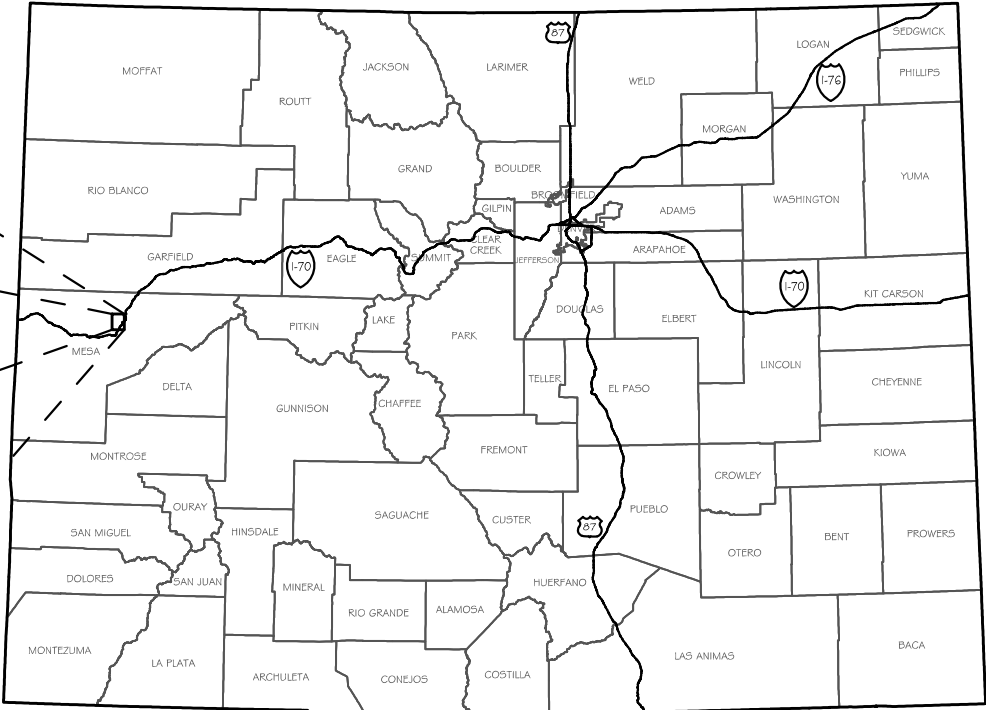
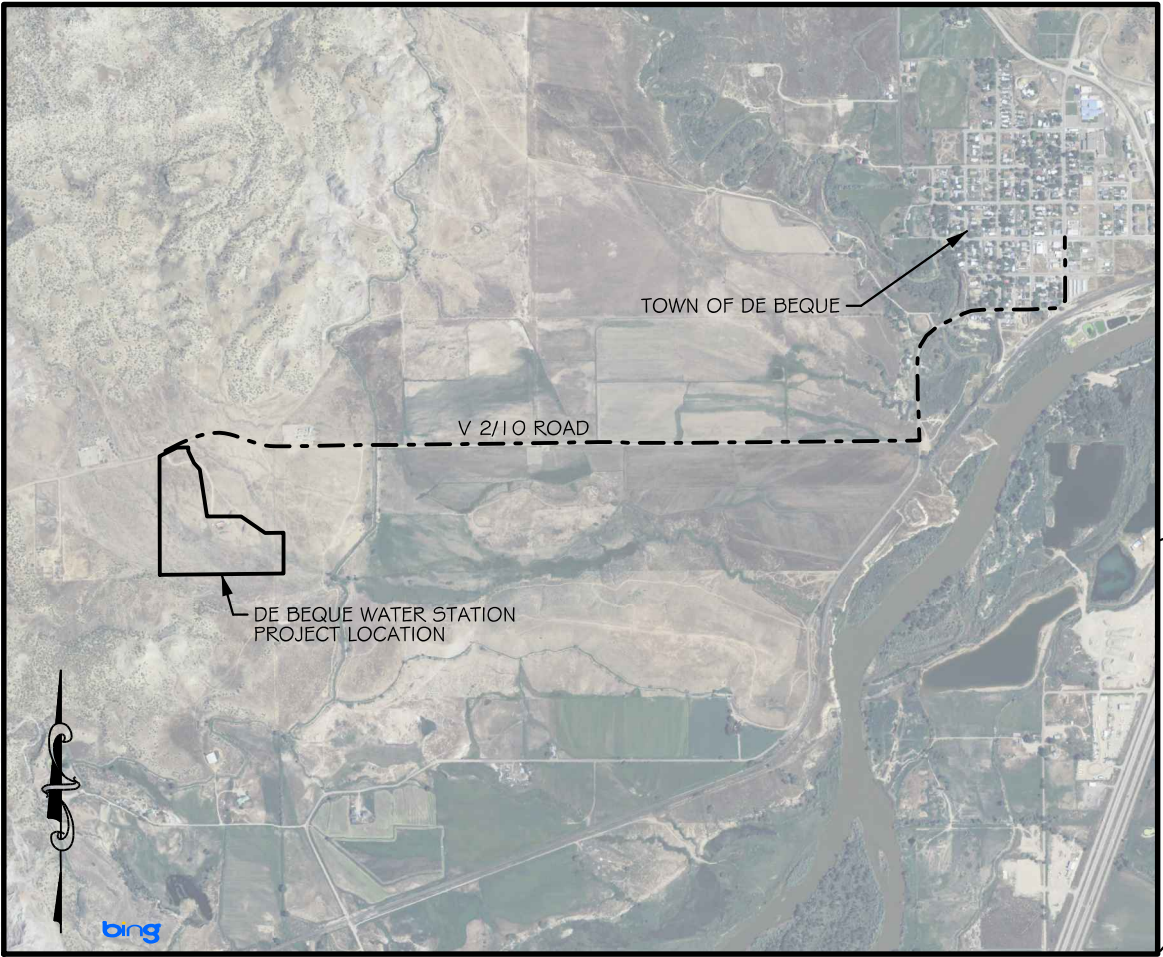




# DE BEQUE WATER STATION PRODUCED WATER REUSE FACILITY - POND 1 RECORD DRAWINGS

LOCATED IN SECTION 29, T. 8 S., R. 97 W. 6TH P.M.,  
MESA COUNTY, COLORADO  
WATER DIVISION 5 - COLORADO RIVER BASIN  
WATER DISTRICT 72 - LOWER COLORADO RIVER  
SUBMITTED: MARCH 2015



STATE OF COLORADO



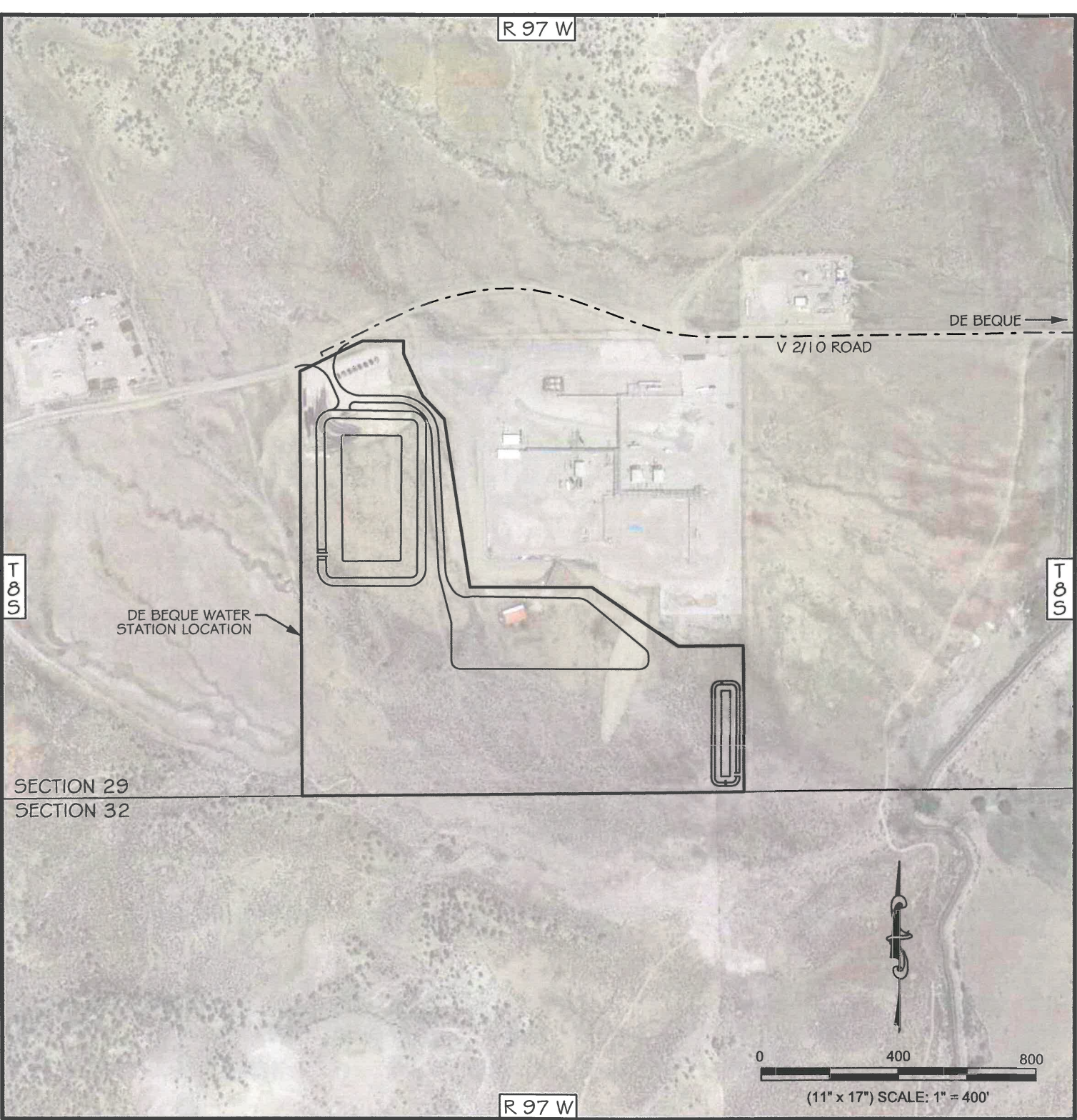
Providing Quality Services to the Rocky Mountain Region Since 1980

**DRAFT RECORD DRAWING**

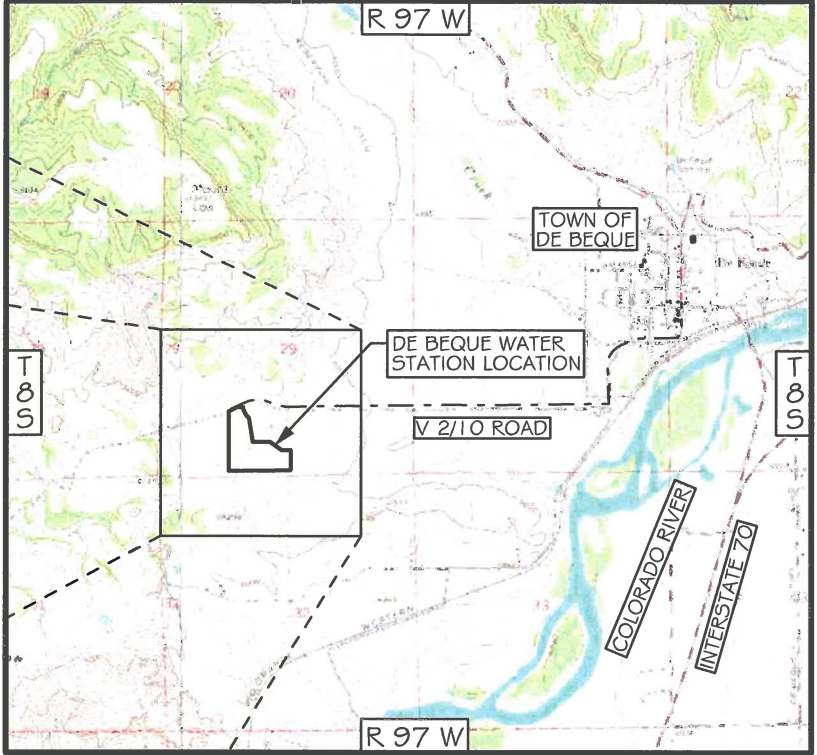


# DE BEQUE WATER STATION - POND 1 RECORD DRAWINGS

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MESA COUNTY, COLORADO  
WATER DIVISION 5 - COLORADO RIVER BASIN  
WATER DISTRICT 72 - LOWER COLORADO RIVER



LOCATION MAP



VICINITY MAP

## PROJECT CONTACTS

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SURVEYOR  
  
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WWC ENGINEERING  
MR. DREW PEARSON, P.E. - (406) 443-3962  
PROJECT ENGINEER



## CERTIFICATE OF ENGINEER

THESE PLANS REPRESENT THE AS-CONSTRUCTED  
CONDITIONS OF THE DE BEQUE STATION FACILITY TO  
THE BEST OF OUR KNOWLEDGE AND JUDGEMENT, BASED  
IN PART ON INFORMATION FURNISHED BY OTHERS, AS  
OF THE \_\_\_\_\_ DAY OF \_\_\_\_\_, 2015

ENGINEER'S PRINTED NAME

ENGINEER'S SIGNATURE

**DRAFT RECORD DRAWING**

DE BEQUE WATER STATION  
POND 1 RECORD DRAWINGS

Title Sheet

SHEET  
1

**Black Hills Engineering & Production**  
2350 G Road, Suite 101  
Grand Junction, CO 81505

**WWC ENGINEERING**  
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REV	DATE						
DDP	08/14						
MMZ	12/14						













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3/18/2015







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3	ABBREVIATIONS
4 TO 5	TYPICAL SECTIONS
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7	POND 1 PLAN VIEW
8	POND 1 CROSS SECTIONS
9	POND 1 CONSTRUCTED ELEVATIONS
10	COMPACTION TESTS
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45	SECURITY GATE DETAIL
46	KEYPAD DETAIL
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# PROJECT LEGEND

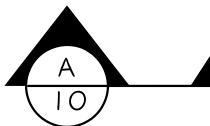
## PLAN FEATURES

	EDGE OF ROAD
	ROAD CENTERLINE
	FENCE
	UNDERGROUND GAS
	OVERHEAD POWER
	DRAINAGE FLOW LINE
	GRAVEL ROAD SURFACE
	EXISTING GROUND CONTOUR
	PROPOSED GROUND CONTOUR
	CULVERT
	PRODUCED WATER PIPE
	RAW WATER PIPE


## LINER ELEMENTS

	PRIMARY LINER
	GEONET
	SECONDARY LINER
	GEOCOMPOSITE CLAY LINER

## DRAWING NOTATION



INDICATES CROSS SECTION LOCATION. "A" REFERS TO THE CROSS SECTION DESIGNATION. "10" REFERS TO THE SHEET NUMBER WHERE THE SECTION IS CUT OR SHOWN.



INDICATES DETAIL LOCATION. "1" REFERS TO THE DETAIL DESIGNATION. "12" REFERS TO THE SHEET NUMBER WHERE THE DETAIL IS INDICATED OR SHOWN.

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JOB # 2013-134

DE BEQUE WATER STATION  
POND 1 RECORD DRAWINGS

Table of Contents and Legend

SHEET

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## ABBREVIATIONS

AB	ANCHOR BOLT, AGGREGATE BASE	DIA	DIAMETER	INT	INTERIOR	SQ IN	SQUARE INCH
ABDN	ABANDON	DIAG	DIAGONAL	JB	JUNCTION BOX	SST	STAINLESS STEEL
ABV	ABOVE	DIM	DIMENSION	JT	JOINT	STA	STATION
AC	ASPHALTIC CONCRETE, ASBESTOS CEMENT	DIMJ	DUCTILE-IRON MECHANICAL JOINT	LBS	POUNDS	STD	STANDARD
ADD	ADDITIONAL	DIR	DIRECTION	LF	LINEAR FEET	STL	STEEL
ADJ	ADJACENT, ADJUST	DN	DOWN	LONG	LONGITUDINAL	STRUCT	STRUCTURE
ADPTR	ADAPTER	DR	DOOR	LT	LEFT	SYM	SYMMETRICAL
AFF	ABOVE FINISHED FLOOR	DWG	DRAWING	LVL	LEVEL	T&B	TOP AND BOTTOM
ANCH	ANCHOR	EA	EACH	MAT	MATERIAL	TB	THRUST BACK
ALUM	ALUMINUM	EF	EACH FACE, EXHAUST FAN	MAX	MAXIMUM	TBC	TOP BACK OF CURVE
ALT	ALTERNATE	EL, ELEV	ELEVATION	MECH	MECHANICAL	TEL	TELEPHONE
ANG	ANGLE	ELB	ELBOW	MFD	MANUFACTURED	TF	TOP FACE
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE	ELEC	ELECTRIC, ELECTRICAL	MFR	MANUFACTURE, MANUFACTURER	TEMP	TEMPORARY
APPROX	APPROXIMATE	ENCL	ENCLOSE	MH	MANHOLE	THK	THICK
APVD	APPROVED	ENGR	ENGINEER	MIN	MINIMUM	THRU	THROUGH
ARCH	ARCHITECTURE, ARCHITECTURAL	EP	EDGE OF PAVEMENT	MISC	MISCELLANEOUS	T.O.	TOP OF
ASPH	ASPHALT	EQL	EQUAL, EQUALLY	MJ	MECHANICAL JOINT	T.P.	OUTSIDE TOP OF PIPE
ASSEM	ASSEMBLY	EQL SP	EQUALLY SPACED	MPWSS	MONTANA PUBLIC WORKS STANDARD SPECIFICATIONS	TOC	TOP OF CONCRETE, TOP OF CURB
AVG	AVERAGE	EQUIP	EQUIPMENT			TYP	TYPICAL
BD	BOARD	EQUIV	EQUIVALENT	NIC	NOT IN CONTRACT	UBC	UNIFORM BUILDING CODE
BFV	BUTTERFLY VALVE	EVC	END VERTICAL CURVE	NO, #	NUMBER	UG	UNDERGROUND
BF	BOTTOM FACE	EW	EACH WAY	NOM	NOMINAL	ULT	ULTIMATE
BH	BOREHOLE	EXC	EXCAVATE	NTS	NOT TO SCALE	UTIL	UTILITY
BLDG	BUILDING	EXP	EXPANSION	OC	ON CENTER	V	VALVE
BLK	BLOCK	EXP JT	EXPANSION JOINT	OD	OUTSIDE DIAMETER	VB	VALVE BOX
BLW	BELOW	EXST	EXISTING	OF	OUTSIDE FACE	VERT	VERTICAL
BM	BENCHMARK	EXT	EXTENSION, EXTERIOR	OHP	OVERHEAD POWER	VOL	VOLUME
BMP	STORMWATER BEST MANAGEMENT PRACTICES	F	FLANGE	OPNG	OPENING	VRFY	VERIFY
BOT	BOTTOM	FAB	FABRICATE	OPT	OPTIONAL	W	WIDTH
BRG	BEARING	FB	FLAT BAR, FACE BRICK	PC	POINT OF CURVE	W/	WITH
BRKT	BRACKET	FC	FLEXIBLE COUPLING	PEN	PENETRATION	W/O	WITHOUT
BTWN	BETWEEN	FCA	FLANGE COUPLING ADAPTER	PERP	PERPENDICULAR	WL, W	WATERLINE
BV	BALL VALVE	FD	FLOOR DRAIN	PH	PIPE HANGER	WM	WIRE MESH, WATER MAIN
BVC	BEGIN VERTICAL CURVE	FDN	FOUNDATION	PI	POINT OF INTERSECTION	WS	WATERSTOP, WATER SURFACE
CF5	CUBIC FEET PER SECOND	FES	FLARED END SECTION	PJF	PREMOLDED JOINT FILLER	WSTL	WELDED STEEL, WROUGHT STEEL
CHAN	CHANNEL	FET	FLARED END TERMINAL	PL	PROPERTY LINE	WT	WEIGHT
CHK	CHECK	FF	FINISHED FLOOR	PLYWD	PLYWOOD	WTR	WATER
CI	CAST IRON	FG	FINISH GRADE	PNL	PANEL	WV	WATER VALVE
CIMJ	CAST-IRON PIPE MECHANICAL JOINT	FH	FIRE HYDRANT	POT	POINT OF TANGENT	WWF	WELDED WIRE FABRIC
CIP	CAST-IRON PIPE FLANGED JOINT	FL	FLOOR, FLOW	PRCST	PRECAST	WWM	WELDED WIRE MESH
CIPC	CAST-IN-PLACE CONCRETE	FLEX	FLEXIBLE	PREFAB	PREFABRICATED	YD	YARD
CIPC	CAST-IN-PLACE CONCRETE	FLG	FLANGE	PRELIM	PRELIMINARY		
CIRC	CIRCULAR	FLL	FLOW LINE	PREP	PREPARE, PREPARATION		
CJ	CONSTRUCTION JOINT, CONTROL JOINT	FIN	FINISH	PROP	PROPERTY		
C	CENTERLINE	FLR	FLOOR	PRV	PRESSURE REDUCING VALVE	NOTES:	
CLDI	CEMENT LINED DUCTILE IRON	FOC	FACE OF CONCRETE	PS	PIPE SUPPORT	1.	FOR ABBREVIATIONS NOT LISTED, SEE "ABBREVIATIONS FOR USE ON DRAWINGS AND TEXT", PUBLISHED BY THE AMERICAN NATIONAL STANDARDS INSTITUTE INC. (ANSI) OR CONTACT THE ENGINEER.
CLG	CEILING	F5TL	FABRICATED STEEL	PT	POINT, POINT OF TANGENCY	2.	THIS IS A STANDARD ABBREVIATION LIST. THEREFORE, NOT ALL ABBREVIATIONS ARE USED ON THE PLANS.
CLR	CLEAR, CLEARANCE	FT	FOOT, FEET	PVC	POLYVINYL CHLORIDE	3.	ADDITIONAL ABBREVIATIONS FOR SPECIALIZED WORK DIVISIONS (INSTRUMENTATION AND CONTROL, ELECTRICAL, ETC.) ARE SHOWN ON OTHER LEGEND SHEETS, AS APPLICABLE.
CMP	CORRUGATED METAL PIPE	FTG	FOOTING, FITTING	PVMT	PAVEMENT	4.	MONTANA PUBLIC WORKS STANDARD SPECIFICATIONS, LATEST EDITION.
CMU	CONCRETE MASONRY UNITS	F TO F	FACE TO FACE	PWR	OVERHEAD POWERLINES		
CO	CLEANOUT	GA	GAGE, GAUGE	RAD	RADIUS		
COL	COLUMN	GAL	GALLON	RC	REINFORCED CONCRETE		
COMB	COMBINATION	GALV	GALVANIZED	RCP	REINFORCED CONCRETE PIPE		
CONC	CONCRETE OR CONCENTRIC	GALVS	GALVANIZED STEEL	RD	ROAD, ROOF DRAIN		
CONN	CONNECT, CONNECTION	GND	GOUND	RDCR	REDUCER		
CONST	CONSTRUCTION	GPM	GALLONS PER MINUTE	REBAR	REINFORCEMENT BAR		
CONT	CONTINUE, CONTINUED, CONTINUOUS	GRTG	GRATING	REF	REFERENCE		
CONTR	CONTRACTOR	GSKT	GASKET	REINF	REINFORCE		
COORD	COORDINATE	GSP	GALVANIZED STEEL PIPE	RELOC	RELOCATE, RELOCATION		
CORR	CORRUGATED	GVL	GRAVEL	REQD	REQUIRED		
CP	CONTROL POINT	HDW	HARDWARE	RST	REINFORCING STEEL		
CPLG	COUPLING	HORIZ	HORIZONTAL	RT	RIGHT		
CSP	CORRUGATED STEEL PIPE	HP	HORSEPOWER	RW	RIGHT-OF-WAY		
C TO C	CENTER TO CENTER	HT	HEIGHT, HEAT TRACE	SAN	SANITARY SEWAR		
CTR	CENTER	HVAC	HEATING, VENTILATING, AND AIR CONDITIONING	SCHED	SCHEDULE		
CT&K	COUNTERSINK	HWY	HIGHWAY	SDWK	SIDEWALK		
CU	CUBIC	HYD	HYDRANT	SEC	SECTION		
CU FT	CUBIC FEET	ID	INSIDE DIAMETER	SHT	SHEET		
CU IN	CUBIC INCH	INV	INVERT ELEVATION	SIM	SIMILAR		
CULV	CULVERT	IF	INSIDE FACE	SLP	SLOPE		
CU YD	CUBIC YARD	IN.	INCH	SP	SPACE, SPACED		
D	DRAIN	INFL	INFLUENT	SPEC	SPECIFICATION		
DBA	DEFORMED BAR ANCHOR	INSTL	INSTALL, INSTALLATION	SPRT	SUPPORT		
DBL	DOUBLE	INSTR	INSTRUMENT	SQ	SQUARE		
DET	DETAIL	INSUL	INSULATE	SQ FT	SQUARE FOOT		
DI	DUCTILE IRON, DRAIN INLET						

NOTES:

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DE BEQUE WATER STATION  
POND 1 RECORD DRAWINGS

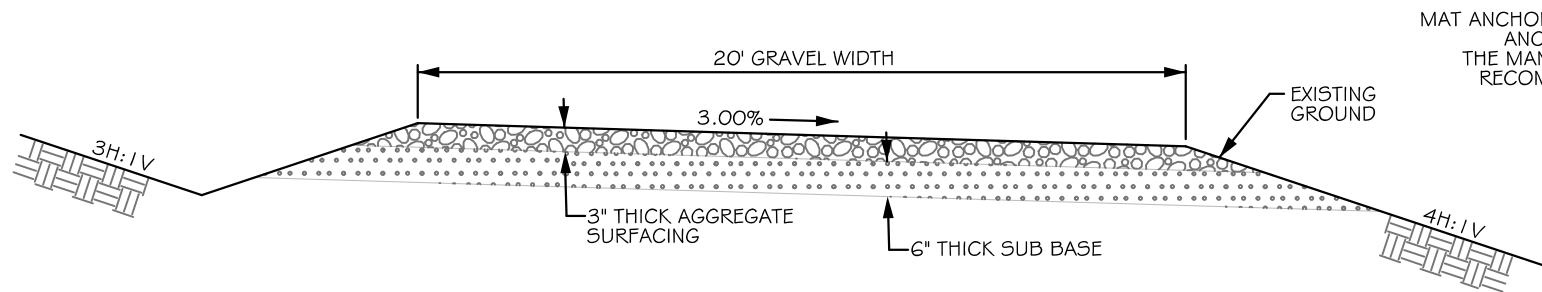
## Abbreviations

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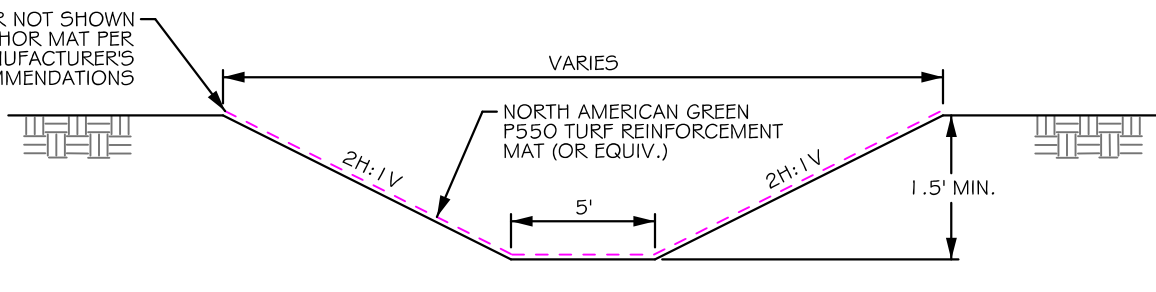


TYPICAL #1 ACCESS ROAD

NOT TO SCALE

NOTES:

- 1) TYPICAL SECTION #1 APPLIES TO ALL ACCESS ROADS EXCLUDING MAINTENANCE ROADS LOCATED ON TOP OF BERMS SURROUNDING PONDS.
- 2) COVERED ALL DISTURBED AREAS WITH 3" TOPSOIL AND REVEGETATED WITH APPROVED GRASS SPECIES.
- 3) CUT AND FILL SLOPES OF 4H:1V OR FLATTER ARE TYPICAL SLOPES. SEE CROSS SECTION SHEETS FOR ACTUAL SLOPE GRADES.
- 4) 3% CROSS SLOPE IS AWAY FROM PONDS AND TOWARD THE CONSTRUCTED DRAINAGE DITCHES EXCEPT AS NOTED ON THE ROAD PLAN AND PROFILE SHEET.
- 5) APPLIED MAGNESIUM CHLORIDE TO THE GRAVELED SURFACE OF THE ACCESS ROAD TO PREVENT DUST.

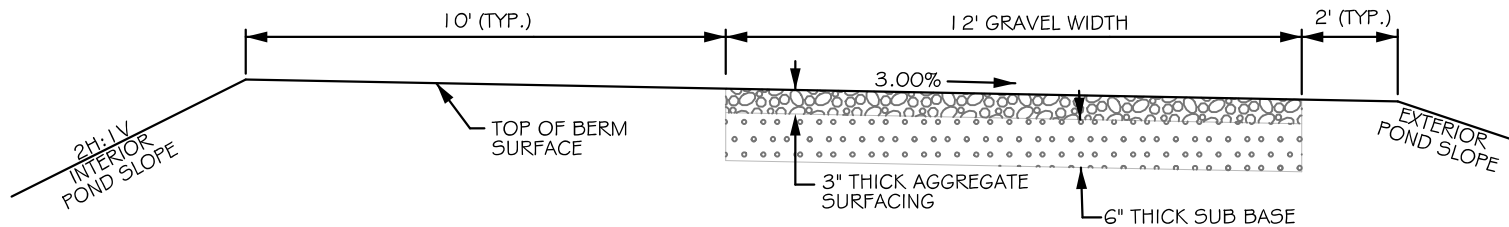


TYPICAL #3 DRAINAGE DITCH

NOT TO SCALE

NOTES:

- 1) TYPICAL SECTION #3 APPLIES TO WEST DRAINAGE DITCH.
- 2) DITCH BOTTOM AND SIDE SLOPES WERE SEEDED WITH APPROVED GRASS SPECIES PRIOR TO APPLICATION OF TURF REINFORCEMENT MAT.
- 3) NORTH AMERICAN GREEN P550 PERMANENT TURF REINFORCEMENT MAT (OR EQUIV.) COVERED DITCH BOTTOMS AND EXTENDED UP THE SIDE SLOPES TO A HEIGHT OF 3 FEET ABOVE DITCH BOTTOM OR TO THE TOP OF THE DITCH, WHICHEVER IS LESS. INSTALLED TURF MAT PER THE MANUFACTURER'S RECOMMENDATIONS.
- 4) ALL DITCH CUT AND FILL SLOPES OF 2H:1V OR FLATTER ARE TYPICAL SLOPES.

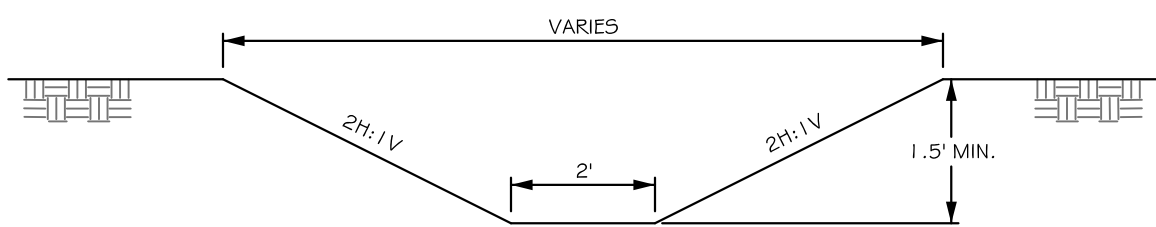


TYPICAL #2 MAINTENANCE ROAD

NOT TO SCALE

NOTES:

- 1) TYPICAL SECTION #2 (MAINTENANCE ROAD) APPLIES TO MAINTENANCE ROADS LOCATED ON TOP OF BERMS SURROUNDING PONDS.
- 2) SEE CROSS SECTION SHEETS FOR ACTUAL SLOPE GRADES.
- 3) ALL INTERIOR POND SLOPES ARE 2H:1V.



TYPICAL #4 DRAINAGE DITCH

NOT TO SCALE

NOTES:

- 1) TYPICAL SECTION #4 APPLIES TO THE NORTH AND SOUTH DRAINAGE DITCH.
- 2) DITCH BOTTOM AND SIDE SLOPES WERE REVEGETATED WITH APPROVED GRASS SPECIES.
- 3) ALL DITCH CUT AND FILL SLOPES OF 2H:1V OR FLATTER ARE TYPICAL SLOPES.

DRAFT RECORD DRAWING

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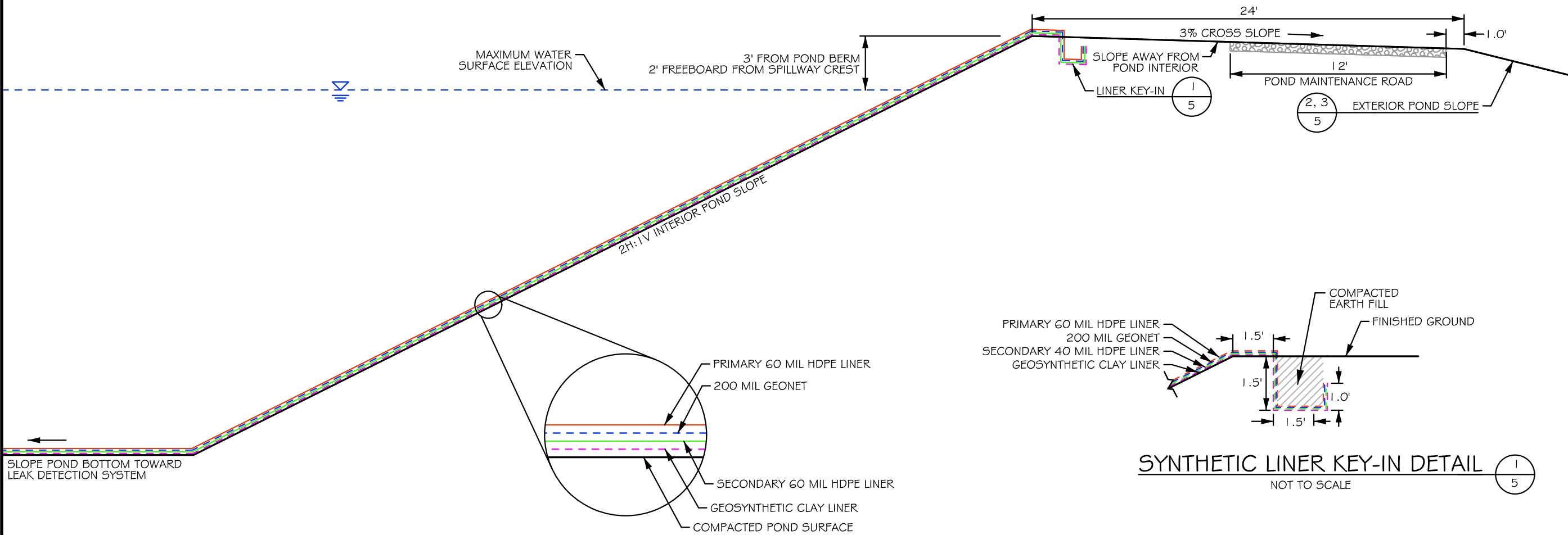
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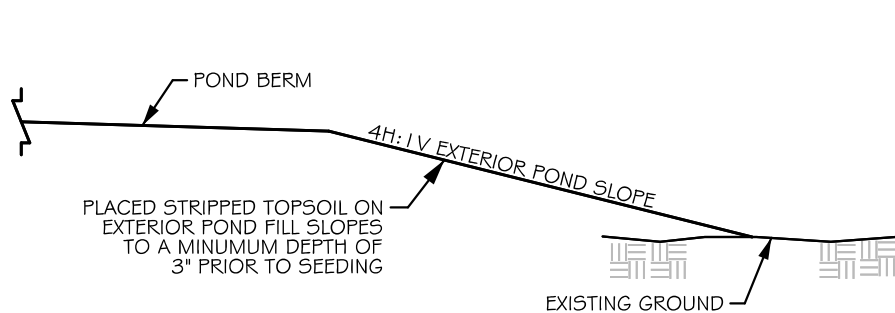
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Typical Sections

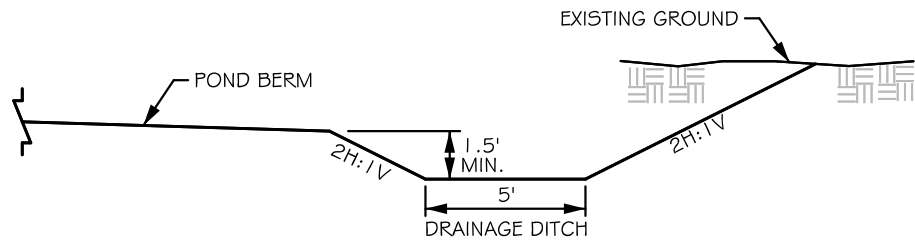
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POND 1 TYPICAL SECTION  
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EXTERIOR POND FILL SECTION  
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EXTERIOR POND CUT SECTION  
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POND 1 RECORD DRAWINGS

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SHEET  
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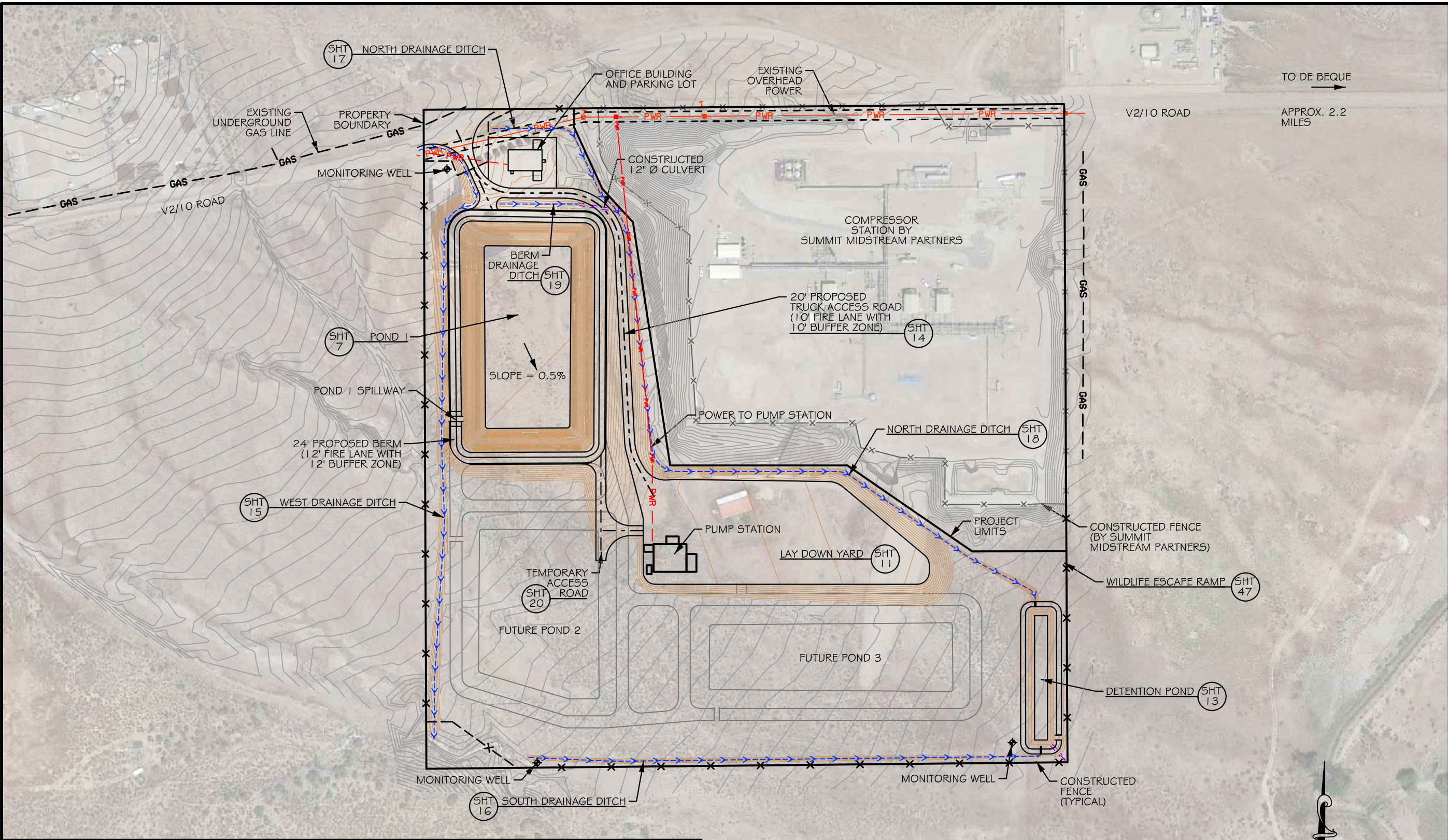
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POND DESIGN ELEMENTS

	POND 1	FUTURE POND 2	FUTURE POND 3
BOTTOM DIMENSIONS	176.2 FT x 370.2 FT	244 FT x 344 FT	494 FT x 139 FT
MAXIMUM WATER STORAGE VOLUME	40.3 AC-FT	31.2 AC-FT	30.0 AC-FT
WATER SURFACE AREA①	112,946 SQ FT	112,176 SQ FT	107,105 SQ FT
MAXIMUM WATER STORAGE DEPTH	21.3 FT	15.4 FT	16.5 FT
FREEBOARD DEPTH	2'	2'	2'
SPILLWAY DEPTH	1'	1'	1'
TOTAL POND DEPTH②	24.3 FT	18.4 FT	19.5 FT
LOWEST NATURAL GROUND ELEVATION AT BERM CL	5053.60	5045.78	5033.70
SPILLWAY CREST ELEVATION	5063.57	5059.80	5050.50
HEIGHT FROM SPILLWAY CREST TO NATURAL GROUND	9.97 FT	14.02 FT	16.80 FT
DAM SIZE/JURISDICTION	NON-JURISDICTIONAL③	MINOR JURISDICTIONAL④	MINOR JURISDICTIONAL④

- ① SURFACE AREA AT MAXIMUM STORAGE VOLUME LEVEL  
② TOTAL POND DEPTH = MAXIMUM WATER STORAGE DEPTH + FREEBOARD DEPTH + SPILLWAY DEPTH (DEPTH FROM TOP OF BERM TO LOWEST CORNER OF POND BOTTOM)  
③ RESERVOIR WITH A CAPACITY OF LESS THAN 100 ACRE-FEET, A SURFACE AREA OF LESS THAN 20 ACRES AND A HEIGHT LESS THAN 10 FEET.  
④ RESERVOIR WITH A CAPACITY OF LESS THAN 100 ACRE-FEET, A SURFACE AREA OF LESS THAN 20 ACRES AND A HEIGHT LESS THAN 20 FEET.

ALL PONDS HAVE THE FOLLOWING DESIGN ELEMENTS:  
2H: 1V INTERIOR SLOPES  
3H: 1V EXTERIOR CUT SLOPES  
4H: 1V EXTERIOR FILL SLOPES

DRAFT RECORD DRAWING

DE BEQUE WATER STATION  
POND 1 RECORD DRAWINGS

Facility Layout

SHEET  
6

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REV	DATE	CKD	STH
DDP	08/14	STH	
MMZ	12/14	STH	
MMZ	1/15	STH	

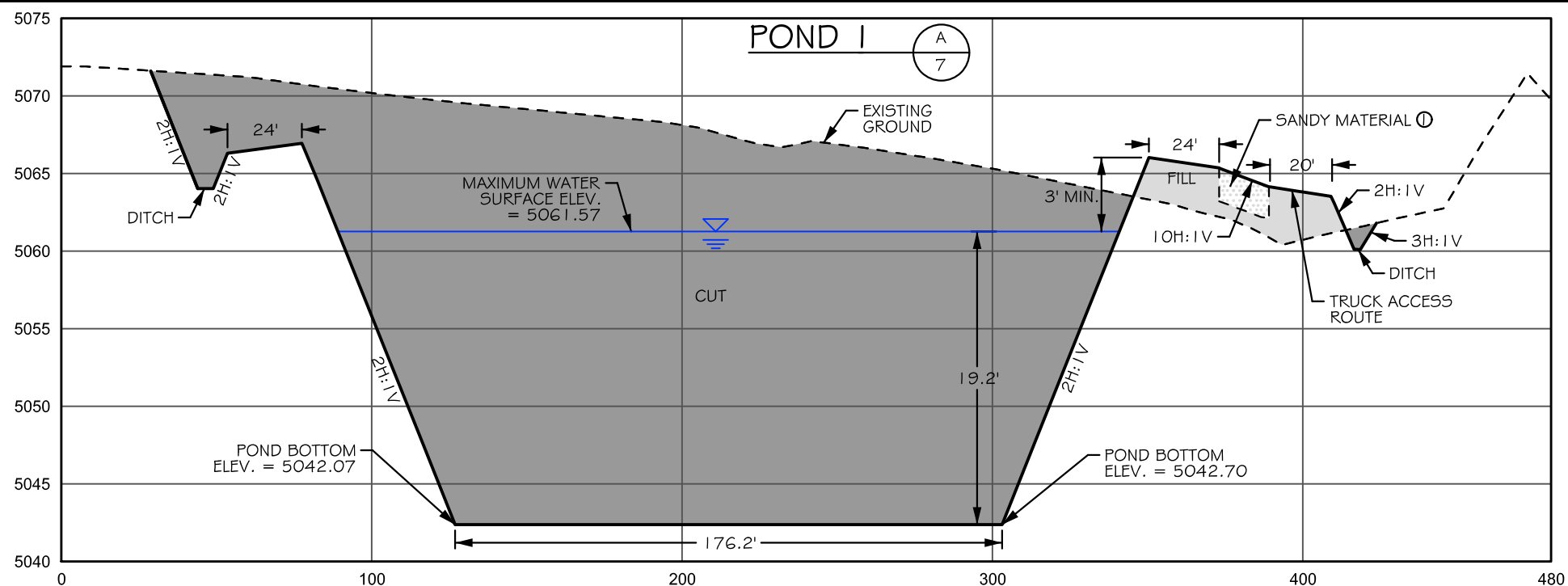
JOB # 2013-134

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3/18/2015



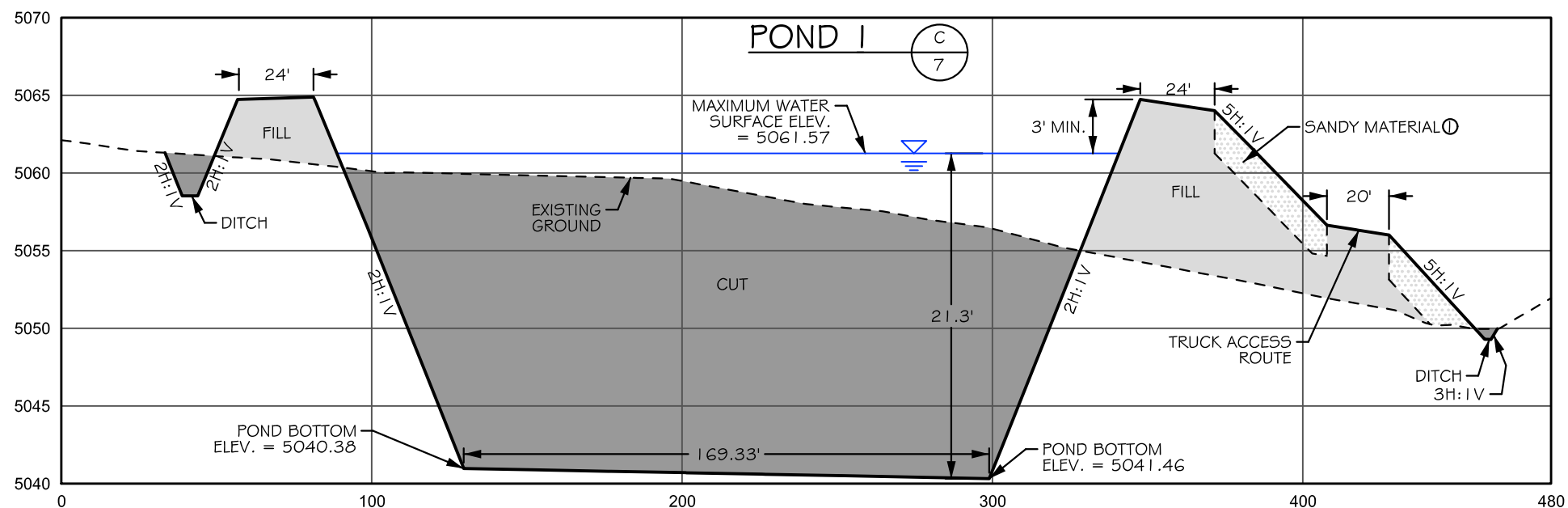
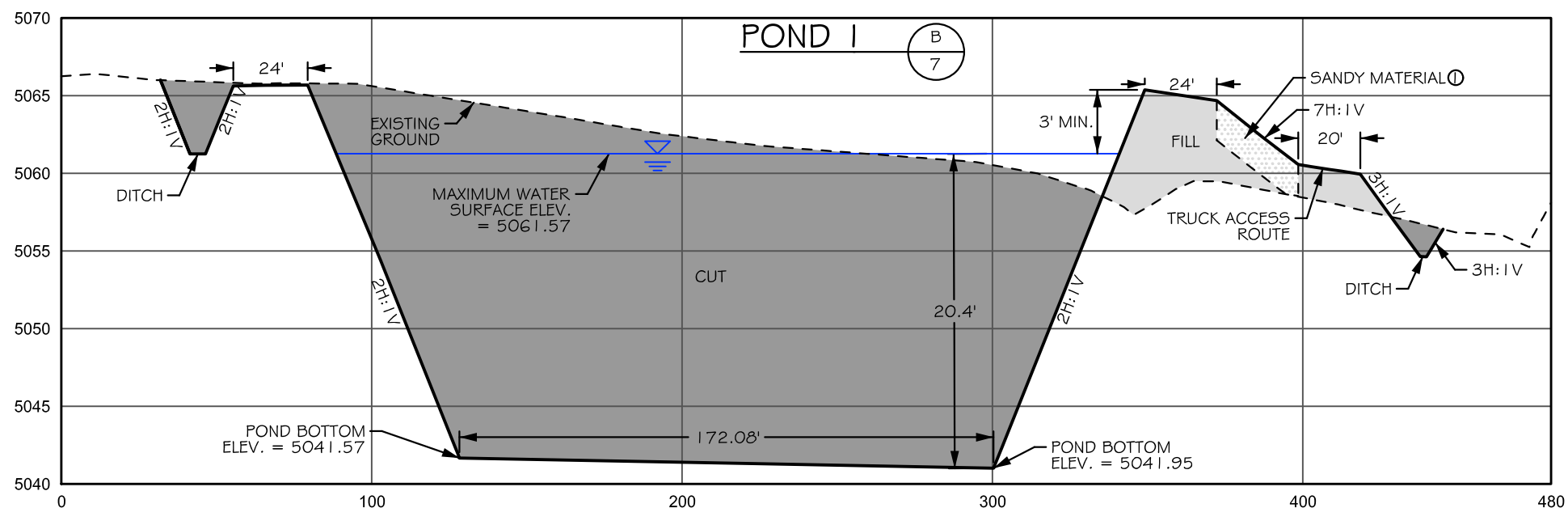







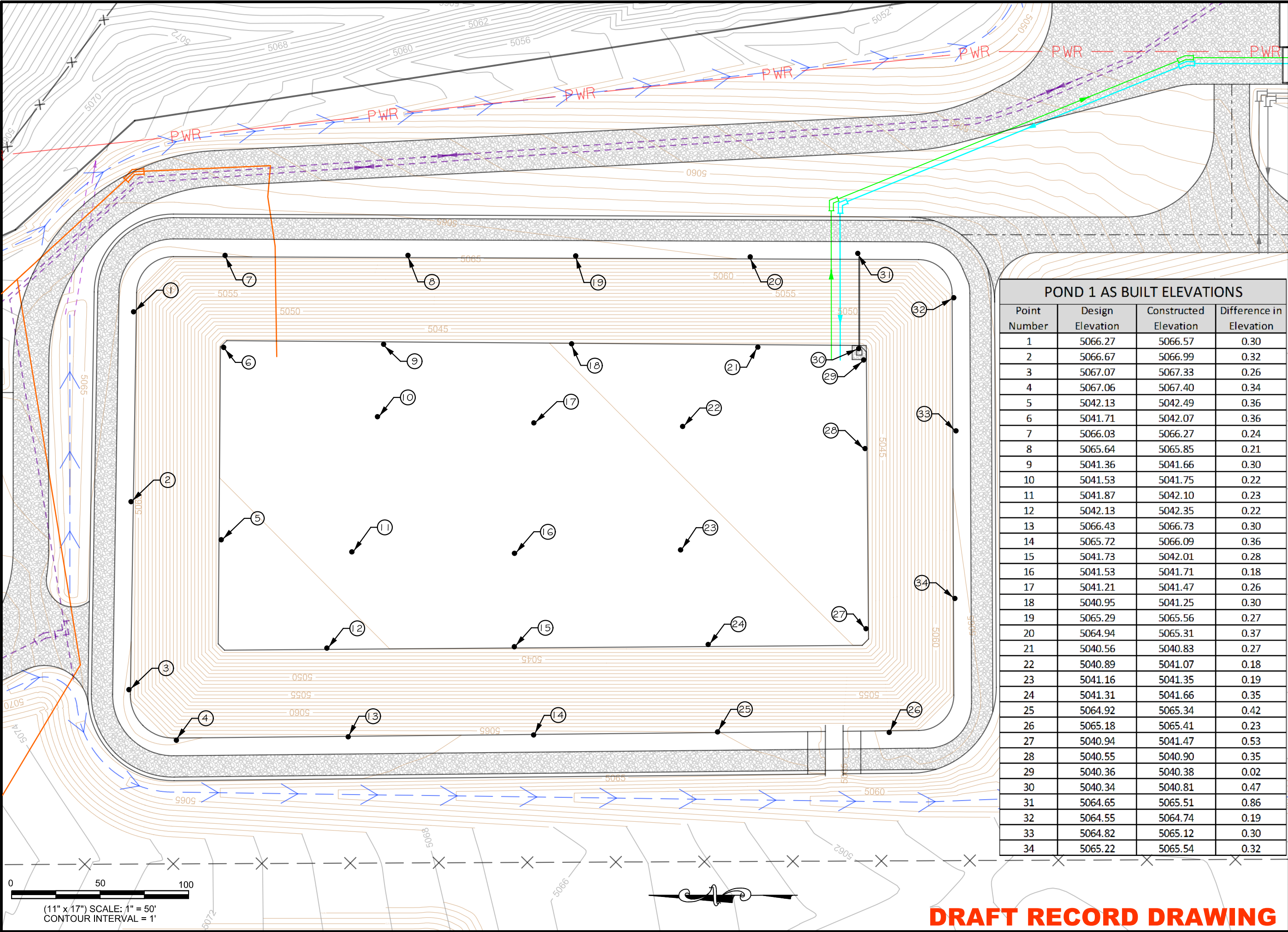
NOTE

① ANY SANDY MATERIAL ENCOUNTERED DURING EXCAVATION WAS PLACED ON THE EXTERIOR FILL SLOPES OF THE POND BERMS. CLAY SOIL WAS USED TO CONSTRUCT THE INTERIOR SLOPES OF THE POND BERMS.



0 50 100  
  
 (11" x 17") HORIZONTAL SCALE: 1" = 50'  
 VERTICAL SCALE: 1" = 10'

**DRAFT  
RECORD  
DRAWING**



POND 1 AS BUILT ELEVATIONS			
Point Number	Design Elevation	Constructed Elevation	Difference in Elevation
1	5066.27	5066.57	0.30
2	5066.67	5066.99	0.32
3	5067.07	5067.33	0.26
4	5067.06	5067.40	0.34
5	5042.13	5042.49	0.36
6	5041.71	5042.07	0.36
7	5066.03	5066.27	0.24
8	5065.64	5065.85	0.21
9	5041.36	5041.66	0.30
10	5041.53	5041.75	0.22
11	5041.87	5042.10	0.23
12	5042.13	5042.35	0.22
13	5066.43	5066.73	0.30
14	5065.72	5066.09	0.36
15	5041.73	5042.01	0.28
16	5041.53	5041.71	0.18
17	5041.21	5041.47	0.26
18	5040.95	5041.25	0.30
19	5065.29	5065.56	0.27
20	5064.94	5065.31	0.37
21	5040.56	5040.83	0.27
22	5040.89	5041.07	0.18
23	5041.16	5041.35	0.19
24	5041.31	5041.66	0.35
25	5064.92	5065.34	0.42
26	5065.18	5065.41	0.23
27	5040.94	5041.47	0.53
28	5040.55	5040.90	0.35
29	5040.36	5040.38	0.02
30	5040.34	5040.81	0.47
31	5064.65	5065.51	0.86
32	5064.55	5064.74	0.19
33	5064.82	5065.12	0.30
34	5065.22	5065.54	0.32

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DE BEQUE WATER STATION  
POND 1 RECORD DRAWINGS

Constructed Elevations

DSGN

DATE

MMZ

11/14

REV

DATE

MMZ

01/15

CKD

STH

CKD

STH

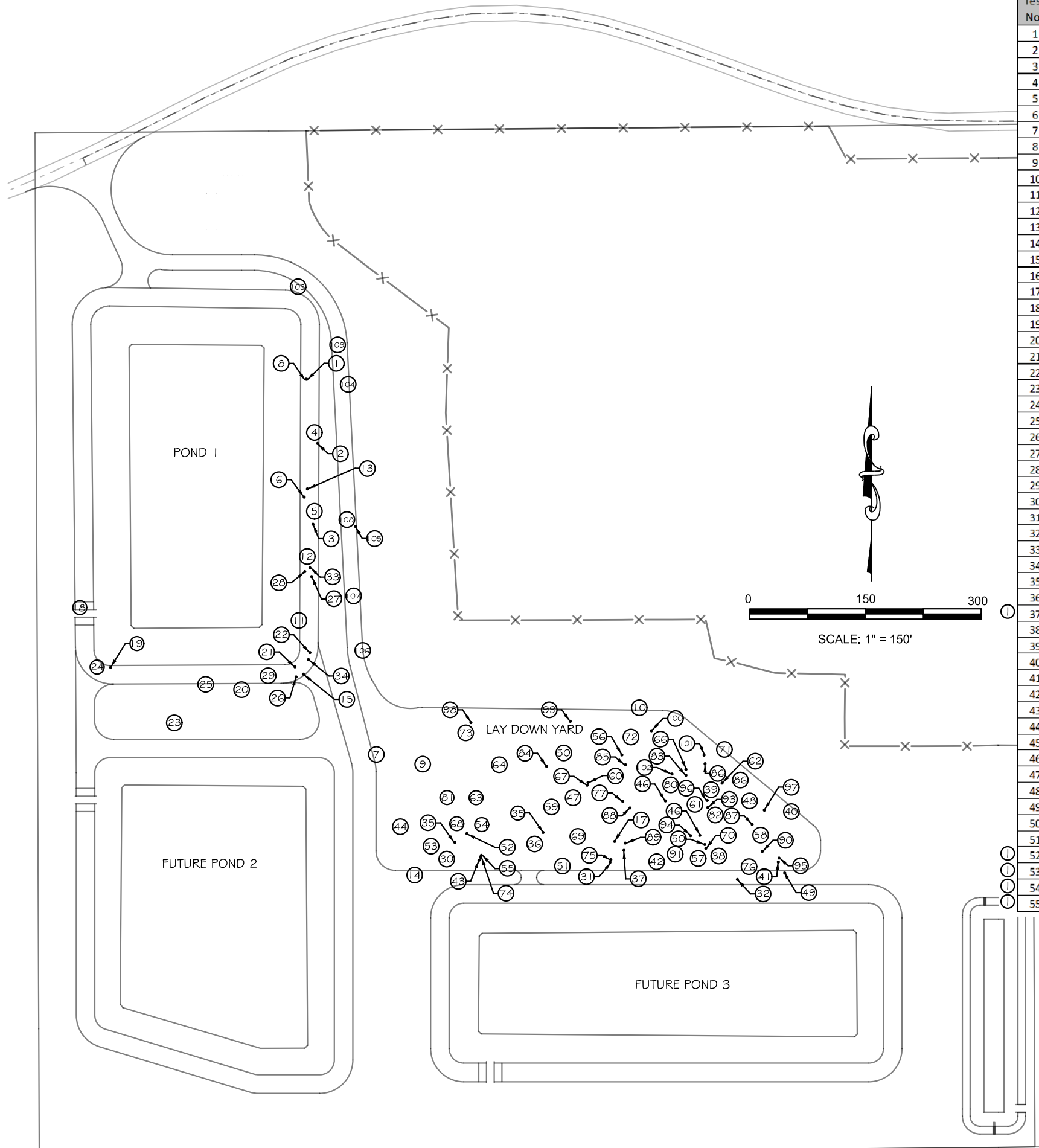
JOB #

2013-134

SHEET

9





De Beque Compaction Tests - Phase 1											
	Laboratory		Field				Laboratory		Field		
Test No.	Max Density PCF	OMC%	Dry Density PCF	MC%	Compaction %	Test No.	Max Density PCF	OMC%	Dry Density PCF	MC%	Compaction %
1	112.0	15.4	108.4	11.1	97	56	119.0	12.4	122.6	8.7	100+
2	112.0	15.4	106.4	11.1	95	57	119.0	12.4	115.8	13.8	97
3	112.0	15.4	107.0	10.2	96	58	119.0	12.4	113.3	12.9	95
4	112.0	15.4	112.7	15.6	100+	59	119.0	12.4	117.5	13.9	99
5	112.0	15.4	11.7	14.4	100	60	119.0	12.4	115.8	9.6	97
6	112.0	15.4	114.5	14.7	100+	61	119.0	12.4	117.2	12.0	98
7	112.0	15.4	113.3	13.5	100+	62	119.0	12.4	114.2	10.7	96
8	112.0	15.4	111.0	16.3	99	63	119.0	12.4	114.8	10.8	96
9	112.0	15.4	106.3	16.3	95	64	119.0	12.4	115.9	9.7	97
10	112.0	15.4	109.9	17.2	98	65	119.0	12.4	117.0	13.9	98
11	112.0	15.4	107.7	18.2	89	66	119.0	12.4	117.3	11.5	99
12	112.0	15.4	107.4	18.2	96	67	119.0	12.4	114.1	10.7	96
13	112.0	15.4	107.0	18.0	96	68	119.0	12.4	114.8	15.1	96
14	112.0	15.4	107.8	18.2	96	69	119.0	12.4	117.7	14.4	99
15	112.0	15.4	115.4	16.5	100+	70	119.0	12.4	118.0	12.3	99
16	112.0	15.4	110.8	16.7	99	71	119.0	12.4	113.5	13.1	95
17	112.0	15.4	110.4	13.2	99	72	119.0	12.4	117.8	9.7	99
18	112.0	15.4	110.7	17.0	99	73	119.0	12.4	112.8	15.8	95
19	112.0	15.4	110.2	17.6	98	74	119.0	12.4	115.5	11.1	97
20	119.0	12.2	115.6	12.0	97	75	119.0	12.4	117.4	8.3	99
21	112.0	15.4	107.2	12.1	96	76	119.0	12.4	117.9	8.5	99
22	112.0	15.4	109.0	17.4	97	77	119.0	12.4	114.6	12.8	96
23	112.0	15.4	109.2	17.9	98	78	119.0	12.4	119.9	10.7	100+
24	112.0	15.4	108.6	14.6	97	79	119.0	12.4	119.0	13.8	100
25	119.0	12.2	113.9	15.7	96	80	119.0	12.4	120.0	8.3	100
26	112.0	15.4	11.9	16.3	100	81	119.0	12.4	117.9	12.7	99
27	112.0	15.4	117.2	13.7	100+	82	119.0	12.4	117.6	13.5	99
28	112.0	15.4	11.7	16.4	100	83	119.0	12.4	118	9.2	99
29	119.0	12.2	115.5	13.9	97	84	119.0	12.4	115.3	11	97
30	112.0	15.4	108.5	12.1	97	85	119.0	12.4	117.6	10.9	99
31	112.0	15.4	107.6	14.6	96	86	119.0	12.4	114.7	12.7	96
32	119.0	12.2	115.3	10.3	97	87	119.0	12.4	115.6	8.7	97
33	112.0	15.4	112.9	15.3	100+	88	119.0	12.4	115.7	9.3	97
34	119.0	12.2	115.4	14.0	97	89	119.0	12.4	113.8	13.5	96
35	119.0	12.2	120.4	12.0	100+	90	119.0	12.4	113	13	95
36	119.0	12.2	118.8	10.8	100	91	119.0	12.4	115.9	13.2	97
37	119.0	12.2	116.4	13.3	98	92	119.0	12.4	116.8	11.7	98
38	119.0	12.2	116.9	13.5	98	93	119.0	12.4	119.1	9.6	100
39	119.0	12.2	114.8	13.8	96	94	119.0	12.4	115.2	13.9	97
40	112.0	15.4	106.9	14.7	95	95	119.0	12.4	116.1	12.8	98
41	119.0	12.2	113.7	11.8	96	96	119.0	12.4	118.8	10.7	100
42	119.0	12.2	114.2	9.9	97	97	119.0	12.4	119.8	9.8	100+
43	119.0	12.2	116.0	9.9	97	98	119.0	12.4	115.4	15.5	97
44	119.0	12.2	113.5	9.4	95	99	119.0	12.4	118.6	9.2	100
45	112.0	15.4	110.5	12.6	99	100	119.0	12.4	120.7	9.8	100+
46	119.0	12.2	114.7	11.9	96	101	119.0	12.4	115.8	11	97
47	119.0	12.2	114.4	12.4	96	102	119.0	12.4	119	11.2	100
48	119.0	12.2	113.6	9.3	95	103	112.0	15.4	113.3	15	100+
49	119.0	12.2	115.7	9.3	97	104	112.0	15.4	112.8	12.7	100+
50	119.0	12.2	114.9	13.0	97	105	119.0	12.4	116.1	10.9	98
51	119.0	12.2	114.5	8.9	96	106	119.0	12.4	118.4	12.4	99
52	112.0	15.4	106.5	11.3	95	107	127.0	7.7	130.2	5	100+
53	119.0	12.4	116.8	12.8	98	108	127.0	7.7	133.3	4.8	100+
54	119.0	12.4	116.3	10.8	98	109	127.0	7.7	131.8	4	100+
55	119.0	12.4	116.3	10.8	98	110	127.0	8.6	122.7	8.7	97

NOTE:

① POINT LOCATIONS NOT SHOWN GRAPHICALLY DUE TO INACCURATE GPS LOCATIONS DURING THE FIELD TEST.

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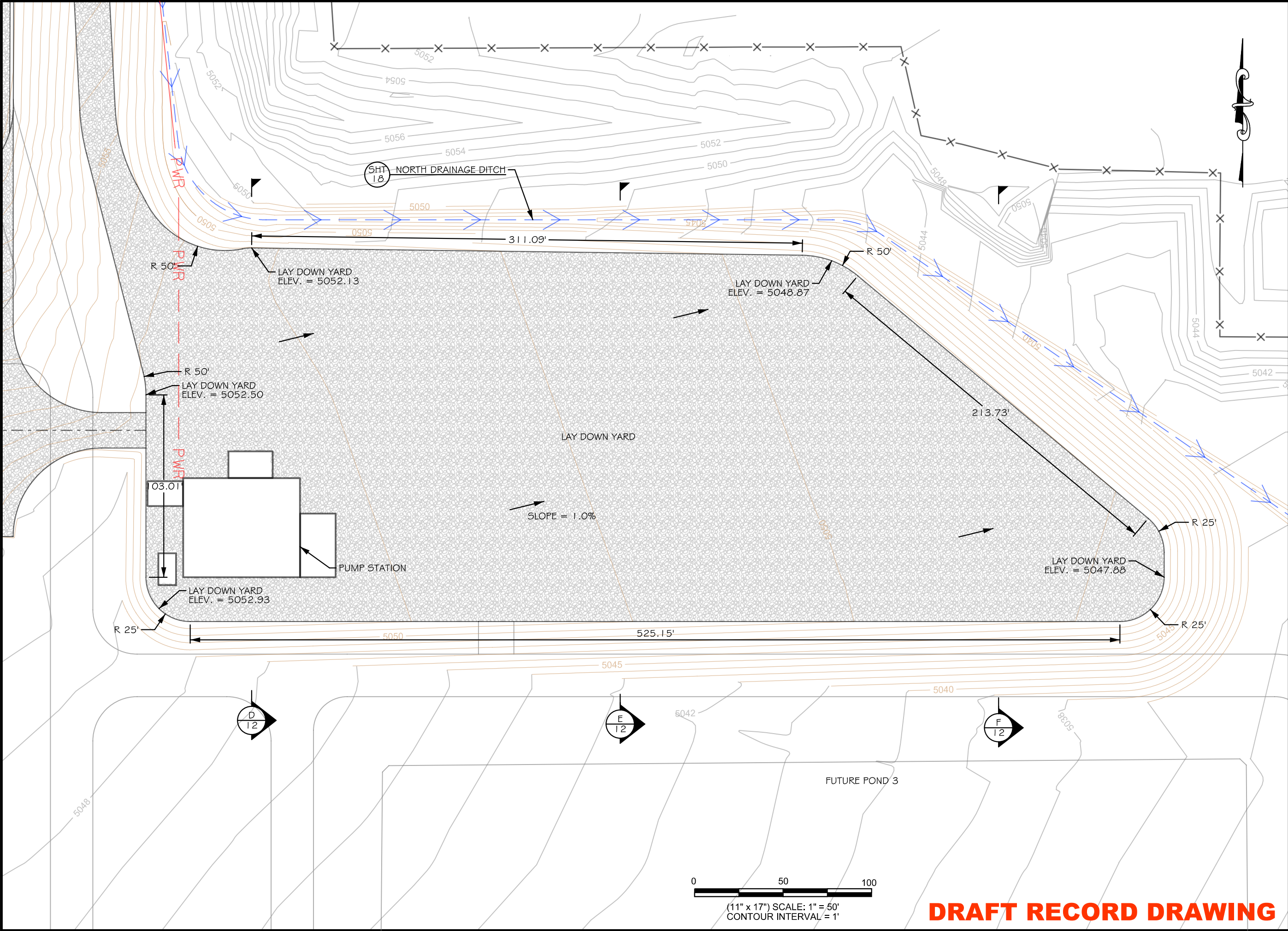
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DE BEQUE WATER STATION  
POND 1 RECORD DRAWINGS  
COMPACTION TESTS

SHEET  
10

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DE BEQUE WATER STATION  
POND 1 RECORD DRAWINGS

Lay Down Yard  
Plan View

SHEET  
11

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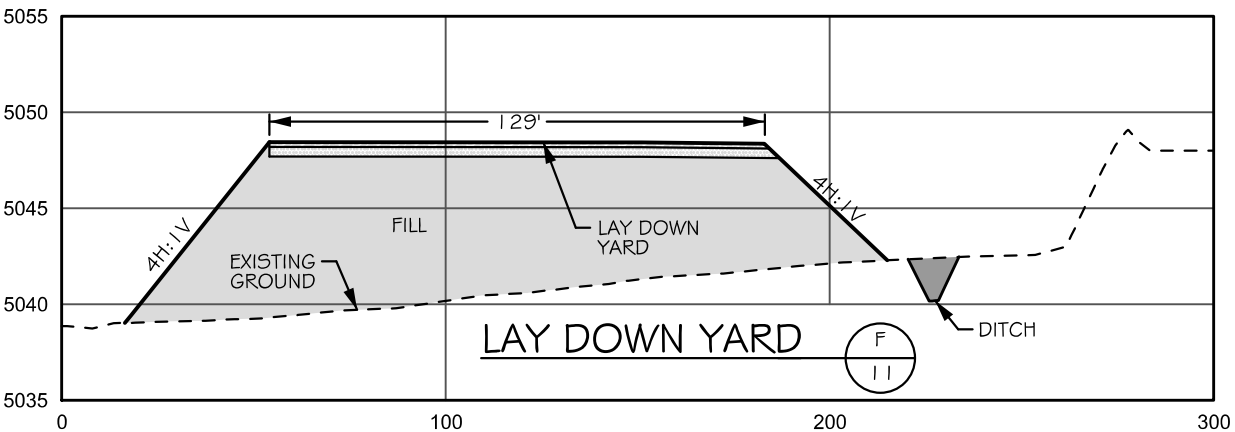
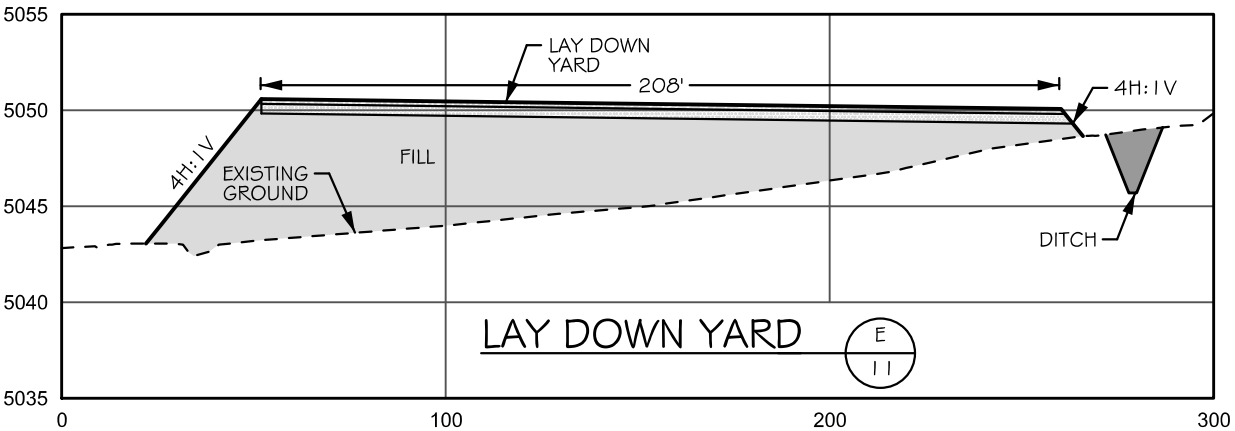
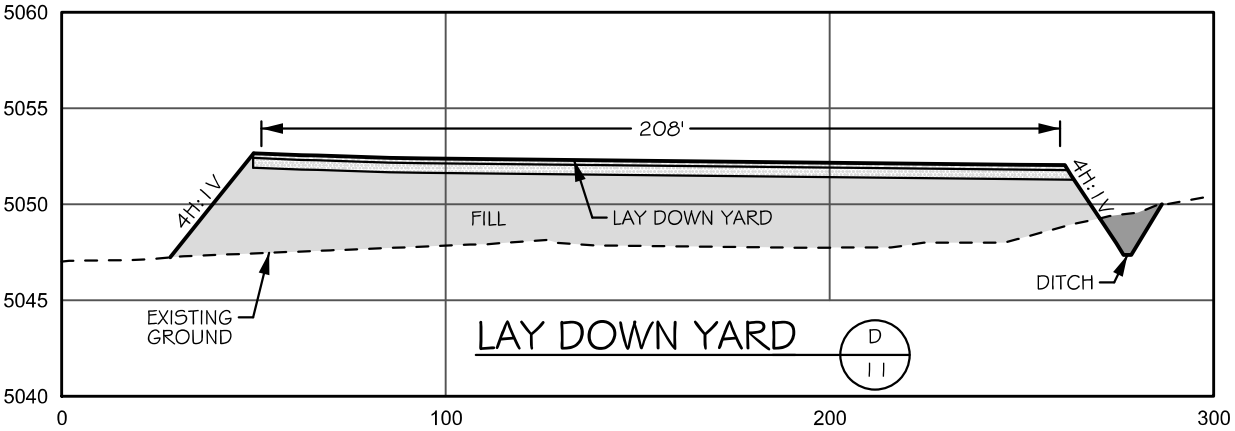
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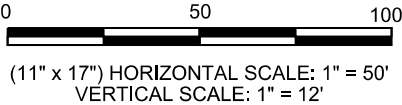
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**DRAFT RECORD DRAWING**



DE BEQUE WATER STATION  
POND 1 RECORD DRAWINGS  
Lay Down Yard  
Cross Sections

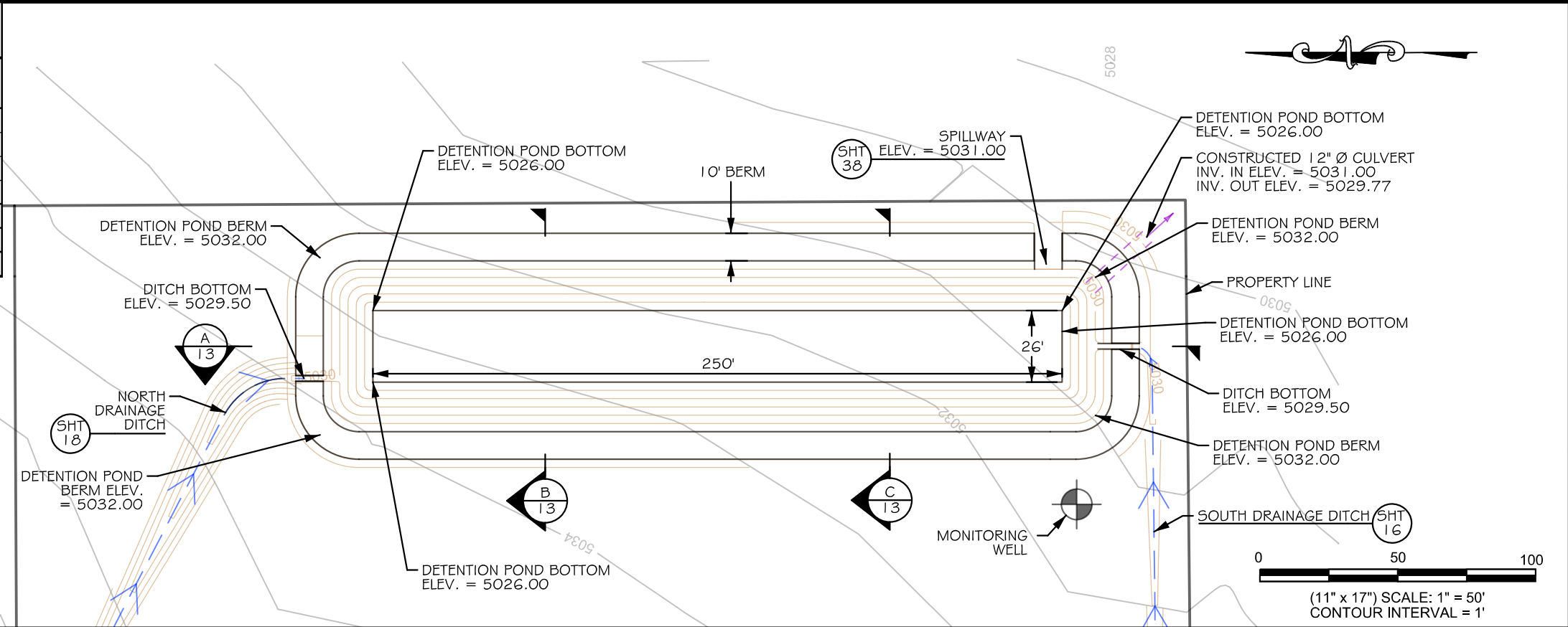
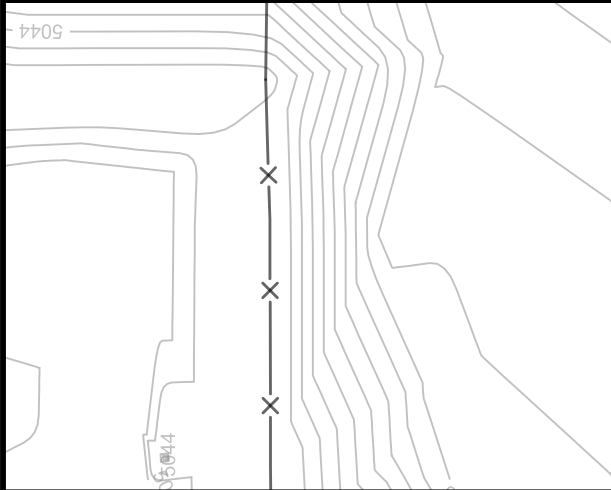
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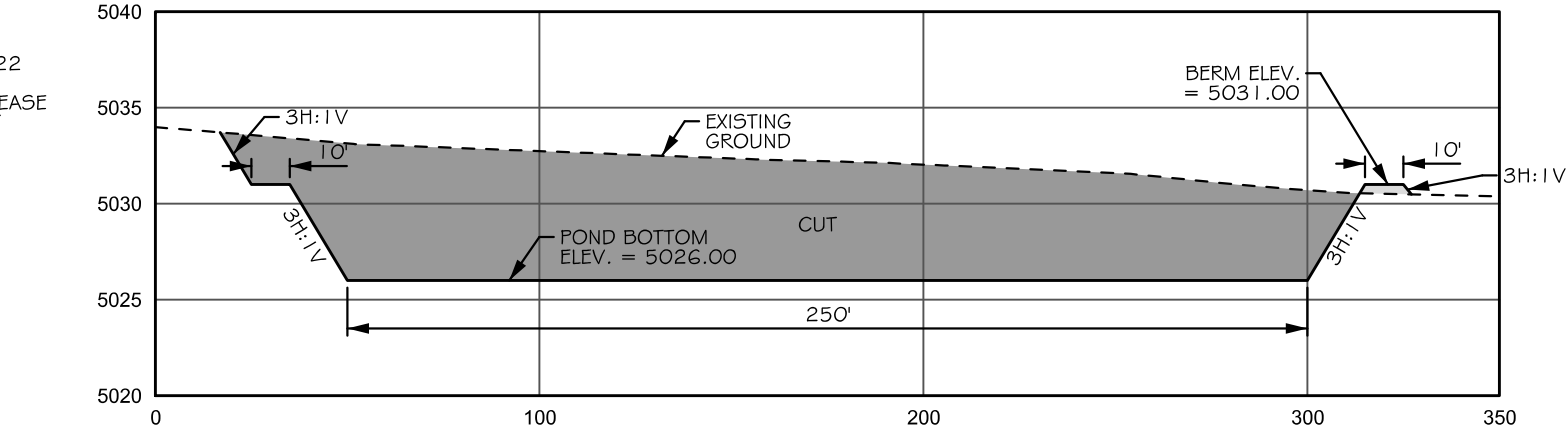
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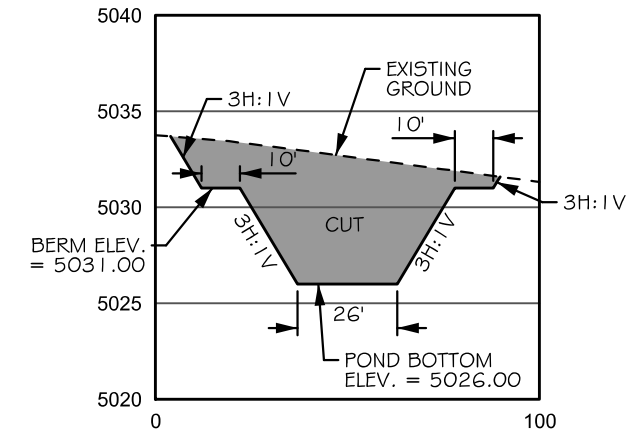
DETENTION POND ELEVATION-STORAGE			
TABLE			
ELEVATION	CAPACITY (CUBIC YDS)	CAPACITY (AC-FT)	CUMULATIVE CAPACITY (AC-FT)
5026	0	0.00	0.00
5027	272	0.17	0.17
5028	336	0.21	0.38
5029	402	0.25	0.63
5030	470	0.29	0.92
5031	542	0.34	1.25
5032	542	0.34	1.64



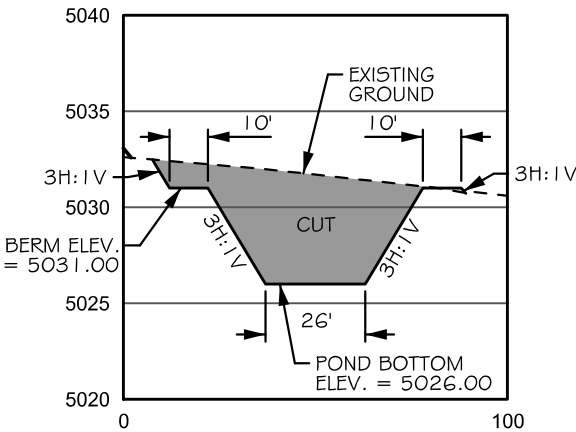
NOTE:  
DETENTION POND IS DESIGNED TO RETAIN THE ENTIRE 0.722 ACRE-FEET OF WATER FROM THE 100-YEAR, 24-HOUR PRECIPITATION EVENT. THE OUTLET STRUCTURES WILL RELEASE WATER AT FLOW RATES LESS THAN THE PRE-DEVELOPMENT RATE FOR ANY SUBSEQUENT STORMS.



DETENTION POND SECTION A 13



DETENTION POND SECTION B 13



DETENTION POND SECTION C 13

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DDP	06/14			DDP	08/14			MMZ					

JOB # 2013-134

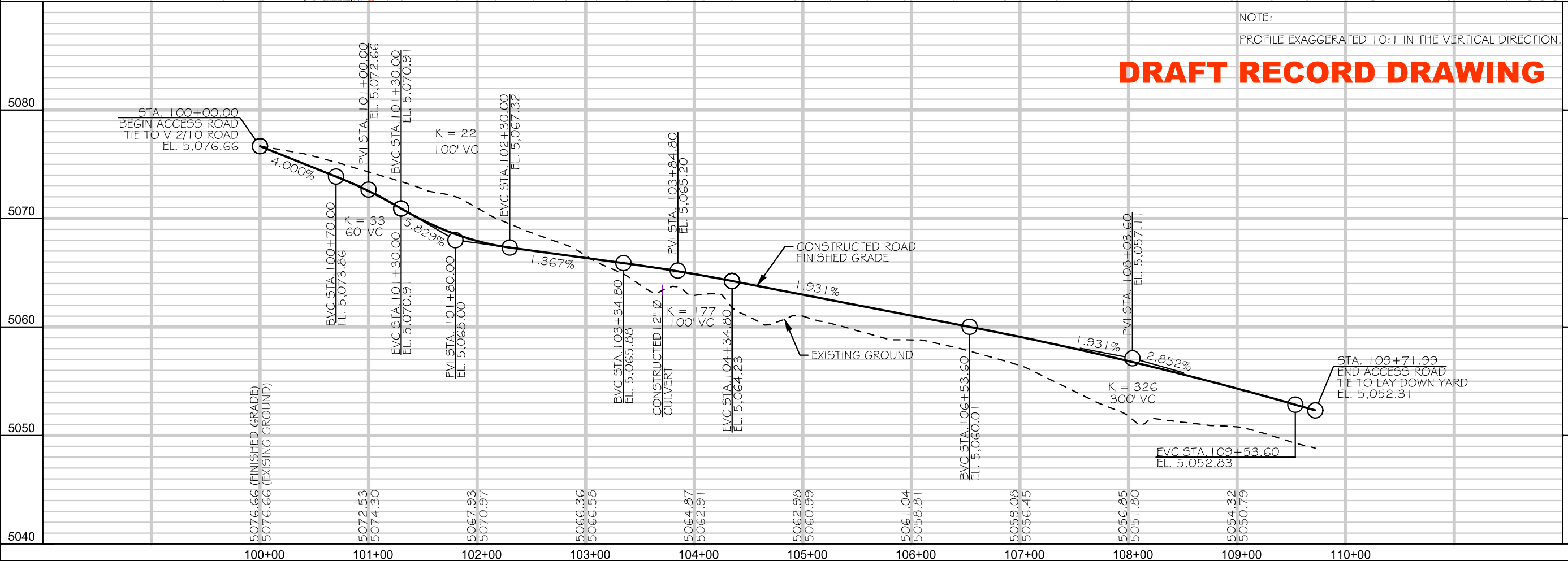
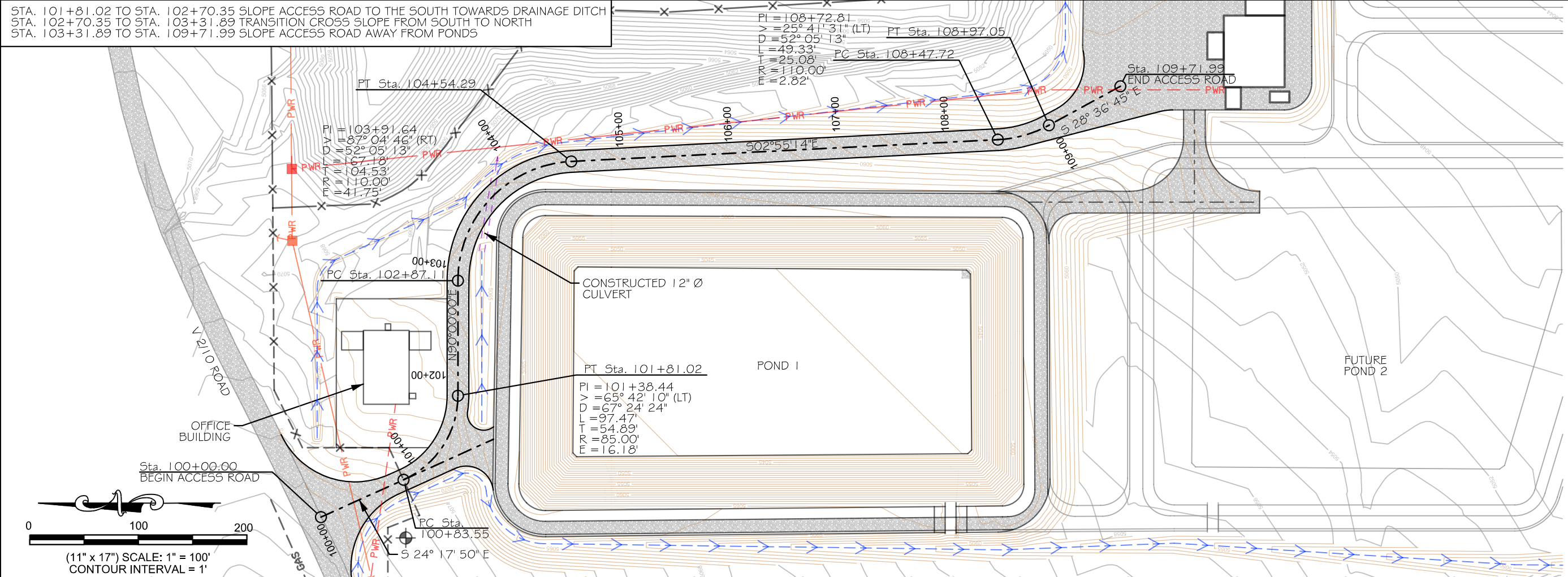
DE BEQUE WATER STATION  
POND 1 RECORD DRAWINGS

Detention Pond  
Plan View and Cross Sections

SHEET  
13



STA. 101+81.02 TO STA. 102+70.35 SLOPE ACCESS ROAD TO THE SOUTH TOWARDS DRAINAGE DITCH  
STA. 102+70.35 TO STA. 103+31.89 TRANSITION CROSS SLOPE FROM SOUTH TO NORTH  
STA. 103+31.89 TO STA. 109+71.99 SLOPE ACCESS ROAD AWAY FROM PONDS



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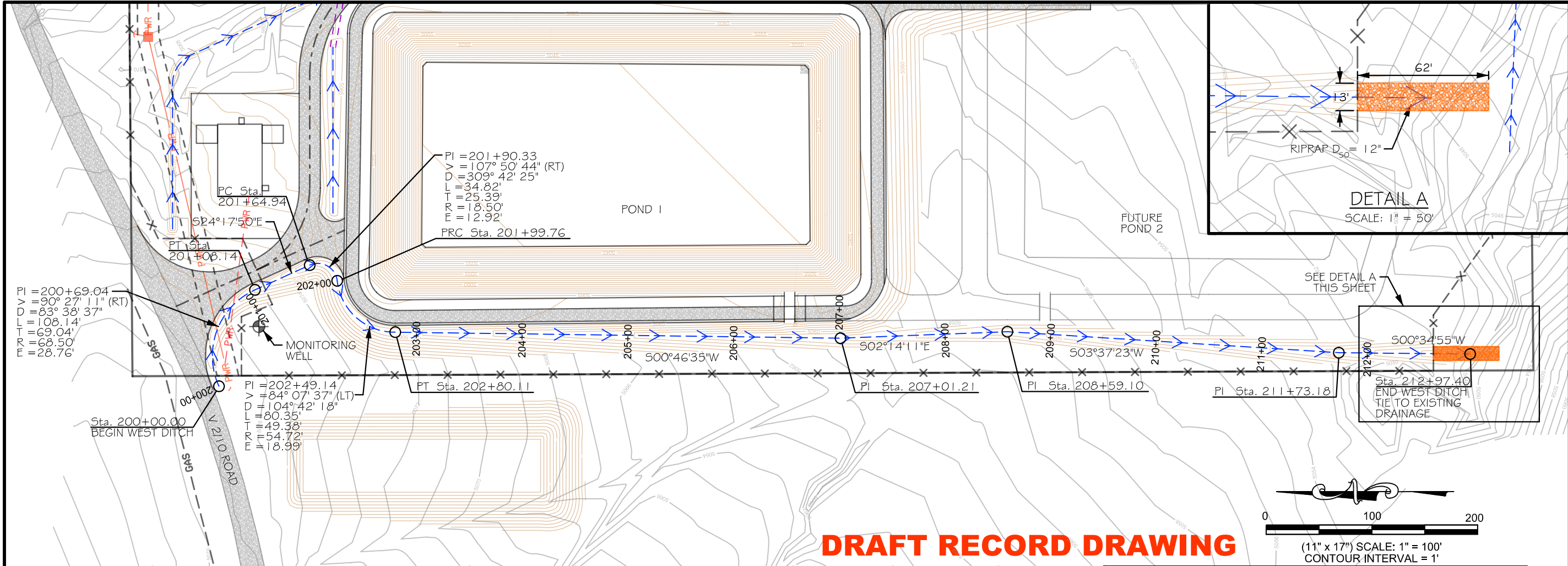
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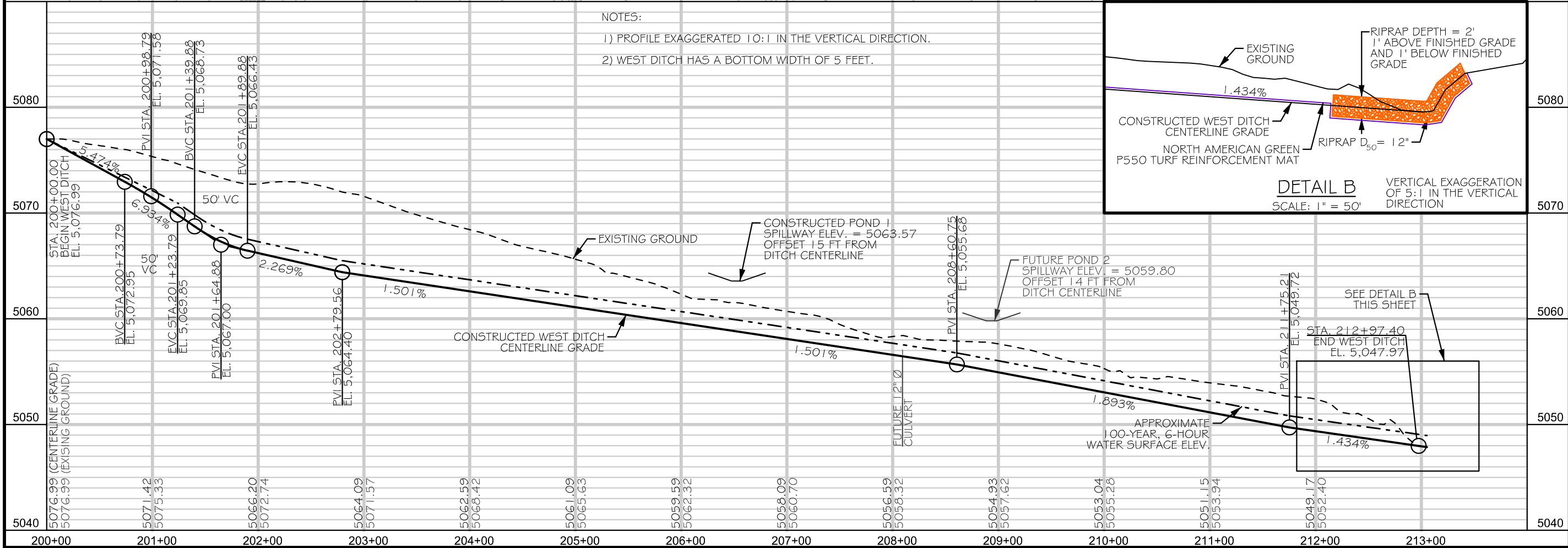
DE BEQUE WATER STATION  
POND 1 RECORD DRAWINGS

## Truck Access Road Plan and Profile

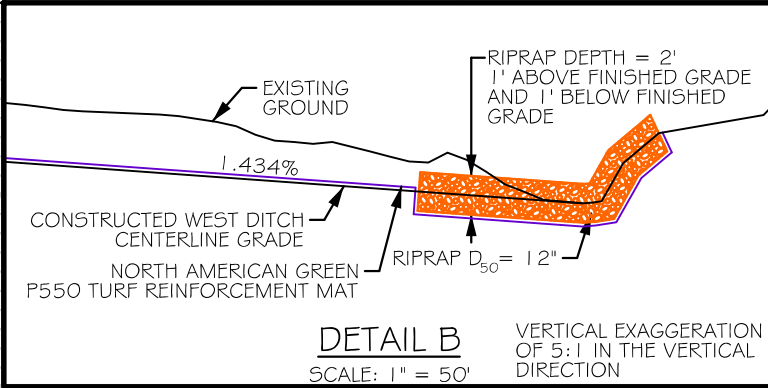
SHEET  
14



DRAFT RECORD DRAWING



- NOTES:
- 1) PROFILE EXAGGERATED 10:1 IN THE VERTICAL DIRECTION.
  - 2) WEST DITCH HAS A BOTTOM WIDTH OF 5 FEET.



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(406) 443-3962

Black Hills Exploration & Production

A Black Hills Corporation Energy Unit

2350 G Road, Suite 101  
Grand Junction, CO 81505

DE BEQUE WATER STATION  
POND 1 RECORD DRAWINGS

West Drainage Ditch  
Plan and Profile

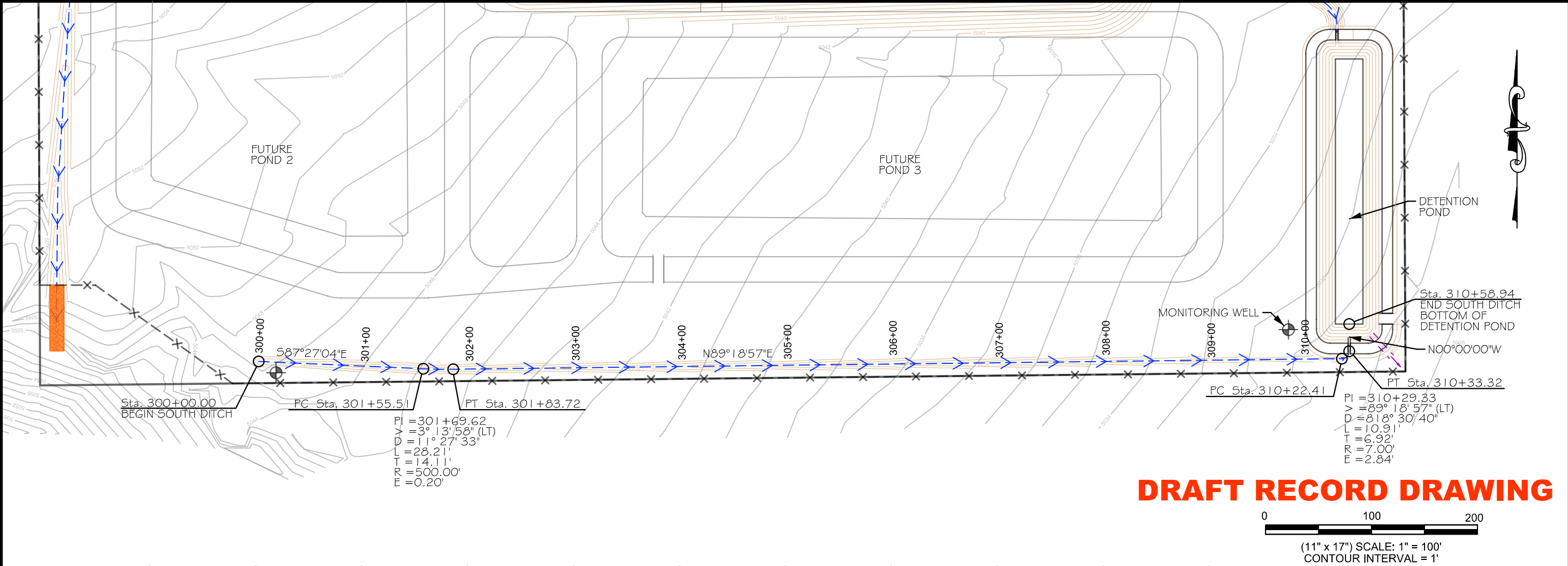
SHEET  
15

DSGN DATE 06/14  
REV DATE 08/14  
MMZ 12/14  
MMZ 1/15

CKD  
STH  
CKD  
STH  
STH

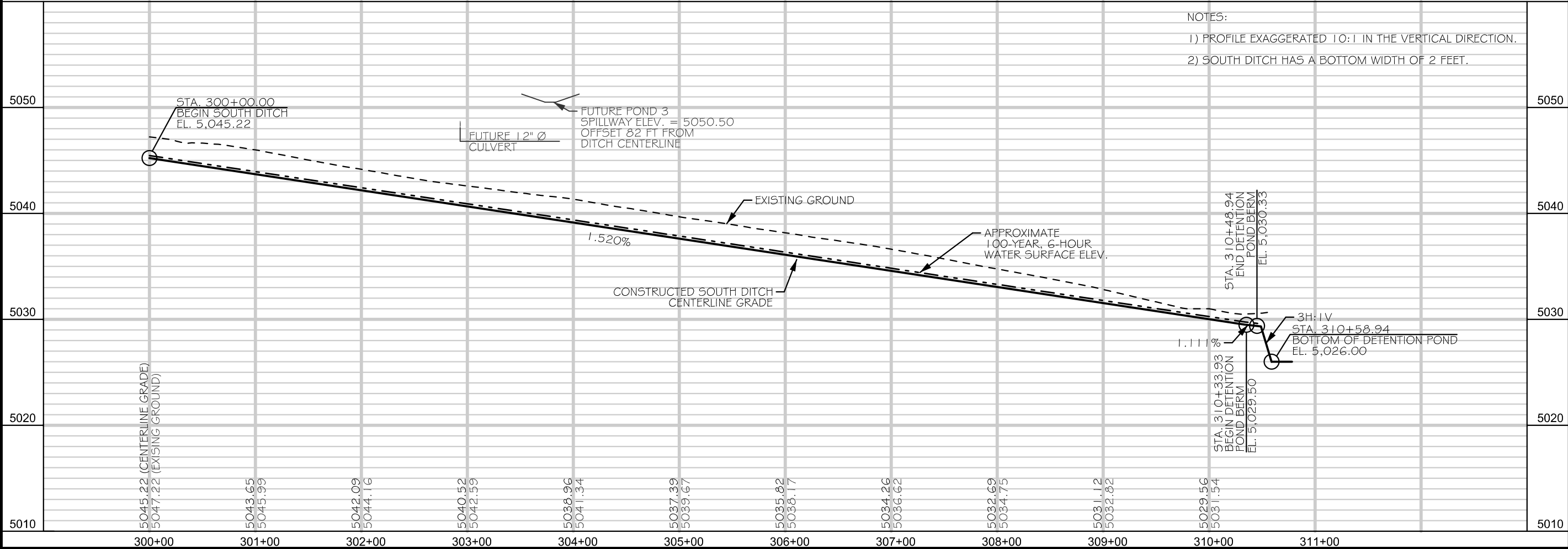
JOB # 2013-134





**DRAFT RECORD DRAWING**

0 100 200  
(11" x 17") SCALE: 1" = 100'  
CONTOUR INTERVAL = 1'



NOTES:  
1) PROFILE EXAGGERATED 10:1 IN THE VERTICAL DIRECTION.  
2) SOUTH DITCH HAS A BOTTOM WIDTH OF 2 FEET.

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**DE BEQUE WATER STATION**

**POND 1 RECORD DRAWINGS**

**South Drainage Ditch**

**Plan and Profile**

**SHEET**

16

**DE BEQUE STATION**

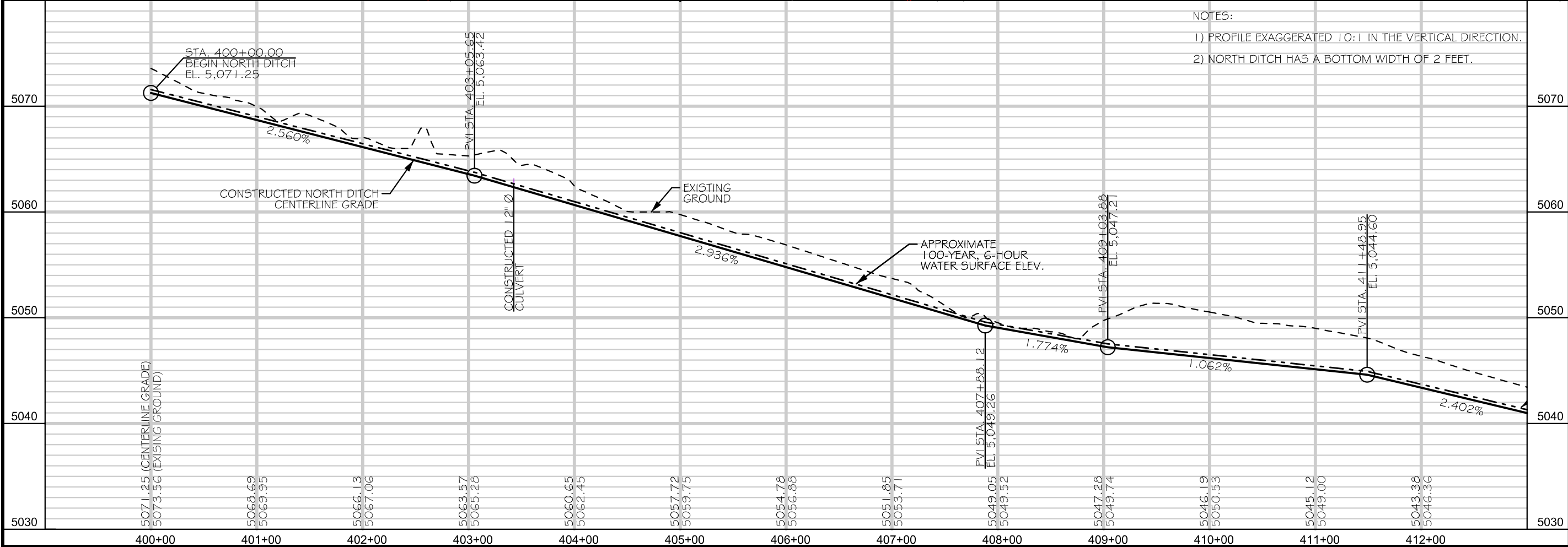
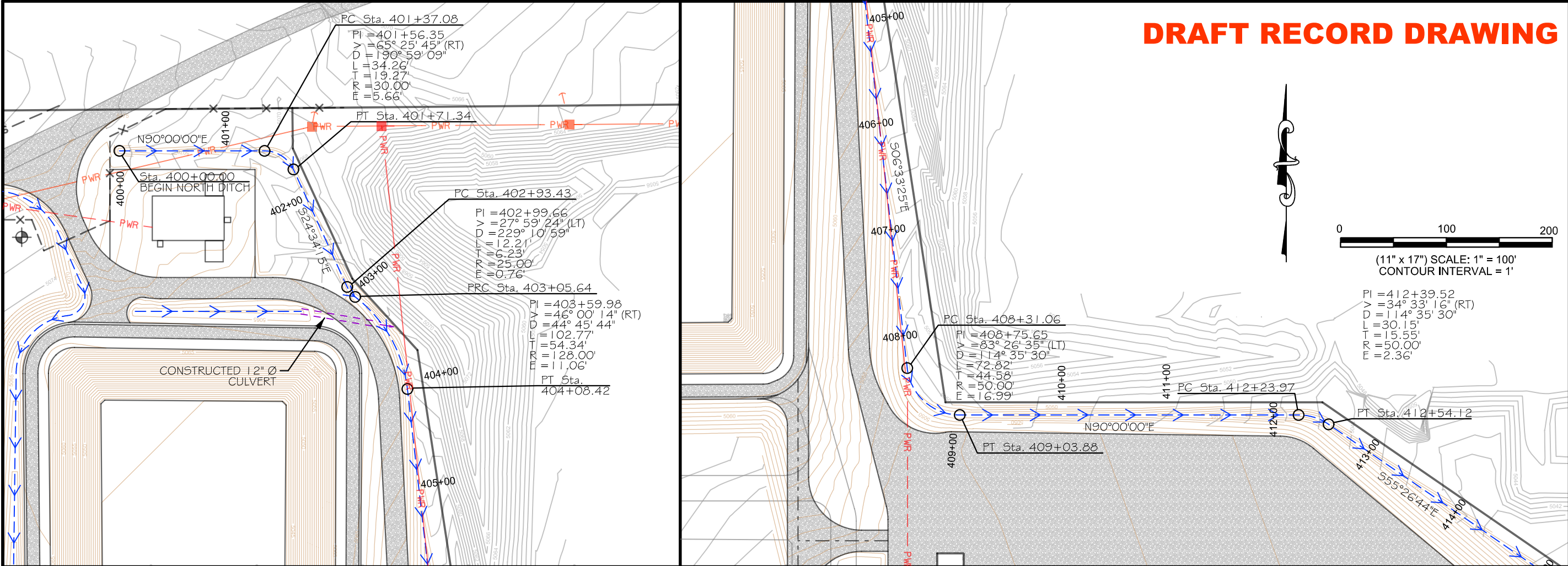
PHASE 1 AS-BUILT

PLANS

AS-BUILT

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**DE BEQUE WATER STATION  
POND 1 RECORD DRAWINGS**

**North Drainage Ditch  
Plan and Profile**

**SHEET  
17**

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REV	DATE	CKD	STH
DDP	08/14		
MMZ	12/14		
MMZ	1/15		

JOB # 2013-134

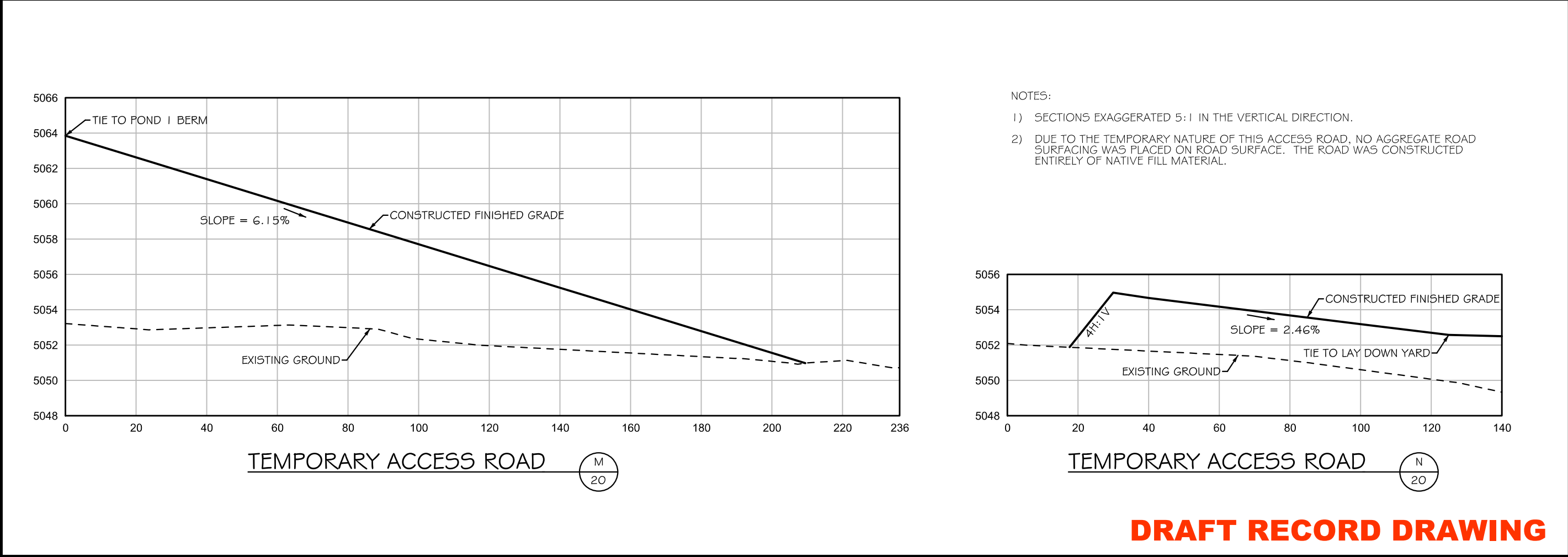
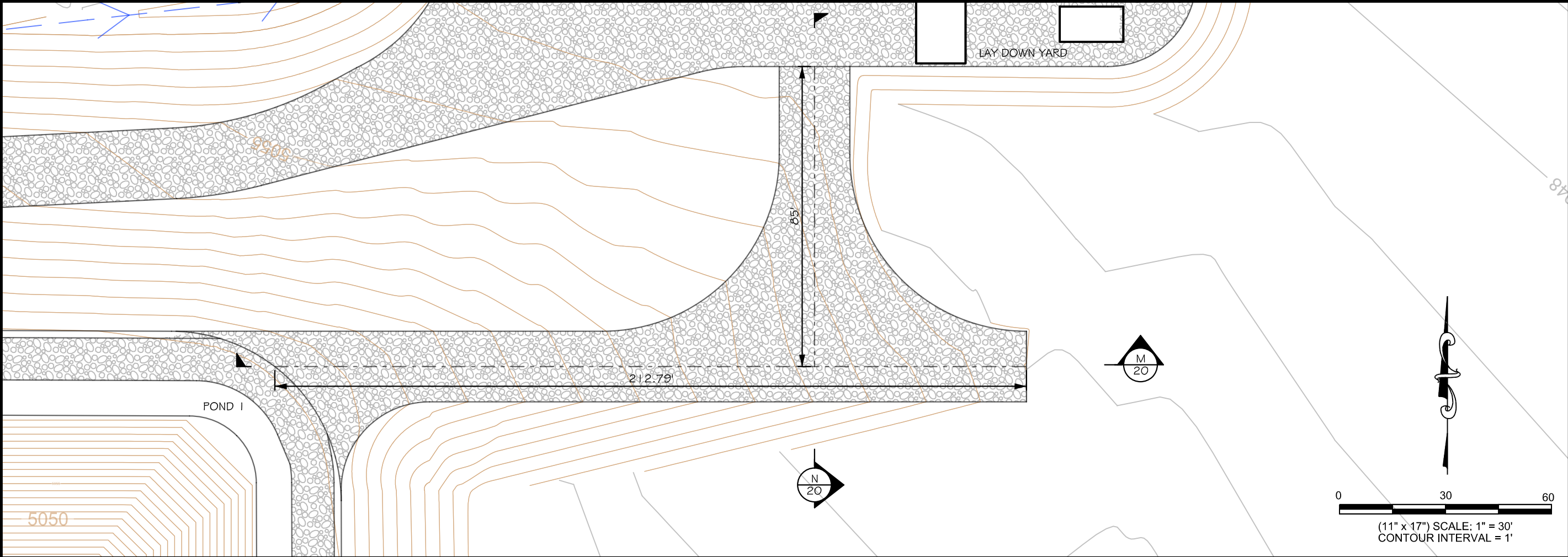
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3/18/2015











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**DE BEQUE WATER STATION**  
**POND 1 RECORD DRAWINGS**  
**Temporary Access Road**  
**Plan and Profile**

**SHEET**  
20

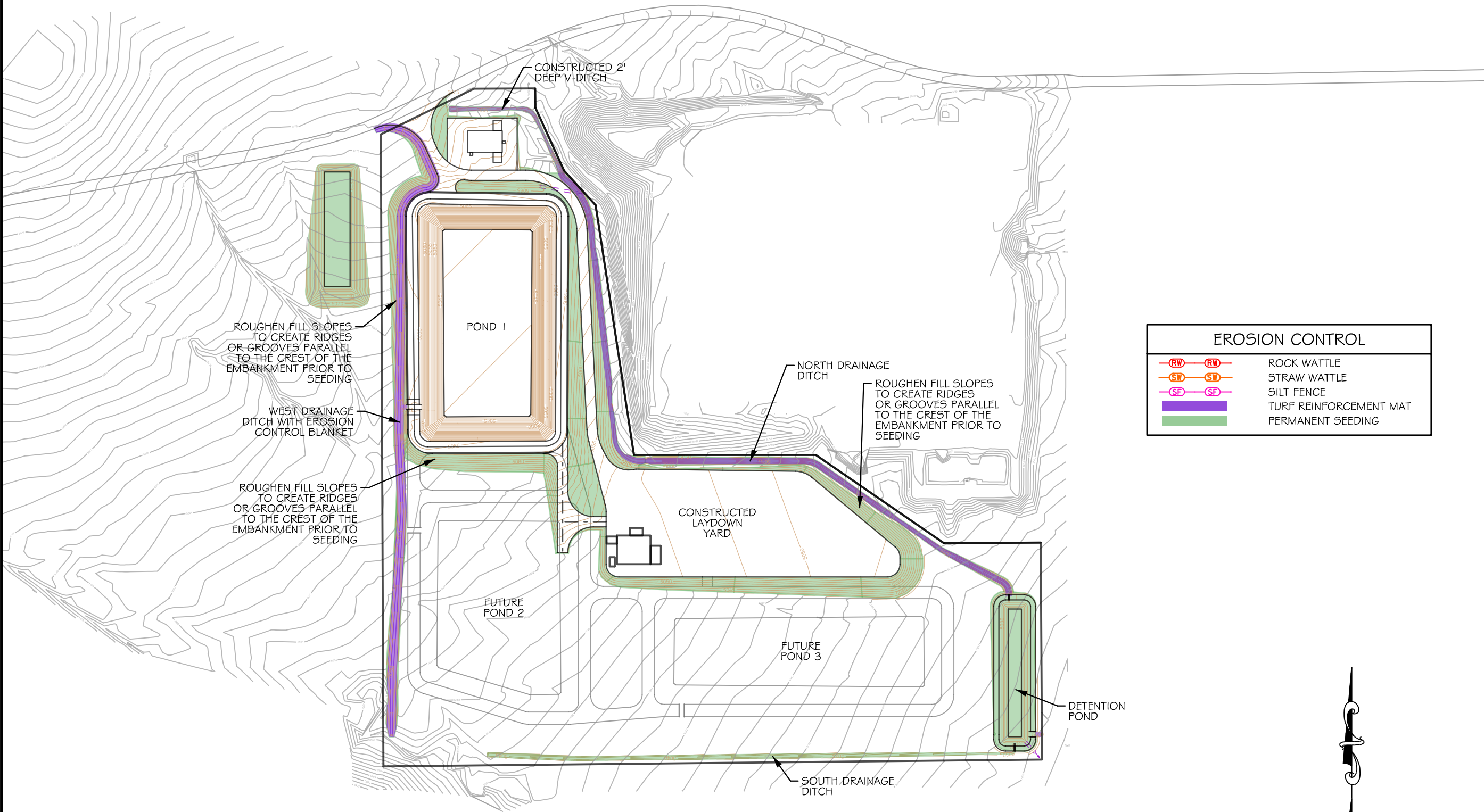
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3/18/2015 FILE PATH: K:\Hillman\BLACK HILLS\13134 - DE BEQUE STATION\ENGINEERING PLANS\AS-BUILT\13134 - Pond 1 PLANS AS-BUILT.dgn

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DDP	06/14	STH
REV	DATE	CKD
DDP	08/14	STH
MMZ	12/14	STH
MMZ	1/15	STH

JOB # 2013-134



EROSION CONTROL

RW

ST

SF

RW

ST

SF

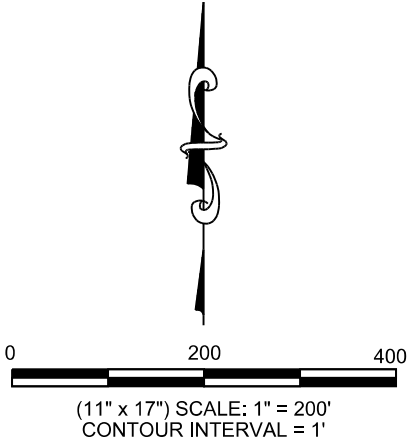
ROCK WATTLE

STRAW WATTLE

SILT FENCE

TURF REINFORCEMENT MAT

PERMANENT SEEDING




DRAFT RECORD DRAWING

DE BEQUE WATER STATION  
POND 1 RECORD DRAWINGS  
Permanent Erosion Control Plan

DSGN	DATE	CKD	STH
DDP	06/14	CKD	STH
REV	DATE	CKD	STH
DDP	08/14	STH	STH
MMZ	11/14	STH	STH
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JOB # 2013-134



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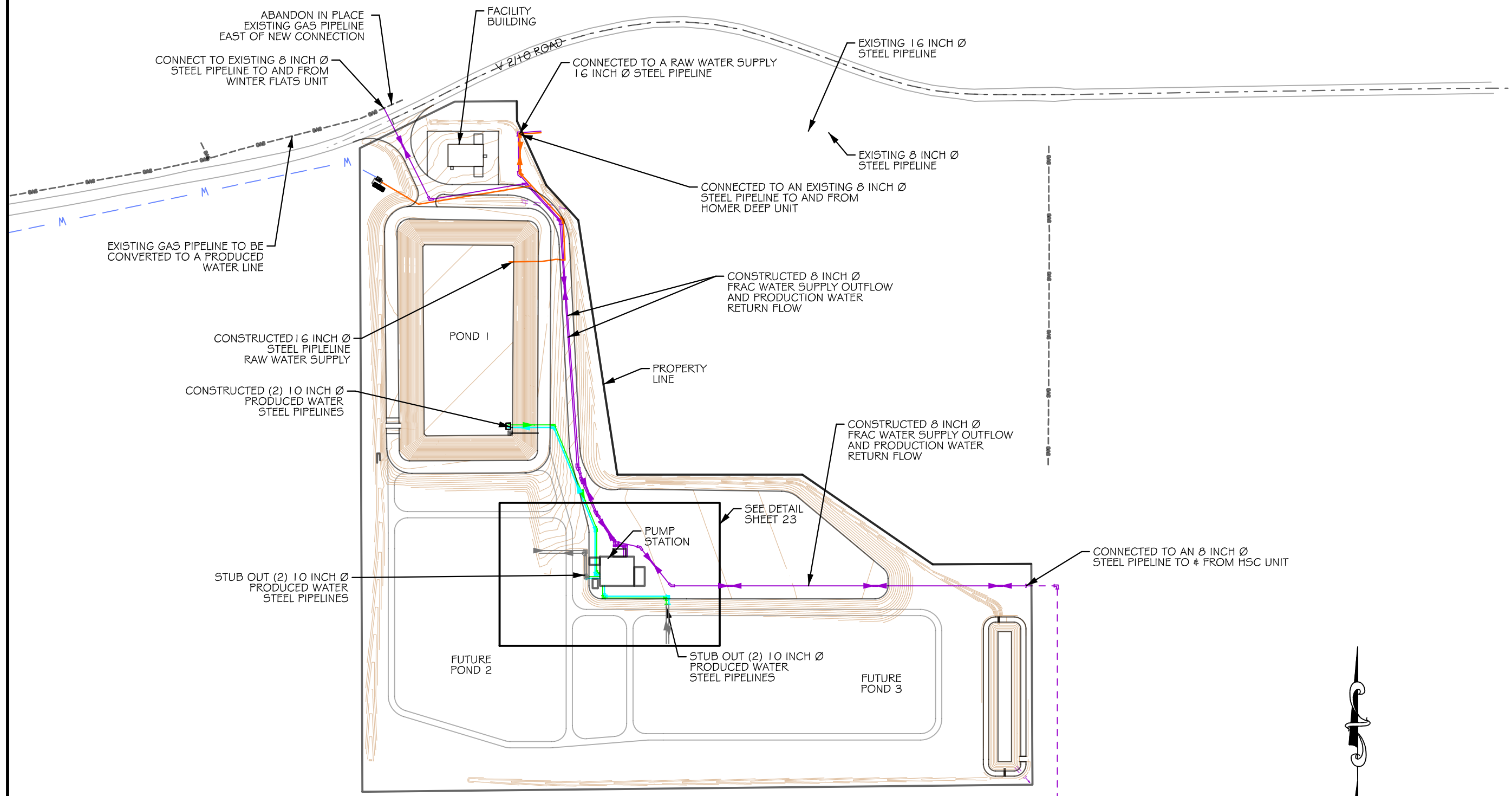
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3/18/2015





0 200 400  
(11" x 17") SCALE: 1" = 200'  
CONTOUR INTERVAL = 1'

**DRAFT RECORD DRAWING**

DE BEQUE WATER STATION  
POND 1 RECORD DRAWINGS

Flow Schematic

DSGN	DATE	CKD
MBJ	06/14	STH
REV	DATE	CKD
TAS	5/14/14	STH
MMZ	1/15	STH
JOB # 2013-134		

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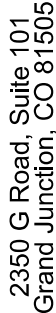
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FILE PATH: K:\Hillman\BLACK HILLS\13134 - DE BEQUE STATION\ENGINEERING PLANS\DEBEQUE COLORADO  
3/18/2015  
Pond 1 PLANS AS-BUILT.dgn



## Flow Schematic Pump House Detail

SHEET  
23

JOB # 2013-134

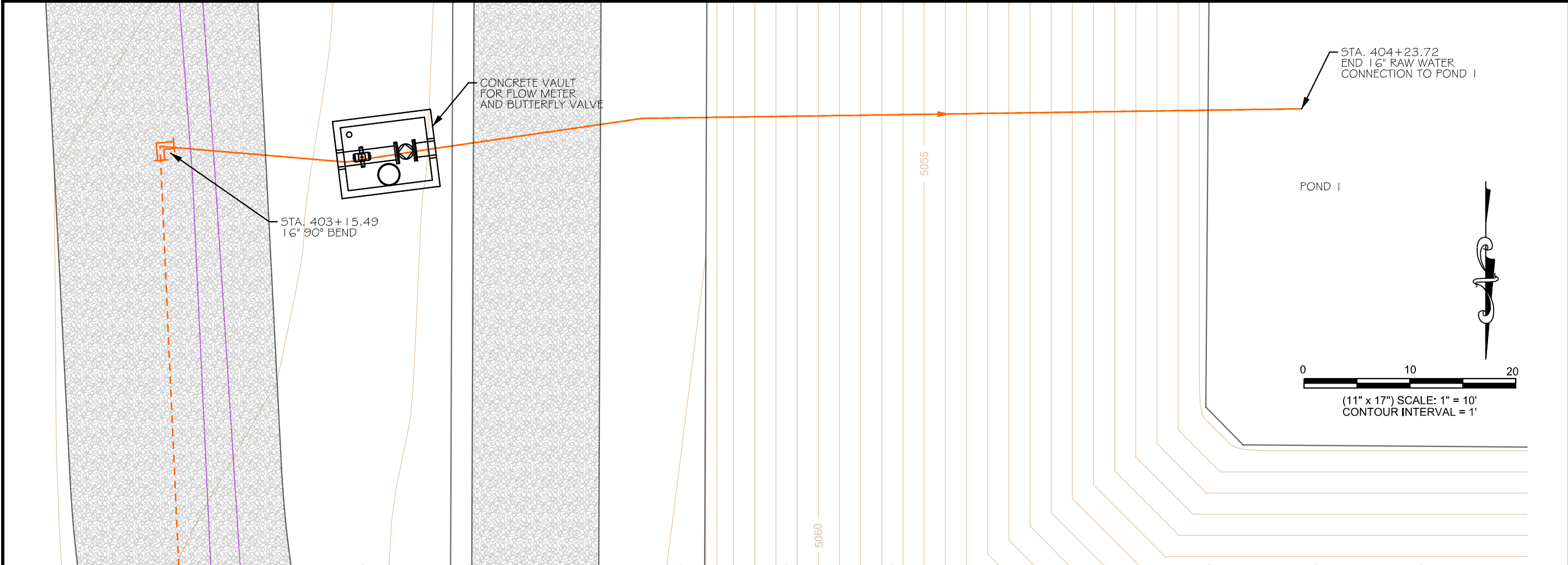
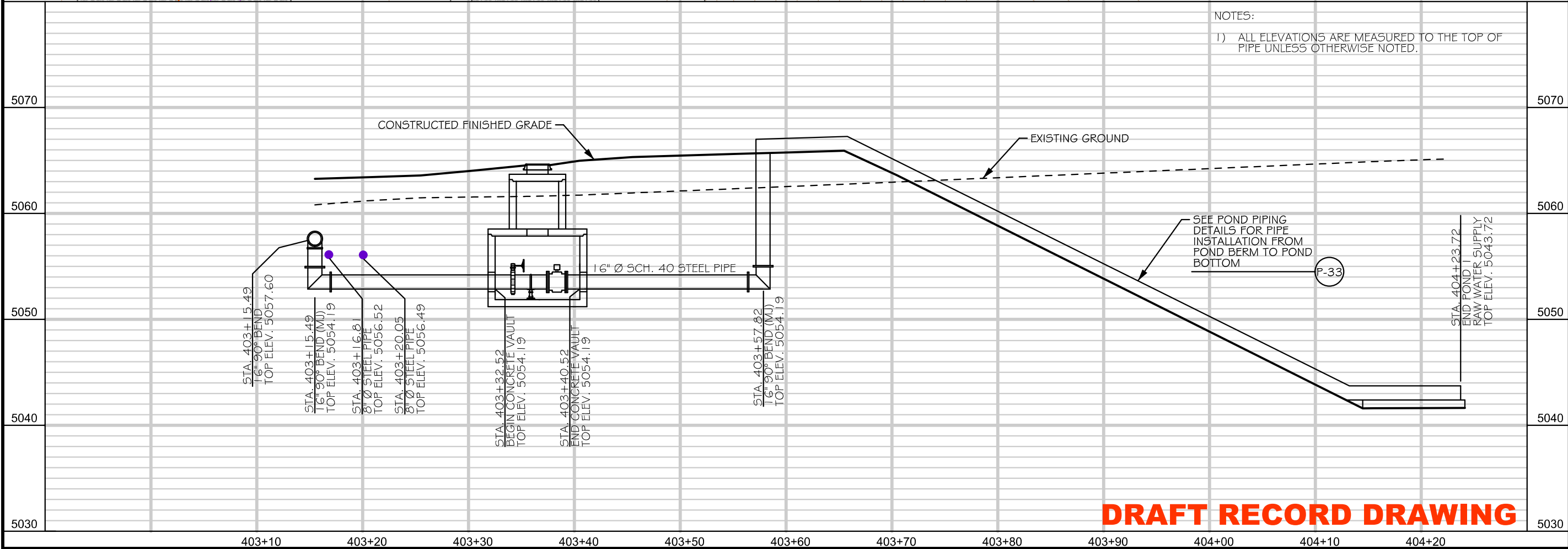
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NOTES:  
1) ALL ELEVATIONS ARE MEASURED TO THE TOP OF PIPE UNLESS OTHERWISE NOTED.

DE BEQUE WATER STATION  
POND 1 RECORD DRAWINGS

SHEET  
24

Pond 1 Raw Water  
Main Connection Plan and Profile

DSGN	DATE	CKD
DDP	06/14	STH
REV	DATE	CKD
MMZ	01/15	STH
JOB # 2013-134		

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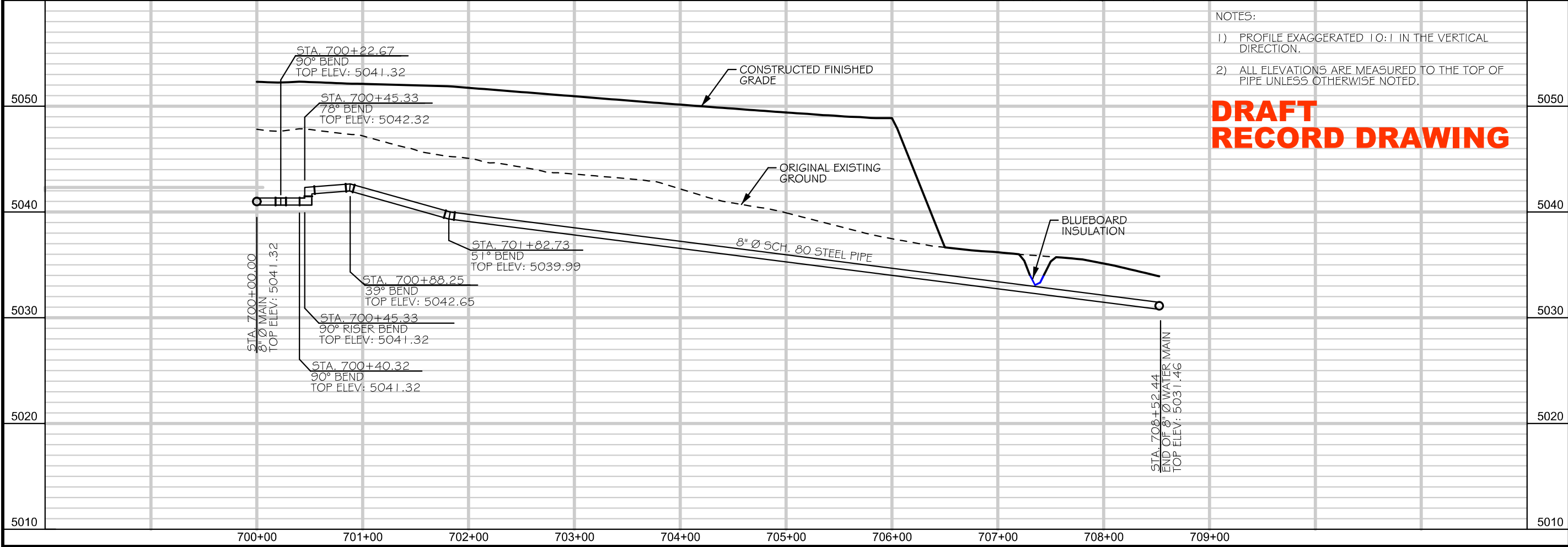
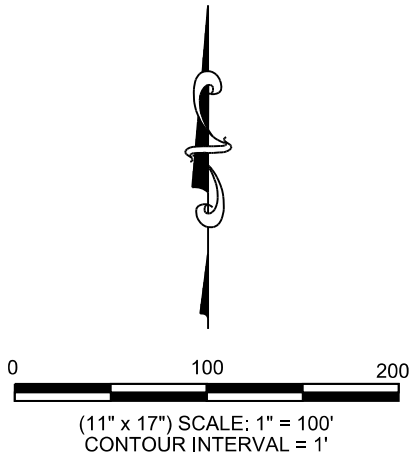
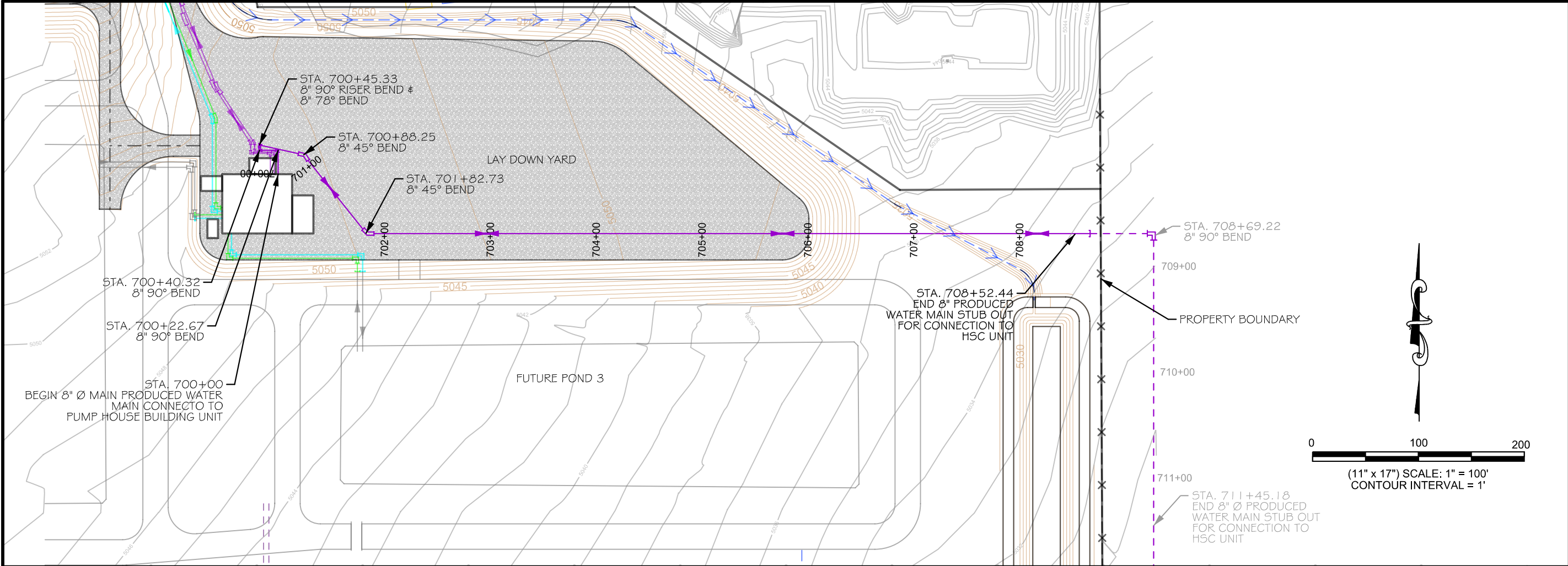












- NOTES:
- 1) PROFILE EXAGGERATED 10:1 IN THE VERTICAL DIRECTION.
  - 2) ALL ELEVATIONS ARE MEASURED TO THE TOP OF PIPE UNLESS OTHERWISE NOTED.

**DRAFT  
RECORD DRAWING**

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**DE BEQUE WATER STATION  
POND 1 RECORD DRAWINGS**

**HSC Unit Produced Water Main  
Plan and Profile**

**SHEET**

28

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**DE BEQUE WATER STATION  
POND 1 RECORD DRAWINGS**

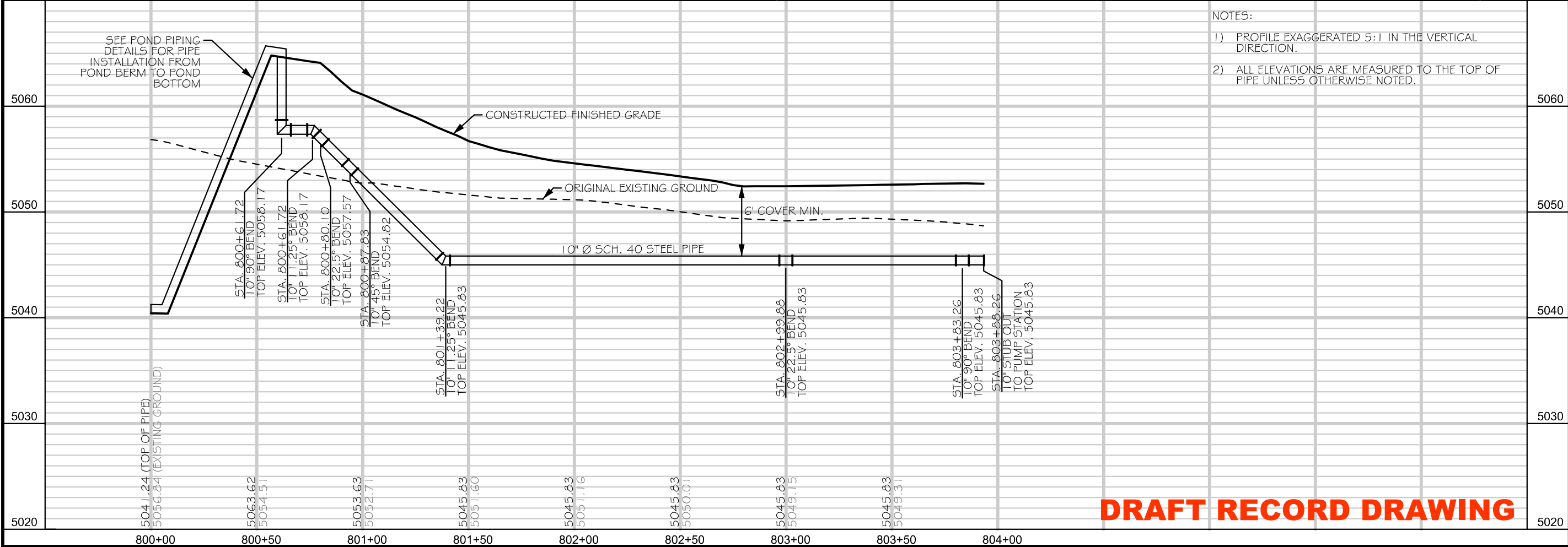
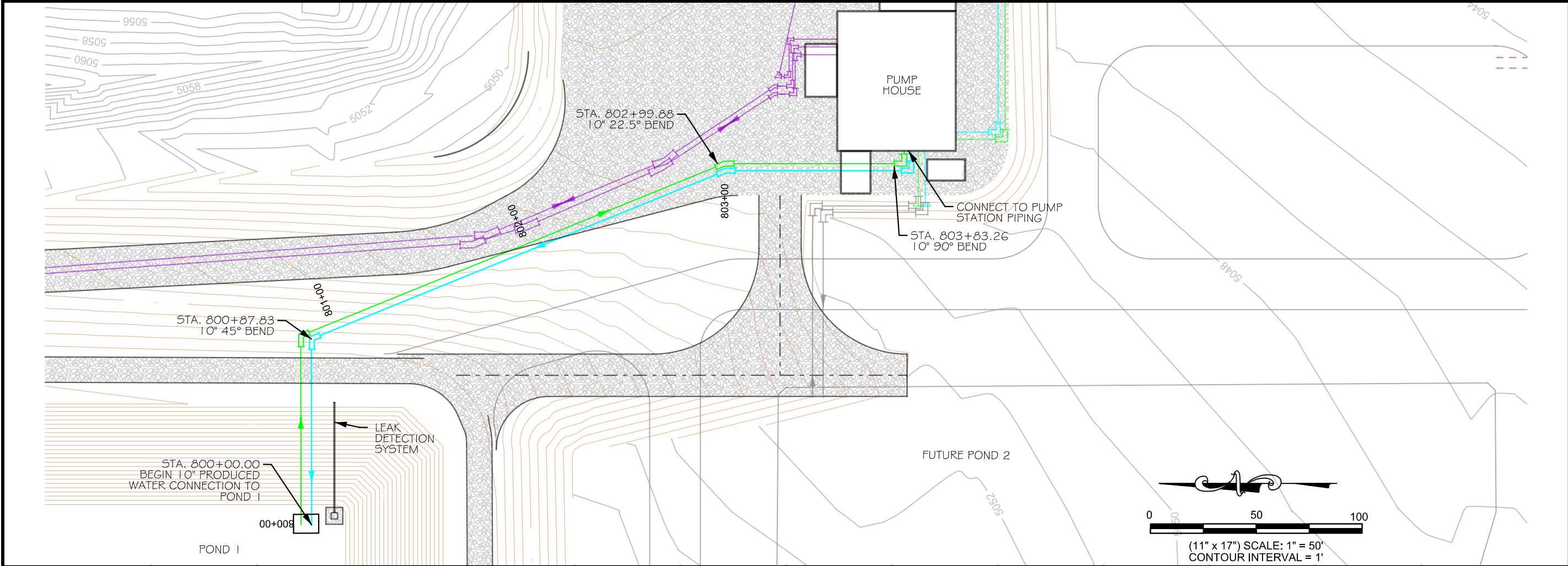
**HSC Unit Produced Water Main  
Plan and Profile**

**SHEET**

28

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**DE BEQUE WATER STATION**

**POND 1 RECORD DRAWINGS**

**Pond 1 Produced Water Main Connection**

**Plan and Profile**

**SHEET**

**29**

**NOTES:**

1) PROFILE EXAGGERATED 5:1 IN THE VERTICAL DIRECTION.

2) ALL ELEVATIONS ARE MEASURED TO THE TOP OF PIPE UNLESS OTHERWISE NOTED.

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DDP	06/14		
REV	DATE	CKD	STH
MMZ	01/15		

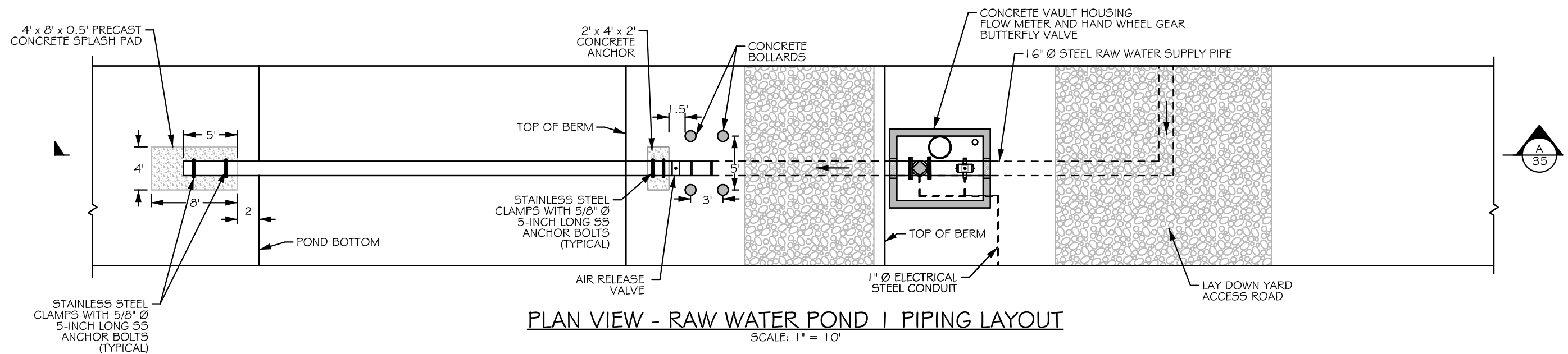
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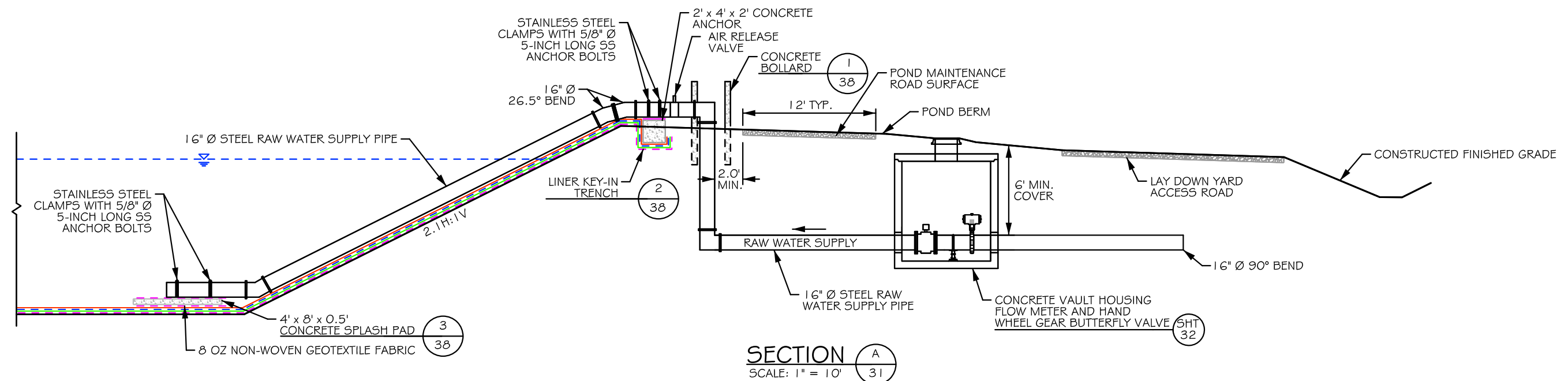






**NOTES:**

- 1) PRIMARY LINER MAY BE EITHER SMOOTH OR TEXTURED 60-MIL HDPE LINER. IF TEXTURED IS USED, TEXTURED SIDE SHALL BE FACE UP.
- 2) SECONDARY LINER SHALL BE SMOOTH 60-MIL HDPE LINER.



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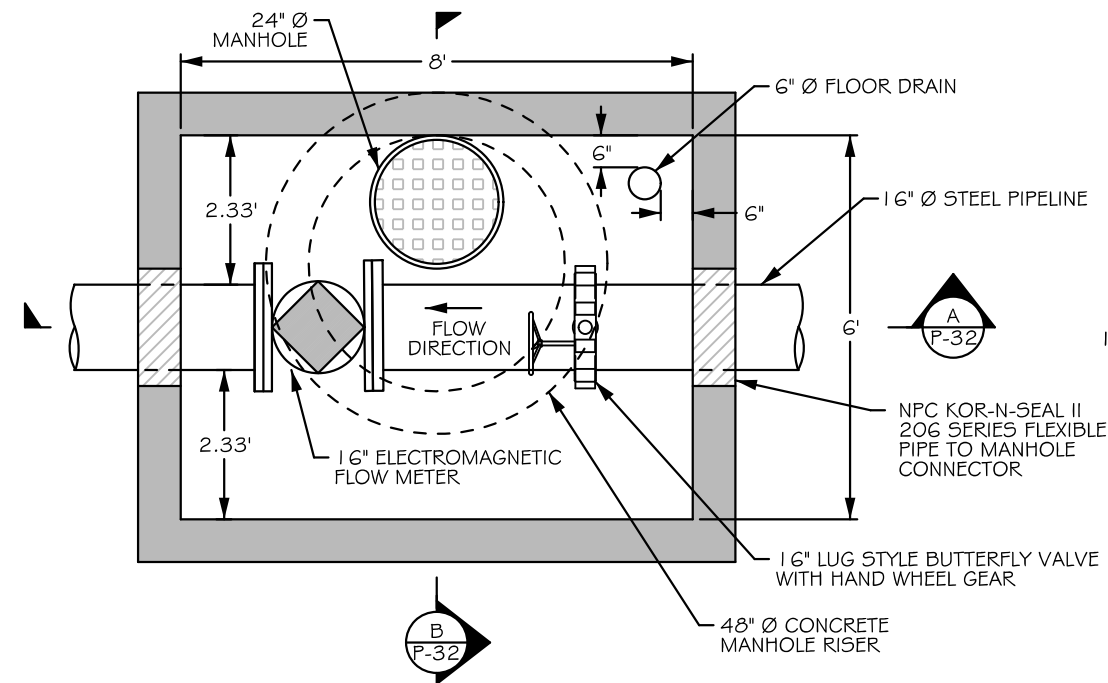
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DDP	06/14			MMZ	07/15			2013-134

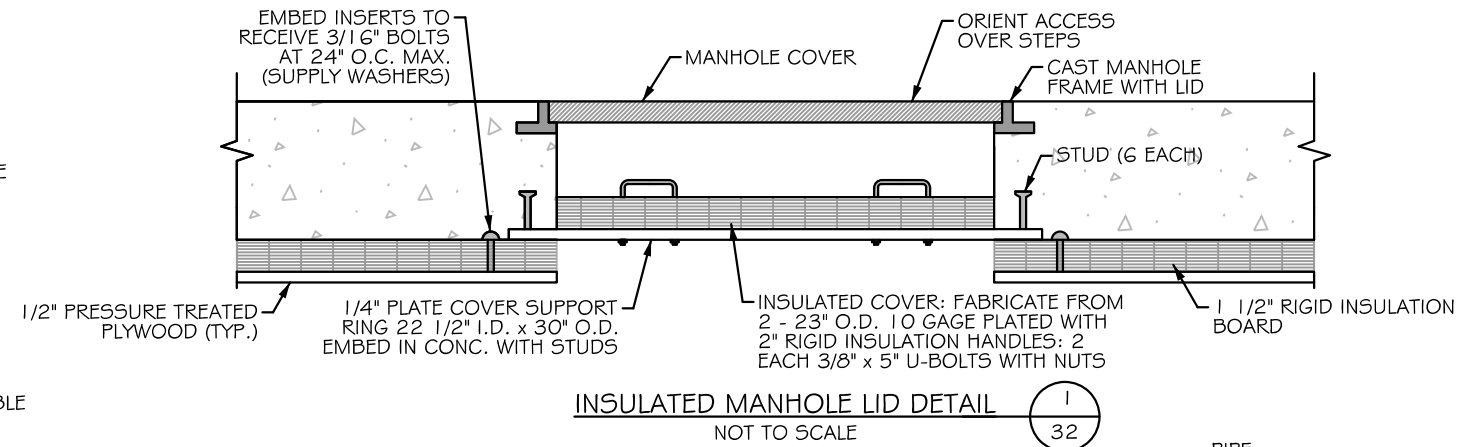
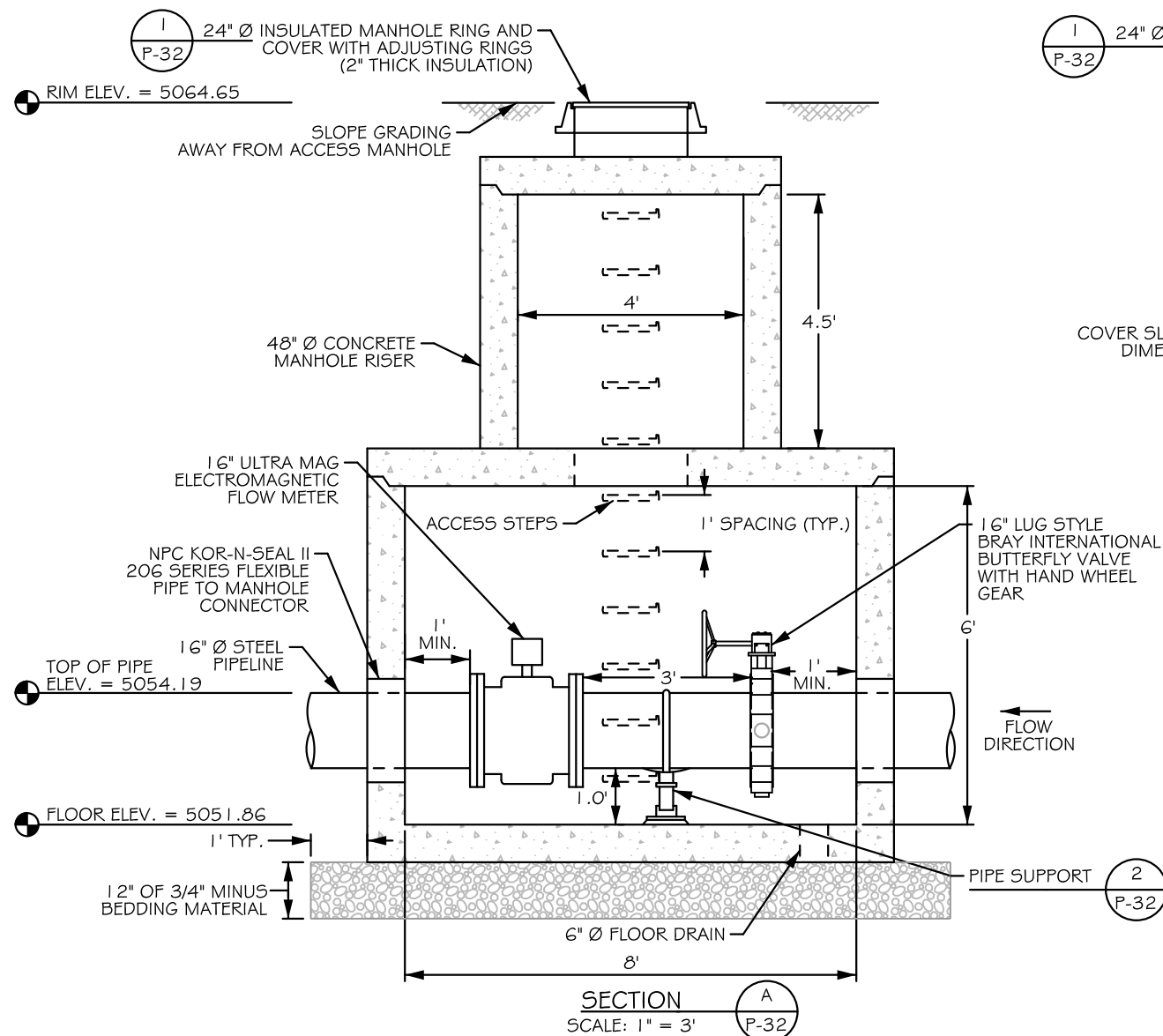
**DE BEQUE WATER STATION**  
**POND 1 RECORD DRAWINGS**  
**Raw Water Pond Piping Details**

**SHEET**  
31

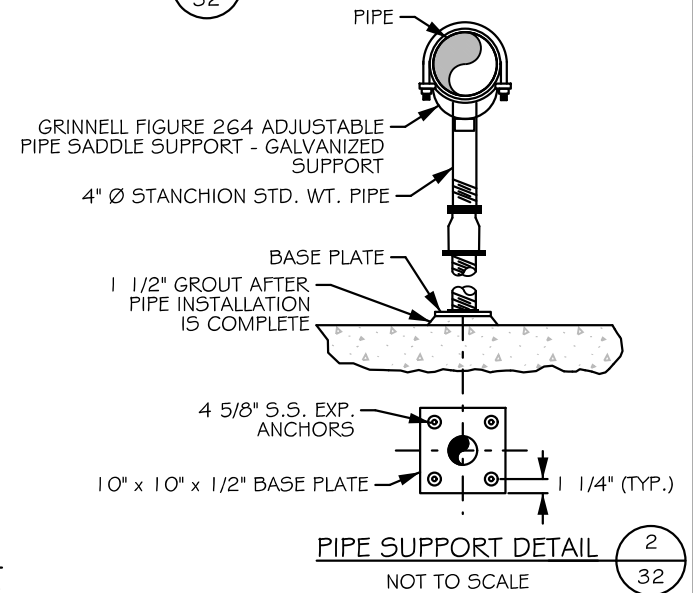




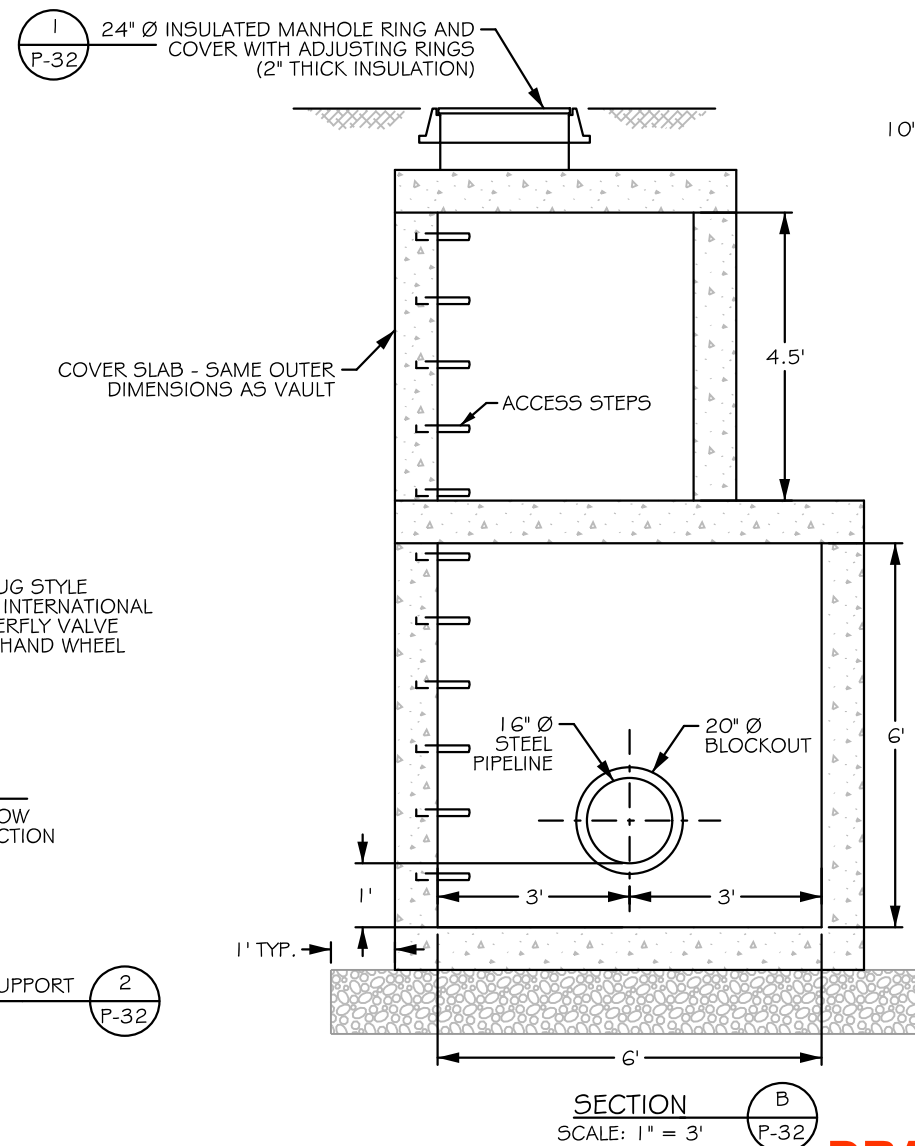
POND 1 RAW WATER MAIN VAULT  
SCALE: 1" = 3'



INSULATED MANHOLE LID DETAIL  
NOT TO SCALE



PIPE SUPPORT DETAIL  
NOT TO SCALE



SECTION B-B  
SCALE: 1" = 3'

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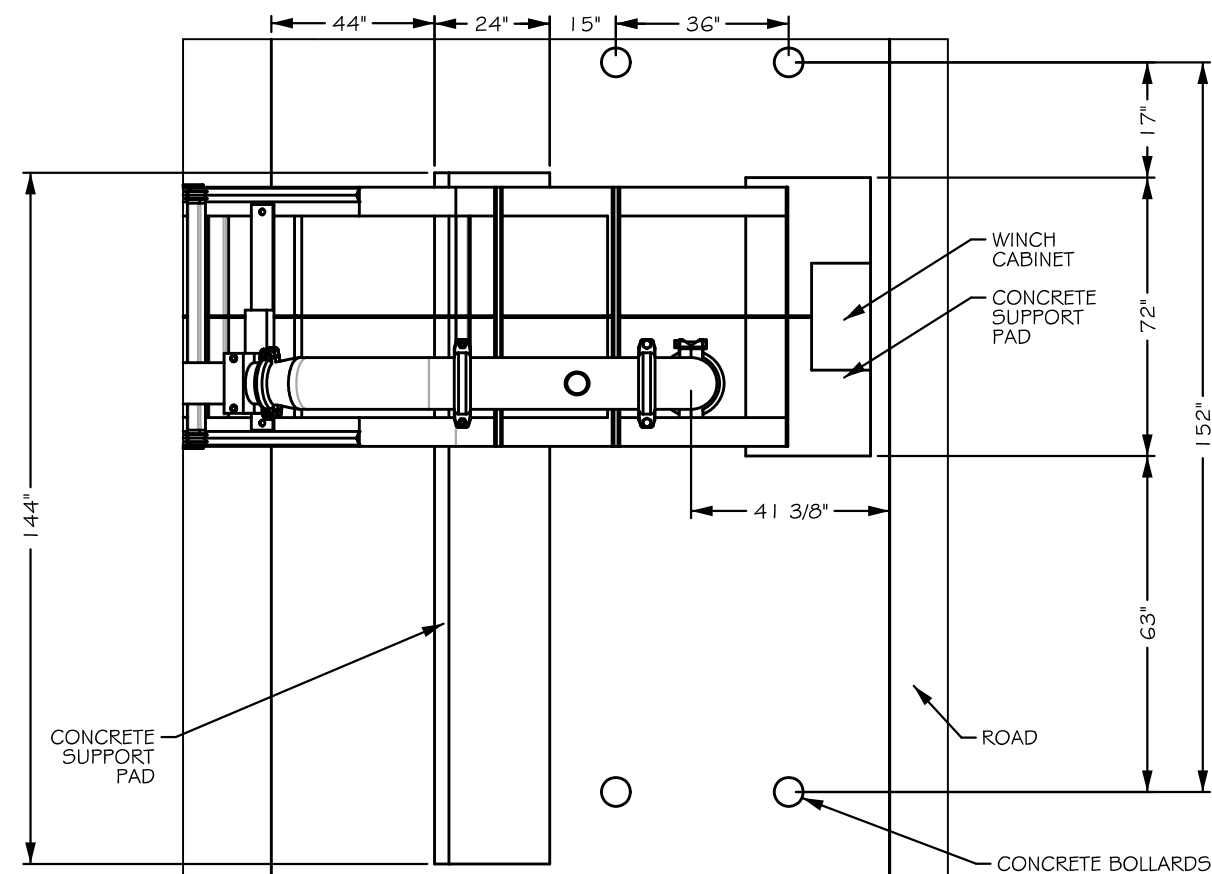
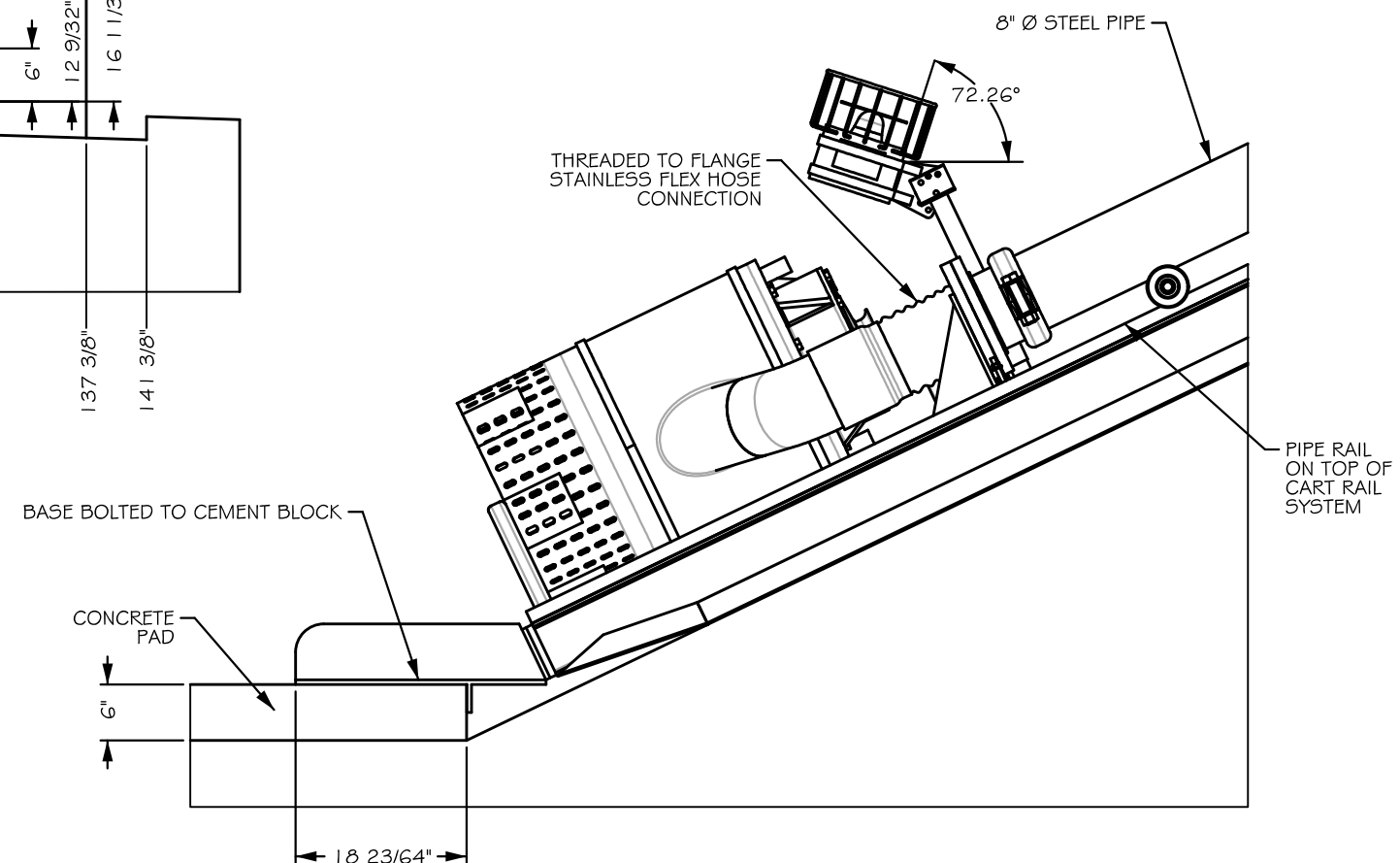
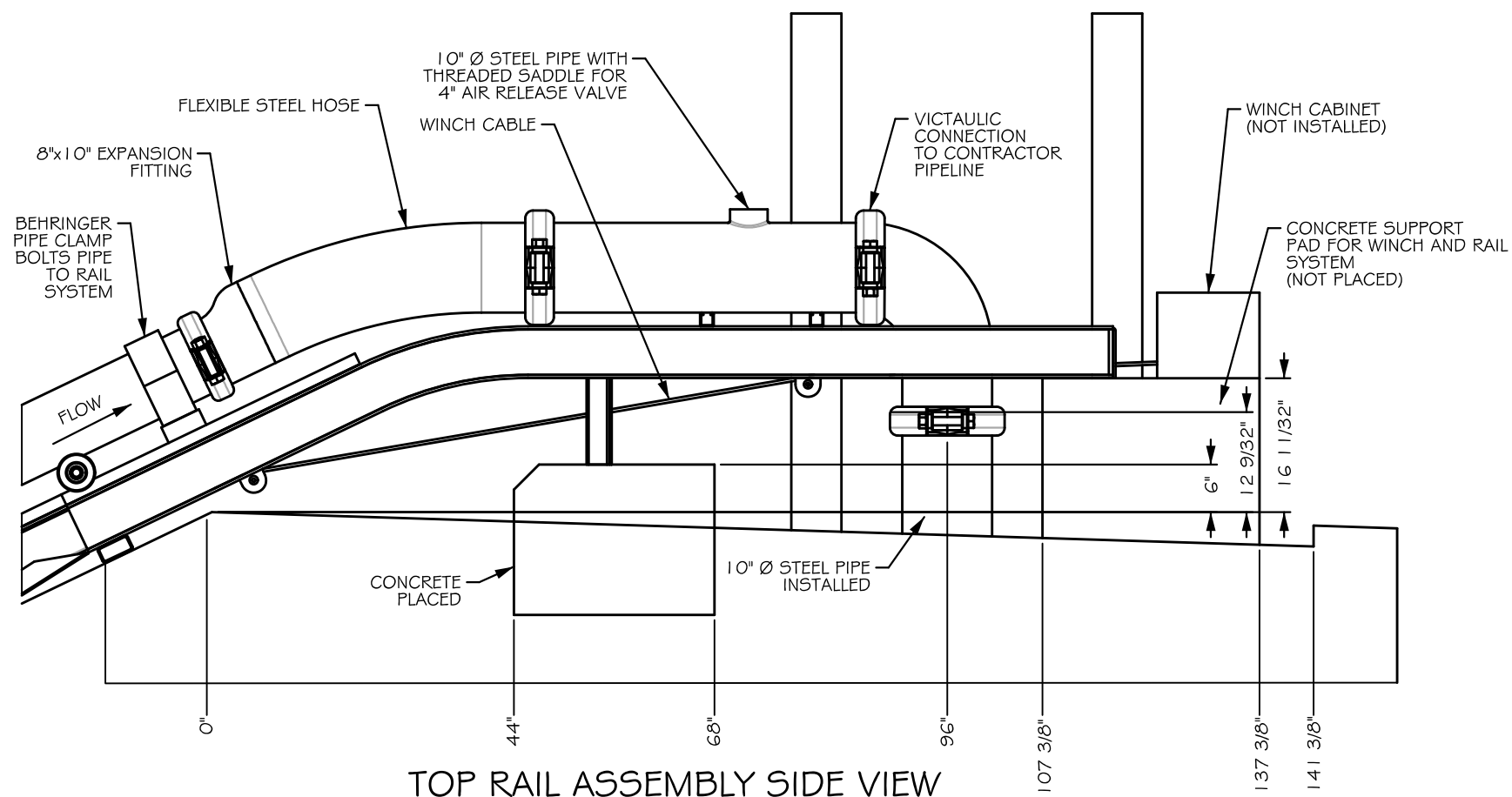
DE BEQUE WATER STATION  
PUMP STATION  
Pond 1 Raw Water  
Flow Meter and Valve Vault

SHEET  
32










TOP RAIL ASSEMBLY TOP VIEW  
NOT TO SCALE

## BOTTOM RAIL ASSEMBLY


NOT TO SCALE

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<p>SCALE: 1/500 WEIGHT: -</p>							<p>SHEET 3 OF 8</p>	

DE BEQUE WATER STATION  
POND 1 RECORD DRAWINGS  
Produced Water Pond Piping Details

SHEET  
35



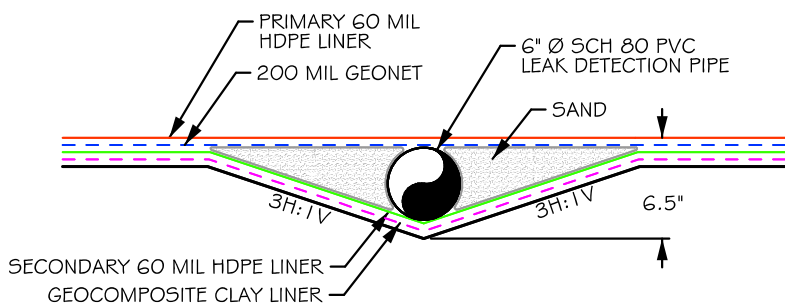
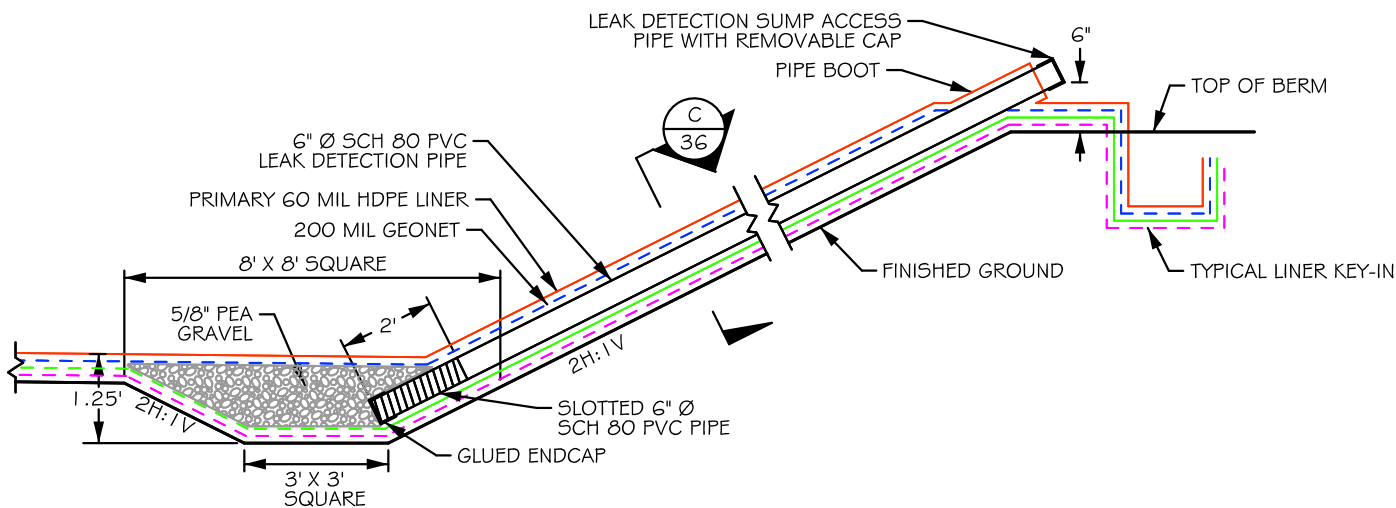
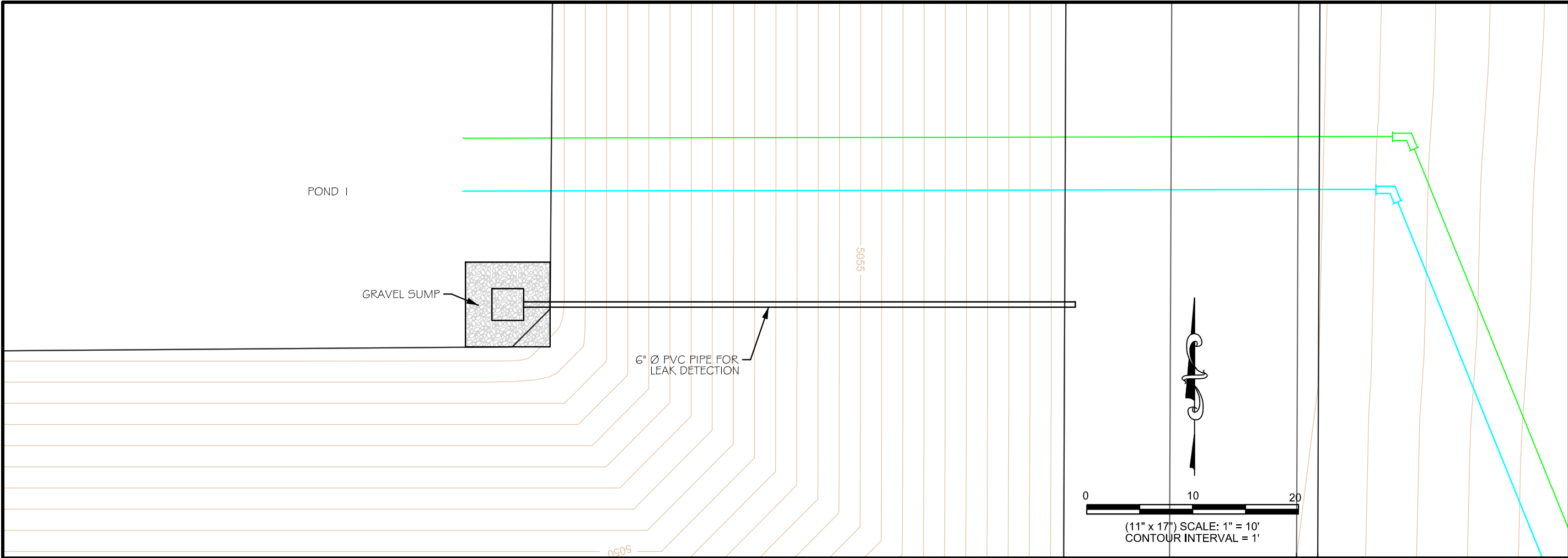
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SUMP ACCESS PIPE SECTION C  
36  
NOT TO SCALE

SUMP DETAIL  
NOT TO SCALE



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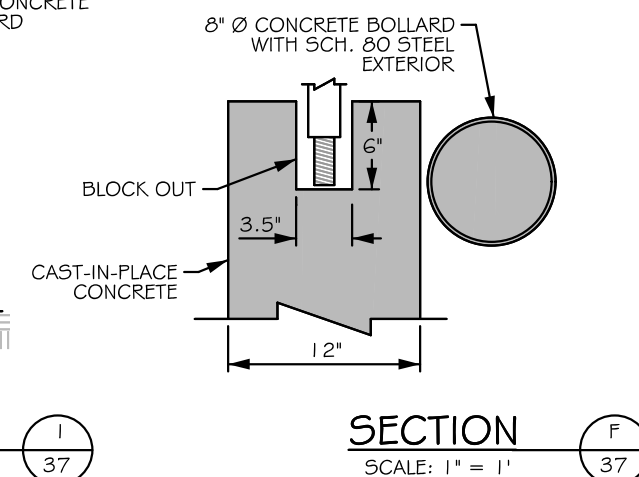
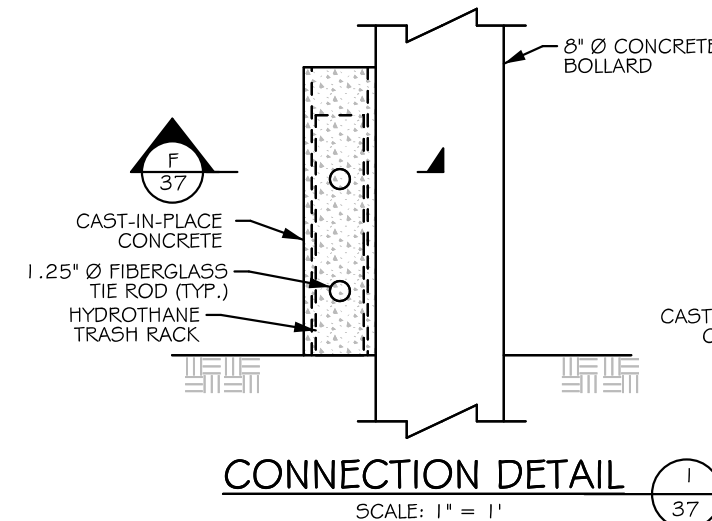
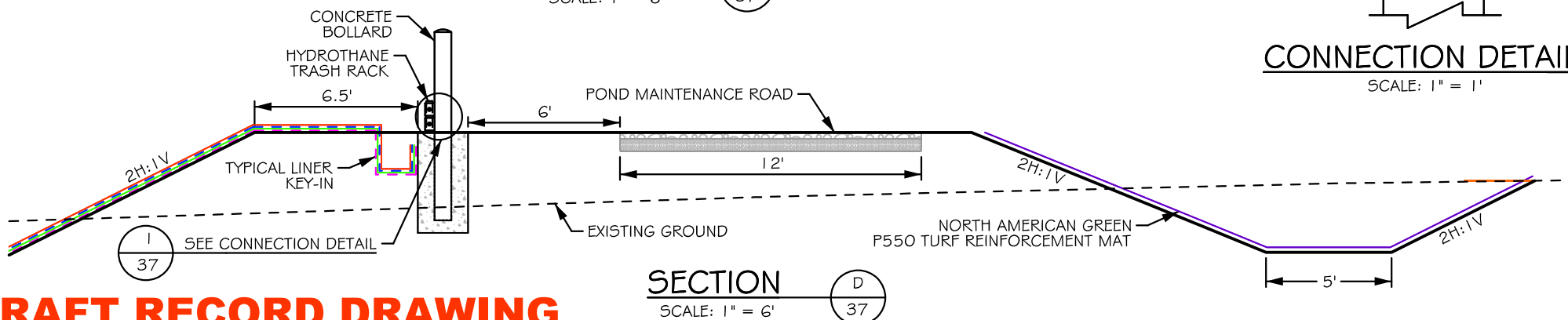
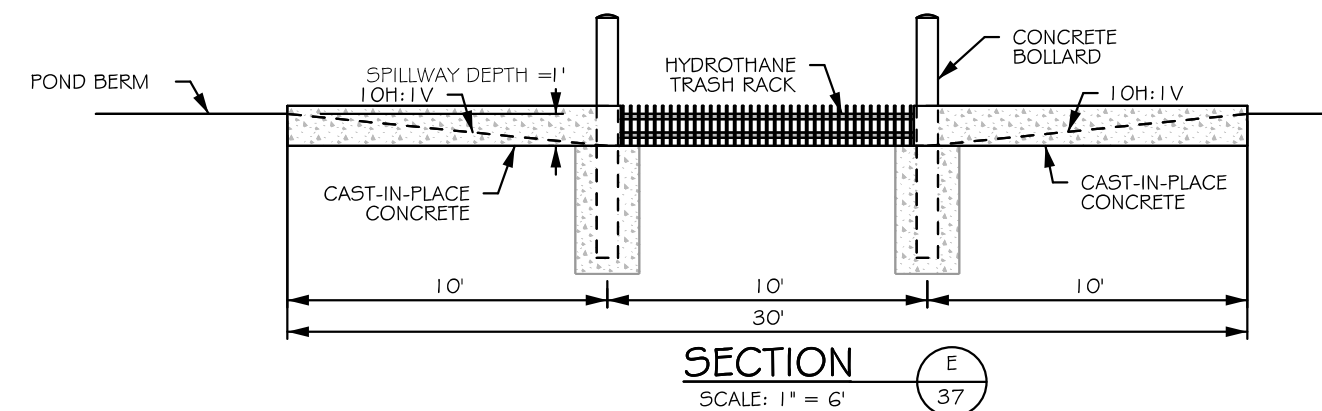
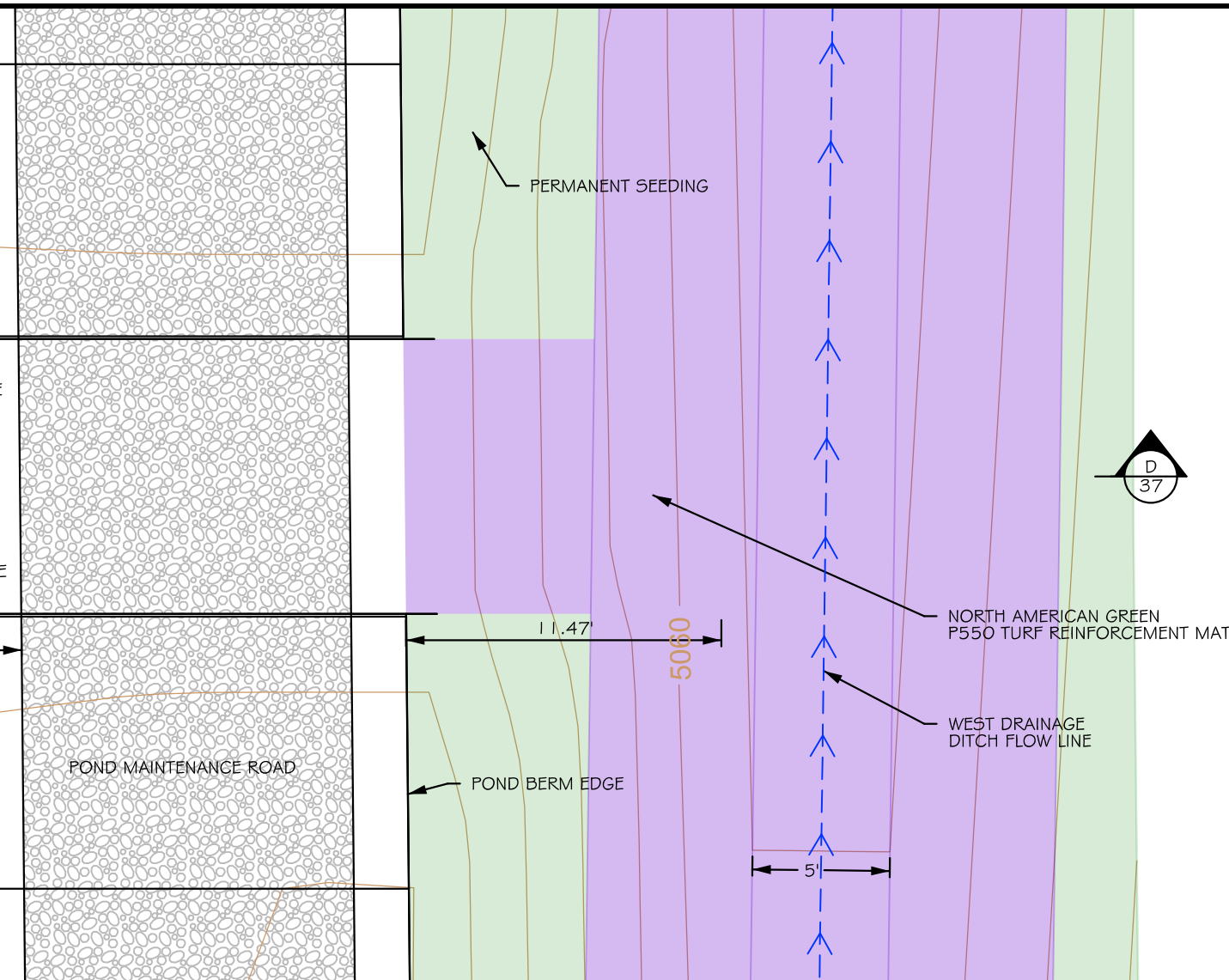
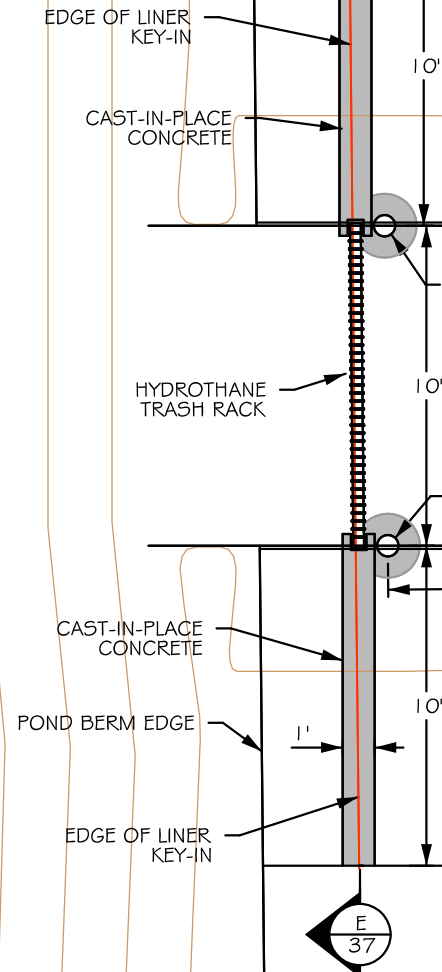
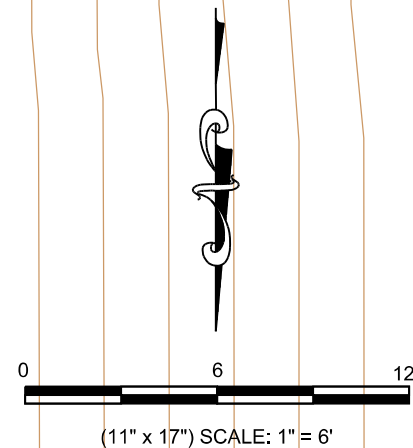
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REV	DATE	CKD
DDP	08/14	STH
MMZ	01/15	STH
JOB # 2013-134		

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DE BEQUE WATER STATION  
POND 1 RECORD DRAWINGS  
Leak Detection Details



**DRAFT RECORD DRAWING**

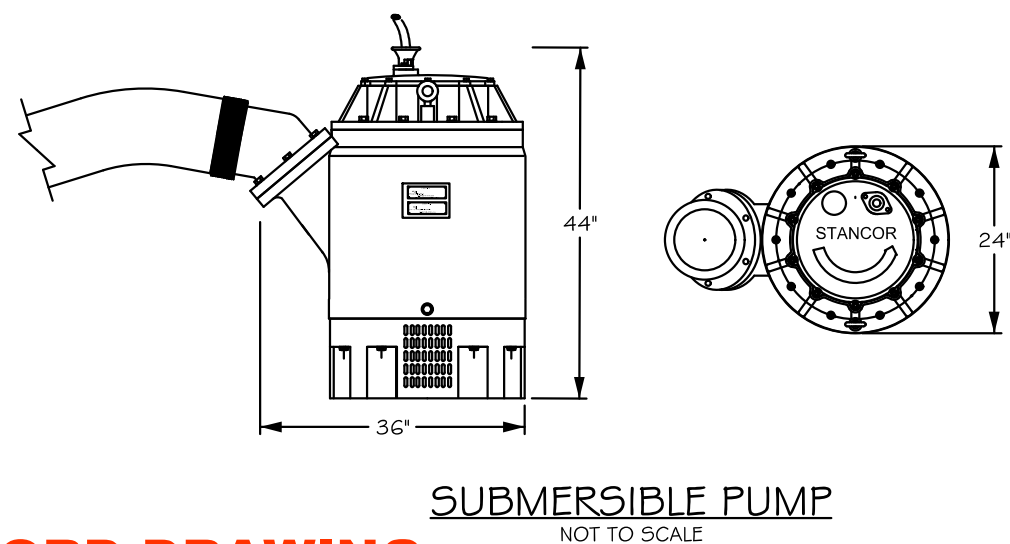
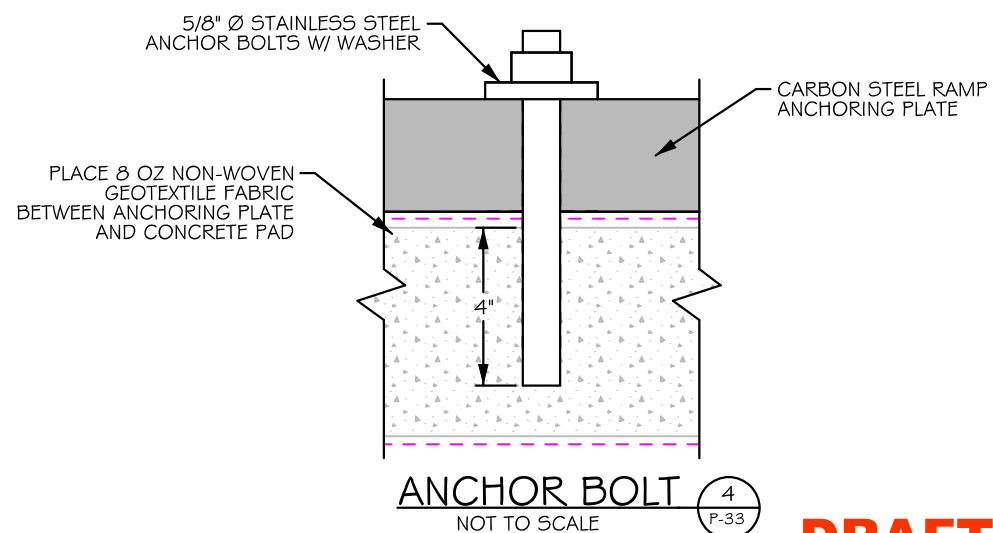
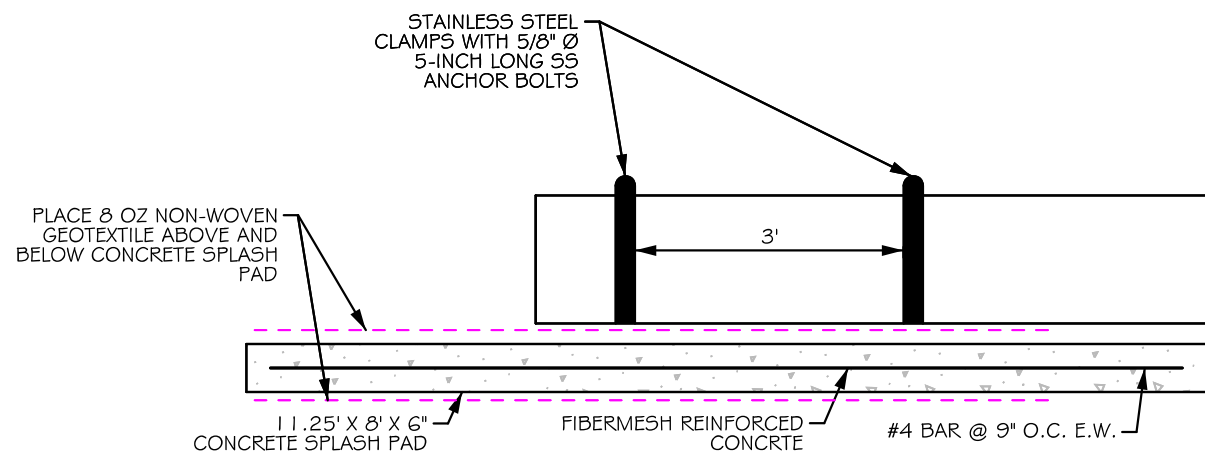
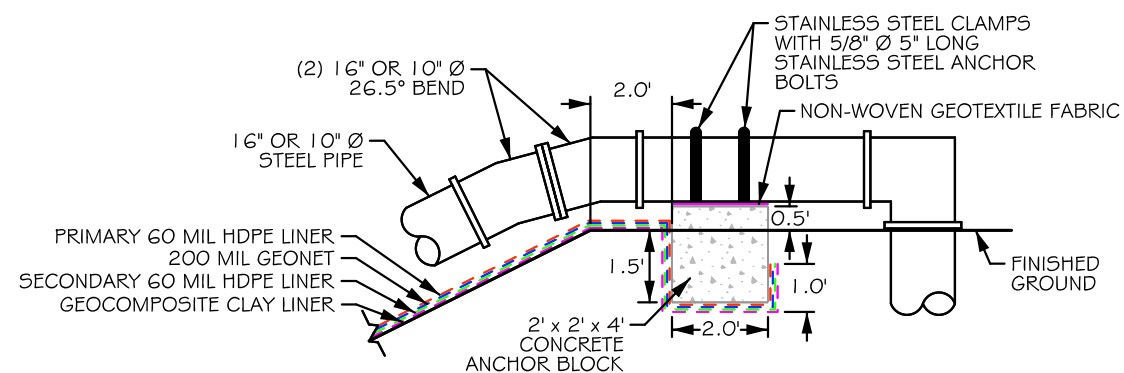
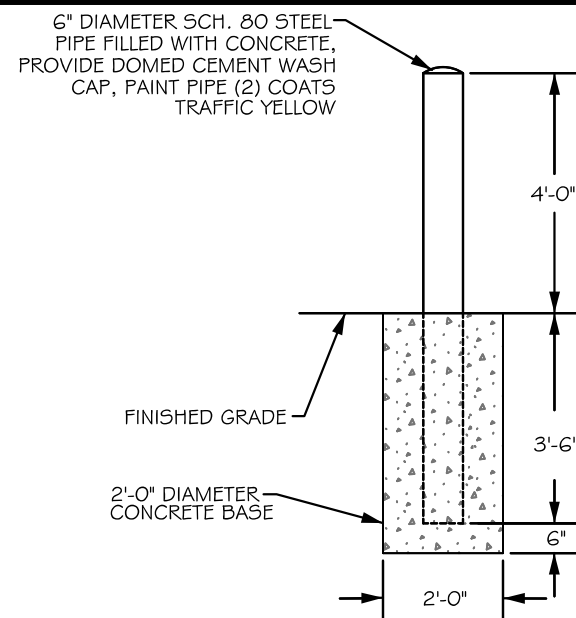
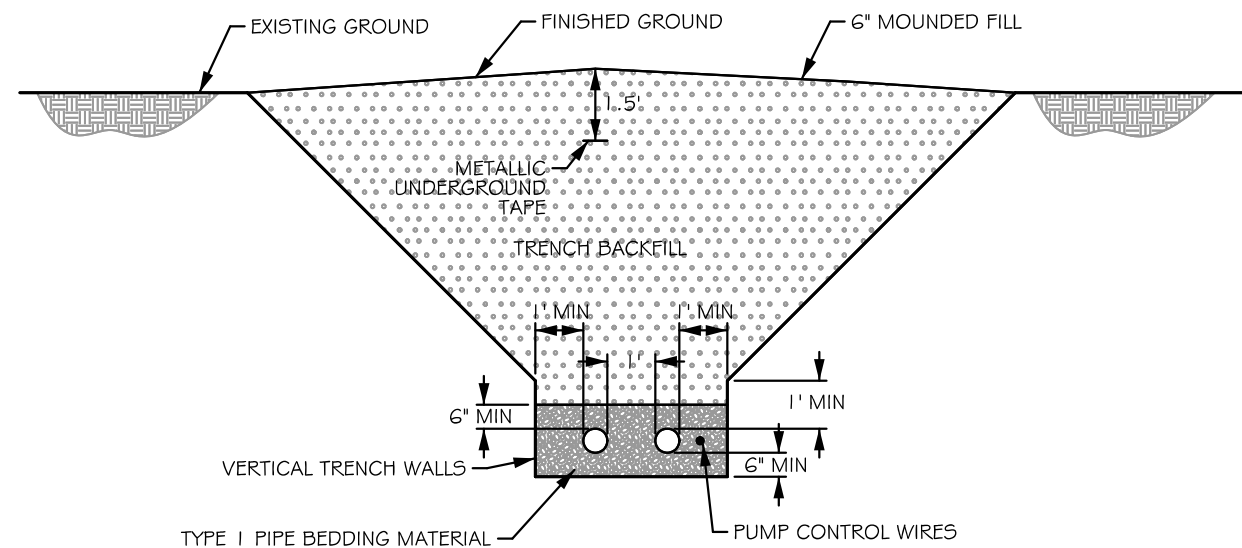
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JOB # 2013-134			

DE BEQUE WATER STATION  
POND 1 RECORD DRAWINGS  
Pond 1 Spillway Detail

SHEET  
37







**DRAFT RECORD DRAWING**

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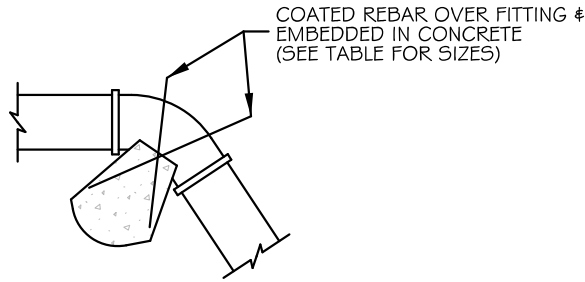
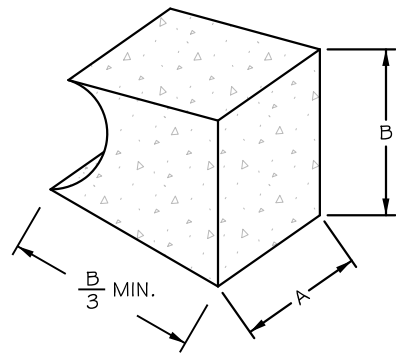
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DE BEQUE WATER STATION  
POND 1 RECORD DRAWINGS

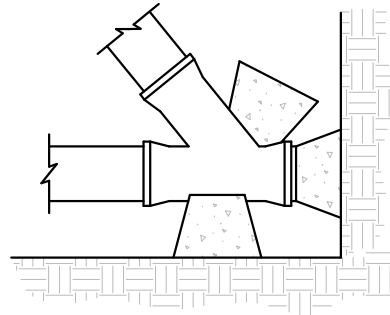
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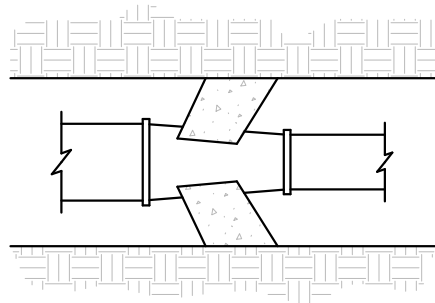




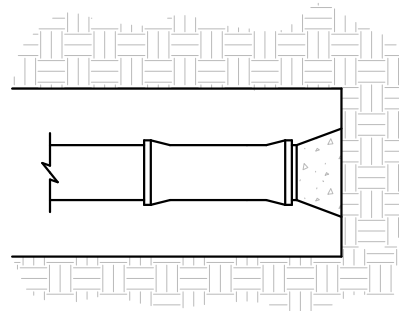
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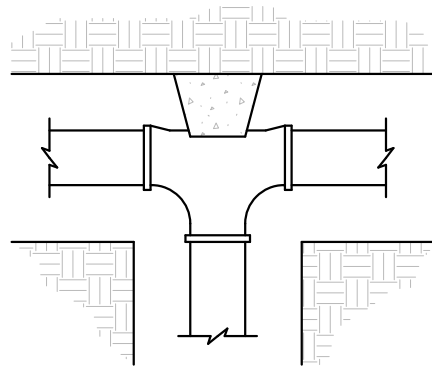
WYE



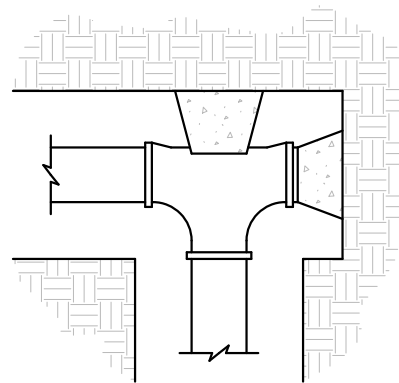
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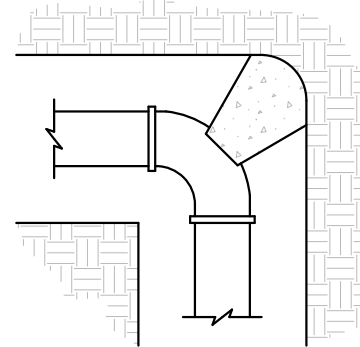
PLUG OR CAP



TEE



TEE (PLUGGED)



BEND

VERTICAL BEND REBAR			
FITTING SIZES	PRESSURE (PSI)	REBAR SIZES	EMBEDMENT
8"	1250	#8	36" ①
10"	150	#6	30"
16"	150	#8	36"

① WHEN THE 36" LENGTH EXCEEDS THE LENGTH B/3 THEN BEND THE SECTION OF REBAR THAT WOULD PROTRUDE FROM THE THRUST BLOCK, PARALLEL TO THE BEARING FACE. PROVIDE 3" OF CONCRETE COVER OVER ALL REBAR.

## THRUST BLOCKING FOR WATER MAIN FITTING ASSEMBLY

NOT TO SCALE

STANDARD DIMENSIONS FOR THRUST BLOCKING															
FITTING SIZES	PRESSURE (PSI)	TEES & PLUGS		90° BEND		45° BEND & WYES		REDUCERS & 22.5° BEND		11.25° BEND		9.5° BEND		4° BEND	
		A	B	A	B	A	B	A	B	A	B	A	B	A	B
8"	1250	6'-0"	5'-0"	6'-0"	5'-0"	4'-4"	4'-0"	3'-0"	2'-9"	2'-0"	2'-0"	2'-0"	1'-9"	1'-5"	1'-0"
10"	150	3'-4"	3'-3"	4'-0"	3'-10"	3'-0"	2'-9"	2'-2"	1'-11"	NOT NEEDED	NOT NEEDED	NOT NEEDED	NOT NEEDED	NOT NEEDED	NOT NEEDED
16"	150	6'-0"	5'-0"	6'-0"	5'-0"	6'-0"	4'-0"	4'-6"	3'-0"	NOT NEEDED	NOT NEEDED	NOT NEEDED	NOT NEEDED	NOT NEEDED	NOT NEEDED

### NOTES:

- THIS TABLE IS BASED ON 150 PSI MAIN PRESSURE WITH 2000 PSF SOIL BEARING PRESSURE AND 1250 PSI WITH 3000 PSF SOIL BEARING PRESSURE.
- WRAP ALL FITTINGS WITH POLYETHYLENE.
- KEEP CONCRETE CLEAR OF JOINT AND JOINT ACCESSORIES.
- POUR THRUST BLOCKING AGAINST UNDISTURBED EARTH.
- VERTICAL BENDS HAVING DOWNWARD RESULTANT THRUST AND HORIZONTAL BENDS HAVE THE SAME THRUST BLOCK REQUIREMENTS.
- THRUST BLOCK BEARING AREA SHALL NOT BE LESS THAN 1.0 SQ. FT.
- THE CONTRACTOR SHALL PROVIDE CATHODIC PROTECTION FOR ALL WATER FITTINGS.
- THE 1250 PSI PRESSURE 8 INCH DIAMETER WATER MAIN WILL REQUIRE THRUST BLOCKING ON HORIZONTAL AND VERTICAL BENDS WITH A BEND OF 4° OR GREATER. BENDS LESS THAN 4° WILL NOT REQUIRE A THRUST BLOCK.

**DRAFT RECORD DRAWING**

DE BEQUE WATER STATION  
POND 1 RECORD DRAWINGS

Thrust Block Details

SHEET  
40

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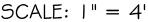
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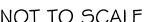
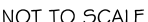
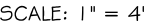
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MMZ	07/15	STH
JOB # 2013-134		

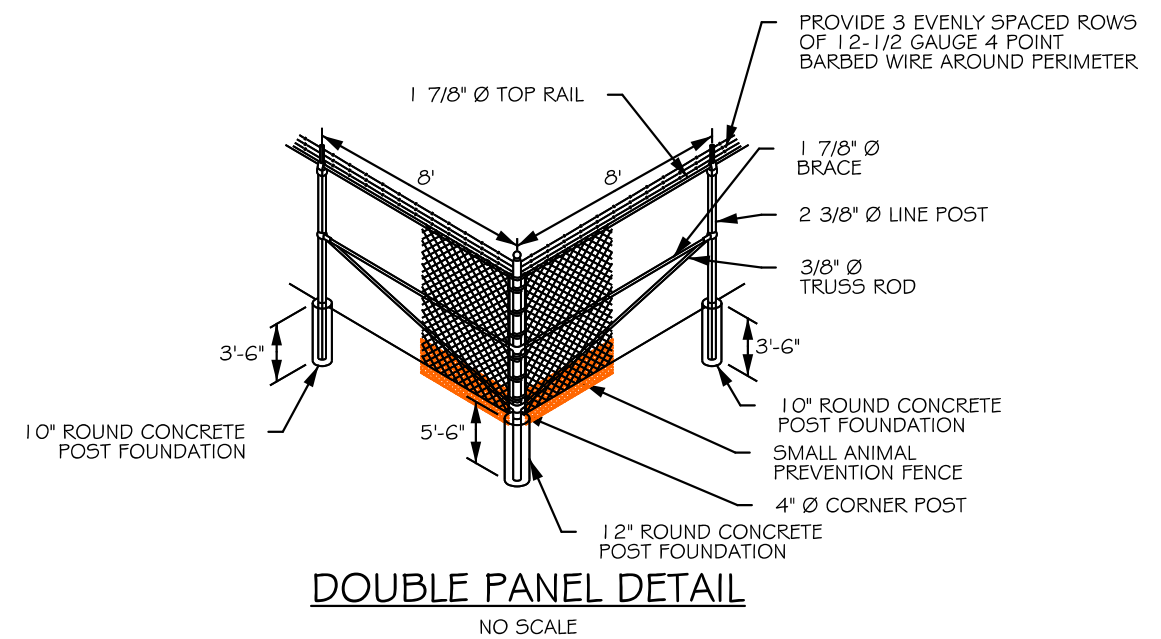
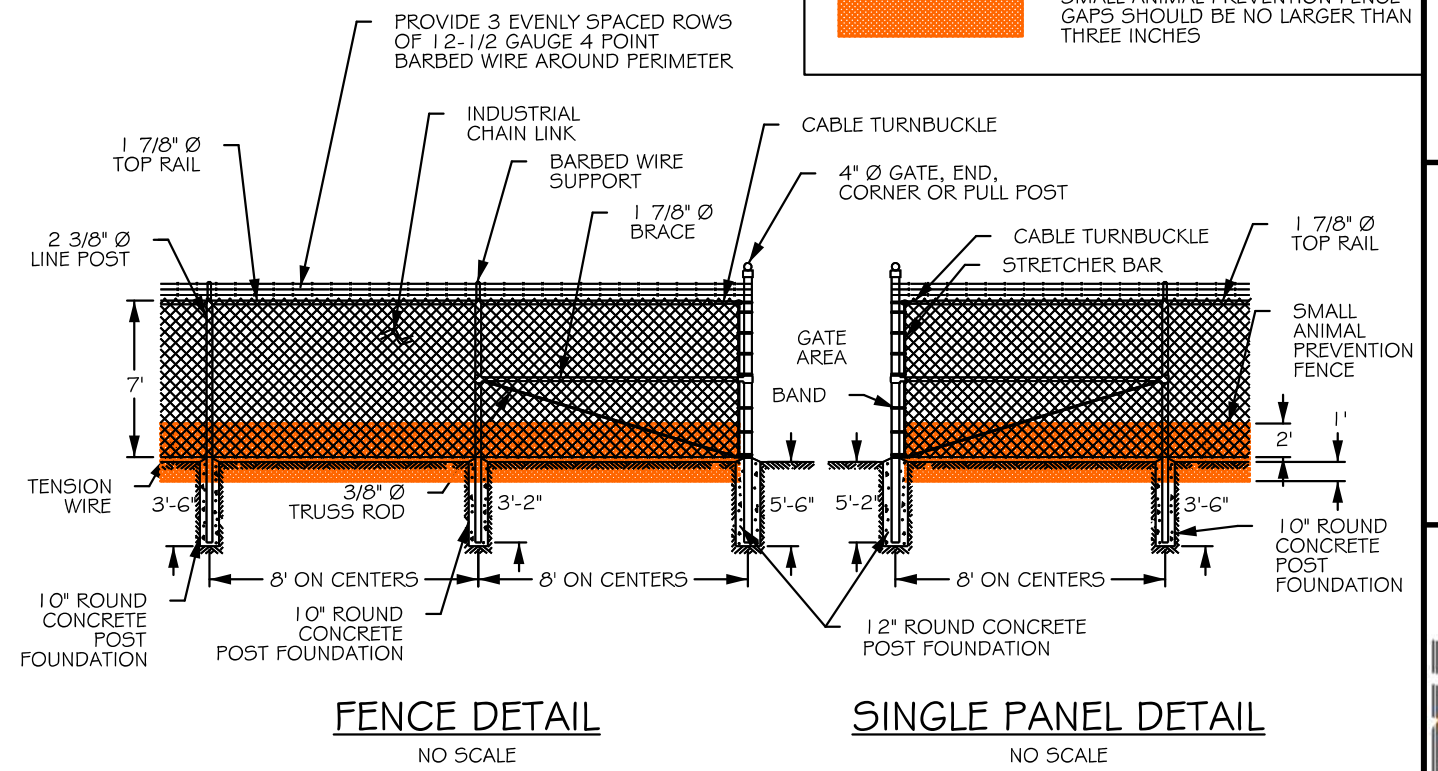
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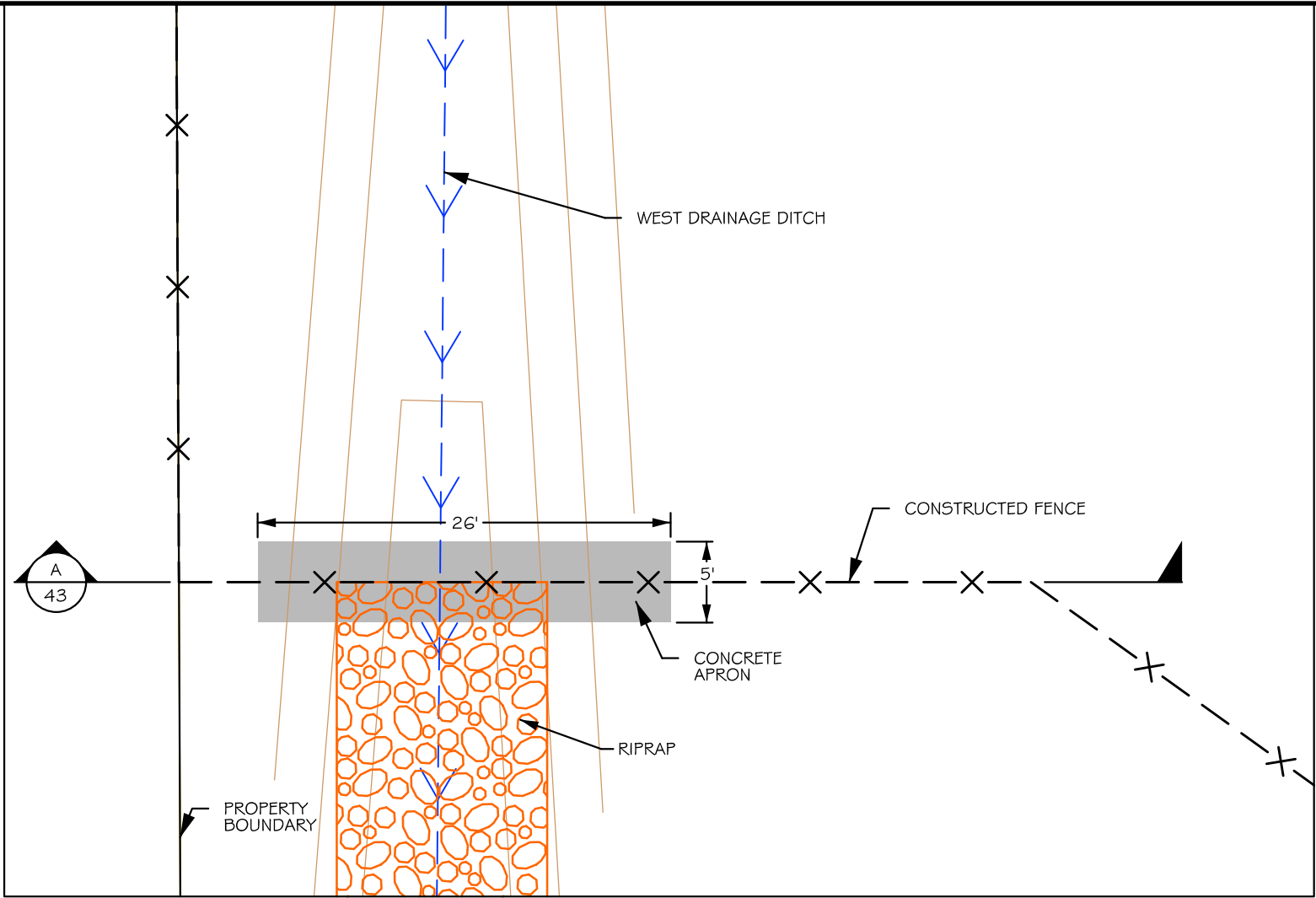
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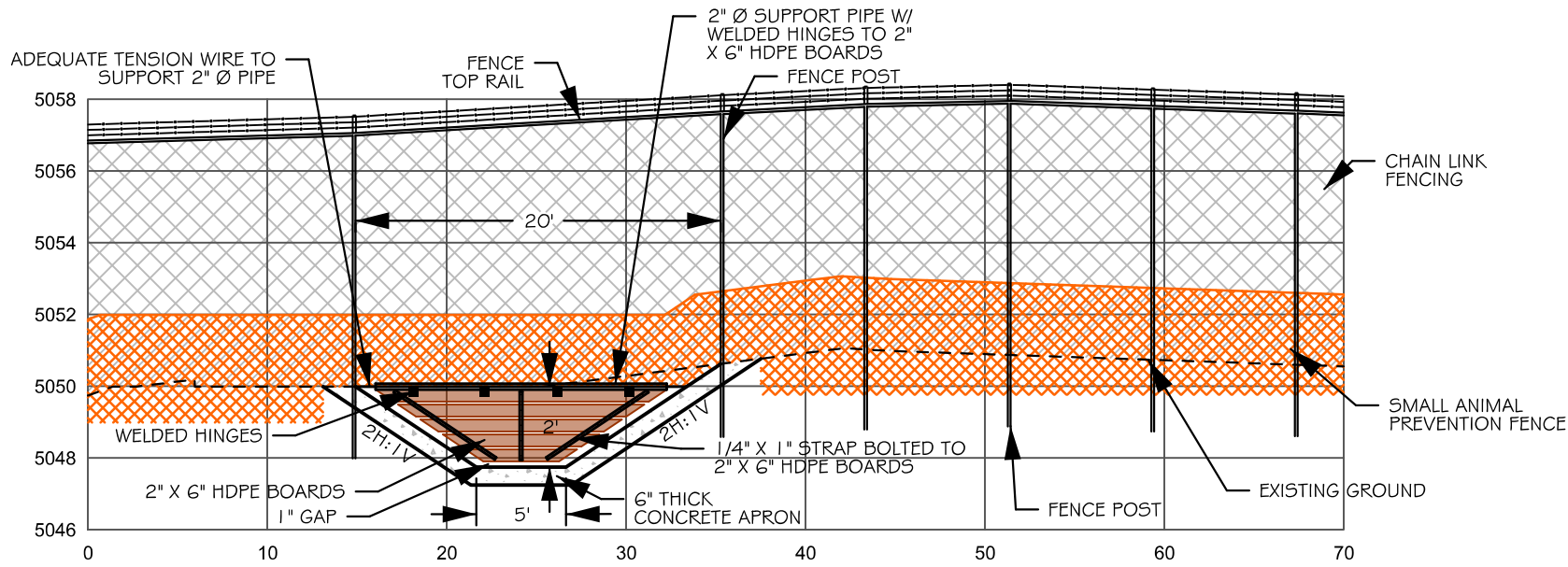
**DRAFT RECORD DRAWING**



FENCE PLAN VIEW

SCALE: 1" = 10'

1  
42



SECTION A-A

SCALE: 1" = 10'

A  
43

**DRAFT RECORD DRAWING**

- NOTES:
- 1) 2:1 VERTICAL EXAGGERATION.
  - 2) SMALL ANIMAL PREVENTION FENCE SHALL BE BLACK STEEL 3' X 1.50'/ROLL CHICKEN WIRE OR ENGINEER-APPROVED EQUAL.

DE BEQUE WATER STATION  
POND 1 RECORD DRAWINGS  
Fence Drainage Crossing Detail

SHEET  
43

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GPV	06/14	STH
REV	DATE	CKD
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MMZ	01/15	STH
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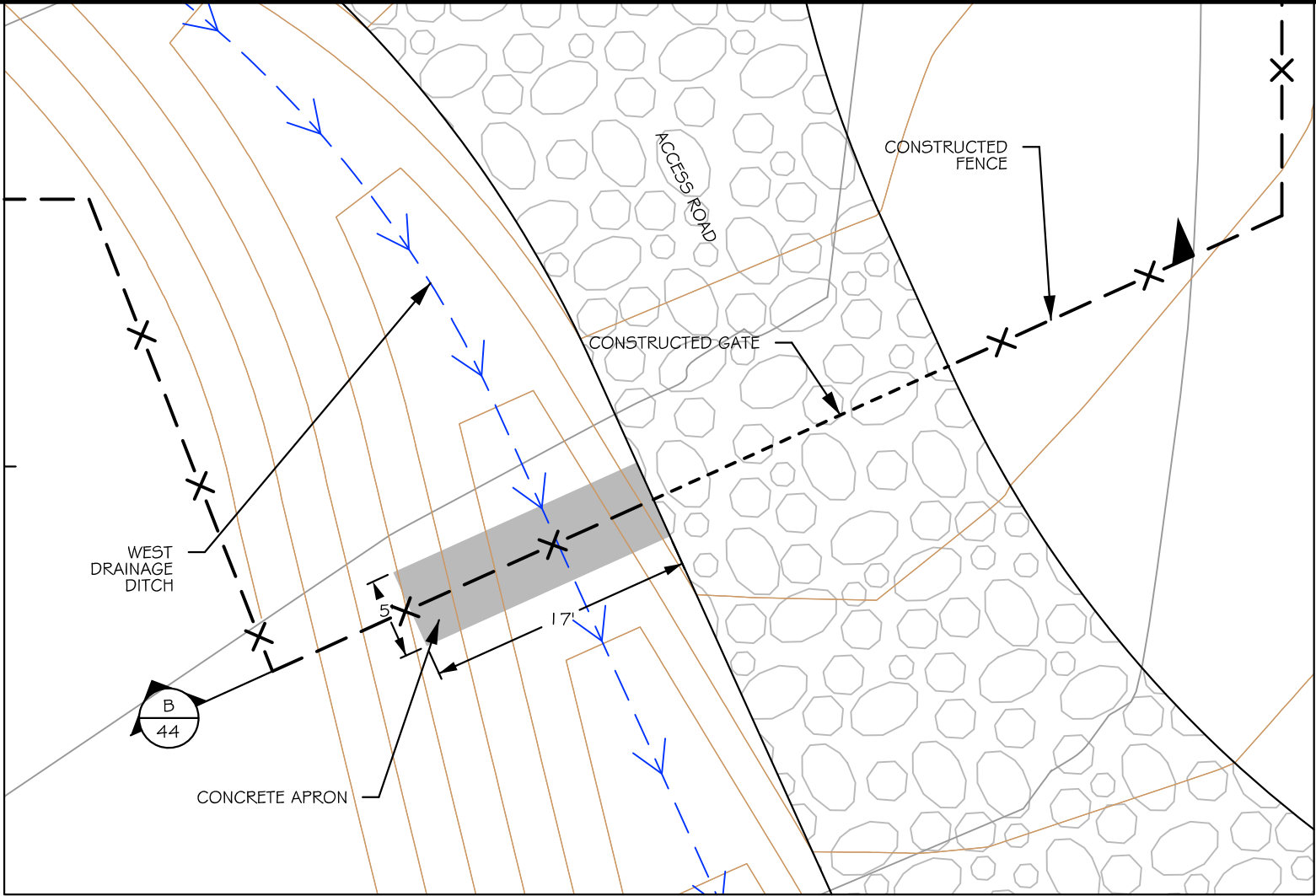
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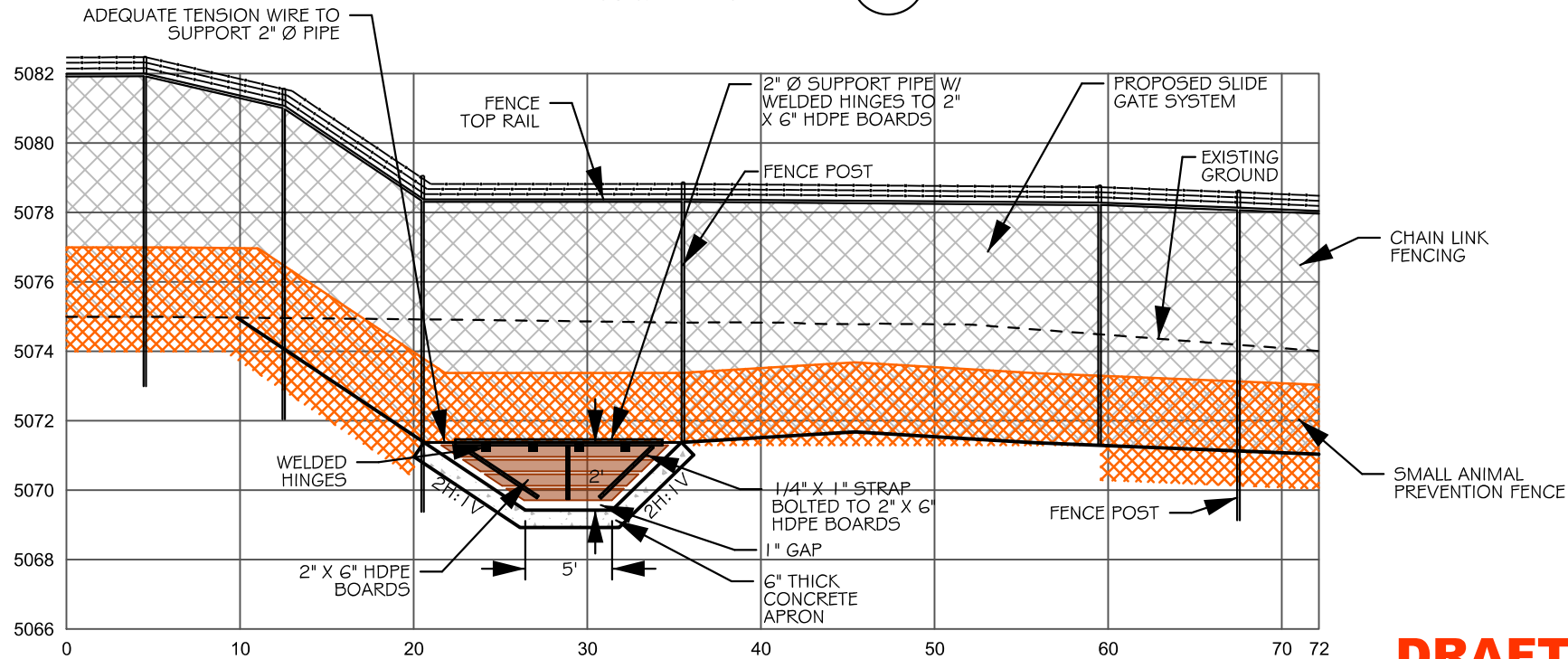




FENCE PLAN VIEW

SCALE: 1" = 10'

2  
42



SECTION

SCALE: 1" = 10'

B  
44

NOTES:

- 1) 2:1 VERTICAL EXAGGERATION.
- 2) SMALL ANIMAL PREVENTION FENCE SHALL BE BLACK STEEL 3' X 150/ROLL CHICKEN WIRE OR ENGINEER-APPROVED EQUAL.

**DRAFT  
RECORD DRAWING**

DE BEQUE WATER STATION  
POND 1 RECORD DRAWINGS

Fence Drainage Crossing Detail

SHEET  
44

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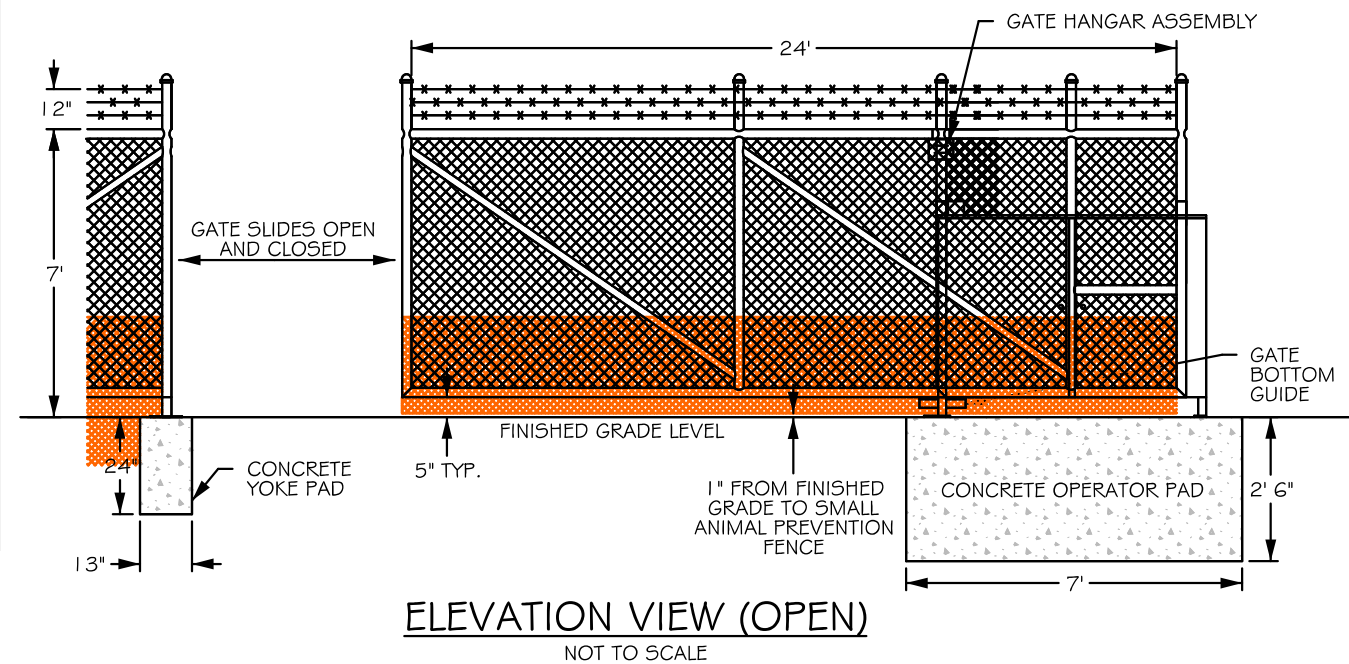
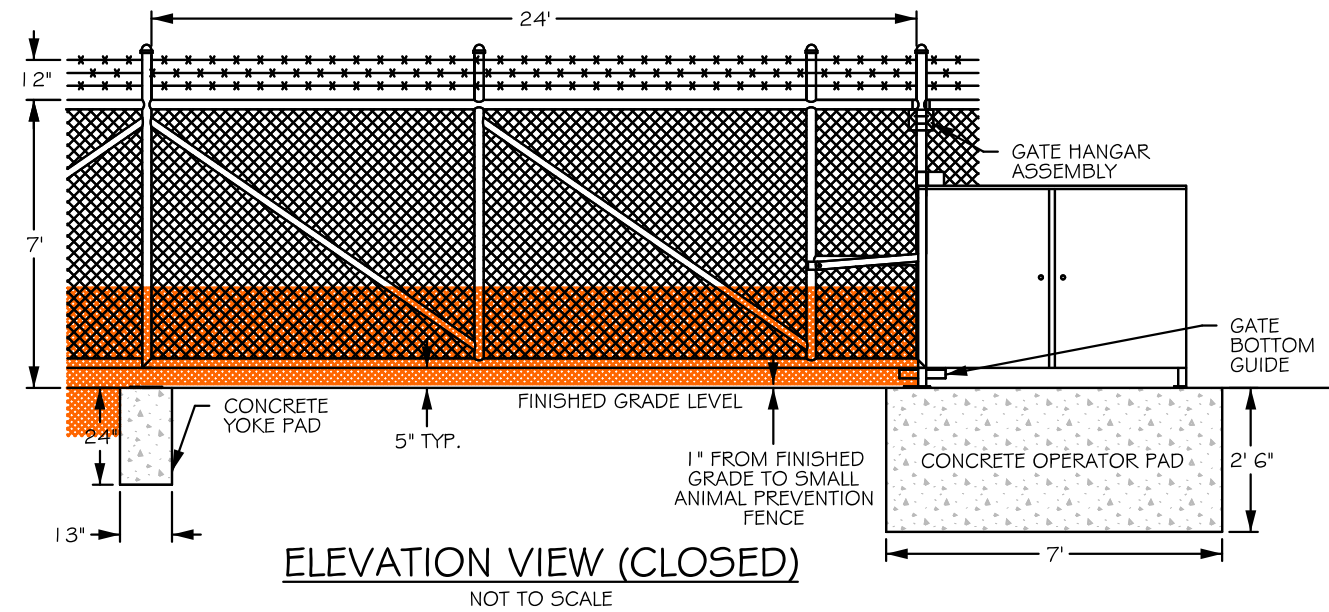
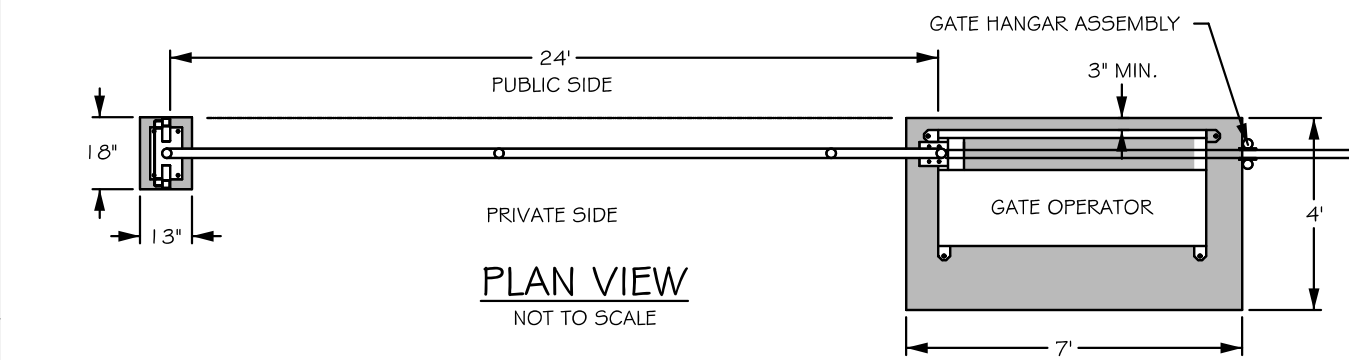
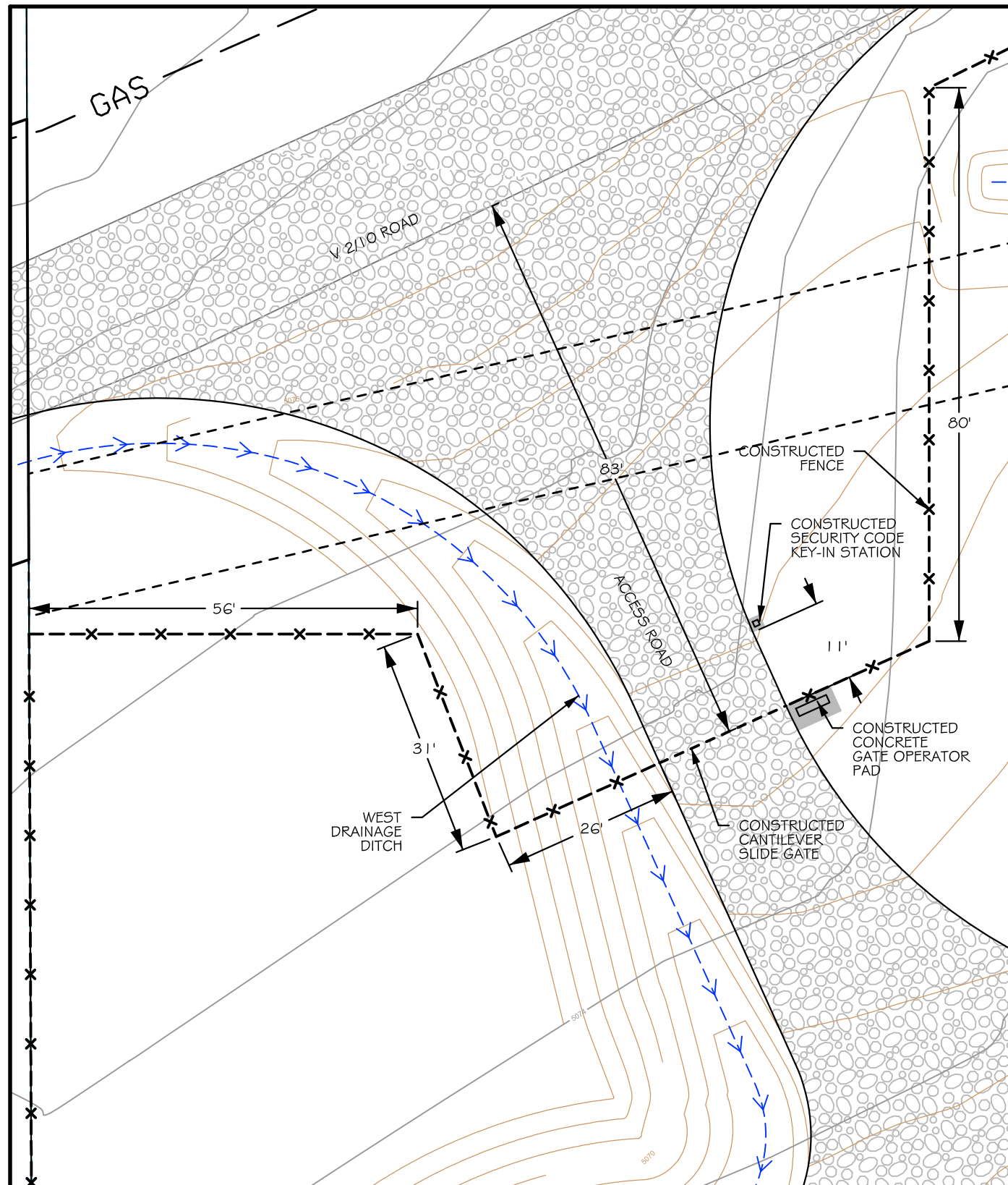
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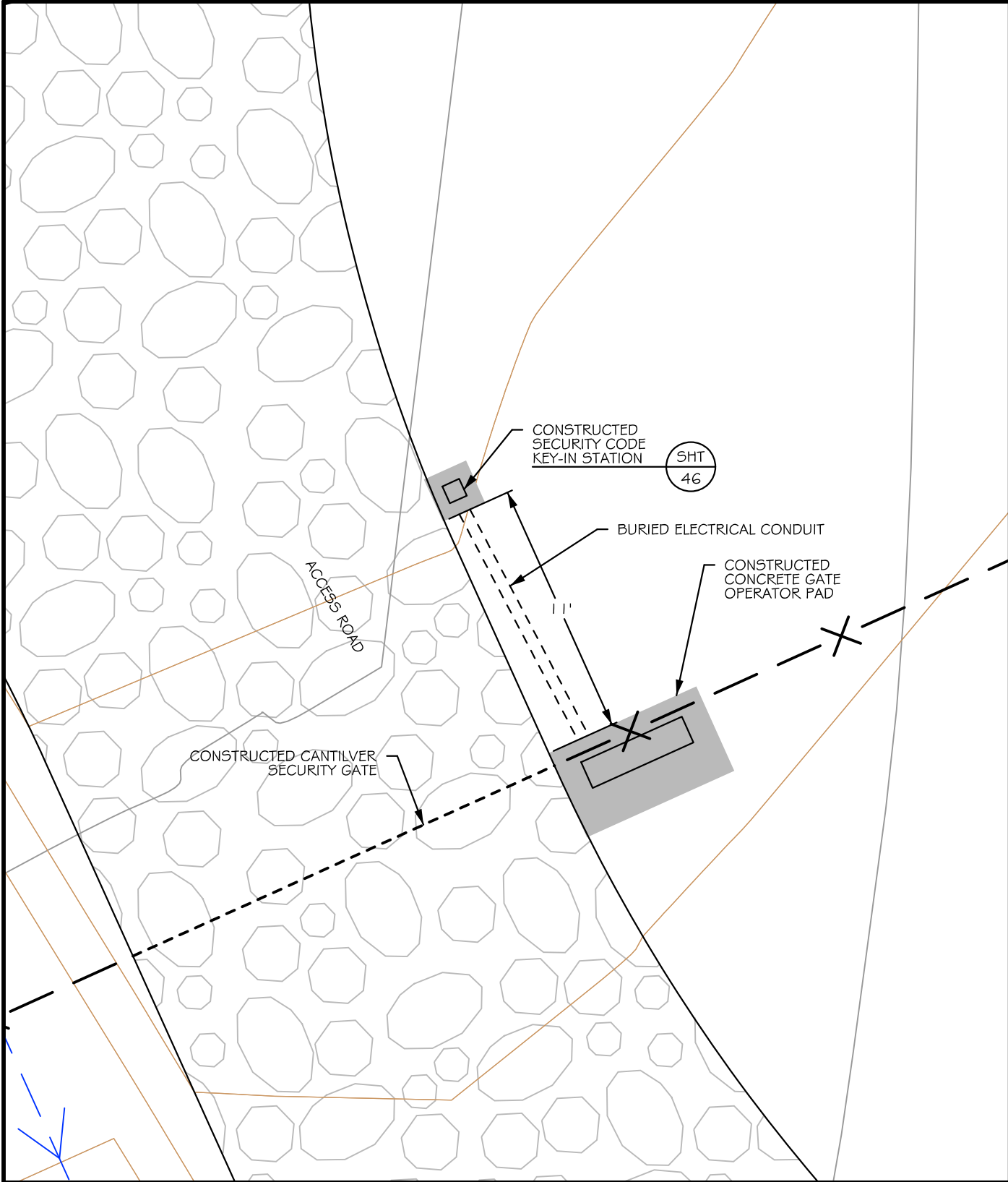
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### Security Gate Details

SHEET  
45

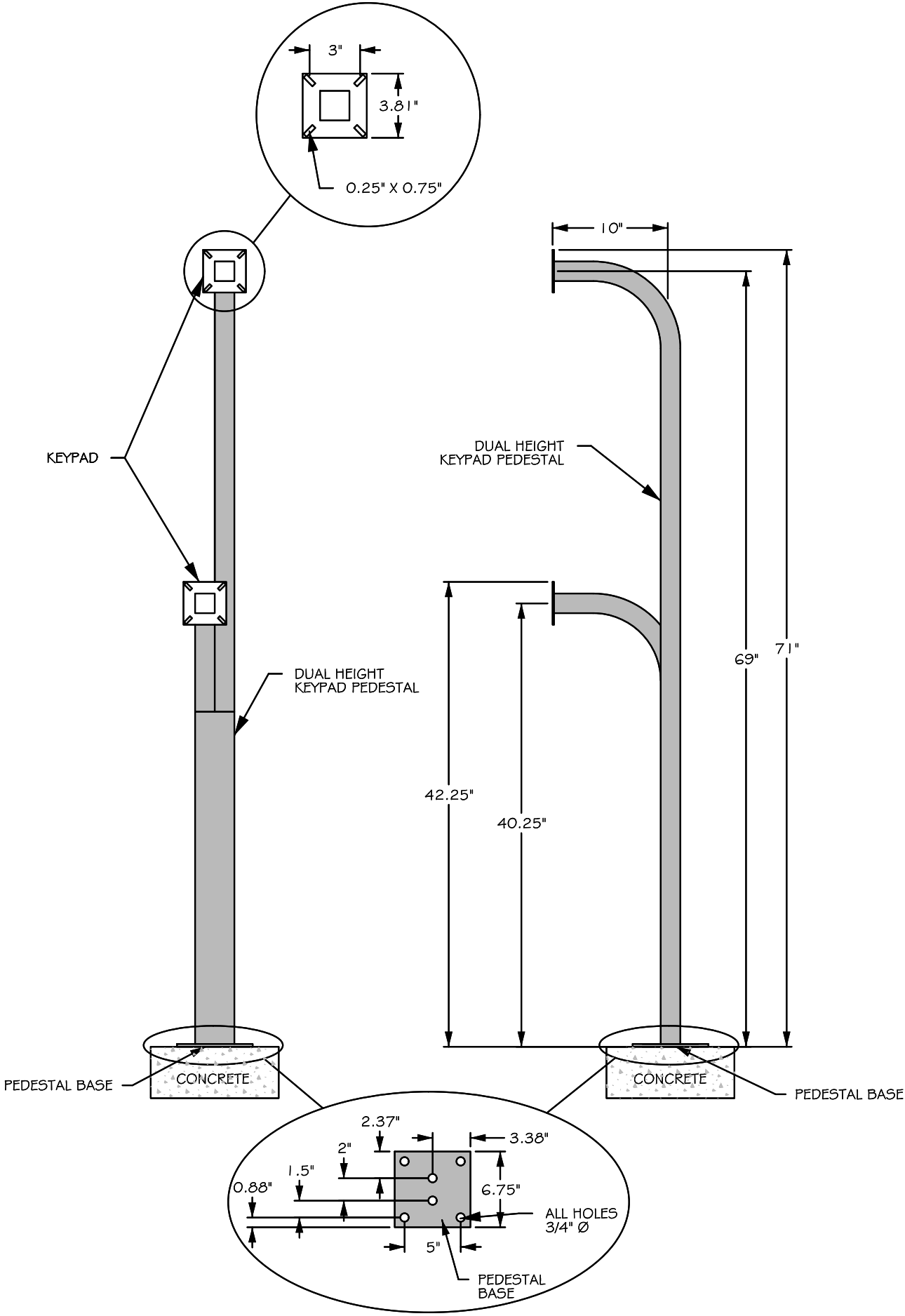
**DRAFT RECORD DRAWING**





KEYPAD PLAN VIEW  
SCALE: 1" = 6'

- NOTES:
- 1) KEYPAD IS AMERICAN ACCESS SYSTEMS, INC. ADVANTAGE DK DIGITAL KEYPAD OR EQUAL.
  - 2) KEYPAD PEDESTAL IS AMERICAN ACCESS SYSTEMS, INC. 18-003 DUAL HEIGHT PEDESTAL OR EQUAL.
  - 3) KEYPAD WAS INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.



KEYPAD DETAIL  
NOT TO SCALE

**DRAFT  
RECORD DRAWING**

DE BEQUE WATER STATION  
POND 1 RECORD DRAWINGS

Keypad Details

SHEET  
46

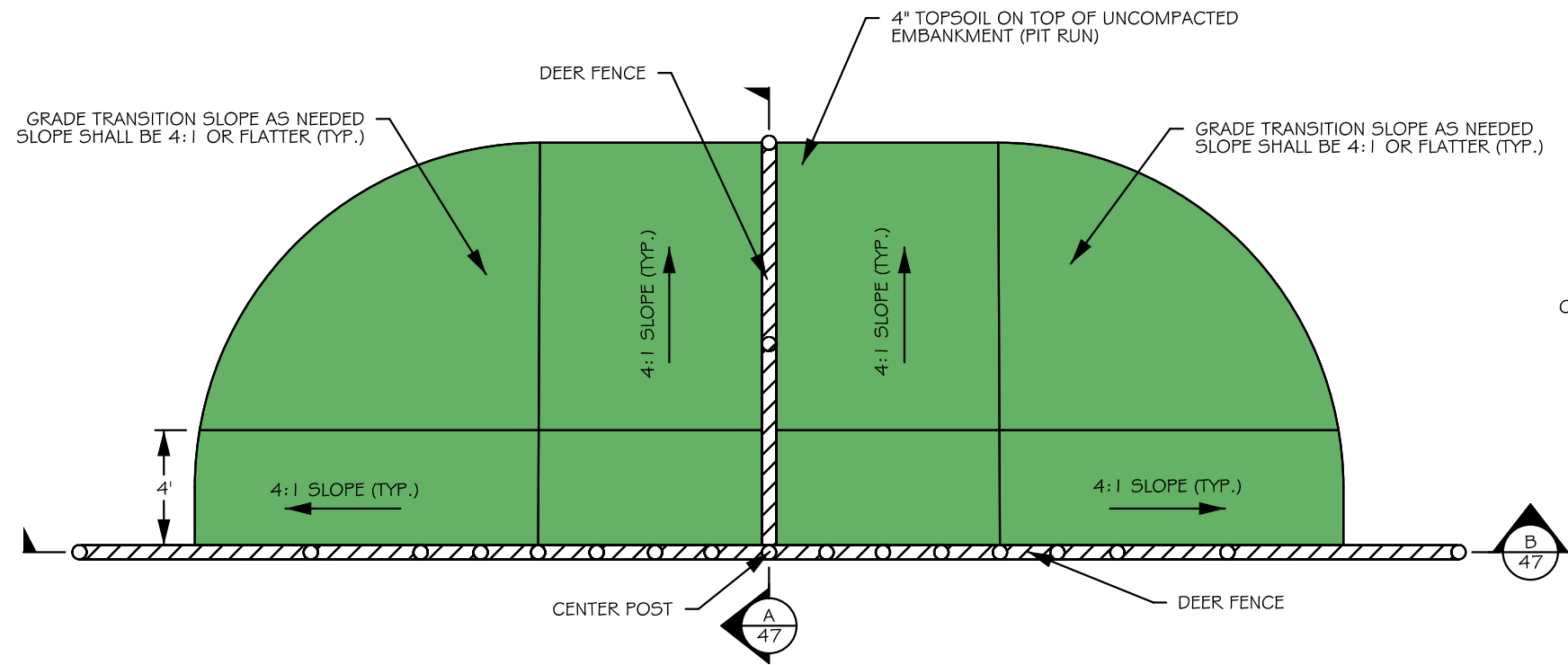
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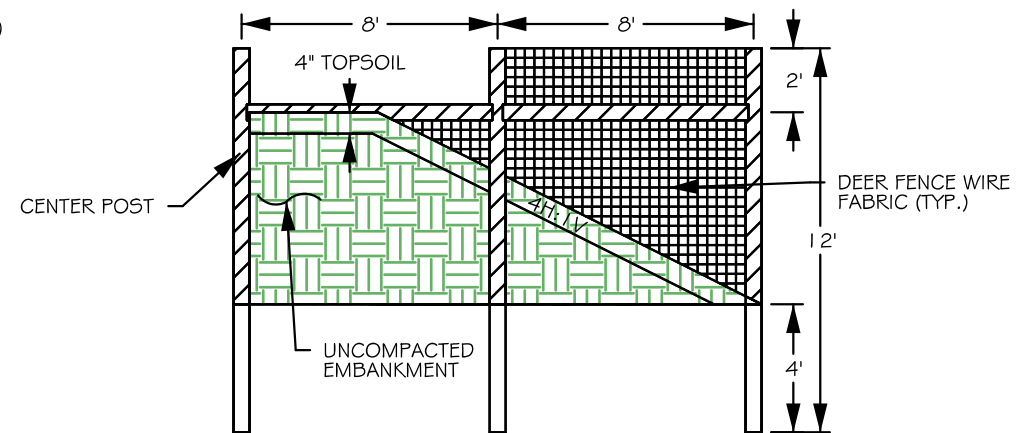
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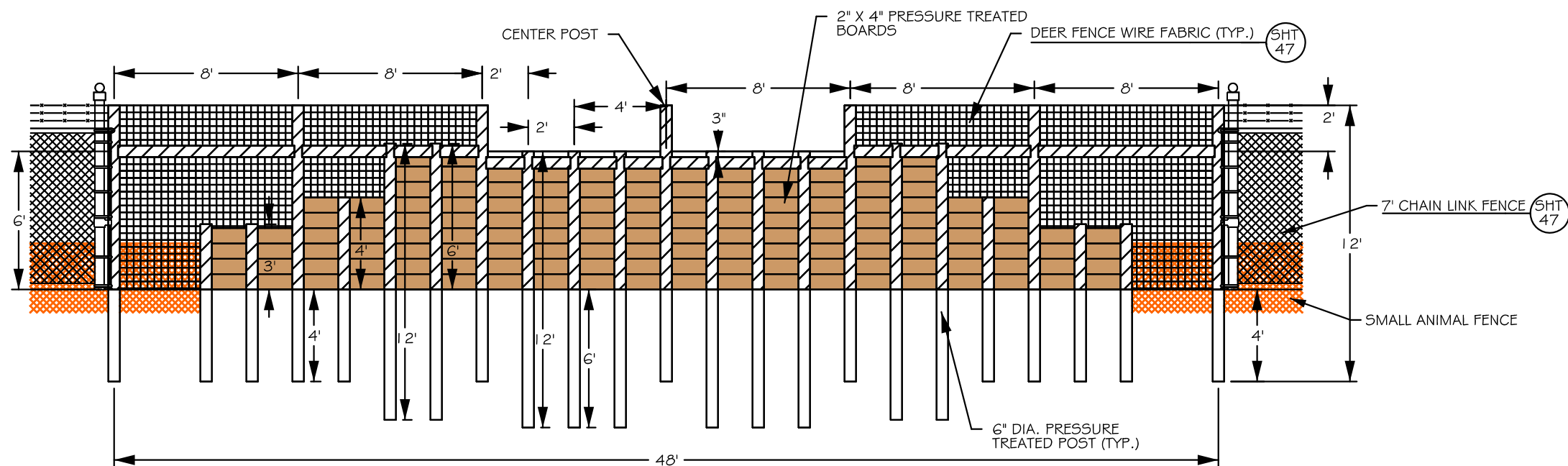
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PLAN VIEW  
NOT TO SCALE



SECTION A  
NOT TO SCALE



SECTION B  
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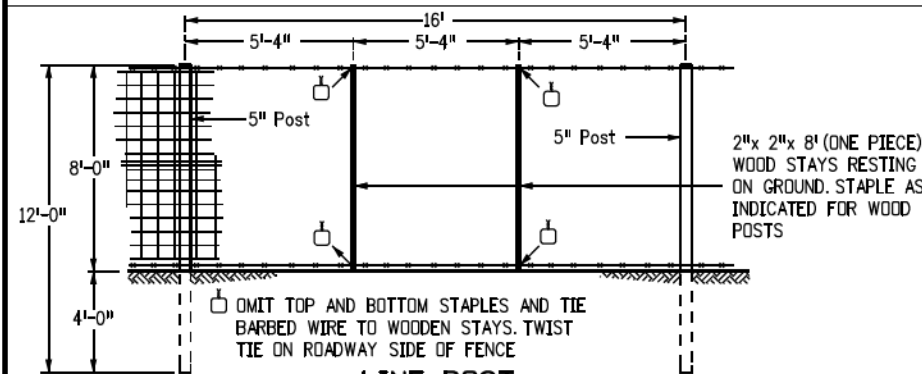
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DE BEQUE WATER STATION  
POND 1 RECORD DRAWINGS  
Wildlife Escape Details

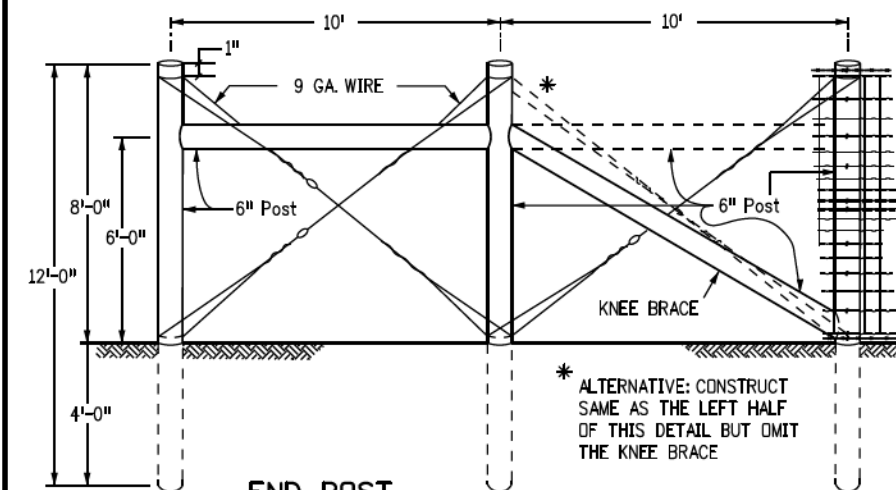
SHEET  
47

DRAFT RECORD DRAWING

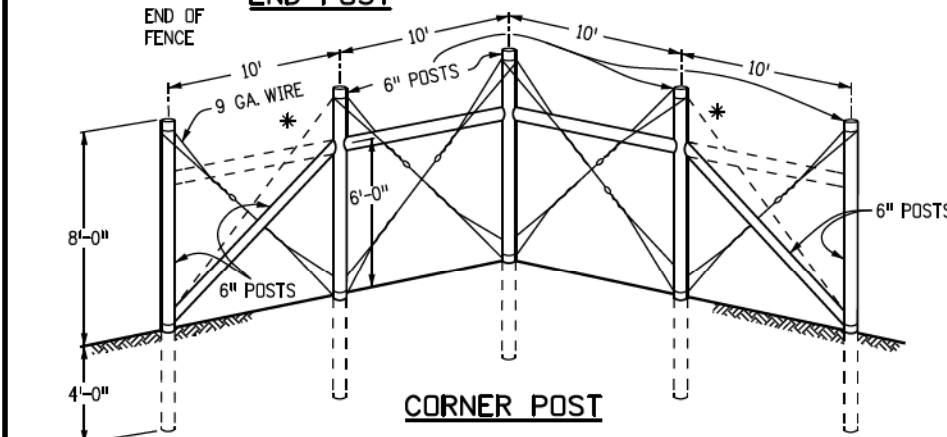




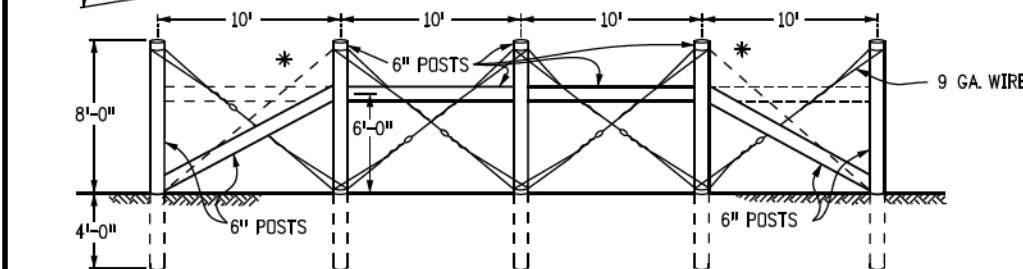
LINE POST



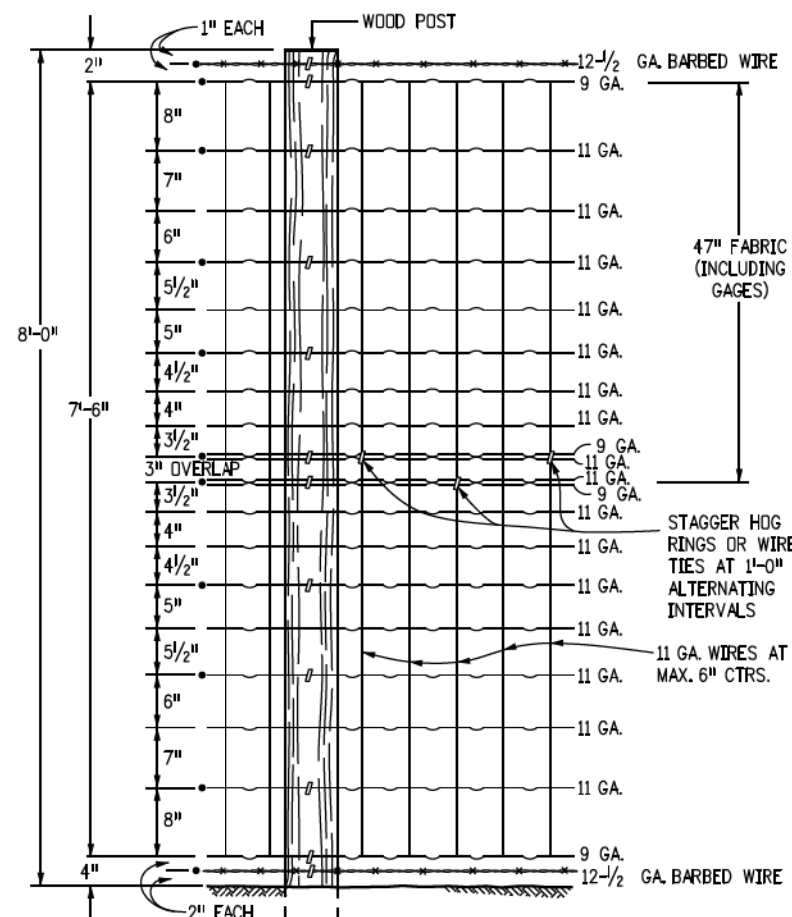
END POST



CORNER POST

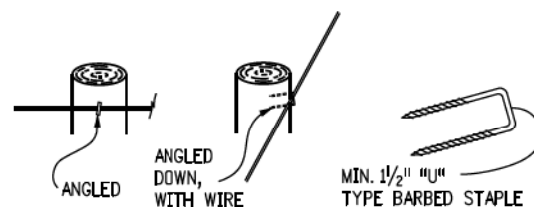


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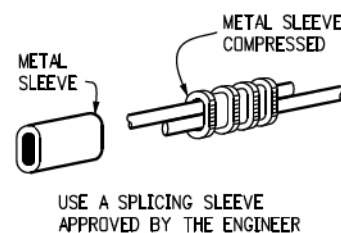


\* FENCE WIRE SHALL BE STAPLED TO WOOD POSTS AND STAYS

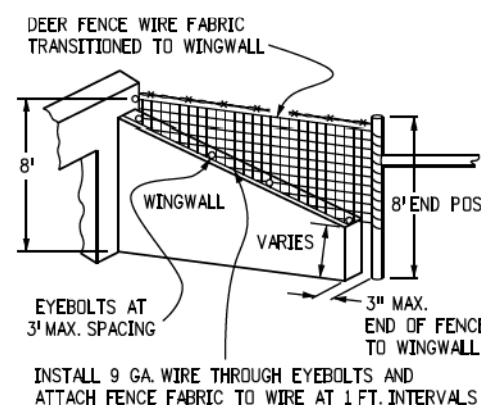
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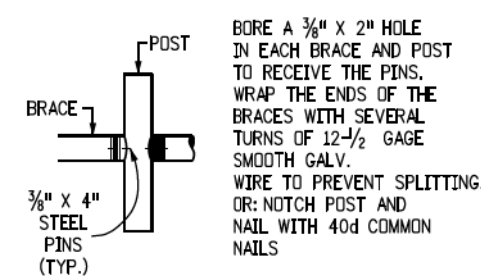
TYPICAL STAPLING



WIRE SPLICE



DEER FENCE TO WINGWALL



CROSS BRACE DOWELING

## GENERAL NOTES

- AT EACH LOCATION WHERE AN ELECTRIC TRANSMISSION, DISTRIBUTION OR SECONDARY LINE CROSSES A BARRIER FENCE, THE CONTRACTOR SHALL FURNISH AND INSTALL A GROUND CONFORMING TO ARTICLE 250 OF THE NATIONAL ELECTRICAL CODE. THE GROUND ROD SHALL BE A MINIMUM DIAMETER OF 1/2 IN. AND 8 FT. IN LENGTH, AND DRIVEN AT LEAST 7 1/2 FT. INTO THE GROUND. THE ROD SHALL BE CONNECTED TO EACH WIRE WITH A MINIMUM AWG NO. 8 STRANDED COPPER WIRE. GROUNDING WILL NOT BE PAID FOR SEPARATELY BUT SHALL BE INCLUDED IN THE WORK.
- END POST, CORNER POST, AND LINE BRACE POST SHALL BE ASSEMBLED AND PAID FOR BY THE UNIT. ALL WORK AND MATERIAL ASSOCIATED WITH EACH ASSEMBLY SHALL BE INCLUDED IN THE UNIT PRICE FOR THAT ASSEMBLY.
- LINE BRACE POSTS SHALL BE SPACED AT 400 FT. INTERVALS, WHERE FENCING IS CONTINUOUS AND WHERE END, CORNER AND LINE BRACE POSTS ARE NOT SPECIFIED.
- ALL LINE POSTS SHALL BE 5 IN. MIN. DIA. AND 12 FT. LONG. ALL END, CORNER AND LINE BRACE POSTS SHALL BE 6 IN. MIN. DIA. AND 12 FT. LONG. ALL POSTS AND BRACES SHALL BE TREATED IN ACCORDANCE WITH SUBSECTION 710.07.
- WOODEN STAYS SHALL BE UNTREATED NATIVE TIMBER. BOTTOM ENDS OF STAYS SHALL REST ON THE NATURAL GROUND AND SHALL BE WIRED AND STAPLED AS SHOWN.
- BARBED WIRE SHALL BE DOUBLE WRAPPED AND TIED OFF AT END POSTS, CORNER POSTS AND LINE BRACE POSTS. WOVEN WIRE SHALL BE SINGLE WRAPPED AND TIED OFF. THE REST OF FENCE SHALL BE RESTARTED IN LIKE MANNER.
- FENCE WIRE MAY BE PLACED ON EITHER THE ROAD SIDE OR THE FIELD SIDE OF POSTS, DEPENDING ON LOCAL CONDITIONS; i.e., ON CURVES, THE WIRE SHOULD BE PLACED ON THE SIDE WHICH WOULD RESULT IN THE LEAST AMOUNT OF TENSION ON THE STAPLES. THIS ALSO APPLIES WHERE WIND DRIFT OR OTHER CONDITIONS WOULD EXERT UNUSUAL PRESSURE AGAINST THE WIRE.
- WHERE CONCRETE STRUCTURES ARE USED AS DEER PASSES, THE FENCE SHALL END AT EYEBOLTS IN WINGS OF THE STRUCTURE. EYEBOLTS IN FRESH CONCRETE SHALL BE 1/2 IN. ROUND BARS AND EMBEDDED A MINIMUM OF 6 IN. WITH A HOOKED OR BENT END. IN EXISTING CONCRETE, THE 1/2 IN. ROUND BARS SHALL BE DEFORMED AND GROUTED INTO DRILLED HOLES. EYEBOLTS SHALL HAVE A MINIMUM OF 1 IN. INSIDE EYE DIAMETER AND SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR. COST OF EYEBOLTS SHALL BE INCLUDED IN THE CONTRACT PRICE FOR FENCING.
- WOVEN WIRE FENCE FABRIC SHALL CONFORM TO AASHTO M 279 (ASTM A 116) DESIGN NO. 1047-6-1 WITH CLASS 1 COATING.
- STEEL BARBED WIRE SHALL CONFORM TO AASHTO M 280 (ASTM A 121) 12-1/2 GAGE WITH CLASS 1 COATING.
- ALL FENCE WIRE TIES, BRACE WIRES, STAPLES AND OTHER WIRE APPURTENANCES SHALL BE GALVANIZED IN CONFORMANCE WITH AASHTO M 232.
- DEER GATE AND TOP BRACES SHALL BE PAINTED WITH GREEN PAINT ACCORDING TO SUBSECTION 708.03 AND COLOR NO. 14109 OF FEDERAL STANDARD 595B.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR RE-ESTABLISHING DISTURBED OR DESTROYED SURVEY MONUMENTS TO THE APPROPRIATE ACCURACY IN ACCORDANCE WITH SUBSECTION 625.08 OF THE STANDARD SPECIFICATIONS.

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DEER FENCE AND GATES	
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STANDARD PLAN NO.
M-607-4
Sheet No. 1 of 3

DRAFT RECORD DRAWING

DE BEQUE WATER STATION  
POND 1 RECORD DRAWINGS

Deer Fence Detail

SHEET  
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## CIVIL/WATER RESOURCE ENGINEERING

### WATER SUPPLY, TREATMENT AND DISTRIBUTION

- AVAILABILITY STUDIES
- DISTRIBUTION SYSTEM MODELING
- DISTRIBUTION SYSTEM DESIGN
- SURFACE & GROUNDWATER MODELING
- RISK & VULNERABILITY ANALYSIS
- PUMP STATION DESIGN
- WATER STORAGE TANK DESIGN
- MONITORING SERVICES
- DEQ PERMITTING
- WATER RIGHTS

### WASTEWATER TREATMENT AND DISPOSAL

- TREATMENT SYSTEM DESIGN
- COLLECTION SYSTEM MODELING
- INFILTRATION/INFLOW ANALYSIS
- LIFT STATION DESIGN
- PROJECT FUNDING APPLICATIONS  
& ADMINISTRATION
- FORCE MAIN DESIGN
- MONITORING SERVICES
- DEQ PERMITTING

### STORMWATER MANAGEMENT

- HYDROLOGY & HYDRAULICS MODELING
- COLLECTION SYSTEM DESIGN
- FLOODPLAIN ASSESSMENT & ADMINISTRATION
- SWPPP REPORTS & PERMITTING
- DETENTION & STORAGE DESIGN
- EROSION & SEDIMENT CONTROL
- DEQ PERMITTING
- POINT SOURCE DISCHARGE COMPLIANCE

## ENVIRONMENTAL SERVICES

ENVIRONMENTAL COMPLIANCE & BEST MANAGEMENT PRACTICES  
ENVIRONMENTAL IMPACT ANALYSIS & REGULATORY PERMITTING  
ENVIRONMENTAL SITE ASSESSMENTS  
MUNICIPAL LANDFILL DESIGN & PERMITTING  
GEOMORPHOLOGIC INVESTIGATIONS  
HYDROCARBON PRODUCT RECOVERY SYSTEM DESIGN  
HYDROLOGIC & WATER QUALITY MONITORING  
HAZARDOUS & NON-HAZARDOUS WASTE MANAGEMENT PLANNING  
SITE REMEDIATION PLANNING & DESIGN  
SOIL AND GROUNDWATER CLEANUP PLANS  
UNDERGROUND STORAGE TANKS INVESTIGATION & REMOVAL PLANS  
NEPA COMPLIANCE DOCUMENTS  
ENVIRONMENTAL AUDITS  
WETLAND DELINEATION & MITIGATION  
MONITORING SERVICES

## TRANSPORTATION SERVICES

TRAFFIC IMPACT STUDIES  
RECONNAISSANCE REPORTS  
BRIDGE HYDRAULICS, SCOUR ANALYSIS, STRUCTURE SELECTION  
DESIGN OF URBAN STREETS, RURAL ROADWAYS  
STREETSCAPE ENHANCEMENTS  
UTILITY REPLACEMENT  
BICYCLE/PEDESTRIAN PATHWAYS  
PARKING FACILITIES

## SURVEYING SERVICES

GPS & CONVENTIONAL SURVEYING  
RIGHT OF WAY SURVEYS  
CONSTRUCTION SURVEYS  
BOUNDARY SURVEYS  
PLANIMETRIC & TOPOGRAPHIC SURVEYS

## PLANNING SERVICES

GROWTH POLICY DEVELOPMENT  
SUBDIVISION REGULATIONS DEVELOPMENT  
SUBDIVISION REVIEWS  
ZONING REGULATIONS & ADMINISTRATION  
ANNEXATION POLICIES & REVIEW

## GIS SERVICES

DATABASE DEVELOPMENT  
MAPPING  
DATA MANAGEMENT  
PLANNING TOOLS

## GRANT & FUNDING ASSISTANCE

PRELIMINARY ENGINEERING REPORTS  
ENVIRONMENTAL CHECKLISTS  
GRANT WRITING  
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