



# MARINA COAST WATER DISTRICT REGIONAL URBAN WATER AUGMENTATION PROJECT RECYCLED WATER PIPELINE AND BLACKHORSE RESERVOIR

## CIP # RW-0156 VOLUME 2 OF 2

MAY 2017

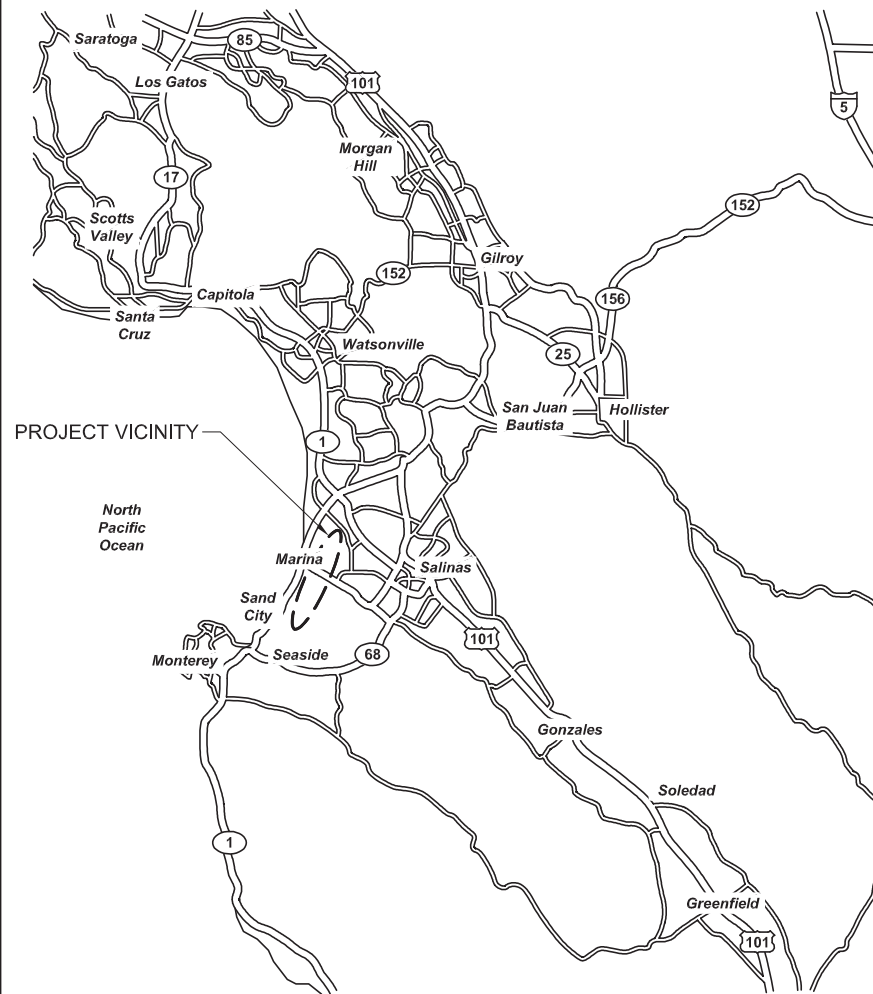
### SHEET INDEX

#### RECYCLED WATER PIPELINE

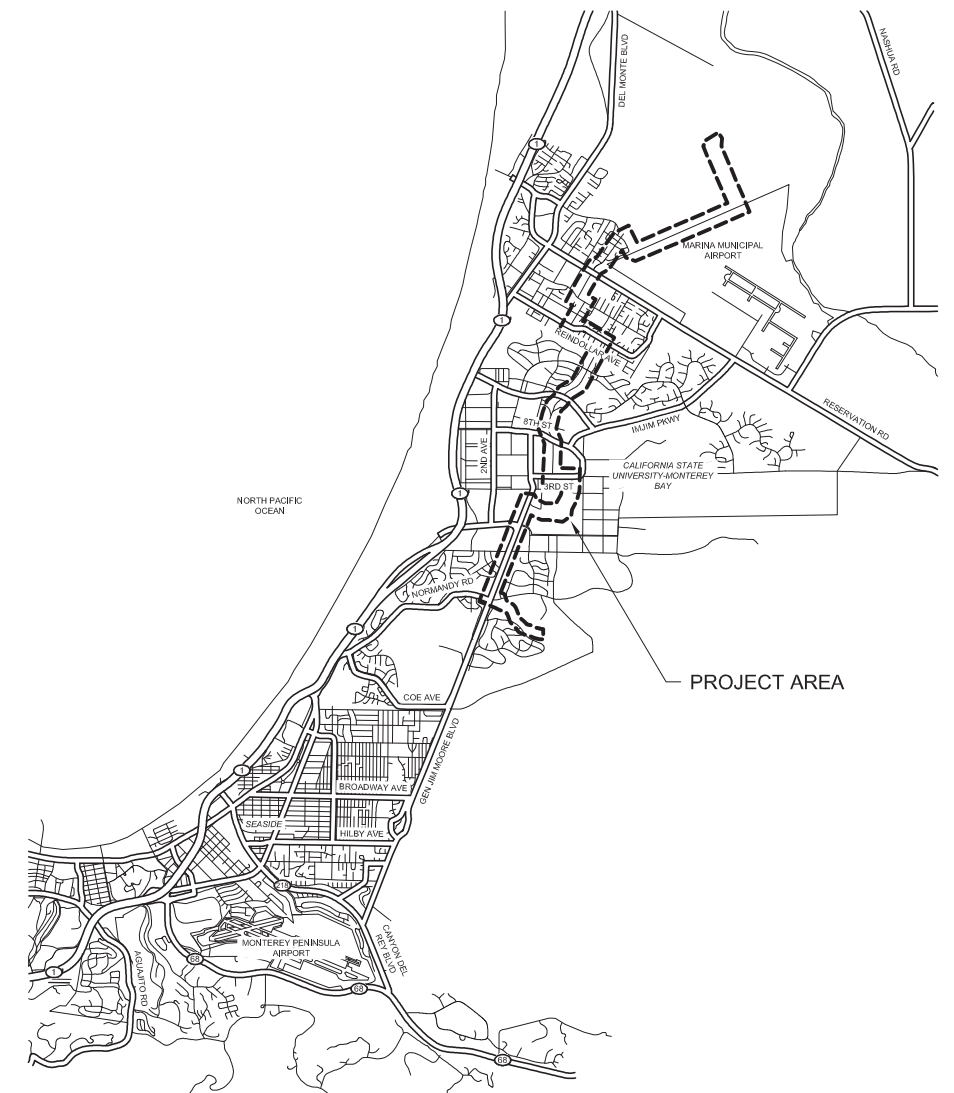
1	G-01	COVER SHEET
2	G-02	GENERAL NOTES - 1
3	G-03	GENERAL NOTES - 2
4	CG-01	INDEX MAP
5	CG-02	SURVEY CONTROL POINTS
6	CR-01	PAVING PLAN - 1
7	CR-02	PAVING PLAN - 2
8	CR-03	PAVING PLAN - 3
9	C-01	PLAN AND PROFILE - STA. 9+95.85 TO STA. 19+00
10	C-02	PLAN AND PROFILE - STA. 19+00 TO STA. 29+00
11	C-03	PLAN AND PROFILE - STA. 29+00 TO STA. 39+00
12	C-04	PLAN AND PROFILE - STA. 39+00 TO STA. 49+00
13	C-05	PLAN AND PROFILE - STA. 49+00 TO STA. 59+00
14	C-06	PLAN AND PROFILE - STA. 59+00 TO STA. 69+00
15	C-07	PLAN AND PROFILE - STA. 69+00 TO STA. 79+00
16	C-08	PLAN AND PROFILE - STA. 79+00 TO STA. 89+00
17	C-09	PLAN AND PROFILE - STA. 89+00 TO STA. 99+00
18	C-10	PLAN AND PROFILE - STA. 99+00 TO STA. 109+00
19	C-11	PLAN AND PROFILE - STA. 109+00 TO STA. 119+00
20	C-12	PLAN AND PROFILE - STA. 119+00 TO STA. 129+00
21	C-13	PLAN AND PROFILE - STA. 129+00 TO STA. 139+00
22	C-14	PLAN AND PROFILE - STA. 139+00 TO STA. 149+00
23	C-15	PLAN AND PROFILE - STA. 149+00 TO STA. 159+00
24	C-16	PLAN AND PROFILE - STA. 159+00 TO STA. 169+00
25	C-17	PLAN AND PROFILE - STA. 169+00 TO STA. 179+00
26	C-18	PLAN AND PROFILE - STA. 179+00 TO STA. 189+00
27	C-19	PLAN AND PROFILE - STA. 189+00 TO STA. 199+00
28	C-20	PLAN AND PROFILE - STA. 199+00 TO STA. 209+00
29	C-21	PLAN AND PROFILE - STA. 209+00 TO STA. 219+00
30	C-22	PLAN AND PROFILE - STA. 219+00 TO STA. 229+00
31	C-23	PLAN AND PROFILE - STA. 229+00 TO STA. 239+00
32	C-24	PLAN AND PROFILE - STA. 239+00 TO STA. 249+00
33	C-25	PLAN AND PROFILE - STA. 249+00 TO STA. 259+00
34	C-26	PLAN AND PROFILE - STA. 259+00 TO STA. 269+00
35	C-27	PLAN AND PROFILE - STA. 269+00 TO STA. 279+00
36	C-28	PLAN AND PROFILE - STA. 279+00 TO STA. 289+00
37	C-29	PLAN AND PROFILE - STA. 289+00 TO STA. 299+00
38	C-30	PLAN AND PROFILE - STA. 299+00 TO STA. 309+00
39	C-31	PLAN AND PROFILE - STA. 309+00 TO STA. 319+00
40	C-32	PLAN AND PROFILE - STA. 319+00 TO STA. 329+00
41	C-33	PLAN AND PROFILE - STA. 329+00 TO STA. 339+00
42	C-34	PLAN AND PROFILE - STA. 339+00 TO STA. 349+00
43	C-35	PLAN AND PROFILE - STA. 349+00 TO STA. 359+00
44	C-36	PLAN AND PROFILE - STA. 359+00 TO STA. 369+00
45	C-37	PLAN AND PROFILE - STA. 369+00 TO STA. 379+00
46	C-38	PLAN AND PROFILE - STA. 379+00 TO STA. 389+00
47	C-39	PLAN AND PROFILE - STA. 389+00 TO STA. 389+56.2
48	C-40	PLAN AND PROFILE - WATER LINE 'A' STA. A10+00 TO STA. A19+00
49	C-41	PLAN AND PROFILE - WATER LINE 'A' STA. A19+00 TO STA. A28+00
50	C-42	PLAN AND PROFILE - WATER LINE 'A' STA. A28+00 TO STA. A37+00
51	C-43	PLAN AND PROFILE - WATER LINE 'A' STA. A37+00 TO STA. A47+00
52	C-44	PLAN AND PROFILE - WATER LINE 'A' STA. A47+00 TO A48+39.73
53	C-45	PIPELINE - DETAILS, BAYONET & BLACKHORSE GOLF COURSE CONNECTION
53A	TP-01	PIPELINE TYPICAL DETAILS

#### BLACKHORSE RECYCLED WATER RESERVOIR

54	G-02	GENERAL NOTES AND SURVEY CONTROL POINTS
55	D-01	EXISTING SITE PLAN AND DEMOLITION PLAN
56	TC-01	CIVIL TYPICAL DETAILS - I
57	TE-01	ELECTRICAL TYPICAL DETAILS - I
58	TE-02	ELECTRICAL TYPICAL DETAILS - II
59	TE-03	ELECTRICAL TYPICAL DETAILS - III
60	TN-01	INSTRUMENTATION TYPICAL DETAILS - I
61	C-01	FINISHED SITE PLAN AND YARD PIPING
62	C-02	PAVING AND GRADING PLAN AND HORIZONTAL CONTROL CIVIL DETAILS
63	C-03	CIVIL DETAILS
64	C-04	PUMP STATION - PLAN & SECTION
65	SG-01	BLACKHORSE RESERVOIR - STRUCTURAL NOTES
66	SG-02	BLACKHORSE RESERVOIR - STRUCTURAL TYPICAL DETAILS
66A	SG-03	BLACKHORSE RESERVOIR - STRUCTURAL TYPICAL DETAILS
67	S-01	RESERVOIR - PLANS
68	S-02	RESERVOIR - SECTIONS AND DETAIL
69	S-03	RESERVOIR - PLAN, SECTIONS AND DETAILS
70	M-01	RESERVOIR PLAN AND DETAILS
71	M-02	RESERVOIR DETAILS
72	M-03	OVERFLOW AND DRAIN PLAN AND SECTIONS
73	E-01	LEGEND
74	E-02	ABBREVIATIONS
75	E-03	SCHEMATIC SYMBOLS
76	E-04	ELECTRICAL SITE PLAN
77	E-05	MCC-01 ELEVATION
78	E-06	MCC-01 ONE-LINE DIAGRAM
79	E-07	SCHEMATICS
80	E-08	PARTIAL PLANS
81	E-09	SCHEDULES
82	N-01	SYMBOLS & ABBREVIATIONS - I
83	N-02	SYMBOLS & ABBREVIATIONS - II
84	N-03	SYMBOLS & ABBREVIATIONS - III
85	N-04	SYMBOLS & ABBREVIATIONS - IV
86	N-05	RESERVOIR AND PUMP - P&ID
87	CP-01	RESERVOIR PLANS
88	CP-02	RESERVOIR SECTION, SCHEMATIC & DETAILS
89	CP-03	TANK INTERIOR SCHEMATIC AND DETAILS
90	CP-04	TANK INTERIOR SCHEMATIC AND DETAILS
91	CP-05	TANK INTERIOR DETAILS
92	CP-06	TANK BOTTOM EXTERIOR DETAILS
93	CP-07	TANK EXTERIOR DETAILS



VICINITY MAP



LOCATION MAP

Call before you Dig  
Avoid cutting underground utility lines. It's costly.



OR  
1-800-227-2600

REV	DATE	BY	DESCRIPTION

BID SET



2700 YGNACIO VALLEY ROAD, SUITE 300  
WALNUT CREEK, CA. 94548  
925-932-1710

Digitally signed by Anne Prudhel  
Contact Info: Carollo Engineers, Inc.  
Date: 2017.05.01 14:03:41-0700'



APPROVED:

MICHAEL WEGLEY  
DISTRICT ENGINEER

DATE

SUBMITTED:

*Anne E. Prudhel*  
ANNE PRUDHEL, P.E.  
CAROLLO ENGINEERS  
R.C.E. 66426

DATE

**GENERAL NOTES**

- REFER TO VOLUME 3 OF 3 - TYPICAL DETAIL BOOK FOR ALL DETAILS DENOTED BY  , ALL MCWD STANDARD DETAILS, AND ABBREVIATIONS.

**STANDARD RECYCLED WATER NOTES**

- CONTRACTOR SHALL POTHOLE AND VERIFY VERTICAL AND HORIZONTAL LOCATIONS OF EXISTING UTILITIES AT LEAST 7 DAYS IN ADVANCE OF CONSTRUCTION OPERATIONS TO ALLOW FOR MINOR GRADE ADJUSTMENTS WITHOUT DELAYING INSTALLATION.
- THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILITIES OR STRUCTURES SHOWN ON THESE PLANS WERE OBTAINED BY A SEARCH OF AVAILABLE RECORDS, SURVEY OF VISIBLE ABOVE GROUND SURFACE FEATURES AT THE TIME OF SURVEY, AND LIMITED POTHOLES AS SHOWN ON THE PLANS. THIS DOES NOT GUARANTEE THE ACCURACY, COMPLETENESS, LOCATION, OR THE EXISTENCE OR NON-EXISTENCE OF ANY UTILITY PIPE OR STRUCTURE WITHIN THE LIMITS OF THIS PROJECT. THE CONTRACTOR IS REQUIRED TO TAKE ALL DUE PRECAUTIONARY MEANS NECESSARY TO PROTECT THOSE UTILITY LINES NOT SHOWN ON THESE PLANS.
- WATER, SEWER, AND GAS SERVICE LATERALS ARE NOT SHOWN ON THE PLANS. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING AND PROTECTING ALL SERVICE LATERALS.
- ALL SERVICE LATERALS DAMAGED OR BROKEN DURING CONSTRUCTION SHALL BE REPLACED IN KIND. SEWER AND WATER LATERAL REPAIRS SHALL CONFORM TO MCWD STD. DETAILS S-6, W-1 and W-2 RESPECTIVELY UNLESS DIRECTED OTHERWISE BY THE ENGINEER.
- AN ENCROACHMENT PERMIT FROM THE APPLICABLE JURISDICTIONAL AGENCY IS REQUIRED PRIOR TO ANY WORK WITHIN PUBLIC RIGHT-OF-WAY. THE CONTRACTOR SHALL ADHERE TO ALL REQUIREMENTS OF ALL ENCROACHMENT PERMITS ISSUED.
- ALL WORK WITHIN PRIVATE EASEMENTS SHALL BE PERFORMED IN ACCORDANCE WITH ALL CONDITIONS PROVIDED IN THE EASEMENT, RIGHT-OF-ENTRY, OR TEMPORARY PERMIT DOCUMENTS AS DESCRIBED IN SECTION 01140.
- UNDER THE DIRECTION OF A SURVEYOR LICENSED IN THE STATE OF CALIFORNIA, THE CONTRACTOR SHALL RESET ALL MONUMENTATION DISTURBED OR REMOVED DURING CONSTRUCTION ACTIVITIES PER C040/TYP.
- WHERE THE RECYCLED WATERLINE CROSSES EXISTING UTILITIES, THE RECYCLED WATERLINE SHALL BE INSTALLED A MINIMUM OF 12" VERTICALLY FROM THE EXISTING UTILITY. THE RECYCLED WATERLINE MUST CROSS BELOW EXISTING WATERLINES AND ABOVE EXISTING SANITARY SEWER LINES - SEE MCWD TYP DET W-16 FOR ADDITIONAL REQUIREMENTS.
- CARVs ARE REQUIRED AT ALL HIGH POINTS IN PIPELINES. BLOW-OFFS ARE REQUIRED AT ALL LOW POINTS IN PIPELINES.

**BASIS OF BEARINGS**

BEARINGS SHOWN HEREON ARE GRID BEARINGS PER THE CALIFORNIA COORDINATE SYSTEM, NAD 83, ZONE 4 (EPOCH 2002.00), AS DETERMINED BY GPS OBSERVATIONS AND THE NATIONAL GEODETIC SURVEY'S (NGS) ONLINE POSITIONING USER SERVICE (OPUS). ALL DISTANCES ARE GRID DISTANCES. AERIAL TOPOGRAPHY FLOWN AUGUST-SEPTEMBER 2006.

BENCHMARK:  
ELEVATIONS SHOWN HEREON ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88). A PUBLISHED NAVD 88 ELEVATION OF 145.94 FEET FOR THE NGS BENCHMARK "L 813 RESET" (PID GU2130) WAS HELD AS THE PRIMARY VERTICAL BENCHMARK FOR THE PROJECT.

**TURNOUT SCHEDULE**

STATION	LOCATION	CONNECTION TYPE	CONNECTION DIAMETER
119+89.00	ARMSTRONG RANCH NEAR CRESCENT AVE	TEE	6
120+69.49	ARMSTRONG RANCH AND CRESCENT AVE	CROSS	24
120+69.49	ARMSTRONG RANCH AND CRESCENT AVE	CROSS	24
146+54.66	CRESCENT AVE AND RESERVATION ROAD	TEE	8
167+61.87	CARMEL AVE AND VAUGHN AVE	CROSS	24
174+88.57	VAUGHN AVE AND HILLCREST AVE	TEE	12
212+26.35	CALIFORNIA AVE AND PATTON PARKWAY	TEE	6
225+18.56	CALIFORNIA AVE AND FUTURE 3RD AVE	CROSS	16
225+42	CALIFORNIA AVE AND 3RD AVE	TEE	6
239+79.91	CALIFORNIA AVE AND IMJIM PKWY	TEE	8
256+47.09	5TH AVE AND 9TH STREET	TEE	12
256+85.00	5TH AVE AND 9TH STREET	TEE	6
270+13.46	5TH AVE IN CSUMB	TEE	6
271+74.16	5TH AVE IN CSUMB	TEE	6
273+07.70	5TH AVE IN CSUMB	TEE	6
277+64.35	5TH AVE IN CSUMB	TEE	6
279+21.33	5TH AVE AND 3RD STREET	TEE	24
279+33.31	5TH AVE AND 3RD STREET	TEE	24
283+36.51	5TH AVE AND 3RD STREET	TEE	6
309+20.16	CSUMB PROPERTY	TEE	6
326+67.76	ENGINEER ROAD AND ENGINEERING LANE	TEE	6
334+88.81	ENGINEER ROAD AND GENERAL JIM MOORE BLVD	TEE	6
343+60.31	GENERAL JIM MOORE BLVD AND LIGHTFIGHTER DRIVE	TEE	6
346+58.70	GENERAL JIM MOORE BLVD AND LIGHTFIGHTER DRIVE	TEE	6
346+63.12	GENERAL JIM MOORE BLVD AND LIGHTFIGHTER DRIVE	TEE	6
347+56.05	GENERAL JIM MOORE BLVD AND LIGHTFIGHTER DRIVE	CROSS	12
382+33.25	GENERAL JIM MOORE BLVD AND GIGLING ROAD	CROSS	16
389+03.84	GENERAL JIM MOORE BLVD AND NORMANDY ROAD	CROSS	24

**POTHOLING SCHEDULE  
(POTHOLING PERFORMED IN 2007)**

POTHOLE #	LOCATION	AC THICKNESS	CONCRETE	TYPE	SIZE	MATERIAL	DEPTH	COMMENTS
1	3239 CRESCENT AVE	3"		GAS	1/2"	PLASTIC	40-1/2"	12' SE OF FACE OF DRIVEWAY AT 3239 CRESCENT AVE
				ELEC	2"	PLASTIC	41"	
				TV	1"	PLASTIC	40-1/2"	
2	CRESCENT AVE & QUEBRADA DEL MAR RD	4"		WATER	12"	PLASTIC	42"	EXCAVATED 12' SE FROM FACE OF CURB ALIGNMENT
3	CRESCENT AVE & QUEBRADA DEL MAR RD	3"		TV	2"	PLASTIC	37-1/2"	EXCAVATED 12' SE FROM FACE OF CURB ALIGNMENT
				CONDUIT	2"	PLASTIC	37-1/2"	
				GAS	2"	PLASTIC	35"	
4	CRESCENT AVE & COSTA DEL MAR RD	3"		WATER	12"	PLASTIC	43"	56' NW OF STOP LINE AT COSTA DEL MAR RD
5	CRESCENT AVE & COSTA DEL MAR RD	3"		GAS	2"	PLASTIC	44"	19' SE OF STOP LINE AT COSTA DEL MAR RD
				ELEC	1"	PLASTIC	45"	
6	CRESCENT AVE & SIERENA DEL MAR RD	4"		GAS	2"	PLASTIC	32"	EXCAVATED 12' SE FROM FACE OF CURB ALIGNMENT
6-A	CRESCENT AVE & SIERENA DEL MAR RD	4"		WATER	12"	PLASTIC	96"	66' NW OF STOP LINE AT SIERENA DEL MAR RD
7	CRESCENT AVE	4"		GAS	4"	PLASTIC	42"	6' SE FROM FACE OF CURB ON CRESCENT AVE
8	3183 CRESCENT AVE & TALLMON ST	3"		GAS	2"	STEEL	37-1/2"	22' SE FROM FACE OF CURB AT 3183 CRESCENT AVE
13	CRESCENT AVE & SHULER CIRCLE	3"		GAS	6"	STEEL	32"	58' NW OF FACE OF CURB AT 3170 CRESCENT AVE
				GAS	2"	STEEL	32"	
14	CRESCENT AVE & SHULER CIRCLE	3"		GAS	2"	STEEL	33"	EXCAVATED TO A DEPTH OF 10' AND NO WATER LINE FOUND. 41' NW OF FACE OF CURB AT 3170 CRESCENT AVE
15	CRESCENT AVE & RESERVATION RD	5"		GAS	4"	PLASTIC	44-1/2"	8' SW OF STOP LINE AT CRESCENT AVE
15-A	CRESCENT AVE & RESERVATION RD	5"	5"			DRY		EXCAVATED TO A DEPTH OF 13'-2". 13' SW OF STOP LINE AT CRESCENT AVE
16	CRESCENT AVE & RESERVATION RD	5"		TELE	3"	PLASTIC	35"	30-1/2' SW OF STOP LINE AT CRESCENT AVE
17	CRESCENT AVE & RESERVATION RD	5"		GAS	6"	STEEL	32"	37' NE OF FACE OF ISLAND ON CRESCENT AVE
18	CRESCENT AVE & RESERVATION RD							CLEARED BY PG&E NO ELECTRIC UNDERGROUND. ELECTRIC OVERHEAD
19	CRESCENT AVE	3"		GAS	2"	STEEL	71"	137" NW FROM FACE OF CURB AT LIGHT POLE ON CRESCENT AVE
				GAS	3/4"	STEEL	66"	12' NW FROM FACE OF CURB AT LIGHT POLE ON CRESCENT AVE
21	CRESCENT AVE	3"		GAS		DRY		DRY HOLE AT AN EXCAVATION DEPTH OF 8'. 30' NORTHWEST FROM FACE OF CURB ON CRESCENT. CALLED PG&E ABOUT UTILITY NOT LOCATED. THEY WILL SEND SOMEONE TO LOCATE.
21-A	CRESCENT AVE	3"		GAS	2"	STEEL	52"	RE-MARKED BY PG&E AND FOUND 2" GAS. 41" NW FROM FACE OF CURB ON CRESCENT AVE
22	CRESCENT AVE & CARMEL AVE	5"		TELE CONDUIT		PLASTIC	62"	12' NW FROM CENTER OF TELEPHONE MAN HOLE ON CARMEL AT CRESCENT AVE
				WATER				WATER LINE NOT FOUND AT AN EXCAVATION DEPTH OF 9'. FOUND CONCRETE ENCASUREMENT CONDUITS AND NO WATER LOCATED UNDER ENCASUREMENT
23	CRESCENT AVE & CARMEL AVE	5"		GAS	2"	STEEL	48"	21' NW FROM CENTER OF TELEPHONE MAN HOLE ON CARMEL AVE AT CRESCENT AVE
24	CRESCENT AVE & CARMEL AVE	5"		GAS	2"	STEEL	47"	135" NE FROM CENTER OF TELEPHONE MAN HOLE ON CARMEL AVE AT CRESCENT AVE
25	335 CARMEL AVE & VAUGHN AVE	5"		GAS	2"	STEEL	49"	13' SW OF FACE OF CURB AT 335 CARMEL AVE
26	335 CARMEL AVE & VAUGHN AVE	5"		3-4" CONDUITS	3-4"	PLASTIC	41 - 1/2"	36' SW FROM EDGE OF CURB AT 335 CARMEL AVE
27	335 CARMEL AVE & VAUGHN AVE	4"		WATER	8"	TRANSITE	39"	44' SW OF EDGE OF DRIVEWAY AT 335 CARMEL AVE
28	VAUGHN AVE & EVERETT AVE	3"		GAS	2"	STEEL	41"	13' SE OF FACE OF CURB AT 3069 VAUGHN AVE
29	VAUGHN AVE & HILLCREST AVE	3"		GAS	2"	STEEL	30"	27' SW OF STOP LINE AT VAUGHN AVE
30	VAUGHN AVE & HILLCREST AVE	4"		WATER	8"	TRANSITE	32 1/2"	18' SW FROM MAN HOLE ON VAUGHN AVE
31	334 REINDOLLAR AVE & VAUGHN AVE	3"		GAS	2"	STEEL	35"	35' NE FROM EDGE OF DRIVEWAY AT 334 REINDOLLAR AVE
32	336 REINDOLLAR AVE & VAUGHN AVE	3"		WATER	6"	TRANSITE	40"	29' NE FROM FACE OF CURB AT 336 REINDOLLAR AVE
33	338 REINDOLLAR AVE	3"		GAS	2"	STEEL	35"	43' SW FROM FACE OF CURB AT 338 REINDOLLAR AVE
				GAS	3/4"	STEEL	35"	

POTHOLES ARE DENOTED ON PLAN WITH 

Last Checked by: 4-28-17 01:55pm Bhwes

<b>BID SET</b>				DESIGNED AP	DISCIPLINE ENGINEER	PROJECT ENGINEER Digitally signed by Jonathon P. Marshall Contact Info: Carollo Engineers, Inc. Date: 2017.05.01 10:40:24-0700Z	PROJECT MANAGER 			Marina Coast Water District	REGIONAL URBAN WATER AUGMENTATION PROJECT		VERIFY SCALES BAR IS ONE INCH ON ORIGINAL DRAWING 0 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	JOB NO. 7568A.10
				DRAWN LGD							DRAWING NO. G-02			
				CHECKED							SHEET NO. 2 OF 93			
REV	DATE	BY	DESCRIPTION	DATE MAY 2017	CIVIL GENERAL NOTES - 1									



**POTHOLING SCHEDULE (CONT.)  
(POTHOLING PERFORMED IN 2007)**

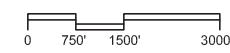
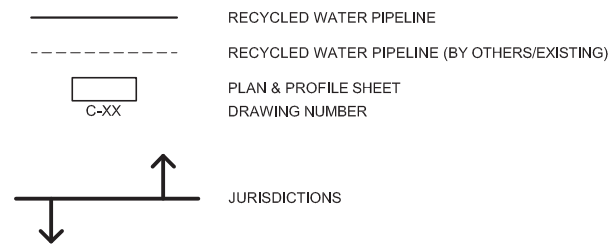
POT HOLE #	LOCATION	AC THICKNESS	CONCRETE	TYPE	SIZE	MATERIAL	DEPTH	COMMENTS
				GAS	3/4"	STEEL	35"	
34	342 REINDOLLAR AVE	3"		GAS	2"	STEEL	42"	31' SW FROM FACE OF CURB AT 342 REINDOLLAR AVE
35	REINDOLLAR AVE	3"		GAS	2"	STEEL	48"	22' SOUTH FROM FENCE LINE ON REINDOLLAR AVE
36	361 REINDOLLAR AVE & BERNEY DRIVE	2"		2-2" GAS	2-2"	STEEL TEE	39-1/2"	GAS TEE, 14' SOUTH FROM FENCE LINE AT 361 REINDOLLAR AVE. GAS LINES CROSS
37	REINDOLLAR AVE & BERNEY DR	5"		WATER	8"	TRANSITE	36 1/2"	23' WEST OF CENTER OF STOP LINE ON REINDOLLAR AVE & BERNEY INTERSECTION
38	366 REINDOLLAR AVE	3"		WATER	8"	AC TRANSITE	38"	34' SOUTH OF FACE OF CURB AT 366 REINDOLLAR AVE
39	373 REINDOLLAR AVE & KENNEDY CT	3"		GAS	2"	STEEL	39"	166" SW FROM FACE OF CURB AT UTILITY POLE. #71 REINDOLLAR AVE
40	383 REINDOLLAR AVE & KING DR	3"		GAS	2"	STEEL	33"	7' SW OF EDGE OF PAVEMENT AT 383 REINDOLLAR AVE
41	REINDOLLAR AVE & REDWOOD DR	4"		WATER	8"	TRANSITE	37"	26' NE FROM FACE OF CURB ON REINDOLLAR AVE
42	401 REINDOLLAR AVE & INDEPENDENCE AVE	3"		GAS	2"	STEEL	33 - 1/2"	28' SW FROM FACE OF CURB AT 401 REINDOLLAR AVE
43	REINDOLLAR AVE & CALIFORNIA AVE	3"		CONDUIT	8"	PLASTIC	45-1/2"	1' NW FROM STOP LINE ON REINDOLLAR AVE
44	REINDOLLAR AVE & CALIFORNIA AVE	3"		GAS	6"	PLASTIC	39"	1' NW FROM STOP LINE ON REINDOLLAR AVE
46	CALIFORNIA AVE	4"		WATER	8"	PLASTIC	50"	12' SE FROM FACE OF CURB ON CALIFORNIA AVE
51	CALIFORNIA AVE & 3RD ST	3"		GAS	4"	PLASTIC	38"	54" NE FROM STOP LINE ON CALIFORNIA AVE
52	CALIFORNIA AVE & 3RD ST	3"		CONDUIT	2"	PLASTIC	36 1/2"	4' NE FROM FACE OF CURB ON 3RD ST
58	CALIFORNIA AVE	4"		GAS	4"	STEEL	116 1/2"	80 1/2" SE FROM FACE OF CURB ON CALIFORNIA AVE
64	CALIFORNIA AVE	3"		WATER	12"	TRANSITE	35 1/2"	101" SE FROM EDGE OF ASPHALT ON CALIFORNIA AVE
67	5TH AVE	4"		WATER	8"	TRANSITE	48"	16' EAST FROM EDGE OF ASPHALT ON 5TH AVE
68	5TH AVE	4"		GAS	2"	PLASTIC	29"	16' EAST FROM EDGE OF ASPHALT ON 5TH AVE
69	5TH AVE	5"		GAS	1"	PLASTIC	31 1/2"	14' EAST FROM EDGE OF ASPHALT ON 5TH AVE
70	5TH AVE & 9TH ST	5"		WATER	8"	TRANSITE	43"	37' EAST OF WATER VALVE ON 9TH ST
72	5TH AVE & 9TH ST	5"		WATER	10"	TRANSITE	37"	10' WEST FROM EDGE OF PAVEMENT ON 5TH AVE
73	5TH AVE	4"		GAS	10"	STEEL	48"	10' WEST OF EDGE OF ASPHALT ON 5TH AVE
76	5TH AVE	2"	8"	WATER	8"	TRANSITE	49"	52' EAST FROM CENTER OF WATER VALVE ON 5TH AVE
75	5TH AVE	5"		WATER	8"	PLASTIC	87 1/2"	116" WEST FROM FACE OF CURB ON 5TH AVE
77	5TH AVE		2"	WATER	8"	TRANSITE	26 1/2"	UTILITY LOCATED ELECTRONICALLY AND EXCAVATED. 30" EAST FROM EDGE OF ASPHALT.
78	5TH AVE			WATER	8"	TRANSITE	23 1/2"	30" EAST FROM EDGE OF ASPHALT
79	3RD ST & 5TH AVE	5"		F/O		SLURRY CONC	TOP: 36" BOT: 48"	EXCAVATED TO TOP OF SLURRY CONCRETE ENCASUREMENT. 23' SOUTH FROM EDGE OF ASPHALT
80	INTER-GARRISON (3RD ST)	4"		WATER	8"	STEEL	32 1/2"	EXCAVATED 10" SOUTH OF WATER VALVE AND WATER UTILITY DOES NOT CROSS PROPOSED ALIGNMENT AT INTER-GARRISON @ 5TH AVE
81	INTER-GARRISON (3RD ST)	4"		WATER	8"	STEEL	30"	8" STEEL PIPE LOCATED 29' SOUTH FROM FACE OF CURB ON INTER-GARRISON (3RD ST)
83	INTER-GARRISON (3RD ST)			GAS	8"	STEEL	33"	77" SOUTH FROM CENTER OF STORM DRAIN ON INTER-GARRISON
84	3RD ST	5"		WATER	8"	TRANSITE	48 1/2"	8' NORTH FROM EDGE OF ASPHALT
84-A	3RD ST	4"		F/O		SLURRY CONC	TOP: 22 1/2" BOT: 33"	EXCAVATED TO TOP OF SLURRY CONCRETE ENCASUREMENT. 22' SOUTH FROM FACE OF CURB ON 3RD ST. NO WATER FOUND AT THIS LOCATION
87	INTER-GARRISON & 5TH AVE	3"		UNKNOWN	6"	STEEL	38"	UNKNOWN TEE UTILITY. EXCAVATED TO A DEPTH OF 38" AND UNKNOWN STEEL UTILITIES LOCATED GOING EAST TO WEST AND SOUTH. UTILITY DOES NOT CROSS PROPOSED ALIGNMENT. 17' WEST FROM WATER VALVE ON INTER-GARRISON & 5TH AVE
				UNKNOWN	8"	STEEL	38"	
88	3RD ST & 5TH AVE	4"		WATER	8"	STEEL	36"	28' SOUTH FROM FACE OF CURB AT 3RD ST AND 5TH AVE
90-A	5TH AVE			WATER (BELL)		STEEL	35 1/2"	DOES NOT CROSS PROPOSED ALIGNMENT. 5' FROM BACK FO CURB. 8" FROM CENTER OF WATER VALVE
91-A	5TH AVE & DIVERTY	2"		TELE DUCT.		SLURRY	TOP: 36" BOT: 48"	25' WEST FROM FACE ON 5TH AVE
91-B	5TH AVE	2"	10"	WATER	12"	TRANSITE	46 1/2"	1' SOUTH OF WATER VALVE ON 5TH AVE & DIVERTY. DOES NOT CROSS PROPOSED ALIGNMENT
92	5TH AVE & DIVERTY	2"		F/O CONDUIT	4"	PLASTIC	TOP: 49 1/2" BOT: 61"	EXCAVATED TO A DEPTH OF 61" AND LOCATED MULTIPLE 4" CONDUITS STARTING AT A DEPTH OF 49 1/2"
93	5TH AVE	3"		WATER ELBOW		8" WATER	32"	EXCAVATED TO LOCATE WATER UTILITY CROSSING. DOES NOT CROSS PROPOSED ALIGNMENT
93-A	5TH AVE	3"		WATER	10"	PLASTIC	38"	CORNER OF 5TH AVE & DIVERTY. 2' FROM EDGE OF CURB
93-C	5TH AVE	3"		WATER	10"	PLASTIC	32"	6" FROM BACK OF CURB ON 5TH AVE & DIVERTY
94	5TH AVE & A ST			WATER	2"	PLASTIC	55"	UNKNOWN CONCRETE ENCASUREMENT LOCATED AT A DEPTH OF 54 1/2". WEST OF 2" EXCAVATED WATER UTILITY. 14'-6" SOUTH OF BACK CURB
95	5TH AVE & A ST			UNKNOWN		STEEL	45 1/2"	UNKNOWN STEEL ENCASUREMENT LOCATED AT A DEPTH OF 45 1/2". 4' EAST OF WATER VALVE
				WATER	8"	TRANSITE	43"	WATER UTILITY LOCATED AT A DEPTH OF 43". 4' EAST OF WATER VALVE
97	ENGINEER RD	2"		GAS	2"	STEEL	31 1/2"	29' SOUTH FROM FACE OF CURB ON ENGINEER RD. 2" GAS POSSIBLY ABANDONED
99	GEN JIM MOORE BLVD & ENGINEER RD	4"		ELEC	4"	PLASTIC	33"	7' SW FROM FACE OF CURB ON ENGINEER RD
101	GEN JIM MOORE BLVD & LIGHT FIGHTER	6"		ELEC		CONC SLURRY ENCASUREMENT	45"	10' SE FROM FACE OF ISLAND
104	GEN JIM MOORE BLVD AT FIRESTATION	10"		GAS	2"	STEEL	38"	39' SE FROM FACE OF ISLAND
107	GEN JIM MOORE BLVD	10"		2-2" ELEC		STEEL	25"	LOCATED 2-2" STEEL UTILITIES, POSSIBLY ELECTRIC-NOT CONFIRMED. MARKED BY PG&E IN RED, POSSIBLY GAS. 15' SE FROM FACE OF ISLAND
109	GEN JIM MOORE BLVD & GIGLING	10"		GAS	12"	STEEL	15"	175" SE FROM FACE OF ISLAND ON GENERAL JIM MOORE BLVD
110	GEN JIM MOORE BLVD	6"		WATER	10"	TRANSITE	37 1/2"	24' SE FROM FACE OF ISLAND
112	GEN JIM MOORE BLVD	4"		TELE		CONC SLURRY ENCASUREMENT	33"	10' SE FROM FACE OF CURB
115	GEN JIM MOORE BLVD AT BLDG 4251	6"		TELE		CONC SLURRY ENCASUREMENT	36"	117" SE FROM FACE OF ISLAND
116	GEN JIM MOORE BLVD AT BLDG 4250	2"		GAS	4"	STEEL	29"	EXCAVATED THROUGH 6" OF BASE ROCK. 112" NE OF EDGE OF FOG STRIP DIVIDER
120	GEN JIM MOORE BLVD	3"		WATER	6"	TRANSITE	36"	
				GAS	6"	PLASTIC	12 1/2"	
121	GEN JIM MOORE BLVD	2"		4" GAS & 6" GAS TEE		STEEL	TOP: 49 1/2" BOT: 61"	EXCAVATED ON SHOULDER TO LOCATE TEE, 26' EAST FROM FACE OF ISLAND CURB ON GENERAL JIM MOORE BLVD
121-A	GEN JIM MOORE BLVD	4"		GAS	4"	STEEL	57"	1' NORTH FROM FOG SHOULDER LANE STRIP ON GENERAL JIM MOORE BLVD
122	GEN JIM MOORE BLVD			GAS	2"	PLASTIC	36"	15" EAST FROM BACK OF CURB ON GENERAL JIM MOORE BLVD. GAS LINE CROSSES WEST
123	GEN JIM MOORE BLVD			WATER	8"	TRANSITE	26"	2' EAST FROM EDGE OF ASPHALT ON GENERAL JIM MOORE BLVD
125	GEN JIM MOORE BLVD & NORMANDY RD	5"		TELE		CONC ENCASUREMENT	TOP: 30" BOT: 38"	20' EAST FROM FACE OF CENTER ISLAND ON GENERAL JIM MOORE BLVD
126-A	GEN JIM MOORE BLVD & NORMANDY RD	5"		WATER	8"	TRANSITE	34"	EXCAVATED 6" IN FRONT OF WATER VALVE
127	GEN JIM MOORE BLVD & NORMANDY RD	5"		GAS	2"	STEEL	26"	12' WEST FROM FACE OF CURB ON GENERAL JIM MOORE BLVD

POTHOLES ARE DENOTED ON PLAN WITH 

Last Created by: BHawes 4-28-17 02:03pm BHawes

<p align="center"><b>BID SET</b></p>				<p>DESIGNED AP</p> <p>DRAWN LGD</p> <p>CHECKED</p> <p>DATE MAY 2017</p>	<p>DISCIPLINE ENGINEER</p>	<p>PROJECT ENGINEER</p> <p>Digitally signed by Jonathon P. Marshall Contact Info: Carollo Engineers, Inc. Date: 2017.05.01 14:54:25-0700</p>	<p>PROJECT MANAGER</p> 		 <p><b>Marina Coast Water District</b></p>	<p align="center">REGIONAL URBAN WATER AUGMENTATION PROJECT</p> <p align="center">RECYCLED WATER PIPELINE</p> <p align="center">CIVIL GENERAL NOTES - 2</p>	<p><b>VERIFY SCALES</b></p> <p>BAR IS ONE INCH ON ORIGINAL DRAWING</p> <p>0  1"</p> <p>IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY</p>	<p>JOB NO. 7568A.10</p> <p>DRAWING NO. G-03</p> <p>SHEET NO. 3 OF 93</p>
REV	DATE	BY	DESCRIPTION	<p>FILENAME: Last Saved By: BHawes 4-28-17 02:03pm C:\pw_working\projectwise\bhawes\dms09329\7568A10_G-03 XREFS: 7568A10_TB</p>								

**LEGEND**



Last Created by: 4-28-17 02:05pm BHawes

<b>BID SET</b>			
DESIGNED	JPM		
DRAWN	BH		
CHECKED	AP		
DATE	MAY 2017		
REV	DATE	BY	DESCRIPTION

DISCIPLINE ENGINEER

PROJECT ENGINEER  
Digitally signed by Jonathon P. Marshall  
Contact Info: Carollo Engineers, Inc.  
Date: 2017.05.01 10:46:42-07'00'



**Marina Coast Water District**

**REGIONAL URBAN WATER AUGMENTATION PROJECT**  
**RECYCLED WATER PIPELINE**  
CIVIL  
**INDEX MAP**

**VERIFY SCALES**  
BAR IS ONE INCH ON ORIGINAL DRAWING  
0 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

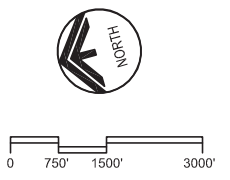
JOB NO. 7568A.10  
DRAWING NO. CG-01  
SHEET NO. 4 OF 93



**CONTROL POINT SCHEDULE**

CONTROL POINTS WERE SURVEYED IN 2006 AND SOME OR ALL OF THE CONTROL POINTS MAY NO LONGER EXIST. CONTRACTOR SHALL ESTABLISH ITS OWN SURVEY CONTROL AND CONTROL POINTS, AS NEEDED TO COMPLETE THE WORK, USING A CALIFORNIA LICENSED CONTRACTOR.

PNT	NORTHING	EASTING	ELEV	DESC.
19001	2142599.8800	5742797.4330	90.9820	FX-GPS
19002	2142063.5140	5743881.6390	88.5720	FX-GPS
19003	2141389.2330	5745163.2400	114.8000	FX-GPS
19004	2141309.5600	5741695.2030	97.3480	FX-GPS
19005	2137665.4390	5741174.9630	130.8490	FX-GPS
19006	2134633.0800	5740897.8140	150.4370	FX-GPS
19007	2133173.9820	5740340.2300	206.2890	FX-GPS
19008	2132755.8840	5741832.4980	237.8880	FX-GPS
19009	2132699.1120	5739129.1190	189.7930	FX-GPS
19010	2131651.4220	5740203.1510	225.8050	FX-GPS
19011	2131261.4800	5741282.0600	263.8220	FX-GPS
19012	2131024.1060	5739056.8230	211.1530	FX-GPS
19013	2126100.9200	5737505.3680	373.2250	FX-GPS
19014	2125565.4180	5738939.3230	433.2550	FX-GPS
19015	2125051.3210	5740772.2650	475.9710	FX-GPS
19016	2122478.0950	5735365.8850	349.9050	FX-GPS
19017	2122088.4630	5734363.5160	289.7860	FX-GPS
19018	2121813.3660	5732252.8560	170.7200	FX-GPS
19019	2147339.2320	5740190.3170	33.5100	FX-GPS
19020	2148474.0510	5740967.5680	49.7520	FX-GPS
19021	2147309.2190	5742001.0490	49.8350	FX-GPS
19022	2147407.1230	5744361.0220	84.0050	FX-GPS
19023	2151072.3470	5749556.6120	163.9550	FX-GPS
19024	2150524.4820	5748702.3390	116.5200	FX-GPS
19025	2144031.8230	5743238.5390	69.4050	FX-GPS
19026	2144989.5090	5745192.5570	91.4290	FX-GPS
19027	2146208.3930	5746797.1310	97.9120	FX-GPS
19028	2145152.3510	5747219.1400	116.2950	FX-GPS
19029	2146166.4390	5748699.7140	124.8540	FX-GPS
19030	2146728.7280	5751083.0650	139.4560	FX-GPS
19031	2147265.6620	5749575.8640	138.0040	FX-GPS
19032	2148639.7490	5750348.0640	112.7270	FX-GPS
19033	2149271.8540	5749452.1470	103.1600	FX-GPS
19034	2136943.6210	5746836.0720	156.0600	FX-GPS
19035	2136465.4600	5748166.0590	165.4360	FX-GPS
19036	2135649.5720	5749491.6670	198.3320	FX-GPS
19037	2138398.3610	5746212.4750	164.3510	FX-GPS
19038	2138316.1800	5747921.7540	170.8830	FX-GPS
19039	2133805.3130	5740814.1030	205.6630	BEMT
19040	2133491.2210	5740793.1420	210.2370	BEMT
19041	2133534.4740	5741136.5250	220.5250	RBR/CAP
19042	2133089.9190	5741878.5170	229.4950	BEMT
19043	2125194.6960	5740401.2660	481.9820	BEST
19044	2125329.3140	5740278.9840	483.8590	RBR/CAP
19045	2125290.9710	5740180.9040	486.3650	RBR/CAP
19046	2125158.0410	5740213.8580	484.4970	RBR/CAP
19047	2137468.2768	5741630.6413	155.5131	BEMT
19048	2140468.2590	5743581.1930	115.2620	BEMT
19049	2140820.2480	5743109.4090	111.9810	RBR/CAP
19050	2141087.1410	5742578.9350	117.6130	BEMT
19051	2141089.0660	5742044.6150	100.5100	BEMT
19052	2143776.3260	5743396.0700	79.2260	RBR/CAP
19053	2129615.9240	5738484.7380	252.9510	RBR/CAP
19054	2130465.2970	5738742.3010	240.0800	RBR/CAP
19055	2145943.2940	5744885.2410	93.0180	BEMT
19056	2145759.7660	5744783.7430	82.6960	BEMT
19057	2145533.1360	5744523.3610	78.8310	BEMT
19058	2145825.1100	5745308.3140	98.1610	REBAR/CAP/FX
19059	2145535.1720	5744618.4680	78.8210	BEMT/FX
19060	2146631.4730	5744166.2640	94.3930	BEMT/FX
19061	2145274.2480	5745376.4540	96.5420	1/2 RBR BE CAP
19062	2146015.0830	5744902.6950	99.0380	1/2 RBR BE CAP
19063	2146210.5390	5744795.3970	105.6980	1/2 RBR BE CAP
19064	2146643.9570	5744578.8500	107.9380	BEMT
19065	2146696.9600	5744264.5030	100.8720	BEMT
19066	2144168.5450	5743359.2480	69.2780	BEMT



	<b>BID SET</b>	DESIGNED JPM	DRAWN BH	CHECKED AP	DATE MAY 2017	DISCIPLINE ENGINEER	PROJECT ENGINEER Digitally signed by Jonathon P. Marshall Contact Info: Carollo Engineers, Inc. Date: 2017.05.01 13:08:40-0700Z	PROJECT MANAGER 	 <b>Carollo</b> Engineers...Working Wonders With Water™	 <b>Marina Coast Water District</b>	<b>REGIONAL URBAN WATER AUGMENTATION PROJECT</b> <b>RECYCLED WATER PIPELINE</b> CIVIL <b>SURVEY CONTROL POINTS</b>	VERIFY SCALES BAR IS ONE INCH ON ORIGINAL DRAWING  IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	JOB NO. 7568A.10 DRAWING NO. <b>CG-02</b> SHEET NO. 5 OF 93
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Last Created by: 4-28-17 02:07pm BHawes

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**GENERAL NOTES**

1. PLACE 2" AC OVERLAY IN ACCORDANCE WITH CITY OF MARINA STANDARD SPECIFICATIONS AND PLANS.
2. CONFORM GRIND AT THE BEGINNING AND END OF EACH STREET SECTION TO PROVIDE A SMOOTH TRANSITION TO EXISTING STREET. CONFORM GRIND SHALL BE 1 1/2" BY 15' WIDE (MIN).
3. WEDGE GRIND 1 1/4" BY 6" (MIN) WHERE THE OVERLAY WILL ABUT ANY PERMANENT STRUCTURE SUCH AS CURBS, GUTTERS, SIDEWALKS, DRIVEWAYS, CATCH BASINS, ISLANDS, ETC. MANHOLES AND VALVES SHALL BE RAISED TO GRADE.
4. ANY DAMAGE TO CONCRETE SUCH AS CURB, GUTTER OR SIDEWALK SHALL BE REPAIRED IN ACCORDANCE WITH THE CITY OF MARINA STANDARDS.
5. ALL CITY MONUMENTS SHALL BE RAISED TO GRADE BY A LAND SURVEYOR LICENSED IN THE STATE OF CALIFORNIA.

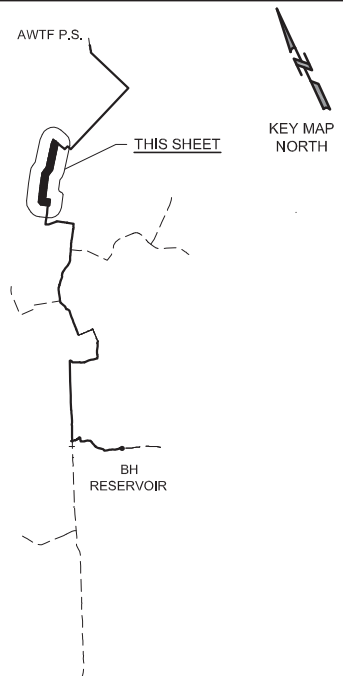
**GENERAL NOTES (CONT'D)**

6. PRIOR TO REMOVING ANY STRIPING, CONTRACTOR SHALL RECORD ALL EXISTING STRIPING LOCATIONS, DEVELOP A PAVEMENT STRIPING AND MARKINGS PLAN TO MATCH EXISTING STRIPING, SUBMIT THE PLAN TO AND OBTAIN APPROVAL FROM THE CITY OF MARINA. CONTRACTOR SHALL REMOVE ALL EXISTING STRIPING AND PAVEMENT MARKERS PRIOR TO INSTALLING OVERLAY. PROVIDE TEMPORARY DELINEATION AS NECESSARY TO CONVEY TRAFFIC IN A SAFE MANNER. REPLACE ALL EXISTING TRAFFIC STRIPES, PAVEMENT MARKERS AND BLUE HYDRANT MARKERS IN KIND AFTER OVERLAY IS COMPLETE.

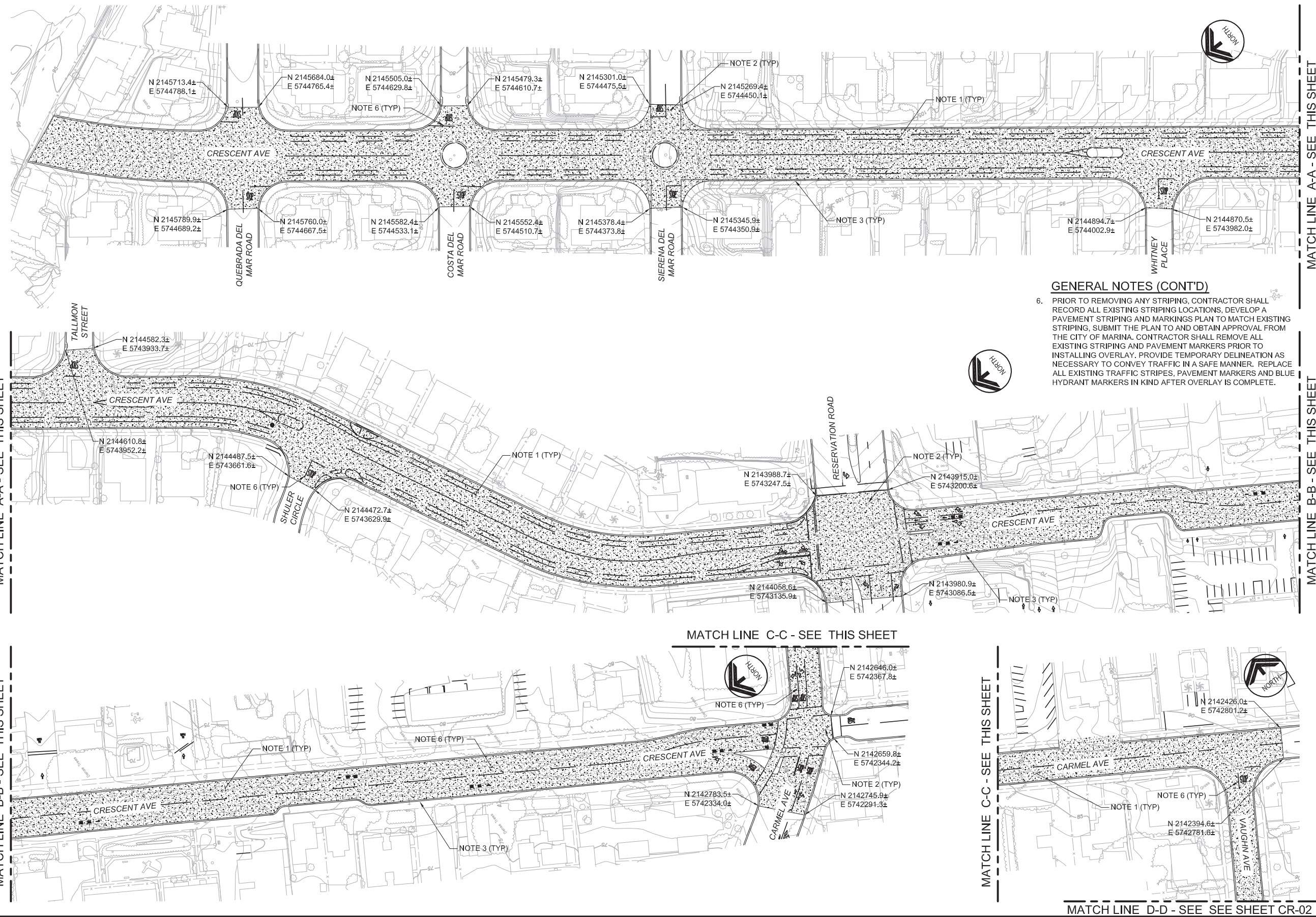
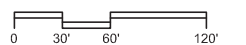
AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.  
**Call before you Dig**  
 1-800-227-2600

UNDERGROUND SERVICE (USA)

**KEY MAP**



**SCALE**



<b>BID SET</b>			
DESIGNED	AP	DISCIPLINE ENGINEER	DATE MAY 2017
DRAWN	LGD		
CHECKED			
REV	DATE	BY	DESCRIPTION

PROJECT ENGINEER  
 Digitally signed by Jonathon P. Marshall  
 Contact Info: Carollo Engineers, Inc.  
 Date: 2017.05.01 13:08:32-0700

PROJECT MANAGER  
  
 PROJECT ENGINEER

**carollo**  
 Engineers...Working Wonders With Water™

**MARINA COAST WATER DISTRICT**  
 Marina Coast Water District

REGIONAL URBAN WATER AUGMENTATION PROJECT  
 RECYCLED WATER PIPELINE  
 CIVIL  
 PAVING PLAN - 1

<b>VERIFY SCALES</b> BAR IS ONE INCH ON ORIGINAL DRAWING	JOB NO. 7568A.10
0 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	DRAWING NO. CR-01
	SHEET NO. 6 OF 93

Last Created by: 4-28-17 01:24pm BHawes



MATCH LINE E-E - SEE THIS SHEET

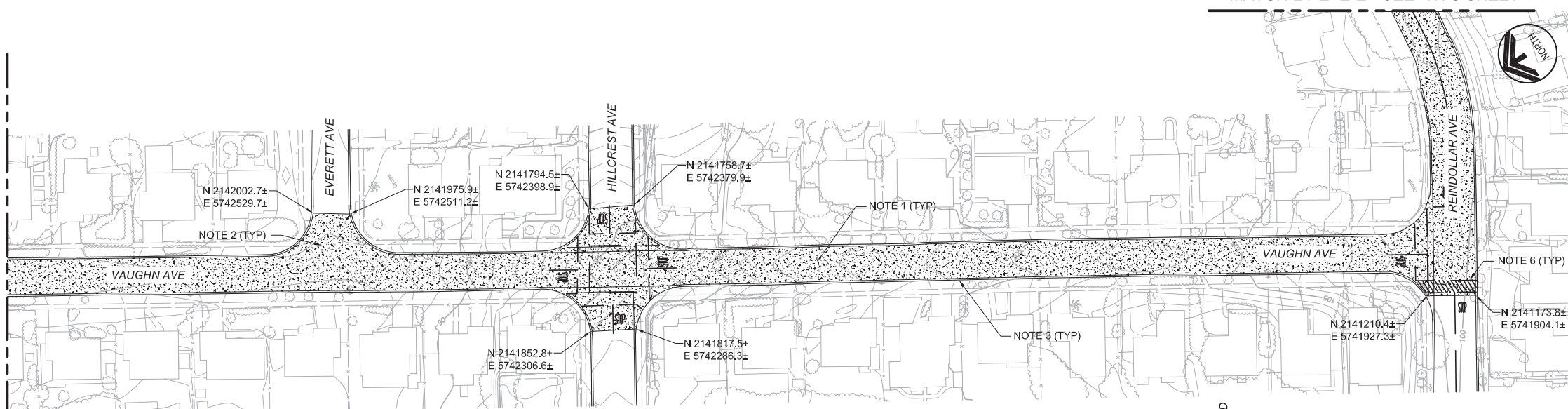
**GENERAL NOTES (CONT'D)**

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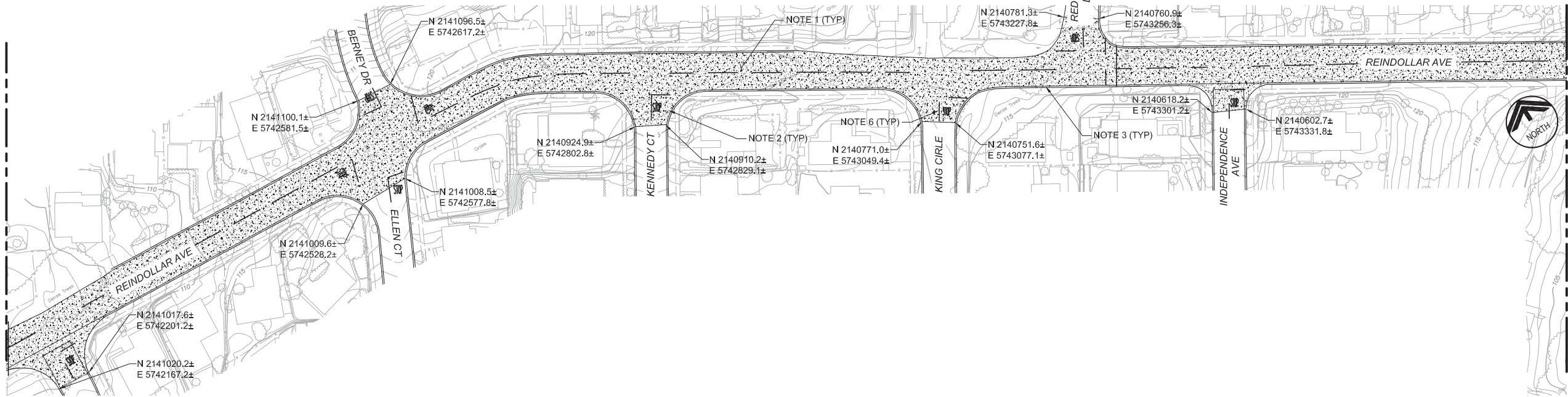
**GENERAL NOTES**

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2. CONFORM GRIND AT THE BEGINNING AND END OF EACH STREET SECTION TO PROVIDE A SMOOTH TRANSITION TO EXISTING STREET. CONFORM GRIND SHALL BE 1 1/2" BY 15' WIDE (MIN).
3. WEDGE GRIND 1 1/4" BY 6" (MIN) WHERE THE OVERLAY WILL ABUT ANY PERMANENT STRUCTURE SUCH AS CURBS, GUTTERS, SIDEWALKS, DRIVEWAYS, CATCH BASINS, ISLANDS, ETC. MANHOLES AND VALVES SHALL BE RAISED TO GRADE.
4. ANY DAMAGE TO CONCRETE SUCH AS CURB, GUTTER OR SIDEWALK SHALL BE REPAIRED IN ACCORDANCE WITH THE CITY OF MARINA STANDARDS.
5. ALL CITY MONUMENTS SHALL BE RAISED TO GRADE BY A LAND SURVEYOR LICENSED IN THE STATE OF CALIFORNIA.

MATCH LINE D-D - SEE SHEET CR-01

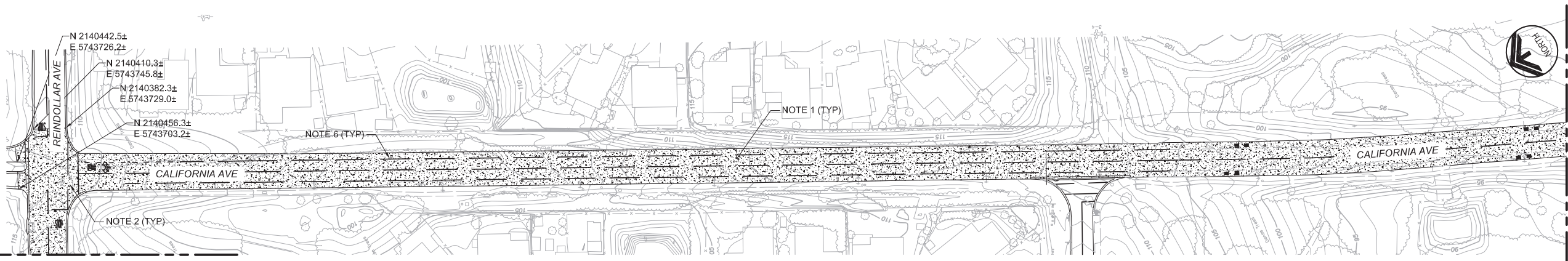


MATCH LINE E-E - SEE THIS SHEET



MATCH LINE F-F - SEE THIS SHEET

MATCH LINE F-F - SEE THIS SHEET



MATCH LINE G-G - SEE SHEET CR-03

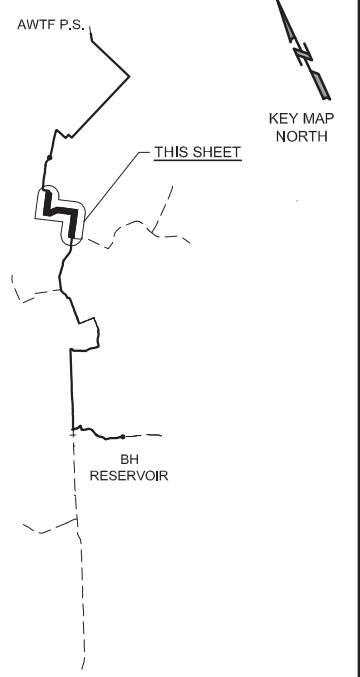
AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.

**Call before you Dig**

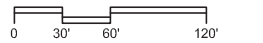
1-800-227-2600

UNDERGROUND SERVICE (USA)

**KEY MAP**



**SCALE**

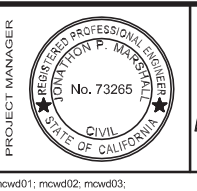


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<b>BID SET</b>			
DESIGNED	AP		
DRAWN	LGD		
CHECKED			
DATE	MAY 2017		
REV	DATE	BY	DESCRIPTION

PROJECT ENGINEER  
 DISCIPLINE ENGINEER

Digitally signed by Jonathon P. Marshall  
 Contact Info: Carollo Engineers, Inc.  
 Date: 2017.05.01 13:08:23-0700



**Marina Coast Water District**

REGIONAL URBAN WATER AUGMENTATION PROJECT  
 RECYCLED WATER PIPELINE  
 CIVIL  
 PAVING PLAN - 2

**VERIFY SCALES**  
 BAR IS ONE INCH ON ORIGINAL DRAWING  
 0 1" 1"  
 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7568A.10  
 DRAWING NO. CR-02  
 SHEET NO. 7 OF 93



**GENERAL NOTES**

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5. ALL CITY MONUMENTS SHALL BE RAISED TO GRADE BY A LAND SURVEYOR LICENSED IN THE STATE OF CALIFORNIA.

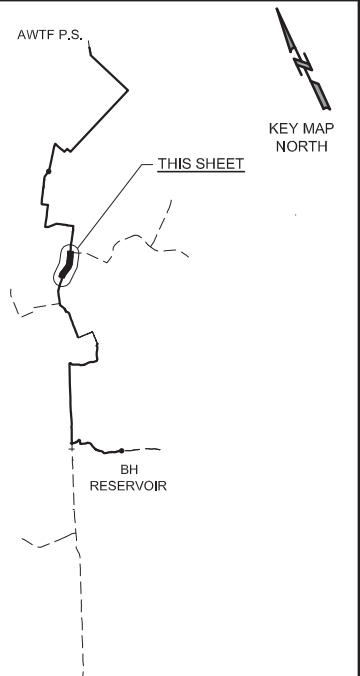
**GENERAL NOTES (CONT'D)**

6. PRIOR TO REMOVING ANY STRIPING, CONTRACTOR SHALL RECORD ALL EXISTING STRIPING LOCATIONS, DEVELOP A PAVEMENT STRIPING AND MARKINGS PLAN TO MATCH EXISTING STRIPING, SUBMIT THE PLAN TO AND OBTAIN APPROVAL FROM THE CITY OF MARINA. CONTRACTOR SHALL REMOVE ALL EXISTING STRIPING AND PAVEMENT MARKERS PRIOR TO INSTALLING OVERLAY. PROVIDE TEMPORARY DELINEATION AS NECESSARY TO CONVEY TRAFFIC IN A SAFE MANNER. REPLACE ALL EXISTING TRAFFIC STRIPES, PAVEMENT MARKERS AND BLUE HYDRANT MARKERS IN KIND AFTER OVERLAY IS COMPLETE.

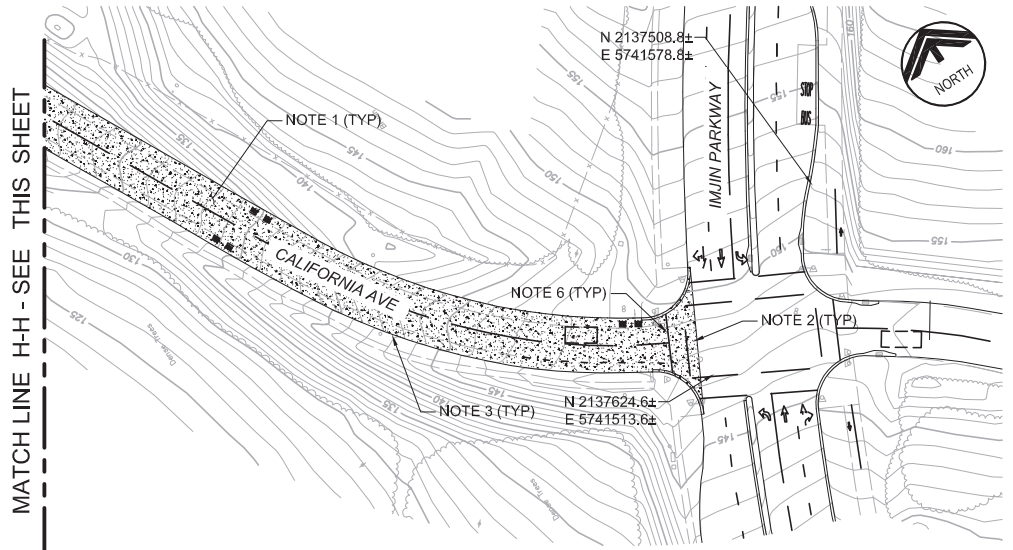
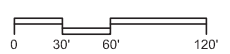
AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.  
**Call before you Dig**  
 1-800-227-2600

UNDERGROUND SERVICE (USA)

**KEY MAP**



**SCALE**



<b>BID SET</b>			
DESIGNED	AP		
DRAWN	LGD		
CHECKED			
DATE	MAY 2017		
REV	DATE	BY	DESCRIPTION

PROJECT ENGINEER  
 Digitally signed by Jonathon P. Marshall  
 Contact Info: Carollo Engineers, Inc.  
 Date: 2017.05.01 13:08:14-07'00'



REGIONAL URBAN WATER AUGMENTATION PROJECT  
 RECYCLED WATER PIPELINE  
 CIVIL  
 PAVING PLAN - 3

**VERIFY SCALES**  
 BAR IS ONE INCH ON ORIGINAL DRAWING  
 0 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7568A.10  
 DRAWING NO. CR-03  
 SHEET NO. 8 OF 93

Last Opened by: 428-17 01:44pm BHawes



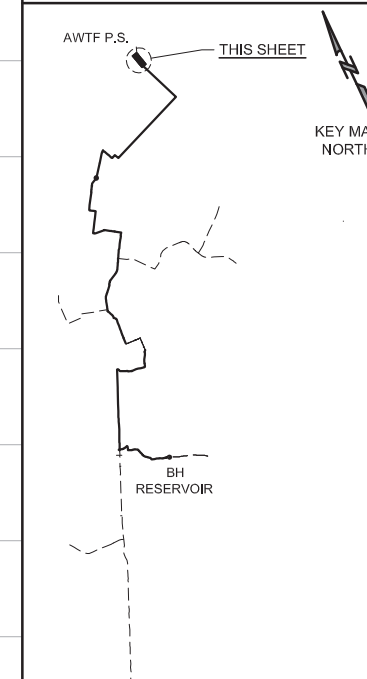
**GENERAL NOTES**

1. CONSTRUCT PIPELINE WITH A MINIMUM 4' OF COVER UNLESS SHOWN OTHERWISE IN THE PROFILE TO AVOID EXISTING UTILITIES OR ACCOMMODATE FUTURE GRADES.
2. THE DISTRICT HAS SECURED A 45' TEMPORARY CONSTRUCTION EASEMENT AS SHOWN ON THE PLANS. THE CONTRACTOR MAY, AT HIS OWN DISCRETION, NEGOTIATE WITH THE PROPERTY OWNER FOR TEMPORARY CONSTRUCTION EASEMENT WIDTH BEYOND THE 45 FEET SHOWN.
3. ROAD SHALL CONSIST OF 6-INCHES OF CRUSHED AGGREGATE COMPACTED TO 95%.

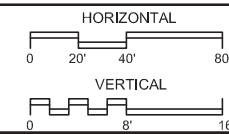


UNDERGROUND SERVICE (USA)

**KEY MAP**

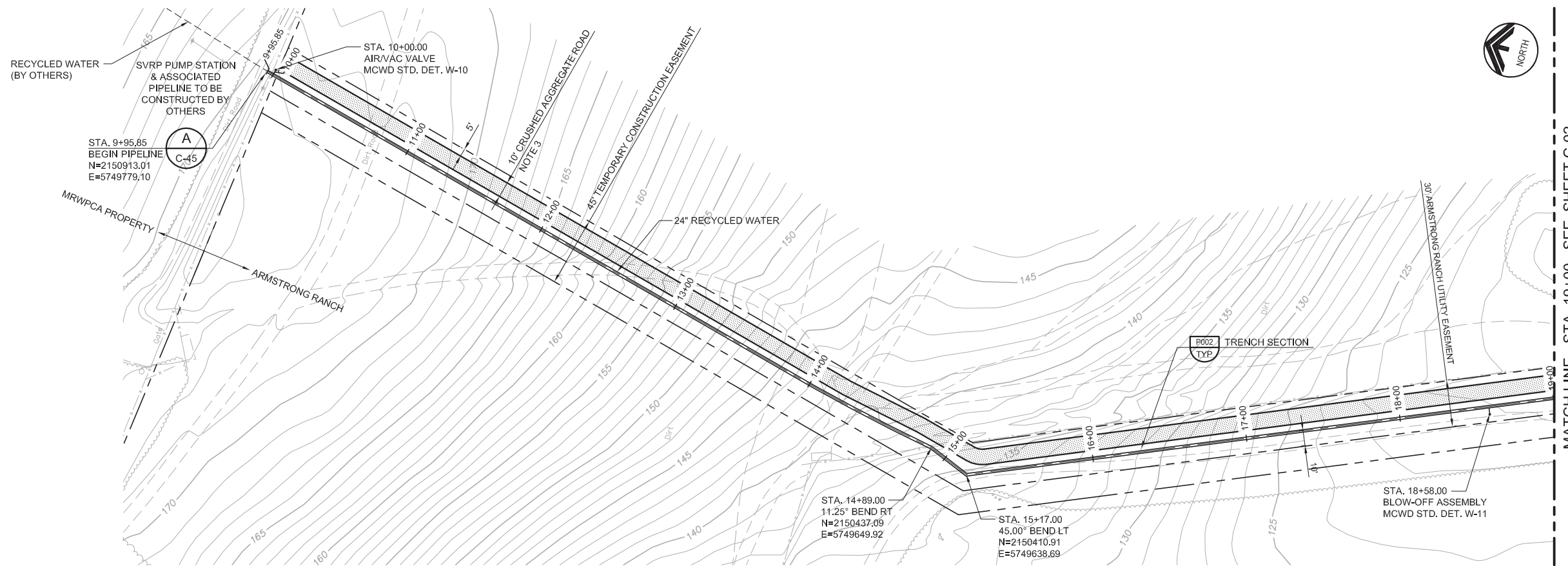


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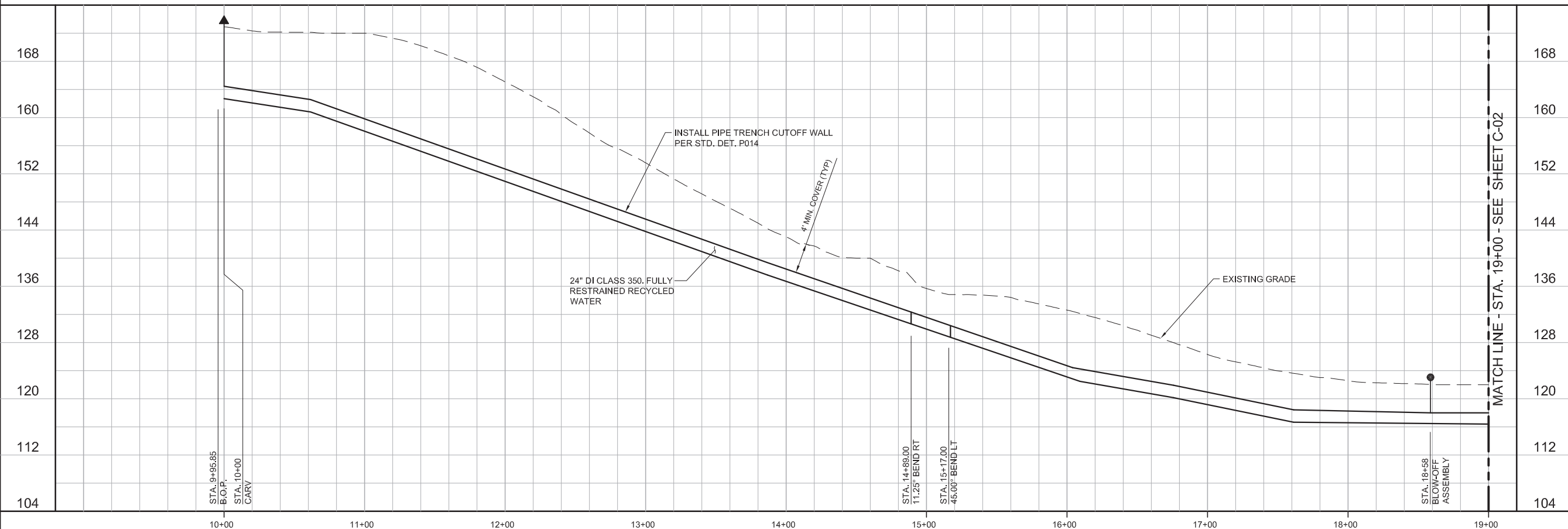


**VERIFY SCALES**  
 BAR IS ONE INCH ON ORIGINAL DRAWING  
 0 1" 16'  
 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7568A.10  
 DRAWING NO. C-01  
 SHEET NO. 9 OF 93



MATCH LINE - STA. 19+00 - SEE SHEET C-02



MATCH LINE - STA. 19+00 - SEE SHEET C-02

<b>BID SET</b>			
DESIGNED	JPM		
DRAWN	BH		
CHECKED	AP		
DATE	MAY 2017		
REV	DATE	BY	DESCRIPTION

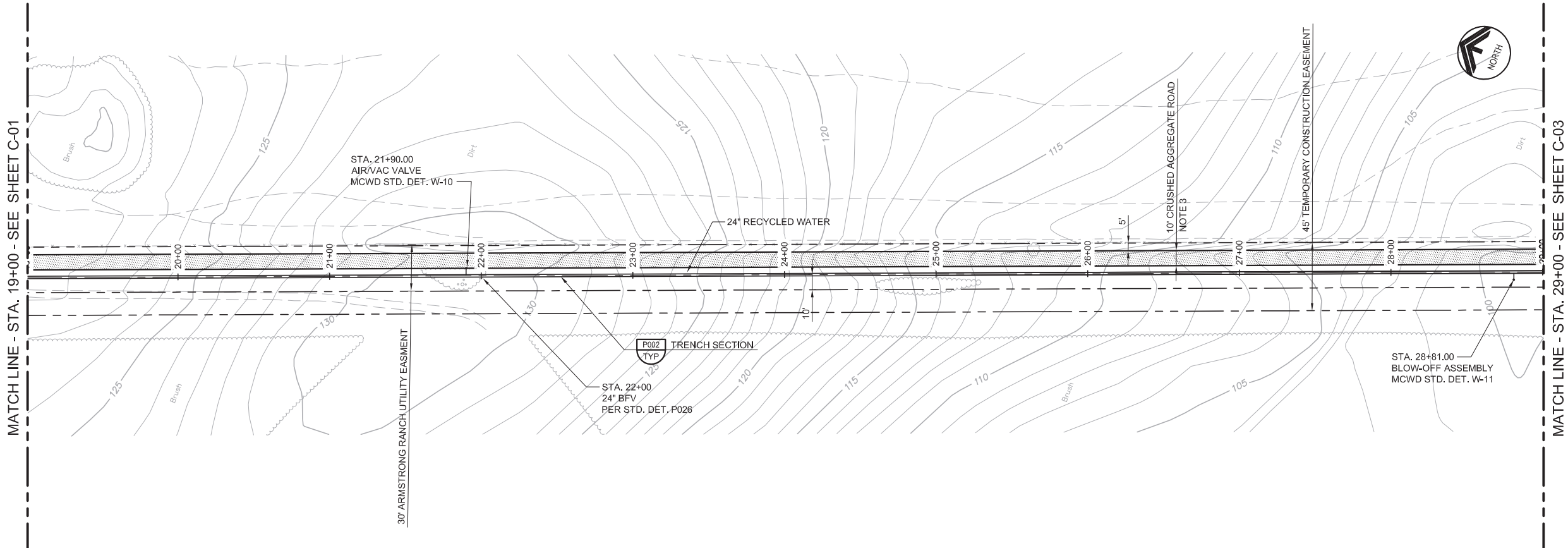
DISCIPLINE ENGINEER

PROJECT ENGINEER  
 Digitally signed by Jonathon P. Marshall  
 Contact Info: Carollo Engineers, Inc.  
 Date: 2017.05.01 13:08:03-07'00"



REGIONAL URBAN WATER AUGMENTATION PROJECT  
 RECYCLED WATER PIPELINE  
 CIVIL  
 PLAN AND PROFILE  
 STA. 9+95.85 TO STA. 19+00

Last Opened by: 4-29-17 08:57am Bbhawes



**GENERAL NOTES**

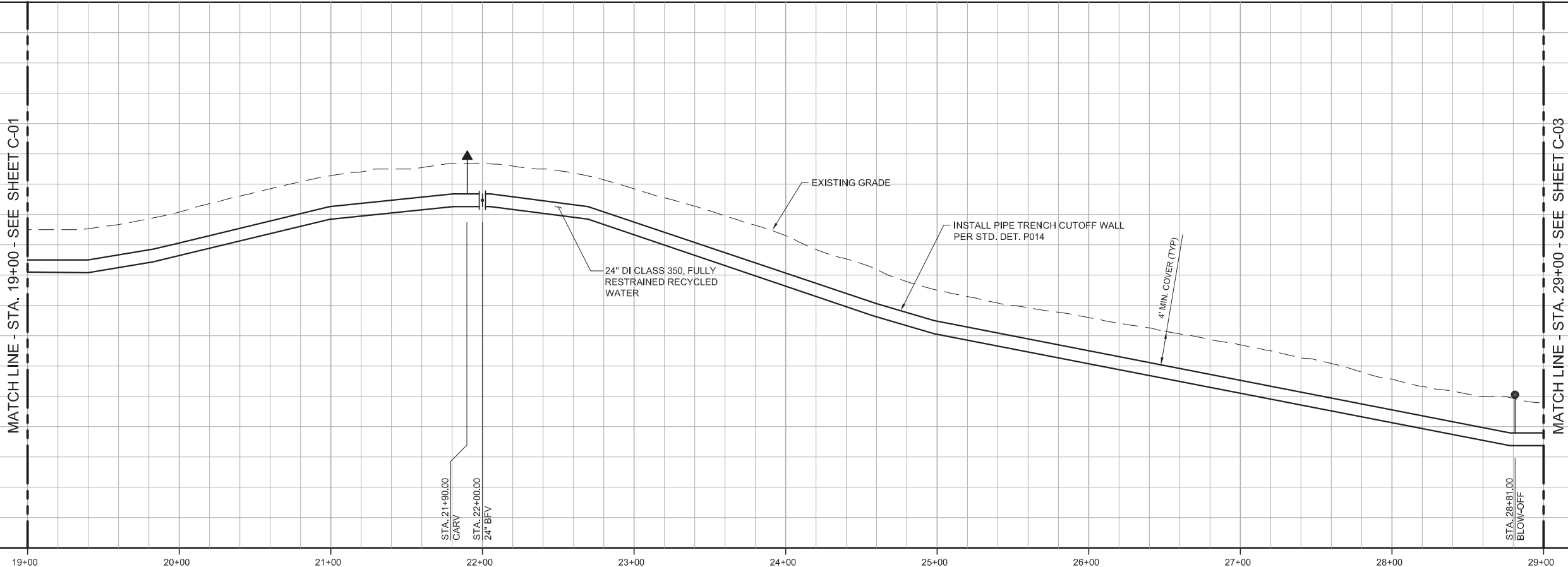
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3. ROAD SHALL CONSIST OF 6-INCHES OF CRUSHED AGGREGATE COMPACTED TO 95%.

AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.

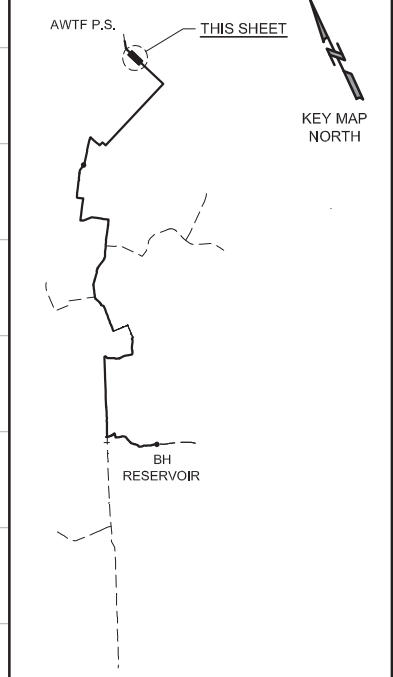
**Call before you Dig**

1-800-227-2600

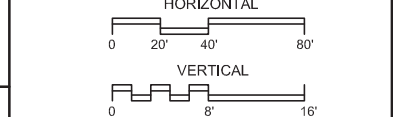
UNDERGROUND SERVICE (USA)



**KEY MAP**



**SCALE**



<b>BID SET</b>			
DESIGNED	JPM	DISCIPLINE ENGINEER	
DRAWN	BH		
CHECKED	AP		
DATE	MAY 2017		
REV	DATE	BY	DESCRIPTION

Digitally signed by Jonathon P. Marshall  
 Contact Info: Carollo Engineers, Inc.  
 Date: 2017.05.01 13:07:53-0700'

PROJECT ENGINEER

PROJECT MANAGER

**JONATHAN P. MARSHALL**  
 No. 73265  
 CIVIL  
 STATE OF CALIFORNIA

**carollo**  
 Engineers...Working Wonders With Water™

**MARINA COAST WATER DISTRICT**

**REGIONAL URBAN WATER AUGMENTATION PROJECT**

**RECYCLED WATER PIPELINE**

CIVIL

**PLAN AND PROFILE**

**STA. 19+00 TO STA. 29+00**

**VERIFY SCALES**

BAR IS ONE INCH ON ORIGINAL DRAWING

0 1" 16'

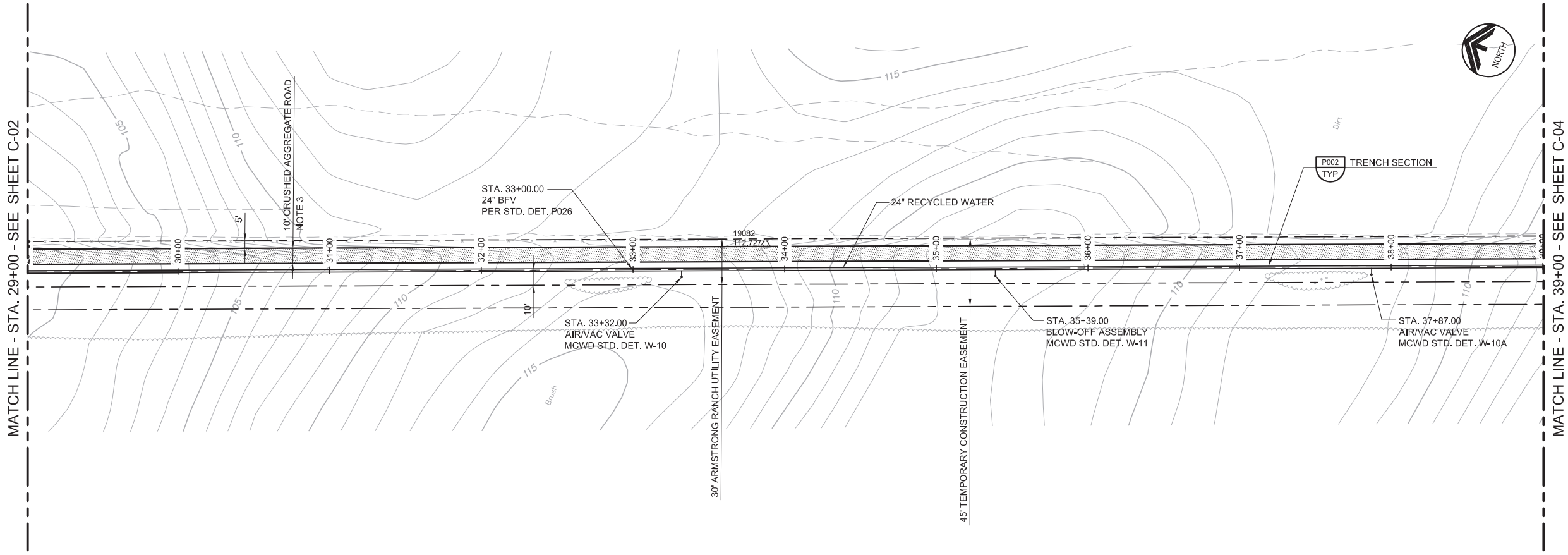
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7568A.10

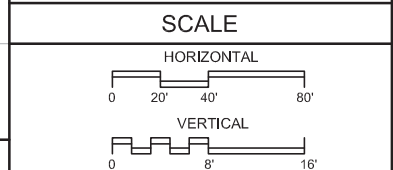
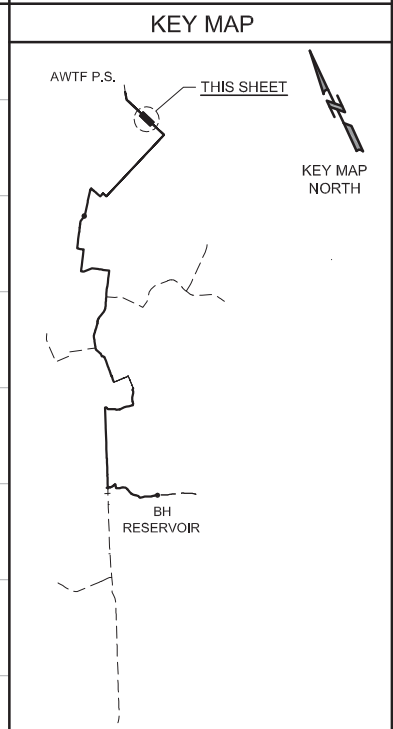
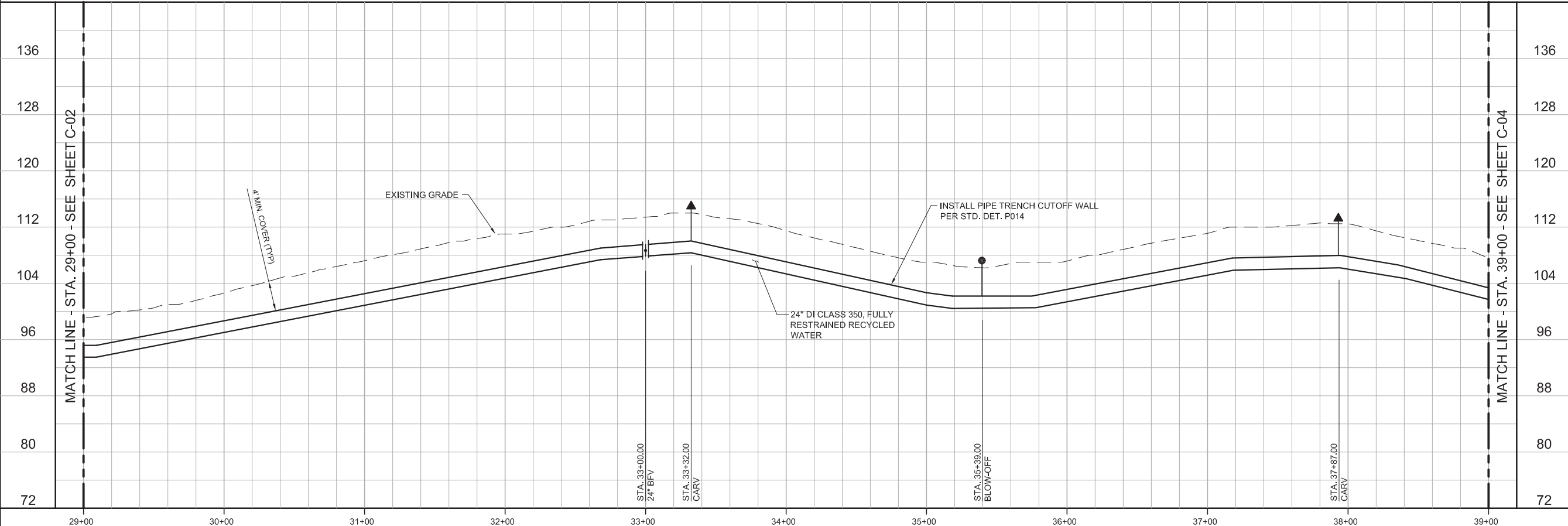
DRAWING NO. C-02

SHEET NO. 10 OF 93





- ### GENERAL NOTES
- CONSTRUCT PIPELINE WITH A MINIMUM 4' OF COVER UNLESS SHOWN OTHERWISE IN THE PROFILE TO AVOID EXISTING UTILITIES OR ACCOMMODATE FUTURE GRADES.
  - THE DISTRICT HAS SECURED A 45' TEMPORARY CONSTRUCTION EASEMENT AS SHOWN ON THE PLANS. THE CONTRACTOR MAY, AT HIS OWN DISCRETION, NEGOTIATE WITH THE PROPERTY OWNER FOR TEMPORARY CONSTRUCTION EASEMENT WIDTH BEYOND THE 45 FEET SHOWN.
  - ROAD SHALL CONSIST OF 6-INCHES OF CRUSHED AGGREGATE COMPACTED TO 95%.



REV				DATE	BY	DESCRIPTION

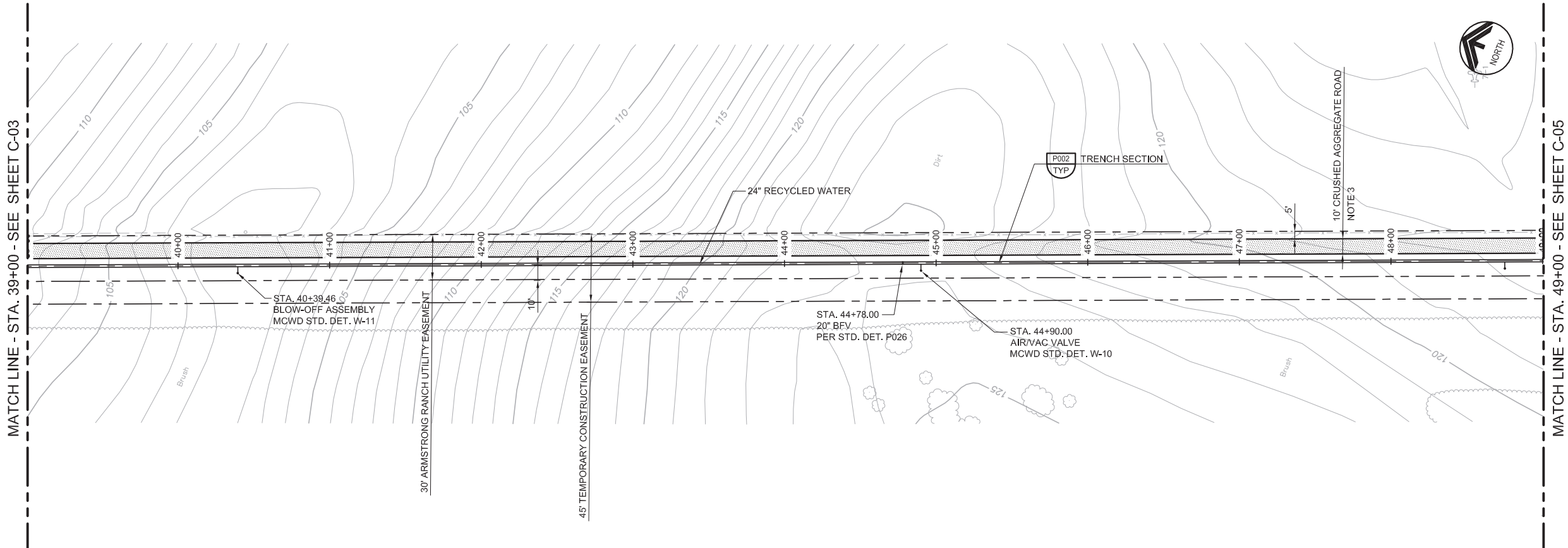
DESIGNED	JPM
DRAWN	BH
CHECKED	AP
DATE	MAY 2017

PROJECT ENGINEER  
 Digitally signed by Jonathon P. Marshall  
 Contact Info: Carollo Engineers, Inc.  
 Date: 2017.05.01 13:07:45-07'00'

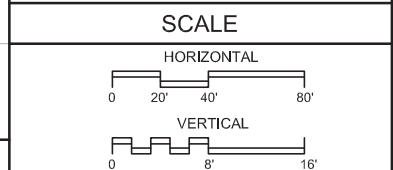
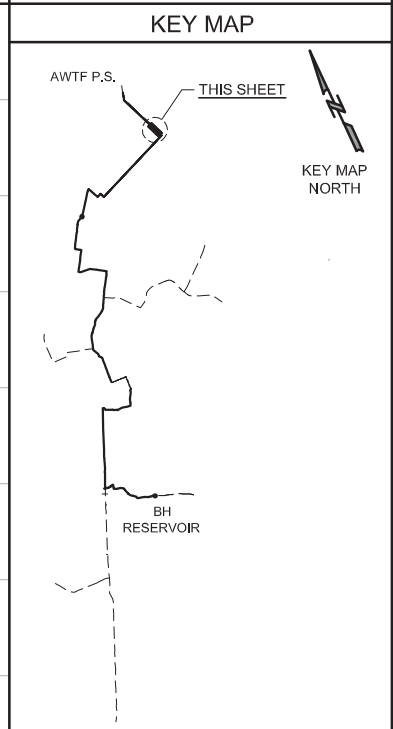
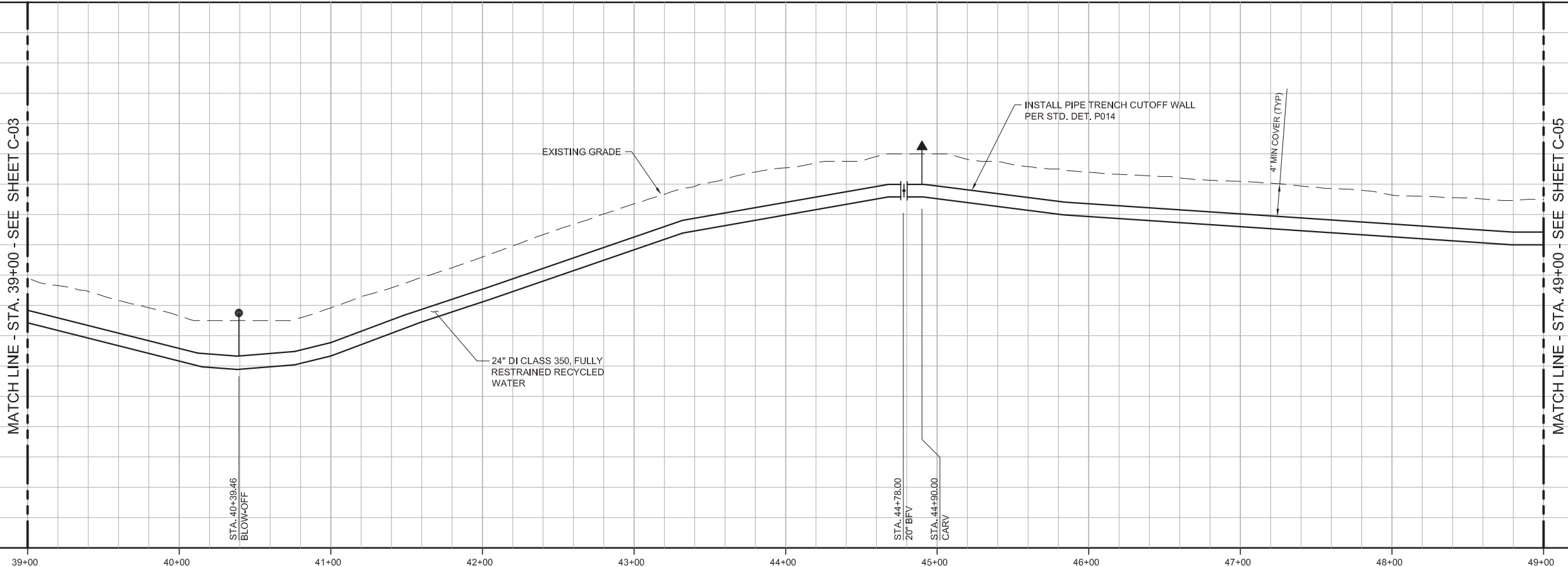


REGIONAL URBAN WATER AUGMENTATION PROJECT  
 RECYCLED WATER PIPELINE  
 CIVIL  
 PLAN AND PROFILE  
 STA. 29+00 TO STA. 39+00

VERIFY SCALES	JOB NO.
BAR IS ONE INCH ON ORIGINAL DRAWING	7568A.10
0 1" 16'	DRAWING NO.
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	C-03
	SHEET NO.
	11 OF 93



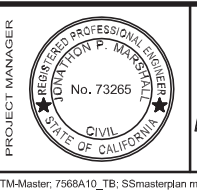
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REV				DATE	BY	DESCRIPTION

DESIGNED	JPM
DRAWN	BH
CHECKED	AP
DATE	MAY 2017

PROJECT ENGINEER  
 Digitally signed by Jonathon P. Marshall  
 Contact Info: Carollo Engineers, Inc.  
 Date: 2017.05.01 13:07:35-0700



REGIONAL URBAN WATER AUGMENTATION PROJECT  
 RECYCLED WATER PIPELINE  
 CIVIL  
 PLAN AND PROFILE  
 STA. 39+00 TO STA. 49+00

VERIFY SCALES	JOB NO.
BAR IS ONE INCH ON ORIGINAL DRAWING	7568A.10
0 1"	DRAWING NO.
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	C-04
	SHEET NO.
	12 OF 93





GENERAL NOTES

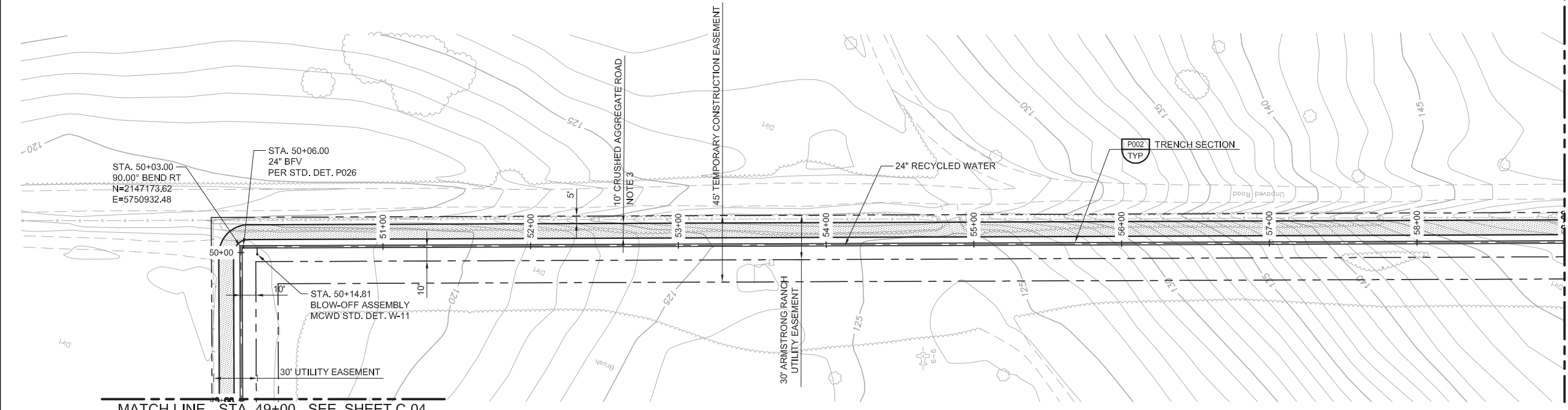
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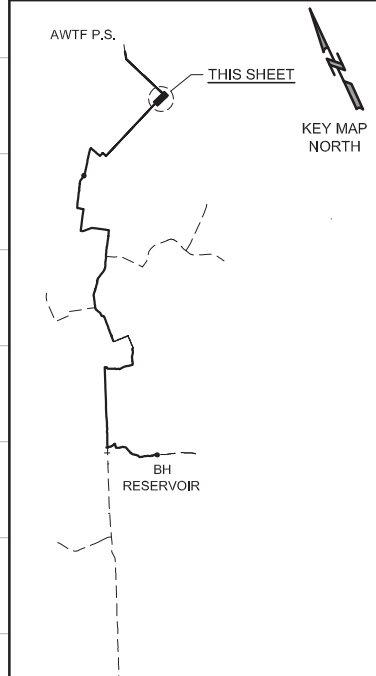
Call before you Dig

1-800-227-2800

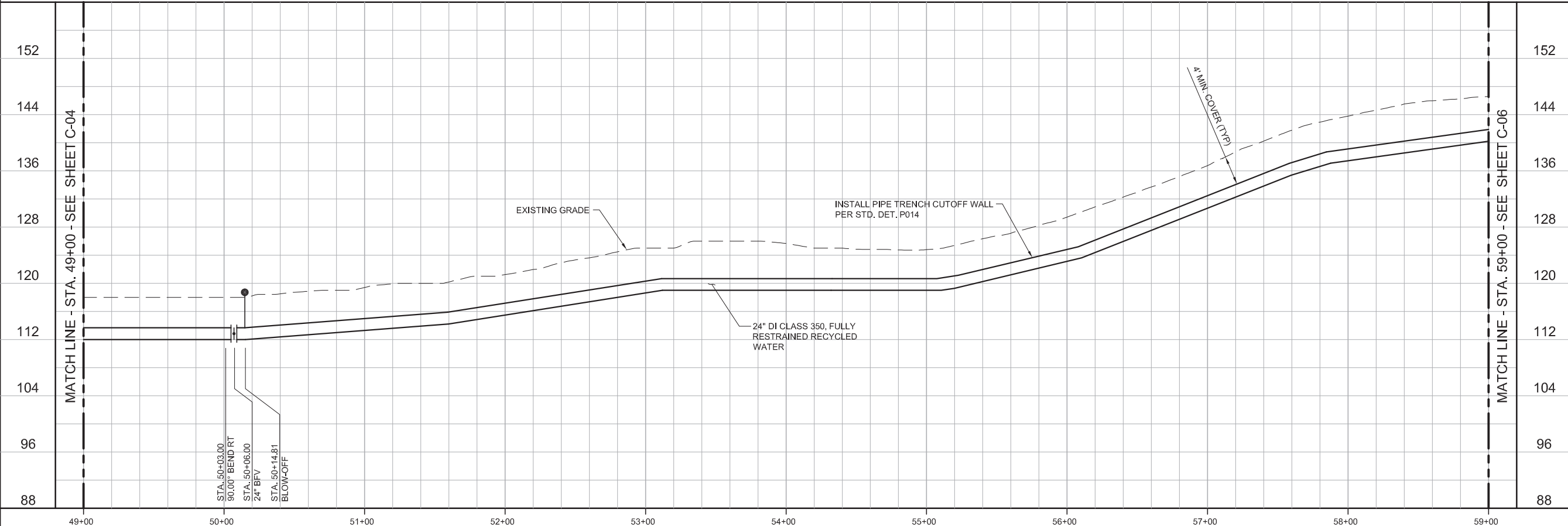
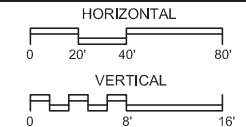
UNDERGROUND SERVICE (USA)



KEY MAP



SCALE



REV	DATE	BY	DESCRIPTION

DESIGNED	JPM
DRAWN	BH
CHECKED	AP
DATE	MAY 2017

Project Engineer: Digitally signed by Jonathon P. Marshall  
Contact Info: Carollo Engineers, Inc.  
Date: 2017.05.01 13:07:26-0700



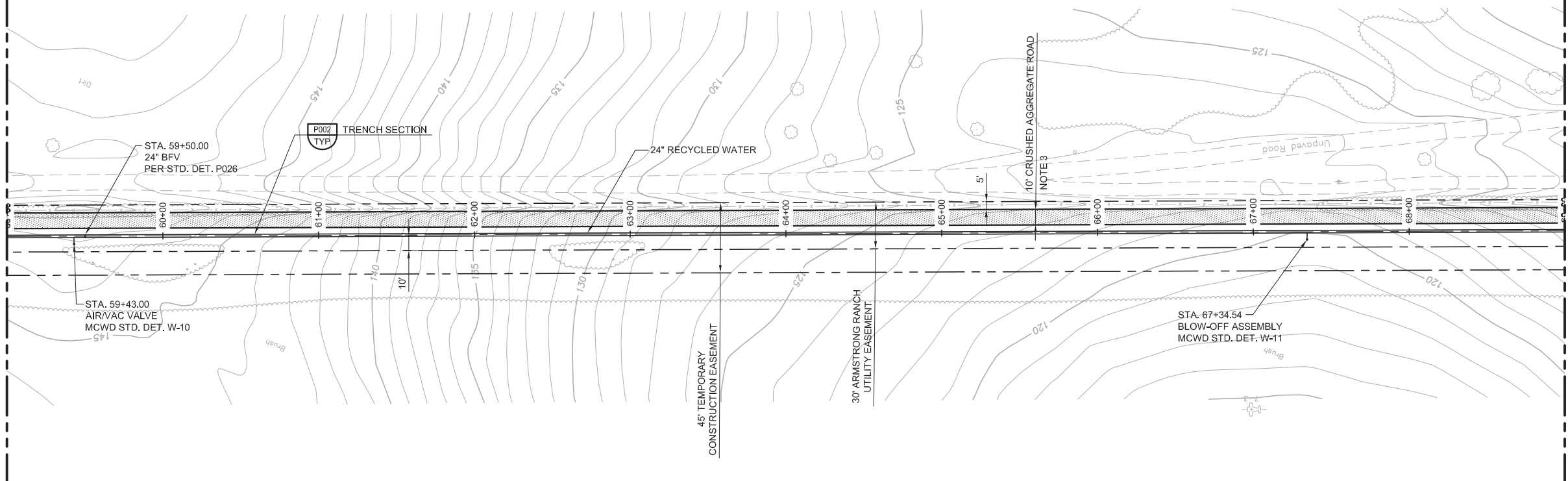
REGIONAL URBAN WATER AUGMENTATION PROJECT  
RECYCLED WATER PIPELINE  
CIVIL  
PLAN AND PROFILE  
STA. 49+00 TO STA. 59+00

VERIFY SCALES	JOB NO. 7568A.10
BAR IS ONE INCH ON ORIGINAL DRAWING	DRAWING NO. C-05
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	SHEET NO. 13 OF 93



MATCH LINE - STA. 59+00 - SEE SHEET C-05

MATCH LINE - STA. 69+00 - SEE SHEET C-07



### GENERAL NOTES

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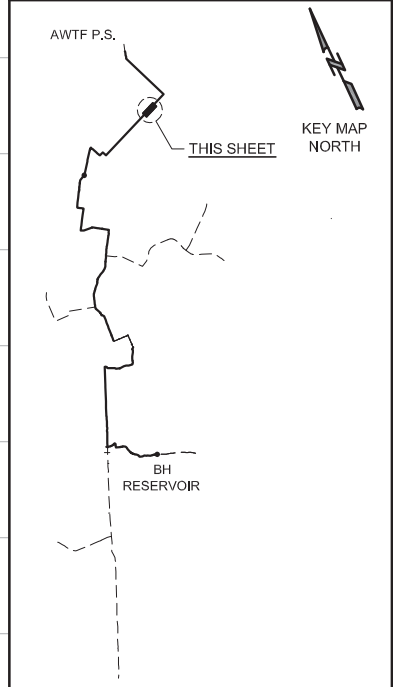
AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.

**Call before you Dig**

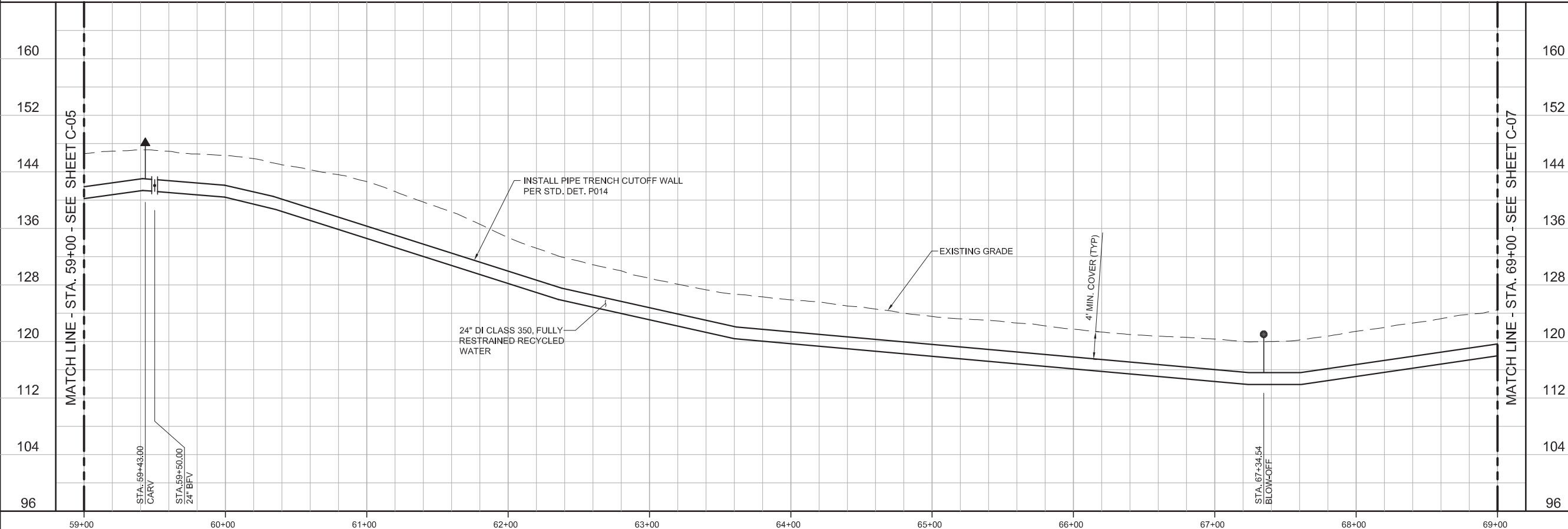
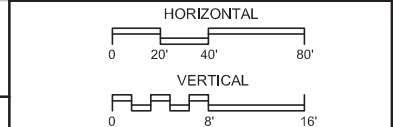
1-800-227-2800

UNDERGROUND SERVICE (USA)

### KEY MAP



### SCALE



REV	DATE	BY	DESCRIPTION

DESIGNED	JPM
DRAWN	BH
CHECKED	AP
DATE	MAY 2017

PROJECT ENGINEER

Digitally signed by Jonathon P. Marshall  
Contact Info: Carollo Engineers, Inc.  
Date: 2017.05.01 13:07:19-07'00'

PROJECT MANAGER

REGISTERED PROFESSIONAL ENGINEER  
JONATHAN P. MARSHALL  
No. 73265  
CIVIL  
STATE OF CALIFORNIA

**carollo**  
Engineers...Working Wonders With Water™

MARINA COAST WATER DISTRICT

**Marina Coast Water District**

REGIONAL URBAN WATER AUGMENTATION PROJECT

RECYCLED WATER PIPELINE

CIVIL

PLAN AND PROFILE

STA. 59+00 TO STA. 69+00

VERIFY SCALES

BAR IS ONE INCH ON ORIGINAL DRAWING

0 1"

IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7568A.10

DRAWING NO. C-06

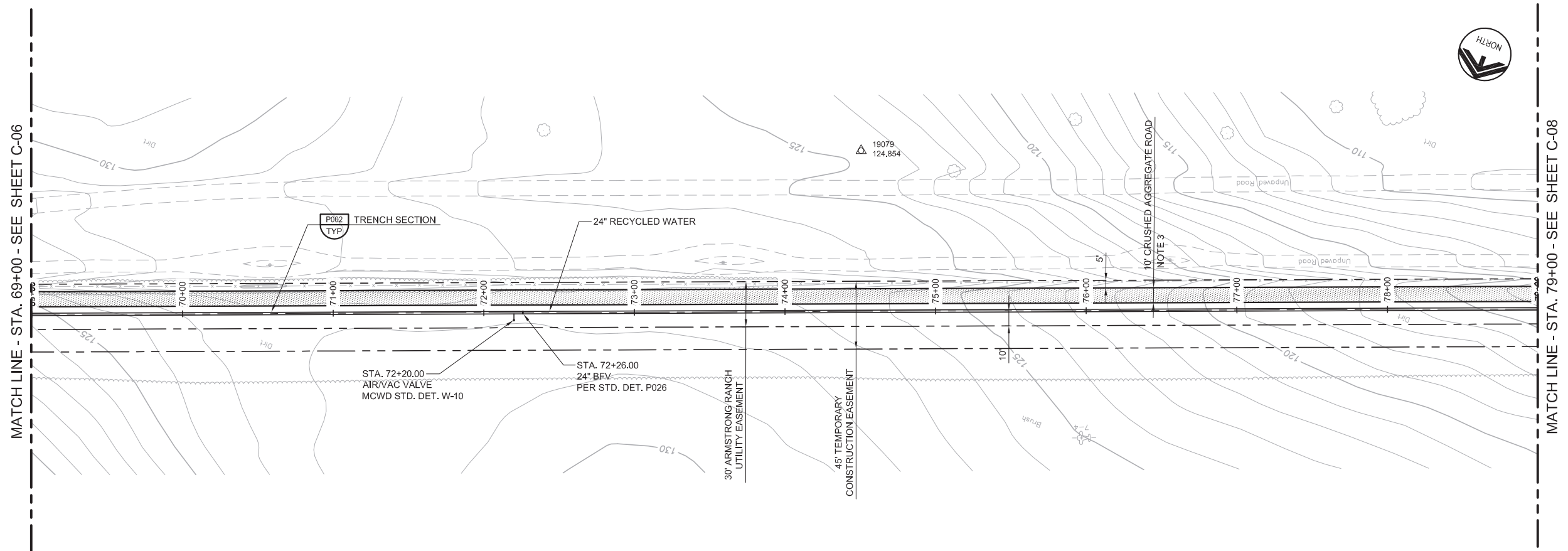
SHEET NO. 14 OF 93

Plot Created by: 4/28/17 10:00am BHawes



**GENERAL NOTES**

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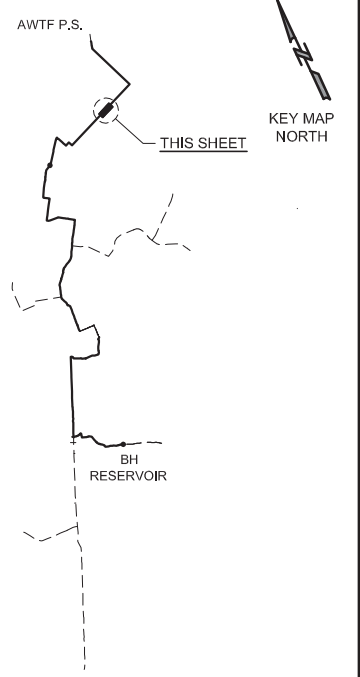
AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.

**Call before you Dig**

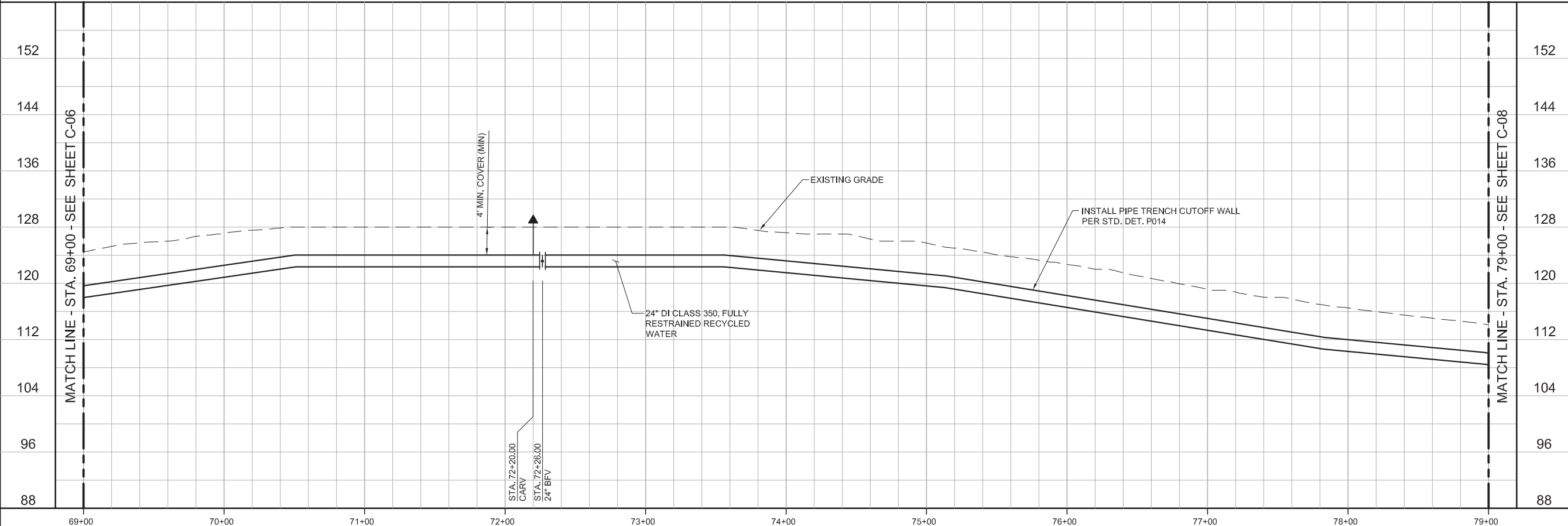
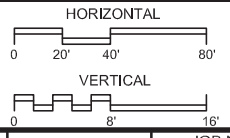
1-800-227-2800

UNDERGROUND SERVICE (USA)

**KEY MAP**



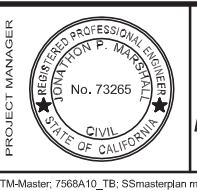
**SCALE**



REV	DATE	BY	DESCRIPTION

<b>BID SET</b>	DESIGNED JPM	DISCIPLINE ENGINEER
	DRAWN BH	
	CHECKED AP	
	DATE MAY 2017	

Digitally signed by Jonathon P. Marshall  
 Contact Info: Carollo Engineers, Inc.  
 Date: 2017.05.01 13:07:11-07'00'



**REGIONAL URBAN WATER AUGMENTATION PROJECT**

**RECYCLED WATER PIPELINE**

CIVIL

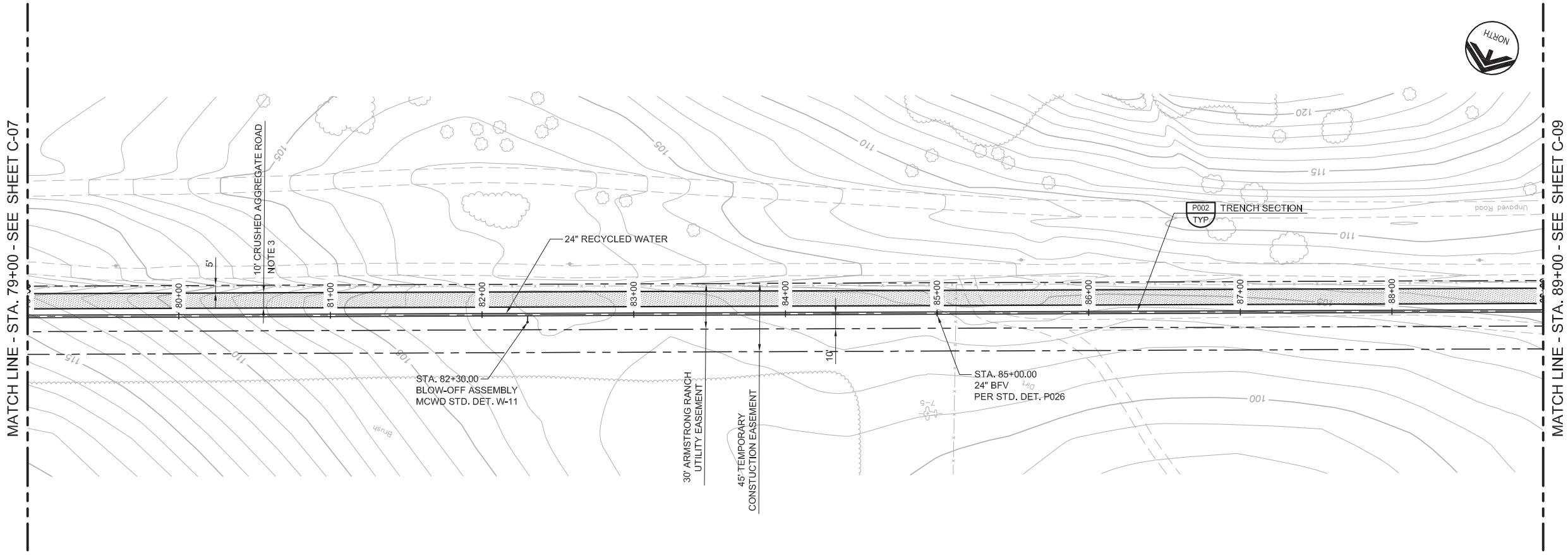
**PLAN AND PROFILE**

**STA. 69+00 TO STA. 79+00**

<b>VERIFY SCALES</b>	JOB NO. 7568A.10
BAR IS ONE INCH ON ORIGINAL DRAWING	DRAWING NO. C-07
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	SHEET NO. 15 OF 93

MATCH LINE - STA. 79+00 - SEE SHEET C-07

MATCH LINE - STA. 89+00 - SEE SHEET C-09



**GENERAL NOTES**

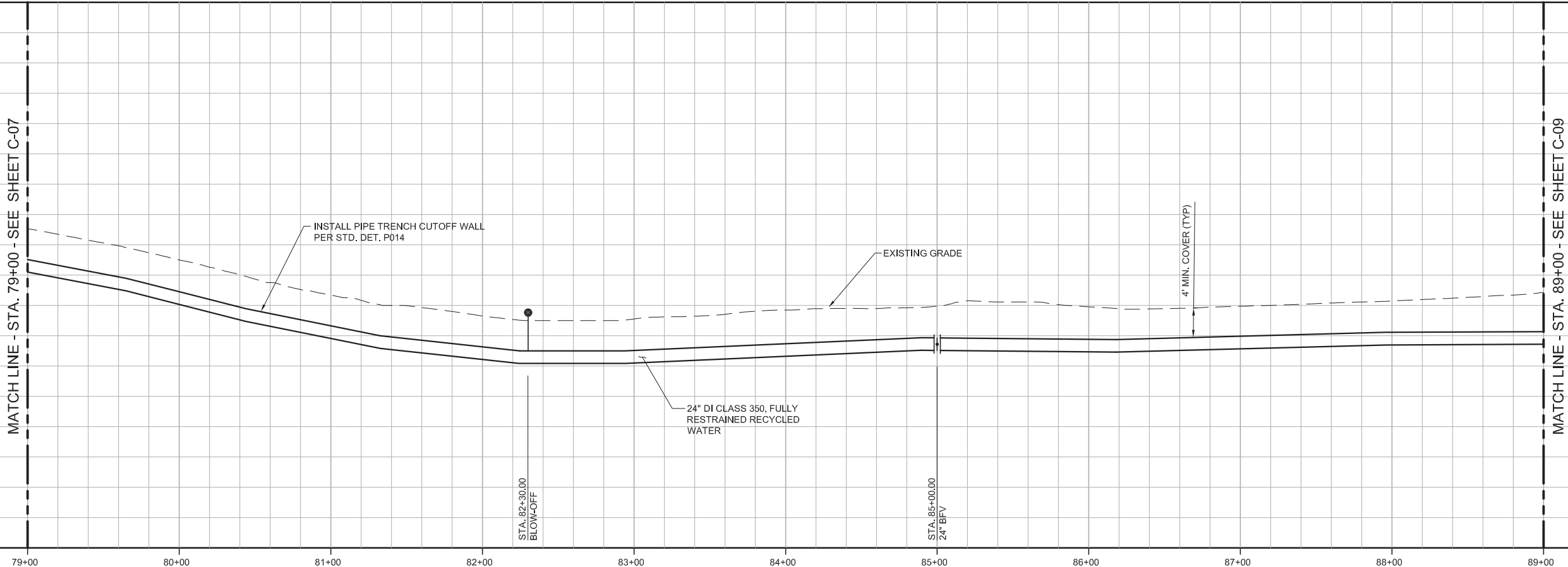
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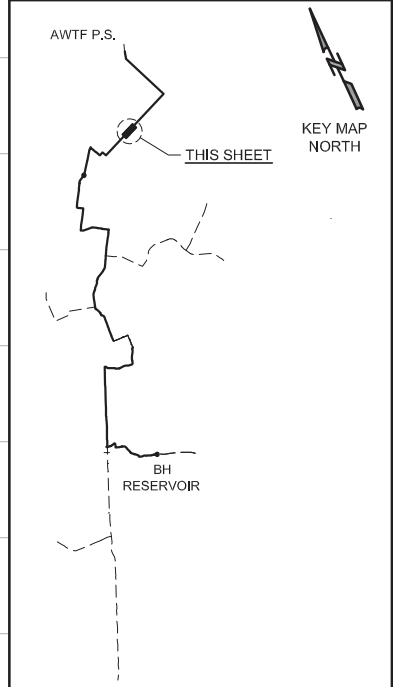
**Call before you Dig**

1-800-227-2600

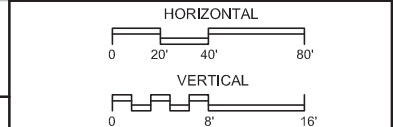
UNDERGROUND SERVICE (USA)



**KEY MAP**



**SCALE**



Last Opened by: 4-26-17 10:21am BHWaves

REV	DATE	BY	DESCRIPTION

DISCIPLINE ENGINEER	DESIGNED	JPM
	DRAWN	BH
	CHECKED	AP
	DATE	MAY 2017

PROJECT ENGINEER  
Digitally signed by Jonathon P. Marshall  
Contact Info: Carollo Engineers, Inc.  
Date: 2017.05.01 13:07:01-0700



**Marina Coast Water District**

REGIONAL URBAN WATER AUGMENTATION PROJECT  
**RECYCLED WATER PIPELINE**  
 CIVIL  
**PLAN AND PROFILE**  
 STA. 79+00 TO STA. 89+00

<b>VERIFY SCALES</b> BAR IS ONE INCH ON ORIGINAL DRAWING 0 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	JOB NO. 7568A.10
	DRAWING NO. C-08
	SHEET NO. 16 OF 93



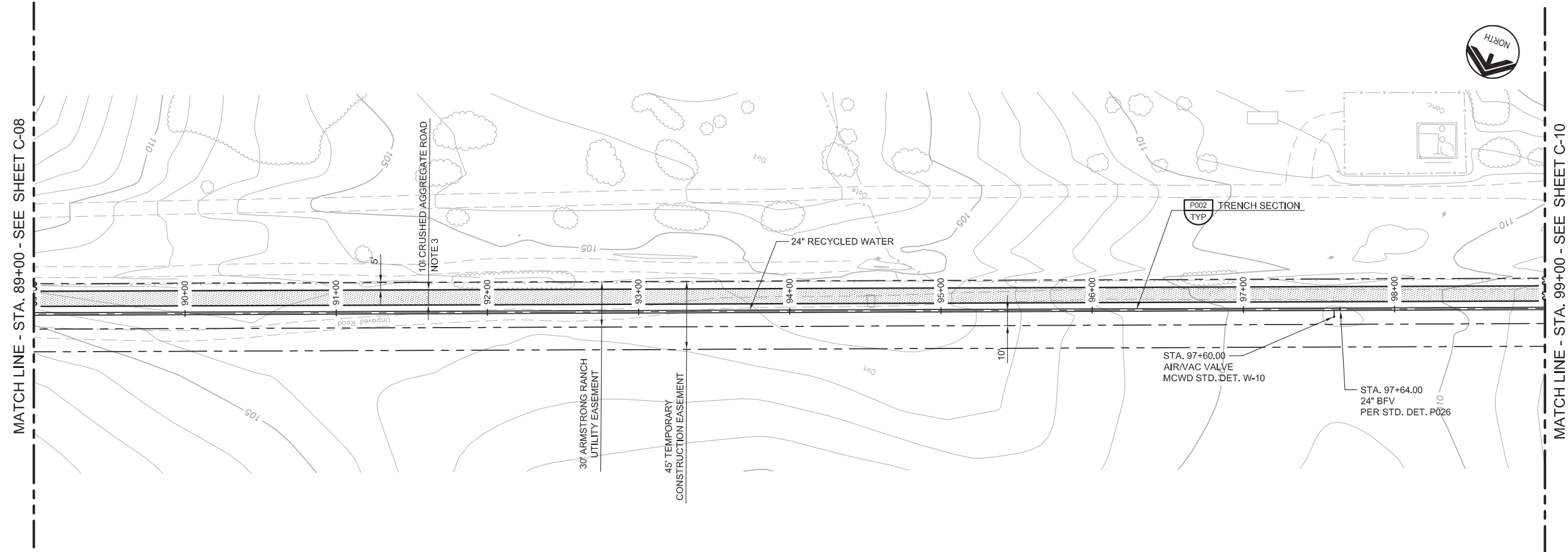
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MATCH LINE - STA. 89+00 - SEE SHEET C-08

MATCH LINE - STA. 99+00 - SEE SHEET C-10



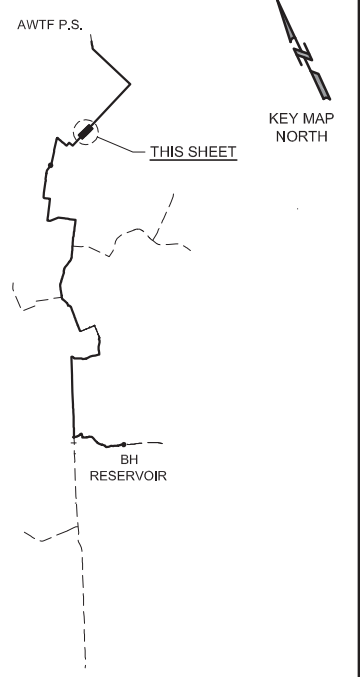
AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.

**Call before you Dig**

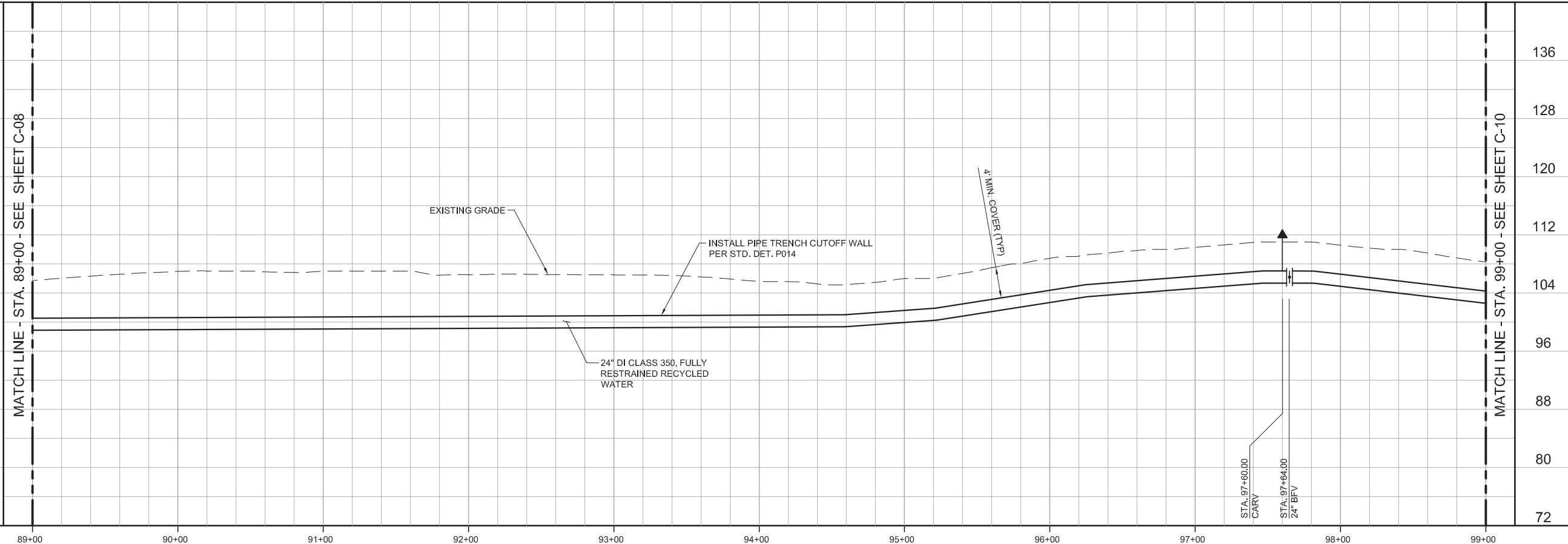
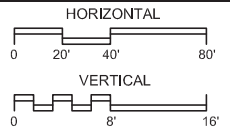
1-800-227-2600

UNDERGROUND SERVICE (USA)

**KEY MAP**



**SCALE**



89+00 90+00 91+00 92+00 93+00 94+00 95+00 96+00 97+00 98+00 99+00

Last Opened by: bhawes 4-26-17 10:24am bhawes

<b>BID SET</b>			
DESIGNED	JPM	DISCIPLINE ENGINEER	
DRAWN	BH		
CHECKED	AP		
DATE	MAY 2017		
REV	DATE	BY	DESCRIPTION

Digitally signed by Jonathon P. Marshall  
 Contact Info: Carollo Engineers, Inc.  
 Date: 2017.05.01 13:06:52-07'00'

PROJECT ENGINEER

PROJECT MANAGER

**Marina Coast Water District**

**REGIONAL URBAN WATER AUGMENTATION PROJECT**

**RECYCLED WATER PIPELINE**

CIVIL

**PLAN AND PROFILE**

**STA. 89+00 TO STA. 99+00**

**VERIFY SCALES**

BAR IS ONE INCH ON ORIGINAL DRAWING

0 1"

IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

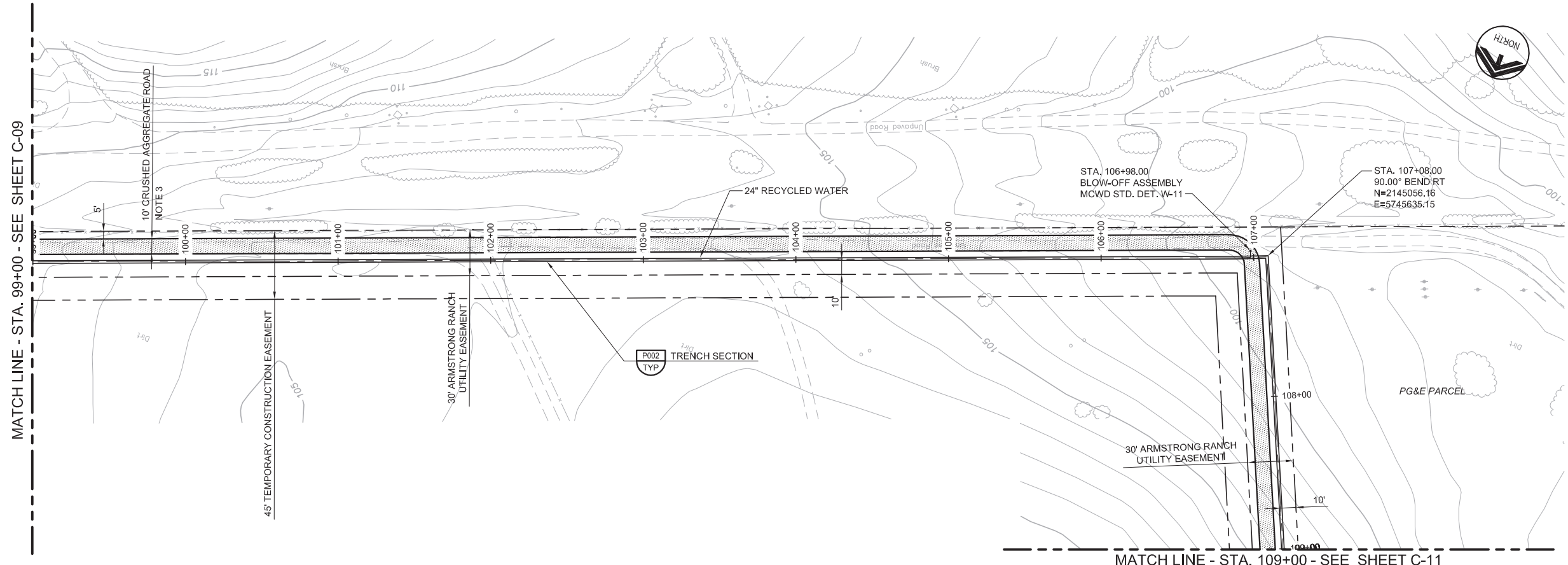
JOB NO. 7568A.10

DRAWING NO. C-09

SHEET NO. 17 OF 93

**GENERAL NOTES**

1. CONSTRUCT PIPELINE WITH A MINIMUM 4' OF COVER UNLESS SHOWN OTHERWISE IN THE PROFILE TO AVOID EXISTING UTILITIES OR ACCOMMODATE FUTURE GRADES.
2. THE DISTRICT HAS SECURED A 45' TEMPORARY CONSTRUCTION EASEMENT AS SHOWN ON THE PLANS. THE CONTRACTOR MAY, AT HIS OWN DISCRETION, NEGOTIATE WITH THE PROPERTY OWNER FOR TEMPORARY CONSTRUCTION EASEMENT WIDTH BEYOND THE 45 FEET SHOWN.
3. ROAD SHALL CONSIST OF 6-INCHES OF CRUSHED AGGREGATE COMPACTED TO 95%.



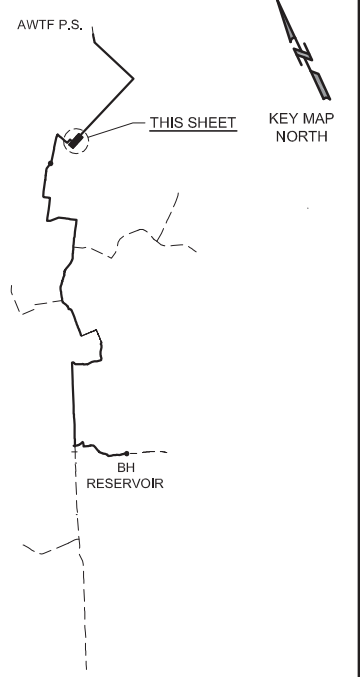
AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.

**Call before you Dig**

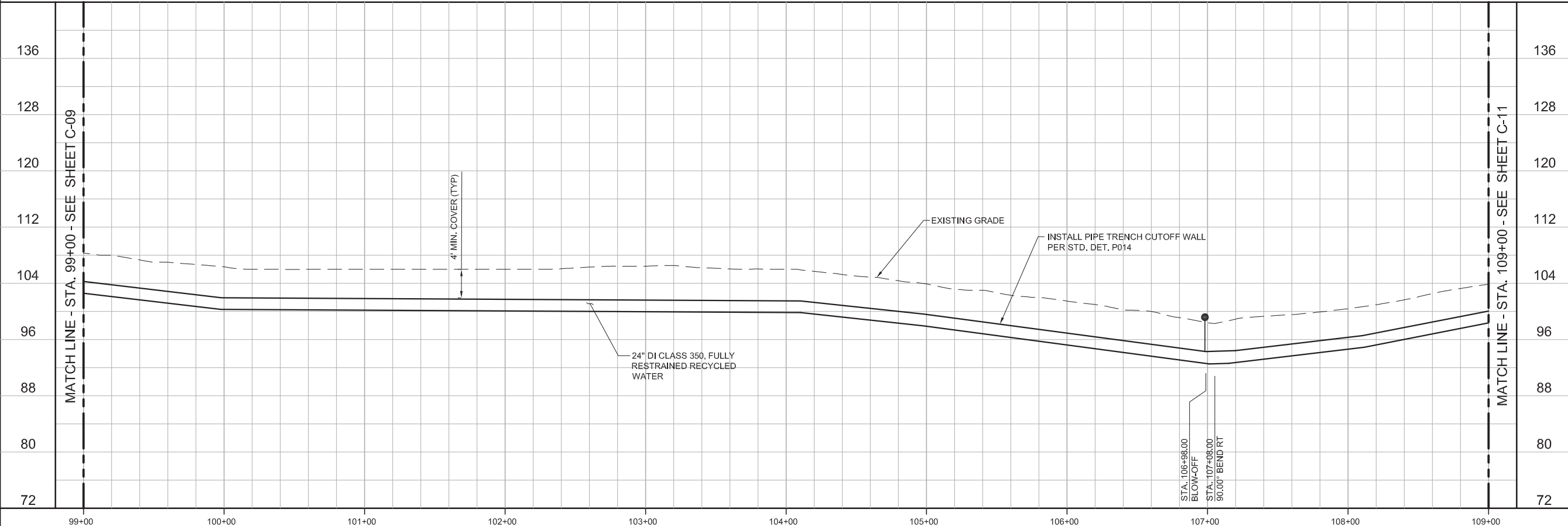
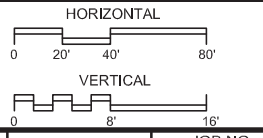
1-800-227-2800

UNDERGROUND SERVICE (USA)

**KEY MAP**



**SCALE**



REV	DATE	BY	DESCRIPTION

DESIGNED	JPM
	DRAWN
	BH
	CHECKED
	AP
DATE	MAY 2017

PROJECT ENGINEER

Digitally signed by Jonathon P. Marshall  
Contact Info: Carollo Engineers, Inc.  
Date: 2017.05.01 13:06:31-0700'



**BID SET**

REGIONAL URBAN WATER AUGMENTATION PROJECT

RECYCLED WATER PIPELINE

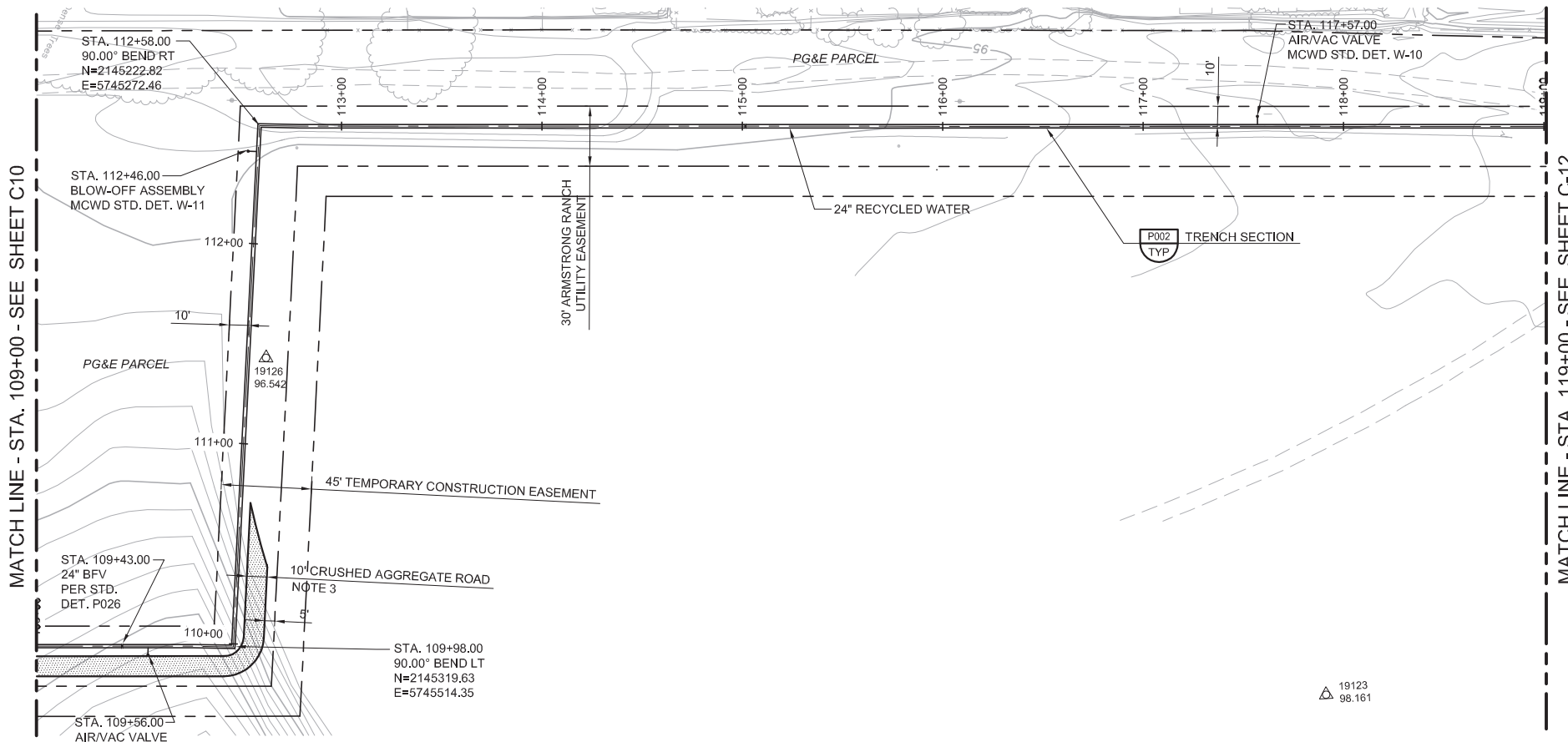
CIVIL

PLAN AND PROFILE

STA. 99+00 TO STA. 109+00

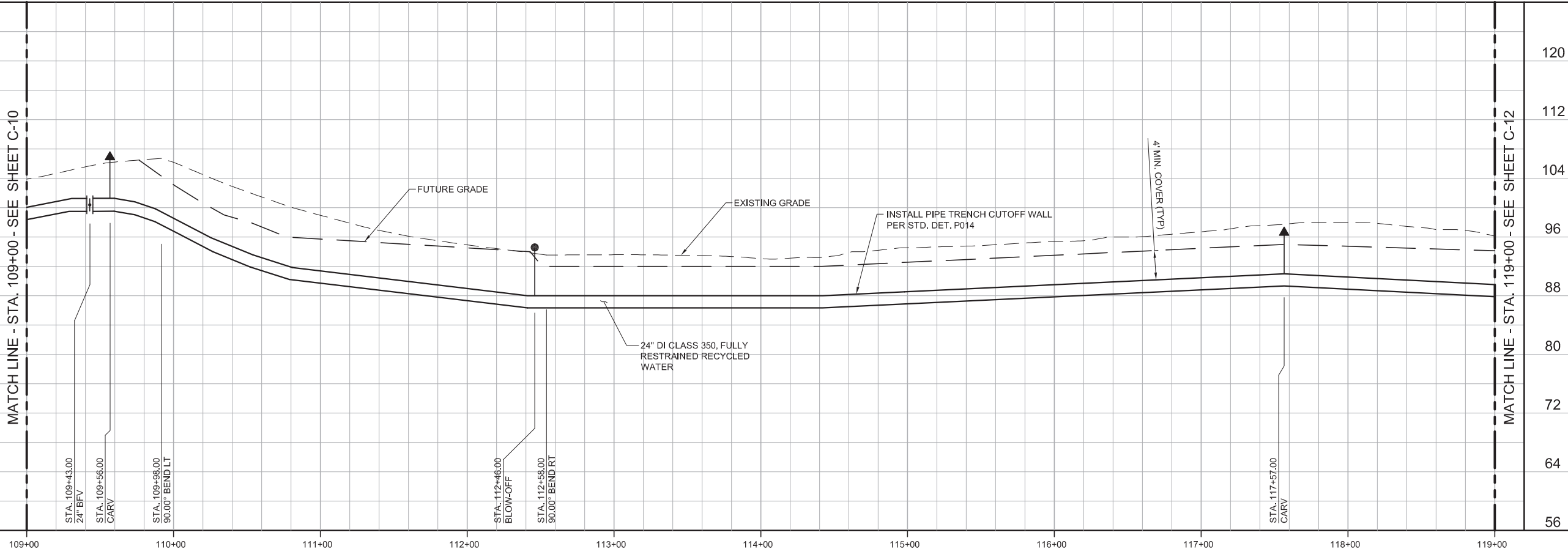
VERIFY SCALES	JOB NO.
BAR IS ONE INCH ON ORIGINAL DRAWING	7568A.10
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	DRAWING NO.
	C-10
	SHEET NO.
	18 OF 93



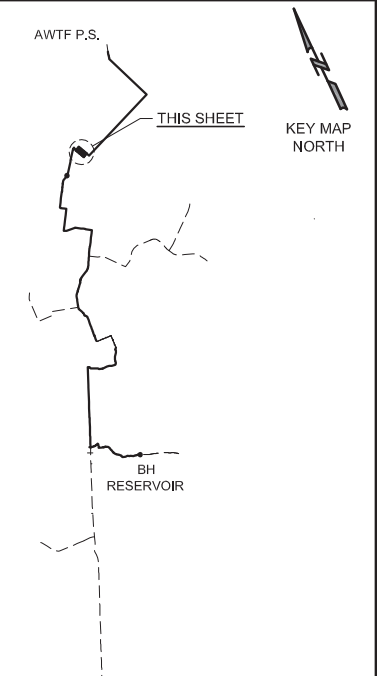


**GENERAL NOTES**

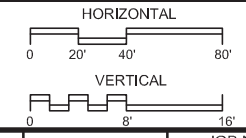
1. CONSTRUCT PIPELINE WITH A MINIMUM 4' OF COVER UNLESS SHOWN OTHERWISE IN THE PROFILE TO AVOID EXISTING UTILITIES OR ACCOMMODATE FUTURE GRADES.
2. THE DISTRICT HAS SECURED A 45' TEMPORARY CONSTRUCTION EASEMENT AS SHOWN ON THE PLANS. THE CONTRACTOR MAY, AT HIS OWN DISCRETION, NEGOTIATE WITH THE PROPERTY OWNER FOR TEMPORARY CONSTRUCTION EASEMENT WIDTH BEYOND THE 45 FEET SHOWN.
3. ROAD SHALL CONSIST OF 6-INCHES OF CRUSHED AGGREGATE COMPACTED TO 95%.



**KEY MAP**

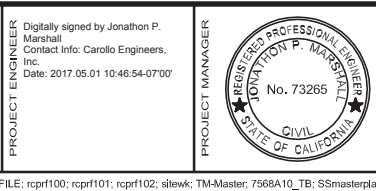


**SCALE**



<b>BID SET</b>			
DESIGNED	JPM	DISCIPLINE ENGINEER	
DRAWN	BH		
CHECKED	AP		
DATE	MAY 2017		
REV	DATE	BY	DESCRIPTION

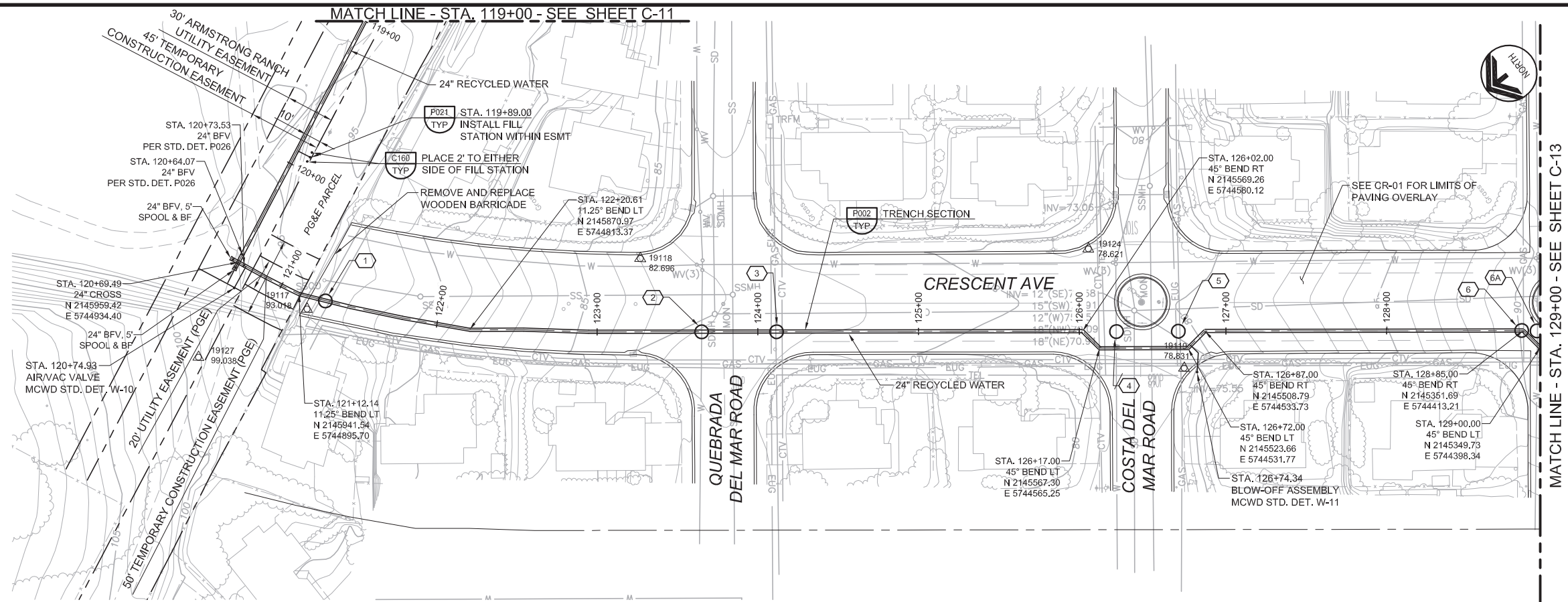
Project Engineer: Digitally signed by Jonathon P. Marshall  
 Contact Info: Carollo Engineers, Inc.  
 Date: 2017.05.01 10:46:54-0700



**REGIONAL URBAN WATER AUGMENTATION PROJECT**  
**RECYCLED WATER PIPELINE**  
 CIVIL  
**PLAN AND PROFILE**  
 STA. 109+00 TO STA. 119+00

**VERIFY SCALES**  
 BAR IS ONE INCH ON ORIGINAL DRAWING  
 0 1" 16'  
 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7568A.10  
 DRAWING NO. C-11  
 SHEET NO. 19 OF 93



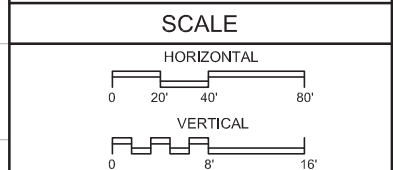
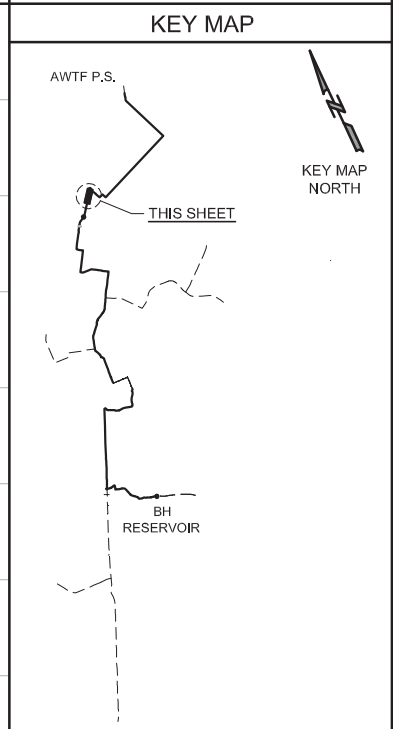
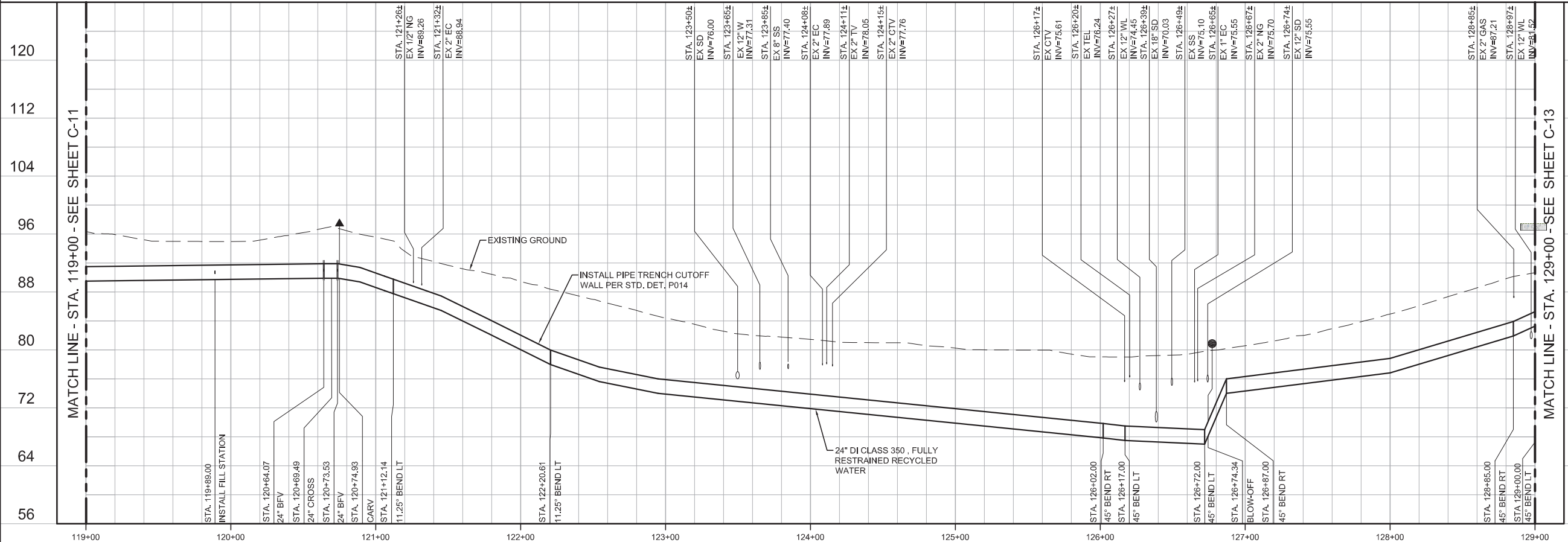
- GENERAL NOTES**
- CONSTRUCT PIPELINE WITH A MINIMUM 4' OF COVER UNLESS SHOWN OTHERWISE IN THE PROFILE TO AVOID EXISTING UTILITIES OR ACCOMMODATE FUTURE GRADES.
  - ANY CONSTRUCTION ACTIVITIES WHICH IMPACT PARKWAYS SHALL BE CONDUCTED TO MINIMIZE DISTURBANCE TO ADJACENT PROPERTY OWNERS. ANY AREAS IMPACTED SHALL BE PHOTOGRAPHED PRIOR TO CONSTRUCTION, AND RESTORED TO THEIR PRE-CONSTRUCTION CONDITION PRIOR TO CONTRACTOR DEMOBILIZATION.

AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.

**Call before you Dig**

1-800-227-2800

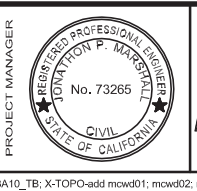
UNDERGROUND SERVICE (USA)



REV	DATE	BY	DESCRIPTION

<b>BID SET</b>	DESIGNED JPM	DISCIPLINE ENGINEER
	DRAWN BH	
	CHECKED AP	
	DATE MAY 2017	

Digitally signed by Jonathon P. Marshall  
 Contact Info: Carollo Engineers, Inc.  
 Date: 2017.05.01 13:06:15-0700



**REGIONAL URBAN WATER AUGMENTATION PROJECT**

**RECYCLED WATER PIPELINE**

CIVIL

**PLAN AND PROFILE**

STA. 119+00 TO STA. 129+00

<b>VERIFY SCALES</b>	JOB NO. 7568A.10
BAR IS ONE INCH ON ORIGINAL DRAWING	DRAWING NO. C-12
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	SHEET NO. 20 OF 93



**GENERAL NOTES**

1. CONSTRUCT PIPELINE WITH A MINIMUM 4' OF COVER UNLESS SHOWN OTHERWISE IN THE PROFILE TO AVOID EXISTING UTILITIES OR ACCOMMODATE FUTURE GRADES.
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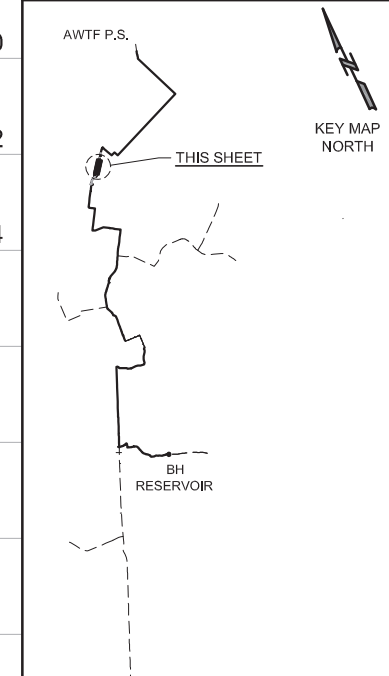
AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.

**Call before you Dig**

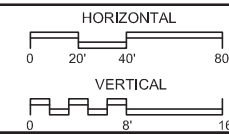
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UNDERGROUND SERVICE (USA)

**KEY MAP**



**SCALE**



**VERIFY SCALES**

BAR IS ONE INCH ON ORIGINAL DRAWING

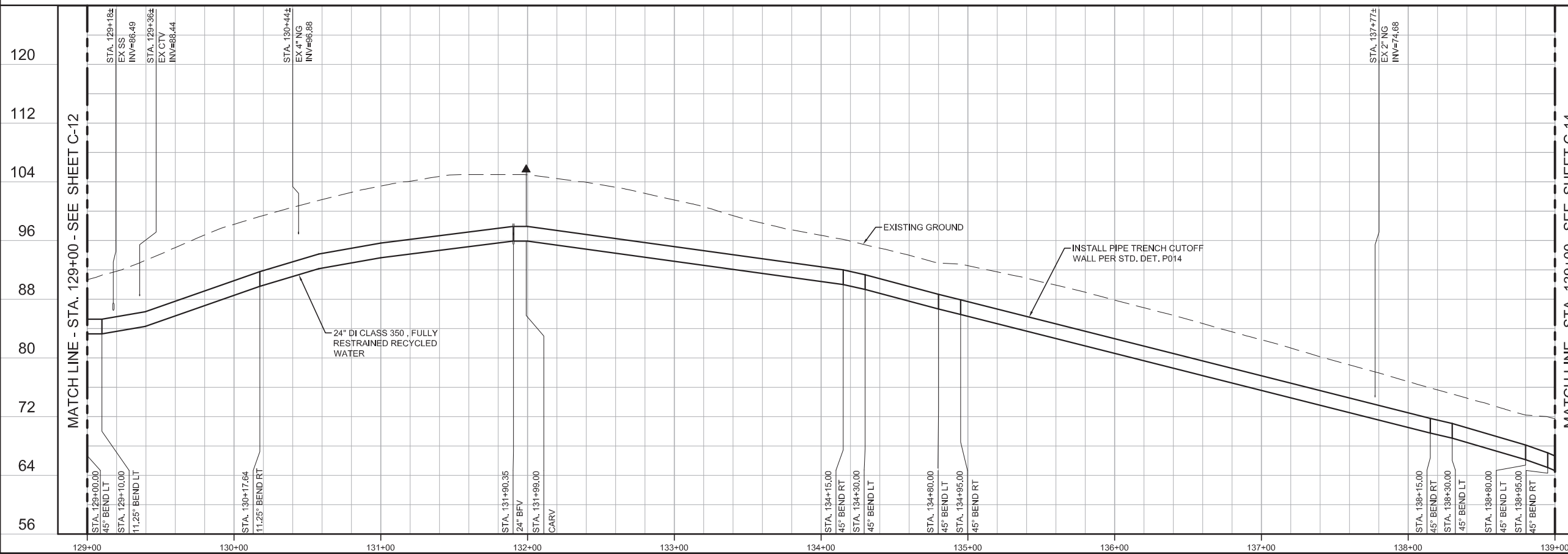
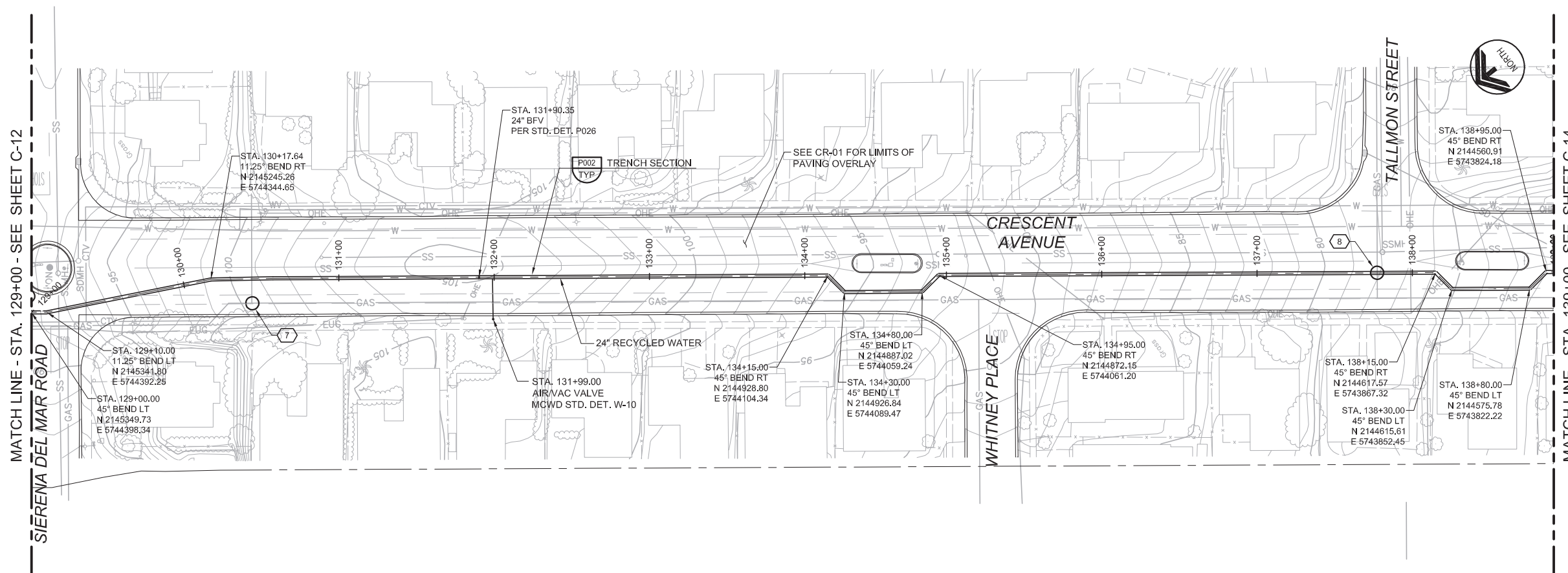
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IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO.  
7568A.10

DRAWING NO.  
C-13

SHEET NO.  
21 OF 93



REV	DATE	BY	DESCRIPTION

DESIGNED	JPM
DRAWN	BH
CHECKED	AP
DATE	MAY 2017

PROJECT ENGINEER

Digitally signed by Jonathon P. Marshall  
Contact Info: Carollo Engineers, Inc.  
Date: 2017.05.01 13:06:07-0700



REGIONAL URBAN WATER AUGMENTATION PROJECT

RECYCLED WATER PIPELINE

CIVIL

PLAN AND PROFILE

STA. 129+00 TO STA. 139+00

**GENERAL NOTES**

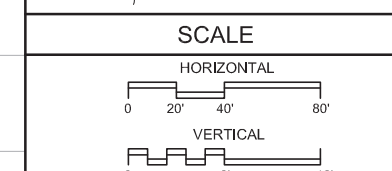
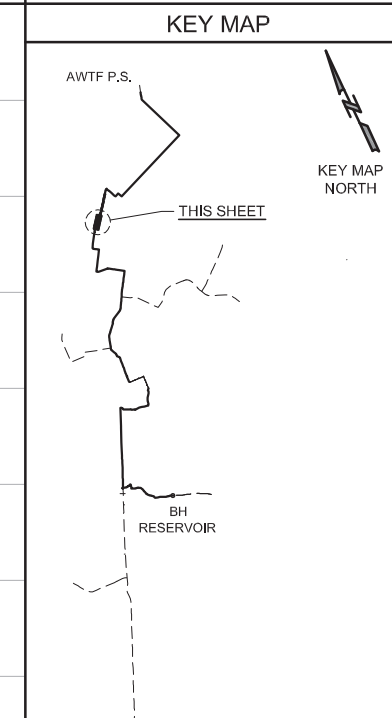
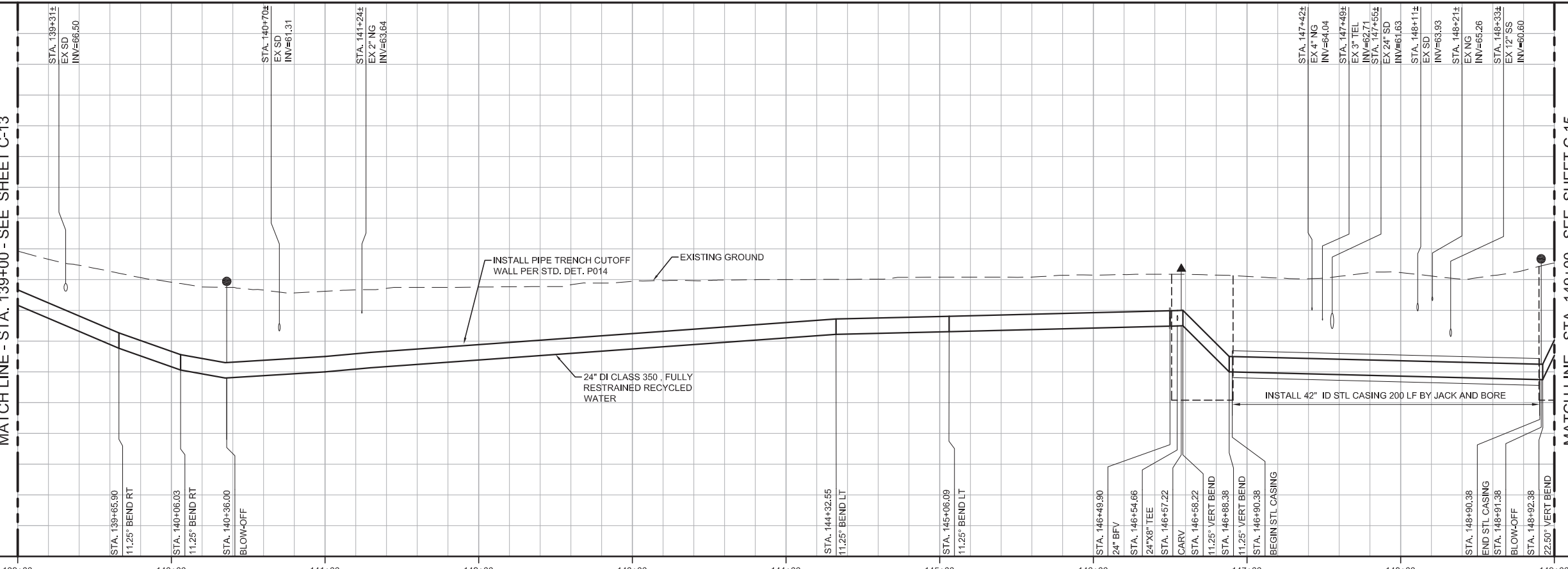
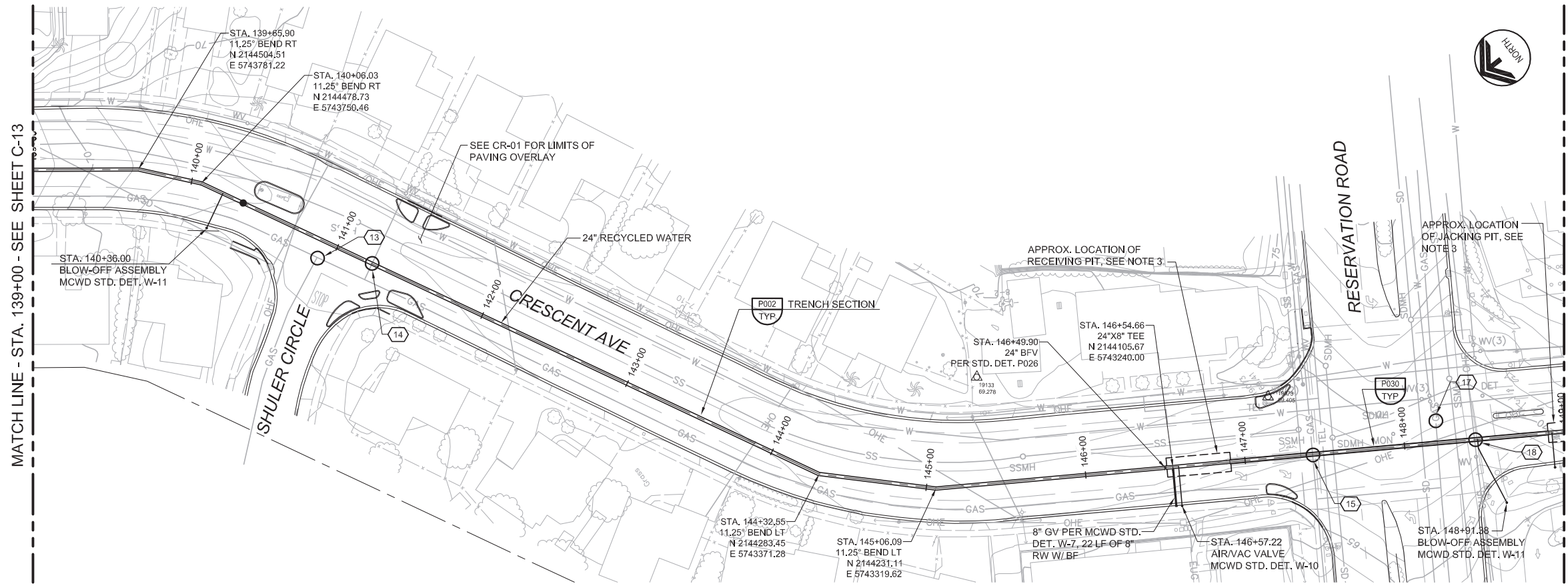
1. CONSTRUCT PIPELINE WITH A MINIMUM 4' OF COVER UNLESS SHOWN OTHERWISE IN THE PROFILE TO AVOID EXISTING UTILITIES OR ACCOMMODATE FUTURE GRADES.
2. ANY CONSTRUCTION ACTIVITIES WHICH IMPACT PARKWAYS SHALL BE CONDUCTED TO MINIMIZE DISTURBANCE TO ADJACENT PROPERTY OWNERS. ANY AREAS IMPACTED SHALL BE PHOTOGRAPHED PRIOR TO CONSTRUCTION, AND RESTORED TO THEIR PRE-CONSTRUCTION CONDITION PRIOR TO CONTRACTOR DEMOBILIZATION.
3. EXACT LOCATIONS AND DIMENSIONS OF JACKING PITS TO BE DETERMINED BY CONTRACTOR AND SUBMITTED TO ENGINEER FOR REVIEW.

AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.

**Call before you Dig**

1-800-227-2600

UNDERGROUND SERVICE (USA)



REV	DATE	BY	DESCRIPTION

<b>BID SET</b>	DESIGNED JPM
	DRAWN BH
	CHECKED AP
	DATE MAY 2017

PROJECT ENGINEER  
Digitally signed by Jonathon P. Marshall  
Contact Info: Carollo Engineers, Inc.  
Date: 2017.05.01 13:05:59-0700

PROJECT MANAGER  
JONATHAN P. MARSHALL  
No. 73265  
CIVIL  
STATE OF CALIFORNIA

**carollo**  
Engineers...Working Wonders With Water™

MARINA COAST WATER DISTRICT

**Marina Coast Water District**

REGIONAL URBAN WATER AUGMENTATION PROJECT

RECYCLED WATER PIPELINE

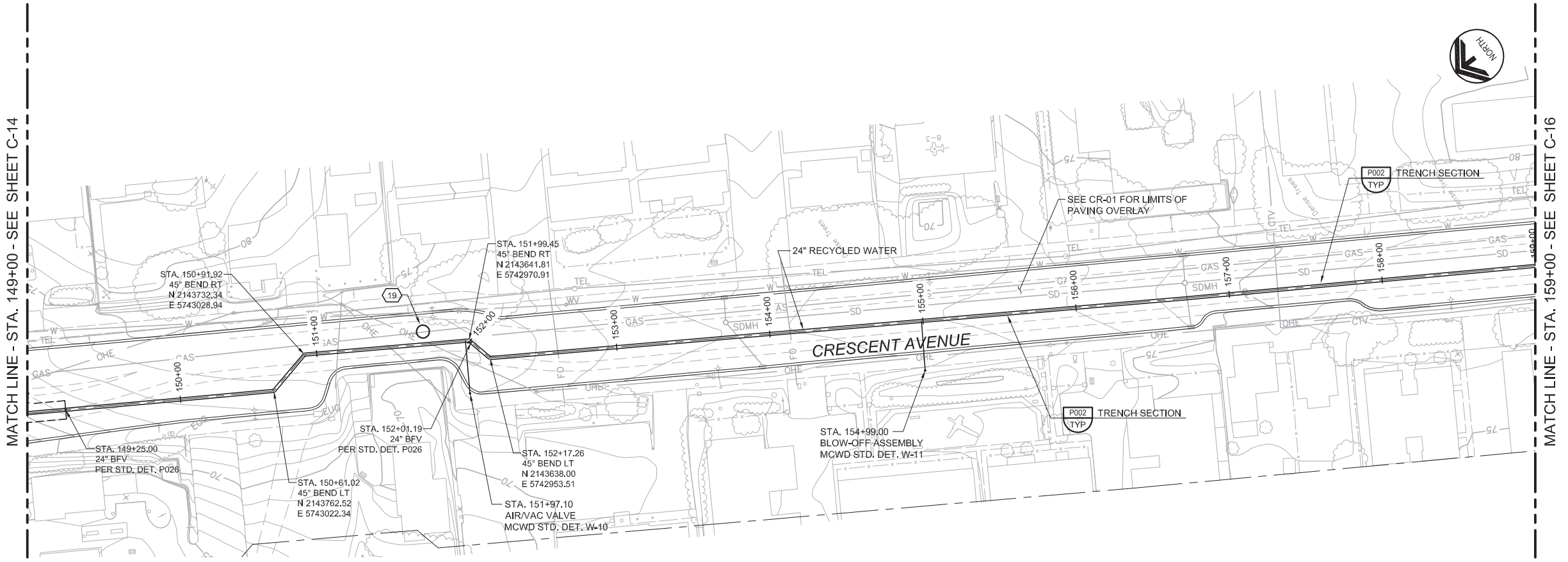
CIVIL  
PLAN AND PROFILE  
STA. 139+00 TO STA. 149+00

**VERIFY SCALES**  
BAR IS ONE INCH ON ORIGINAL DRAWING  
0 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7568A.10  
DRAWING NO. C-14  
SHEET NO. 22 OF 93

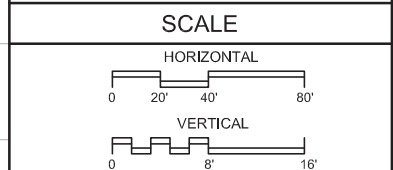
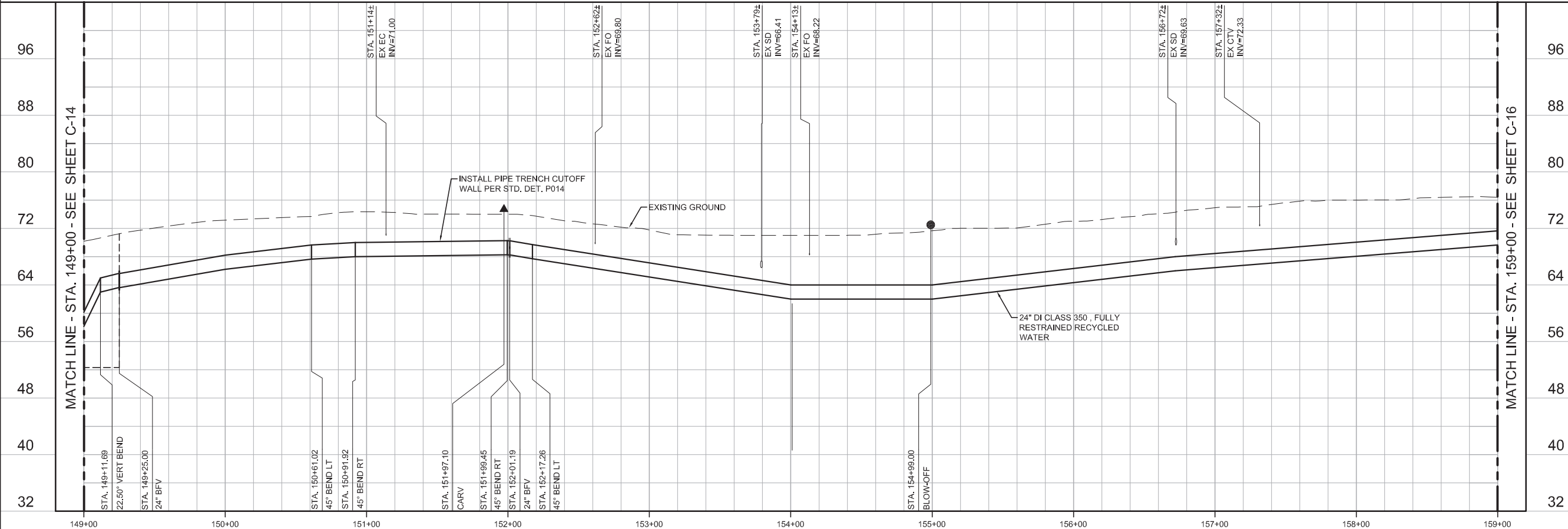
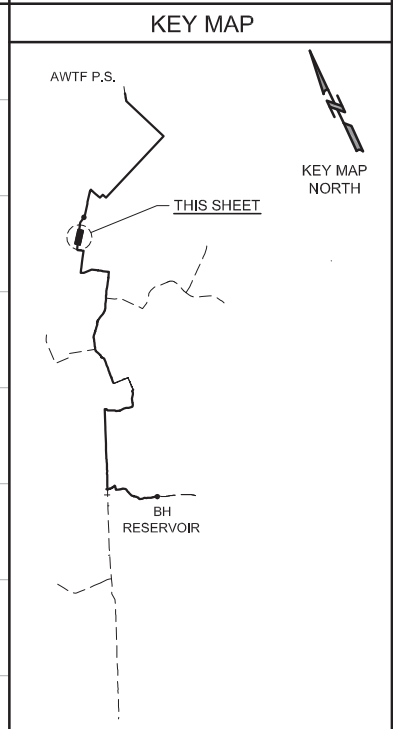
Last Opened by: 4/29/17 11:33am Bhowes





- GENERAL NOTES**
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AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.  
**Call before you Dig**  
 1-800-227-2600  
 UNDERGROUND SERVICE (USA)



REV	DATE	BY	DESCRIPTION

DESIGNED	JPM
DRAWN	BH
CHECKED	AP
DATE	MAY 2017

Project Engineer  
 Digitally signed by Jonathon P. Marshall  
 Contact Info: Carollo Engineers, Inc.  
 Date: 2017.05.01 13:05:48-0700



**REGIONAL URBAN WATER AUGMENTATION PROJECT**

**RECYCLED WATER PIPELINE**

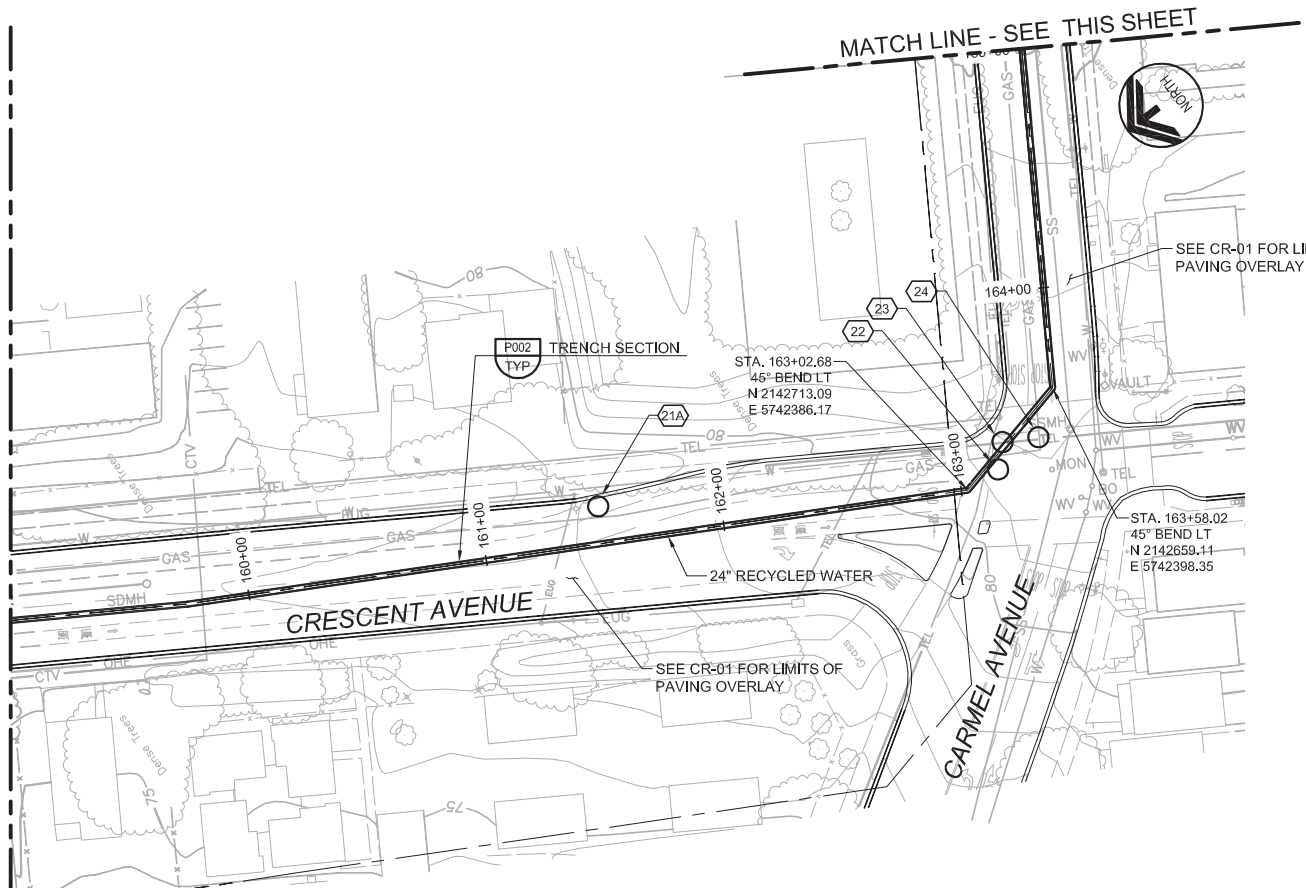
CIVIL

**PLAN AND PROFILE**

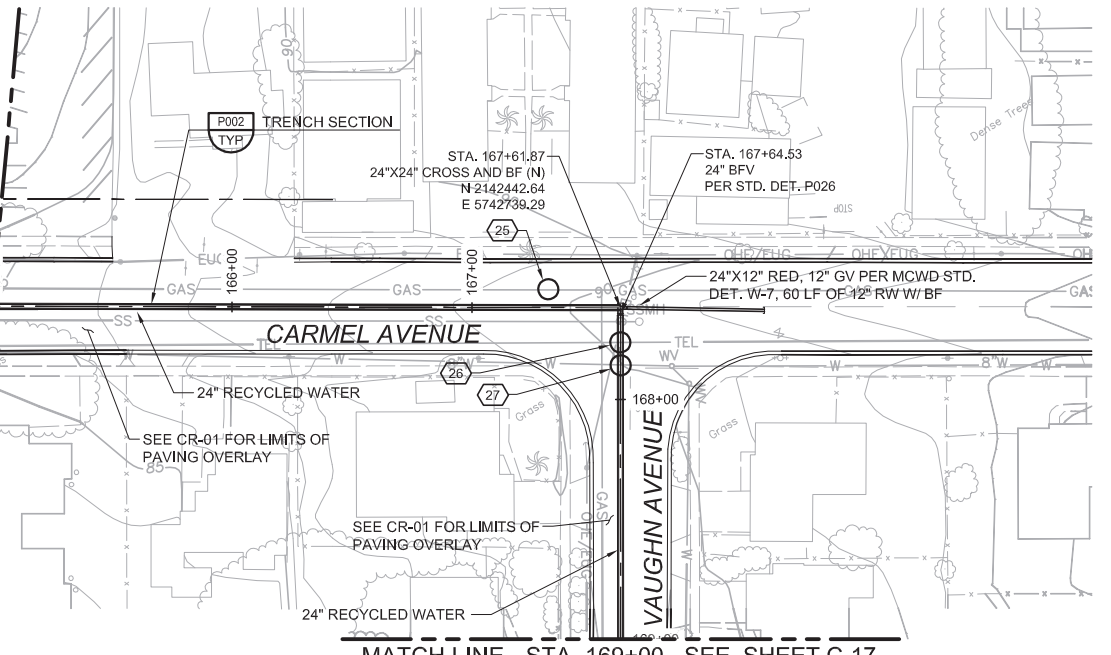
STA. 149+00 TO STA. 159+00

<b>VERIFY SCALES</b>	JOB NO.
BAR IS ONE INCH ON ORIGINAL DRAWING	7568A.10
0 1"	DRAWING NO.
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	C-15
	SHEET NO.
	23 OF 93

MATCH LINE - STA. 159+00 - SEE SHEET C-15



MATCH LINE - SEE THIS SHEET



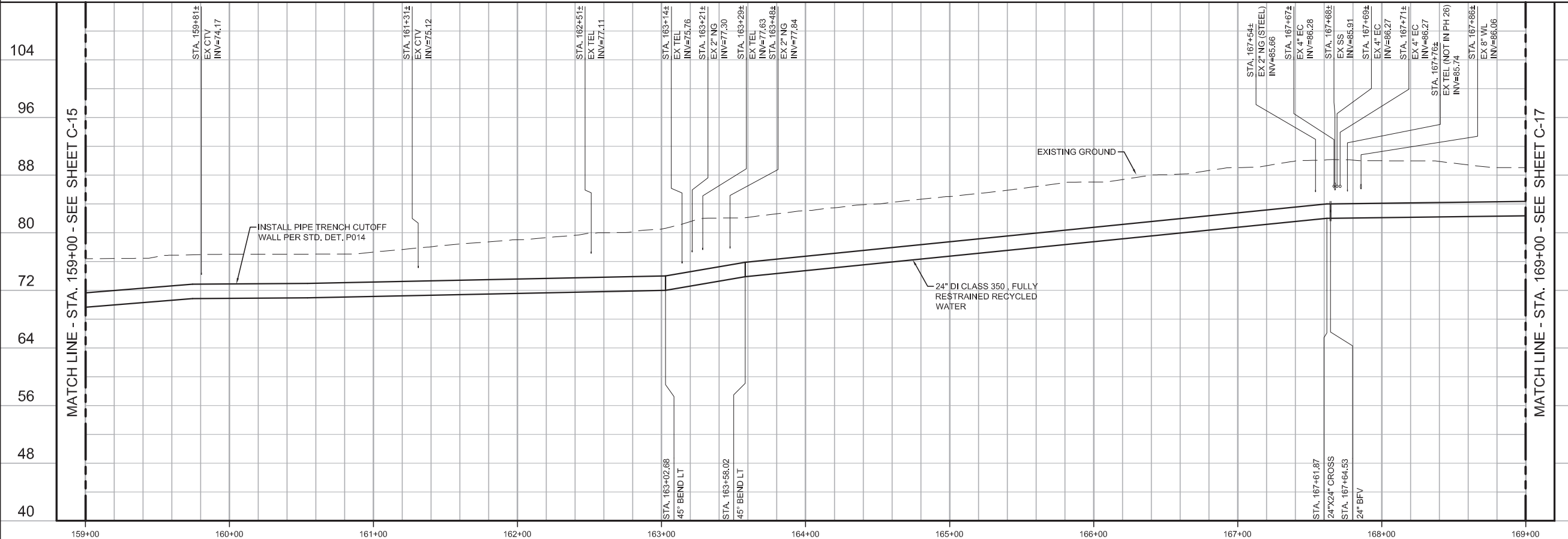
MATCH LINE - STA. 169+00 - SEE SHEET C-17

GENERAL NOTES

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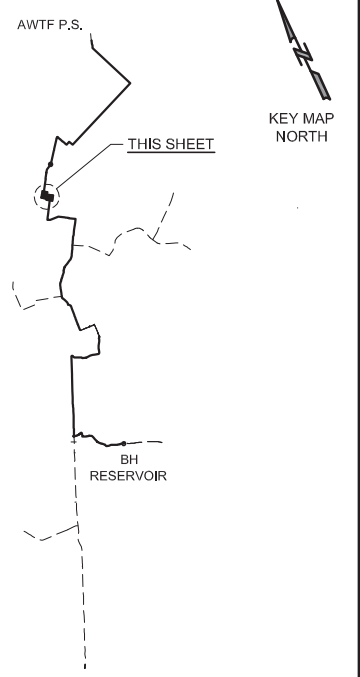
Call before you Dig  
1-800-227-2600

UNDERGROUND SERVICE (USA)

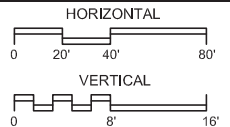


MATCH LINE - STA. 169+00 - SEE SHEET C-17

KEY MAP



SCALE



REV				DATE	BY	DESCRIPTION

DESIGNED	JPM
DRAWN	BH
CHECKED	AP
DATE	MAY 2017

PROJECT ENGINEER  
Digitally signed by Jonathon P. Marshall  
Contact Info: Carollo Engineers, Inc.  
Date: 2017.05.01 13:05:39-0700'

PROJECT MANAGER  
REGISTERED PROFESSIONAL ENGINEER  
JONATHAN P. MARSHALL  
No. 73265  
CIVIL  
STATE OF CALIFORNIA



REGIONAL URBAN WATER AUGMENTATION PROJECT  
RECYCLED WATER PIPELINE  
CIVIL  
PLAN AND PROFILE  
STA. 159+00 TO STA. 169+00

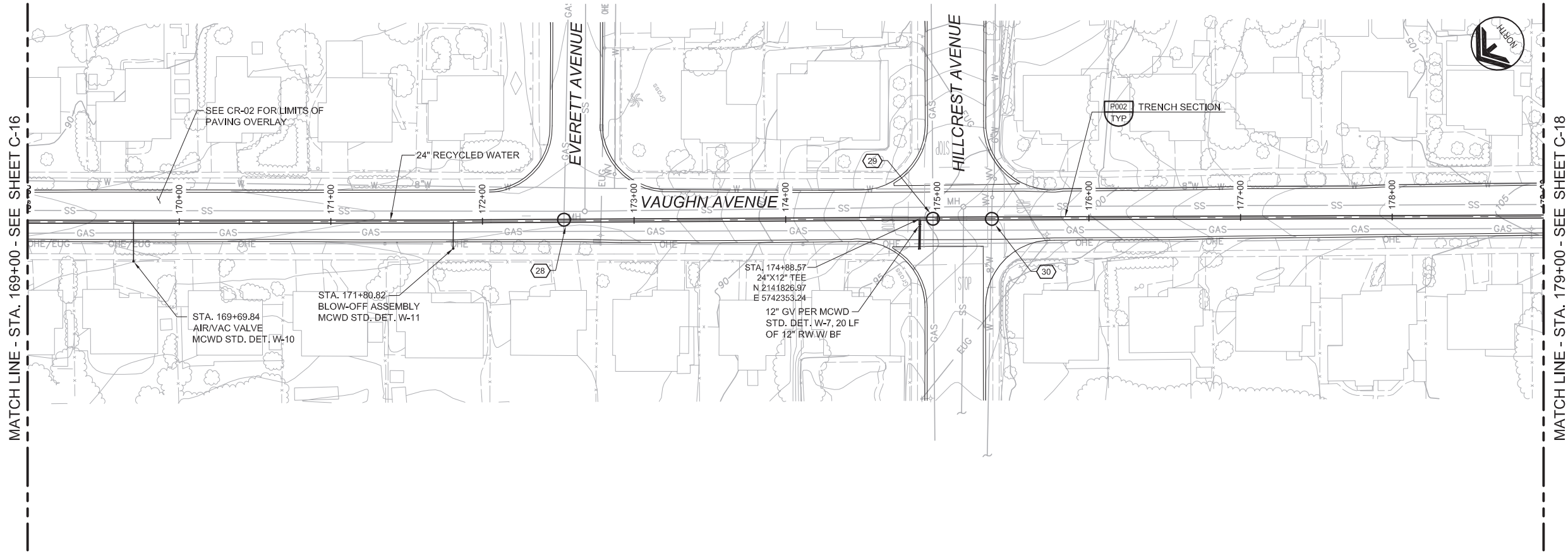
VERIFY SCALES  
BAR IS ONE INCH ON ORIGINAL DRAWING  
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IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7568A.10  
DRAWING NO. C-16  
SHEET NO. 24 OF 93



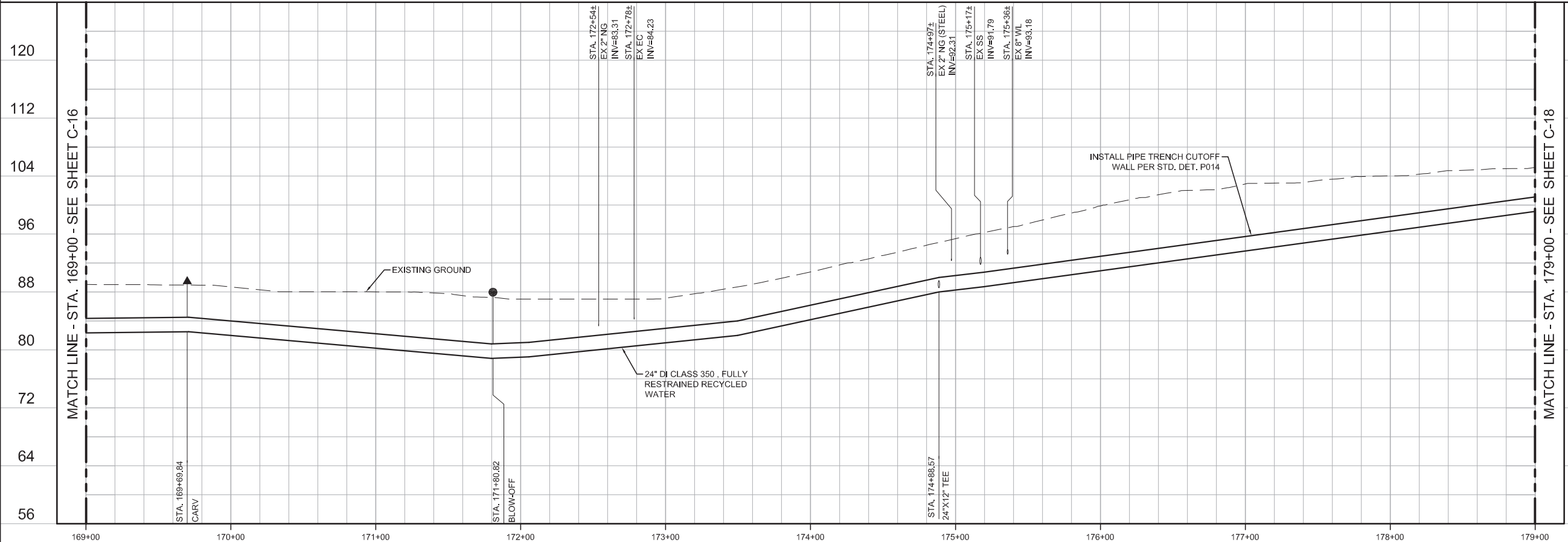
**GENERAL NOTES**

1. CONSTRUCT PIPELINE WITH A MINIMUM 4' OF COVER UNLESS SHOWN OTHERWISE IN THE PROFILE TO AVOID EXISTING UTILITIES OR ACCOMMODATE FUTURE GRADES.
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MATCH LINE - STA. 169+00 - SEE SHEET C-16

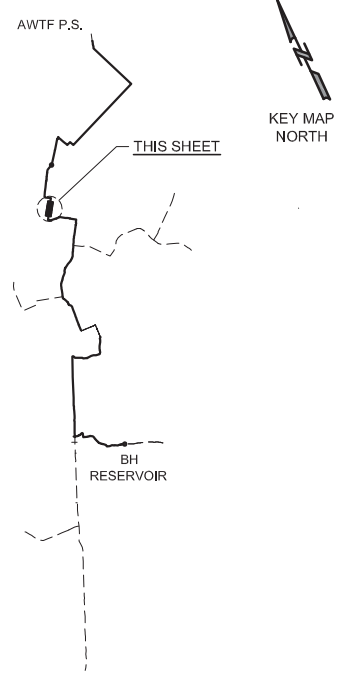
MATCH LINE - STA. 179+00 - SEE SHEET C-18



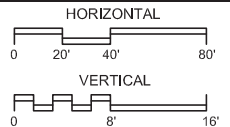
MATCH LINE - STA. 169+00 - SEE SHEET C-16

MATCH LINE - STA. 179+00 - SEE SHEET C-18

**KEY MAP**

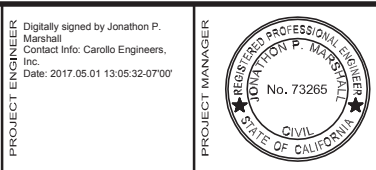


**SCALE**



<b>BID SET</b>			
DESIGNED	JPM	DISCIPLINE ENGINEER	
DRAWN	BH		
CHECKED	AP		
DATE	MAY 2017		
REV	DATE	BY	DESCRIPTION

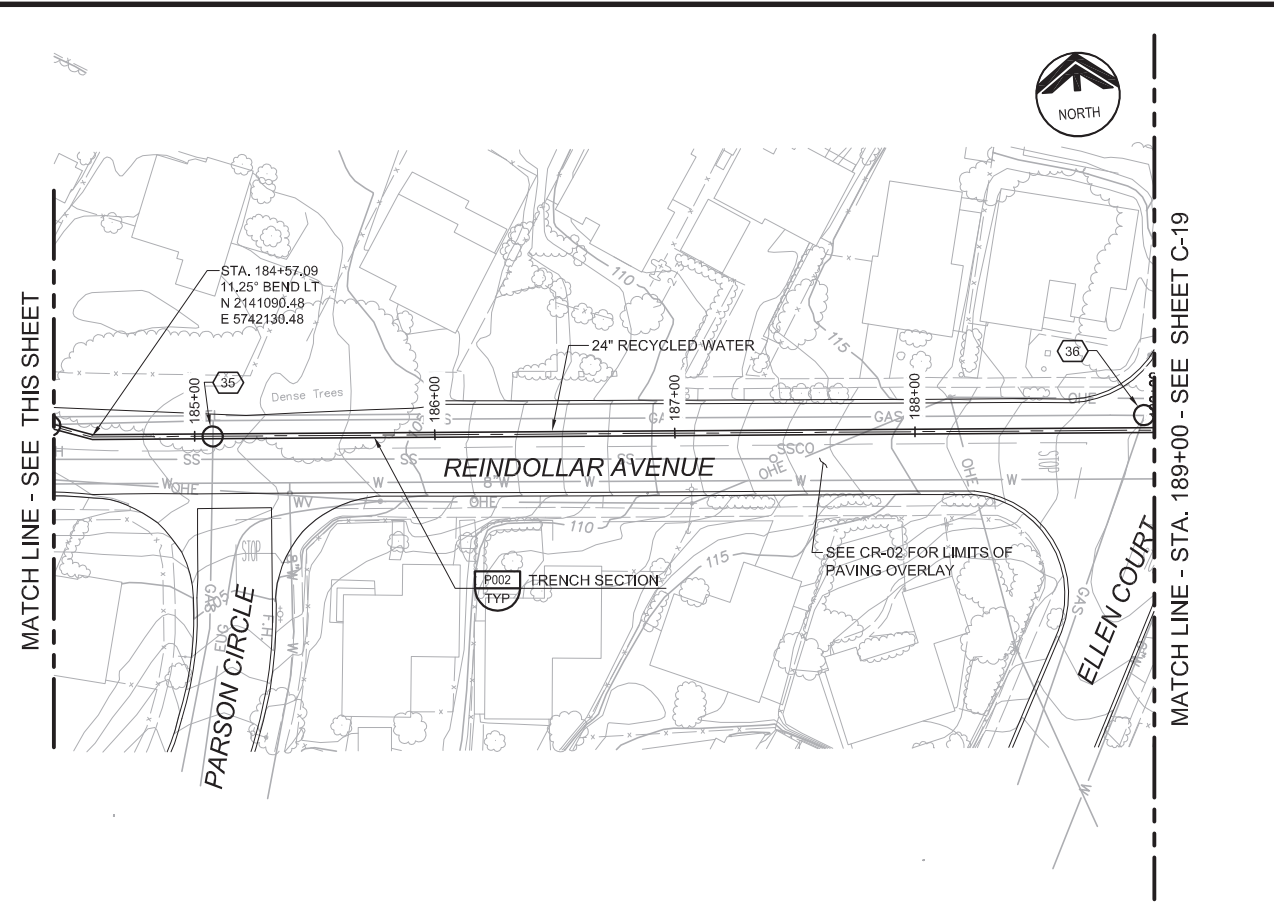
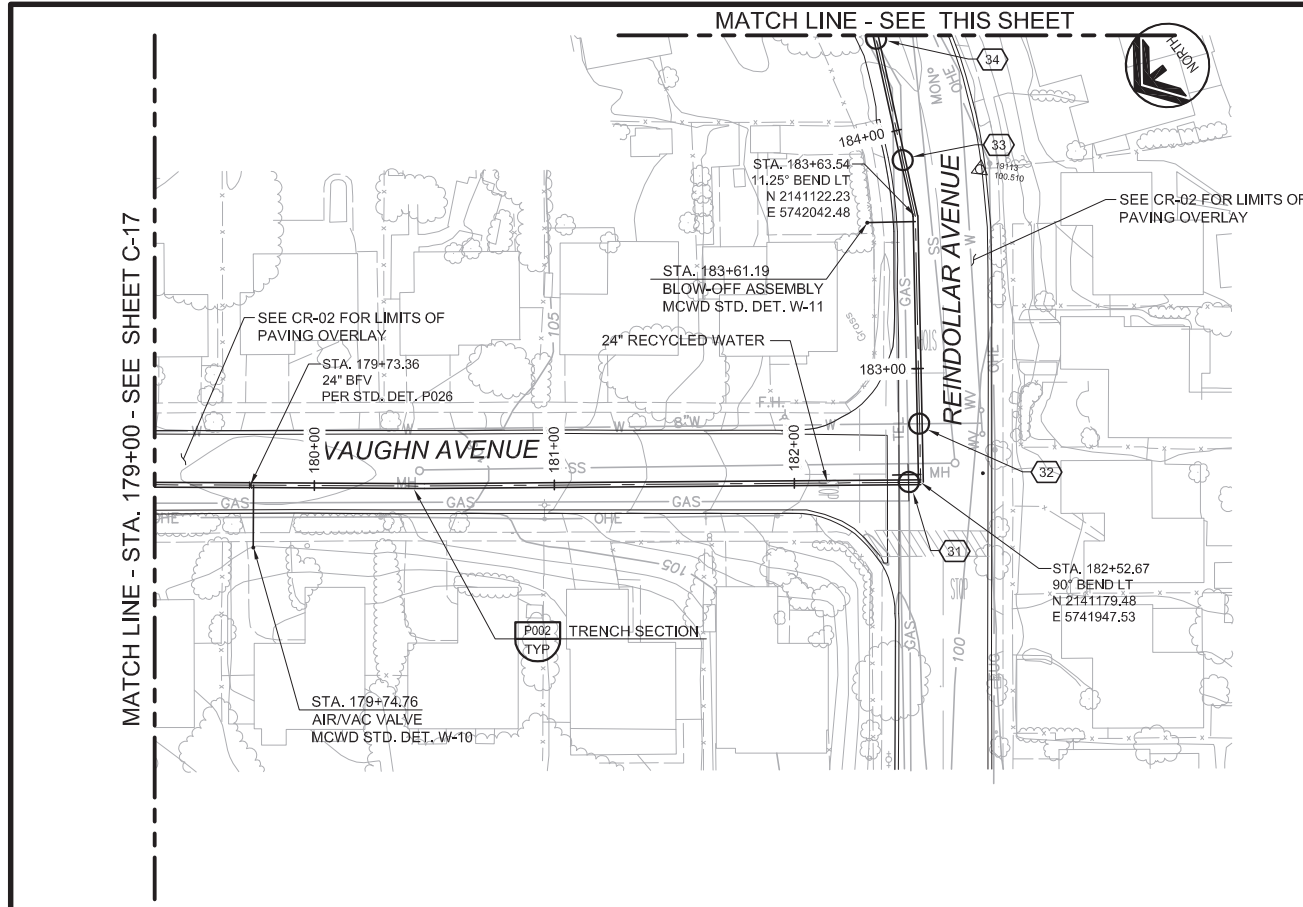
PROJECT ENGINEER  
Digitally signed by Jonathon P. Marshall  
Contact Info: Carollo Engineers, Inc.  
Date: 2017.05.01 13:05:32-0700



**REGIONAL URBAN WATER AUGMENTATION PROJECT**  
**RECYCLED WATER PIPELINE**  
CIVIL  
**PLAN AND PROFILE**  
STA. 169+00 TO STA. 179+00

**VERIFY SCALES**  
BAR IS ONE INCH ON ORIGINAL DRAWING  
0 1" 16'  
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

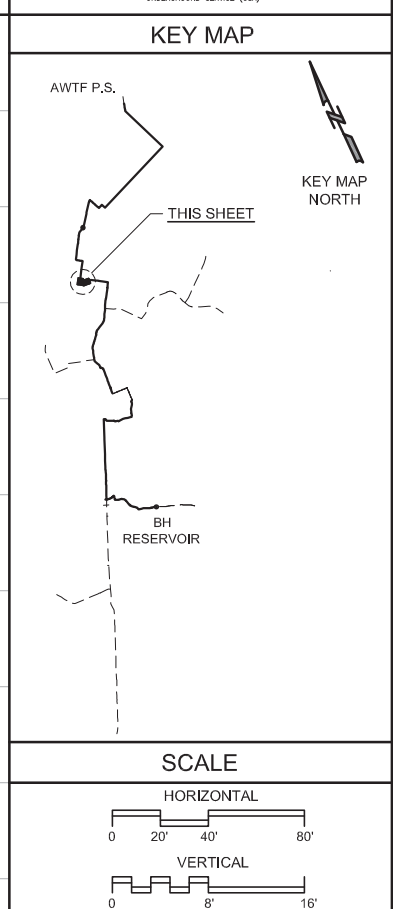
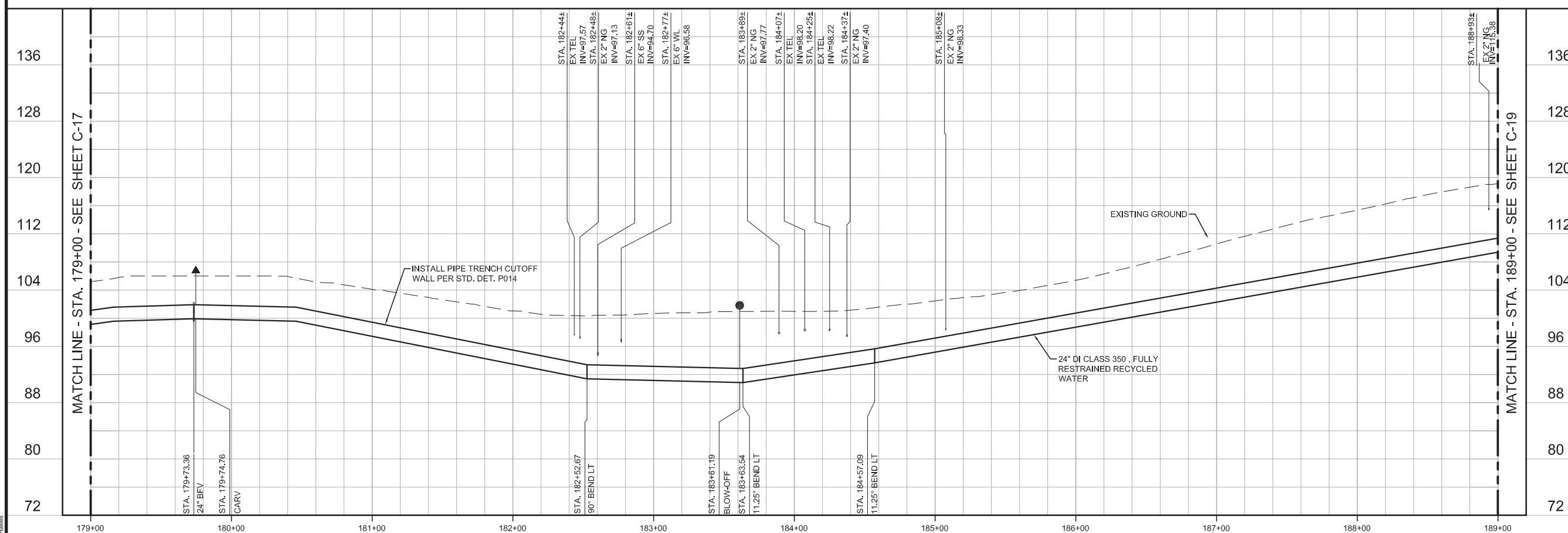
JOB NO. 7568A.10  
DRAWING NO. C-17  
SHEET NO. 25 OF 93



**GENERAL NOTES**

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AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.  
**Call before you Dig**  
 1-800-227-2600  
UNDERGROUND SERVICE (USA)



<b>BID SET</b>			
DESIGNED	JPM	DISCIPLINE ENGINEER	
DRAWN	BH		
CHECKED	AP		
DATE	MAY 2017		
REV	DATE	BY	DESCRIPTION

PROJECT ENGINEER  
Digitally signed by Jonathon P. Marshall  
Contact Info: Carollo Engineers, Inc.  
Date: 2017.05.01 13:05:24-0700Z

PROJECT MANAGER  
REGISTERED PROFESSIONAL ENGINEER  
JONATHAN P. MARSHALL  
No. 73265  
CIVIL  
STATE OF CALIFORNIA



REGIONAL URBAN WATER AUGMENTATION PROJECT  
 RECYCLED WATER PIPELINE  
 CIVIL  
 PLAN AND PROFILE  
 STA. 179+00 TO STA. 189+00

**VERIFY SCALES**  
 BAR IS ONE INCH ON ORIGINAL DRAWING  
 0 1" 16'  
 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7568A.10  
 DRAWING NO. C-18  
 SHEET NO. 26 OF 93



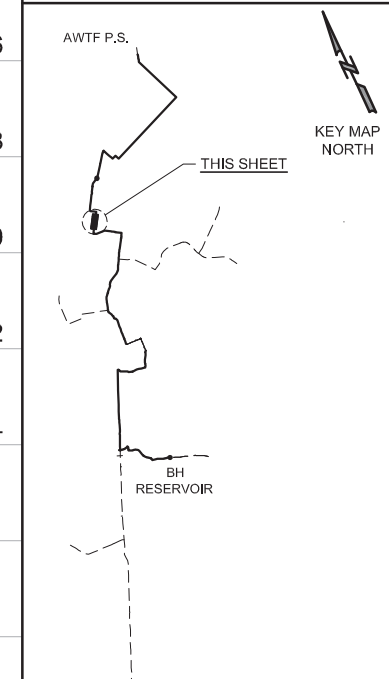
**GENERAL NOTES**

1. CONSTRUCT PIPELINE WITH A MINIMUM 4' OF COVER UNLESS SHOWN OTHERWISE IN THE PROFILE TO AVOID EXISTING UTILITIES OR ACCOMMODATE FUTURE GRADES.
2. ANY CONSTRUCTION ACTIVITIES WHICH IMPACT PARKWAYS SHALL BE CONDUCTED TO MINIMIZE DISTURBANCE TO ADJACENT PROPERTY OWNERS. ANY AREAS IMPACTED SHALL BE PHOTOGRAPHED PRIOR TO CONSTRUCTION, AND RESTORED TO THEIR PRE-CONSTRUCTION CONDITION PRIOR TO CONTRACTOR DEMOBILIZATION.

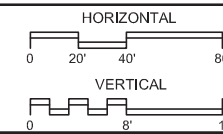


UNDERGROUND SERVICE (USA)

**KEY MAP**



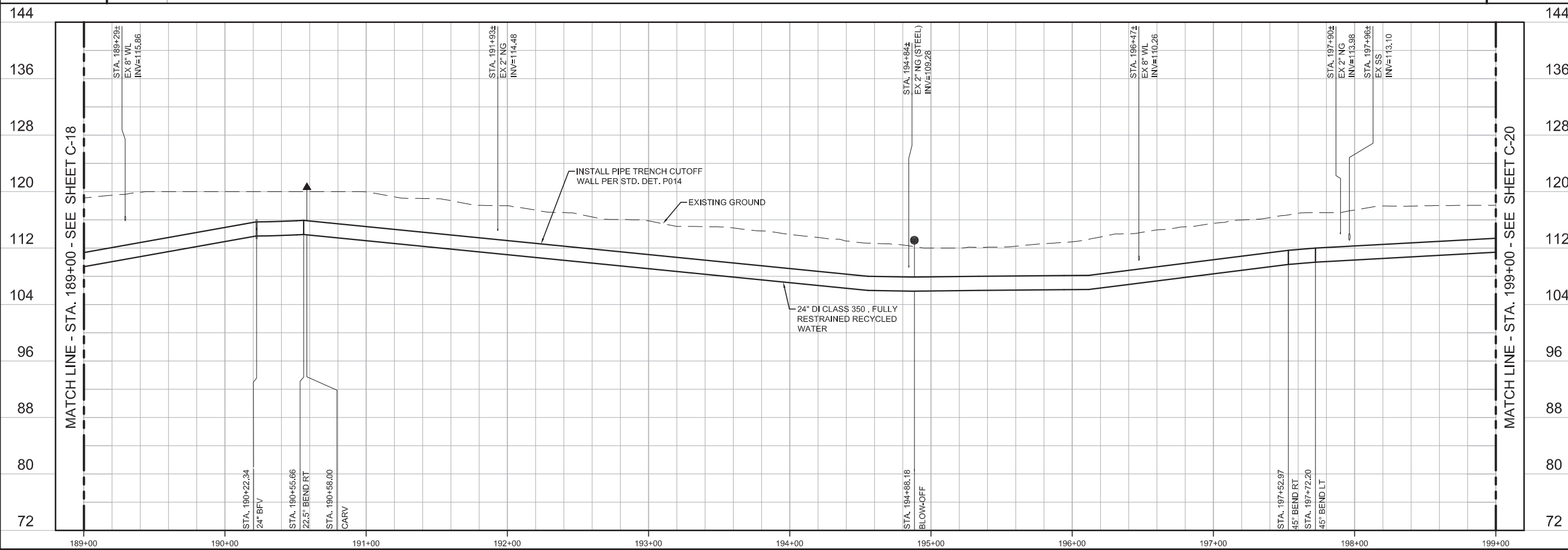
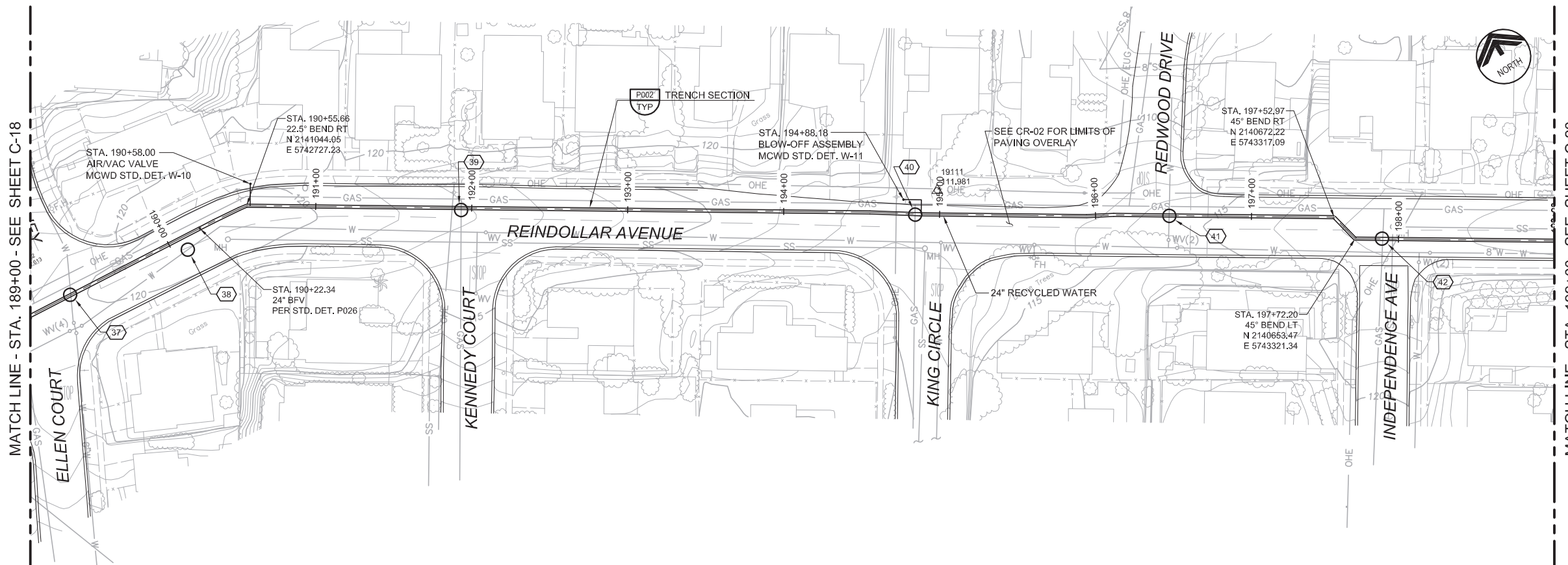
**SCALE**



**VERIFY SCALES**

BAR IS ONE INCH ON ORIGINAL DRAWING  
 0 1" 16'  
 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7568A.10  
 DRAWING NO. C-19  
 SHEET NO. 27 OF 93



REV	DATE	BY	DESCRIPTION

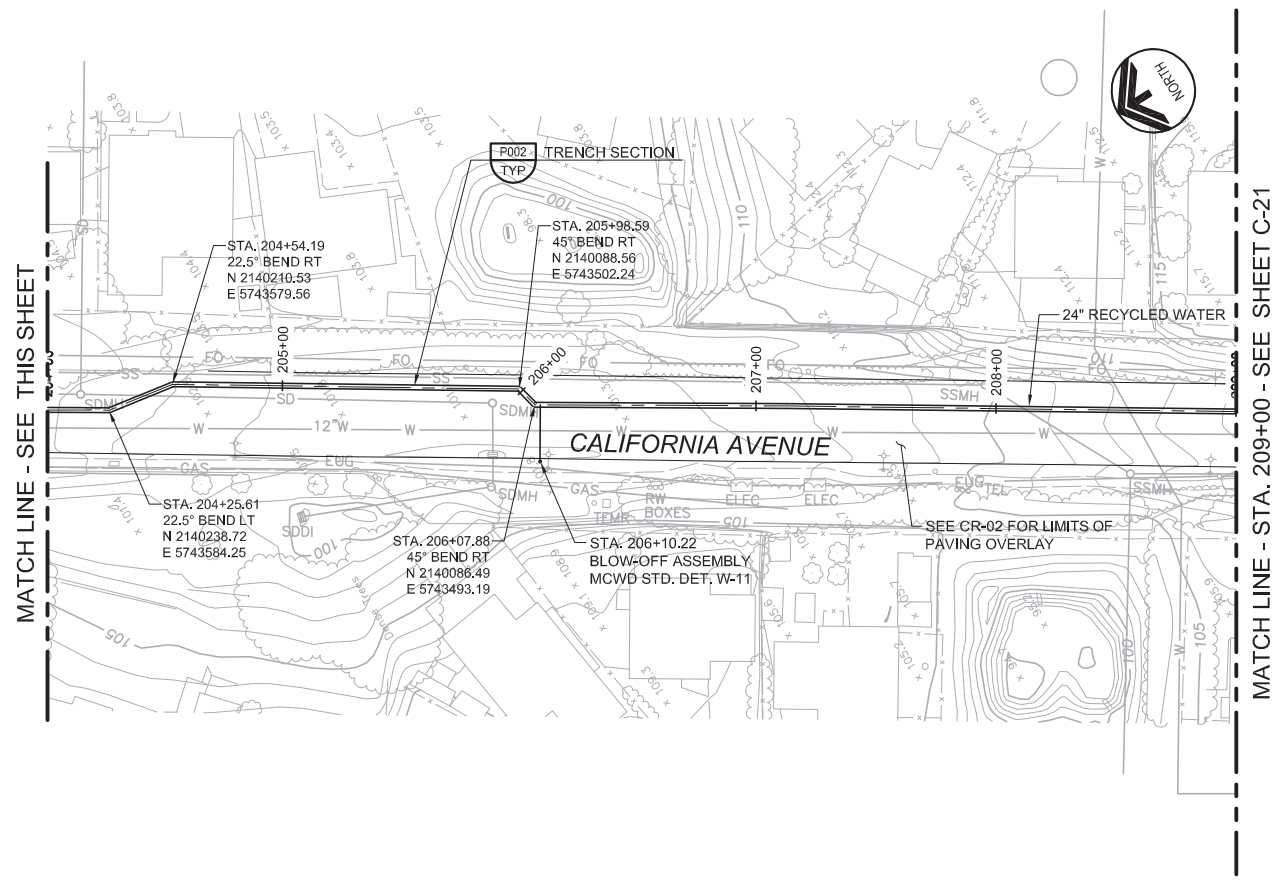
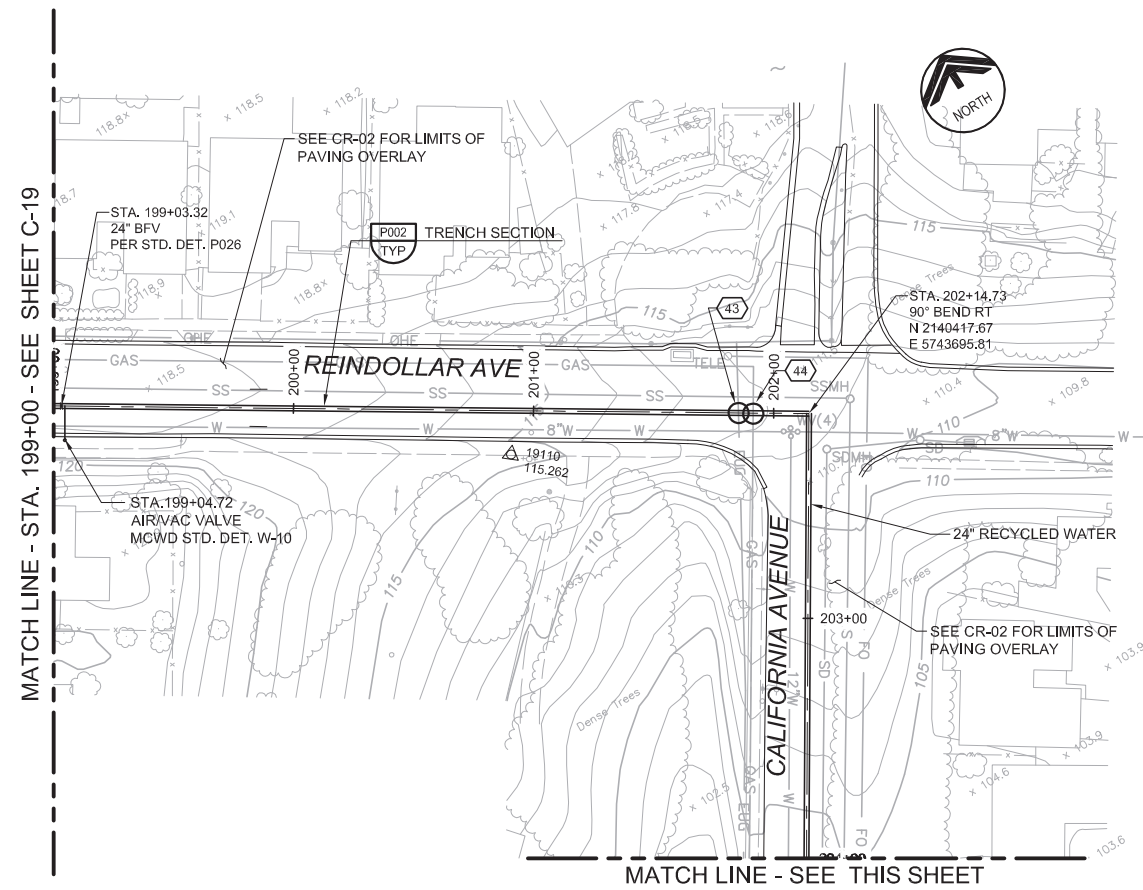
DESIGNED	JPM
DRAWN	BH
CHECKED	AP
DATE	MAY 2017

PROJECT ENGINEER  
 Digitally signed by Jonathon P. Marshall  
 Contact Info: Carollo Engineers, Inc.  
 Date: 2017.05.01 13:05:16-0700



**REGIONAL URBAN WATER AUGMENTATION PROJECT**  
**RECYCLED WATER PIPELINE**  
 CIVIL  
**PLAN AND PROFILE**  
 STA. 189+00 TO STA. 199+00

Last Opened by: 4/26/17 12:24pm BHWes



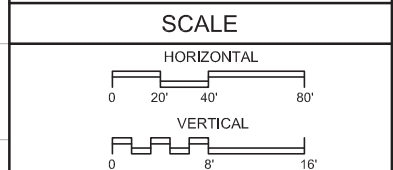
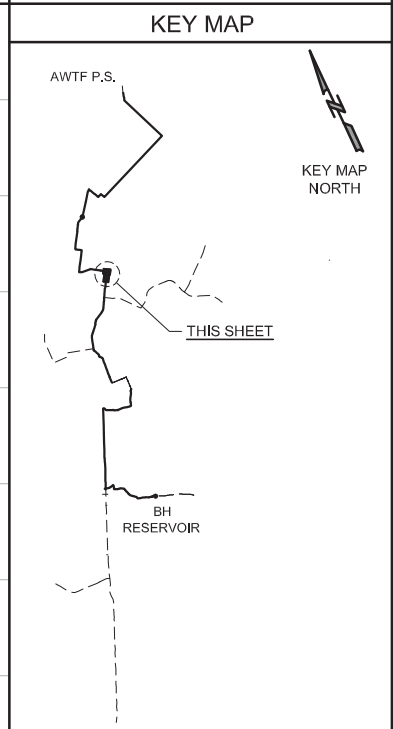
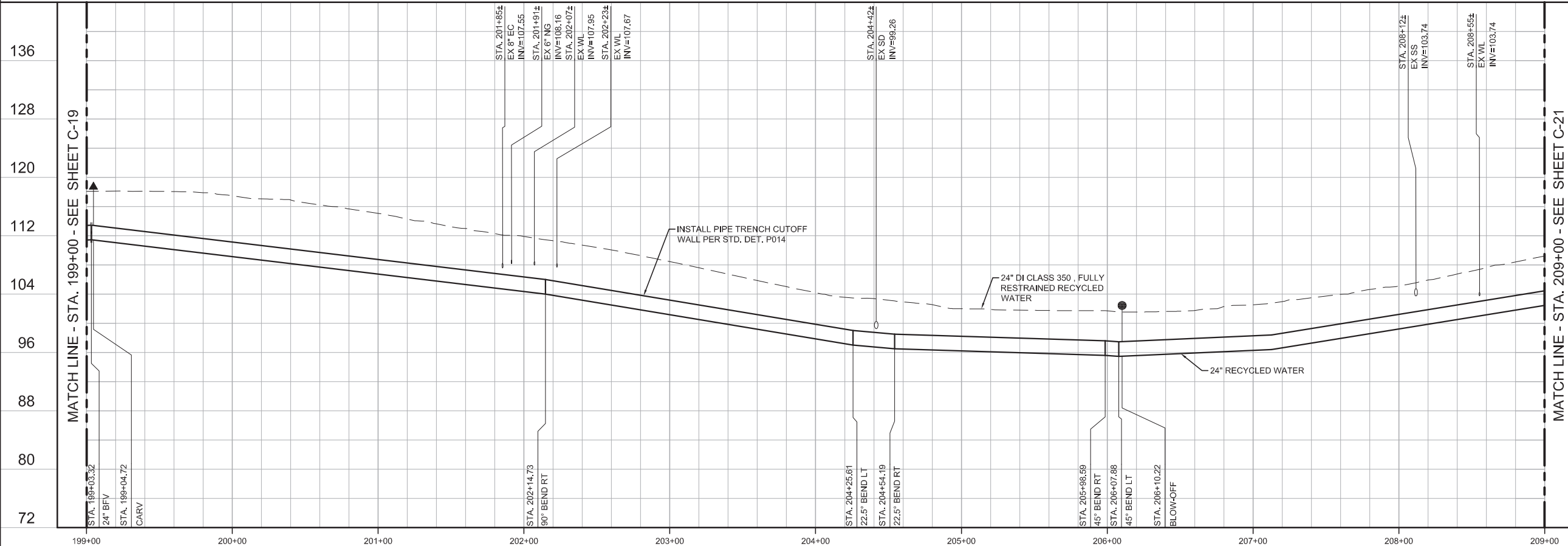
- GENERAL NOTES**
- CONSTRUCT PIPELINE WITH A MINIMUM 4' OF COVER UNLESS SHOWN OTHERWISE IN THE PROFILE TO AVOID EXISTING UTILITIES OR ACCOMMODATE FUTURE GRADES.
  - ANY CONSTRUCTION ACTIVITIES WHICH IMPACT PARKWAYS SHALL BE CONDUCTED TO MINIMIZE DISTURBANCE TO ADJACENT PROPERTY OWNERS. ANY AREAS IMPACTED SHALL BE PHOTOGRAPHED PRIOR TO CONSTRUCTION, AND RESTORED TO THEIR PRE-CONSTRUCTION CONDITION PRIOR TO CONTRACTOR DEMOBILIZATION.

AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.

**Call before you Dig**

1-800-227-2600

UNDERGROUND SERVICE (USA)



REV	DATE	BY	DESCRIPTION

DESIGNED JPM	DISCIPLINE ENGINEER
DRAWN BH	
CHECKED AP	
DATE MAY 2017	

Digitally signed by Jonathon P. Marshall  
Contact Info: Carollo Engineers, Inc.  
Date: 2017.05.01 13:05:08-0700

PROJECT ENGINEER  
JONATHAN P. MARSHALL  
No. 73265  
CIVIL  
STATE OF CALIFORNIA

PROJECT MANAGER

**carollo**  
Engineers...Working Wonders With Water™

MARINA COAST  
WATER DISTRICT

**Marina Coast Water District**

REGIONAL URBAN WATER AUGMENTATION PROJECT

RECYCLED WATER PIPELINE

CIVIL  
PLAN AND PROFILE  
STA. 199+00 TO STA. 209+00

**VERIFY SCALES**  
BAR IS ONE INCH ON ORIGINAL DRAWING  
0 1" 1"

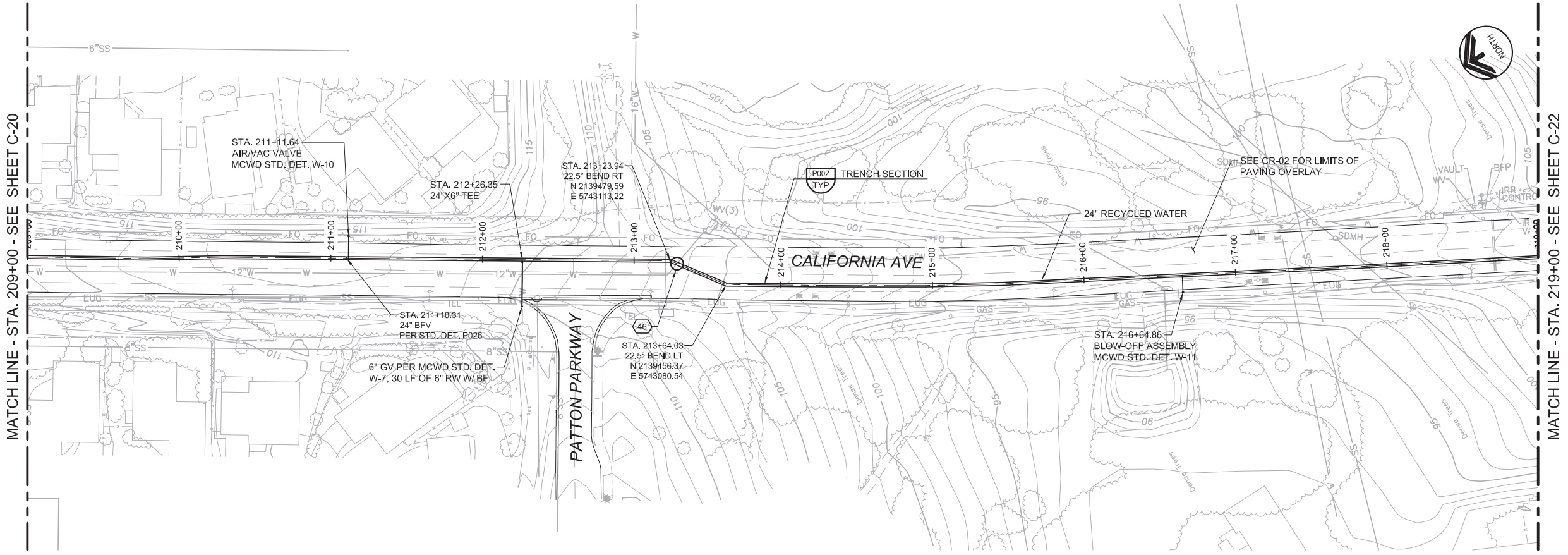
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO.  
7568A.10

DRAWING NO.  
C-20

SHEET NO.  
28 OF 93



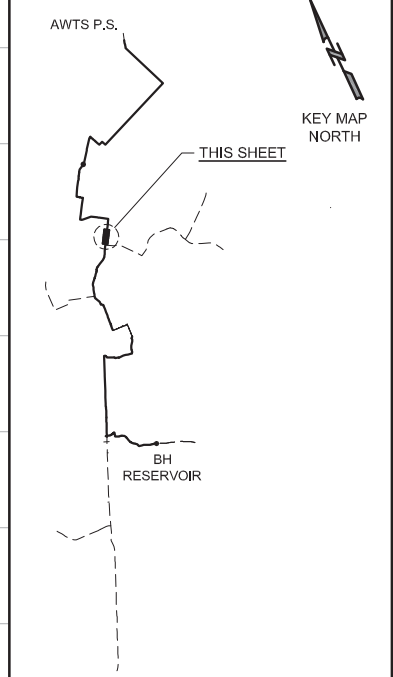


**GENERAL NOTES**

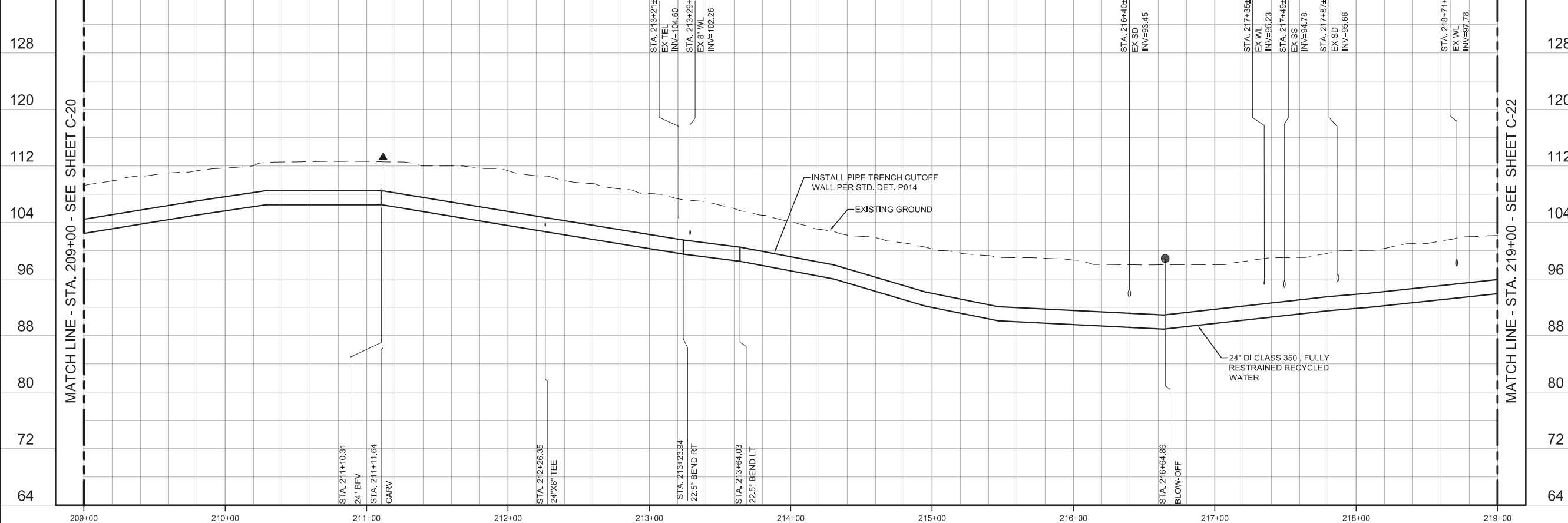
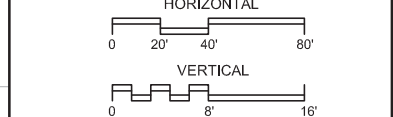
1. CONSTRUCT PIPELINE WITH A MINIMUM 4' OF COVER UNLESS SHOWN OTHERWISE IN THE PROFILE TO AVOID EXISTING UTILITIES OR ACCOMMODATE FUTURE GRADES.
2. LOCATION OF EX 2" W SHOWN IS APPROX. CONTRACTOR SHALL FIELD VERIFY LOCATION AND SIZE PRIOR TO START OF CONSTRUCTION.
3. ANY CONSTRUCTION ACTIVITIES WHICH IMPACT PARKWAYS SHALL BE CONDUCTED TO MINIMIZE DISTURBANCE TO ADJACENT PROPERTY OWNERS. ANY AREAS IMPACTED SHALL BE PHOTOGRAPHED PRIOR TO CONSTRUCTION, AND RESTORED TO THEIR PRE-CONSTRUCTION CONDITION PRIOR TO CONTRACTOR DEMOBILIZATION.



**KEY MAP**



**SCALE**



REV	DATE	BY	DESCRIPTION

DESIGNED	JPM
DRAWN	BH
CHECKED	AP
DATE	MAY 2017

Project Engineer: Digitally signed by Jonathon P. Marshall  
 Contact Info: Carollo Engineers, Inc.  
 Date: 2017.05.01 13:04:59-0700



**REGIONAL URBAN WATER AUGMENTATION PROJECT**  
**RECYCLED WATER PIPELINE**  
 CIVIL  
**PLAN AND PROFILE**  
 STA. 209+00 TO STA. 219+00

**VERIFY SCALES**  
 BAR IS ONE INCH ON ORIGINAL DRAWING  
 0 1" 1"  
 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7568A.10  
 DRAWING NO. C-21  
 SHEET NO. 29 OF 93

**GENERAL NOTES**

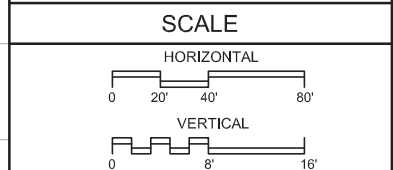
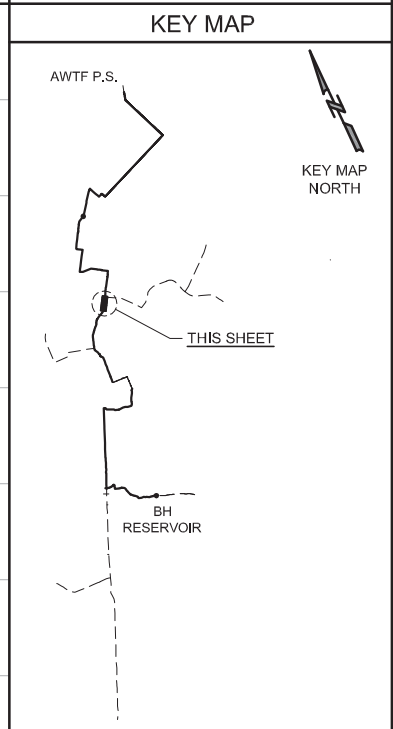
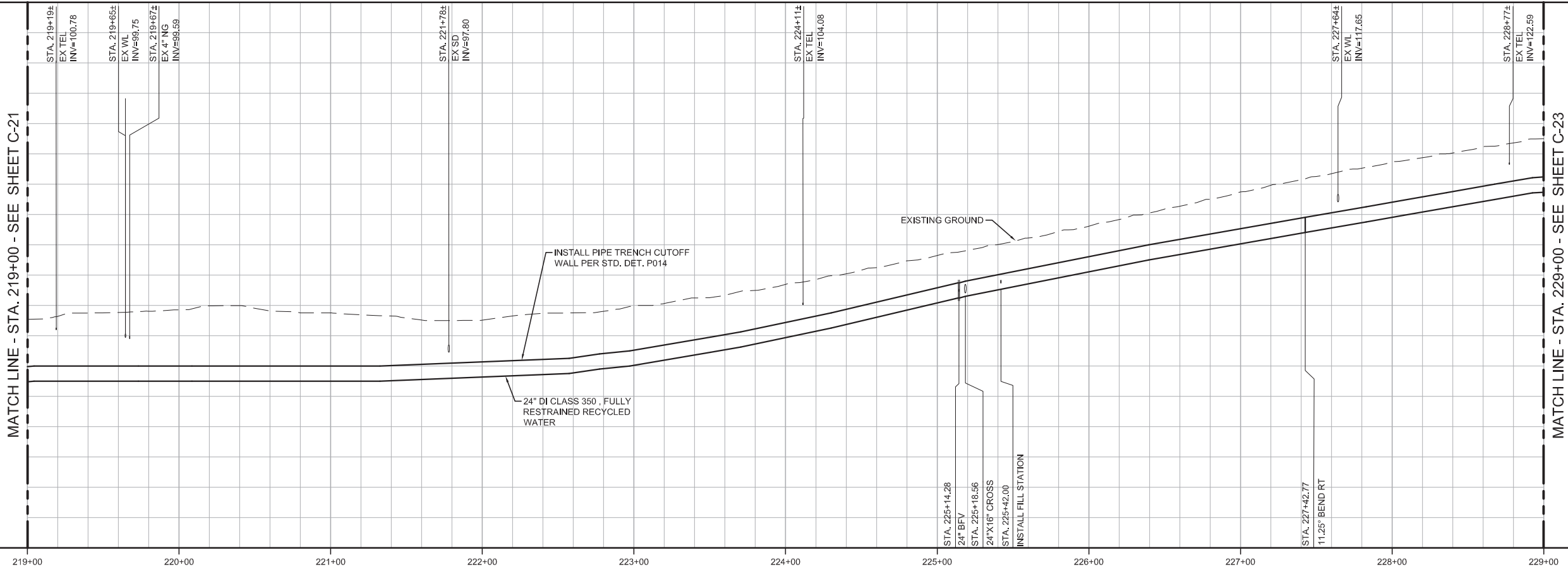
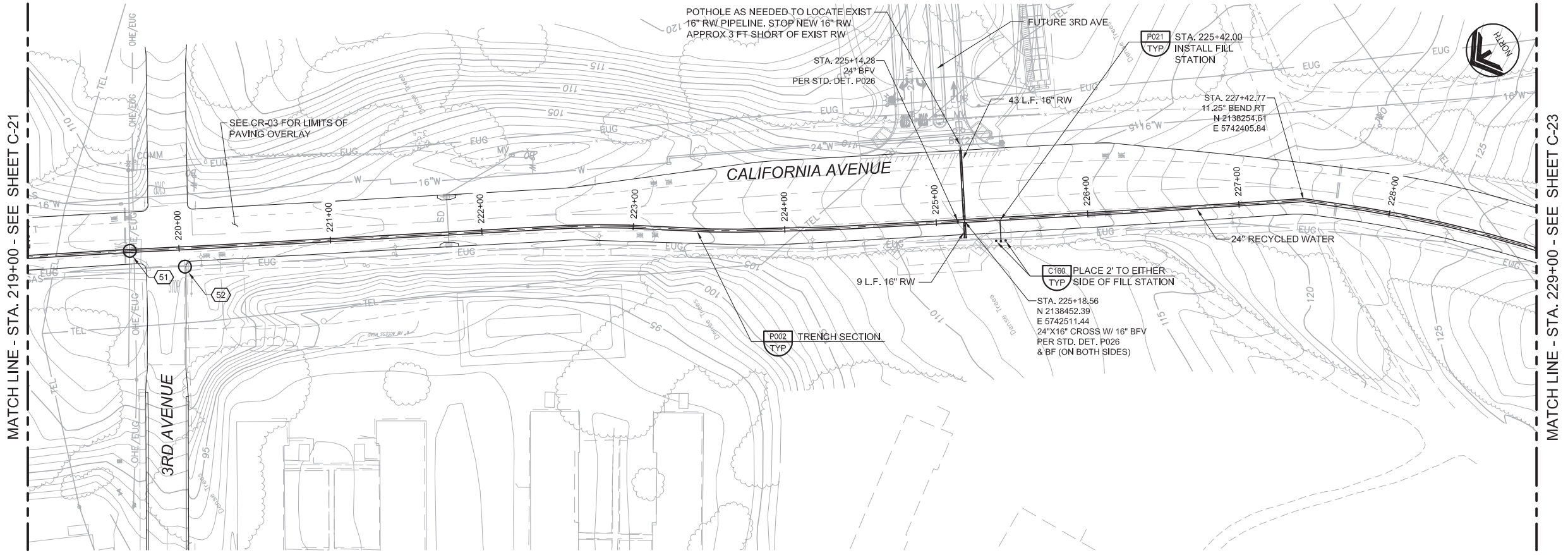
1. CONSTRUCT PIPELINE WITH A MINIMUM 4' OF COVER UNLESS SHOWN OTHERWISE IN THE PROFILE TO AVOID EXISTING UTILITIES OR ACCOMMODATE FUTURE GRADES.
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AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.

**Call before you Dig**

1-800-227-2600

UNDERGROUND SERVICE (USA)



<b>BID SET</b>			
DESIGNED	JPM		
DRAWN	BH		
CHECKED	AP		
DATE	MAY 2017		
DISCIPLINE ENGINEER			

Project Engineer: Digitally signed by Jonathon P. Marshall  
 Contact Info: Carollo Engineers, Inc.  
 Date: 2017.05.01 13:04:48-0700Z

PROJECT MANAGER

**carollo**  
 Engineers...Working Wonders With Water™

**Marina Coast Water District**

**REGIONAL URBAN WATER AUGMENTATION PROJECT**  
 RECYCLED WATER PIPELINE  
 CIVIL  
 PLAN AND PROFILE  
 STA. 219+00 TO STA. 229+00

**VERIFY SCALES**  
 BAR IS ONE INCH ON ORIGINAL DRAWING  
 0 1" 16"  
 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7568A.10  
 DRAWING NO. C-22  
 SHEET NO. 30 OF 93



**GENERAL NOTES**

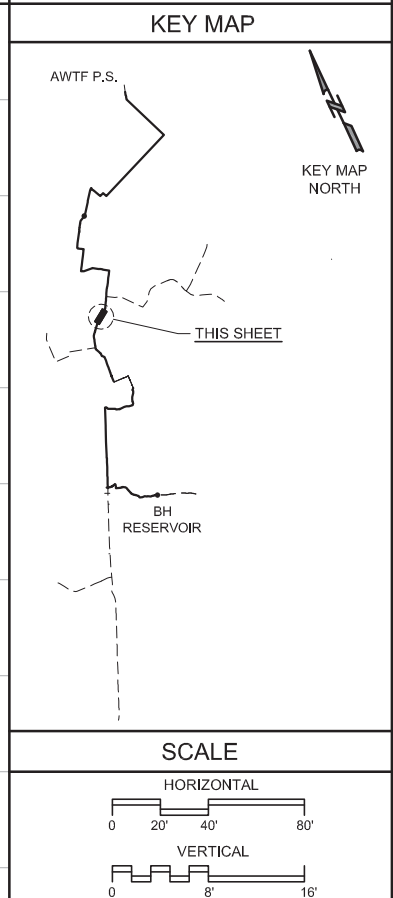
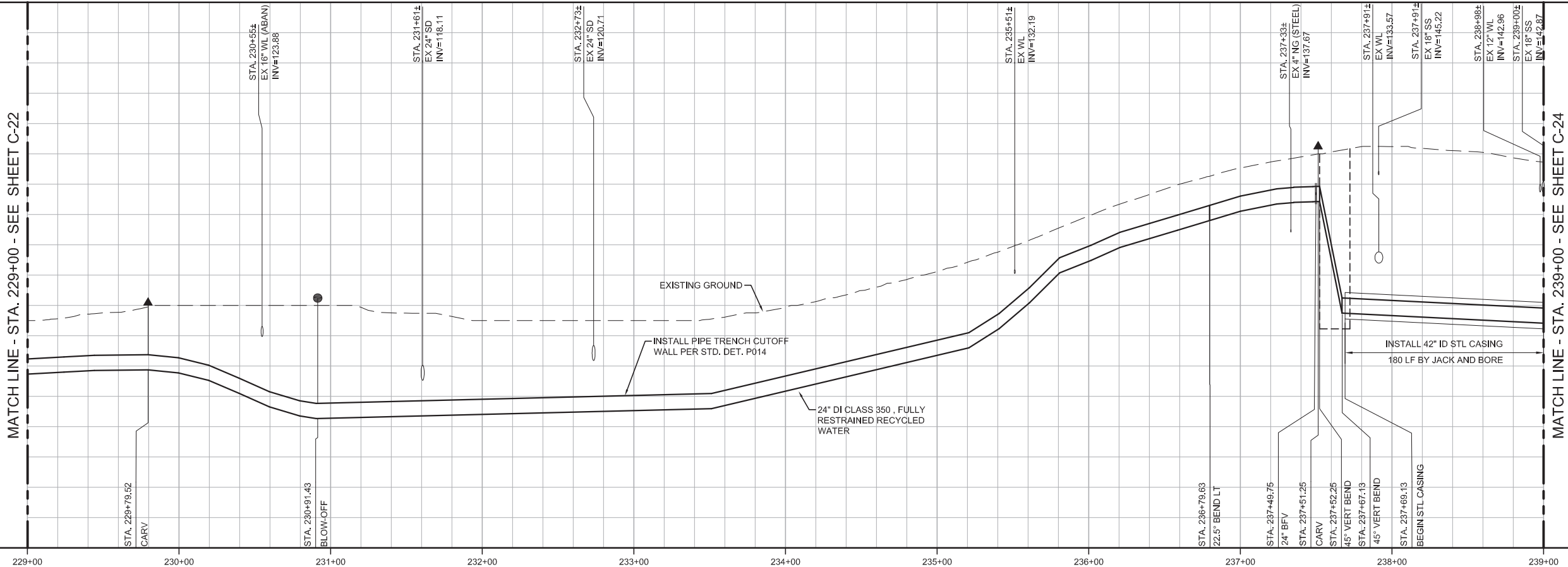
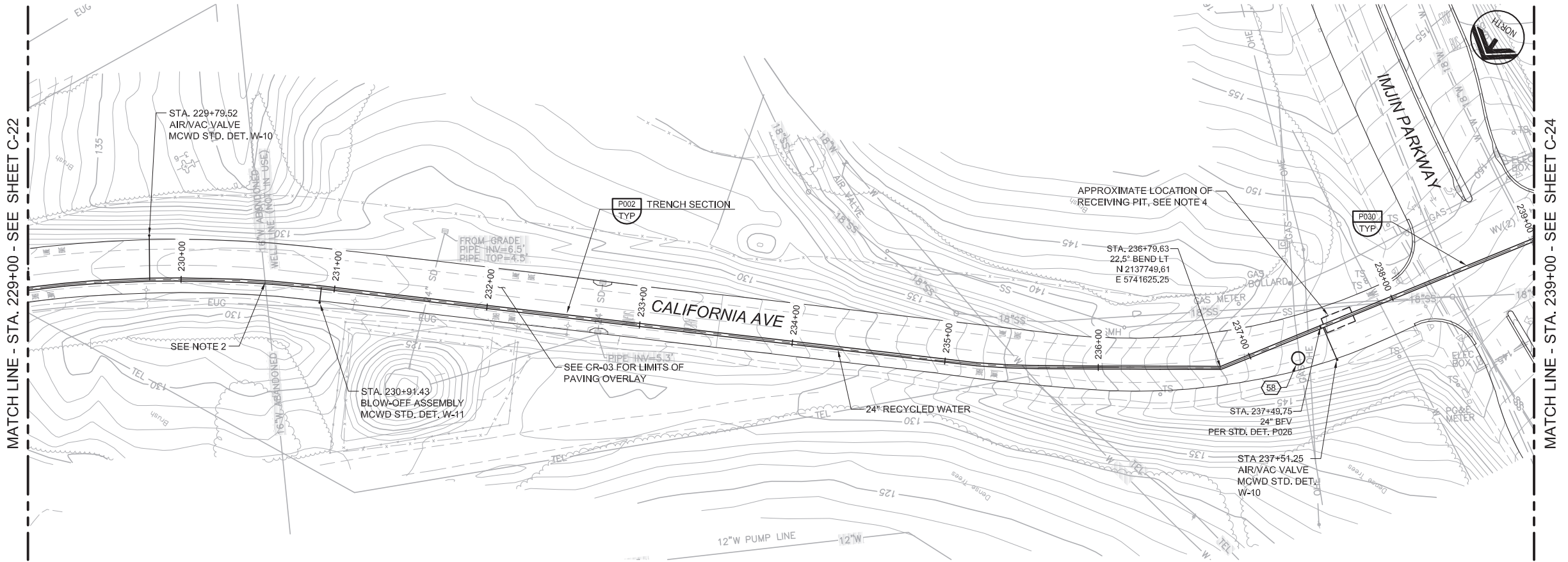
1. CONSTRUCT PIPELINE WITH A MINIMUM 4' OF COVER UNLESS SHOWN OTHERWISE IN THE PROFILE TO AVOID EXISTING UTILITIES OR ACCOMMODATE FUTURE GRADES.
2. CONTRACTOR MAY CUT THROUGH ABANDONED LINE AND CAP IF IN CONFLICT WITH NEW RW LINE.
3. ANY CONSTRUCTION ACTIVITIES WHICH IMPACT PARKWAYS SHALL BE CONDUCTED TO MINIMIZE DISTURBANCE TO ADJACENT PROPERTY OWNERS. ANY AREAS IMPACTED SHALL BE PHOTOGRAPHED PRIOR TO CONSTRUCTION, AND RESTORED TO THEIR PRE-CONSTRUCTION CONDITION PRIOR TO CONTRACTOR DEMOBILIZATION.
4. EXACT LOCATIONS AND DIMENSIONS OF JACKING AND RECEIVING PITS TO BE DETERMINED BY CONTRACTOR AND SUBMITTED TO ENGINEER FOR REVIEW.

AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.

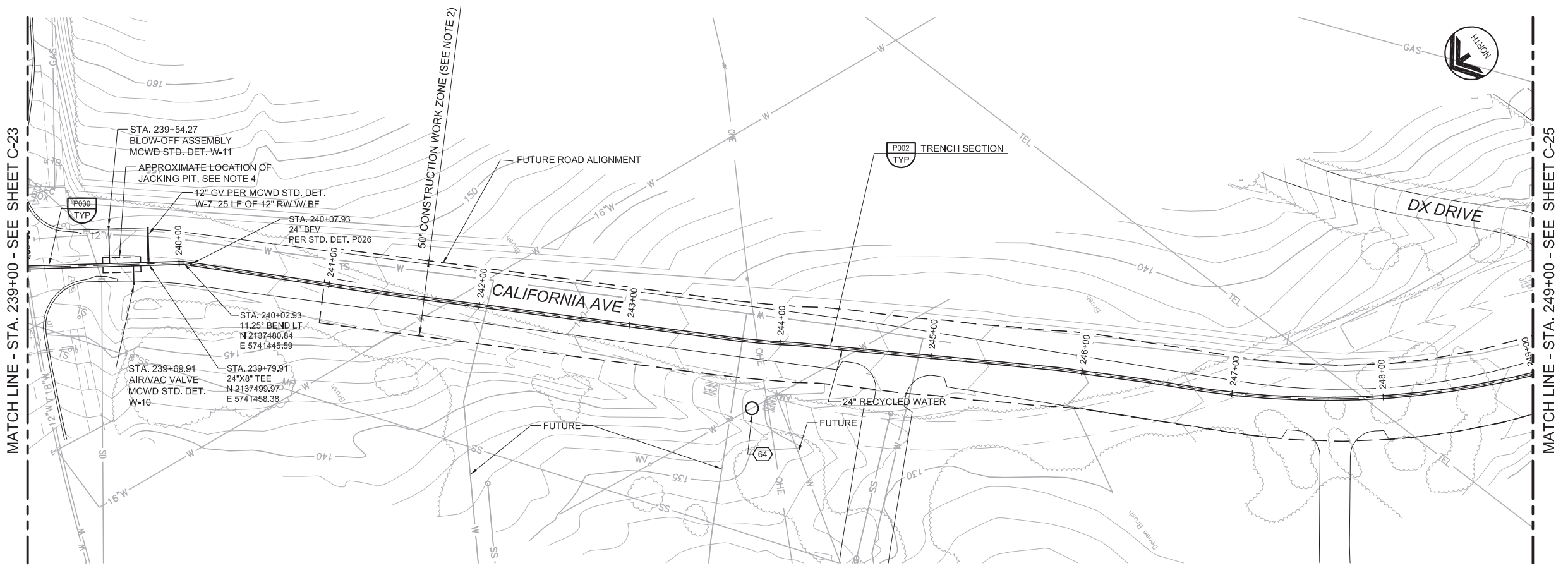
**Call before you Dig**

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UNDERGROUND SERVICE (USA)



<b>BID SET</b>	DESIGNED JPM	<b>Marina Coast Water District</b>	<b>REGIONAL URBAN WATER AUGMENTATION PROJECT</b>	<b>VERIFY SCALES</b>	JOB NO. 7568A.10
	DRAWN BH	<b>carollo</b> Engineers...Working Wonders With Water™	<b>RECYCLED WATER PIPELINE</b>	BAR IS ONE INCH ON ORIGINAL DRAWING	DRAWING NO. C-23
	CHECKED AP	<b>Marina Coast Water District</b>	CIVIL	0 1" 16"	SHEET NO. 31 OF 93
	DATE MAY 2017	<b>Marina Coast Water District</b>	<b>PLAN AND PROFILE</b>	IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	
REV	DATE	BY	DESCRIPTION		



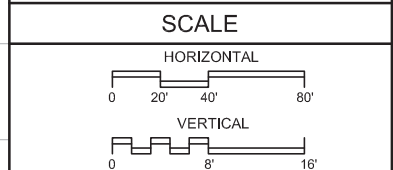
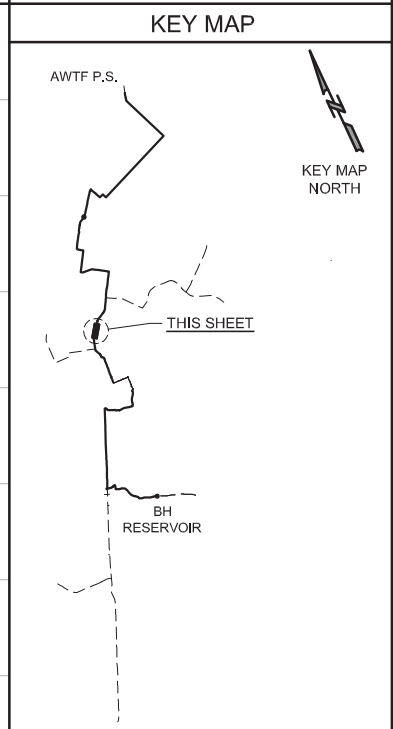
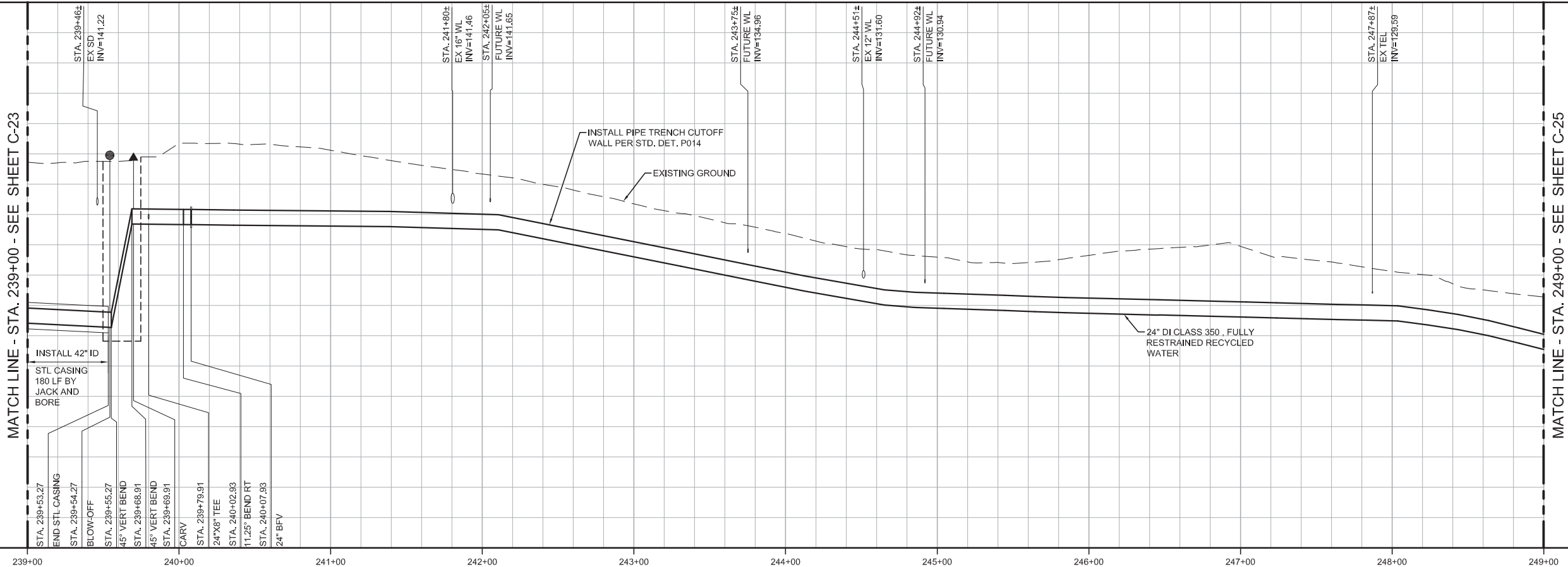
- ### GENERAL NOTES
1. CONSTRUCT PIPELINE WITH A MINIMUM 4' OF COVER UNLESS SHOWN OTHERWISE IN THE PROFILE TO AVOID EXISTING UTILITIES OR ACCOMMODATE FUTURE GRADES.
  2. PIPELINE INSTALLATION IN OFF-ROAD AREAS BETWEEN STA 241+13.18 AND 249+74.78 SHALL BE CONSTRUCTED IN ACCORDANCE WITH CITY OF MARINA ENCROACHMENT PERMIT CONDITIONS. THE CONTRACTOR IS RESTRICTED TO A 50-FOOT WORK ZONE CENTERED ON THE PIPELINE.
  3. ANY CONSTRUCTION ACTIVITIES WHICH IMPACT PARKWAYS SHALL BE CONDUCTED TO MINIMIZE DISTURBANCE TO ADJACENT PROPERTY OWNERS. ANY AREAS IMPACTED SHALL BE PHOTOGRAPHED PRIOR TO CONSTRUCTION, AND RESTORED TO THEIR PRE-CONSTRUCTION CONDITION PRIOR TO CONTRACTOR DEMOBILIZATION.
  4. EXACT LOCATIONS AND DIMENSIONS OF JACKING AND RECEIVING PITS TO BE DETERMINED BY CONTRACTOR AND SUBMITTED TO ENGINEER FOR REVIEW.

AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.

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UNDERGROUND SERVICE (USA)



REV	DATE	BY	DESCRIPTION

DESIGNED	JPM
DRAWN	BH
CHECKED	AP
DATE	MAY 2017

PROJECT ENGINEER  
 Digitally signed by Jonathon P. Marshall  
 Contact Info: Carollo Engineers, Inc.  
 Date: 2017.05.01 13:04:31-0700

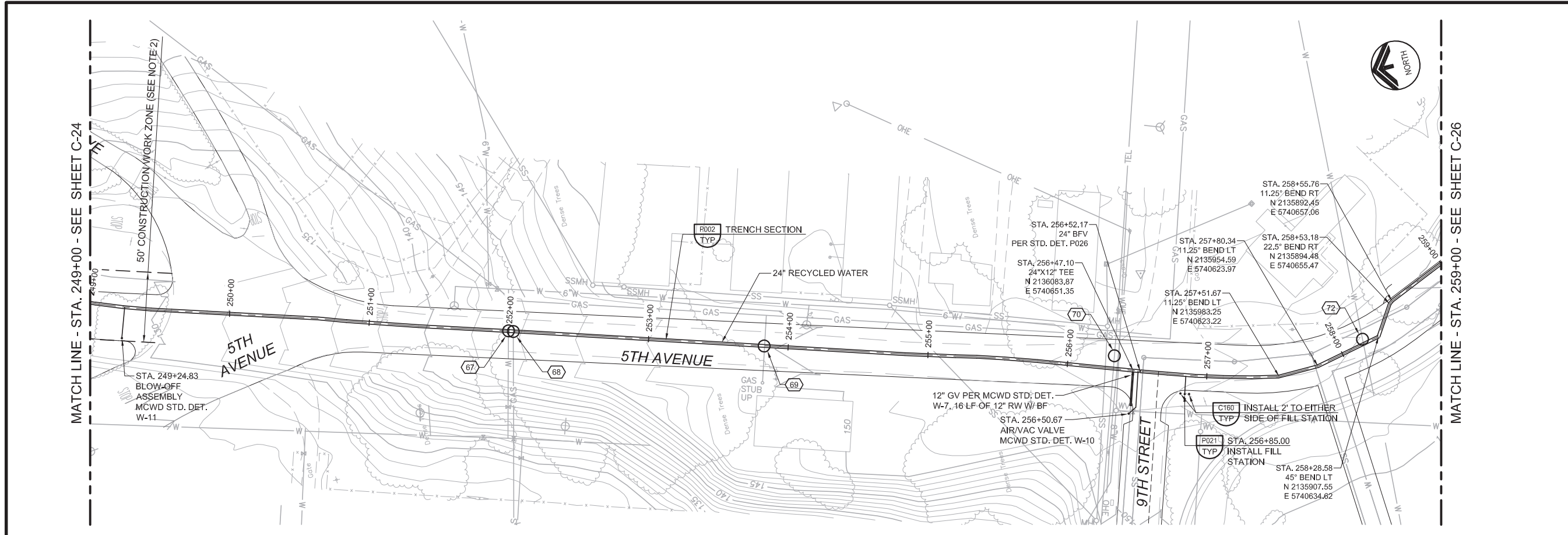
PROJECT MANAGER

**Marina Coast Water District**

REGIONAL URBAN WATER AUGMENTATION PROJECT  
 RECYCLED WATER PIPELINE  
 CIVIL  
 PLAN AND PROFILE  
 STA. 239+00 TO STA. 249+00

VERIFY SCALES BAR IS ONE INCH ON ORIGINAL DRAWING 0 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	JOB NO. 7568A.10 DRAWING NO. C-24 SHEET NO. 32 OF 93
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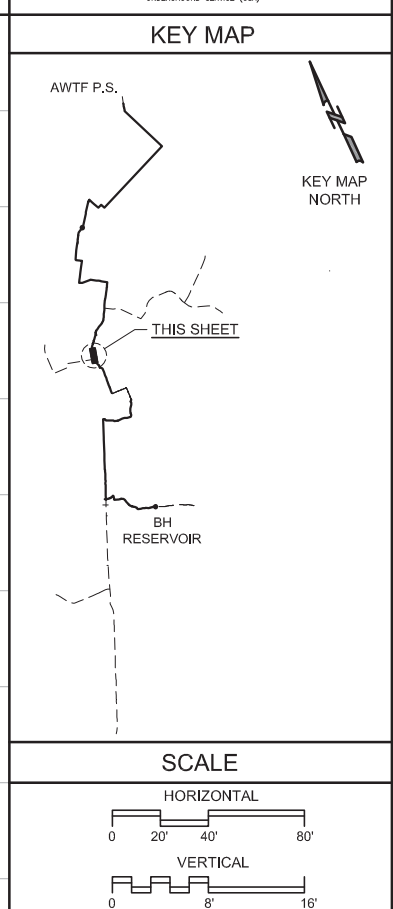
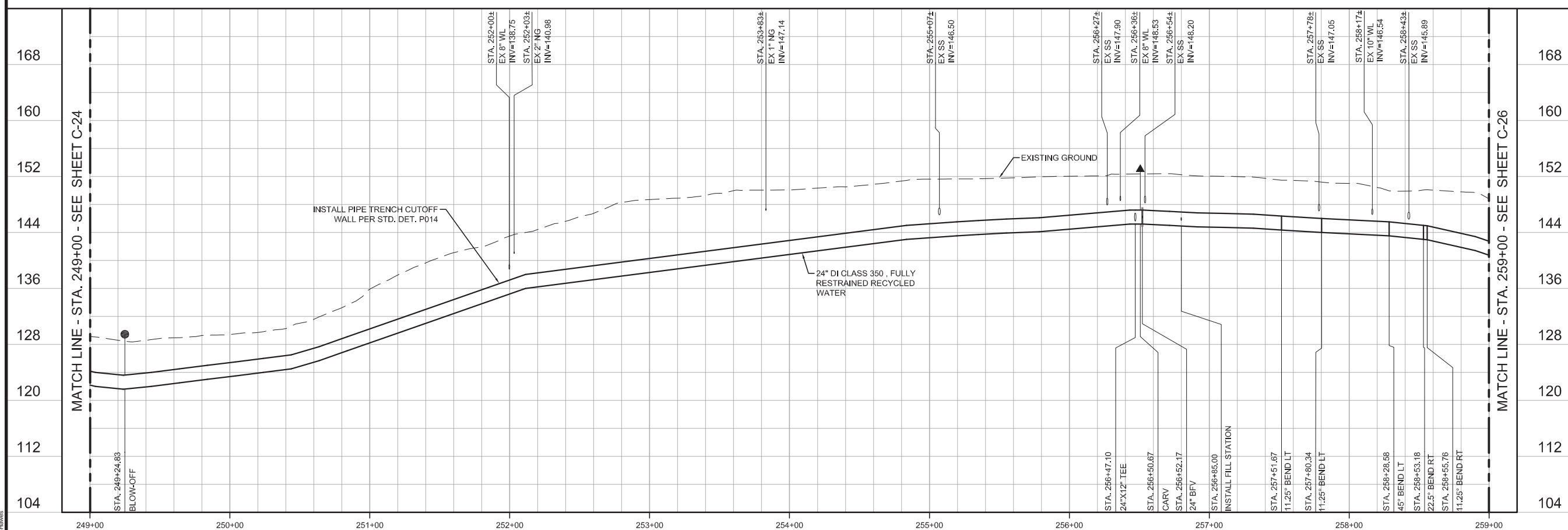




**GENERAL NOTES**

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- PIPELINE INSTALLATION IN OFF-ROAD AREAS BETWEEN STA. 241+13.18 AND 249+74.78 SHALL BE CONSTRUCTED IN ACCORDANCE WITH CITY OF MARINA ENCROACHMENT PERMIT CONDITIONS. THE CONTRACTOR IS RESTRICTED TO A 50 FOOT WORK ZONE CENTERED ON THE PIPELINE.
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AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.  
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 1-800-227-2600  
UNDERGROUND SERVICE (USA)



<b>BID SET</b>			
DESIGNED	JPM		
DRAWN	BH		
CHECKED	AP		
DATE	MAY 2017		
REV	DATE	BY	DESCRIPTION

DISCIPLINE ENGINEER

PROJECT ENGINEER

Digitally signed by Jonathon P. Marshall  
 Contact Info: Carollo Engineers, Inc.  
 Date: 2017.05.01 13:04:18-0700'



**REGIONAL URBAN WATER AUGMENTATION PROJECT**

**RECYCLED WATER PIPELINE**

CIVIL

**PLAN AND PROFILE**

STA. 249+00 TO STA. 259+00

**VERIFY SCALES**

BAR IS ONE INCH ON ORIGINAL DRAWING

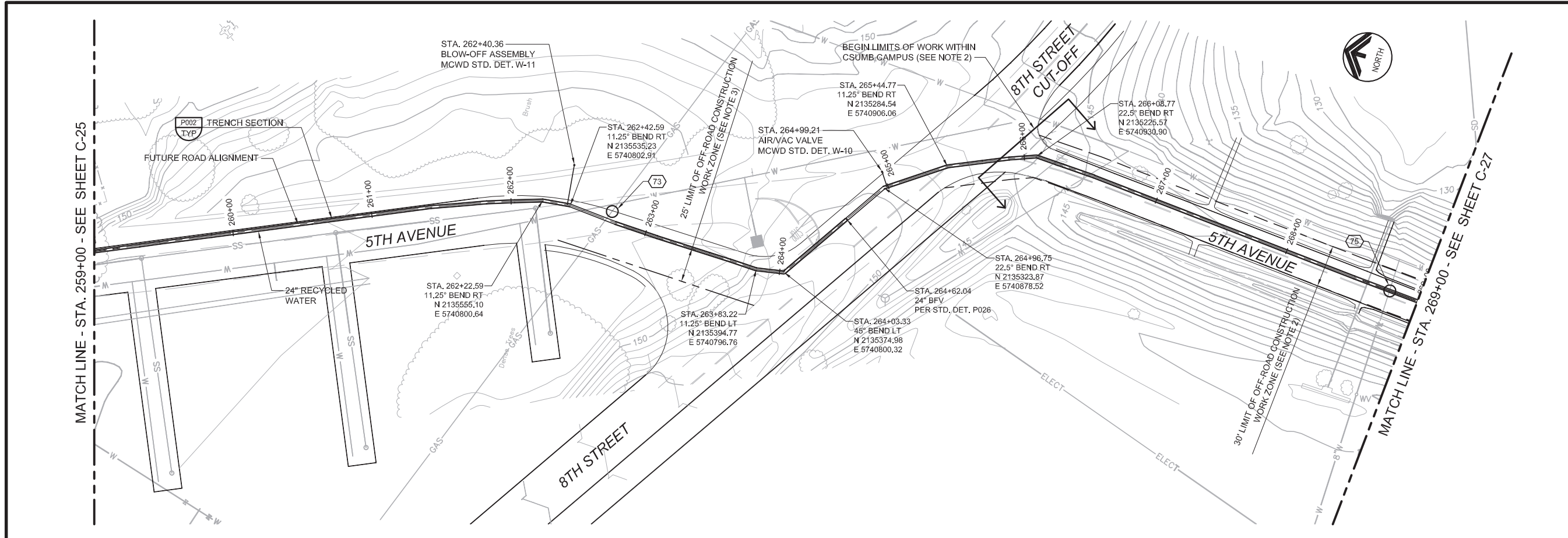
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IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7568A.10

DRAWING NO. C-25

SHEET NO. 33 OF 93

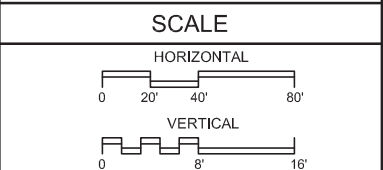
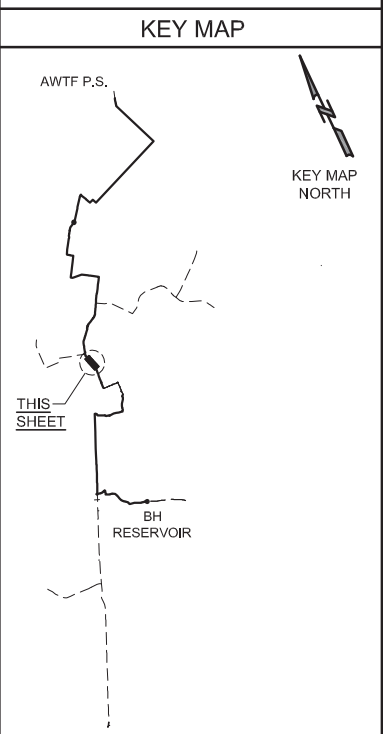
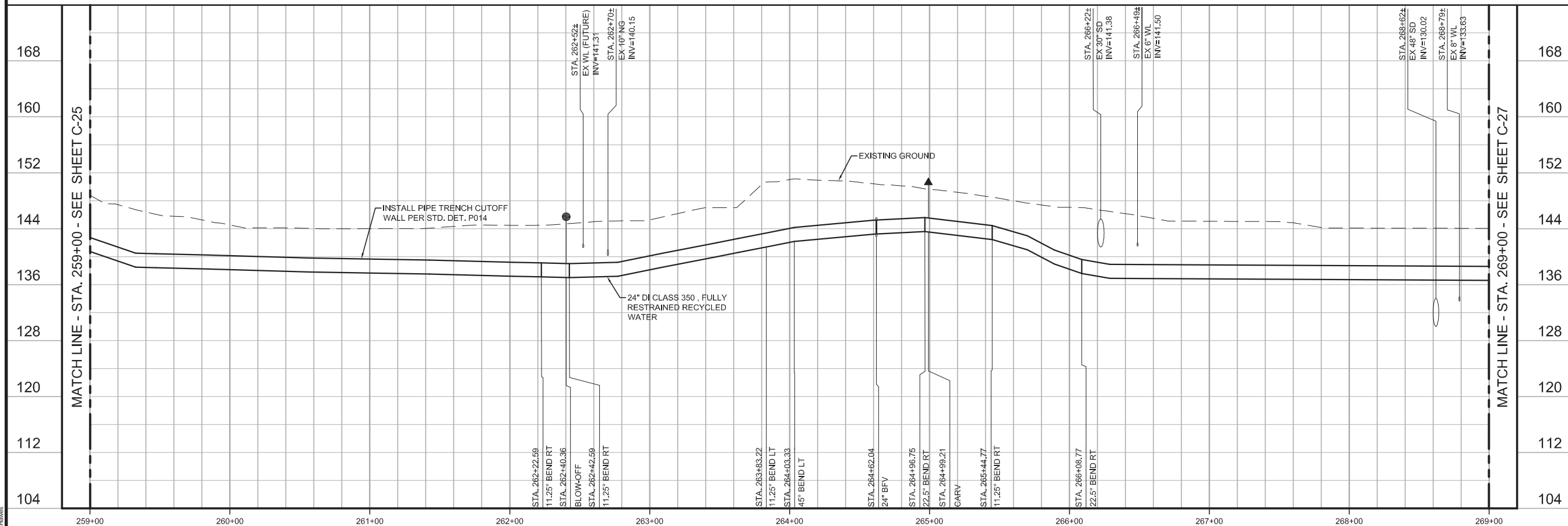


- ### GENERAL NOTES
- CONSTRUCT PIPELINE WITH A MINIMUM 4' OF COVER UNLESS SHOWN OTHERWISE IN THE PROFILE TO AVOID EXISTING UTILITIES OR ACCOMMODATE FUTURE GRADES.
  - CONSTRUCTION SHALL BE IN ACCORDANCE WITH CSUMB TEMPORARY CONSTRUCTION PERMIT FROM STA. 265+80± TO STA. 283+85±. ALLOWABLE CONSTRUCTION WORK ZONE IS FROM EDGE OF PAVEMENT TO EDGE OF PAVEMENT UNLESS OTHERWISE AUTHORIZED IN WRITING.
  - PIPELINE INSTALLATION IN OFF-ROAD AREA BETWEEN STA. 263+07± AND 264+52± SHALL BE CONSTRUCTED IN ACCORDANCE WITH CITY OF MARINA ENCROACHMENT PERMIT CONDITIONS. THE CONSTRUCTION WORK ZONE IS CONSTRAINED TO THE ROAD RIGHT-OF-WAY AND THE OFF-ROAD LIMIT SHOWN ON THE PLANS.
  - ANY CONSTRUCTION ACTIVITIES WHICH IMPACT PARKWAYS SHALL BE CONDUCTED TO MINIMIZE DISTURBANCE TO ADJACENT PROPERTY OWNERS. ANY AREAS IMPACTED SHALL BE PHOTOGRAPHED PRIOR TO CONSTRUCTION, AND RESTORED TO THEIR PRE-CONSTRUCTION CONDITION PRIOR TO CONTRACTOR DEMOBILIZATION.

AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.

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1-800-227-2600

UNDERGROUND SERVICE (USA)



REV	DATE	BY	DESCRIPTION

<b>BID SET</b>	
DESIGNED	JPM
DRAWN	BH
CHECKED	AP
DATE	MAY 2017

PROJECT ENGINEER  
Digitally signed by Jonathon P. Marshall  
Contact Info: Carollo Engineers, Inc.  
Date: 2017.05.01 13:04:09-0700

PROJECT MANAGER  
JONATHAN P. MARSHALL  
No. 73265  
CIVIL  
STATE OF CALIFORNIA



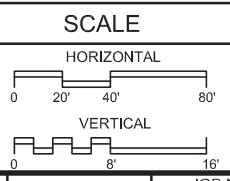
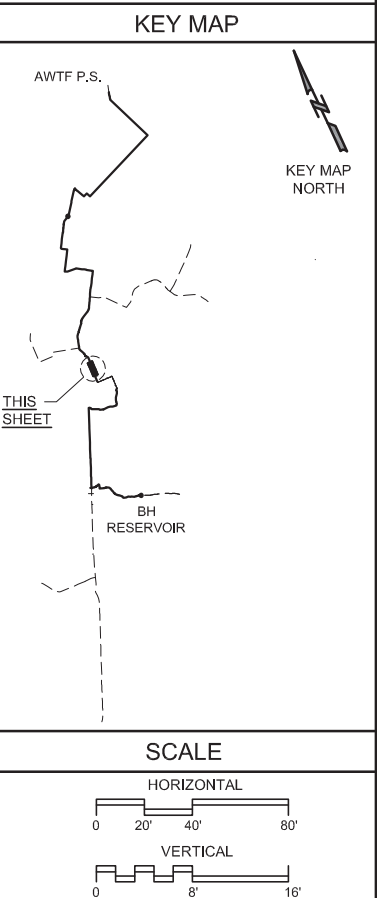
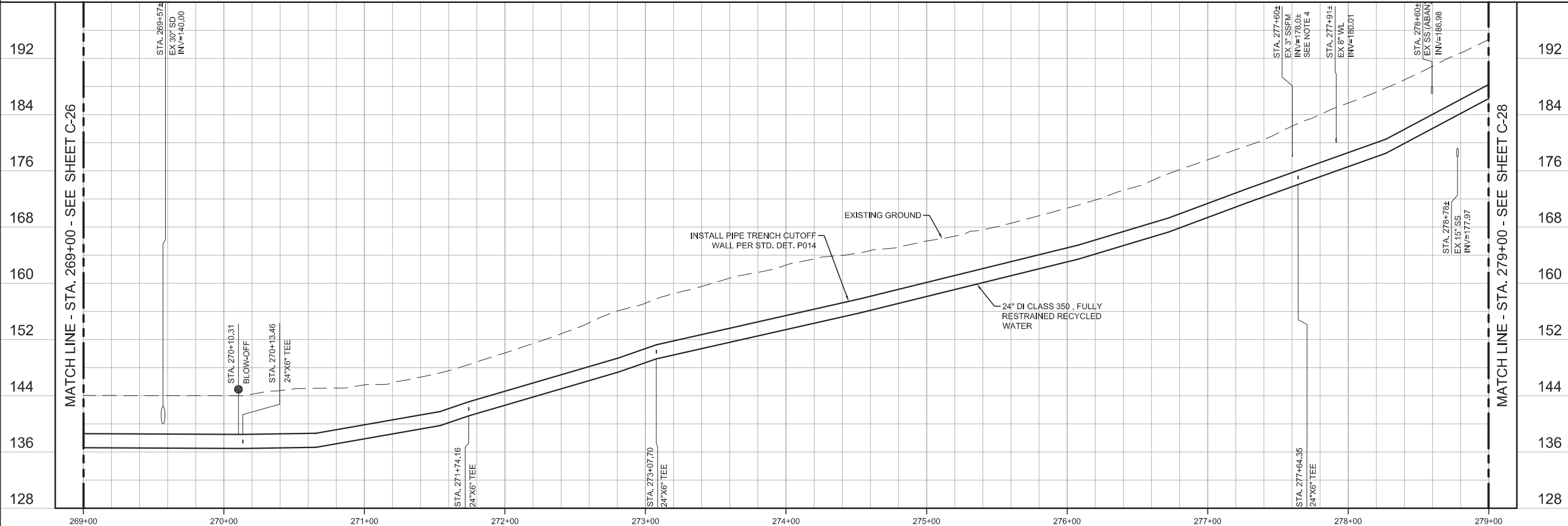
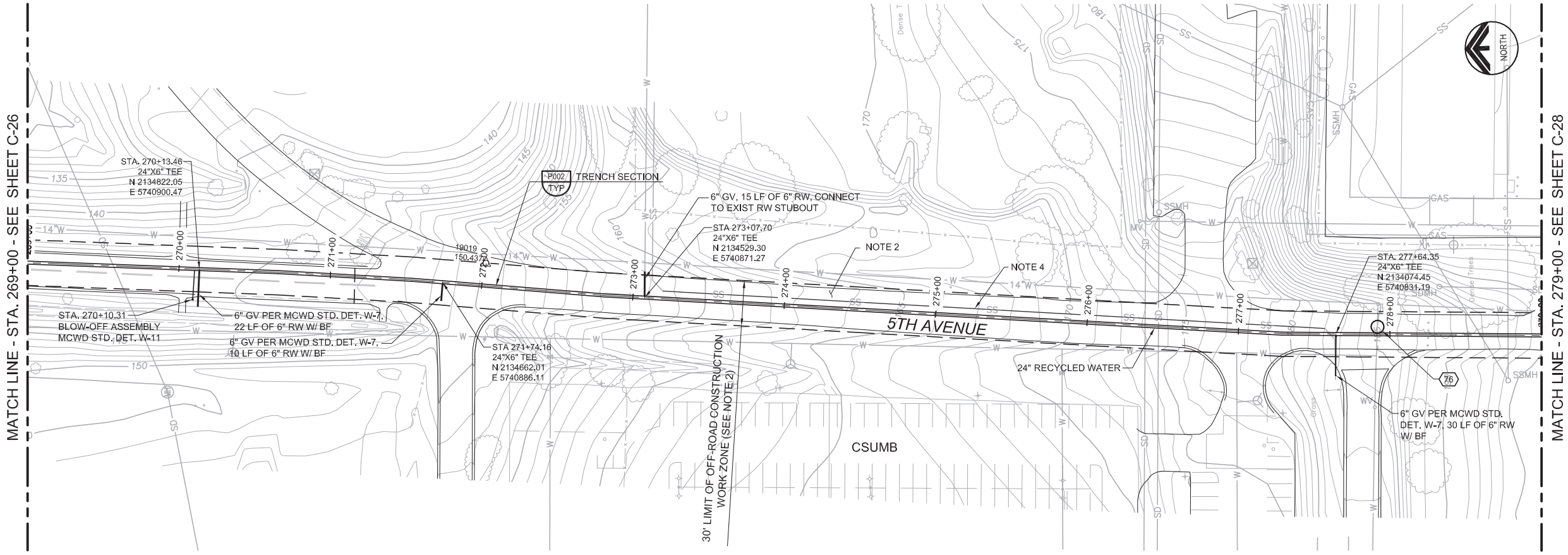
**REGIONAL URBAN WATER AUGMENTATION PROJECT**  
**RECYCLED WATER PIPELINE**  
CIVIL  
**PLAN AND PROFILE**  
STA. 259+00 TO STA. 269+00

<b>VERIFY SCALES</b> BAR IS ONE INCH ON ORIGINAL DRAWING 0 1" 1"	JOB NO. 7568A.10
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	DRAWING NO. C-26
	SHEET NO. 34 OF 93



**GENERAL NOTES**

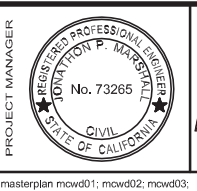
1. CONSTRUCT PIPELINE WITH A MINIMUM 4' OF COVER UNLESS SHOWN OTHERWISE IN THE PROFILE TO AVOID EXISTING UTILITIES OR ACCOMMODATE FUTURE GRADES.
2. CONSTRUCTION SHALL BE IN ACCORDANCE WITH CSUMB TEMPORARY CONSTRUCTION PERMIT FROM STA. 265+80± TO STA. 283+85±. ALLOWABLE CONSTRUCTION WORK ZONE IS FROM EDGE OF PAVEMENT TO EDGE OF PAVEMENT UNLESS AUTHORIZED IN WRITING BY THE ENGINEER.
3. ANY CONSTRUCTION ACTIVITIES WHICH IMPACT PARKWAYS SHALL BE CONDUCTED TO MINIMIZE DISTURBANCE TO ADJACENT PROPERTY OWNERS. ANY AREAS IMPACTED SHALL BE PHOTOGRAPHED PRIOR TO CONSTRUCTION, AND RESTORED TO THEIR PRE-CONSTRUCTION CONDITION PRIOR TO CONTRACTOR DEMOBILIZATION.
4. 3" SSFM LOCATION AND DEPTH UNKNOWN, CONTRACTOR TO POT HOLE AND CONFIRM.



<b>BID SET</b>			
DESIGNED	JPM		
DRAWN	BH		
CHECKED	AP		
DATE	MAY 2017		
REV	DATE	BY	DESCRIPTION

DISCIPLINE ENGINEER

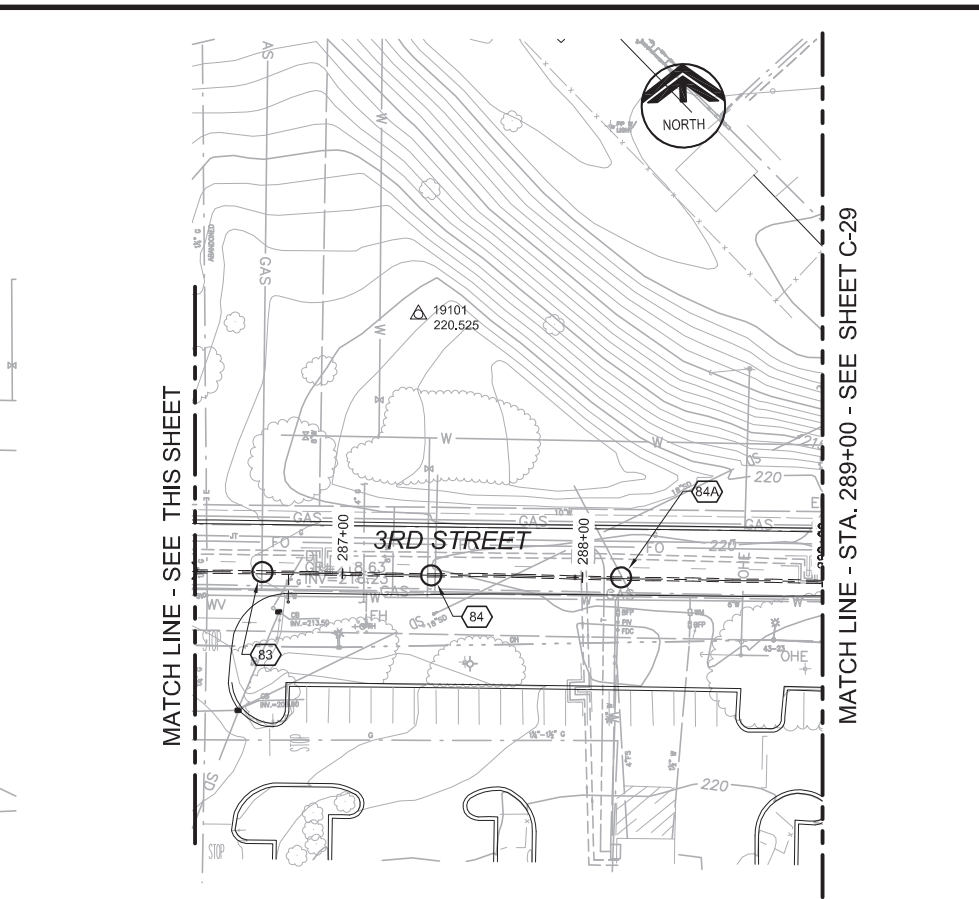
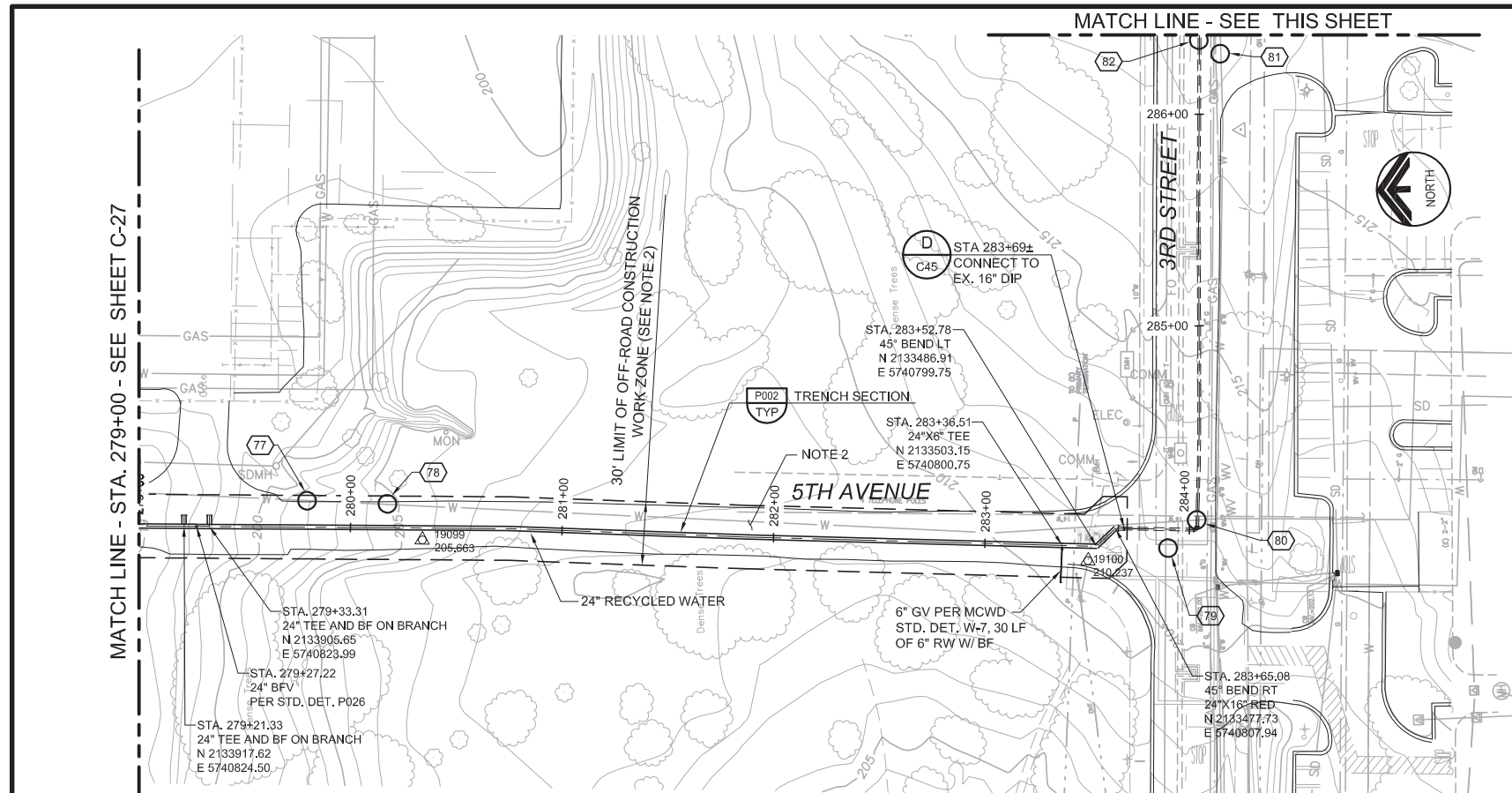
PROJECT ENGINEER  
Digitally signed by Jonathon P. Marshall  
Contact Info: Carollo Engineers, Inc.  
Date: 2017.05.01 13:04:00-0700



REGIONAL URBAN WATER AUGMENTATION PROJECT  
**RECYCLED WATER PIPELINE**  
 CIVIL  
**PLAN AND PROFILE**  
 STA. 269+00 TO STA. 279+00

**VERIFY SCALES**  
 BAR IS ONE INCH ON ORIGINAL DRAWING  
 0 1" 16'  
 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

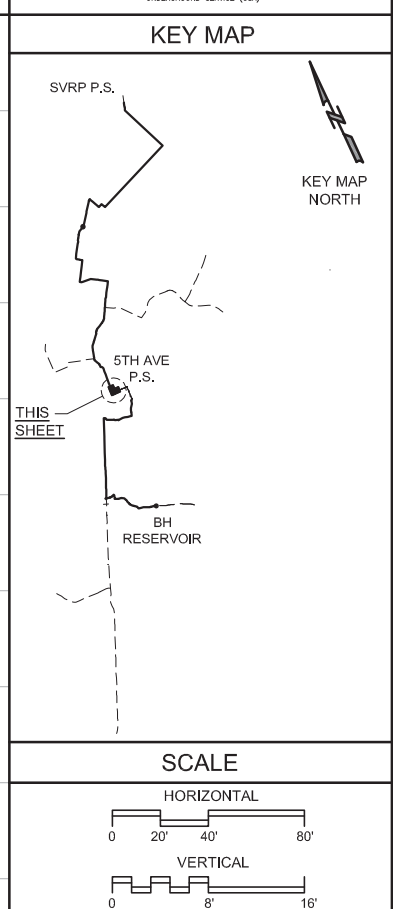
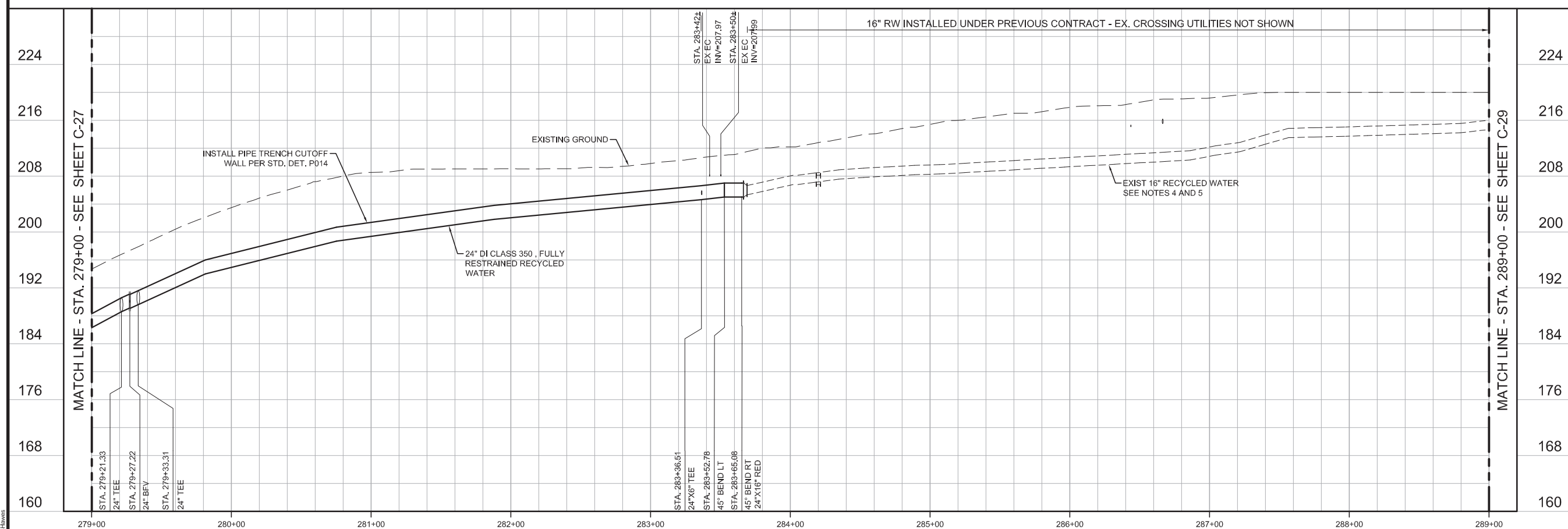
JOB NO. 7568A.10  
 DRAWING NO. C-27  
 SHEET NO. 35 OF 93



**GENERAL NOTES**

- CONSTRUCT PIPELINE WITH A MINIMUM 4' OF COVER UNLESS SHOWN OTHERWISE IN THE PROFILE TO AVOID EXISTING UTILITIES OR ACCOMMODATE FUTURE GRADES.
- CONSTRUCTION SHALL BE IN ACCORDANCE WITH CSUMB TEMPORARY CONSTRUCTION PERMIT FROM STA. 265+80± TO STA. 283+85±. ALLOWABLE CONSTRUCTION WORK ZONE IS FROM EDGE OF PAVEMENT TO EDGE OF PAVEMENT UNLESS AUTHORIZED IN WRITING BY THE ENGINEER.
- ANY CONSTRUCTION ACTIVITIES WHICH IMPACT PARKWAYS SHALL BE CONDUCTED TO MINIMIZE DISTURBANCE TO ADJACENT PROPERTY OWNERS. ANY AREAS IMPACTED SHALL BE PHOTOGRAPHED PRIOR TO CONSTRUCTION, AND RESTORED TO THEIR PRE-CONSTRUCTION CONDITION PRIOR TO CONTRACTOR DEMOBILIZATION.
- CONTRACTOR SHALL PRESSURE TEST THE EXISTING RECYCLED WATER MAIN.
- TOPOGRAPHY SHOWN ABOVE EXISTING 16" RW MAIN MAY NOT MATCH EXISTING CONDITIONS. CONTRACTOR TO FIELD VERIFY EXISTING CONDITIONS IMPACTING CONSTRUCTION.

Call before you Dig
   
 1-800-227-2600
   
UNDERGROUND SERVICE (USA)



<b>BID SET</b>			
DESIGNED	JPM		
DRAWN	BH		
CHECKED	AP		
DATE	MAY 2017		
REV	DATE	BY	DESCRIPTION

DISCIPLINE ENGINEER

Digitally signed by Jonathon P. Marshall  
 Contact Info: Carollo Engineers, Inc.  
 Date: 2017.05.01 13:03:51-0700

PROJECT ENGINEER

PROJECT MANAGER

**carollo**  
 Engineers...Working Wonders With Water™

**Marina Coast Water District**

REGIONAL URBAN WATER AUGMENTATION PROJECT

RECYCLED WATER PIPELINE

CIVIL

PLAN AND PROFILE

STA. 279+00 TO STA. 289+00

**VERIFY SCALES**

BAR IS ONE INCH ON ORIGINAL DRAWING

0 1"

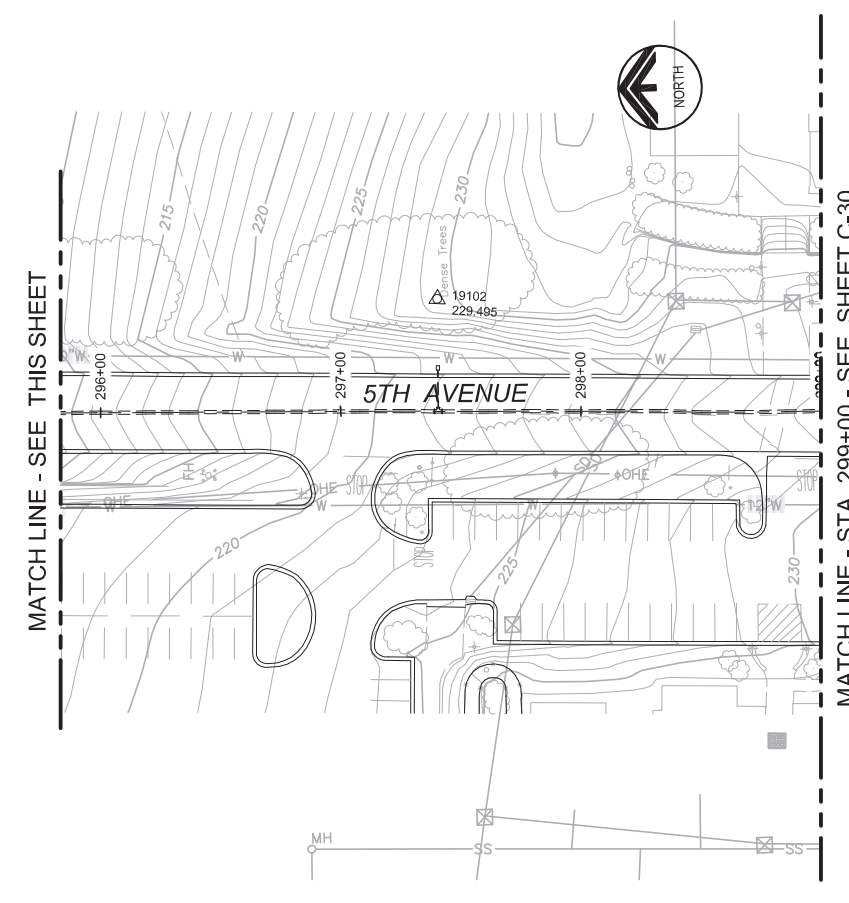
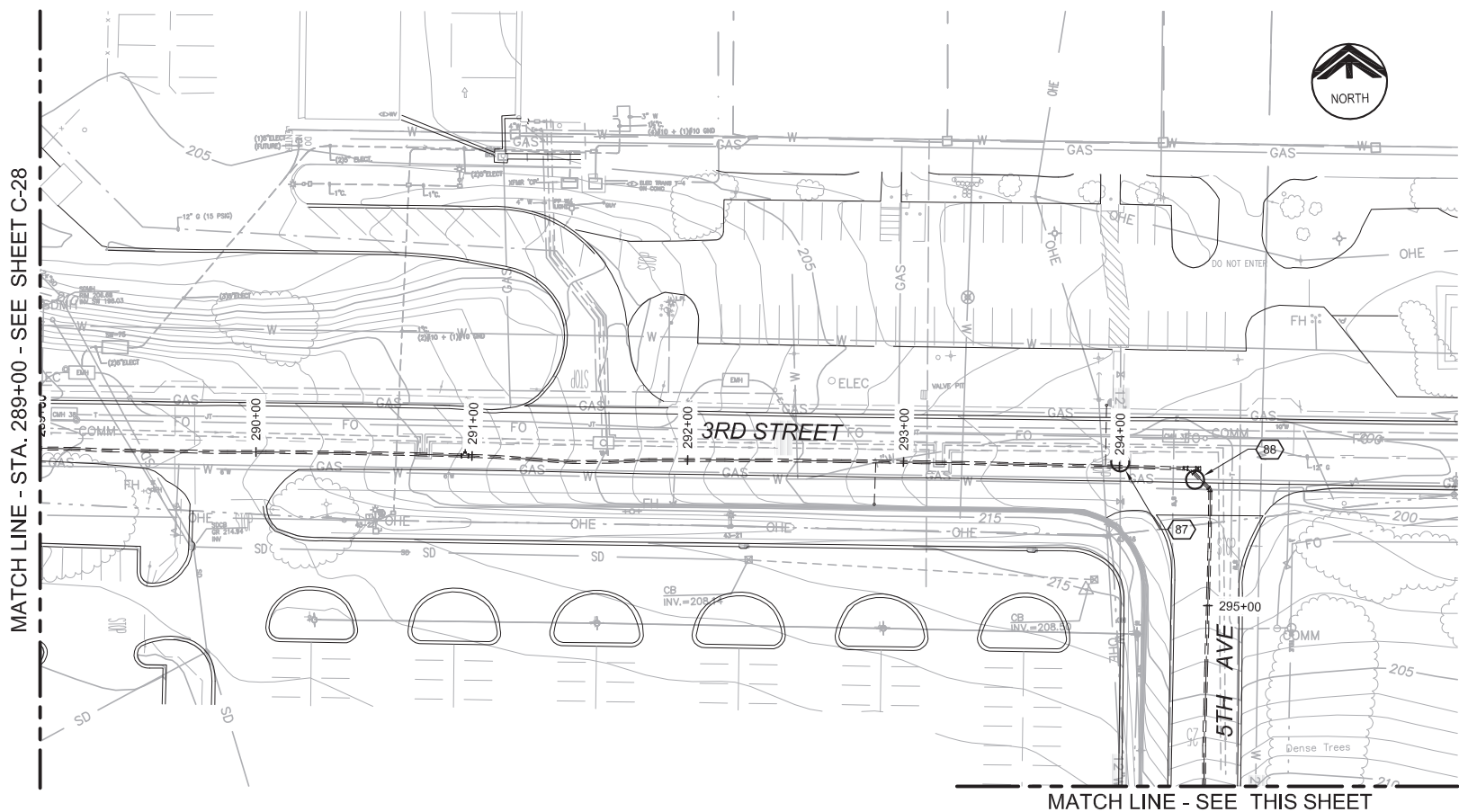
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7568A.10

DRAWING NO. C-28

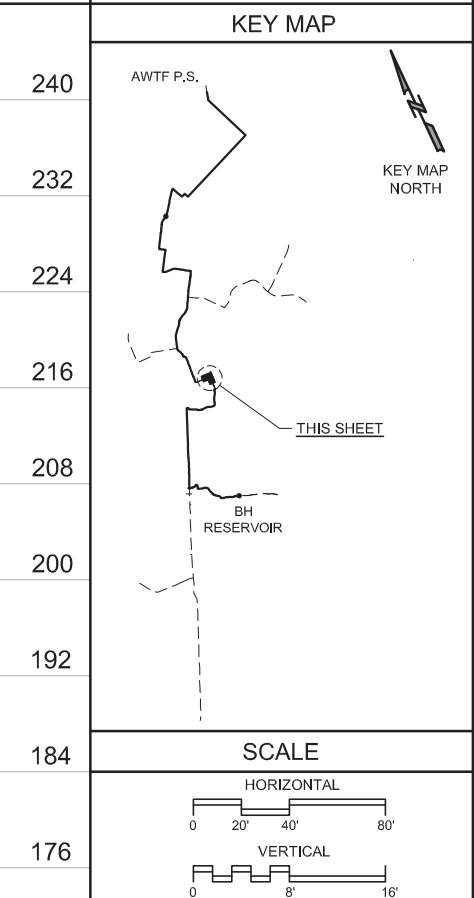
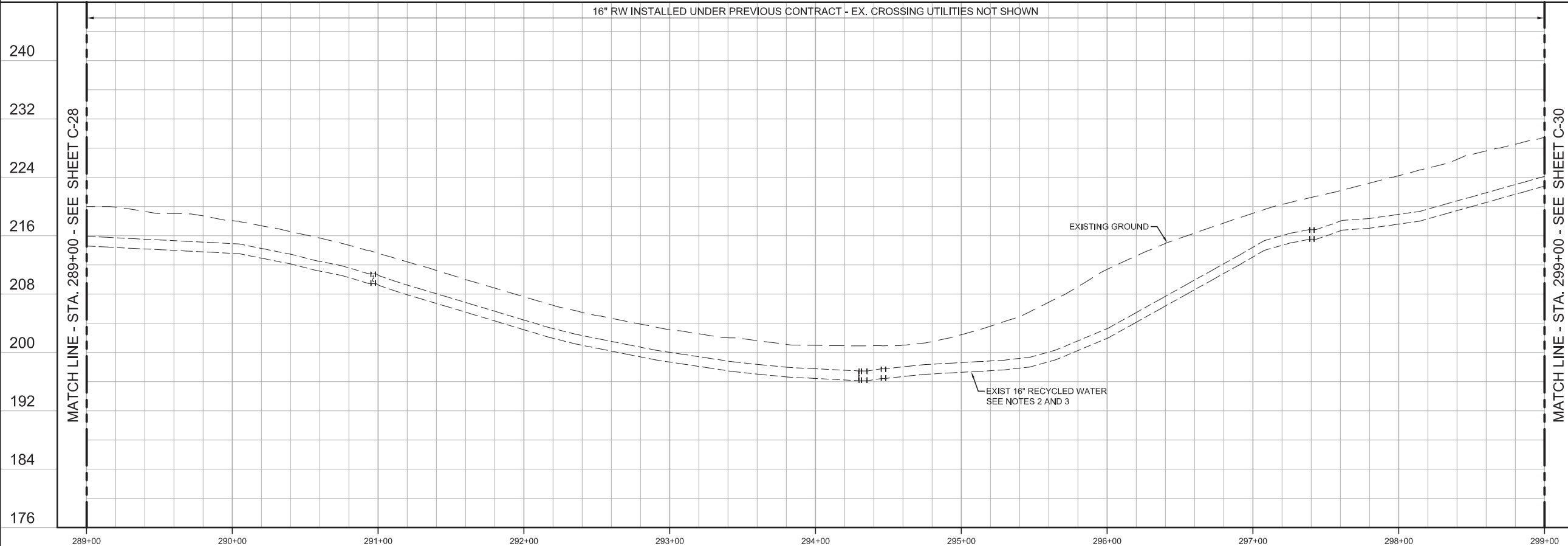
SHEET NO. 36 OF 93





- ### GENERAL NOTES
1. ANY CONSTRUCTION ACTIVITIES WHICH IMPACT PARKWAYS SHALL BE CONDUCTED TO MINIMIZE DISTURBANCE TO ADJACENT PROPERTY OWNERS. ANY AREAS IMPACTED SHALL BE PHOTOGRAPHED PRIOR TO CONSTRUCTION, AND RESTORED TO THEIR PRE-CONSTRUCTION CONDITION PRIOR TO CONTRACTOR DEMOBILIZATION.
  2. CONTRACTOR SHALL PRESSURE TEST ITS EXISTING RECYCLED WATER MAIN.
  3. TOPOGRAPHY SHOWN ABOVE EXISTING 16" RW MAIN MAY NOT MATCH EXISTING CONDITIONS. CONTRACTOR TO FIELD VERIFY EXISTING CONDITIONS IMPACTING CONSTRUCTION.

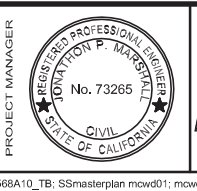
AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.  
**Call before you Dig**  
 1-800-227-2600  
UNDERGROUND SERVICE (USA)



REV	DATE	BY	DESCRIPTION

<b>BID SET</b>	DESIGNED JPM	DISCIPLINE ENGINEER
	DRAWN BH	
	CHECKED AP	
	DATE MAY 2017	

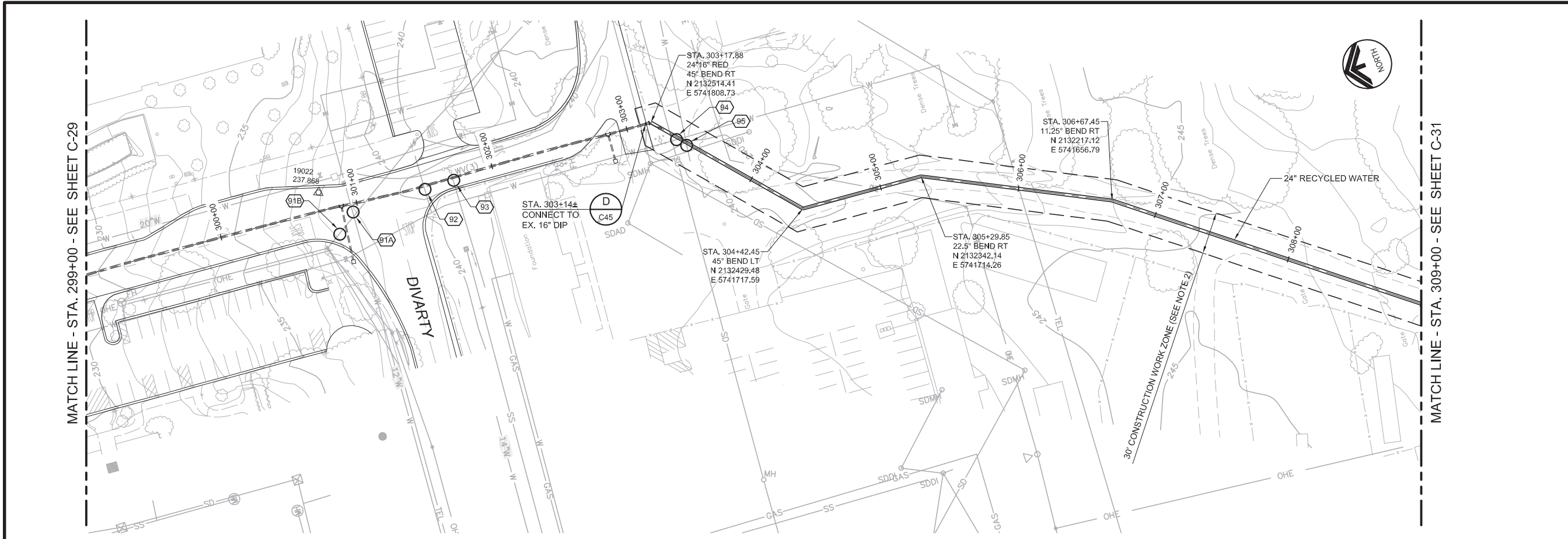
PROJECT ENGINEER  
 Digitally signed by Jonathon P. Marshall  
 Contact Info: Carollo Engineers, Inc.  
 Date: 2017.05.01 13:03:39-0700'



REGIONAL URBAN WATER AUGMENTATION PROJECT  
 RECYCLED WATER PIPELINE  
 CIVIL  
 PLAN AND PROFILE  
 STA. 289+00 TO STA. 299+00

**VERIFY SCALES**  
 BAR IS ONE INCH ON ORIGINAL DRAWING  
 0 1" 16'  
 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7568A.10  
 DRAWING NO. C-29  
 SHEET NO. 37 OF 93



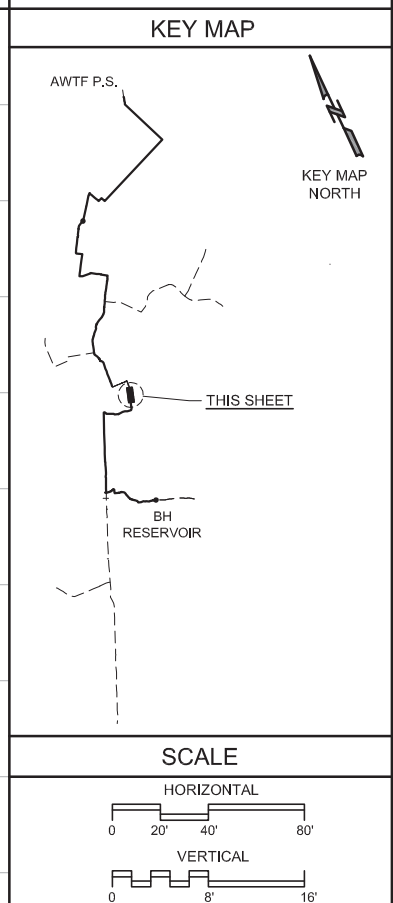
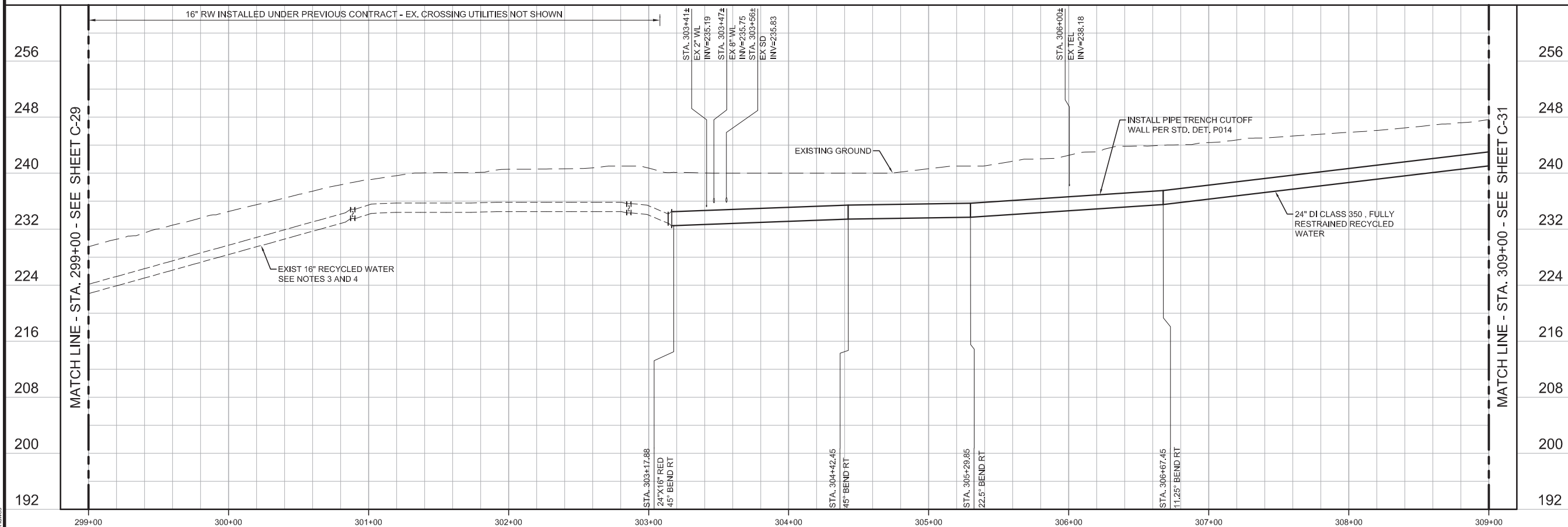
- ### GENERAL NOTES
- CONSTRUCT PIPELINE WITH A MINIMUM 4' OF COVER UNLESS SHOWN OTHERWISE IN THE PROFILE TO AVOID EXISTING UTILITIES OR ACCOMMODATE FUTURE GRADES.
  - CONSTRUCTION SHALL BE IN ACCORDANCE WITH CSUMB TEMPORARY CONSTRUCTION PERMIT FROM STA. 303+14± TO STA. 347+31±.
  - CONTRACTOR SHALL PRESSURE TEST THE EXISTING RECYCLED WATER MAIN.
  - TOPOGRAPHY SHOWN ABOVE EXISTING 16" RW MAY NOT MATCH EXISTING CONDITIONS. CONTRACTOR TO FIELD VERIFY EXISTING CONDITIONS IMPACTING CONSTRUCTION.

AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.

**Call before you Dig**

1-800-227-2600

UNDERGROUND SERVICE (USA)



### SCALE

HORIZONTAL: 0 20' 40' 80'

VERTICAL: 0 8' 16'

VERIFY SCALES: BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

JOB NO. 7568A.10  
DRAWING NO. C-30  
SHEET NO. 38 OF 93

REV	DATE	BY	DESCRIPTION

<b>BID SET</b>	DESIGNED JPM	DISCIPLINE ENGINEER
	DRAWN BH	
	CHECKED AP	
	DATE MAY 2017	

PROJECT ENGINEER  
Digitally signed by Jonathon P. Marshall  
Contact Info: Carollo Engineers, Inc.  
Date: 2017.05.01 13:03:30-0700



**REGIONAL URBAN WATER AUGMENTATION PROJECT**

**RECYCLED WATER PIPELINE**

CIVIL

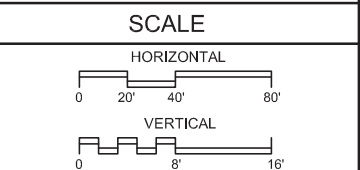
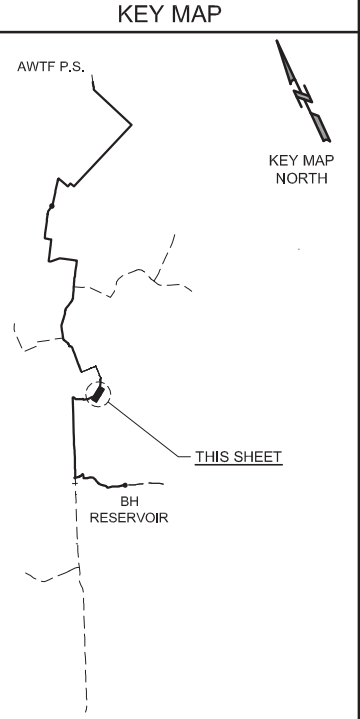
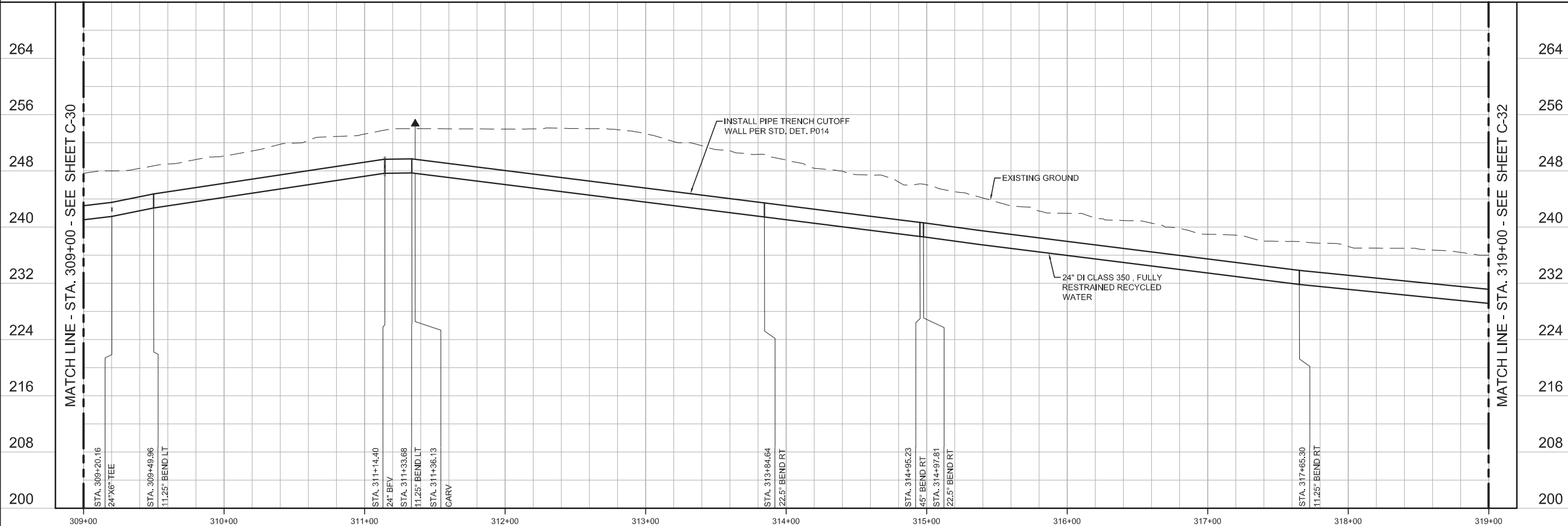
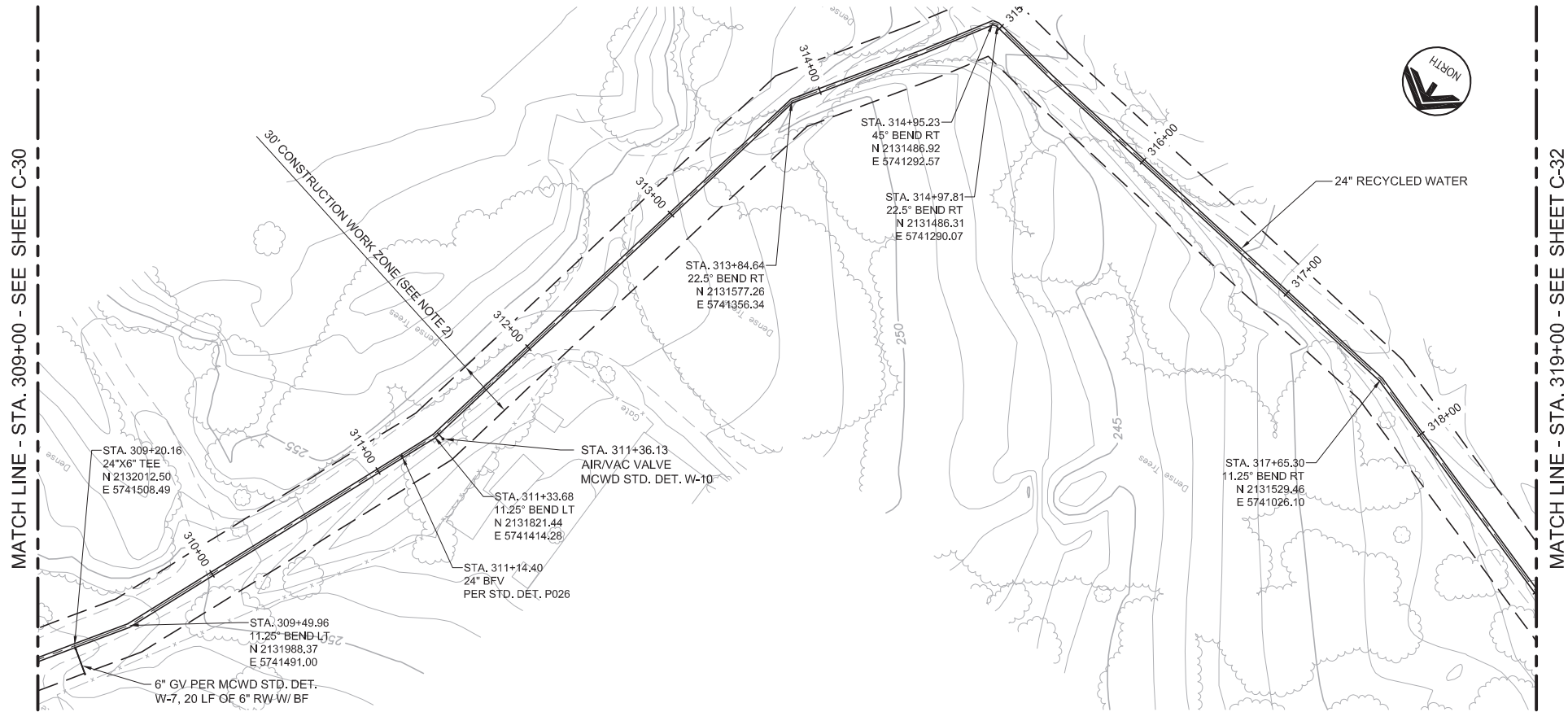
**PLAN AND PROFILE**

STA. 299+00 TO STA. 309+00



**GENERAL NOTES**

1. CONSTRUCT PIPELINE WITH A MINIMUM 4' OF COVER UNLESS SHOWN OTHERWISE IN THE PROFILE TO AVOID EXISTING UTILITIES OR ACCOMMODATE FUTURE GRADES.
2. CONSTRUCTION SHALL BE IN ACCORDANCE WITH CSUMB TEMPORARY CONSTRUCTION PERMIT FROM STA. 303+14± TO STA. 347+31±.



<b>BID SET</b>			
DESIGNED	JPM		
DRAWN	BH		
CHECKED	AP		
DATE	MAY 2017		
REV	DATE	BY	DESCRIPTION

DISCIPLINE ENGINEER  
 PROJECT ENGINEER  
 PROJECT MANAGER

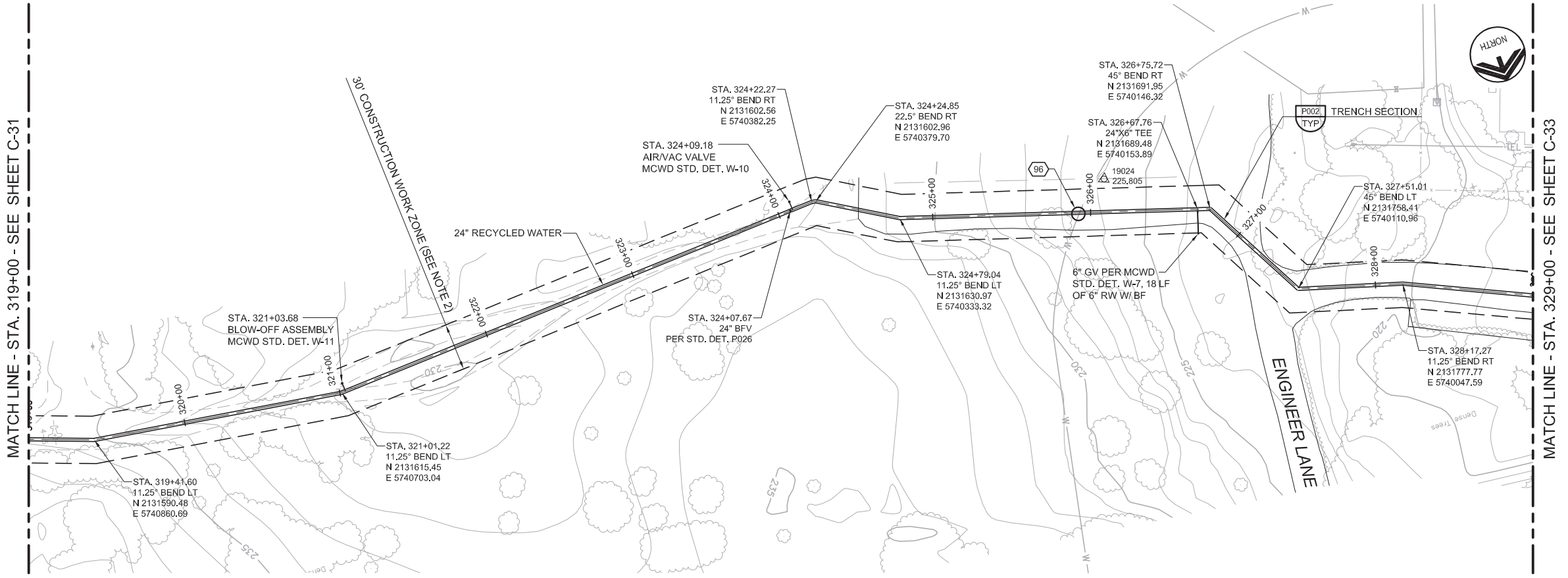
Digitally signed by Jonathon P. Marshall  
 Contact Info: Carollo Engineers, Inc.  
 Date: 2017.05.01 13:03:21-0700



**REGIONAL URBAN WATER AUGMENTATION PROJECT**  
**RECYCLED WATER PIPELINE**  
 CIVIL  
**PLAN AND PROFILE**  
 STA. 309+00 TO STA. 319+00

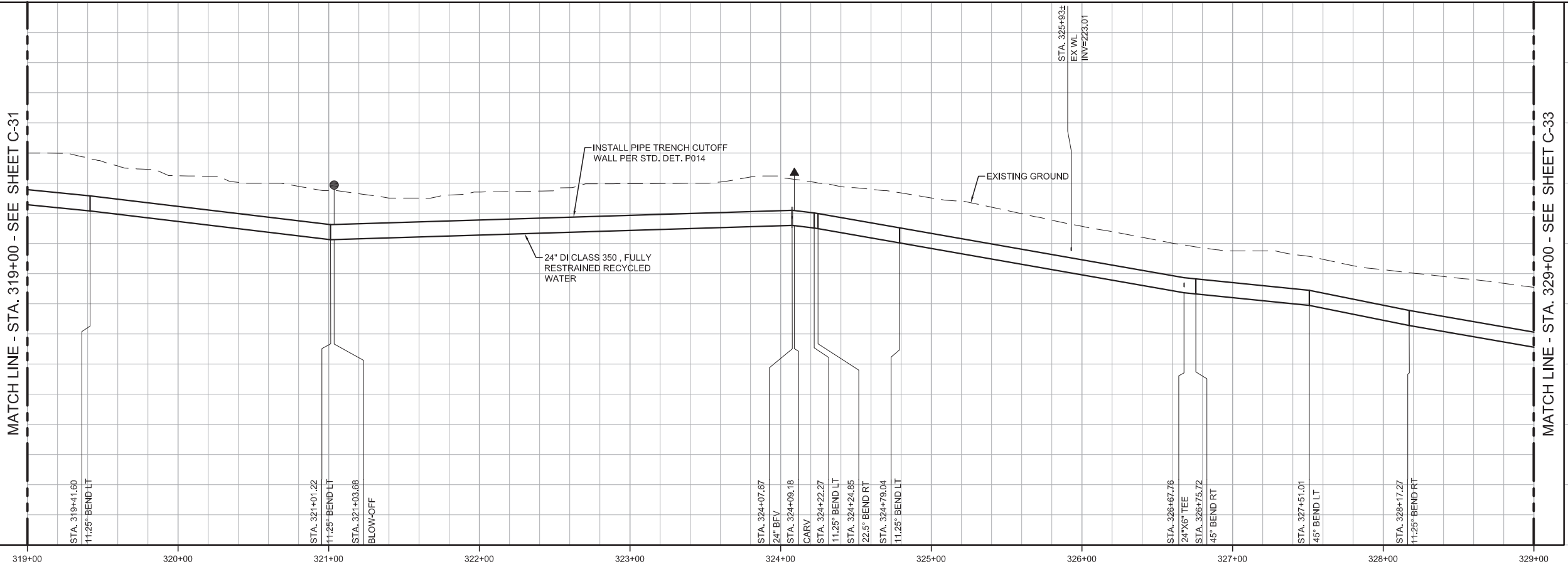
**VERIFY SCALES**  
 BAR IS ONE INCH ON ORIGINAL DRAWING  
 0 1" 16'  
 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7568A.10  
 DRAWING NO. C-31  
 SHEET NO. 39 OF 93

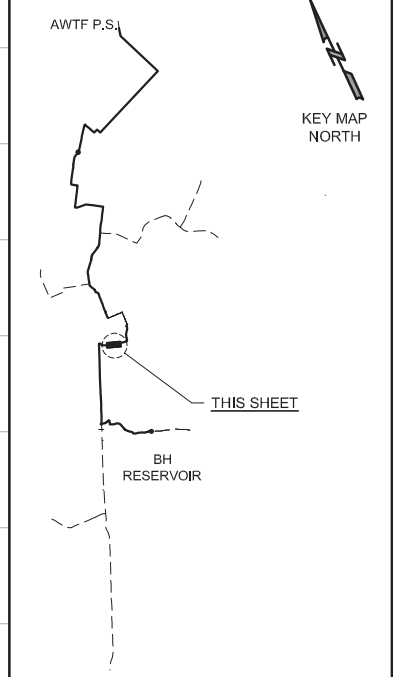


**GENERAL NOTES**

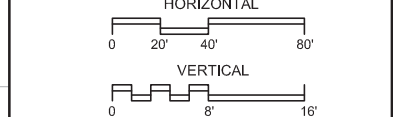
1. CONSTRUCT PIPELINE WITH A MINIMUM 4' OF COVER UNLESS SHOWN OTHERWISE IN THE PROFILE TO AVOID EXISTING UTILITIES OR ACCOMMODATE FUTURE GRADES.
2. CONSTRUCTION SHALL BE IN ACCORDANCE WITH CSMUB TEMPORARY CONSTRUCTION PERMIT FROM STA. 303+14± TO STA. 347+31±.



**KEY MAP**



**SCALE**



REV	DATE	BY	DESCRIPTION

DESIGNED	JPM
DRAWN	BH
CHECKED	AP
DATE	MAY 2017

PROJECT ENGINEER  
 Digitally signed by Jonathon P. Marshall  
 Contact Info: Carollo Engineers, Inc.  
 Date: 2017.05.01 13:02:59-0700

PROJECT MANAGER  
  
**carollo**  
 Engineers...Working Wonders With Water™

**Marina Coast Water District**

REGIONAL URBAN WATER AUGMENTATION PROJECT  
 RECYCLED WATER PIPELINE  
 CIVIL  
 PLAN AND PROFILE  
 STA. 319+00 TO STA. 329+00

VERIFY SCALES  
 BAR IS ONE INCH ON ORIGINAL DRAWING  
 0 1" 16'  
 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7568A.10  
 DRAWING NO. C-32  
 SHEET NO. 40 OF 93



**GENERAL NOTES**

1. CONSTRUCT PIPELINE WITH A MINIMUM 4' OF COVER UNLESS SHOWN OTHERWISE IN THE PROFILE TO AVOID EXISTING UTILITIES OR ACCOMMODATE FUTURE GRADES.
2. CONSTRUCTION SHALL BE IN ACCORDANCE WITH CSMUB TEMPORARY CONSTRUCTION PERMIT FROM STA. 303+14± TO STA. 347+31±.
3. ALLOWABLE CONSTRUCTION WORK ZONE FOR GENERAL JIM MOORE BLVD IS EDGE OF PAVEMENT TO CENTERLINE OF ROAD EXCEPT WHERE APPURTENANCES ARE REQUIRED OUTSIDE THESE LIMITS OR OTHERWISE AUTHORIZED BY THE ENGINEER.

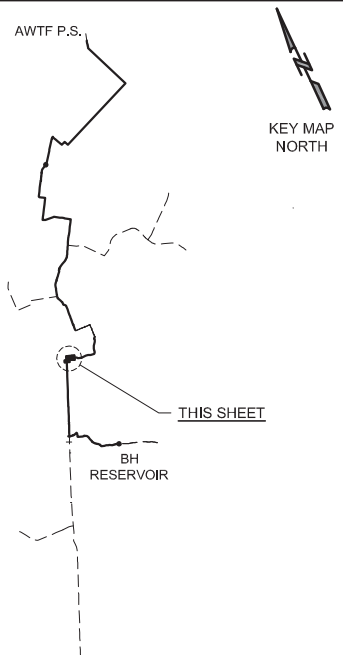
AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.

**Call before you Dig**

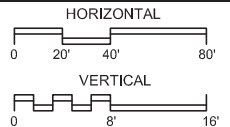
1-800-227-2800

UNDERGROUND SERVICE (USA)

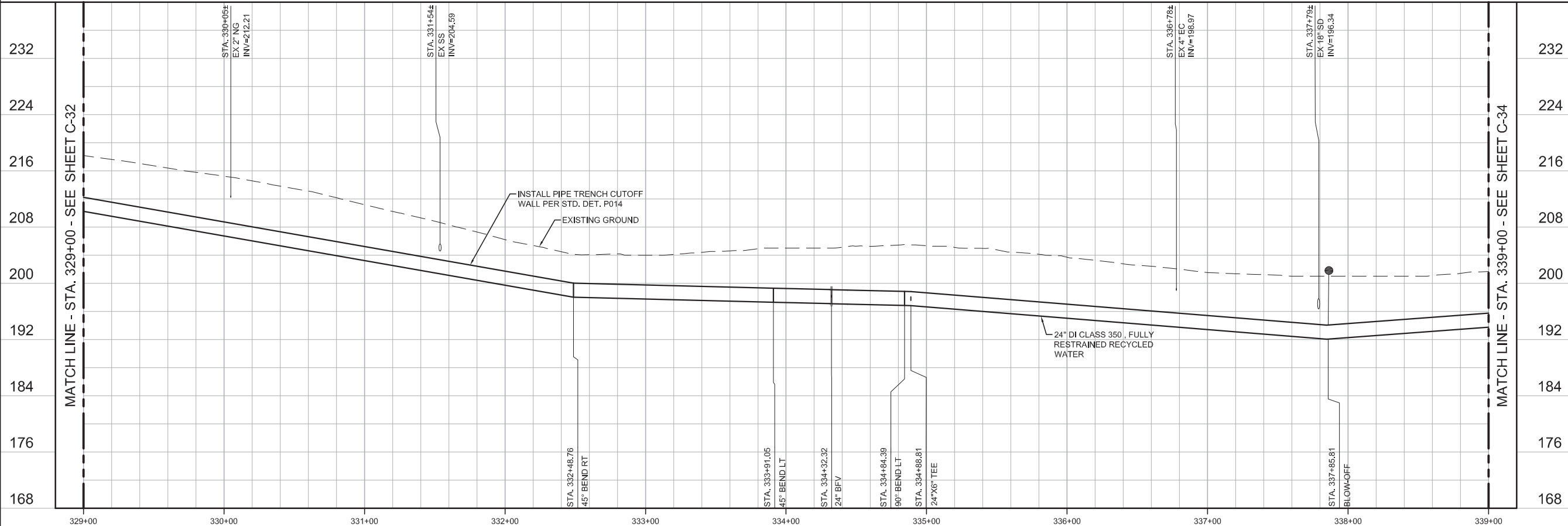
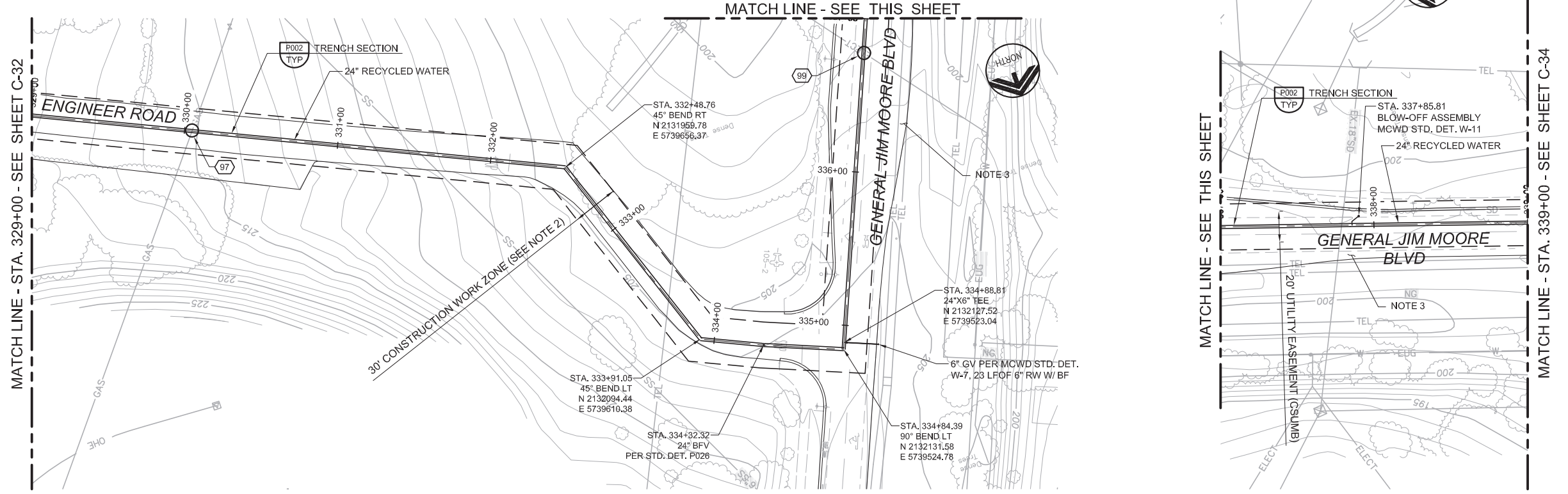
**KEY MAP**



**SCALE**



<b>VERIFY SCALES</b> BAR IS ONE INCH ON ORIGINAL DRAWING 0 1" 16'	JOB NO. 7568A.10
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	DRAWING NO. C-33
	SHEET NO. 41 OF 93



<b>BID SET</b>			
DESIGNED	JPM		
DRAWN	BH		
CHECKED	AP		
DATE	MAY 2017		
REV	DATE	BY	DESCRIPTION

DISCIPLINE ENGINEER

PROJECT ENGINEER

Digitally signed by Jonathon P. Marshall  
Contact Info: Carollo Engineers, Inc.  
Date: 2017.05.01 13:02:51-0700'

PROJECT MANAGER

**JONATHAN P. MARSHALL**  
No. 73265  
CIVIL  
STATE OF CALIFORNIA

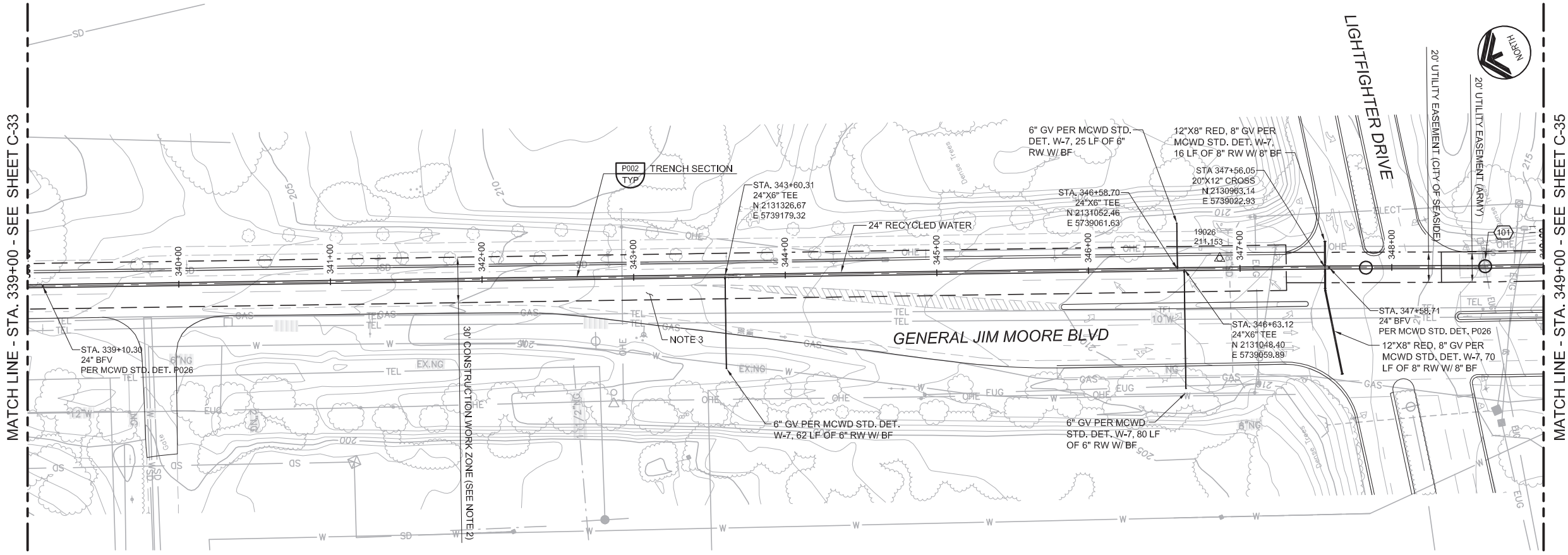
**carollo**  
Engineers...Working Wonders With Water™

**MARINA COAST WATER DISTRICT**

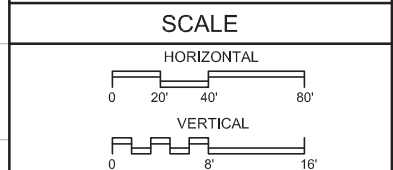
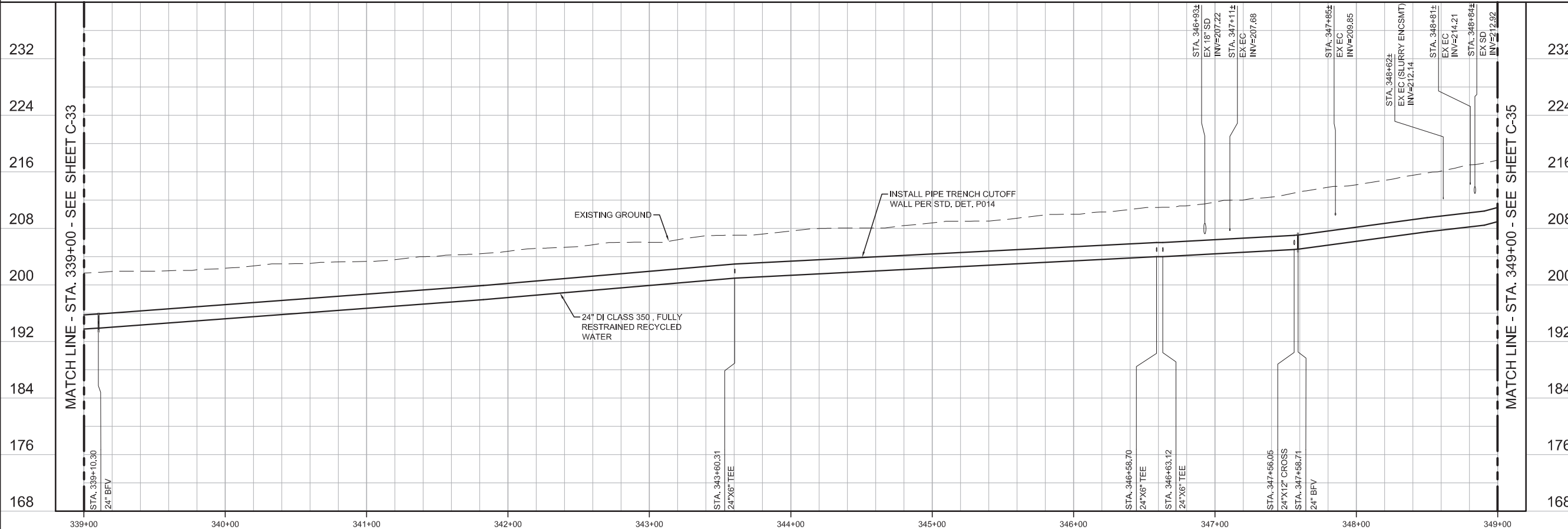
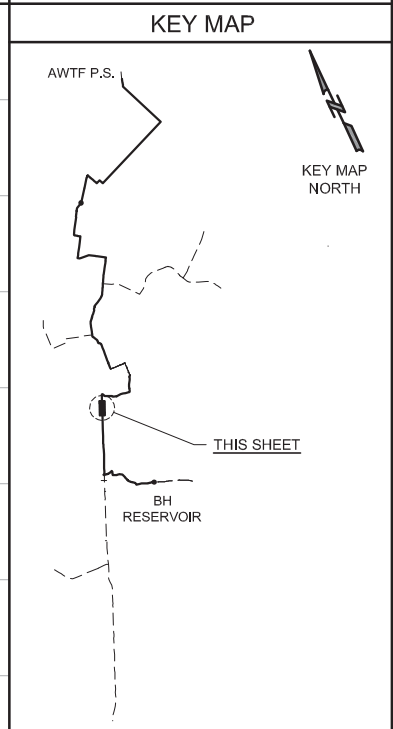
**REGIONAL URBAN WATER AUGMENTATION PROJECT**

**RECYCLED WATER PIPELINE**

CIVIL  
**PLAN AND PROFILE**  
STA. 329+00 TO 339+00



- ### GENERAL NOTES
- CONSTRUCT PIPELINE WITH A MINIMUM 4' OF COVER UNLESS SHOWN OTHERWISE IN THE PROFILE TO AVOID EXISTING UTILITIES OR ACCOMMODATE FUTURE GRADES.
  - CONSTRUCTION SHALL BE IN ACCORDANCE WITH CSMUB TEMPORARY CONSTRUCTION PERMIT FROM STA. 303+14± TO STA. 347+31±.
  - ALLOWABLE CONSTRUCTION WORK ZONE FOR GENERAL JIM MOORE BLVD IS EDGE OF PAVEMENT TO CENTERLINE OF ROAD EXCEPT WHERE APPURTENANCES ARE REQUIRED OUTSIDE THESE LIMITS OR OTHERWISE AUTHORIZED BY THE ENGINEER.
  - TEMPORARY CONSTRUCTION EASEMENT LOCATED FROM STA. 347+30± TO STA. 389+56± SHALL BE FROM EDGE OF PAVEMENT TO MEDIAN IN NORTHBOUND LANES.



REV	DATE	BY	DESCRIPTION

DESIGNED	JPM
	DRAWN
	BH
	CHECKED
	AP
DATE	MAY 2017

Project Engineer  
Digitally signed by Jonathon P. Marshall  
Contact Info: Carollo Engineers, Inc.  
Date: 2017.05.01 13:02:40-0700Z



REGIONAL URBAN WATER AUGMENTATION PROJECT  
 RECYCLED WATER PIPELINE  
 CIVIL  
 PLAN AND PROFILE  
 STA. 339+00 TO STA. 349+00

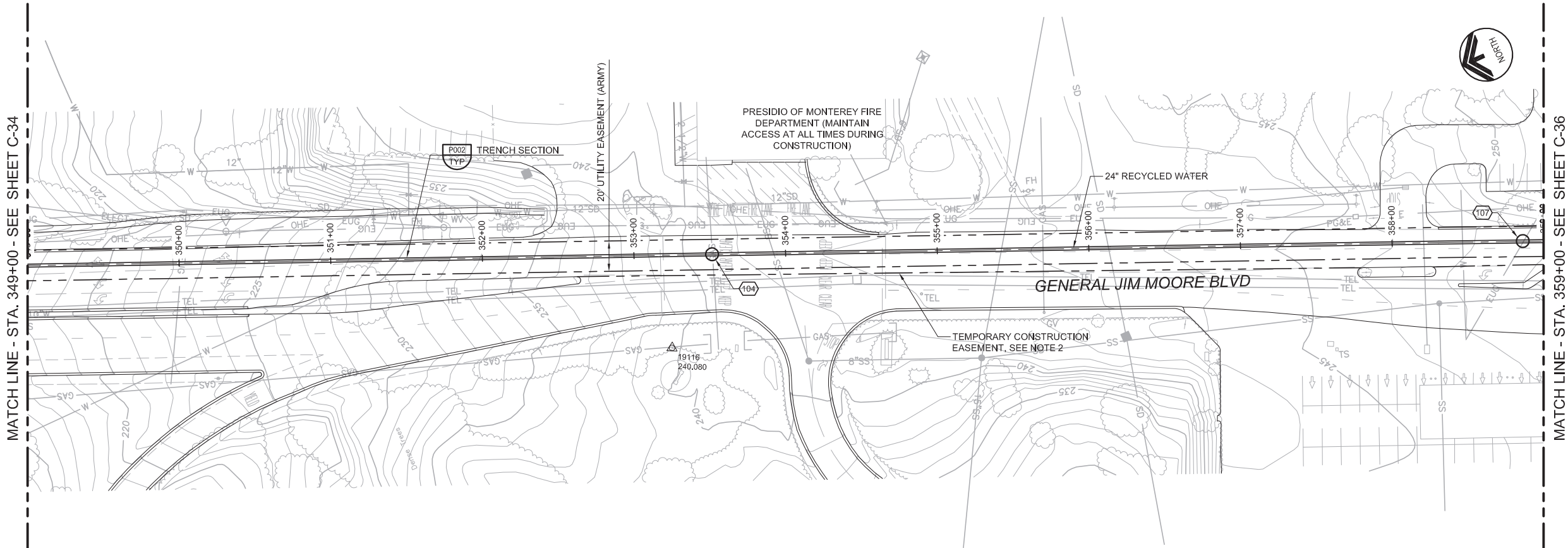
VERIFY SCALES  
 BAR IS ONE INCH ON ORIGINAL DRAWING  
 0 1" 16"  
 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7568A.10  
 DRAWING NO. C-34  
 SHEET NO. 42 OF 93



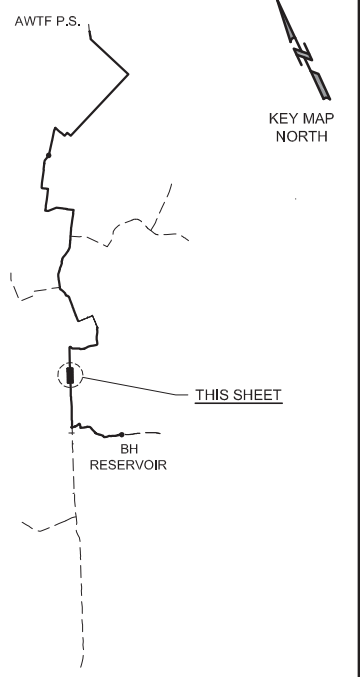
**GENERAL NOTES**

1. CONSTRUCT PIPELINE WITH A MINIMUM 4' OF COVER UNLESS SHOWN OTHERWISE IN THE PROFILE TO AVOID EXISTING UTILITIES OR ACCOMMODATE FUTURE GRADES.
2. FROM STA. 347+30± TO STA. 389+56± TEMPORARY CONSTRUCTION EASEMENT SHALL BE FROM EDGE OF PAVEMENT TO MEDIAN IN NORTHBOUND LANES.

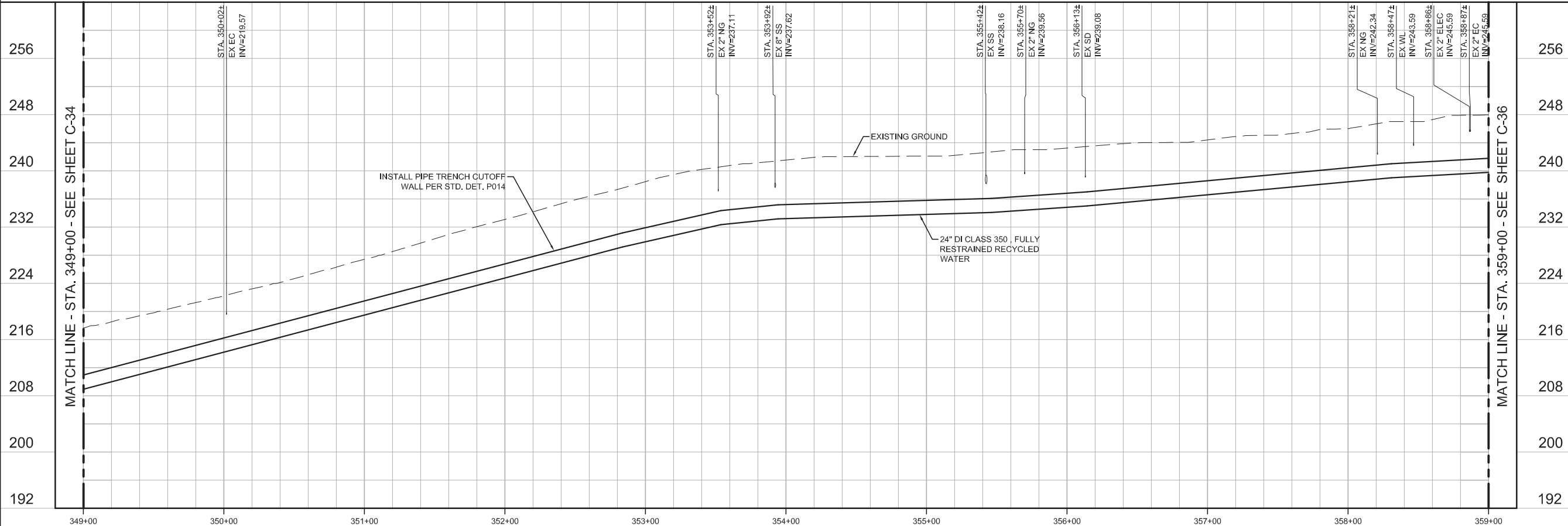
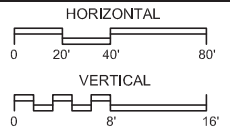


AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.  
**Call before you Dig**  
 1-800-227-2800  
UNDERGROUND SERVICE (USA)

**KEY MAP**



**SCALE**



REV	DATE	BY	DESCRIPTION

<b>BID SET</b>	DESIGNED JPM
	DRAWN BH
	CHECKED AP
	DATE MAY 2017

PROJECT ENGINEER  
 Digitally signed by Jonathon P. Marshall  
 Contact Info: Carollo Engineers, Inc.  
 Date: 2017.05.01 13:02:30-0700



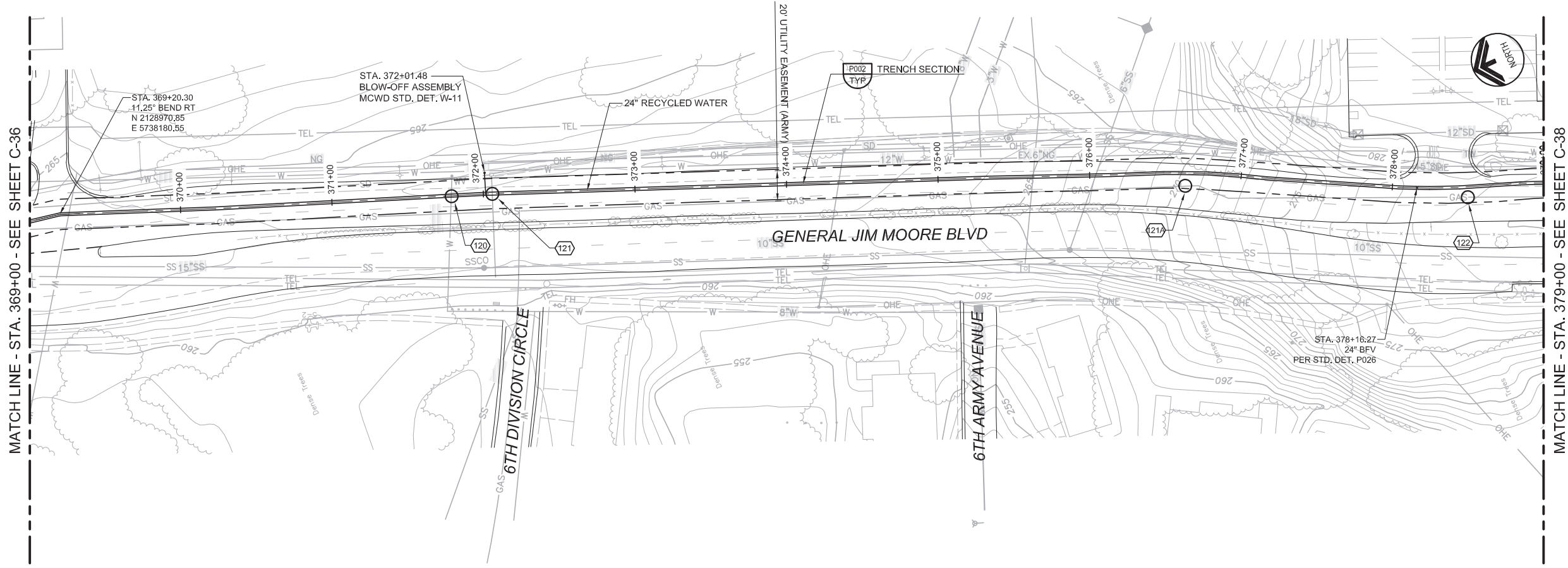
REGIONAL URBAN WATER AUGMENTATION PROJECT  
 RECYCLED WATER PIPELINE  
 CIVIL  
 PLAN AND PROFILE  
 STA. 349+00 TO STA. 359+00

**VERIFY SCALES**  
 BAR IS ONE INCH ON ORIGINAL DRAWING  
 0 1" 16'  
 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY  
 JOB NO. 7568A.10  
 DRAWING NO. C-35  
 SHEET NO. 43 OF 93

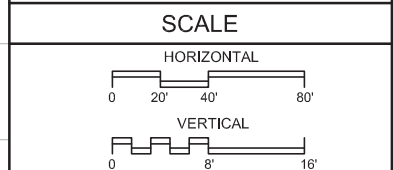
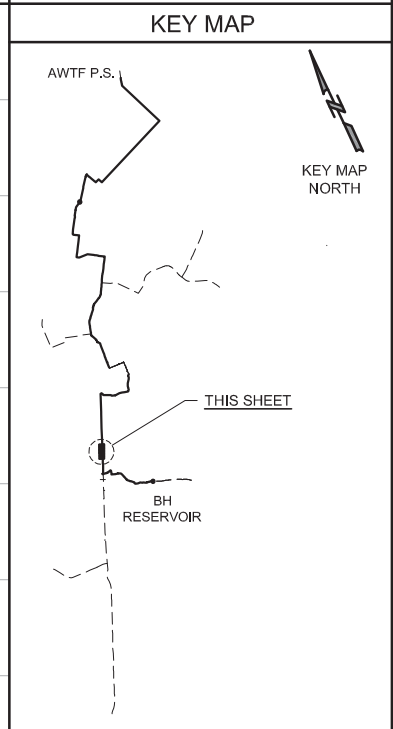
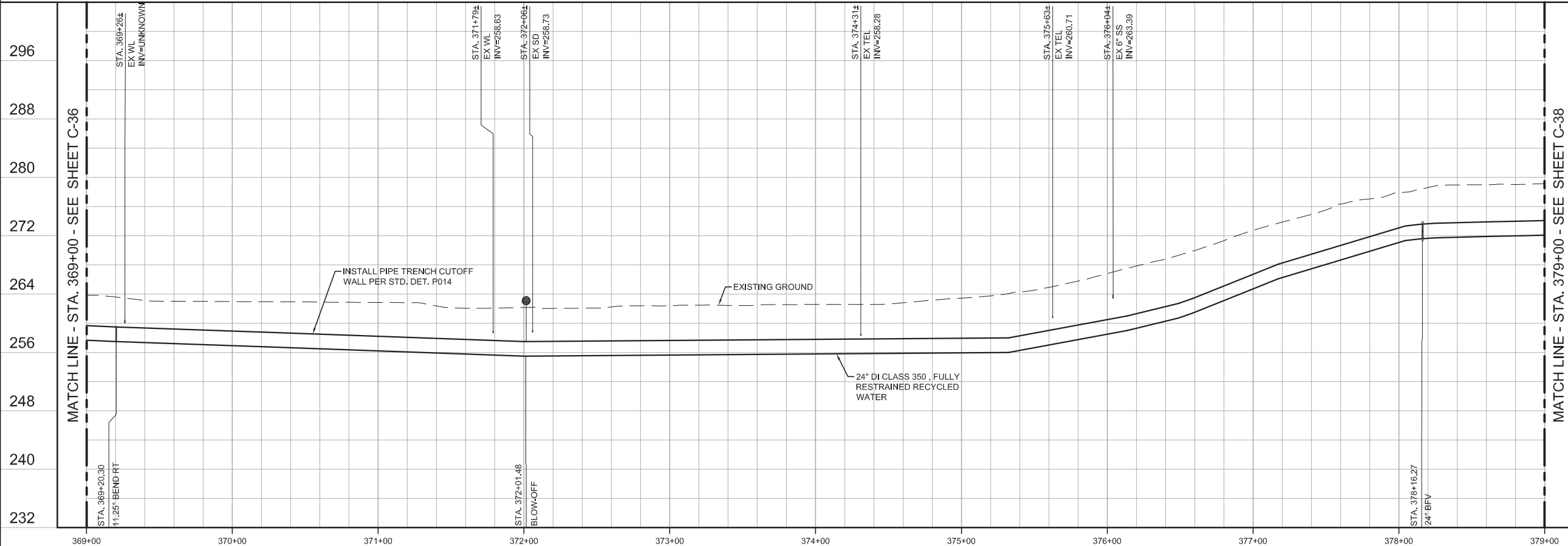
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- GENERAL NOTES**
- CONSTRUCT PIPELINE WITH A MINIMUM 4' OF COVER UNLESS SHOWN OTHERWISE IN THE PROFILE TO AVOID EXISTING UTILITIES OR ACCOMMODATE FUTURE GRADES.
  - FROM STA. 347+30± TO STA. 389+56± TEMPORARY CONSTRUCTION EASEMENT SHALL BE FROM EDGE OF PAVEMENT TO MEDIAN IN NORTHBOUND LANES.



<b>BID SET</b>			
DESIGNED	JPM		
DRAWN	BH		
CHECKED	AP		
DATE	MAY 2017		
REV	DATE	BY	DESCRIPTION

DISCIPLINE ENGINEER

PROJECT ENGINEER

Digitally signed by Jonathon P. Marshall  
Contact Info: Carollo Engineers, Inc.  
Date: 2017.05.01 12:57:13-0700'



**REGIONAL URBAN WATER AUGMENTATION PROJECT**

**RECYCLED WATER PIPELINE**

CIVIL

**PLAN AND PROFILE**

STA. 369+00 TO STA. 379+00

**VERIFY SCALES**

BAR IS ONE INCH ON ORIGINAL DRAWING

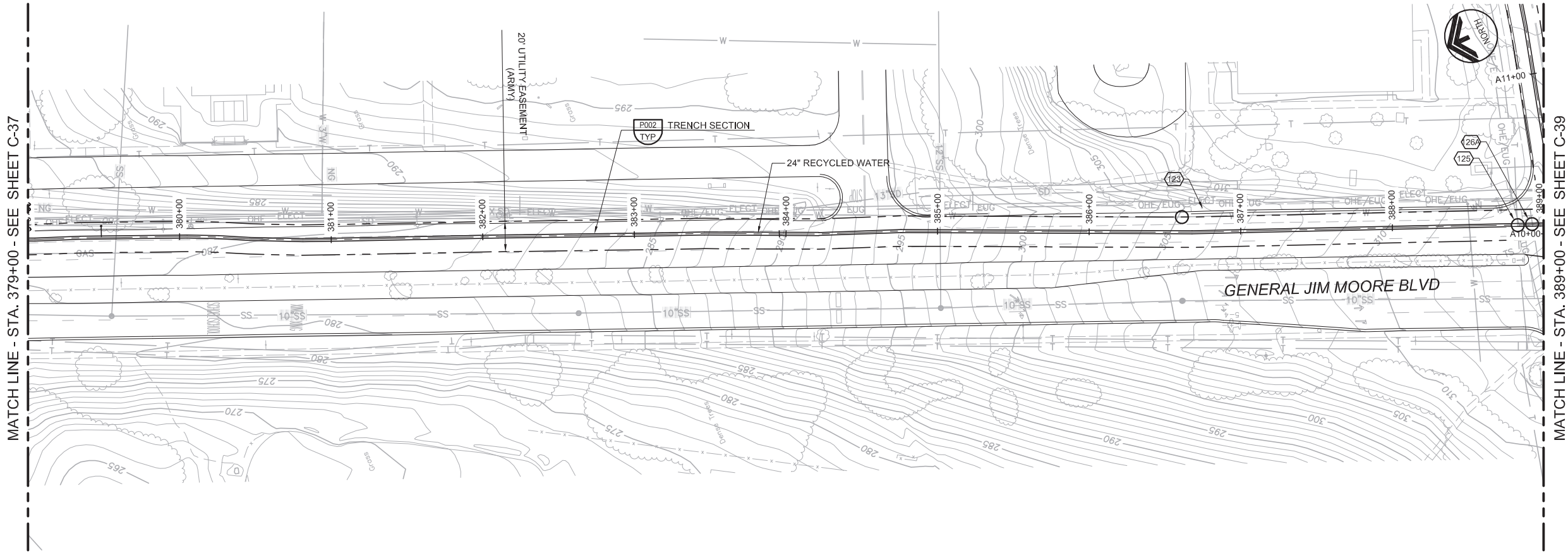
0 1" 16'

IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7568A.10

DRAWING NO. C-37

SHEET NO. 45 OF 93



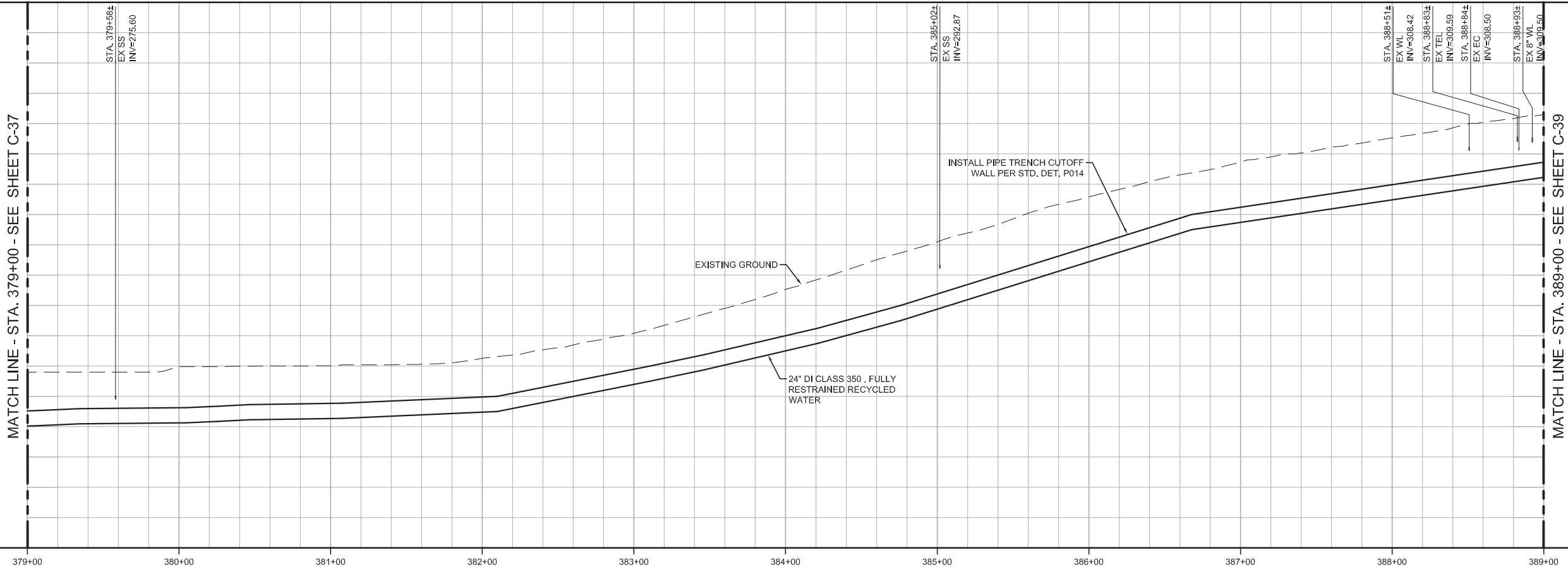
- GENERAL NOTES**
- CONSTRUCT PIPELINE WITH A MINIMUM 4' OF COVER UNLESS SHOWN OTHERWISE IN THE PROFILE TO AVOID EXISTING UTILITIES OR ACCOMMODATE FUTURE GRADES.
  - FROM STA. 347+30± TO STA. 389+56± TEMPORARY CONSTRUCTION EASEMENT SHALL BE FROM EDGE OF PAVEMENT TO MEDIAN IN NORTHBOUND LANES.

AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.

**Call before you Dig**

1-800-227-2800

UNDERGROUND SERVICE (USA)



**KEY MAP**

AWTF P.S.

THIS SHEET

BH RESERVOIR

KEY MAP NORTH

**SCALE**

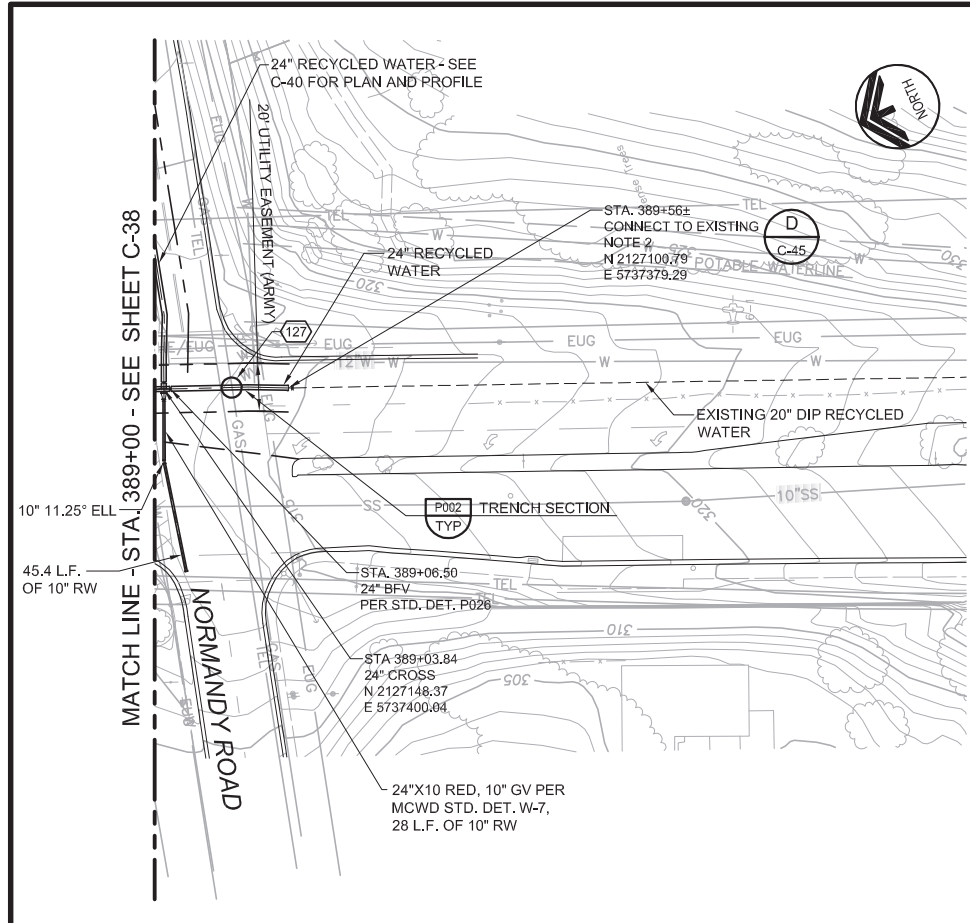
HORIZONTAL: 0, 20', 40', 80'

VERTICAL: 0, 8', 16'

<b>BID SET</b>				DESIGNED JPM	DISCIPLINE ENGINEER	PROJECT ENGINEER Digitally signed by Jonathon P. Marshall Contact Info: Carollo Engineers, Inc. Date: 2017.05.01 12:57:03-0700Z	PROJECT MANAGER JONATHAN P. MARSHALL No. 73265 CIVIL STATE OF CALIFORNIA	 <b>carollo</b> Engineers...Working Wonders With Water™	 <b>Marina Coast Water District</b>	<b>REGIONAL URBAN WATER AUGMENTATION PROJECT</b>		<b>VERIFY SCALES</b> BAR IS ONE INCH ON ORIGINAL DRAWING 0 1"	JOB NO. 7568A.10 DRAWING NO. C-38 SHEET NO. 46 OF 93
				DRAWN BH									
				CHECKED AP									
				DATE MAY 2017									
REV	DATE	BY	DESCRIPTION										

Last Opened by: 428-17 01:08pm BHawes





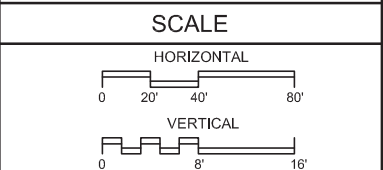
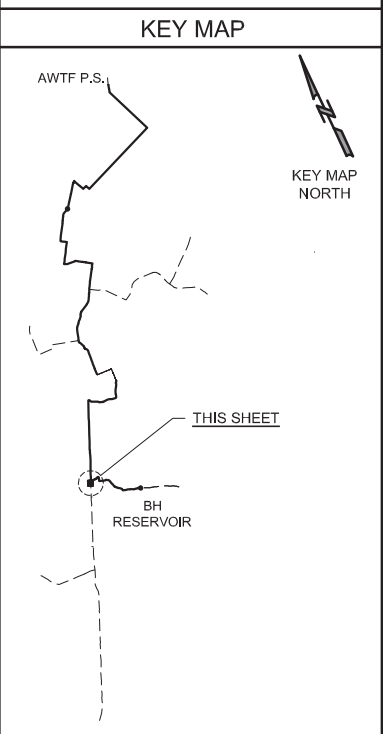
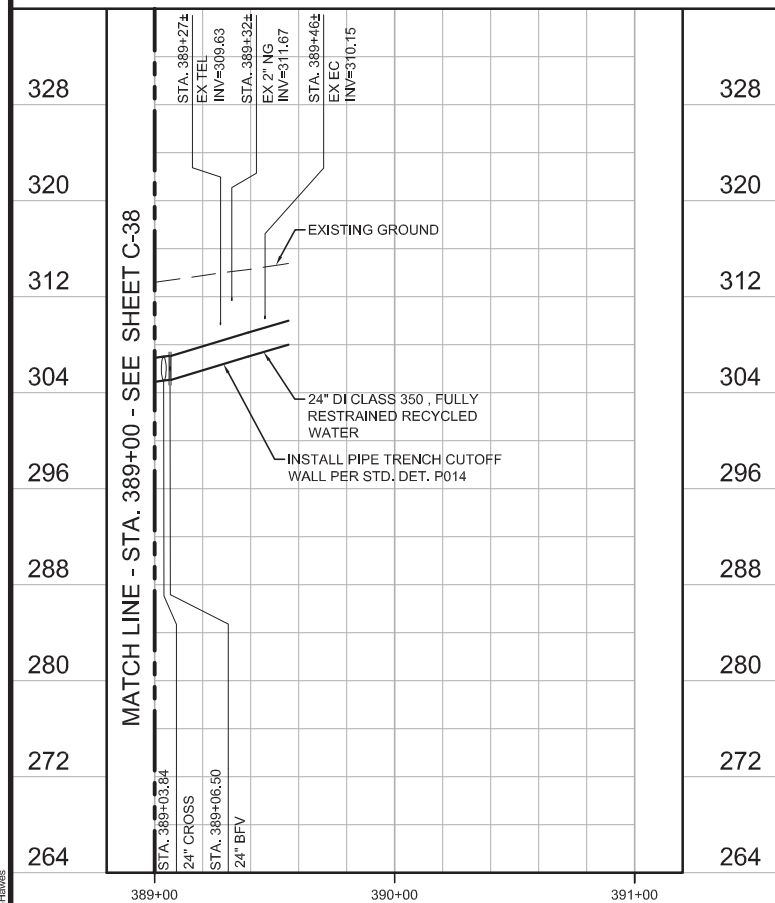
- ### GENERAL NOTES
1. CONSTRUCT PIPELINE WITH A MINIMUM 4' OF COVER UNLESS SHOWN OTHERWISE IN THE PROFILE TO AVOID EXISTING UTILITIES OR ACCOMMODATE FUTURE GRADES.
  2. CONTRACTOR SHALL FIELD VERIFY SIZE AND LOCATION OF EXISTING RW TERMINATION PRIOR TO CONSTRUCTION AND NOTIFY ENGINEER IF THERE ARE DISCREPANCIES.
  3. FROM STA. 347+30± TO STA. 389+56± TEMPORARY CONSTRUCTION EASEMENT SHALL BE FROM EDGE OF PAVEMENT TO MEDIAN IN NORTHBOUND LANES.

AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.

**Call before you Dig**

1-800-227-2600

UNDERGROUND SERVICE (USA)



REV	DATE	BY	DESCRIPTION

DESIGNED JPM	DISCIPLINE ENGINEER
DRAWN BH	
CHECKED AP	
DATE MAY 2017	

PROJECT ENGINEER  
Digitally signed by Jonathon P. Marshall  
Contact Info: Carollo Engineers, Inc.  
Date: 2017.05.01 12:56:47-07'00'

PROJECT MANAGER

**carollo**  
Engineers...Working Wonders With Water™

**Marina Coast Water District**

REGIONAL URBAN WATER AUGMENTATION PROJECT

RECYCLED WATER PIPELINE

CIVIL

PLAN AND PROFILE  
STA. 389+00 TO STA. 389+56±

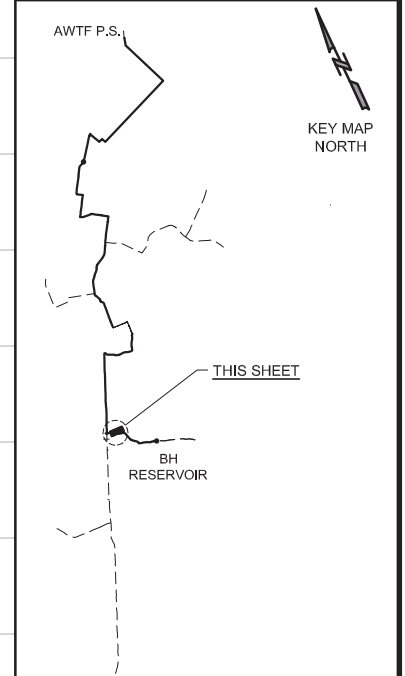
VERIFY SCALES BAR IS ONE INCH ON ORIGINAL DRAWING 0 1" 16'	JOB NO. 7568A.10
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	DRAWING NO. C-39
	SHEET NO. 47 OF 93

**GENERAL NOTES**

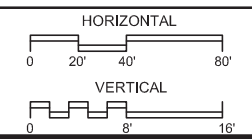
1. CONSTRUCT PIPELINE WITH A MINIMUM 4' OF COVER UNLESS SHOWN OTHERWISE IN THE PROFILE TO AVOID EXISTING UTILITIES OR ACCOMMODATE FUTURE GRADES.
2. ALLOWABLE CONSTRUCTION WORK AREA ON NORMANDY RD SHALL BE FROM EDGE OF PAVEMENT TO EDGE OF PAVEMENT.



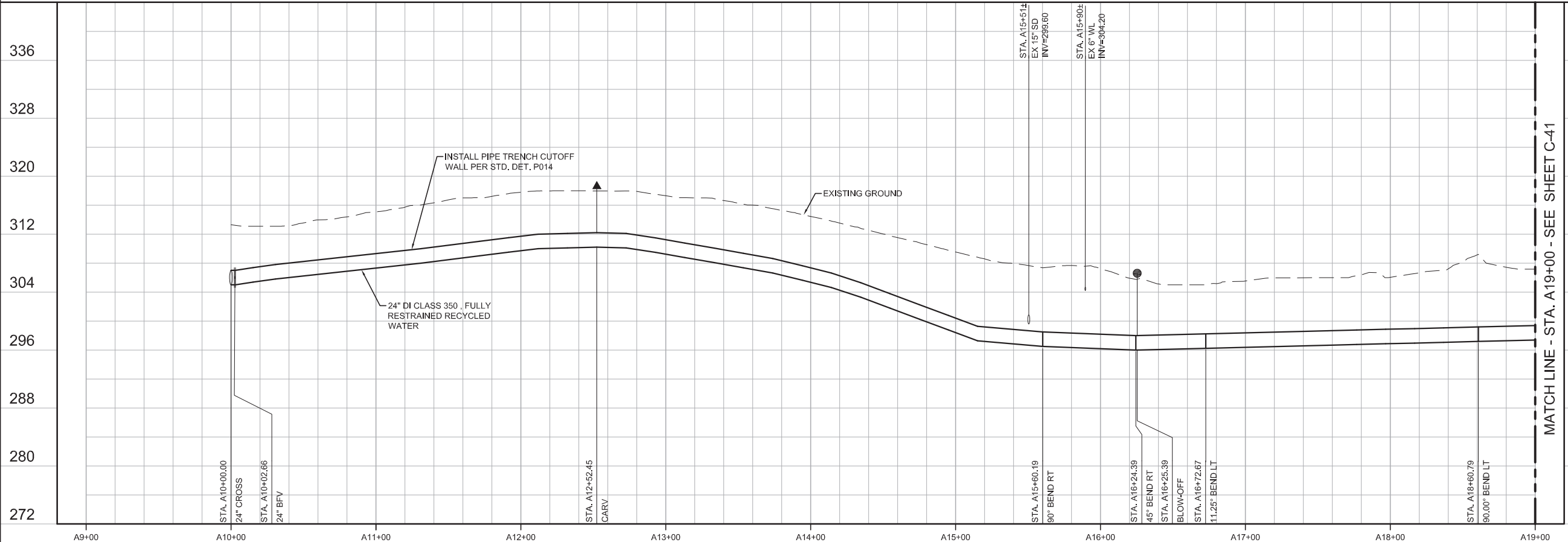
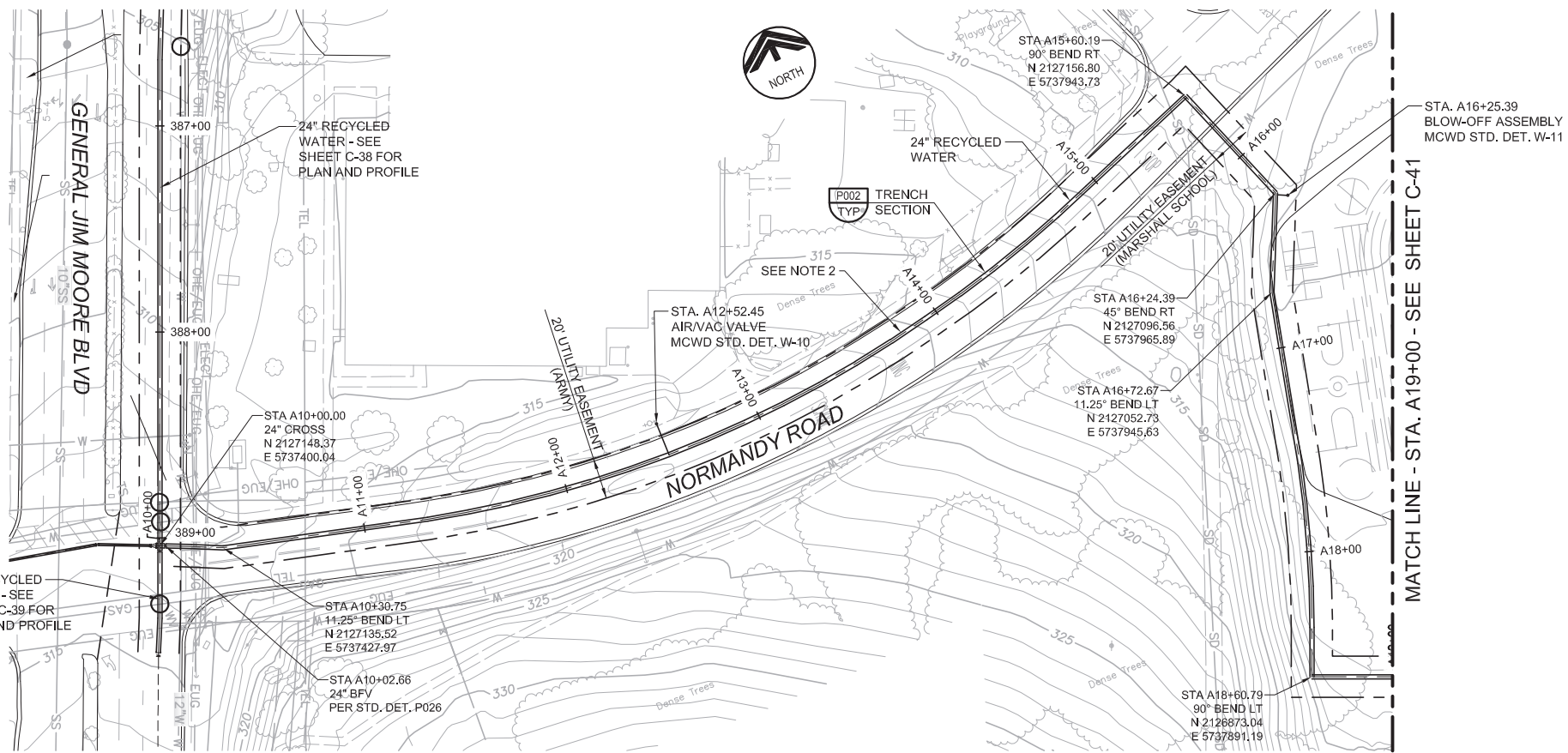
**KEY MAP**



**SCALE**



<b>VERIFY SCALES</b> BAR IS ONE INCH ON ORIGINAL DRAWING 0 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	JOB NO. 7568A.10 DRAWING NO. <b>C-40</b> SHEET NO. 48 OF 93
---	--



<b>BID SET</b>			
DESIGNED	JPM	DISCIPLINE ENGINEER	
DRAWN	BH		
CHECKED	AP		
DATE	MAY 2017		
REV	DATE	BY	DESCRIPTION

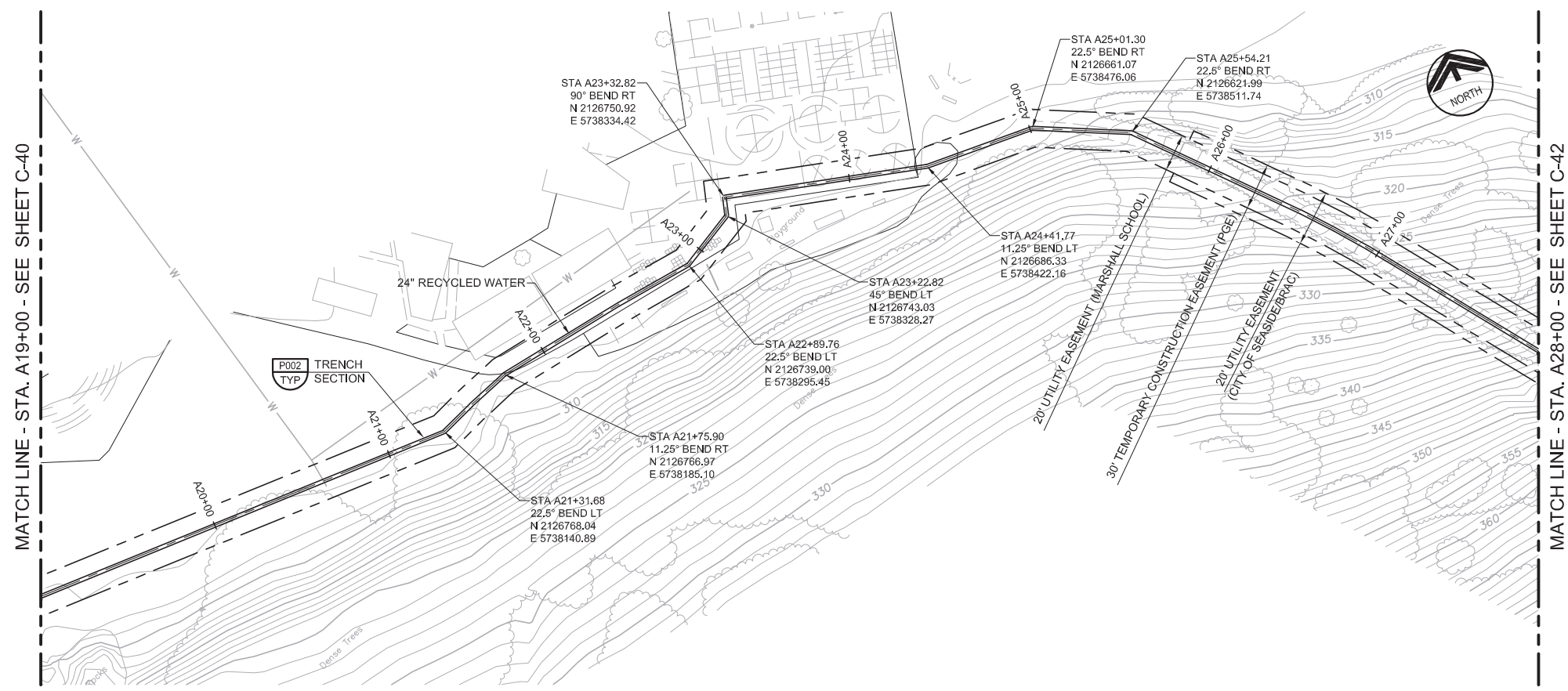
PROJECT ENGINEER	Digitally signed by Jonathon P. Marshall Contact Info: Carollo Engineers, Inc. Date: 2017.05.01 12:56:12-0700
PROJECT MANAGER	JONATHAN P. MARSHALL No. 73265 CIVIL STATE OF CALIFORNIA

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Engineers...Working Wonders With Water™

**Marina Coast Water District**

**REGIONAL URBAN WATER AUGMENTATION PROJECT**  
**RECYCLED WATER PIPELINE**  
CIVIL  
**PLAN AND PROFILE**  
WATER LINE "A" - STA. A10+00 TO STA. A19+00





**GENERAL NOTES**

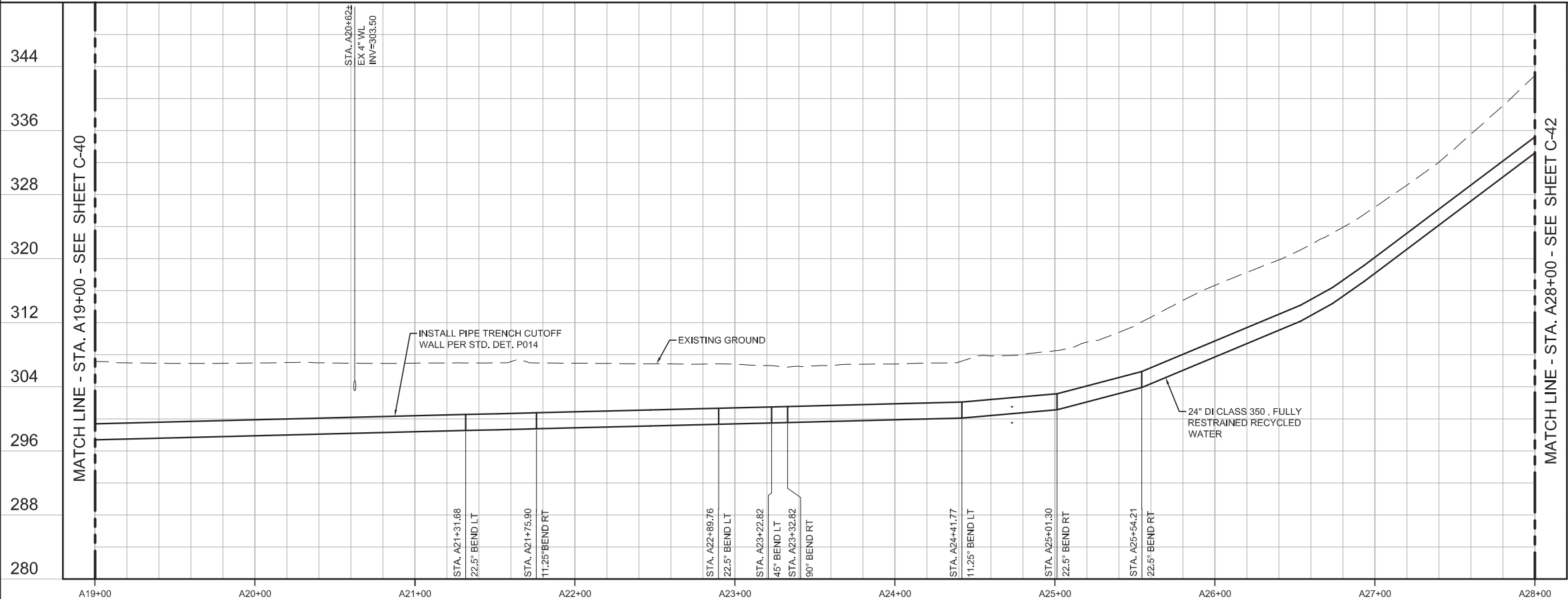
1. CONSTRUCT PIPELINE WITH A MINIMUM 4' OF COVER UNLESS SHOWN OTHERWISE IN THE PROFILE TO AVOID EXISTING UTILITIES OR ACCOMMODATE FUTURE GRADES.

AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.

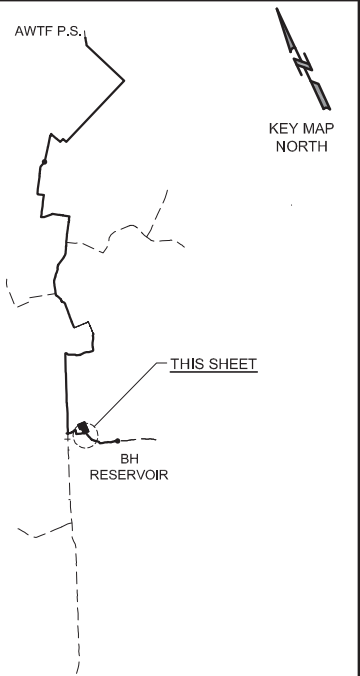
**Call before you Dig**

1-800-227-2800

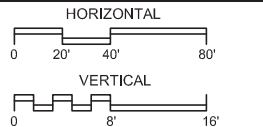
UNDERGROUND SERVICE (USA)



**KEY MAP**



**SCALE**



REV	DATE	BY	DESCRIPTION

<b>BID SET</b>	DESIGNED JPM	DISCIPLINE ENGINEER
	DRAWN BH	
	CHECKED AP	
	DATE MAY 2017	

Project Engineer  
Digitally signed by Jonathon P. Marshall  
Contact Info: Carollo Engineers, Inc.  
Date: 2017.05.01 12:55:42-0700'

Project Manager  
Jonathon P. Marshall  
No. 73265  
CIVIL  
STATE OF CALIFORNIA



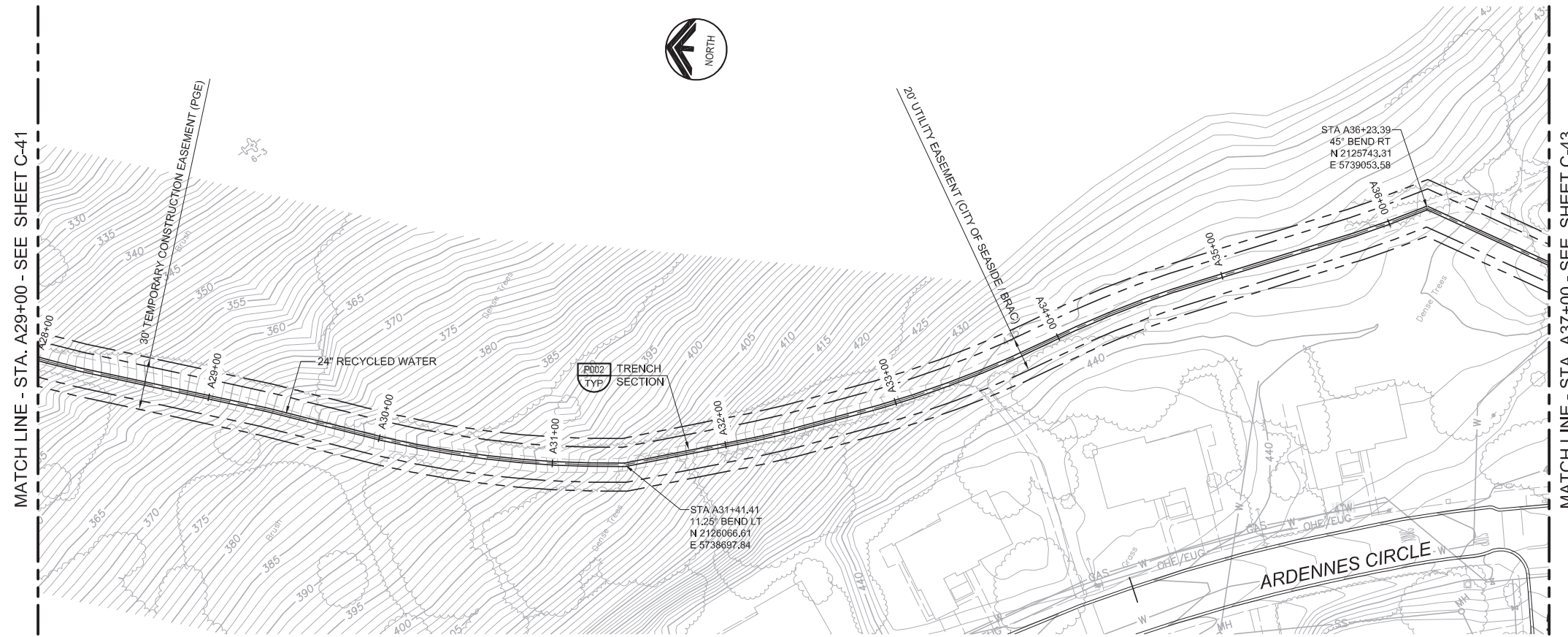
**REGIONAL URBAN WATER AUGMENTATION PROJECT**

**RECYCLED WATER PIPELINE**

CIVIL  
**PLAN AND PROFILE**  
WATER LINE "A" - STA. A19+00 TO STA. A28+00

**VERIFY SCALES**  
BAR IS ONE INCH ON ORIGINAL DRAWING  
0 1" 16'  
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7568A.10  
DRAWING NO. C-41  
SHEET NO. 49 OF 93



GENERAL NOTES

- 1. CONSTRUCT PIPELINE WITH A MINIMUM 4' OF COVER UNLESS SHOWN OTHERWISE IN THE PROFILE TO AVOID EXISTING UTILITIES OR ACCOMMODATE FUTURE GRADES.

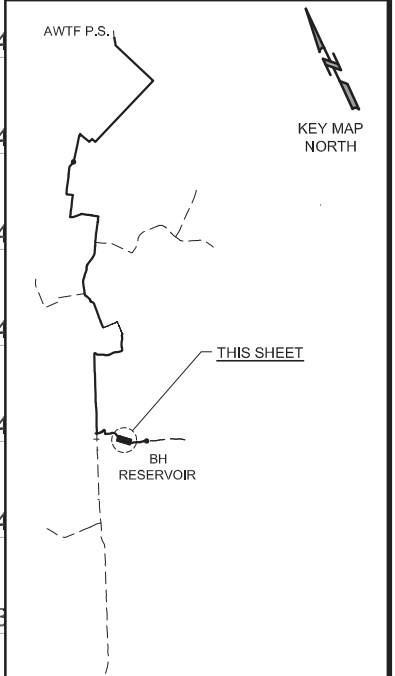
AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.

**Call before you Dig**

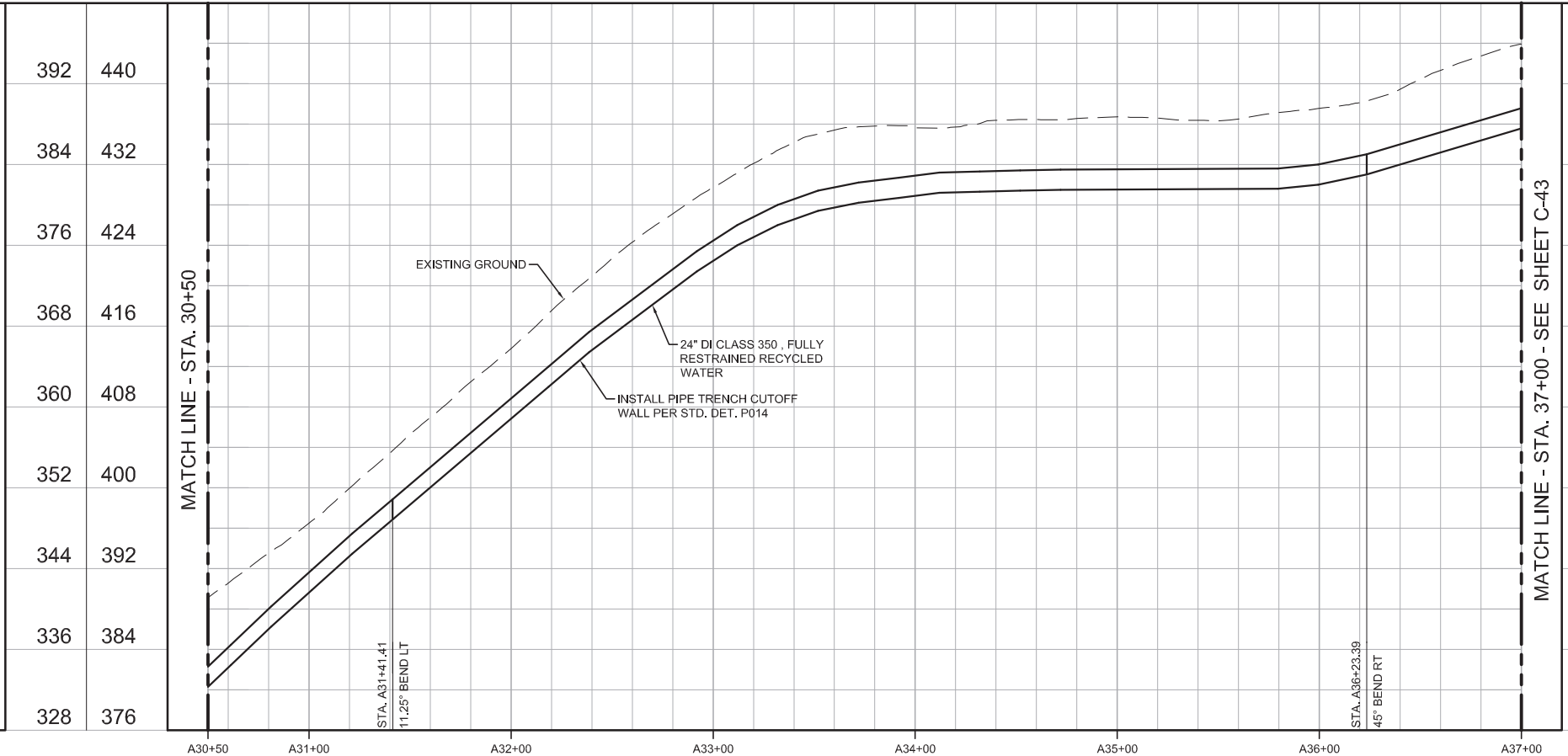
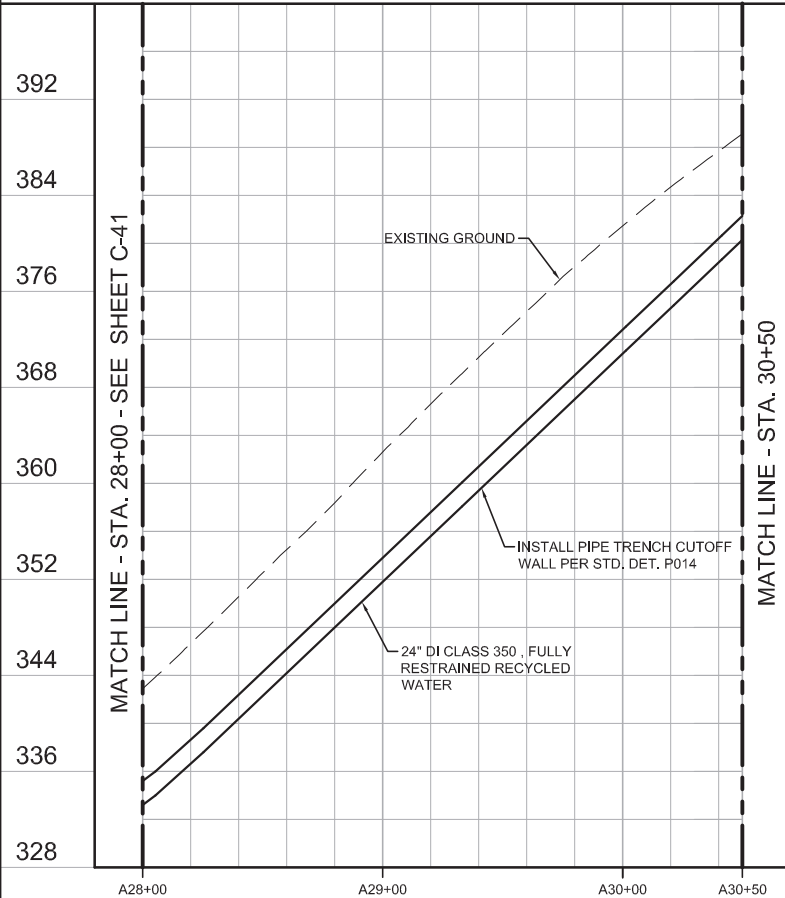
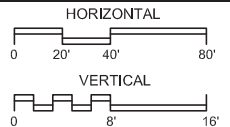
1-800-227-2600

UNDERGROUND SERVICE (USA)

KEY MAP



SCALE



REV	DATE	BY	DESCRIPTION

DESIGNED	JPM
DRAWN	BH
CHECKED	AP
DATE	MAY 2017

PROJECT ENGINEER  
Digitally signed by Jonathon P. Marshall  
Contact Info: Carollo Engineers, Inc.  
Date: 2017.05.01 12:55:09-0700'



REGIONAL URBAN WATER AUGMENTATION PROJECT  
 RECYCLED WATER PIPELINE  
 CIVIL  
 PLAN AND PROFILE  
 WATER LINE "A" - STA. A28+00 TO STA. A37+00

VERIFY SCALES  
 BAR IS ONE INCH ON ORIGINAL DRAWING  
 0 1" 16'  
 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7568A.10  
 DRAWING NO. C-42  
 SHEET NO. 50 OF 93

File Created by: 4-28-17 01:14pm BHowes



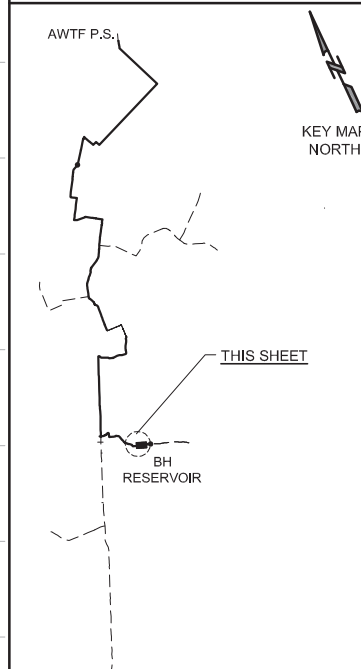
**GENERAL NOTES**

- CONSTRUCT PIPELINE WITH A MINIMUM 4' OF COVER UNLESS SHOWN OTHERWISE IN THE PROFILE TO AVOID EXISTING UTILITIES OR ACCOMMODATE FUTURE GRADES.

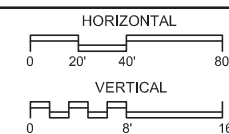
AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.  
**Call before you Dig**  
 1-800-227-2800

UNDERGROUND SERVICE (USA)

**KEY MAP**



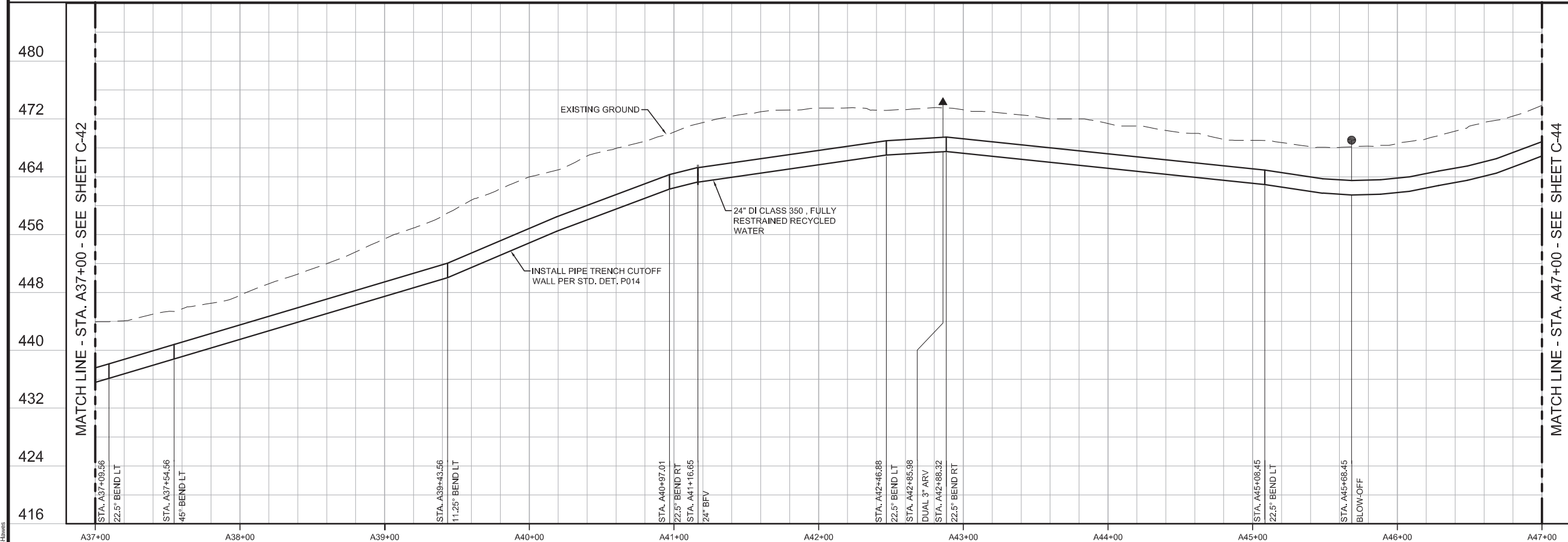
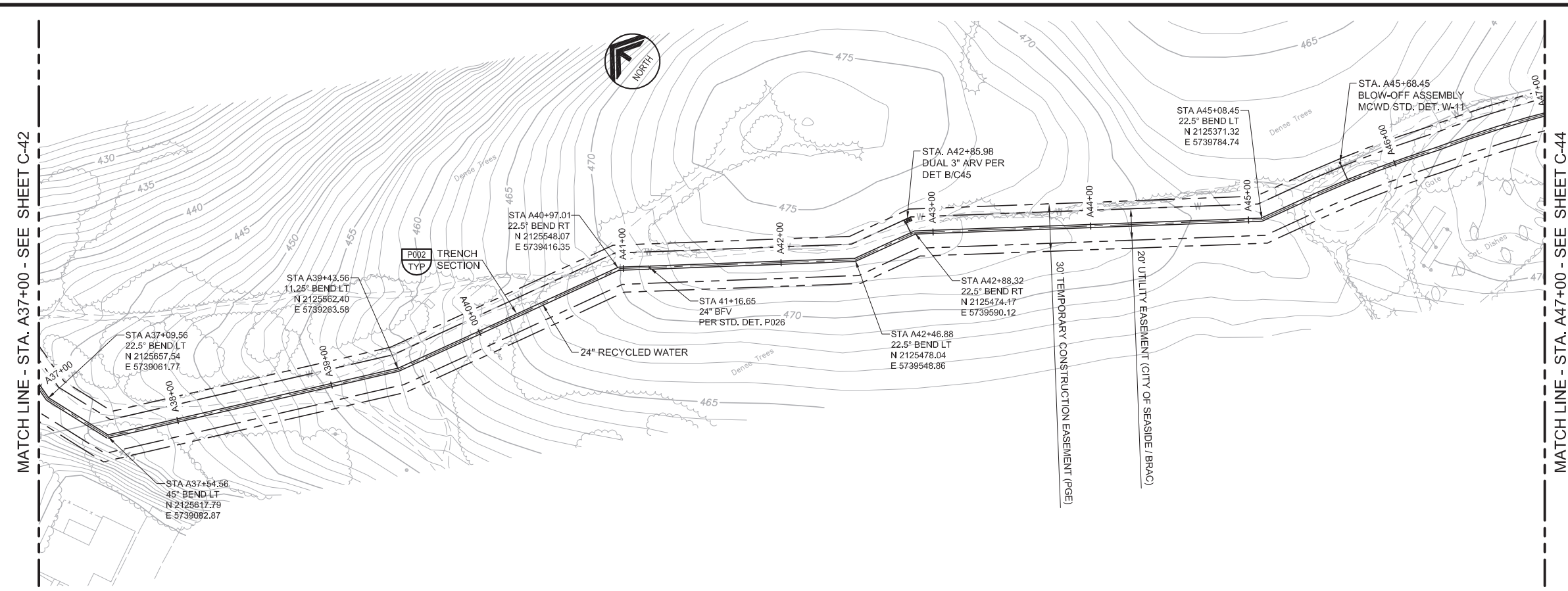
**SCALE**



**VERIFY SCALES**

BAR IS ONE INCH ON ORIGINAL DRAWING  
 0 1" 16'  
 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7568A.10  
 DRAWING NO. C-43  
 SHEET NO. 51 OF 93



<b>BID SET</b>			
DESIGNED	JPM		
DRAWN	BH		
CHECKED	AP		
DATE	MAY 2017		
REV	DATE	BY	DESCRIPTION

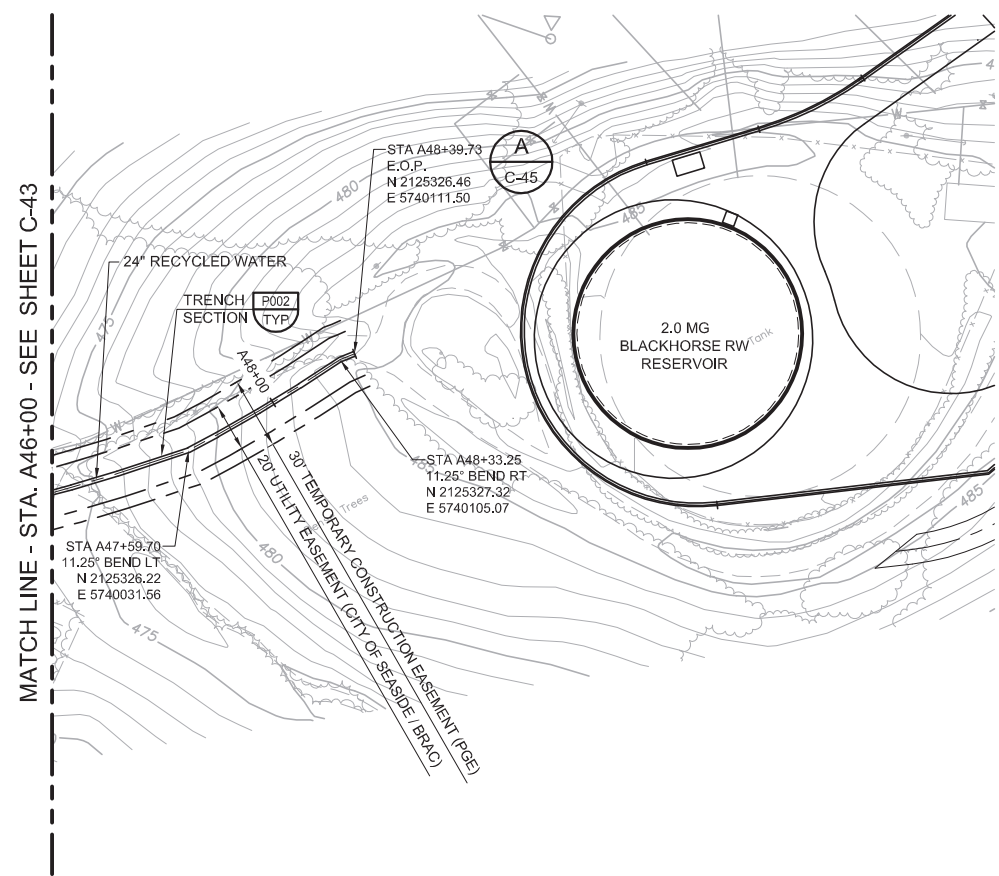
DISCIPLINE ENGINEER  
 PROJECT ENGINEER  
 PROJECT MANAGER

Digitally signed by Jonathon P. Marshall  
 Contact Info: Carollo Engineers, Inc.  
 Date: 2017.05.01 12:54:50-0700



**Marina Coast Water District**

**REGIONAL URBAN WATER AUGMENTATION PROJECT**  
**RECYCLED WATER PIPELINE**  
 CIVIL  
**PLAN AND PROFILE**  
**WATER LINE "A" - STA. A37+00 TO STA. A47+00**



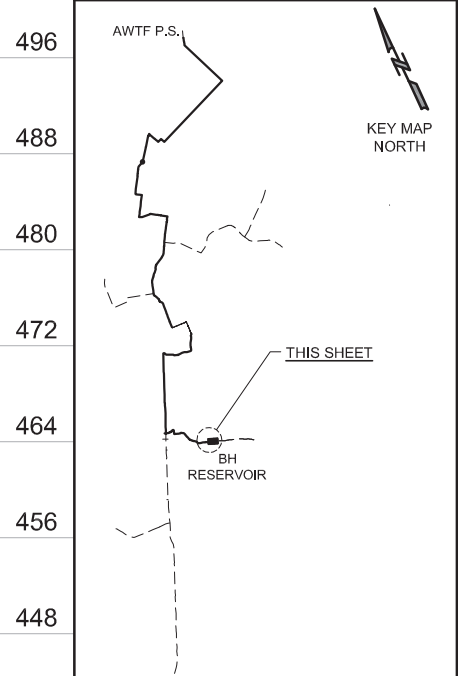
**GENERAL NOTES**

1. CONSTRUCT PIPELINE WITH A MINIMUM 4' OF COVER UNLESS SHOWN OTHERWISE IN THE PROFILE TO AVOID EXISTING UTILITIES OR ACCOMMODATE FUTURE GRADES.

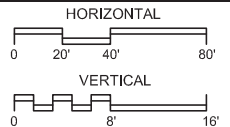
AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.  
**Call before you Dig**  
 1-800-227-2600

UNDERGROUND SERVICE (USA)

**KEY MAP**



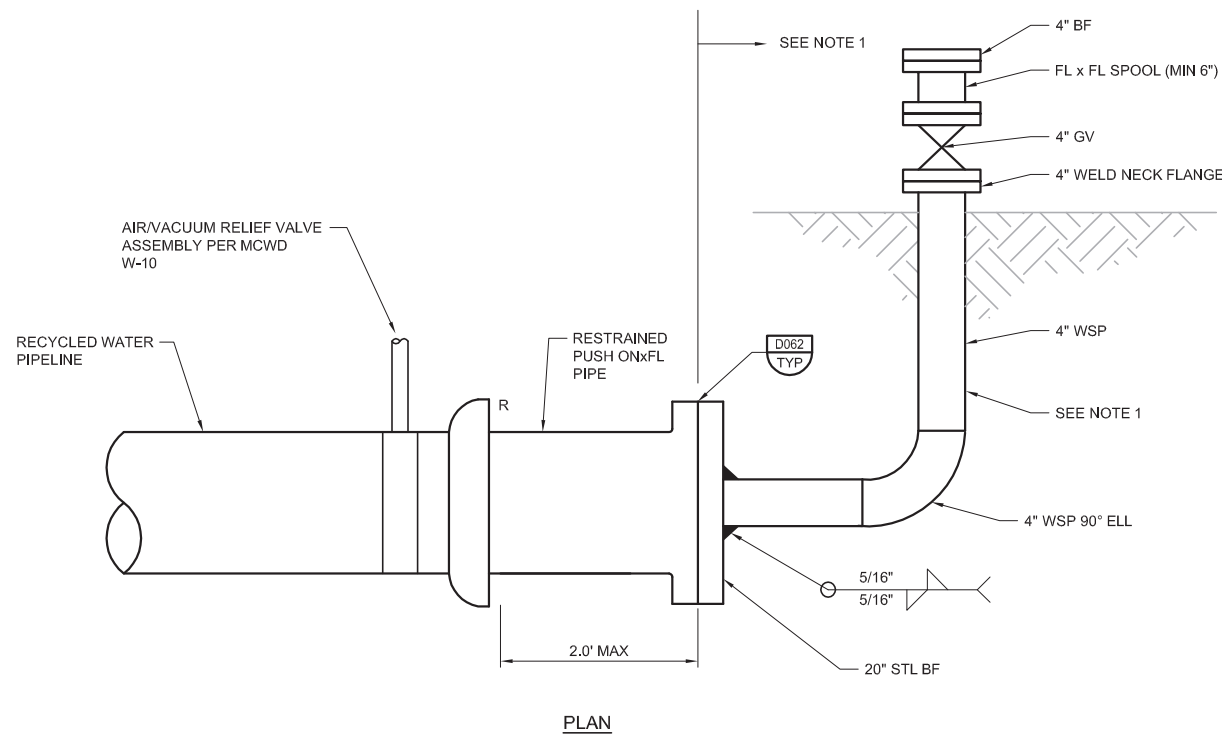
**SCALE**



<p>MATCH LINE - STA. A46+00 - SEE SHEET C-43</p>				<p>MATCH LINE - STA. A46+00 - SEE SHEET C-43</p>				<p>MATCH LINE - STA. A46+00 - SEE SHEET C-43</p>							
REV	DATE	BY	DESCRIPTION	DESIGNED AP / AS	DRAWN LGD	CHECKED	DATE MAY 2017	DISCIPLINE ENGINEER	PROJECT ENGINEER Digitally signed by Jonathon P. Marshall Contact Info: Carollo Engineers, Inc. Date: 2017.05.01 12:54:06-0700	PROJECT MANAGER JONATHAN P. MARSHALL No. 73265 CIVIL STATE OF CALIFORNIA	 <b>Carollo</b> <i>Engineers...Working Wonders With Water™</i>	 <b>Marina Coast Water District</b>	<b>REGIONAL URBAN WATER AUGMENTATION PROJECT</b> <b>RECYCLED WATER PIPELINE</b> CIVIL <b>PLAN AND PROFILE</b> <b>WATER LINE "A" - STA. A47+00 TO STA. A48+39.73</b>	<b>VERIFY SCALES</b> BAR IS ONE INCH ON ORIGINAL DRAWING  IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	JOB NO. 7568A.10 DRAWING NO. <b>C-44</b> SHEET NO. 52 OF 93

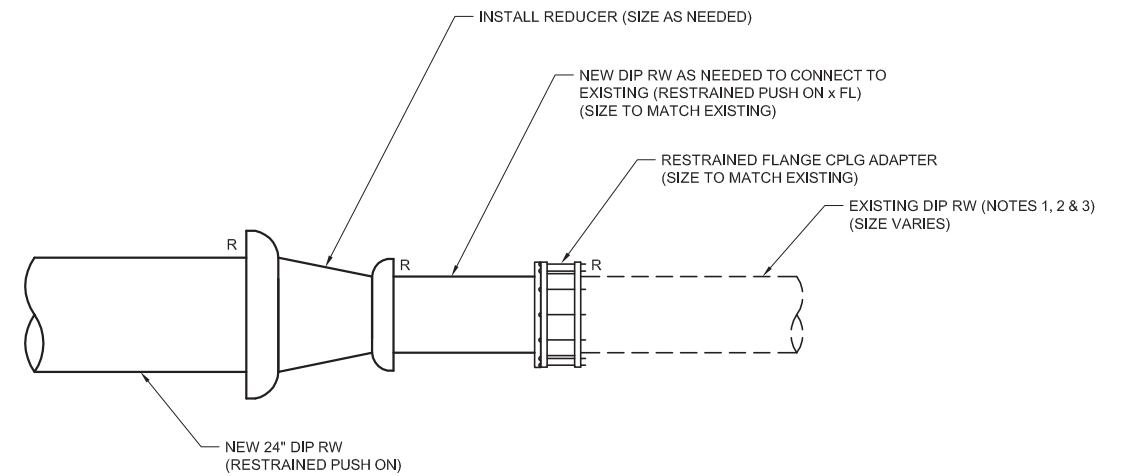
Last Opened by: BHawes 4-30-17 04:26pm





**NOTES:**

1. WHEN NO LONGER NEEDED FOR FILLING OR TESTING REMOVE ALL STEEL PIPING INCLUDING STEEL BF AND REPLACE WITH DI BF. INSTALL ABOVE GROUND PIPE MARKER TO MARK END OF PIPELINE. CONNECTION TO FUTURE PIPE WILL BE MADE BY OTHERS.

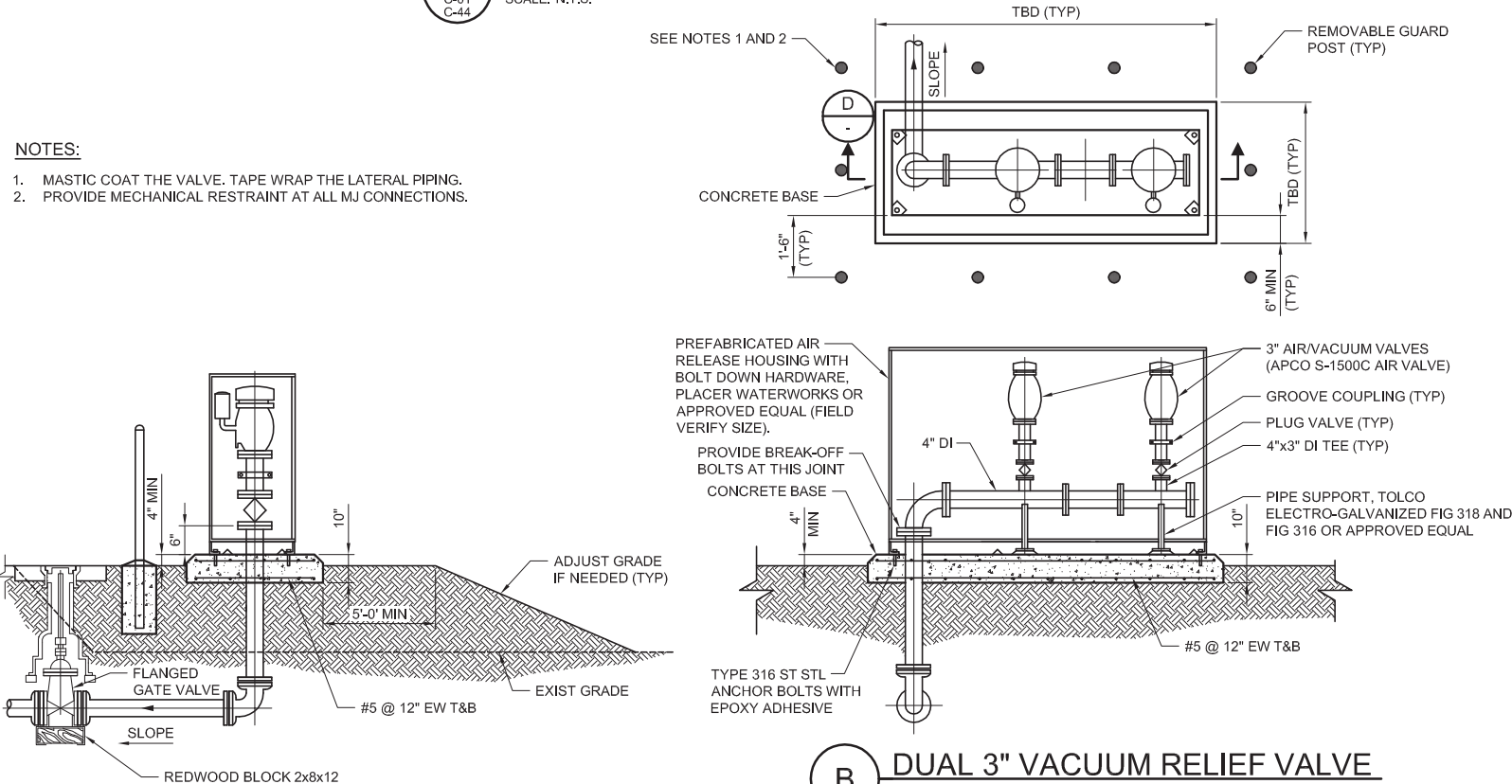


**NOTES:**

1. CONTRACTOR SHALL FIELD VERIFY CONDITIONS AT END OF EXISTING PIPE AT LEAST SEVEN DAYS IN ADVANCE OF CONSTRUCTION AND NOTIFY ENGINEER IF CONDITIONS ARE SIGNIFICANTLY DIFFERENT.
2. DRAIN EXISTING PIPELINE OF ALL WATER PRIOR TO MAKING CONNECTION.
3. REMOVE EXISTING CAP THRUST BLOCK AND TEMPORARY ARV AT THE END OF EXISTING RW MAIN PRIOR TO MAKING CONNECTION.

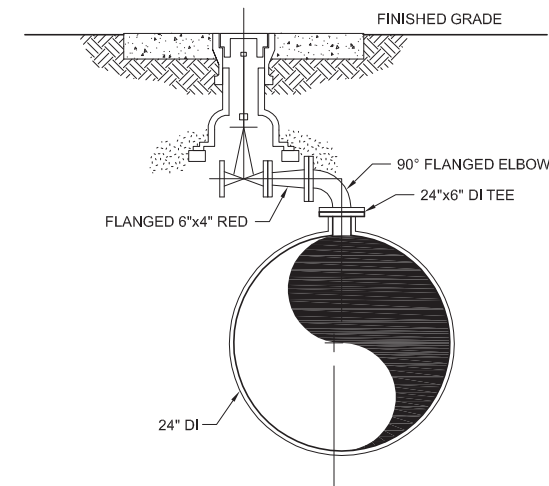
**D FINISHED WATER PIPELINE CONNECTION**  
SCALE: N.T.S.

**A TEMPORARY BLOW OFF DETAIL**  
SCALE: N.T.S.



**NOTES:**

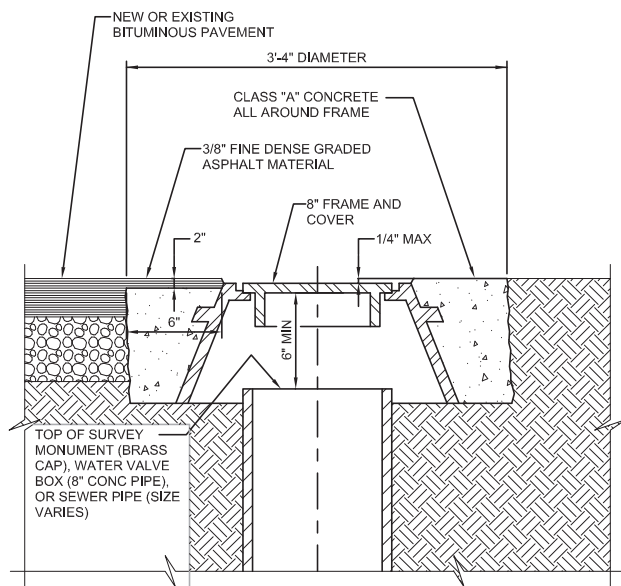
1. MASTIC COAT THE VALVE. TAPE WRAP THE LATERAL PIPING.
2. PROVIDE MECHANICAL RESTRAINT AT ALL MJ CONNECTIONS.



**B DUAL 3" VACUUM RELIEF VALVE**  
SCALE: NTS

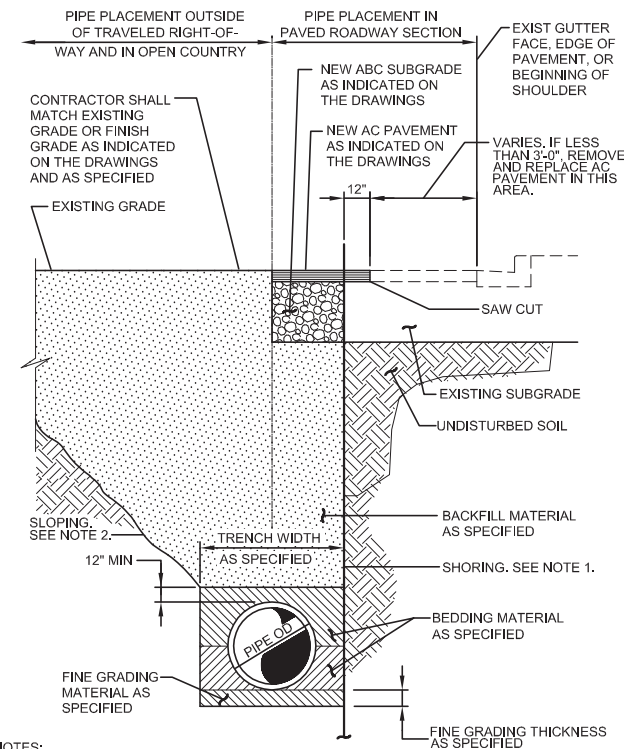
<p><b>BID SET</b></p>				<p>DESIGNED AP</p>	<p>DISCIPLINE ENGINEER</p>	<p>PROJECT ENGINEER</p> <p>Digitally signed by Jonathon P. Marshall Contact Info: Carollo Engineers, Inc. Date: 2017.05.01 12:53:55-0700'</p>	<p>PROJECT MANAGER</p> <p>REGISTERED PROFESSIONAL ENGINEER JONATHAN P. MARSHALL No. 73265 CIVIL STATE OF CALIFORNIA</p>	<p><b>carollo</b> Engineers...Working Wonders With Water™</p>	<p>MARINA COAST WATER DISTRICT</p>	<p>REGIONAL URBAN WATER AUGMENTATION PROJECT</p>		<p><b>VERIFY SCALES</b></p> <p>BAR IS ONE INCH ON ORIGINAL DRAWING</p> <p>0 1"</p> <p>IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY</p>	<p>JOB NO. 7568A.10</p>
				<p>DRAWN LGD</p>						<p>DRAWING NO. C-45</p>			
				<p>CHECKED KVA / GWS</p>						<p>SHEET NO. 53 OF 93</p>			
				<p>DATE MAY 2017</p>									
REV	DATE	BY	DESCRIPTION										

Last Created by: 4-30-17 04:29pm BHawes



**C040** GRADE ADJUSTMENT FOR WATER VALVE, SURVEY MONUMENT, OR SEWER CLEANOUT FRAME

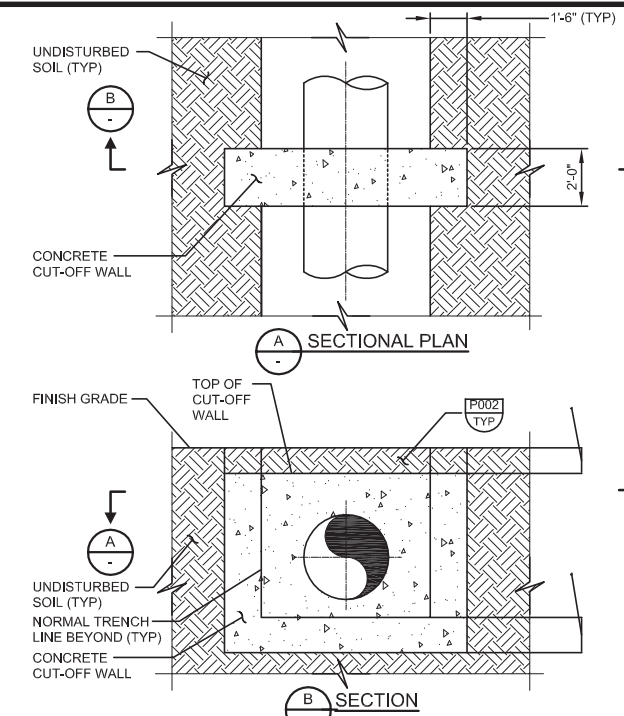
08/01/05



- NOTES:**
- SEE SPECIFICATIONS FOR SHORING REQUIREMENTS.
  - SEE SPECIFICATIONS FOR SLOPING REQUIREMENTS.

**P002** PIPE INSTALLATION AND PAVEMENT REPLACEMENT

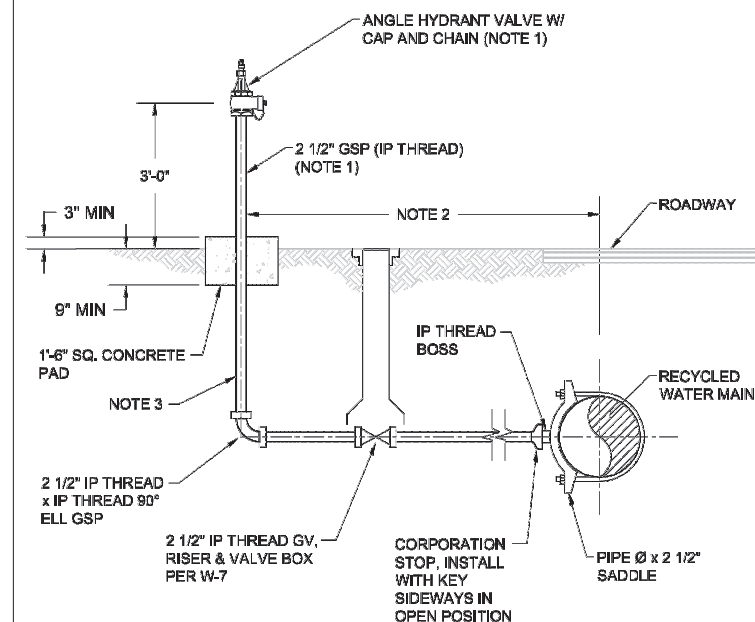
09/06/13



- NOTES:**
- BRACE CUT-OFF WALL UNTIL BACKFILL IS PLACED.
  - KEEP BACKFILL DEPTH EQUAL ON BOTH SIDES OF CUT-OFF WALL AS TRENCH IS BACKFILLED.
  - DO NOT LOCATE PIPE JOINTS IN CUT-OFF WALL.
  - CLEAN PIPE WALL WITHIN CUTOFF WALL FOR GOOD BOND.

**P014** PIPE TRENCH CONCRETE CUT-OFF WALL

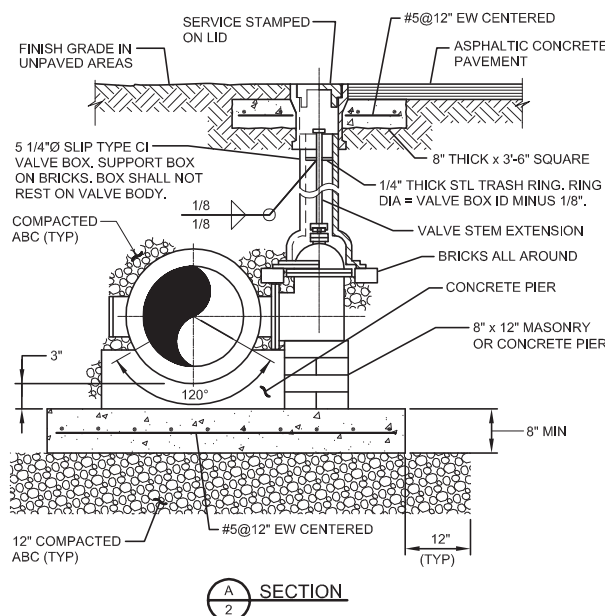
03/24/15



- NOTES:**
- ALL ABOVE GROUND PIPING SIGNS AND VALVES SHALL BE TNEMEC N69-14SF PAINTED SAFETY PURPLE (PANTONE #512).
  - DISTANCE VARIES, SEE PLANS FOR INSTALLATION LOCATIONS AND DISTANCES FROM MAIN.
  - TAPE WRAP ALL BELOW GRADE GSP.

**P021** FILL STATION

NTS

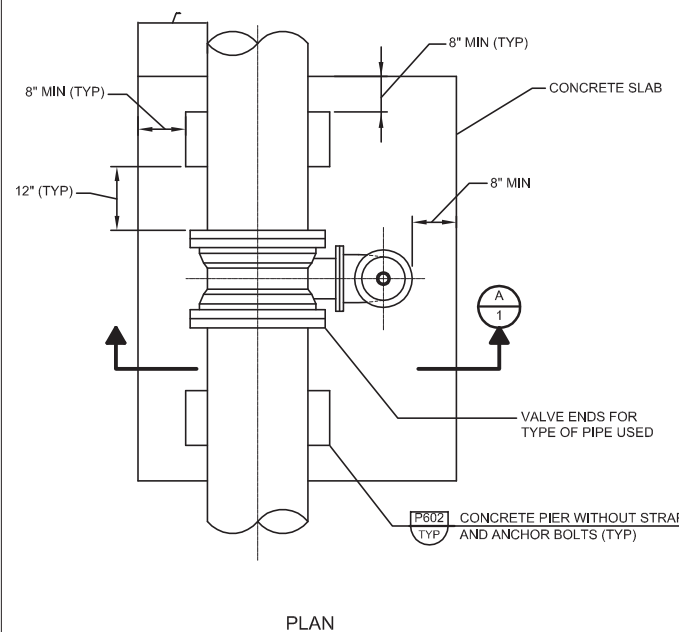


- NOTES:**
- ALL BURIED VALVES SHALL BE PROVIDED WITH EXTENSION STEM OPERATOR WITH 2\"/>

**P026** BURIED BUTTERFLY VALVE

SHEET 1 OF 2

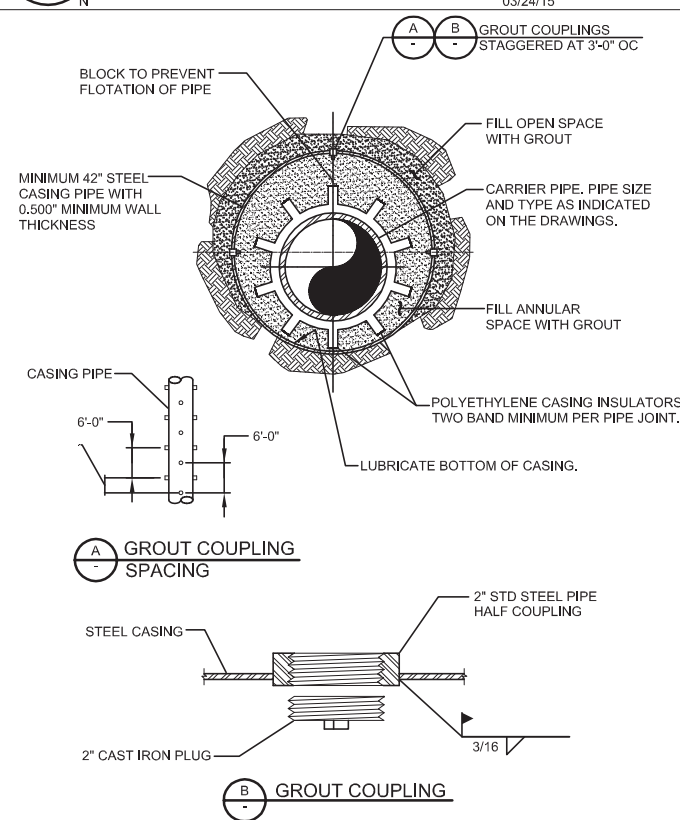
11/30/08



**P026** BURIED BUTTERFLY VALVE

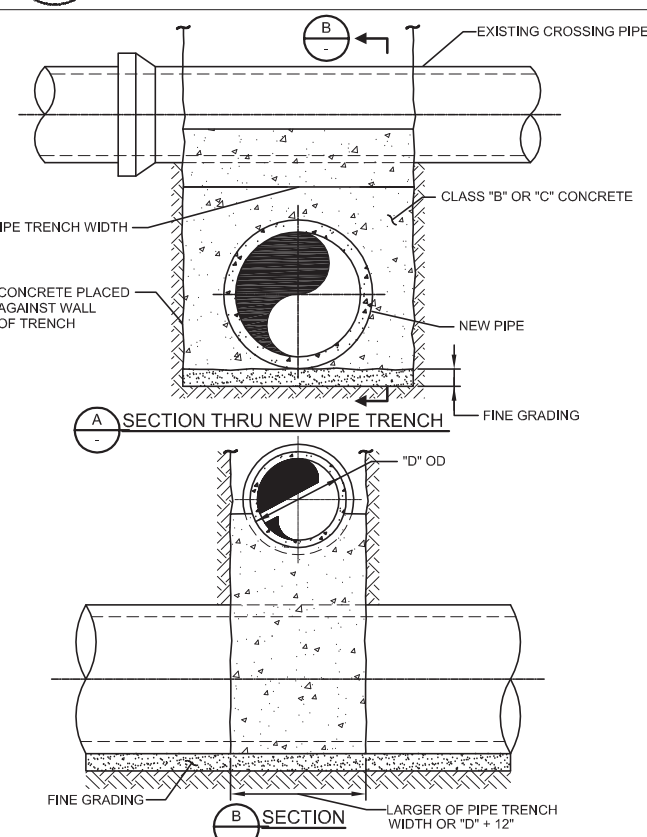
SHEET 2 OF 2

11/30/08



**P030** PIPE IN JACKED STEEL CASING - GROUT FILL

03/01/10



**P048** PIPE SUPPORT ACROSS TRENCH

03/02/15

Last Checked by: 5/01/17 10:44am Bbhawes

REV	DATE	BY	DESCRIPTION

DESIGNED	RRH
DRAWN	SJB
CHECKED	RH
DATE	MAY 2017

PROJECT ENGINEER  
Digitally signed by Jonathon P. Marshall  
Contact Info: Carollo Engineers, Inc.  
Date: 2017.05.01 14:26:32-0700

PROJECT MANAGER  
**JONATHAN P. MARSHALL**  
No. 73265  
CIVIL  
STATE OF CALIFORNIA

**carollo**  
Engineers...Working Wonders With Water™

**MARINA COAST WATER DISTRICT**

REGIONAL URBAN WATER AUGMENTATION PROJECT  
RECYCLED WATER PIPELINE  
CIVIL  
PIPELINE TYPICAL DETAILS

**VERIFY SCALES**  
BAR IS ONE INCH ON ORIGINAL DRAWING  
0 1"  
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7568A.10  
DRAWING NO. TP-01  
SHEET NO. 53A OF 93





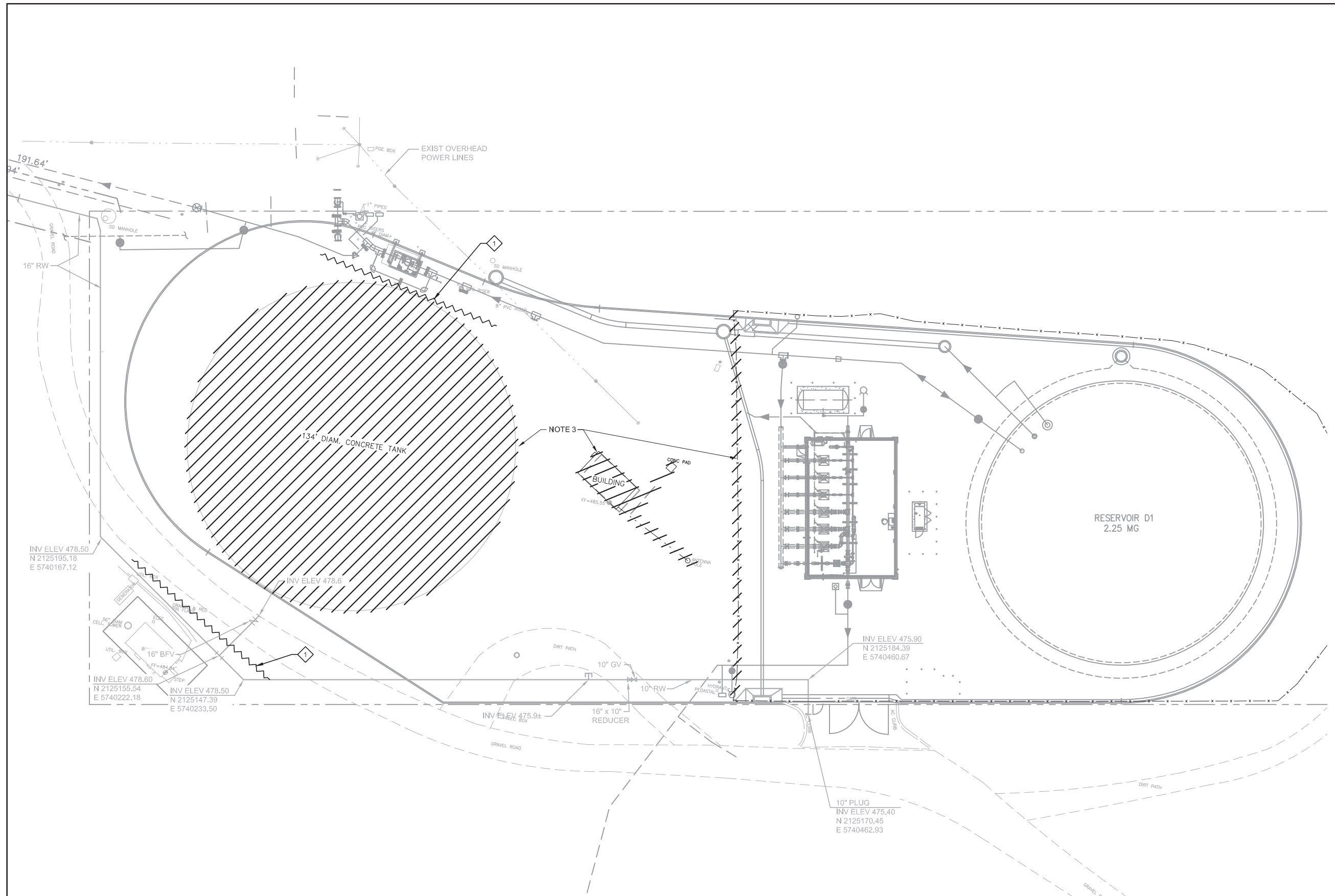
**GENERAL NOTES**

1. CONTRACTOR SHALL FIELD VERIFY ELEVATION OF ALL EXISTING PIPING AND ELECTRICAL DIRECT BURIED CABLES PRIOR TO CONSTRUCTION. PIPING AND UNDERGROUND INFRASTRUCTURE REMAIN IN SERVICE AT ALL TIMES. PROVIDE SHORING AS REQUIRED AND PROTECT ALL EXISTING UNDERGROUND INFRASTRUCTURE FROM DAMAGE DURING CONSTRUCTION.
2. SEE SPECIFICATION 01140 FOR WORK RESTRICTIONS.
3. SEE SECTION 02222 FOR DESCRIPTION OF ITEMS TO BE DEMOLISHED.

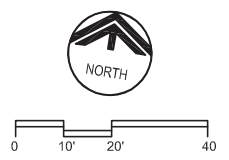
**KEY NOTES**

1. PROVIDE TEMPORARY SHORING AS REQUIRED TO PROTECT EXISTING UTILITIES DURING DEMOLITION OF EXISTING TANK AND DURING EXCAVATION FOR NEW TANK SUB-GRADE. SEE DRAWING S-02 FOR NEW TANK SUB-GRADE REQUIREMENTS. SHORING SHALL BE IN ACCORDANCE WITH SECTION 02260.

**LEGEND**



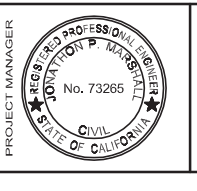
**PLAN**  
SCALE: 1" = 20'



REV	DATE	BY	DESCRIPTION

DESIGNED SAS	DISCIPLINE ENGINEER
DRAWN LGD	
CHECKED RJH	
DATE APRIL 2017	

PROJECT ENGINEER  
Digitally signed by Jonathon P. Marshall  
Contact Info: Carollo Engineers, Inc.  
Date: 2017.05.01 14:55:47-07'00'



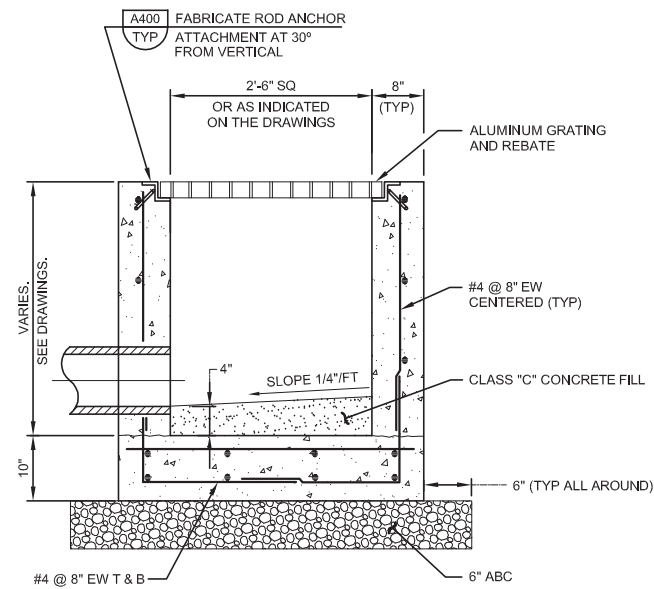
**Marina Coast Water District**

REGIONAL URBAN WATER AUGMENTATION PROJECT
BLACKHORSE RECYCLED WATER RESERVOIR
CIVIL
EXISTING SITE PLAN AND DEMOLITION PLAN

<b>VERIFY SCALES</b> BAR IS ONE INCH ON ORIGINAL DRAWING 0 1" 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	JOB NO. 7568A.10 DRAWING NO. D-01 SHEET NO. 55 OF 93
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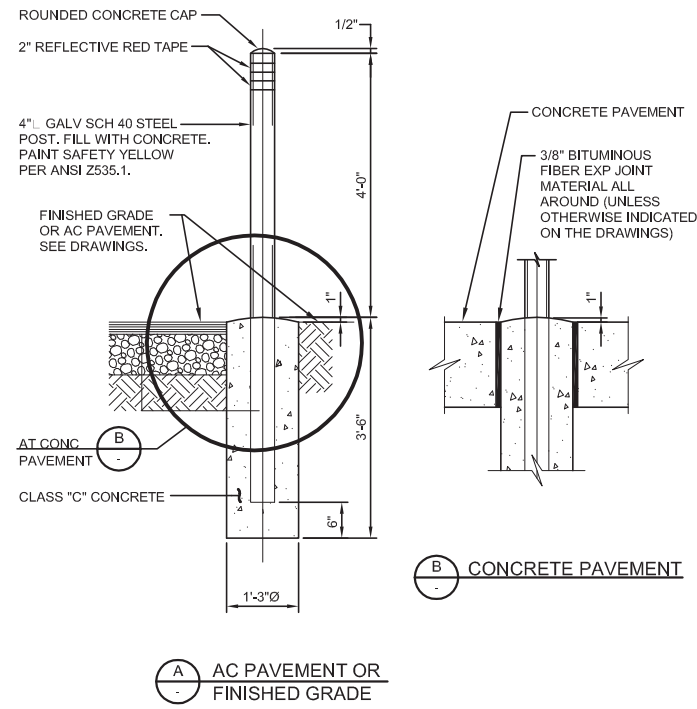
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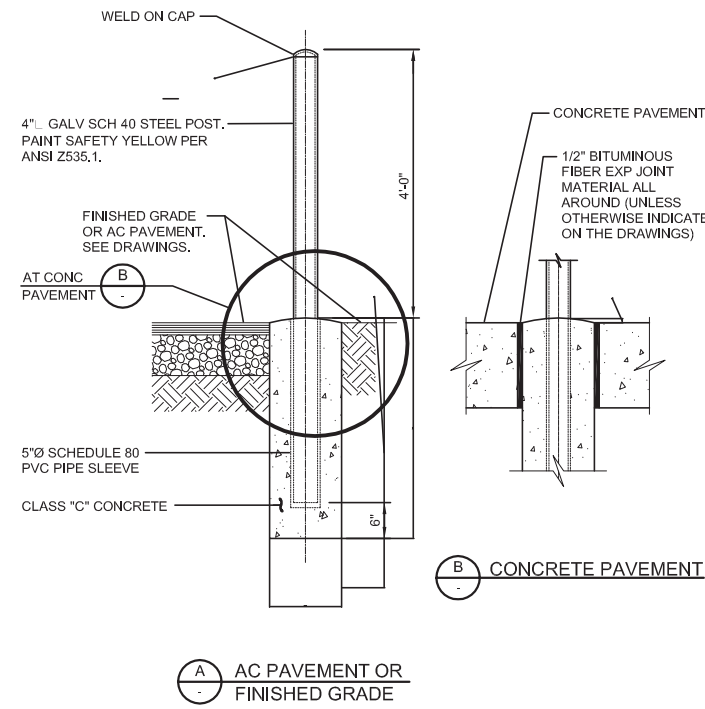
**C002 CATCH BASIN**  
TYP

SHEET 1 OF 4 06/25/15



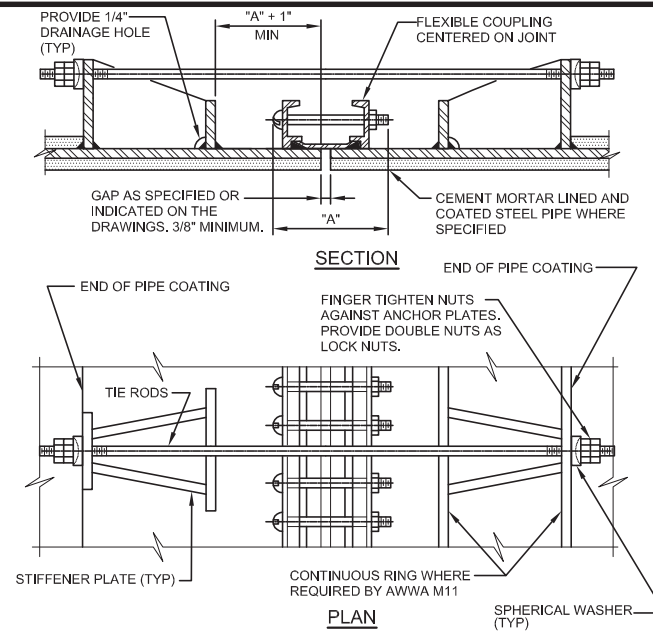
**C160 GUARD POST**  
TYP

01/13/14



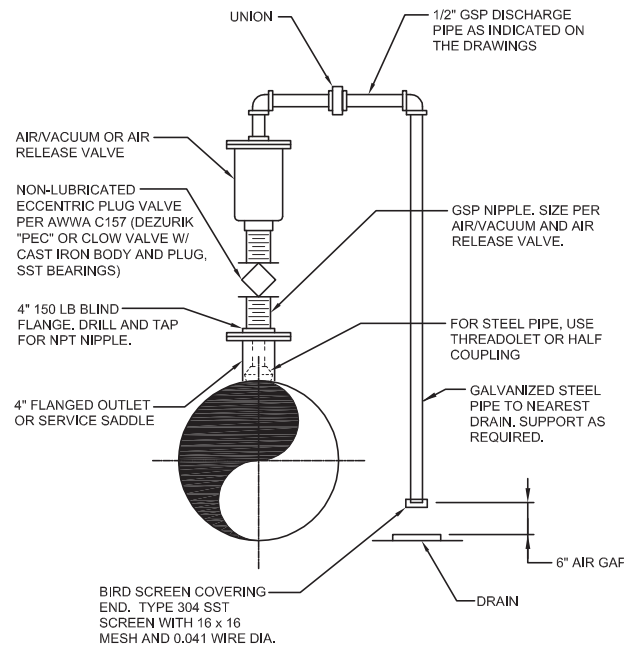
**C161 REMOVABLE GUARD POST**  
TYP

01/13/14



**P112 STEEL PIPE FLEXIBLE COUPLING TIE DOWN**  
TYP

04/09/15



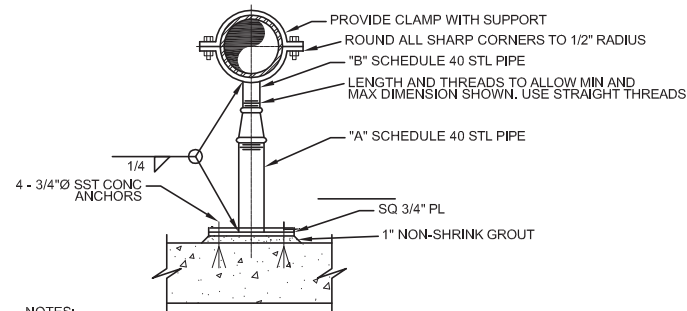
- NOTES:
1. VALVE SIZE SHALL BE AS INDICATED ON THE DRAWINGS.
  2. SERVICE TAP AND PLUG VALVE SHALL MATCH VALVE INLET SIZE.

**P240 AIR VACUUM AND AIR RELEASE FOR 3" AND SMALLER VALVE ASSEMBLY**  
TYP

03/01/10

**ADJUSTABLE PIPE SADDLE SUPPORT SCHEDULE (INCHES)**

SIZE OF SUPPORTED PIPE **	PIPE SIZE "A"	PIPE SIZE "B"	"C"	"D"	
				MINIMUM	MAXIMUM
2 1/2 *	2 1/2	1 1/2	12	8	13
3	2 1/2	1 1/2	12	8 1/2	13 1/2
3 1/2	2 1/2	1 1/2	12	8 1/2	13 1/2
4	3	2 1/2	12	9 1/2	14
6	3	2 1/2	12	10 1/2	15 1/2
8	3	2 1/2	12	11 1/2	16 1/2
10	3	2 1/2	12	13 1/2	18 1/2
12	3	2 1/2	12	15	19 1/2
14	4	3	12	16 1/2	20 1/2
16	4	3	12	17 1/2	22 1/2
18	6	3 1/2	14	19 1/2	24
20	6	3 1/2	14	21	25 1/2
24	6	4	14	23 1/2	28 1/2
30	6	4	14	27	31 1/2
32	6	4	14	28 1/2	32 1/2
36	6	4	14	30 1/2	34 1/2



- NOTES:
1. HOT-DIP GALVANIZED SUPPORT AFTER FABRICATION.
  2. \* = USE 2 1/2" SUPPORTS FOR PIPES LESS THEN 2 1/2"Ø.
  3. \*\* = NOMINAL PIPE SIZE.

**P624 ADJUSTABLE PIPE SUPPORT**  
TYP

SHEET

09/04/13

REV	DATE	BY	DESCRIPTION

DESIGNED	RRH
DRAWN	SJB
CHECKED	RH
DATE	APRIL 2017

DISCIPLINE ENGINEER

PROJECT ENGINEER  
Digitally signed by Jonathon P. Marshall  
Contact Info: Carollo Engineers, Inc.  
Date: 2017.05.01 14:26:02-0700



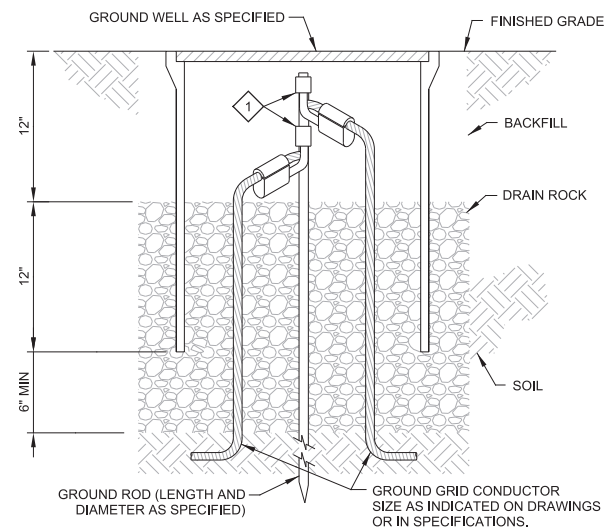
Marina Coast Water District

REGIONAL URBAN WATER AUGMENTATION PROJECT  
BLACKHORSE RECYCLED WATER RESERVOIR  
CIVIL  
CIVIL TYPICAL DETAILS - I

VERIFY SCALES  
BAR IS ONE INCH ON ORIGINAL DRAWING  
0 1"  
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7568A.10  
DRAWING NO. TC-01  
SHEET NO. 56 OF 93

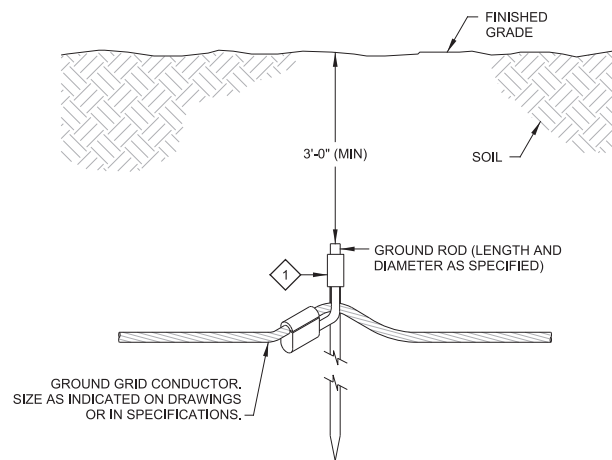
FILENAME:



KEY NOTES:

1 GROUND ROD TO GROUND GRID CROSS CONNECTOR. SIZE FOR ROD AND CABLE PER CONNECTOR MANUFACTURERS GUIDELINES.

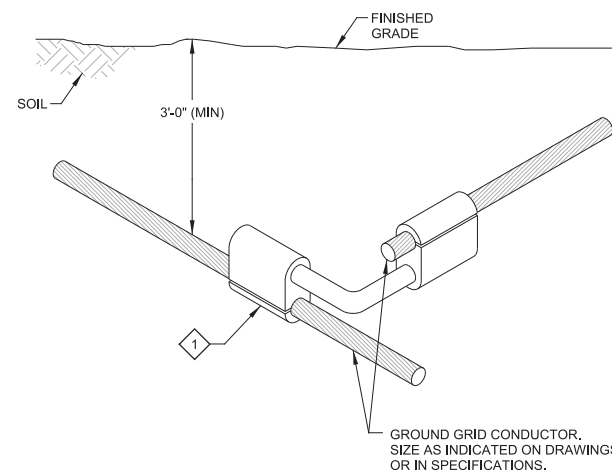
**EG001** GROUND ROD AND GROUNDWELL  
TYP COMPRESSION CONNECTION



KEY NOTES:

1 GROUND ROD TO GROUND GRID CROSS CONNECTOR. SIZE FOR ROD AND CABLE PER CONNECTOR MANUFACTURERS GUIDELINES.

**EG002** GROUND ROD  
TYP COMPRESSION CONNECTION



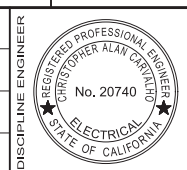
KEY NOTES:

1 GROUND GRID CROSS CONNECTOR. SIZE FOR CABLE PER CONNECTOR MANUFACTURERS GUIDELINES.

**EG101** COPPER GROUNDING CABLE CONNECTION  
TYP COMPRESSION CONNECTION

REV	DATE	BY	DESCRIPTION

DESIGNED	CAC
DRAWN	JRS
CHECKED	MJP
DATE	APRIL 2017



PROJECT ENGINEER  
Digitally signed by Jonathon P. Marshall  
Contact Info: Carollo Engineers, Inc.  
Date: 2017.05.01 14:25:49-07'00'

PROJECT ENGINEER  
Digitally signed by Christopher Carvalho  
Contact Info: Carollo Engineers, Inc.  
Date: 2017.05.01 14:37:51-07'00'



Marina Coast Water District

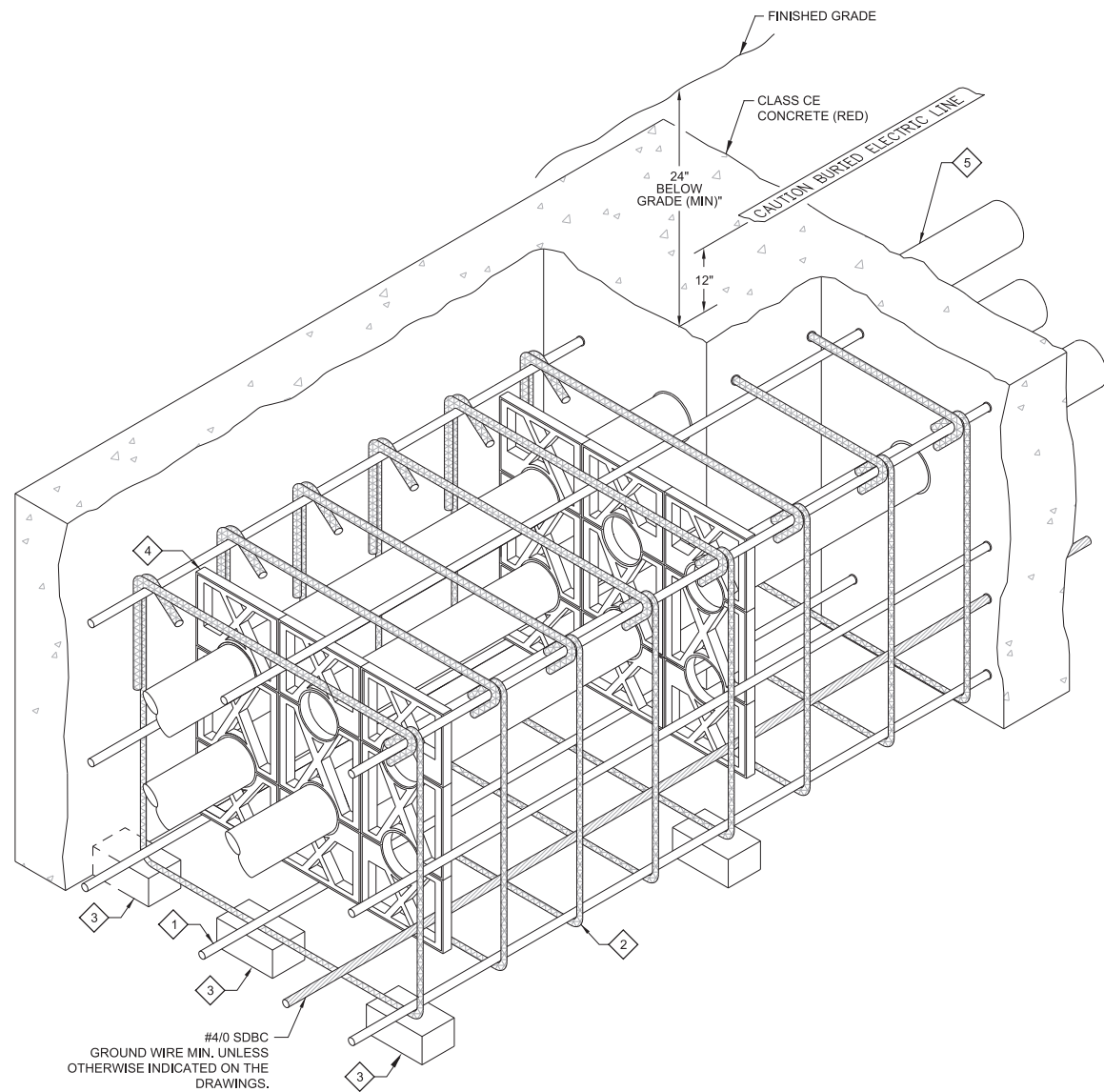
REGIONAL URBAN WATER AUGMENTATION PROJECT  
BLACKHORSE RECYCLED WATER RESERVOIR  
ELECTRICAL  
TYPICAL DETAILS - I

VERIFY SCALES  
BAR IS ONE INCH ON ORIGINAL DRAWING  
0 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7568A.10  
DRAWING NO. TE-01  
SHEET NO. 57 OF 93

FILENAME:





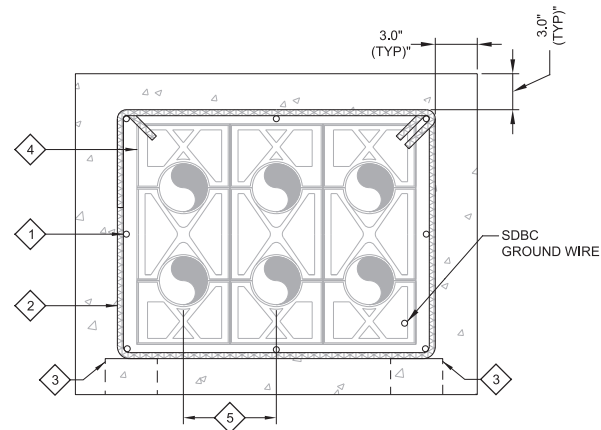
#4/0 SDBC  
GROUND WIRE MIN. UNLESS  
OTHERWISE INDICATED ON THE  
DRAWINGS.

**NOTES:**

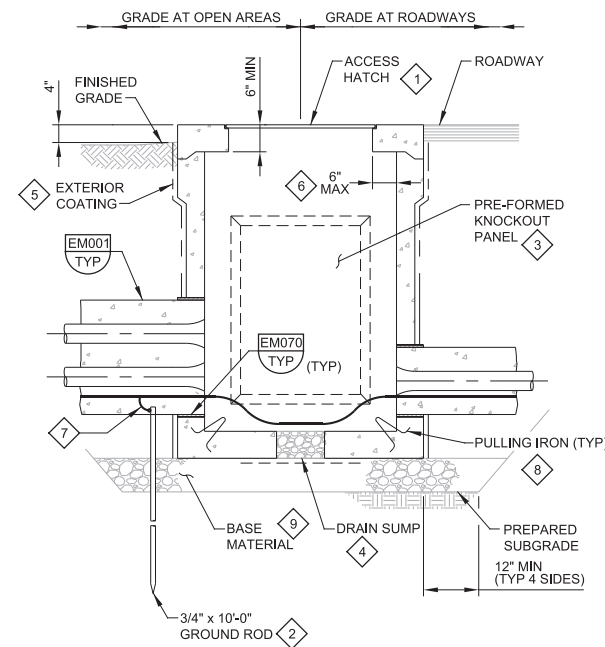
- DIMENSIONS SHOWN ARE MINIMUM.
- ADJUST SIZE OF DUCT BANK BASED UPON THESE GUIDELINES AND THE DUCT BANK SPECIFICATION TO ACCOMMODATE ACTUAL NUMBER OF CONDUITS WITHIN DUCT BANK. REFER TO DUCT BANK SECTIONS, AND CONDUIT SCHEDULE FOR NUMBER AND SIZE OF CONDUITS.
- MAKE PROVISIONS TO PREVENT CONDUIT FLOTATION DURING CONCRETE PLACEMENT & CURING.

**KEY NOTES:**

- #4 REINFORCING STEEL 12" MAXIMUM ON CENTER AROUND ENTIRE PERIMETER OF DUCT BANK.
- #4 REINFORCING STEEL STIRRUPS MAXIMUM 24" ON CENTER ALONG LENGTH OF DUCT BANK.
- MINIMUM OF TWO PRECAST CONCRETE BAR SUPPORTS PLACED UNDER A STIRRUP AT EACH PVC CONDUIT SPACER ALONG LENGTH OF DUCT BANK. PROVIDE PRECAST BAR SUPPORTS AT INTERVALS OF 24" TO REDUCE DEFLECTION.
- PVC CONDUIT SPACERS ON 8'-0" CENTERS (MAXIMUM) LOCATE 12" FROM STIRRUPS.
- REFER TO DUCT BANK SECTIONS AND CONDUIT SCHEDULES FOR CONDUIT REQUIREMENTS.



**EM001** REINFORCED CONCRETE DUCT BANK  
TYP



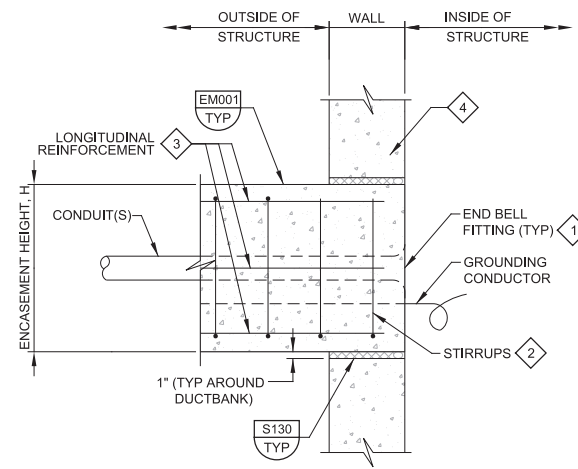
**NOTES:**

- PROVIDE MINIMUM INTERIOR DIMENSIONS AS SHOWN IN THE ELECTRICAL HANDHOLE AND MANHOLE SCHEDULE (MAXIMUM INTERIOR DIMENSIONS: 48" WIDE x 48" LONG x 48" DEEP)
- BOND ALL METALLIC ITEMS INSIDE HANDHOLE TO GROUND ROD USING #4 AWG BARE COPPER CABLE.
- SEE DRAWINGS FOR ORIENTATION, NUMBER, AND SIZE OF DUCT BANKS AT EACH HANDHOLE.

**KEY NOTES:**

- SEE THE MANHOLE AND HANDHOLE SCHEDULE FOR REQUIRED LOAD RATING OF HATCH.
- BOND DUCT BANK GROUND CABLE TO GROUND ROD. REFER TO THE SPECIFICATIONS FOR CONNECTION REQUIREMENTS.
- INSTALL DUCT BANKS ONLY THROUGH CAST-IN OPENINGS OR PREFORMED KNOCKOUT PANELS. PROVIDE KNOCKOUTS ON EACH WALL AROUND HANDHOLE.
- PROVIDE MINIMUM 4 INCH DIAMETER, GRAVEL FILLED PENETRATION THROUGH FLOOR OF HANDHOLE. SET SUMP OPENING OVER MINIMUM 18" SQUARE FILTER FABRIC TO ISOLATE GRAVEL FROM BASE MATERIAL BELOW.
- COAT EXTERIOR WALLS BELOW GRADE WITH BITUMINOUS DAMPROOFING.
- MAXIMUM TOP SLAB OVERHANG IS TYPICAL AROUND 4 SIDES OF HANDHOLE.
- GROUNDING CABLE CONNECTION. REFER TO THE SPECIFICATIONS FOR CONNECTION REQUIREMENTS.
- PROVIDE ONE PULLING IRON ON EACH WALL OF HANDHOLE.
- BASE MATERIAL: PROVIDE MIN 12" COMPACTED AGGREGATE BASE COURSE.

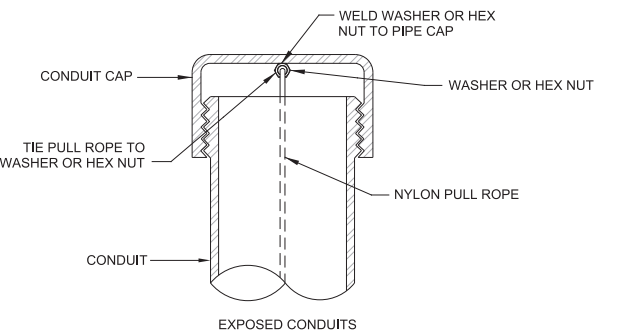
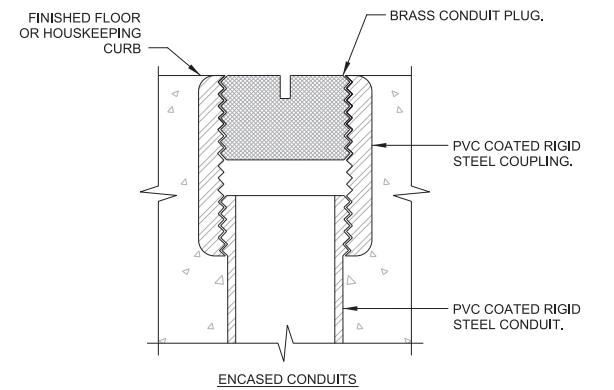
**EM056** ELECTRICAL HANDHOLE  
TYP PRECAST CONCRETE W/HATCH



**KEY NOTES:**

- PROVIDE GROUNDING FITTING FOR METALLIC CONDUITS ENTERING MANHOLE. BOND GROUNDING FITTING TO DUCTBANK GROUNDING CONDUCTOR.
- FOR FIRST 12'-0" FROM INSIDE FACE OF STRUCTURE, STIRRUP SPACING IN INCHES = (H-4)/2 WHERE H = CONCRETE ENCASEMENT HEIGHT IN INCHES.
- ADDITIONAL #4 x 12'-0" @ 12" ON ALL FOUR FACES OF ENCASEMENT. ALTERNATE WITH TYPICAL REINFORCEMENT FOR 6" SPACING.
- PROVIDE ADDITIONAL REINFORCEMENT AROUND OPENING AS REQUIRED. FOR CAST-IN-PLACE STRUCTURES, PROVIDE REINFORCEMENT PER S180 TYP

**EM070** ENCASED CONDUITS AT MANHOLES OR STRUCTURES - W/O WATERSTOP  
TYP



**NOTES:**

- PROVIDE 2" MIN CLEAR BETWEEN ADJACENT CONDUITS

**EM105** SPARE CONDUIT DETAIL  
TYP

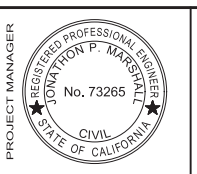
REV	DATE	BY	DESCRIPTION

DESIGNED CAC
DRAWN JRS
CHECKED MJP
DATE APRIL 2017



Digitally signed by Jonathon P. Marshall  
Contact Info: Carollo Engineers, Inc.  
Date: 2017.05.01 14:25:33-07'00'

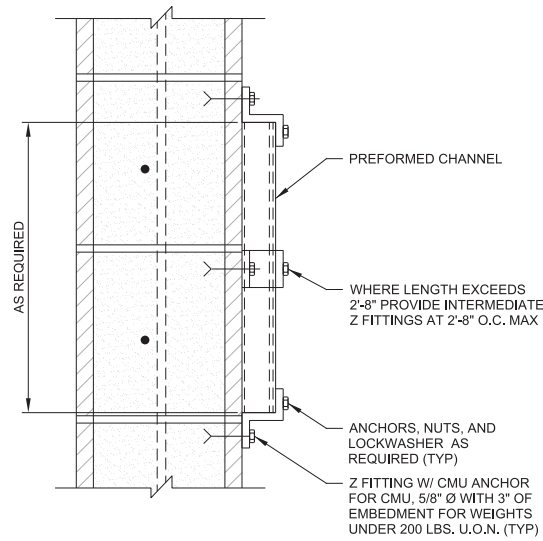
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Contact Info: Carollo Engineers, Inc.  
Date: 2017.05.01 14:37:34-07'00'



REGIONAL URBAN WATER AUGMENTATION PROJECT  
BLACKHORSE RECYCLED WATER RESERVOIR  
ELECTRICAL  
TYPICAL DETAILS - II

VERIFY SCALES BAR IS ONE INCH ON ORIGINAL DRAWING 0 1"	JOB NO. 7568A.10
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	DRAWING NO. TE-02
	SHEET NO. 58 OF 93

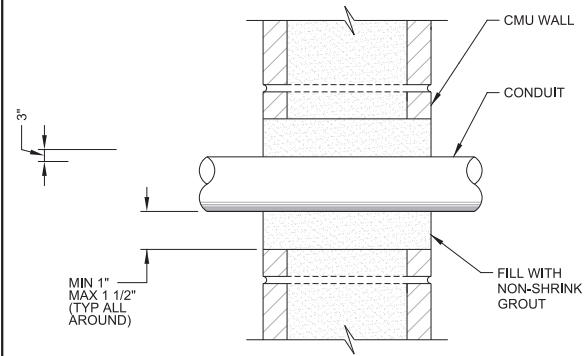
FILENAME:



NOTES:

1. THIS DETAIL TYPICAL FOR BOTH VERTICAL AND HORIZONTAL MOUNTING.
2. SUPPORTS TO BE SPACED IN ACCORDANCE WITH NEC REQUIREMENTS. CONCRETE ANCHORS FOR CMU SHALL BE PER THE SPECIFICATIONS.

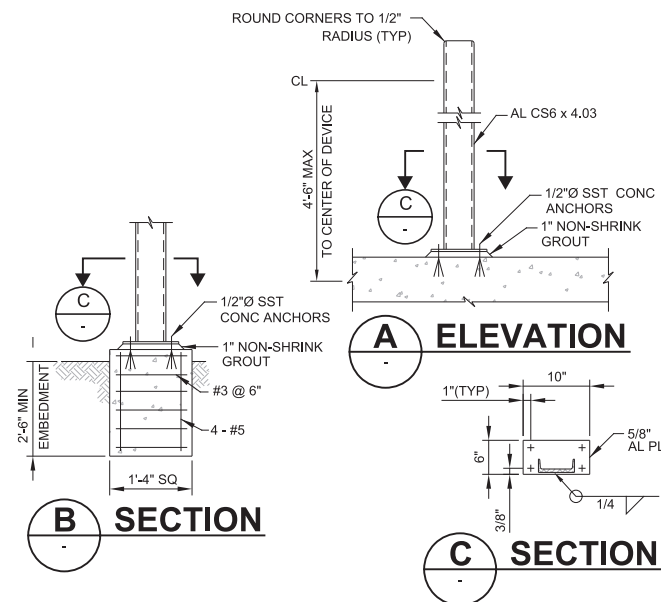
**EM170** PREFORMED CHANNEL SUPPORT  
TYP FULLY GROUTED CMU WALL



NOTES:

1. PROVIDE NON-DESTRUCTIVE TESTING TO DETERMINE LOCATIONS OF REINFORCEMENT. MAINTAIN MIN 2" CLEAR BETWEEN CORE DRILLED OPENING AND REINFORCEMENT.
2. ROUGHEN SURFACE OF OPENING TO A 1/4" AMPLITUDE AND APPLY EPOXY CEMENT BONDING AGENT IMMEDIATELY PRIOR TO GROUTING.
3. PROVIDE 8" MINIMUM CENTER-TO-CENTER SPACING FOR CONDUITS.

**EM173** CORE HOLE PENETRATION  
TYP FULLY GROUTED CMU WALL



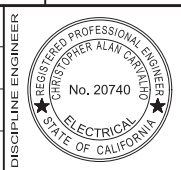
NOTES:

1. WHERE SEPARATE FOUNDATION IS REQUIRED, SEE SECTION B.
2. COAT ALUMINUM SURFACES IN CONTACT WITH CONCRETE PER SPECIFICATIONS.
3. USE STAINLESS STEEL FASTENERS FOR MOUNTING DEVICES.
4. WEIGHT OF DEVICE(S) SHALL NOT EXCEED 100 POUNDS.

**EM201** DEVICE SUPPORT AND MOUNTING  
TYP

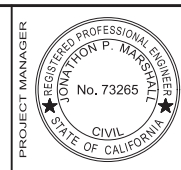
REV	DATE	BY	DESCRIPTION

DESIGNED	CAC
DRAWN	JRS
CHECKED	MJP
DATE	APRIL 2017



PROJECT ENGINEER  
Digitally signed by Jonathon P. Marshall  
Contact Info: Carollo Engineers, Inc.  
Date: 2017.05.01 14:24:49-07'00'

PROJECT ENGINEER  
Digitally signed by Christopher Carvalho  
Contact Info: Carollo Engineers, Inc.  
Date: 2017.05.01 14:37:19-07'00'



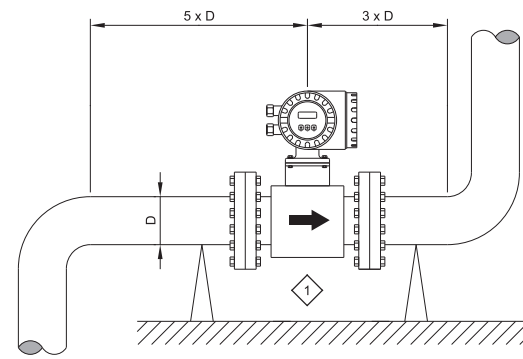
Marina Coast Water District

REGIONAL URBAN WATER AUGMENTATION PROJECT  
BLACKHORSE RECYCLED WATER RESERVOIR  
ELECTRICAL  
TYPICAL DETAILS - III

VERIFY SCALES  
BAR IS ONE INCH ON ORIGINAL DRAWING  
0 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7568A.10  
DRAWING NO. TE-03  
SHEET NO. 59 OF 93

FILENAME:



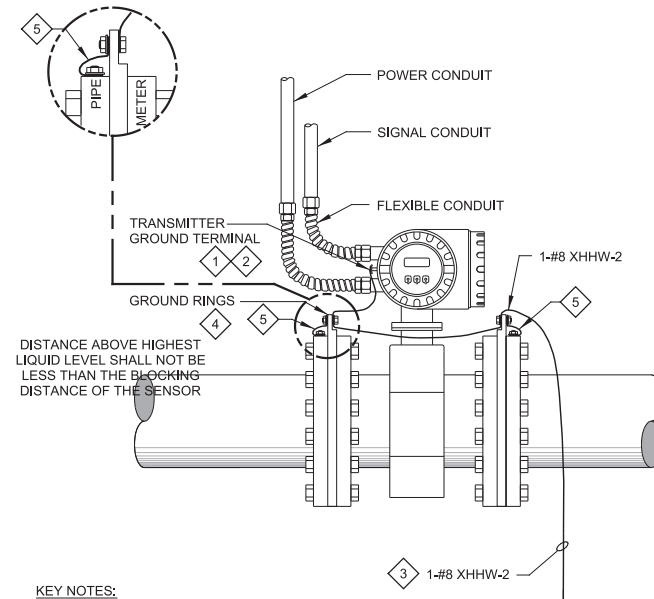
**NOTES:**

1. FOLLOW MANUFACTURER'S RECOMMENDED MAXIMUM TORQUE SETTINGS. DO NOT OVER-TORQUE FLANGE BOLTS. OVERTIGHTENING THE FASTENERS WILL DEFORM SEALING FACES OR DAMAGE THE LINE.
2. ALWAYS TIGHTEN FLANGE BOLTS UNIFORMLY AND IN DIAGONALLY OPPOSITE SEQUENCE.
3. MOUNT METER SO THAT IT REMAINS FULLY FLOODED.
4. INSTALL METER SUCH THAT THERE ARE NO PIPE BENDS FOR 5 PIPE DIAMETERS UPSTREAM AND 3 PIPE DIAMETERS DOWNSTREAM OF THE METER.

**KEY NOTES:**

- 1 PIPE SUPPORTS BY MECHANICAL CONTRACTOR. NO SUPPORTS SHALL BE INSTALLED AT THE METER HOUSING.

**NF130** MAGNETIC FLOW MOUNTING DETAIL  
TYP

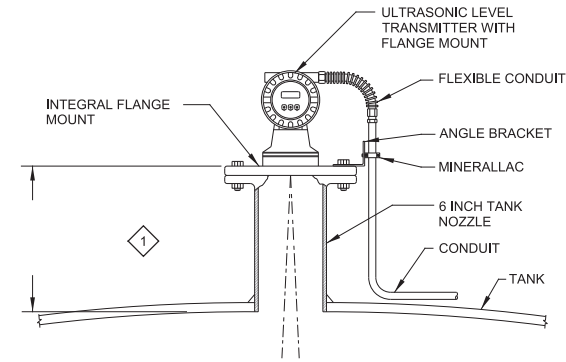


DISTANCE ABOVE HIGHEST LIQUID LEVEL SHALL NOT BE LESS THAN THE BLOCKING DISTANCE OF THE SENSOR

**KEY NOTES:**

- 1 CONTRACTOR SHALL VERIFY ZERO POTENTIAL BETWEEN FLOW TUBE, EARTH GROUND AND TRANSMITTER GROUND TERMINAL.
- 2 CONNECT TRANSMITTER GROUND TERMINAL TO GROUND RINGS.
- 3 CONNECT METER BODY TO EARTH GROUND POTENTIAL.
- 4 EQUALIZE POTENTIAL VIA GROUND RINGS BETWEEN FLUID AND MAGMETER.
- 5 PROVIDE BONDING JUMPER ON CONDUCTIVE PIPES.

**NF136** INTEGRAL MAGNETIC FLOWMETER GROUNDING DETAIL  
TYP



**KEY NOTES:**

- 1 BLOCKING DISTANCE REQUIREMENT SHALL MEET TRANSDUCER MANUFACTURER REQUIREMENTS.

**NL170** ULTRASONIC LEVEL TRANSMITTER TANK MOUNTING DETAIL  
TYP

REV	DATE	BY	DESCRIPTION

DESIGNED  
CAC  
DRAWN  
JRS  
CHECKED  
MJP  
DATE  
APRIL 2017



PROJECT ENGINEER  
Digitally signed by Jonathon P. Marshall  
Contact Info: Carollo Engineers, Inc.  
Date: 2017.05.01 14:24:38-07'00'  
PROJECT ENGINEER  
Digitally signed by Christopher Carvalho  
Contact Info: Carollo Engineers, Inc.  
Date: 2017.05.01 14:37:07-07'00'



Marina Coast Water District

REGIONAL URBAN WATER AUGMENTATION PROJECT  
BLACKHORSE RECYCLED WATER RESERVOIR  
INSTRUMENTATION  
TYPICAL DETAILS - I

VERIFY SCALES  
BAR IS ONE INCH ON ORIGINAL DRAWING  
0 1"  
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO.  
7568A.10  
DRAWING NO.  
TN-01  
SHEET NO.  
60 OF 93

FILENAME:

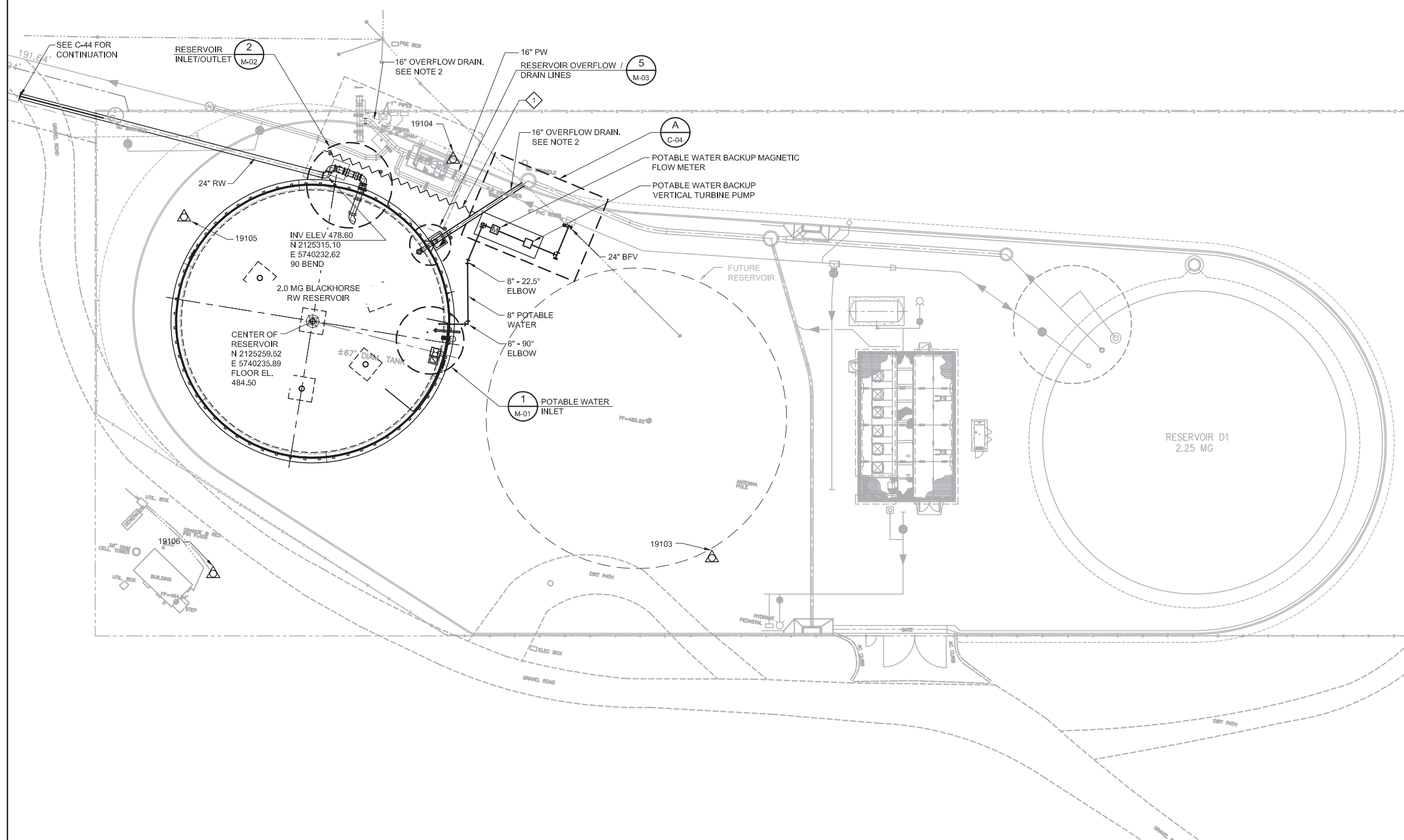


**GENERAL NOTES**

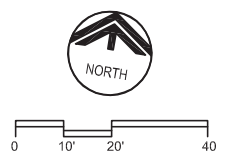
- CONTRACTOR SHALL FIELD VERIFY ELEVATION OF ALL EXISTING PIPING AND ELECTRICAL DIRECT BURIED CABLES PRIOR TO CONSTRUCTION. PIPING AND UNDERGROUND INFRASTRUCTURE SHALL REMAIN IN SERVICE AT ALL TIMES. PROVIDE SHORING AS REQUIRED AND PROTECT ALL EXISTING UNDERGROUND INFRASTRUCTURE FROM DAMAGE DURING CONSTRUCTION.
- SLOPE 16" OVERFLOW/DRAIN PIPE SUCH THAT IT PASSES BELOW THE 24" POTABLE WATER PIPING WITH A MINIMUM OF 12" OF CLEARANCE.

**KEY NOTES**

- PROVIDE TEMPORARY SHORING AS REQUIRED TO PROTECT EXISTING UTILITIES DURING DEMOLITION OF EXISTING TANK AND DURING EXCAVATION FOR NEW TANK SUB-GRADE. SEE DRAWING S-02 FOR NEW TANK SUB-GRADE REQUIREMENTS. SHORING SHALL BE IN ACCORDANCE WITH SECTION 02266.



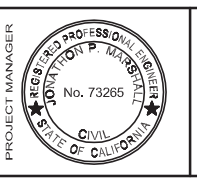
**PLAN**  
SCALE: 1" = 20'



REV	DATE	BY	DESCRIPTION

DESIGNED RRH	DISCIPLINE ENGINEER
DRAWN SJB	
CHECKED BH	
DATE APRIL 2017	

PROJECT ENGINEER  
Digitally signed by Jonathon P. Marshall  
Contact Info: Carollo Engineers, Inc.  
Date: 2017.05.01 12:53:45-0700



**Marina Coast Water District**

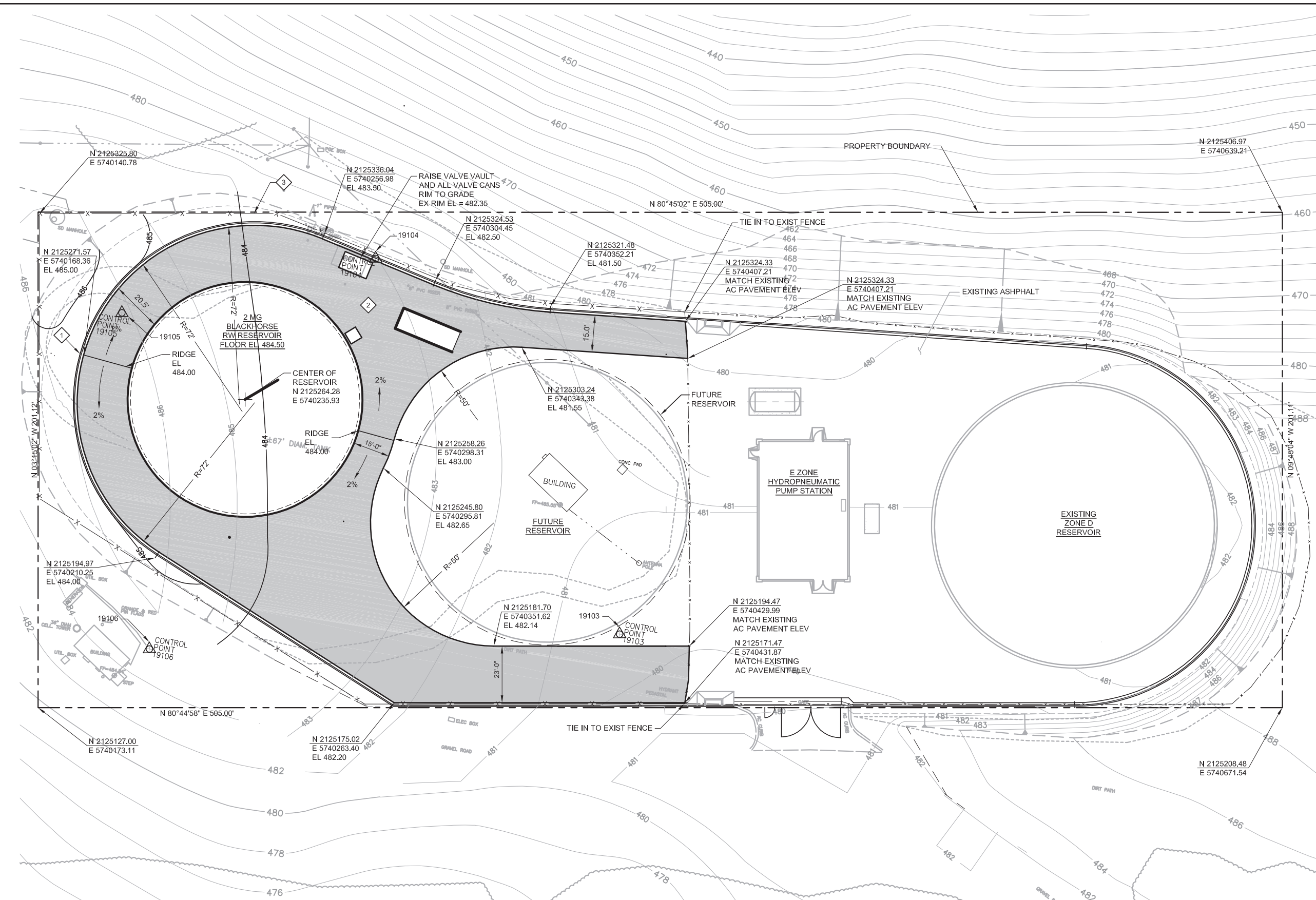
REGIONAL URBAN WATER AUGMENTATION PROJECT
BLACKHORSE RECYCLED WATER RESERVOIR
CIVIL
FINISHED SITE PLAN & YARD PIPING

<b>VERIFY SCALES</b> BAR IS ONE INCH ON ORIGINAL DRAWING 0 1" 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	JOB NO. 7568A.10 DRAWING NO. C-01 SHEET NO. 61 OF 93
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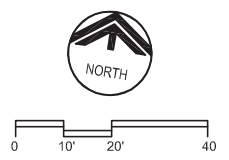
FILENAME:

KEY NOTES

- 1 CONCRETE CURBS PER DETAIL 2/C-03.
- 2 SITE PAVING PER DETAIL 1/C-03.
- 3 INSTALL NEW CHAIN LINK FENCE TO MATCH EXIST. INSTALL PER SECTION 02820.



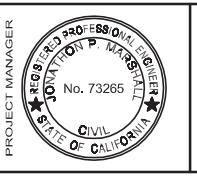
PLAN  
SCALE: 1" = 20'



REV	DATE	BY	DESCRIPTION

DESIGNED RRH	DISCIPLINE ENGINEER
DRAWN SJB	
CHECKED RH	
DATE APRIL 2017	

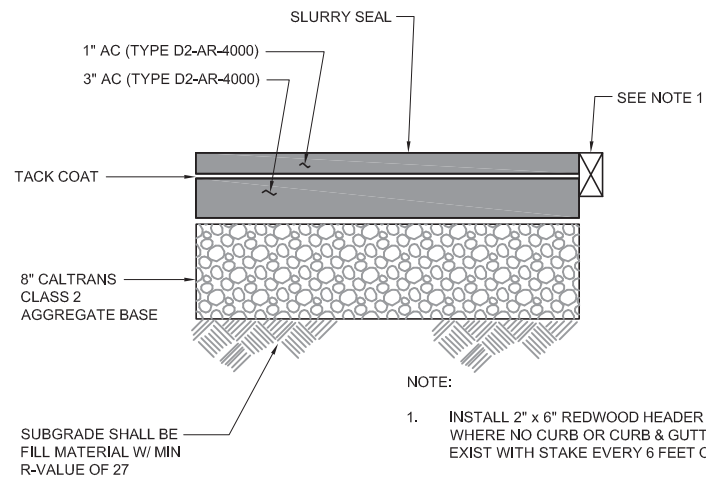
PROJECT ENGINEER  
Digitally signed by Jonathon P. Marshall  
Contact Info: Carollo Engineers, Inc.  
Date: 2017.05.01 12:53:34-0700'



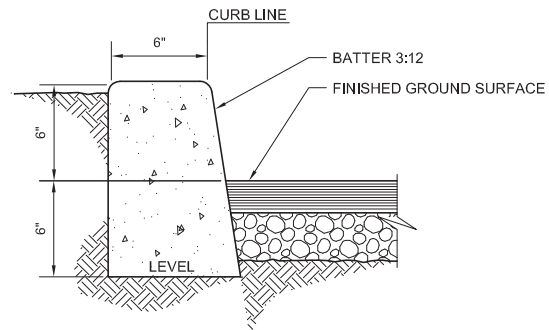
REGIONAL URBAN WATER AUGMENTATION PROJECT  
BLACKHORSE RECYCLED WATER RESERVOIR  
CIVIL  
PAVING AND GRADING PLAN AND HORIZONTAL CONTROL

VERIFY SCALES BAR IS ONE INCH ON ORIGINAL DRAWING 0 1" 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	JOB NO. 7568A.10 DRAWING NO. C-02 SHEET NO. 62 OF 93
---	---

FILENAME:



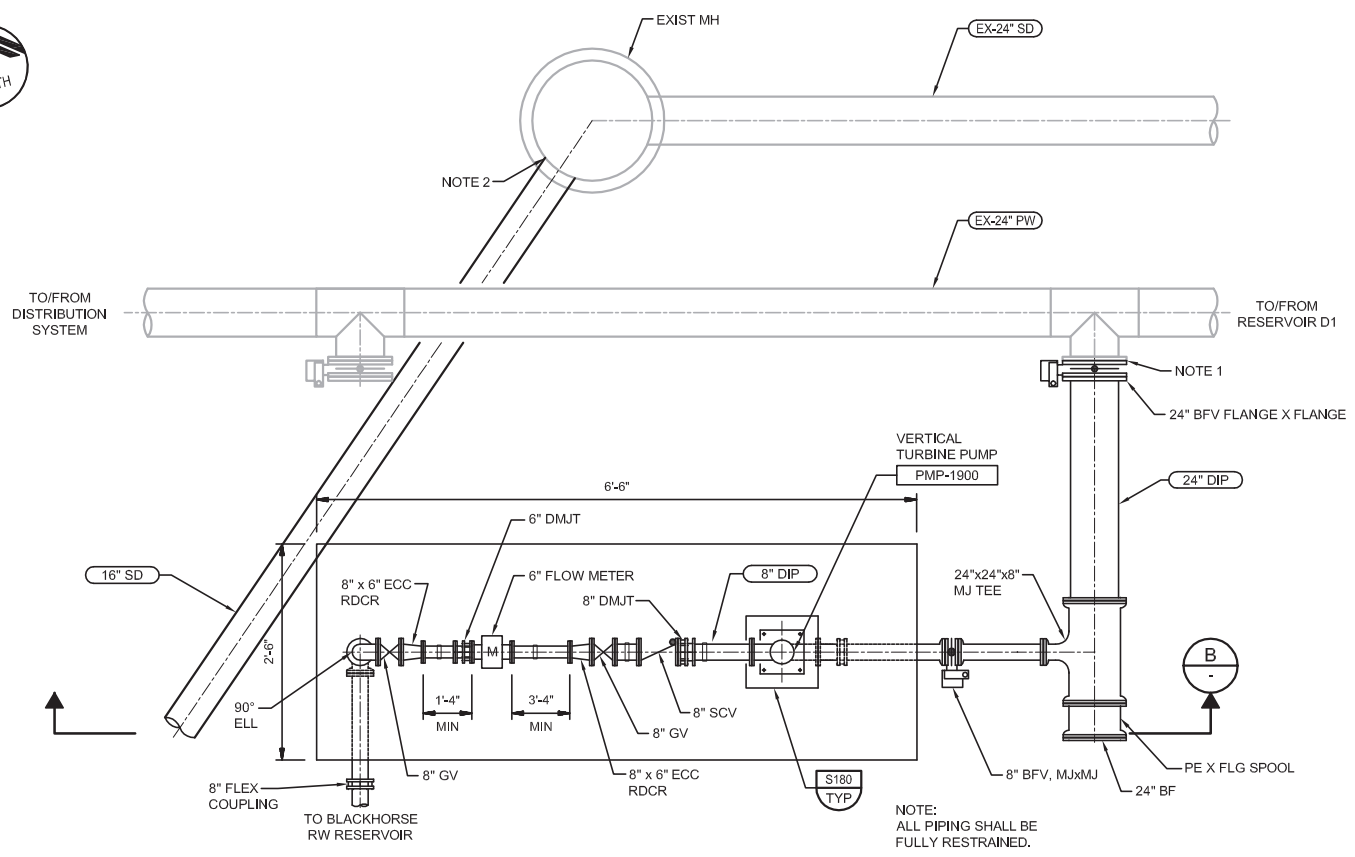
**1 SITE PAVING**  
C-02 SCALE: N.T.S.



**2 6" CONCRETE CURB HEAD**  
SCALE: N.T.S.

DESIGNED RRH	DISCIPLINE ENGINEER	PROJECT ENGINEER Digitally signed by Jonathon P. Marshall Contact Info: Carollo Engineers, Inc. Date: 2017.05.01 12:53:20-07'07'	PROJECT MANAGER JONATHAN P. MARSHALL No. 73265 CIVIL STATE OF CALIFORNIA	 	REGIONAL URBAN WATER AUGMENTATION PROJECT BLACKHORSE RECYCLED WATER RESERVOIR CIVIL CIVIL DETAILS	<b>VERIFY SCALES</b> BAR IS ONE INCH ON ORIGINAL DRAWING  IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	JOB NO. 7568A.10
DRAWN SJB							DRAWING NO. C-03
CHECKED RH							SHEET NO. 11 OF 93
DATE APRIL 2017							
REV	DATE	BY	DESCRIPTION	FILENAME:			

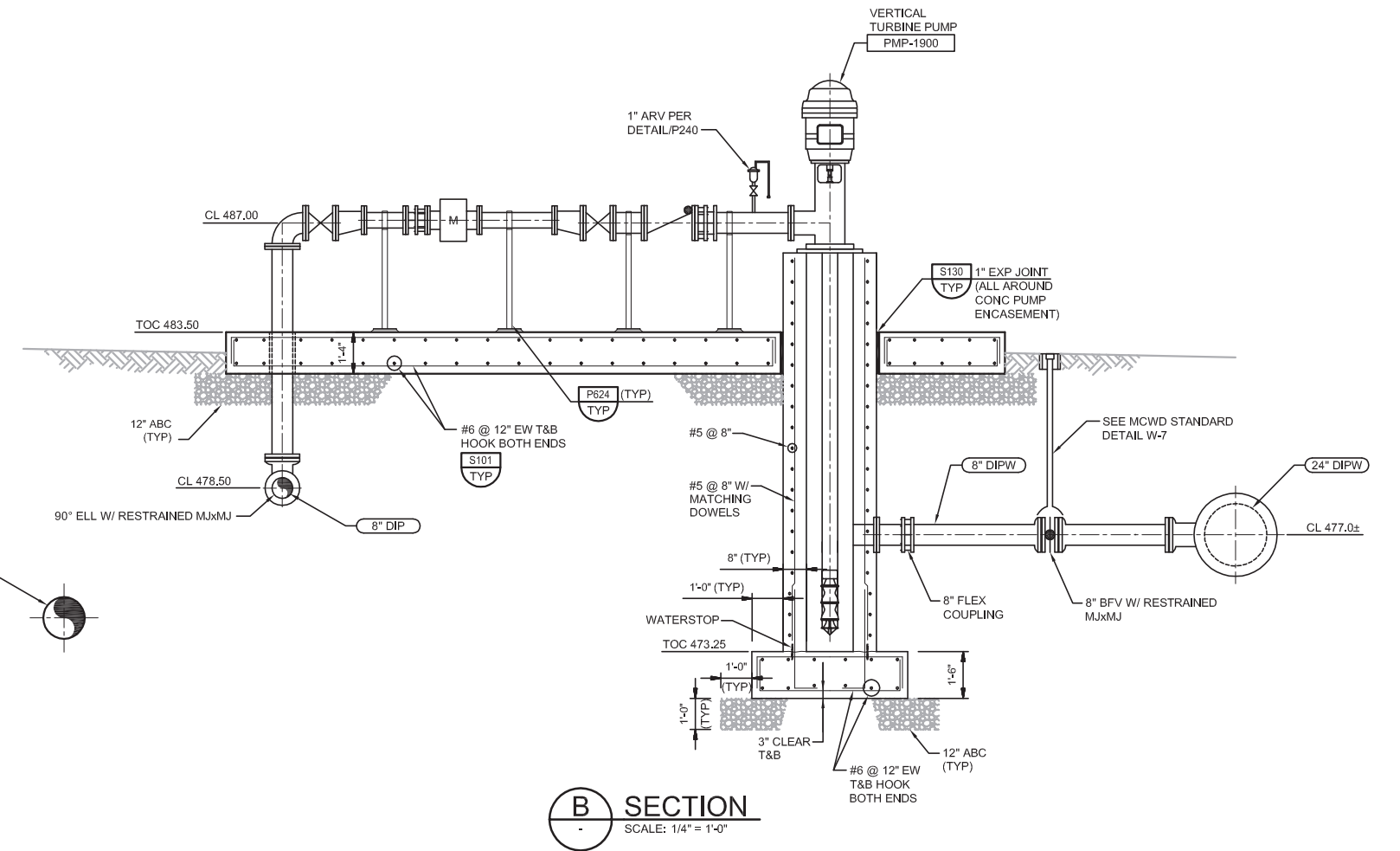




**NOTES:**

1. REMOVE EXISTING BLIND FLANGE FROM 24" OUTLET AND INSTALL NEW 24" BFV.
2. CORE DRILL HOLE PIPE OD + 2" MAX. INSTALL 16"X1' STUB INTO HOLE AND SEAL ANNULAR SPACE WITH NON-SHRINK GOUT.
3. ALL PIPING SHALL BE FULLY RESTRAINED.

**A PARTIAL PLAN**  
C-01 SCALE: 1/4" = 1'-0"

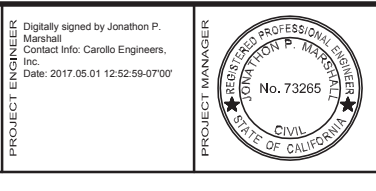


**B SECTION**  
SCALE: 1/4" = 1'-0"

REV	DATE	BY	DESCRIPTION

DESIGNED ST	DISCIPLINE ENGINEER
DRAWN AL	
CHECKED	
DATE APRIL 2017	

PROJECT ENGINEER  
Digitally signed by Jonathon P. Marshall  
Contact Info: Carollo Engineers, Inc.  
Date: 2017.05.01 12:52:59-07'00'



REGIONAL URBAN WATER AUGMENTATION PROJECT  
BLACKHORSE RECYCLED WATER RESERVOIR  
CIVIL  
PUMP STATION  
PLAN AND SECTION

**VERIFY SCALES**  
BAR IS ONE INCH ON ORIGINAL DRAWING  
0 1" 1"  
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO.  
7568A.10  
DRAWING NO.  
C-04  
SHEET NO.  
64 OF 93

FILENAME:

**GENERAL NOTES:**

- 1. USE STRUCTURAL DRAWINGS IN CONJUNCTION WITH PROJECT DRAWINGS BY OTHER DISCIPLINES AND WITH THE SPECIFICATIONS.
2. UNLESS DETAILED, SPECIFIED, OR INDICATED OTHERWISE, CONSTRUCTION SHALL BE AS INDICATED IN THE GENERAL NOTES AND TYPICAL DETAILS.
3. PRESENTATION CONVENTIONS FOR STRUCTURAL DRAWINGS:
A. SCREENED LINE WORK INDICATES EXISTING CONDITIONS.
B. WRITTEN DIMENSIONS TAKE PRECEDENCE OVER SCALED SIZES.
C. PLANS ARE TREATED AS HORIZONTAL SECTIONS, (I.E.: "PLAN AT ELEVATION 110" SHOWS CONSTRUCTION AT AND BELOW ELEVATION 110.)
4. VERIFY DIMENSIONS AND CONDITIONS BEFORE BEGINNING WORK. ADVISE ENGINEER IMMEDIATELY OF DISCREPANCIES BETWEEN EXISTING CONDITIONS AND DIMENSIONS, AND INFORMATION SHOWN ON THESE DRAWINGS. CONFIRM THE FOLLOWING BEFORE PREPARATION AND SUBMITTAL OF SHOP DRAWINGS:
A. DIMENSIONS AND WEIGHTS FOR EQUIPMENT SELECTED.
B. SIZES AND LOCATIONS OF EQUIPMENT PADS FOR EQUIPMENT SELECTED.
5. TYPICAL DETAILS ARE INCLUDED ON THE "SG" DRAWINGS.
A. TYPICAL DETAILS ARE INTENDED TO APPLY AT LOCATIONS DESCRIBED BY THEIR TITLES, EVEN WHEN NOT SPECIFICALLY REFERENCED ON THE DRAWINGS.
B. IN STRUCTURAL TYPICAL DETAILS, ORIENTATION OF BARS IN EACH MAT OF REINFORCEMENT (WHETHER "LINES" OR "DOTS" ARE CLOSER TO THE FACE OF THE CONCRETE) IS GENERALLY ARBITRARY. SEE DRAWINGS OF EACH STRUCTURE FOR ORIENTATION REQUIRED AT THAT STRUCTURE.
6. SEE CIVIL DRAWINGS FOR STRUCTURE COORDINATES, POINTS ON THE STRUCTURES TO WHICH SITE COORDINATES REFER ARE SHOWN ON THE STRUCTURAL PLANS.
7. DRAWINGS PREPARED BY OTHER DISCIPLINES INCLUDE OPENINGS, ANCHORS, PIPES, CONDUITS, AND OTHER ITEMS THAT ARE EMBEDDED INTO OR PASS THROUGH STRUCTURES.
A. CONFIRM SIZE AND LOCATIONS OF OPENINGS, PENETRATIONS AND EMBEDMENT FOR ITEMS AND EQUIPMENT FURNISHED.
B. IN GENERAL, OPENINGS, EMBEDMENTS, AND PENETRATIONS LESS THAN 12 INCHES IN DIAMETER ARE NOT SHOWN ON THE STRUCTURAL DRAWINGS.
C. SEE MECHANICAL DRAWINGS FOR DETAILS OF PIPE PENETRATIONS, PIPE SUPPORTS, AND ASSOCIATED STRUCTURAL REQUIREMENTS.
D. SEE MECHANICAL DRAWINGS FOR EQUIPMENT PADS AND PIPE SUPPORTS.

**STRUCTURAL DESIGN CRITERIA - GENERAL:**

- SEE DRAWINGS OF INDIVIDUAL STRUCTURES FOR SPECIFIC DESIGN CRITERIA BASED ON THESE OVERALL CRITERIA FOR THE SITE.
1. DESIGN CODE:
A. 2013 CALIFORNIA BUILDING CODE (CBC 2013).
B. ASCE 7-10.
C. AWWA D100-11.
2. STRUCTURE RISK CATEGORY: SEE GENERAL NOTE 6/S-01.
3. DEAD LOADS: CALCULATED FOR STRUCTURE SELF-WEIGHT.
4. LIVE LOADS:
A. FLOOR LIVE LOAD: SEE PLANS.
B. GRATING AND CHECKERED PLATE: 100 PSF (UNO).
C. ROOF LIVE LOAD: SEE PLANS (20 PSF MINIMUM).
D. EQUIPMENT LOADS: SEE PLANS.
5. FLUID PRESSURE LOADS: 63 PSF/FT (UNO).
6. SNOW LOAD DATA: N/A
7. WIND DESIGN DATA:
A. SPECIAL WIND REGION: NO
B. WIND-BORNE DEBRIS REGION: NO
C. BASIC WIND SPEED (3 SEC GUST, 33 FEET ABOVE GROUND): 115 MPH.
8. EARTHQUAKE DESIGN DATA:
A. SITE CLASS: D.
B. MAPPED SPECTRAL RESPONSE ACCELERATIONS: Ss = 1.472 g S1 = 0.527 g
C. SITE COEFFICIENTS: Fa = 1.0 Fv = 1.5
D. MAXIMUM CONSIDERED ACCELERATIONS: Sms = 1.472 g Sm1 = 0.579 g
E. DESIGN SPECTRAL RESPONSE ACCELERATIONS: Sds = 0.981 g Sd1 = 0.527 g (\* 5% DAMPED)
9. RAIN LOADS: N/A
10. ICE LOADS: N/A
11. CONSTRUCTION LOADS: STRUCTURES HAVE BEEN DESIGNED FOR OPERATING LOADS ON COMPLETED FACILITIES. UNTIL CONSTRUCTION IS COMPLETE AND MEMBERS HAVE ACHIEVED THEIR DESIGN STRENGTH, PROTECT STRUCTURES AS REQUIRED BY SHORING, BRACING, AND BALANCING.

**GEOTECHNICAL REPORT / FOUNDATION DESIGN CRITERIA:**

- 1. GEOTECHNICAL INVESTIGATION REPORT:
TITLE: GEOTECHNICAL REVIEW AND SUPPLEMENTAL GEOTECHNICAL RECOMMENDATIONS FOR PROPOSED D ZONE WELDED STEEL WATER STORAGE TANK, MCWD IN MARINA, CA.
PREPARED BY: KLEINFELDER
REPORT NO 82412 DATED: NOV 17, 2008
2. FOUNDATION DESIGNS ARE BASED ON RECOMMENDATIONS IN THE GEOTECHNICAL INVESTIGATION REPORT.
A. NET ALLOWABLE BEARING PRESSURE SEE PLANS.
B. LATERAL EARTH PRESSURE (UNO): SURCHARGE: EQUIVALENT TO 2 FEET OF SOIL ABOVE FINISHED GRADE.
PASSIVE (PSF/FT): 500
SLIDING COEFFICIENT OF FRICTION: 0.40

**TYPICAL STRUCTURAL MATERIALS:**

- 1. MATERIALS SHALL CONFORM TO THE FOLLOWING REQUIREMENTS UNLESS OTHERWISE INDICATED ON THE DRAWINGS.
2. SEE PROJECT SPECIFICATIONS AND NOTES ON DRAWINGS OF SPECIFIC STRUCTURES FOR DETAILED AND LOCATION-SPECIFIC REQUIREMENTS.

**REINFORCING STEEL (FOR CONCRETE AND MASONRY):**

- 1. DEFORMED BARS:
A. TYPICAL: ASTM A 615, GRADE 60.
B. WHERE INDICATED ON THE DRAWINGS: ASTM A 706.

**CONCRETE:**

- 1. NORMAL DENSITY.
2. MINIMUM SPECIFIED CONCRETE COMPRESSIVE STRENGTH, fc (AT 28 DAYS UNO).
A. STRUCTURES: "CLASS A" fc = 4000 PSI.
B. FILL, THRUST BLOCKS, PIPE ENCASMENT: "CLASS C" fc = 2500 PSI.
C. ELECTRICAL DUCT ENCASMENT: "CLASS CE" fc = 2500 PSI.

**MASONRY: N/A**

**STRUCTURAL STEEL:**

- 1. SECTIONS
A. SHAPES W, WT: ASTM A 992 (Fy = 50 KSI)
B. SHAPES S, ST, M, MT, HP, C, MC, L: ASTM A 36 (Fy = 36 KSI)
C. PLATES AND BARS: ASTM A 36 (Fy = 36 KSI)
D. PIPES: ASTM A 53, GRADE B (Fy = 35 KSI)
E. HOLLOW STRUCTURAL SECTIONS:
ROUND: ASTM A 500, GRADE B (Fy = 42 KSI)
SQUARE AND RECTANGULAR: ASTM A 500, GRADE B (Fy = 46 KSI)
2. CONNECTIONS:
A. BOLTS - STEEL TO-STEEL:
ASTM A 325 HIGH-STRENGTH BOLTS, WITH LOAD INDICATOR WASHERS.
B. N/A
C. WELDS - SHIELDED METAL ARC PROCESS USING E70-XX ELECTRODES.
**STAINLESS STEEL:**
1. ANSI TYPE 316/316L EXCEPT WHERE TYPE 304/304L IS INDICATED ON THE DRAWINGS.
2. SECTIONS: SHAPES AND BARS: ASTM A 276.
3. BOLTED CONNECTIONS - BOLTS AND ANCHOR BOLTS:
A. MATCH ALLOY OF THE STRUCTURAL MEMBERS CONNECTED.
B. TYPE 316/316L: ASTM A 193, GRADE B8M, CLASS 1, HEAVY HEX.
C. TYPE 304/304L: ASTM A 193, GRADE B8, CLASS 1, HEAVY HEX.
4. WELDED CONNECTIONS:
A. TYPE 316L: E316L-15 ELECTRODES.
B. TYPE 304L: E304L-15 ELECTRODES.

**STRUCTURAL ALUMINUM:**

- 1. SECTIONS
A. SHAPES: ASTM B 308, ALLOY 6061-T6.
B. SHEET AND PLATE: ASTM B 209, ALLOY 6061-T6.
2. BOLTED CONNECTIONS - BOLTS AND ANCHOR BOLTS:
A. STAINLESS STEEL - TYPE 316, ASTM A 193, GRADE B8M, CLASS 1, HEAVY HEX.
3. WELDED CONNECTIONS:
A. GAS METAL ARC (MIG) OR GAS TUNGSTEN ARC (TIG) PROCESS USING FILLER ALLOY 4043 ELECTRODES.

**WELDED STEEL TANK**

- 1. SEE SPECIFICATION 13206Q.

**CONSTRUCTION:**

CONFORM TO THE FOLLOWING REQUIREMENTS UNLESS OTHERWISE INDICATED ON THE DRAWINGS.

**EXCAVATION AND BACKFILLING:**

- 1. EXPOSE AND PREPARE SUBGRADE AS SHOWN ON THE DRAWINGS AND SPECIFIED. OBTAIN ENGINEER'S OBSERVATION OF SUBGRADE SURFACES, AS EXPOSED AND AS PREPARED, BEFORE PROCEEDING WITH FOUNDATION CONSTRUCTION.
2. DO NOT PLACE BACKFILL AGAINST WALLS UNTIL STRUCTURES SUPPORTING THE TOP OF THE WALL ARE IN PLACE, ARE COMPLETE, AND (IN THE CASE OF CONCRETE) HAVE CURED TO THEIR MINIMUM SPECIFIED 28-DAY COMPRESSIVE STRENGTH.

**CONCRETE:**

- 1. SEE S101/TYP FOR CONCRETE NOTES, INCLUDING CLEAR COVER AND LAP SPlice LENGTH REQUIREMENTS FOR REINFORCING.
2. SUBMIT LOCATIONS OF CONSTRUCTION JOINTS NOT SHOWN ON THE DRAWINGS FOR ACCEPTANCE BY THE ENGINEER BEFORE FORM LAYOUT.
3. PROVIDE CHAMFER AT EXPOSED EDGES OF CAST-IN-PLACE CONCRETE.
4. PROVIDE REINFORCING:
A. AT CORNERS AND JUNCTIONS, SUPPLEMENT WITH ADDED BARS WHERE INDICATED ON THE DRAWINGS.
B. AT OPENINGS - AS INDICATED IN S180/TYP.
5. WELDING OF REINFORCING IS NOT PERMITTED UNLESS DETAILED ON THE DRAWINGS OR ACCEPTED IN ADVANCE BY THE ENGINEER.
6. MAINTAIN MINIMUM 3 INCHES CLEAR CONCRETE COVER BETWEEN REINFORCING AND EMBEDMENTS.

**STEEL, STAINLESS STEEL, AND ALUMINUM - CONNECTIONS:**

- 1. BOLTED:
A. MADE USING 3/4-INCH DIAMETER BOLTS.
B. HAVING A MINIMUM OF 2 BOLTS, SPACED NOT CLOSER THAN 3 INCHES ON CENTER.
C. WITH A DISTANCE OF AT LEAST 1 1/2 INCHES FROM CENTER OF BOLT TO ANY EDGE OF A PLATE OR STRUCTURAL ELEMENT.
2. WELDED:
A. FILLET WELDS: PER AWS CODE BASED ON THE THICKNESS OF THE MATERIALS BEING JOINED, AND FULL LENGTH OF THE JOINT.
3. INTERFACE BETWEEN MATERIALS:
A. AT BOLTED CONNECTIONS THAT INCLUDE DIFFERENT METALS (E.G.: STEEL AND STAINLESS STEEL, OR ALUMINUM AND STAINLESS STEEL) PROVIDE ISOLATING SLEEVES AND WASHERS AS SPECIFIED IN SECTION 05190.
B. WHERE ALUMINUM IS IN CONTACT WITH MASONRY OR CONCRETE, COAT ALUMINUM SURFACES AS SPECIFIED IN SECTION 09960.
4. POST-INSTALLED ANCHORS IN CONCRETE AND MASONRY:
A. INSTALL IN FULL COMPLIANCE WITH ACCEPTED BUILDING CODE EVALUATION REPORT AND MANUFACTURER'S INSTRUCTIONS.
B. DO NOT CUT, DAMAGE, OR INTERRUPT EXISTING REINFORCEMENT TO INSTALL ANCHORS. USE NON-DESTRUCTIVE TESTING EQUIPMENT TO IDENTIFY LOCATIONS OF REINFORCEMENT IN MEMBERS BEFORE DRILLING HOLES FOR ANCHORS.

**SPECIAL INSPECTION:**

- 1. SPECIAL INSPECTION IS REQUIRED FOR THE FOLLOWING STRUCTURAL MATERIALS AND CONSTRUCTION.
2. DIVISION 2 SITE CONSTRUCTION (EARTHWORK)
A. EXCAVATION DEPTH.
B. ADEQUACY OF EXPOSED SURFACE TO PROVIDE REQUIRED SUPPORT.
C. PREPARATION OF SOILS/SURFACES SUPPORTING CONSTRUCTION.
D. FILL AND BACKFILL.
3. DIVISION 3 CONCRETE:
A. LOCATIONS.
B. FORMWORK AND MEMBER SIZES.
C. REINFORCING STEEL.
D. ANCHORS: CAST-IN AND POST-INSTALLED.
E. CONCRETE MIX AND PLACEMENT.
F. PROTECTION AND CURING PROCEDURES.
4. DIVISION 4 MASONRY: N/A
5. DIVISION 5 METALS
A. GENERAL ALL METALS:
1) MEMBER LOCATIONS.
2) MEMBER SIZES/TYPES.
3) ANCHORS - CAST-IN AND BUILT-IN ANCHOR BOLTS.
4) ANCHORS - POST-INSTALLED MECHANICAL AND ADHESIVE.
B. STRUCTURAL STEEL (CARBON AND STAINLESS).
1) WELDING.
C. STRUCTURAL ALUMINUM.
1) BOLTING.
2) WELDING.
6. DIVISION 13 SPECIAL CONSTRUCTION
1) WELDING OF WELDED STEEL TANK.

**STRUCTURAL SYMBOLS:**

- 1. WELDING: SYMBOLS: IN ACCORDANCE WITH AMERICAN WELDING SOCIETY (AWS) A2.4.

**STRUCTURAL ABBREVIATIONS:**

- 1. ABBREVIATIONS FOR NAMES OF TECHNICAL GROUPS MAY BE FOUND IN THE PROJECT SPECIFICATIONS.
2. STRUCTURAL MEMBERS:
A. STEEL: ABBREVIATIONS AND DESIGNATIONS ARE IN ACCORDANCE WITH THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION'S STEEL CONSTRUCTION MANUAL, CURRENT EDITION.
B. ALUMINUM: ABBREVIATIONS AND DESIGNATIONS ARE IN ACCORDANCE WITH THE ALUMINUM ASSOCIATION'S ALUMINUM DESIGN MANUAL, CURRENT EDITION.
3. ABBREVIATIONS FOR STRUCTURAL DRAWINGS: WHEN USED ON THE STRUCTURAL DRAWINGS, THE FOLLOWING ABBREVIATIONS HAVE THE MEANINGS LISTED.
ABC AGGREGATE BASE COURSE
BC BOLT CIRCLE
BO BOTTOM OF
CJ CONSTRUCTION JOINT
CL CENTER LINE
EF EACH FACE
EL ELEVATION
EXP JT EXPANSION JOINT
GALV GALVANIZED
I.D. INSIDE DIAMETER
I.F. INSIDE FACE
L ANGLE
O.D. OUTSIDE DIAMETER
O.F. OUTSIDE FACE
PL PLATE
SST STAINLESS STEEL
STL STEEL
ST STL STAINLESS STEEL
T.O. TOP OF
TOC TOP OF CONCRETE
TOS TOP OF STEEL
TYP TYPICAL
W/ WITH
W/O WITHOUT
#\_ NUMBER (REINFORCING BAR SIZE)

**DEFERRED DESIGN SUBMITTALS**

AS DEFINED IN THE BUILDING CODE. DEFERRED DESIGN SUBMITTALS ARE PORTIONS OF THE DESIGN THAT ARE NOT SUBMITTED AT THE TIME OF PERMIT APPLICATION, AND THAT ARE TO BE REVIEWED BY THE REGISTERED DESIGN PROFESSIONAL AND SUBSEQUENTLY SUBMITTED TO THE BUILDING OFFICIAL.

DEFERRED DESIGN SUBMITTALS FOR THIS PROJECT INCLUDE:

- 1. DIVISION 2 SITE CONSTRUCTION (EARTHWORK).
A. 02300 - AGGREGATE BASE COURSE, CLASS 2 PERMEABLE, IMPORTED MATERIAL
B. 02085 - PRECAST CONCRETE VAULTS
C. 02621 - STABILIZATION FABRIC
2. DIVISION 3 CONCRETE.
A. 02085 - PRECAST CONCRETE VAULTS
B. 02621 - STABILIZATION FABRIC
C. 03300 - CAST-IN-PLACE CONCRETE MIX DESIGNS
3. DIVISION 13 SPECIAL CONSTRUCTION
A. 13206Q - WELDED STEEL TANKS

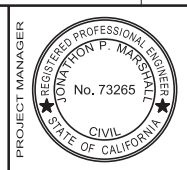
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Table with 2 columns: DESIGNED EQ, DRAWN MWR, CHECKED JPM, DATE APRIL 2017



Digitally signed by Jonathon P. Marshall
Contact Info: Carollo Engineers, Inc.
Date: 2017.05.01 14:22:55-0700

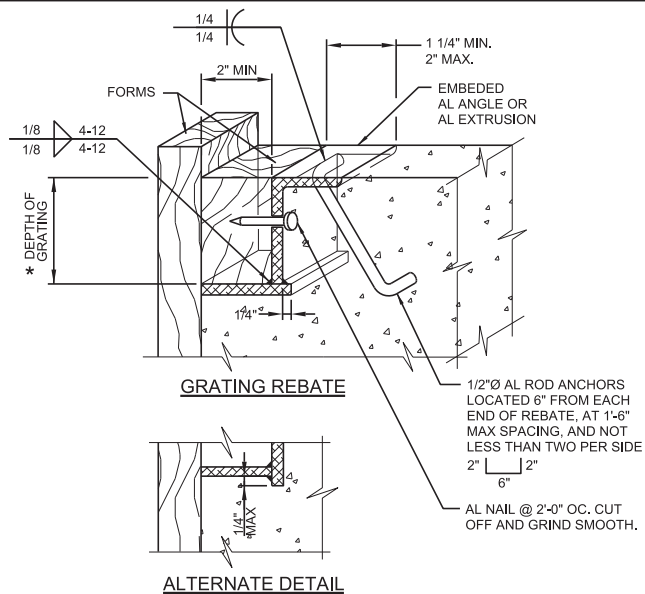


Marina Coast Water District

REGIONAL URBAN WATER AUGMENTATION PROJECT
BLACKHORSE RECYCLED WATER RESERVOIR
STRUCTURAL
BLACKHORSE RESERVOIR STRUCTURAL NOTES

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7568A.10
DRAWING NO. SG-01
SHEET NO. 65 OF 93



- NOTES:**
- FOR AL GRATING, SEE SPECIFICATIONS.
  - REBATE ANGLE SHALL BE CONTINUOUS AROUND ENTIRE OPENING.
  - ANGLE AND BEARING PLATE SHALL BE 1/4" MIN THICK.
  - REBATE MAY BE EXTRUDED, SUBJECT TO ENGINEER'S ACCEPTANCE.
  - COAT ALUMINUM SURFACES IN CONTACT WITH CONCRETE AS SPECIFIED.
  - \* = DIMENSION AS REQUIRED BY GRATING MANUFACTURER.

**A400 ALUMINUM GRATING REBATE AND SEAT**  
TYP

NS SHEET 1 OF 2 06/06/13

- SEE DIVISION 03 SPECIFICATIONS FOR REQUIREMENTS FOR CONCRETE CONSTRUCTION.
- UNLESS OTHERWISE INDICATED ON THE DRAWINGS, MINIMUM REINFORCEMENT OF CONCRETE WALLS OR SLABS SHALL BE:
  - 10" THICK OR LESS: #5 @ 12" EACH WAY.
  - MORE THAN 10" THICK: #5 @ 12" EACH WAY, EACH FACE.
- WALL REINFORCEMENT AT CORNERS OR JUNCTIONS OF WALLS SHALL BE CONTINUOUS, LAP SPICED, OR TERMINATED IN AN ACI STANDARD 90 DEGREE HOOK. SEE DETAIL S144/TYP.
- UNLESS OTHERWISE INDICATED ON THE DRAWINGS, BARS SHALL BE DOWELED. DOWELS SHALL BE THE SAME SIZE AND SPACING AS THE REINFORCEMENT WHICH IS SPICED TO THE DOWELS.
- SLAB, BEAM AND COLUMN REINFORCING BARS SHALL HAVE A MINIMUM EXTENSION OR ANCHORAGE INTO SUPPORTS IN ACCORDANCE WITH ACI 318 AND ACI 350.
- STIRRUP SUPPORT BARS SHALL BE PROVIDED TO SECURE TOP BARS AGAINST DISPLACEMENT AS REQUIRED.
- UNLESS OTHERWISE INDICATED ON THE DRAWINGS, CONCRETE COVER OVER #11 AND SMALLER REINFORCING BARS SHALL BE AS FOLLOWS:
  - A. SLABS AND JOISTS:**
    - FORMED CONCRETE SURFACES AND UNFORMED TOP SURFACES FOR DRY CONDITIONS
      - #7 BARS AND SMALLER: 1"
      - #8 BARS AND LARGER: 1 1/2"
    - FORMED CONCRETE SURFACES AND UNFORMED TOP SURFACES EXPOSED TO WEATHER, IN CONTACT WITH SOIL OR FLUIDS, OR LOCATED OVER FLUIDS: 2"
  - B. BEAMS AND COLUMNS:**
    - FORMED CONCRETE SURFACES FOR DRY CONDITIONS:
      - STIRRUPS, SPIRALS, AND TIES: 1 1/2"
      - PRINCIPAL REINFORCEMENT: 2"
    - FORMED CONCRETE SURFACES EXPOSED TO WEATHER, IN CONTACT WITH SOIL OR FLUIDS, OR IN BEAMS LOCATED OVER FLUIDS:
      - STIRRUPS AND TIES: 2"
      - PRINCIPAL REINFORCEMENT: 2 1/2"
  - C. WALLS:**
    - FORMED CONCRETE SURFACES FOR DRY CONDITIONS:
      - #7 BARS AND SMALLER: 1"
      - #8 BARS AND LARGER: 1 1/2"
    - FORMED CONCRETE SURFACES EXPOSED TO WEATHER, OR IN CONTACT WITH SOIL OR FLUIDS: 2"

**S101 REINFORCED CONCRETE NOTES**  
TYP

S SHEET 1 OF 3 07/08/16

- FOOTINGS AND SLABS ON GRADE:
  - FORMED VERTICAL CONCRETE SURFACES: 2"
  - AT UNFORMED CONCRETE SURFACES CAST AGAINST SOIL, ROCK, OR CONCRETE WORK MATS: 3"
  - TOP SURFACE OF FOOTINGS AND SLABS: SAME AS SLABS
- WATERSTOPS:
  - A. PROVIDE WATERSTOPS AT JOINTS IN SLABS AND WALLS OF LIQUID-CONTAINING STRUCTURES, AND PORTIONS OF STRUCTURES BELOW THE DESIGN GROUNDWATER LEVEL. MAKE WATERSTOPS CONTINUOUS THROUGH STRUCTURE, SPICING WATERSTOPS IN SLABS WITH WATERSTOPS IN WALLS.**
  - B. END WATERSTOPS 3" BELOW TOP OF WALLS. WHERE TOP OF WALL IS COVERED BY A SLAB WITHOUT WATERSTOPS, CONTINUE WATERSTOP TO WALL/SLAB JOINT. WHERE TOP OF WALL IS COVERED BY A SLAB WITH WATERSTOPS, MAKE WATERSTOPS CONTINUOUS, SPICING WATERSTOPS IN WALLS WITH WATERSTOPS IN SLAB.**
- CURE CONCRETE IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. WHERE WATER CURING IS SPECIFIED, MEMBRANE CURING IS NOT ALLOWED.
  - A. THE CONTRACTOR IS WARNED THAT WATER CURING IS DIFFICULT AT TIMES DUE TO WIND AND DRY CONDITIONS. STUDY SPECIFICATION REQUIREMENTS AND FURNISH ADEQUATE SYSTEMS TO PROVIDE WATER CURING WHERE REQUIRED.**
  - B. KEEP WATER CURED SURFACES VISIBLY MOIST AT ALL TIMES. FLOOD TOPS OF WALLS NOT LESS THAN 3 TIMES DAILY.**
- DO NOT PLACE BACKFILL AGAINST WALLS UNTIL:
  - A. WALLS HAVE BEEN CAST TO FULL HEIGHT OF STRUCTURE AND CONCRETE HAS REACHED THE MINIMUM SPECIFIED COMPRESSIVE STRENGTH (f<sub>c</sub>).**
  - B. CONNECTING SLABS AND BEAMS HAVE BEEN CAST AND CONCRETE IN THOSE ELEMENTS HAS REACHED THE MINIMUM SPECIFIED COMPRESSIVE STRENGTH (f<sub>c</sub>).**
- LAP SPLICES:
  - A. SEE TABLE 1 OF THIS DETAIL FOR LAP SPlice LENGTHS.**
  - B. WHEN MULTIPLE BARS ARE SPICED AT THE SAME SECTION, THE "CLEAR BAR SPACING" IS DEFINED AS THE MINIMUM CLEAR DISTANCE BETWEEN THE BARS OUTSIDE THE SPICE LENGTH MINUS ONE BAR DIAMETER.**
  - C. UNLESS OTHERWISE INDICATED ON THE DRAWINGS, BARS AT A LAP SPICE SHALL BE IN CONTACT WITH EACH OTHER.**
  - D. "TOP BARS" ARE HORIZONTAL REINFORCEMENT AT LOCATIONS WHERE MORE THAN 12 INCHES OF FRESH CONCRETE IS CAST IN THE MEMBER BELOW THE BAR.**
- FORM EXPOSED CONCRETE CORNERS AND EDGES WITH 3/4" CHAMFER UNLESS OTHERWISE INDICATED ON THE DRAWINGS.

**S101 REINFORCED CONCRETE NOTES**  
TYP

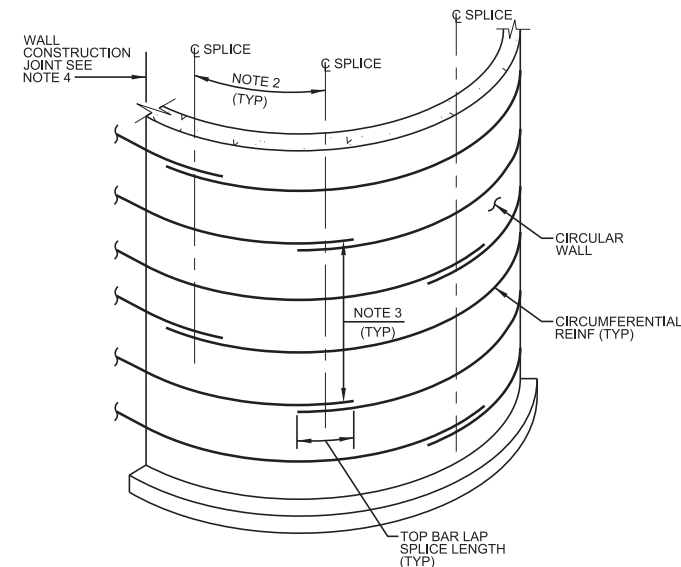
S SHEET 2 OF 3 07/08/16

TABLE 1: REINFORCING BAR LAP SPLICES: f <sub>c</sub> = 4000 PSI, F <sub>y</sub> = 60,000 PSI				
BAR SIZE	MINIMUM COVER (BAR DIA)	MINIMUM CLEAR BAR SPACING (BAR DIA)	LAP SPICE LENGTH (INCHES)	
			TOP BARS	OTHER BARS
#4	MORE THAN 1	MORE THAN 2	32 *	25 *
	MORE THAN 2	MORE THAN 4	20	16
#5	MORE THAN 1	MORE THAN 2	40 *	31 *
	MORE THAN 2	MORE THAN 4	26	20
#6	MORE THAN 1	MORE THAN 2	48 *	37 *
	MORE THAN 2	MORE THAN 4	30	24
#7	MORE THAN 1	MORE THAN 2	70 *	54 *
	MORE THAN 2	MORE THAN 4	43	33
#8	MORE THAN 1	MORE THAN 2	81 *	62 *
	MORE THAN 2	MORE THAN 4	50	38
#9	MORE THAN 1	MORE THAN 2	90 *	70 *
	MORE THAN 2	MORE THAN 4	56	42
#10	MORE THAN 1	MORE THAN 2	104 *	81 *
	MORE THAN 2	MORE THAN 4	62	48
#11	MORE THAN 1	MORE THAN 2	114 *	88 *
	MORE THAN 2	MORE THAN 4	69	54

- REINFORCING BAR LAP SPICE TABLE NOTES:**
- TABULATED SPICE LENGTHS ARE APPLICABLE ONLY WHEN BOTH REQUIREMENTS FOR MINIMUM COVER AND FOR MINIMUM CLEAR BAR SPACING ARE SATISFIED.
  - \*\* IF THE CLEAR BAR SPACING IS LESS THAN OR EQUAL TO TWO BAR DIAMETERS, OR THE COVER IS LESS THAN OR EQUAL TO ONE BAR DIAMETER, THE LAP SPICE LENGTH SHALL BE INCREASED BY 50 PERCENT.

**S101 REINFORCED CONCRETE NOTES**  
TYP

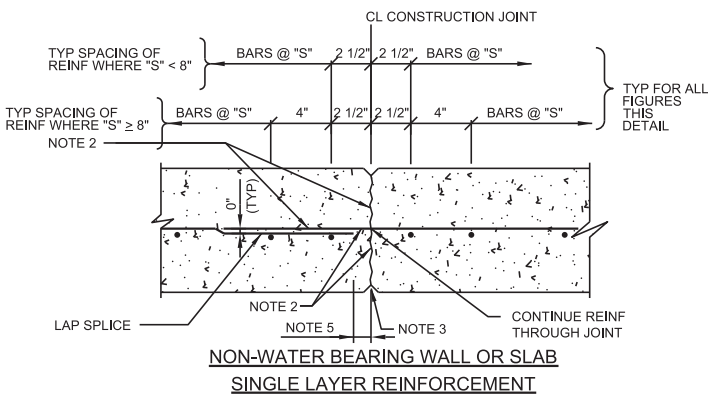
S SHEET 3 OF 3 07/08/16



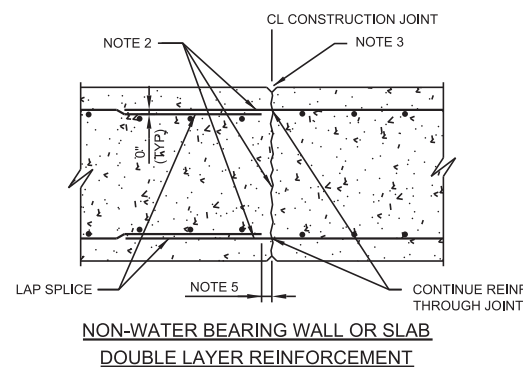
- NOTES:**
- SPLICE HORIZONTAL BARS IN CIRCULAR WALLS OF LIQUID-CONTAINING STRUCTURES USING TOP BAR LAP SPLICES.
  - AT EACH FACE, STAGGER ADJACENT SPLICES BY AT LEAST ONE TOP BAR LAP SPICE LENGTH, BUT NOT LESS THAN 3 FEET.
  - AT EACH FACE OF WALL, LAP SPLICES SHALL NOT COINCIDE IN VERTICAL ARRAYS MORE THAN EVERY THIRD BAR.
  - STAGGER BAR PROJECTIONS PAST VERTICAL CONSTRUCTION JOINT TO MAINTAIN LAYOUT RESULTING FROM NOTES 2 AND 3.

**S102 CIRCULAR WALLS - HORIZONTAL REINFORCEMENT LAP SPLICES**  
TYP

S SHEET 1 OF 1 12/24/13



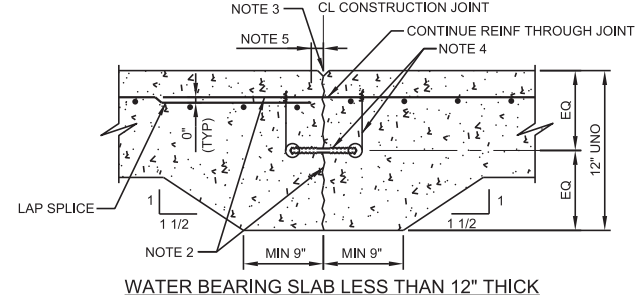
**NON-WATER BEARING WALL OR SLAB SINGLE LAYER REINFORCEMENT**



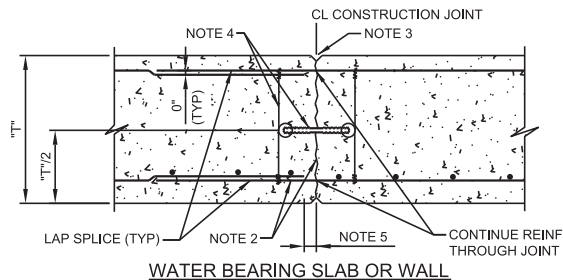
**NON-WATER BEARING WALL OR SLAB DOUBLE LAYER REINFORCEMENT**

**S110 CONSTRUCTION JOINT**  
TYP

S SHEET 1 OF 2 07/11/16



**WATER BEARING SLAB LESS THAN 12" THICK**



**WATER BEARING SLAB OR WALL**

- NOTES:**
- "S" EQUALS TYPICAL BAR SPACING INDICATED ON THE DRAWINGS. "T" EQUALS SLAB OR WALL THICKNESS.
  - WATER-BLAST EXPOSED JOINT FACE AND PROJECTING REINFORCEMENT BEFORE PLACING CONCRETE.
  - JOINT EDGES:
    - A. FOR WALLS AND BOTTOM OF EXPOSED SLABS: FORM EDGES WITH 1/2" CHAMFER.
    - B. FOR SLABS: EDGE TOP AND ENDS WITH 1/4" RADIUS.
  - 6" WATERSTOP CENTERED ON JOINT - SEE DETAIL S106/TYP. PROVIDE WIRE TIES MAX 2'-0" OC. HOG RINGS MAY BE USED IN LIEU OF WIRE LOOPS. THOROUGHLY CLEAN WATERSTOP BEFORE PLACING CONCRETE IN SECOND POUR.
  - STOP REINFORCING 2' CLEAR OF JOINT.

**S110 CONSTRUCTION JOINT**  
TYP

S SHEET 2 OF 2 07/11/16

LAST SAVED BY: Bhraves

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DATE	APRIL 2017



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Date: 2017.05.01 14:23:04-07007

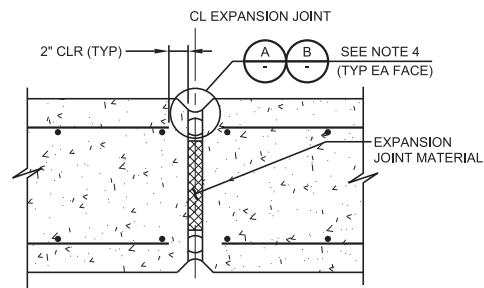


REGIONAL URBAN WATER AUGMENTATION PROJECT  
BLACKHORSE RECYCLED WATER RESERVOIR  
STRUCTURAL  
BLACKHORSE RESERVOIR  
TYPICAL DETAILS

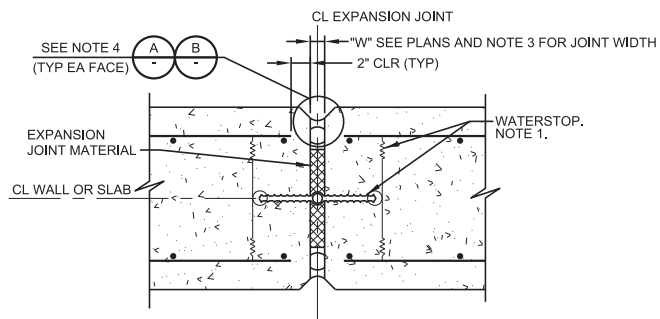
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BAR IS ONE INCH ON ORIGINAL DRAWING  
0 1"  
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7568A.10  
DRAWING NO. SG-02  
SHEET NO. 66 OF 93





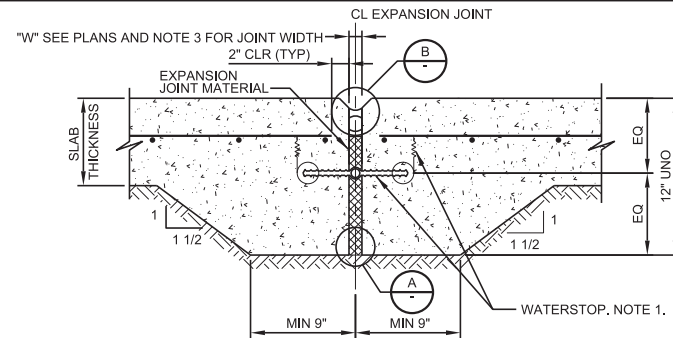
NON-WATER BEARING SLAB OR WALL



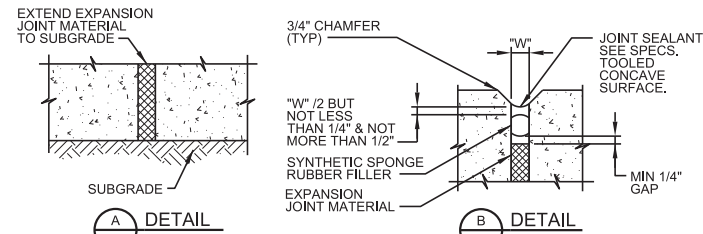
WATER BEARING SLAB OR WALL

S130 EXPANSION JOINT  
TYP

SHEET 1 OF 2 07/22/16



WATER BEARING SLAB LESS THAN 12" THICK

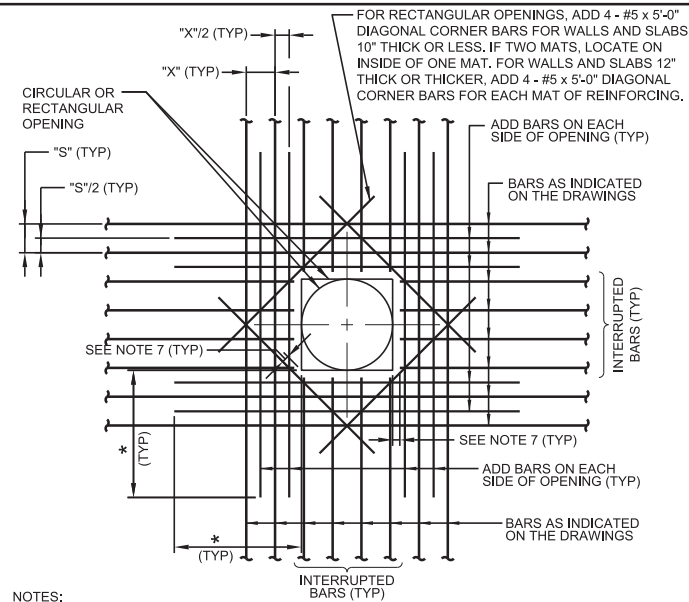


NOTES:

- 9" WATERSTOP WITH CENTER BULB CENTERED ON JOINT - SEE DETAIL S106/TYP. PROVIDE WIRE TIES MAX 2'-0" OC. HOG RINGS MAY BE USED IN LIEU OF WIRE LOOPS. THOROUGHLY CLEAN WATERSTOP BEFORE PLACING CONCRETE IN SECOND POUR.
- JOINT EDGES:  
A. FOR WALLS AND BOTTOM OF EXPOSED SLABS: FORM EDGES WITH 3/4" CHAMFER.  
B. FOR SLABS: EDGE TOP AND ENDS WITH 1/4" RADIUS.
- "W"=1" UNLESS OTHERWISE INDICATED ON PLANS. (MIN JOINT WIDTH = 3/8". MAX JOINT WIDTH = 2")
- USE DETAIL A ONLY AT SOIL SIDE OF SLABS ON GRADE. USE DETAIL B AT ALL OTHER LOCATIONS.

S130 EXPANSION JOINT  
TYP

SHEET 2 OF 2 07/22/16



NOTES:

- ADD BARS SHALL BE SAME SIZE AS PARALLEL BARS BEING CUT.
- AREA OF ADD BARS AT EACH EDGE OF OPENING IN EACH DIRECTION SHALL BE EQUAL TO OR GREATER THAN 1/2 THE CROSS SECTIONAL AREA OF THE INTERRUPTED BARS.
- PROVIDE STANDARD ACI HOOKS ON BARS IF STRAIGHT EXTENSION PAST THE OPENING, CANNOT BE ACHIEVED.
- PLACE ADD BARS IN SAME PLANES AS INTERRUPTED REINFORCING.
- PLACE #5 DIAGONAL BARS ON INSIDE MAT OF REINFORCING.
- \* = DIMENSION EQUALS OPENING DIMENSION MEASURED PERPENDICULAR TO ADD BARS PLUS LAP SPLICE LENGTH.
- 2" CLEAR TO CONCRETE OPENINGS OR OUTSIDE FACE OF PIPES AND PIPE SLEEVES. DO NOT OVERCUT REINFORCMENT FOR EASIER PLACEMENT OF WEEP RINGS AND FLANGES.

S180 ADDITIONAL REINFORCING AT OPENINGS IN  
TYP CONCRETE SLABS OR WALLS

07/11/13

LAST SAVED BY: bhawes

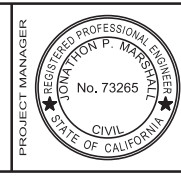
REV	DATE	BY	DESCRIPTION

DESIGNED EQ
DRAWN MWR
CHECKED JPM
DATE APRIL 2017



Digitally signed by Jonathon P. Marshall  
Contact Info: Carollo Engineers, Inc.  
Date: 2017.05.01 14:23:13-07'00'

Digitally signed by Edgardo Quiroz  
Contact Info: Carollo Engineers, Inc.  
Date: 2017.05.01 15:08:23-07'00'

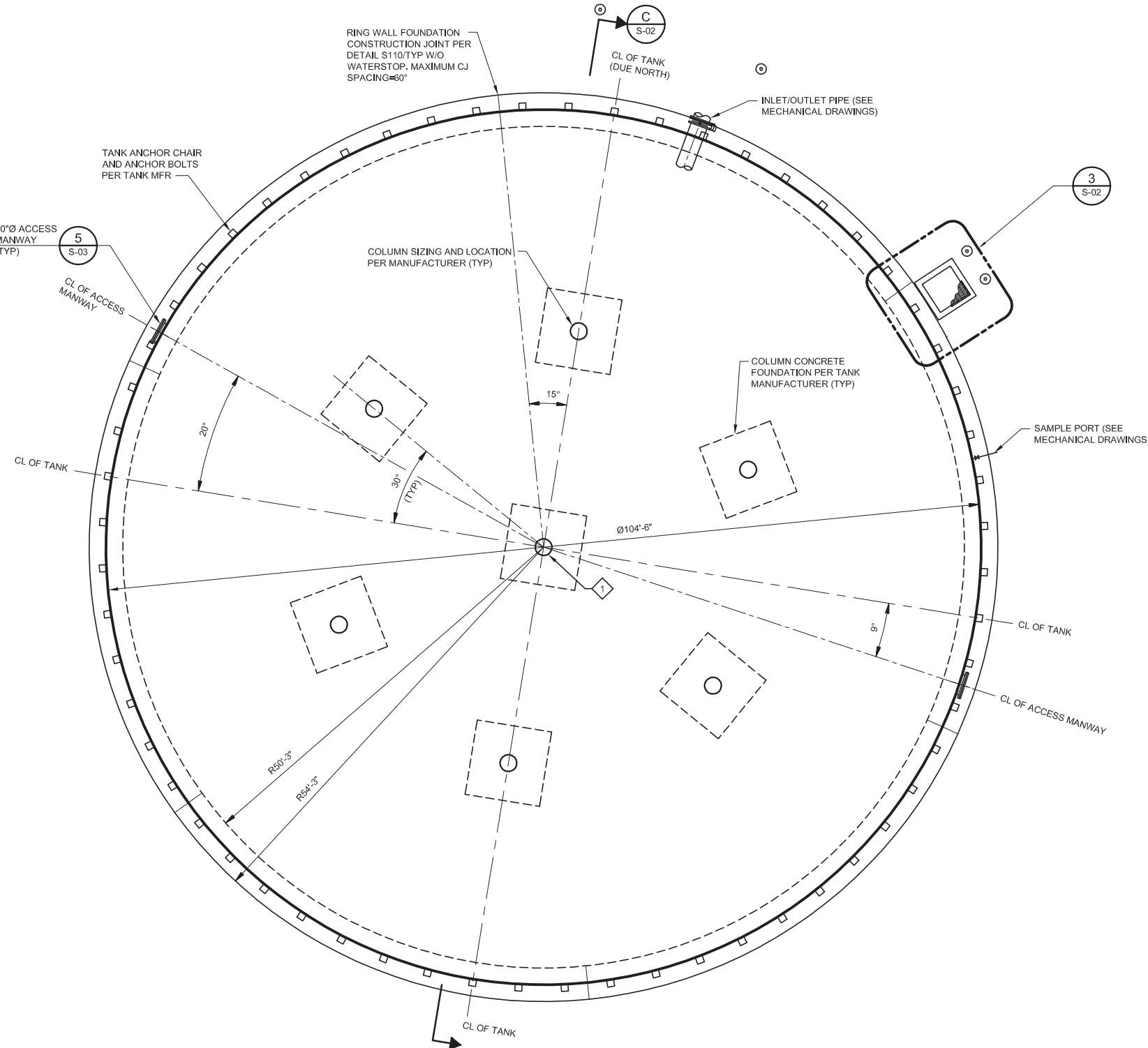


Marina Coast Water District

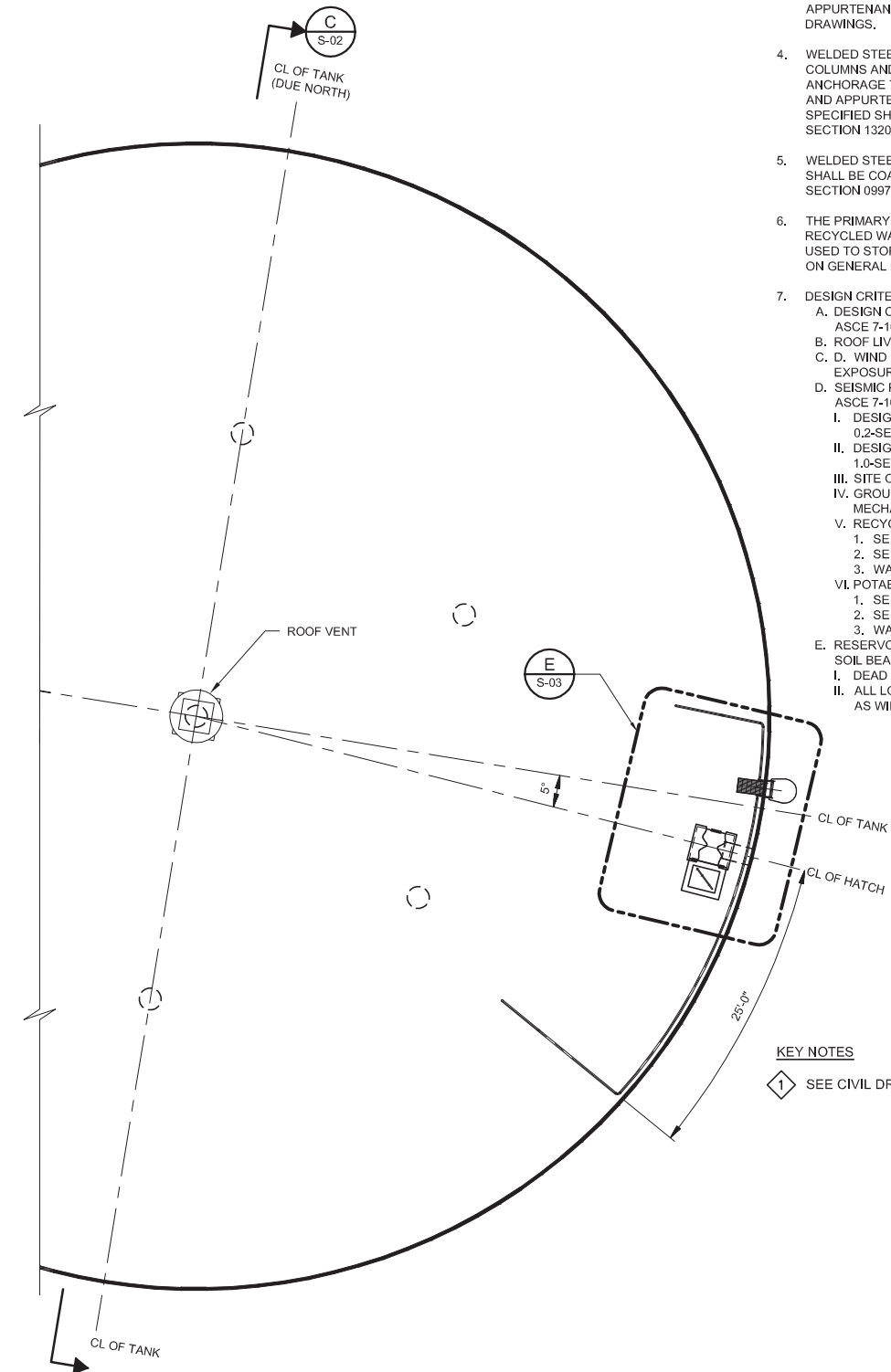
REGIONAL URBAN WATER AUGMENTATION PROJECT  
BLACKHORSE RECYCLED WATER RESERVOIR  
STRUCTURAL  
BLACKHORSE RESERVOIR  
TYPICAL DETAILS

VERIFY SCALES  
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JOB NO.  
7568A.10  
DRAWING NO.  
SG-03  
SHEET NO.  
66A OF 93



**A FOUNDATION PLAN**  
SCALE: 1/8" = 1'-0"  
FILE: BHR\_S-103.dwg



**B TOP PLAN**  
SCALE: 1/8" = 1'-0"  
FILE: BHR\_S-103.dwg

**GENERAL NOTES**

1. SEE DRAWINGS SG-01 THROUGH SG-03 FOR STRUCTURAL GENERAL NOTES AND STANDARD DETAILS.
2. SEE CP DRAWINGS FOR TANK CATHODIC PROTECTION.
3. SEE MECHANICAL DRAWINGS FOR PIPE PENETRATIONS AND APPURTENANCES NOT SHOWN ON THE STRUCTURAL DRAWINGS.
4. WELDED STEEL WATER RESERVOIR, INCLUDING INTERNAL COLUMNS AND CONCRETE FOOTINGS, RESERVOIR ANCHORAGE TO THE CONCRETE RING WALL FOUNDATION, AND APPURTENANCES SHOWN ON THE DRAWINGS AND/OR SPECIFIED SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 13206Q.
5. WELDED STEEL WATER RESERVOIR AND APPURTENANCES SHALL BE COATED IN ACCORDANCE WITH SPECIFICATION SECTION 09974.
6. THE PRIMARY USE OF THE RESERVOIR IS TO STORE RECYCLED WATER. IN THE FUTURE, THE RESERVOIR MAY BE USED TO STORE POTABLE WATER. SEE DESIGN CRITERIA ON GENERAL NOTE 7 FOR DIFFERENT DESIGN PARAMETERS.
7. DESIGN CRITERIA:
  - A. DESIGN CODES: 2013 CALIFORNIA BUILDING CODE, ASCE 7-10, AND AWWA D100.
  - B. ROOF LIVE LOAD: 20 PSF.
  - C. D. WIND PARAMETERS: BASIC WIND SPEED = 115 MPH; EXPOSURE COEFFICIENT = C.
  - D. SEISMIC PARAMETERS BASED ON AWWA D100 AND ASCE 7-10:
    - I. DESIGN EARTHQUAKE SPECTRAL ACCELERATION AT 0.2-SEC: SDS = 0.981 G
    - II. DESIGN EARTHQUAKE SPECTRAL ACCELERATION AT 1.0-SEC: SD1 = 0.527 G
  - III. SITE CLASS: D
  - IV. GROUND SUPPORTED FLAT-BOTTOM TANK MECHANICALLY ANCHORED.
  - V. RECYCLED WATER STORAGE PARAMETERS:
    1. SEISMIC USE GROUP: II
    2. SEISMIC IMPORTANCE FACTOR: I = 1.25
    3. WATER LEVEL ELEVATION AT OVERFLOW: 515.60
  - VI. POTABLE WATER STORAGE PARAMETERS:
    1. SEISMIC USE GROUP: III
    2. SEISMIC IMPORTANCE FACTOR: I = 1.50
    3. WATER LEVEL ELEVATION AT OVERFLOW: 512.50
- E. RESERVOIR RING WALL FOUNDATION NET ALLOWABLE SOIL BEARING PRESSURE:
  - I. DEAD PLUS LIVE PLUS WATER: 3,000 PSF
  - II. ALL LOADS INCLUDING SHORT TERM LOADS SUCH AS WIND AND SEISMIC: 4,000 PSF

**KEY NOTES**

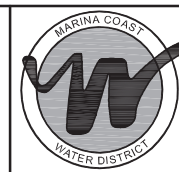
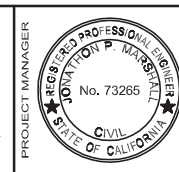
1. SEE CIVIL DRAWINGS FOR RESERVOIR COORDINATES.

REV	DATE	BY	DESCRIPTION

DESIGNED  
EQ  
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AL  
CHECKED  
TWP  
DATE  
APRIL 2017



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Date: 2017.05.01 14:23:20-07'00'



**Marina Coast Water District**

REGIONAL URBAN WATER AUGMENTATION PROJECT  
BLACKHORSE RECYCLED WATER RESERVOIR  
STRUCTURAL RESERVOIR PLANS

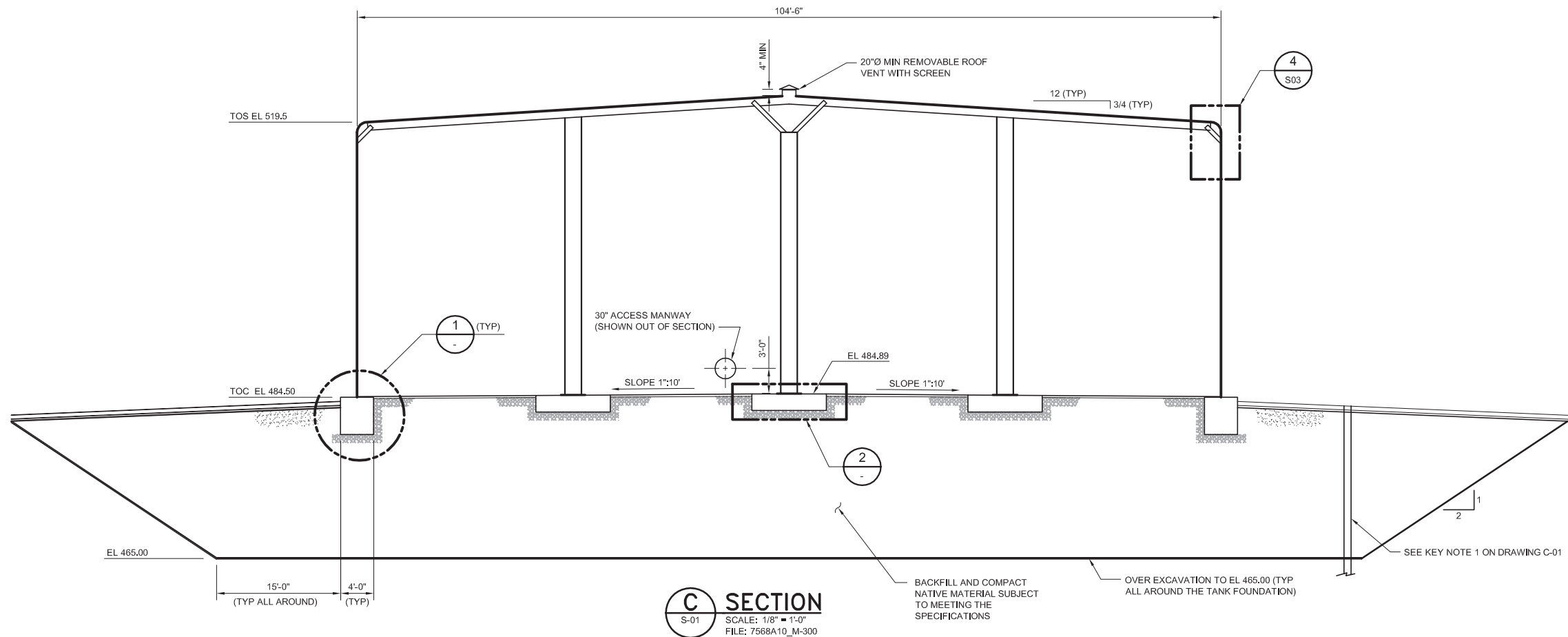
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JOB NO.  
7568A.10  
DRAWING NO.  
S-01  
SHEET NO.  
67 OF 93

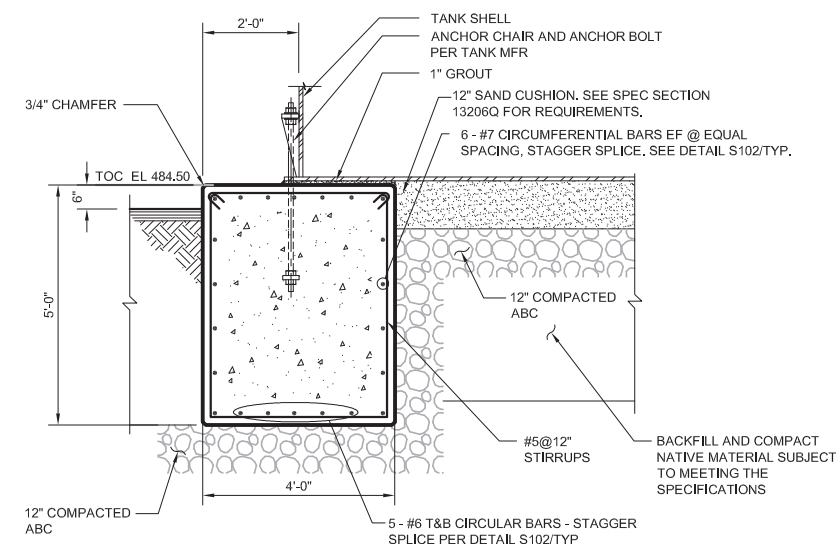
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**NOTES:**

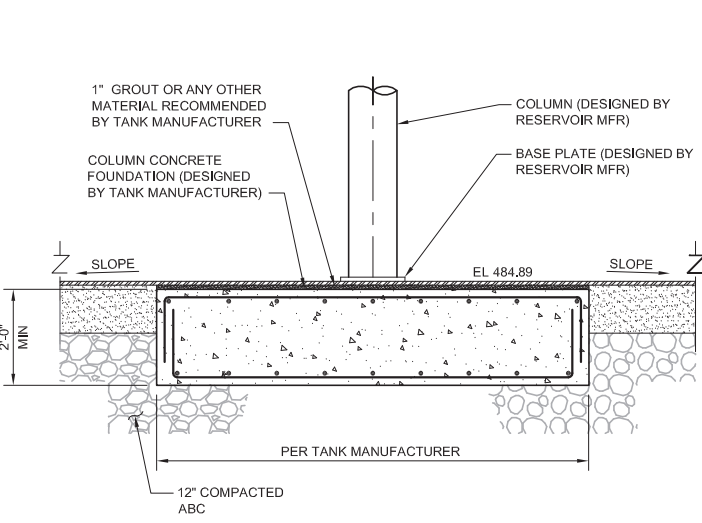
1. TOLERANCES ON CONCRETE FOUNDATIONS: RINGWALL AFTER GROUTING SHALL BE LEVEL WITHIN  $\pm 1/8"$  IN ANY 30' CIRCUMFERENCE UNDER THE SHELL. THE LEVELNESS ON THE CIRCUMFERENCE SHALL NOT VARY BY MORE THAN  $\pm 1/4"$  FROM AN ESTABLISHED PLAN. THE TOLERANCE ON POURED CONCRETE BEFORE GROUTING SHALL BE  $\pm 1"$ .
2. THE TOP OF THE CONCRETE SHALL BE CLEANED AND THOROUGHLY WETTED BEFORE NON-SHRINK GROUT IS PLACED.
3. WHEN GROUTED, A 1" MINIMUM SPACE BETWEEN THE TANK BOTTOM AND THE TOP OF THE CONCRETE SHALL BE THE ENTIRE SPACE BENEATH THE TANK FROM THE OUTSIDE EDGE OF THE TANK BOTTOM TO THE SAND CUSHION. IN NO CASE SHALL THE WIDTH OF GROUT PLACED UNDER THE TANK BOTTOM BE LESS THAN 2'-6". THE TOP OF THE FOUNDATIONS SHALL BE THOROUGHLY SATURATED WITH WATER AND SURFACE DAMP BEFORE GROUT IS PLACED.



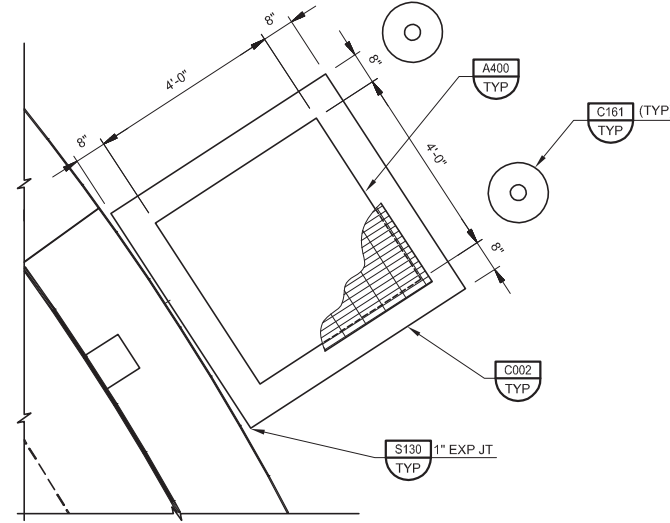
**C SECTION**  
S-01 SCALE: 1/8" = 1'-0"  
FILE: 7568A10\_M-300



**1 TANK FOUNDATION DETAIL**  
SCALE: 1/2" = 1'-0"  
FILE: 7568A10\_M-400



**2 DETAIL - COLUMN FOOTING**  
SCALE: 1/2" = 1'-0"  
FILE: 7568A10\_M-301



**3 DETAIL**  
S-01 SCALE: 1/2" = 1'-0"  
FILE: BHR\_S-103.dwg

REV	DATE	BY	DESCRIPTION

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DRAWN SJB/AL  
CHECKED TWP  
DATE APRIL 2017

DISCIPLINE ENGINEER  
EDUARDO QUIROZ  
No. 04906  
REGISTERED PROFESSIONAL ENGINEER  
STATE OF CALIFORNIA

PROJECT ENGINEER  
Digitally signed by Jonathon P. Marshall  
Contact Info: Carollo Engineers, Inc.  
Date: 2017.05.01 14:23:27-07'00'

PROJECT MANAGER  
EDUARDO QUIROZ  
No. 73265  
REGISTERED PROFESSIONAL ENGINEER  
STATE OF CALIFORNIA

**carollo**

MARINA COAST WATER DISTRICT  
**Marina Coast Water District**

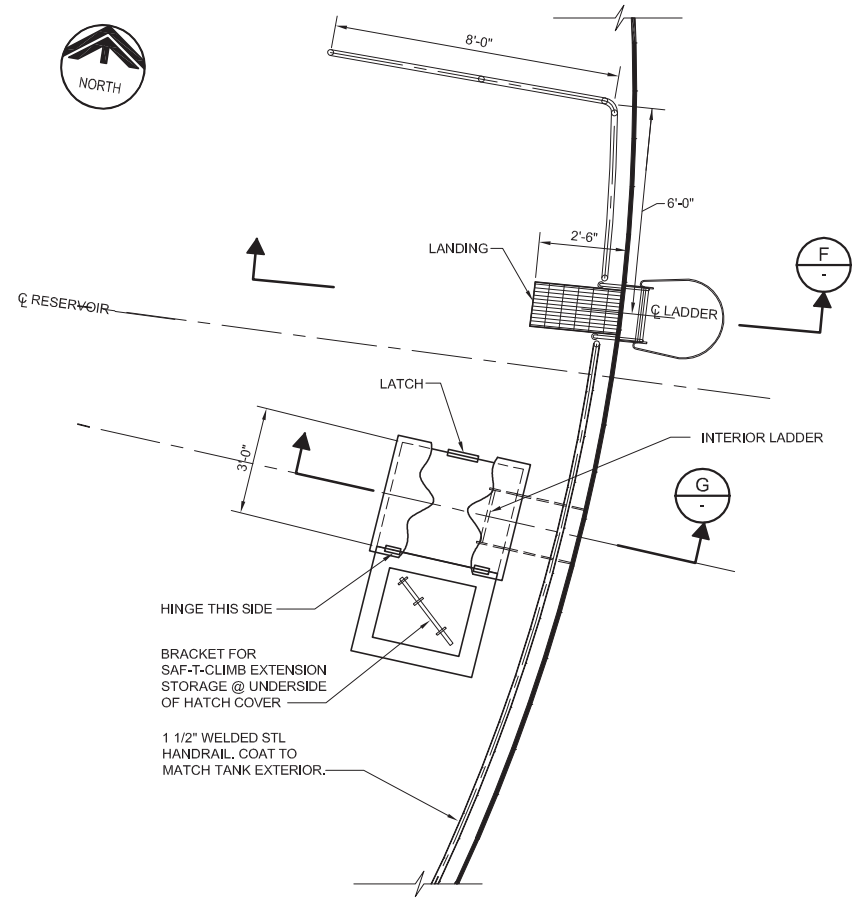
REGIONAL URBAN WATER AUGMENTATION PROJECT  
BLACKHORSE RECYCLED WATER RESERVOIR  
STRUCTURAL  
RESERVOIR  
SECTIONS AND DETAIL

VERIFY SCALES  
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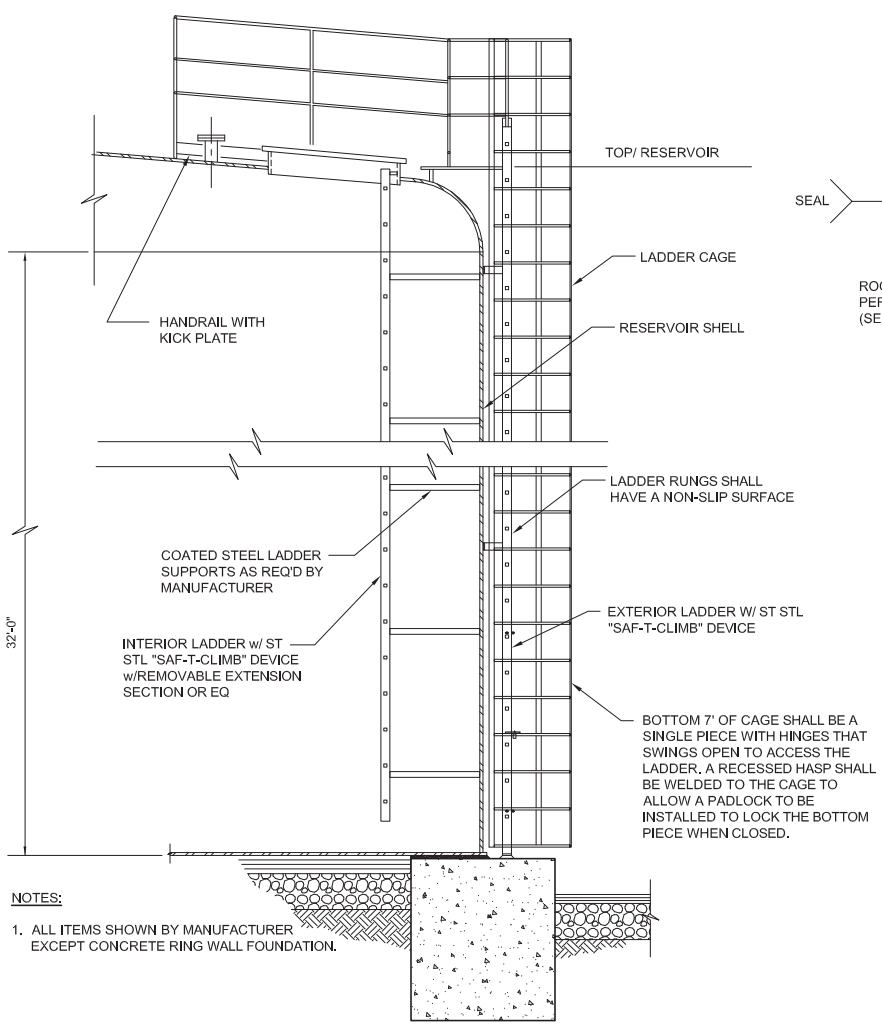
JOB NO. 7568A.10  
DRAWING NO. S-02  
SHEET NO. 68 OF 93

FILENAME:

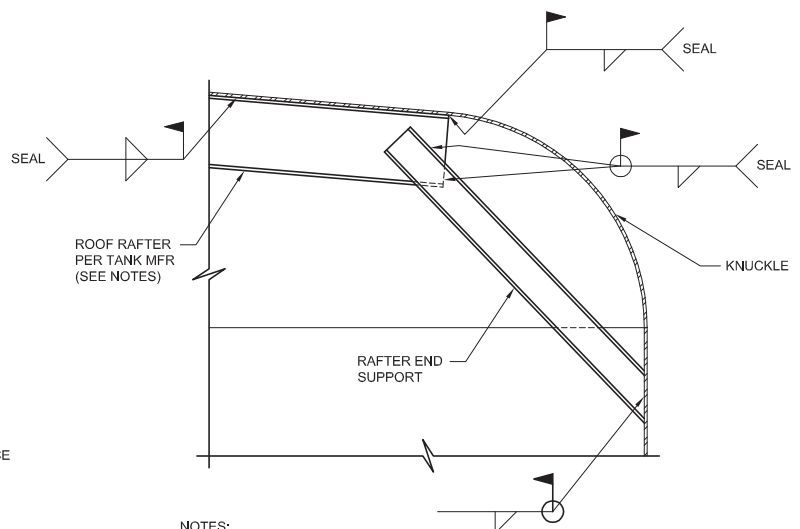




**E ACCESS COVER PLAN**  
S-01 SCALE: 3/8" = 1'-0"  
FILE: 7568A10\_M-103

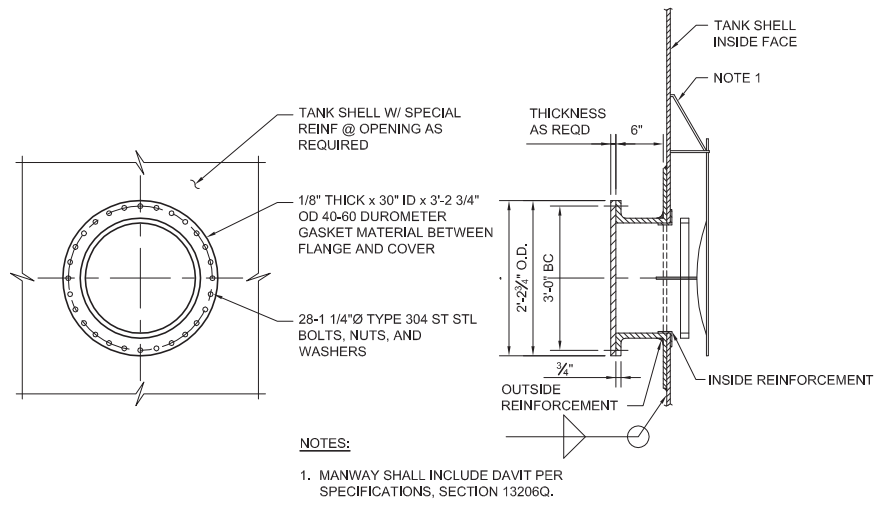


**F SECTION**  
SCALE: 3/8" = 1'-0"  
FILE: 7568A10\_M-304



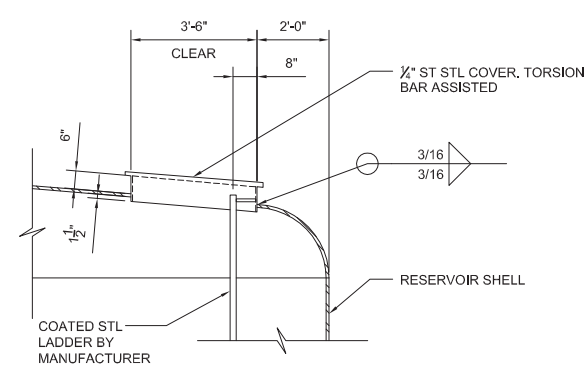
- NOTES:**
1. ALL RAFTER FAYING SURFACES SHALL BE SEAL WELDED.
  2. ROOF RAFTER LATERAL BRACING SHALL BE STRUCTURAL STEEL CHANNELS OR ANGLES WITH WELDED CONNECTIONS. THREADED CONNECTIONS SHALL NOT BE USED.
  3. GUARDRAIL NOT SHOWN.

**4 DETAIL**  
S-02 SCALE: 3/4" = 1'-0"  
FILE: 7568A10\_S-401



- NOTES:**
1. MANWAY SHALL INCLUDE DAVIT PER SPECIFICATIONS, SECTION 132060.

**5 SECTION-30" ACCESS MANWAY**  
S-01 SCALE: 1/2" = 1'-0"  
FILE: 7568A10\_M-307



**G SECTION-ACCESS HATCH**  
SCALE: 3/8" = 1'-0"  
FILE: 7568A10\_M-306

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PROJECT ENGINEER

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Date: 2017.05.01 14:23:35-07'00'

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Contact Info: Carollo Engineers, Inc.  
Date: 2017.05.01 15:09:16-07'00'

PROJECT MANAGER

REGIONAL URBAN WATER AUGMENTATION PROJECT

BLACKHORSE RECYCLED WATER RESERVOIR

STRUCTURAL  
RESERVOIR  
PLAN, SECTIONS AND DETAILS

**VERIFY SCALES**

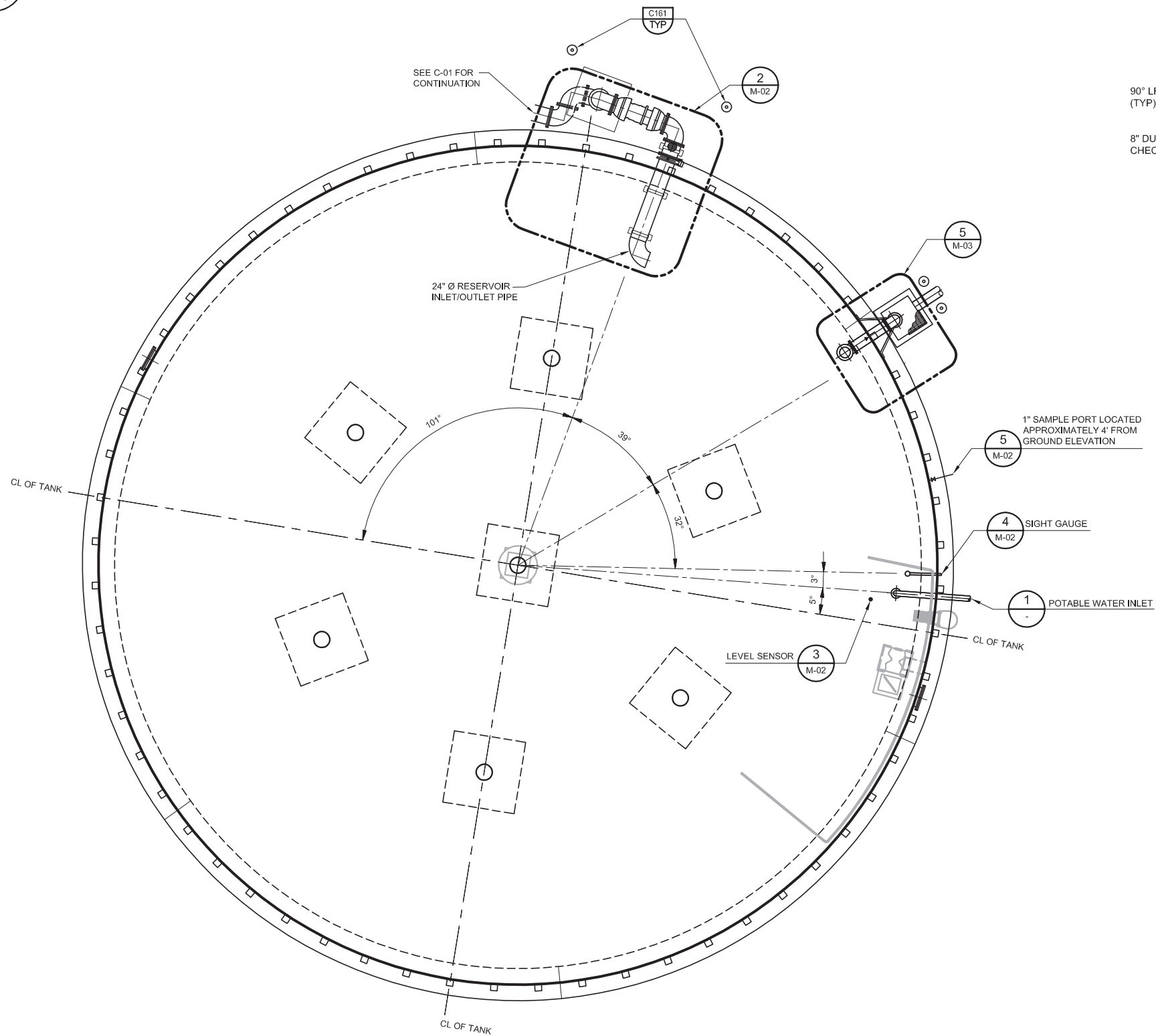
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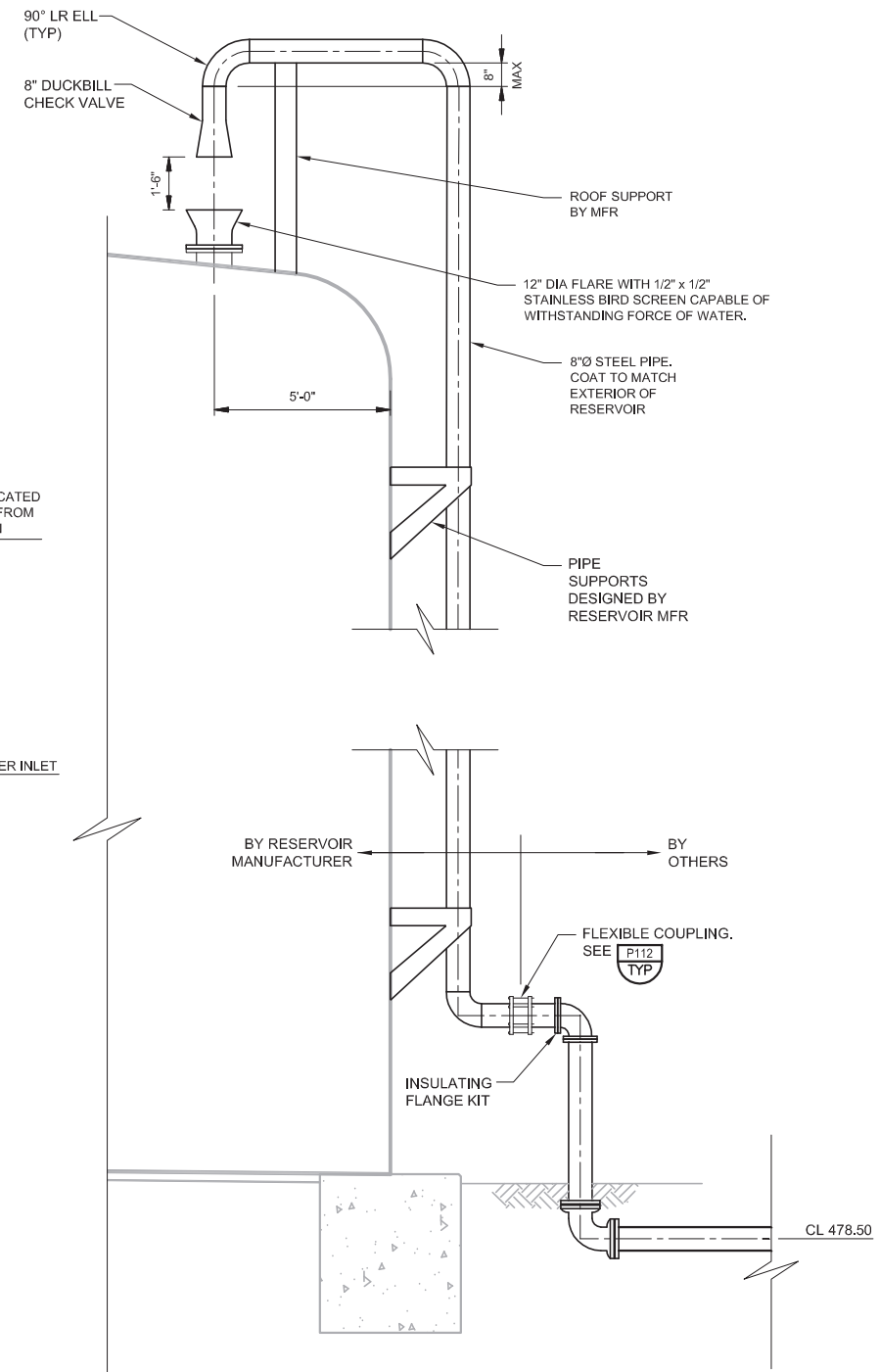
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7568A.10  
DRAWING NO. S-03  
SHEET NO. 69 OF 93

FILENAME:



**A RESERVOIR ORIENTATION PLAN**  
 C-02 SCALE: 1/8" = 1'-0"  
 FILE: BHR\_M-103.dwg



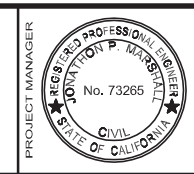
**1 POTABLE WATER INLET**  
 SCALE: 3/8" = 1'-0"  
 FILE: BHR\_M-01.dwg

REV	DATE	BY	DESCRIPTION

DESIGNED	RRH
DRAWN	SJB
CHECKED	BH
DATE	APRIL 2017

DISCIPLINE ENGINEER

PROJECT ENGINEER  
 Digitally signed by Jonathon P. Marshall  
 Contact Info: Carollo Engineers, Inc.  
 Date: 2017.05.01 13:17:15-07'07



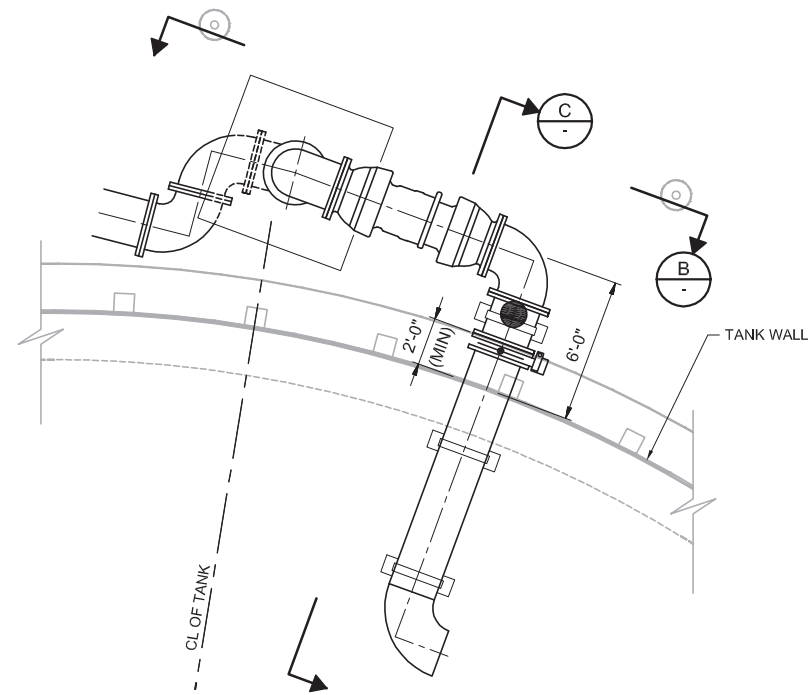
Marina Coast Water District

REGIONAL URBAN WATER AUGMENTATION PROJECT  
 BLACKHORSE RECYCLED WATER RESERVOIR  
 MECHANICAL  
 RESERVOIR  
 PLAN AND DETAILS

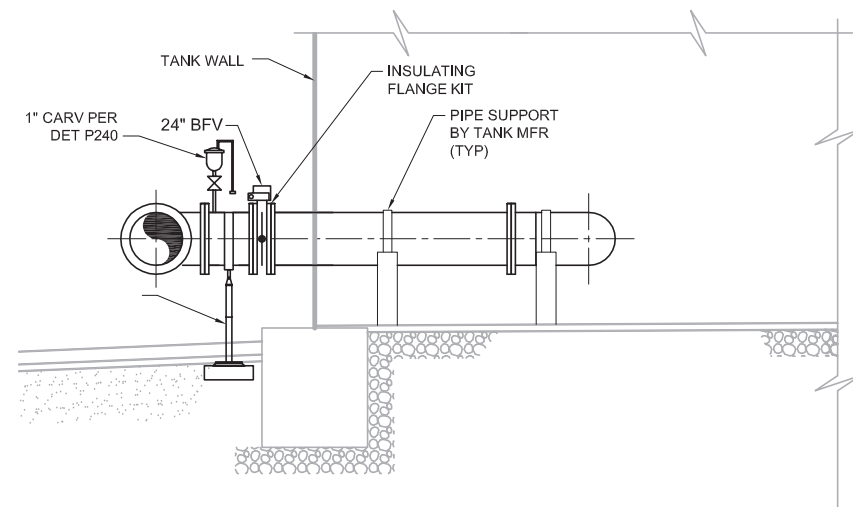
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 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7568A.10  
 DRAWING NO. M-01  
 SHEET NO. 70 OF 93

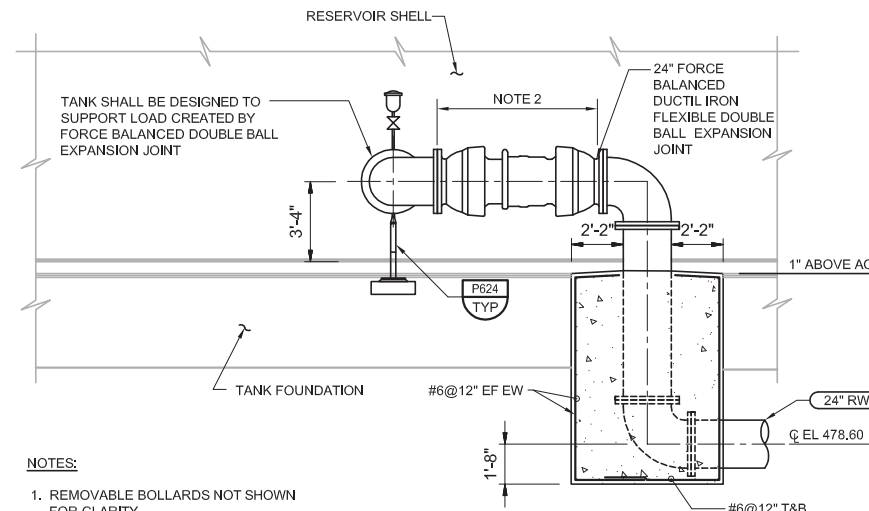
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**2 INLET/OUTLET PIPE DETAIL**  
M-01 SCALE: 1/4"=1'-0"

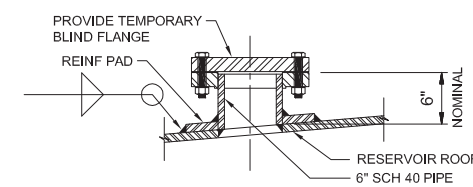


**C SECTION**  
SCALE: 1/4"=1'-0"

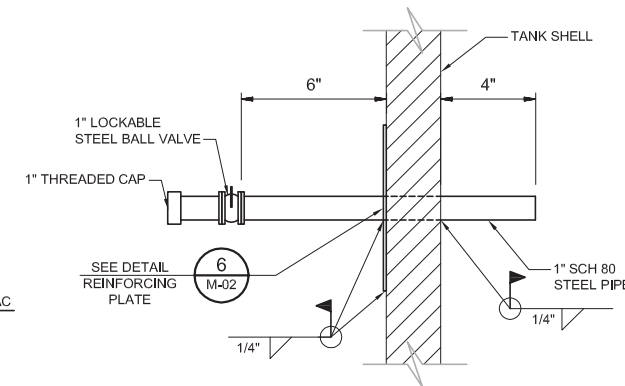


- NOTES:**
1. REMOVABLE BOLLARDS NOT SHOWN FOR CLARITY.
  2. TO BE PROVIDED BY TANK MANUFACTURER.
  3. SUPPORT HORIZONTAL PIPE SECTION AS NEEDED.
  4. ADJUSTABLE PIPE SUPPORT SHALL ONLY HAVE LOWER SUPPORT SADDLE (NOT UPPER HOOP).

**B SECTION**  
SCALE: NO SCALE  
FILE: 7568A10\_M-303

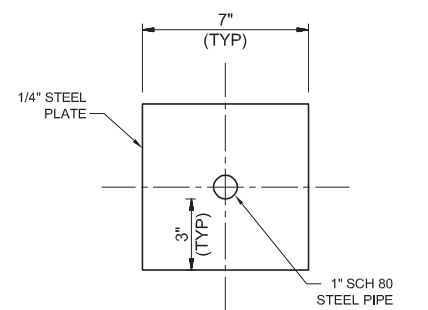


**3 DETAIL-LEVEL SENSOR**  
M-01 SCALE: 1"=1'-0"  
FILE: 7568A10\_M-305

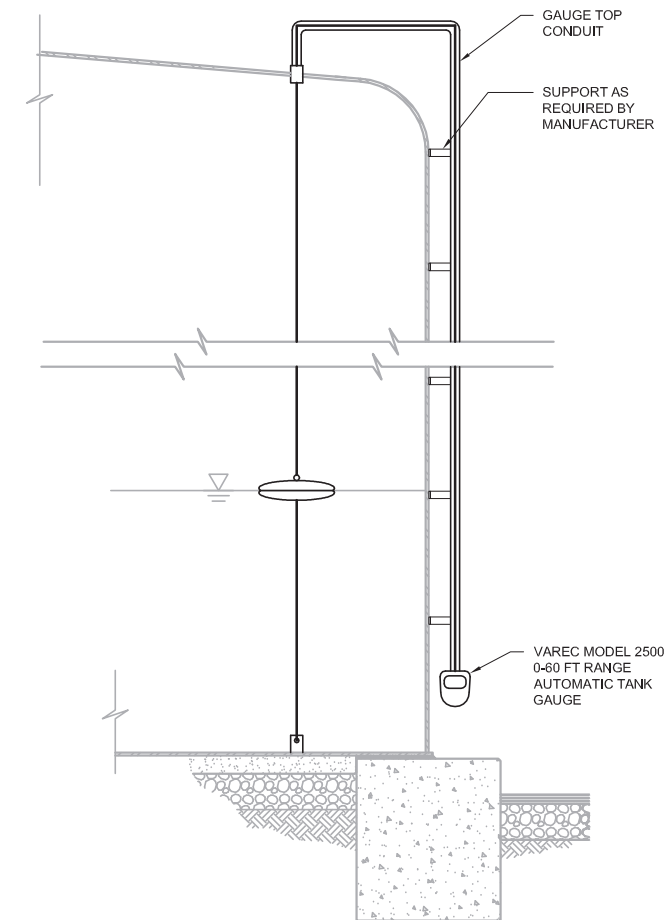


- NOTES:**
- COAT INTERIOR AND EXTERIOR OF PIPE AND ALL EXPOSED SURFACES TO MATCH RESERVOIR.

**5 SHELL PENETRATION**  
M-01 SCALE: NO SCALE  
FILE:



**6 REINFORCED PLATE**  
M-02 SCALE: NO SCALE  
FILE:

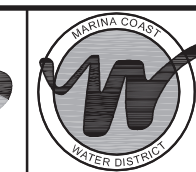


**4 DETAIL-SIGHT GAUGE**  
M-01 SCALE: 3/8"=1'-0"  
FILE: 7568A10\_M-311

REV	DATE	BY	DESCRIPTION

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DATE	APRIL 2017

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Contact Info: Carollo Engineers, Inc.  
Date: 2017.05.01 13:17:07-07'07'



Marina Coast Water District

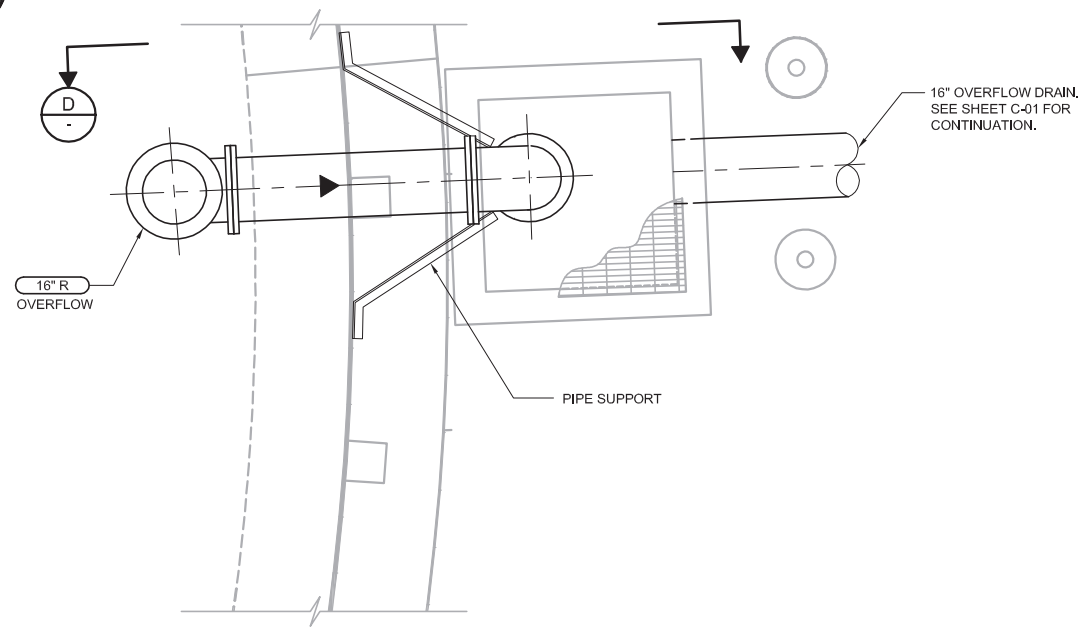
REGIONAL URBAN WATER AUGMENTATION PROJECT  
BLACKHORSE RECYCLED WATER RESERVOIR  
MECHANICAL  
RESERVOIR DETAILS

**VERIFY SCALES**  
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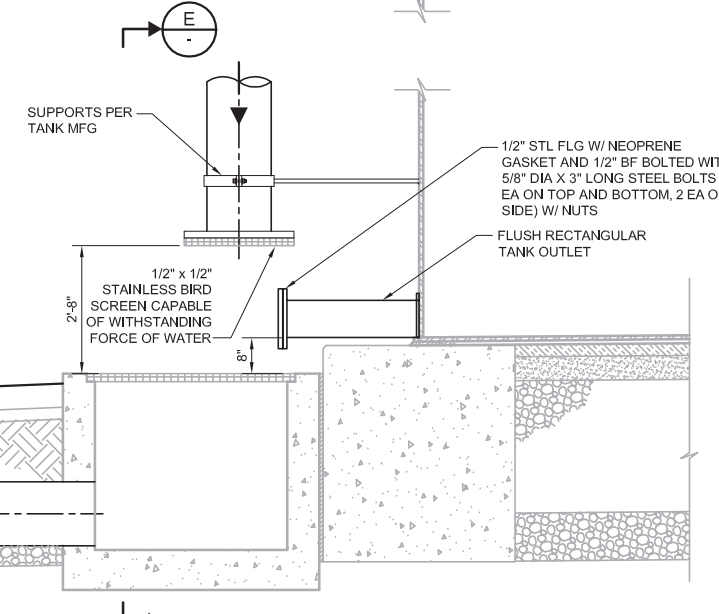
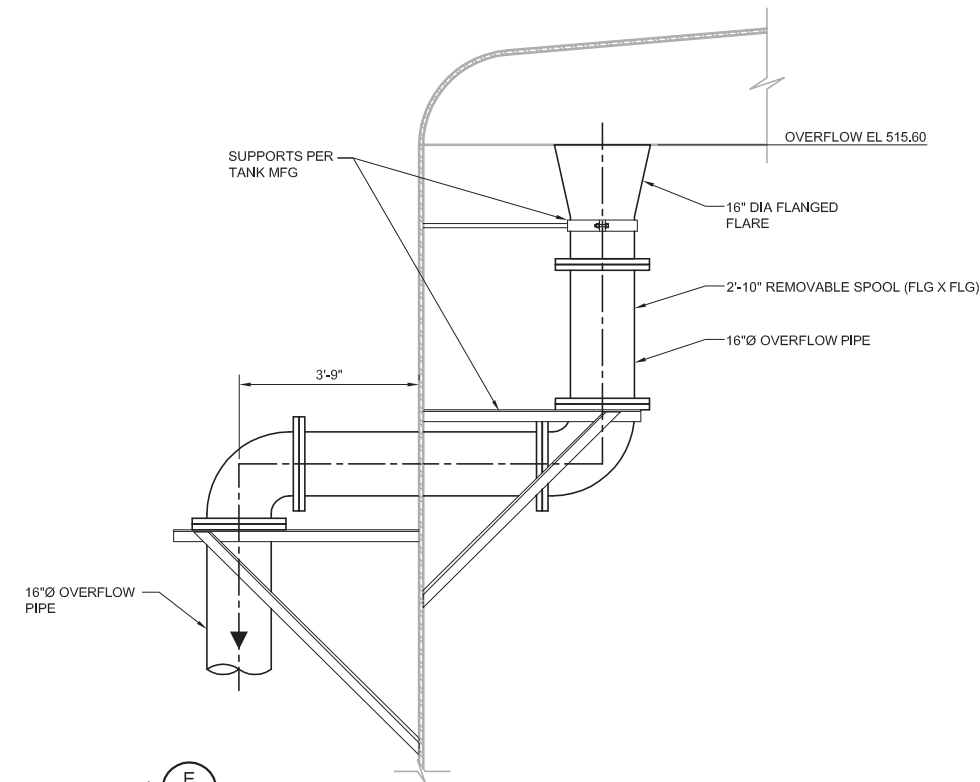
JOB NO. 7568A.10  
DRAWING NO. M-02  
SHEET NO. 71 OF 93

FILENAME:

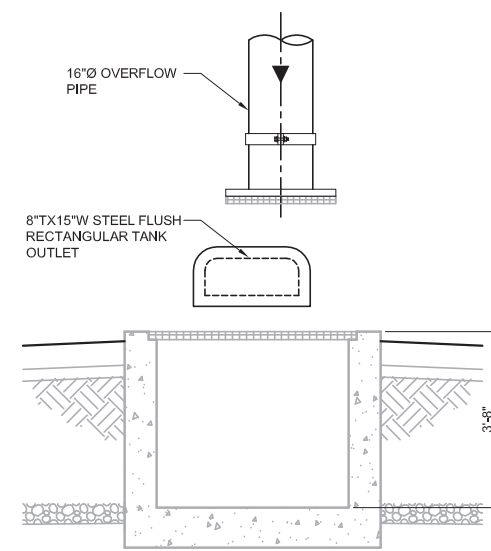




**5** **DETAIL – OVERFLOW/DRAIN LINES**  
 M-01 SCALE: 1/2" = 1'-0"  
 FILE: 7568A10\_M-103



**D** **OVERFLOW & DRAIN SECTION**  
 SCALE: 1/2" = 1'-0"  
 FILE: 7568A10\_M-302



**E** **SECTION-FLUSH CLEANOUT**  
 SCALE: 1" = 1'-0"  
 FILE: 7568A10\_M-308

REV	DATE	BY	DESCRIPTION

DESIGNED	RRH
DRAWN	SJB
CHECKED	
DATE	APRIL 2017

PROJECT ENGINEER  
 Digitally signed by Jonathon P. Marshall  
 Contact Info: Carollo Engineers, Inc.  
 Date: 2017.05.01 13:16:56-07'00'



REGIONAL URBAN WATER AUGMENTATION PROJECT  
 BLACKHORSE RECYCLED WATER RESERVOIR  
 MECHANICAL  
 OVERFLOW AND DRAIN  
 PLAN AND SECTIONS

<b>VERIFY SCALES</b>	JOB NO. 7568A.10
BAR IS ONE INCH ON ORIGINAL DRAWING	DRAWING NO. M-03
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	SHEET NO. 72 OF 93

FILENAME:

ELECTRICAL PLAN SYMBOLS

ELECTRICAL ONE-LINE SYMBOLS

IDENTIFICATION SYMBOLS

- EQUIP #** EQUIPMENT AND INSTRUMENT IDENTIFICATION
- EQUIPMENT/INSTRUMENT LOCATOR
- LUMINAIRE IDENTIFICATION**  
 a = CIRCUIT DESIGNATION  
 b = DEVICE SWITCHED FROM  
 c = MOUNTING HEIGHT IN FEET TO BOTTOM OF FIXTURE
- CONDUIT IDENTIFICATION**  
 XXXX = CONDUIT NUMBER, REFER TO CONDUIT SCHEDULE UNLESS OTHERWISE NOTED, GROUPED CONDUITS ARE LABELED LEFT TO RIGHT OR TOP TO BOTTOM.
- INDICATES KEYNOTE X (PERTAINS ONLY TO SHEET WHERE NOTE IS FOUND)**
- DISCONNECT SWITCH**  
 a = TYPE, REFER TO DISCONNECT SCHEDULE
- PCM ALARM HORN/STROBE COMBINATION**
- VOIP PAGING LOUD SPEAKER**
- VOIP PAGING CEILING MOUNT SPEAKER**

LUMINAIRES

- LINEAR STRIP**
- LUMINAIRE POLE MOUNTED**
- STROBE**  
 a = COLOR  
 R = RED  
 G = GREEN  
 A = AMBER
- LUMINAIRE, EMERGENCY BATTERY-POWERED**
- LUMINAIRE, EMERGENCY/EXIT BATTERY-POWERED**
- LUMINAIRE, EMERGENCY BATTERY-POWERED REMOTE**
- LUMINAIRE, SURFACE OR PENDANT MOUNTED**
- LUMINAIRE, WALL MOUNTED**
- LUMINAIRE, FLOOD/SPOT**
- LUMINAIRE, EXIT ONE OR TWO FACES AS INDICATED, ARROW POINTS IN DIRECTION OF EGRESS.**
- LUMINAIRE, WALL WASHER**
- PHOTOCELL**

TITLE 24 DAYLIT ZONES

- PRIMARY SIDELIT DAYLIT ZONE**
- SECONDARY SIDELIT DAYLIT ZONE**
- SKYLIGHT DAYLIT ZONE**

SWITCHES/RECEPTACLES

- SINGLE POLE SWITCH**  
 a = CIRCUIT DESIGNATION  
 b = DEVICE SWITCHED DESIGNATION
- c = TYPE**  
 2 = DOUBLE POLE SWITCH  
 3 = THREE-WAY SWITCH  
 4 = FOUR-WAY SWITCH  
 K = KEY OPERATED SWITCH  
 F = SWITCH AND FUSE/STAT HOLDER  
 P = SWITCH AND PILOT LIGHT  
 T = THERMOSTAT  
 D = DIMMER SWITCH  
 L = LOW VOLTAGE LIGHT SWITCH  
 M = MANUAL MOTOR STARTER  
 N = NETWORKED SINGLE OR MULTIPLE SWITCH LOCATIONS  
 WP = WEATHER PROOF
- OCCUPANCY SENSOR**  
 X = REFERENCE LIGHTING CONTROL COMPONENT SCHEDULE  
 a = CIRCUIT DESIGNATION  
 b = DEVICE SWITCHED DESIGNATION  
 c = MOUNTING HEIGHT IN FEET TO BOTTOM OF SENSOR
- NETWORK LIGHTING EQUIPMENT**  
 X = REFERENCE LIGHTING CONTROL COMPONENT SCHEDULE  
 a = CIRCUIT DESIGNATION  
 b = DEVICE SWITCHED DESIGNATION  
 c = TYPE  
 B = BRIDGE  
 G = GATEWAY  
 R = RELAY PACK
- SWITCH AND SINGLE RECEPTACLE**  
 a = CIRCUIT DESIGNATION  
 b = DEVICE TYPE DESIGNATION
- DUPLEX RECEPTACLE**  
 a = CIRCUIT DESIGNATION  
 b = DEVICE TYPE DESIGNATION
- QUADRUPLEX RECEPTACLE**  
 a = CIRCUIT DESIGNATION  
 b = DEVICE TYPE DESIGNATION
- IN FLOOR DUPLEX RECEPTACLE**  
 a = CIRCUIT DESIGNATION  
 b = DEVICE TYPE DESIGNATION
- IN FLOOR QUADRUPLEX RECEPTACLE**  
 a = CIRCUIT DESIGNATION  
 b = DEVICE TYPE DESIGNATION
- DUPLEX RECEPTACLE w/SPLIT WIRE**  
 a = CIRCUIT DESIGNATION  
 b = DEVICE TYPE DESIGNATION
- APPLIANCE RECEPTACLE**  
 a = CIRCUIT DESIGNATION  
 b = DEVICE TYPE DESIGNATION
- WELDING RECEPTACLE**  
 a = CIRCUIT DESIGNATION  
 b = DISCONNECT TYPE
- SPECIAL PURPOSE RECEPTACLE**  
 a = CIRCUIT DESIGNATION  
 b = DEVICE TYPE DESIGNATION
- TWIST LOCK RECEPTACLE**  
 a = AMP RATING
- TELEPHONE OUTLET**  
 a = MOUNTING HEIGHT
- DATA COMMUNICATIONS OUTLET**  
 a = MOUNTING HEIGHT  
 b = TYPE  
 B = BUSINESS  
 S = SCADA

FIRE ALARM

- SMOKE DETECTOR**  
 a = TYPE  
 I = IONIZATION  
 P = PHOTOELECTRIC  
 d = DUCT DETECTOR
- FIRE ALARM CONTROL PANEL**
- FIRE ALARM PULL STATION**
- FIRE ALARM HORN/STROBE COMBINATION**
- FIRE ALARM STROBE**
- FIRE SPRINKLER**  
 F = FLOW SWITCH  
 T = TAMPER SWITCH

RACEWAY

- EXPOSED CONDUIT**
- BREAK AND CONTINUATION IN CONDUIT RUN**
- EXPOSED CONDUIT HIDDEN BEHIND WALLS, FLOORS OR OTHER STRUCTURES**
- UNDERGROUND CONDUIT, DIRECT BURIED OR IN DUCTBANK**
- CONDUIT IN SLAB**
- CONDUIT VERTICAL CHANGE IN DIRECTION**
- CONDUIT CAP**
- JUNCTION BOX**
- CONDUIT SEAL**
- CONDUIT TEE**
- DUCTBANK APPROXIMATE DIMENSIONS SHOWN ON DUCTBANK SCHEDULE**

CONDUIT SIZE AND CONDUCTORS

- INDIVIDUAL CONDUCTORS**  
 W/C-(3-X (Ø), 1-Y (N) & 1-Z (G))  
 W/C (WHERE INDICATED); W = CONDUIT TRADE SIZE
- 3-X (Ø):**  
 3 = QUANTITY  
 X = SIZE OF CONDUCTORS  
 (Ø) = DESIGNATES PHASE CONDUCTORS
- 1-Y (N) (WHERE INDICATED):**  
 1 = QUANTITY  
 Y = SIZE OF CONDUCTORS  
 (N) = DESIGNATES NEUTRAL CONDUCTORS
- 1-Z (G) (WHERE INDICATED):**  
 1 = QUANTITY  
 Z = SIZE OF CONDUCTORS  
 (G) = DESIGNATES GROUND CONDUCTORS
- U(3-X (Ø) & 1-X (G))**  
 U = NUMBER OF PARALLEL RUNS
- MULTI CONDUCTOR CABLES**  
 K/2/C#16S  
 K (WHERE INDICATED) = NUMBER OF PAIRS  
 2/C#16S = TWO CONDUCTOR, 16 GAUGE, TWISTED SHIELDED PAIR
- K/3/C#16S**  
 K (WHERE INDICATED) = NUMBER OF TRIPLETS  
 3/C#16S = THREE CONDUCTOR, 16 GAUGE, TWISTED SHIELDED TRIPLETS
- N/CX**  
 N = NUMBER OF CONDUCTORS IN THE CABLE  
 X = SIZE OF CONDUCTORS

GROUNDING

- UNDERGROUND GROUND CABLE #4/0 SDBC UNLESS OTHERWISE NOTED**
- GROUND ROD**
- GROUND ROD AND GROUND WELL**
- GROUND CONNECTION**

MEDIUM VOLTAGE

- CIRCUIT BREAKER, MEDIUM VOLTAGE**  
 a = CIRCUIT BREAKER NUMBER  
 b = FRAME SIZE
- ANSI RELAY DEVICE**  
 a = ANSI DEVICE FUNCTION  
 b = QUANTITY
- MEDIUM VOLTAGE DISCONNECT SWITCH NON-FUSED CUT OUT**
- MEDIUM VOLTAGE DISCONNECTING FUSE SINGLE FUSE CUT OUT**
- MEDIUM VOLTAGE DISCONNECTING FUSE DOUBLE FUSE CUT OUT**
- MEDIUM VOLTAGE SINGLE FUSE**
- MEDIUM VOLTAGE DOUBLE FUSE**
- MEDIUM VOLTAGE LIVE FRONT TERMINATOR**
- MEDIUM VOLTAGE ELBOW**
- MEDIUM VOLTAGE TEE**
- MEDIUM VOLTAGE CONTACTOR**
- MEDIUM VOLTAGE STARTER**
- MOV-ELBOW ARRESTER**

LOW VOLTAGE

- LOW VOLTAGE CIRCUIT BREAKER**  
 a = TYPE  
 MCP = MOTOR CIRCUIT PROTECTOR  
 TM = THERMAL MAGNETIC  
 SS = SOLID STATE  
 b = FRAME SIZE (MANUFACTURER TO DETERMINE FRAME SIZE UNLESS INDICATED)  
 c = NUMBER OF POLES  
 d = TRIP SETTING (AT = AMP TRIP) (AC = MCP CONTINUOUS RATING)  
 e = DESIGNATION  
 f = INTERRUPTING RATING
- LOW VOLTAGE CIRCUIT BREAKER AUXILIARY OPERATOR**  
 S = SHUNT TRIP  
 G = GROUND FAULT INTERRUPTER  
 V = SOLENOID KEY RELEASE
- DISCONNECT SWITCH**  
 A = TYPE, REFER TO DISCONNECT SCHEDULE
- FUSED DISCONNECT SWITCH**  
 B = TYPE, REFER TO DISCONNECT SCHEDULE  
 b = FUSE RATING
- FUSE**
- COMBINATION STARTER WITH CONTROL POWER TRANSFORMER**  
 a = CIRCUIT BREAKER DISCONNECT, TYPE AS NOTED  
 b = STARTER TYPE  
 c = NEMA STARTER SIZE  
 d = OVERLOAD
- VARIABLE FREQUENCY DRIVE WITH FEATURES AS SHOWN**  
 a = INPUT CONTACTOR  
 b = OUTPUT CONTACTOR  
 c = BYPASS STARTER  
 d = INPUT CIRCUIT BREAKER  
 LR = LINE REACTOR  
 LL = LOAD REACTOR
- REDUCED VOLTAGE SOLID STATE STARTER WITH FEATURES AS SHOWN**  
 BS = BYPASS STARTER
- EQUIPMENT ENCLOSURE**

MISCELLANEOUS

- MOTOR**  
 HP = HORSEPOWER RATING  
 FULL LOAD AMPS AS NOTED
- PACKAGED EQUIPMENT LOAD RATING AS INDICATED**  
 a = RATED LOAD  
 b = UNIT (HP, KW, KVA) AS INDICATED
- TRANSFORMER**  
 a = DEVICE ID.  
 b = KVA RATING  
 c = NUMBER OF PHASES  
 d = PRIMARY VOLTAGE  
 e = SECONDARY VOLTAGE  
 f,g = CONNECTION TYPE SYMBOL  
 h = IMPEDANCE
- GROUNDING WYE CONNECTION**
- DELTA CONNECTION**
- ENGINE-GENERATOR RATINGS AS INDICATED ON THE DRAWINGS**  
 a = KVA/KW  
 b = VOLTAGE/CONNECTION  
 c = PHASE  
 d = WIRE  
 e = PF
- CURRENT TRANSFORMER WITH SHORTING TERMINAL BLOCK**  
 a = QUANTITY  
 b = RATIO
- POTENTIAL TRANSFORMER**  
 a = QUANTITY  
 b = RATIO  
 c,d = CONNECTION TYPE SYMBOL
- SOLID STATE MULTIFUNCTION METER**
- AMPERE TEST POINT**
- VOLTAGE TEST POINT**
- UTILITY METER**
- LIGHTNING ARRESTER**
- SURGE PROTECTIVE DEVICE**
- DRAWOUT CONNECTION**
- GROUND**
- CAPACITOR**
- BATTERY**
- KIRK KEY INTERLOCK**
- LOAD BANK**

DESIGNED	CC		
DRAWN	JS		
CHECKED	MJP		
DATE	APRIL 2017		
REV	DATE	BY	DESCRIPTION

DESIGNED CC  
 DRAWN JS  
 CHECKED MJP  
 DATE APRIL 2017

Digitally signed by Jonathon P. Marshall  
 Contact Info: Carollo Engineers, Inc.  
 Date: 2017.05.01 14:19:14-07'00'

**carollo**

**Marina Coast Water District**

**REGIONAL URBAN WATER AUGMENTATION PROJECT**  
**BLACKHORSE RECYCLED WATER RESERVOIR**

ELECTRICAL LEGEND

**VERIFY SCALES**  
 BAR IS ONE INCH ON ORIGINAL DRAWING  
 0 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7568A.10  
 DRAWING NO. E-01  
 SHEET NO. 73 OF 93

ABBREVIATIONS

A	AMP	J	JUNCTION BOX
ABS	ABSOLUTE	K	KEY INTERLOCK
ACK	ALTERNATING CURRENT	KA	KILOAMP
ACTR	ACTUATOR	KV	KILOVOLT
AF	AMP FRAME	KVA	KILOVOLT AMPERE
AFC	AUTOMATIC FREQUENCY CONTROL	KVAR	KILOVAR (REACTANCE)
AIC	AMP INTERRUPTING CAPACITY	KW	KILOWATT
AM	AMMETER	KWD	KILOWATT DEMAND
ANN	ANNUNCIATOR	KWH	KILOWATT HOUR
ANT	ANTENNA	L	LONG-TIME
APU	AUXILIARY POWER UNIT	L-B	LINE-BUS
ARM	ARMORED CABLE	L-G	LINE-GROUND
AS	AMMETER SWITCH	LA	LIGHTNING ARRESTOR
ASYM	ASYMMETRICAL	LBL	LABEL
AT	AMP TRIP	LC	LIGHTING CONTACT OR
ATO	AUTOMATIC THROW OVER	LCP- X	LOCAL CONTROL PANEL NO. X
ATP	AMMETER TEST POINT	LL	LEAD-LAG LOAD REACTOR
ATS	AUTOMATIC TRANSFER SWITCH	LP	LIGHT POLE
AUTO XFMR	AUTOMATIC TRANSFORMER	LP - X	LIGHTING PANEL NO. X
AUX	AUXILIARY	LTG	LIGHTING
AWG	AMERICAN WIRE GAGE	LV	LOW VOLTAGE
B	BELL	LVL	LEVEL
BAT	BATTERY	M-X	MOTOR CONTROLLER NO. X
BFG	BELOW FINISHED GRADE	MA	MILLIAMPERE
BHP	BRAKE HORSEPOWER	MCA	MOTOR CIRCUIT AMPS
BKR	BREAKER	MCC - X	MOTOR CONTROL CENTER NO. X
BRF	BELOW RAISED FLOOR	MCP	MOTOR CIRCUIT PROTECTOR
C	CONDUIT / CONTINUOUS LOAD	MH	MANHOLE / MOUNTING HEIGHT
CB	CIRCUIT BREAKER	MLO	MAIN LUGS ONLY
CCTV	CLOSED CIRCUIT TELEVISION	MOD	MOTOR OPERATED DAMPER
CCW	COUNTER CLOCKWISE	MOV	METAL OXIDE VARISTOR
CKT	CIRCUIT	MRP	MOTOR PROTECTION RELAY
COAX	COAXIAL CABLE	MS-X	MOTOR STARTER NO. X
COM	COMMON	MSP	MOTOR STARTING PANEL
COMM	COMMUNICATION	MTO	MANUAL THROW OVER
CPT	CONTROL POWER TRANSFORMER	MTR-X	MOTOR NO. X
CS	CONTROL SWITCH	MTS	MANUAL TRANSFER SWITCH
CT	CURRENT TRANSFORMER	MV	MEGAVOLT
CV	CONTROL VALVE	MVA	MEGAVOLT-AMPERES
CW	CLOCKWISE / COOL WHITE	MVS	MEDIUM VOLTAGE SWITCH
DC	DIRECT CURRENT	MW	MEGAWATT
DCS	DISTRIBUTED CONTROL SYSTEM	N	NEUTRAL
DCU - X	DISTRIBUTED CONTROL UNIT NO. X	NC	NORMALLY CLOSED
DEMO	DEMOLITION	NEC	NATIONAL ELECTRICAL CODE
DISC	DISCONNECT SWITCH	NFC	NONMETALLIC FLEXIBLE CONDUIT
DM	DEMAND METER	NL	NIGHT LIGHT
DPDT	DOUBLE POLE DOUBLE THROW	NO	NORMALLY OPEN
DPST	DOUBLE POLE SINGLE THROW	NP	NAMEPLATE
DS	DOOR SWITCH	O	OPEN OR OPENED
E/G	EMERGENCY GENERATOR	OH	OVERHEAD
EM	EMERGENCY	OL	OVERLOAD RELAY
EMT	ELECTRICAL METALLIC TUBING	P	POLE
ENCL	ENCLOSURE	PA	PUBLIC ADDRESS
ENG	ENGINE	PB	PUSHBUTTON / PULL BOX
ENT	ELECTRICAL NON-METALLIC TUBING	PCS	PVC COATED GALVANIZED STEEL CONDUIT
EP	EXPLOSION PROOF	PCM	PROCESS CONTROL MODULE
ETM	ELAPSED TIME METER	PE	PHOTOCELL
FA	FIRE ALARM	PF	POWER FACTOR
FACP	FIRE ALARM CONTROL PANEL	PFCC	POWER FACTOR CORRECTION CAPACITOR
FDR	FEEDER	PFR	PHASE FAILURE RELAY
FLA	FULL LOAD AMPS	PH	PHASE
FLX	FLEXIBLE CONDUIT	PNL	PANEL
FO	FIBER OPTIC	PPX	POWER PANEL NO. X
FRC	FIBERGLASS RIGID CONDUIT	PRI	PRIMARY
FREQ	FREQUENCY	PT	POTENTIAL TRANSFORMER
FU	FUSE	PVC	POLYVINYL CHLORIDE RIGID PLASTIC CONDUIT
FU	SW FUSED SWITCH	PWR	POWER
FVNR	FULL VOLTAGE NON-REVERSING	RAC	RIGID ALUMINUM CONDUIT
FVR	FULL VOLTAGE REVERSING	RECPT	RECEPTACLE
FWD	FORWARD	REV	REVERSE
G	GROUND / EQUIPMENT GROUND / GROUND FAULT	RF	RADIO FREQUENCY
GEN	GENERATOR	RMS	ROOT MEAN SQUARED
GRC	GALVANIZED STEEL RIGID CONDUIT	RVAT	REDUCED VOLTAGE AUTO TRANSFORMER
GFCI	GROUND FAULT CIRCUIT INTERRUPTER (RECEPTACLE)	RVNR	REDUCED VOLTAGE NON-REVERSING
GFI	GROUND FAULT INTERRUPTER (BREAKER)	RVSS	REDUCED VOLTAGE SOLID STATE
GFR	GROUND FAULT RELAY	S	SHIELD / SHORT-TIME
H	HOT-LEG	SA	SURGE ARRESTER
HF	HIGH FREQUENCY	SC	SHORT CIRCUIT
HP	HORSEPOWER	SDBC	SOFT DRAWN BARE COPPER
HPS	HIGH PRESSURE SODIUM	SFL	SUB FEED LUGS
HR	HOUR	SLT	SEALTIGHT LIQUIDTIGHT FLEXIBLE CONDUIT
HSTAT	HUMIDISTAT	SM	SURFACE MOUNTED
HV	HIGH VOLTAGE	SP	SINGLE POLE
HVAC	HEATING/VENTILATION/AIR CONDITIONING	SPD	SURGE PROTECTIVE DEVICE
HZ	HERTZ	SPDT	SINGLE POLE DOUBLE THROW
I	INSTANTANEOUS LOAD	SPST	SINGLE POLE SINGLE THROW
IC	INTERRUPTING CAPACITY	SPKR	SPEAKER
IJB	INSTRUMENT JUNCTION BOX	SS	SOLID STATE
IMC	INTERMEDIATE METAL CONDUIT	STB	SHORTING TERMINAL BLOCK
INST	INSTANTANEOUS	SW	SWITCH
INT	INTERLOCK	SWBD	SWITCHBOARD
INTERCOM	INTERCOMMUNICATION	SWG	SWITCHGEAR
		SYM	SYMMETRICAL

TACH	TACHOMETER
TB - X	TERMINAL BLOCK - UNIT X
TC	THERMOCOUPLE / TIME CLOCK / TRAY CABLE
TD	TEMPERATURE DETECTOR RELAY
TE	TOTALLY ENCLOSED
TEFC	TOTALLY ENCLOSED FAN COOLED
TENV	TOTALLY ENCLOSED NON-VENTILATED
TERM	TERMINAL
TJB	TERMINAL JUNCTION BOX
TM	THERMAL MAGNETIC
TP	TWISTED PAIR
TS	TEMPERATURE SWITCH
TS1W	TWO SPEED CONSEQUENT POLE, ONE WINDING
TS2W	TWO SPEED SEPARATE WINDING
TSTAT	THERMOSTAT
UHF	ULTRA HIGH FREQUENCY
UNG	UNGROUND
UPS	UNINTERRUPTABLE POWER SUPPLY
UVR	UNDER VOLTAGE RELAY
V	VOLT
VA	VOLT AMPERE
VAR	VARMETER
VCP	VENDOR CONTROL PANEL
VFD	VARIABLE FREQUENCY DRIVE
VHF	VERY HIGH FREQUENCY
VM	VOLTMETER
VP	VAPORPROOF
VR	VOLTAGE REGULATOR
VS	VOLTAGE SWITCH
VT	VOLTAGE TRANSFORMER
VTP	VOLTAGE TEST POINT
W	WATT / WEST
WT	WATER TIGHT
WP	WEATHER PROOF
XFMR	TRANSFORMER

POWER DEVICE FUNCTION NUMBERS

1	MASTER ELEMENT	83	AUTOMATIC SELECTIVE CONTROL OR TRANSFER RELAY
2	TIME-DELAY STARTING OR CLOSING RELAY	84	OPERATING MECHANISM
3	CHECKING OR INTERLOCKING RELAY	85	PILOT COMMUNICATIONS, CARRIER OR PILOT-WIRE RELAY
4	MASTER CONTACTOR	86	LOCKOUT RELAY
5	STOPPING DEVICE	87	DIFFERENTIAL PROTECTIVE RELAY
6	STARTING CIRCUIT BREAKER	88	AUXILIARY MOTOR OR MOTOR GENERATOR
7	ANODE CIRCUIT BREAKER	89	LINE SWITCH
8	CONTROL POWER DISCONNECTING DEVICE	90	REGULATING DEVICE
9	REVERSING DEVICE	91	VOLTAGE DIRECTIONAL RELAY
10	UNIT SEQUENCE SWITCH	92	VOLTAGE AND POWER DIRECTIONAL RELAY
11	MULTIFUNCTION DEVICE	93	FIELD-CHANGING CONTACTOR
12	OVER-SPEED DEVICE	94	TRIPPING OR TRIP-FREE RELAY
13	SYNCHRONOUS-SPEED DEVICE		
14	UNDER-SPEED DEVICE		
15	SPEED OR FREQUENCY MATCHING DEVICE		
16	DATA COMMUNICATIONS DEVICE		
17	SHUNTING OR DISCHARGE SWITCH		
18	ACCELERATING OR DECELERATING DEVICE		
19	STARTING-TO-RUNNING TRANSITION CONTACTOR		
20	ELECTRICALLY OPERATED VALVE		
21	DISTANCE RELAY		
22	EQUALIZER CIRCUIT BREAKER		
23	TEMPERATURE CONTROL DEVICE		
24	VOLTS PER HERTZ RELAY		
25	SYNCHRONIZING OR SYNCHRONISM-CHECK DEVICE		
26	APPARATUS THERMAL DEVICE		
27	UNDERVOLTAGE RELAY		
27N	GROUND FAULT UNDERVOLTAGE RELAY		
28	FLAME DETECTOR		
29	ISOLATING CONTACTOR		
30	ANNUNCIATOR RELAY		
31	SEPARATE EXCITATION DEVICE		
32	DIRECTIONAL POWER RELAY		
33	POSITION SWITCH		
34	MASTER SEQUENCE DEVICE		
35	BRUSH-OPERATING OR SLIP-RING SHORT-CIRCUITING DEVICE		
36	POLARITY DEVICE		
37	UNDERCURRENT OR UNDERPOWER RELAY		
38	BEARING PROTECTIVE DEVICE		
39	MECHANICAL CONDITION MONITOR		
40	FIELD RELAY		
41	FIELD CIRCUIT BREAKER		
42	RUNNING CIRCUIT BREAKER		
43	MANUAL TRANSFER OR SELECTOR DEVICE		
44	UNIT SEQUENCE STARTING RELAY		
45	ABNORMAL ATMOSPHERIC CONDITION MONITOR		
46	REVERSE-PHASE OR BALANCE CURRENT RELAY		
47	PHASE-BALANCE OR PHASE-SEQUENCE VOLTAGE RELAY		
48	INCOMPLETE SEQUENCE RELAY		
49	MACHINE OR TRANSFORMER THERMAL RELAY		
50	INSTANTANEOUS OVERCURRENT RELAY		
51	AC TIME OVERCURRENT RELAY		
52	AC CIRCUIT BREAKER		
53	FIELD EXCITATION RELAY		
54	TURNING GEAR ENGAGING DEVICE		
55	POWER FACTOR RELAY		
56	FIELD APPLICATION RELAY		
57	SHORT-CIRCUITING OR GROUNDING DEVICE		
58	RECTIFICATION FAILURE RELAY		
59	OVERVOLTAGE RELAY		
60	VOLTAGE OR CURRENT BALANCE RELAY		
61	DENSITY SWITCH OR SENSOR		
62	TIME-DELAY STOPPING OR OPENING RELAY		
63	PRESSURE SWITCH		
64	GROUND DETECTOR RELAY		
65	GOVERNOR		
66	NOTCHING OR JOGGING DEVICE		
67	AC DIRECTIONAL OVERCURRENT RELAY		
68	BLOCKING OR OUT OF STEP RELAY		
69	PERMISSIVE CONTROL DEVICE		
70	RHEOSTAT		
71	LIQUID LEVEL SWITCH		
72	DC CIRCUIT BREAKER		
73	LOAD-RESISTOR CONTACTOR		
74	ALARM RELAY		
75	POSITION CHANGING MECHANISM		
76	DC OVERCURRENT RELAY		
77	TELEMETERING DEVICE		
78	PHASE-ANGLE MEASURING RELAY		
79	AC RECLOSING RELAY		
80	FLOW SWITCH		
81	FREQUENCY RELAY		
82	DC LOAD MEASURING RECLOSING RELAY		

**COMMONLY USED SUFFIX LETTERS APPLIED TO POWER DEVICE FUNCTION NUMBERS**

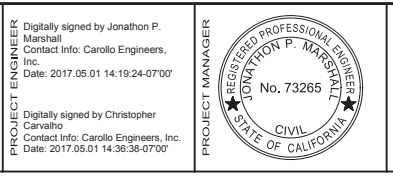
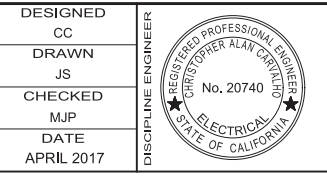
A	ALARM ONLY
B	BUS PROTECTION
G	GROUND FAULT PROTECTION
B	(RELAY CT IN A SYSTEM NEUTRAL CIRCUIT OR GENERATOR PROTECTION)
GS	GROUND FAULT PROTECTION (RELAY CT IN TOROIDAL OR GROUND SENSOR TYPE)
L	LINE PROTECTION
M	MOTOR PROTECTION
N	GROUND FAULT PROTECTION (RELAY COIL CONNECTED IN RESIDUAL CT CIRCUIT)
T	TRANSFORMER PROTECTION
V	VOLTAGE
P	PHASE PROTECTION

**ABBREVIATIONS**

AFD	- ARC FLASH DETECTOR
CLK	- CLOCK OR TIMING SOURCE
DDR	- DYNAMIC DISTURBANCE RECORDER
DFR	- DIGITAL FAULT RECORDER
ENV	- ENVIRONMENTAL DATA
HIZ	- HIGH IMPEDANCE FAULT DETECTOR
HMI	- HUMAN MACHINE INTERFACE
HST	- HISTORIAN
LGC	- SCHEME LOGIC
MET	- SUBSTATION METERING
PDC	- PHASOR DATA CONCENTRATOR
PMU	- PHASOR MEASUREMENT UNIT
PQM	- POWER QUALITY MONITOR
RIO	- REMOTE I/O DEVICE
RTU	- REMOTE TELEMETRY UNIT/REMOTE TERMINAL UNIT
SER	- SEQUENCE OF EVENTS RECORDER
TCM	- TRIP CIRCUIT MONITOR

**NOTES:**  
1. REFER TO SPECIFICATIONS AND OTHER DRAWINGS FOR ADDITIONAL ABBREVIATIONS.

DESIGNED	CC		
DRAWN	JS		
CHECKED	MJP		
DATE	APRIL 2017		
REV	DATE	BY	DESCRIPTION



REGIONAL URBAN WATER AUGMENTATION PROJECT		VERIFY SCALES	JOB NO. 7568A.10
BLACKHORSE RECYCLED WATER RESERVOIR		BAR IS ONE INCH ON ORIGINAL DRAWING	DRAWING NO. E-02
ELECTRICAL ABBREVIATIONS		0 1"	SHEET NO. 74 OF 93

FILENAME:

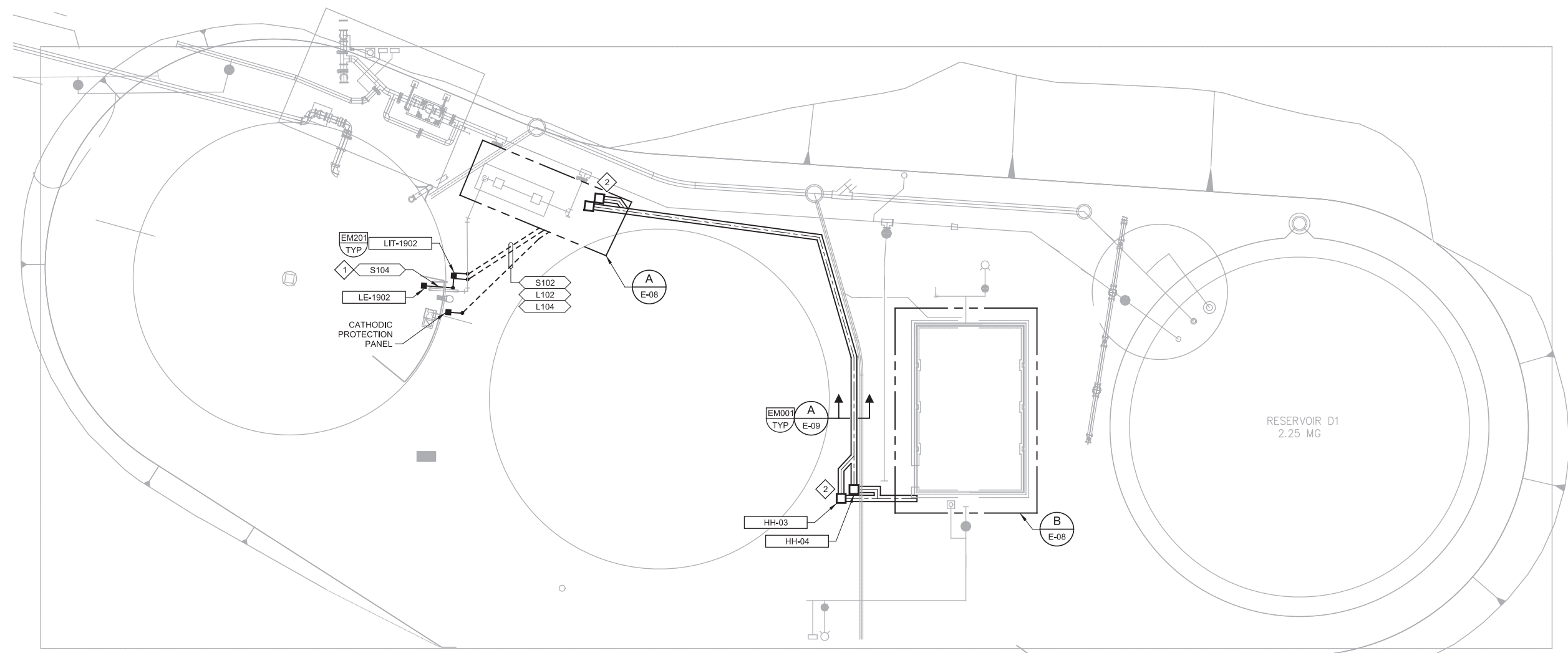


PROCESS SWITCHES	HAND SWITCHES	RELAYS	TERMINAL BLOCKS	I/O	MISC
FLOAT SWITCH CLOSE ON RISING LEVEL  FLOAT SWITCH OPEN ON RISING LEVEL  PRESSURE SWITCH CLOSE ON RISING PRESSURE  PRESSURE SWITCH OPEN ON RISING PRESSURE  TEMPERATURE SWITCH CLOSE ON RISING TEMPERATURE  TEMPERATURE SWITCH OPEN ON RISING TEMPERATURE  FLOW SWITCH CLOSE ON INCREASE IN FLOW  FLOW SWITCH OPEN ON INCREASE IN FLOW  VIBRATION SWITCH OPEN ON RISING VIBRATION  VIBRATION SWITCH CLOSE ON RISING VIBRATION  TORQUE SWITCH OPEN ON HIGH TORQUE  TORQUE SWITCH CLOSE ON HIGH TORQUE  NORMALLY CLOSED LIMIT SWITCH  NORMALLY CLOSED HELD OPEN LIMIT SWITCH  NORMALLY OPEN LIMIT SWITCH  NORMALLY OPEN HELD CLOSED LIMIT SWITCH	NORMALLY OPEN MOMENTARY PUSHBUTTON  NORMALLY CLOSED MOMENTARY PUSHBUTTON  THREE POSITION SELECTOR SWITCH x - DENOTES POSITION CONTACTS CLOSED IN  TWO POSITION SELECTOR SWITCH x - DENOTES POSITION CONTACTS CLOSED IN  MUSHROOM HEAD PUSHBUTTON  PUSH-PULL PUSHBUTTON MAINTAINED CONTACT  PADLOCK SWITCH x - DENOTES POSITION CONTACTS CLOSED IN  PULL CORD SWITCH  STOP-LOCKOUT PUSHBUTTON  SPRING-RETURN x - DENOTES POSITION CONTACTS CLOSED IN	RELAY COIL a = TYPE CR - CONTROL RELAY TD - TIME DELAY RELAY M - MOTOR STARTER COIL L - MOTOR STARTER COIL - LOW SPEED H - MOTOR STARTER COIL - HIGH SPEED F - MOTOR STARTER COIL - FORWARD R - MOTOR STARTER COIL - REVERSE  b = TDON - TIME DELAY ON ENERGIZATION TDOFF - TIME DELAY ON DEENERGIZATION  c = TIMING RANGE/SETTING d = DESCRIPTION  NORMALLY OPEN CONTROL CONTACT  NORMALLY CLOSED CONTROL CONTACT  TIME DELAY CONTACT NORMALLY OPEN TIMED CLOSING NOTC  TIME DELAY CONTACT NORMALLY CLOSED TIMED OPENING NCTO  TIME DELAY CONTACT NORMALLY OPEN TIMED OPENING NOTO  TIME DELAY CONTACT NORMALLY CLOSED TIMED CLOSING NCTC	TERMINAL IN PLC/PCM PANEL  TERMINAL IN MOTOR CONTROL CENTER  TERMINAL IN LOCAL STARTER CONTROL PANEL  TERMINAL AT FIELD DEVICE  TERMINAL IN RTU  TERMINAL IN FIELD PANEL  TERMINAL IN (USER CHOICE)  DIGITAL BUS CONNECTOR * = D - DEVICENET * = PA - PROFIBUS PA * = DP - PROFIBUS DP * = H1 - FOUNDATION FIELDBUS H1 * = H2 - FOUNDATION FIELDBUS H2 * = E - ETHERNET	PLC DISCRETE a = INPUT OR OUTPUT AS INDICATED  PLC ANALOG a = INPUT OR OUTPUT AS INDICATED  DIGITAL BUS	SOLENOID  METER UNIT M = TYPE  MOTOR  CIRCUIT BREAKER  DISCONNECT  FUSE  TRANSIENT SURGE PROTECTION  MWH* MOTOR WINDING HEATER * - MOTOR TAG I.D.  SPACE HEATER  VARISTOR  CAPACITOR  RESISTOR  BATTERY  DIODE  MOTOR OVERLOAD HEATERS  OVERLOAD CONTACT  DRAWOUT CONNECTION  GROUND  LIGHTNING ARRESTOR  CONTROL POWER TRANSFORMER  KI* ETM ELAPSED TIME METER
	<b>PILOT LIGHTS</b>				
	PILOT LIGHT a = LENS COLOR R = RED G = GREEN W = WHITE A = AMBER				

DESIGNED CAC		Digitally signed by Jonathon P. Marshall Contact Info: Carollo Engineers, Inc. Date: 2017.05.01 14:21:41-07'00'				<b>Marina Coast Water District</b>	REGIONAL URBAN WATER AUGMENTATION PROJECT	<b>VERIFY SCALES</b> BAR IS ONE INCH ON ORIGINAL DRAWING 	JOB NO. 7568A.10
DRAWN CGR		PROJECT ENGINEER					DRAWING NO. E-03		
CHECKED MJP		PROJECT MANAGER					SHEET NO. 75 OF 93		
DATE APRIL 2017		DISCIPLINE ENGINEER					Digitally signed by Christopher Carvalho Contact Info: Carollo Engineers, Inc. Date: 2017.05.01 14:36:23-07'00'		



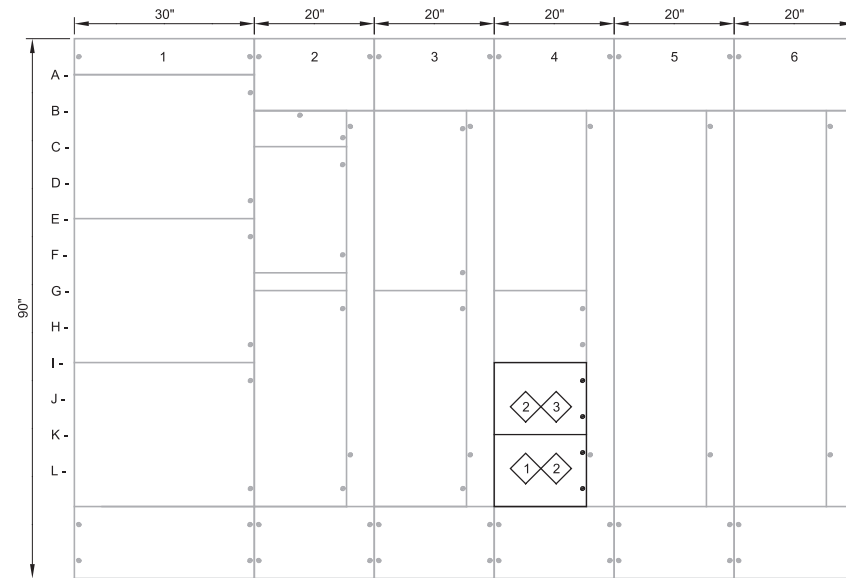
- KEY NOTES:**
- 1 RUN CONDUITS ALONG THE PIPE SUPPORTS.
  - 2 SEPARATE THE DUCT BANK SECTION AT THE HANDHOLES. 480V POWER, 120V POWER AND CONTROLS WILL RUN THROUGH ONE HANDHOLE AND ANALOG SIGNAL WIRE THROUGH THE OTHER.



**PLAN**  
 SCALE: 1"=20'-0"  
 FILE: 7568A100E101

				DESIGNED CAC		PROJECT ENGINEER Digitally signed by Jonathon P. Marshall Contact Info: Carollo Engineers, Inc. Date: 2017.05.01 14:21:33-07'00'				<b>Marina Coast Water District</b>	REGIONAL URBAN WATER AUGMENTATION PROJECT	<b>VERIFY SCALES</b> BAR IS ONE INCH ON ORIGINAL DRAWING 0 ——— 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	JOB NO. 7568A.10
				DRAWN JS							DRAWING NO. <b>E-04</b>		
				CHECKED MJP							SHEET NO.		
				DATE APRIL 2017							76 OF 93		
REV	DATE	BY	DESCRIPTION										

FILENAME:



- GENERAL NOTES:**
- MCC-01 IS SQUARE D MODEL 6.
- KEY NOTES:**
- 1 SPACE FOR FUTURE STARTER.
  - 2 PROVIDE NEW DOORS AND NAMEPLATES.
  - 3 NEW STARTER.

**FRONT VIEW**

SCALE: 3/4"=1'-0"  
FILE: 7568A1000E601

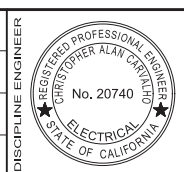
**SIDE VIEW**

SCALE: 3/4"=1'-0"  
FILE: 7568A1000E601

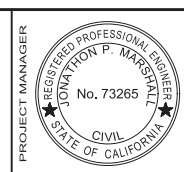
- 1A- MAIN FEED FROM  
ATS
- 2A- TVSS
- 3A- PUMP-1  
SMALL PUMP
- 4A- PUMP-3  
SMALL PUMP
- 5A- PUMP-4  
FIRE PUMP
- 6A- PUMP-5  
FIRE PUMP
- 1E- MAIN CIRCUIT  
BREAKER
- 2B- PANEL A
- 3G- PUMP-2  
SMALL PUMP
- 4G- AIR COMPRESSOR
- 2G- TRANSFORMER T-1
- 4L- PUMP-1900  
POTABLE WATER  
PUMP
- 4K- SPACE

REV	DATE	BY	DESCRIPTION

DESIGNED  
CAC  
DRAWN  
JS  
CHECKED  
MJP  
DATE  
APRIL 2017



PROJECT ENGINEER  
Digitally signed by Jonathon P. Marshall  
Contact Info: Carollo Engineers, Inc.  
Date: 2017.05.01 14:21:25-07'00'  
Digitally signed by Christopher Carvalho  
Contact Info: Carollo Engineers, Inc.  
Date: 2017.05.01 14:35:47-07'00'



REGIONAL URBAN WATER AUGMENTATION PROJECT  
BLACKHORSE RECYCLED WATER RESERVOIR  
ELECTRICAL  
MCC-01 ELEVATION

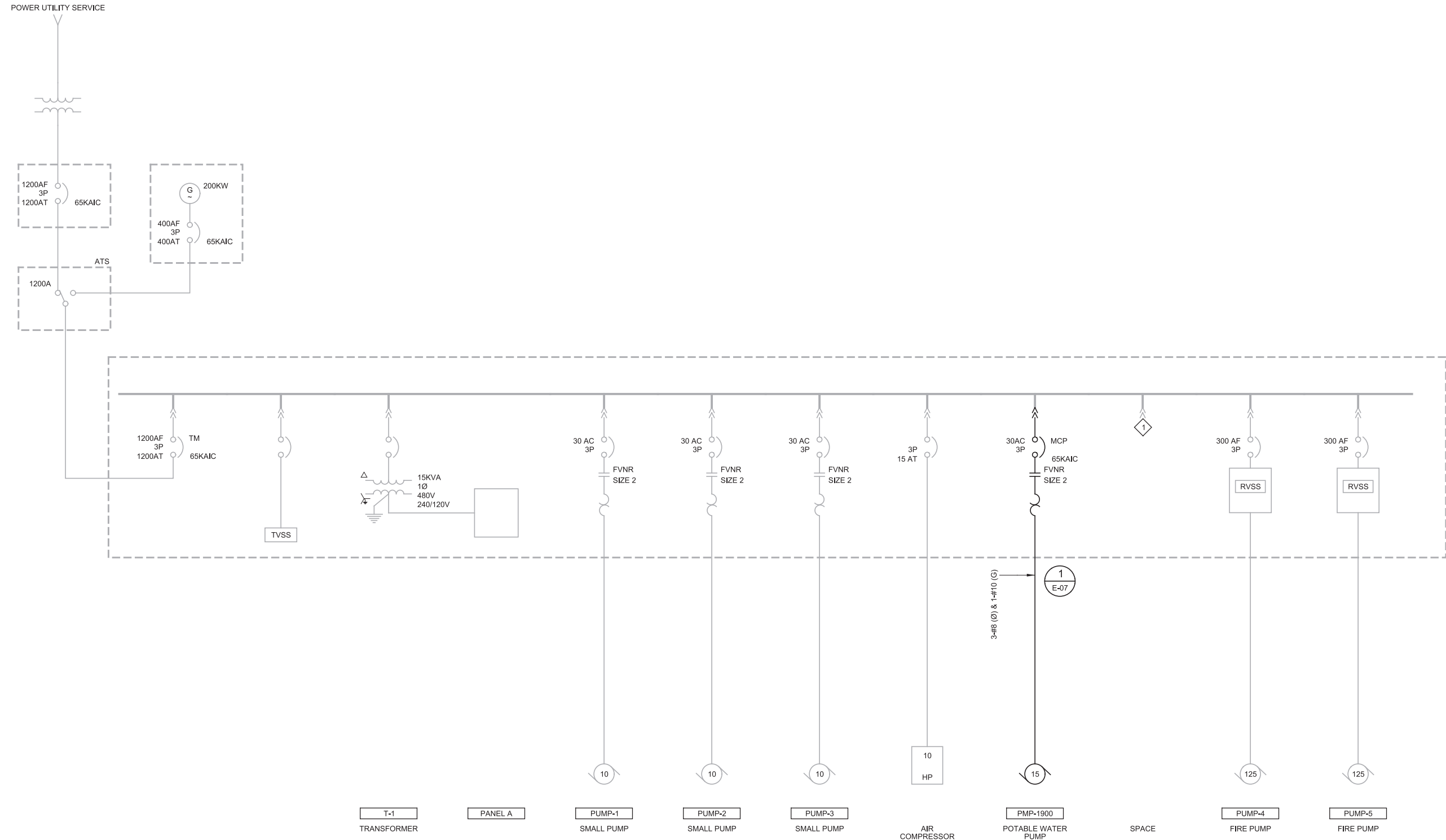
**VERIFY SCALES**  
BAR IS ONE INCH ON ORIGINAL DRAWING  
0 1"  
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO.  
7568A.10  
DRAWING NO.  
E-05  
SHEET NO.  
77 OF 93

FILENAME:

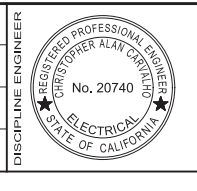


KEY NOTES:  
 SPACE FOR FUTURE PUMP STARTER.

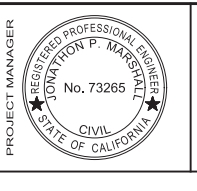


REV	DATE	BY	DESCRIPTION

DESIGNED  
CAC  
 DRAWN  
JS  
 CHECKED  
MJP  
 DATE  
APRIL 2017



PROJECT ENGINEER  
 Digitally signed by Jonathon P. Marshall  
 Contact Info: Carollo Engineers, Inc.  
 Date: 2017.05.01 14:21:17-07'00'



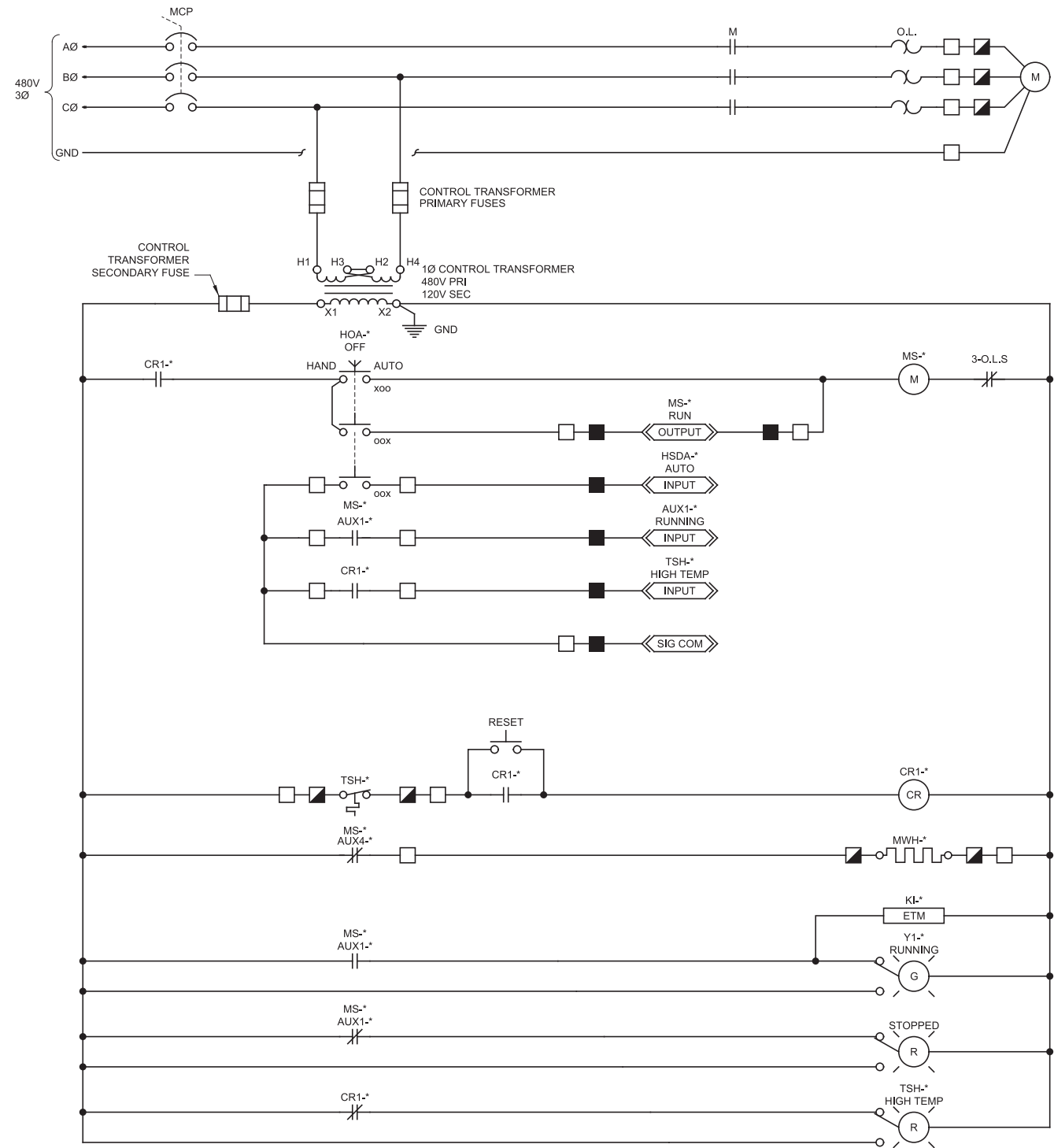
Marina Coast Water District

REGIONAL URBAN WATER AUGMENTATION PROJECT  
 BLACKHORSE RECYCLED WATER RESERVOIR  
 ELECTRICAL  
 MCC-01 ONE-LINE DIAGRAM

VERIFY SCALES  
 BAR IS ONE INCH ON ORIGINAL DRAWING  
 0 1" 1"  
 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO.  
7568A.10  
 DRAWING NO.  
E-06  
 SHEET NO.  
78 OF 93

FILENAME:

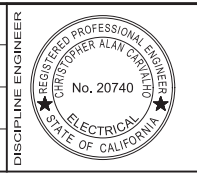


\* = 1900 → PMP-1900

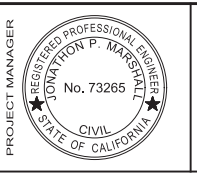
1 PORTABLE WATER PUMP - FVNR  
N-05, E-06

REV	DATE	BY	DESCRIPTION

DESIGNED  
CAC  
DRAWN  
CGR  
CHECKED  
MJP  
DATE  
APRIL 2017



PROJECT ENGINEER  
Digitally signed by Jonathon P. Marshall  
Contact Info: Carollo Engineers, Inc.  
Date: 2017.05.01 14:21:08-07'00'  
Digitally signed by Christopher Carvalho  
Contact Info: Carollo Engineers, Inc.  
Date: 2017.05.01 14:35:14-07'00'



Marina Coast Water District

REGIONAL URBAN WATER AUGMENTATION PROJECT  
BLACKHORSE RECYCLED WATER RESERVOIR  
INSTRUMENTATION SCHEMATICS

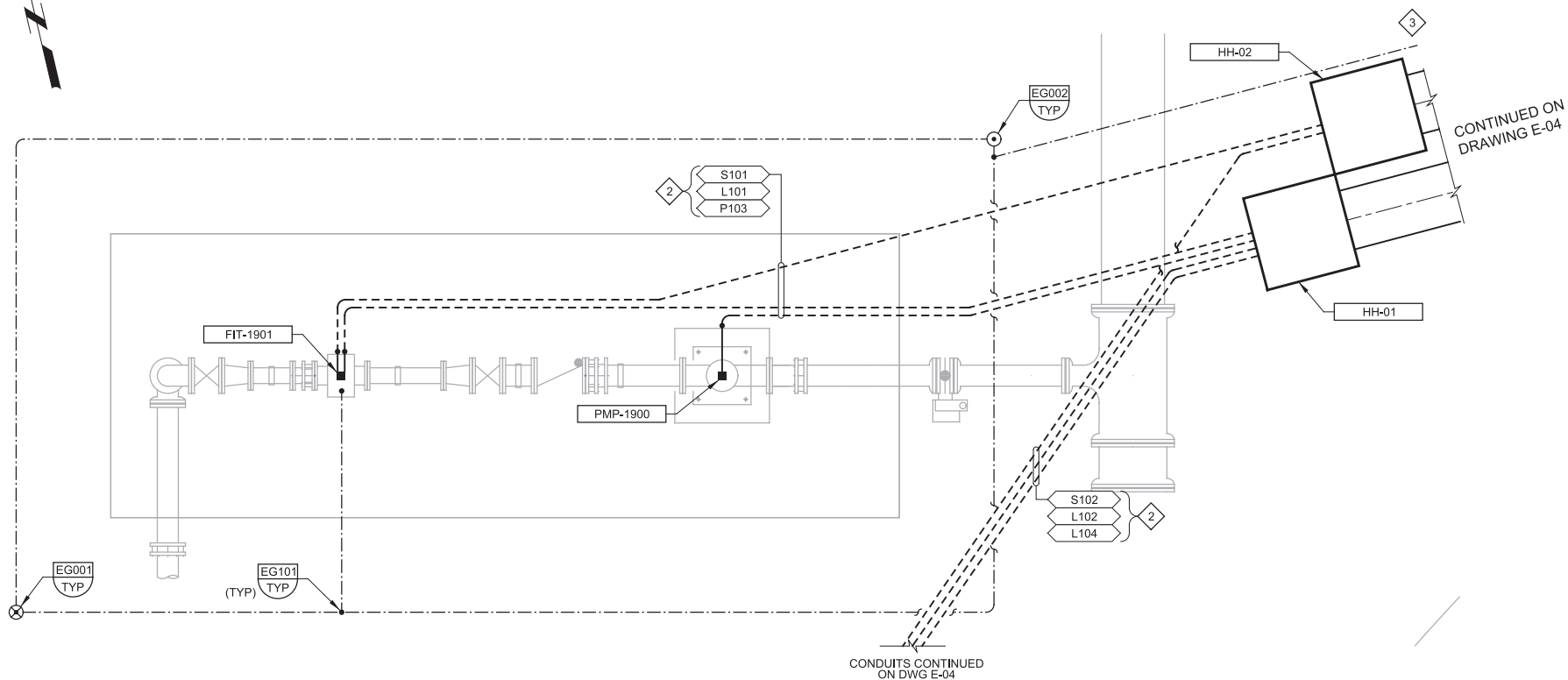
VERIFY SCALES  
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IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7568A.10  
DRAWING NO. E-07  
SHEET NO. 79 OF 93

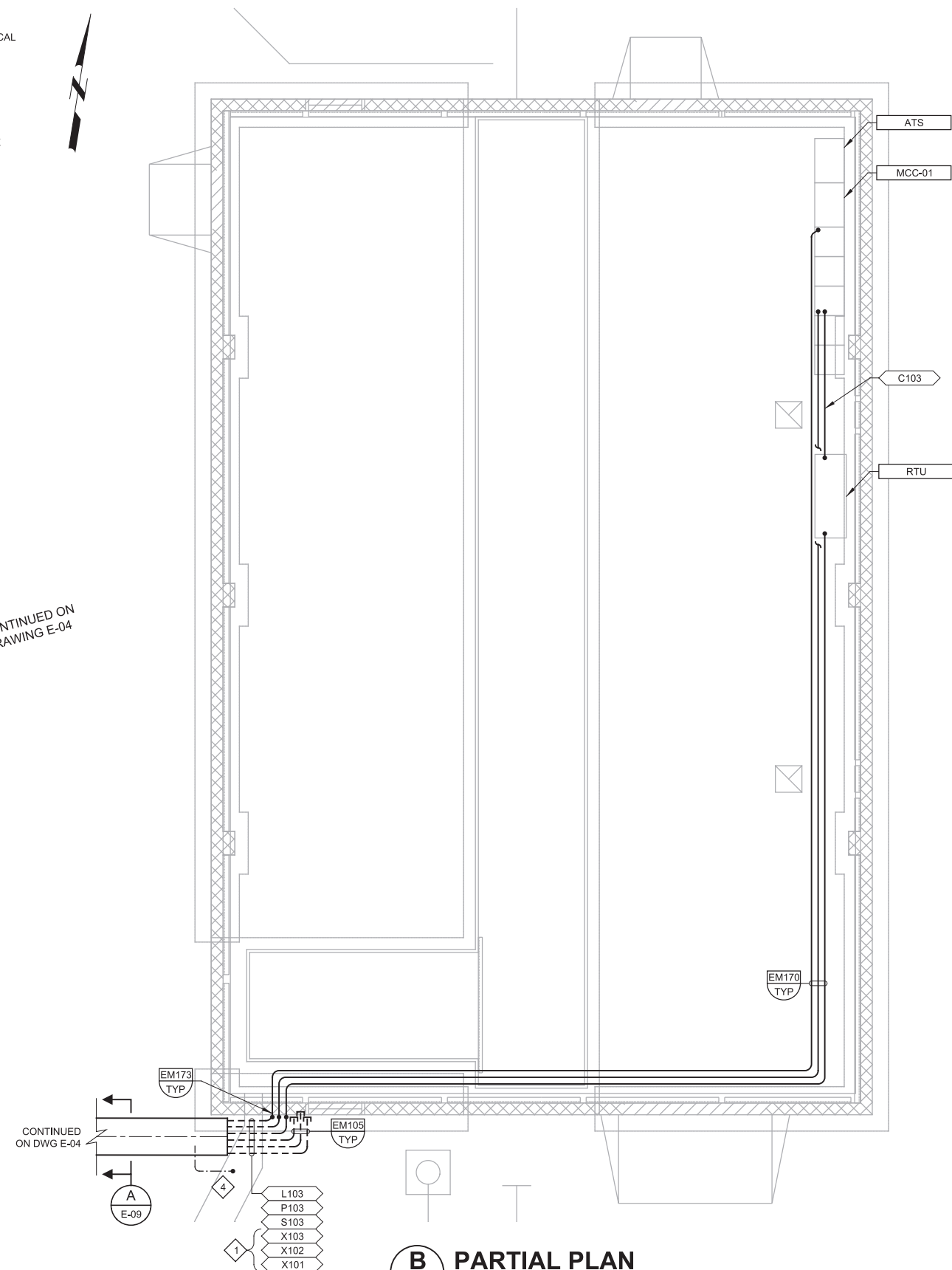
FILENAME:

**KEY NOTES:**

- 1 CAP CONDUITS MINIMUM OF 6" ABOVE GRADE. REFER TO TYPICAL DETAIL EM105.
- 2 CONDUITS RUN IN CONCRETE ENCASED DUCTBANK UNTIL IT REACHES THE EQUIPMENT.
- 3 BOND THE DUCTBANK GROUND CONDUCTOR TO THE GROUND GRID AROUND THE PUMP PAD PER TYPICAL DETAIL EG101.
- 4 LOCATE THE EXISTING GROUND GRID AROUND THE PUMP STATION. BOND THE DUCTBANK GROUND CONDUCTOR TO THE GROUND GRID PER EG101/TYP.



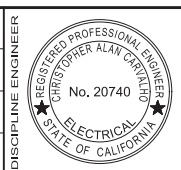
**A PARTIAL PLAN**  
E-04 SCALE: 3/8" = 1'-0"  
FILE: 7568A1000E102



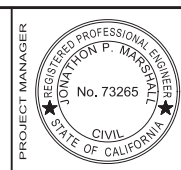
**B PARTIAL PLAN**  
E-04 SCALE: 1/4" = 1'-0"  
FILE: 7568A1000E102

REV	DATE	BY	DESCRIPTION

DESIGNED CAC
DRAWN JS
CHECKED MJP
DATE APRIL 2017



PROJECT ENGINEER  
Digitally signed by Jonathon P. Marshall  
Contact Info: Carollo Engineers, Inc.  
Date: 2017.05.01 14:21:00-07'00'



**Marina Coast Water District**

REGIONAL URBAN WATER AUGMENTATION PROJECT  
BLACKHORSE RECYCLED WATER RESERVOIR  
ELECTRICAL  
PARTIAL PLANS

VERIFY SCALES  
BAR IS ONE INCH ON ORIGINAL DRAWING  
0 1"  
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

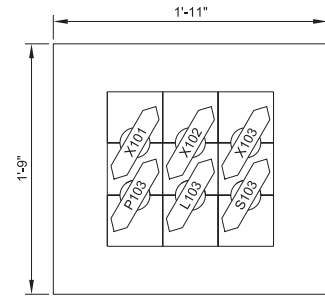
JOB NO.  
7568A.10  
DRAWING NO.  
**E-08**  
SHEET NO.  
80 OF 93

FILENAME:



**GENERAL NOTES:**  
 1. CONSTRUCT DUCTBANK IN ACCORDANCE WITH EM001 UNLESS OTHERWISE INDICATED.

**KEY NOTES:**  
 1. NEW LOADS ADDED TO AN EXISTING SPARE BREAKER IN THE EXISTING LIGHTING PANEL. PROVIDE NEW UPDATED PANELBOARD SCHEDULE.



**A DUCT BANK SECTION**  
 E-04, E-08

EXISTING PANEL A										11/4/2016
LOCATION:	BLACKHORSE PS	NEMA:	1	PH A WEIGHTED VA	0					
VOLTS:	240 / 120	FEED:	BOTTOM	PH B WEIGHTED VA	0					
PHASE & WIRE:	1PH 3W	MTG:	MCC							
INTERRUPT:	18 KAIC	BUS RATING:	100	EQUIP SIZING VA	0					
OPTIONS:	SPD	MAIN:	CB	PANEL AMPS	0.0					
		MAIN RATING:	100 AF 80 AT							
IC/F	DESCRIPTION	LOAD (VA)	BKR	CIR	Ø	CIR	BKR	LOAD (VA)	DESCRIPTION	IC/F
	INTERIOR LIGHTING		15A-1P	1	A	2	20A-1P		RECEPTACLES	
	INTERIOR LIGHTING		15A-1P	3	B	4	20A-1P		FIT-1901, LIT-1902	
	EXTERIOR LIGHTING		20A-1P	5	A	6	15A-1P		EMO	
	GENERATOR BATTERY CHARGER		15A-1P	7	B	8	15A-1P		SOUTH FAN	
	BLOCK HEATER / GENERATOR		15A-1P	9	A	10	15A-1P		SOUTH FAN	
	CATHODIC PROTECTION PANEL		15A-1P	11	B	12	15A-1P		NORTH FAN	
	OUTSIDE POLE LIGHTS		15A-1P	13	A	14	20A-2P		CPI	
	CATHODIC PROTECTION PANEL NO.2		15A-1P	15	B	16			SPACE	
	REPEATER CABINET		20A-1P	17	A	18	50A-1P		SPACE	
	REPEATER CABINET		20A-1P	19	B	20			SPACE	
	MAIN BREAKER		80A-2P	21	A	22				
				23	B	24				

ELECTRICAL HANDHOLE AND MANHOLE SCHEDULE							11/4/2016
TAG NO	MINIMUM INTERIOR DIMENSIONS (INCHES)			CONSTRUCTION	TYPICAL DETAIL	SURFACE LOADING	COMMENTS
	WIDTH	LENGTH	DEPTH				
HH-01	48	48	48	PRECAST	EM056	ROADWAY	
HH-02	48	48	48	PRECAST	EM056	ROADWAY	
HH-03	48	48	48	PRECAST	EM056	ROADWAY	
HH-04	48	48	48	PRECAST	EM056	ROADWAY	

**NOTES:**  
 1. SEE SPECIFICATION 02581 FOR PRECAST ELECTRICAL HANDHOLES AND MANHOLES.

**CONDUIT SCHEDULE AREA** 4/26/17

RWPF										
MCWD										
CONDUIT	CONDUCTORS				GROUND		DESCRIPTION			CONNECTING SEGMENTS
NUMBER	SIZE	#	SIZE	TYPE	#	SIZE	TYPE			
C103	0.75"	10	#14	XHHW-2	1	#14	XHHW-2	FR: MCC-01 RTU TO: 10 #14	>> PUMP-6 CONTROLS	
L101	2"	2	#12	XHHW-2	1	#12	XHHW-2	FR: FIT-1901 HH-01 TO: 2 #12	>> FIT-1901 POWER	L103
L102	2"	2	#12	XHHW-2	1	#12	XHHW-2	FR: LIT-1902 HH-01 TO: 2 #12	>> LIT-1902 POWER	L103
L103	2"	6	#12	XHHW-2	1	#12	XHHW-2	FR: HH-01 PANEL A TO: 2 #12	>> FIT-1901 POWER	L101
								2 #12	>> LIT-1902 POWER	L102
								2 #12	>> CATHODIC PROTECTION PANEL POWER	L104
L104	0.75"	2	#12	XHHW-2	1	#12	XHHW-2	FR: CATHODIC PROTECTION PANEL HH-01 TO: 2 #12	>> CATHODIC PROTECTION PANEL POWER	L103
P103	2"	3	#8	XHHW-2	1	#8	XHHW-2	FR: PUMP-1900 MCC-01 TO: 3 #10	>> PUMP-1900 POWER	
								2 #12	>> MWH-1900 POWER	
								2 #14	>> TSH-1900 CONTROL	
S101	2"	1	2/CS-#16		1	#14	XHHW-2	FR: FIT-1901 HH-02 TO: 1 2/CS-#16	>> FIT-1901 SIGNAL	S103
S102	0.75"	1	2/CS-#16		1	#14	XHHW-2	FR: LIT-1902 HH-02 TO: 1 2/CS-#16	>> LIT-1902 SIGNAL	S103
S103	0.75"	2	2/CS-#16		1	#14	XHHW-2	FR: HH-02 RTU TO: 1 2/CS-#16	>> FIT-1901 SIGNAL	S101
								1 2/CS-#16	>> LIT-1902 SIGNAL	S102
S104	0.75"	1	MFR	CABLE	1	#14	XHHW-2	FR: LE-1902 LIT-1902 TO: 1 MFR	>> LE SIGNAL	
X101	0.75"	1	PULL	ROPE				FR: HH-01 ELECTRICAL BUILDING TO: 1 PULL	>> SPARE	
X102	0.75"	1	PULL	ROPE				FR: HH-01 ELECTRICAL BUILDING TO: 1 PULL	>> SPARE	
X103	0.75"	1	PULL	ROPE				FR: HH-02 ELECTRICAL BUILDING TO: 1 PULL	>> SPARE	

END OF CONDUIT SCHEDULE

DESIGNED CAC		Digitally signed by Jonathon P. Marshall Contact Info: Carollo Engineers, Inc. Date: 2017.05.01 14:20:52-07'00'				<b>Marina Coast Water District</b>	REGIONAL URBAN WATER AUGMENTATION PROJECT BLACKHORSE RECYCLED WATER RESERVOIR ELECTRICAL SCHEDULES	<b>VERIFY SCALES</b> BAR IS ONE INCH ON ORIGINAL DRAWING 0 ——— 1"	JOB NO. 7568A.10
DRAWN JS								IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	DRAWING NO. E-09
CHECKED MJP									SHEET NO. 81 OF 93
DATE APRIL 2017									
REV	DATE	BY	DESCRIPTION	FILENAME:					

SYMBOL	DRAWING VISIBLE FIELDS	FIELD - 1	FIELD - 2	FIELD - 3	FIELD - 4	FIELD - 5	FIELD - 6
SCADA SYSTEM OPERATOR INTERFACE TERMINAL	1- TAG 2- LOOP NUMBER 3- FUNCTION 4- DESCRIPTION 5- LOCATION 6- EXISTING/FUTURE	REFER	REFER	ACTION ALARM NUM - NUMERIC SP - SET POINT STATUS TREND	DESCRIPTION	DESCRIPTION	E - EXISTING F - FUTURE
HARDWIRED I/O POINT	1- TAG 2- LOOP NUMBER 3- FUNCTION 4- DESCRIPTION 5- LOCATION 6- EXISTING/FUTURE	REFER	REFER	AI - ANALOG INPUT AO - ANALOG OUTPUT DI - DISCRETE INPUT DO - DISCRETE OUTPUT HSC - HIGH SPEED COUNTER INPUT RTD - RTD INPUT	DESCRIPTION	PAC - PROGRAMMABLE AUTOMATION CONTROLLER NO. PLC - PROGRAMMABLE LOGIC CONTROLLER NO. RIO - REMOTE I/O VCP - VENDOR CONTROL PANEL NO.	E - EXISTING F - FUTURE
DIGITAL BUS I/O REGISTER (FIELDBUS I/O)	1- TAG 2- LOOP NUMBER 3- FUNCTION 4- DESCRIPTION 5- LOCATION 6- EXISTING/FUTURE	REFER	REFER	BUS ID CNET - CONTROLNET DNET - DEVICENET ENET - ETHERNET/IP FF - FOUNDATION FIELDBUS MB - MODBUS RTU MB+ - MODBUS PLUS MBTCP - MODBUS TCP DP - PROFIBUS DP PA - PROFIBUS PA PNET - PROFINET SERIAL - PROPRIETARY PROTOCOL	DESCRIPTION	PAC - PROGRAMMABLE AUTOMATION CONTROLLER NO. PLC - PROGRAMMABLE LOGIC CONTROLLER NO. RIO - REMOTE I/O VCP - VENDOR CONTROL PANEL NO.	E - EXISTING F - FUTURE
HUMAN MACHINE INTERFACE	1- TAG 2- LOOP NUMBER 3- FUNCTION 4- DESCRIPTION 5- LOCATION 6- EXISTING/FUTURE	REFER	REFER	ACTION ALARM NUM - NUMERIC SP - SET POINT STATUS	DESCRIPTION	HMI - HUMAN MACHINE INTERFACE NO. LCP - LOCAL CONTROL PANEL NO. PCM - PROCESS CONTROL MODULE NO. VCP - VENDOR CONTROL PANEL NO.	E - EXISTING F - FUTURE
PILOT DEVICE OPERATOR INTERFACE	1- TAG 2- LOOP NUMBER 3- FUNCTION 4- DESCRIPTION 5- LOCATION 6- EXISTING/FUTURE	REFER	REFER	AM - AUTO/MANUAL BYPASS - BYPASS CL - CLOSE E-STOP - EMERGENCY STOP FRLR - FIXED RATE/LEVEL RATE HOA - HAND/OFF/AUTO JOHC - JOG OPEN/HOLD/CLOSE JOJC - JOG OPEN/JOG CLOSE LH - LOW/HIGH LOR - LOCAL/OFF/REMOTE LOS - LOCK OUT STOP LS - LEAD/STANDBY LSR - LOCAL/STOP/REMOTE NOOT - NO OFFLINE/OFFLINE TRANSITION OC - OPEN/CLOSE LOL - ON LINE/OFF LINE OO - OFF/ON OP - OPEN OSC - OPEN/STOP/CLOSE RST - RESET SAAM - SEMI AUTO/AUTO/MANUAL SEL - SELECT SP - STOP SPD - SPEED SS - START/STOP ST - START	DESCRIPTION	LCP - LOCAL CONTROL PANEL NO. MCC - MOTOR CONTROL CENTER NO. PCM - PROCESS CONTROL MODULE NO. RVSS - REDUCED VOLTAGE SOLID STARTER NO. VCP - VENDOR CONTROL PANEL NO. VFD - VARIABLE FREQUENCY DRIVE NO.	E - EXISTING F - FUTURE
POWER DEVICE PRIMARY FUNCTION OPERATOR ACCESSIBLE	1- TAG 2- LOOP NUMBER 3- FUNCTION 4- VOLTAGE/PHASE 5- LOCATION 6- EXISTING/FUTURE	CB - CIRCUIT BREAKER DISC - DISCONNECT FU - FUSE	REFER	TM - THERMAL MAGNETIC CIRCUIT BREAKER	24VDC - 1P 120VAC - 1P 208VAC - 2P 208VAC - 3P 240VAC - 3P 240VAC - 2P 480VAC - 3P 2400VAC - 3P 4160VAC - 3P	DP - DISTRIBUTION PANEL NO. LCP - LOCAL CONTROL PANEL NO. LP - LIGHTING PANEL NO. MCC - MOTOR CONTROL CENTER NO. PCM - PROCESS CONTROL MODULE NO. PP - POWER PANEL NO. VCP - VENDOR CONTROL PANEL NO.	E - EXISTING F - FUTURE
POWER DEVICE AUXILIARY FUNCTION FOR OPERATOR ACCESSIBLE DEVICES	1- TAG 2- LOOP NUMBER 3- FUNCTION 4- DESCRIPTION 5- LOCATION 6- EXISTING/FUTURE	DISC - DISCONNECT	REFER	DESCRIPTION	DESCRIPTION	DESCRIPTION	E - EXISTING F - FUTURE
POWER DEVICE PRIMARY FUNCTION OPERATOR INACCESSIBLE	1- TAG 2- LOOP NUMBER 3- FUNCTION 4- VOLTAGE/PHASE 5- LOCATION 6- EXISTING/FUTURE	CB - CIRCUIT BREAKER FU - FUSE	REFER	MCP - MOTOR CIRCUIT PROTECTOR SS - SOLID STATE CIRCUIT BREAKER TM - THERMAL MAGNETIC CIRCUIT BREAKER	24VDC - 1P 120VAC - 1P 208VAC - 2P 208VAC - 3P 240VAC - 2P 240VAC - 3P 480VAC - 3P 2400VAC - 3P 4160VAC - 3P	DP - DISTRIBUTION PANEL NO. LCP - LOCAL CONTROL PANEL NO. LP - LIGHTING PANEL NO. MCC - MOTOR CONTROL CENTER NO. PCM - PROCESS CONTROL MODULE NO. PP - POWER PANEL NO. VCP - VENDOR CONTROL PANEL NO.	E - EXISTING F - FUTURE

SYMBOL	DRAWING VISIBLE FIELDS	FIELD - 1	FIELD - 2	FIELD - 3	FIELD - 4	FIELD - 5	FIELD - 6
INSTRUMENT PRIMARY ELEMENT	1- TAG 2- LOOP NUMBER 3- FUNCTION 4- FURNISHED BY 5- LOCATION 6- EXISTING/FUTURE	REFER	REFER	DESCRIPTION	DESCRIPTION	AREA NO. BUILDING NO. ROOM NO.	E - EXISTING F - FUTURE
INSTRUMENT/CONTROL ELEMENT PRIMARY FUNCTION OPERATOR ACCESSIBLE	1- TAG 2- LOOP NUMBER 3- FUNCTION 4- FURNISHED BY 5- DESCRIPTION 6- EXISTING/FUTURE	REFER	REFER	DESCRIPTION	DESCRIPTION	DESCRIPTION	E - EXISTING F - FUTURE
INSTRUMENT/CONTROL ELEMENT AUXILIARY FUNCTION OPERATOR ACCESSIBLE	1- TAG 2- LOOP NUMBER 3- FUNCTION 4- FURNISHED BY 5- DESCRIPTION 6- EXISTING/FUTURE	REFER	REFER	DESCRIPTION	DESCRIPTION	DESCRIPTION	E - EXISTING F - FUTURE
INSTRUMENT/CONTROL ELEMENT PRIMARY FUNCTION OPERATOR INACCESSIBLE	1- TAG 2- LOOP NUMBER 3- FUNCTION 4- FURNISHED BY 5- LOCATION 6- EXISTING/FUTURE	REFER	REFER	DESCRIPTION	DESCRIPTION	LCP - LOCAL CONTROL PANEL NO. MCC - MOTOR CONTROL CENTER NO. PCM - PROCESS CONTROL MODULE NO. VCP - VENDOR CONTROL PANEL NO.	E - EXISTING F - FUTURE
INSTRUMENT/CONTROL ELEMENT AUXILIARY FUNCTION OPERATOR INACCESSIBLE	1- TAG 2- LOOP NUMBER 3- FUNCTION 4- FURNISHED BY 5- LOCATION 6- EXISTING/FUTURE	REFER	REFER	DESCRIPTION	DESCRIPTION	LCP - LOCAL CONTROL PANEL NO. MCC - MOTOR CONTROL CENTER NO. PCM - PROCESS CONTROL MODULE NO. VCP - VENDOR CONTROL PANEL NO.	E - EXISTING F - FUTURE
FIELD EQUIPMENT NON-POWERED	1- TAG 2- LOOP NUMBER 3- FUNCTION/TYPE 4- FURNISHED BY 5- LOCATION 6- EXISTING/FUTURE	REFER	REFER	DESCRIPTION	DESCRIPTION	AREA NO. BUILDING NO. ROOM NO.	E - EXISTING F - FUTURE
FIELD EQUIPMENT PRIMARY FUNCTION POWERED	1- TAG 2- LOOP NUMBER 3- FUNCTION 4- FURNISHED BY 5- LOCATION 6- EXISTING/FUTURE	REFER	REFER	DESCRIPTION	DESCRIPTION	AREA NO. BUILDING NO. ROOM NO.	E - EXISTING F - FUTURE
FIELD EQUIPMENT AUXILIARY FUNCTION POWERED	1- TAG 2- LOOP NUMBER 3- FUNCTION 4- FURNISHED BY 5- DESCRIPTION 6- EXISTING/FUTURE	MWH - MOTOR WINDING HEATER TSH - TEMPERATURE SWITCH XSH - TORQUE SWITCH	REFER	DESCRIPTION	DESCRIPTION	DESCRIPTION	E - EXISTING F - FUTURE
FIELD EQUIPMENT STARTER/DRIVE CUBICLE/CABINET	1- TAG 2- LOOP NUMBER 3- TYPE 4- VOLTAGE/PHASE 5- LOCATION 6- EXISTING/FUTURE	MS - MOTOR STARTER RVAT - REDUCED VOLTAGE AUTO TRANSFORMER STARTER RVSS - REDUCED VOLTAGE SOLID STATE STARTER VFD - VARIABLE FREQUENCY DRIVE	REFER	FVNR - FULL VOLTAGE NON-REVERSING STARTER FVR - FULL VOLTAGE REVERSING STARTER PWS - PART-WINDING STARTER RVAT - REDUCED VOLTAGE AUTO TRANSFORMER STARTER RVSS - REDUCED VOLTAGE SOLID STATE STARTER TS1W - TWO SPEED SINGLE WINDING TS2W - TWO SPEED TWO WINDINGS VFD - VARIABLE FREQUENCY DRIVE	120VAC - 1P 208VAC - 2P 208VAC - 3P 240VAC - 2P 240VAC - 3P 480VAC - 3P 2400VAC - 3P 4160VAC - 3P	LCP - LOCAL CONTROL PANEL NO. MCC - MOTOR CONTROL CENTER NO. PCM - PROCESS CONTROL MODULE NO. VCP - VENDOR CONTROL PANEL NO.	E - EXISTING F - FUTURE

INSTRUMENT BUBBLE LOCATIONS		NOTES
SCADA		<ul style="list-style-type: none"> <li>1 INSTRUMENT TAG IDENTIFICATION LETTERS TABLE</li> <li>2 OPERATOR PILOT DEVICE LEGEND</li> <li>3 EQUIPMENT TAGGING TABLE</li> <li>4 I/O TYPE DESIGNATIONS TABLE</li> <li>5 INSTRUMENT TYPE DESIGNATIONS TABLE</li> <li>6 FURNISHED BY: FBO FURNISHED BY OWNER FBV FURNISHED BY VENDOR</li> </ul>
CONTROL PANEL		
OPERATOR INTERFACE/CONTROL DEVICES		
POWER SOURCE		
FIELD		
I/O		

REV	DATE	BY	DESCRIPTION

DESIGNED CAC  
DRAWN CGR  
CHECKED MJP  
DATE APRIL 2017

DISCIPLINE ENGINEER  
REGISTERED PROFESSIONAL ENGINEER  
CHRISTOPHER ALAN CAROLLO  
No. 20740  
ELECTRICAL  
STATE OF CALIFORNIA

PROJECT ENGINEER  
Digitally signed by Jonathon P. Marshall  
Contact Info: Carollo Engineers, Inc.  
Date: 2017.05.01 14:20:44-07'00'

PROJECT ENGINEER  
Digitally signed by Christopher Cavitt  
Contact Info: Carollo Engineers, Inc.  
Date: 2017.05.01 14:33:31-07'00'

PROJECT MANAGER  
REGISTERED PROFESSIONAL ENGINEER  
JONATHAN P. MARSHALL  
No. 73265  
CIVIL  
STATE OF CALIFORNIA

**Carollo**

**Marina Coast Water District**

REGIONAL URBAN WATER AUGMENTATION PROJECT  
BLACKHORSE RECYCLED WATER RESERVOIR  
INSTRUMENTATION  
SYMBOLS & ABBREVIATIONS - I

VERIFY SCALES  
BAR IS ONE INCH ON ORIGINAL DRAWING  
0 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7568A.10  
DRAWING NO. N-01  
SHEET NO. 82 OF 93

### INSTRUMENT TAG IDENTIFICATION LETTERS

INSTRUMENT FUNCTION / MEASURED VARIABLE		ELEMENT	TRANSMITTER	INDICATING TRANSMITTER	CONVERTER / TRANSDUCER / RELAY / SPECIAL DEVICES	INDICATOR	RECORDER	CONTROLLER	INDICATING CONTROLLER	RECORDING CONTROLLER	SWITCH	SWITCH LOW LOW	SWITCH LOW	SWITCH HIGH	SWITCH HIGH HIGH	SWITCH COMBINATION HIGH LOW	ACTION	ALARM LOW LOW	ALARM LOW	ALARM HIGH	ALARM HIGH HIGH	TOTALIZE INDICATOR / TRANSMITTER	VALVE	GAUGE	LIGHT	SPEED SETTING
A	ANALYSIS	AE	AT	AIT	AY	AI	AR	AC	AIC	ARC	AS	ASLL	ASL	ASH	ASHH	ASHL		AALL	AAL	AAH	AAHH				AL	
B	BURNER FLAME	BE	BT	BIT	BY	BI	BR	BC	BIC	BRC	BS	BSLL	BSL	BSH	BSHH			BALL	BAL	BAH	BAHH				BL	
C	CONDUCTIVITY	CE	CT	CIT	CY	CI	CR	CC	CIC	CRC	CS	CSLL	CSL	CSH	CSHH	CSHL		CALL	CAL	CAH	CAHH				CL	
D	DENSITY	DE	DT	DIT	DY	DI	DR	DC	DIC	DRC	DS	DSLL	DSL	DSH	DSHH	DSHL		DALL	DAL	DAH	DAHH				DL	
E																										
F	FLOW	FE	FT	FIT	FY	FI	FR	FC	FIC	FRC	FS	FSLL	FSL	FSH	FSHH	FSHL		FALL	FAL	FAH	FAHH	FQI	FCV	FG	FL	
FF	FLOW RATIO				FFY	FFI		FFC	FFIC		FFS														FFL	
G	GAUGING (DIMENSION)																									
H	HAND (MANUAL)*							HC			HS*												HV	HL	HSS	
I	CURRENT		IT	IIT	IY	II	IR	IC	IIC	IRC	IS	ISLL	ISL	ISH	ISHH			IALL	IAL	IAH	IAHH				IL	
J	POWER																									
K	TIME				KY	KI	KR	KC	KIC	KRC	KS	KSLL	KSL	KSH	KSHH			KALL	KAL	KAH	KAHH		KV		KL	
L	LEVEL	LE	LT	LIT	LY	LI	LR	LC	LIC	LRC	LS	LSLL	LSL	LSH	LSHH	LSHL		LALL	LAL	LAH	LAHH		LCV	LG	LL	
M	MOISTURE OR HUMIDITY	ME	MT	MIT	MY	MI	MR	MC	MIC	MRC	MS	MSLL	MSL	MSH	MSHH			MALL	MAL	MAH	MAHH				ML	
N	EMERGENCY SHUTDOWN																									
O																										
P	PRESSURE OR VACUUM	PE	PT	PIT	PY	PI**	PR	PC	PIC	PRC	PS****	PSLL	PSL	PSH	PSHH	PSHL		PALL	PAL	PAH	PAHH		PCV		PL	
PD	DIFFERENTIAL PRESSURE		PDT	PDIT	PDY	PDI	PDR	PDC	PDIC	PDRC	PDS	PDSLL	PDSL	PDSH	PDSHH			PDALL	PDAL	PDAH	PDAHH		PDCV		PDL	
Q	QUANTITY	QE	QT	QIT	QY	QI	QR				QS	QSLL	QSL	QSH	QSHH			QALL	QAL	QAH	QAAH					
R	RADIOACTIVITY																									
S	SPEED	SE	ST	SIT	SY	SI	SR	SC	SIC	SRC	SS	SSLL	SSL	SSH	SSHH			SALL	SAL	SAH	SAHH					
T	TEMPERATURE	TE	TT	TIT	TY	TI	TR	TC	TIC	TRC	TS	TSLL	TSL	TSH	TSHH	TSHL		TALL	TAL	TAH	TAHH		TCV		TL	
TD	DIFFERENTIAL TEMPERATURE		TDT	TDIT	TDY	TDI	TDR	TDC	TDIC	TDRC	TDS	TDSLL	TDSL	TDSH	TDSHH			TDALL	TDAL	TDAH	TDAHH		TDCV		TDL	
U	MULTIVARIABLE					UI	UR	UC	UIC	URC	US														UL	
V	VISCOSITY	VE	VT	VIT	VY	VI	VR	VC	VIC	VRC	VS	VSLL	VSL	VSH	VSHH			VALL	VAL	VAH	VAHH				VL	
W	WEIGHT	WE	WT	WIT	WY	WI	WR				WS	WSLL	WSL	WSH	WSHH			WALL	WAL	WAH	WAHH					
X	UNCLASSIFIED	XE	XT	XIT	XY	XI	XR	XC	XIC	XRC	XS	XSLL	XSL	XSH	XSHH			XALL	XAL	XAH	XAAH		XCV	XG	XL	
XV	VIBRATION	XVE	XVT		XVY	XVI	XVR				XVS			XVSH	XVSHH					XVAH	XVAHH				XVL	
Y	STATUS***					YI***																			YL	
Z	POSITION	ZE	ZT	ZIT	ZY	ZI					ZS**														ZL**	

\* REFER TO OPERATOR PILOT DEVICE LEGEND  
 \*\* LETTER INDICATES POSITION (O=OPEN, C=CLOSED, R=RAISE, L=LOWER, ETC)  
 \*\*\* PI# # = 1,2,3 ETC. AND REPRESENTS A UNIQUE IDENTIFIER AND IS APPLICABLE TO ALL ITEMS IN THE TABLE ABOVE  
 \*\*\*\* COULD ALSO BE PIS - FOR PRESSURE INDICATING SWITCH

### INSTRUMENT LINE SYMBOLS

INSTRUMENT OR CONNECTION TO PROCESS	—————
PNEUMATIC SIGNAL	—#—#—#—#—#—#—#—#—
ELECTRIC SIGNAL	-----
HYDRAULIC SIGNAL	— L — L — L — L — L —
CAPILLARY TUBE	— X — X — X — X — X —
ELECTROMAGNETIC OR SONIC SIGNAL (GUIDED)	— S — S — S — S — S —
ELECTROMAGNETIC OR SONIC SIGNAL (NOT GUIDED)	— S — S — S — S — S —
INTERNAL SYSTEM LINK (SOFTWARE OR DATA LINK)	— o — o — o — o — o — o —
COPPER ETHERNET	— C — C — C — C — C —
FIBER OPTIC ETHERNET	— F — F — F — F — F —
WIRELESS ETHERNET	— W — W — W — W — W —
PROFIBUS DP	— PBD — PBD — PBD — PBD — PBD —
PROFIBUS PA	— PBA — PBA — PBA — PBA — PBA —
DEVICENET	— DN — DN — DN — DN — DN —
FOUNDATION FIELDBUS	— FF — FF — FF — FF — FF —

### PROCESS LINE SYMBOLS

PRIMARY PROCESS FLOW IN PIPE	—————
SECONDARY PROCESS FLOW IN PIPE	—————
PRIMARY PROCESS FLOW IN CHANNEL	— · · · —
SECONDARY PROCESS FLOW IN CHANNEL	— · · · —

### DESIGNATIONS

EQUIPMENT ENCLOSURE	-----
EXISTING	-----
FUTURE	-----

### MISCELLANEOUS P&ID SYMBOLS

CHEMICAL INJECTION POINT	—————
CONTINUATION TAG	—————
PIPE CALLOUT	—————
SIGNAL CONTINUATION	—————

### OPERATOR PILOT DEVICE LEGEND

PILOT DEVICE FUNCTION / DEVICE TYPE		LOCAL-OFF-REMOTE (LOR) OR LOCAL-STOP-REMOTE (LSR)	STOP (SP)	START (ST)	HAND-OFF-AUTO (HOA)	OFF-ON (OO)	SELECT (SEL)	OPEN-STOP-CLOSE (OSC)	JOG OPEN-HOLD-CLOSE (JOHC)	SEMI-AUTO-AUTO-MANUAL (SAAM)	LEAD-LAG-STANDBY (LLGS)	JOG OPEN-JOG CLOSE (JOJC)	ONLINE-OFFLINE (OLOF)	AUTO-MANUAL (AM)	FIXED RATE-LEVEL RATE (FRLR)	OPEN-CLOSE (OC)	NO OFFLINE-OFFLINE TRANSITION (NOOT)	LOW-HIGH (LH)	RESET (RST)	SPEED (SPD)	START-STOP (STSP)	E-STOP (E-SP)	BYPASS (BYF)	POSITION (POS)		
PILOT DEVICE TAG (HAND SWITCHES)	HSA*	HSB	HSC	HSD*	HSE	HSF	HSG*	HSH*	HSI	HSJ*	HSK*	HSL*	HSM*	HSN	HSO*	HSP	HSQ*	HSR	HSS	HST*	HSU	HSV	HSW	HSX	HSY	HSZ
SCADA/HMI TAG (HAND ACTION)	HAA	HAB	HAC	HAD	HAE	HAF	HAG	HAH	HAI	HAJ	HAK	HAL	HAM	HAN	HAO	HAP	HAQ	HAR	HAS	HAT	HAU	HAV	HAW	HAX	HAY	HAZ

HSA\* SELECTOR SWITCH POSITION EG: HSA(R) R = REMOTE, HSD(A) A = AUTO, ETC

### I/O TYPE DESIGNATIONS

AUX1	RUNNING	MSL	MOTOR START LOW
AUX2	FAILED/FAULT	MSM	VALVE MODULATE
AUXF1	RUNNING FORWARD	MSP	MOTOR STOP
AUXH1	RUNNING HIGH	MSR	MOTOR START REVERSE
AUXL1	RUNNING LOW	MST	MOTOR START
AUXR1	RUNNING REVERSE	SS	SPEED SIGNAL
SVC	SOLENOID VALVE CLOSE	ZC	POSITION COMMAND
SVO	SOLENOID VALVE OPEN	ZCC	POSITION COMMAND CLOSE
MS	RUN	ZCO	POSITION COMMAND OPEN
MSF	MOTOR START FORWARD		
MSH	MOTOR START HIGH		

### INSTRUMENT TYPE DESIGNATIONS

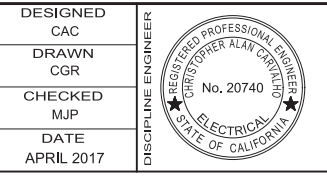
AM	AMMONIA	O3	OZONE	SC	STREAMING CURRENT
CAP	CAPACITANCE	ORP	OXIDATION REDUCTION POTENTIAL	SH	SODIUM HYPOCHLORITE
CG	COMBUSTIBLE GAS	P	PRESSURE	TDR	TIME DOMAIN REFLECTOMETRY
CL	CHLORINE	P-SUB	PRESSURE SUBMERSIBLE	TH	THERMAL
COND	CONDUCTIVITY	PC	PARTICLE COUNTER	TSS	TOTAL SUSPENDED SOLIDS
DO	DISSOLVED OXYGEN	PO	PHOSPHOROUS	TURB	TURBIDITY
FMCW	FREQ. MODULATED CONT. WAVE	PTOF	PULSE TIME OF FLIGHT	US	ULTRASONIC
HSF	FLUORIDE	RII	RESISTANCE TO CURRENT	UVI	UV INTENSITY
IS	INTRINSIC SAFETY BARRIER	ROT	ROTAMETER	UVT	UV TRANSMITTANCE
LEL	LOWER EXPLOSIVE LIMIT	RTD	RESISTANCE TEMP DETECTOR	VAC	VACUUM
MAG	MAGNETIC				

### SPECIFIC ABBREVIATIONS

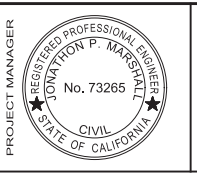
APH	A PHASE	MWH	MOTOR WINDING HEATER
BPH	B PHASE	SSG	SECONDARY SWITCHGEAR
BRB	BEARING BOTTOM	SV*	SOLENOID VALVE
BRT	BEARING TOP	SPD	SURGE PROTECTIVE DEVICE
BTFLY	BUTTERFLY	UPS	UNINTERRUPTIBLE POWER SUPPLY
CPH	C PHASE	YA	STATUS AUTO
CC*	CALIBRATION COLUMN * = 1, 2, 3, ETC.	YR	STATUS REMOTE
HTR	HEATER	Y1	STATUS RUNNING
HTU	HEAT TRACE UNIT	Y2	ALARM FAILED/FAULT

\* CC# AND SV# # = 1, 2, 3 ETC. AND REPRESENTS A UNIQUE IDENTIFIER

DESIGNED	CAC		
DRAWN	CGR		
CHECKED	MJP		
DATE	APRIL 2017		
REV	DATE	BY	DESCRIPTION



Digitally signed by Jonathon P. Marshall  
 Contact Info: Carollo Engineers, Inc.  
 Date: 2017.05.01 14:20:37-07'00'



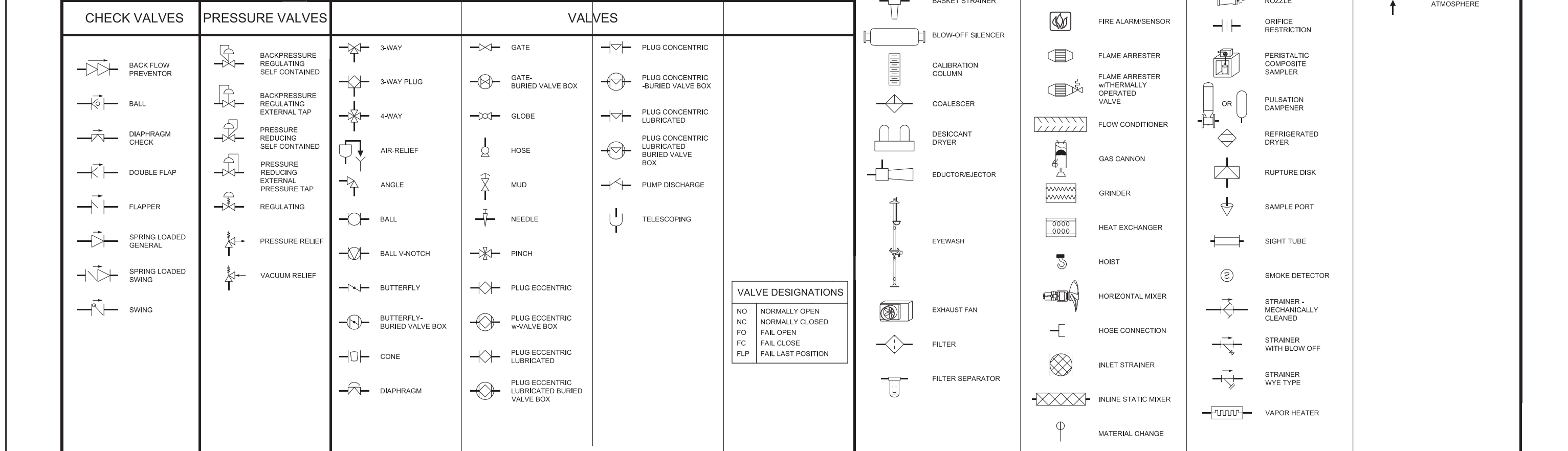
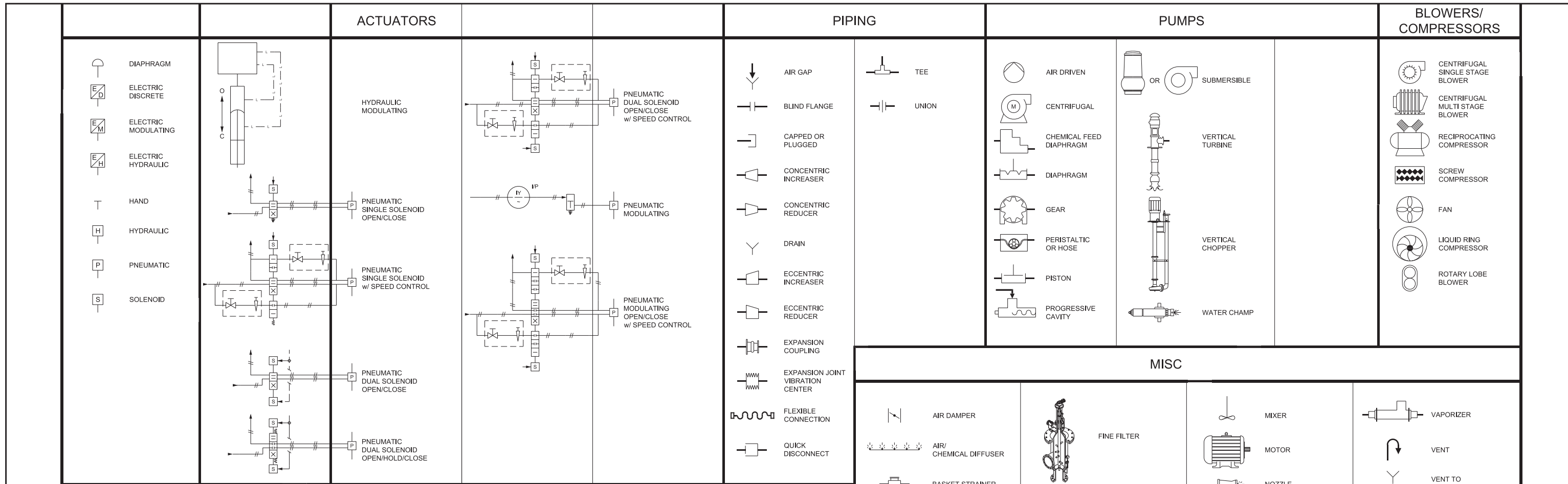
Marina Coast Water District

REGIONAL URBAN WATER AUGMENTATION PROJECT  
 BLACKHORSE RECYCLED WATER RESERVOIR  
 INSTRUMENTATION  
 SYMBOLS & ABBREVIATIONS - II

VERIFY SCALES  
 BAR IS ONE INCH ON ORIGINAL DRAWING  
 0 — 1" — 1"  
 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7568A.10  
 DRAWING NO. N-02  
 SHEET NO. 83 OF 93





<table border="1"> <tr><td>DESIGNED</td><td>CAC</td></tr> <tr><td>DRAWN</td><td>CGR</td></tr> <tr><td>CHECKED</td><td>MJP</td></tr> <tr><td>DATE</td><td>APRIL 2017</td></tr> </table>	DESIGNED	CAC	DRAWN	CGR	CHECKED	MJP	DATE	APRIL 2017		<p>Digitally signed by Jonathon P. Marshall Contact Info: Carollo Engineers, Inc. Date: 2017.05.01 14:20:24-07'00'</p>			<p>REGIONAL URBAN WATER AUGMENTATION PROJECT BLACKHORSE RECYCLED WATER RESERVOIR INSTRUMENTATION SYMBOLS &amp; ABBREVIATIONS - III</p>	<p>VERIFY SCALES BAR IS ONE INCH ON ORIGINAL DRAWING 0 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY</p>	<p>JOB NO. 7568A.10 DRAWING NO. N-03 SHEET NO. 84 OF 93</p>
DESIGNED	CAC														
DRAWN	CGR														
CHECKED	MJP														
DATE	APRIL 2017														

GATES		FLUMES	FLOW	LEVEL	TEMPERATURE	WEIGHT
SIDE VIEW	PLAN VIEW					
	FLAP	LEOPOLD-LAGCO	BATCH	BUBBLER	TEMPERATURE w/THERMOWELL	HYDRAULIC
	KNIFE	PALMER-BOWLUS	CORIOLIS	CAPACITANCE	TEMPERATURE GAUGE	STRAIN GAUGE
	SLIDE	PARSHALL	MAGNETIC	DIFFERENTIAL PRESSURE	THERMOMETER	
	SLUICE	REGULAR CUTTHROAT	ORIFICE	ELECTRODE		
	STOP	TRAPEZOIDAL	PADDLE WHEEL	FLOAT		
	WEIR		PITOT TUBE AVERAGING	INVERTED COLUMN		
			PITOT TUBE/ANNUBAR	RADAR PTOF		
			POSITIVE-DISPLACEMENT	RADAR TDR		
			PROPELLER-TURBINE	SUSPENDED/SUBMERSIBLE		
			ROTAMETER	TUNING FORK		
			THERMAL	ULTRASONIC		
			ULTRASONIC DOPPLER			
			ULTRA-SONIC TRANSIT TIME			

**WEIRS**

	RECTANGULAR w/o END CONTRACTIONS
	RECTANGULAR w/ END CONTRACTIONS
	V-NOTCH (TRIANGULAR)
	TRAPEZOIDAL (CIPOLLETTI)

**WEIRS**

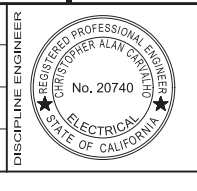
	V-CONE
	VENTURI TUBE OR FLOW NOZZLE
	VORTEX

**PRESSURE/VACUUM**

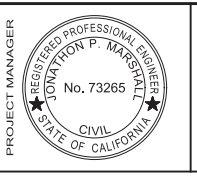
PRESSURE	DIFFERENTIAL PRESSURE	PRESSURE SEALS
GAUGE	GAUGE DIFFERENTIAL INDICATOR	SEAL ANNULAR
MANOMETER	DIFFERENTIAL PRESSURE SWITCH	SEAL DIAPHRAGM
PRESSURE SWITCH	DIFFERENTIAL PRESSURE TRANSMITTER	SEAL SANITARY
PRESSURE TRANSMITTER		
		EXAMPLE
		PRESSURE SWITCH

REV	DATE	BY	DESCRIPTION

DESIGNED CAC
DRAWN CGR
CHECKED MJP
DATE APRIL 2017



Project Engineer  
Digitally signed by Jonathon P. Marshall  
Contact Info: Carollo Engineers, Inc.  
Date: 2017.05.01 14:20:17-07'00'

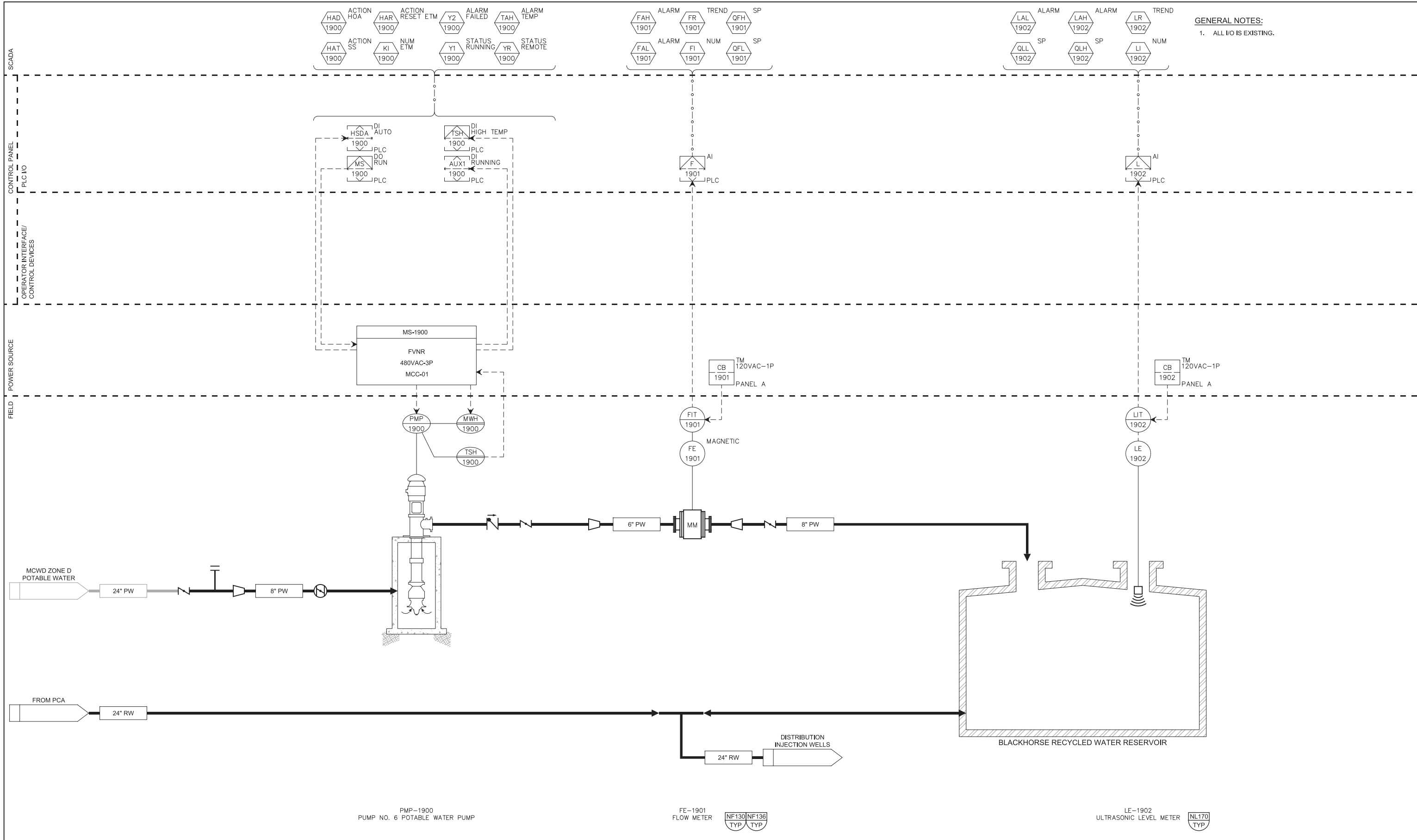


Marina Coast Water District

REGIONAL URBAN WATER AUGMENTATION PROJECT  
BLACKHORSE RECYCLED WATER RESERVOIR  
INSTRUMENTATION  
SYMBOLS & ABBREVIATIONS - IV

VERIFY SCALES  
BAR IS ONE INCH ON ORIGINAL DRAWING  
0 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7568A.10  
DRAWING NO. N-04  
SHEET NO. 85 OF 93



**GENERAL NOTES:**  
1. ALL I/O IS EXISTING.

PMP-1900  
PUMP NO. 6 POTABLE WATER PUMP

FE-1901  
FLOW METER  
NF130 NF136  
TYP TYP

LE-1902  
ULTRASONIC LEVEL METER  
NL170  
TYP

REV	DATE	BY	DESCRIPTION

DESIGNED  
CAC

DRAWN  
CGR

CHECKED  
MJP

DATE  
APRIL 2017

PROJECT ENGINEER  
Digitally signed by Jonathon P. Marshall  
Contact Info: Carollo Engineers, Inc.  
Date: 2017.05.01 14:20:08-07'00'

PROJECT ENGINEER  
Digitally signed by Christopher Carvalho  
Contact Info: Carollo Engineers, Inc.  
Date: 2017.05.01 14:32:55-07'00'

PROJECT MANAGER  
Digitally signed by Jonathon P. Marshall  
Contact Info: Carollo Engineers, Inc.  
Date: 2017.05.01 14:20:08-07'00'



REGIONAL URBAN WATER AUGMENTATION PROJECT

BLACKHORSE RECYCLED WATER RESERVOIR

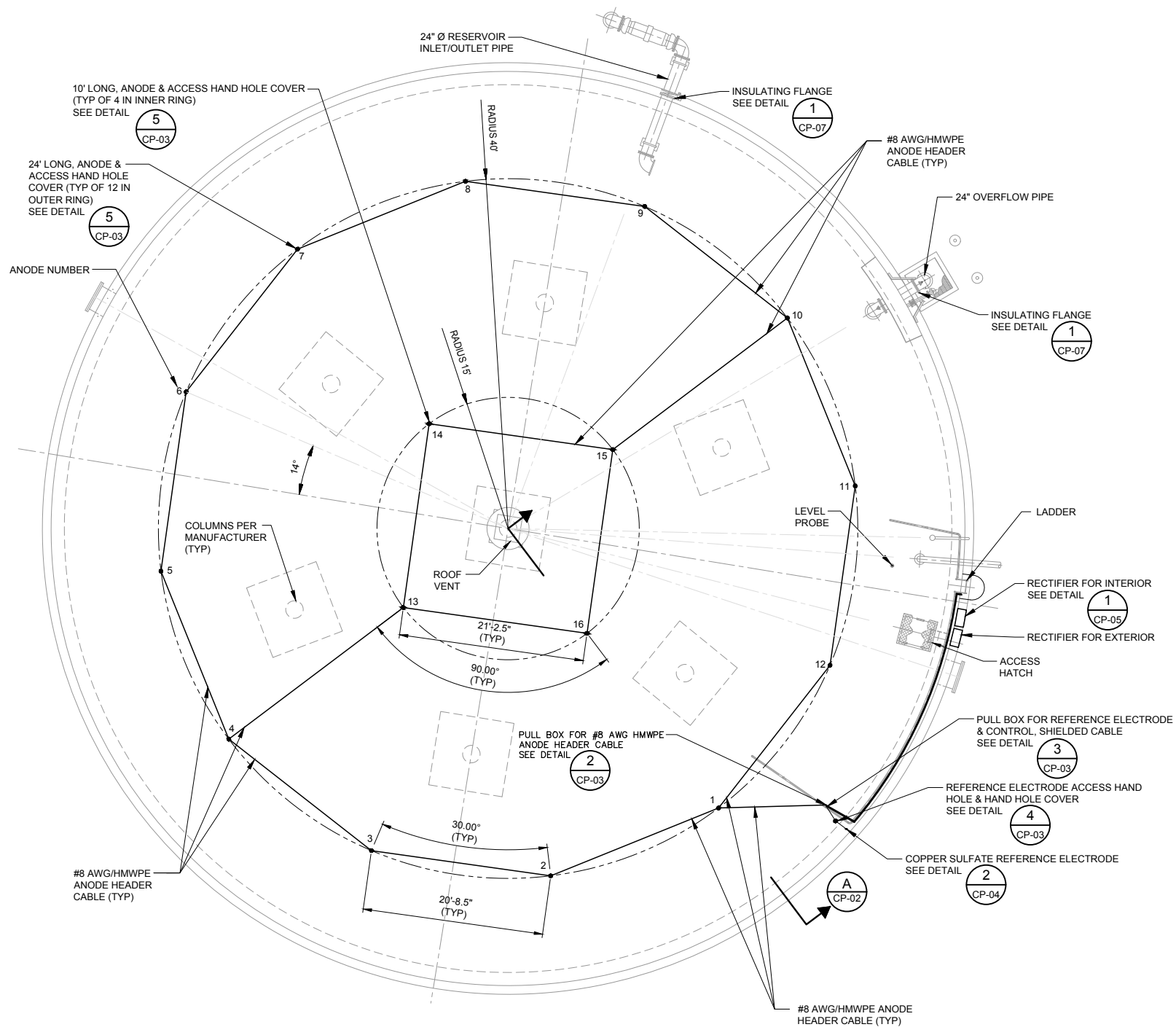
LEVEL CONTROL - P&ID

RESERVOIR AND PUMP - P&ID

<b>VERIFY SCALES</b> BAR IS ONE INCH ON ORIGINAL DRAWING 0 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	JOB NO. 7568A.10
	DRAWING NO. <b>N-05</b>
	SHEET NO. 86 OF 93

LAST SAVED BY: ABengflord

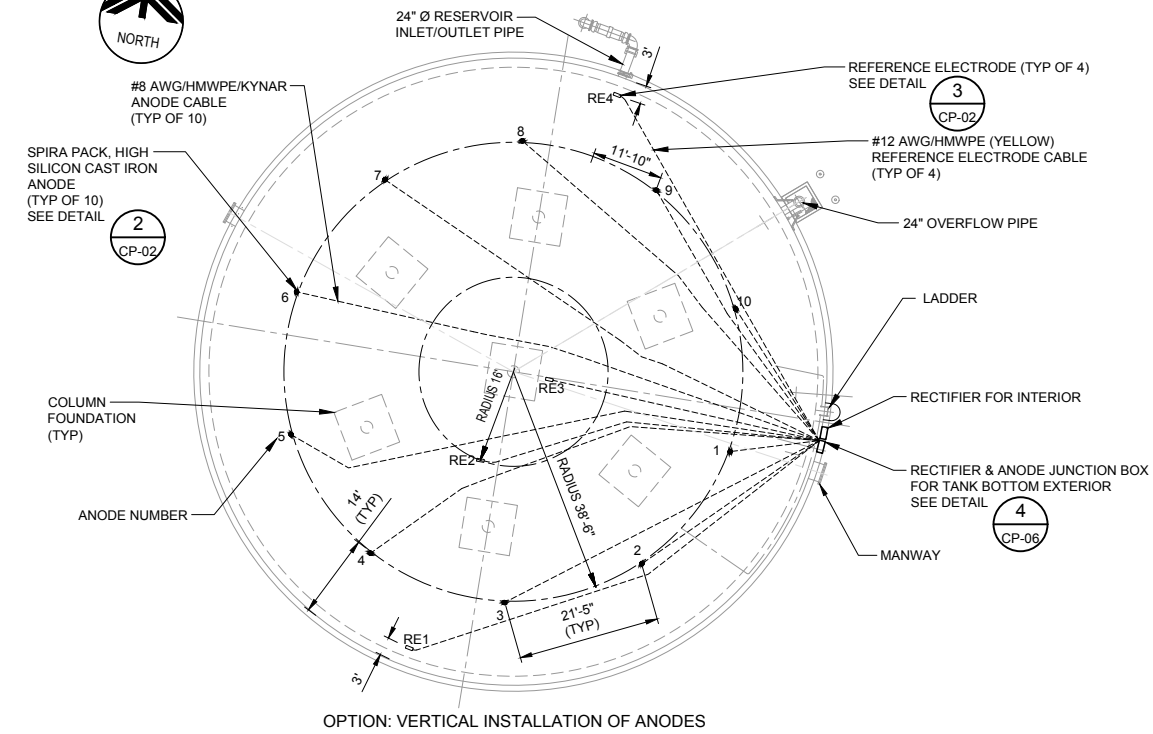




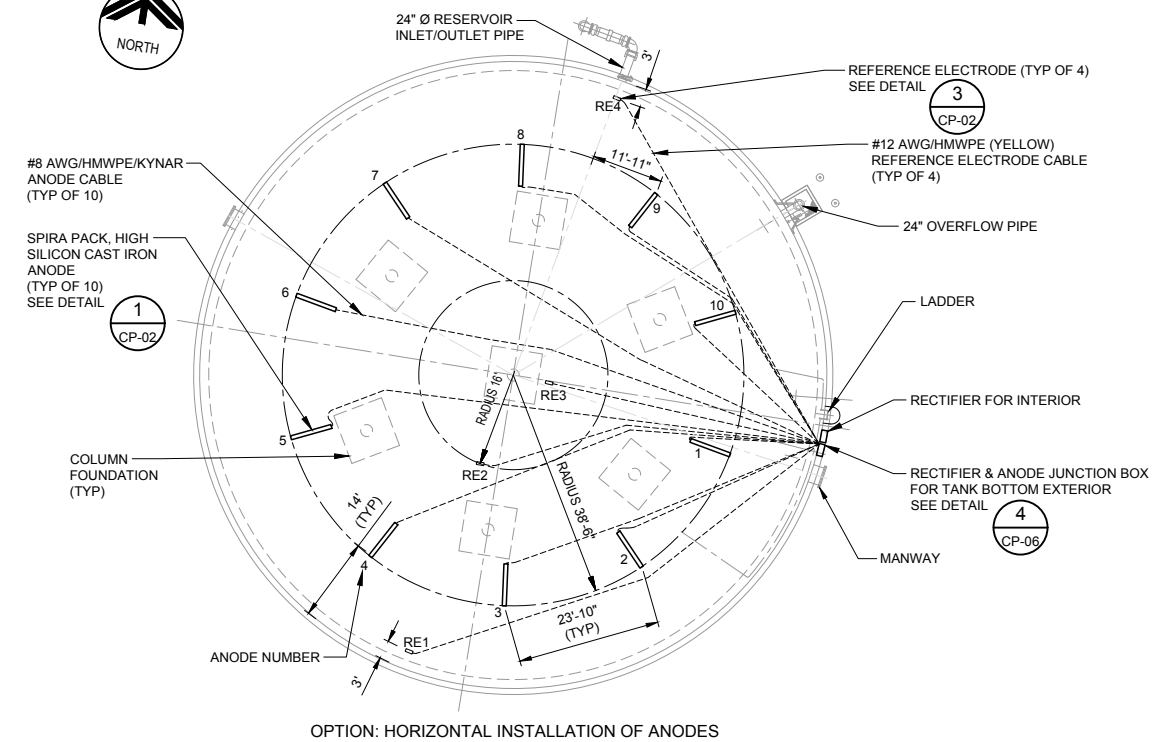
NOTE:  
1. FOR THE SCHEMATIC FOR THE INTERNAL CATHODIC PROTECTION SYSTEM SEE DETAIL 1/CP-03.

### RESERVOIR INTERIOR CATHODIC PROTECTION SITE PLAN

SCALE: 1/8" = 1'-0"  
FILE: BHR\_M-103.dwg



OPTION: VERTICAL INSTALLATION OF ANODES



OPTION: HORIZONTAL INSTALLATION OF ANODES

NOTES:  
1. CONTRACTOR SHALL COORDINATE WITH THE TANK MANUFACTURER AND THE MECHANICAL PLANS TO DETERMINE THE EXACT LOCATION OF THE COLUMN FOOTINGS IN ORDER TO AVOID ANY CONFLICTS WITH THE TANK FOUNDATION WHEN RUNNING THE ANODE CABLES AND THE REFERENCE ELECTRODE CABLES.  
2. FOR THE SCHEMATIC FOR THE EXTERNAL CATHODIC PROTECTION SYSTEM SEE DETAIL 4/CP-02.

### RESERVOIR BOTTOM EXTERIOR CATHODIC PROTECTION SITE PLAN

SCALE: 1/16" = 1'-0"  
FILE: BHR\_M-103.dwg

REV	DATE	BY	DESCRIPTION

DESIGNED TH  
DRAWN TH  
CHECKED MA  
DATE APRIL 2017

DISCIPLINE ENGINEER  
**REGISTERED PROFESSIONAL ENGINEER**  
No. CR 1035  
Exp. June 30, 2017  
CORROSION  
M. ALI

PROJECT ENGINEER  
PROJECT MANAGER

**JDH CORROSION**  
consultants, inc.  
1100 Willow Pass Court Concord, CA 94520  
(925)927-6630 FAX (925)927-6634  
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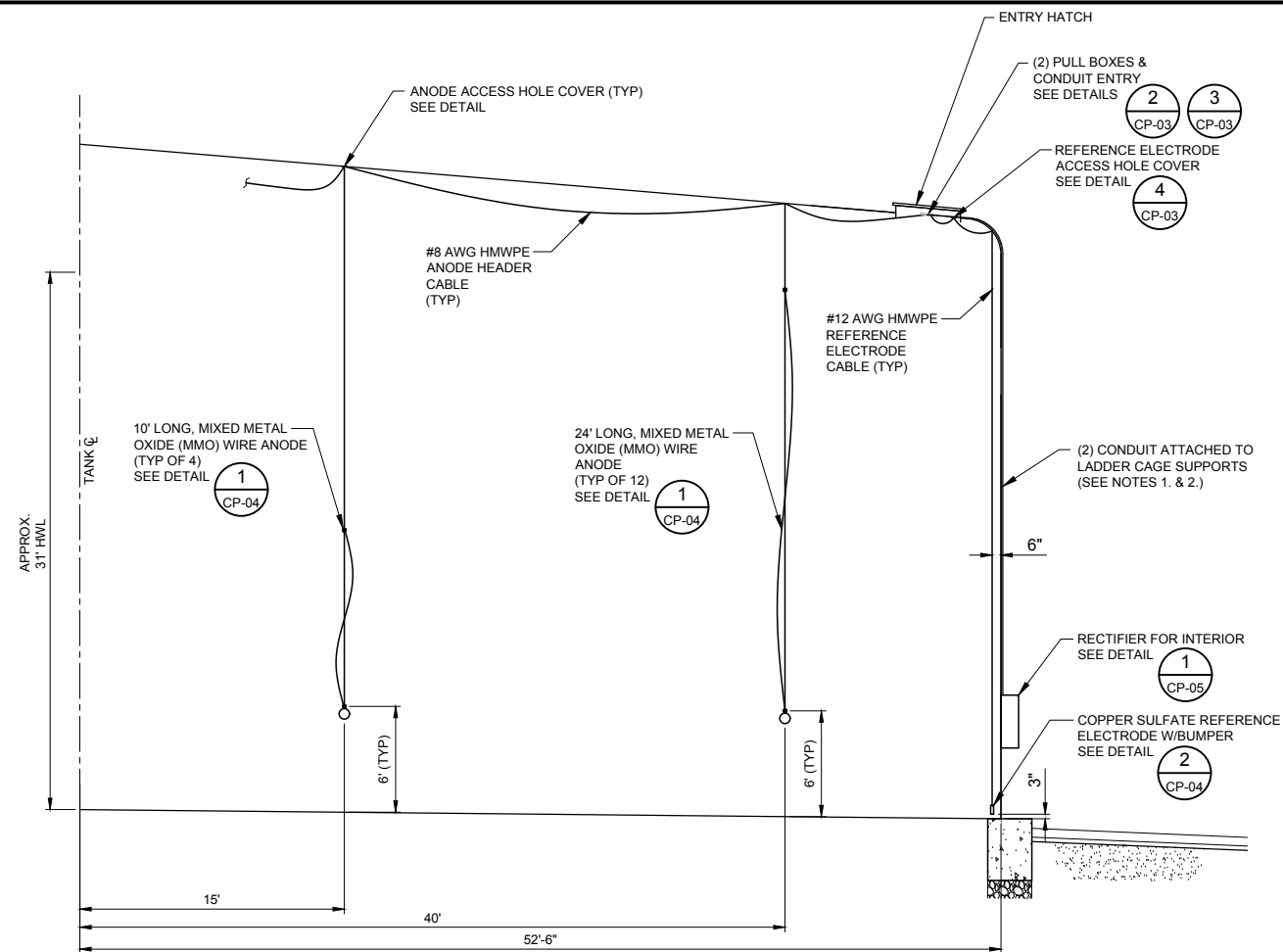
**MARINA COAST WATER DISTRICT**  
Marina Coast Water District

REGIONAL URBAN WATER AUGMENTATION PROJECT  
BLACKHORSE RECYCLED WATER RESERVOIR  
CATHODIC PROTECTION  
RESERVOIR PLANS

**VERIFY SCALES**  
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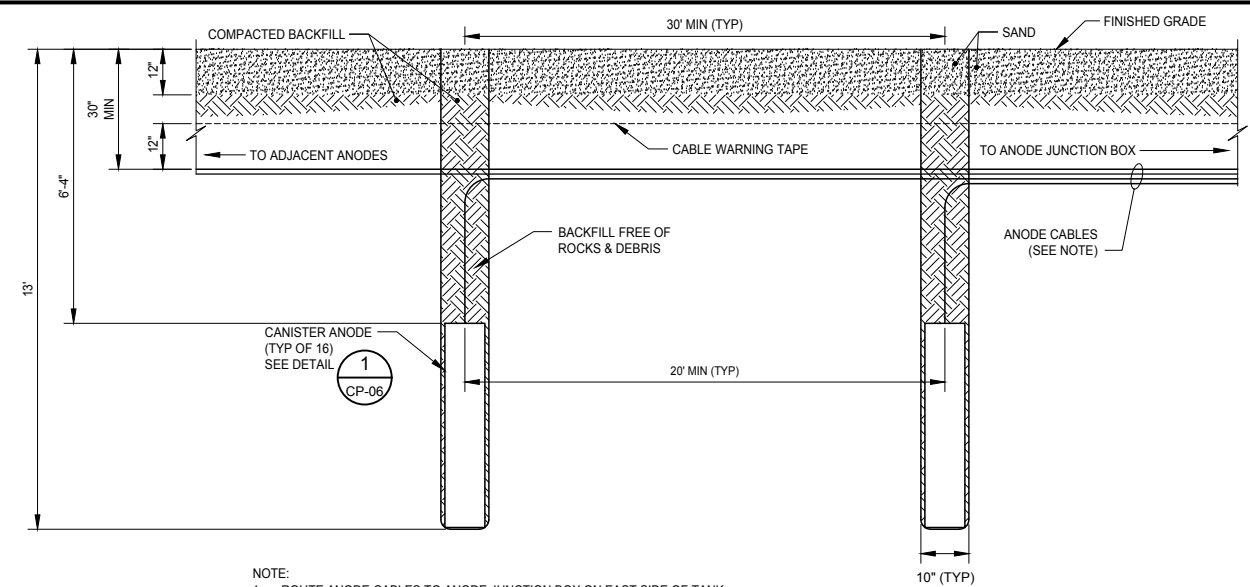
JOB NO. 7568A.10  
DRAWING NO. CP-01  
SHEET NO. 87 OF 93

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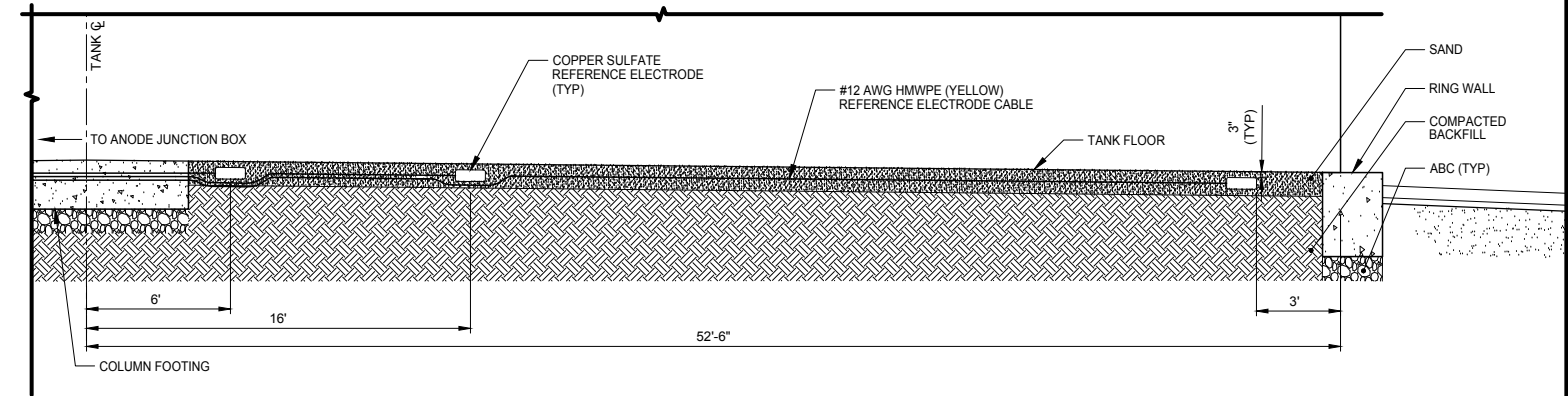
- NOTES:
- ROUTE CONDUIT TO RECTIFIER: (1) 3/4" GALVANIZED RIGID CONDUIT W/(1) #8 AWG HMWPE ANODE HEADER CABLE & (1) 3/4" GALVANIZED RIGID CONDUIT W/(1) #12 AWG/THHN SHIELDED TWISTED PAIR (COPPER SULFATE REFERENCE ELECTRODE & CONTROL CABLE).
  - EXTERIOR LADDER AND CAGE NOT SHOWN. SEE EXTERIOR LADDER DETAIL ON SHEET S-03. THE CONTRACTOR SHALL COORDINATE WITH THE TANK MANUFACTURER FOR THE EXACT LOCATION OF THE RECTIFIERS.
  - SUPPORT COLUMNS NOT SHOWN.

**A SECTION: RESERVOIR INTERIOR CATHODIC PROTECTION**  
 CP-02 SCALE: NOT TO SCALE  
 FILE: CP-02.dwg



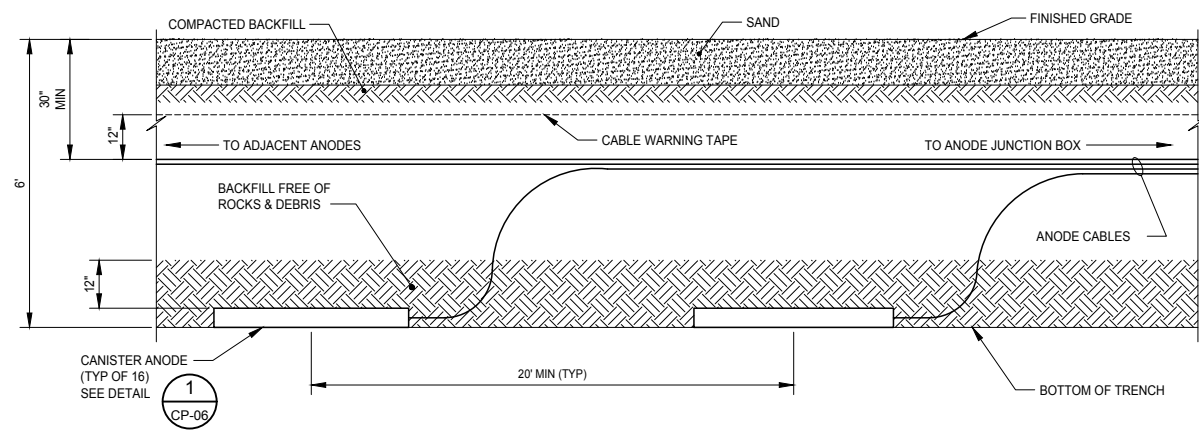
NOTE:  
 1. ROUTE ANODE CABLES TO ANODE JUNCTION BOX ON EAST SIDE OF TANK

**2 TANK BOTTOM, VERTICAL CANISTER ANODE INSTALLATION**  
 CP-01 SCALE: NOT TO SCALE  
 FILE: CP-02.dwg



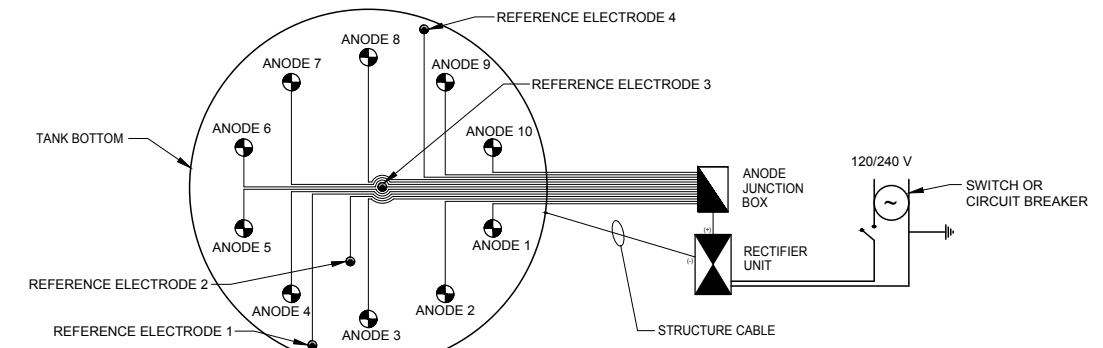
NOTE:  
 1. ROUTE ANODE CABLES AROUND THE FOOTINGS AND TO ANODE JUNCTION BOX ON EAST SIDE OF TANK.

**3 TANK BOTTOM, REFERENCE ELECTRODE INSTALLATION**  
 CP-01 SCALE: NOT TO SCALE  
 FILE: CP-02.dwg



NOTE:  
 1. ROUTE ANODE CABLES TO ANODE JUNCTION BOX ON EAST SIDE OF TANK

**1 TANK BOTTOM, HORIZONTAL CANISTER ANODE INSTALLATION**  
 CP-01 SCALE: NOT TO SCALE  
 FILE: CP-02.dwg



**4 SCHEMATIC - TANK BOTTOM EXTERIOR CATHODIC PROTECTION SYSTEM**  
 CP-01 SCALE: NOT TO SCALE  
 FILE: CP-02.dwg

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DRAWN TH	
CHECKED MA	
DATE APRIL 2017	

DISCIPLINE ENGINEER  
 PROJECT ENGINEER

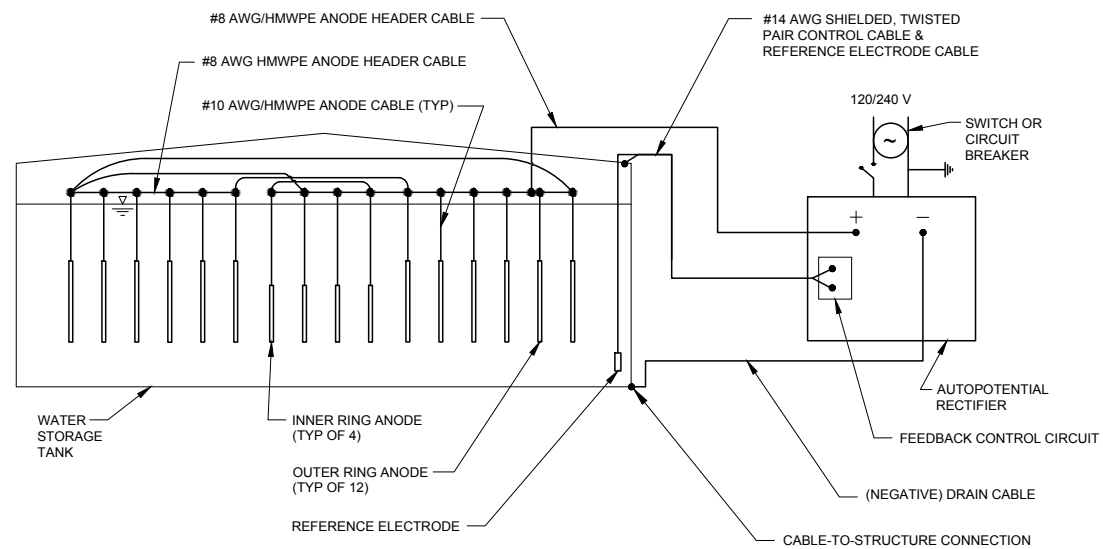
PROJECT MANAGER

**JDH CORROSION**  
 consultants, inc.  
 1100 Willow Pass Court Concord, CA 94520  
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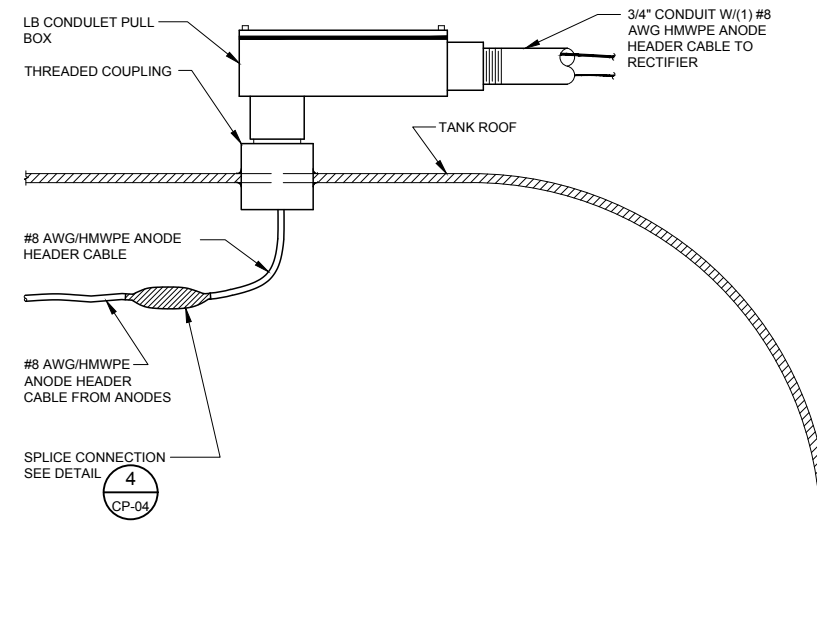
**MARINA COAST WATER DISTRICT**

REGIONAL URBAN WATER AUGMENTATION PROJECT  
 BLACKHORSE RECYCLED WATER RESERVOIR  
 CATHODIC PROTECTION  
 RESERVOIR SECTION, SCHEMATIC & DETAILS

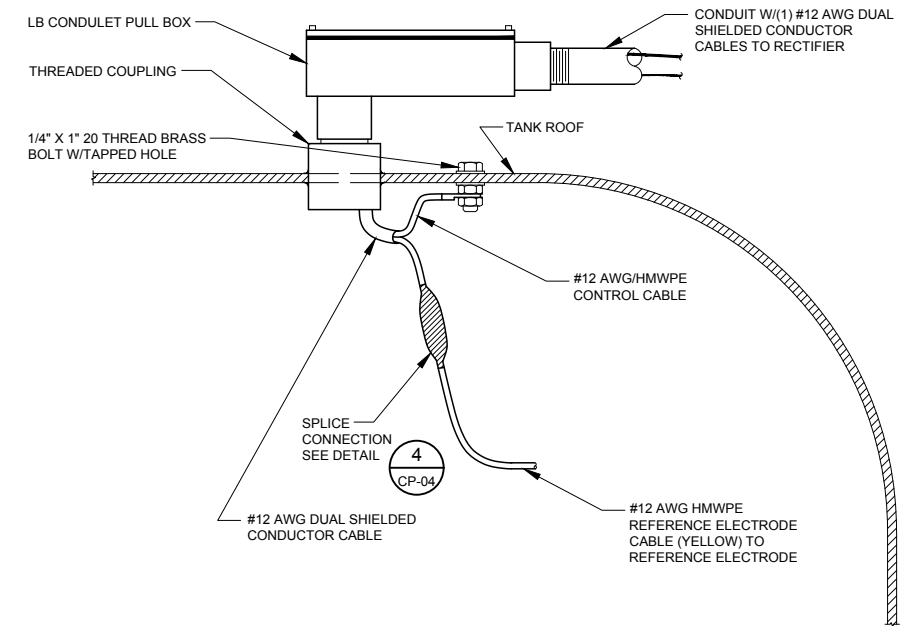
<b>VERIFY SCALES</b> BAR IS ONE INCH ON ORIGINAL DRAWING 0 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	JOB NO. 7568A.10 DRAWING NO. CP-02 SHEET NO. 88 OF 93
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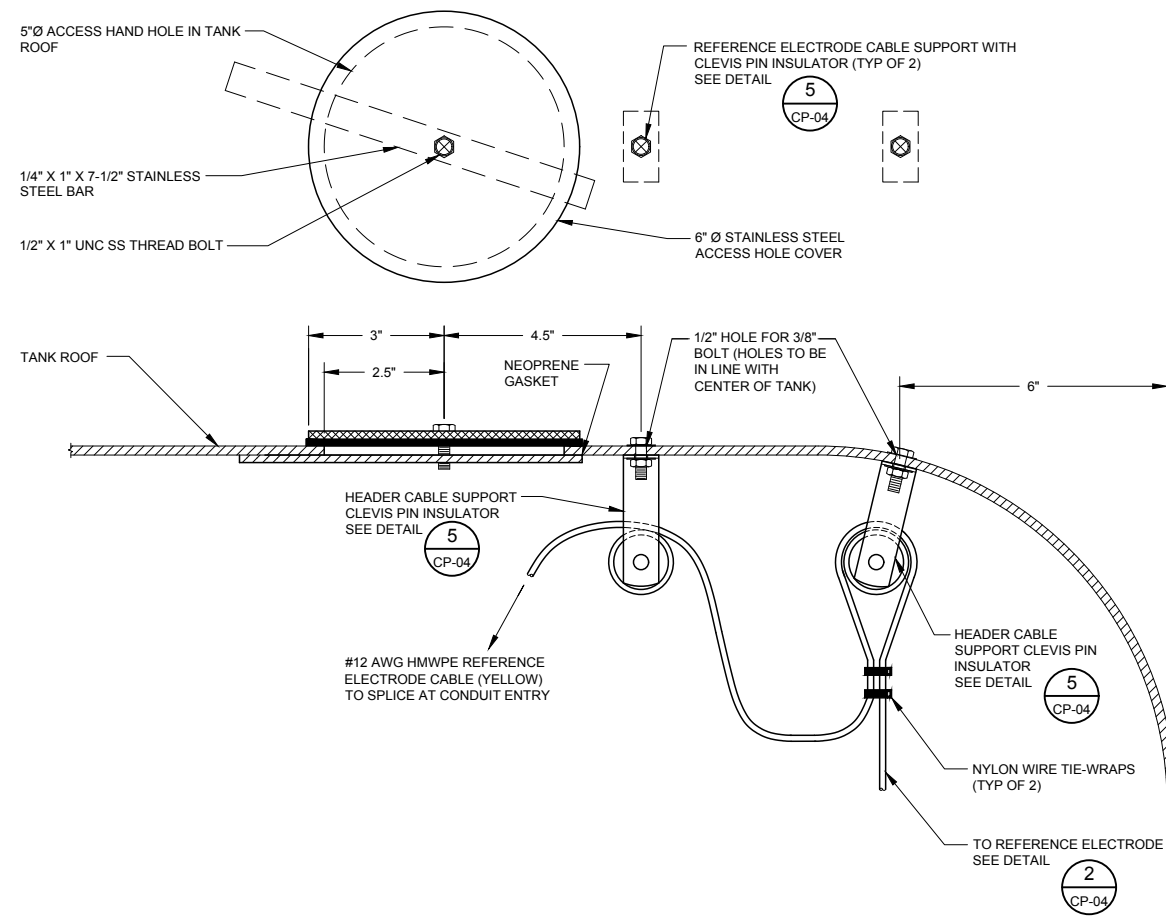
**1 SCHEMATIC - INTERNAL CATHODIC PROTECTION SYSTEM**  
CP-01



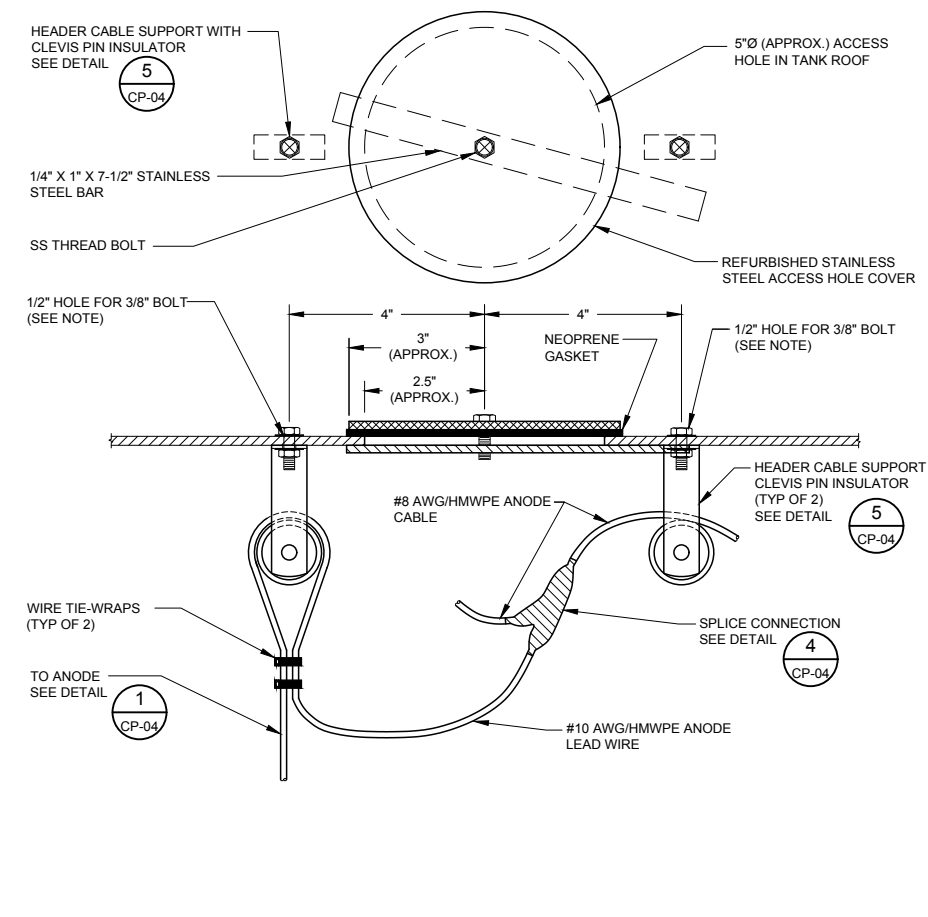
**2 PULL BOX & CONDUIT ENTRY FOR ANODE HEADER CABLE**  
CP-01, CP-02



**3 PULL BOX & CONDUIT ENTRY FOR REFERENCE ELECTRODE CABLE**  
CP-01, CP-02



**4 REFERENCE ELECTRODE ACCESS HAND-HOLE & SUSPENSION**  
CP-01, CP-02



**5 ANODE ACCESS HAND-HOLE**  
CP-01

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DISCIPLINE ENGINEER	PROJECT ENGINEER	PROJECT MANAGER
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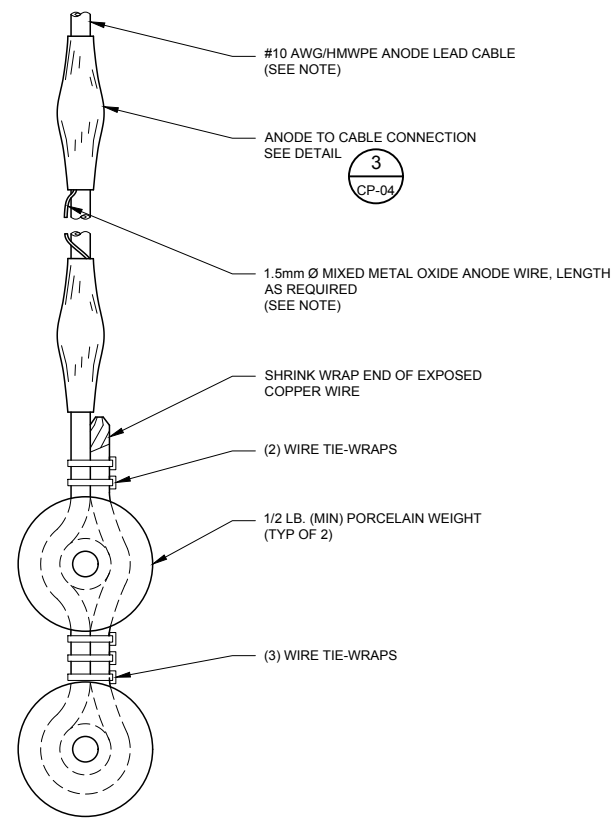
**Marina Coast Water District**

REGIONAL URBAN WATER AUGMENTATION PROJECT  
BLACKHORSE RECYCLED WATER RESERVOIR  
CATHODIC PROTECTION  
TANK INTERIOR SCHEMATIC & DETAILS

**VERIFY SCALES**  
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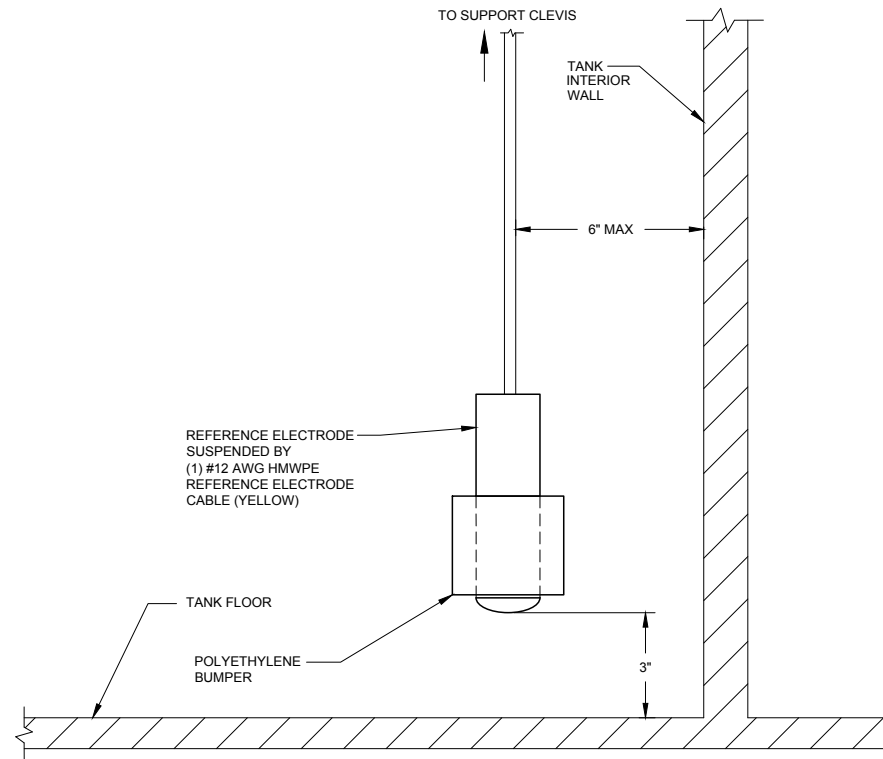
JOB NO. 7568A.10  
DRAWING NO. CP-03  
SHEET NO. 89 OF 93



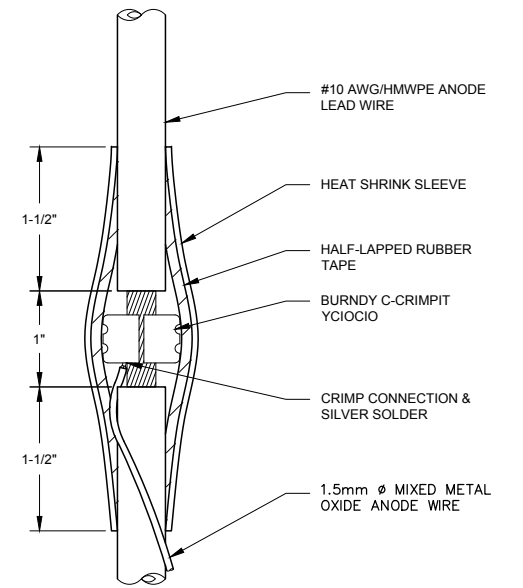


NOTE:  
ANODE MATERIAL LENGTHS: 24 FEET LONG (OUTER RING), AND 10 FEET LONG (INNER RING).

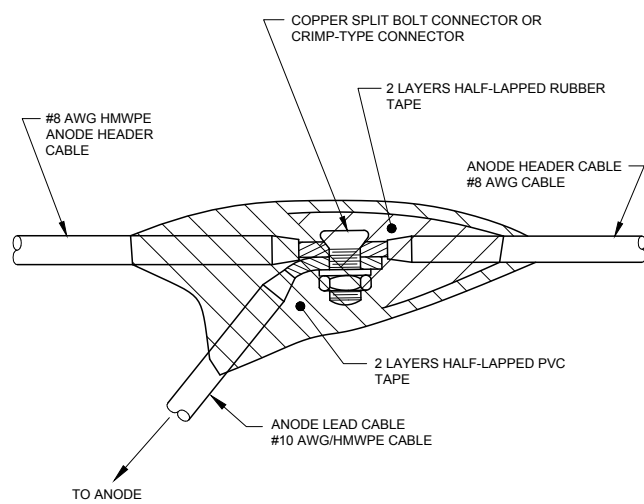
**1** MMO ANODE SUSPENSION  
CP-02, CP-03



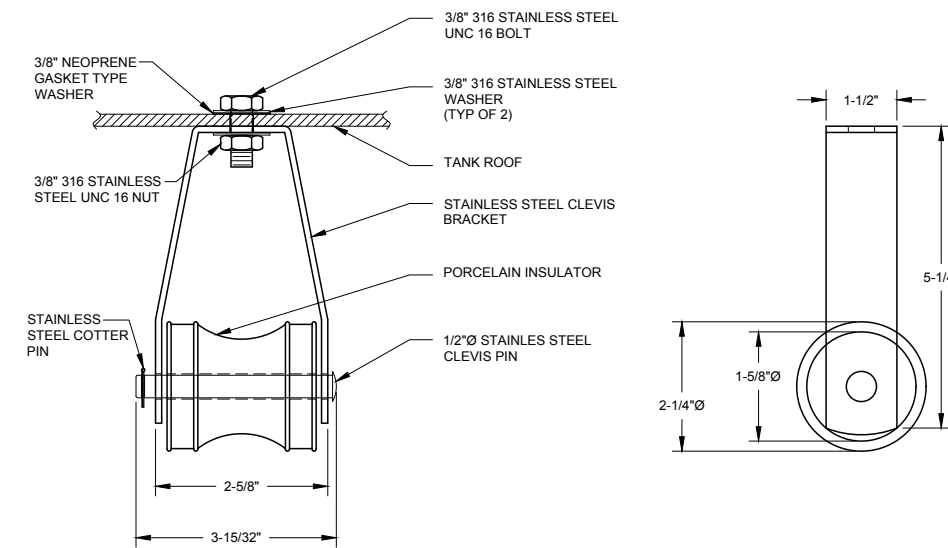
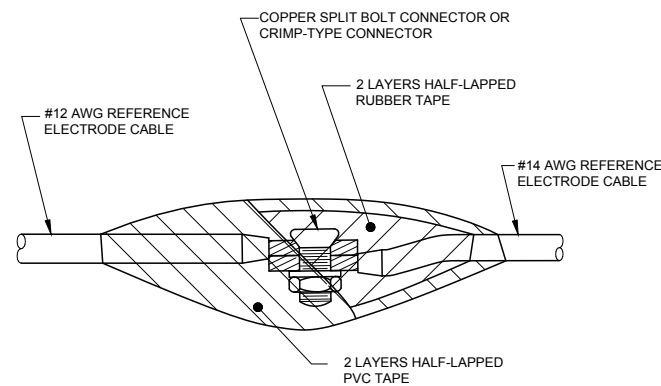
**2** REFERENCE ELECTRODE INSTALLATION  
CP-01, CP-02, CP-03



**3** ANODE-TO-CABLE CONNECTION  
CP-04



**4** SPLICE CONNECTION  
CP-03



NOTE:  
ALL HARDWARE SHALL BE STAINLESS STEEL.

**5** CLEVIS PIN CABLE SUPPORT  
CP-03

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DATE	APRIL 2017



DISCIPLINE ENGINEER

PROJECT ENGINEER

PROJECT MANAGER

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consultants, inc.

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**MARINA COAST WATER DISTRICT**

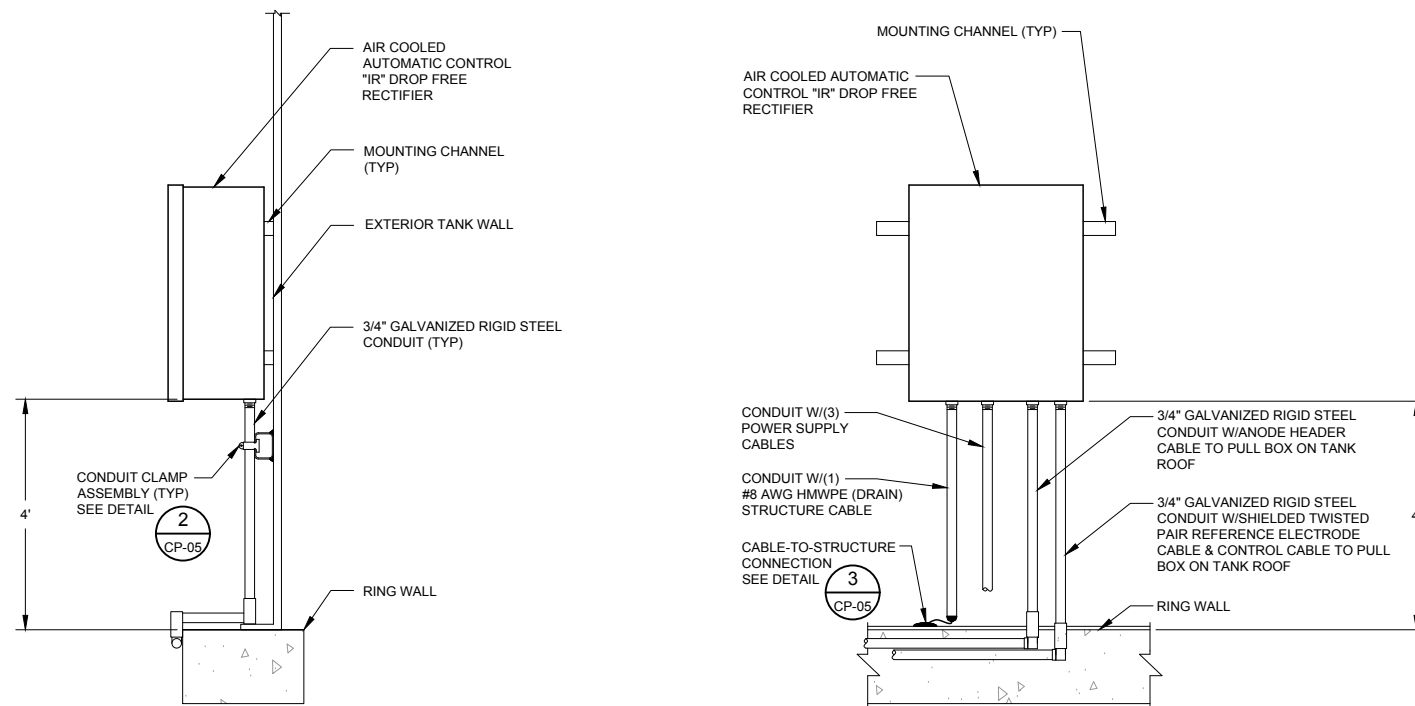
REGIONAL URBAN WATER AUGMENTATION PROJECT

BLACKHORSE RECYCLED WATER RESERVOIR

CATHODIC PROTECTION

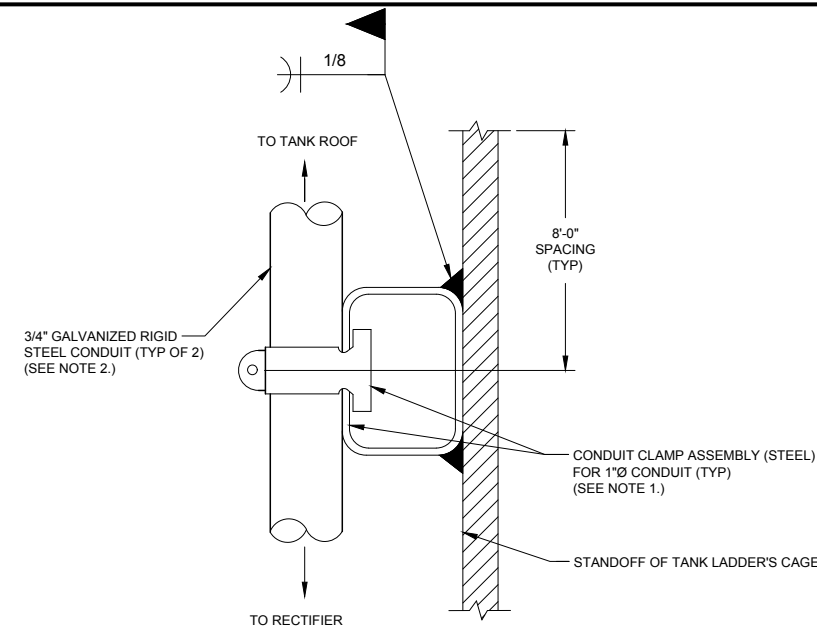
TANK INTERIOR SCHEMATIC & DETAILS

<b>VERIFY SCALES</b>	JOB NO. 7568A.10
BAR IS ONE INCH ON ORIGINAL DRAWING	DRAWING NO. CP-04
0 1"	SHEET NO. 90 OF 93
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	



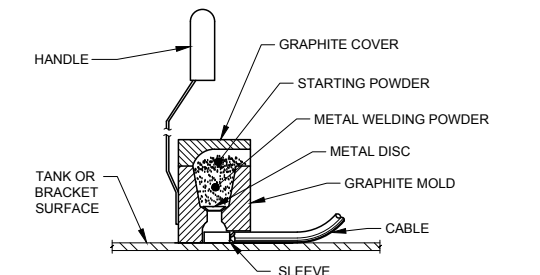
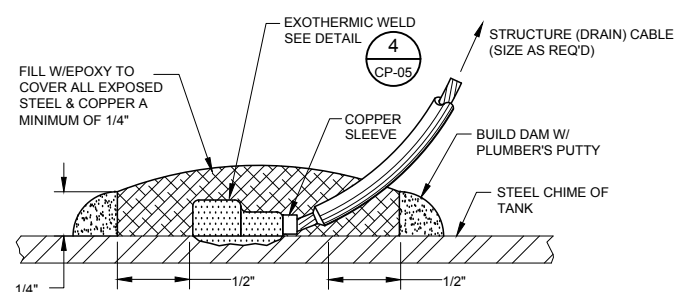
- NOTES:
1. ATTACH RIGID STEEL CONDUIT TO THE RING WALL, THEN TO THE EXTERIOR LADDER STANDOFFS. SEE DETAIL 2/CP-05.
  2. ALL CONDUIT SHALL BE GALVANIZED RIGID STEEL CONDUIT AND PROVIDED WITH THE SAME COATING AS THE TANK.
  3. ROUTE AC CONDUIT TO RESERVOIR CONTROL PANEL.

**1 WALL MOUNTED RECTIFIER FOR INTERIOR**  
CP-01, CP-02



- NOTE:
1. CONDUIT CHANNEL UNISTRUT TO BE WELDED TO TANK AND CONDUIT TO BE MOUNTED TO THE STANDOFFS OF THE TANK LADDER'S CAGE. TOUCH UP AREAS DAMAGED BY THE WELDING PROCESS WITH A PRIMER AND TOP COAT PER SPECIFICATIONS. COMPLETE FINAL TOUCH UPS AFTER THE CONDUIT HAS BEEN INSTALLED.
  2. THE CABLE IN THE CONDUIT FOR THE REFERENCE ELECTRODE WILL BE (1) #12 AWG/HMWPE SHIELDED TWISTED PAIR DUAL CONDUCTOR CABLE. THE CABLE IN THE CONDUIT FOR THE ANODES WILL BE (1) #8 AWG/HMWPE ANODE HEADER CABLE.
  3. ALL CONDUIT SHALL BE GALVANIZED RIGID STEEL CONDUIT AND PROVIDED WITH THE SAME COATING AS THE TANK.

**2 CONDUIT CLAMP ASSEMBLY**  
CP-05, CP-06



- STEP 1.** FILE STRUCTURE CONNECTION AREA TO BARE SHINY METAL AND CLEAN.
- STEP 2.** STRIP INSULATION FROM WIRE. ATTACH SLEEVE REQUIRED ON #6 AWG WIRE OR SMALLER
- STEP 3.** HOLD MOLD FIRMLY WITH OPENING AWAY FROM OPERATOR AND IGNITE WITH FLINT GUN.
- STEP 4.** REMOVE SLAG FROM CONNECTION AND PEEN WELD FOR SOUNDNESS.
- STEP 5.** COVER CONNECTION AND EXPOSED STRUCTURE SURFACE WITH COATING COMPOUND PER DETAIL 3/CP-05.

NOTE:  
PROCEDURE SHOWN ABOVE IS TO BE USED AS A GENERAL GUIDE ONLY.  
CONSULT MANUFACTURER'S LITERATURE FOR SPECIFIC INSTALLATION INSTRUCTIONS.

**3 CABLE-TO-STRUCTURE CONNECTION**  
CP-05, CP-06

**4 EXOTHERMIC WELD**  
CP-05

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DATE APRIL 2017	
DISCIPLINE ENGINEER	

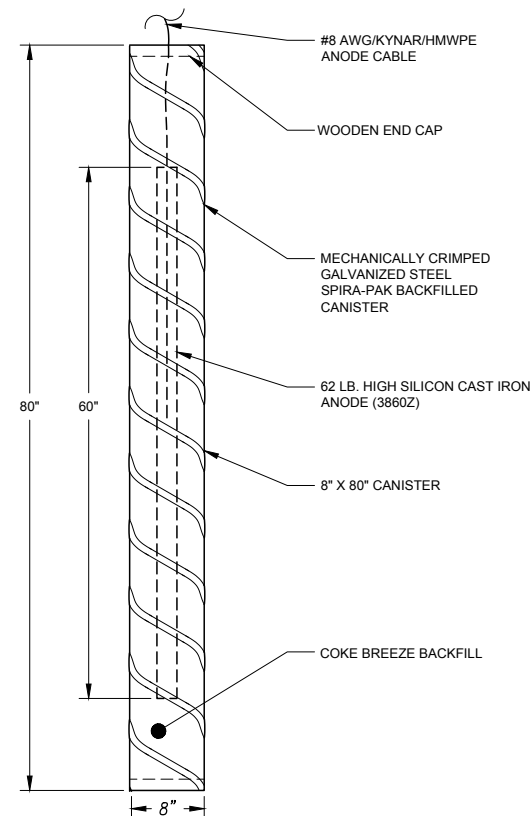
PROJECT ENGINEER	PROJECT MANAGER
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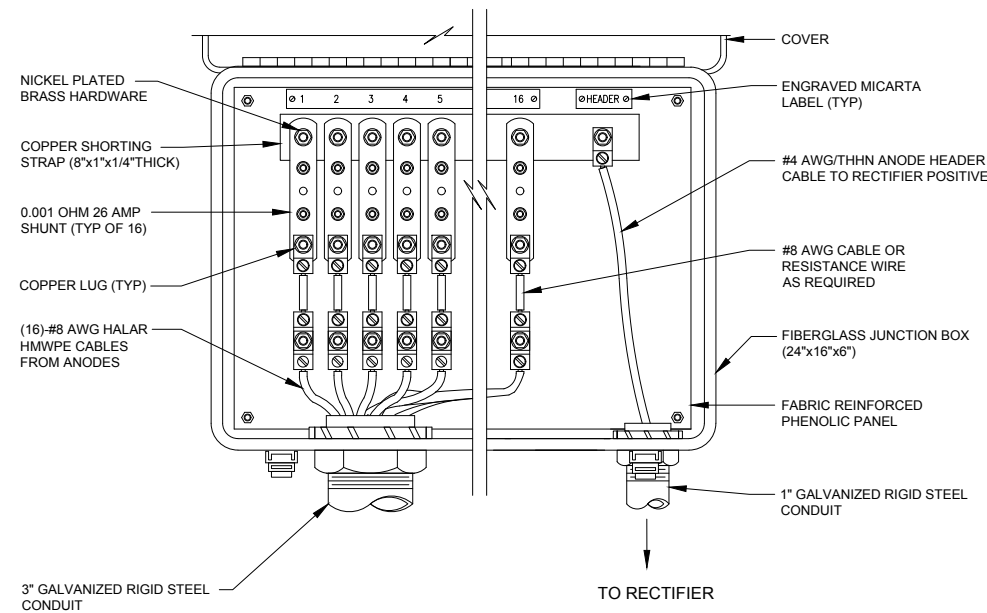
**Marina Coast Water District**

REGIONAL URBAN WATER AUGMENTATION PROJECT  
BLACKHORSE RECYCLED WATER RESERVOIR  
CATHODIC PROTECTION  
TANK INTERIOR DETAILS

VERIFY SCALES BAR IS ONE INCH ON ORIGINAL DRAWING 0 1"	JOB NO. 7568A.10
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	DRAWING NO. CP-05
	SHEET NO. 91 OF 93

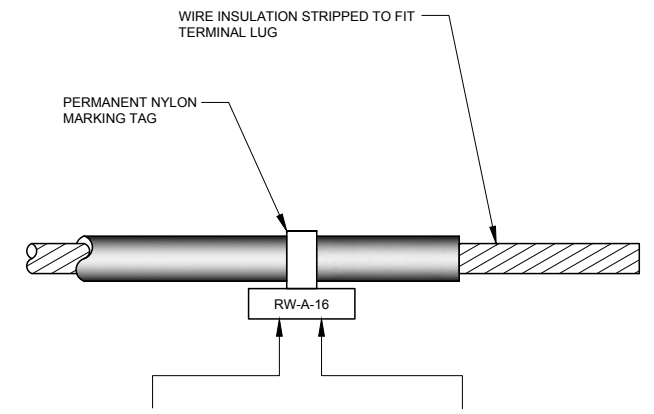


**1** SPIRA PAK CANISTER ANODE  
CP-02



**2** ANODE JUNCTION BOX FOR TANK BOTTOM EXTERIOR  
CP-06

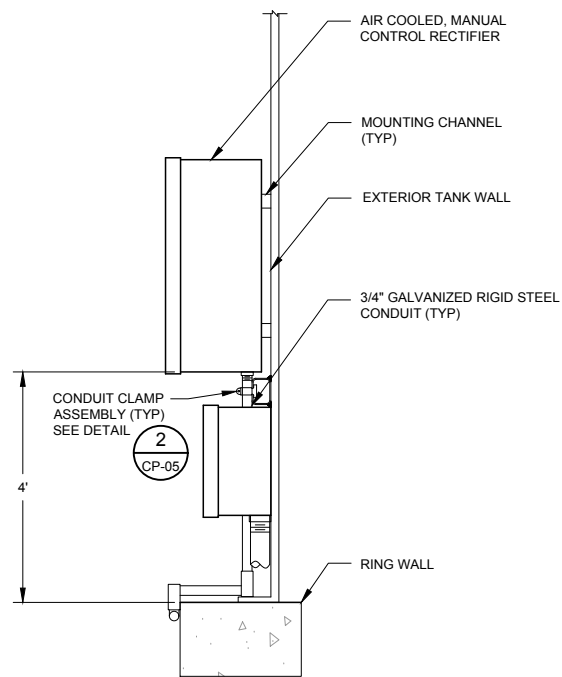
NOTES:  
 1. RESISTANCE WIRE TO BE INSTALLED BY THE ENGINEER.  
 2. IDENTIFY CABLES. SEE DETAIL 3, SHEET CP-06.  
 3. ALL CONDUIT SHALL BE GALVANIZED RIGID STEEL CONDUIT AND PROVIDED WITH THE SAME COATING AS THE TANK.



**3** CABLE IDENTIFICATION  
CP-06

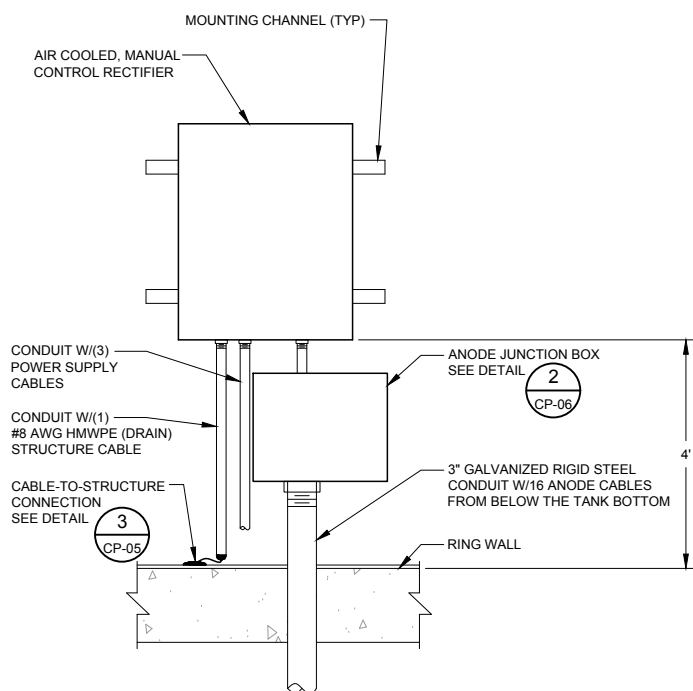
ABBREVIATIONS  
 AN - ANODE  
 RW - RECYCLED WATER  
 DR - DRAIN CABLE  
 TT - TEST CABLE

NUMBER  
 ANODE NUMBER



**4** WALL MOUNTED RECTIFIER FOR TANK BOTTOM EXTERIOR  
CP-01

NOTES:  
 1. ATTACH RIGID STEEL CONDUIT TO THE RING WALL.  
 2. ALL CONDUIT SHALL BE GALVANIZED RIGID STEEL CONDUIT AND PROVIDED WITH THE SAME COATING AS THE TANK.  
 3. ROUTE AC CONDUIT TO RESERVOIR CONTROL PANEL.  
 4. ALL CONDUIT SHALL BE GALVANIZED RIGID STEEL CONDUIT AND PROVIDED WITH THE SAME COATING AS THE TANK.



**3** CP-05

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**Marina Coast Water District**

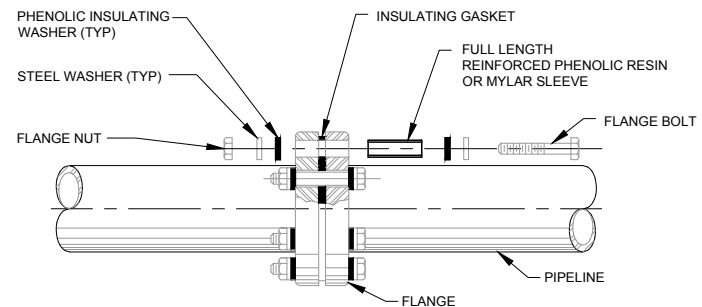
REGIONAL URBAN WATER AUGMENTATION PROJECT  
 BLACKHORSE RECYCLED WATER RESERVOIR  
 CATHODIC PROTECTION  
 TANK BOTTOM EXTERIOR DETAILS

VERIFY SCALES  
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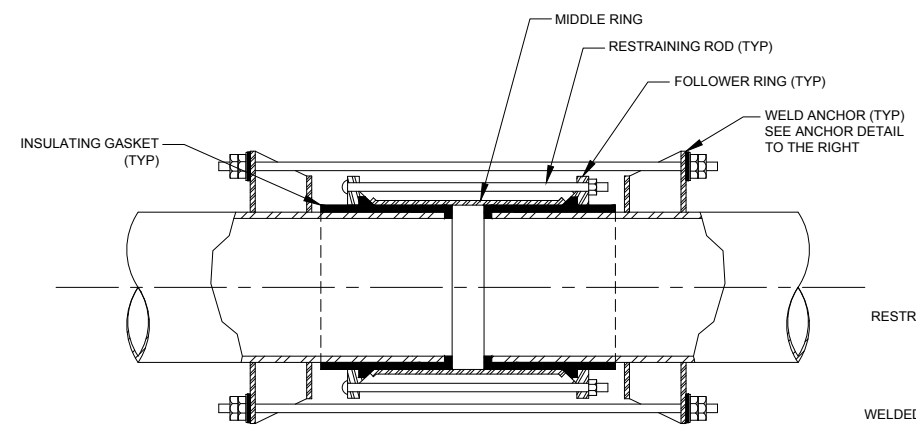
JOB NO. 7568A.10  
 DRAWING NO. CP-06  
 SHEET NO. 92 OF 93

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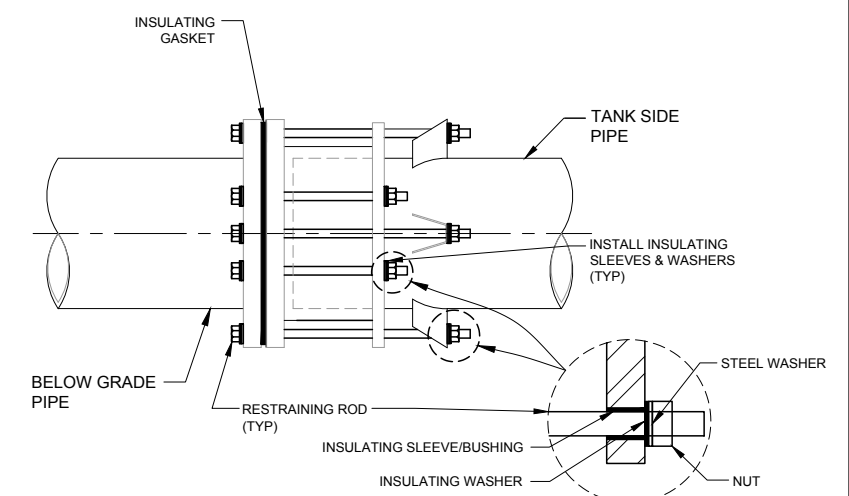
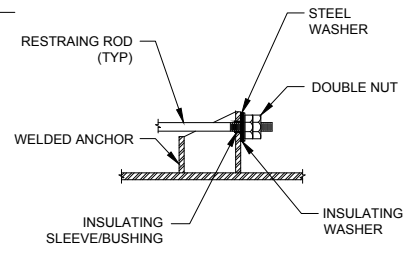




INSULATING FLANGE



INSULATING FLANGED COUPLING ADAPTER



INSULATING FLANGED COUPLING ADAPTER

- NOTES:
1. THE INSULATING FLANGE KIT SHALL BE FOR WATER SERVICE, SUITABLE FOR WET & DRY LOCATIONS, AND BE OF SAME PRESSURE RATING AS THE FLANGE.
  2. THIS DETAIL IS TYPICAL FOR STEEL AND DUCTILE IRON PIPE FLANGES, AND ALSO FOR STEEL PIPE INSULATING FLEXIBLE COUPLINGS AND INSULATED RESTRAINED FLEXIBLE COUPLINGS.
  3. THE ALLOY OF THE STEEL WASHERS SHALL BE THE SAME AS IS SPECIFIED FOR THE FLANGE BOLTS.

**1** INSULATING JOINTS  
CP-01

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DISCIPLINE ENGINEER  
PROJECT ENGINEER

PROJECT MANAGER

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BLACKHORSE RECYCLED WATER RESERVOIR  
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TANK EXTERIOR DETAILS

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JOB NO. 7568A.10  
DRAWING NO. CP-07  
SHEET NO. 93 OF 93