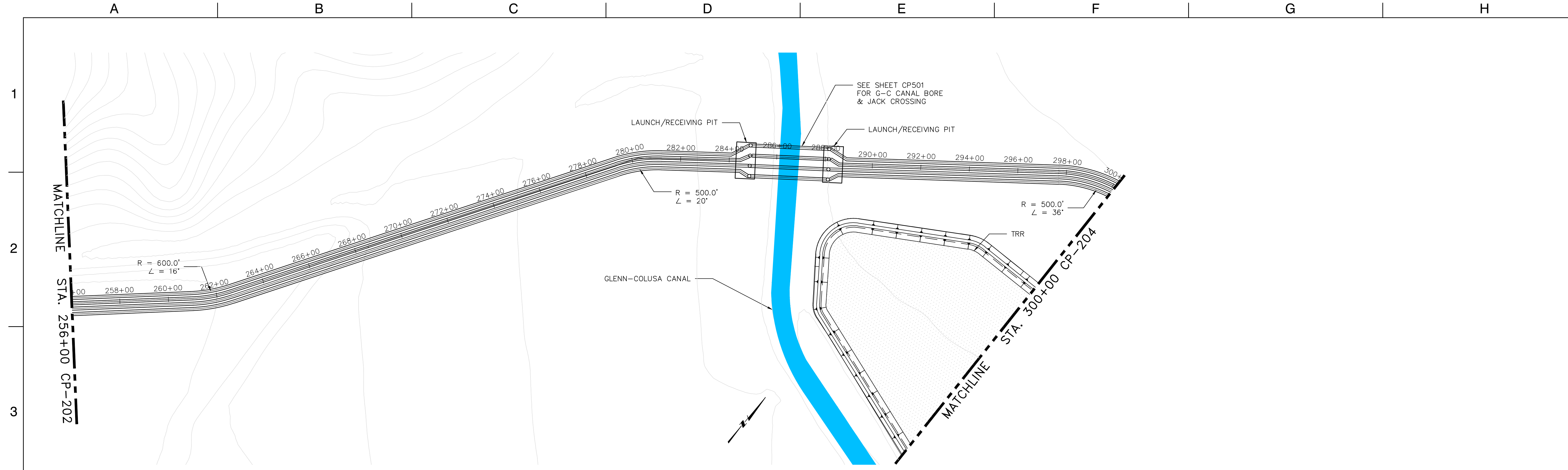
APPROVAL RECOMMENDED	
APPROVAL BY	
ESTIMATE LEVEL	FEASIBILITY

AECOM <small>AECOM Technical Services, Inc. 2020 L Street, Suite 300 Sacramento, Ca 95811 T 916-414-5800 F 916-414-1557 www.aecom.com</small>	REVIEWED	DATE
	MIKE FORREST	08/04/2017
	REG. CE. NO. 27855	
	APPROVAL RECOMMENDED	
	DWAYNE DEUTSCHER	
	REG. CE. NO. 34557	
	APPROVED	
	JOE BARNES	
	REG. CE. NO. 40105	



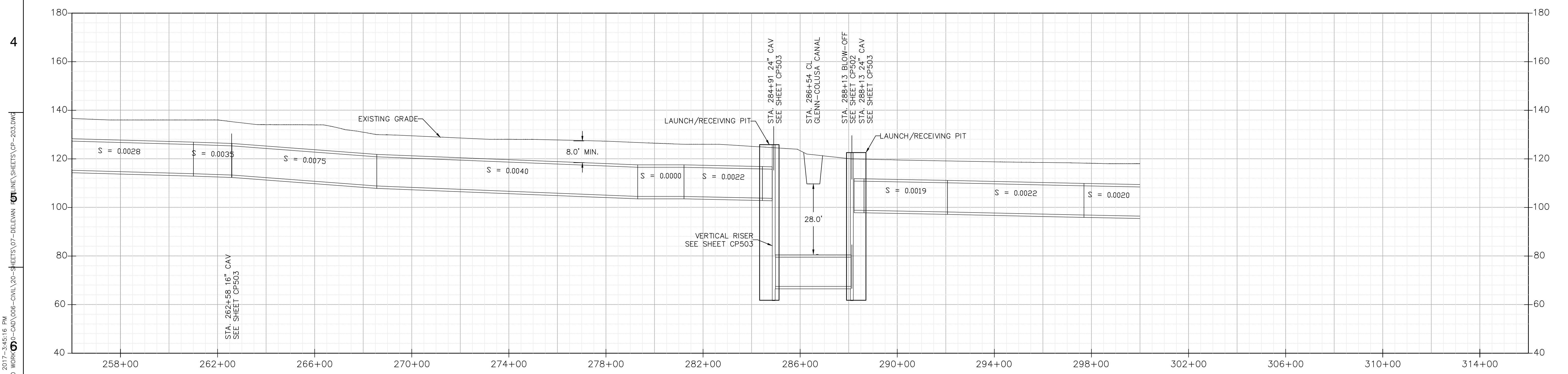
WSIP APPLICATION ATTACHMENT A4.A
DELEVAN PIPELINE PLAN AND PROFILE
 STA. 167+36 TO STA. 208+00

SPEC. NO.	
DRAWING NO.	CP-201
REV.	SHEET NO.
	53



PLAN
HORIZONTAL SCALE: 1" = 200'

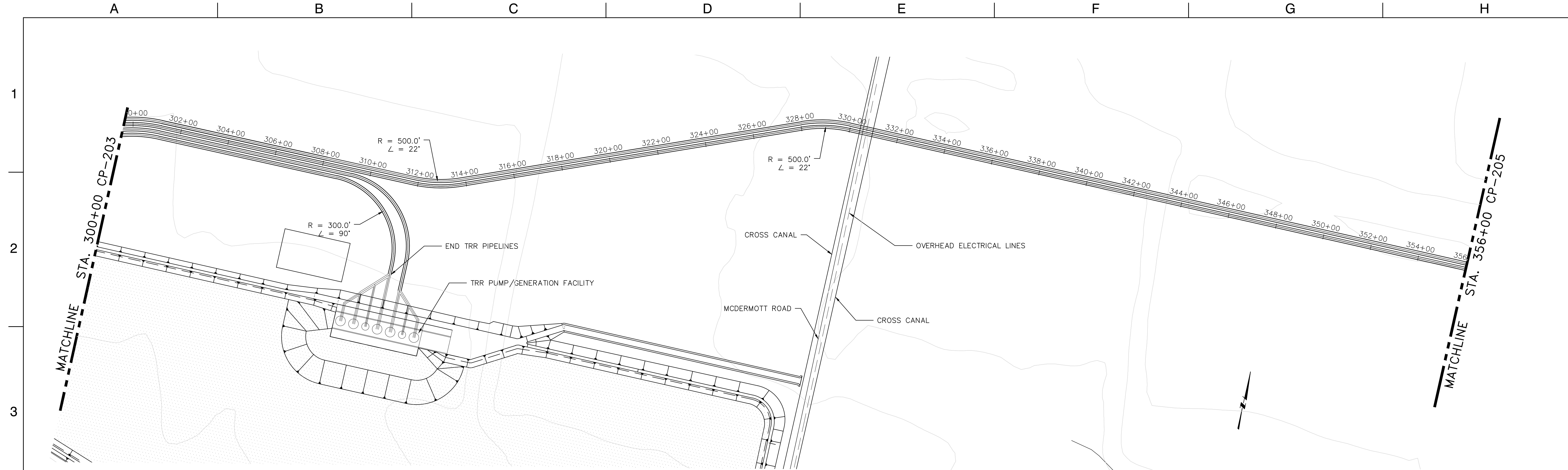
NOTE: SEE SHEET CP301 FOR PIPELINE SPACING.



PROFILE
HORIZONTAL SCALE: 1" = 200'
VERTICAL SCALE: 1" = 20'

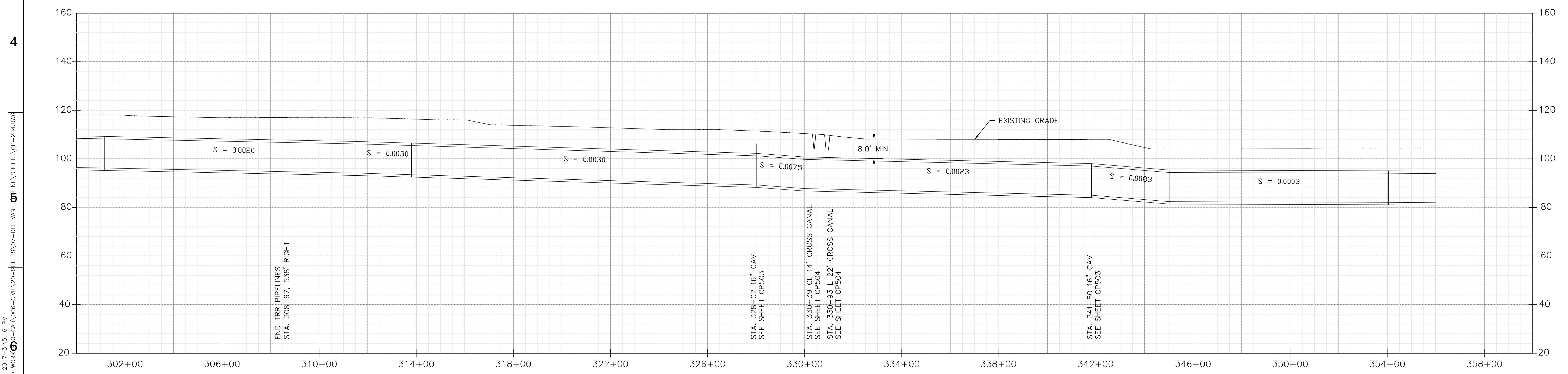
DESIGNED D. DEUTSCHER		APPROVAL RECOMMENDED			REVIEWED MIKE FORREST	DATE 08/04/2017		WSIP APPLICATION ATTACHMENT A4.A		SPEC. NO.
DRAWN M. WONG		APPROVAL BY			REG. CE. NO. 27855 APPROVAL RECOMMENDED DWAYNE DEUTSCHER REG. CE. NO. 34557	DELEVAN AND TRR PIPELINE PLAN AND PROFILE STA. 256+00 TO STA. 300+00		DRAWING NO. CP-203		
CHECKED M. FORREST		ESTIMATE LEVEL FEASIBILITY		APPROVED JOE BARNES REG. CE. NO. 40105				REV. SHEET NO. 55		
A3-A	08/01/2017	COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)	WSIP	JB						
REV	DATE	DESCRIPTION		SUB.	APPD					

PLOTTED BY: BARNHART, DENNIS - August 7, 2017 - 3:45:16 PM
 DRAWING: G:\SR\PA\FEASIBILITY_AECOM\900 WORK\0-CAD\006-CIVIL\20-SHEETS\07-DELEVAN\01-LINE\01-SHEETS\CP-203.DWG



PLAN
HORIZONTAL SCALE: 1" = 200'

NOTE: SEE SHEET CP301 FOR PIPELINE SPACING.



PROFILE
HORIZONTAL SCALE: 1" = 200'
VERTICAL SCALE: 1" = 20'

DESIGNED D. DEUTSCHER				APPROVAL RECOMMENDED				REVIEWED MIKE FORREST REG. CE. NO. 27855 DATE 08/04/2017				WSIP APPLICATION ATTACHMENT A4.A				SPEC. NO.	
DRAWN M. WONG				APPROVAL BY				APPROVAL RECOMMENDED DWAYNE DEUTSCHER REG. CE. NO. 34557				DELEVAN AND TRR PIPELINE PLAN AND PROFILE STA. 300+00 TO STA. 356+00				DRAWING NO. CP-204	
CHECKED M. FORREST				ESTIMATE LEVEL FEASIBILITY				APPROVED JOE BARNES REG. CE. NO. 40105				REV.		SHEET NO. 56			
A3-A 08/01/2017 COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)				WSIP				APPD				A		B			

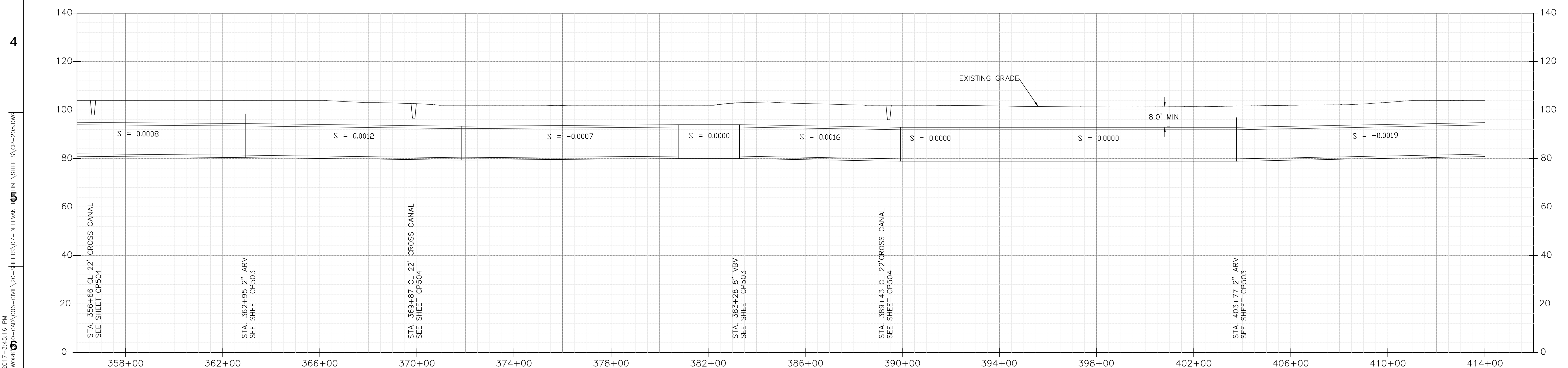


PLOTTED BY: BARNHART, DENNIS - August 7, 2017 - 3:45:16 PM
 DRAWING: G:\SR\PA\FEASIBILITY_AECOM\900 WORK\0-CAD\006-CIVIL\20-SHEETS\07-DELEVAN\01-LINE\01-SHEETS\CP-204.DWG



PLAN
HORIZONTAL SCALE: 1" = 200'

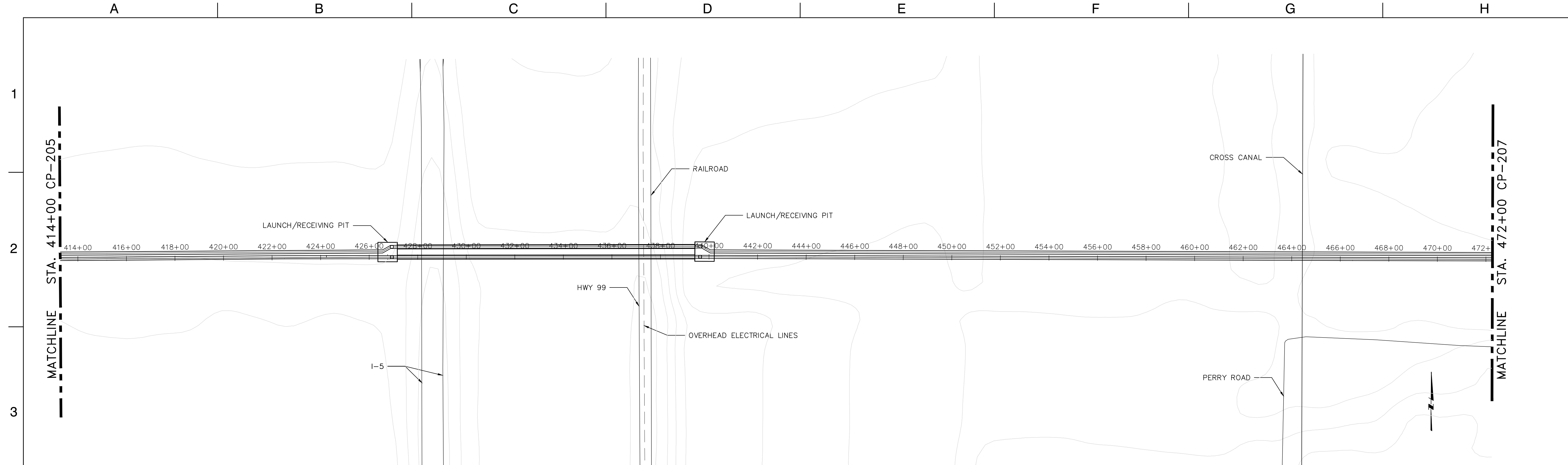
NOTE: SEE SHEET CP301 FOR PIPELINE SPACING.



PROFILE
HORIZONTAL SCALE: 1" = 200'
VERTICAL SCALE: 1" = 20'

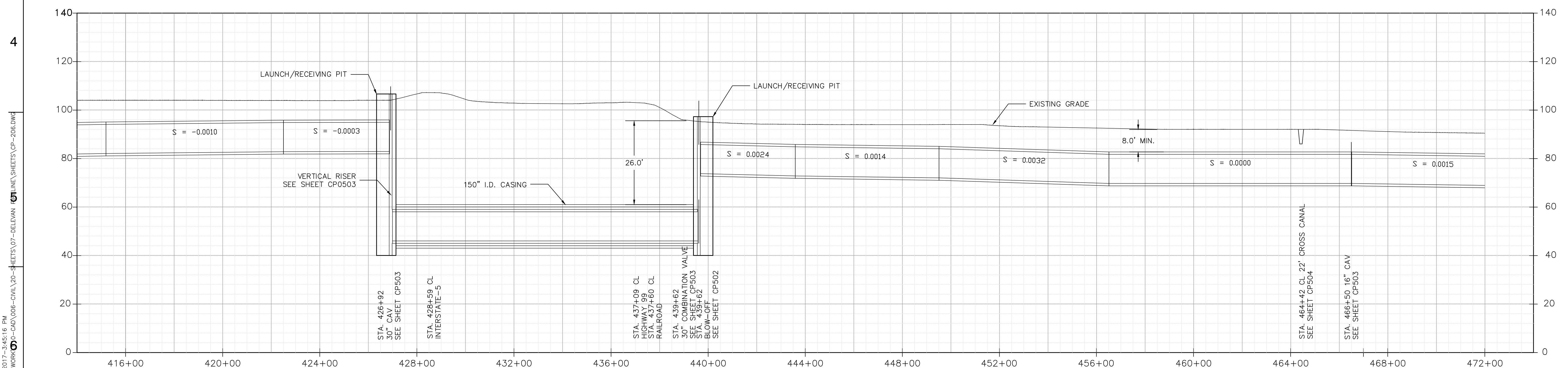
DESIGNED D. DEUTSCHER				APPROVAL RECOMMENDED			REVIEWED MIKE FORREST REG. CE. NO. 27855	DATE 08/04/2017			WSIP APPLICATION ATTACHMENT A4.A		SPEC. NO.
DRAWN M. WONG				APPROVAL BY			APPROVAL RECOMMENDED DWAYNE DEUTSCHER REG. CE. NO. 34557				DRAWING NO. CP-205		
CHECKED M. FORREST				ESTIMATE LEVEL FEASIBILITY			APPROVED JOE BARNES REG. CE. NO. 40105				REV. SHEET NO. 57		
A3-A	08/01/2017	COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)	WSIP	JB									
REV	DATE	DESCRIPTION	SUB.	APPD									

PLOTTED BY: BARNHART, DENNIS - August 7, 2017 - 3:45:16 PM
 DRAWING: G:\SR\PA\FEASIBILITY_AECOM\900 WORK\0-CAD\006-CIVIL\20-SHEETS\07-DELEVAN\01-LINE\SHEETS\CP-205.DWG



PLAN
HORIZONTAL SCALE: 1" = 200'

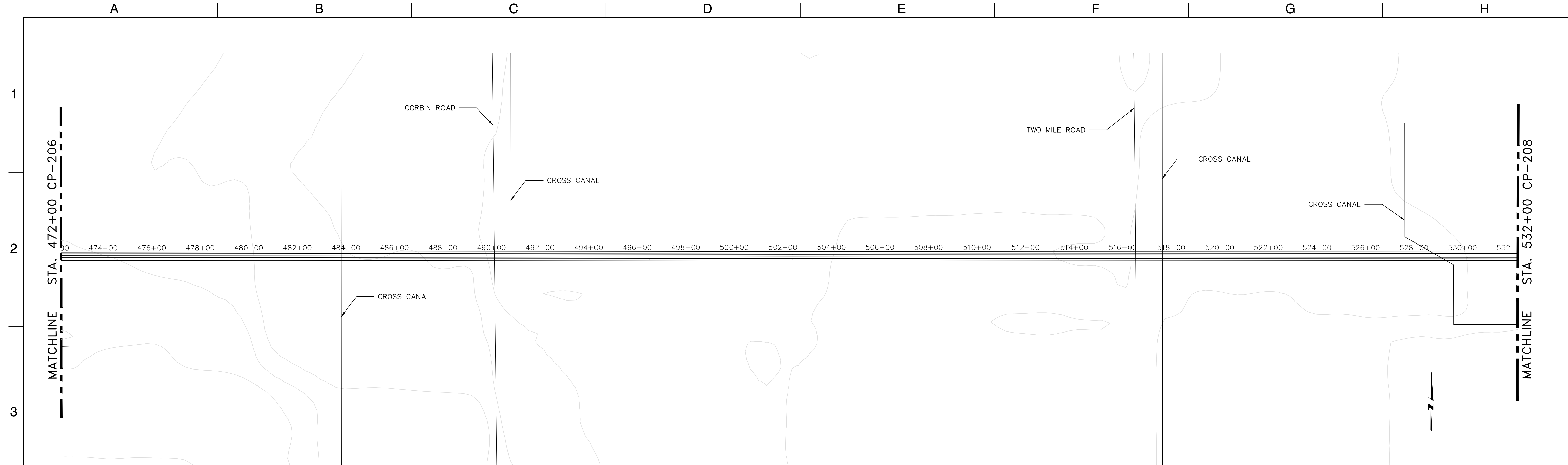
NOTE: SEE SHEET CP301 FOR PIPELINE SPACING.



PROFILE
HORIZONTAL SCALE: 1" = 200'
VERTICAL SCALE: 1" = 20'

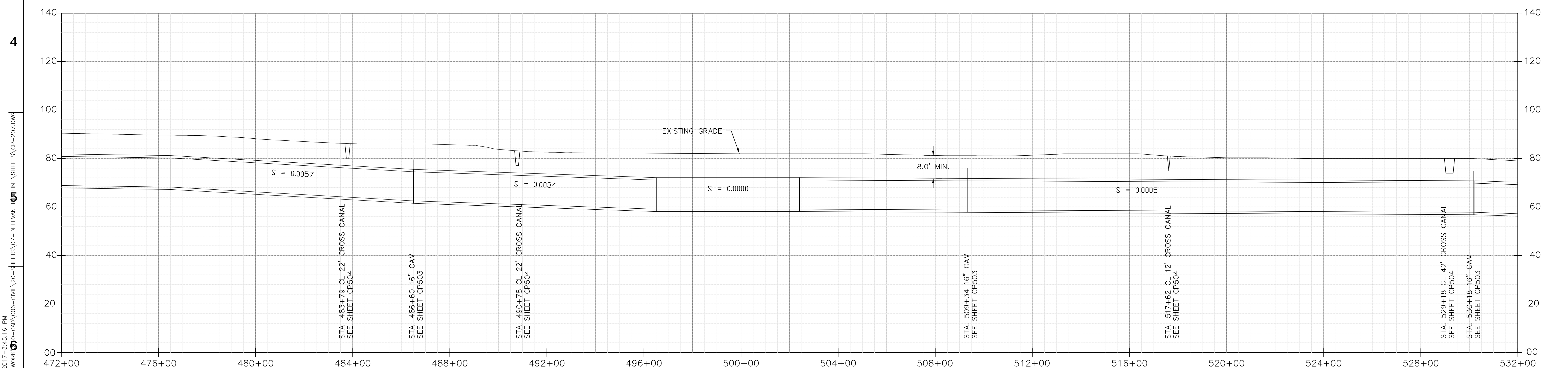
DESIGNED D. DEUTSCHER		APPROVAL RECOMMENDED			REVIEWED MIKE FORREST REG. CE. NO. 27855	DATE 08/04/2017		WSIP APPLICATION ATTACHMENT A4.A		SPEC. NO.
DRAWN M. WONG		APPROVAL BY			APPROVAL RECOMMENDED DWAYNE DEUTSCHER REG. CE. NO. 34557			DELEVAN PIPELINE PLAN AND PROFILE STA. 414+00 TO STA. 472+00		DRAWING NO. CP-206
CHECKED M. FORREST		ESTIMATE LEVEL FEASIBILITY		<small>AECOM Technical Services, Inc. 2020 L Street, Suite 300 Sacramento, CA 95811 T 916-414-5800 F 916-414-1557 www.aecom.com</small>		APPROVED JOE BARNES REG. CE. NO. 40105		REV.	SHEET NO. 58	
A3-A	08/01/2017	COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)	WSIP	JB						
REV	DATE	DESCRIPTION	SUB.	APPD						

PLOTTED BY: BARNHART, DENNIS - August 7, 2017 - 3:45:16 PM
 DRAWING: G:\S\PA\FEASIBILITY_AECOM\900 WORK\0-CAD\006-CIVIL\20-SHEETS\07-DELEVAN\01-LINE\01-SHEETS\CP-206.DWG



PLAN
HORIZONTAL SCALE: 1" = 200'

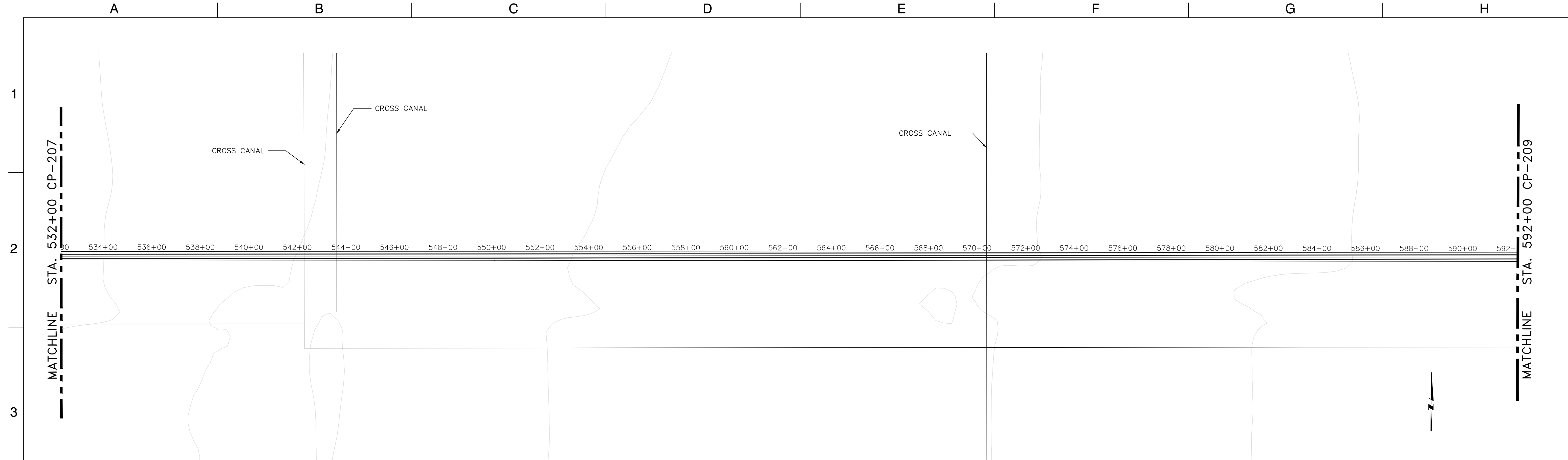
NOTE: SEE SHEET CP301 FOR PIPELINE SPACING.



PROFILE
HORIZONTAL SCALE: 1" = 200'
VERTICAL SCALE: 1" = 20'

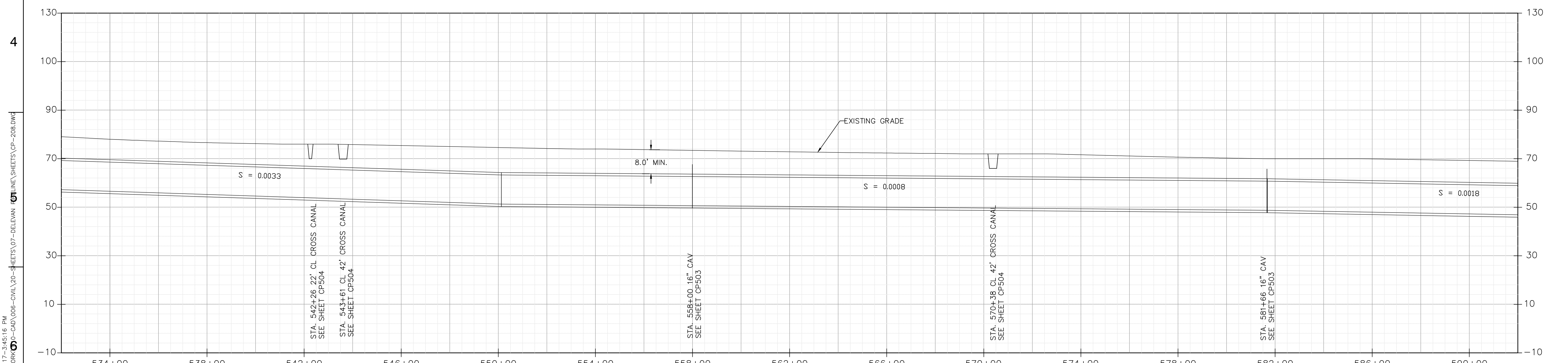
DESIGNED D. DEUTSCHER				APPROVAL RECOMMENDED			REVIEWED MIKE FORREST	DATE 08/04/2017			WSIP APPLICATION ATTACHMENT A4.A		SPEC. NO.
DRAWN M. WONG				APPROVAL BY			REG. CE. NO. 27855 APPROVAL RECOMMENDED DWAYNE DEUTSCHER REG. CE. NO. 34557				DELEVAN PIPELINE PLAN AND PROFILE		DRAWING NO. CP-207
CHECKED M. FORREST				ESTIMATE LEVEL FEASIBILITY		AECOM Technical Services, Inc. 2020 L Street, Suite 300 Sacramento, CA 95811 T 916-414-5800 F 916-414-1557 www.aecom.com	APPROVED JOE BARNES		STA. 472+00 TO STA. 532+00		REV. SHEET NO.		
REV	DATE	DESCRIPTION	SUB.	APPD			REG. CE. NO. 40105					59	

PLOTTED BY: BARNHART, DENNIS - August 7, 2017 - 3:45:16 PM
 DRAWING: G:\SR\PA\FEASIBILITY_AECOM\900 WORK\0-CAD\006-CIVIL\20-SHEETS\07-DELEVAN\01-LINE\01-SHEETS\CP-207.DWG



PLAN
HORIZONTAL SCALE: 1" = 200'

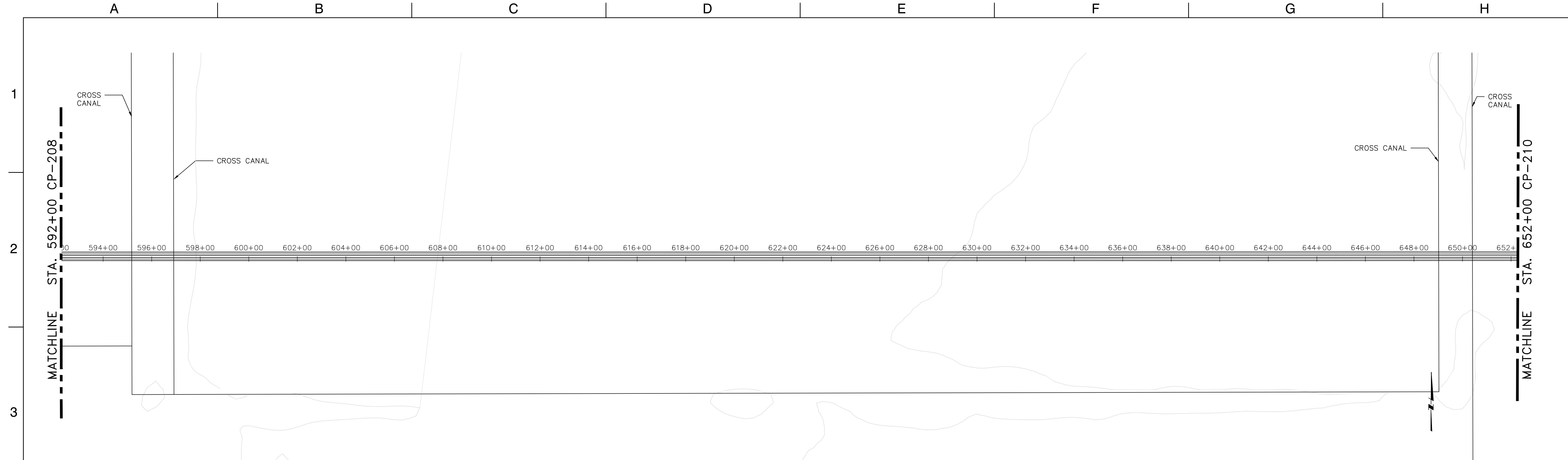
NOTE: SEE SHEET CP301 FOR PIPELINE SPACING.



PROFILE
HORIZONTAL SCALE: 1" = 200'
VERTICAL SCALE: 1" = 20'

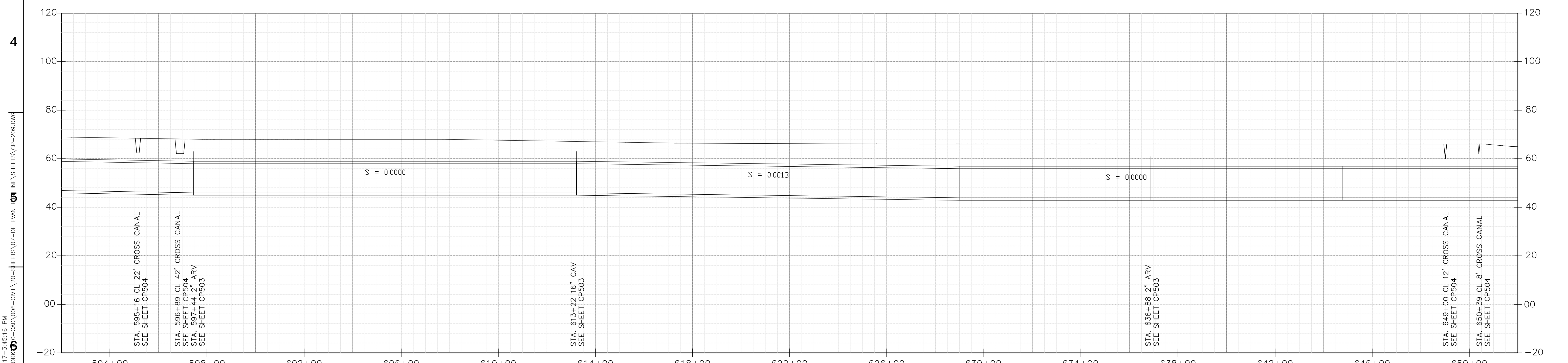
DESIGNED D. DEUTSCHER		APPROVAL RECOMMENDED			REVIEWED MIKE FORREST	DATE 08/04/2017		WSIP APPLICATION ATTACHMENT A4.A		SPEC NO.
DRAWN M. WONG		APPROVAL BY			REG. CE. NO. 27855			DELEVAN PIPELINE PLAN AND PROFILE		DRAWING NO. CP-208
CHECKED M. FORREST		ESTIMATE LEVEL FEASIBILITY		APPROVAL RECOMMENDED DWAYNE DEUTSCHER				STA. 532+00 TO STA. 592+00		REV. SHEET NO.
A3-A		08/01/2017		COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)		WSIP		JB		60

PLOTTED BY: BARNHART, DENNIS - August 7, 2017 - 3:45:16 PM
 DRAWING: G:\S\PIPA\FEASIBILITY_AECOM\900 WORKING\0-CAD\006-CIVIL\20-SHEETS\07-DELEVAN\01-LINE\01-SHEETS\CP-208.DWG



PLAN
HORIZONTAL SCALE: 1" = 200'

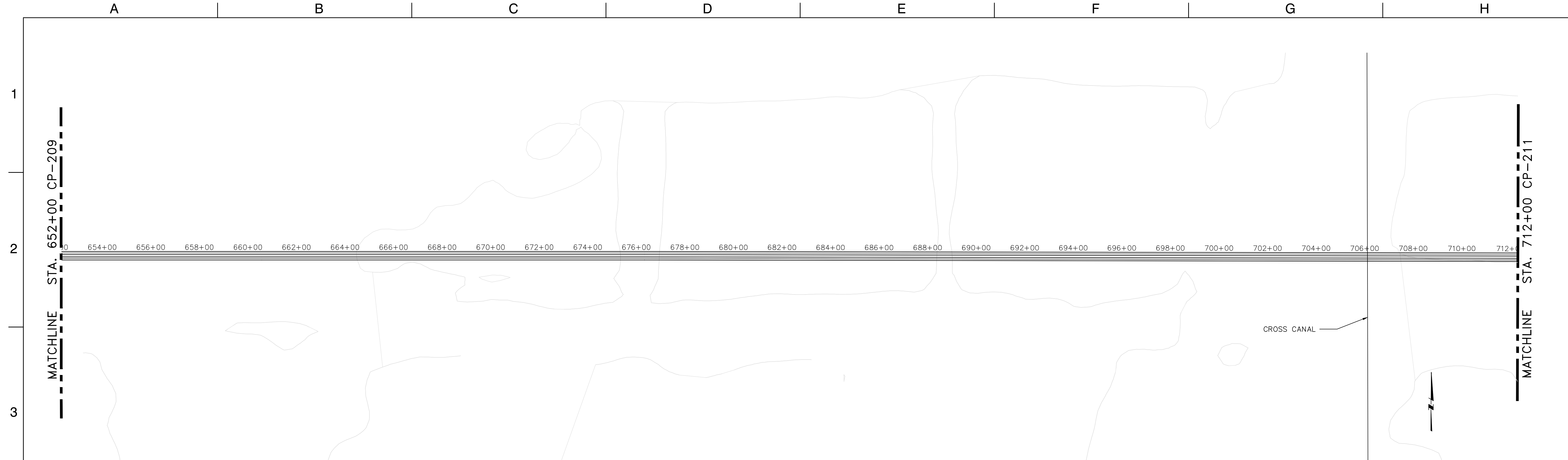
NOTE: SEE DWG CP301 FOR PIPELINE SPACING



PROFILE
HORIZONTAL SCALE: 1" = 200'
VERTICAL SCALE: 1" = 20'

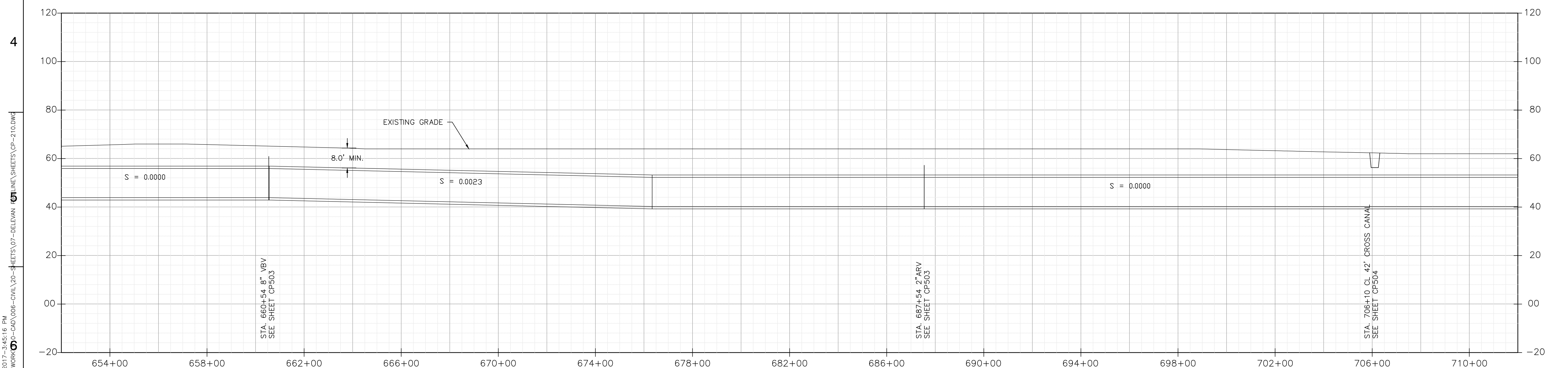
DESIGNED D. DEUTSCHER		APPROVAL RECOMMENDED			REVIEWED MIKE FORREST	DATE 08/04/2017		WSIP APPLICATION ATTACHMENT A4.A		SPEC. NO.
DRAWN M. WONG		APPROVAL BY			REG. CE. NO. 27855	APPROVAL RECOMMENDED DWAYNE DEUTSCHER		DELEVAN PIPELINE PLAN AND PROFILE		DRAWING NO. CP-209
CHECKED M. FORREST		ESTIMATE LEVEL FEASIBILITY		REG. CE. NO. 34557	APPROVED JOE BARNES			STA. 592+00 TO STA. 652+00		REV. SHEET NO.
A3-A		08/01/2017		COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)		WSIP		JB		61
REV	DATE	DESCRIPTION		SUB.	APPD					
		A	B	C	D	E	F	G	H	

PLOTTED BY: BARNHART, DENNIS - August 7, 2017 - 3:45:16 PM
 DRAWING: G:\SR\PA\FEASIBILITY_AECOM\900 WORK\0-CAD\006-CIVIL\20-SHEETS\07-DELEVAN\01-LINE\01-SHEETS\CP-209.DWG



PLAN
HORIZONTAL SCALE: 1" = 200'

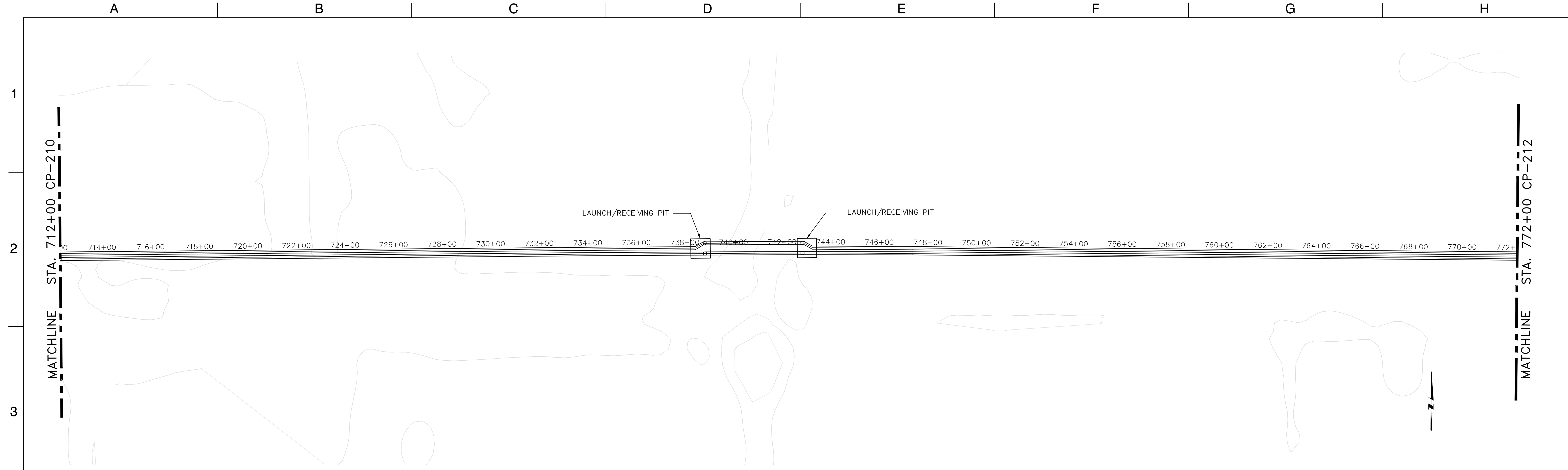
NOTE: SEE SHEET CP301 FOR PIPELINE SPACING.



PROFILE
HORIZONTAL SCALE: 1" = 200'
VERTICAL SCALE: 1" = 20'

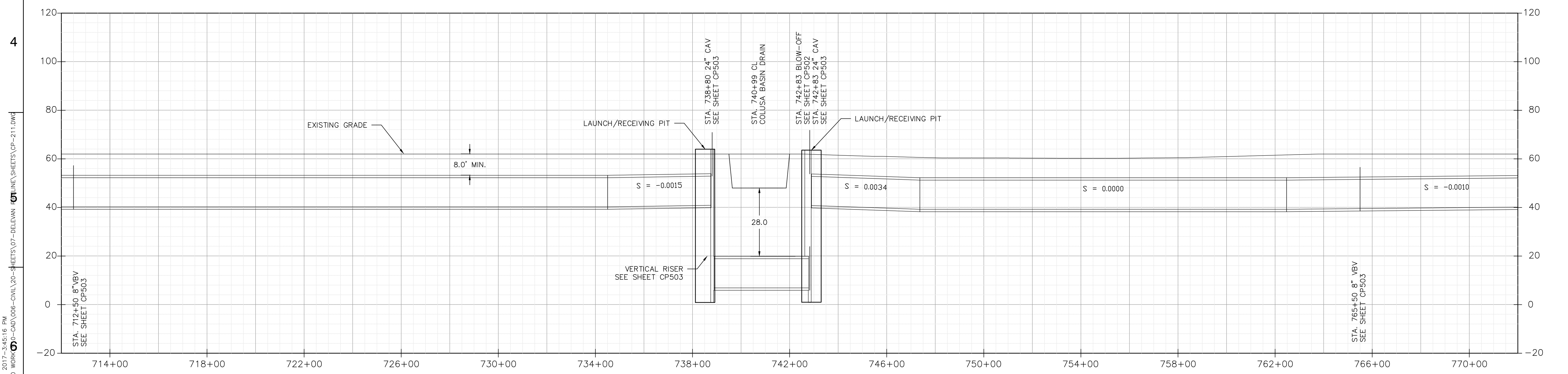
DESIGNED D. DEUTSCHER		APPROVAL RECOMMENDED			REVIEWED MIKE FORREST	DATE 08/04/2017		WSIP APPLICATION ATTACHMENT A4.A		SPEC. NO.
DRAWN M. WONG		APPROVAL BY			REG. CE. NO. 27855			DELEVAN PIPELINE PLAN AND PROFILE		DRAWING NO. CP-210
CHECKED M. FORREST		ESTIMATE LEVEL FEASIBILITY		APPROVAL RECOMMENDED DWAYNE DEUTSCHER				STA. 652+00 TO STA. 712+00		REV. SHEET NO.
A3-A		COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)		APPROVED JOE BARNES						62
REV	DATE	DESCRIPTION		SUB.	APPD					

PLOTTED BY: BARNHART, DENNIS - August 7, 2017 - 3:45:16 PM
 DRAWING: G:\S\A\A\FEASIBILITY_AECOM\900 WORK\0-CAD\006-CIVIL\20-SHEETS\07-DELEVAN\01-LINE\SHEETS\CP-210.DWG



PLAN
HORIZONTAL SCALE: 1" = 200'

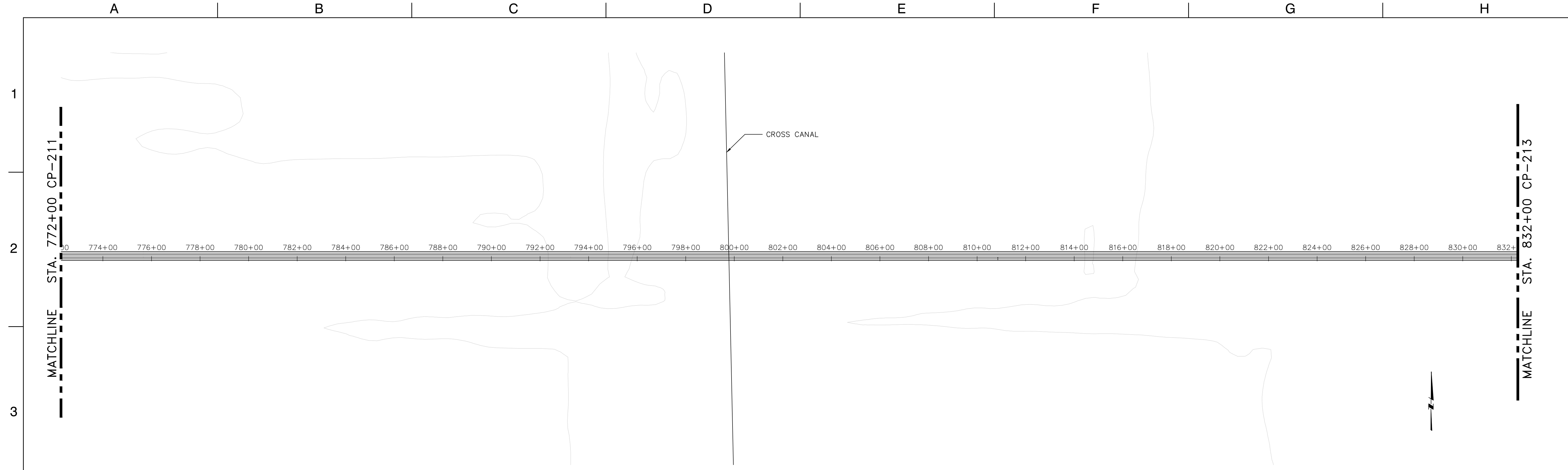
NOTE: SEE SHEET CP301 FOR PIPELINE SPACING.



PROFILE
HORIZONTAL SCALE: 1" = 200'
VERTICAL SCALE: 1" = 20'

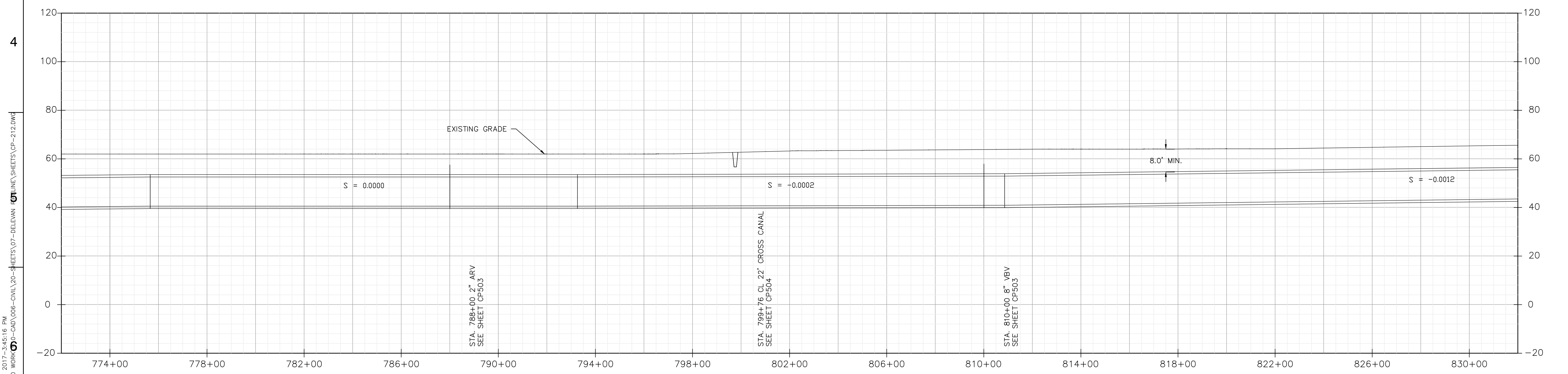
DESIGNED D. DEUTSCHER		APPROVAL RECOMMENDED			REVIEWED MIKE FORREST	DATE 08/04/2017		WSIP APPLICATION ATTACHMENT A4.A		SPEC NO.
DRAWN M. WONG		APPROVAL BY			REG. CE. NO. 27855	APPROVAL RECOMMENDED DWAYNE DEUTSCHER		DELEVAN PIPELINE PLAN AND PROFILE		DRAWING NO. CP-211
CHECKED M. FORREST		ESTIMATE LEVEL FEASIBILITY		REG. CE. NO. 34557	APPROVED JOE BARNES			STA. 712+00 TO STA. 772+00		REV. SHEET NO.
A3-A		08/01/2017		COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)		WSIP		JB		63
REV	DATE	DESCRIPTION		SUB.	APPD					
		A	B	C	D	E	F	G	H	

PLOTTED BY: BARNHART, DENNIS -- August 7, 2017 -- 3:45:16 PM
 DRAWING: G:\S\PA\FEASIBILITY_AECOM\900 WORK\0-CAD\006-CIVIL\20-SHEETS\07-DELEVAN\01-LINE\01-SHEETS\CP-211.DWG



PLAN
HORIZONTAL SCALE: 1" = 200'

NOTE: SEE SHEET CP301 FOR PIPELINE SPACING.

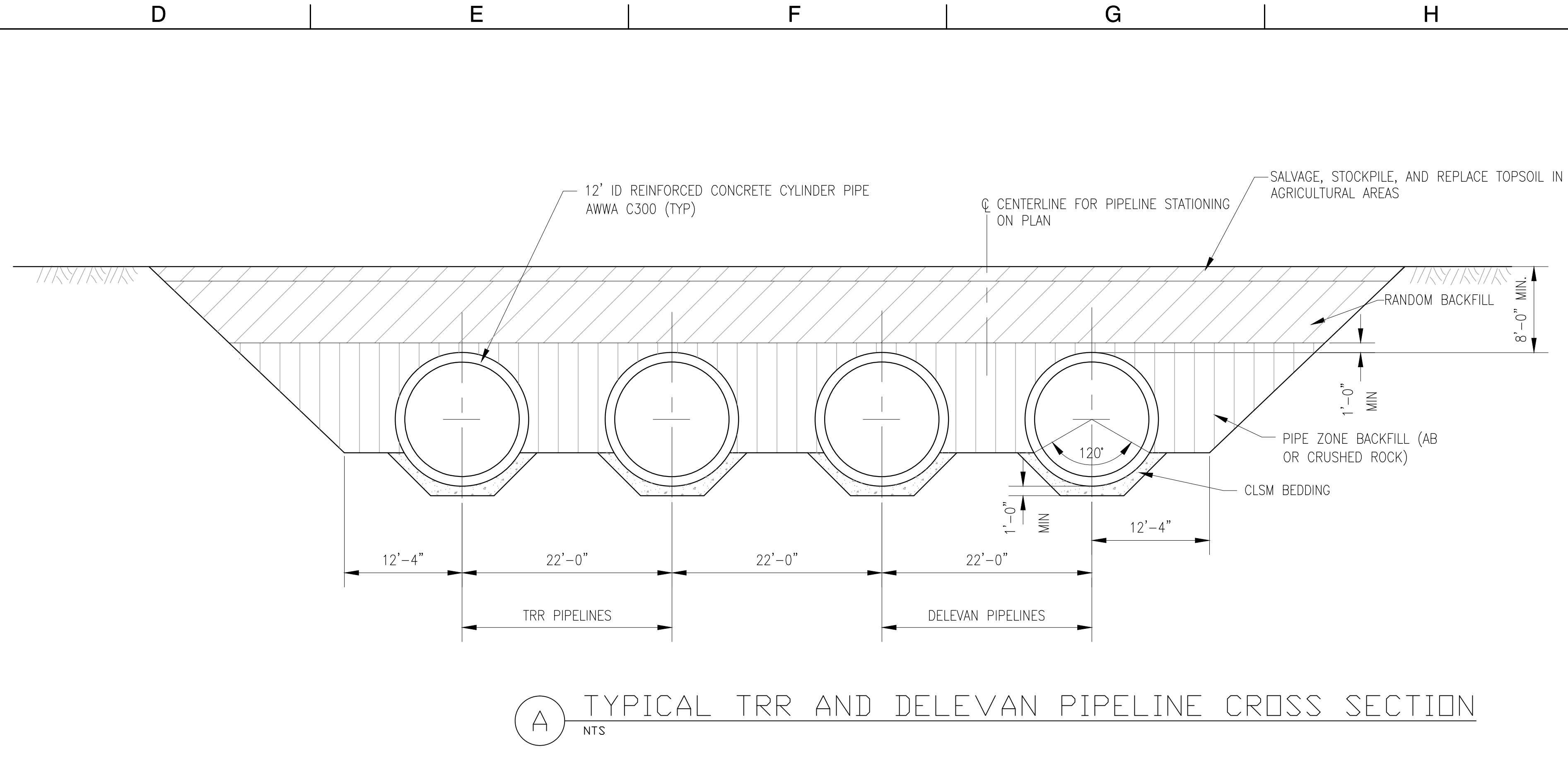


PROFILE
HORIZONTAL SCALE: 1" = 200'
VERTICAL SCALE: 1" = 20'

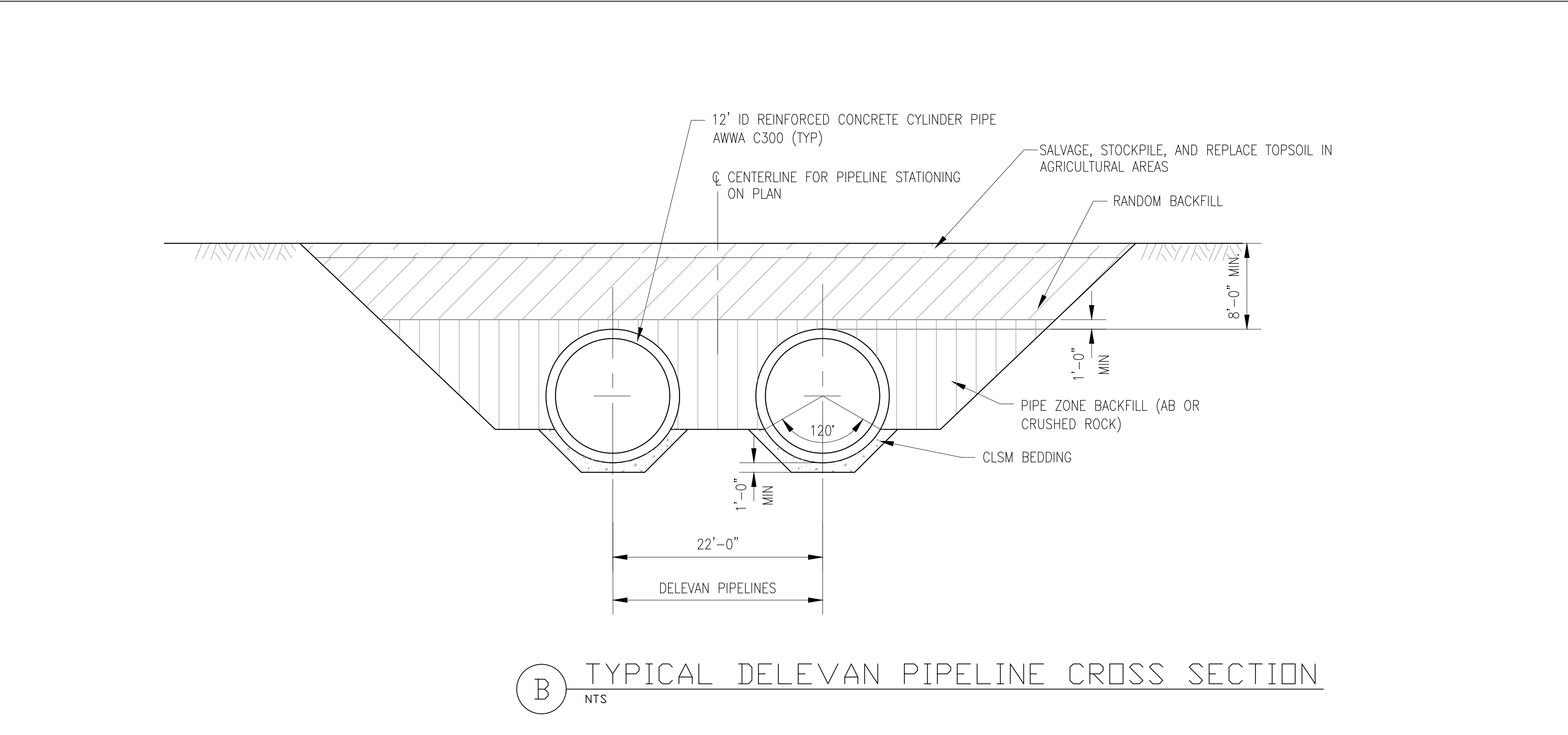
DESIGNED D. DEUTSCHER		APPROVAL RECOMMENDED			REVIEWED MIKE FORREST	DATE 08/04/2017		WSIP APPLICATION ATTACHMENT A4.A		SPEC. NO.
DRAWN M. WONG		APPROVAL BY			REG. CE. NO. 27855	APPROVAL RECOMMENDED DWAYNE DEUTSCHER		DELEVAN PIPELINE PLAN AND PROFILE		DRAWING NO. CP-212
CHECKED M. FORREST		ESTIMATE LEVEL FEASIBILITY		REG. CE. NO. 34557	APPROVED JOE BARNES			STA. 772+00 TO STA. 832+00		REV. SHEET NO.
A3-A		COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)		T 916-414-5800 F 916-414-1557 www.aecom.com		REG. CE. NO. 40105				64
REV	DATE	DESCRIPTION		SUB.	APPD					

PLOTTED BY: BARNHART, DENNIS - August 7, 2017 - 3:45:16 PM
 DRAWING: G:\SR\PA\FEASIBILITY_AECOM\900 WORK\0-CAD\006-CIVIL\20-SHEETS\07-DELEVAN\01-LINE\01-SHEETS\CP-212.DWG

PLOTTED BY: BARNHART, DENNIS - August 7, 2017 - 3:45:16 PM
 DRAWING: G:\SR\PA\FEASIBILITY_AECOM\900 WORK\0-CAD\006-CIVIL\20-SHEETS\07-DELEVAN PIPELINE\DETAILS\CP-301.DWG



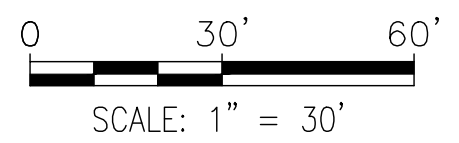
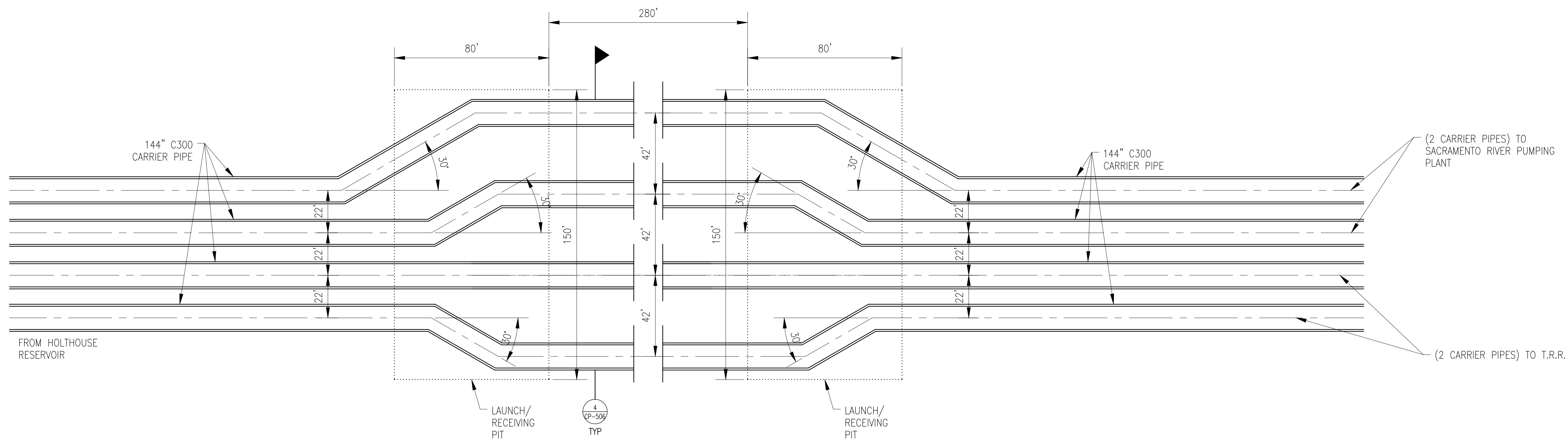
A TYPICAL TRR AND DELEVAN PIPELINE CROSS SECTION
NTS



B TYPICAL DELEVAN PIPELINE CROSS SECTION
NTS

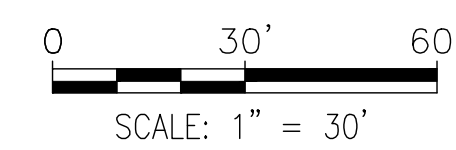
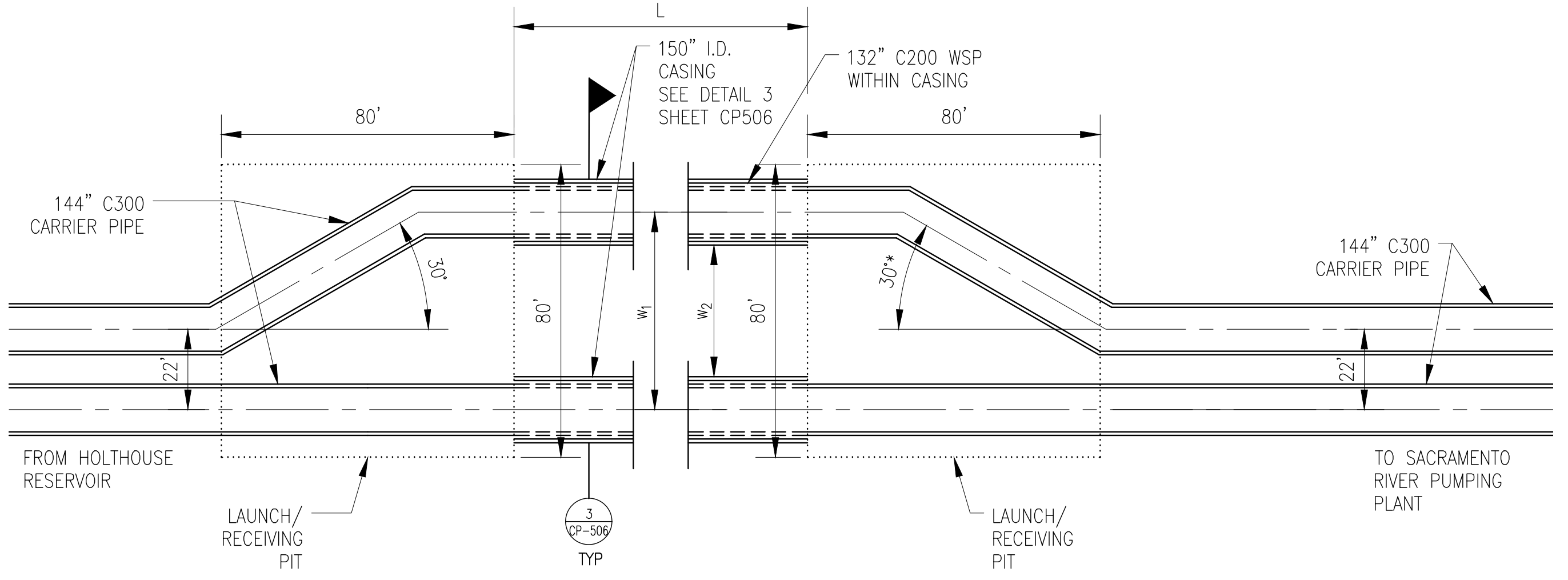
DESIGNED D. DEUTSCHER		APPROVAL RECOMMENDED			REVIEWED MIKE FORREST	DATE 08/04/2017		WSIP APPLICATION ATTACHMENT A4.A		SPEC NO.
DRAWN M. WONG		APPROVAL BY			REG. CE. NO. 27855 APPROVAL RECOMMENDED DWAYNE DEUTSCHER REG. CE. NO. 34557			DELEVAN PIPELINE TYPICAL PIPE CROSS SECTIONS		DRAWING NO. CP-301
CHECKED M. FORREST		ESTIMATE LEVEL FEASIBILITY				APPROVED JOE BARNES		REV. SHEET NO.		66
REV	DATE	DESCRIPTION								

PLOTTED BY: BARNHART, DENNIS - August 7, 2017 - 3:45:16 PM
 DRAWING: G:\S\RA\PA\FEASIBILITY_AECOM\900 WORK\0-CAD\006-CIVIL\20-SHEETS\07-DELEVAN\01-LINE\DETAILS\CP-501.DWG



**GLENN-COLUSA CANAL BORE & JACK CROSSING
STA. 285+66 TO STA. 287+43**

CROSSING	BEGIN STA.	END STA.	L	w ₁	w ₂	DEPTH BENEATH INVERT OR SURFACE	CASING	CASING DIA.
I-5 & RAILROAD	427+14	439+40	1,226'	38.5'	26'	26'	YES	150"
COLUSA BASIN DRAIN	738+92	742+49	357'	42'	28'	28'	NO	NA
HIGHWAY 45	878+12	880+48	236'	38.5'	26'	26'	YES	150"



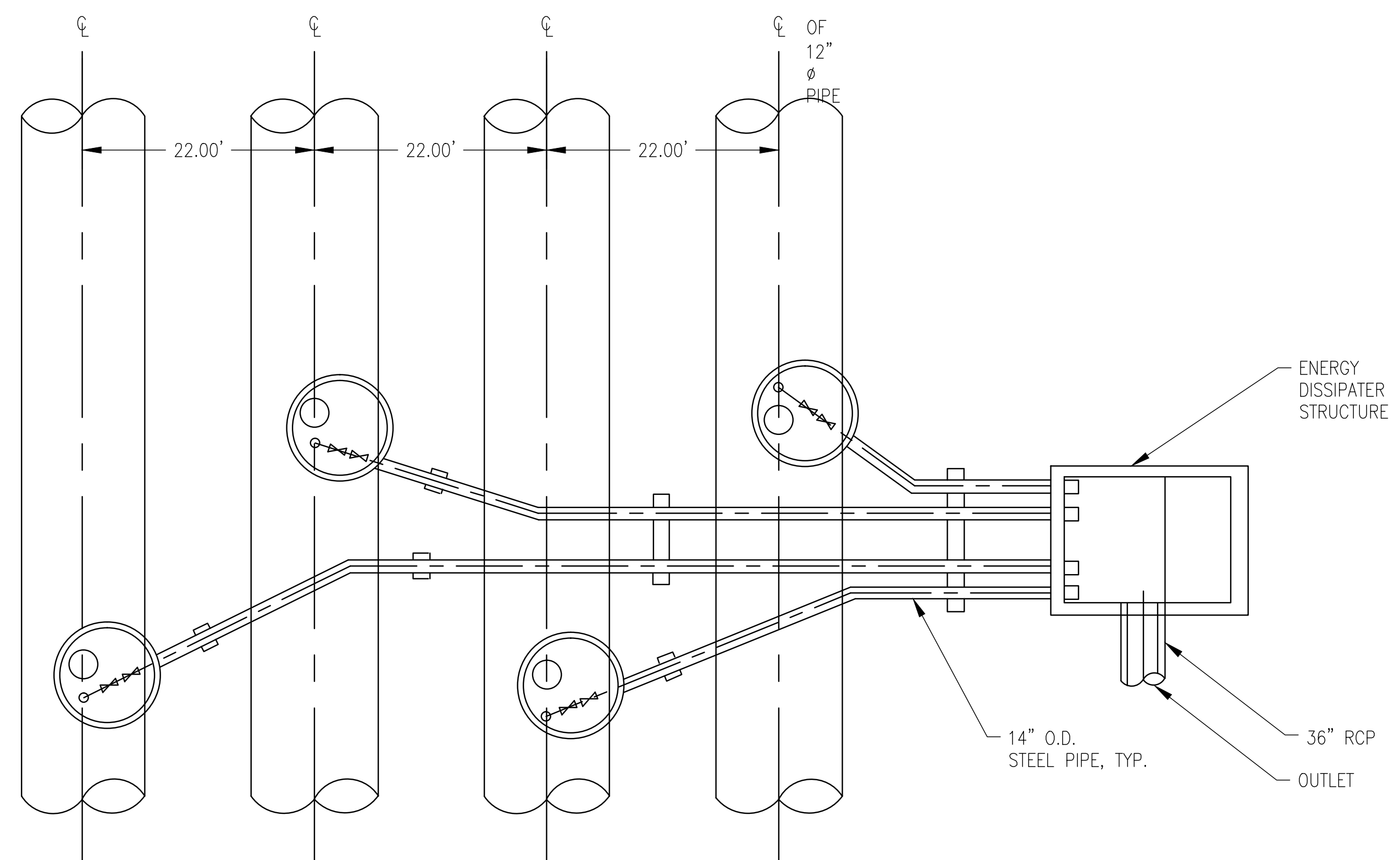
TYPICAL BORE & JACK CROSSING

*I-5 AND COLUSA BASIN DRAIN ONLY

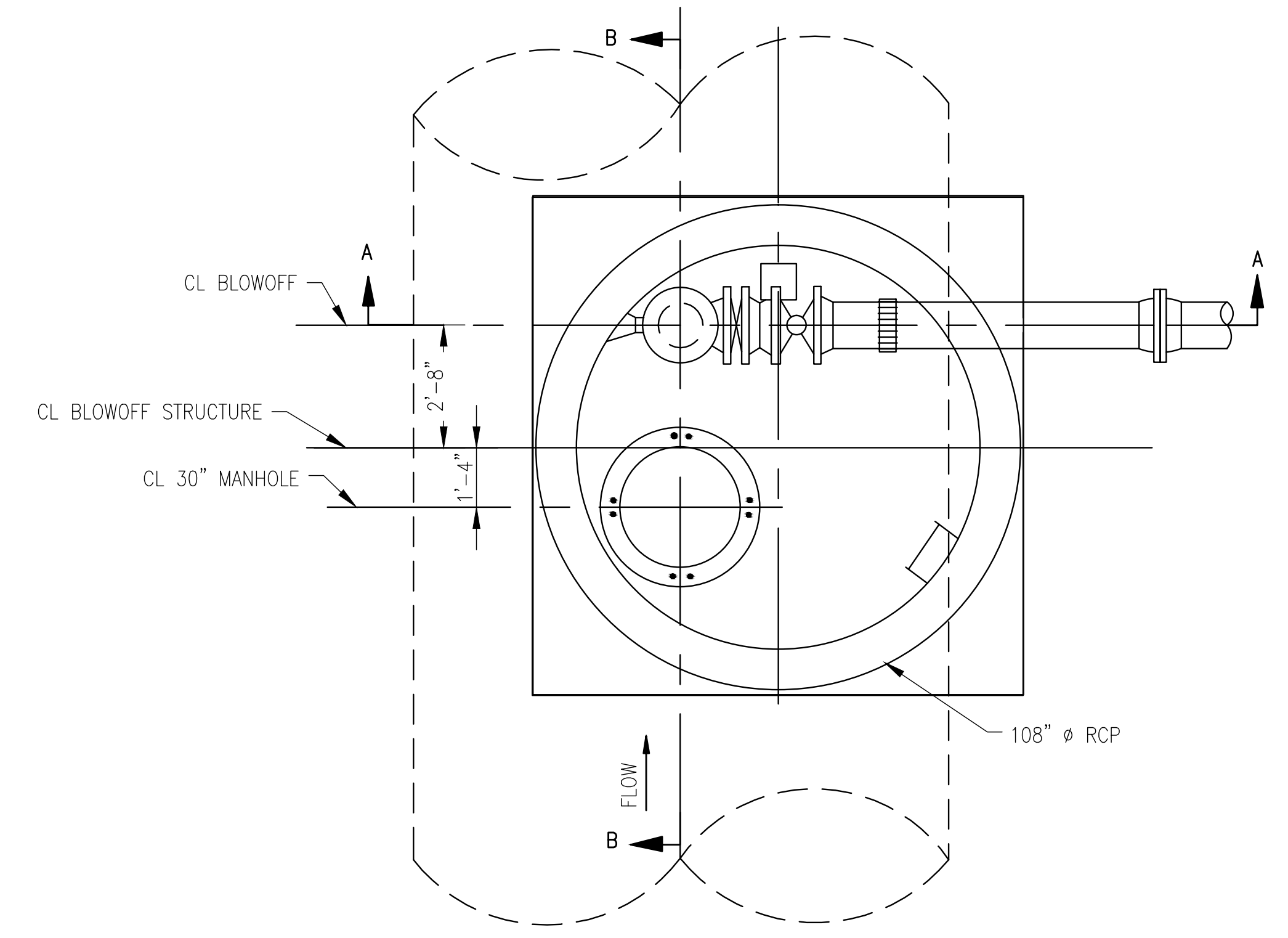
DESIGNED D. DEUTSCHER				APPROVAL RECOMMENDED 				REVIEWED MIKE FORREST REG. CE. NO. 27855 DATE 08/04/2017				WSIP APPLICATION ATTACHMENT A4.A				SPEC. NO.	
DRAWN M. WONG				APPROVAL BY				APPROVAL RECOMMENDED DWAYNE DEUTSCHER REG. CE. NO. 34557				DELEVAN PIPELINE BORE AND JACK DETAILS				DRAWING NO. CP-501	
CHECKED M. FORREST				ESTIMATE LEVEL FEASIBILITY				APPROVED JOE BARNES REG. CE. NO. 40105								REV. SHEET NO. 67	
A3-A		08/01/2017		COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)				WSIP		JB		DESCRIPTION				SUB. APPD	

A B C D E F G H

1

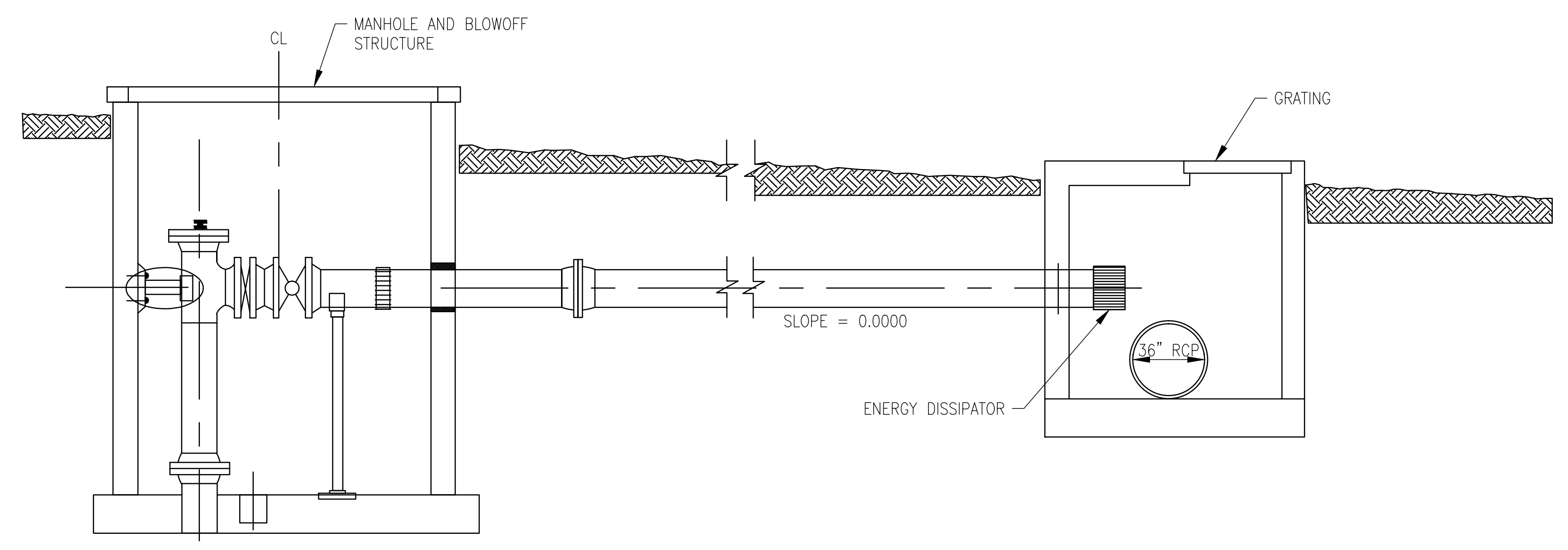


PLAN
SCALE: 1" = 10'

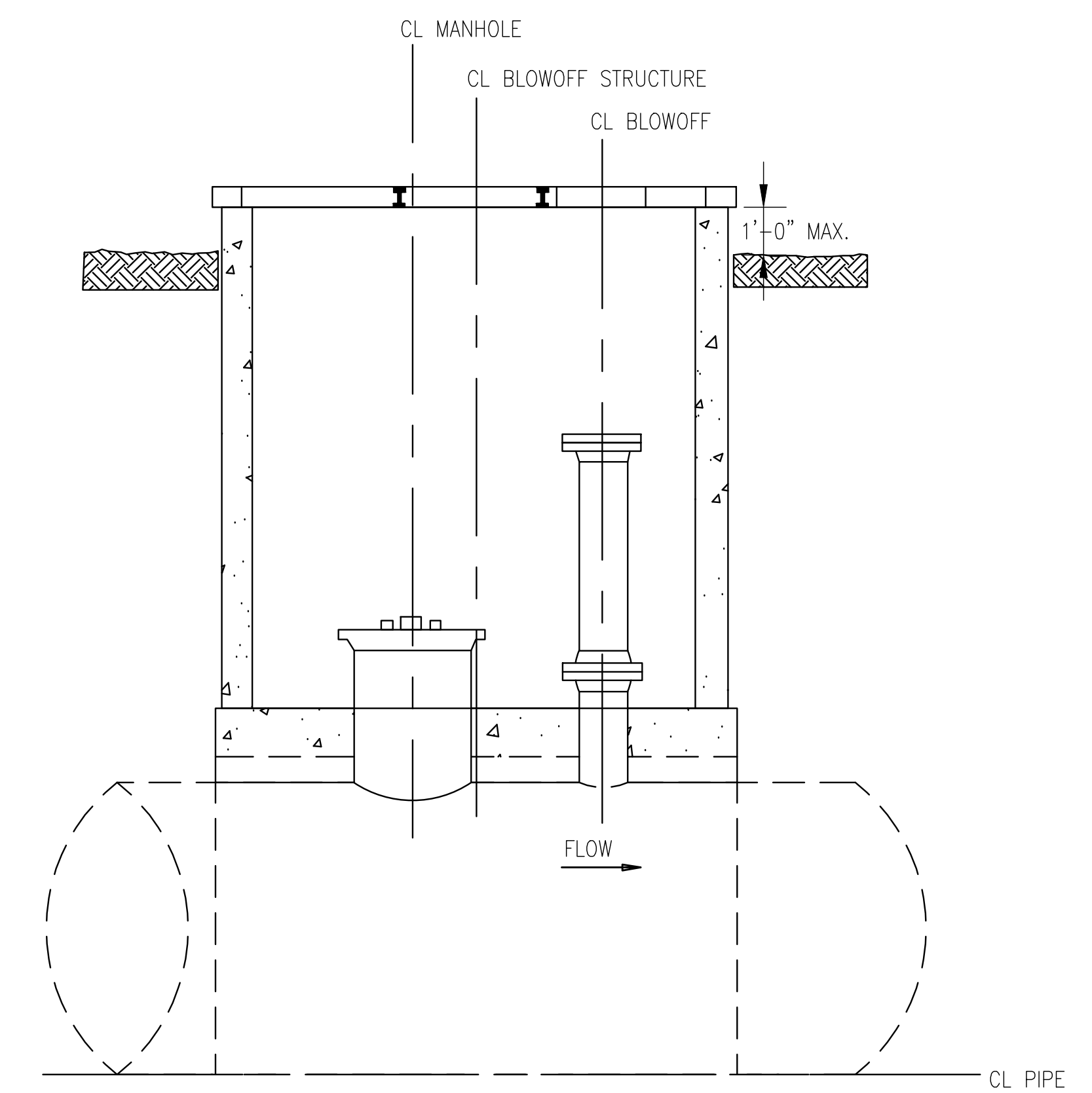


PLAN
SCALE: 3/8" = 1'

3



SECTION A-A
SCALE: N.T.S.



SECTION B-B
SCALE: 3/8" = 1'-0"

PLOTTED BY: BARNHART, DENNIS - August 7, 2017 - 3:45:16 PM
 DRAWING: G:\SR\PA\FEASIBILITY_AECOM\900 WORK\900-CAD\006-CIVIL\20-SHEETS\07-DELEVAN\DETAILS\CP-502.DWG

DESIGNED	D. DEUTSCHER	APPROVAL RECOMMENDED	
DRAWN	M. WONG	APPROVAL BY	
CHECKED	M. FORREST	ESTIMATE LEVEL	FEASIBILITY
REV	DATE	DESCRIPTION	SUB. APPD
A3-A	08/01/2017	COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)	WSIP JB

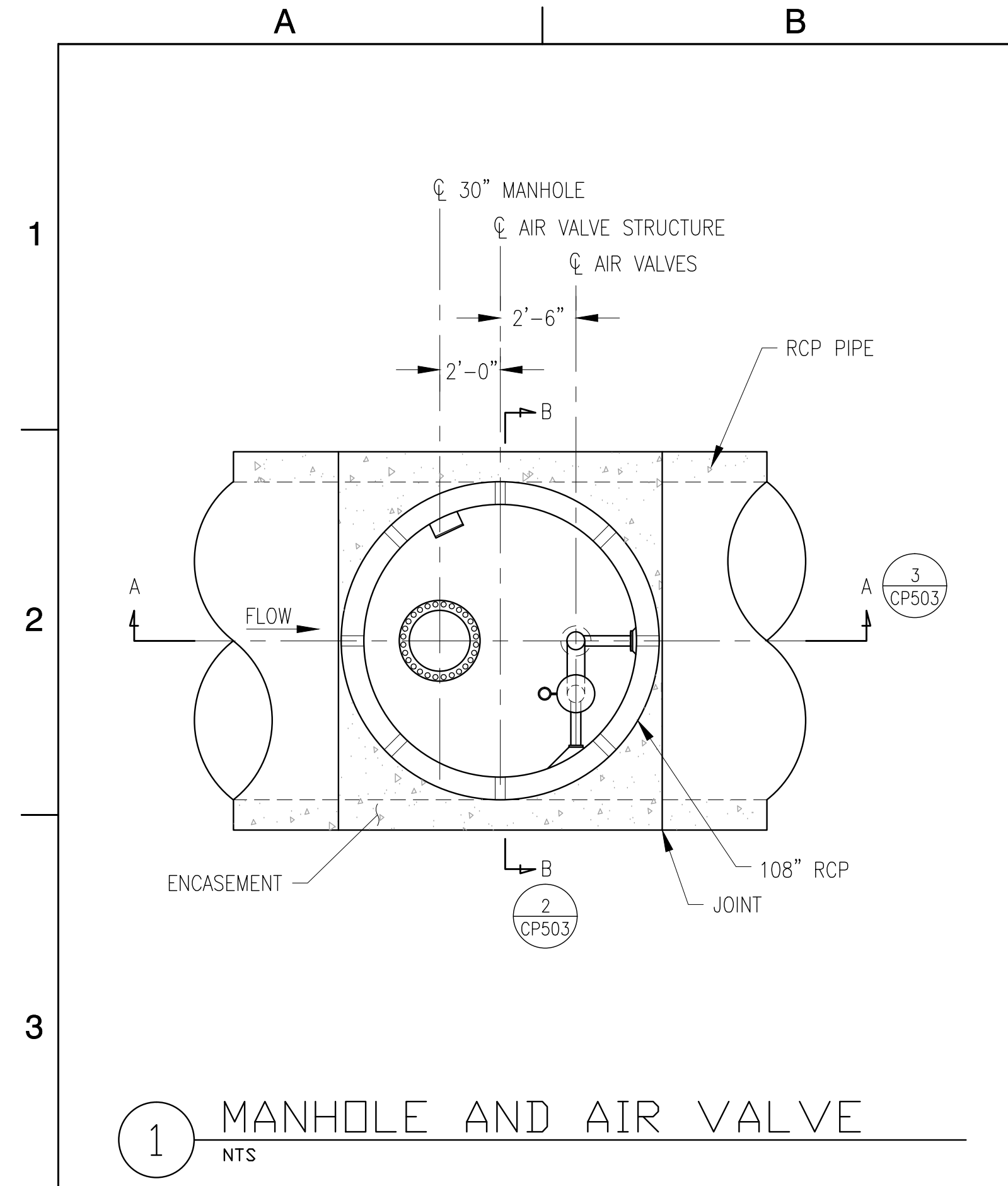
DESIGNED	D. DEUTSCHER	APPROVAL RECOMMENDED	
DRAWN	M. WONG	APPROVAL BY	
CHECKED	M. FORREST	ESTIMATE LEVEL	FEASIBILITY

AECOM Technical Services, Inc. 2020 L Street, Suite 300 Sacramento, Ca 95811 T 916-414-5800 F 916-414-1557 www.aecom.com	REVIEWED	DATE
	MIKE FORREST	08/04/2017
	REG. CE. NO. 27855	
	APPROVAL RECOMMENDED	
	DWAYNE DEUTSCHER	
	REG. CE. NO. 34557	
	APPROVED	
	JOE BARNES	
	REG. CE. NO. 40105	

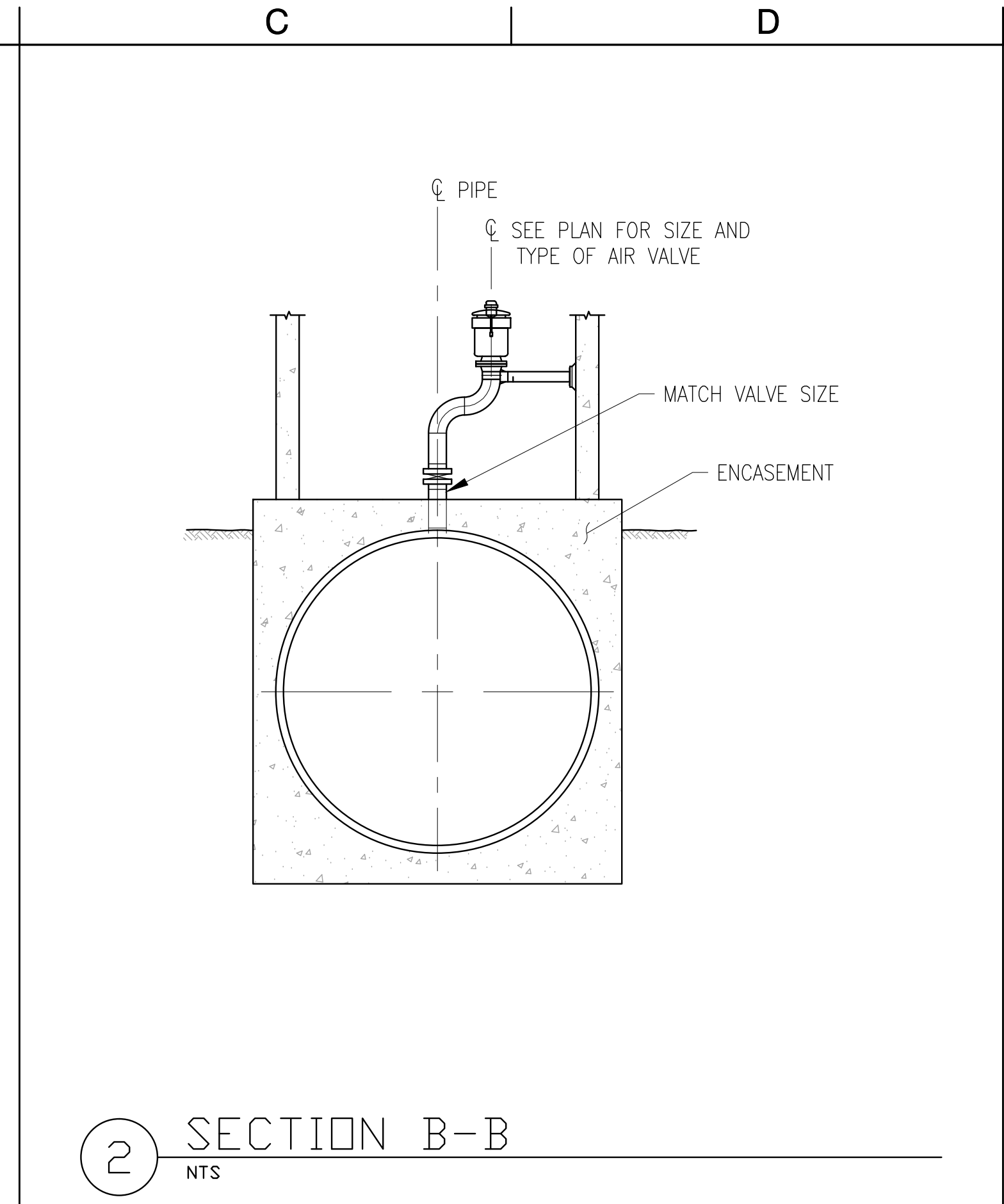


WSIP APPLICATION ATTACHMENT A4.A
 DELEVAN PIPELINE
 MANHOLE AND BLOWOFF STRUCTURE DETAILS

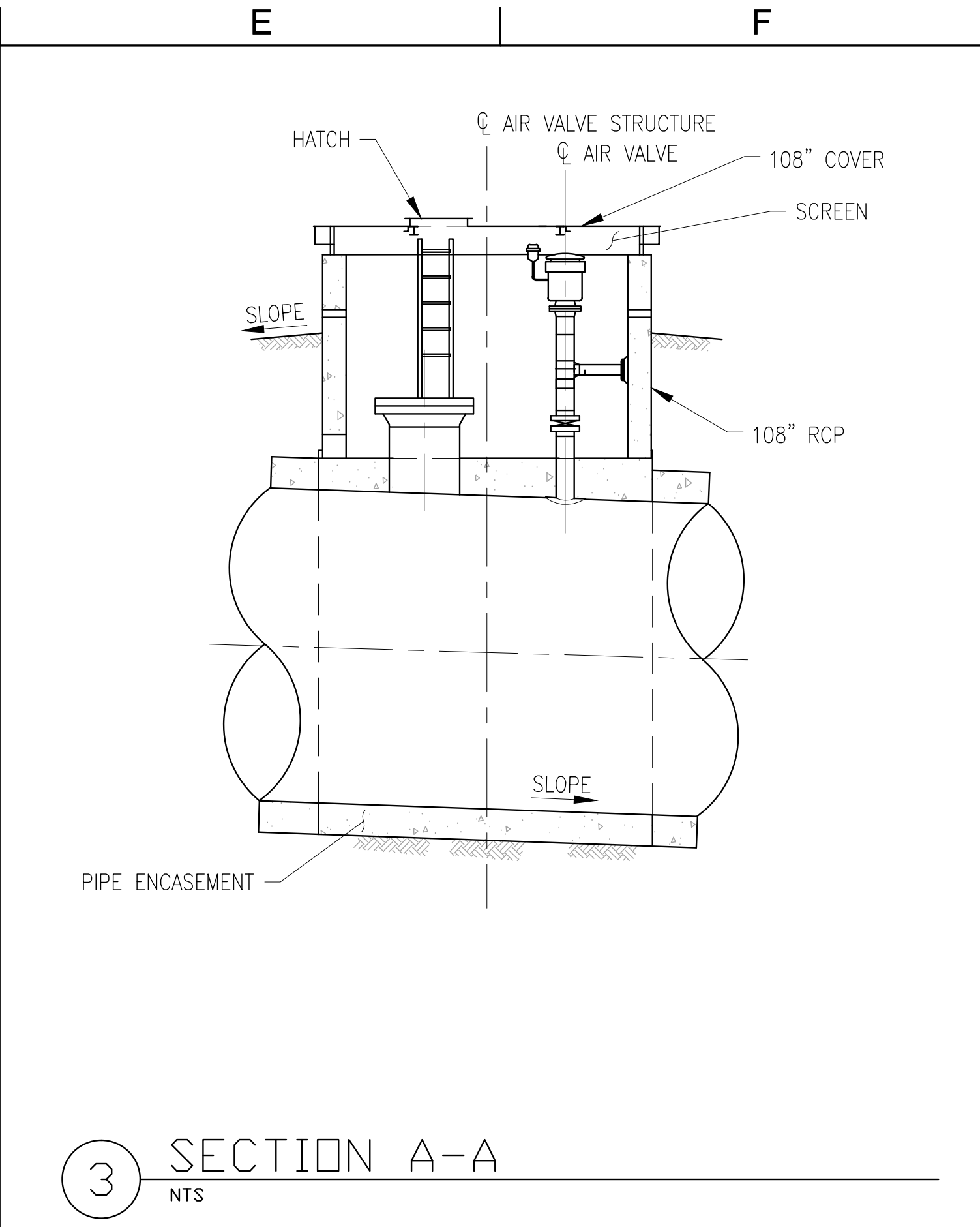
SPEC NO.	
DRAWING NO.	CP-502
REV.	SHEET NO.
	68



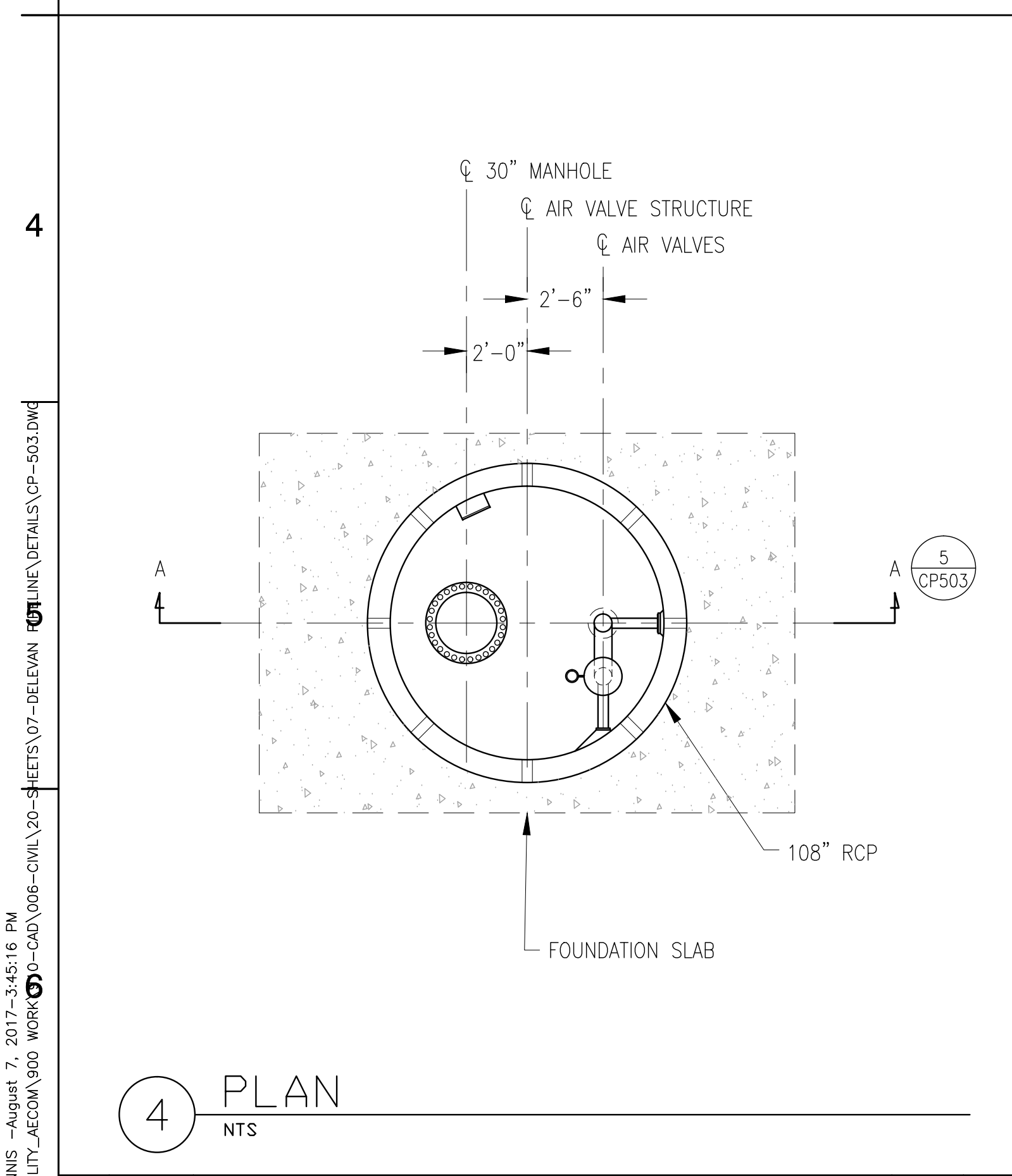
1 MANHOLE AND AIR VALVE
NTS



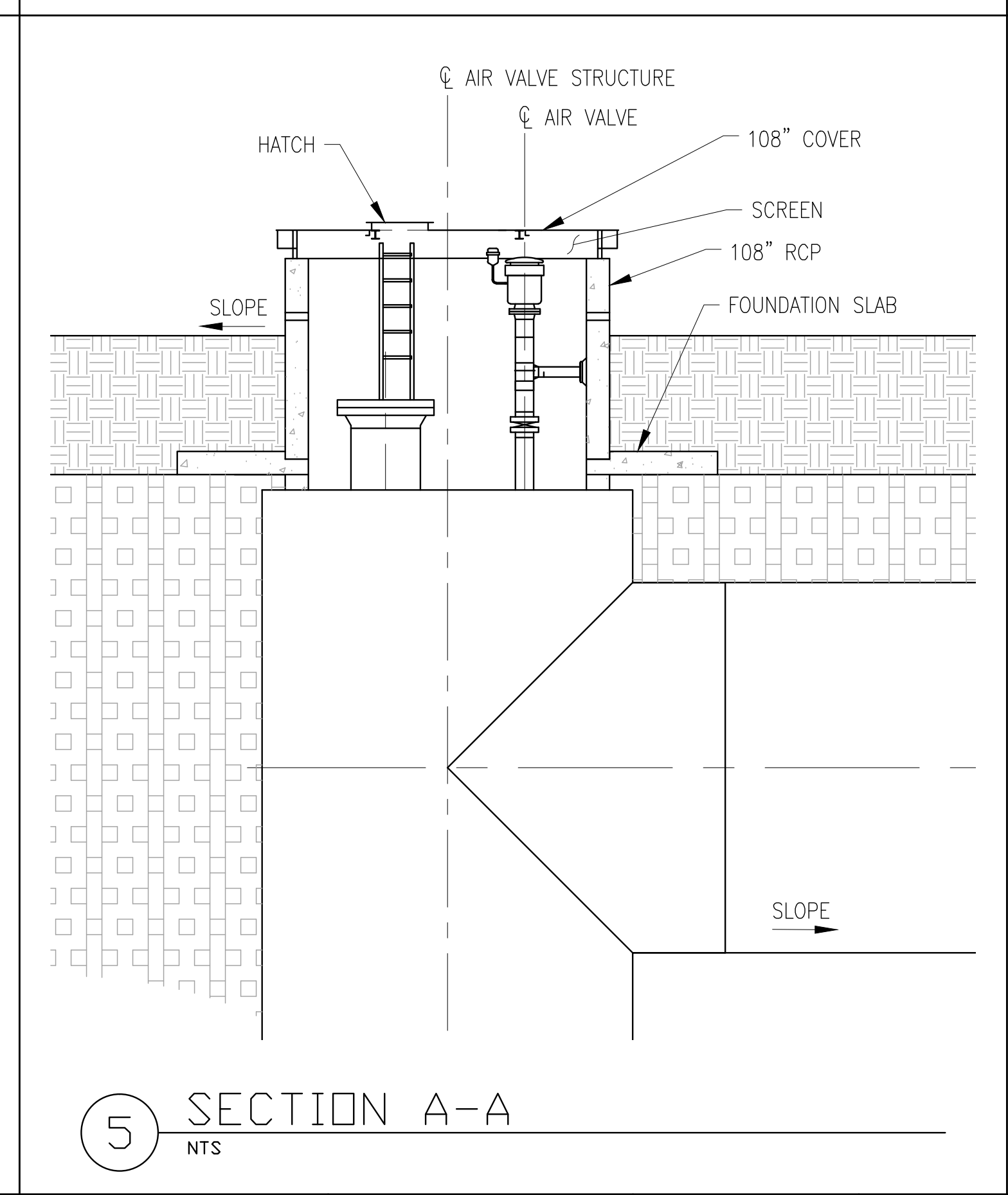
2 SECTION B-B
NTS



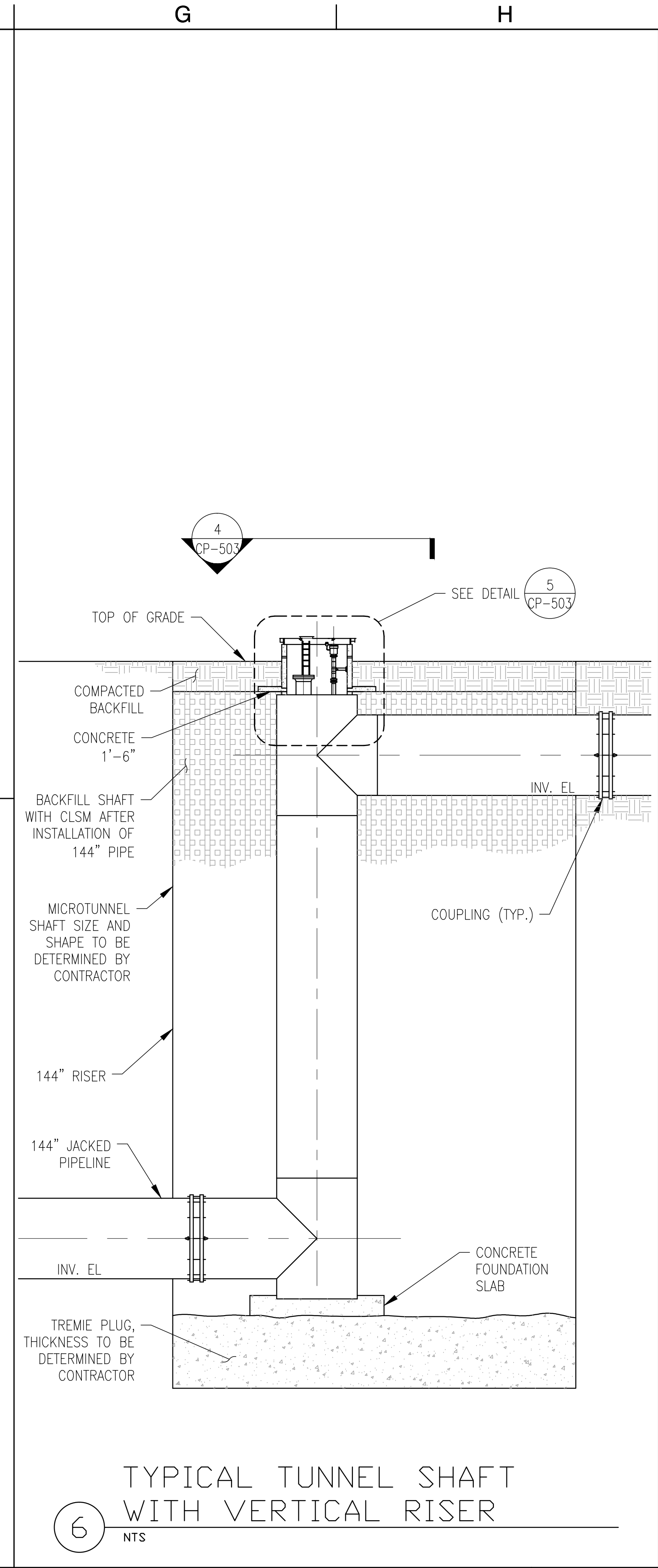
3 SECTION A-A
NTS



4 PLAN
NTS



5 SECTION A-A
NTS



6 TYPICAL TUNNEL SHAFT WITH VERTICAL RISER
NTS

PLOTTED BY: BARNHART, DENNIS - August 7, 2017 - 3:45:16 PM
 DRAWING: G:\SR\PA\FEASIBILITY_AECOM\900 WORK\0-CAD\006-CIVIL\20-SHEETS\07-DELEVAN\01-LINE\DETAILS\CP-503.DWG

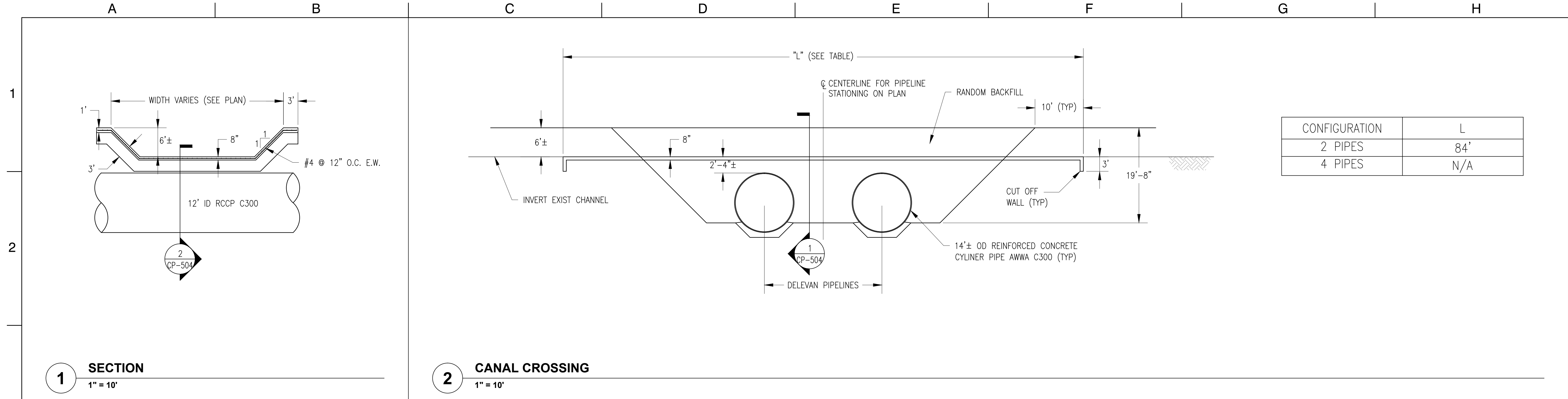
REV	DATE	DESCRIPTION	SUB.	APPD.
A3-A	08/01/2017	COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)	WSIP	JB

DESIGNED D. DEUTSCHER	APPROVAL RECOMMENDED
DRAWN M. WONG	APPROVAL BY
CHECKED M. FORREST	ESTIMATE LEVEL FEASIBILITY

AECOM AECOM Technical Services, Inc. 2020 L Street, Suite 300 Sacramento, CA 95811 T 916-414-5800 F 916-414-1557 www.aecom.com	REVIEWED MIKE FORREST	DATE 08/04/2017
	REG. CE. NO. 27855	
	APPROVAL RECOMMENDED DWAYNE DEUTSCHER	
	REG. CE. NO. 34557	
	APPROVED JOE BARNES	
	REG. CE. NO. 40105	



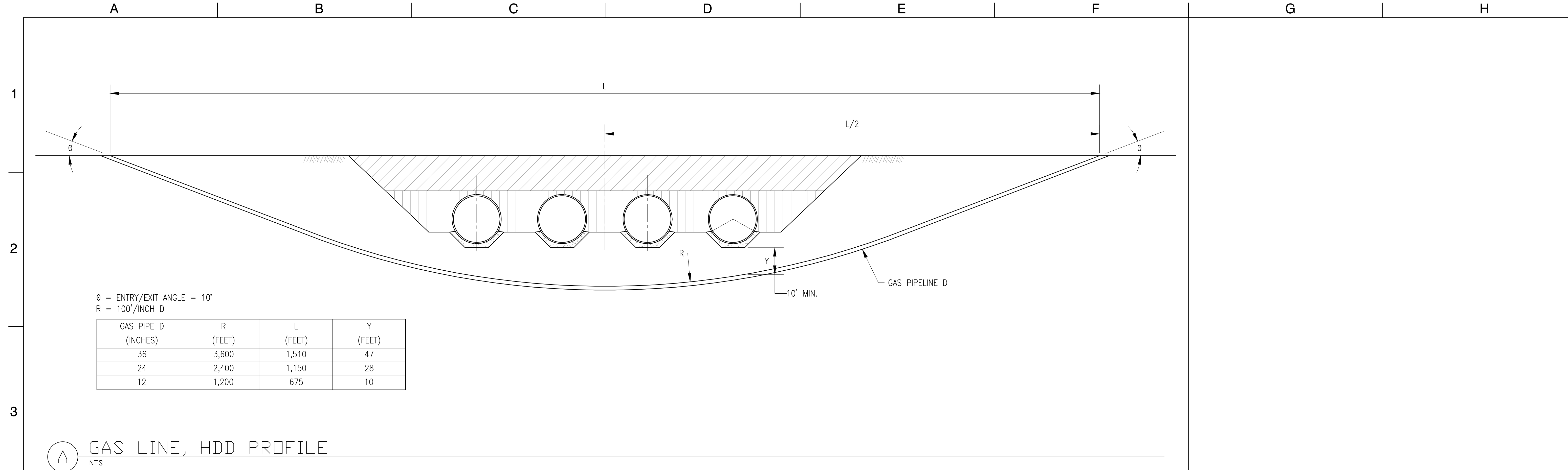
WSIP APPLICATION ATTACHMENT A4.A		SPEC. NO.
DELEVAN AND TRR		DRAWING NO. CP-503
TYPICAL MANHOLE AND		REV. SHEET NO.
AIR VALVE DETAILS		69



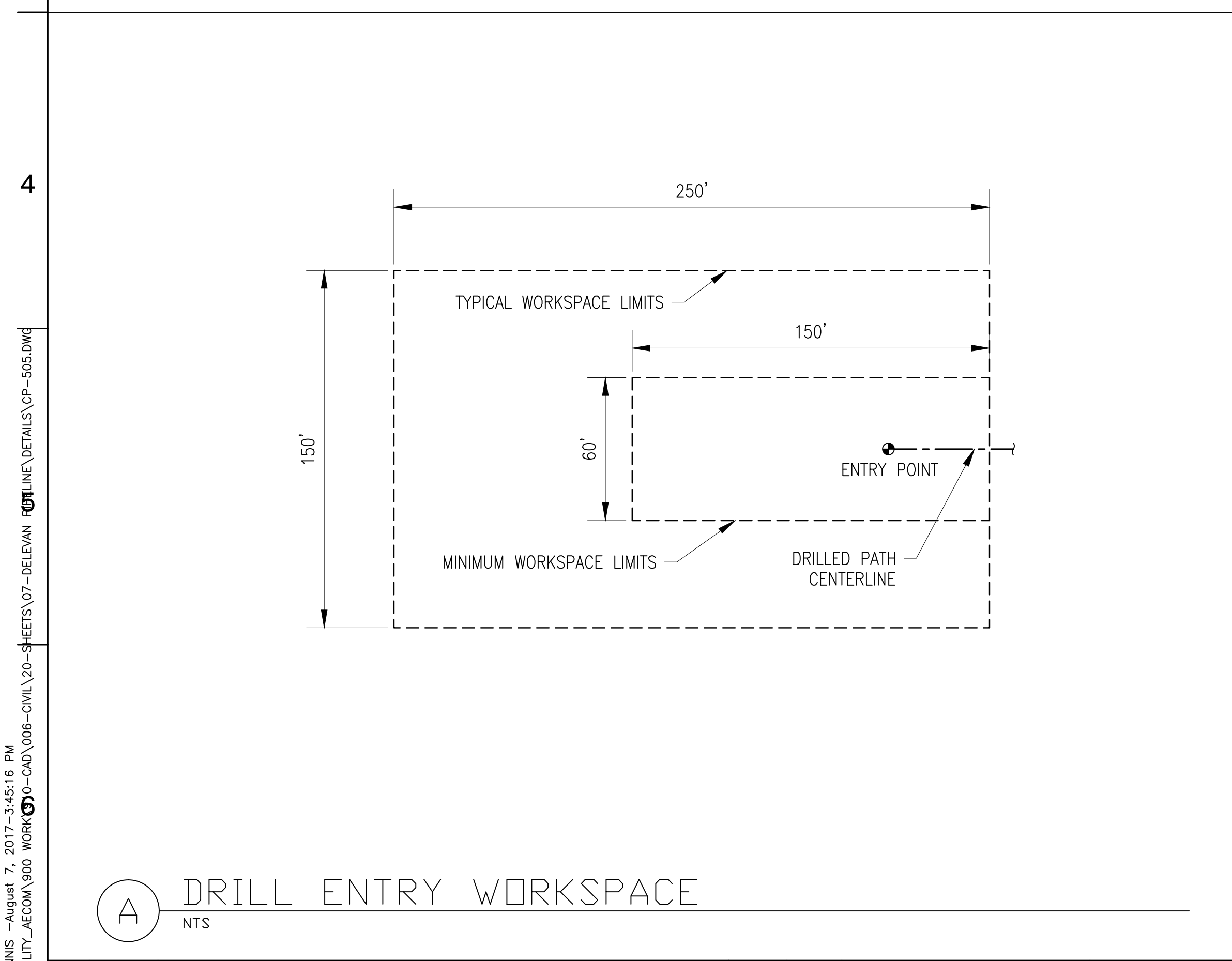
CONFIGURATION	L
2 PIPES	84'
4 PIPES	N/A

PLOTTED BY: BARNHART, DENNIS - August 7, 2017 - 3:45:16 PM
 DRAWING: G:\SR\PA\FEASIBILITY_AECOM\900 WORK\07-DELEVAN\07-DELEVAN\DETAILS\CP-504.DWG

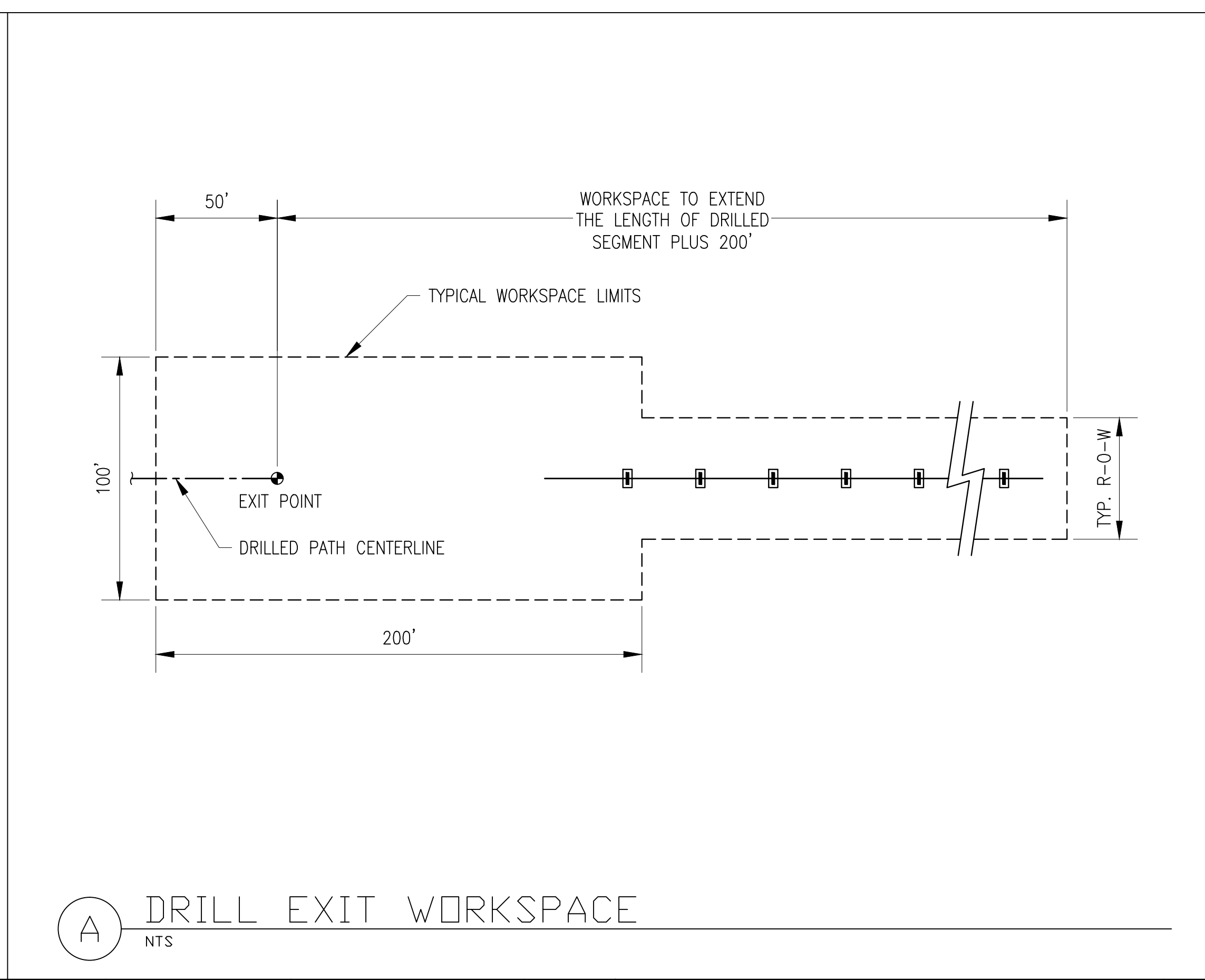
DESIGNED D. DEUTSCHER		APPROVAL RECOMMENDED			REVIEWED MIKE FORREST REG. CE. NO. 27855	DATE 08/04/2017		WSIP APPLICATION ATTACHMENT A4.A		SPEC NO.
DRAWN M. WONG		APPROVAL BY			APPROVAL RECOMMENDED DWAYNE DEUTSCHER REG. CE. NO. 34557			DELEVAN AND TRR PIPELINE TYPICAL CROSS CANAL DETAILS		DRAWING NO. CP-504
CHECKED M. FORREST		ESTIMATE LEVEL FEASIBILITY			APPROVED JOE BARNES REG. CE. NO. 40105					REV. SHEET NO. 70
REV	DATE	DESCRIPTION				SUB.	APPD			



A GAS LINE, HDD PROFILE
NTS




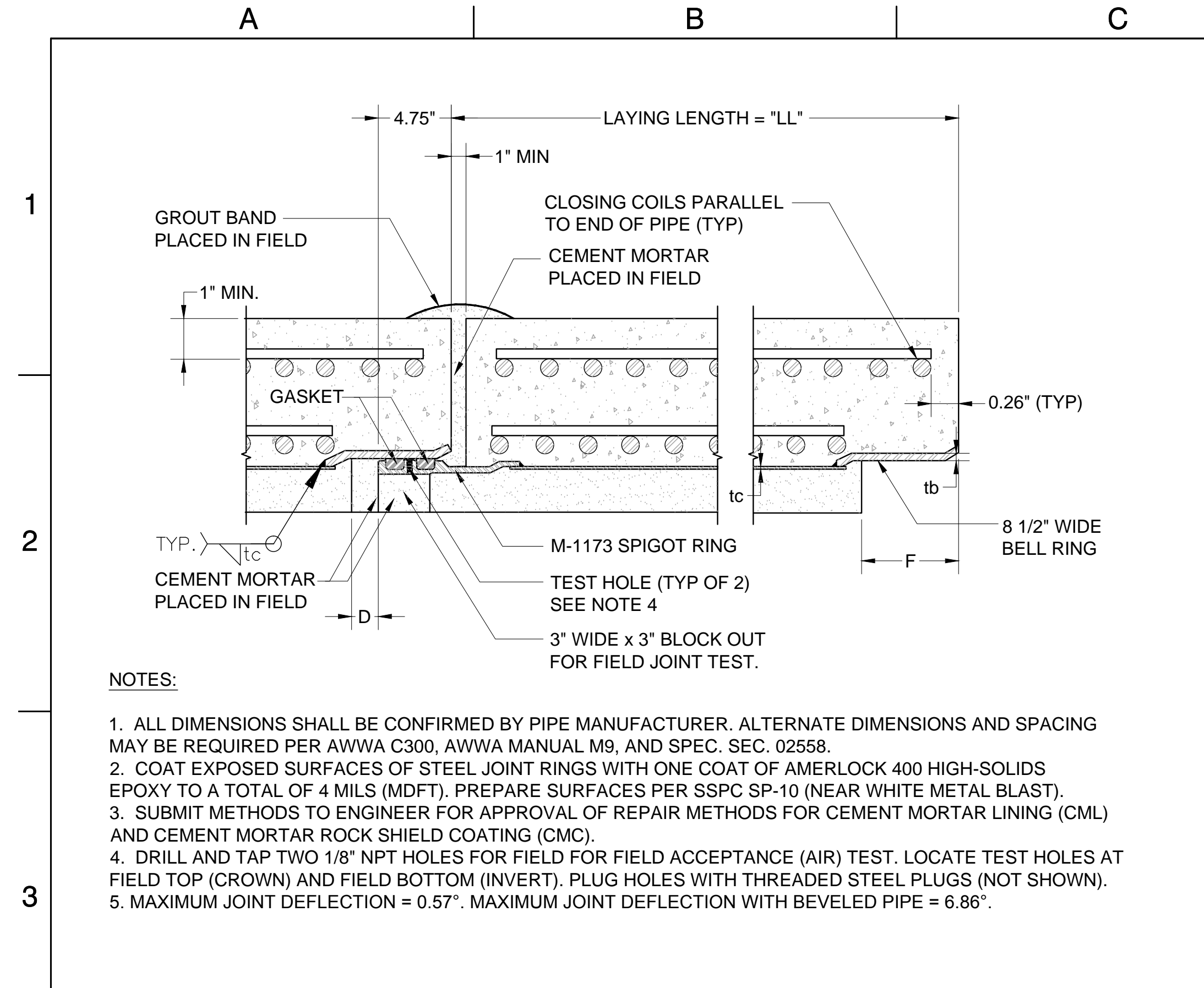
A DRILL ENTRY WORKSPACE
NTS



A DRILL EXIT WORKSPACE
NTS

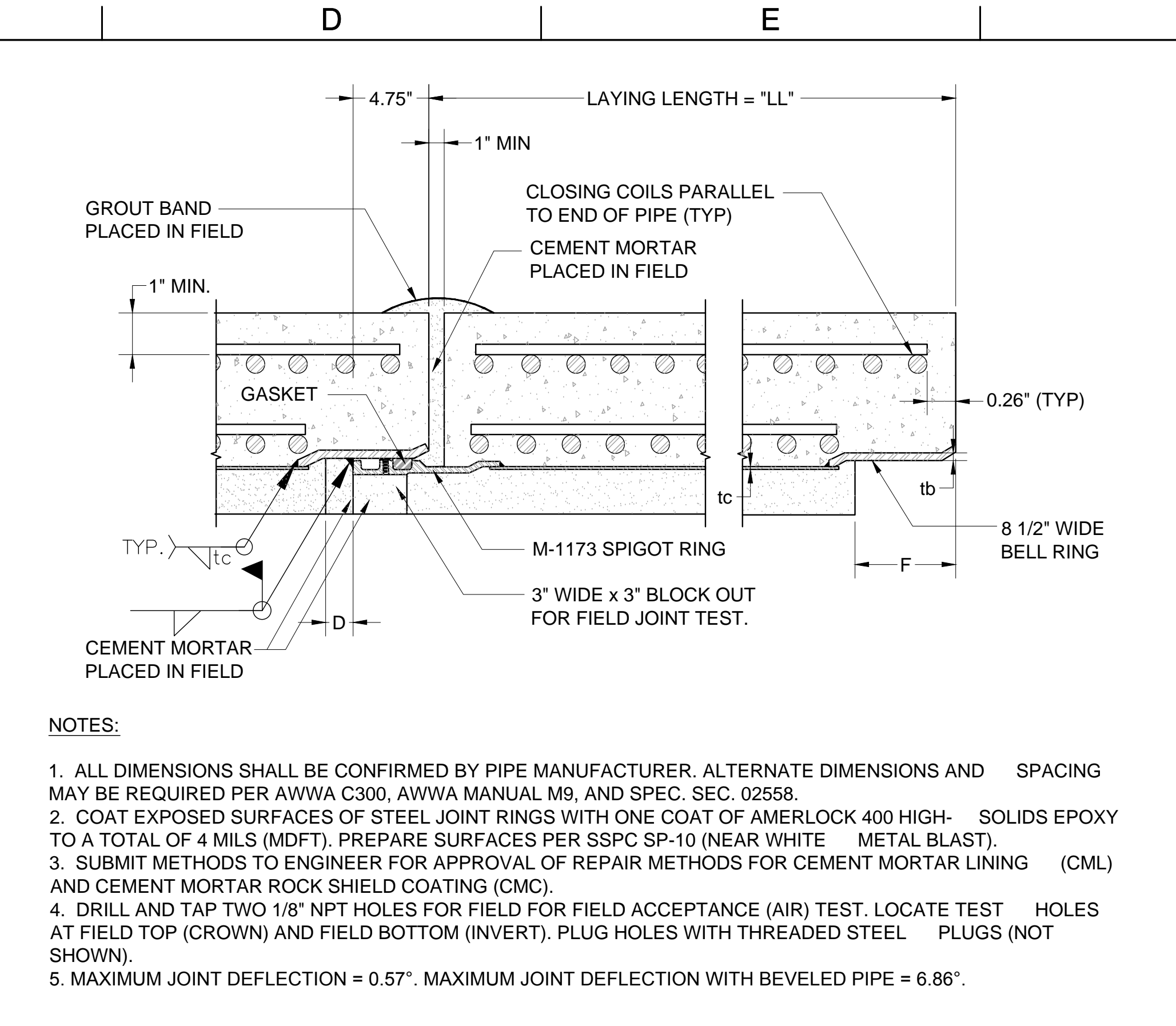
PLOTTED BY: BARNHART, DENNIS - August 7, 2017 - 3:45:16 PM
 DRAWING: G:\SR\PA\FEASIBILITY_AECOM\900 WORK\0-CAD\006-CIVIL\20-SHEETS\07-DELEVAN\01-LINE\DETAILS\CP-505.DWG

DESIGNED D. DEUTSCHER		APPROVAL RECOMMENDED		REVIEWED MIKE FORREST REG. CE. NO. 27855		DATE 08/04/2017				WSIP APPLICATION ATTACHMENT A4.A DELEVAN AND TRR PIPELINE NATURAL GAS PIPELINE RE-CONSTRUCTION		SPEC NO.	
DRAWN M. WONG		APPROVAL BY		APPROVAL RECOMMENDED DWAYNE DEUTSCHER REG. CE. NO. 34557		APPROVED JOE BARNES REG. CE. NO. 40105						DRAWING NO. CP-505	
CHECKED M. FORREST		ESTIMATE LEVEL FEASIBILITY		AECOM Technical Services, Inc. 2020 L Street, Suite 300 Sacramento, Ca 95811 T 916-414-5800 F 916-414-1557 www.aecom.com						REV.		SHEET NO. 71	
A3-A	08/01/2017	COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)		WSIP	JB								
REV	DATE	DESCRIPTION		SUB.	APPD								



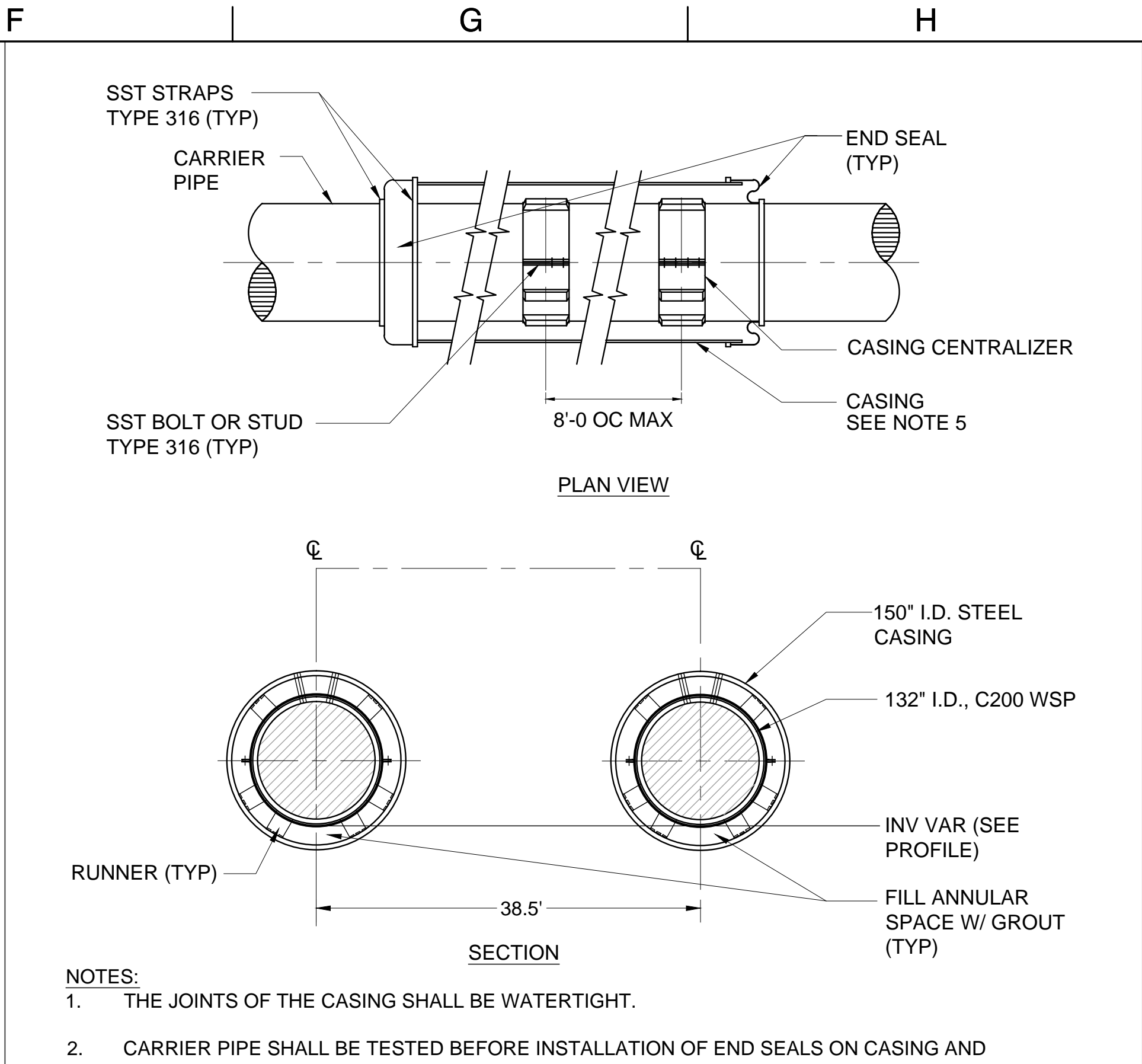
- NOTES:**
1. ALL DIMENSIONS SHALL BE CONFIRMED BY PIPE MANUFACTURER. ALTERNATE DIMENSIONS AND SPACING MAY BE REQUIRED PER AWWA C300, AWWA MANUAL M9, AND SPEC. SEC. 02558.
 2. COAT EXPOSED SURFACES OF STEEL JOINT RINGS WITH ONE COAT OF AMERLOCK 400 HIGH-SOLIDS EPOXY TO A TOTAL OF 4 MILS (MDFT). PREPARE SURFACES PER SSPC SP-10 (NEAR WHITE METAL BLAST).
 3. SUBMIT METHODS TO ENGINEER FOR APPROVAL OF REPAIR METHODS FOR CEMENT MORTAR LINING (CML) AND CEMENT MORTAR ROCK SHIELD COATING (CMC).
 4. DRILL AND TAP TWO 1/8" NPT HOLES FOR FIELD FOR FIELD ACCEPTANCE (AIR) TEST. LOCATE TEST HOLES AT FIELD TOP (CROWN) AND FIELD BOTTOM (INVERT). PLUG HOLES WITH THREADED STEEL PLUGS (NOT SHOWN).
 5. MAXIMUM JOINT DEFLECTION = 0.57". MAXIMUM JOINT DEFLECTION WITH BEVELED PIPE = 6.86".

1 REINFORCED CONCRETE CYLINDER PIPE UNRESTRAINED JOINT



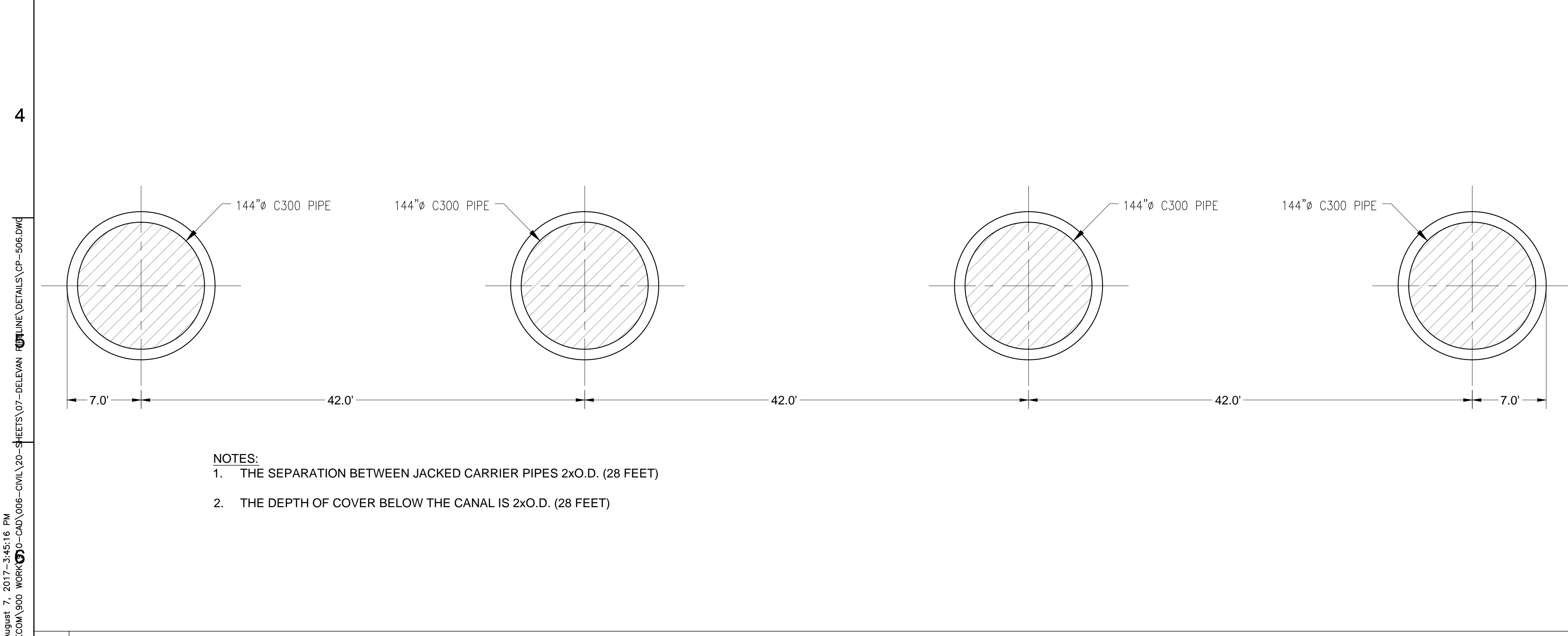
- NOTES:**
1. ALL DIMENSIONS SHALL BE CONFIRMED BY PIPE MANUFACTURER. ALTERNATE DIMENSIONS AND SPACING MAY BE REQUIRED PER AWWA C300, AWWA MANUAL M9, AND SPEC. SEC. 02558.
 2. COAT EXPOSED SURFACES OF STEEL JOINT RINGS WITH ONE COAT OF AMERLOCK 400 HIGH-SOLIDS EPOXY TO A TOTAL OF 4 MILS (MDFT). PREPARE SURFACES PER SSPC SP-10 (NEAR WHITE METAL BLAST).
 3. SUBMIT METHODS TO ENGINEER FOR APPROVAL OF REPAIR METHODS FOR CEMENT MORTAR LINING (CML) AND CEMENT MORTAR ROCK SHIELD COATING (CMC).
 4. DRILL AND TAP TWO 1/8" NPT HOLES FOR FIELD FOR FIELD ACCEPTANCE (AIR) TEST. LOCATE TEST HOLES AT FIELD TOP (CROWN) AND FIELD BOTTOM (INVERT). PLUG HOLES WITH THREADED STEEL PLUGS (NOT SHOWN).
 5. MAXIMUM JOINT DEFLECTION = 0.57". MAXIMUM JOINT DEFLECTION WITH BEVELED PIPE = 6.86".

2 REINFORCED CONCRETE CYLINDER PIPE RESTRAINED JOINT



- NOTES:**
1. THE JOINTS OF THE CASING SHALL BE WATERTIGHT.
 2. CARRIER PIPE SHALL BE TESTED BEFORE INSTALLATION OF END SEALS ON CASING AND FILLING OF ANNULAR SPACE. FLOATATION CALCULATION SHALL BE PROVIDED PRIOR TO FILLING OF ANNULAR SPACE. CONTRACTOR SHALL BLOCK THE TOP OF THE CARRIER PIPE TO PREVENT FLOATAION WHEN ANNULAR SPACE BACKFILL IS INSTALLED.
 3. CASING SPACERS SHALL BE BOLTED AROUND THE PIPE SUCH THAT THE RUNNERS ARE LOCATED SYMMETRICALLY ABOUT THE LONGITUDINAL AXIS OF PIPE.
 4. PROVIDE GROUT PORTS TO ENABLE FILLING VOIDS OUTSIDE OF THE CASING.
 5. SUBMIT CALCULATIONS THAT DEMONSTRATE THAT THE YIELD STRENGTH OF THE CASING IS SUFFICIENT TO CARRY ANTICIPATED JACKING LOADS.
 6. THE SEPARATION BETWEEN CASING PIPES 2xO.D. (26 FEET)
 7. THE DEPTH BELOW INTERSTATE 5 AND THE RAIL ROAD IS 2 x O.D. (26 FEET)

3 CASING PIPE CROSSING

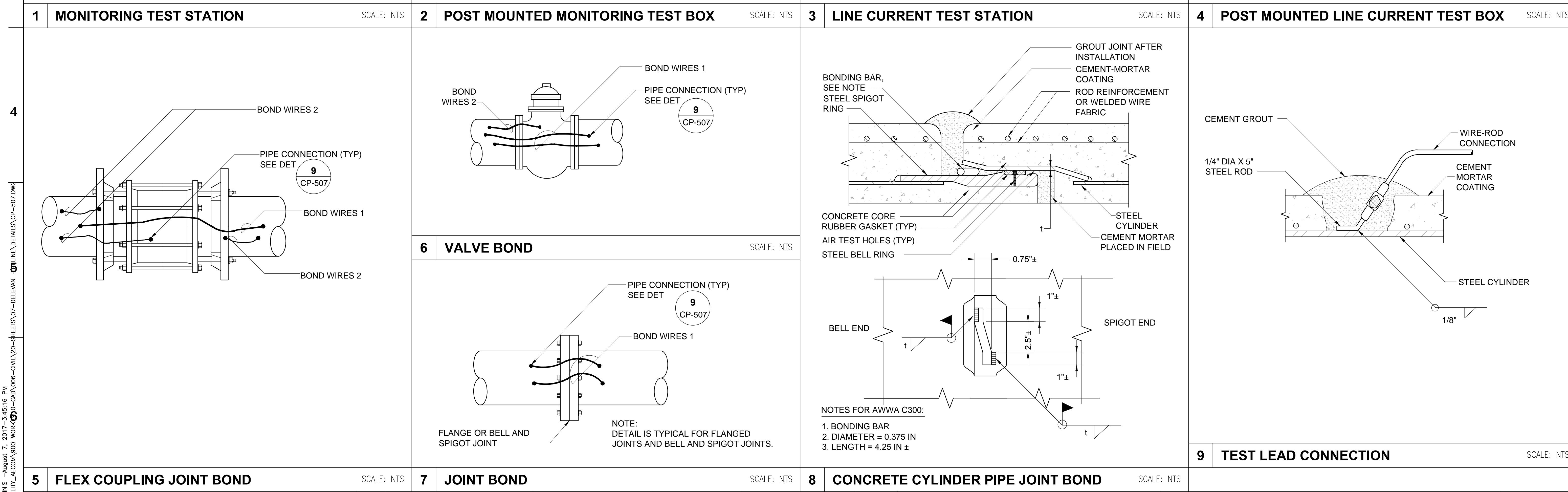
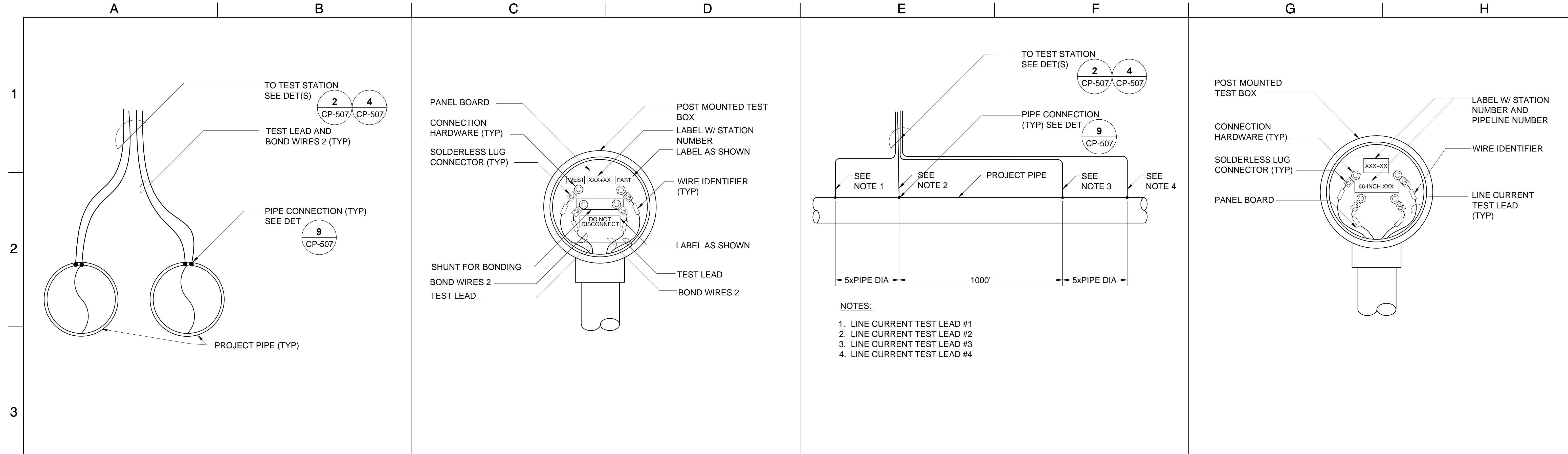


- NOTES:**
1. THE SEPARATION BETWEEN JACKED CARRIER PIPES 2xO.D. (28 FEET)
 2. THE DEPTH OF COVER BELOW THE CANAL IS 2xO.D. (28 FEET)

4 CROSSING AT GLENN-COLUSA CANAL

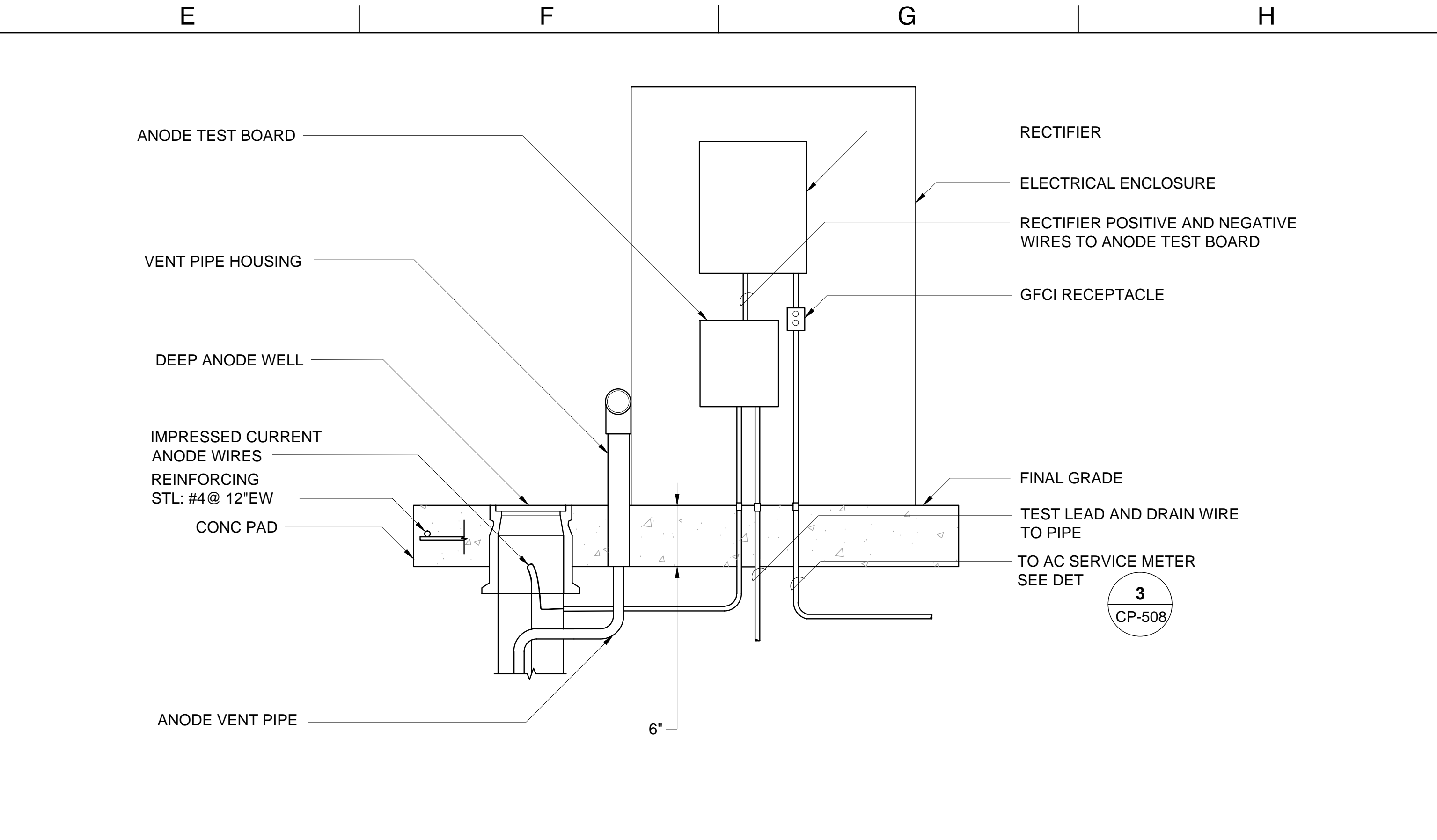
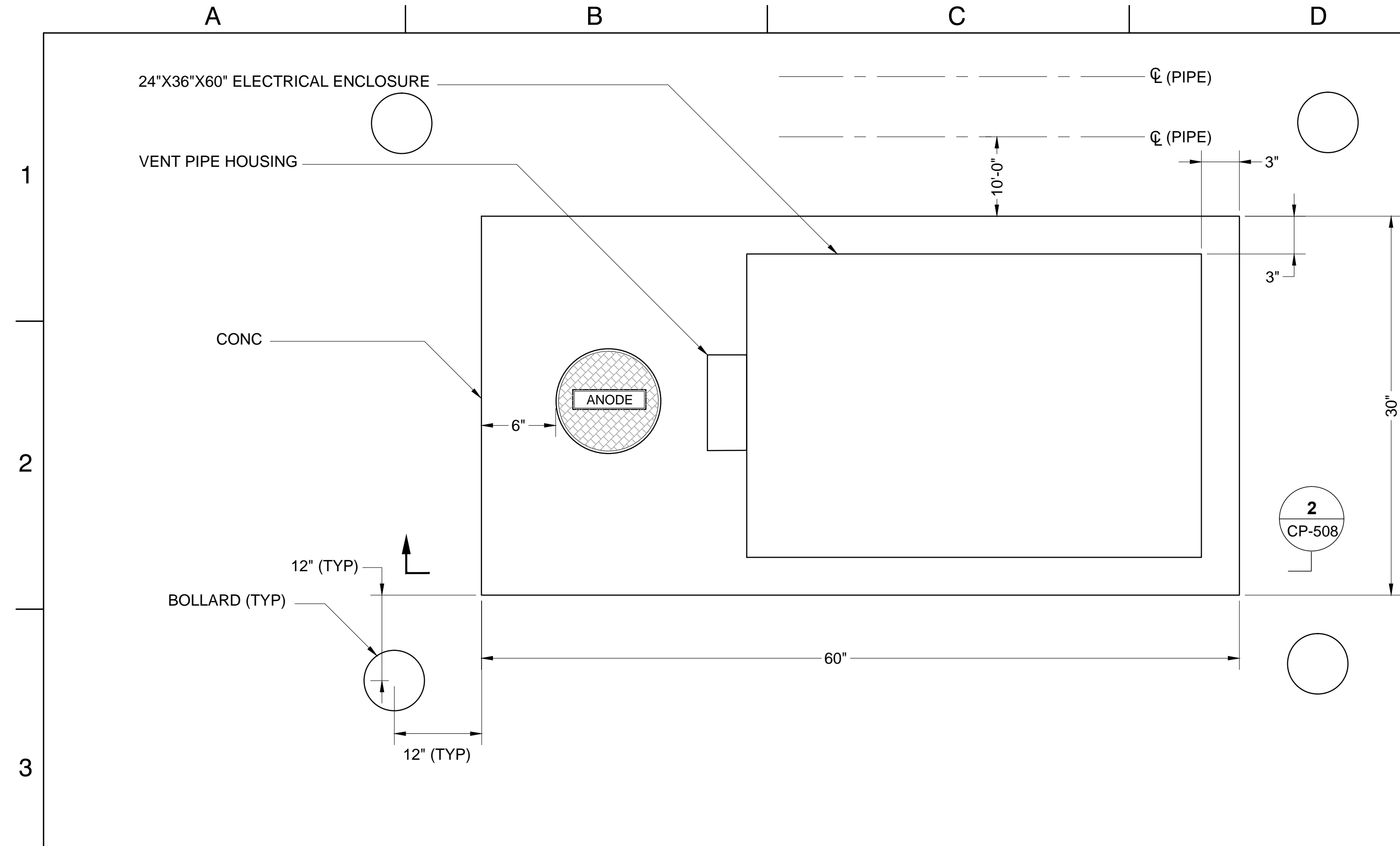
DESIGNED D. DEUTSCHER		APPROVAL RECOMMENDED			REVIEWED MIKE FORREST	DATE 08/04/2017			WSIP APPLICATION ATTACHMENT A4.A		SPEC NO.
DRAWN M. WONG		APPROVAL BY			REG. CE. NO. 27855	APPROVAL RECOMMENDED DWAYNE DEUTSCHER			DRAWING NO. CP-506		
CHECKED M. FORREST		ESTIMATE LEVEL FEASIBILITY		APPROVED JOE BARNES		REV. SHEET NO.		DELEVAN AND TRR PIPELINE PIPE DETAILS		72	
REV	DATE	DESCRIPTION		SUB.		APPD					

PLOTTED BY: BARNHART, DENNIS - August 7, 2017 - 3:45:16 PM
 DRAWING: G:\SHPA\FEASIBILITY\AECOM\900 WORK\00-CAD\006-CIVIL\20-SHEETS\07-DELEVAN\CP-506.DWG



5 FLEX COUPLING JOINT BOND SCALE: NTS				7 JOINT BOND SCALE: NTS				8 CONCRETE CYLINDER PIPE JOINT BOND SCALE: NTS				9 TEST LEAD CONNECTION SCALE: NTS					
DESIGNED D. DEUTSCHER				APPROVAL RECOMMENDED				REVIEWED MIKE FORREST REG. CE. NO. 27855 APPROVAL RECOMMENDED DWAYNE DEUTSCHER REG. CE. NO. 34557 APPROVED JOE BARNES REG. CE. NO. 40105				DATE 08/04/2017					
DRAWN M. WONG				APPROVAL BY				AECOM AECOM Technical Services, Inc. 2020 L Street, Suite 300 Sacramento, CA 95811 T 916-414-5800 F 916-414-1557 www.aecom.com				SITES 					
CHECKED M. FORREST				ESTIMATE LEVEL FEASIBILITY				WSIP APPLICATION ATTACHMENT A4.A DELEVAN AND TRR PIPELINE CATHODIC PROTECTION				SPEC NO. DRAWING NO. CP-507 REV. SHEET NO. 73					
A3-A 08/01/2017 COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)				WSIP JB				A3-A 08/01/2017 COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)				WSIP JB					
REV	DATE	DESCRIPTION		SUB.	APPD	REV	DATE	DESCRIPTION		SUB.	APPD	REV	DATE	DESCRIPTION		SUB.	APPD

PLOTTED BY: BARNHART, DENNIS - August 7, 2017 - 3:45:16 PM
 DRAWING: G:\SRIPA\FEASIBILITY_AECOM\900 WORK\0-CAD\006-CIVIL\20-SHEETS\07-DELEVAN\CP-507.DWG

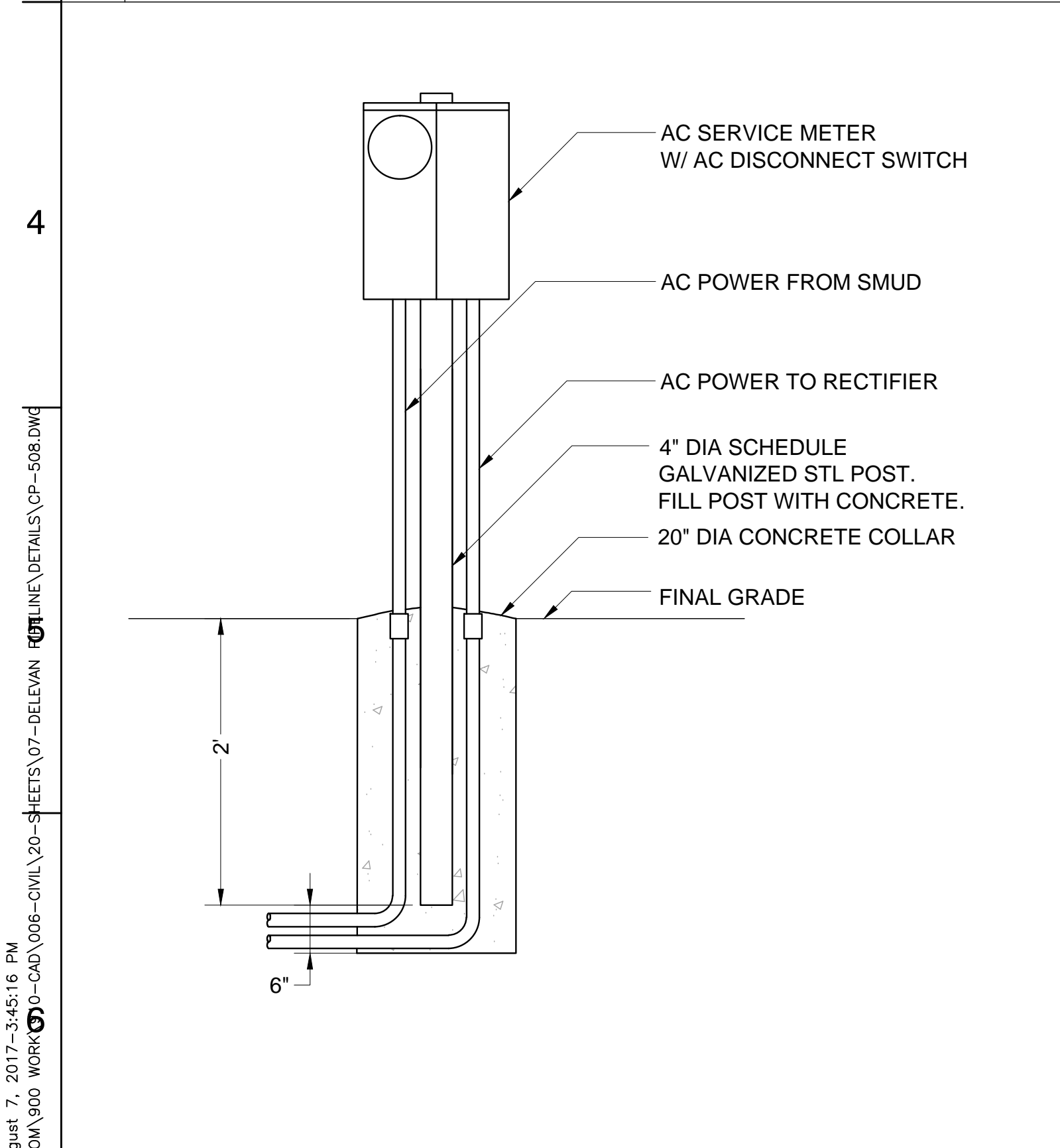


1 PAD MOUNTED RECTIFIER INSTALLATION PLAN VIEW

SCALE: NTS

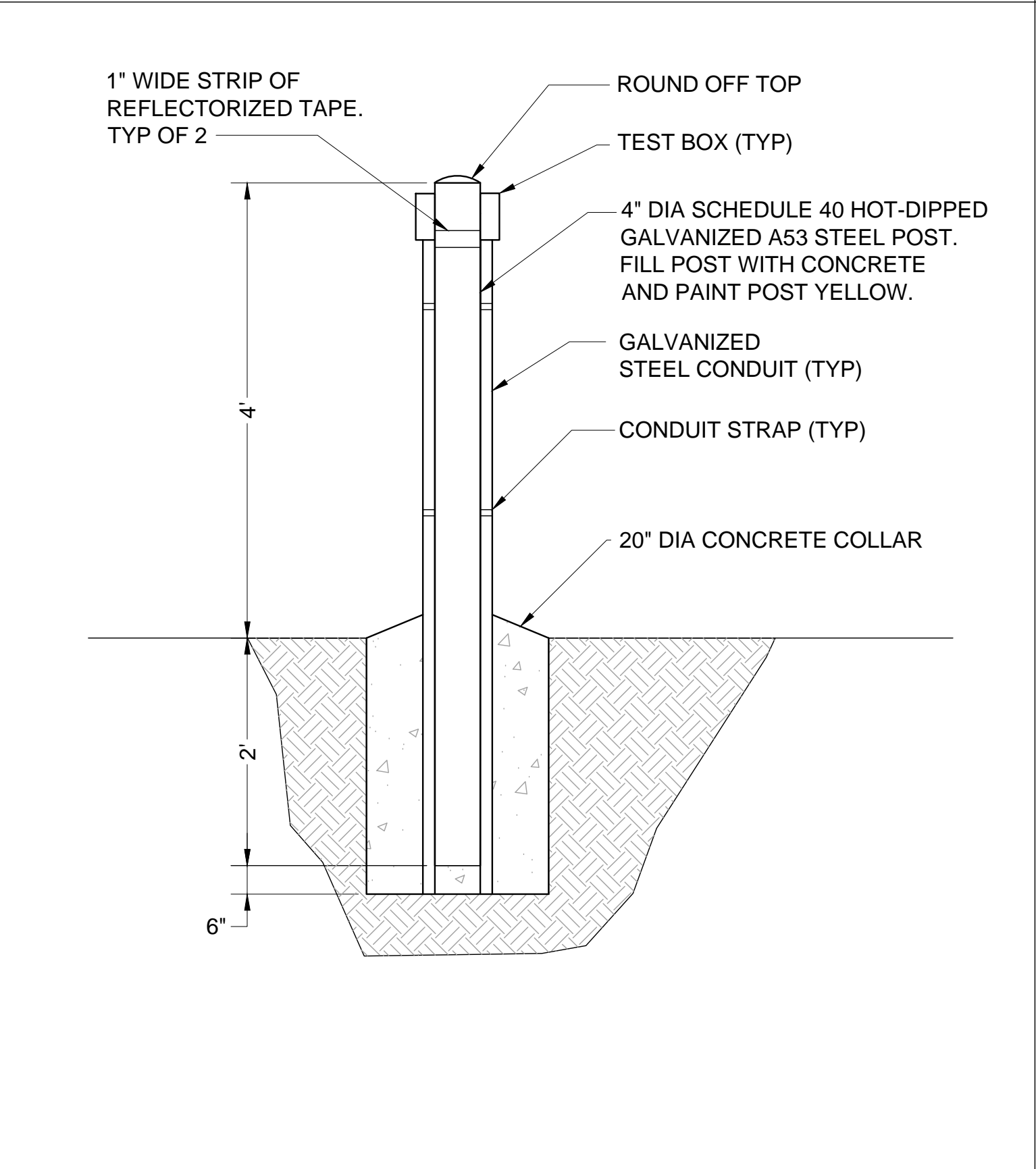
2 PAD MOUNTED RECTIFIER INSTALLATION SECTION

SCALE: NTS



3 AC SERVICE METER

SCALE: NTS



4 DUAL HEAD POST MOUNTED TEST STATION

SCALE: NTS

DESIGNED	D. DEUTSCHER	APPROVAL RECOMMENDED	
DRAWN	M. WONG	APPROVAL BY	
CHECKED	M. FORREST	ESTIMATE LEVEL	FEASIBILITY
REV	DATE	DESCRIPTION	SUB. APPD
A3-A	08/01/2017	COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)	WSIP JB

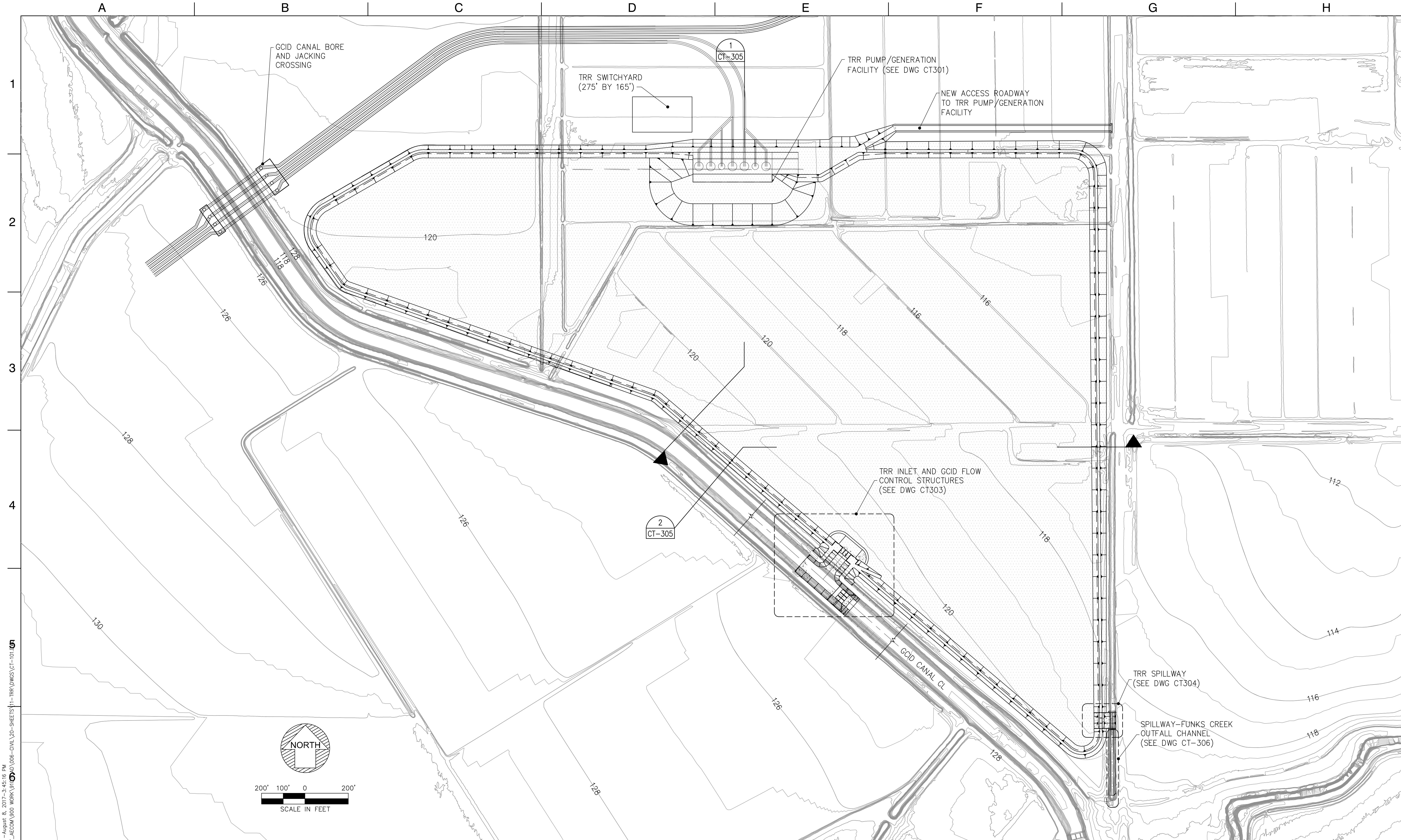
DESIGNED	D. DEUTSCHER	APPROVAL RECOMMENDED	
DRAWN	M. WONG	APPROVAL BY	
CHECKED	M. FORREST	ESTIMATE LEVEL	FEASIBILITY

REVIEWED	MIKE FORREST	DATE	08/04/2017
REG. CE. NO.	27855		
APPROVAL RECOMMENDED	DWAYNE DEUTSCHER		
REG. CE. NO.	34557		
APPROVED	JOE BARNES		
REG. CE. NO.	40105		



WSIP APPLICATION ATTACHMENT A4.A		SPEC NO.	
DELEVAN AND TRR PIPELINE CATHODIC PROTECTION INSTALLATION		DRAWING NO.	CP-508
REV.		SHEET NO.	74

PLOTTED BY: BARNHART, DENNIS - August 7, 2017 - 3:45:16 PM
 DRAWING: G:\SR\PA\FEASIBILITY_AECOM\900 WORK\05-CAD\006-CIVIL\20-SHEETS\07-DELEVAN\01-LINE\DETAILS\CP-508.DWG



PLOTTED BY: BARNHART, DENNIS - August 8, 2017 - 3:45:16 PM
 DRAWING: G:\SRIPA\FEASIBILITY_AECOM\900 WORK\9100\006-CIVIL\20-SHEETS\1-TRR\DWGS\CT-101.dwg

DESIGNED	L. MURRAY	APPROVAL RECOMMENDED	
DRAWN	L. MURRAY	APPROVAL BY	
CHECKED	M. FORREST	ESTIMATE LEVEL	
		FEASIBILITY	

DATE	08/04/2017
DESCRIPTION	COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)
SUB.	WSIP
APPD	JB

AECOM

REVIEWED
 MIKE FORREST
 REG. CE. NO. 27855

APPROVAL RECOMMENDED
 LOREN MURRAY
 REG. CE. NO. 42663

APPROVED
 JOE BARNES
 REG. CE. NO. 40105

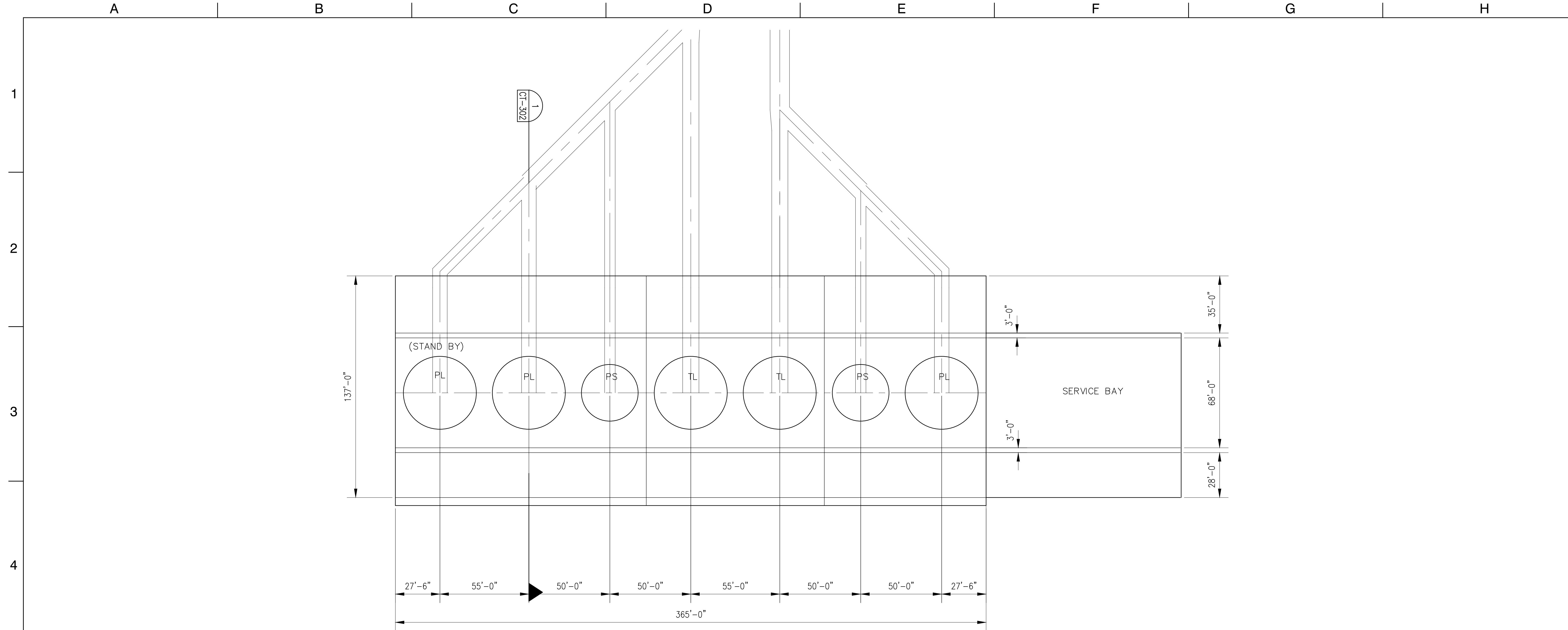
AECOM Technical Services, Inc.
 2020 L Street, Suite 300
 Sacramento, CA 95811
 T 916-414-5800 F 916-414-1557
 www.aecom.com



WSIP APPLICATION ATTACHMENT A4.A

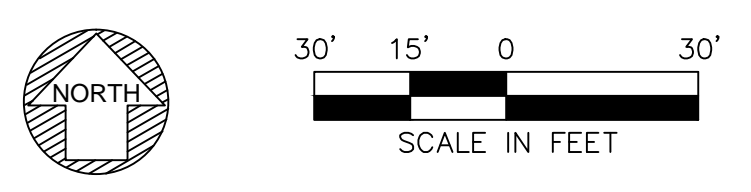
**TERMINAL REGULATING RESERVOIR
 PLAN**

SPEC NO.	
DRAWING NO.	CT-101
REV.	SHEET NO.
	76



PUMPING UNITS DATA		
UNITS	CAPACITY	VALVE DIAMETER
PL	620 cfs	7.5 ft (90 in)
PS	325 cfs	5.0 ft (60 in)
TL	750 cfs	8.5 ft (102 in)

FLOOR PLAN 1
CT-101



PLOTTED BY: BARNHART, DENNIS -- August 6, 2017 -- 3:45:16 PM
 DRAWING: G:\SR\PA\FEASIBILITY_AECOM\900 WORK\6-SHEETS\11-TRR\DWGS\1-301.DWG

DESIGNED L. MURRAY		APPROVAL RECOMMENDED			REVIEWED MIKE FORREST REG. CE. NO. 27855	DATE 08/04/2017		WSIP APPLICATION ATTACHMENT A4.A		SPEC NO.
DRAWN L. MURRAY		APPROVAL BY			APPROVAL RECOMMENDED LOREN MURRAY REG. CE. NO. 42663			TRR PUMP/GENERATION FACILITY		DRAWING NO. CT-301
CHECKED M. FORREST		ESTIMATE LEVEL FEASIBILITY		APPROVED JOE BARNES REG. CE. NO. 40105		FLOOR PLAN		REV.	SHEET NO. 77	
REV	DATE	DESCRIPTION				SUB.	APPD			

A B C D E F G H

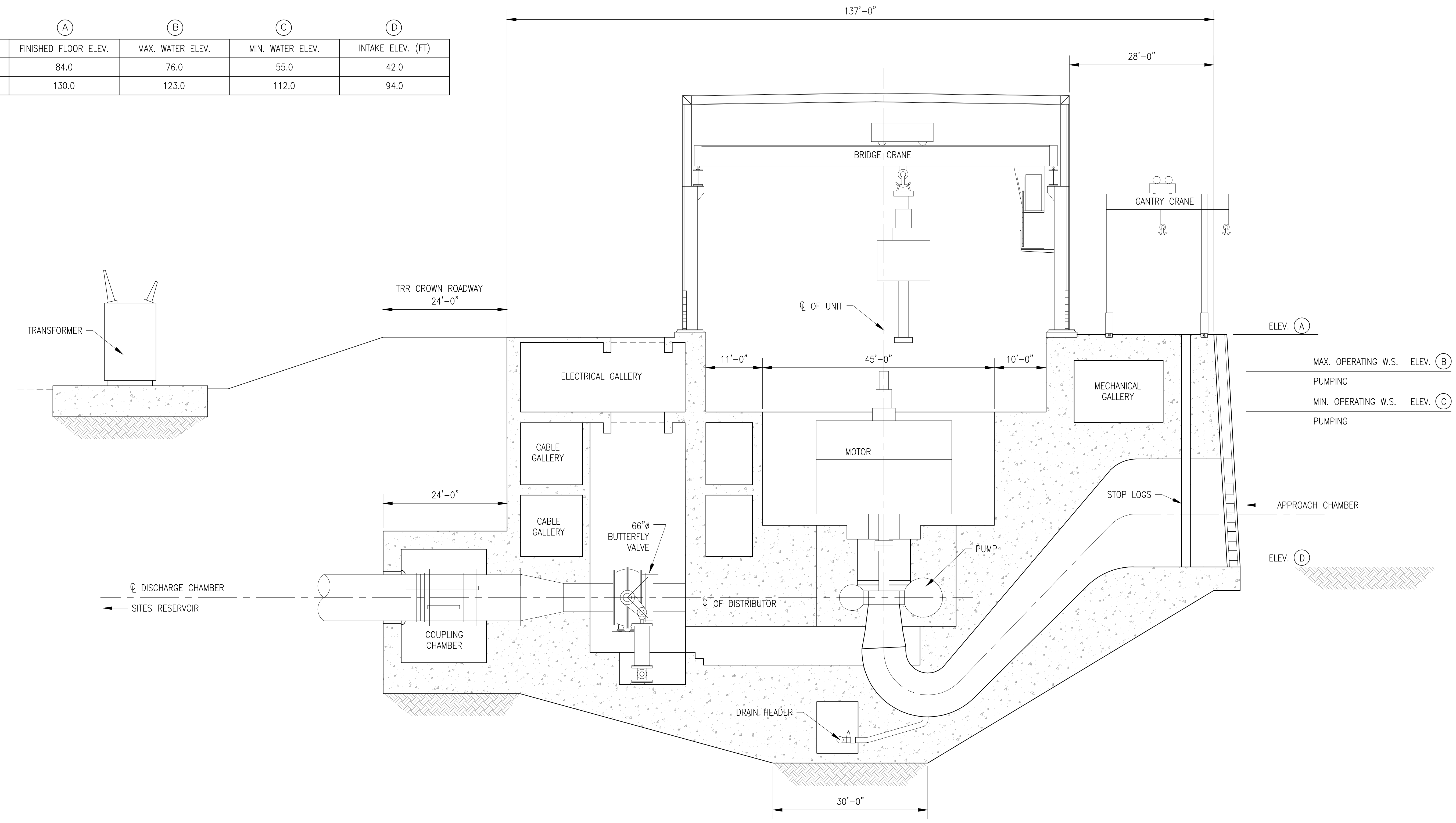
1

	(A)	(B)	(C)	(D)
PROPOSED P/G PLANT	FINISHED FLOOR ELEV.	MAX. WATER ELEV.	MIN. WATER ELEV.	INTAKE ELEV. (FT)
SACRAMENTO RIVER	84.0	76.0	55.0	42.0
TRR	130.0	123.0	112.0	94.0

2

3

4



TRANSVERSE SECTION 620-CFS PUMP UNIT 1
CT-301



PLOTTED BY: BARNHART, DENNIS - August 6, 2017 - 3:45:16 PM
 DRAWING: G:\SR\PA\FEASIBILITY_AECOM\900 WORK\6-SHEETS\11-TRR\DWGS\1-302.DWG

REV	DATE	DESCRIPTION	SUB.	APPD.
A3-A	08/01/2017	COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)	WSIP	JB

DESIGNED L. MURRAY	APPROVAL RECOMMENDED
DRAWN L. MURRAY	APPROVAL BY
CHECKED M. FORREST	ESTIMATE LEVEL FEASIBILITY

AECOM AECOM Technical Services, Inc. 2020 L Street, Suite 300 Sacramento, CA 95811 T 916-414-5800 F 916-414-1557 www.aecom.com	REVIEWED MIKE FORREST REG. CE. NO. 27855	DATE 08/04/2017
	APPROVAL RECOMMENDED LOREN MURRAY REG. CE. NO. 42663	
	APPROVED JOE BARNES REG. CE. NO. 40105	



WSIP APPLICATION ATTACHMENT A4.A
 TRR PUMP/GENERATION FACILITY
 TRANSVERSE SECTION 620-CFS UNIT

SPEC NO.	
DRAWING NO.	CT-302
REV.	SHEET NO. 78

A B C D E F G H

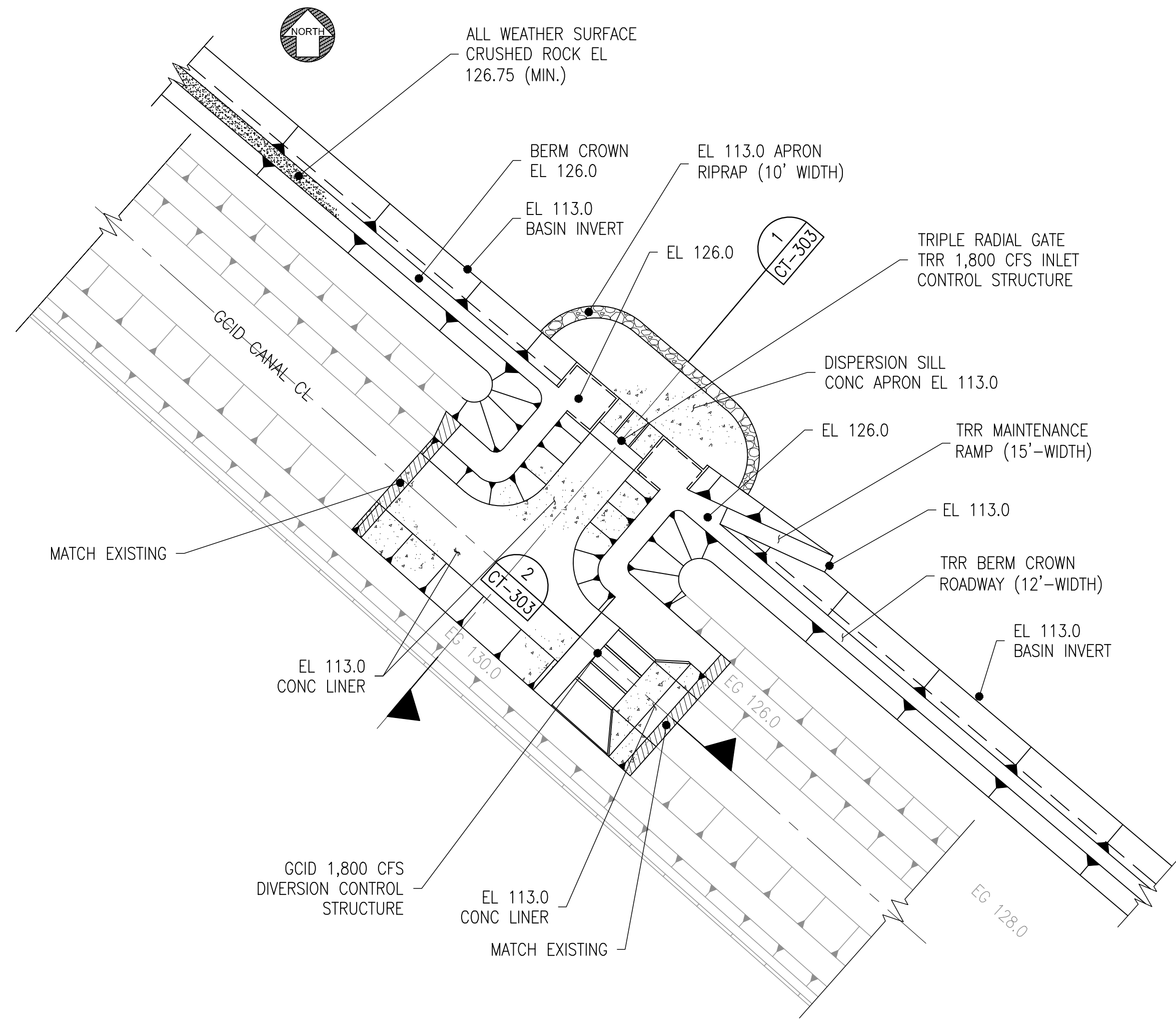
1

2

3

4

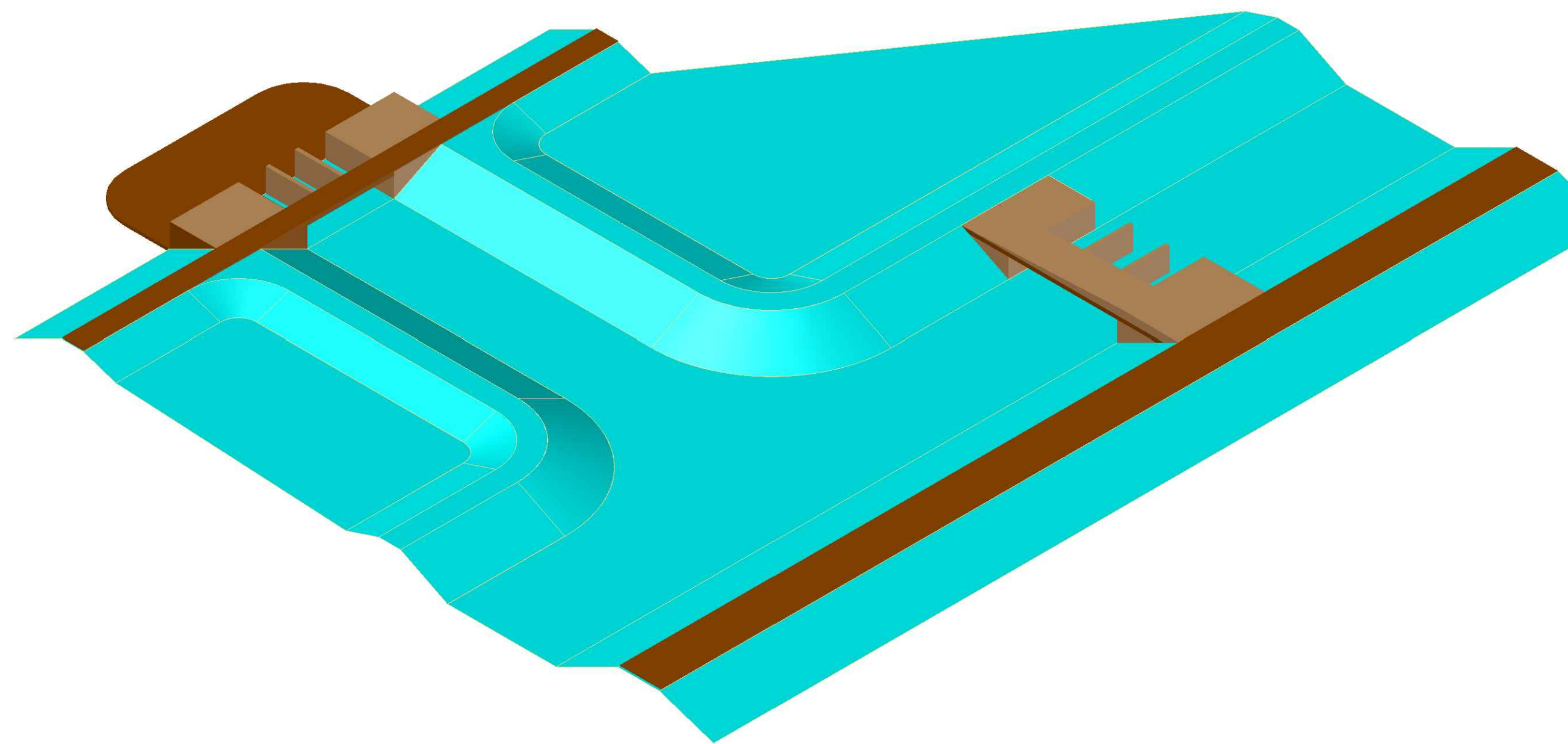
5



PLAN - TRR INLET AND DIVERSION STRUCTURES

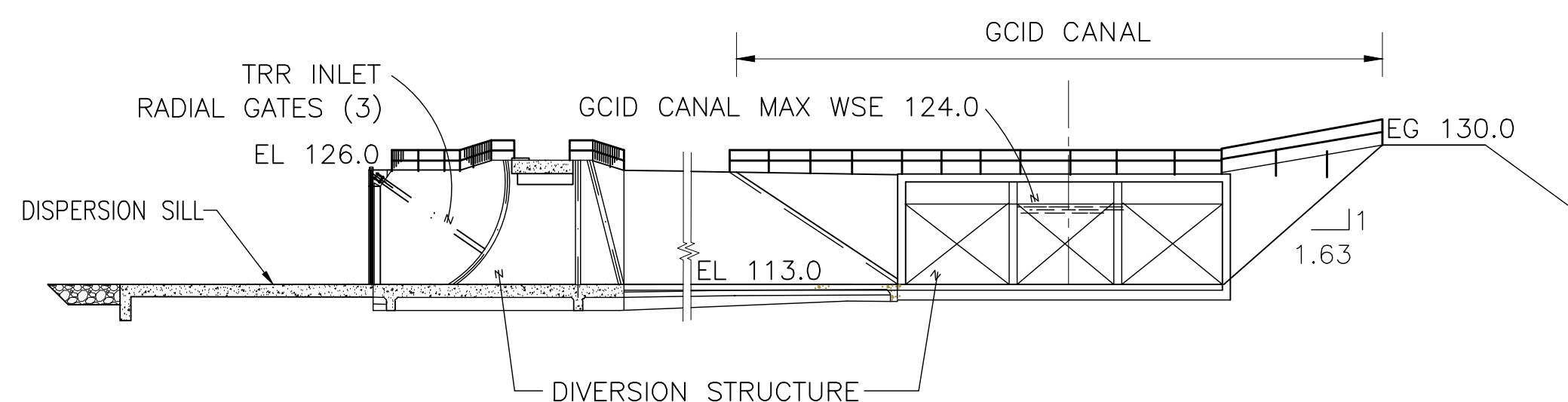
1"=80.0'

CT-101



CONCEPTUAL OBLIQUE VIEW

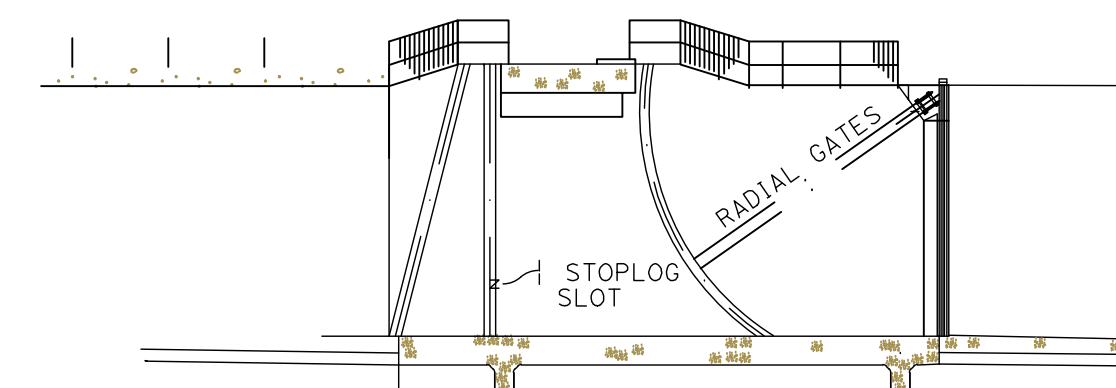
NTS



TRR INLET AND DIVERSION STRUCTURES

NTS

CT-303



GCID 1,800 CFS CONTROL STRUCTURE

NTS

CT-303

PLOTTED BY: BARNHART, DENNIS - August 8, 2017 - 3:45:16 PM
 DRAWING: G:\SR\PA\FEASIBILITY_AECOM\900 WORK\910-CAD\CAD\DWG\120-SHEETS\11-TRR\DWG\CT-303.DWG

DESIGNED	L. MURRAY	APPROVAL RECOMMENDED	
DRAWN	L. MURRAY	APPROVAL BY	
CHECKED	M. FORREST	ESTIMATE LEVEL	FEASIBILITY
REV	DATE	DESCRIPTION	SUB. APPD
A3-A	08/01/2017	COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)	WSIP JB

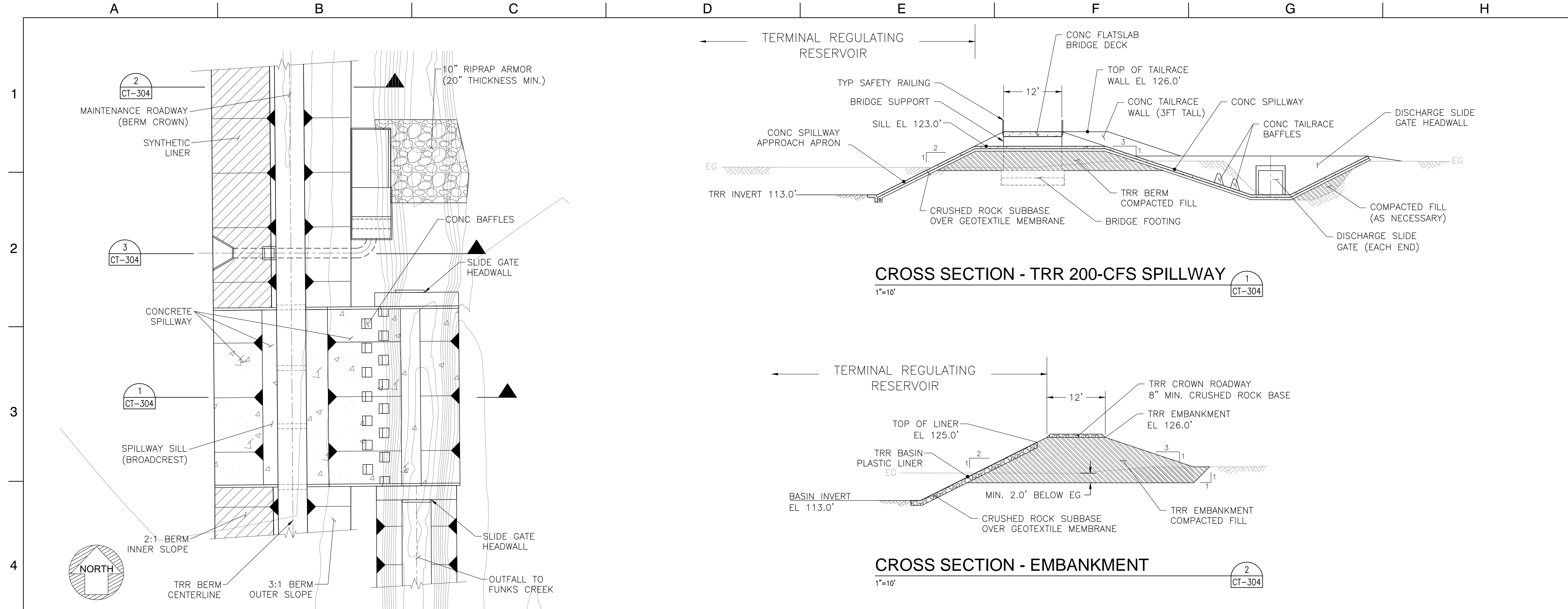
DESIGNED	L. MURRAY	APPROVAL RECOMMENDED	
DRAWN	L. MURRAY	APPROVAL BY	
CHECKED	M. FORREST	ESTIMATE LEVEL	FEASIBILITY

AECOM Technical Services, Inc. 2020 L Street, Suite 300 Sacramento, Ca 95811 T 916-414-5800 F 916-414-1557 www.aecom.com	REVIEWED MIKE FORREST REG. CE. NO. 27855 APPROVAL RECOMMENDED LOREN MURRAY REG. CE. NO. 42663 APPROVED JOE BARNES REG. CE. NO. 40105	DATE 08/04/2017
--	--	--------------------



WSIP APPLICATION ATTACHMENT A4.A		SPEC NO.
TRR INLET AND GCID FLOW CONTROL DIVERSION STRUCTURES		DRAWING NO. CT-303
REV.	DATE	SHEET NO. 79

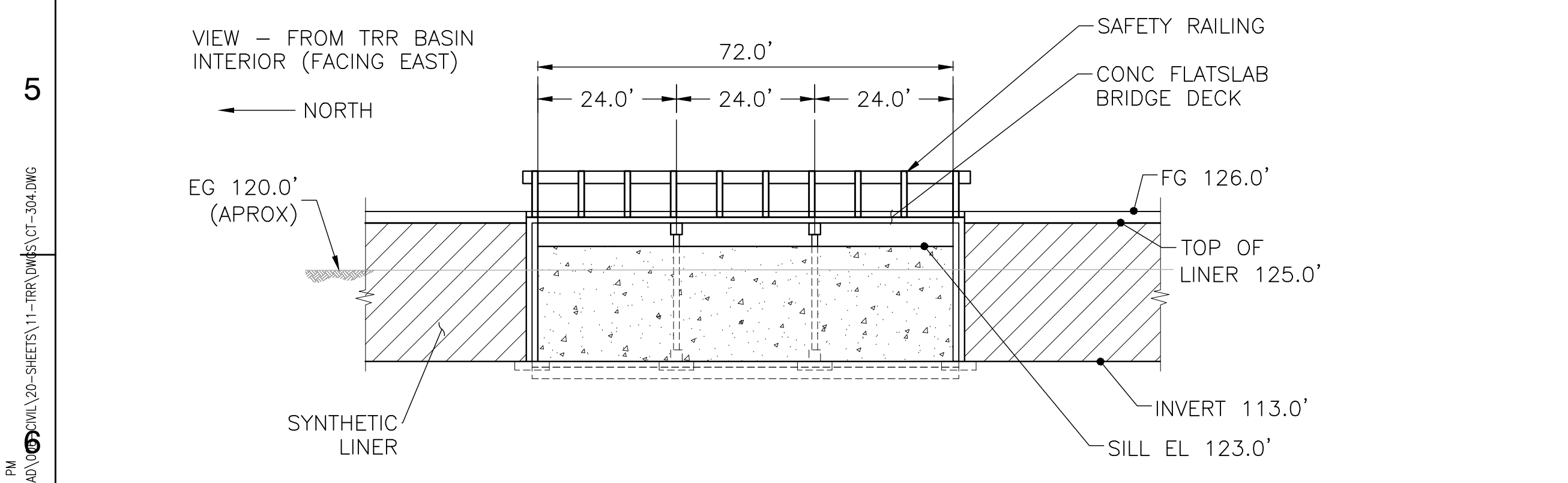
SPEC NO.	
DRAWING NO.	CT-303
REV.	SHEET NO. 79



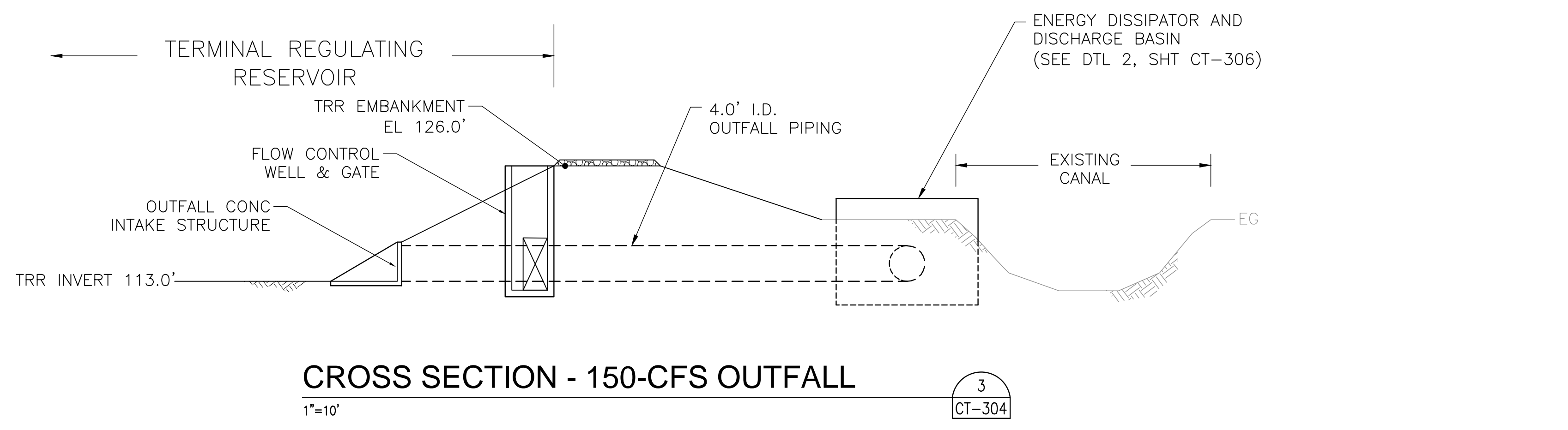
PLAN - TRR 200-CFS SPILLWAY
1"=20.0'

CROSS SECTION - TRR 200-CFS SPILLWAY
1"=10'

CROSS SECTION - EMBANKMENT
1"=10'



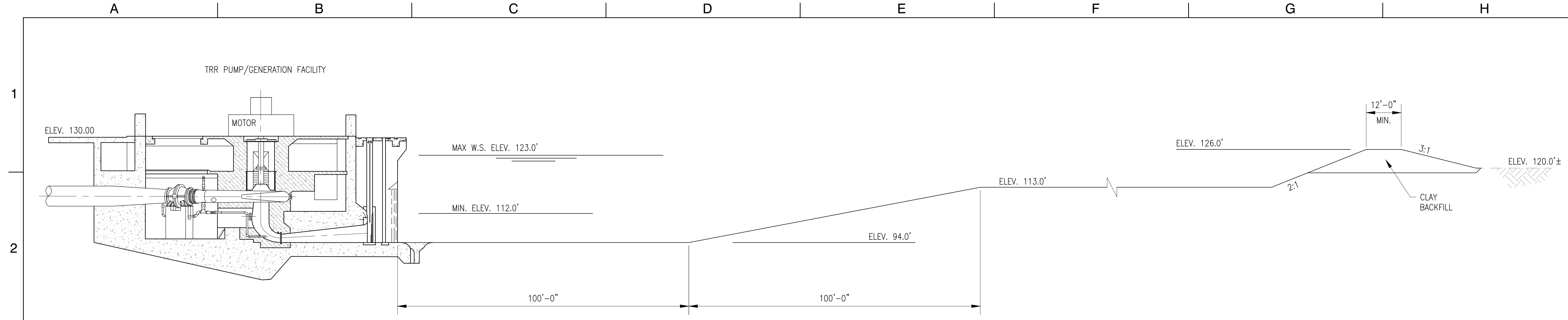
PROFILE - TRR 200-CFS SPILLWAY
NTS



CROSS SECTION - 150-CFS OUTFALL
1"=10'

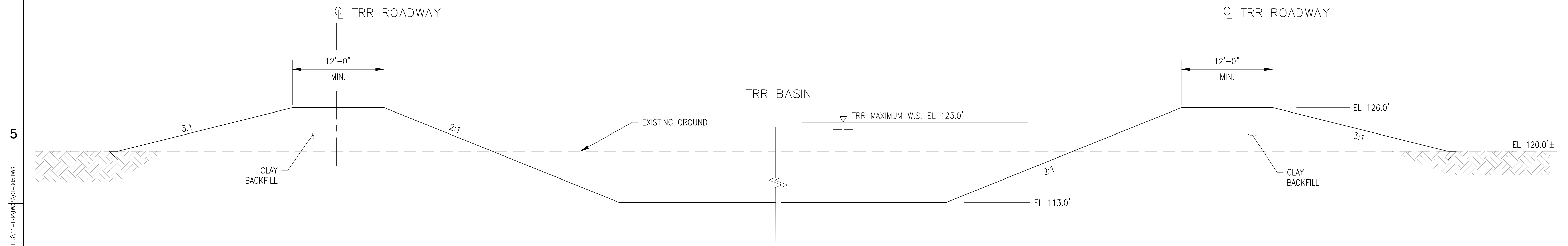
DESIGNED L. MURRAY		APPROVAL RECOMMENDED			REVIEWED MIKE FORREST REG. CE. NO. 27855 APPROVAL RECOMMENDED LOREN MURRAY REG. CE. NO. 42663 APPROVED JOE BARNES REG. CE. NO. 40105	DATE 08/04/2017	WSIP APPLICATION ATTACHMENT A4.A		SPEC NO.	
DRAWN L. MURRAY		APPROVAL BY							TRR 200-CFS SPILLWAY 150-CFS OUTLET WORKS	
CHECKED M. FORREST		ESTIMATE LEVEL FEASIBILITY		AECOM Technical Services, Inc. 2020 L Street, Suite 300 Sacramento, Ca 95811 T 916-414-5800 F 916-414-1557 www.aecom.com				REV. SHEET NO. 80		
REV	DATE	DESCRIPTION		SUB.	APPD					

PLOTTED BY: BARNHART, DENNIS - August 8, 2017 - 3:45:16 PM
 DRAWING: G:\SR\PA\FEASIBILITY_AECOM\910-CAD\DWG\126-SHEETS\11-TRR\DWG\CT-304.DWG



TYP SECTION
NTS

1
CT-101



TYP SECTION
NTS

2
CT-101

DESIGNED	L. MURRAY
DRAWN	L. MURRAY
CHECKED	M. FORREST
APPD	
DATE	08/01/2017
DESCRIPTION	COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)
SUB.	WSIP

APPROVAL RECOMMENDED	
APPROVAL BY	
ESTIMATE LEVEL	FEASIBILITY

AECOM	REVIEWED	DATE
MIKE FORREST	MIKE FORREST	08/04/2017
REG. CE. NO. 27855	APPROVAL RECOMMENDED	
LOREN MURRAY	LOREN MURRAY	
REG. CE. NO. 42663	APPROVED	
JOE BARNES	JOE BARNES	
REG. CE. NO. 40105		

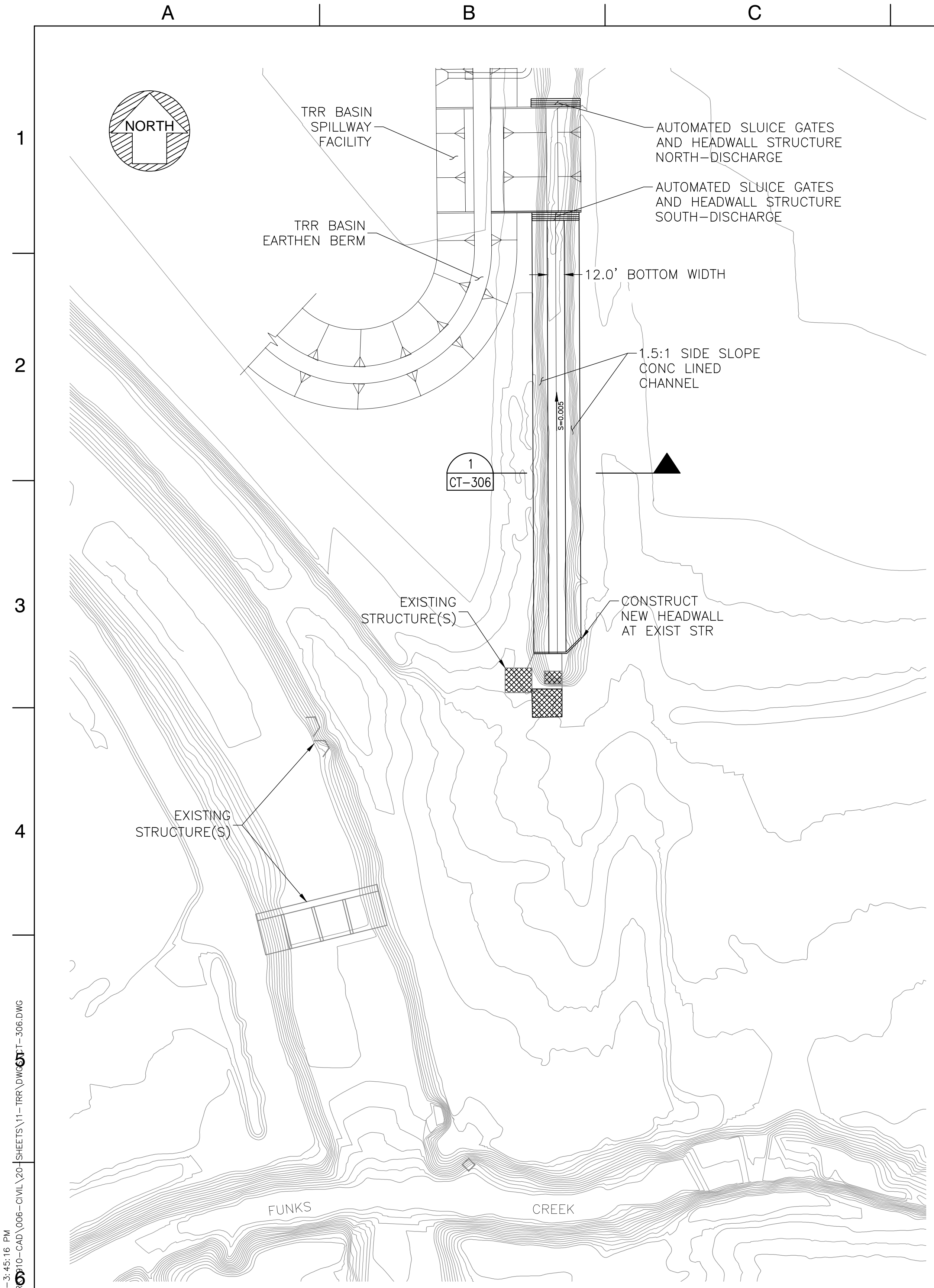


WSIP APPLICATION ATTACHMENT A4.A

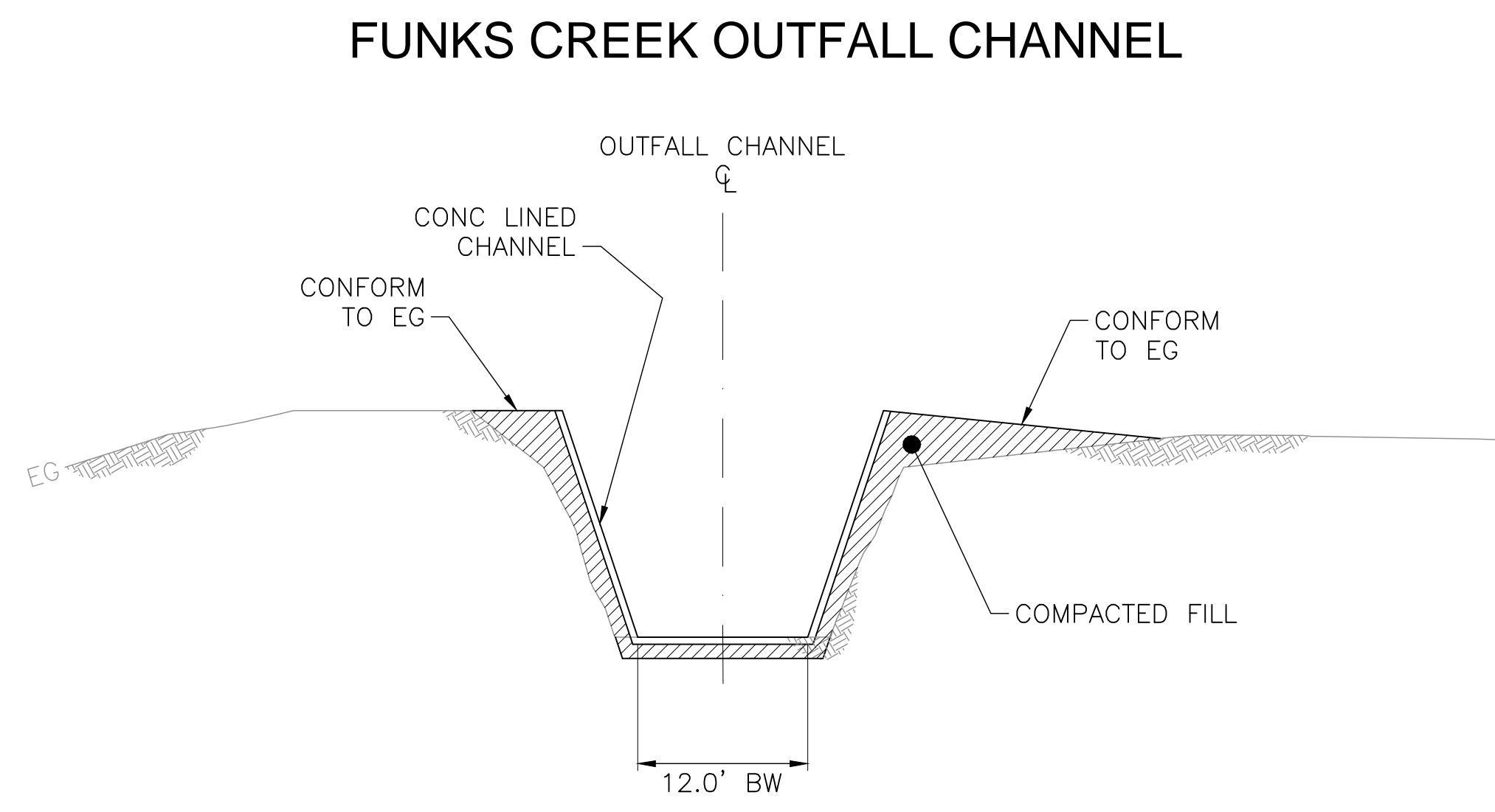
**TRR BASIN
TYPICAL SECTIONS**

SPEC NO.	
DRAWING NO.	CT-305
REV.	SHEET NO.
	81

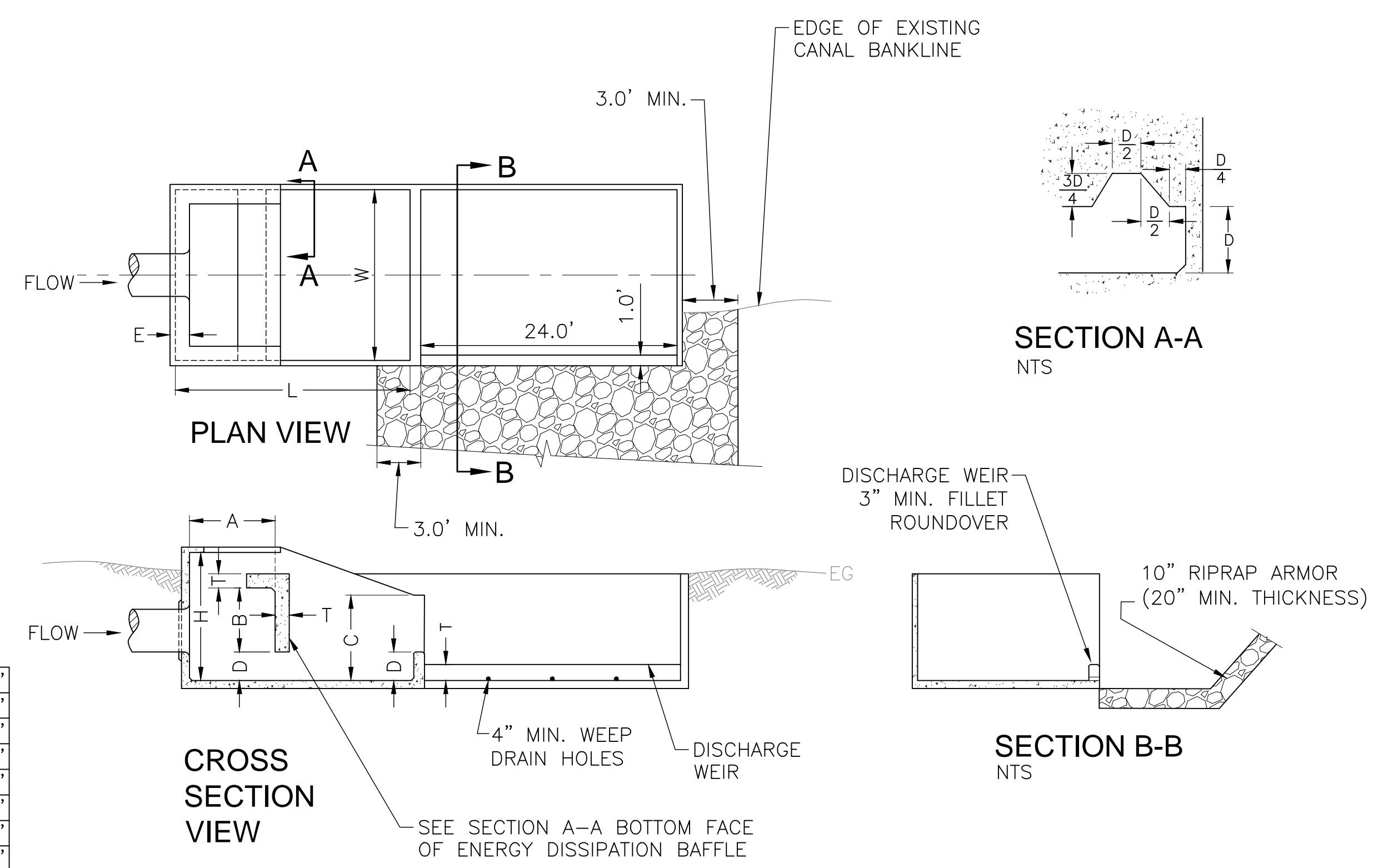
PLOTTED BY: BARNHART, DENNIS - August 6, 2017 - 3:45:16 PM
 DRAWING: G:\SR\PA\FEASIBILITY_AECOM\900 WORK\910-CAD\CAD\06\06\06\126-SHEETS\11-TRR\DWG\CT-305.DWG



PLAN - FUNKS CREEK OUTFALL CHANNEL
1"=50.0'



TYP SECTION
1"=10'



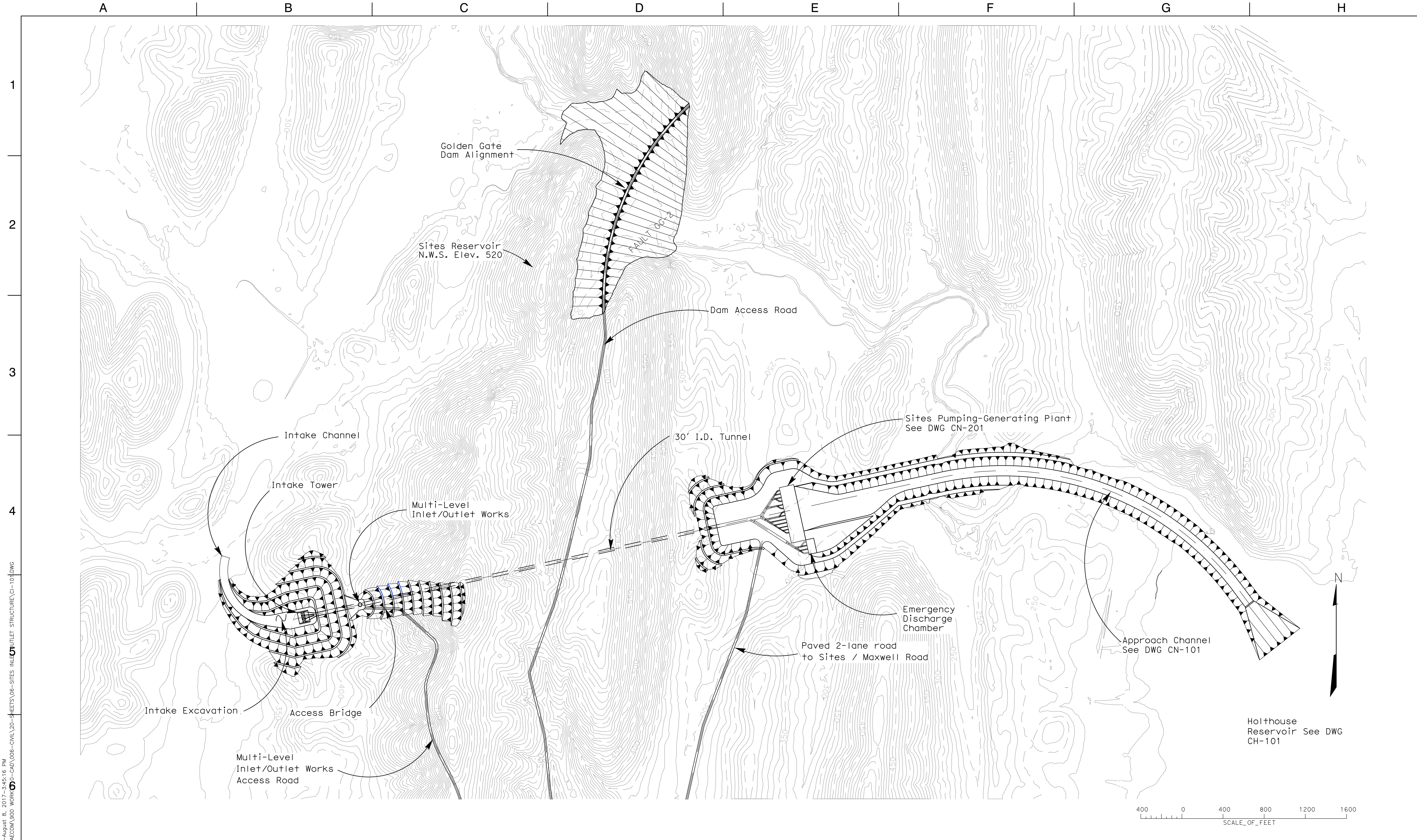
DIMENSIONS

H	12'-0"
L	21'-0"
A	8'-0"
B	6'-0"
C	8'-0"
D	2'-8"
E	1'-4"
T	1'-4"
W	16'-0"

DETAIL 150-CFS ENERGY DISSIPATOR/DISCHARGE BASIN
NTS

PLOTTED BY: BARNHART, DENNIS - August 8, 2017 - 3:45:16 PM
 DRAWING: G:\SRJPA\FEASIBILITY_AECOM\900\WORK\06-CIVIL\20-CAD\006-11-TRR\DWG\CT-306.DWG

DESIGNED L. MURRAY				APPROVAL RECOMMENDED			REVIEWED MIKE FORREST REG. CE. NO. 27855		DATE 08/04/2017		WSIP APPLICATION ATTACHMENT A4.A				SPEC. NO.	
DRAWN L. MURRAY				APPROVAL BY			APPROVAL RECOMMENDED LOREN MURRAY REG. CE. NO. 42663						DRAWING NO. CT-306			
CHECKED M. FORREST				ESTIMATE LEVEL FEASIBILITY			APPROVED JOE BARNES REG. CE. NO. 40105						TRR 200-CFS SPILLWAY		REV. SHEET NO. 82	
A3-A	08/01/2017	COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)	WSIP	JB												



PLOTTED BY: BARNHART, DENNIS - August 6, 2017 - 3:45:16 PM
 DRAWING: G:\S\PA\FEASIBILITY_AECOM\900 WORK\0-CAD\006-CIVIL\20-SHEETS\06-SITES INLET\OUTLET STRUCTURE\CI-101.DWG

DESIGNED	J. BARNES
DRAWN	N. KARUNATILAKA
CHECKED	M. FORREST
APPROVAL RECOMMENDED	
APPROVAL BY	
ESTIMATE LEVEL	FEASIBILITY

WSIP	JB
SUB.	APPD

AECOM
 AECOM Technical Services, Inc.
 2020 L Street, Suite 300
 Sacramento, CA 95811
 T 916-414-5800 F 916-414-1557
 www.aecom.com

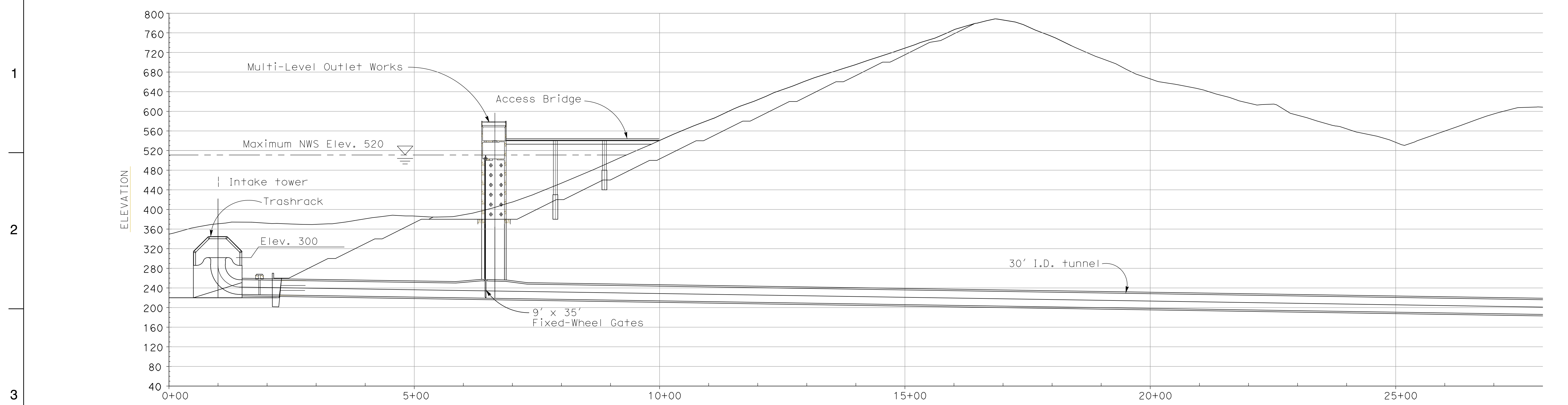
REVIEWED
MIKE FORREST
 REG. CE. NO. 27855
 APPROVAL RECOMMENDED
LOREN MURRAY
 REG. CE. NO. 42663
 APPROVED
JOE BARNES
 REG. CE. NO. 40105

DATE: 08/04/2017

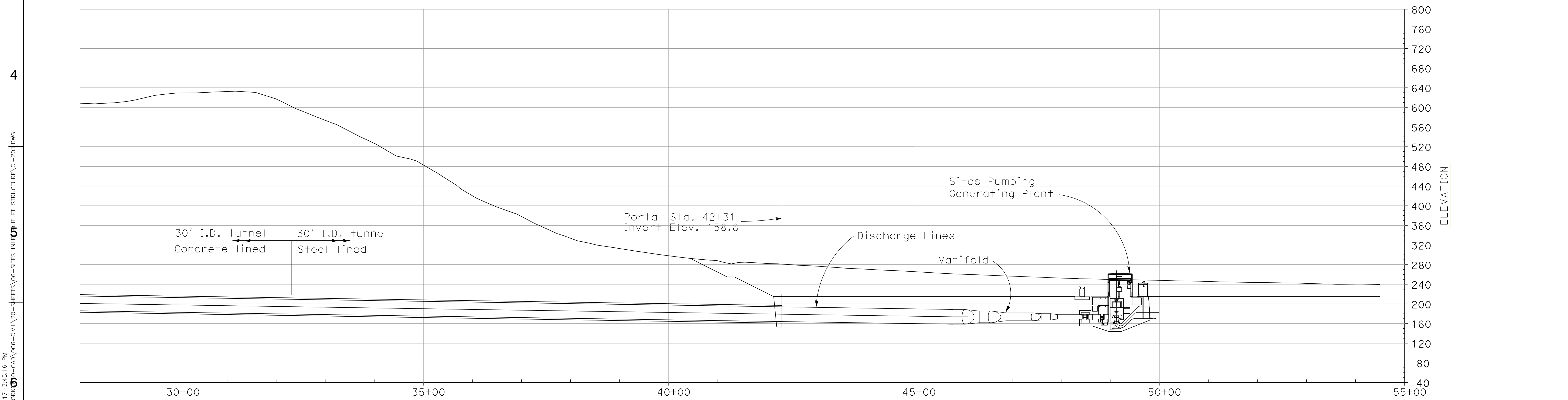


WSIP APPLICATION ATTACHMENT A4.A		SPEC. NO.
INLET/OUTLET TUNNEL		DRAWING NO. CI-101
PLAN		REV. SHEET NO. 83

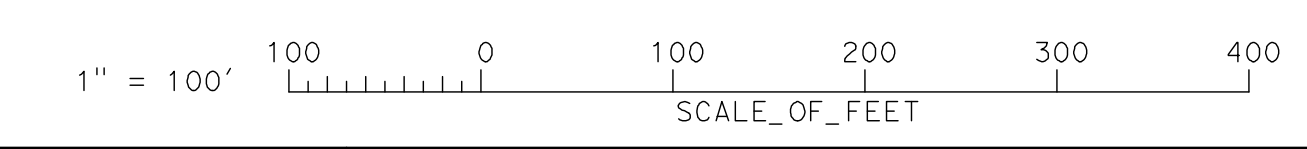
A B C D E F G H



PROFILE
STA 00+00 to STA 27+00
Scale: 1"=100'



PROFILE
STA 27+00 to STA 55+00
Scale: 1"=100'



PLOTTED BY: BARNHART, DENNIS - August 6, 2017 - 3:45:16 PM
 DRAWING: G:\S\PA\FEASIBILITY_AECOM\900 WORK\06-SHEETS\06-SITES INLET\20-SHEETS\06-SITES INLET\STRUCTURE\CI-201.DWG

DESIGNED	J. BARNES
DRAWN	N. KARUNATILAKA
CHECKED	M. FORREST
DATE	08/01/2017
DESCRIPTION	COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)
SUB.	WSIP
APPD	JB

APPROVAL RECOMMENDED	
APPROVAL BY	
ESTIMATE LEVEL	FEASIBILITY

AECOM <small>AECOM Technical Services, Inc. 2020 L Street, Suite 300 Sacramento, Ca 95811 T 916-414-5800 F 916-414-1557 www.aecom.com</small>	REVIEWED	DATE
	MIKE FORREST	08/04/2017
	REG. CE. NO. 27855	
	APPROVAL RECOMMENDED	
	LOREN MURRAY	
	REG. CE. NO. 42663	
	APPROVED	
	JOE BARNES	
	REG. CE. NO. 40105	



WSIP APPLICATION ATTACHMENT A4.A

INLET/OUTLET TUNNEL

PROFILE

SPEC NO.	
DRAWING NO.	CI-201
REV.	SHEET NO.
	84

A B C D E F G H

A

B

C

D

E

F

G

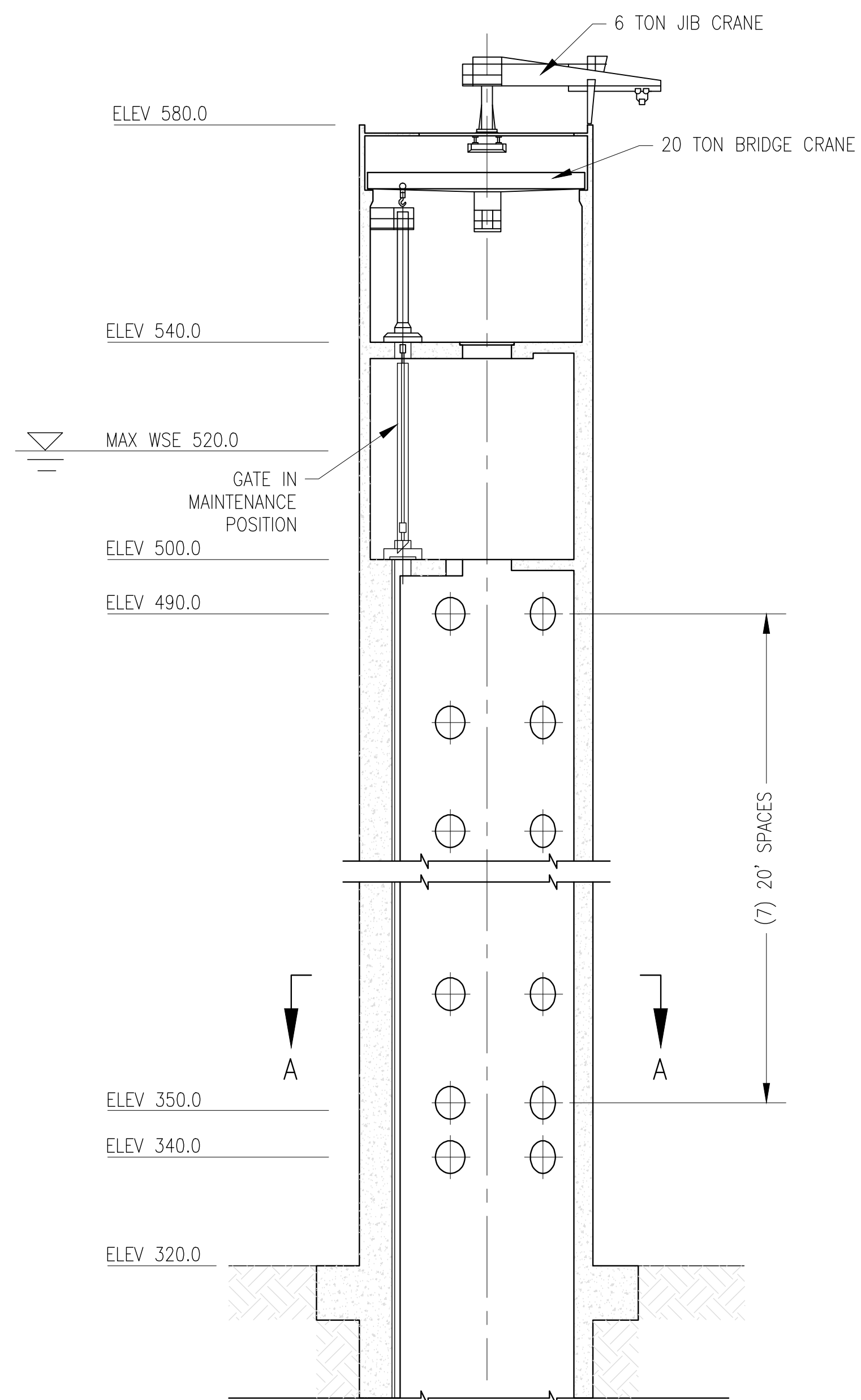
H

1

2

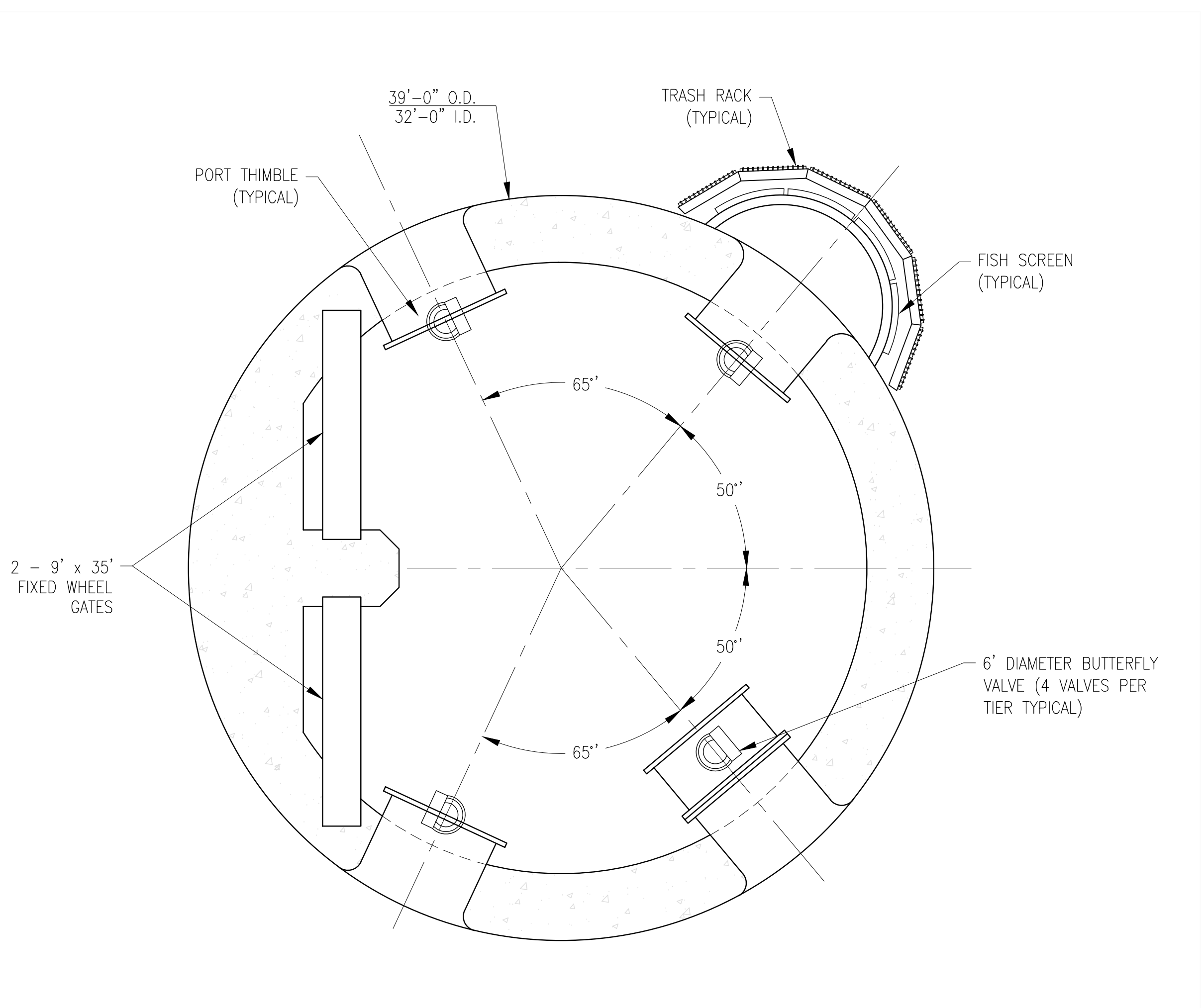
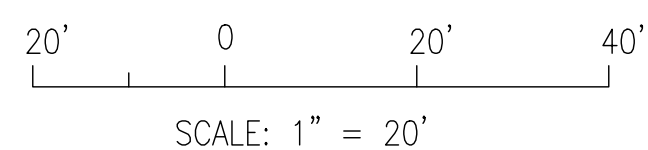
3

4

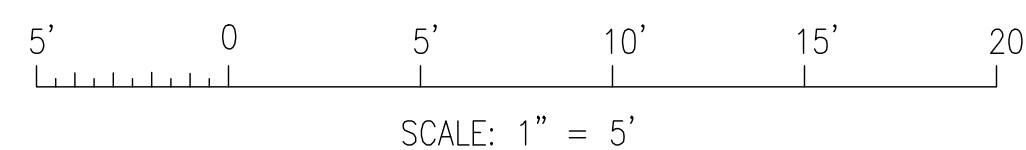


NOTE: 9 TIERS TOTAL

VERTICAL SECTION



SECTION A-A



6 PLOTTED BY: BARNHART, DENNIS -- August 6, 2017 -- 3:45:16 PM
DRAWING: G:\S\PA\FEASIBILITY_AECOM\900 WORK\6-SHEETS\06-SITES INLET\OUTLET STRUCTURE\CI-501.DWG

DESIGNED	J. BARNES	APPROVAL RECOMMENDED	
DRAWN	N. KARUNATILAKA	APPROVAL BY	
CHECKED	M. FORREST	ESTIMATE LEVEL	FEASIBILITY
REV	DATE	DESCRIPTION	SUB. APPD
A3-A	08/01/2017	COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)	WSIP JB

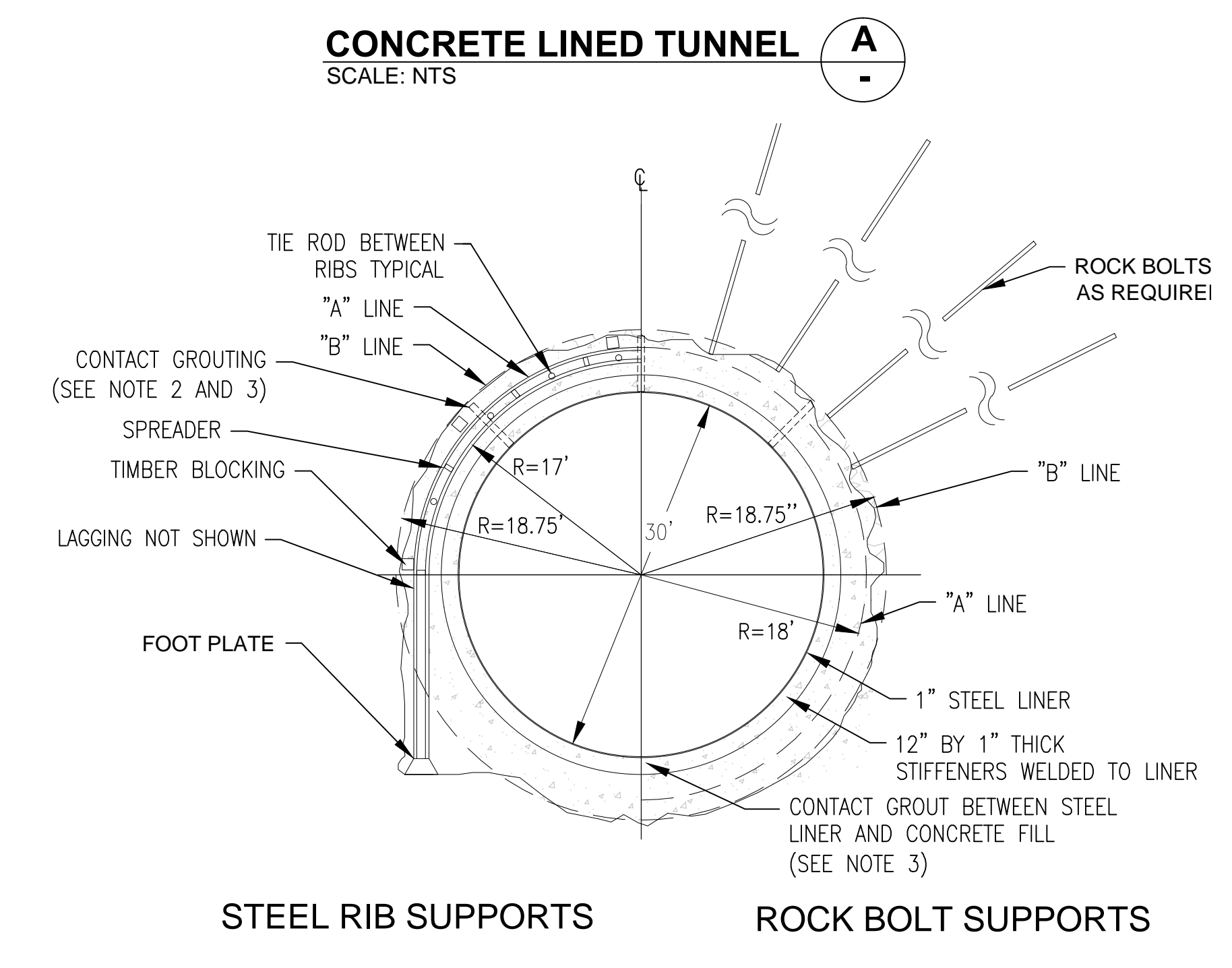
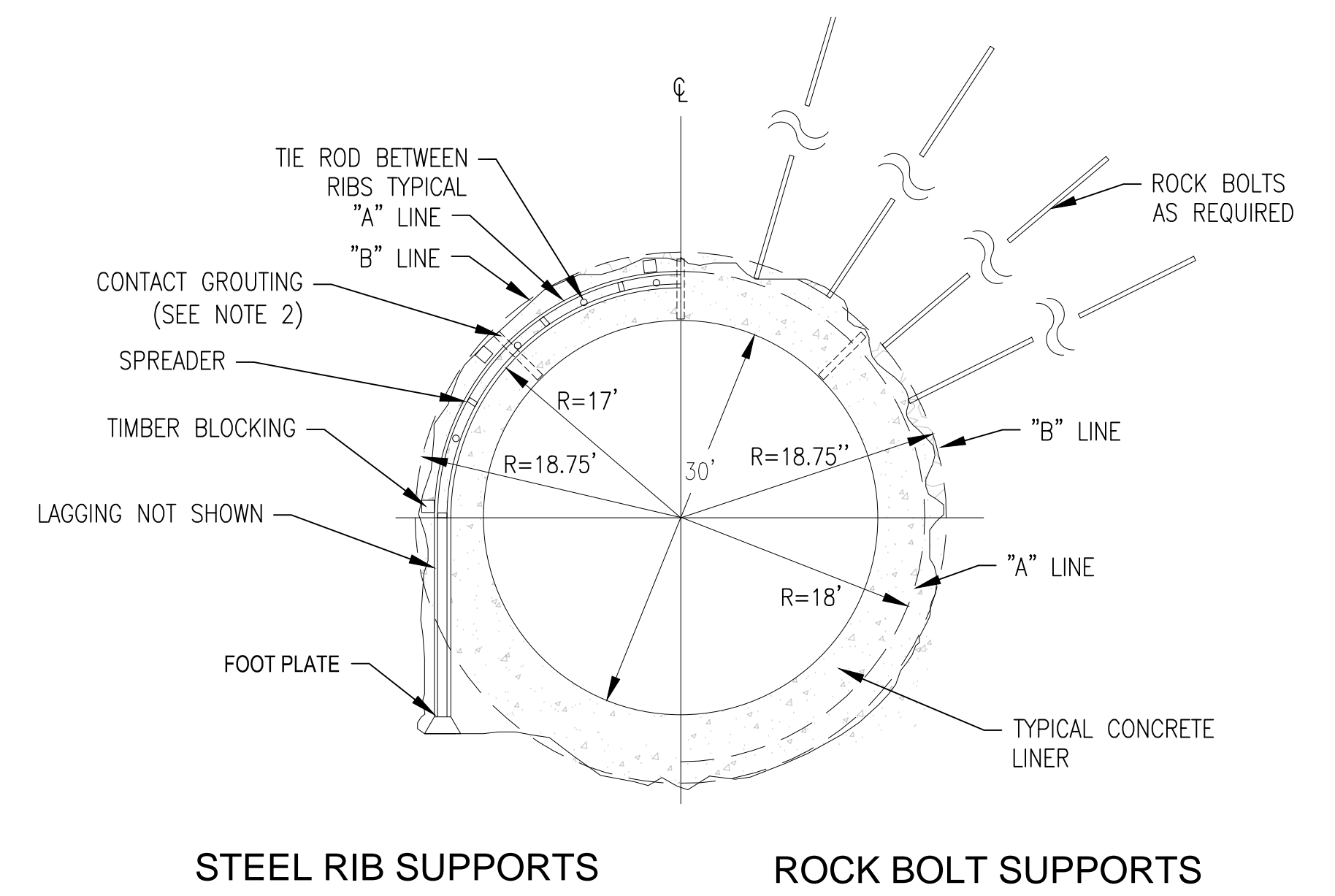
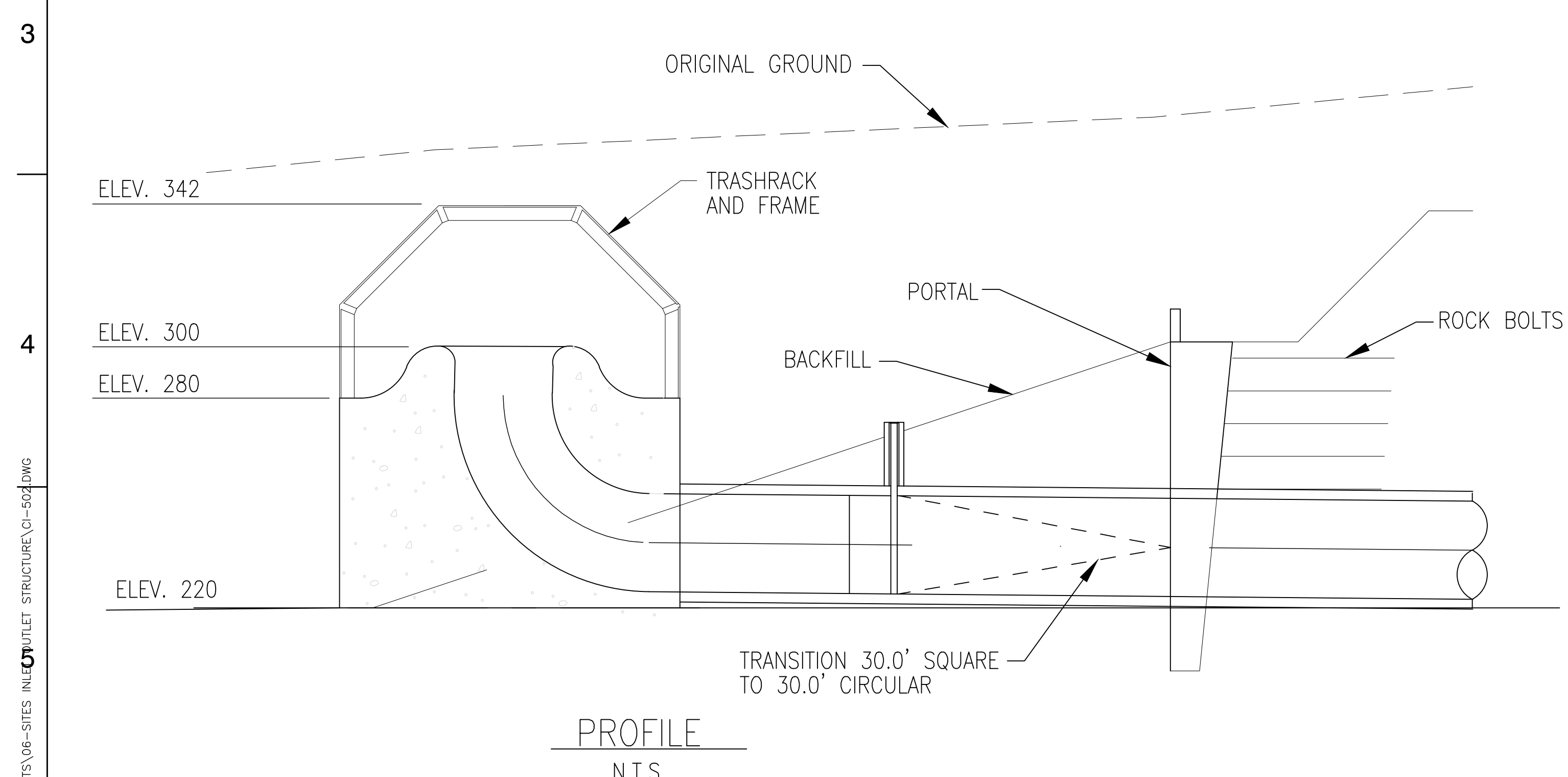
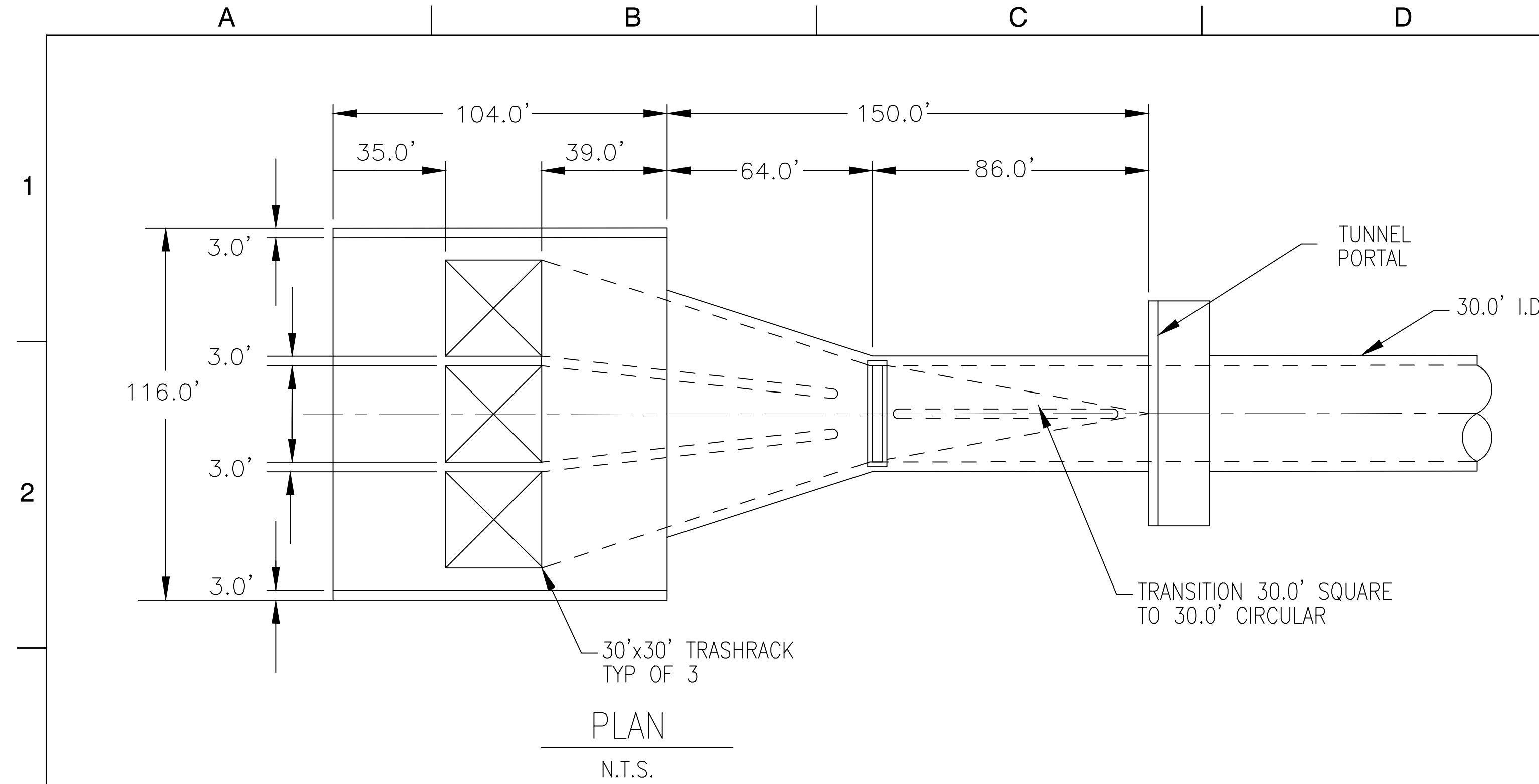
DESIGNED	J. BARNES	APPROVAL RECOMMENDED	
DRAWN	N. KARUNATILAKA	APPROVAL BY	
CHECKED	M. FORREST	ESTIMATE LEVEL	FEASIBILITY

 AECOM Technical Services, Inc. 2020 L Street, Suite 300 Sacramento, Ca 95811 T 916-414-5800 F 916-414-1557 www.aecom.com	REVIEWED	DATE
	MIKE FORREST	08/04/2017
	REG. CE. NO. 27855	
	APPROVAL RECOMMENDED	
	LOREN MURRAY	
	REG. CE. NO. 42663	
	APPROVED	
	JOE BARNES	
	REG. CE. NO. 40105	



WSIP APPLICATION ATTACHMENT A4.A
 MULTI-LEVEL INLET/OUTLET TOWER
 STRUCTURE DETAILS

SPEC NO.	
DRAWING NO.	CI-501
REV.	SHEET NO.
	85



CONCRETE LINED TUNNEL A
SCALE: NTS

CONCRETE LINED TUNNEL WITH STEEL LINER B
SCALE: NTS

- NOTES:
1. CONCRETE AND STEEL LINED TUNNEL SECTIONS BASED UPON ANGELES TUNNEL DETAILS.
 2. FOR CONTACT GROUTING, DRILL AND GROUT 8 GROUT HOLES AROUND PERIMETER RADIALLY SPACED AT 45°. CONTACT GROUT AT 10' INTERVALS ALONG THE TUNNEL.
 3. FOR CONTACT GROUTING AROUND STEEL LINED SECTION, DRILL AND TAP LINER FOR GROUTING NIPPLE. REMOVE NIPPLE AND PLUG WELD LINER AFTER GROUTING.
 4. GROUT CONTACT BETWEEN THE STEEL LINER AND CONCRETE BACKFILL AT INVERT AND SOFFIT AT 10' INTERVALS ALONG THE STEEL LINED SECTION OF TUNNEL.
 5. CONCRETE FOR CONCRETE LINER SHALL BE 4,000 PSI.

PLOTTED BY: BARNHART, DENNIS - August 6, 2017 - 3:45:16 PM
 DRAWING: G:\S\PA\FEASIBILITY_AECOM\900 WORK\6-SHEETS\06-SITES INLET\OUTLET STRUCTURE\CI-502.DWG

DESIGNED J. BARNES		APPROVAL RECOMMENDED		 AECOM Technical Services, Inc. 2020 L Street, Suite 300 Sacramento, CA 95811 T 916-414-5800 F 916-414-1557 www.aecom.com	REVIEWED MIKE FORREST REG. CE. NO. 27855	DATE 08/04/2017		WSIP APPLICATION ATTACHMENT A4.A		SPEC NO.
DRAWN N. KARUNATILAKA		APPROVAL BY			APPROVAL RECOMMENDED LOREN MURRAY REG. CE. NO. 42663			MULTI-LEVEL INLET/OUTLET TOWER		DRAWING NO. CI-502
CHECKED M. FORREST		ESTIMATE LEVEL FEASIBILITY		APPROVED JOE BARNES REG. CE. NO. 40105		STRUCTURE AND TUNNEL DETAILS		REV.	SHEET NO. 86	
REV	DATE	DESCRIPTION		SUB.	APPD					

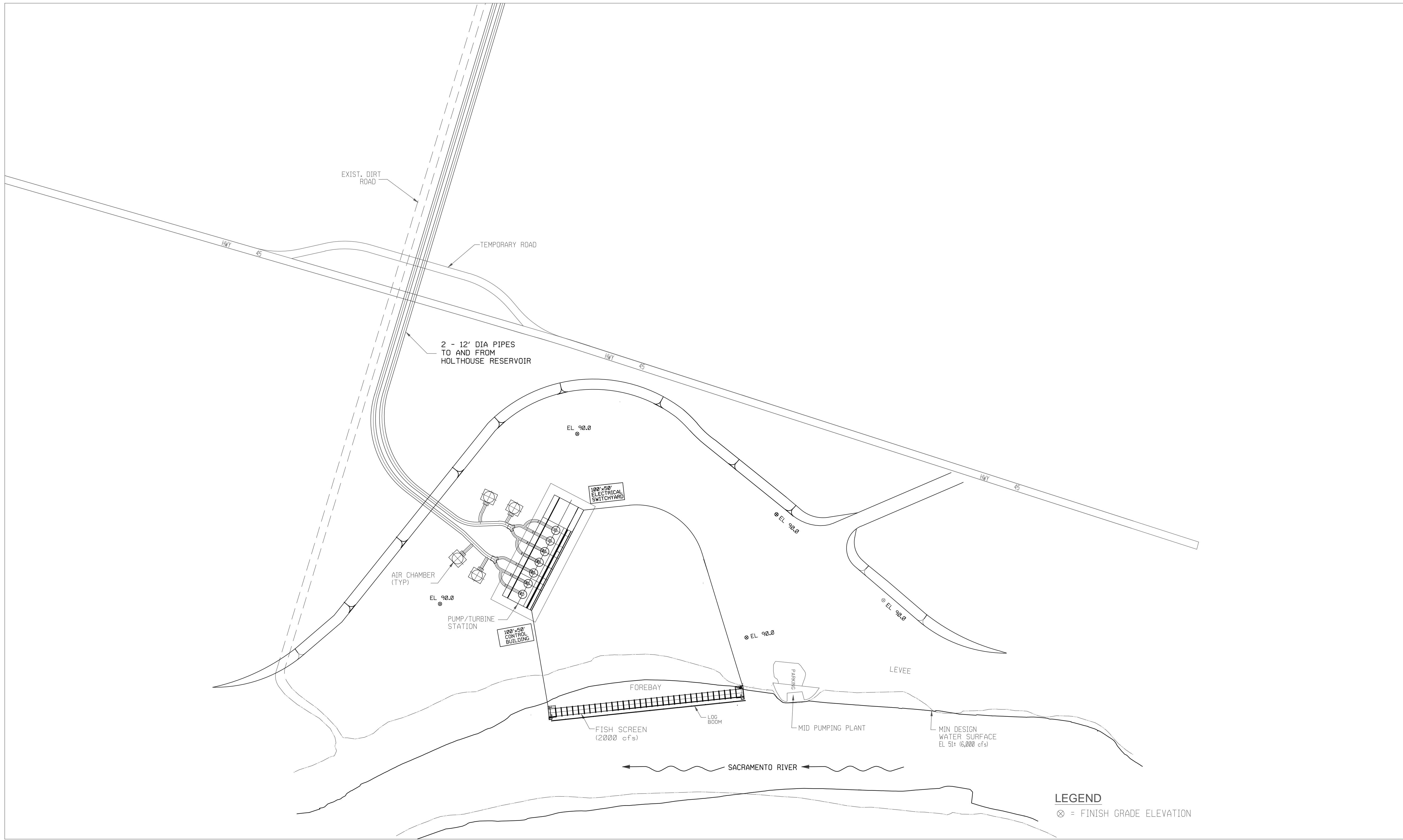
A B C D E F G H

1

2

3

4



LEGEND
⊗ = FINISH GRADE ELEVATION

PLOTTED BY: BARNHART, DENNIS - August 7, 2017 - 3:45:16 PM
 DRAWING: G:\SR\PA\FEASIBILITY_AECOM\900 WORK\6-SHEETS\09-PUMPING-GENERATING PLANTS\CF-101.dwg
 6

REV	DATE	DESCRIPTION	SUB.	APPD
A3-A	08/01/2017	COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)	WSIP	JB

DESIGNED	L. CHAIHAN	APPROVAL RECOMMENDED
DRAWN	J. TANG	APPROVAL BY
CHECKED	M. FORREST	ESTIMATE LEVEL
		FEASIBILITY

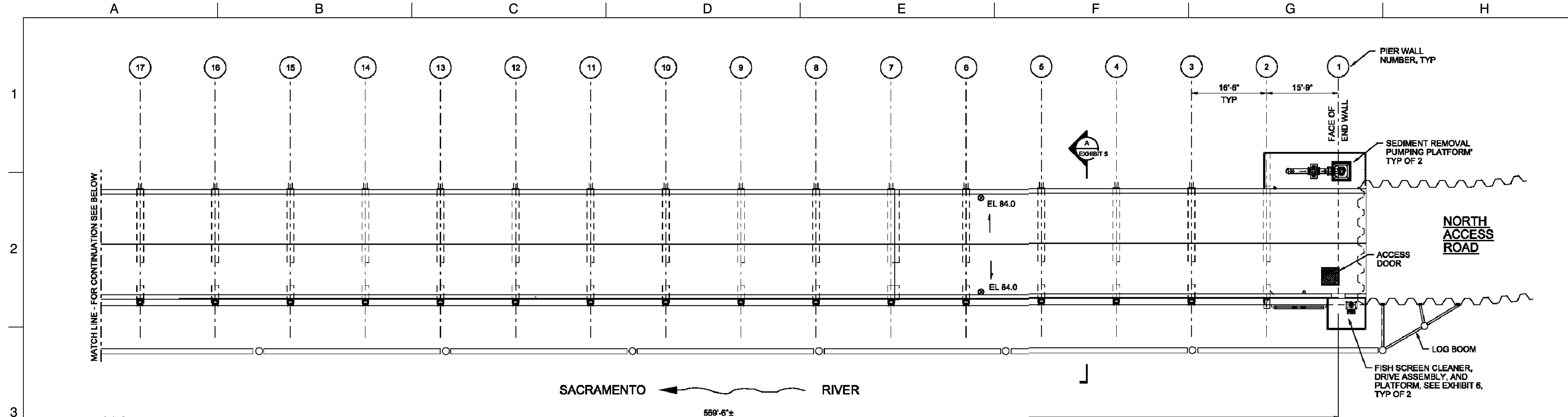
AECOM AECOM Technical Services, Inc. 2020 L Street, Suite 300 Sacramento, CA 95811 T 916-414-5800 F 916-414-1557 www.aecom.com	REVIEWED	DATE
	MIKE FORREST	08/04/2017
	REG. CE. NO. 27855	
	APPROVAL RECOMMENDED	
	DWAYNE DEUTSCHER	
	REG. CE. NO. 34557	
	APPROVED	
	JOE BARNES	
	REG. CE. NO. 40105	



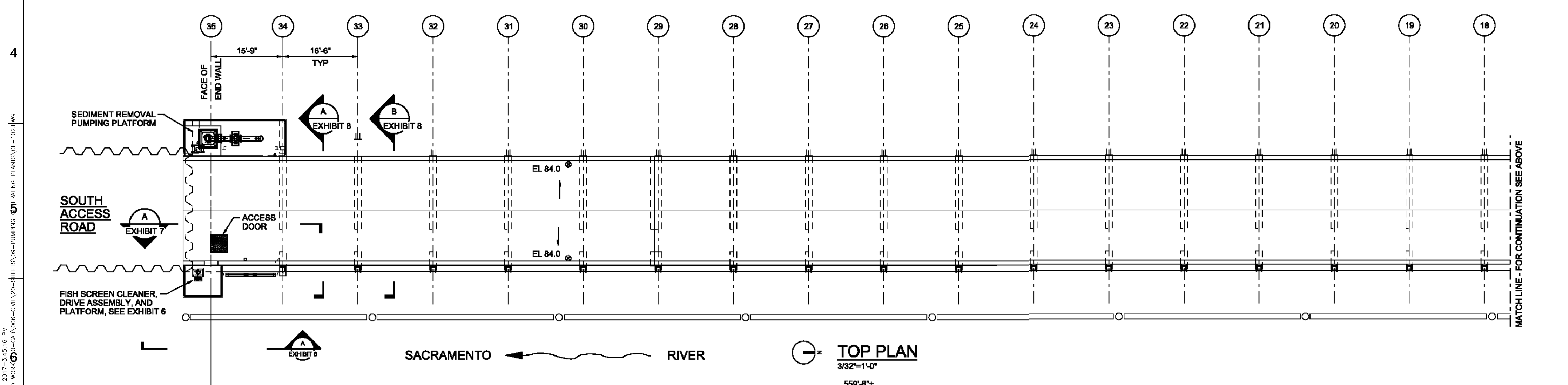
WSIP APPLICATION ATTACHMENT A4.A
 DELEVAN INTAKE PUMPING-GENERATING
 PLANT AND FISH SCREEN STRUCTURE
 SITE PLAN

SPEC NO.	
DRAWING NO.	CF-101
REV.	SHEET NO.
	87

A B C D E F G H



TOP PLAN
3/32"=1'-0"

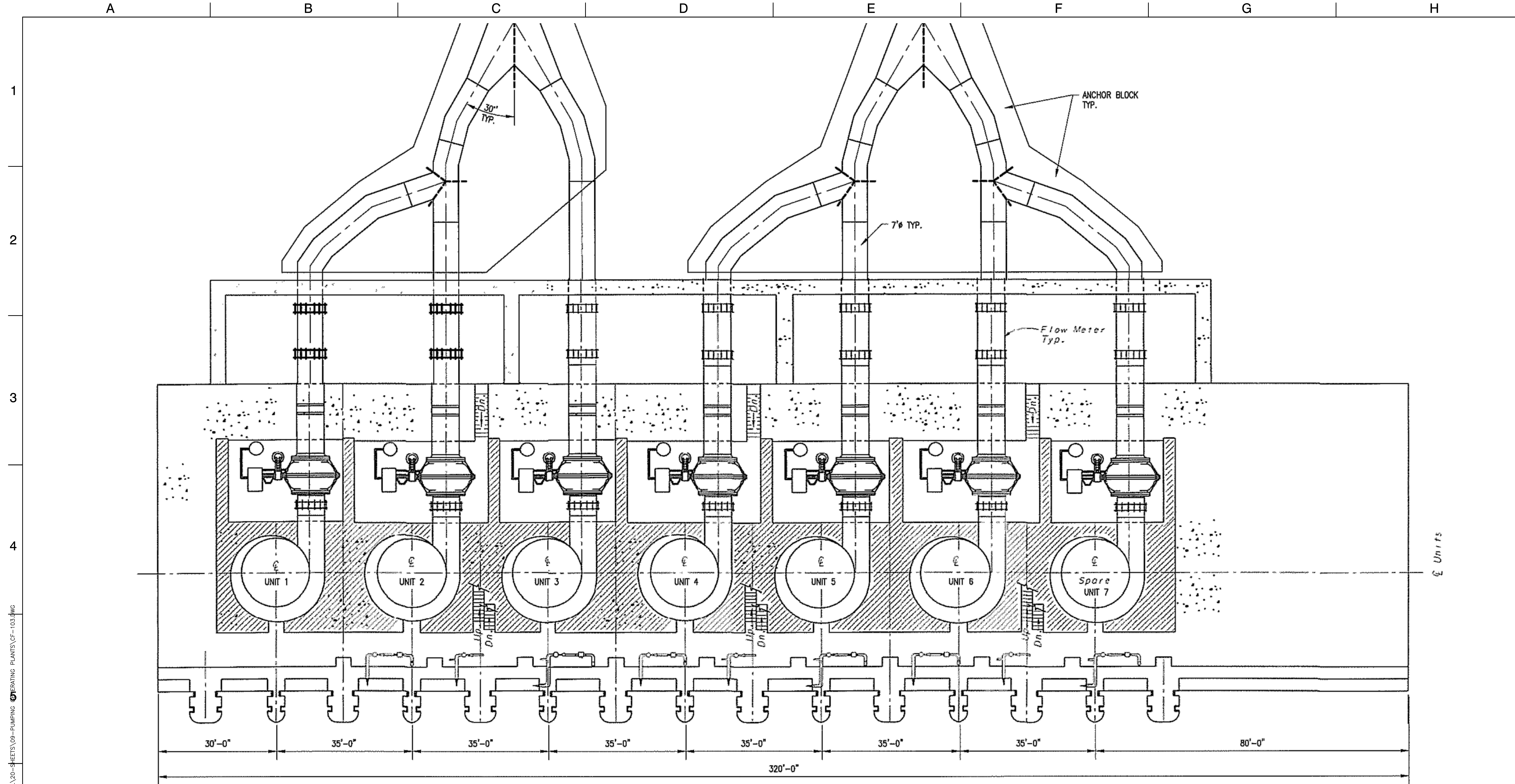


TOP PLAN
3/32"=1'-0"

FEASIBILITY-LEVEL FINAL
NOT FOR CONSTRUCTION

DESIGNED CH2MHILL		APPROVAL RECOMMENDED			REVIEWED MIKE FORREST REG. CE. NO. 27855 APPROVAL RECOMMENDED MIKE FORREST REG. CE. NO. 27855 APPROVED JOE BARNES REG. CE. NO. 40105	DATE 08/04/2017		WSIP APPLICATION ATTACHMENT A4.A DELEVAN INTAKE PUMPING-GENERATING PLANT AND FISH SCREEN STRUCTURE TOP PLAN	SPEC. NO.
DRAWN CH2MHILL		APPROVAL BY							DRAWING NO. CF-102
CHECKED M. FORREST		ESTIMATE LEVEL FEASIBILITY		AECOM Technical Services, Inc. 2020 L Street, Suite 300 Sacramento, Ca 95811 T 916-414-5800 F 916-414-1557 www.aecom.com				REV. SHEET NO. 88	
A3-A 08/01/2017 COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)	WSIP JB	SUB. APPD	DESCRIPTION						

PLOTTED BY: BARNHART, DENNIS - August 6, 2017 - 3:45:16 PM
 DRAWING: G:\SR\PA\FEASIBILITY_AECOM\900 WORK\0-CAD\006-CIVIL\20-SHEETS\09-PUMPING OPERATING PLANTS\CF-102.dwg



PUMPING - GENERATING PLANT - GENERAL ARRANGEMENT
LOWER ELEVATION PLAN
Not to Scale

NOTES

1. Floor plan shown with 4 - 500 cfs units, and 1 - 500 cfs spare unit.

PLOTTED BY: BARNHART, DENNIS - August 6, 2017 - 3:45:16 PM
 DRAWING: G:\SRIPA\FEASIBILITY_AECOM\900 WORK\6-SHEETS\09-PUMPING OPERATING PLANTS\CF-103.DWG

REV	DATE	DESCRIPTION	SUB.	APPD.
A3-A	08/01/2017	COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)	WSIP	JB

DESIGNED CH2MHILL	APPROVAL RECOMMENDED
DRAWN CH2MHILL	APPROVAL BY
CHECKED M. FORREST	ESTIMATE LEVEL FEASIBILITY

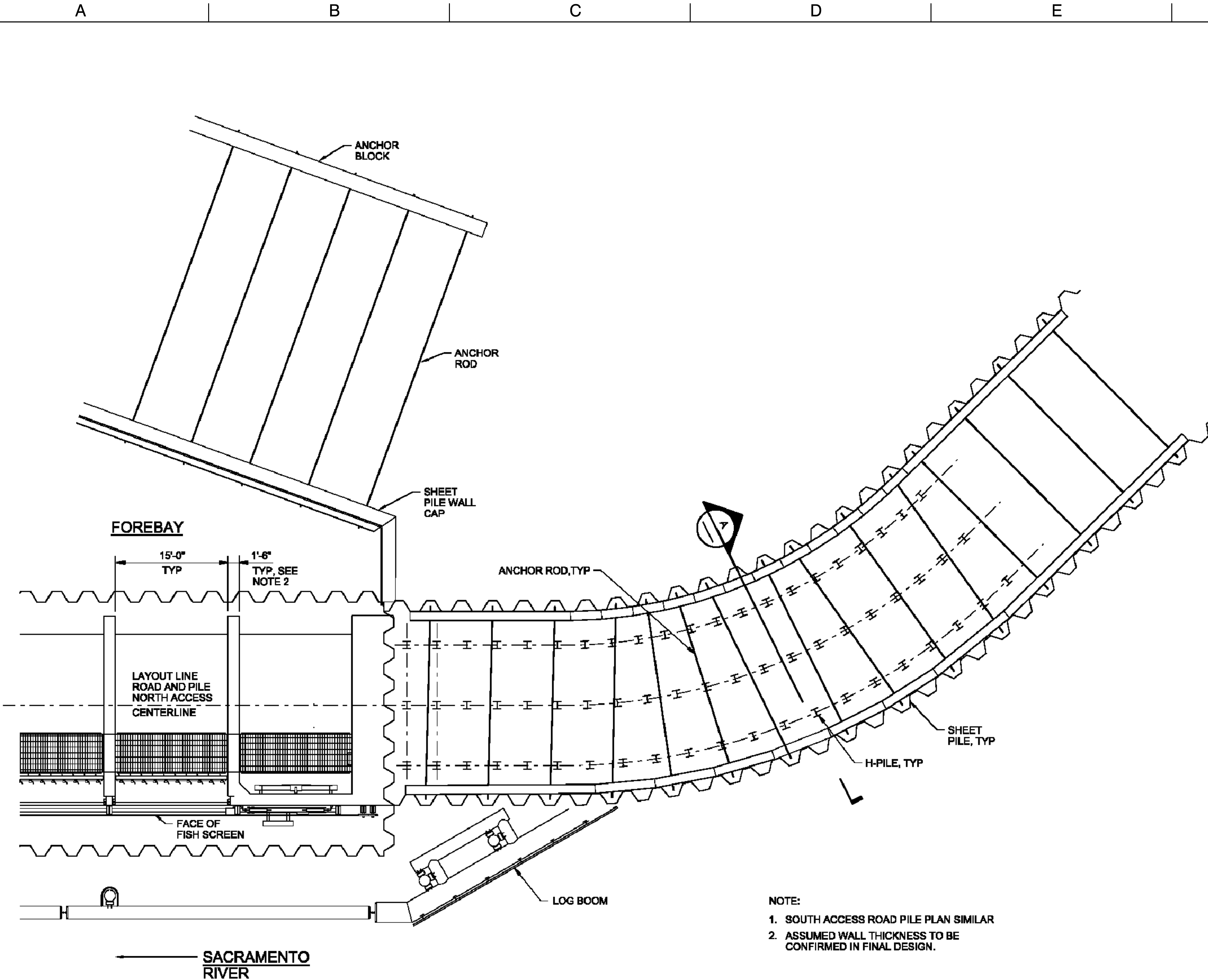
AECOM <small>AECOM Technical Services, Inc. 2020 L Street, Suite 300 Sacramento, Ca 95811 T 916-414-5800 F 916-414-1557 www.aecom.com</small>	REVIEWED MIKE FORREST REG. CE. NO. 27855	DATE 08/04/2017
	APPROVAL RECOMMENDED MIKE FORREST REG. CE. NO. 27855	
	APPROVED JOE BARNES REG. CE. NO. 40105	



WSIP APPLICATION ATTACHMENT A4.A
DELEVAN INTAKE PUMPING-GENERATING
PLANT AND FISH SCREEN STRUCTURE
LOWER LEVEL PLAN

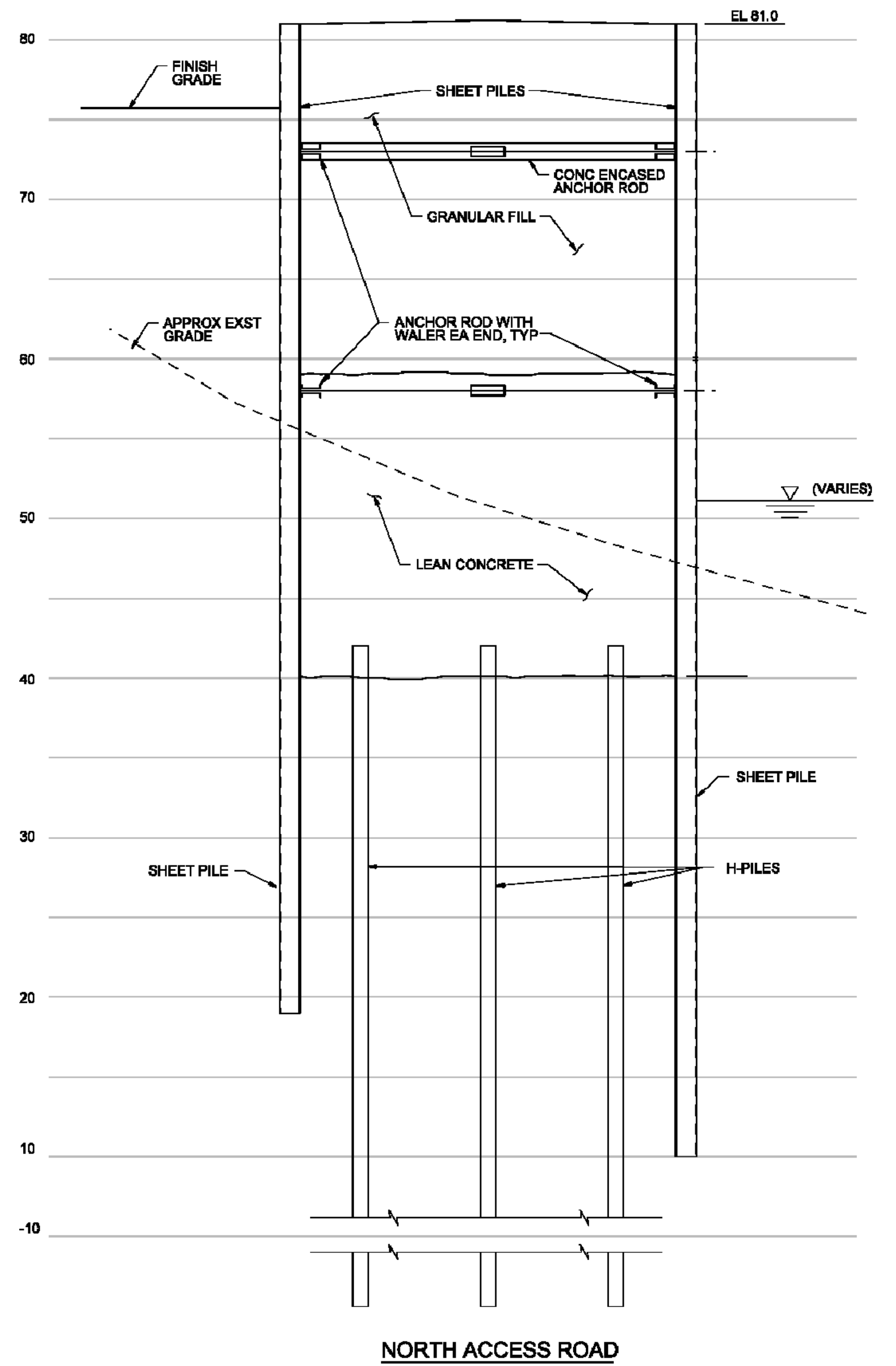
SPEC. NO.	
DRAWING NO.	CF-103
REV.	SHEET NO.
	89

PLOTTED BY: BARNHART, DENNIS - August 8, 2017 - 3:45:16 PM
 DRAWING: G:\S\RA\FA\FEASIBILITY_AECOM\900 WORK\6-CAD\06-CIVIL\20-SHEETS\09-PUMPING-GENERATING PLANTS\CF-301.dwg
 A3-A 08/01/2017 COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D) WSIP JB
 REV DATE DESCRIPTION SUB. APPD



- NOTE:**
1. SOUTH ACCESS ROAD PILE PLAN SIMILAR
 2. ASSUMED WALL THICKNESS TO BE CONFIRMED IN FINAL DESIGN.

NORTH ACCESS ROAD - PILE PLAN
 1/8"=1'-0"

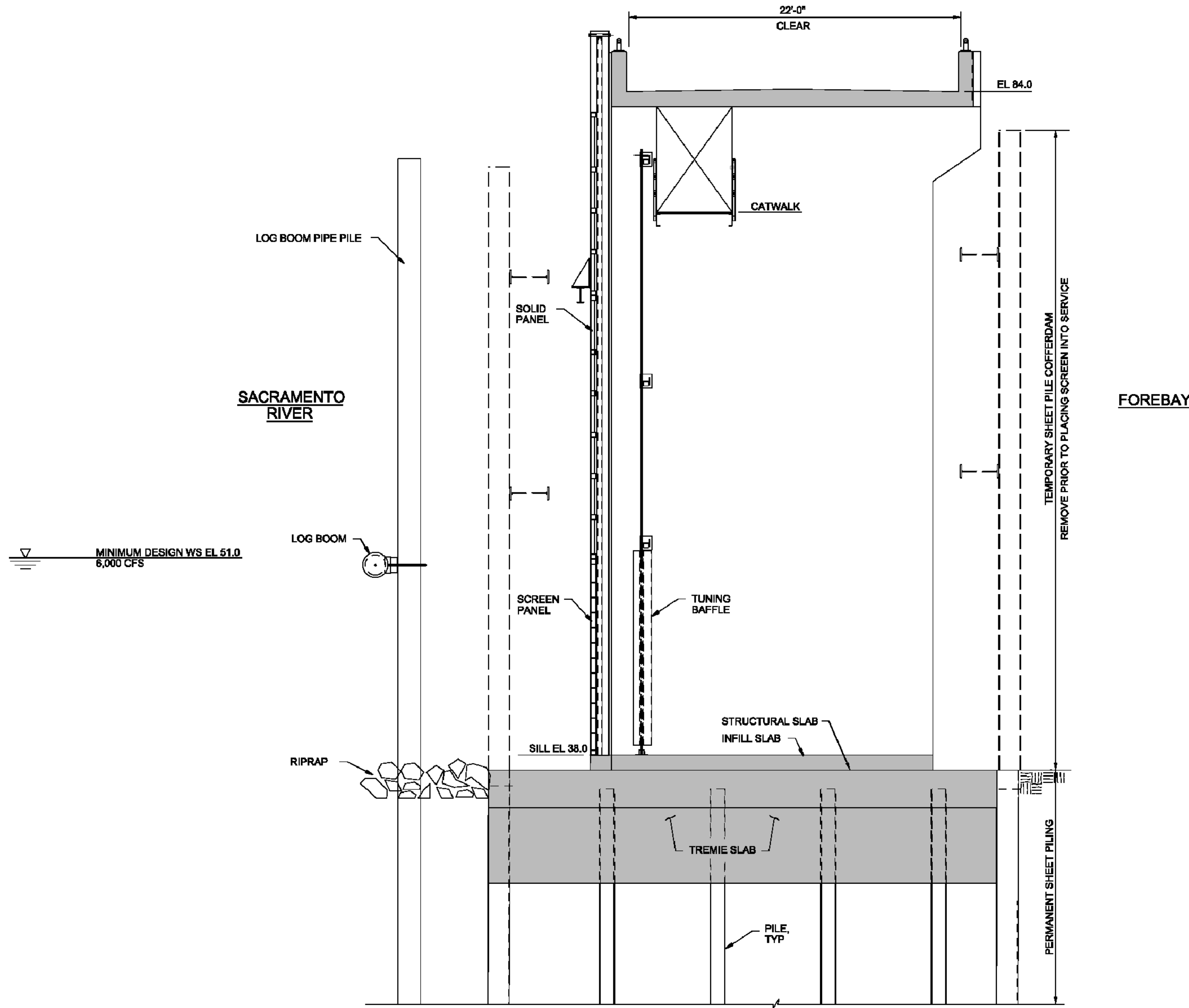


A SECTION
 3/16"=1'-0"
FEASIBILITY-LEVEL FINAL
NOT FOR CONSTRUCTION

DESIGNED CH2MHILL		APPROVAL RECOMMENDED			REVIEWED MIKE FORREST REG. CE. NO. 27855	DATE 08/04/2017		WSIP APPLICATION ATTACHMENT A4.A DELEVAN INTAKE PUMPING-GENERATING PLANT AND FISH SCREEN STRUCTURE ACCESS ROAD PILE PLAN AND SECTION	SPEC. NO.
DRAWN CH2MHILL		APPROVAL BY			APPROVAL RECOMMENDED MIKE FORREST REG. CE. NO. 27855				DRAWING NO. CF-301
CHECKED M. FORREST		ESTIMATE LEVEL FEASIBILITY		APPROVED JOE BARNES REG. CE. NO. 40105			REV.	SHEET NO. 90	
A	B	C	D	E	F	G	H		

A B C D E F G H

1
2
3
4



TYPICAL SCREEN BAY

A SECTION
1/4"=1'-0"
EXHIBIT 4

FEASIBILITY-LEVEL FINAL
NOT FOR CONSTRUCTION

PLOTTED BY: BARNHART, DENNIS - August 6, 2017 - 3:45:16 PM
 DRAWING: G:\SRIPA\FEASIBILITY_AECOM\900 WORK\0-CAD\006-CIVIL\20-SHEETS\09-PUMPING-GENERATING PLANTS\CF-302.DWG

DESIGNED	CH2MHILL	APPROVAL RECOMMENDED	
DRAWN	CH2MHILL	APPROVAL BY	
CHECKED	M. FORREST	ESTIMATE LEVEL	FEASIBILITY
REV	DATE	DESCRIPTION	SUB. APPD
A3-A	08/01/2017	COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)	WSIP JB

DESIGNED	CH2MHILL	APPROVAL RECOMMENDED	
DRAWN	CH2MHILL	APPROVAL BY	
CHECKED	M. FORREST	ESTIMATE LEVEL	FEASIBILITY

AECOM AECOM Technical Services, Inc. 2020 L Street, Suite 300 Sacramento, CA 95811 T 916-414-5800 F 916-414-1557 www.aecom.com	REVIEWED	DATE
	MIKE FORREST	08/04/2017
	REG. CE. NO. 27855	
	APPROVAL RECOMMENDED	
	MIKE FORREST	
	REG. CE. NO. 27855	
	APPROVED	
	JOE BARNES	
	REG. CE. NO. 40105	

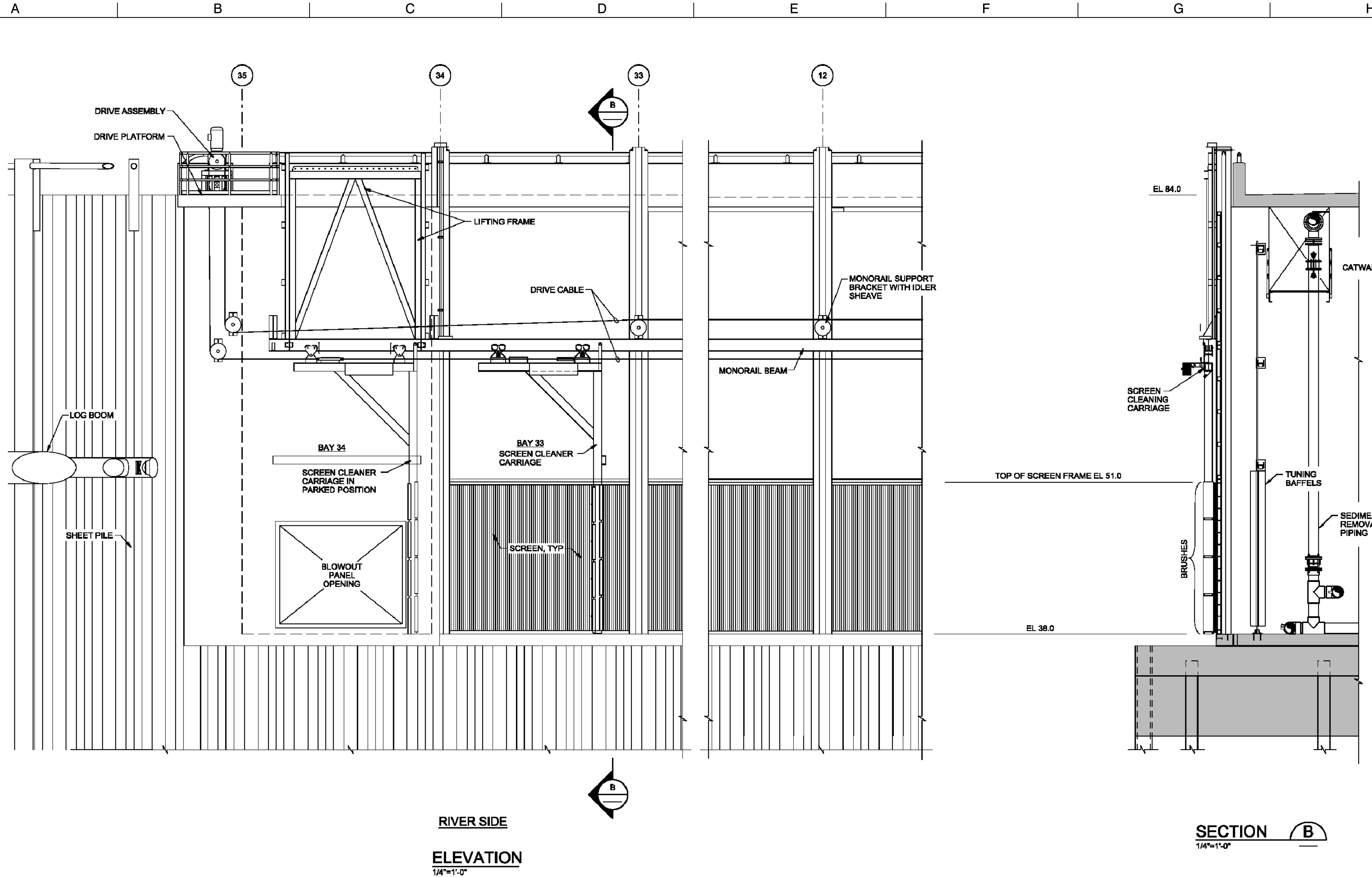


WSIP APPLICATION ATTACHMENT A4.A
 DELEVAN INTAKE PUMPING-GENERATING
 PLANT AND FISH SCREEN STRUCTURE
 TYPICAL FISH SCREEN BAY SECTION

SPEC NO.	
DRAWING NO.	CF-302
REV.	SHEET NO.
	91

A B C D E F G H

PLOTTED BY: BARNHART, DENNIS - August 6, 2017 - 3:45:16 PM
 DRAWING: G:\SR\PA\FEASIBILITY_AECOM\900 WORK\0-CAD\006-CIVIL\20-SHEETS\09-PUMPING\09-OPERATING PLANTS\CF-303.DWG



RIVER SIDE
ELEVATION
1/4"=1'-0"

SECTION B
1/4"=1'-0"

FEASIBILITY-LEVEL FINAL
NOT FOR CONSTRUCTION

DESIGNED	CH2MHILL	APPROVAL RECOMMENDED	
DRAWN	CH2MHILL	APPROVAL BY	
CHECKED	M. FORREST	ESTIMATE LEVEL	FEASIBILITY
REV	DATE	DESCRIPTION	SUB. APPD
A3-A	08/01/2017	COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)	WSIP JB

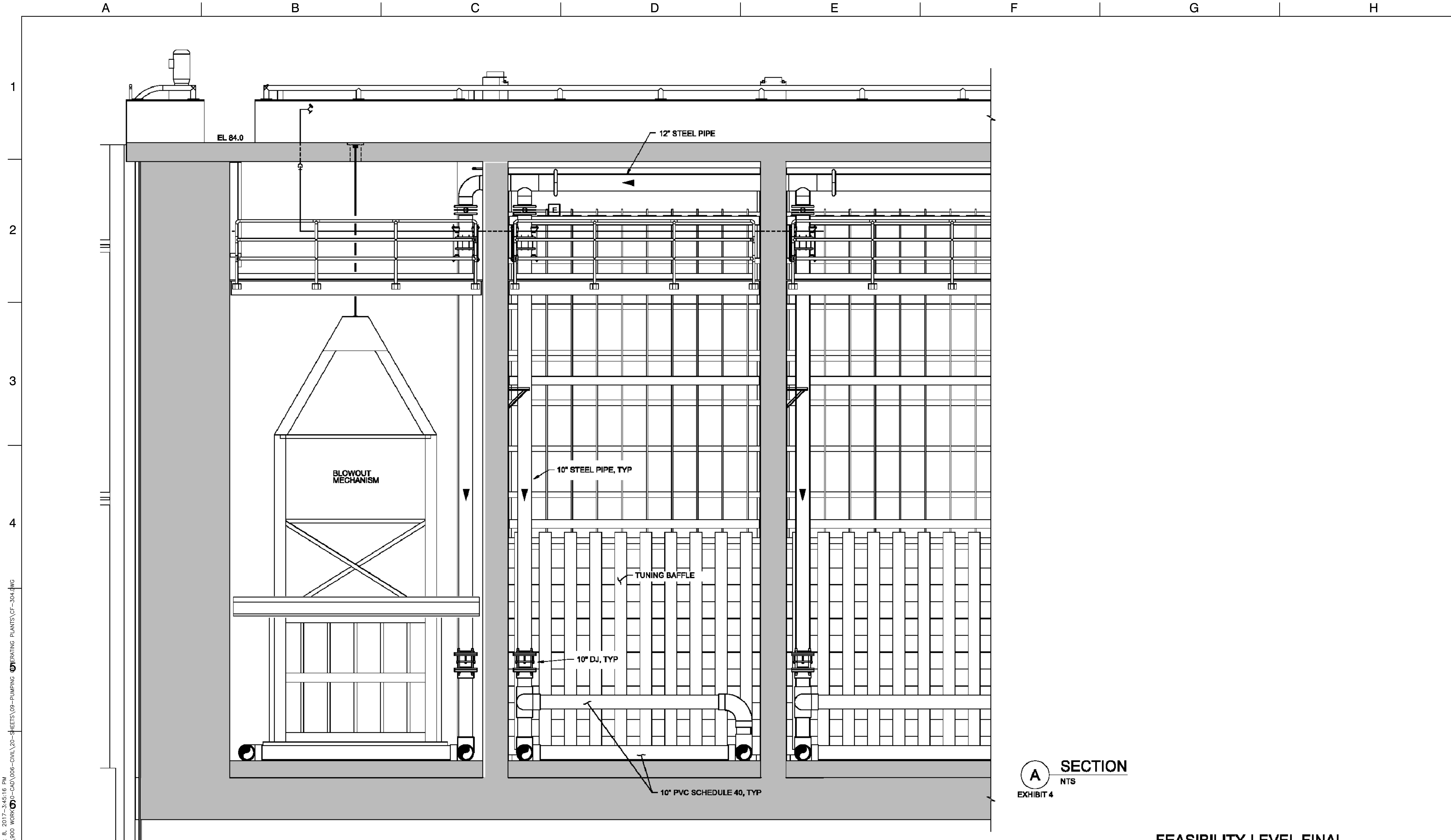
DESIGNED	CH2MHILL	APPROVAL RECOMMENDED	
DRAWN	CH2MHILL	APPROVAL BY	
CHECKED	M. FORREST	ESTIMATE LEVEL	FEASIBILITY

	REVIEWED MIKE FORREST REG. CE. NO. 27855 APPROVAL RECOMMENDED MIKE FORREST REG. CE. NO. 27855 APPROVED JOE BARNES REG. CE. NO. 40105	DATE 08/04/2017
--	--	--------------------



WSIP APPLICATION ATTACHMENT A4.A
 DELEVAN INTAKE PUMPING-GENERATING
 PLANT AND FISH SCREEN STRUCTURE
 FISH SCREEN SIDE ELEVATION

SPEC NO.	
DRAWING NO.	CF-303
REV.	SHEET NO.
	92

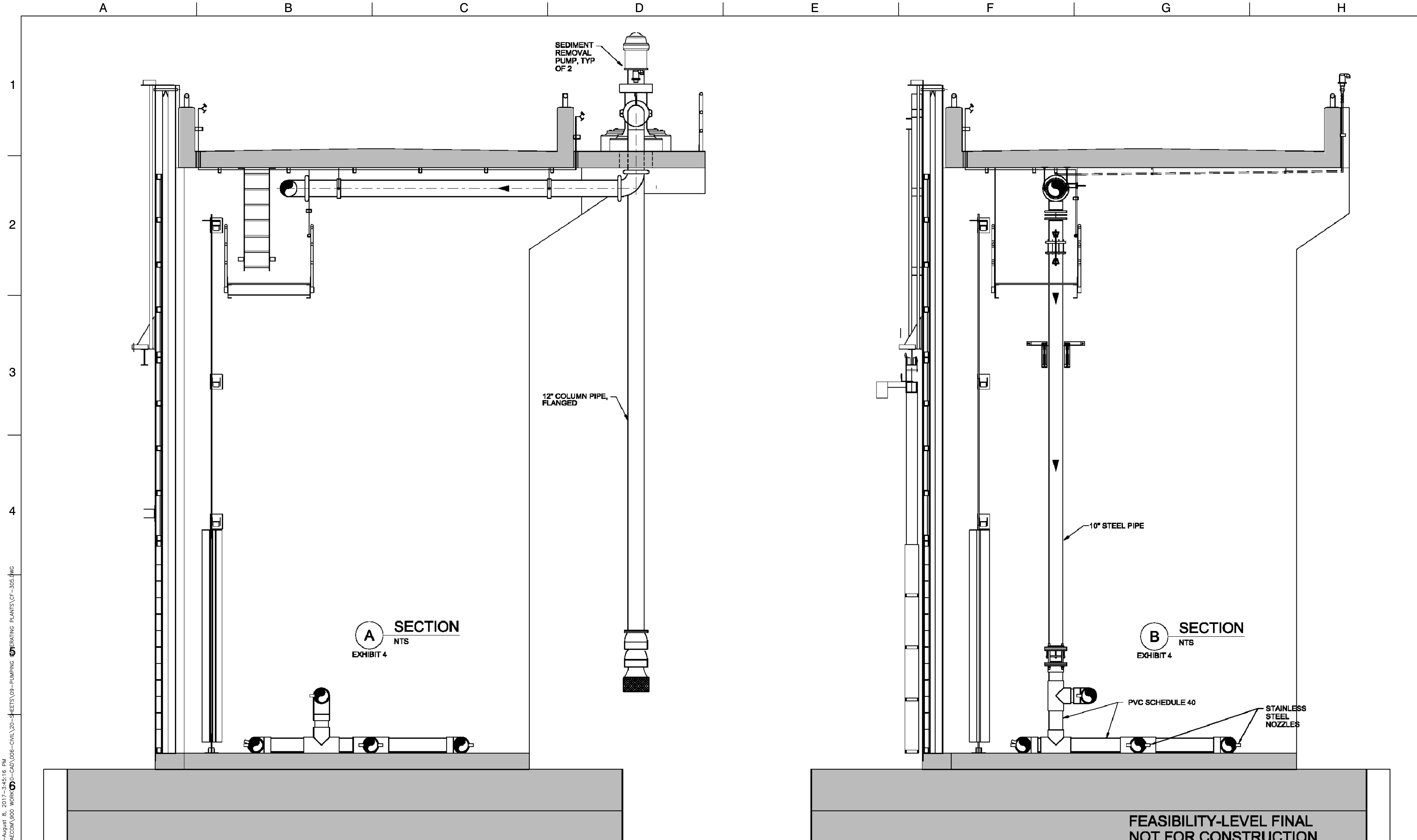


A SECTION
NTS
EXHIBIT 4

**FEASIBILITY-LEVEL FINAL
NOT FOR CONSTRUCTION**

PLOTTED BY: BARNHART, DENNIS - August 8, 2017 - 3:45:16 PM
 DRAWING: G:\S\PA\FEASIBILITY_AECOM\900 WORK\0-CAD\06-CIVIL\20-SHEETS\09-PUMPING\OPERATING PLANTS\CF-304.dwg

DESIGNED CH2MHILL		APPROVAL RECOMMENDED			REVIEWED MIKE FORREST REG. CE. NO. 27855	DATE 08/04/2017		WSIP APPLICATION ATTACHMENT A4.A		SPEC. NO.
DRAWN CH2MHILL		APPROVAL BY			APPROVAL RECOMMENDED MIKE FORREST REG. CE. NO. 27855			DELEVAN INTAKE PUMPING-GENERATING PLANT AND FISH SCREEN STRUCTURE		DRAWING NO. CF-304
CHECKED M. FORREST		ESTIMATE LEVEL FEASIBILITY		APPROVED JOE BARNES REG. CE. NO. 40105		SEDIMENT REMOVAL PIPING SECTIONS		REV. SHEET NO. 93		
A3-A	08/01/2017	COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)	WSIP	JB						
REV	DATE	DESCRIPTION	SUB.	APPD						



PLOTTED BY: BARNHART, DENNIS - August 6, 2017 - 3:45:16 PM
 DRAWING: G:\SR\PA\FEASIBILITY_AECOM\900 WORK\06-CAD\006-CIVIL\20-SHEETS\09-PUMPING\OPERATING PLANTS\CF-305.DWG

DESIGNED	CH2MHILL	APPROVAL RECOMMENDED	
DRAWN	CH2MHILL	APPROVAL BY	
CHECKED	M. FORREST	ESTIMATE LEVEL	FEASIBILITY
REV	DATE	DESCRIPTION	SUB. APPD
A3-A	08/01/2017	COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)	WSIP JB

DESIGNED	CH2MHILL	APPROVAL RECOMMENDED	
DRAWN	CH2MHILL	APPROVAL BY	
CHECKED	M. FORREST	ESTIMATE LEVEL	FEASIBILITY

AECOM <small>AECOM Technical Services, Inc. 2020 L Street, Suite 300 Sacramento, Ca 95811 T 916-414-5800 F 916-414-1557 www.aecom.com</small>	REVIEWED	DATE
	MIKE FORREST	08/04/2017
	REG. CE. NO. 27855	
	APPROVAL RECOMMENDED	
	MIKE FORREST	
	REG. CE. NO. 27855	
	APPROVED	
	JOE BARNES	
	REG. CE. NO. 40105	



WSIP APPLICATION ATTACHMENT A4.A
 DELEVAN INTAKE PUMPING-GENERATING
 PLANT AND FISH SCREEN STRUCTURE
 SEDIMENT REMOVAL PIPING SECTIONS

SPEC NO.	
DRAWING NO.	CF-305
REV.	SHEET NO.
	94

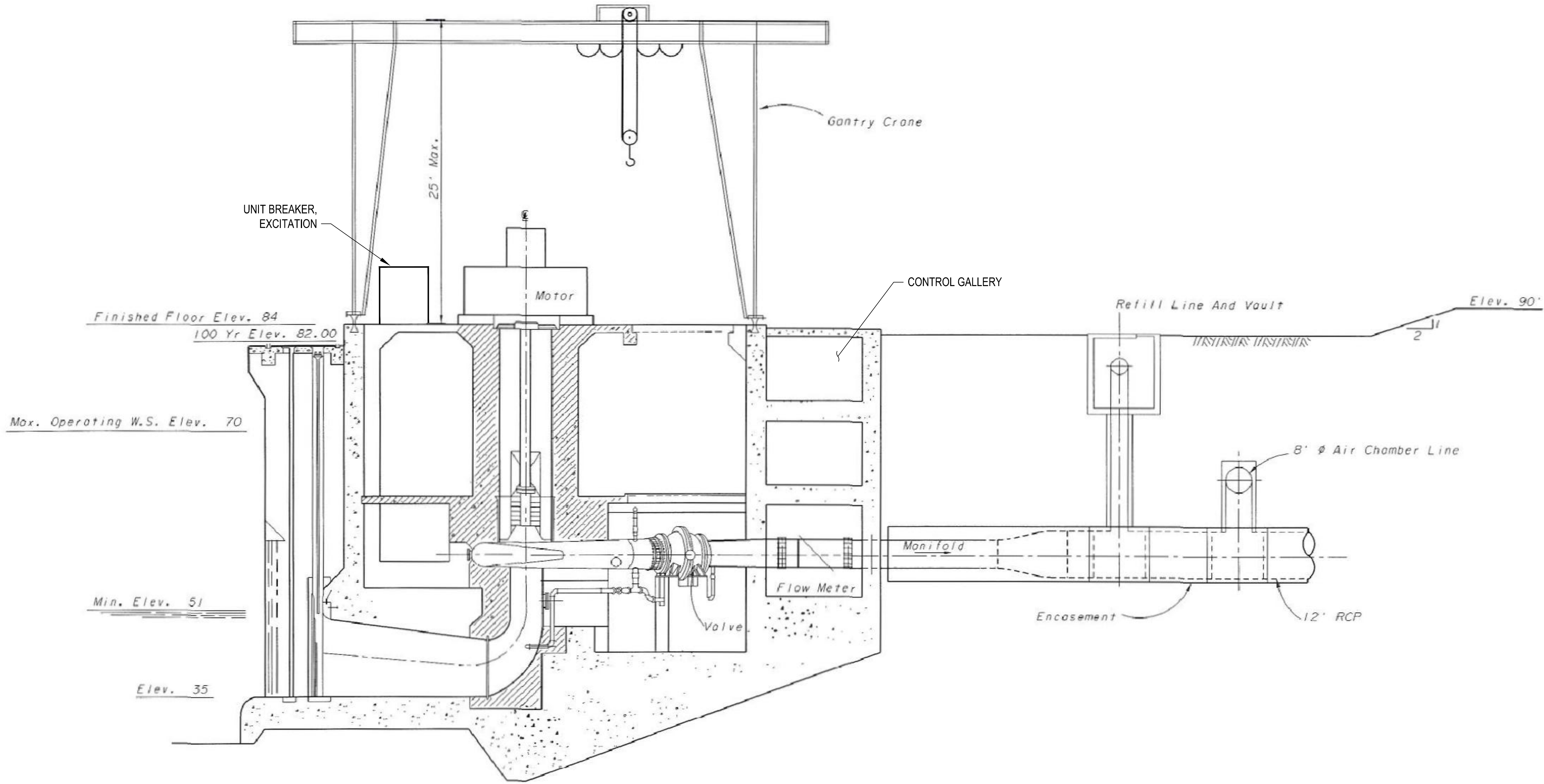
A B C D E F G H

1

2

3

4



TYPICAL TRANSVERSE SECTION
Not to Scale

PLOTTED BY: BARNHART, DENNIS - August 6, 2017 - 3:45:16 PM
 DRAWING: G:\SRIPA\FEASIBILITY_AECOM\900 WORK\900-CAD\006-CIVIL\20-SHEETS\09-PUMPING\OPERATING PLANTS\CF-307.DWG

DESIGNED	CH2MHILL	APPROVAL RECOMMENDED	
DRAWN	CH2MHILL	APPROVAL BY	
CHECKED	M. FORREST	ESTIMATE LEVEL	FEASIBILITY
REV	DATE	DESCRIPTION	SUB. APPD
A3-A	08/01/2017	COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)	WSIP JB

DESIGNED	CH2MHILL	APPROVAL RECOMMENDED	
DRAWN	CH2MHILL	APPROVAL BY	
CHECKED	M. FORREST	ESTIMATE LEVEL	FEASIBILITY

AECOM AECOM Technical Services, Inc. 2020 L Street, Suite 300 Sacramento, Ca 95811 T 916-414-5800 F 916-414-1557 www.aecom.com	REVIEWED	DATE
	MIKE FORREST	08/04/2017
	REG. CE. NO. 27855	
	APPROVAL RECOMMENDED	
	APPROVED	
	JOE BARNES	
	REG. CE. NO. 40105	

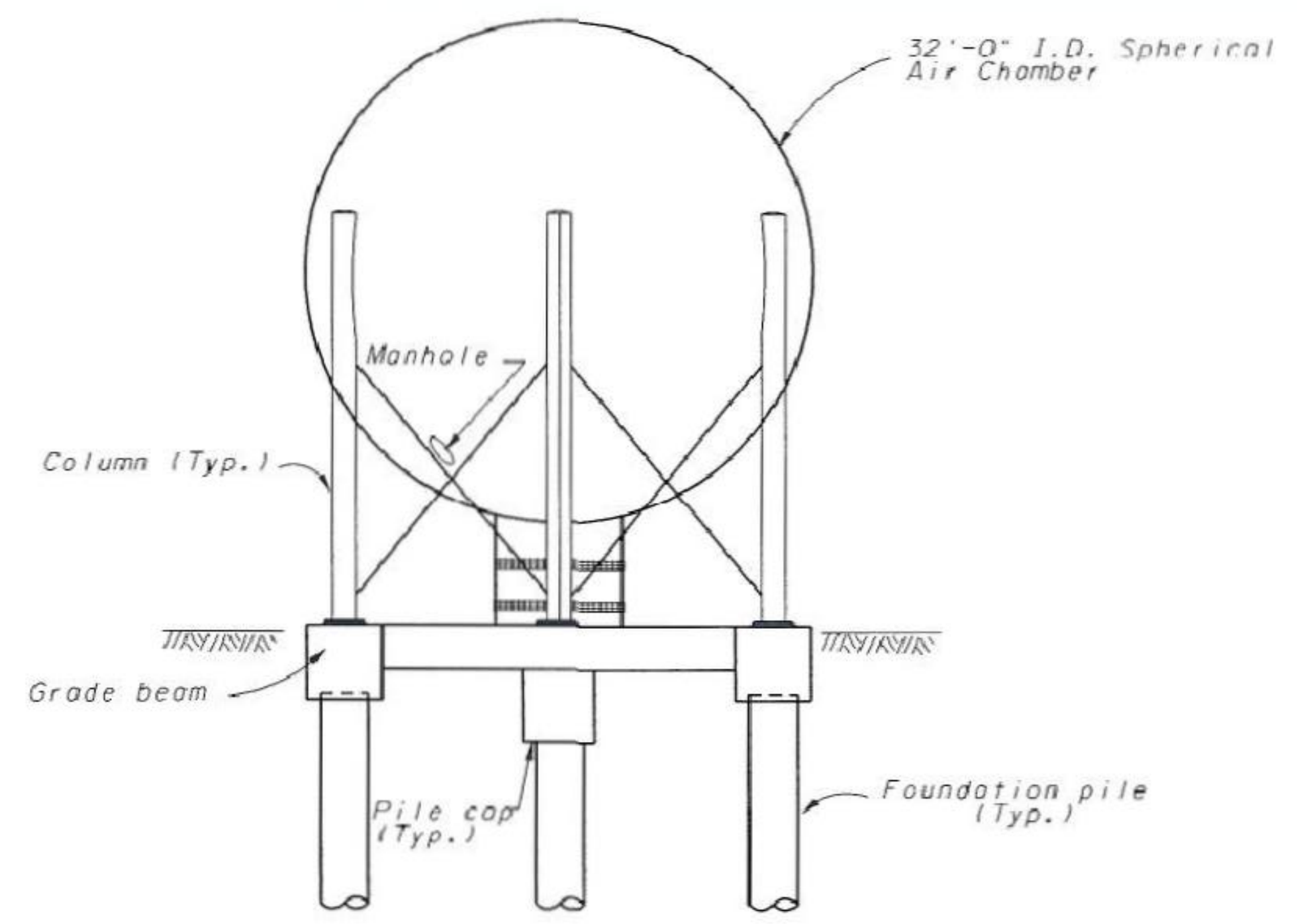
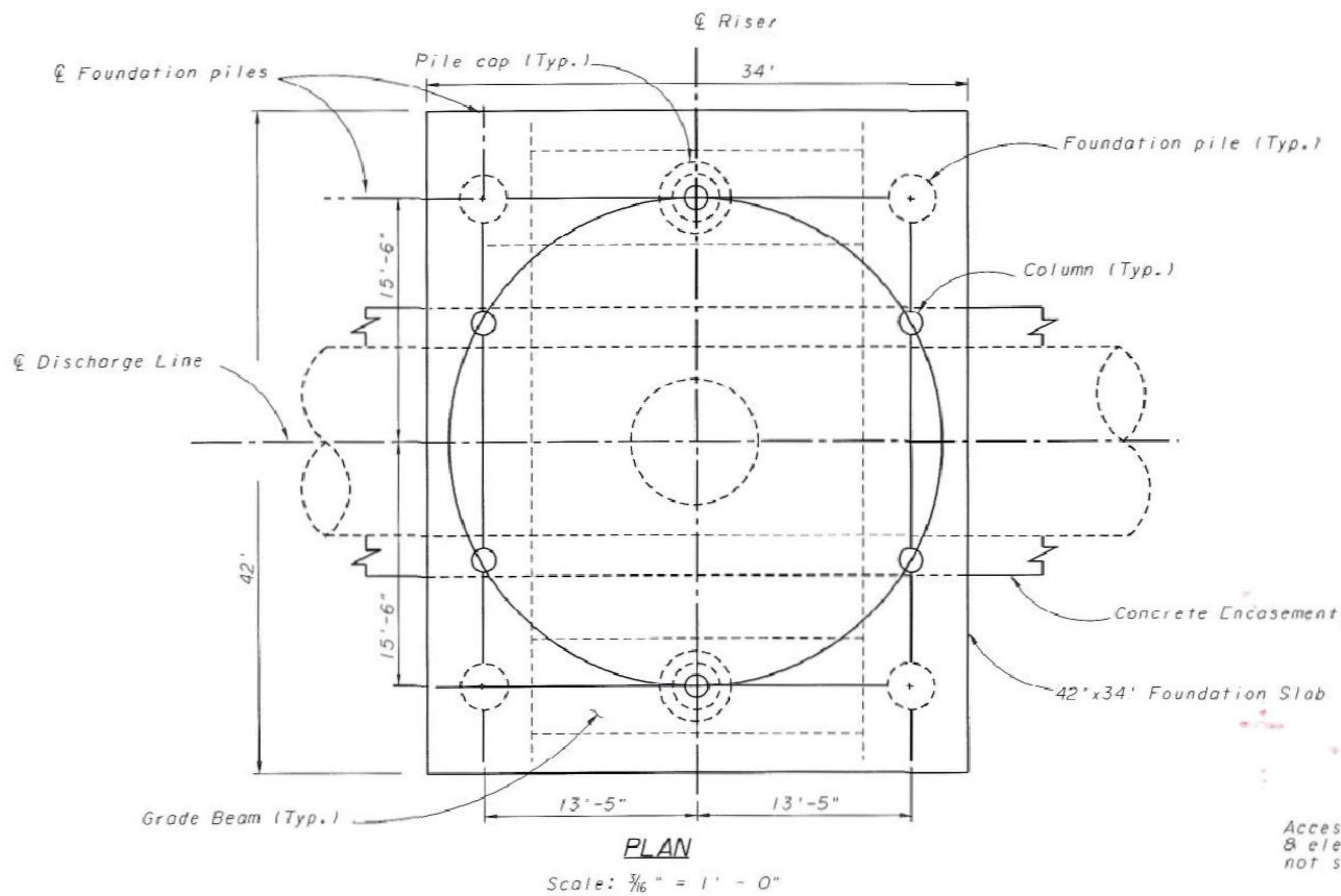


WSIP APPLICATION ATTACHMENT A4.A
 DELEVAN INTAKE PUMPING-GENERATING
 PLANT AND FISH SCREEN STRUCTURE
 CENTRIFUGAL PUMPS

SPEC NO.	
DRAWING NO.	CF-307
REV.	SHEET NO.
	96

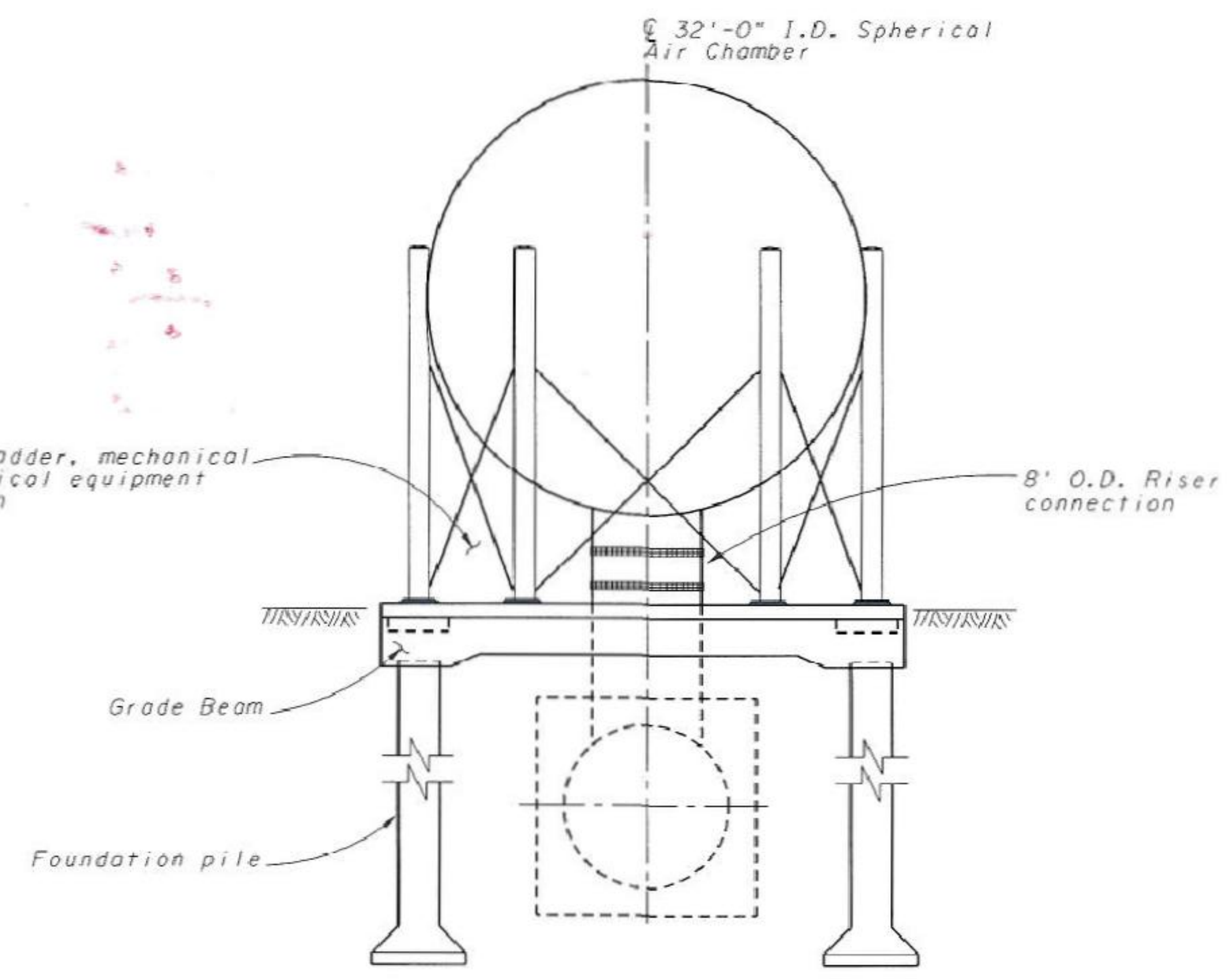
A B C D E F G H

PLOTTED BY: BARNHART, DENNIS - August 8, 2017 - 3:45:16 PM
 DRAWING: G:\SIP\A\FEASIBILITY_AECOM\900 WORK\6-CAD\06-CIVIL\20-SHEETS\09-PUMPING\OPERATING PLANTS\CF-308.dwg



ELEVATION

Scale: 1/8" = 1' - 0"



SOUTH ELEVATION

Scale: 1/8" = 1' - 0"

DESIGNED	CH2MHILL	APPROVAL RECOMMENDED	
DRAWN	CH2MHILL	APPROVAL BY	
CHECKED	M. FORREST	ESTIMATE LEVEL	FEASIBILITY
REV	DATE	DESCRIPTION	SUB. APPD
A3-A	08/01/2017	COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)	WSIP JB

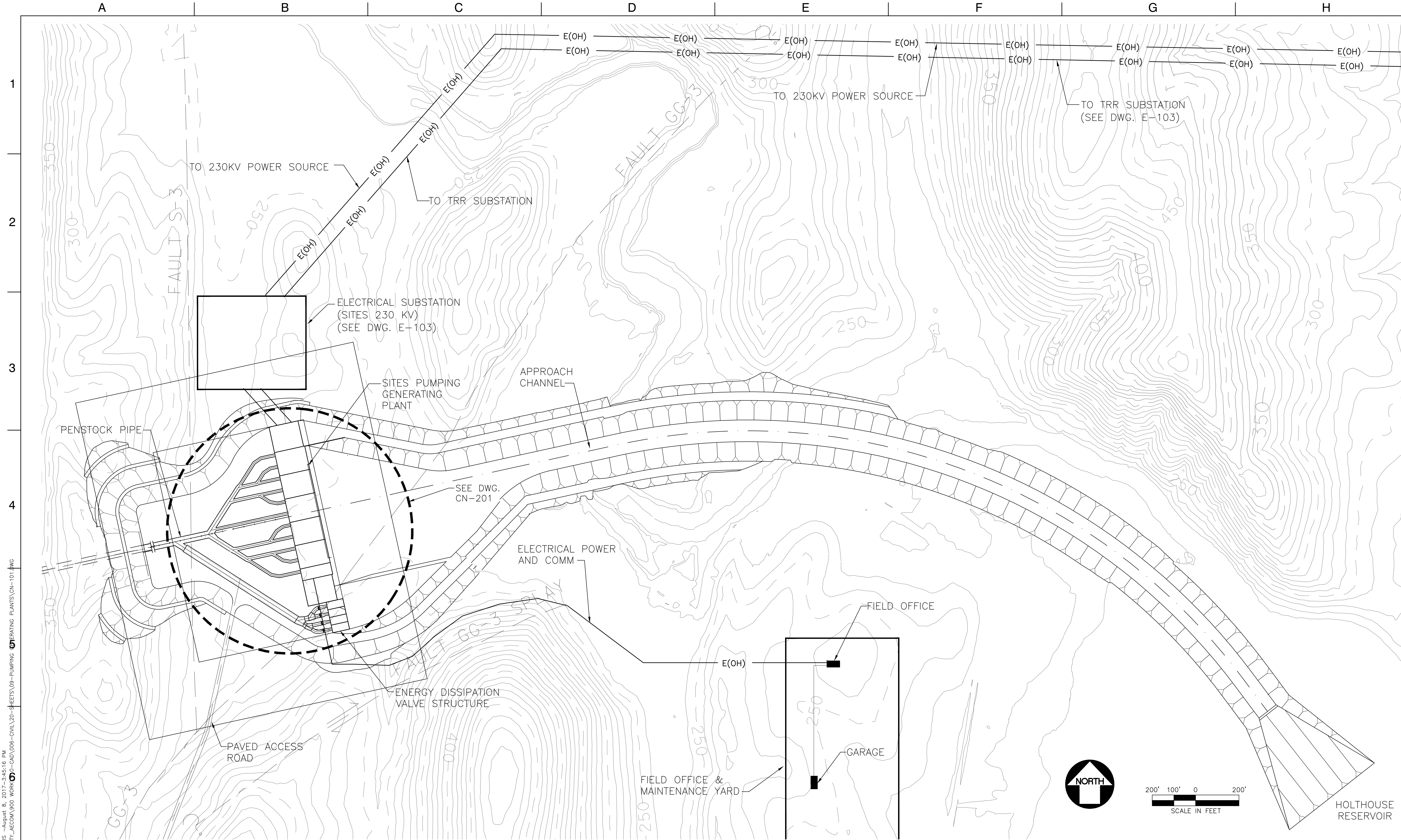
DESIGNED	CH2MHILL	APPROVAL RECOMMENDED	
DRAWN	CH2MHILL	APPROVAL BY	
CHECKED	M. FORREST	ESTIMATE LEVEL	FEASIBILITY

AECOM <small>AECOM Technical Services, Inc. 2020 L Street, Suite 300 Sacramento, Ca 95811 T 916-414-5800 F 916-414-1557 www.aecom.com</small>	REVIEWED	DATE
	MIKE FORREST	08/04/2017
	REG. CE. NO. 27855	
	APPROVAL RECOMMENDED	
	APPROVED	
	JOE BARNES	
	REG. CE. NO. 40105	



WSIP APPLICATION ATTACHMENT A4.A
 DELEVAN INTAKE PUMPING-GENERATING
 PLANT AND FISH SCREEN STRUCTURE
 AIR CHAMBER PLANT AND ELEVATION

SPEC NO.	
DRAWING NO.	CF-308
REV.	SHEET NO.
	97



PLOTTED BY: BARNHART, DENNIS - August 8, 2017 - 3:45:16 PM
 DRAWING: G:\SR\PA\FEASIBILITY_AECOM\900 WORK\0-CAD\006-CIVIL\20-SHEETS\09-PUMPING\OPERATING PLANTS\CN-101.DWG

REV	DATE	DESCRIPTION	SUB.	APPD
A3-A	08/01/2017	COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)	WSIP	JB

DESIGNED C. LAKHBIR	APPROVAL RECOMMENDED
DRAWN T. L. PENG	APPROVAL BY
CHECKED M. FORREST	ESTIMATE LEVEL FEASIBILITY

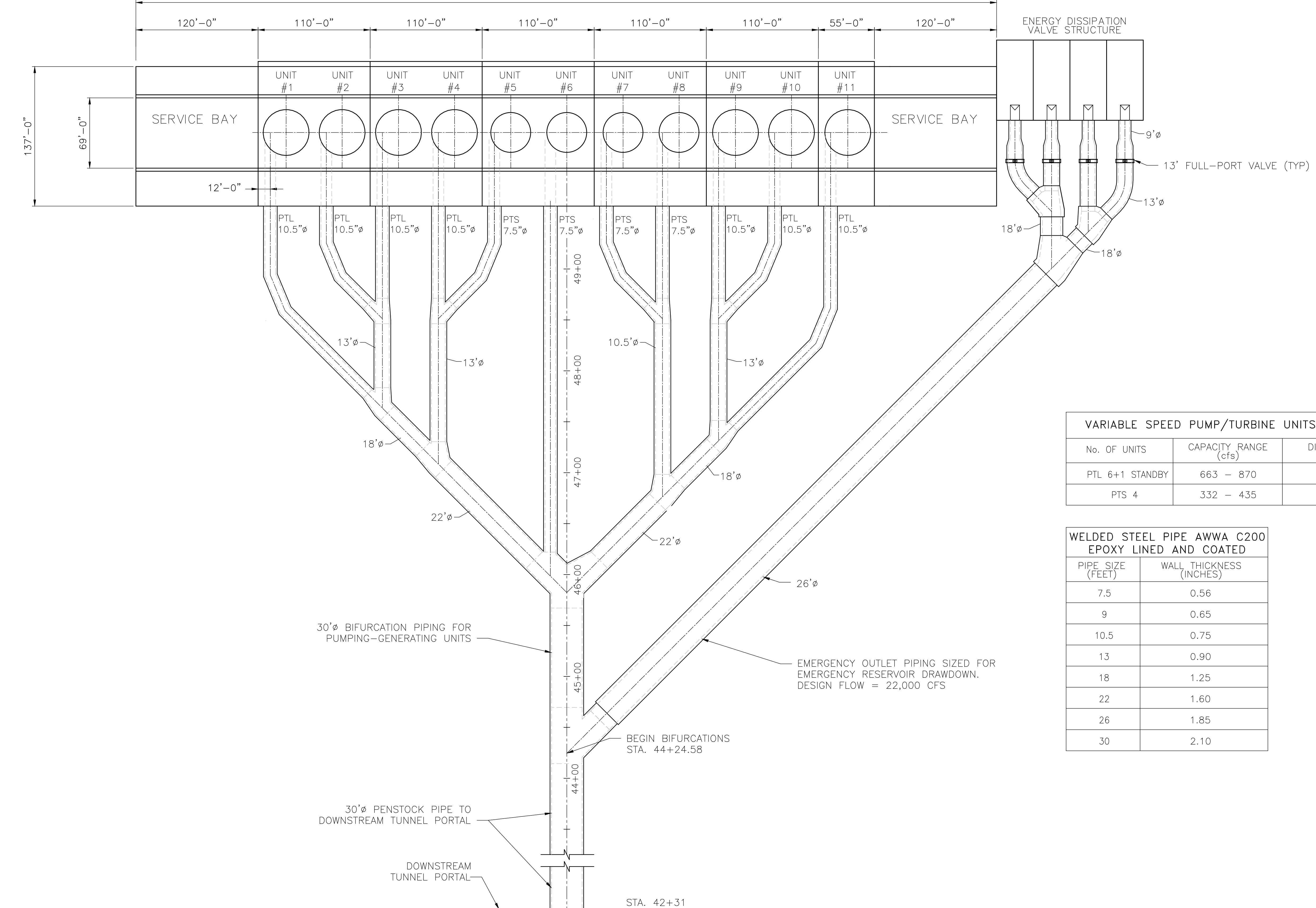
AECOM <small>AECOM Technical Services, Inc. 2020 L Street, Suite 300 Sacramento, Ca 95811 T 916-414-5800 F 916-414-1557 www.aecom.com</small>	REVIEWED MIKE FORREST REG. CE. NO. 27855	DATE 08/04/2017
	APPROVAL RECOMMENDED MIKE FORREST REG. CE. NO. 27855	
	APPROVED JOE BARNES REG. CE. NO. 40105	



WSIP APPLICATION ATTACHMENT A4.A
SITES PUMPING-GENERATING PLANT
SITE PLAN

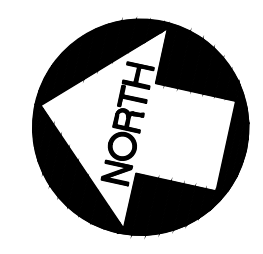
SPEC. NO.	
DRAWING NO.	CN-101
REV.	SHEET NO.
	98

845'-0"
(SITES PUMPING - GENERATING PLANT OVERALL LENGTH)



VARIABLE SPEED PUMP/TURBINE UNITS DATA		
No. OF UNITS	CAPACITY RANGE (cfs)	DISCHARGE PIPE DIA. (FT.)
PTL 6+1 STANDBY	663 - 870	10.5
PTS 4	332 - 435	7.5

WELDED STEEL PIPE AWWA C200 EPOXY LINED AND COATED	
PIPE SIZE (FEET)	WALL THICKNESS (INCHES)
7.5	0.56
9	0.65
10.5	0.75
13	0.90
18	1.25
22	1.60
26	1.85
30	2.10



SEE DWG. CM-113 AND CM-114 FOR PLAN OF PUMP HOUSE

PLOTTED BY: BARNHART, DENNIS - August 6, 2017 - 3:45:16 PM
 DRAWING: G:\S\PA\FEASIBILITY_AECOM\900 WORK\6-SHEETS\09-PUMPING-GENERATING PLANTS\CN-201.DWG

REV	DATE	DESCRIPTION	SUB.	APPD
A3-A	08/01/2017	COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)	WSIP	JB

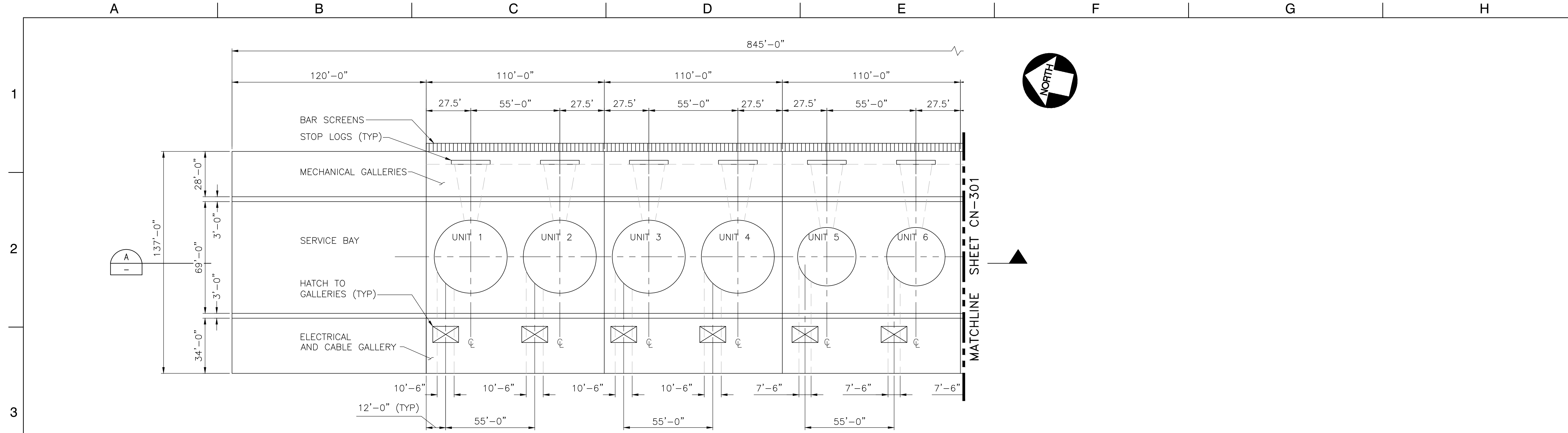
DESIGNED C. LAKHBIR	APPROVAL RECOMMENDED
DRAWN T. L. PENG	APPROVAL BY
CHECKED M. FORREST	ESTIMATE LEVEL FEASIBILITY

AECOM <small>AECOM Technical Services, Inc. 2020 L Street, Suite 300 Sacramento, Ca 95811 T 916-414-5800 F 916-414-1557 www.aecom.com</small>	REVIEWED MIKE FORREST REG. CE. NO. 27855	DATE 08/04/2017
	APPROVAL RECOMMENDED MIKE FORREST REG. CE. NO. 27855	
	APPROVED JOE BARNES REG. CE. NO. 40105	

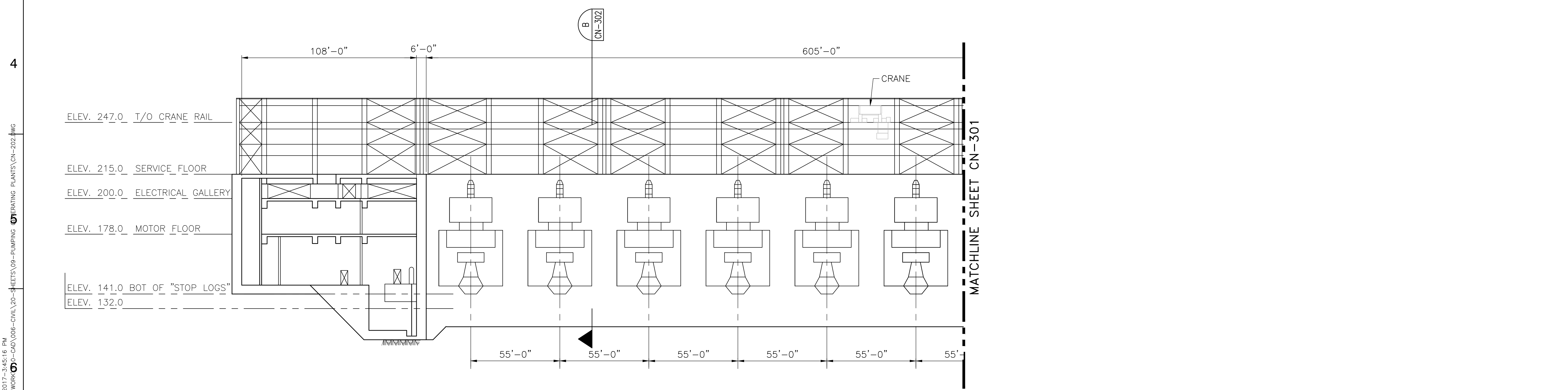


WSIP APPLICATION ATTACHMENT A4.A
SITES PUMPING-GENERATING PLANT
SITE PLAN

SPEC NO.	
DRAWING NO.	CN-201
REV.	SHEET NO.
	99



PLAN - SERVICE FLOOR @ ELEV. 215.0
SCALE: 1"=30'



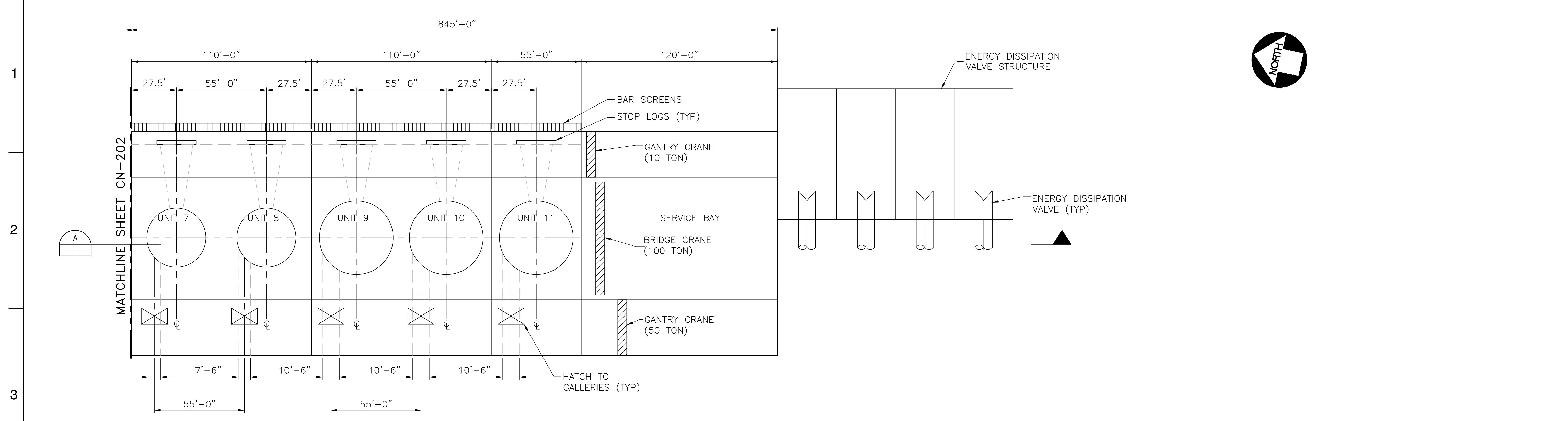
SECTION
1"=30'



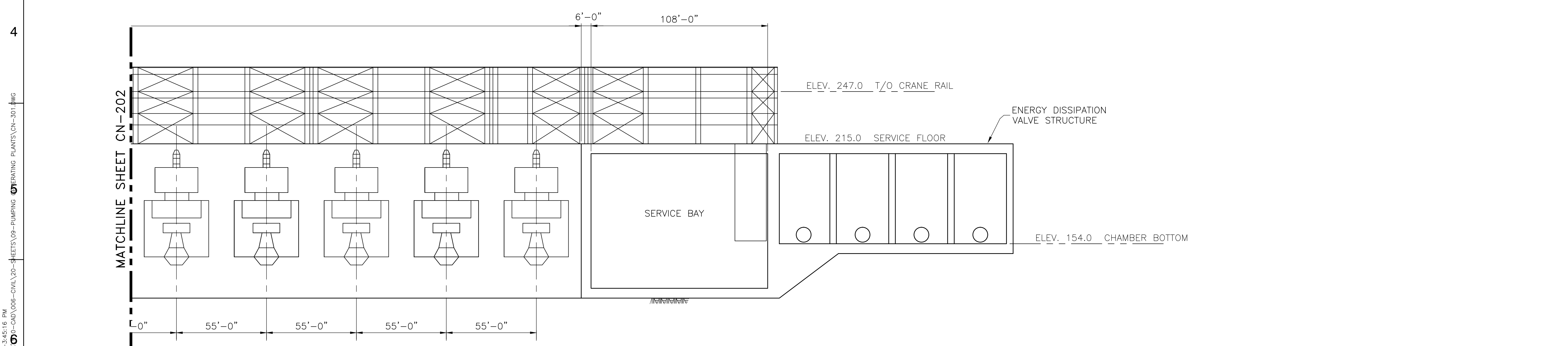
PLOTTED BY: BARNHART, DENNIS - August 6, 2017 - 3:45:16 PM
 DRAWING: G:\SRIPA\FEASIBILITY_AECOM\900 WORK\6-SHEETS\09-PUMPING 9 OPERATING PLANTS\CN-202.DWG

DESIGNED C. LAKHBIR				APPROVAL RECOMMENDED			REVIEWED MIKE FORREST REG. CE. NO. 27855		DATE 08/04/2017		WSIP APPLICATION ATTACHMENT A4.A				SPEC. NO.	
DRAWN T. L. PENG				APPROVAL BY			APPROVAL RECOMMENDED MIKE FORREST REG. CE. NO. 27855		SITES PUMPING-GENERATING PLANT SITE PLAN				DRAWING NO. CN-202			
CHECKED M. FORREST				ESTIMATE LEVEL FEASIBILITY			APPROVED JOE BARNES REG. CE. NO. 40105						REV. SHEET NO. 100			
A3-A	08/01/2017	COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)	WSIP	JB												
REV	DATE	DESCRIPTION	SUB.	APPD												

A B C D E F G H




PLAN (CONT.) - SERVICE FLOOR @ ELEV. 215.0
SCALE: 1"=30'



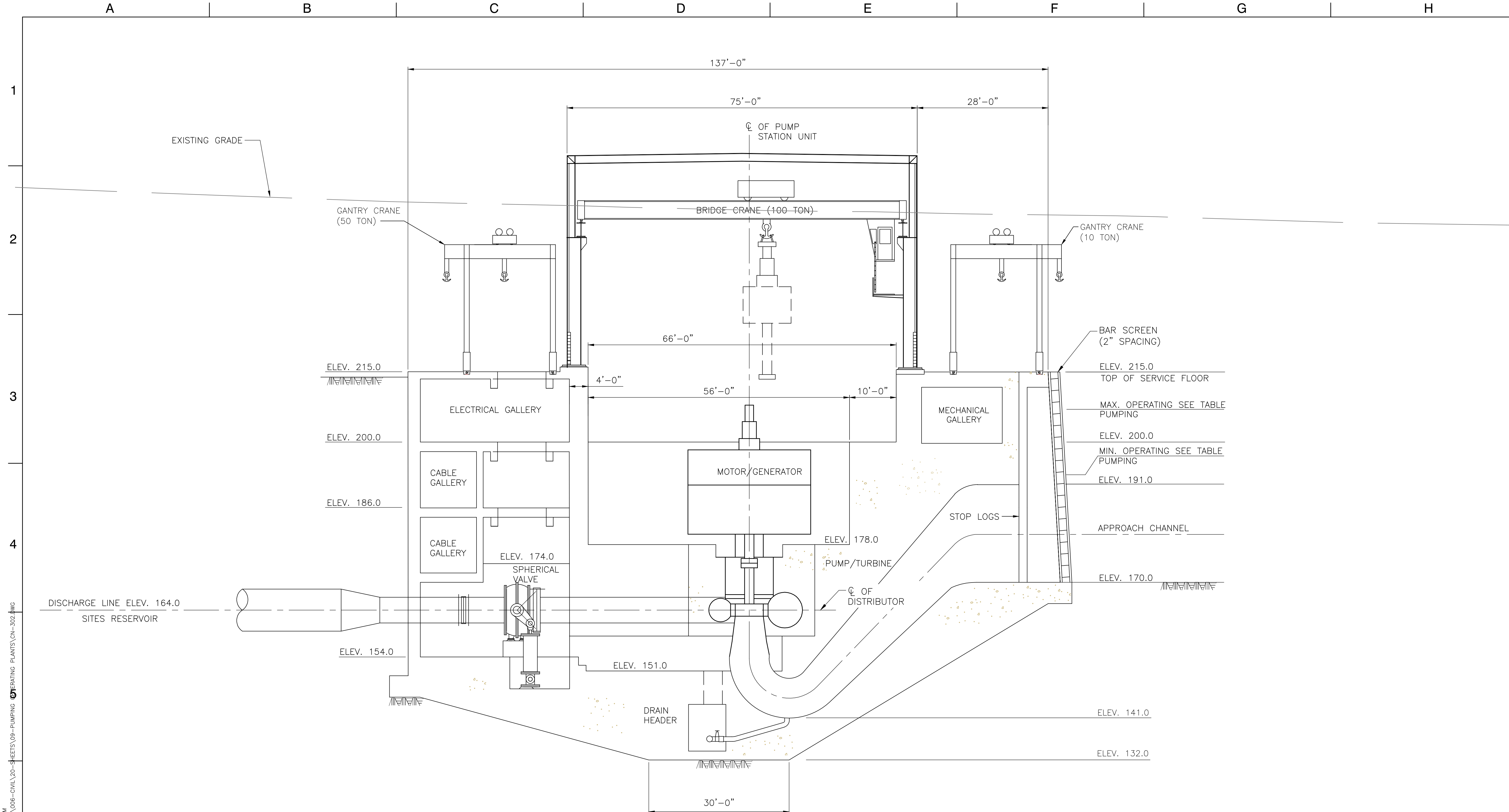
SECTION (CONT.)
1"=30'



PLOTTED BY: BARNHART, DENNIS - August 6, 2017 - 3:45:16 PM
 DRAWING: G:\S\PA\FEASIBILITY_AECOM\900 WORK\06-CAD\006-CIVIL\20-SHEETS\09-PUMPING\OPERATING PLANTS\CN-301.dwg

DESIGNED C. LAKHBIR		APPROVAL RECOMMENDED		AECOM REG. CE. NO. 27855 APPROVAL RECOMMENDED MIKE FORREST REG. CE. NO. 27855 APPROVED JOE BARNES REG. CE. NO. 40105	DATE 08/04/2017	WSIP APPLICATION ATTACHMENT A4.A		SPEC NO.
DRAWN T. L. PENG		APPROVAL BY				SITES PUMPING-GENERATING PLANT PLAN AND SECTION		DRAWING NO. CN-301
CHECKED M. FORREST		ESTIMATE LEVEL FEASIBILITY				REV. SHEET NO. 101		
A3-A	08/01/2017	COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)	WSIP	JB				
REV	DATE	DESCRIPTION	SUB.	APPD				

A B C D E F G H

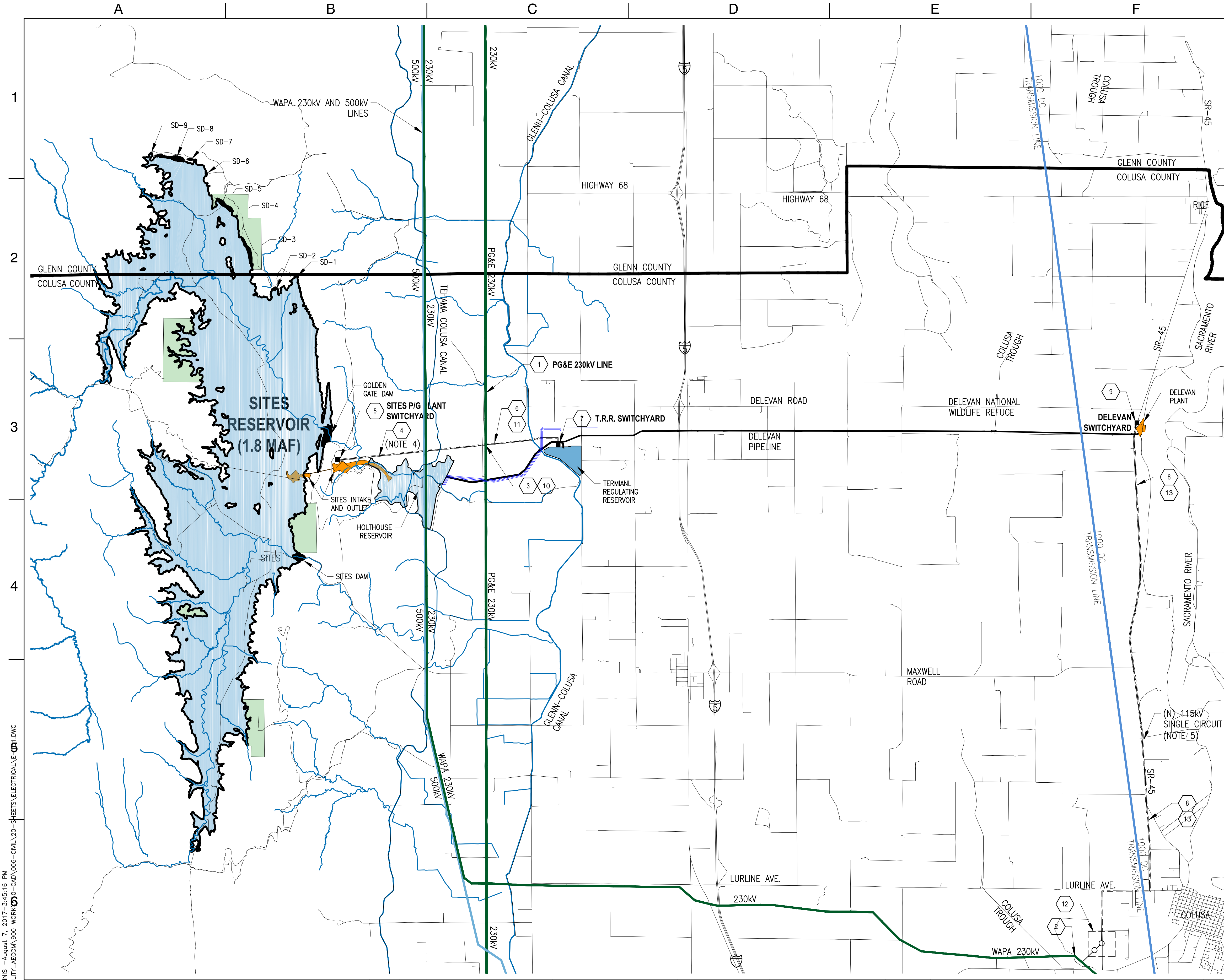


SECTION B
1"=10'

OPERATING LEVEL	MAXIMUM	MINIMUM
PUMPING	207.8	193.0
AT HOLHOUSE RESERVOIR	208.8	194.0

PLOTTED BY: BARNHART, DENNIS - August 6, 2017 - 3:45:16 PM
 DRAWING: G:\S\PA\FEASIBILITY_AECOM\900 WORK\6-SHEETS\09-PUMPING-GENERATING PLANTS\CN-302.DWG

DESIGNED C. LAKHBIR				APPROVAL RECOMMENDED			REVIEWED MIKE FORREST REG. CE. NO. 27855		DATE 08/04/2017		WSIP APPLICATION ATTACHMENT A4.A				SPEC. NO.	
DRAWN T. L. PENG				APPROVAL BY							SITES PUMPING-GENERATING PLANT CROSS SECTION				DRAWING NO. CN-302	
CHECKED M. FORREST				ESTIMATE LEVEL FEASIBILITY							APPROVED JOE BARNES REG. CE. NO. 40105		REV. SHEET NO. 102			
REV	DATE	DESCRIPTION	SUB.	APPD												



- SHEET NOTES:**
- BEFORE WORK IS STARTED, CONTRACTOR SHALL VERIFY SITE CONDITIONS. COORDINATE ALL ELECTRICAL WORK WITH OTHER DISCIPLINES AND GOVERNMENT PROJECT PERSONNEL.
 - ELECTRICAL WORK SHALL BE PROVIDED IN ACCORDANCE WITH ANSI/IEEE STANDARDS, WESTERN (WAPA) REQUIREMENTS, FERC/WECC, AND THE NATIONAL ELECTRICAL SAFETY CODE (ANSI C2-2017), AS APPLICABLE. ANY CONFLICTS WITH THE DESIGNS AS SHOWN SHALL BE RESOLVED BY THE ENGINEER.
 - POLE LOCATION, ELECTRICAL CONDUIT, AND EQUIPMENT SHOWN ARE DIAGRAMMATIC. CONTRACTOR SHALL BE RESPONSIBLE TO VERIFY FINAL LOCATION AND ROUTING SO AS NOT TO DISTURB EXISTING UTILITIES. MINOR CHANGES IN WORK DUE TO EXISTING CONDITIONS SHALL BE MADE WITHOUT ADDITIONAL COST TO THE OWNER.
 - 230KV LINE SHALL BE ROUTED INTO NEW SITES PLANT SUBSTATION. OUTAGE SHALL BE PLANNED AND COORDINATED WITH UTILITY DURING A SCHEDULED OUTAGE. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE FULL RESPONSIBILITY OF THE CONTRACTOR. CONTRACTOR SHALL REPAIR OR REPLACE ALL UTILITIES DAMAGED DURING CONSTRUCTION TO THE OWNER'S SATISFACTION.
 - CONTRACTOR SHALL PROVIDE 230KV CONSTRUCTION IN ACCORDANCE WITH CA GENERAL ORDER NO. 95 AND UTILITY STANDARD CONSTRUCTION DRAWINGS.
 - TRANSMISSION LINE COST ESTIMATE IS BASED ON THE FOLLOWING DESIGN BASIS AND QUANTITIES: 700 FT RULING SPAN; 128-120' TANGENT LATTICE TOWERS; 6-120' DEADEND LATTICE TOWERS; 4-120' LARGE ANGLE LATTICE TOWERS; AND , 2-160' DEADEND TUBULAR STRUCTURES (MONOPOLES).

- KEYED NOTES:**
- EXISTING PG&E 230KV LINES. LINES MAY BE ROUTED INTO NEW SITES SUBSTATION AND THEN RETURN TO SOUTHERN PORTION OF EXISTING LINE.
 - EXISTING WAPA 230KV KESWICK-O'BANION LINE, SOUTHERN PART. LINE WILL ROUTE INTO NEW DELEVAN SUBSTATION AND THEN CONTINUE TO SOUTHERN PORTION OF EXISTING LINE.
 - LOCATION OF 230KV LINE TAKEOFF TO SITES SUBSTATION. NEW 230KV DEADEND STRUCTURES WILL BE REQUIRED. START OF DOUBLE CIRCUIT 230KV LINE TO SITES SUBSTATION. LINES WILL CROSS EXISTING WAPA 500KV AND 230KV LINES.
 - ONE DOUBLE CIRCUIT AND ONE SINGLE CIRCUIT 230KV LINES TO/FROM SITES SUBSTATION. ONE DOUBLE CIRCUIT IS THE UTILITY, AND SINGLE CIRCUIT IS THE TRR PLANT 230KV LINE. LATTICE TOWER CONSTRUCTION.
 - SITES SUBSTATION AND P/G PLANT. SEE DWG E-104 FOR SITE PLAN. SEE SHEET E-601 FOR SINGLE LINE DIAGRAM.
 - ONE SINGLE CIRCUIT 230KV LINE FOR THE TRR PLANT, ORIGINATING FROM SITES SWITCHYARD. LATTICE TOWER CONSTRUCTION. LINE WILL CROSS UNDER 500KV LINE. LINE WILL ALSO CROSS EXISTING PG&E 230KV LINE. COST SHALL ASSUME UNDERBUILD OF EXISTING PG&E LINE.
 - TRR SWITCHYARD AND P/G PLANT. 230 KV LINE PROVIDES RADIAL FEED TO SUBSTATION. SEE DWG E-108 FOR SITE PLAN. SEE DWG E-603 FOR SINGLE LINE DIAGRAM.
 - SINGLE CIRCUIT 115KV LINE FROM WAPA TO DELEVAN PLANT. MONOPOLE STEEL TOWER CONSTRUCTION. LINE SHALL CROSS SR-45 AND WILL REQUIRE FULL COORDINATION WITH CALTRANS.
 - DELEVAN SWITCHYARD AND P/G PLANT. 115 KV LINE PROVIDES FEED FROM SUBSTATION. SEE DWG E-107 FOR SITE PLAN. SEE DWG E-602 FOR SINGLE LINE DIAGRAM.
 - 230KV LINE ESTIMATE IS BASED ON SINGLE 2156 ACSR "BLUEBIRD" FOR EACH CIRCUIT WITH LINE CONSTRUCTION CONSISTING OF DOUBLE CIRCUIT LATTICE TOWERS.
 - TRANSMISSION LINE ESTIMATE IS BASED ON A SINGLE CURCUIT CONSTRUCTION FROM SITES SWITCHYARD TO TRR SWITCHYARD (3.5 MILES).
 - NEW SUBSTATION FOR DELEVAN PUMP STATION. INCOMING 230KV FROM WAPA, 230KV TO 115KV POWER TRANSFORMER, WITH 115KV TO DELEVAN.
 - OH LINE ROUTING IS PRELIMINARY.

PLOTTED BY: BARNHART, DENNIS - August 7, 2017 - 3:45:16 PM
 DRAWING: G:\SRA\PA\FEASIBILITY_AECOM\900 WORK\0-CAD\006-CIVIL\20-SHEETS\ELECTRICAL\E-01.DWG

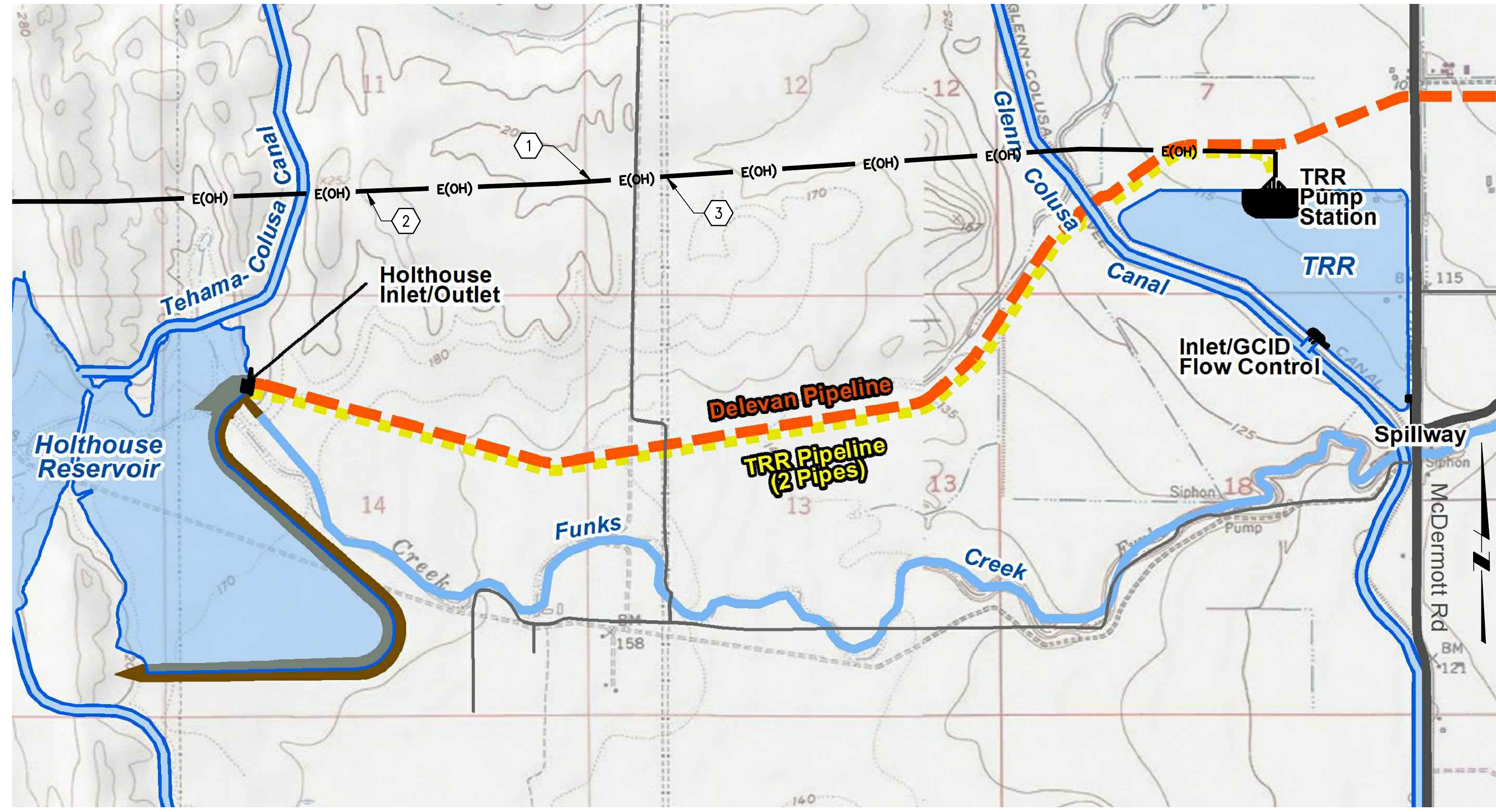
DESIGNED	S. KHALSA
DRAWN	D. LARSON
CHECKED	M. FORREST
APPROVAL RECOMMENDED	
APPROVAL BY	
ESTIMATE LEVEL	FEASIBILITY

DESIGNED	S. KHALSA
DRAWN	D. LARSON
CHECKED	M. FORREST
APPROVAL RECOMMENDED	
APPROVAL BY	
ESTIMATE LEVEL	FEASIBILITY

REVIEWED	MIKE FORREST	DATE	08/04/2017
REG. CE. NO.	27855		
APPROVAL RECOMMENDED	SHABAD KHALSA		
REG. CE. NO.	11185		
APPROVED	JOE BARNES		
REG. CE. NO.	40105		



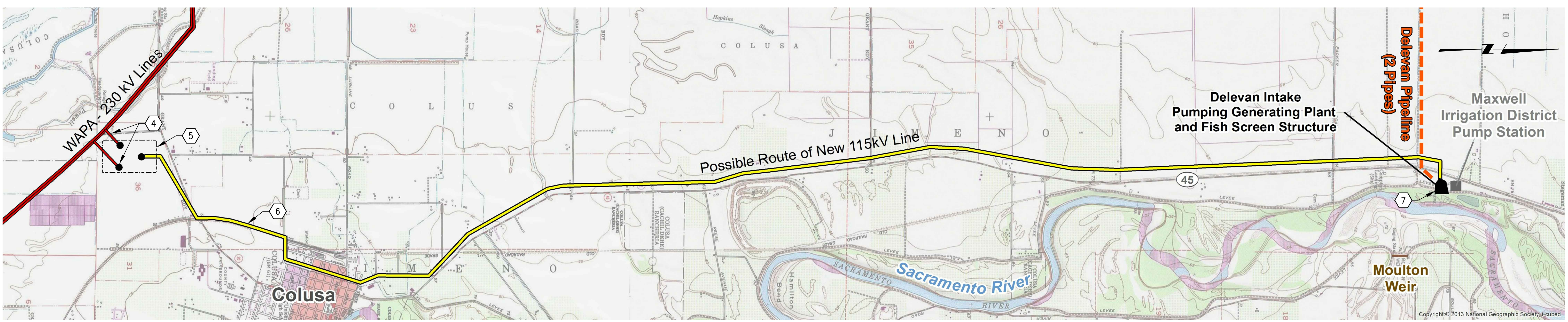
WSIP APPLICATION ATTACHMENT A4.A		SPEC NO.
SITES TRANSMISSION LINE PLAN		DRAWING NO. E-101
REV.	SHEET NO.	103



NOTE:
 1. SEE ELECTRICAL TRANSMISSION SITE PLAN, SHEET ##### FOR NOTES ON 230KV LINE REVISIONS. PG&E 230 KV LINE SHALL BE TAPPED AND ROUTED TO SITES SUBSTATION
 2. SEE ADDITIONAL ELECTRICAL DESIGN INFORMATION FOR THE TRR SWITCHYARD AND PLANT ON SHEETS ##### AND #####.

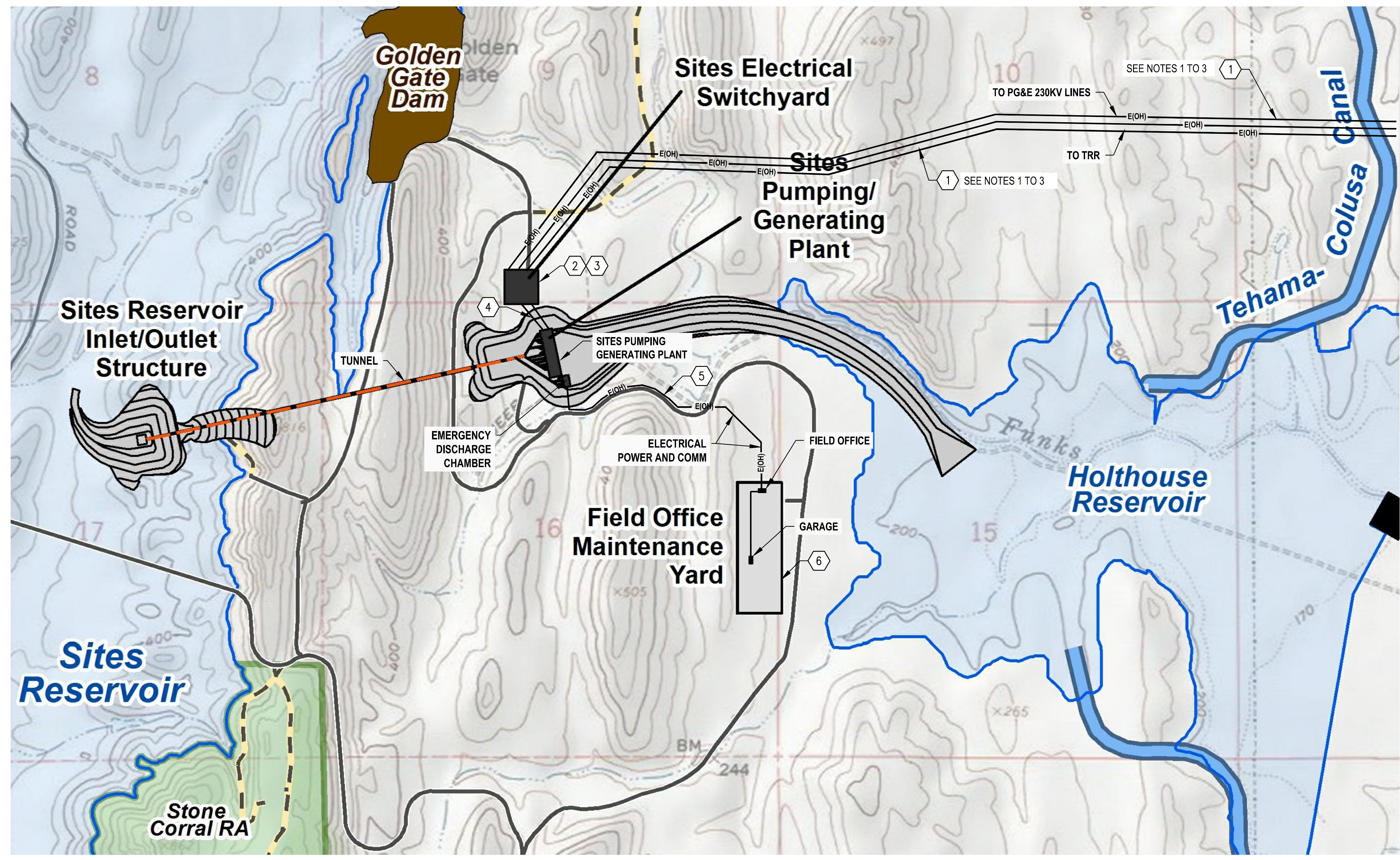
- KEYED NOTES:**
- ① POSSIBLE LOCATION OF INTERCONNECTION TO PG&E 230KV LINES. ROUTE TO SITES P/G PLANT.
 - ② ONE DOUBLE CIRCUIT AND ONE SINGLE CIRCUIT 230KV LINES.
 - ③ SINGLE CIRCUIT 230KV LINE FROM SITES SWITCHYARD TO TRR SWITCHYARD.
 - ④ POSSIBLE LOCATION OF INTERCONNECTION TO WAPA 230KV LINES. ROUTE TO NEW SUBSTATION.
 - ⑤ NEW WAPA SUBSTATION. TRANSFORMER FOR 230KV TO 115KV CIRCUIT TO DELEVAN PLANT.
 - ⑥ WOOD OR STEEL POLES, SINGLE CIRCUIT 115KV OH LINE TO DELEVAN P/G PLANT.
 - ⑦ DELEVAN SWITCHYARD. SEE SINGLE LINE DIAGRAM E-5601.

LEGEND:
 E(OH) ——— NEW OVERHEAD ELECTRICAL LINE



PLOTTED BY: BARNHART, DENNIS - August 7, 2017 - 3:45:16 PM
 DRAWING: G:\S\RA\PA\FEASIBILITY_AECOM\900 WORK\0-CAD\006-CIVIL\20-SHEETS\ELECTRICAL\E-102.DWG

DESIGNED S. KHALSA		APPROVAL RECOMMENDED			REVIEWED MIKE FORREST REG. CE. NO. 27855 APPROVAL RECOMMENDED SHABAD KHALSA REG. CE. NO. 11185 APPROVED JOE BARNES REG. CE. NO. 40105	DATE 08/04/2017	WSIP APPLICATION ATTACHMENT A4.A		SPEC. NO.
DRAWN D. LARSON		APPROVAL BY					SITES/ TRR AND DELEVAN TRANSMISSION PLAN DETAILS		DRAWING NO. E-102
CHECKED M. FORREST		ESTIMATE LEVEL FEASIBILITY				WSIP APPLICATION ATTACHMENT A4.A SITES/ TRR AND DELEVAN TRANSMISSION PLAN DETAILS		REV. SHEET NO. 104	
REV	DATE	DESCRIPTION						SUB.	APPD



SHEET NOTES:

1. SEE SHEET E-0101 FOR GENERAL ELECTRICAL NOTES.
2. UTILITY 230KV LINES SHALL BE ROUTED INTO NEW SITES PLANT SUBSTATION ON DOUBLE CIRCUIT LATTICE STRUCTURES. 230KV LINE TO TRR PLANT SHALL LEAVE SITES SUBSTATION IN SAME EASEMENT.
3. ASSUME POWER LINE DIFFICULTY OF INSTALLATION TO BE SIMILAR TO PARTIALLY WOODED ROLLING HILL CONSTRUCTION.
4. SWITCHYARD LAYOUT SHALL PROVIDE BREAKER AND A HALF SCHEME, WITH THREE OUTGOING OVERHEAD CIRCUITS, AND FOUR UNDERGROUND CIRCUITS TO THE PLANT. SEE SINGLE LINE DIAGRAM, SHEET #####

NUMBERED NOTES:

- 1 REROUTED UTILITY 230KV LINE, DOUBLE CIRCUIT, AND SINGLE CIRCUIT FROM SITES TO TRR PLANT.
- 2 SITES 230KV SWITCHYARD. SEE SINGLE LINE DIAGRAM ON E-1601. UTILITY LINE ROUTED INTO AND OUT OF SITES SUBSTATION. TRR 230KV LINE WILL ORIGINATE AT SITES SWITCHYARD.
- 3 SITES P/G PLANT SHALL INCLUDE ALL SWITCHYARD MONITORING AND CONTROLS, INCLUDING UTILITY REMOTE TRANSFER TRIP CONTROL SCHEMES. SEE SITES P/G PLAN VIEW, SHEET EP-5102.
- 4 FOUR 13.8kV UNDERGROUND CIRCUITS TO SITES P/G AT PLANT. SUBSTATION CIRCUIT BREAKER WIRING SHALL BE ROUTED TO MAIN CONTROL ROOM IN THE PLANT.
- 5 SITES FIELD OFFICE TO BE SUPPLIED WITH 480V CIRCUITS FOR BUILDING POWER AND COMMUNICATION CIRCUITS.
- 6 FIELD OFFICE AND MAINTENANCE FACILITIES TO BE PROVIDED WITH TYPICAL BUILDING AMENITIES, YARD LIGHTING, WATER, SEPTIC, AND SECURITY SYSTEMS.

LEGEND:

E(OH) ——— NEW OVERHEAD ELECTRICAL LINE

ELECTRICAL SITE PLAN

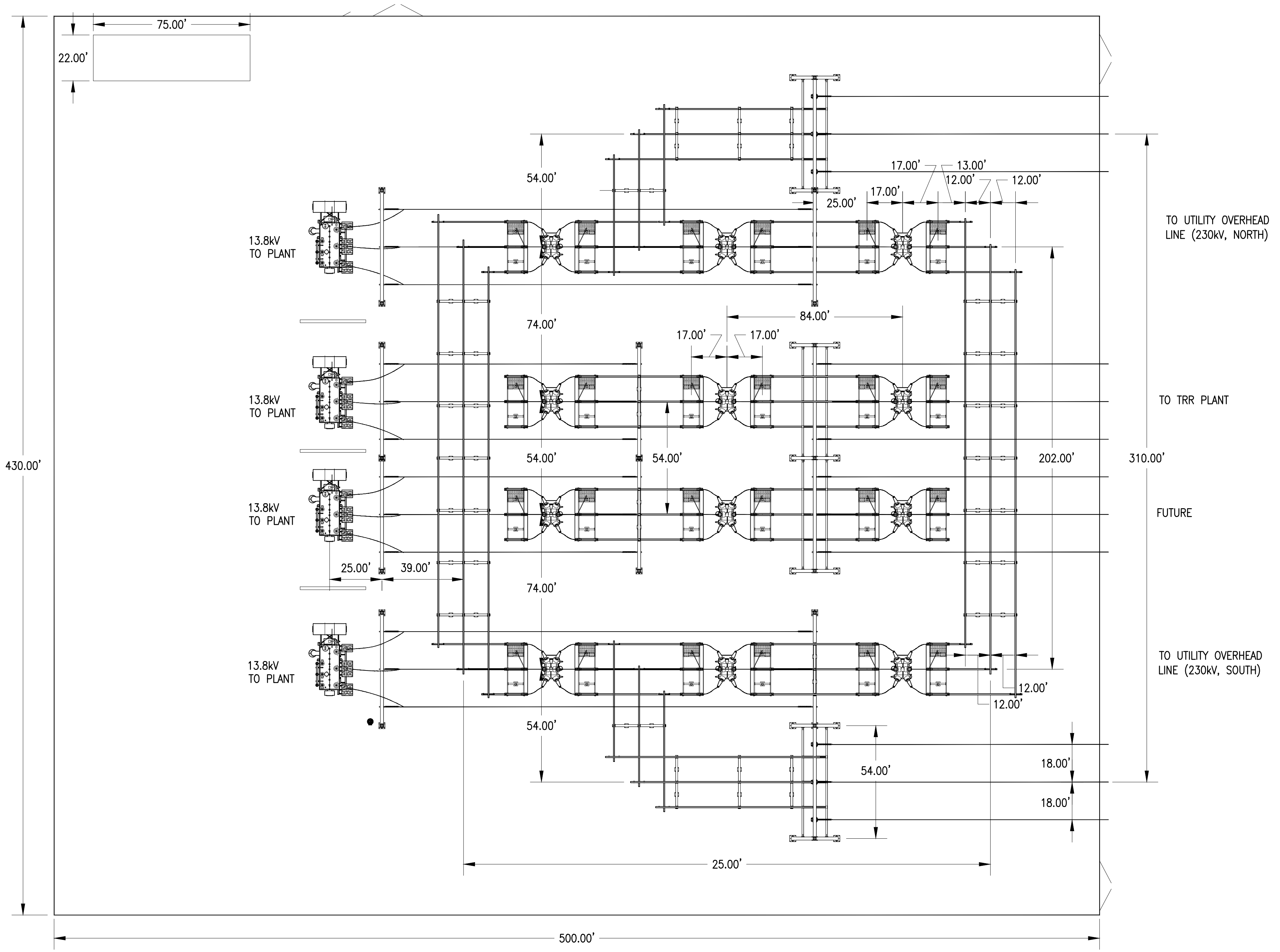
PLOTTED BY: BARNHART, DENNIS - August 7, 2017 - 3:45:16 PM
 DRAWING: G:\S\RA\FEASIBILITY_AECOM\900 WORK\0-CAD\006-CIVIL\20-SHEETS\ELECTRICAL\E-103.DWG

DESIGNED S. KHALSA		APPROVAL RECOMMENDED		REVIEWED MIKE FORREST REG. CE. NO. 27855 APPROVAL RECOMMENDED SHABAD KHALSA REG. CE. NO. 11185 APPROVED JOE BARNES REG. CE. NO. 40105	DATE 08/04/2017	WSIP APPLICATION ATTACHMENT A4.A SITES PUMPING/ GENERATING PLANT ELECTRICAL SITE PLAN	SPEC NO.
DRAWN D. LARSON		APPROVAL BY					DRAWING NO. E-103
CHECKED M. FORREST		ESTIMATE LEVEL FEASIBILITY				REV.	SHEET NO. 105
A3-A	08/01/2017	COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)	WSIP	JB			



A B C D E F G H

1
2
3
4



SWITCHYARD PLAN

PLOTTED BY: BARNHART, DENNIS - August 7, 2017 - 3:45:16 PM
 DRAWING: G:\SRIPA\FEASIBILITY_AECOM\900 WORK\0-CAD\006-CIVIL\20-SHEETS\ELECTRICAL\E-04.DWG

DESIGNED S. KHALSA		APPROVAL RECOMMENDED			REVIEWED MIKE FORREST	DATE 08/04/2017		WSIP APPLICATION ATTACHMENT A4.A		SPEC NO.
DRAWN D. LARSON		APPROVAL BY			REG. CE. NO. 27855 APPROVAL RECOMMENDED SHABAD KHALSA REG. CE. NO. 11185	SITES PUMPING/ GENERATING PLANT SWITCHYARD PLAN		DRAWING NO. E-104		
CHECKED M. FORREST		ESTIMATE LEVEL FEASIBILITY		APPROVED JOE BARNES REG. CE. NO. 40105				REV.	SHEET NO. 106	
REV	DATE	DESCRIPTION		SUB.	APPD					

A B C D E F G H

A

B

C

D

E

F

G

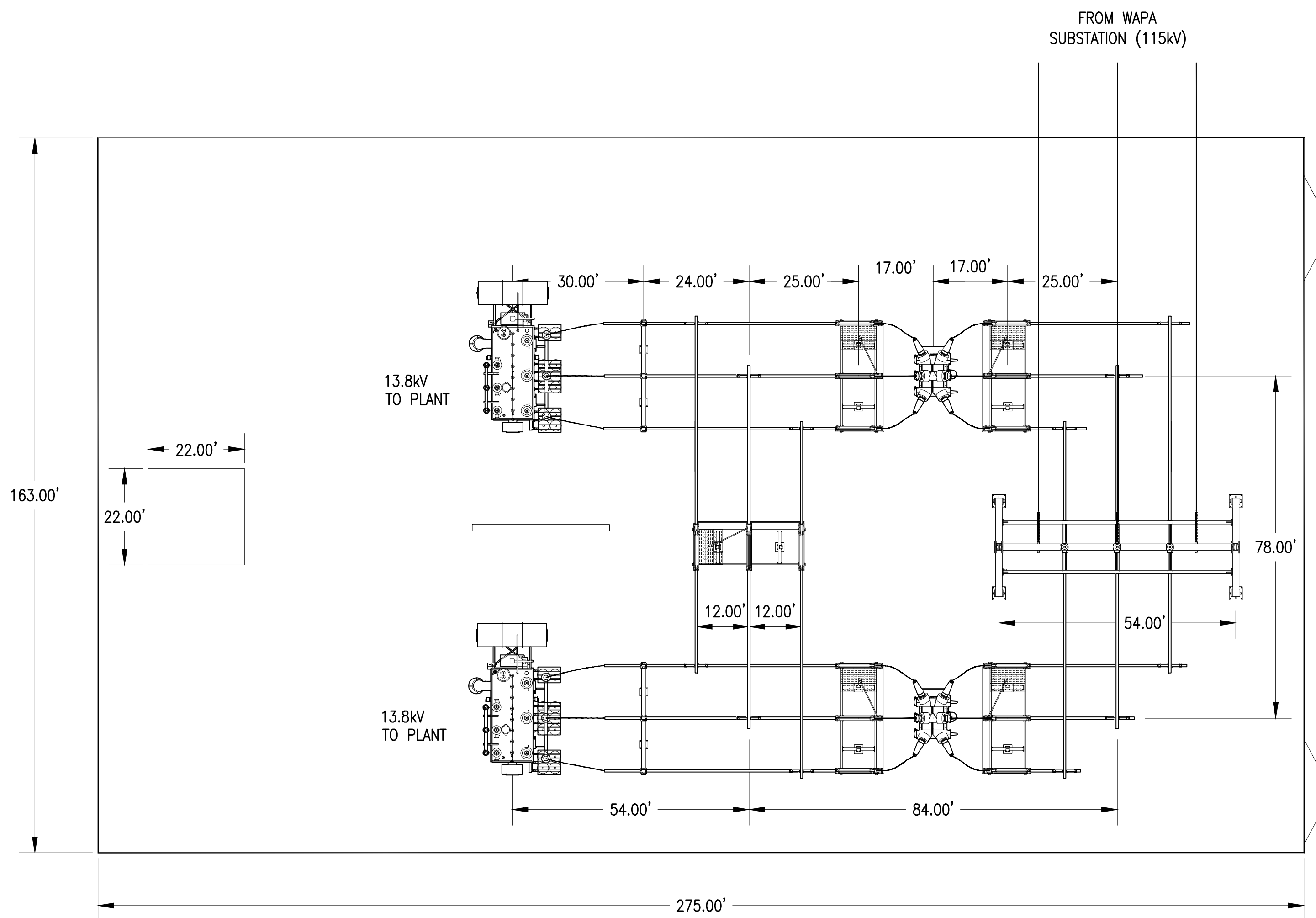
H

1

2

3

4



SWITCHYARD PLAN

PLOTTED BY: BARNHART, DENNIS - August 7, 2017 - 3:45:16 PM
DRAWING: G:\S\A\PA\FEASIBILITY_AECOM\900 WORK\0-CAD\006-CIVIL\20-SHEETS\ELECTRICAL\E-107.DWG

DESIGNED	S. KHALSA	APPROVAL RECOMMENDED	
DRAWN	D. LARSON	APPROVAL BY	
CHECKED	M. FORREST	ESTIMATE LEVEL	FEASIBILITY
REV	DATE	DESCRIPTION	SUB. APPD
A3-A	08/01/2017	COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)	WSIP JB

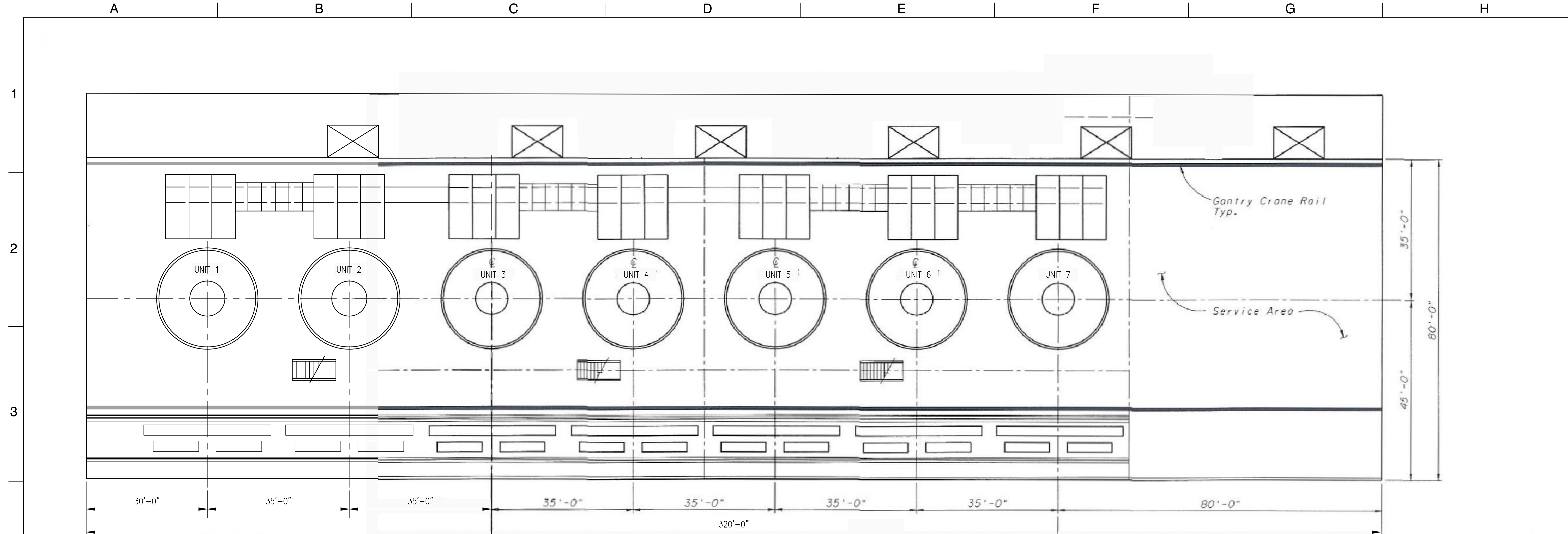
DESIGNED	S. KHALSA	APPROVAL RECOMMENDED	
DRAWN	D. LARSON	APPROVAL BY	
CHECKED	M. FORREST	ESTIMATE LEVEL	FEASIBILITY

 <small>AECOM Technical Services, Inc. 2020 L Street, Suite 300 Sacramento, Ca 95811 T 916-414-5800 F 916-414-1557 www.aecom.com</small>	REVIEWED	MIKE FORREST	DATE	08/04/2017
	REG. CE. NO.	27855		
	APPROVAL RECOMMENDED	SHABAD KHALSA		
	REG. CE. NO.	11185		
	APPROVED	JOE BARNES		
	REG. CE. NO.	40105		



WSIP APPLICATION ATTACHMENT A4.A	
DELEVAN PUMPING/ GENERATING PLANT SWITCHYARD PLAN	

SPEC NO.	
DRAWING NO.	E-105
REV.	SHEET NO.
	107



PUMPING - GENERATING PLANT - GENERAL ARRANGEMENT
FLOOR PLAN
Not to Scale

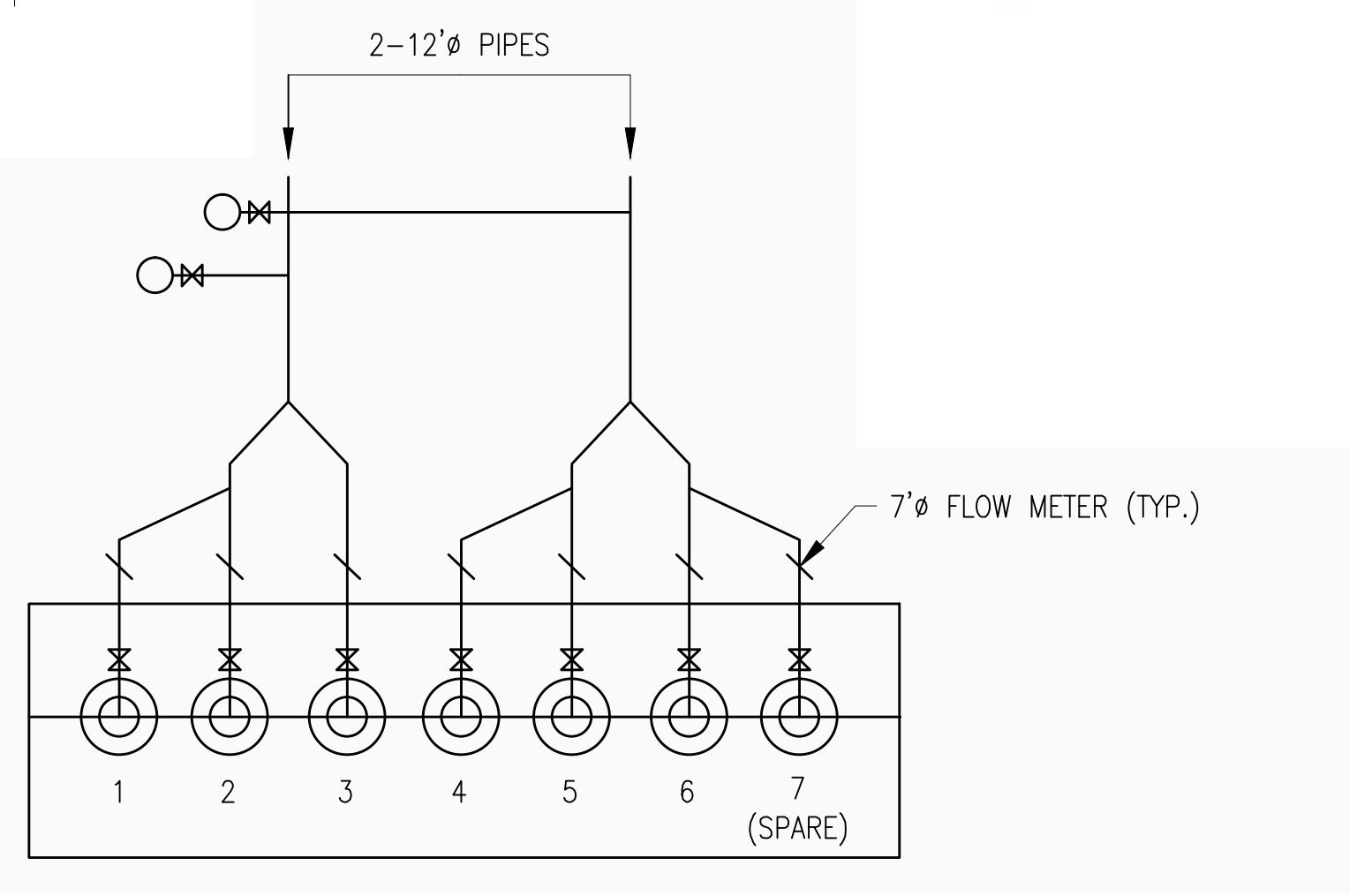


DIAGRAM
SACRAMENTO RIVER
PUMPING - GENERATING PLANT

NOTES

1. Floor plan shown with 4 - 500 cfs units and 1 - 500 cfs spare unit.

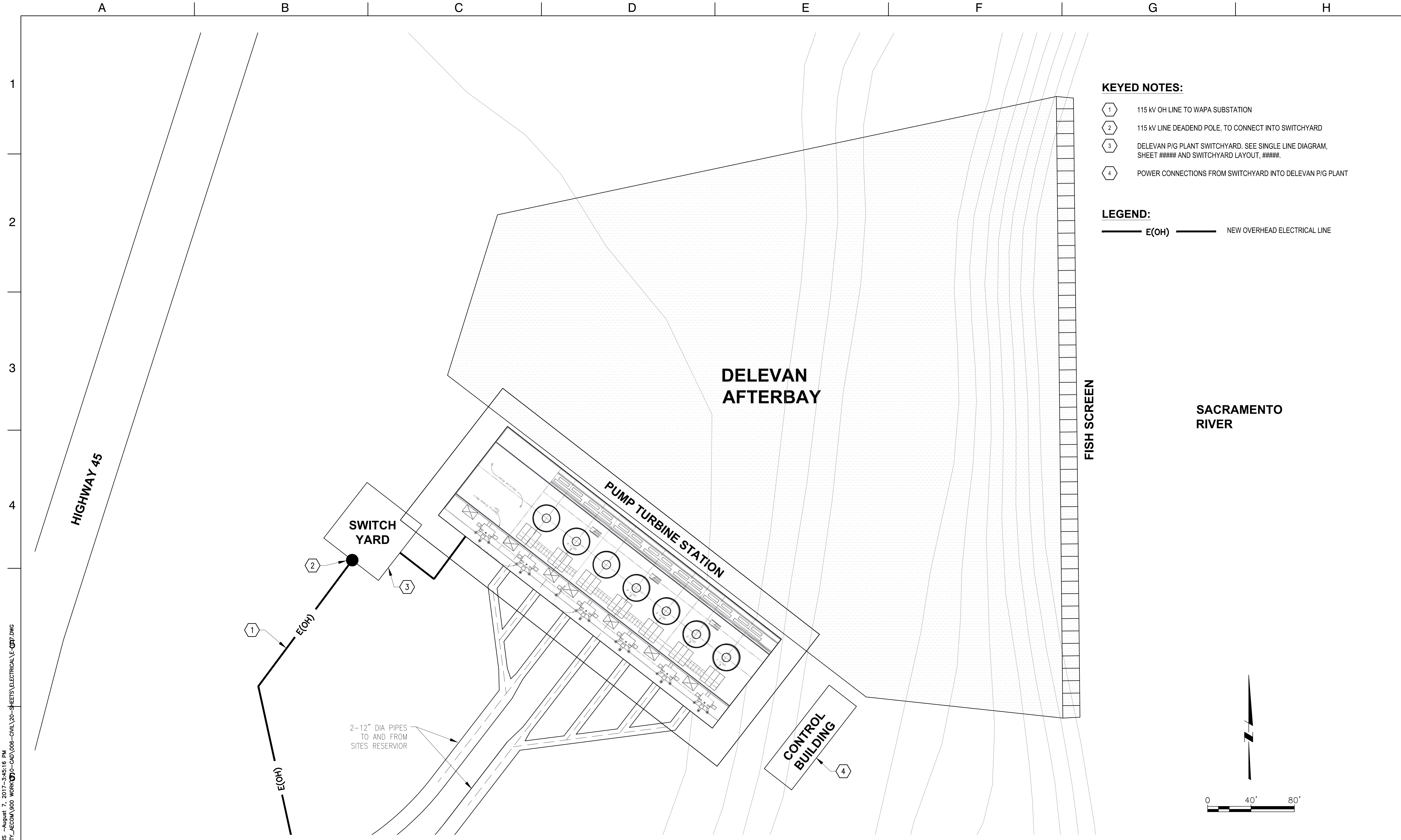
LEGEND

○✂ Air Chamber w/96" BFV

⊕ 500 cfs Pump/Turbine Motor Unit

PLOTTED BY: BARNHART, DENNIS - August 7, 2017 - 3:45:16 PM
 DRAWING: G:\SR\PA\FEASIBILITY_AECOM\900 WORK\0-CAD\006-CIVIL\20-SHEETS\ELECTRICAL\E-010.DWG

DESIGNED S. KHALSA		APPROVAL RECOMMENDED			REVIEWED MIKE FORREST	DATE 08/04/2017		WSIP APPLICATION ATTACHMENT A4.A		SPEC NO.
DRAWN D. LARSON		APPROVAL BY			REG. CE. NO. 27855 APPROVAL RECOMMENDED SHABAD KHALSA REG. CE. NO. 11185			DELEVAN PUMPING/ GENERATING PLANT		DRAWING NO. E-106
CHECKED M. FORREST		ESTIMATE LEVEL FEASIBILITY		APPROVED JOE BARNES REG. CE. NO. 40105			FLOOR PLAN		REV. SHEET NO. 108	
REV	DATE	DESCRIPTION				SUB.	APPD			



KEYED NOTES:

- 1 115 kV OH LINE TO WAPA SUBSTATION
- 2 115 kV LINE DEADEND POLE, TO CONNECT INTO SWITCHYARD
- 3 DELEVAN P/G PLANT SWITCHYARD. SEE SINGLE LINE DIAGRAM, SHEET ##### AND SWITCHYARD LAYOUT, #####.
- 4 POWER CONNECTIONS FROM SWITCHYARD INTO DELEVAN P/G PLANT

LEGEND:

— E(OH) — NEW OVERHEAD ELECTRICAL LINE

PLOTTED BY: BARNHART, DENNIS - August 7, 2017 - 3:45:16 PM
 DRAWING: G:\S\N\PA\FEASIBILITY_AECOM\900_WORK\0-CAD\006-CIVIL\20-SHEETS\ELECTRICAL\E-107.DWG

DESIGNED	S. KHALSA
DRAWN	D. LARSON
CHECKED	M. FORREST
DATE	08/01/2017
DESCRIPTION	COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)
SUB.	WSIP
APPD	JB

APPROVAL RECOMMENDED	
APPROVAL BY	
ESTIMATE LEVEL	FEASIBILITY

AECOM <small>AECOM Technical Services, Inc. 2020 L Street, Suite 300 Sacramento, Ca 95811 T 916-414-5800 F 916-414-1557 www.aecom.com</small>	REVIEWED	DATE
	MIKE FORREST	08/04/2017
	REG. CE. NO. 27855	
	APPROVAL RECOMMENDED	
	SHABAD KHALSA	
	REG. CE. NO. 11185	
	APPROVED	
	JOE BARNES	
	REG. CE. NO. 40105	



WSIP APPLICATION ATTACHMENT A4.A
DELEVAN PUMPING/ GENERATING PLANT
SITE PLAN

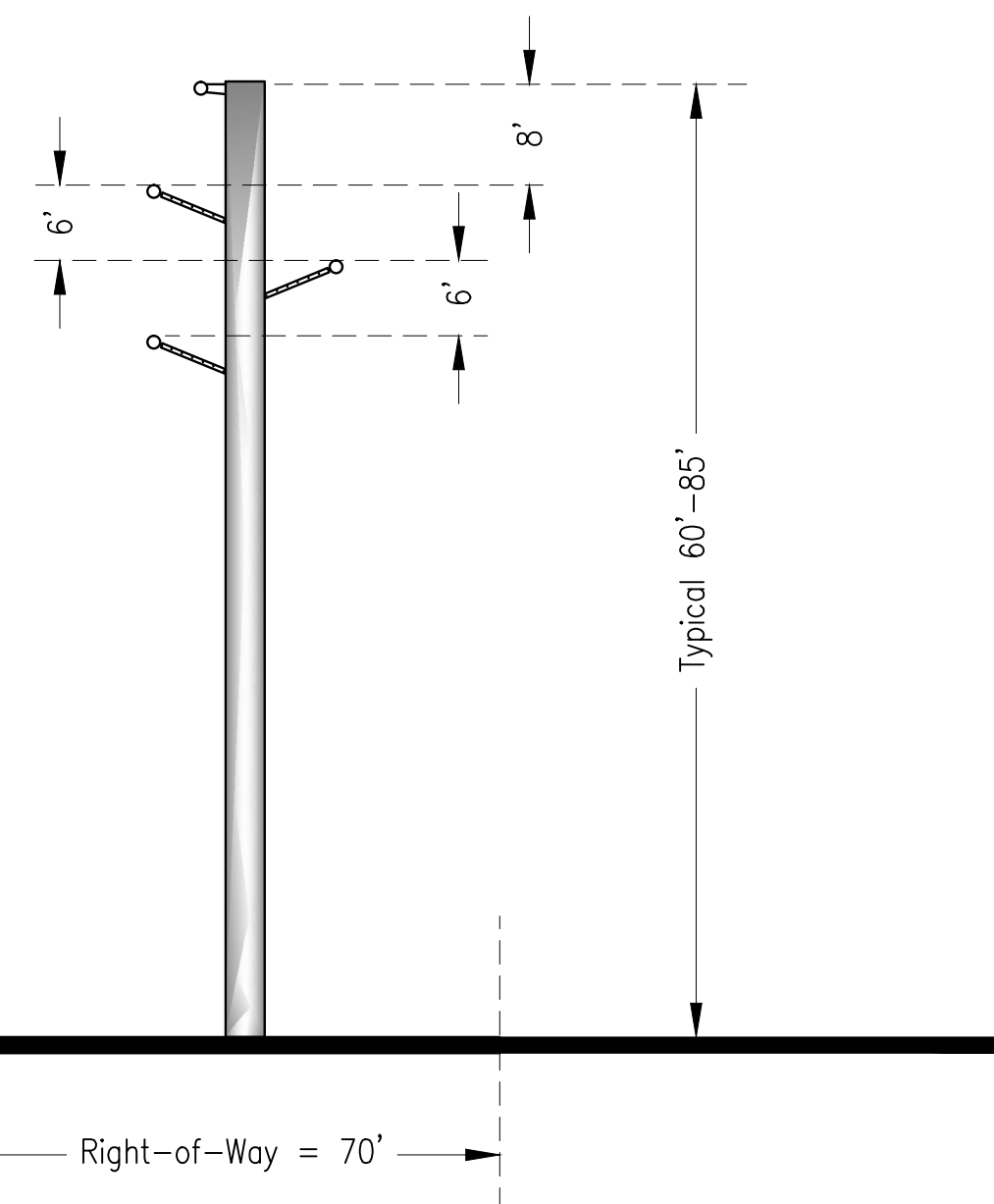
SPEC. NO.	
DRAWING NO.	E-107
REV.	SHEET NO.
	109



230kV DOUBLE CIRCUIT LATTICE STRUCTURE
SCALE: NTS

230kV DOUBLE CIRCUIT STEEL MONO-POLE
SCALE: NTS

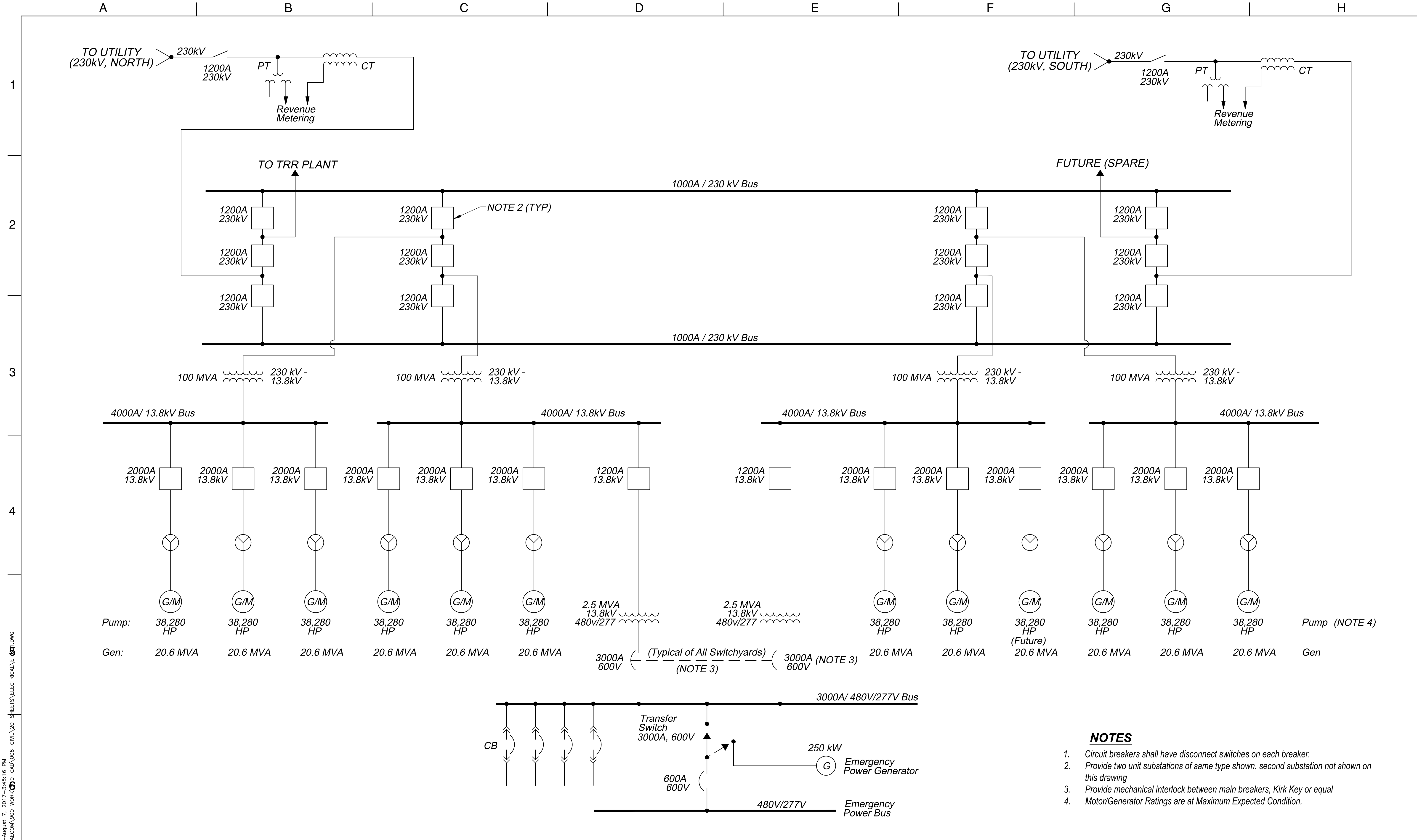
**230kV SINGLE CIRCUIT STEEL MONO-POLE
(FUTURE DOUBLE CIRCUIT STEEL MONO-POLE)**
SCALE: NTS



115kV SINGLE CIRCUIT STEEL MONO-POLE
SCALE: NTS

PLOTTED BY: BARNHART, DENNIS -- August 7, 2017 -- 3:45:16 PM
 DRAWING: G:\SRIPA\FEASIBILITY_AECOM\900 WORK\0-CAD\006-CIVIL\20-SHEETS\ELECTRICAL\E-01.DWG

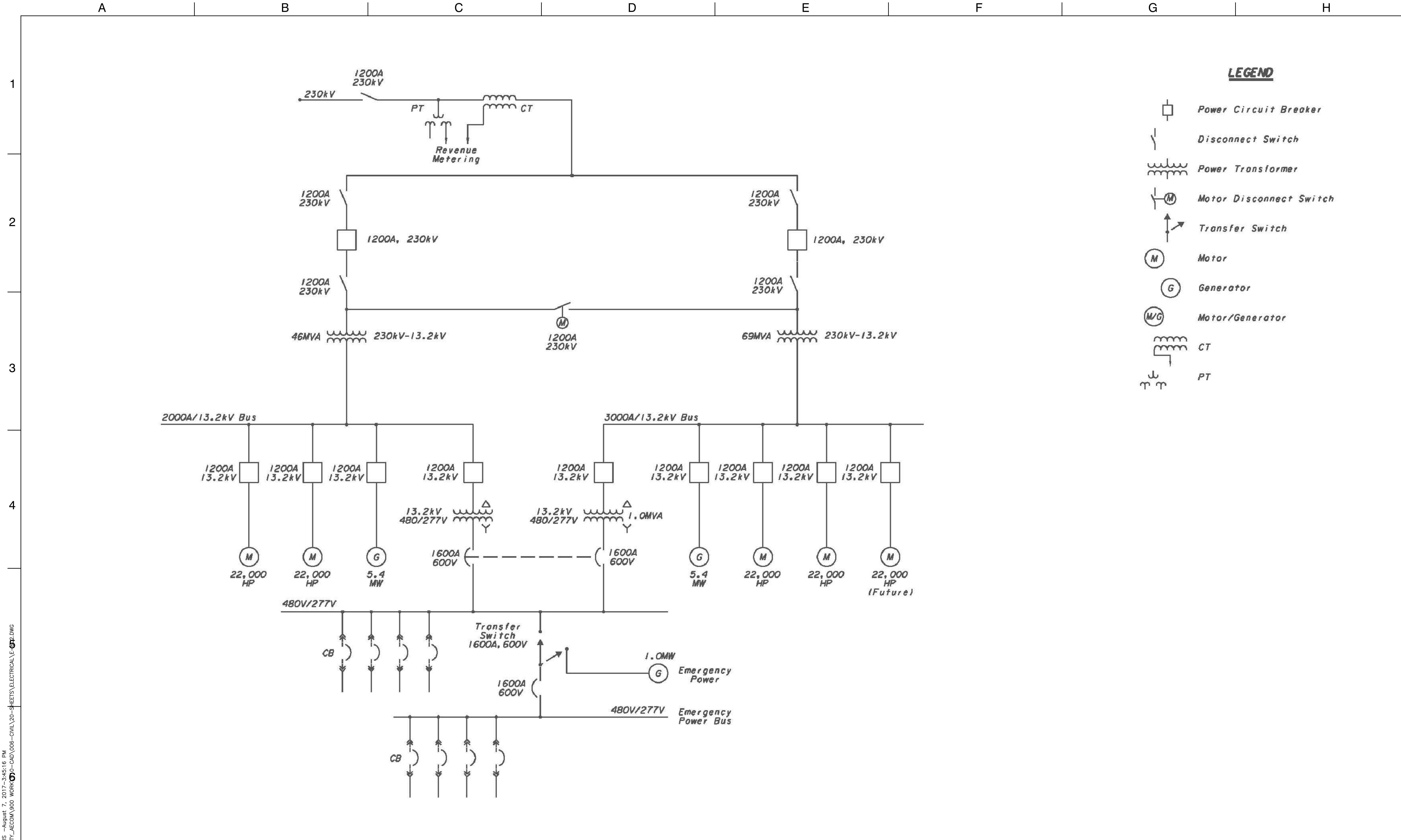
				DESIGNED S. KHALSA	APPROVAL RECOMMENDED		REVIEWED MIKE FORREST REG. CE. NO. 27855	DATE 08/04/2017		WSIP APPLICATION ATTACHMENT A4.A		SPEC NO.
				DRAWN D. LARSON	APPROVAL BY		APPROVAL RECOMMENDED SHABAD KHALSA REG. CE. NO. 11185			DRAWING NO. E-501		
				CHECKED M. FORREST	ESTIMATE LEVEL FEASIBILITY		APPROVED JOE BARNES REG. CE. NO. 40105			REV. SHEET NO. 110		
A3-A	08/01/2017	COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)	WSIP	JB								
REV	DATE	DESCRIPTION	SUB.	APPD								



- NOTES**
1. Circuit breakers shall have disconnect switches on each breaker.
 2. Provide two unit substations of same type shown, second substation not shown on this drawing
 3. Provide mechanical interlock between main breakers, Kirk Key or equal
 4. Motor/Generator Ratings are at Maximum Expected Condition.

PLOTTED BY: BARNHART, DENNIS - August 7, 2017 - 3:45:16 PM
 DRAWING: G:\SR\PA\FEASIBILITY_AECOM\900 WORK\0-CAD\006-CIVIL\20-SHEETS\ELECTRICAL\E-01.DWG

DESIGNED S. KHALSA		APPROVAL RECOMMENDED			REVIEWED MIKE FORREST	DATE 08/04/2017			WSIP APPLICATION ATTACHMENT A4.A		SPEC NO.
DRAWN D. LARSON		APPROVAL BY			REG. CE. NO. 27855 APPROVAL RECOMMENDED SHABAD KHALSA REG. CE. NO. 11185				SITES SWITCHYARD SINGLE LINE DIAGRAM		DRAWING NO. E-601
CHECKED M. FORREST		ESTIMATE LEVEL FEASIBILITY		AECOM Technical Services, Inc. 2020 L Street, Suite 300 Sacramento, CA 95811 T 916-414-5800 F 916-414-1557 www.aecom.com		APPROVED JOE BARNES REG. CE. NO. 40105		REV.	SHEET NO.	111	
A3-A	08/01/2017	COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)	WSIP	JB							



LEGEND

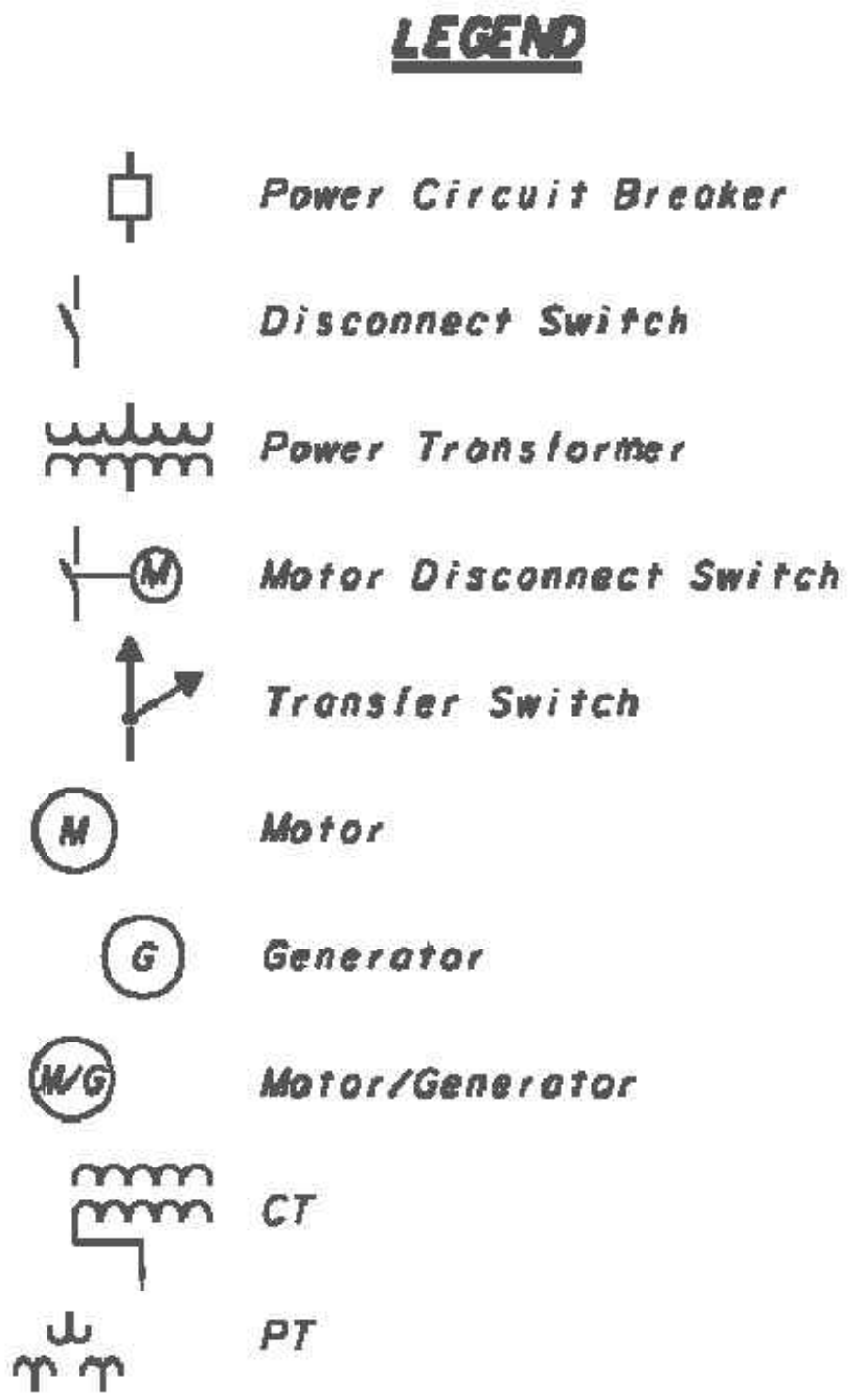
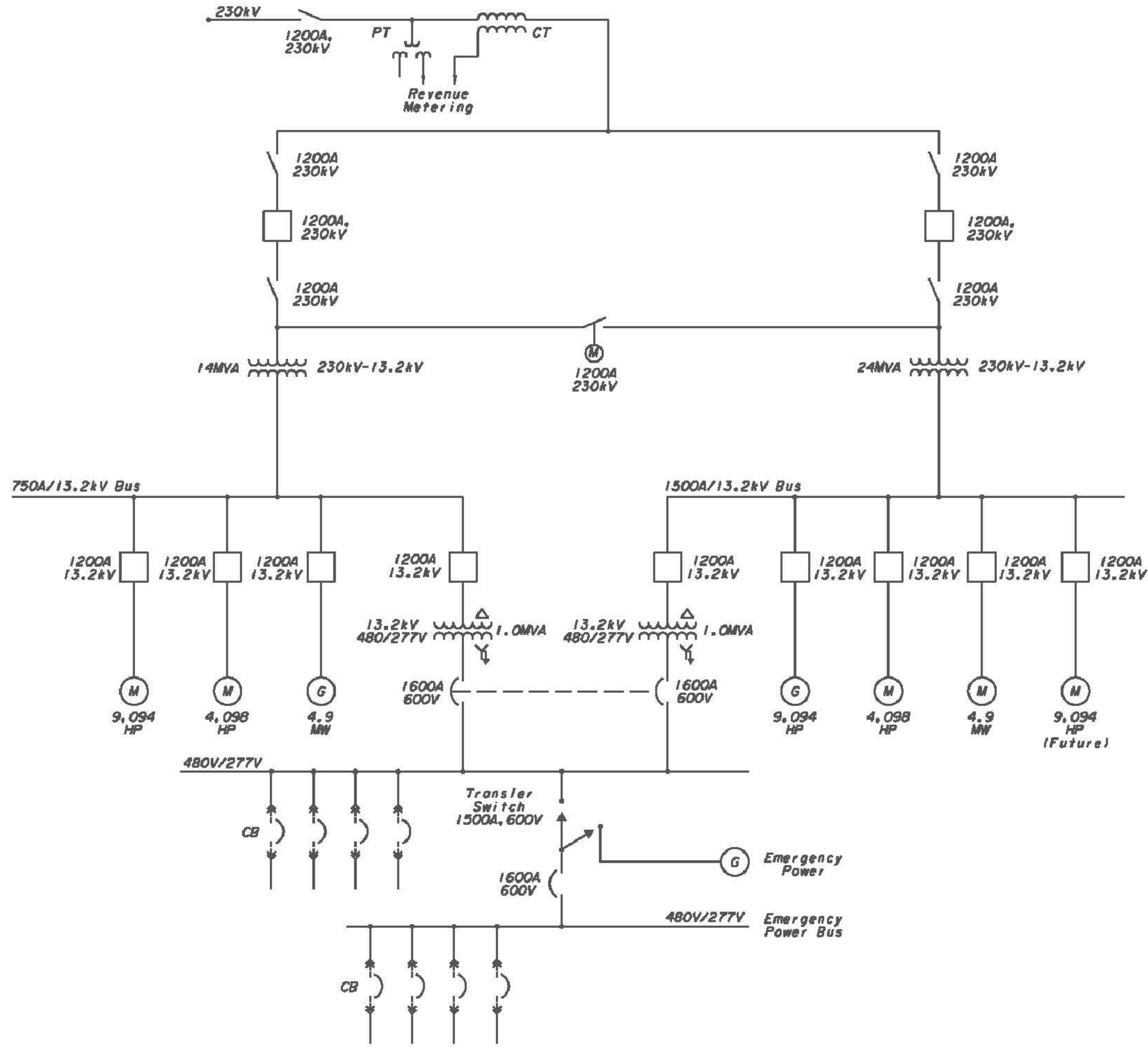
	Power Circuit Breaker
	Disconnect Switch
	Power Transformer
	Motor Disconnect Switch
	Transfer Switch
	Motor
	Generator
	Motor/Generator
	CT
	PT

PLOTTED BY: BARNHART, DENNIS - August 7, 2017 - 3:45:16 PM
 DRAWING: G:\SR\PA\FEASIBILITY_AECOM\900 WORK\0-CAD\006-CIVIL\20-SHEETS\ELECTRICAL\E-602.DWG

				DESIGNED S. KHALSA	APPROVAL RECOMMENDED	 REVIEWED MIKE FORREST REG. CE. NO. 27855 APPROVAL RECOMMENDED SHABAD KHALSA REG. CE. NO. 11185 APPROVED JOE BARNES REG. CE. NO. 40105	DATE 08/04/2017	WSIP APPLICATION ATTACHMENT A4.A		SPEC. NO.
				DRAWN D. LARSON	APPROVAL BY		DELEVAN SWITCHYARD SINGLE LINE DIAGRAM		DRAWING NO. E-602	
				CHECKED M. FORREST	ESTIMATE LEVEL FEASIBILITY			REV.	SHEET NO. 112	
A3-A	08/01/2017	COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)	WSIP	JB						
REV	DATE	DESCRIPTION	SUB.	APPD						



1
2
3
4



PLOTTED BY: BARNHART, DENNIS -- August 7, 2017 -- 3:45:16 PM
 DRAWING: G:\SR\PA\FEASIBILITY_AECOM\900 WORK\6-CAD\006-CIVIL\20-SHEETS\ELECTRICAL\E-603.DWG

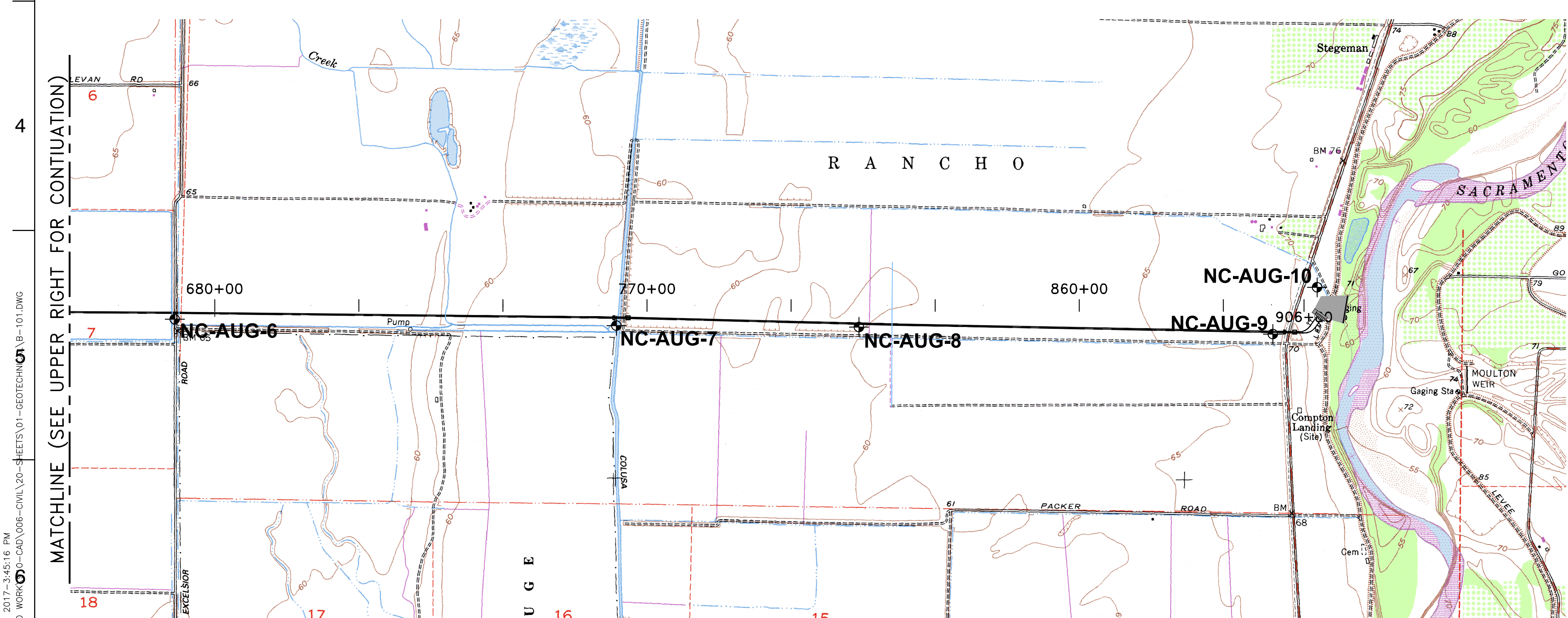
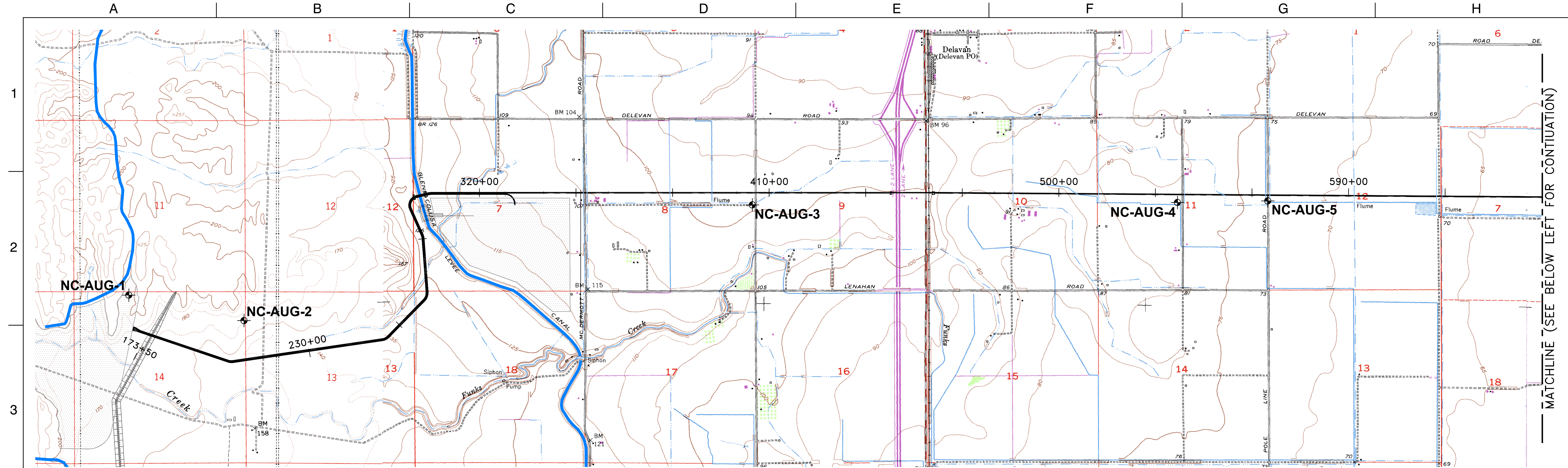
DESIGNED	S. KHALSA
DRAWN	D. LARSON
CHECKED	M. FORREST
APPROVAL	RECOMMENDED
APPROVAL	BY
ESTIMATE LEVEL	FEASIBILITY

DESIGNED	S. KHALSA
DRAWN	D. LARSON
CHECKED	M. FORREST
APPROVAL	RECOMMENDED
APPROVAL	BY
ESTIMATE LEVEL	FEASIBILITY

AECOM Technical Services, Inc. 2020 L Street, Suite 300 Sacramento, Ca 95811 T 916-414-5800 F 916-414-1557 www.aecom.com	REVIEWED MIKE FORREST REG. CE. NO. 27855 APPROVAL RECOMMENDED SHABAD KHALSA REG. CE. NO. 11185 APPROVED JOE BARNES REG. CE. NO. 40105	DATE 08/04/2017
--	---	--------------------



WSIP APPLICATION ATTACHMENT A4.A		SPEC. NO.
TRR SWITCHYARD SINGLE LINE DIAGRAM		DRAWING NO. E-603
REV.	DATE	SHEET NO. 113



PLAN

HORIZONTAL SCALE: 1" = 1500'

SOURCE:
 Sites Project, Feasibility Study for Conveyance, Colusa Basin Drain, and Funks
 Reservoir Modification-Aug-03.pdf

PLOTTED BY: BARNHART, DENNIS - August 6, 2017 - 3:45:16 PM
 DRAWING: G:\SR\PA\FEASIBILITY_AECOM\900 WORK\0-CAD\006-CIVIL\20-SHEETS\01-GEOTECHNICAL\B-101.DWG

DESIGNED	DWR
DRAWN	D. LARSON
CHECKED	M. FORREST
DATE	08/01/2017
DESCRIPTION	COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)
SUB.	WSIP
APPD	JB

APPROVAL RECOMMENDED	
APPROVAL BY	
ESTIMATE LEVEL	FEASIBILITY

 <small>AECOM Technical Services, Inc. 2020 L Street, Suite 300 Sacramento, Ca 95811 T 916-414-5800 F 916-414-1557 www.aecom.com</small>	REVIEWED	DATE
	MIKE FORREST	08/04/2017
	REG. CE. NO. 27855	
	APPROVAL RECOMMENDED	
	REG. CE. NO.	
	APPROVED	
	JOE BARNES	
	REG. CE. NO. 40105	



WSIP APPLICATION ATTACHMENT A4.A		SPEC. NO.
GEOTECHNICAL DELEVAN AND TRR PIPELINE BORING LOGS		DRAWING NO. B-101
		REV. SHEET NO. 115

MATCHLINE (SEE BELOW LEFT FOR CONTINUATION)

MATCHLINE (SEE UPPER RIGHT FOR CONTINUATION)

A

B

C

D

E

F

G

H

State of California
The Resources Agency
DEPARTMENT OF WATER RESOURCES

SHEET 1 of 3
HOLE NO. NC-AUG-1
ELEV. 200' FEET
DEPTH 51.5 FEET

DRILL HOLE LOG

PROJECT: SITES RESERVOIR PROJECT
DATE DRILLED: 05/05/01
FEATURE: NEW CANAL ALIGNMENT
ATTITUDE: VERTICAL
LOCATION: CAL COORDS: N-2247683; E-6482710
LOGGED BY: D.FOREWALTER, G.GORDON
CONTR: LAYNE-CHRISTENSEN DRILL RIG: CME-850
DEPTH TO WATER: NOT DETERMINED
*As measured off of contour maps prepared by DWR (contour interval=10 feet).

Table with columns: DEPTH (ELEV), LOG, FIELD CLASSIFICATION AND DESCRIPTION, SAMPLE NO., MODE, REMARKS. Includes data for Eocene Tehama Formation and various soil types like clay and sand.

State of California
The Resources Agency
DEPARTMENT OF WATER RESOURCES

SHEET 2 of 3
HOLE NO. NC-AUG-1

DRILL HOLE LOG

PROJECT & FEATURE: SITES RESERVOIR PROJECT; New Canal Alignment

Table with columns: DEPTH (ELEV), LOG, FIELD CLASSIFICATION AND DESCRIPTION, SAMPLE NO., MODE, REMARKS. Includes data for Great Valley Sequence and Cretaceous Cortina Formation.

State of California
The Resources Agency
DEPARTMENT OF WATER RESOURCES

SHEET 3 of 3
HOLE NO. NC-AUG-1

DRILL HOLE LOG

PROJECT & FEATURE: SITES RESERVOIR PROJECT; New Canal Alignment

Table with columns: DEPTH (ELEV), LOG, FIELD CLASSIFICATION AND DESCRIPTION, SAMPLE NO., MODE, REMARKS. Includes data for various soil types and a note about back filling.

State of California
The Resources Agency
DEPARTMENT OF WATER RESOURCES

SHEET 1 of 3
HOLE NO. NC-AUG-2
ELEV. 170' FEET
DEPTH 51.5 FEET

DRILL HOLE LOG

PROJECT: SITES RESERVOIR PROJECT
DATE DRILLED: 05/05/01
FEATURE: NEW CANAL ALIGNMENT
ATTITUDE: VERTICAL
LOCATION: CAL COORDS: N-2246895; E-6486288
LOGGED BY: D.FOREWALTER, G.GORDON
CONTR: LAYNE-CHRISTENSEN DRILL RIG: CME-850
DEPTH TO WATER: 5.0'
*As measured off of contour maps prepared by DWR (contour interval=10 feet).

Table with columns: DEPTH (ELEV), LOG, FIELD CLASSIFICATION AND DESCRIPTION, SAMPLE NO., MODE, REMARKS. Includes data for Eocene Tehama Formation and various soil types.

State of California
The Resources Agency
DEPARTMENT OF WATER RESOURCES

SHEET 2 of 3
HOLE NO. NC-AUG-2

DRILL HOLE LOG

PROJECT & FEATURE: SITES RESERVOIR PROJECT; New Canal Alignment

Table with columns: DEPTH (ELEV), LOG, FIELD CLASSIFICATION AND DESCRIPTION, SAMPLE NO., MODE, REMARKS. Includes data for various soil types and shear strength values.

State of California
The Resources Agency
DEPARTMENT OF WATER RESOURCES

SHEET 3 of 3
HOLE NO. NC-AUG-2

DRILL HOLE LOG

PROJECT & FEATURE: SITES RESERVOIR PROJECT; New Canal Alignment

Table with columns: DEPTH (ELEV), LOG, FIELD CLASSIFICATION AND DESCRIPTION, SAMPLE NO., MODE, REMARKS. Includes data for various soil types and shear strength values.

State of California
The Resources Agency
DEPARTMENT OF WATER RESOURCES

SHEET 1 of 3
HOLE NO. NC-AUG-3
ELEV. 95' FEET
DEPTH 51.5 FEET

DRILL HOLE LOG

PROJECT: SITES RESERVOIR PROJECT
DATE DRILLED: 05/06/01
FEATURE: NEW CANAL ALIGNMENT
ATTITUDE: VERTICAL
LOCATION: CAL COORDS: N-2260486; E-6502080
LOGGED BY: D.FOREWALTER, G.GORDON
CONTR: LAYNE-CHRISTENSEN DRILL RIG: CME-850
DEPTH TO WATER: 5.5'
*As measured off of contour maps prepared by DWR (contour interval=10 feet).

Table with columns: DEPTH (ELEV), LOG, FIELD CLASSIFICATION AND DESCRIPTION, SAMPLE NO., MODE, REMARKS. Includes data for Pleistocene Lower River Bank Formation and various soil types.

State of California
The Resources Agency
DEPARTMENT OF WATER RESOURCES

SHEET 2 of 3
HOLE NO. NC-AUG-3

DRILL HOLE LOG

PROJECT & FEATURE: SITES RESERVOIR PROJECT; New Canal Alignment

Table with columns: DEPTH (ELEV), LOG, FIELD CLASSIFICATION AND DESCRIPTION, SAMPLE NO., MODE, REMARKS. Includes data for various soil types and shear strength values.

SOURCE:
Sites Project, Feasibility Study for
Conveyance, Colusa Basin Drain, and
Funks Reservoir Modification-Aug-03.pdf

VERTICAL: PLOTTED BY: BARNHART, DENNIS - August 6, 2017 - 3:45:16 PM
DRAWING: G:\SALPA\FEASIBILITY_AECOM\900 WORK\06-CAD\06G-SHEETS\01-GEOTECHNICAL\08-301.DWG

Table with columns: DESIGNED, DRAWN, CHECKED, ESTIMATE LEVEL, FEASIBILITY. Includes names like DWR, D. LARSON, M. FORREST.

Table with columns: REVIEWED, DATE, APPROVAL RECOMMENDED, APPROVAL BY. Includes name MIKE FORREST and date 08/04/2017.

Table with columns: REVIEWED, DATE, APPROVAL RECOMMENDED, APPROVAL BY. Includes name MIKE FORREST and date 08/04/2017.



WSIP APPLICATION ATTACHMENT A4.A
GEOTECHNICAL DELEVAN
AND TRR PIPELINE BORING LOGS

Table with columns: SPEC. NO., DRAWING NO., REV., SHEET NO. Includes drawing number B-301 and sheet number 116.

DRILL HOLE LOG

PROJECT & FEATURE: SITES RESERVOIR PROJECT; New Canal Alignment

DEPTH (ELEV.) (ft)	LOG	FIELD CLASSIFICATION AND DESCRIPTION	SAMPLE NO.	MODE	REMARKS
36.0					Shear Strength = 4.5 kg/cm ² Unconfined Strength = 1.25 tons/ft ²
38.0				AD	
40.0	CL	40.0 to 41.5' Clay (CL); silty, dark yellowish-brown (10YR 4/6); firm to stiff, slightly moist; medium plasticity; medium toughness; high dry strength.	9	DR	California Modified Blow Count-7,10,11 Shear Strength = 9.0 kg/cm ² Unconfined Strength = 2.5 tons/ft ²
42.0				AD	
44.0					
46.0	ML	45.0 to 46.5' Silty (ML); clayey; dark yellowish-brown (10YR 4/4); firm, slightly moist; medium plasticity; medium toughness.	10	DR	California Modified Blow Count- no count taken Shear Strength = 8.25 kg/cm ² Unconfined Strength = 2.7 tons/ft ²
48.0				AD	
50.0	CL	50.0 to 51.5' Clay (CL); silty; dark yellowish-brown (10YR 4/6); stiff to very stiff, slightly moist; high plasticity; low to medium toughness; high dry strength. BOH = 51.5'	11	DR	California Modified Blow Count- 6,12,22 Shear Strength = 8.75 kg/cm ² Unconfined Strength = 1.5 tons/ft ²
52.0					Hole completed by back filling with cuttings.
54.0					

DRILL HOLE LOG

PROJECT: SITES RESERVOIR PROJECT
FEATURE: NEW CANAL ALIGNMENT
LOCATION: CAL COORDS: N- 2250580; E-6515287
CONTR: LAYNE-CHRISTENSEN
DATE DRILLED: 05/04/01
ATTITUDE: VERTICAL
LOGGED BY: B. ROSS, C. GOLSH
DEPTH TO WATER: 6.9'

DEPTH (ELEV.) (ft)	LOG	FIELD CLASSIFICATION AND DESCRIPTION	SAMPLE NO.	MODE	REMARKS
0.0		PLEISTOCENE LOWER RIVER BANK FORMATION 0.0 to 51.5'			8" hollow stem auger used for drilling
2.0				AD	
4.0		2.0 to 4.5' Clay (CL); silty; very dark grayish-brown (10YR 3/2); soft, moist; medium plasticity; high dry strength; low toughness.	1	PS	Shelby Tube 400 psi
6.0				AD	
8.0					
10.0		5.0 to 7.5' Clay (CL); slightly silty; dark grayish-brown (10YR 4/2); soft, slightly moist; medium plasticity; high dry strength; low toughness; some gray mottling and minor calcium carbonate nodules.	2	PS	Shelby Tube 450 psi Shear Strength = 8.2 kg/cm ² Unconfined Strength = .75 tons/ft ²
12.0				AD	
14.0					
16.0		10.0 to 11.5' Clay (CL); slightly silty; brown (10YR 4/6); soft, slightly moist; medium plasticity; medium toughness; high dry strength; minor calcium carbonate nodules and some rootlets.	3	DR	California Modified Blow Count-5,6,9 Shear Strength = 6.0 kg/cm ² Unconfined Strength = 1.5 tons/ft ²
18.0				AD	
20.0					
22.0					
24.0					
26.0		15.0 to 16.5' Clay (CL); slightly silty; dark yellowish-brown (10YR 4/4); firm, slightly moist; medium plasticity; medium toughness; high dry strength; minor organics and some calcium carbonate nodules.	4	DR	California Modified Blow Count-6,8,12

DRILL HOLE LOG

DEPTH (ELEV.) (ft)	LOG	FIELD CLASSIFICATION AND DESCRIPTION	SAMPLE NO.	MODE	REMARKS
16.0					Shear Strength = 12.5 kg/cm ² Unconfined Strength = 3.5 tons/ft ²
18.0				AD	
20.0	CL	20.0 to 21.5' Clay (CL); silty; dark yellowish-brown (10YR 4/4); soft, slightly moist; medium plasticity; low toughness; high dry strength; some dark mottling and calcium carbonate.	5	DR	California Modified Blow Count-4,7,11 Shear Strength = 10+ kg/cm ² Unconfined Strength = 3.0 tons/ft ²
22.0				AD	
24.0					
26.0	SP	25.0 to 28.5' Sand (SP); very fine-grained, angular to sub-angular; minor silt; minor clay; very dark grayish-brown (2.5Y 3/2); loose, wet; unconsolidated.	6	DR	California Modified Blow Count-6,9,9 Shear Strength = 8.0 kg/cm ² Unconfined Strength = 1.25 tons/ft ²
28.0				AD	
30.0					
32.0		30.0-31.5' No Recovery.	7	DR	California Modified Blow Count-9,22,23 Shear Strength = N/A Unconfined Strength = N/A
34.0				AD	
36.0					
38.0					
40.0					
42.0					
44.0					
46.0					
48.0					
50.0					
52.0					
54.0					
56.0					
58.0					
60.0					
62.0					
64.0					
66.0					
68.0					
70.0					
72.0					
74.0					
76.0					
78.0					
80.0					
82.0					
84.0					
86.0					
88.0					
90.0					
92.0					
94.0					
96.0					
98.0					
100.0					
102.0					
104.0					
106.0					
108.0					
110.0					
112.0					
114.0					
116.0					
118.0					
120.0					
122.0					
124.0					
126.0					
128.0					
130.0					
132.0					
134.0					
136.0					
138.0					
140.0					
142.0					
144.0					
146.0					
148.0					
150.0					
152.0					
154.0					
156.0					
158.0					
160.0					
162.0					
164.0					
166.0					
168.0					
170.0					
172.0					
174.0					
176.0					
178.0					
180.0					
182.0					
184.0					
186.0					
188.0					
190.0					
192.0					
194.0					
196.0					
198.0					
200.0					
202.0					
204.0					
206.0					
208.0					
210.0					
212.0					
214.0					
216.0					
218.0					
220.0					
222.0					
224.0					
226.0					
228.0					
230.0					
232.0					
234.0					
236.0					
238.0					
240.0					
242.0					
244.0					
246.0					
248.0					
250.0					
252.0					
254.0					
256.0					
258.0					
260.0					
262.0					
264.0					
266.0					
268.0					
270.0					
272.0					
274.0					
276.0					
278.0					
280.0					
282.0					
284.0					
286.0					
288.0					
290.0					
292.0					
294.0					
296.0					
298.0					
300.0					
302.0					
304.0					
306.0					
308.0					
310.0					
312.0					
314.0					
316.0					
318.0					
320.0					
322.0					
324.0					
326.0					
328.0					
330.0					
332.0					
334.0					
336.0					
338.0					
340.0					
342.0					
344.0					
346.0					
348.0					
350.0					
352.0					
354.0					
356.0					
358.0					
360.0					
362.0					
364.0					
366.0					
368.0					
370.0					
372.0					
374.0					
376.0					
378.0					
380.0					
382.0					
384.0					
386.0					
388.0					
390.0					
392.0					
394.0					
396.0					
398.0					
400.0					
402.0					
404.0					
406.0					
408.0					
410.0					
412.0					
414.0					
416.0					
418.0					
420.0					
422.0					
424.0					
426.0					
428.0					
430.0					
432.0					
434.0					
436.0					
438.0					
440.0					
442.0					
444.0					
446.0					
448.0					
450.0					

DRILL HOLE LOG

PROJECT & FEATURE SITES RESERVOIR PROJECT, New Canal Alignment

Table with columns: DEPTH (ELEV.), LOG, FIELD CLASSIFICATION AND DESCRIPTION, SAMPLE NO., MODE, REMARKS. Includes soil descriptions like Clay (CL) and Silt (ML) with shear strength and unconfined strength values.

DRILL HOLE LOG

PROJECT & FEATURE SITES RESERVOIR PROJECT, New Canal Alignment

Table with columns: DEPTH (ELEV.), LOG, FIELD CLASSIFICATION AND DESCRIPTION, SAMPLE NO., MODE, REMARKS. Includes soil descriptions like Sand (SM) and Clay (CL) with shear strength and unconfined strength values.

DRILL HOLE LOG

PROJECT SITES RESERVOIR PROJECT DATE DRILLED 05/01/01 ATTITUDE VERTICAL LOCATION NEW CANAL ALIGNMENT LOGGED BY B. ROSS, J. WEDDLE CONTR. LAYNE-CHRISTENSEN DRILL RIG CME-850 DEPTH TO WATER 12.0

Table with columns: DEPTH (ELEV.), LOG, FIELD CLASSIFICATION AND DESCRIPTION, SAMPLE NO., MODE, REMARKS. Includes soil descriptions like HOLOCENE BASIN DEPOSITS and Sand (SP) with shear strength and unconfined strength values.

DRILL HOLE LOG

PROJECT & FEATURE SITES RESERVOIR PROJECT, New Canal Alignment

Table with columns: DEPTH (ELEV.), LOG, FIELD CLASSIFICATION AND DESCRIPTION, SAMPLE NO., MODE, REMARKS. Includes soil descriptions like Clay (CL) and Sand (SP) with shear strength and unconfined strength values.

DRILL HOLE LOG

PROJECT & FEATURE SITES RESERVOIR PROJECT, New Canal Alignment

Table with columns: DEPTH (ELEV.), LOG, FIELD CLASSIFICATION AND DESCRIPTION, SAMPLE NO., MODE, REMARKS. Includes soil descriptions like Gravel (GW) and Clay (CL) with shear strength and unconfined strength values.

DRILL HOLE LOG

PROJECT SITES RESERVOIR PROJECT DATE DRILLED 05/01/01 ATTITUDE VERTICAL LOCATION CAL COORDS: N-2250416, E-6543015 LOGGED BY B. ROSS, J. WEDDLE CONTR. LAYNE-CHRISTENSEN DRILL RIG CME-850 DEPTH TO WATER 6.0

Table with columns: DEPTH (ELEV.), LOG, FIELD CLASSIFICATION AND DESCRIPTION, SAMPLE NO., MODE, REMARKS. Includes soil descriptions like PLEISTOCENE LOWER MODESTO FORMATION and Clay (CL) with shear strength and unconfined strength values.

DRILL HOLE LOG

PROJECT & FEATURE SITES RESERVOIR PROJECT, New Canal Alignment

Table with columns: DEPTH (ELEV.), LOG, FIELD CLASSIFICATION AND DESCRIPTION, SAMPLE NO., MODE, REMARKS. Includes soil descriptions like Clay (CL) and Gravel (GC) with shear strength and unconfined strength values.

DRILL HOLE LOG

PROJECT & FEATURE SITES RESERVOIR PROJECT, New Canal Alignment

Table with columns: DEPTH (ELEV.), LOG, FIELD CLASSIFICATION AND DESCRIPTION, SAMPLE NO., MODE, REMARKS. Includes soil descriptions like Gravel (GW) and Clay (CL) with shear strength and unconfined strength values.

SOURCE: Sites Project, Feasibility Study for Conveyance, Colusa Basin Drain, and Funks Reservoir Modification-Aug-03.pdf

VERTICAL PLOTTED BY: BARNHART, DENNIS - August 6, 2017 - 3:45:16 PM DRAWING: G:\S\PA\FEASIBILITY_AECOM\900 WORK\06-CAD\06-CAD\20-SHEETS\01-GEOTECHNICAL\B-303.DWG

Table with columns: REV, DATE, DESCRIPTION, SUB., APPD. Includes revision history for compliance with CCR Title 23, Div. 7, Ch. 1, §6003(a)(5)(D).

Table with columns: DESIGNED, DRAWN, CHECKED, APPROVAL RECOMMENDED, APPROVAL BY, ESTIMATE LEVEL, FEASIBILITY. Includes names like DWR, D. LARSON, M. FORREST.

Table with columns: REVIEWED, DATE, REG. CE. NO., APPROVED. Includes name MIKE FORREST and date 08/04/2017.



WSIP APPLICATION ATTACHMENT A4.A GEOTECHNICAL DELEVAN AND TRR PIPELINE BORING LOGS

Table with columns: SPEC. NO., DRAWING NO., REV., SHEET NO. Includes drawing number B-303 and sheet number 118.

A

B

C

D

E

F

G

H

State of California
The Resources Agency
DEPARTMENT OF WATER RESOURCES

SHEET 1 of 3
HOLE NO. NC-AUG-9
ELEV. 70* FEET
DEPTH 51.5 FEET

DRILL HOLE LOG

PROJECT: SITES RESERVOIR PROJECT
FEATURE: NEW CANAL ALIGNMENT
LOCATION: CAL COORDS: N-2250270, E- 6551632
CONTR: LAYNE-CHRISTENSEN
DATE DRILLED: 05/02/01
ATTITUDE: VERTICAL
LOGGED BY: B. ROSS, C. BOURNE
DEPTH TO WATER: 9.0'
*As measured off of contour maps prepared by DWR (contour interval=10 feet).

Table with columns: DEPTH (ELEV.), LOG, FIELD CLASSIFICATION AND DESCRIPTION, SAMPLE NO., MODE, REMARKS. Includes soil descriptions like 'PLEISTOCENE LOWER MODESTO FORMATION' and 'Clay (CL)' with shear strength data.

State of California
The Resources Agency
DEPARTMENT OF WATER RESOURCES

SHEET 2 of 3
HOLE NO. NC-AUG-9

DRILL HOLE LOG

PROJECT & FEATURE: SITES RESERVOIR PROJECT, New Canal Alignment

Table with columns: DEPTH (ELEV.), LOG, FIELD CLASSIFICATION AND DESCRIPTION, SAMPLE NO., MODE, REMARKS. Includes soil descriptions like 'Clay (CL)' and 'Silt (ML)' with shear strength data.

State of California
The Resources Agency
DEPARTMENT OF WATER RESOURCES

SHEET 3 of 3
HOLE NO. NC-AUG-9

DRILL HOLE LOG

PROJECT & FEATURE: SITES RESERVOIR PROJECT, New Canal Alignment

Table with columns: DEPTH (ELEV.), LOG, FIELD CLASSIFICATION AND DESCRIPTION, SAMPLE NO., MODE, REMARKS. Includes soil descriptions like 'Silt (ML)' and 'Clay (CL)' with shear strength data.

State of California
The Resources Agency
DEPARTMENT OF WATER RESOURCES

SHEET 1 of 3
HOLE NO. NC-AUG-10
ELEV. 65* FEET
DEPTH 51.5 FEET

DRILL HOLE LOG

PROJECT: SITES RESERVOIR PROJECT
FEATURE: NEW CANAL ALIGNMENT
LOCATION: CAL COORDS: N-2251244, E- 6552553
CONTR: LAYNE-CHRISTENSEN
DATE DRILLED: 05/02/01
ATTITUDE: VERTICAL
LOGGED BY: B. ROSS, C. BOURNE
DEPTH TO WATER: 9.0'
*As measured off of contour maps prepared by DWR (contour interval=10 feet).

Table with columns: DEPTH (ELEV.), LOG, FIELD CLASSIFICATION AND DESCRIPTION, SAMPLE NO., MODE, REMARKS. Includes soil descriptions like 'PLEISTOCENE LOWER MODESTO FORMATION' and 'Silt (ML)' with shear strength data.

State of California
The Resources Agency
DEPARTMENT OF WATER RESOURCES

SHEET 2 of 3
HOLE NO. NC-AUG-10

DRILL HOLE LOG

PROJECT & FEATURE: SITES RESERVOIR PROJECT, New Canal Alignment

Table with columns: DEPTH (ELEV.), LOG, FIELD CLASSIFICATION AND DESCRIPTION, SAMPLE NO., MODE, REMARKS. Includes soil descriptions like 'Clay (CL)' and 'Silt (ML)' with shear strength data.

State of California
The Resources Agency
DEPARTMENT OF WATER RESOURCES

SHEET 3 of 3
HOLE NO. NC-AUG-10

DRILL HOLE LOG

PROJECT & FEATURE: SITES RESERVOIR PROJECT, New Canal Alignment

Table with columns: DEPTH (ELEV.), LOG, FIELD CLASSIFICATION AND DESCRIPTION, SAMPLE NO., MODE, REMARKS. Includes soil descriptions like 'Sand (SM)' and 'Clay (CL)' with shear strength data.

SOURCE:
Sites Project, Feasibility Study for Conveyance,
Colusa Basin Drain, and Funks Reservoir
Modification-Aug-03.pdf

PLOTTED BY: BARNHART, DENNIS - August 6, 2017 - 3:45:16 PM
DRAWING: G:\S\PA\FEASIBILITY_AECOM\900 WORK\06-CAD\006-CIVIL\20-SHEETS\01-GEOTECHNICAL\B-304.DWG

Table with columns: REV, DATE, DESCRIPTION, SUB., APPD. Includes revision history for compliance with CCR Title 23.

Table with columns: DESIGNED, DRAWN, CHECKED, ESTIMATE LEVEL, APPROVAL RECOMMENDED, APPROVAL BY. Includes signatures and dates for DWR and AECOM.

Table with columns: REVIEWED, DATE, REG. CE. NO., APPROVED. Includes signature of Mike Forrest and Joe Barnes.



Table with columns: WSIP APPLICATION ATTACHMENT A4.A, GEOTECHNICAL DELEVAN AND TRR PIPELINE BORING LOGS, SPEC. NO., DRAWING NO. B-304, REV. SHEET NO. 119.

A

B

C

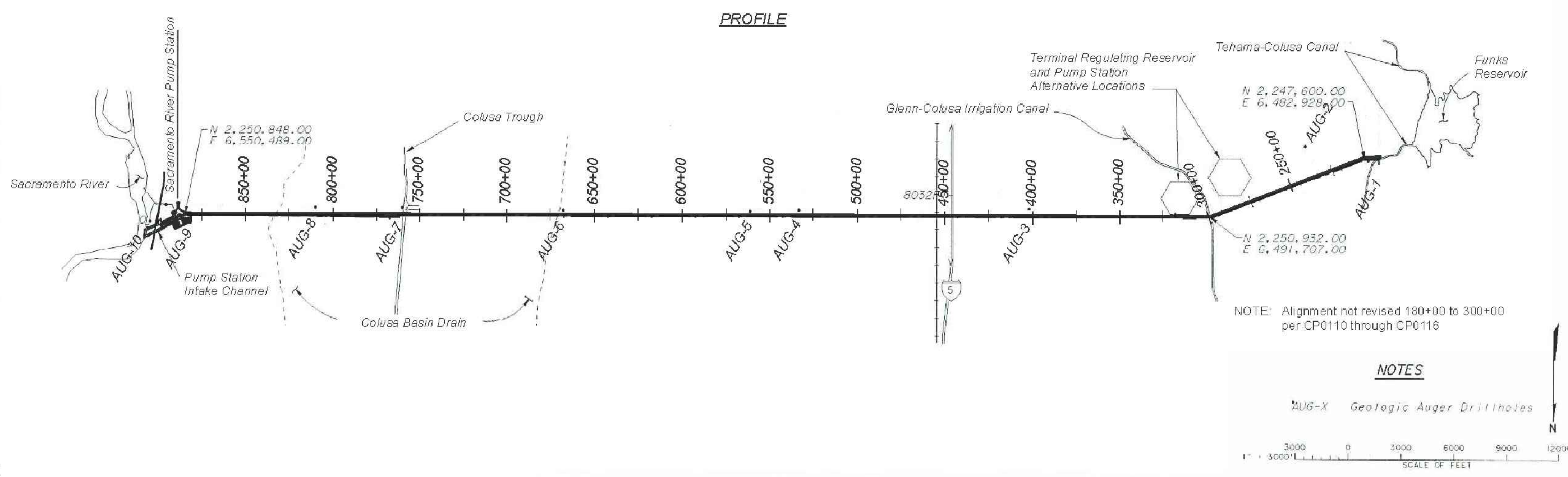
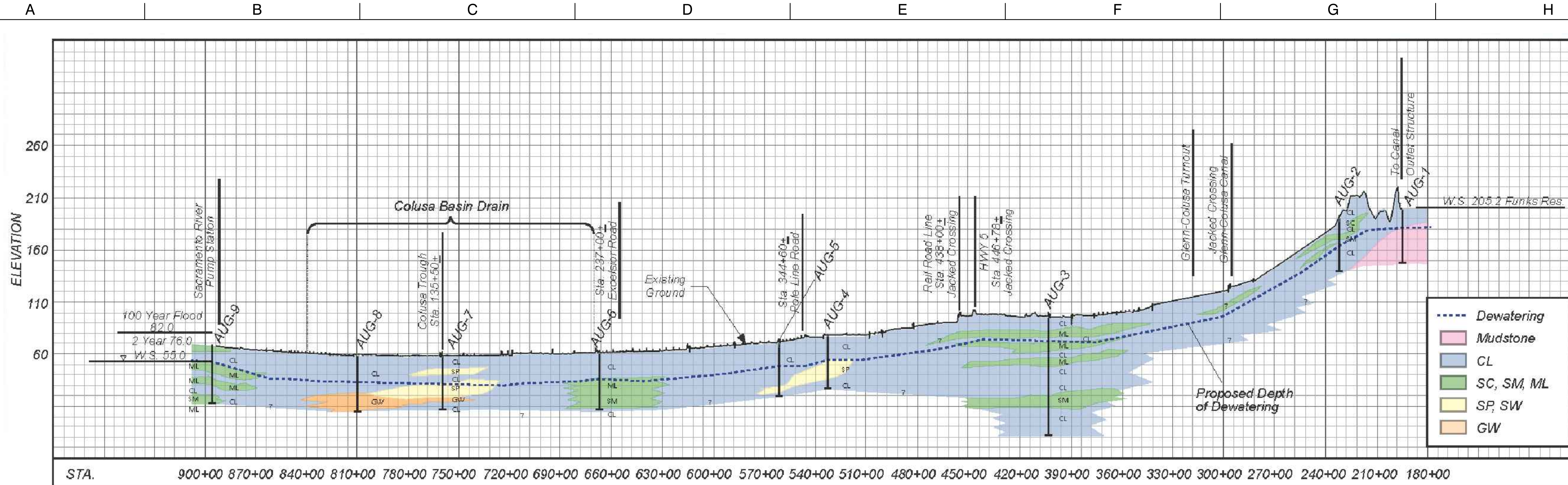
D

E

F

G

H



PLOTTED BY: BARNHART, DENNIS - August 6, 2017 - 3:45:16 PM
 DRAWING: G:\SR\PA\FEASIBILITY_AECOM\900 WORK\0-CAD\006-CIVIL\20-SHEETS\01-GEOTECHNICAL\B-305.DWG

REV	DATE	DESCRIPTION	SUB.	APPD
A3-A	08/01/2017	COMPLIANCE WITH CCR TITLE 23, DIV. 7, CH. 1, §6003(a)(5)(D)	WSIP	JB

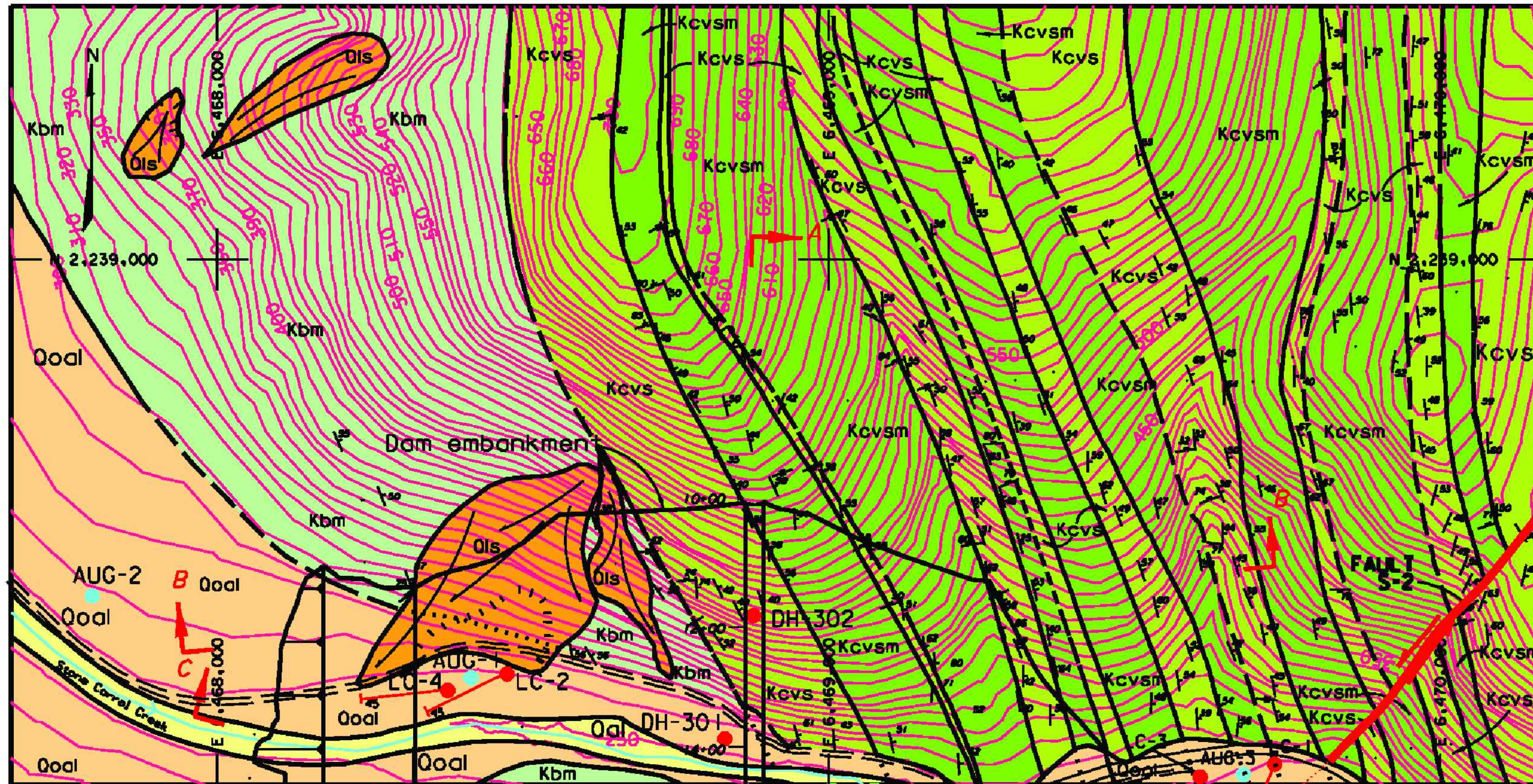
DESIGNED DWR	APPROVAL RECOMMENDED
DRAWN D. LARSON	APPROVAL BY
CHECKED M. FORREST	ESTIMATE LEVEL FEASIBILITY

AECOM <small>AECOM Technical Services, Inc. 2020 L Street, Suite 300 Sacramento, CA 95811 T 916-414-5800 F 916-414-1557 www.aecom.com</small>	REVIEWED MIKE FORREST REG. CE. NO. 27855 APPROVAL RECOMMENDED	DATE 08/04/2017
	REG. CE. NO. APPROVED JOE BARNES REG. CE. NO. 40105	



WSIP APPLICATION ATTACHMENT A4.A
**GEOTECHNICAL DELEVAN-TRR
 PIPELINE GEOLOGIC CROSS SECTION**

SPEC. NO.	
DRAWING NO.	B-305
REV.	SHEET NO. 120

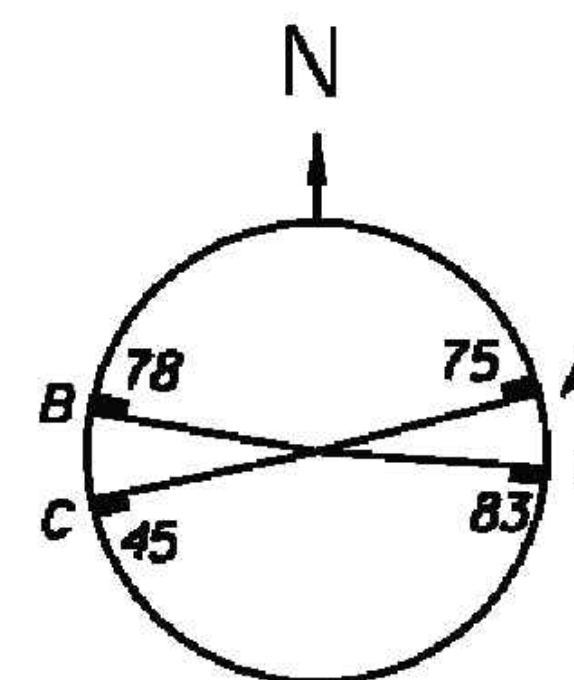


Notes

Contour maps prepared by Mapping and Photogrammetry Section, Division of Land and Right of Way, DWR, from 1:7200 Photography WR-BMV-C-3, November 12 and 19, 1998. Mapping Projection is NAD-83, CA Zone 2 NAVD 88.

Contour Interval shown on this map is 10 feet. The current topography includes 2 foot contour intervals but that level is turned off to avoid masking the geology.

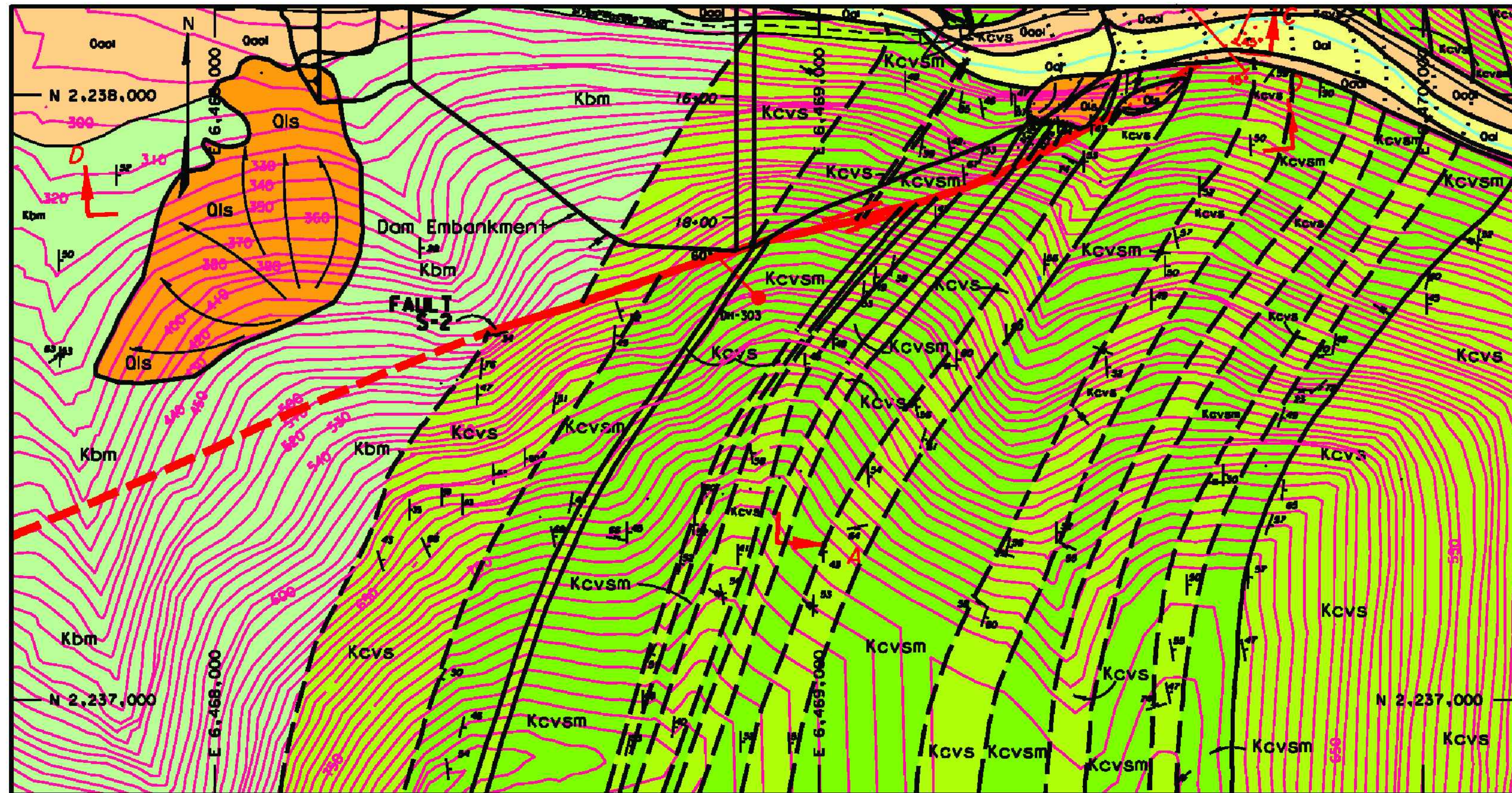
Geologic mapping and exploration performed by Division of Planning and Local Assistance, Northern District. Division of Engineering, Project Geology Section assisted.



JOINT ROSE. Average strike and dip of various indicated joint sets present within the immediate dam site area.

SHEET 121
B-1101

DRAWING SCALES		PROJECT REPORT NO. 94-30-02	DESIGNED BY Northern District Geol.	STATE OF CALIFORNIA THE RESOURCES AGENCY DEPARTMENT OF WATER RESOURCES DIVISION OF ENGINEERING PROJECT GEOLOGY SECTION STATE WATER FACILITIES	INTEGRATED STORAGE INVESTIGATION SITES RESERVOIR PROJECT SITES DAM SITE	PROJECT DATE 7-31-03
FULL SIZE 1" = 100' SCALE OF FEET		CONSTRUCTION SPEC. NO.	PROJECT GEOLOGY SECTION			1 OF 2
		PROJECT DRAWING NO. PG-SRP-18	DRAWING PREPARED BY CONNER/DUNSTON	EXPLORATION AND GEOLOGIC MAP		PLATE 7

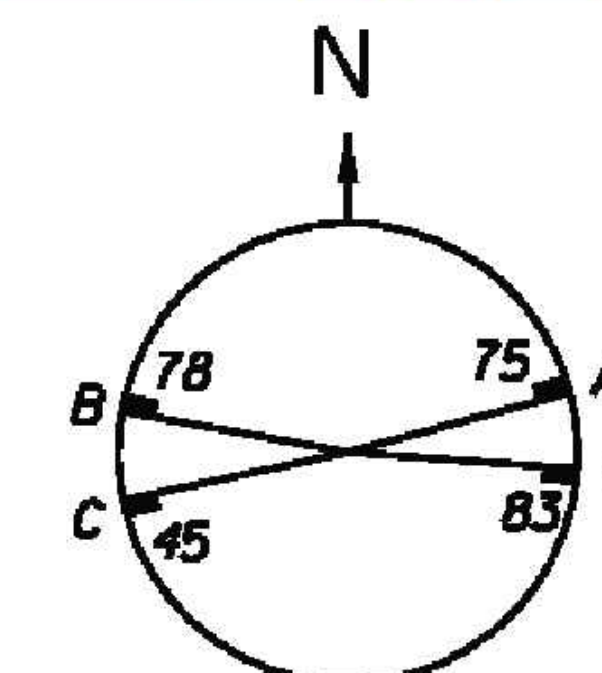


Notes

Contour maps prepared by Mapping and Photogrammetry Section, Division of Land and Right of Way, DWR, from 1:200 Photography WR-BMV-C-3, November 12 and 19, 1998. Mapping Projection is NAD-83, CA Zone 2 NAVD 88.

Contour Interval shown on this map is 10 feet. The current topography includes 2 foot contour intervals but that level is turned off to avoid masking the geology.

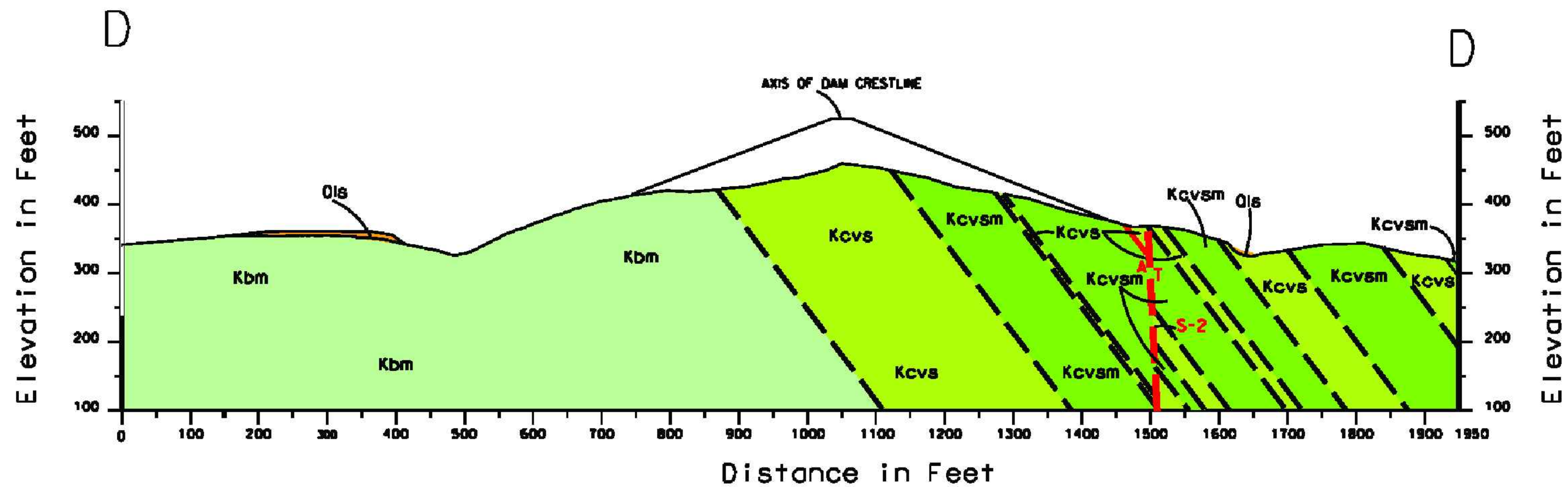
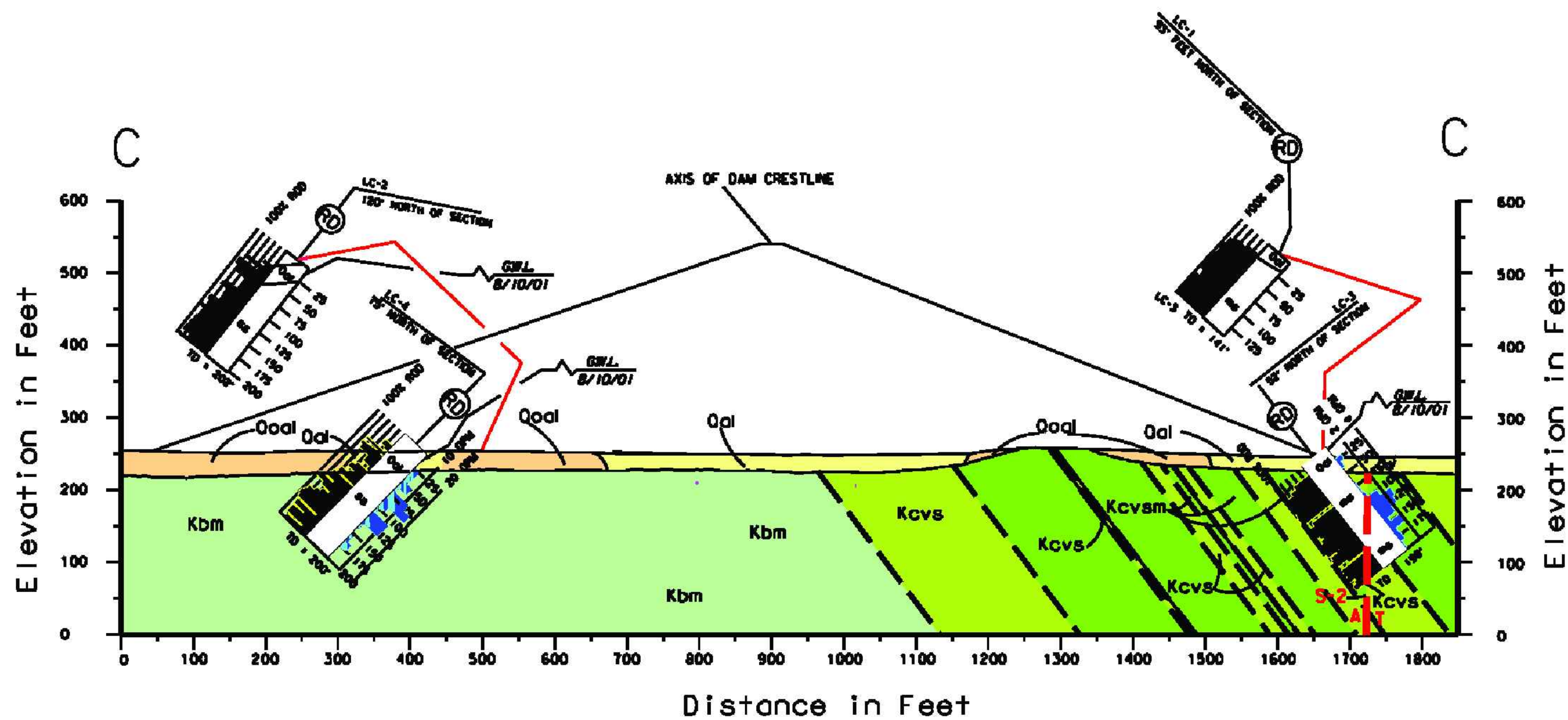
Geologic mapping and exploration performed by Division of Planning and Local Assistance, Northern District. Division of Engineering, Project Geology Section assisted.



JOINT ROSE. Average strike and dip of various indicated joint sets present within the immediate dam site area.

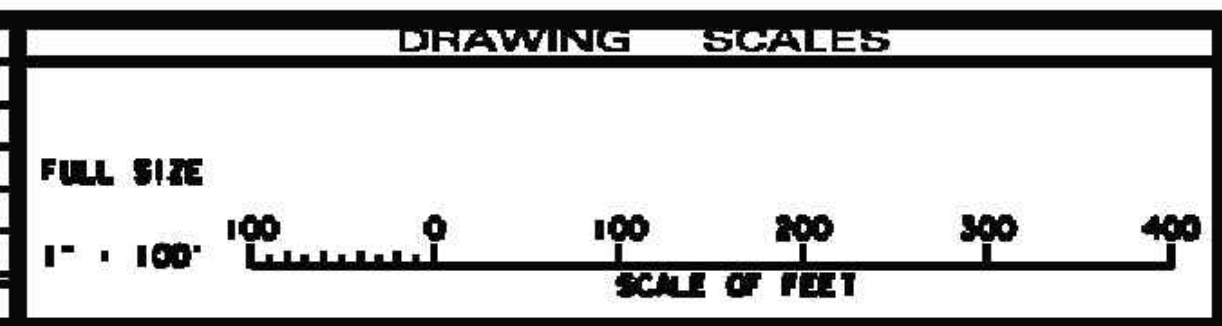
SHEET 122
B-1102

DRAWING SCALES		PROJECT REPORT NO. 94-0-02	DESIGNED BY Northern District Geol.	STATE OF CALIFORNIA THE RESOURCES AGENCY DEPARTMENT OF WATER RESOURCES DIVISION OF ENGINEERING PROJECT GEOLOGY SECTION STATE WATER FACILITIES	INTEGRATED STORAGE INVESTIGATION SITES RESERVOIR PROJECT SITES DAM SITE	SHEET NO. 7-31-03	2 OF 2
FULL SIZE 1" = 100'		CONSTRUCTION SPEC. NO.	PROJECT GEOLOGY SECTION				
SCALE OF FEET 0 100 200 300 400		PROJECT GEOL. NO. PG-SRP-19	DRAWING PREPARED BY CONDOR/MS/IR/AY				



*****FILE SPECIFICATION*****

REV.	DATE	DESCRIPTION



PROJECT REPORT No.
94-30-02

CONTRACTOR SPEC. No.

PROJECT NUMBER No.
PG-SRP-21

DESIGNED BY: _____

CHECKED BY: _____

DATE: 8/19/03

Geological Services

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
DIVISION OF ENGINEERING
PROJECT GEOLOGY SECTION
STATE WATER FACILITIES

INTEGRATED STORAGE INVESTIGATION
SITES RESERVOIR PROJECT
SITES DAM SITE

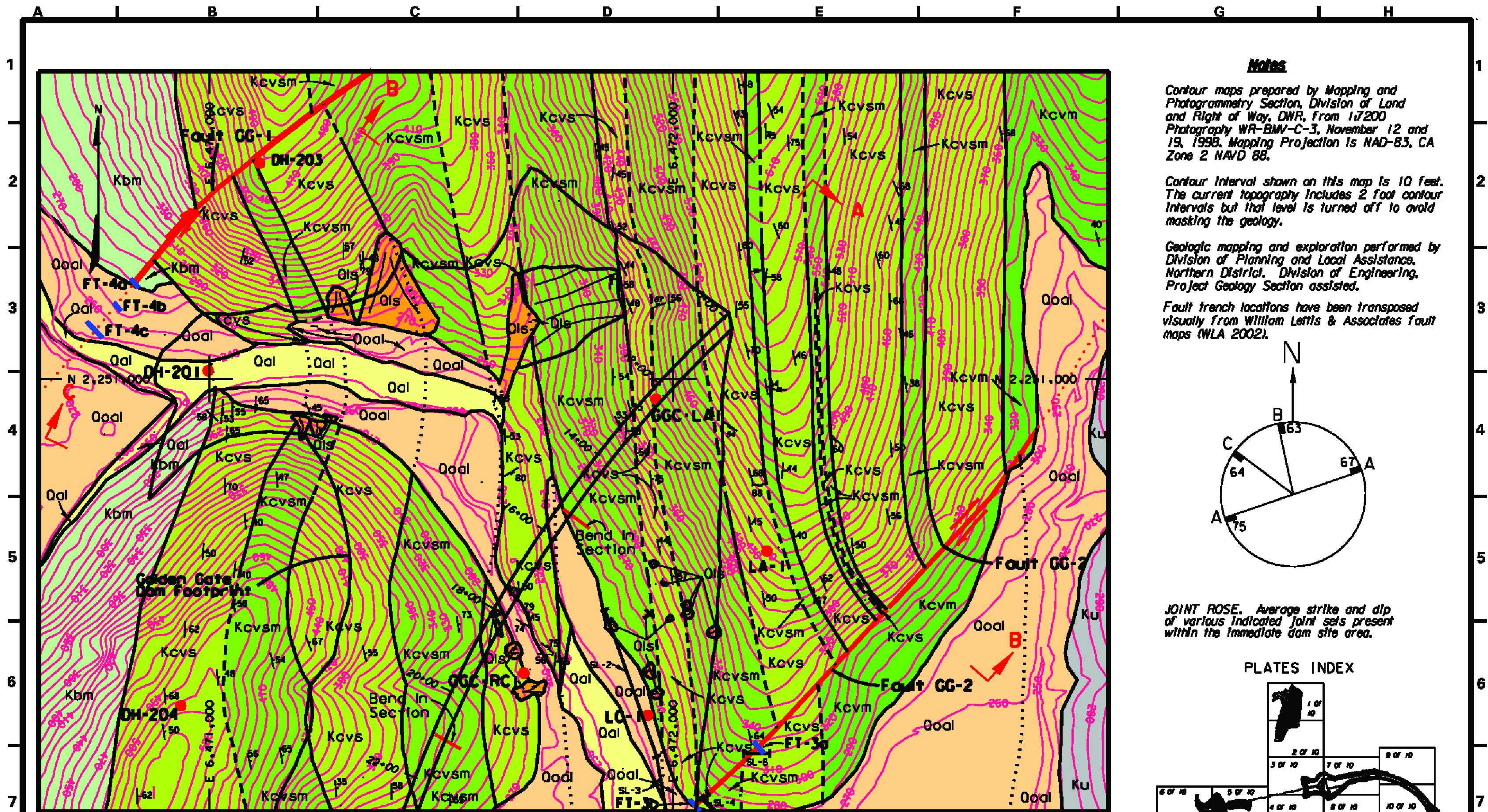
GEOLOGIC SECTIONS
SECTIONS C - C AND D - D

SHEET 124
B-1302

DATE: 7-31-03

2 OF 2

PLATE 8



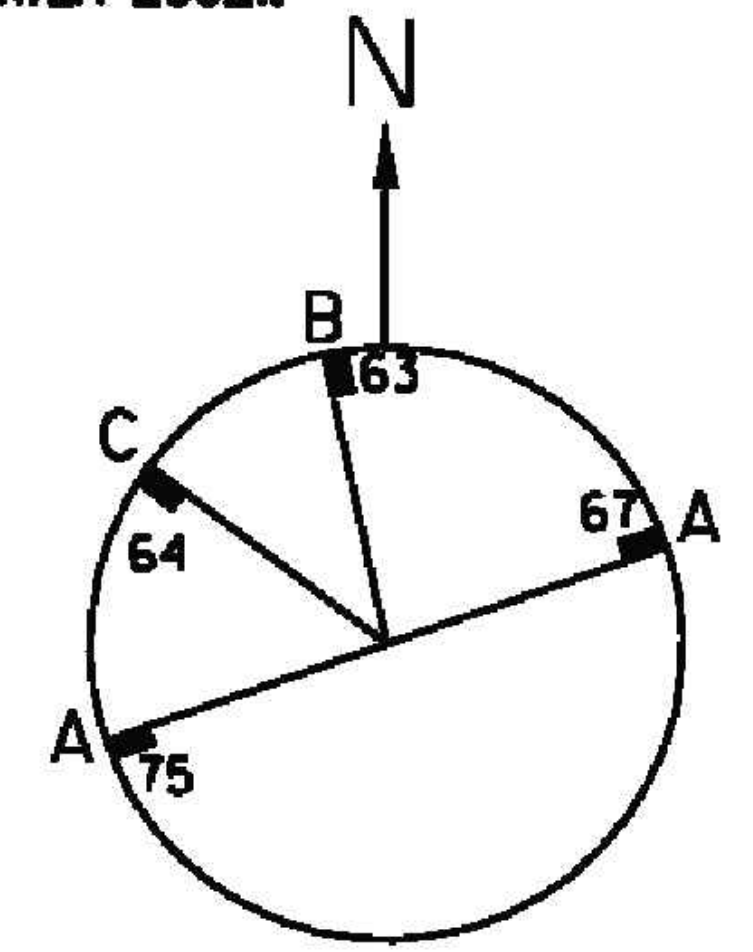
Notes

Contour maps prepared by Mapping and Photogrammetry Section, Division of Land and Right of Way, DWR, from 1:7200 Photography WR-BMV-C-3, November 12 and 19, 1998. Mapping Projection is NAD-83, CA Zone 2 NAVD 88.

Contour Interval shown on this map is 10 feet. The current topography includes 2 foot contour intervals but that level is turned off to avoid masking the geology.

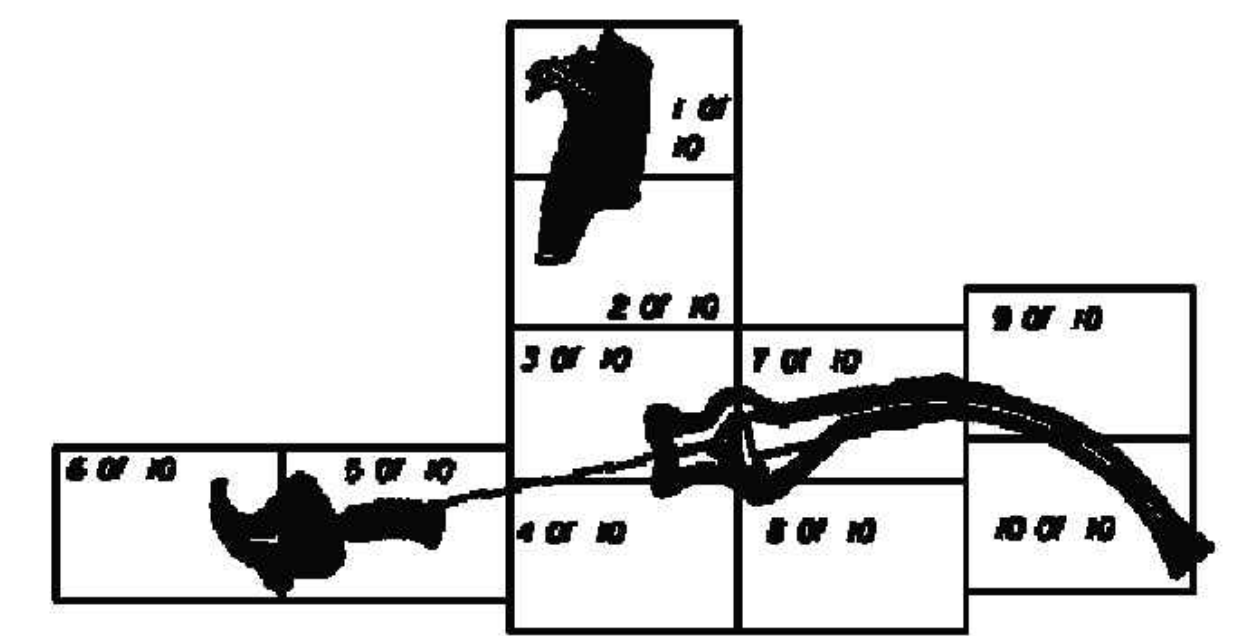
Geologic mapping and exploration performed by Division of Planning and Local Assistance, Northern District, Division of Engineering, Project Geology Section assisted.

Fault trench locations have been transposed visually from William Lettis & Associates Fault maps (WLA 2002).



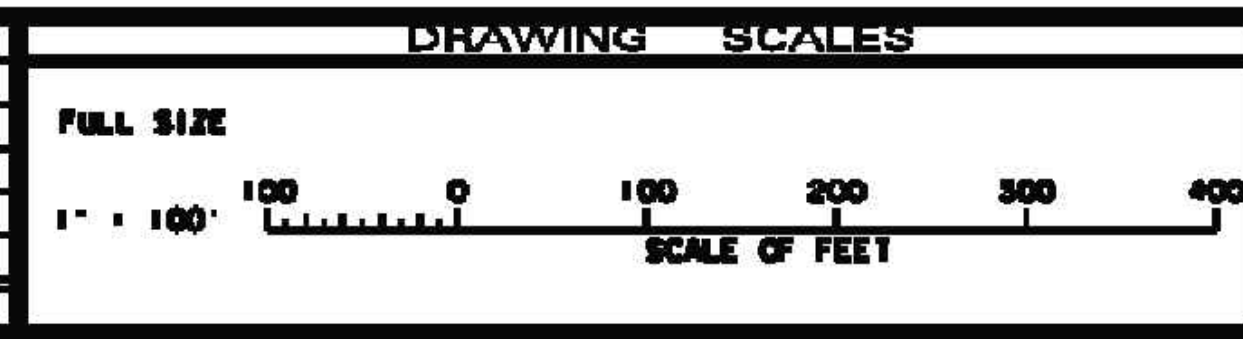
JOINT ROSE. Average strike and dip of various indicated joint sets present within the immediate dam site area.

PLATES INDEX



SHEET 125
B-2101

REV.	DATE	DESCRIPTION



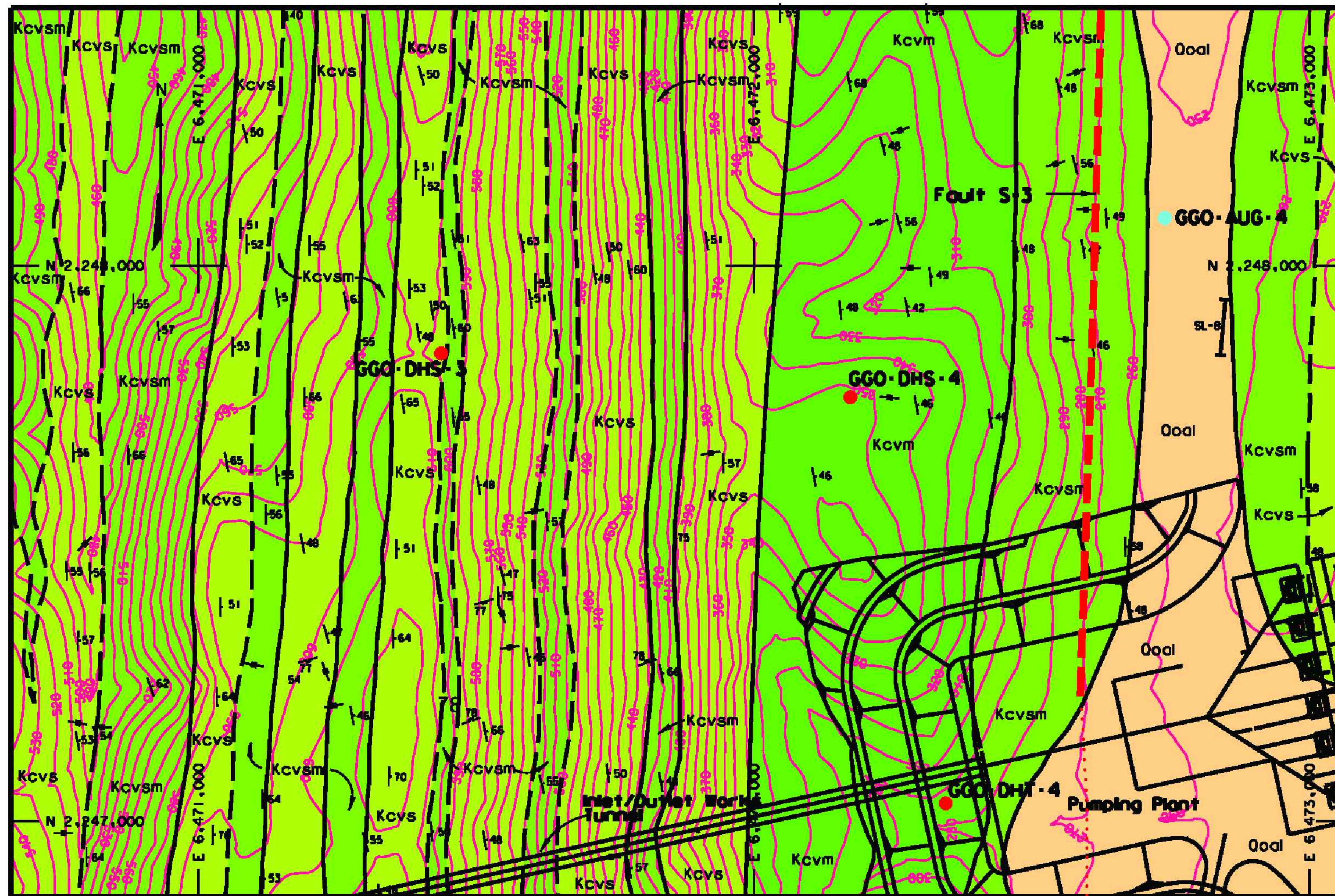
DRAWING NO. 94-30-02
CONSTRUCTION SPEC. NO. PG-SRP-03

DESIGNED BY: Northern District Geol.
PROJECT GEOL. SECTION
DATE: 6/13/03
CHECKED BY: General/Division

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
DIVISION OF ENGINEERING
PROJECT GEOL. SECTION
STATE WATER FACILITIES

INTEGRATED STORAGE INVESTIGATION
SITES RESERVOIR PROJECT
GOLDEN GATE DAM SITE
EXPLORATION AND GEOLOGIC MAP

PLATE NO. 1 of 10
DATE 7-31-03
PLATE 3



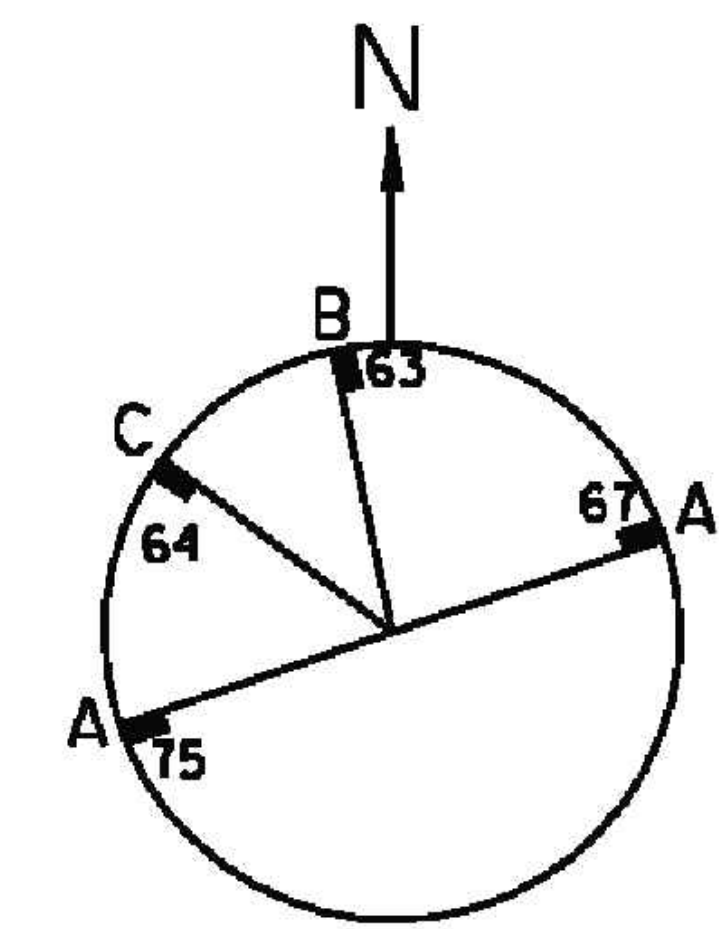
Notes

Contour maps prepared by Mapping and Photogrammetry Section, Division of Land and Right of Way, DWR, from 17200 Photography WR-BMW-C-3, November 12 and 19, 1998. Mapping Projection is NAD-83, CA Zone 2 NAD 88.

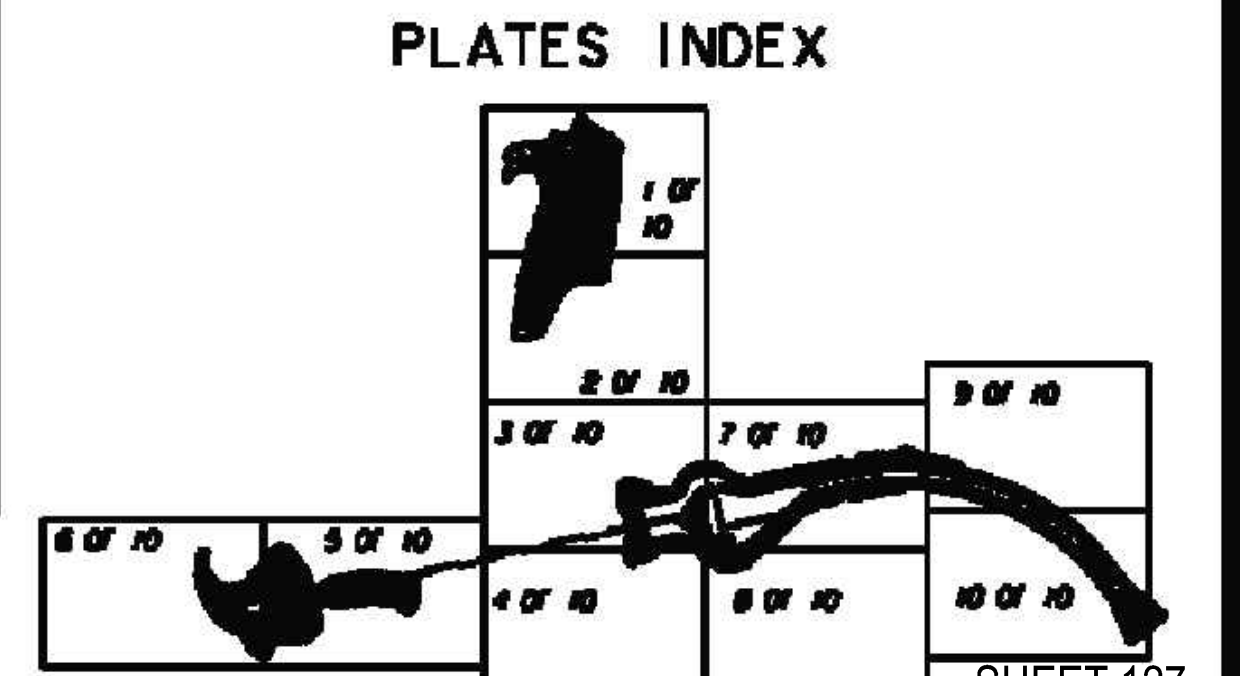
Contour Interval shown on this map is 10 feet. The current topography includes 2 foot contour intervals but that level is turned off to avoid masking the geology.

Geologic mapping and exploration performed by Division of Planning and Local Assistance, Northern District, Division of Engineering, Project Geology Section assisted.

The geologic investigation was conducted along one of four design tunnel options. The design option presented here is the Long Tunnel with a Gate Shaft.



JOINT ROSE. Average strike and dip of various indicated joint sets present within the immediate dam site area.



SHEET 127
B-2103
7-31-03
3 OF 10
PLATE 3

DRAWING SCALES		PROJECT NO. 94-30-02	DESIGNED BY Northern District Geol.	STATE OF CALIFORNIA THE RESOURCES AGENCY DEPARTMENT OF WATER RESOURCES DIVISION OF ENGINEERING PROJECT GEOLOGY SECTION STATE WATER FACILITIES	INTEGRATED STORAGE INVESTIGATION SITES RESERVOIR PROJECT GOLDEN GATE DAM SITE
FULL SIZE 1" = 100'		CONSTRUCTION SPEC. NO.	PROJECT GEOLOGY SECTION		
SCALE OF FEET 0 100 200 300 400		PROJECT GEOLOGY SECTION	DATE: 6/15/05	EXPLORATION AND GEOLOGIC MAP	
PG-SRP-05		CONCHER/DMS/IRLAN		PLATE 3	

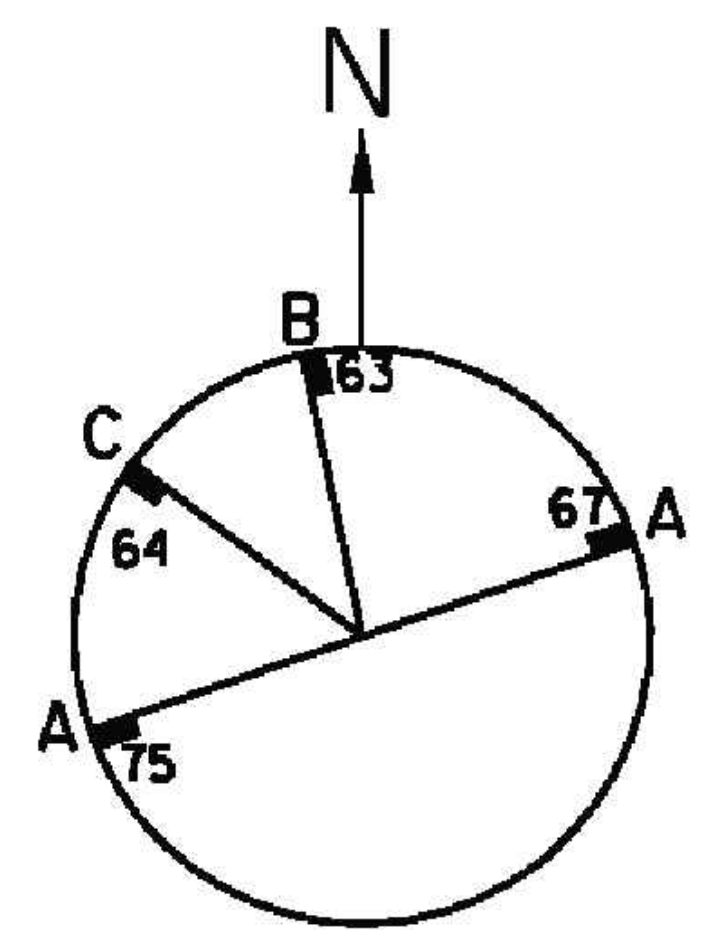
Notes

Contour maps prepared by Mapping and Photogrammetry Section, Division of Land and Right of Way, DWR, from 1:7200 Photography WR-BMW-C-3, November 12 and 19, 1998. Mapping Projection is NAD-83, CA Zone 2 NAVD 88.

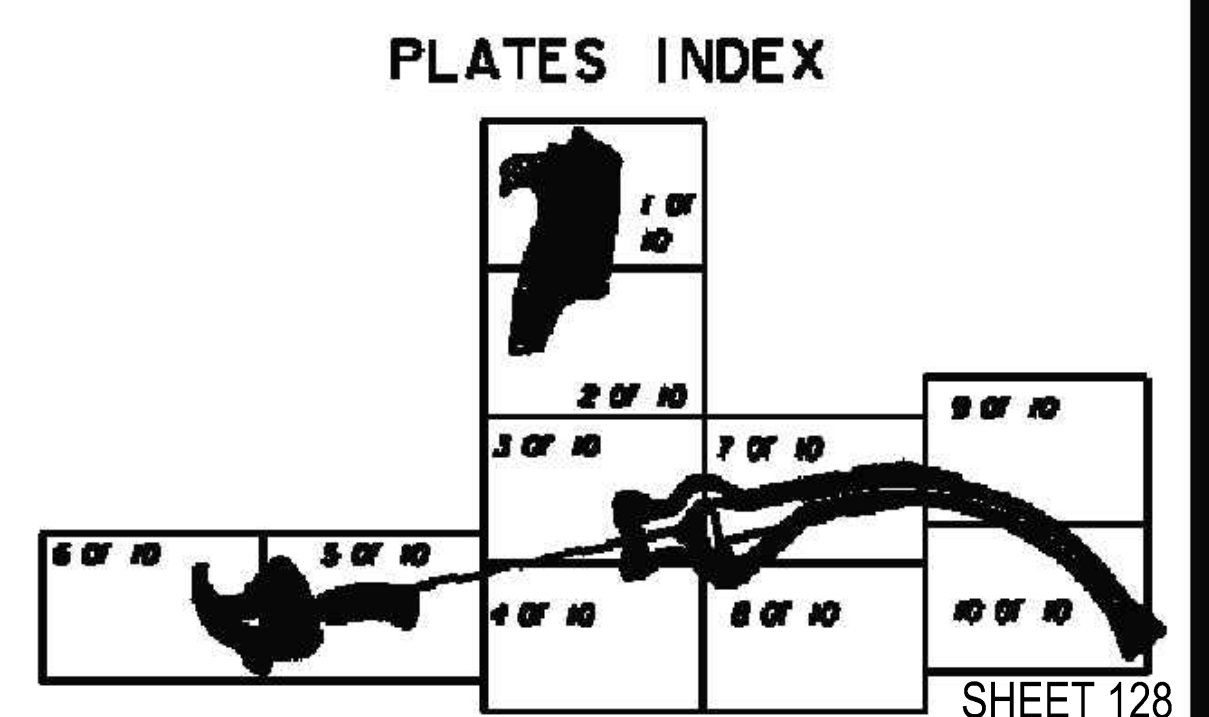
Contour Interval shown on this map is 10 feet. The current topography includes 2 foot contour intervals but that level is turned off to avoid masking the geology.

Geologic mapping and exploration performed by Division of Planning and Local Assistance, Northern District, Division of Engineering, Project Geology Section assisted.

The geologic investigation was conducted along one of four design tunnel options. The design option presented here is the Long Tunnel with a Gate Shaft.



JOINT ROSE. Average strike and dip of various indicated joint sets present within the immediate dam site area.

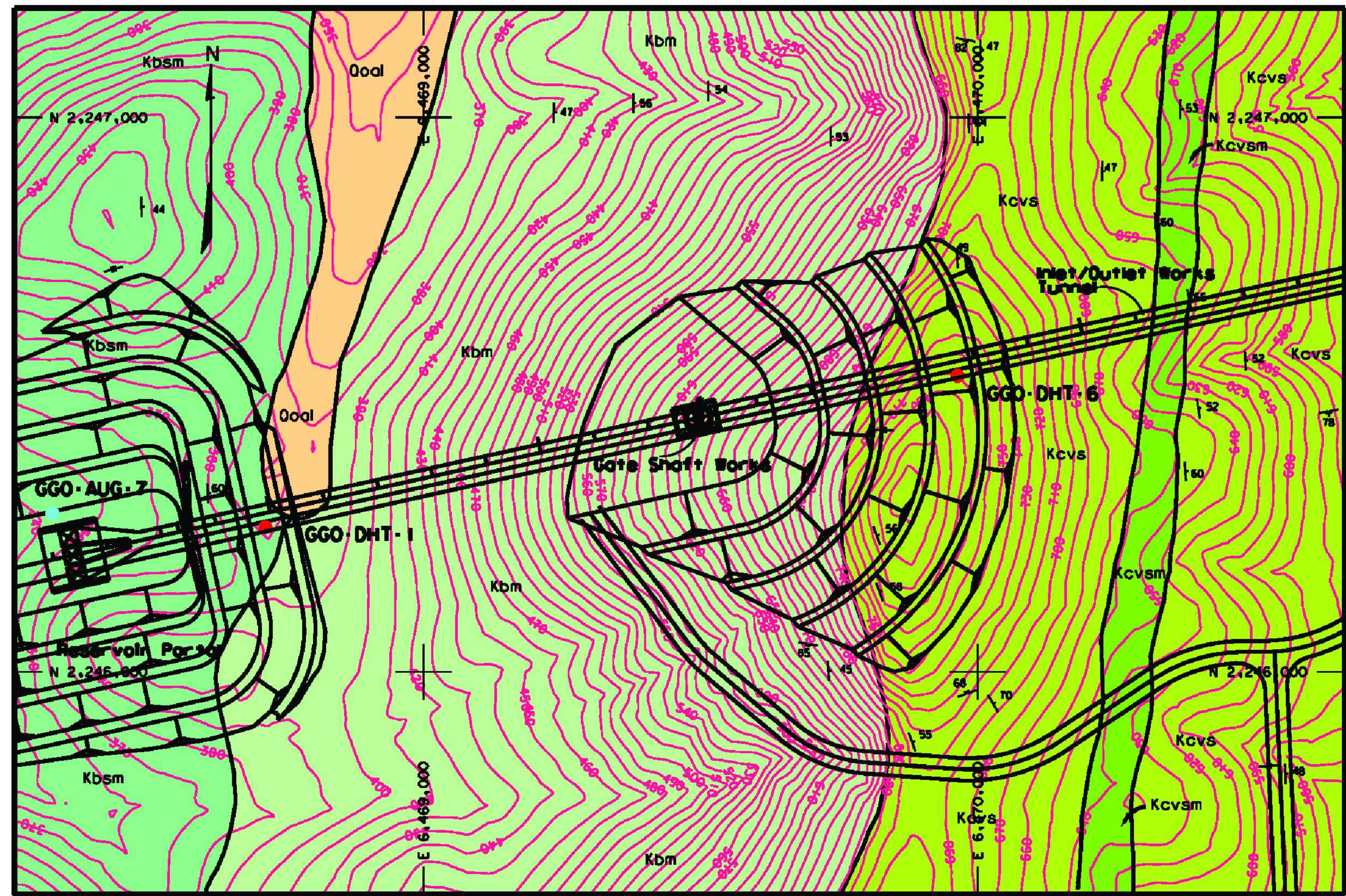


SHEET 128
B-2105

DATE 7-31-03

5 OF 10

PLATE 3



*****SHEET SPECIFICATION*****

DRAWING SCALES	
FULL SIZE	SCALE OF FEET
1" = 100'	0 100 200 300 400

DESIGN REPORT NO. 94-30-02	DESIGNED BY Northern District Geol.
CONSTRUCTION SPEC. NO.	PROJECT GEOL. SECTION
DESIGN DRAWING NO. PG-SRP-07	DATE 6/15/03

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
DIVISION OF ENGINEERING
PROJECT GEOLOGY SECTION
STATE WATER FACILITIES

SITES RESERVOIR PROJECT
GOLDEN GATE DAM SITE
EXPLORATION AND GEOLOGIC MAP

DATE 7-31-03
5 OF 10
PLATE 3

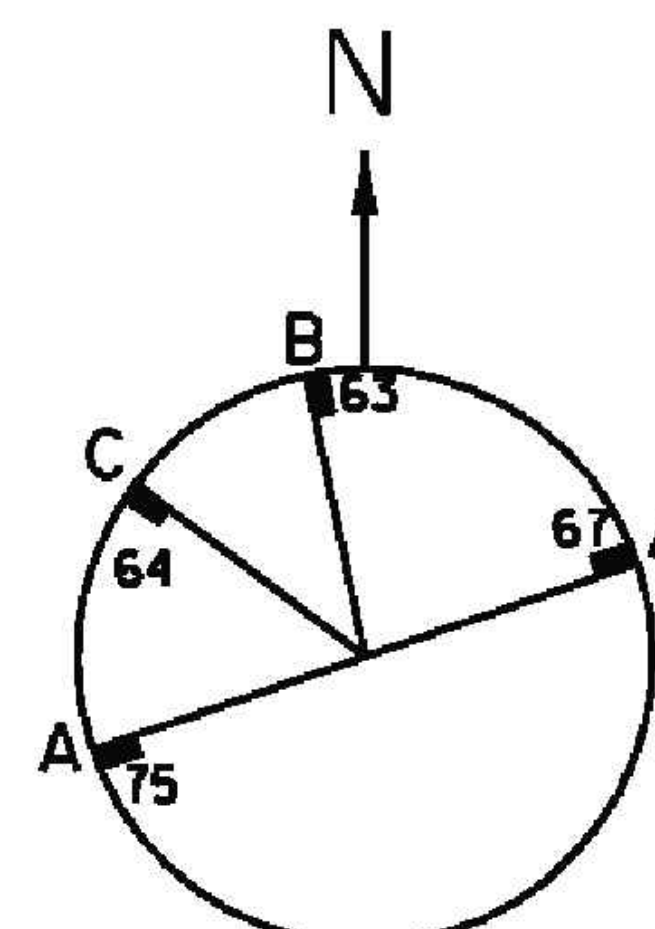
Notes

Contour maps prepared by Mapping and Photogrammetry Section, Division of Land and Right of Way, DWR, from 1:7200 Photography WR-BMW-C-3, November 12 and 19, 1998. Mapping Projection is NAD-83, CA Zone 2 NAD 88.

Contour Interval shown on this map is 10 feet. The current topography includes 2 foot contour intervals but that level is turned off to avoid masking the geology.

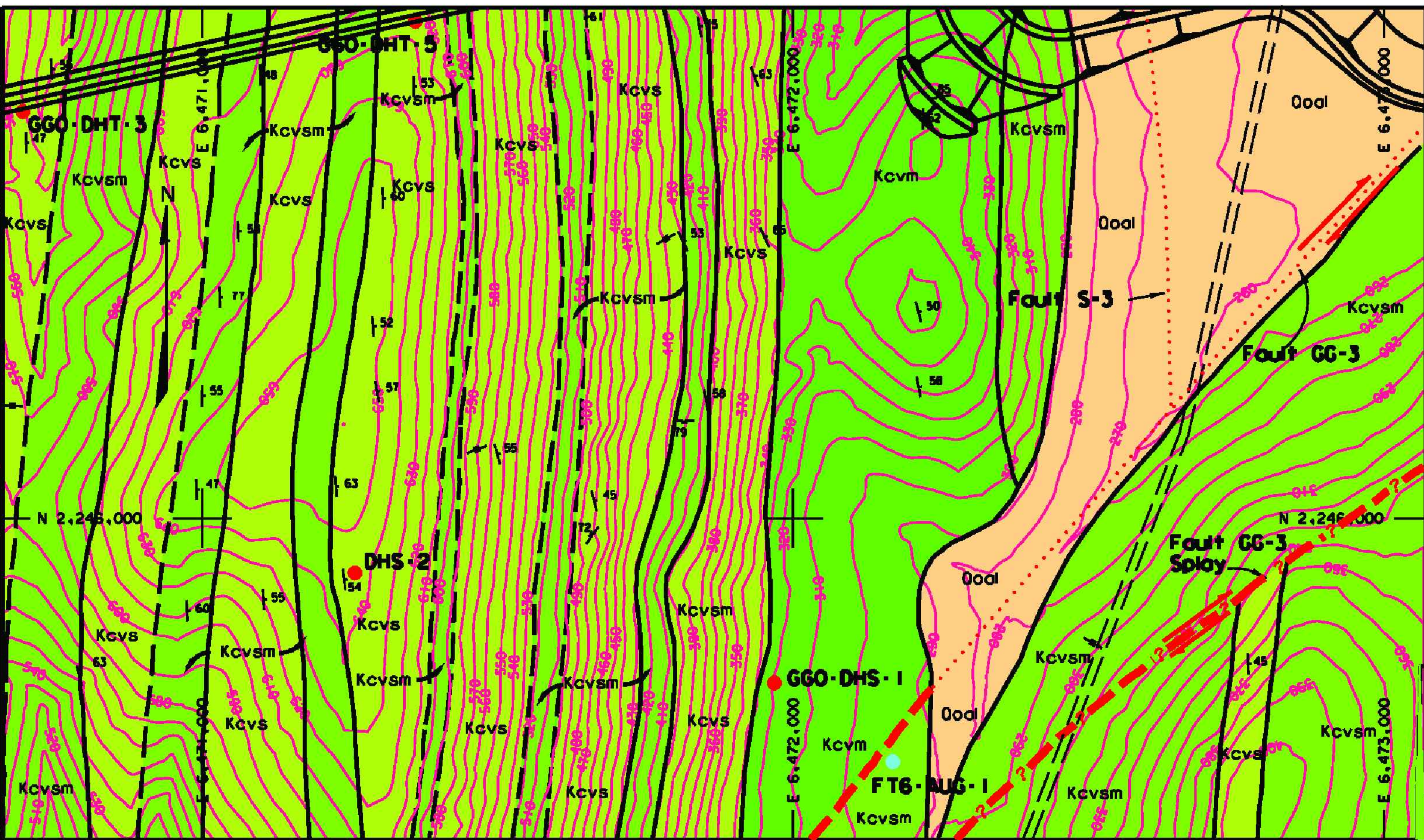
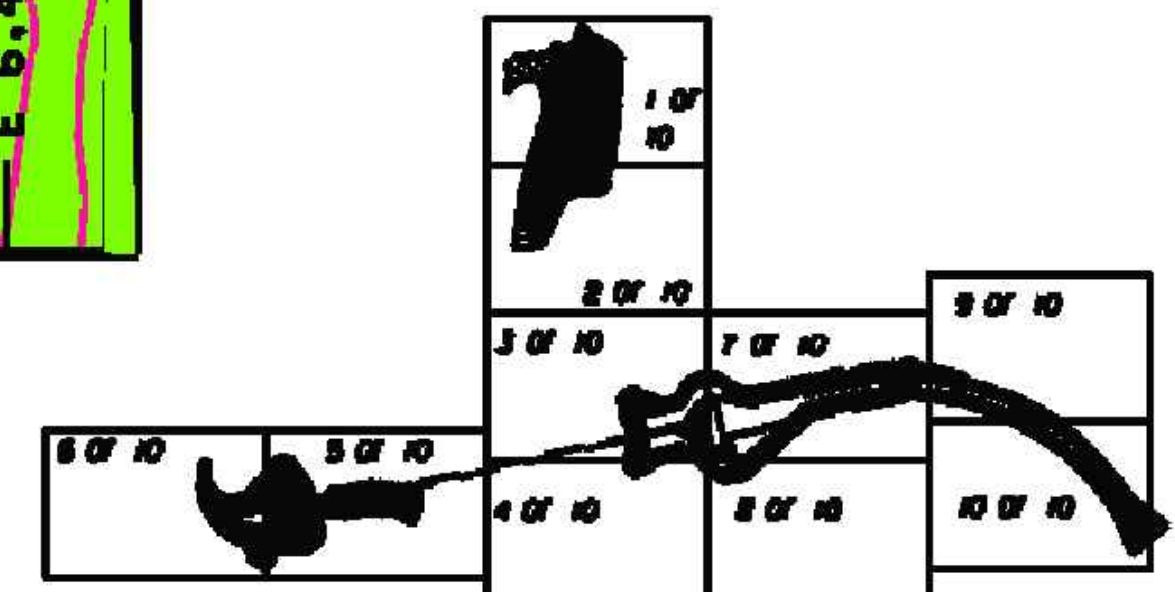
Geologic mapping and exploration performed by Division of Planning and Local Assistance, Northern District, Division of Engineering, Project Geology Section assisted.

The geologic investigation was conducted along one of four design tunnel options. The design option presented here is the Long Tunnel with a Gate Shaft.



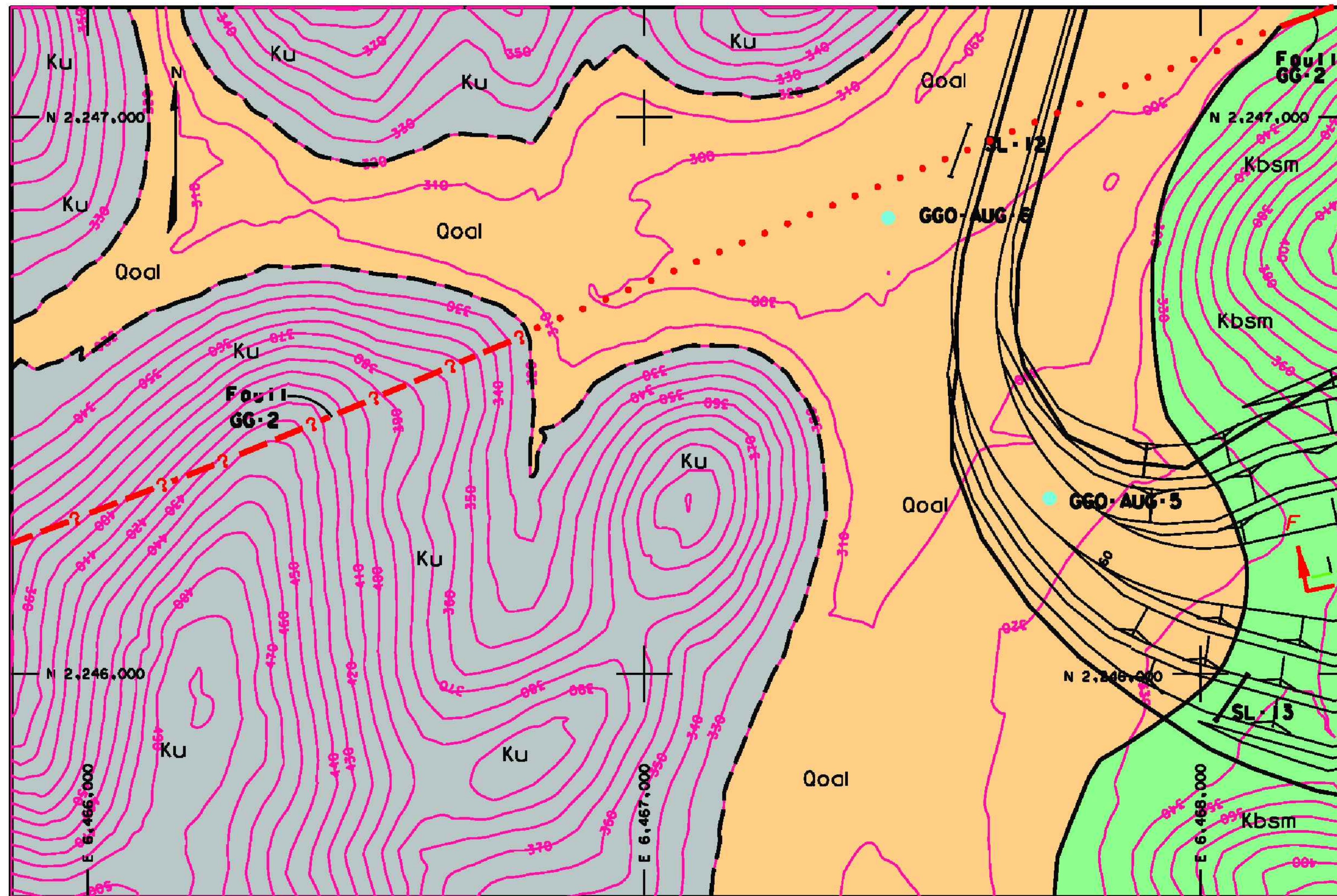
JOINT ROSE. Average strike and dip of various indicated joint sets present within the immediate dam site area.

PLATES INDEX



SHEET 129
B-2104

<p>DRAWING SCALES</p> <p>FULL SIZE</p> <p>1" = 100'</p> <p>SCALE OF FEET</p>		<p>PROJECT NO. 94-30-02</p> <p>CONSTRUCTION SPEC. NO.</p> <p>DATE: 6/15/03</p> <p>PG-SRP-06</p>	<p>DESIGNED BY: Northern District Geol.</p> <p>CHECKED BY: Project Geology Section</p> <p>DATE: 6/15/03</p> <p>PROJECT: Golden Gate Dam Site</p>	<p>STATE OF CALIFORNIA THE RESOURCES AGENCY DEPARTMENT OF WATER RESOURCES DIVISION OF ENGINEERING PROJECT GEOLOGY SECTION STATE WATER FACILITIES</p>	<p>INTEGRATED STORAGE INVESTIGATION SITES RESERVOIR PROJECT GOLDEN GATE DAM SITE</p> <p>EXPLORATION AND GEOLOGIC MAP</p>	<p>DATE: 7-31-03</p> <p>4 OF 10</p> <p>PLATE 3</p>
---	--	---	--	--	--	--

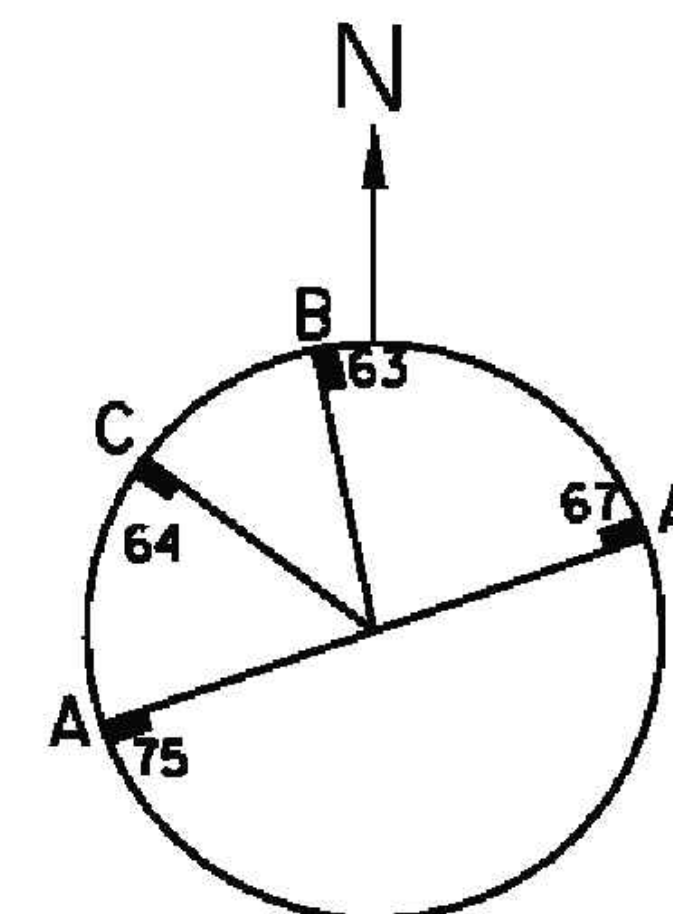


Notes

Contour maps prepared by Mapping and Photogrammetry Section, Division of Land and Right of Way, DWR, from 1:200 Photography WR-BMW-C-3, November 12 and 19, 1998. Mapping Projection is NAD-83, CA Zone 2 NAD 88.

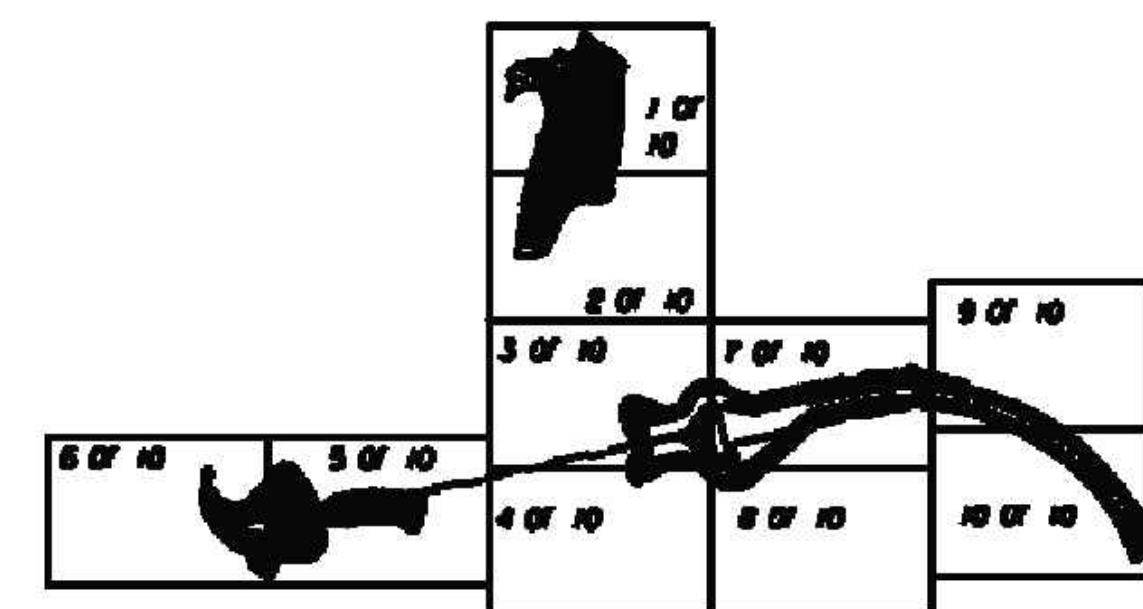
Contour Interval shown on this map is 10 feet. The current topography includes 2 foot contour intervals but that level is turned off to avoid masking the geology.

Geologic mapping and exploration performed by Division of Planning and Local Assistance, Northern District, Division of Engineering, Project Geology Section assisted.

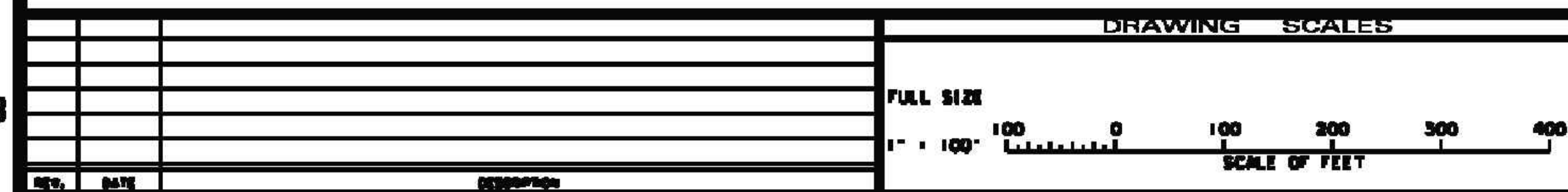


JOINT ROSE. Average strike and dip of various indicated joint sets present within the immediate dam site area.

PLATES INDEX



SHEET 130
B-2106

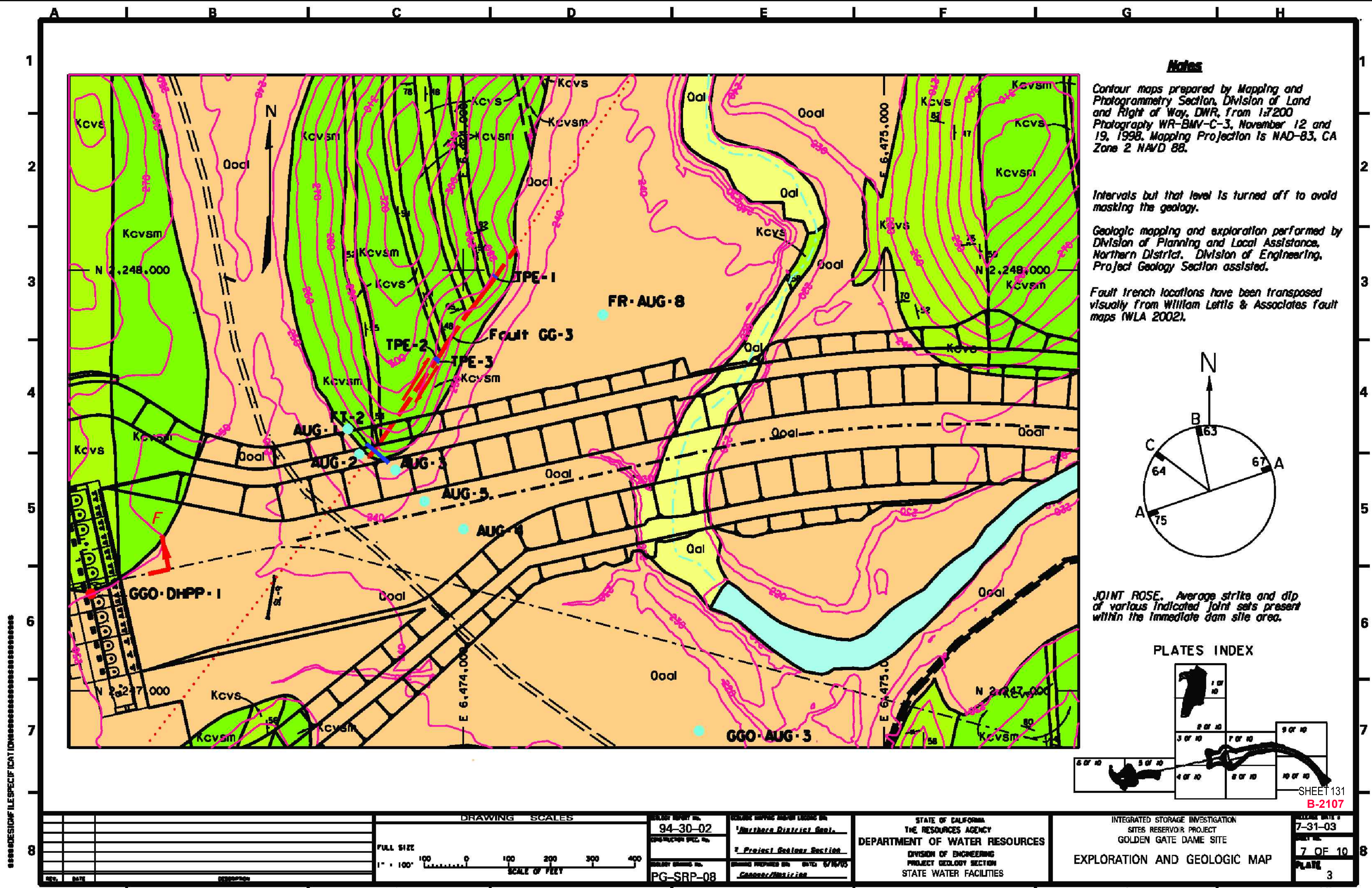


PROJECT REPORT No. 94-30-02
CONSTRUCTION SPEC. No.
PG-SRP-11
DESIGNED BY: Northern District Geol.
PROJECT GEOLOGY SECTION
DATE: 6/11/05
DRAWN BY: J. Martinez

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
DIVISION OF ENGINEERING
PROJECT GEOLOGY SECTION
STATE WATER FACILITIES

INTEGRATED STORAGE INVESTIGATION
SITES RESERVOIR PROJECT
GOLDEN GATE DAM SITE
EXPLORATION AND GEOLOGIC MAP

DATE: 7-31-03
6 of 10
PLATE 3



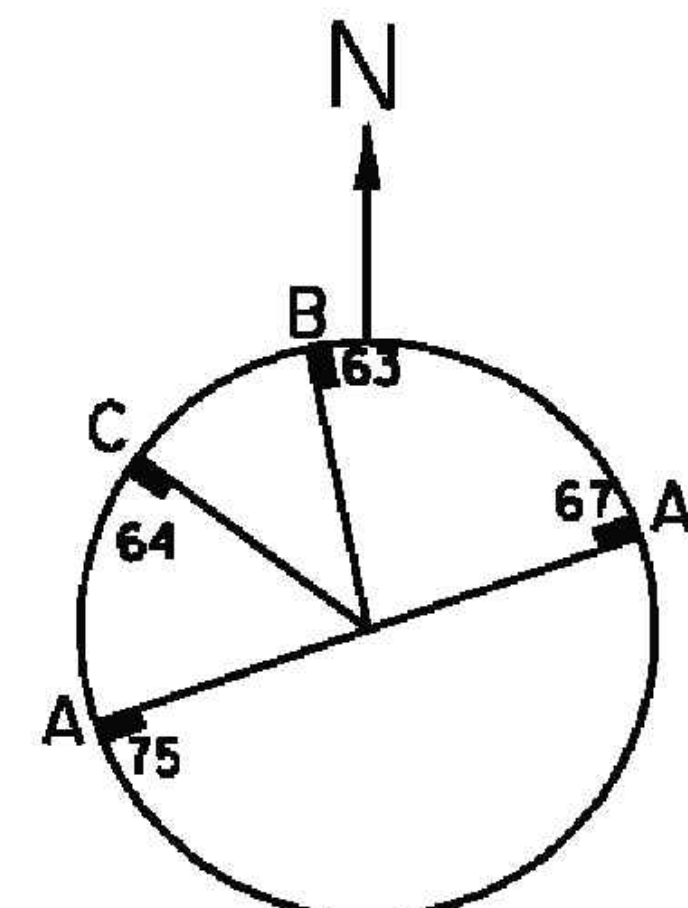
Notes

Contour maps prepared by Mapping and Photogrammetry Section, Division of Land and Right of Way, DWR, from 1:7200 Photography WR-BMV-C-3, November 12 and 19, 1998. Mapping Projection is NAD-83, CA Zone 2 NAVD 88.

Intervals but that level is turned off to avoid masking the geology.

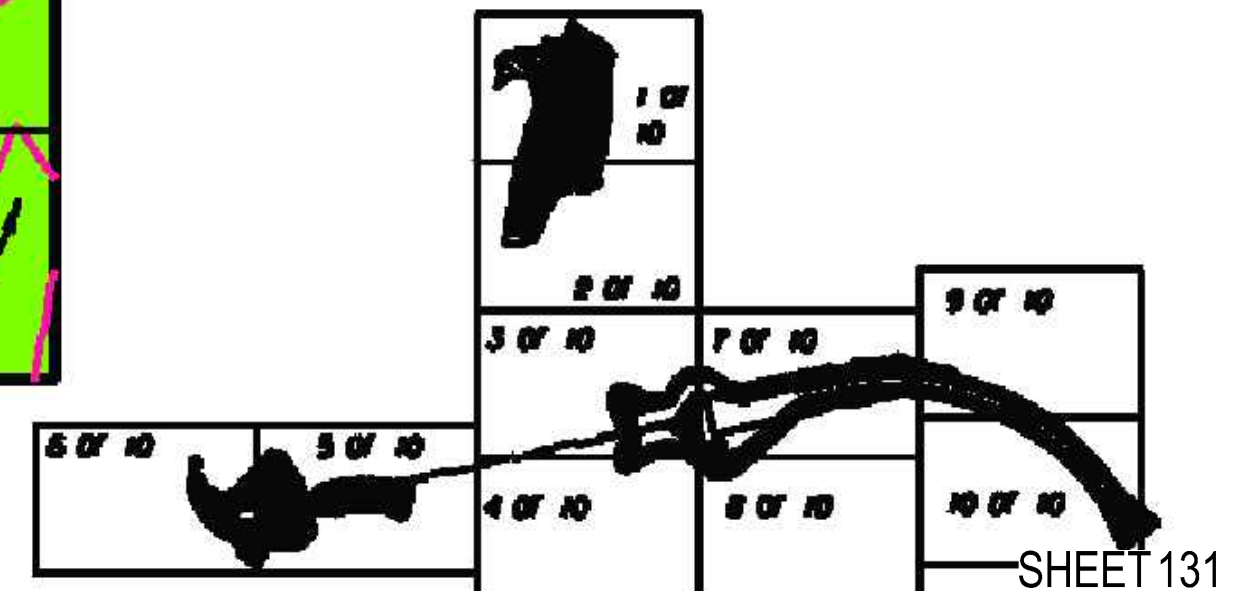
Geologic mapping and exploration performed by Division of Planning and Local Assistance, Northern District, Division of Engineering, Project Geology Section assisted.

Fault trench locations have been transposed visually from William Lettis & Associates fault maps (WLA 2002).

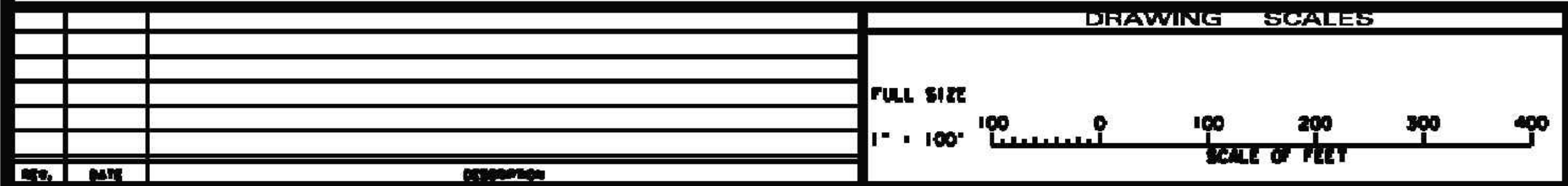


JOINT ROSE. Average strike and dip of various indicated joint sets present within the immediate dam site area.

PLATES INDEX



SHEET 131
B-2107



PROJECT REPORT NO. 94-30-02
CONSTRUCTION SPEC. NO. PG-SRP-08
DESIGNED BY Northern District Geol.
PROJECT GEOL. SECTION
DATE: 6/16/05
CHECKED BY: [Signature]

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
DIVISION OF ENGINEERING
PROJECT GEOLOGY SECTION
STATE WATER FACILITIES

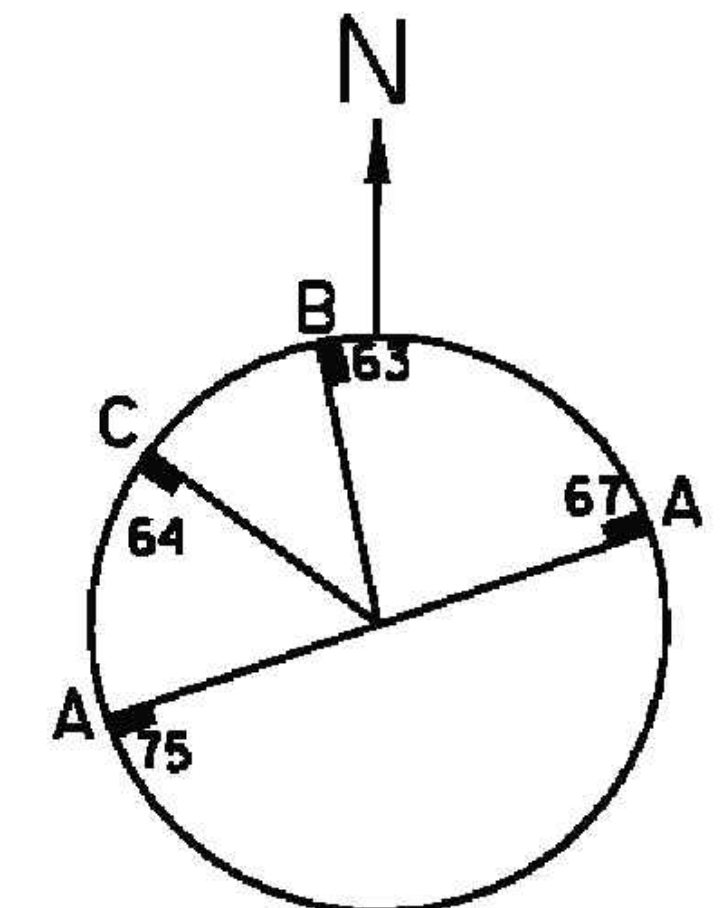
INTEGRATED STORAGE INVESTIGATION
SITES RESERVOIR PROJECT
GOLDEN GATE DAM SITE
EXPLORATION AND GEOLOGIC MAP

DATE: 7-31-03
SHEET NO. 7 OF 10
PLATE 3

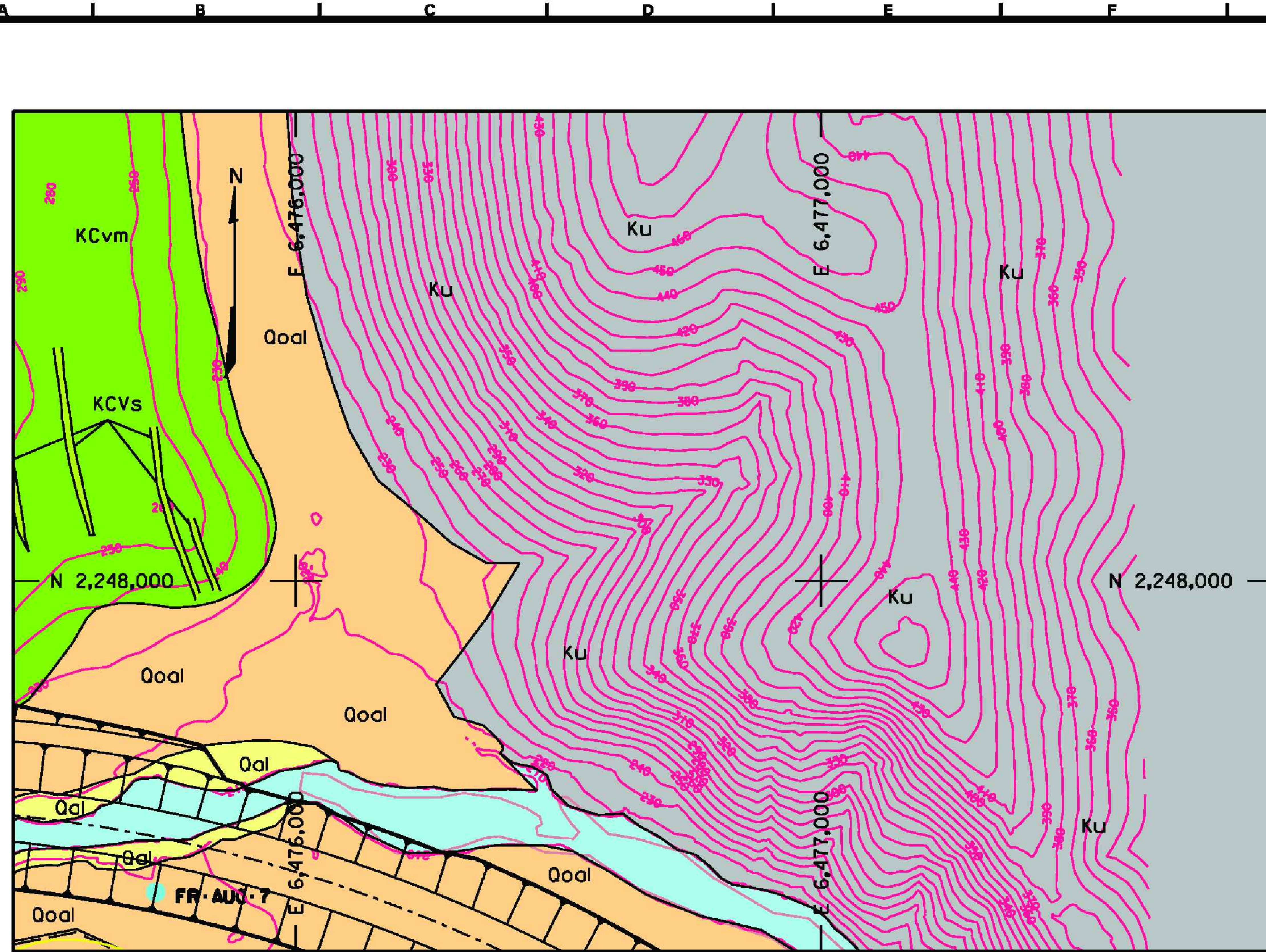
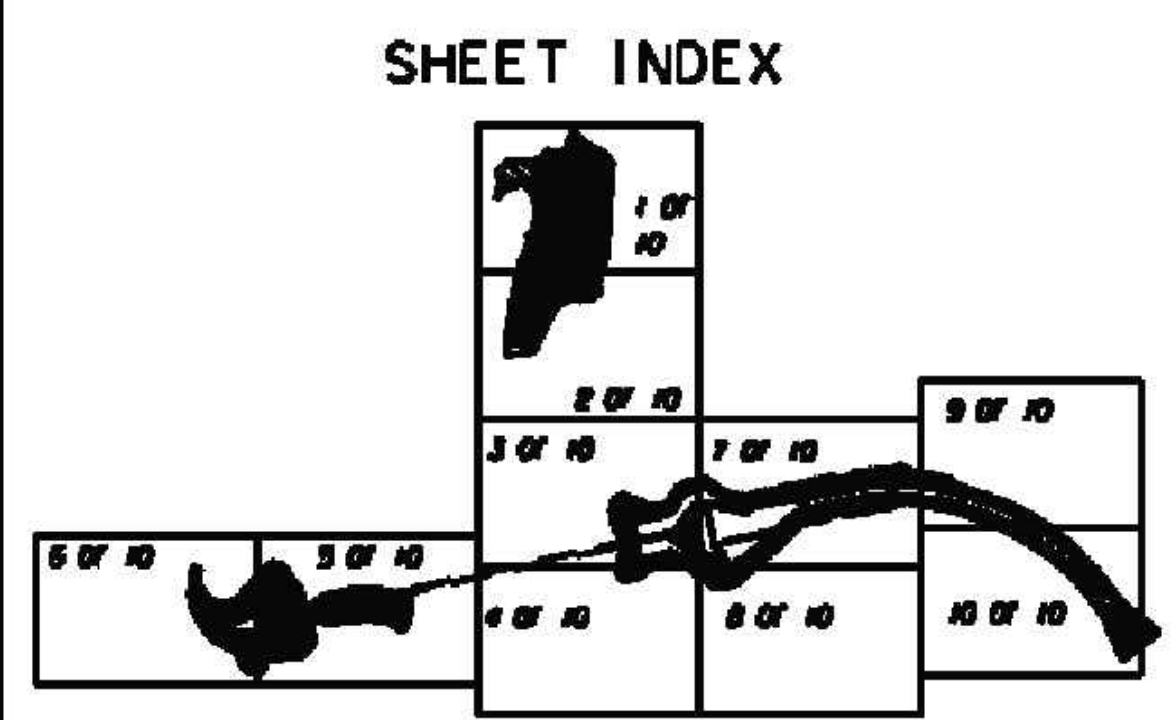
Notes
 Contour maps prepared by Mapping and Photogrammetry Section, Division of Land and Right of Way, DWR, from 1:7200 Photography WR-BMV-C-3, November 12 and 19, 1998. Mapping Projection is NAD-83, CA Zone 2 NAVD 88.

Contour Interval shown on this map is 10 feet. The current topography includes 2 foot contour intervals but that level is turned off to avoid masking the geology.

Geologic mapping and exploration performed by Division of Planning and Local Assistance, Northern District, Division of Engineering, Project Geology Section assisted.



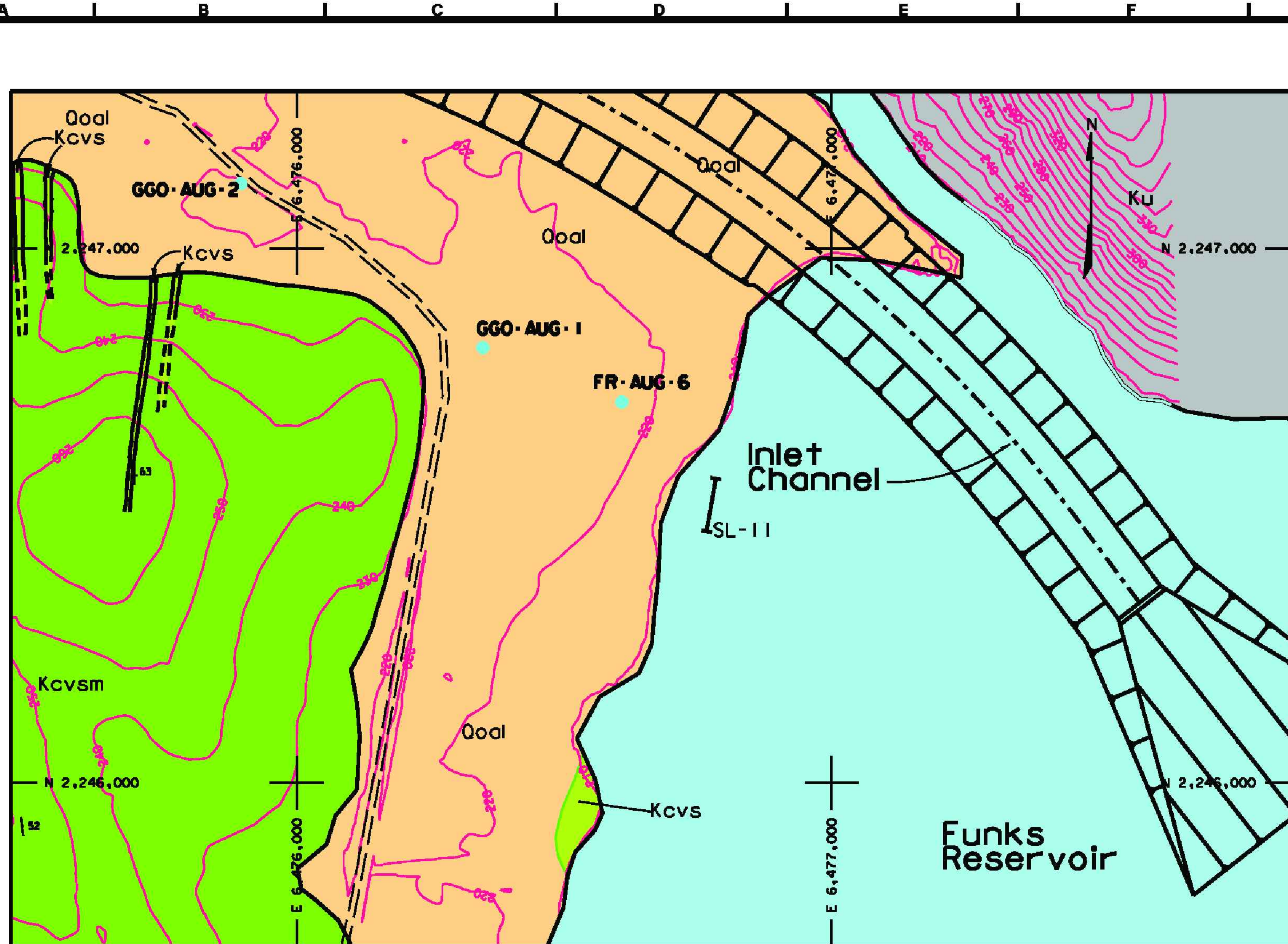
JOINT ROSE. Average strike and dip of various indicated joint sets present within the immediate dam site area.



*****DESIGN/FILESPECIFIC IDENTIFICATION*****

SHEET 133
 B-2109

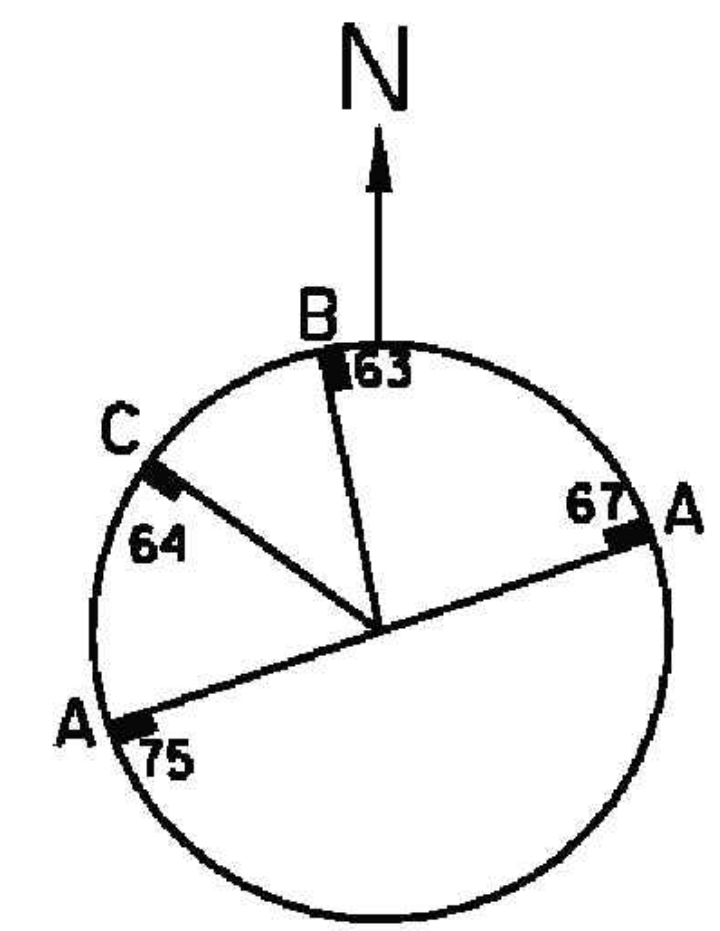
DRAWING SCALES FULL SIZE 1" = 100'		DRAWING NO. 94-30-02 CONSTRUCTION SPEC. NO. PG-SRP-12	DESIGNER: JAMES L. BROWN 'Northern District Geol.' 1. Project Geology Section DRAWING PREPARED BY: J. Morrison DATE: 6/11/03	STATE OF CALIFORNIA THE RESOURCES AGENCY DEPARTMENT OF WATER RESOURCES DIVISION OF ENGINEERING PROJECT GEOLOGY SECTION STATE WATER FACILITIES	INTEGRATED STORAGE INVESTIGATION SITES RESERVOIR PROJECT GOLDEN GATE DAM SITE EXPLORATION AND GEOLOGIC MAP	SHEET NO. 7-31-03 DATE: 9 of 10 PLATE 3
---	--	--	--	--	---	---



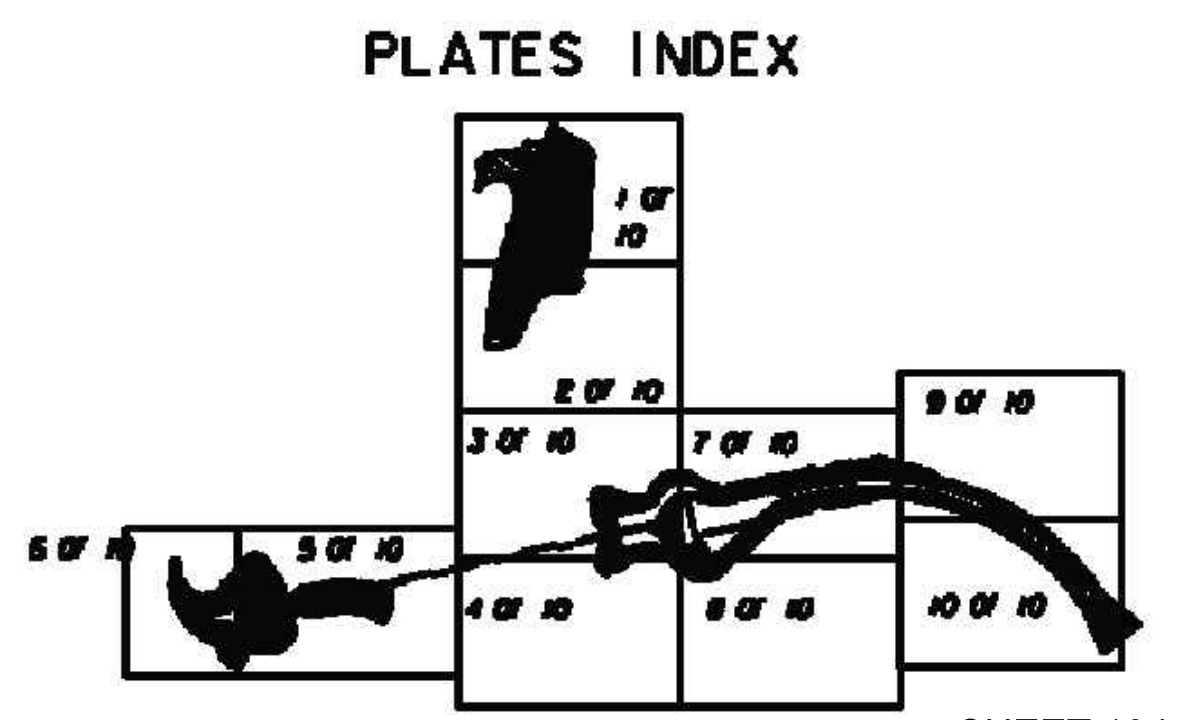
Notes
 Contour maps prepared by Mapping and Photogrammetry Section, Division of Land and Right of Way, DWR, from 1:2000 Photography WR-BMV-C-3, November 12 and 19, 1998. Mapping Projection is NAD-83, CA Zone 2 NAVD 88.

Contour Interval shown on this map is 10 feet. The current topography includes 2 foot contour intervals but that level is turned off to avoid masking the geology.

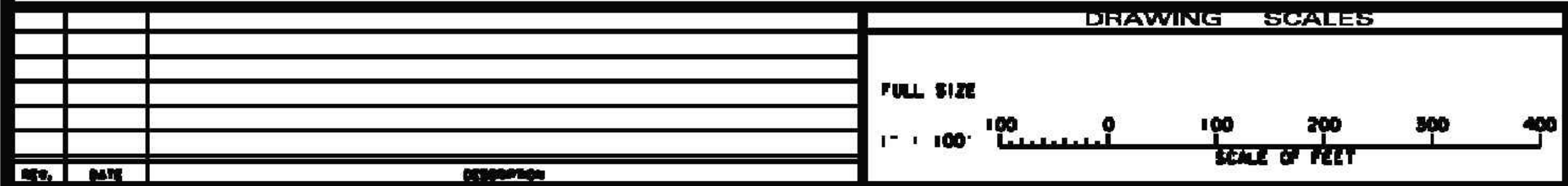
Geologic mapping and exploration performed by Division of Planning and Local Assistance, Northern District. Division of Engineering, Project Geology Section assisted.



JOINT ROSE. Average strike and dip of various indicated joint sets present within the immediate dam site area.



SHEET 134
 B-2110

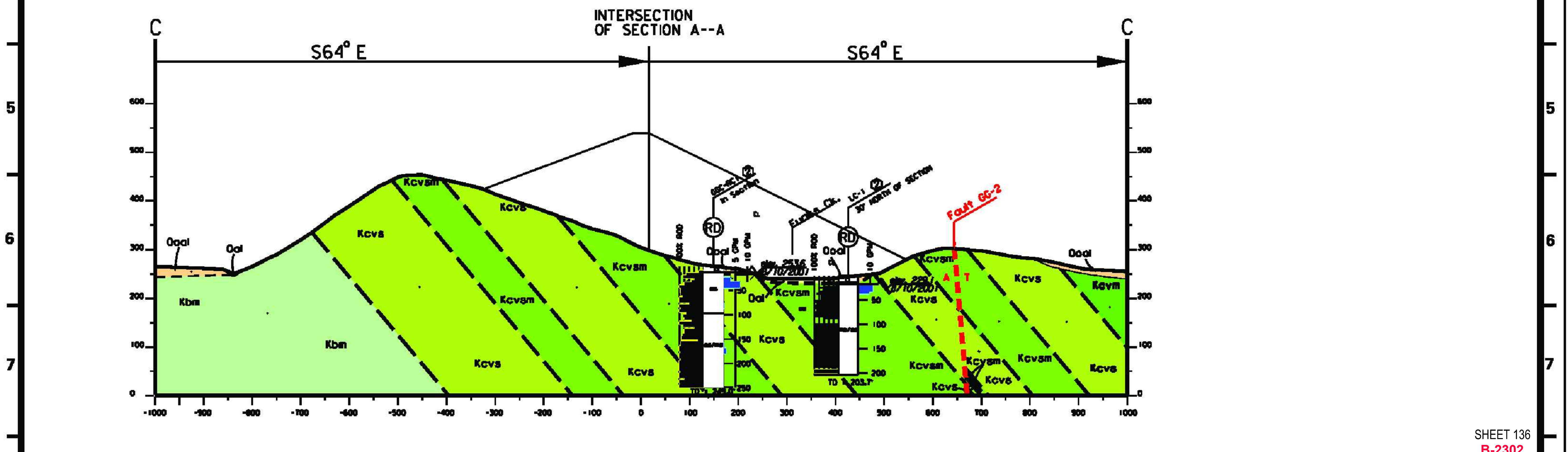
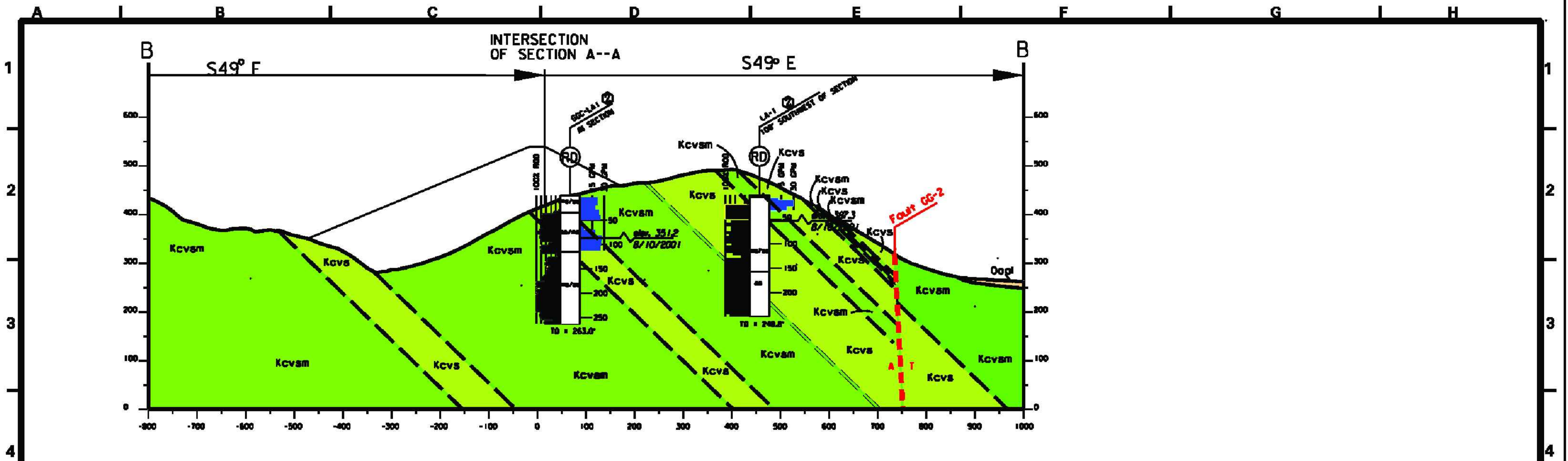


PROJECT NO. 94-30-02
 DRAWING NO. PG=SRP-10
 DATE: 6/17/05
 PROJECT GEOLGY SECTION
 CONCEPT/DESIGN

STATE OF CALIFORNIA
 THE RESOURCES AGENCY
 DEPARTMENT OF WATER RESOURCES
 DIVISION OF ENGINEERING
 PROJECT GEOLGY SECTION
 STATE WATER FACILITIES

INTEGRATED STORAGE INVESTIGATION
 SITES RESERVOIR PROJECT
 GOLDEN GATE DAM SITE
 EXPLORATION AND GEOLOGIC MAP

DATE: 7-31-03
 10 OF 10
 PLATE 3



SHEET 136
B-2302

DATE 7-31-03

1 OF 2

PLATE 5

DRAWING SCALES



PROJECT NO. 94-30-02

CONTRACT NO. PG-SRP-14

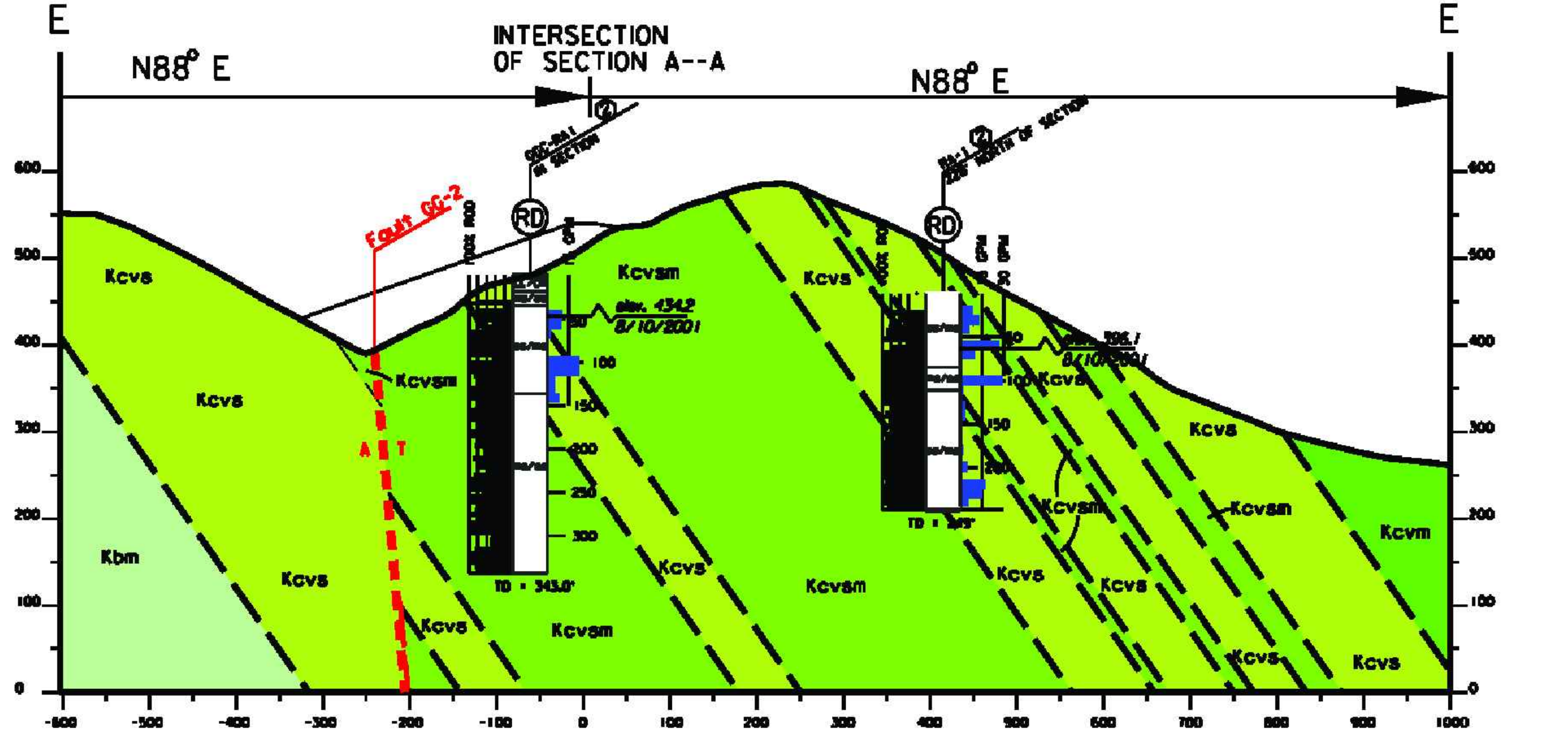
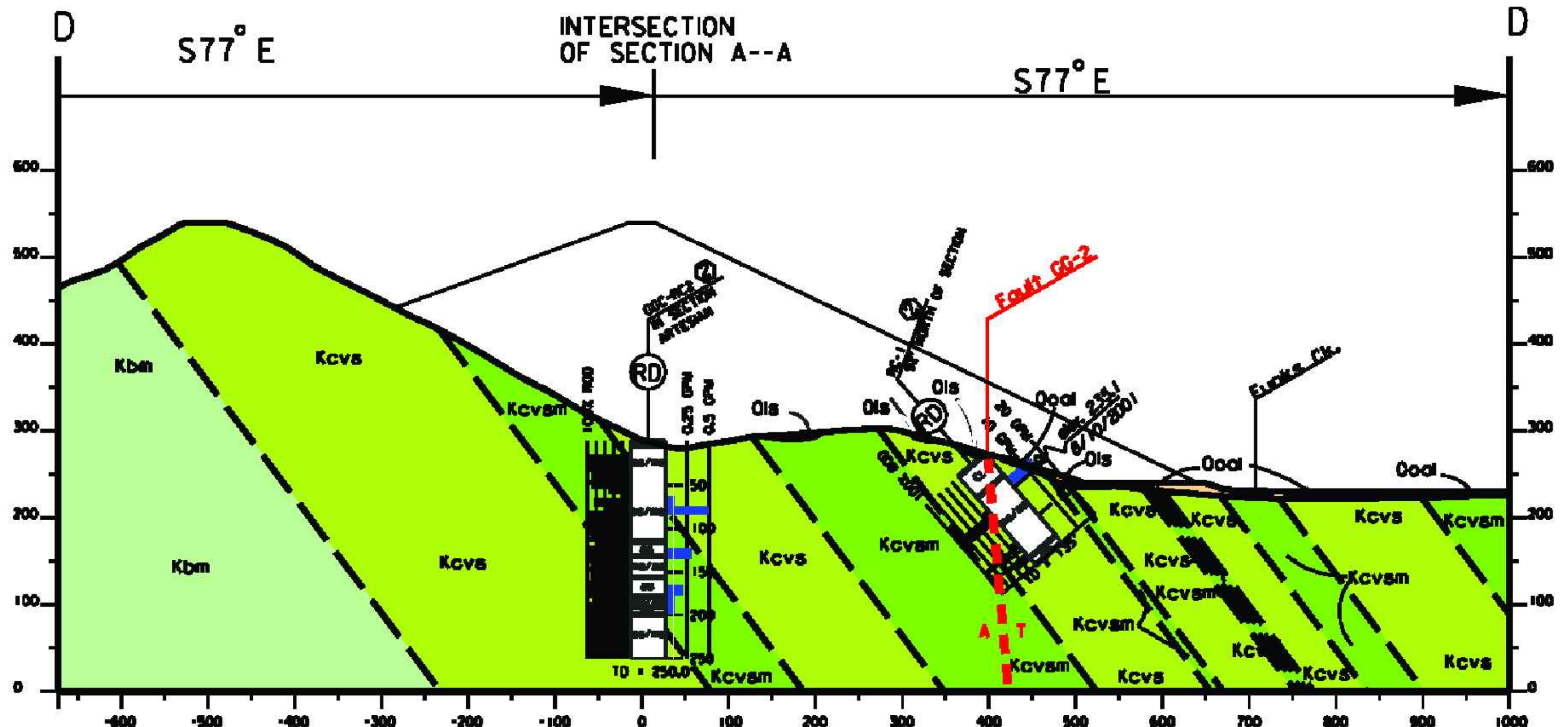
DESIGNED BY Northern District Geol.

PROJECT GEOLOGY SECTION

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
DIVISION OF ENGINEERING
PROJECT GEOLOGY SECTION
STATE WATER FACILITIES

INTEGRATED STORAGE INVESTIGATION
SITES RESERVOIR PROJECT
GOLDEN GATE DAM SITE
GEOLOGIC SECTIONS
SECTIONS B - B AND C - C

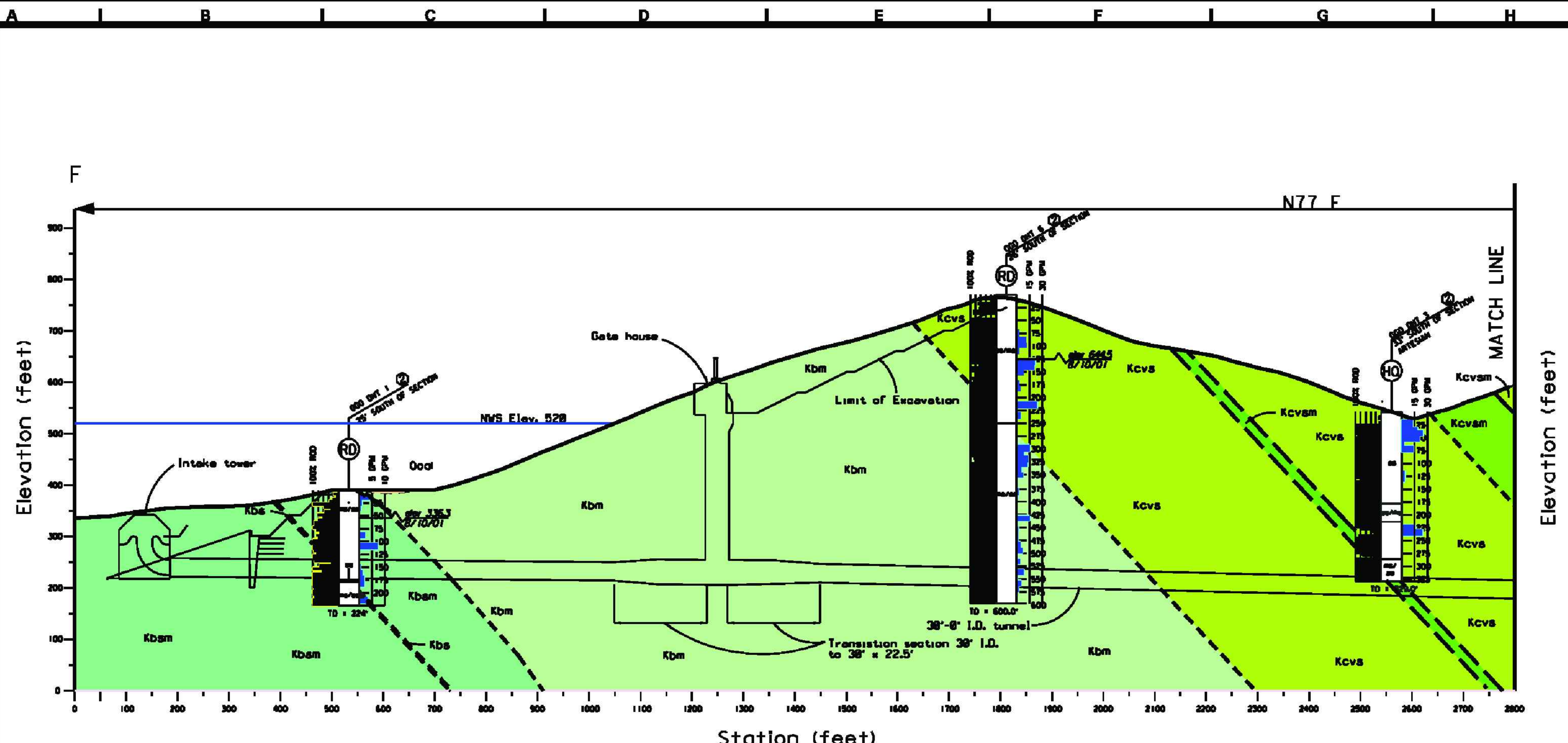
*****FILE SPECIFICATION*****



SHEET 137
B-2303

*****FILE SPECIFICATION*****

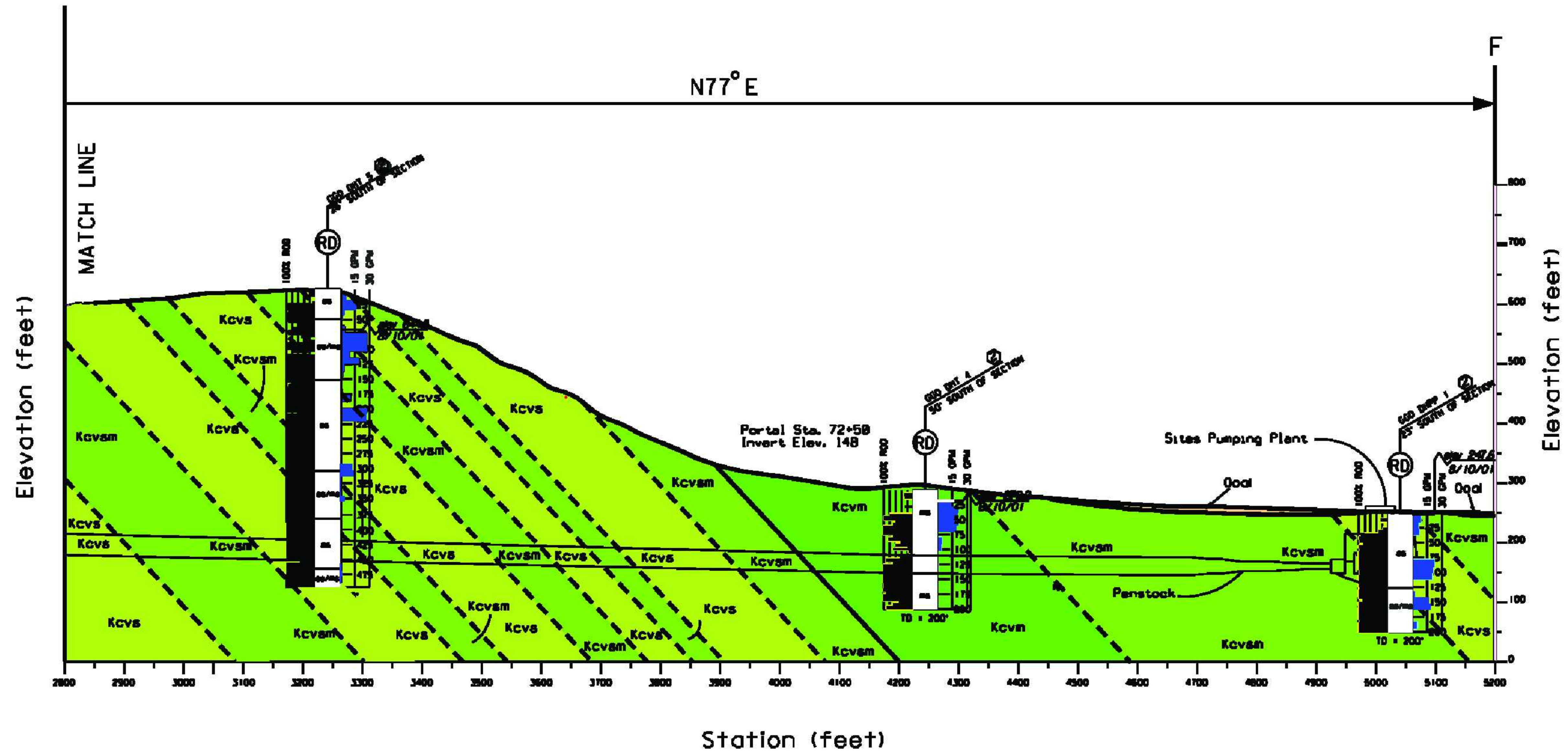
DRAWING SCALES		PROJECT REPORT No. 94-30-02	DESIGNED BY Northern District Geol.	STATE OF CALIFORNIA THE RESOURCES AGENCY DEPARTMENT OF WATER RESOURCES DIVISION OF ENGINEERING PROJECT GEOLOGY SECTION STATE WATER FACILITIES	INTEGRATED STORAGE INVESTIGATION SITES RESERVOIR PROJECT GOLDEN GATE DAM SITE GEOLOGIC CROSS SECTIONS SECTIONS D - D AND E - E	DATE 7-31-03
FULL SIZE 1" = 100'		CONSTRUCTION SPEC. No.	PROJECT GEOLOGY SECTION			2 OF 2
SCALE OF FEET		PROJECT DRAWING No. PG-SRP-15	DATE PREPARED BY 6/17/03			PLATE 5



NOTE
 Geologic investigations were conducted only along the initial design of a Long Tunnel alignment with the gate shaft option.

SHEET 138
 B-2304

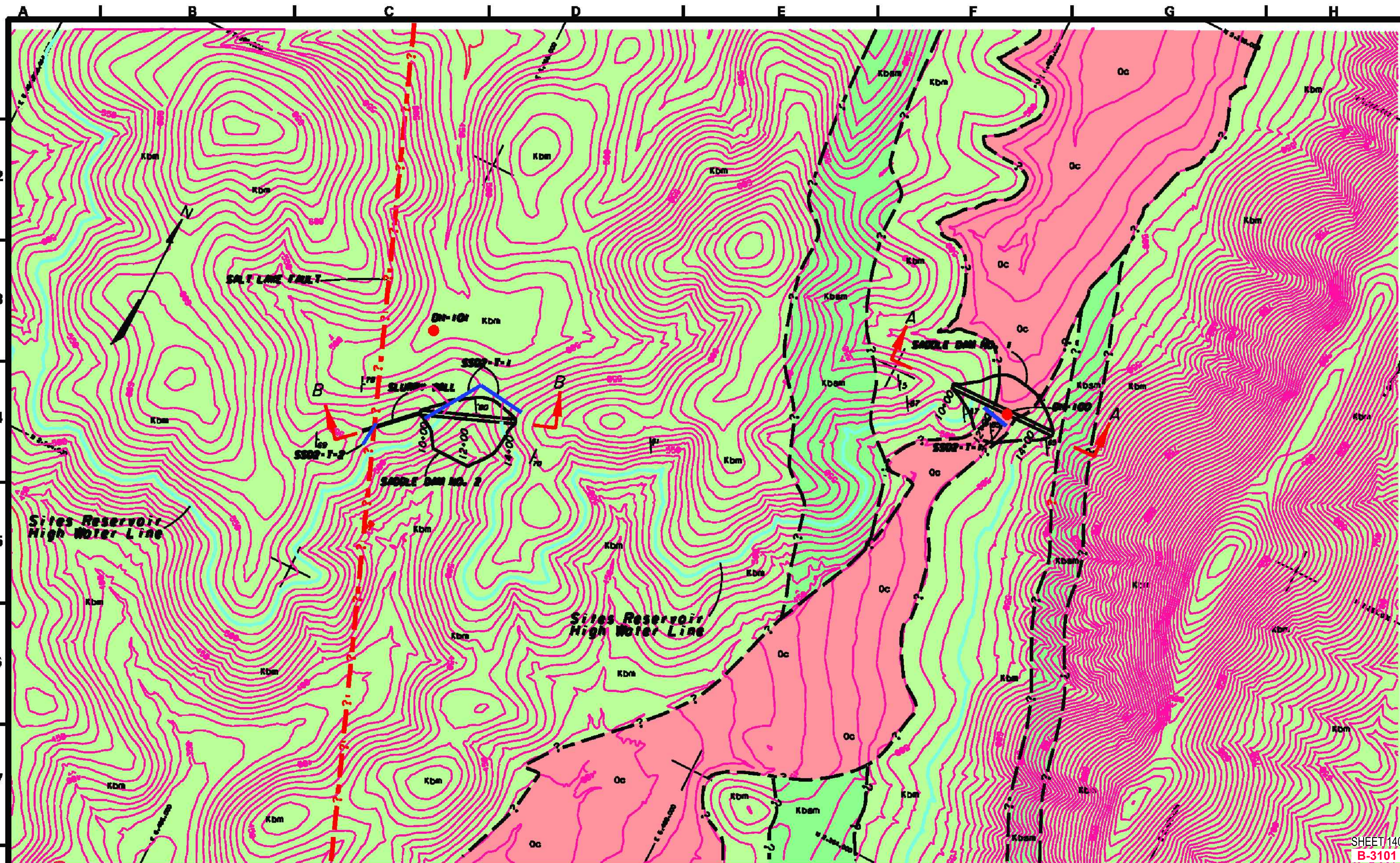
DRAWING SCALES FULL SIZE 1" = 100'		DRAWING NO. 94-30-02	DESIGNING ENGINEER <i>[Signature]</i>	STATE OF CALIFORNIA THE RESOURCES AGENCY DEPARTMENT OF WATER RESOURCES DIVISION OF ENGINEERING PROJECT GEOLOGY SECTION STATE WATER FACILITIES	INTEGRATED STORAGE INVESTIGATION SITES RESERVOIR PROJECT GOLDEN GATE DAM SITE GEOLOGIC SECTIONS OUTLET TUNNEL SECTION F - F	SHEET NO. 7-31-03
SCALE OF FEET 0 100 200 300 400		PROJECT NO. PG-SRP-16	DATE 6/17/05			1 OF 2 PLATE 6



NOTE
 Geologic investigations were conducted only along the initial design of a Long Tunnel alignment with the gate shaft option.

SHEET 139
 B-2305

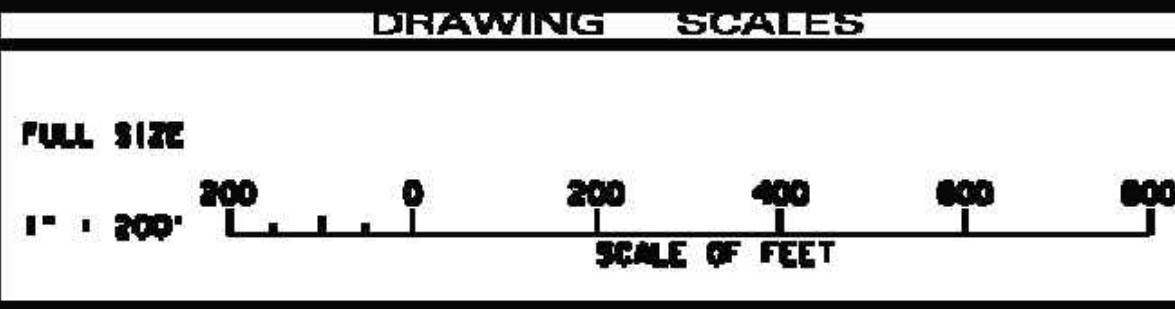
DRAWING SCALES		PROJECT REPORT No. 94-30-02	DESIGNED BY <i>Northridge District Geol.</i>	STATE OF CALIFORNIA THE RESOURCES AGENCY DEPARTMENT OF WATER RESOURCES DIVISION OF ENGINEERING PROJECT GEOLOGY SECTION STATE WATER FACILITIES	INTEGRATED STORAGE INVESTIGATION SITES RESERVOIR PROJECT GOLDEN GATE DAM SITE GEOLOGIC SECTIONS OUTLET TUNNEL SECTION F - F	DATE 7-31-03
FULL SIZE 1" = 100'		CONSTRUCTION SPEC. No.	<i>Project Geology Section</i>			DATE 6/17/05
SCALE OF FEET 0 100 200 300 400		PROJECT NUMBER PG-SRP-17	<i>Geology/Inspection</i>			2 OF 2 PLATE 6



SHEET 140
B-3101

*****FILE SPECIFICATION*****

NO.	DATE	DESCRIPTION



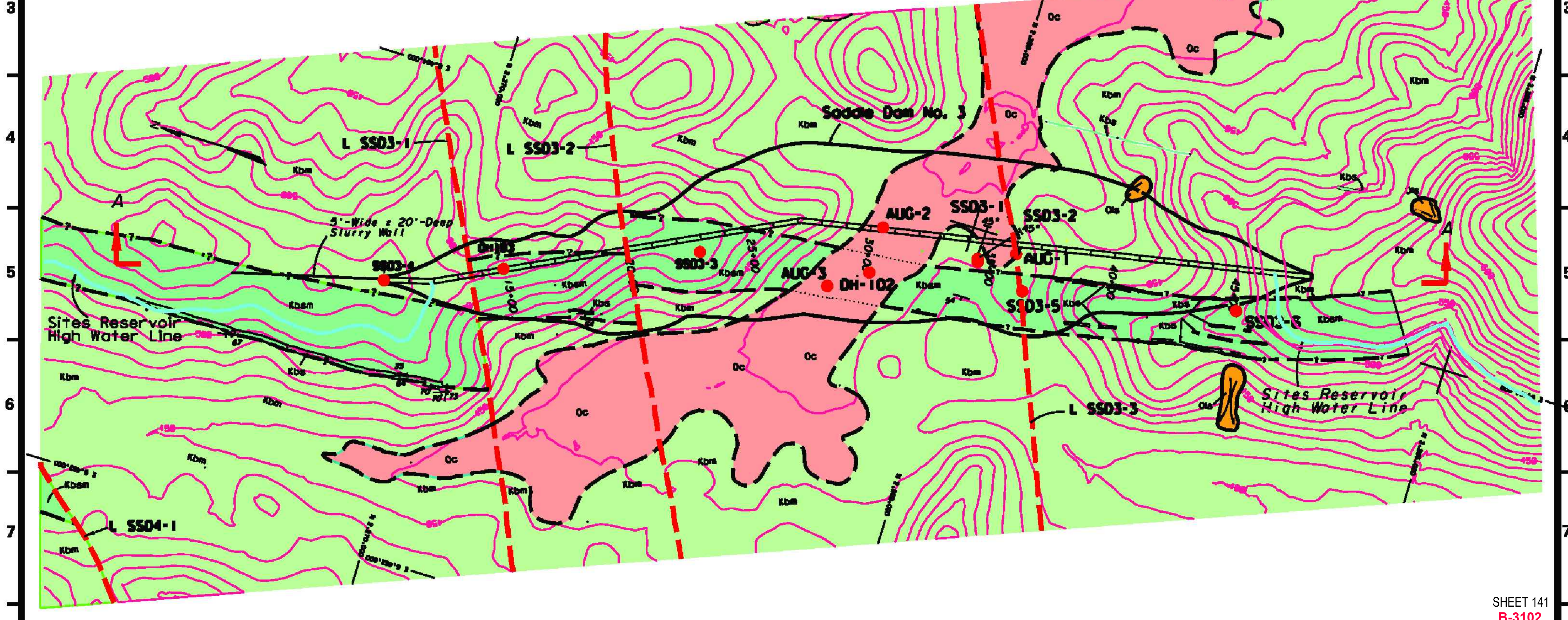
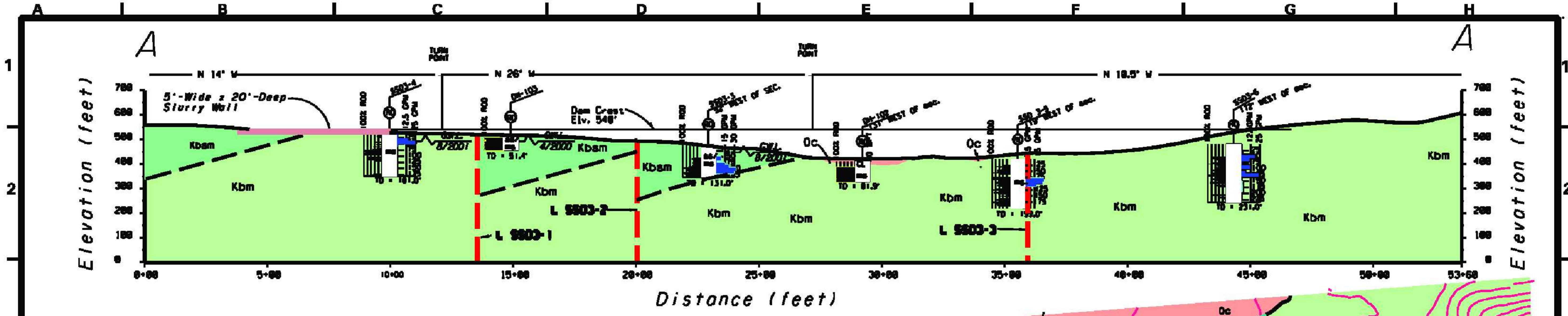
PROJECT NO. 94-30-02
CONTRACT NO. PG-SRP-22

DESIGNED BY 'SINGLE, SJO
DRAWN AND C.A.
CHECKED BY F. ANDERSON
DATE 1/1/83

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
DIVISION OF ENGINEERING
PROJECT GEOLOGY SECTION
STATE WATER FACILITIES

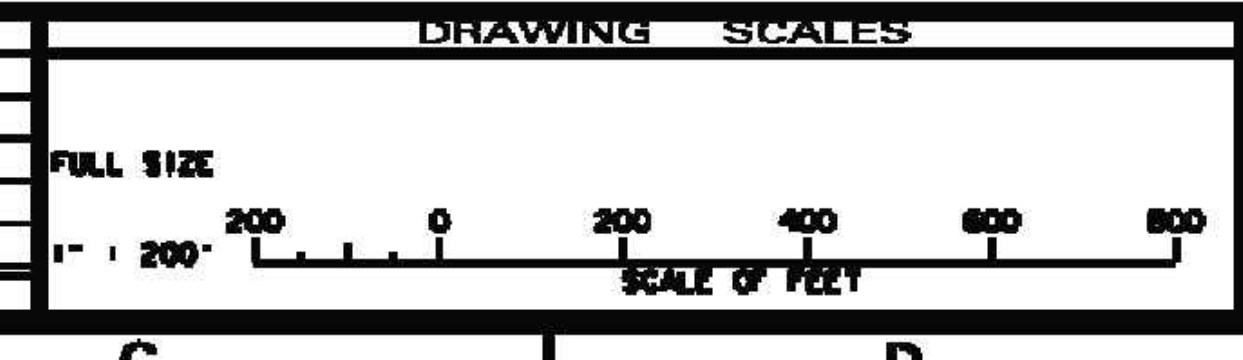
INTEGRATED STORAGE INVESTIGATION
SITES RESERVOIR PROJECT
GEOLOGIC MAP
SITES SADDLE DAMS 1 AND 2

PROJECT DATE 7-31-03
SHEET NO. 1 OF 4
PLATE 9



SHEET 141
B-3102

NO.	DATE	DESCRIPTION



PROJECT NUMBER
94-30-02

CONSTRUCTION SPEC. NO.
PG-SRP-23

DESIGNED BY
1. STEVE S.P.

2ND DES. BY
JENNIFER HANSLMAN

DATE: 6/20/03

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
DIVISION OF ENGINEERING
PROJECT GEOLOGY INC.
STATE WATER FACILITIES

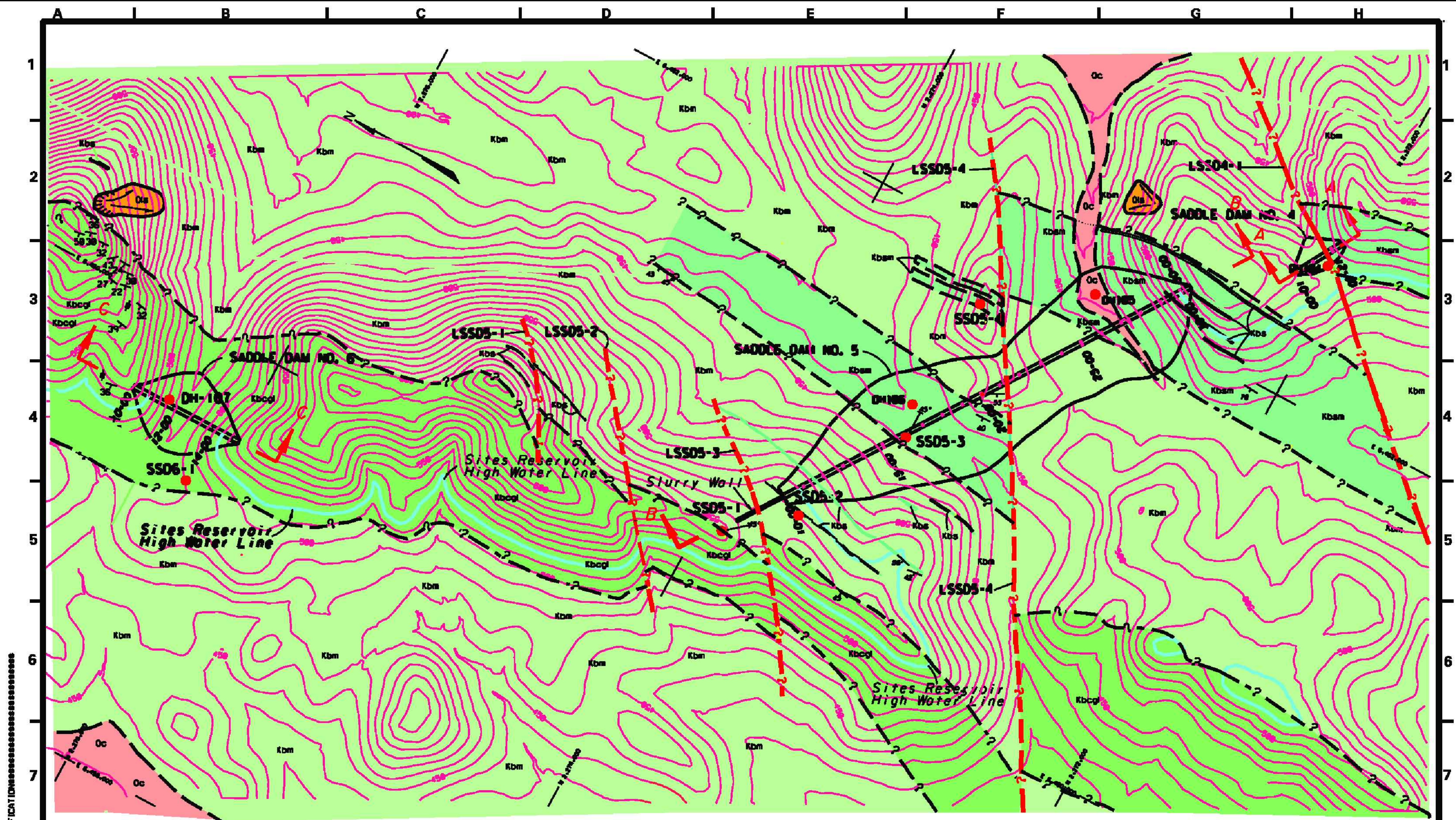
INTEGRATED STORAGE INVESTIGATION
SITES RESERVOIR PROJECT

GEOLOGIC PLAN AND PROFILE
SITES SADDLE DAM 3

PROJECT DATE
7-31-03

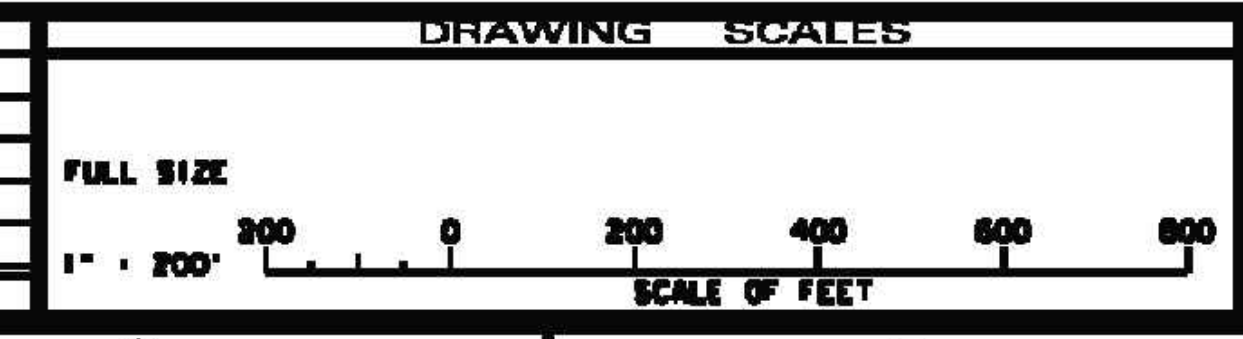
SHEET NO.
2 OF 4

PLATE
9



SHEET 142
B-3103

REV.	DATE	DESCRIPTION



PROJECT REPORT NO.
94-30-02

CONSTRUCTION SPEC. NO.
PG-SRP-24

DESIGNED BY
S. STEELE, SJD

FIELD GEOLOGIST
F. ANDERSON

DATE: 6/25/05

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
DIVISION OF ENGINEERING
PROJECT GEOLOGY SECTION
STATE WATER FACILITIES

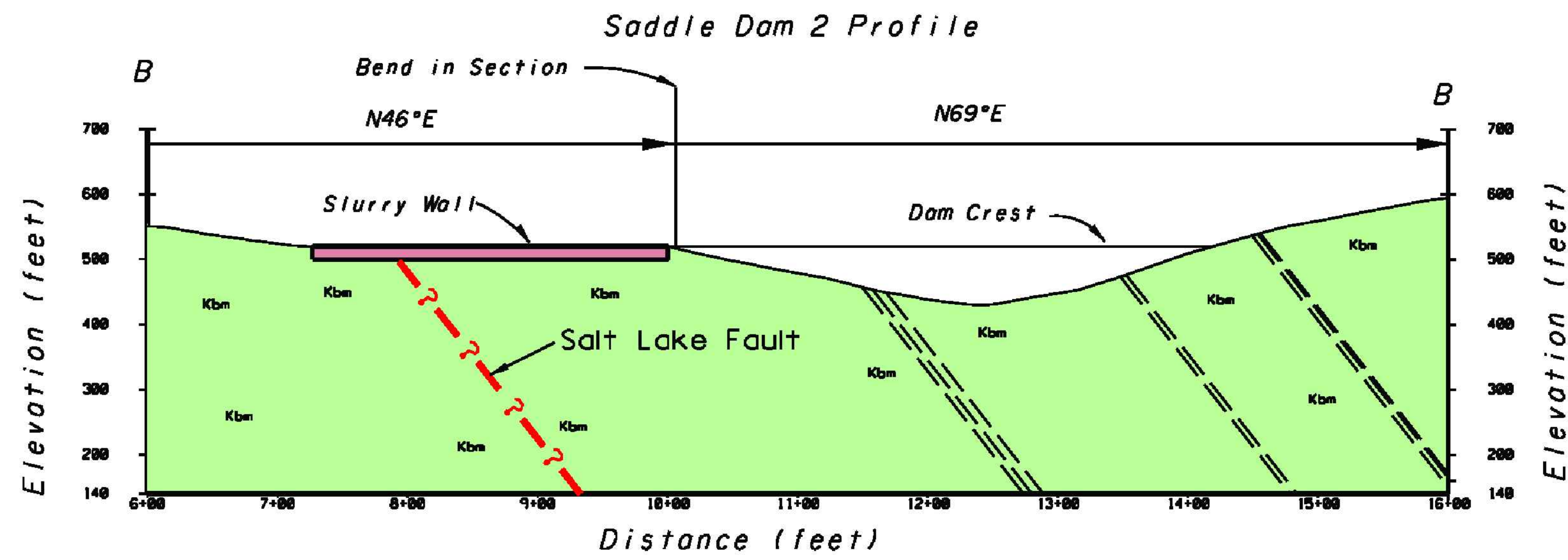
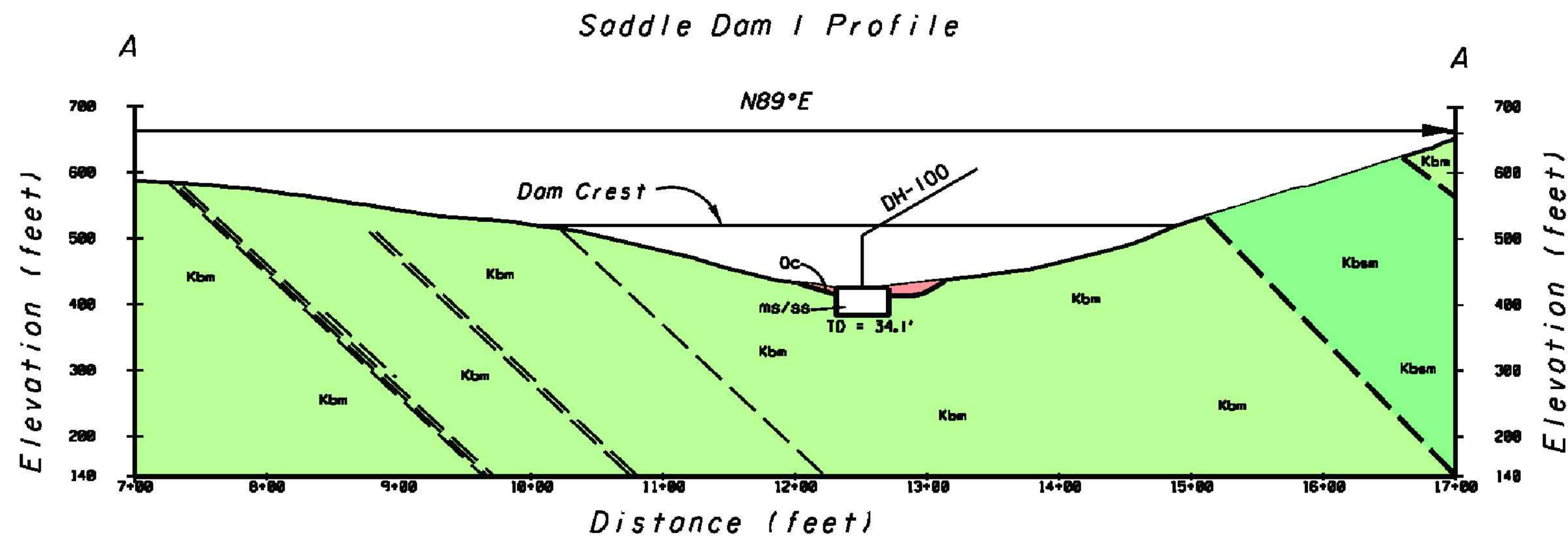
INTEGRATED STORAGE INVESTIGATION
SITES RESERVOIR PROJECT

GEOLOGIC MAP
SITES SADDLE DAMS 4, 5, AND 6

PROJECT DATE
7-31-03

3 OF 4

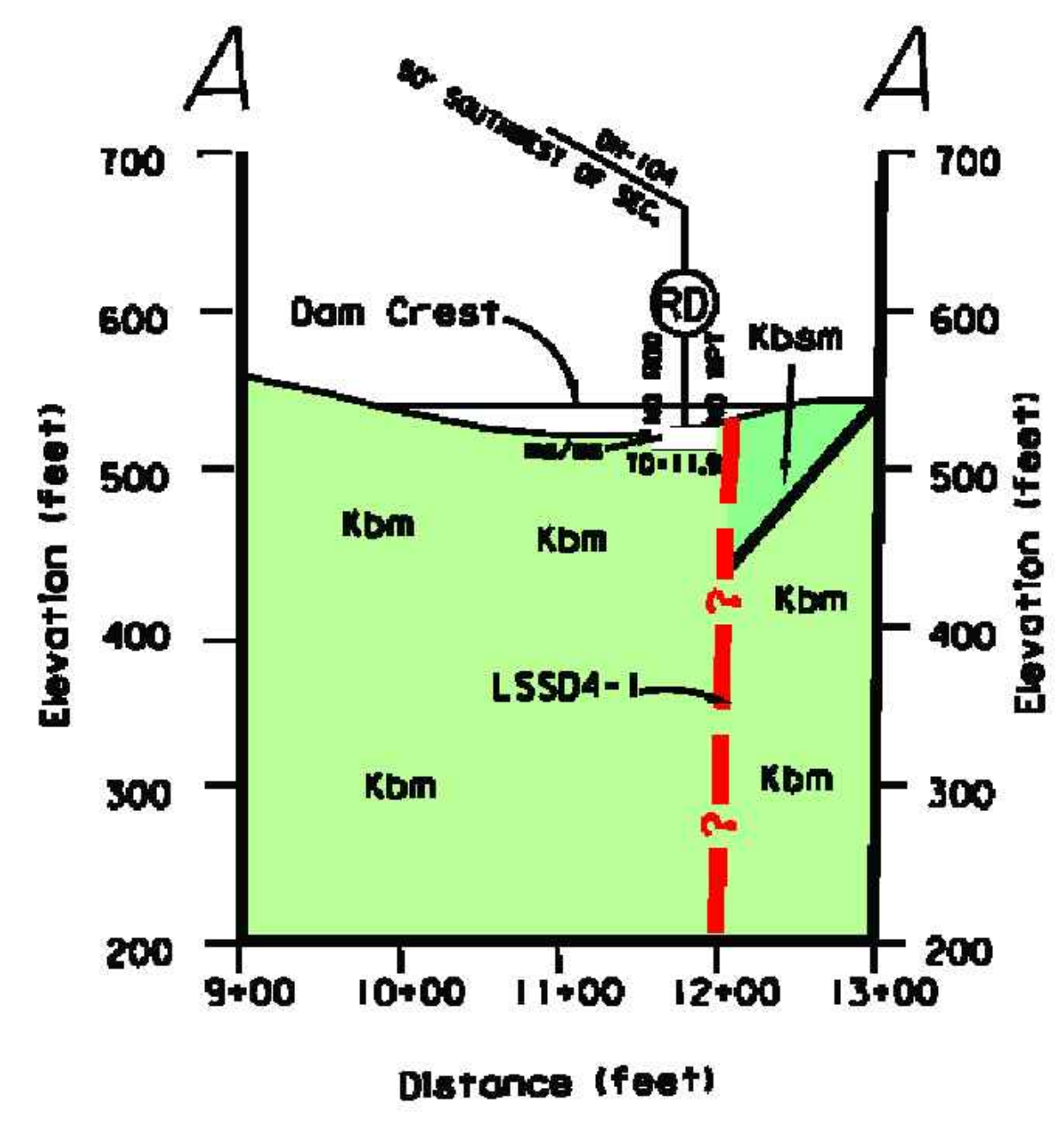
PLATE
9



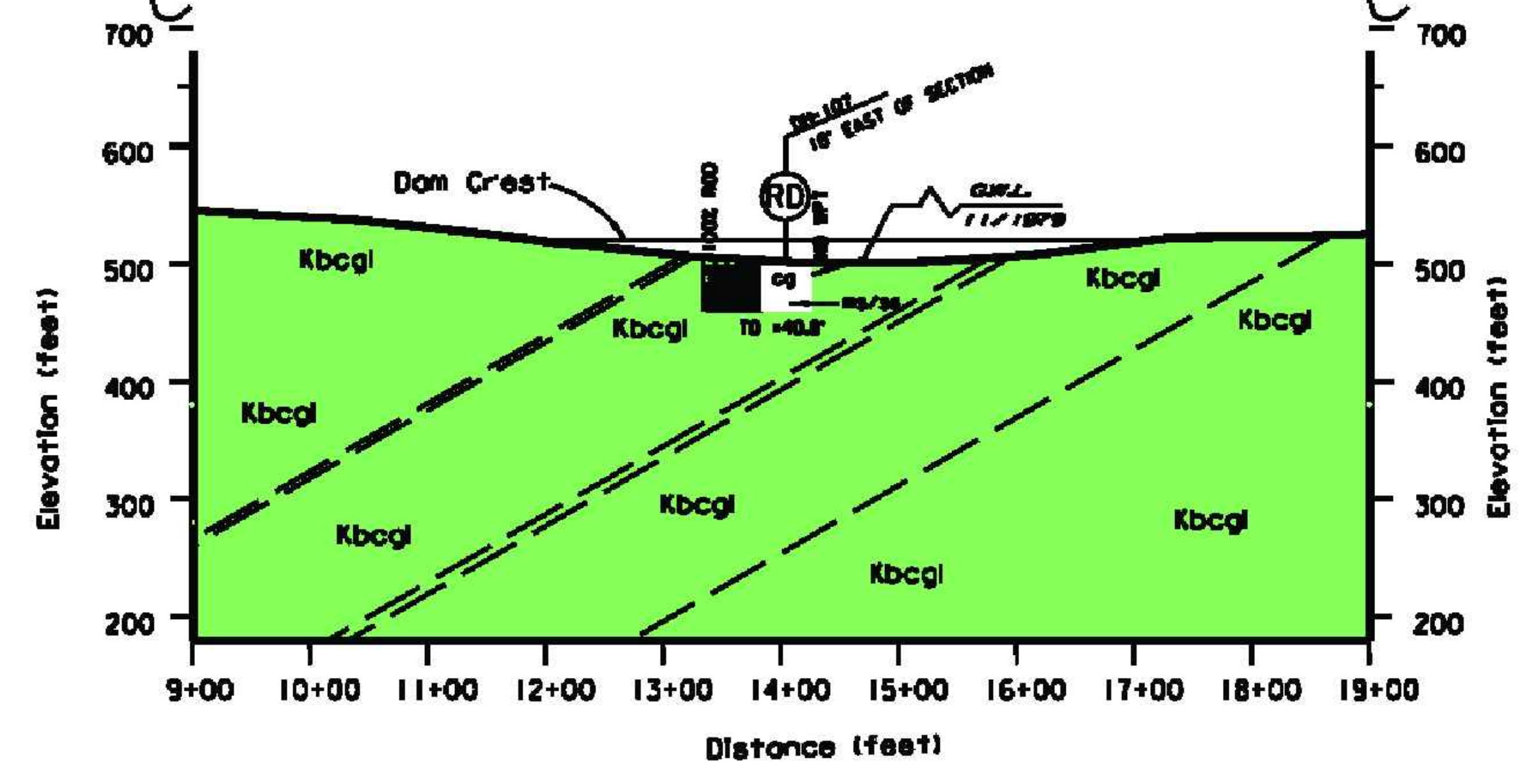
SHEET 144
B-3301

<p>DESIGNATION</p> <p>DATE</p>	<p>DRAWING SCALES</p> <p>FULL SIZE</p> <p>1" = 50'</p> <p>VERTICAL SCALE OF FEET</p> <p>1" = 100'</p> <p>HORIZONTAL SCALE OF FEET</p>	<p>PROJECT NO.</p> <p>90-30-02</p> <p>CONSTRUCTION SPEC. NO.</p> <p>DATE</p> <p>1/1/83</p>	<p>DESIGNED BY</p> <p>J. BROWN & RICH. LIND</p> <p>CHECKED BY</p> <p>J. BROWN & RICH. LIND</p>	<p>STATE OF CALIFORNIA</p> <p>THE RESOURCES AGENCY</p> <p>DEPARTMENT OF WATER RESOURCES</p> <p>DIVISION OF ENGINEERING</p> <p>PROJECT GEOLOGY SECTION</p> <p>STATE WATER FACILITIES</p>	<p>INTEGRATED STORAGE INVESTIGATION</p> <p>SITES RESERVOIR PROJECT</p> <p>GEOLOGIC SECTION</p> <p>SITES SADDLE DAM 1 AND 2</p> <p>SECTION A-A AND B-B</p>	<p>DATE</p> <p>7-31-03</p> <p>PLATE</p> <p>10</p>
--------------------------------	--	--	--	---	---	---

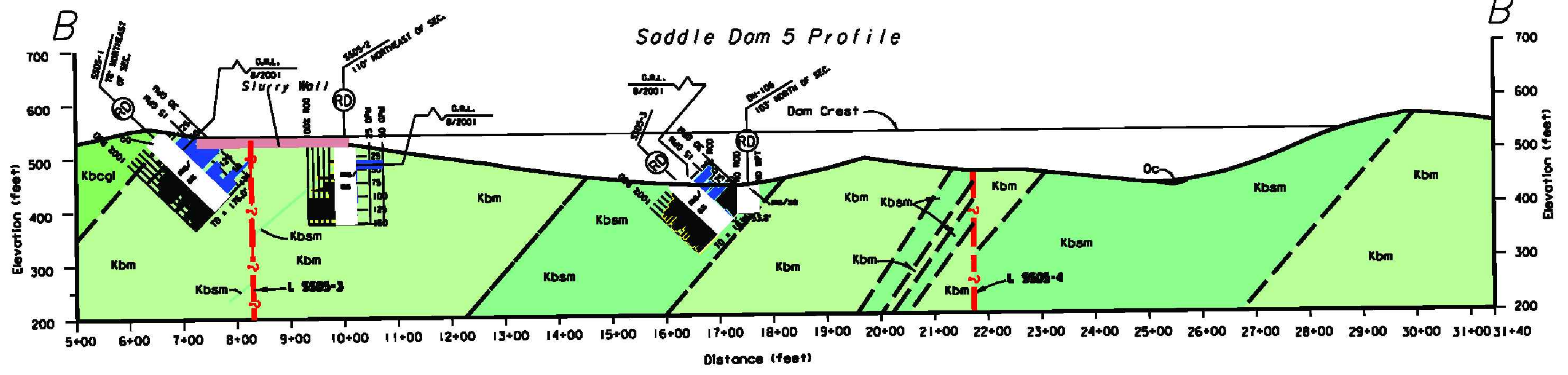
Saddle Dam 4 Profile



Saddle Dam 6 Profile

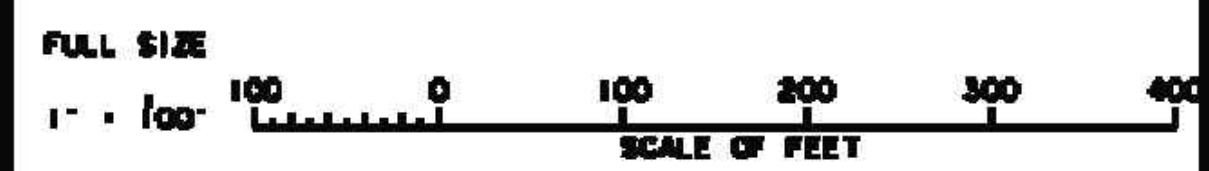


Saddle Dam 5 Profile



SHEET 145
B-3302

DRAWING SCALES



PROJECT NO. 94-30-02
CONTRACT NO. PG-SRP-27

DESIGNED BY 'STEVE SIO'
FIELD SUPERVISOR 'FARNO HOSSEINI'
DATE: 1/2/03

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
DIVISION OF ENGINEERING
PROJECT GEOLOGY SECTION
STATE WATER FACILITIES

INTEGRATED STORAGE INVESTIGATION
SITES RESERVOIR PROJECT
GEOLOGIC SECTION
SITES SADDLE DAMS 4, 5 AND 6
SECTION A-A, B-B, AND C-C

DATE: 7-31-03
1 OF 1
PLATE 11

