SCHWARTZ
PLANT E
OUTFALL LINE

WASTEWATER SYSTEM IMPROVEMENTS FOR THE GRAND STRAND WATER AND SEWER AUTHORITY

CENTRAL WASTEWATER TREATMENT SYSTEM

PROJECT NO. CA68503.81 PART 4 48inch EFFLUENT OUTFALL

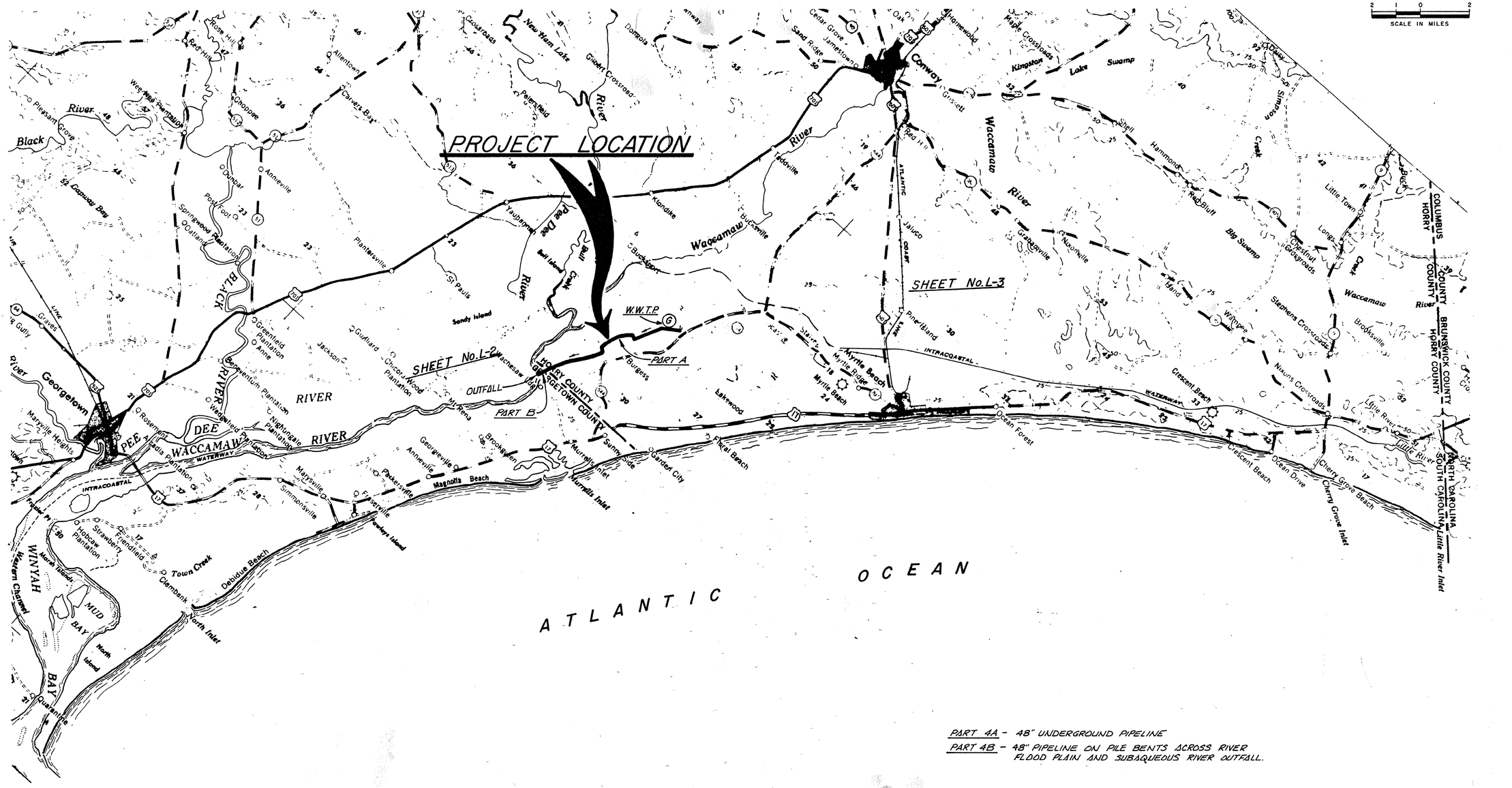
EPA NO. C450381-03

BLACK, CROW AND EIDSNESS, INC

GAINESVILLE FLORIDA
COLUMBIA SOUTH CAROLINA

7-09 017 S

SEE SHEET NO. 2 FOR INDEX



PART 4A - 48" UNDERGROUND PIPELINE

PART 4B - 48" PIPELINE ON PILE BENTS ACROSS RIVER FLOOD PLAIN AND SUBAQUEOUS RIVER OUTFALL.

C 450381-03

GRAND STRAND WATER & SEWER AUTHORITY

BLACK, CROW AND EIDSNESS, INC.
ENGINEERS

DRAWN BY: BW | DATE: SEPT 1978
CHECKED BY: | FILE NO. 0468508.01

SCALE: GRAPHIC

7-09-017-5

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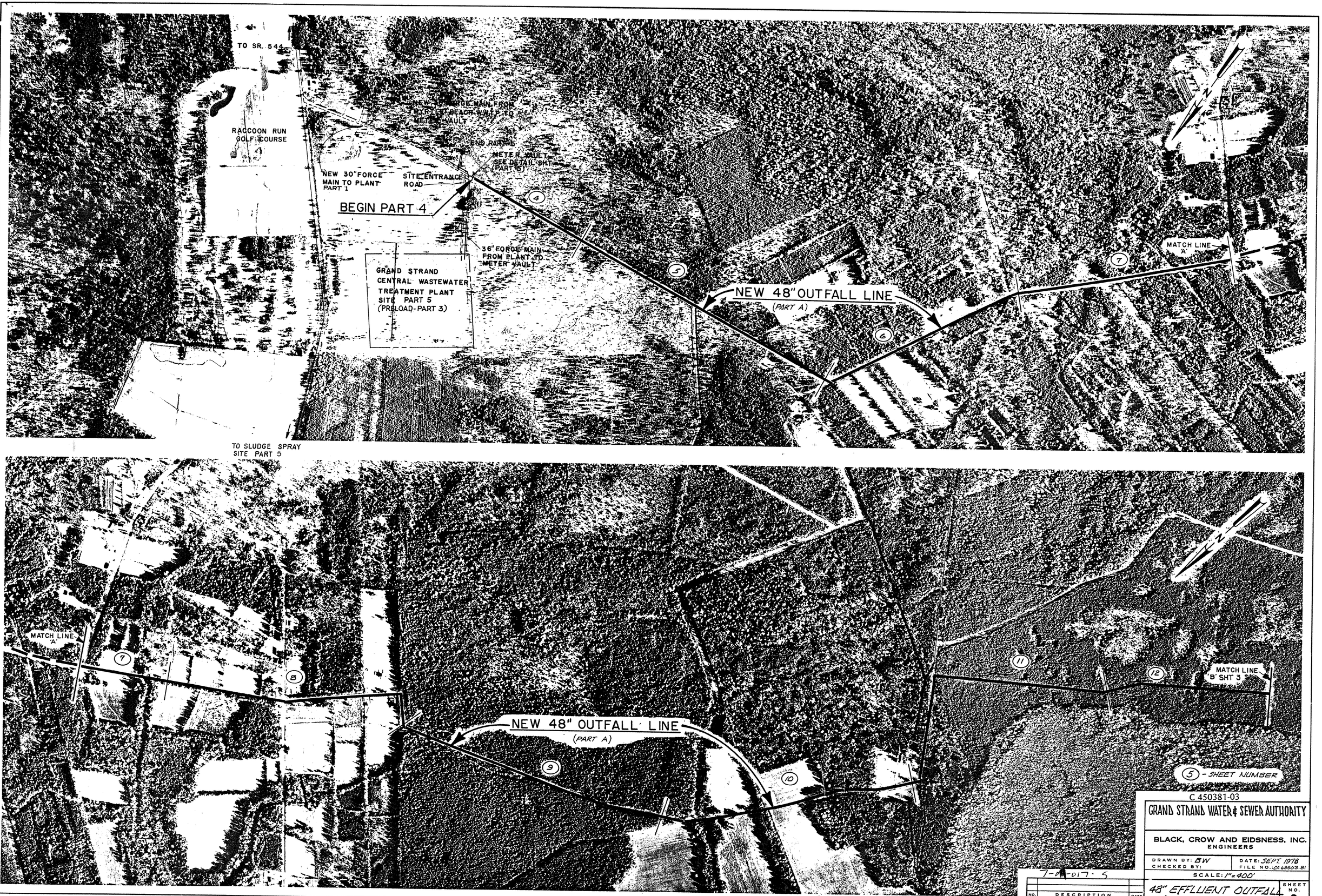
	REVISIONS	

48" EFFLUENT OUTFALL GENERAL LOCATION MAP

SHEET NO. 1

SEP 29 1978



C 450381-03

GRAND STRAND WATER & SEWER AUTHORITY

BLACK, CROW AND EIDSNESS, INC.
ENGINEERS

DRAWN BY: BW | DATE: SEPT. 1978
CHECKED BY: | FILE NO.: CA 48503.81
SCALE: 1" = 400'

7-CA-017-S

NO.	DESCRIPTION	DATE
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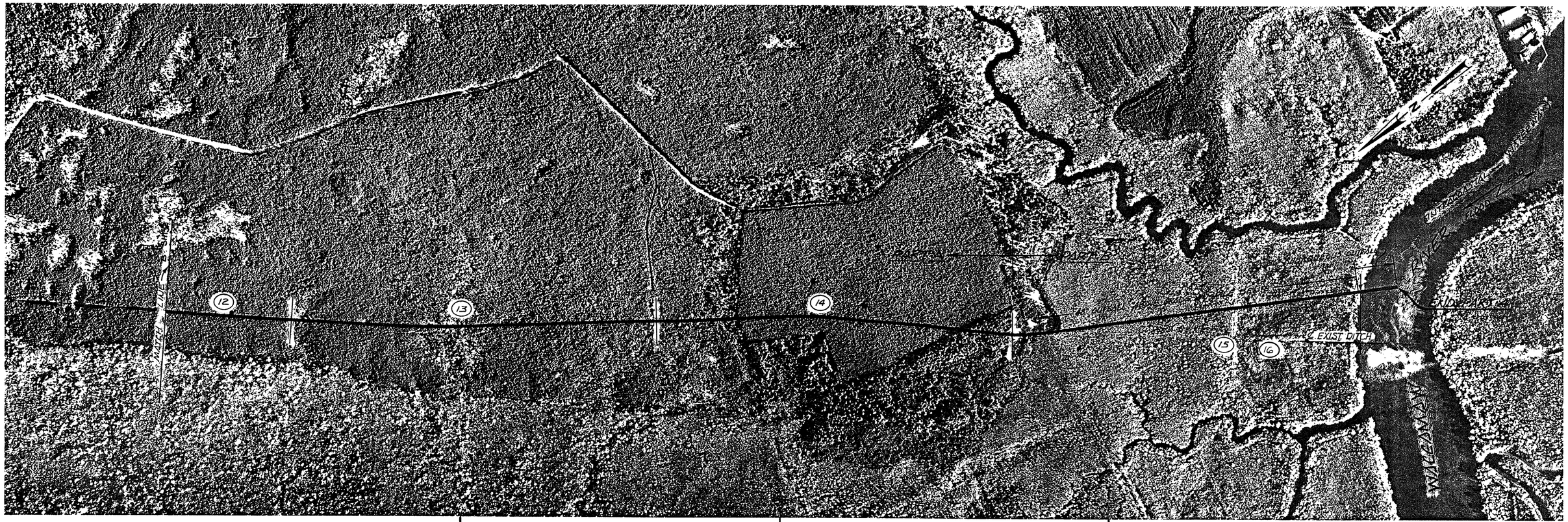
48" EFFLUENT OUTFALL PIPELINE

SHEET NO. 2

C 450381-03

SEP 29 1978



LEGEND

T.#..... N/A = TARGET NUMBER..... NOT AVIABLE *
T.P.#..... 114 = TRAVERSE POINT NUMBER
P.S.#..... 73+27.72 = PROFILE STATION NUMBER..... (SURVEY STATION)

* MAY BE SAME NUMBER AS TRAVERSE POINT

23
22
17
21

DOT DENOTES APPROXIMATE LOCATION, (EACH SIDE & OF ROADWAY.) NUMBER DENOTES GROUND ELEVATION AT DOT.

BORING LOCATION AND NUMBER
P.P.....POWER POLE
B.M.#.....BENCH MARK NUMBER (SURVEY ELEVATION REF)
J.C.T. BOX.....TELEPHONE (ABOVE GROUND) JUCTION BOX
U.G.T.C.....UNDERGROUND TELEPHONE CABLE
C.M.P.....CORRUGATED METAL PIPE
R.C.P.....REINFORCED CONCRETE PIPE
INV.....INVERT ELEVATION
P.....PROBE NUMBER (REF)
(7).....SHEET NUMBER OF PROFILE LIMITS
.....BUTTERFLY VALVE
.....AIR RELEASE VALVE
.....BLOW OFF
.....ACCESS MANHOLE
.....DIFFUSER

GENERAL NOTES

1. CONTRACTOR SHALL LAY PIPE TO GRADE AS INDICATED BY PLOTTED INVERT LINE AND DESIGNATED INVERT ELEVATIONS. MAXIMUM ELEVATION ERROR SHALL BE ± 0.15 FT.
2. THE CONTRACTOR SHALL BE SOLEY RESPONSIBLE FOR NOTIFYING ALL UTILITIES PRIOR TO CONSTRUCTION AND FOR VERIFYING LOCATION OF EXISTING FACILITIES.
3. ALL PIPES, DRIVEWAYS, PLANTED VEGETATION, ETC. DISTURBED OR DAMAGED DURING CONSTRUCTION, SHALL BE REPAIRED AND/OR REPLACED BY THE CONTRACTOR TO EQUAL OR BETTER CONDITION. DAMAGED PIPES SHALL NOT BE REUSED.
4. CONSTRUCTION SHALL BE ACCOMPLISHED SO AS TO PROVIDE INGRESS AND EGRESS TO PROPERTY OWNERS AT ALL TIMES.
5. CONTRACTOR SHALL AVOID BLOCKING NATURAL DRAINAGE AND PREVENT SILTATION OF CREEKS, CULVERTS AND DITCHES. TEMPORARY CULVERTS MAY BE REQUIRED FOR CONSTRUCTION ROADWAY.
6. AIR RELEASE VALVES, ETC. SHALL ALWAYS BE LOCATED AT THE EDGE OF R/W OR ROADWAY AS APPROVED BY THE RESIDENT ENGINEER WITH ONE (1) 4 x 4 TREATED MARKER POST DENOTING SUCH VALVE LOCATION NEARBY. ROUTE PIPING FROM TOP OF FORCE MAIN TO VALVE LOCATION AS REQUIRED. AIR RELEASE VALVES ETC. LOCATED IN THE WOODED AREAS MAY BE LOCATED DIRECTLY ABOVE PIPELINE.
7. CONTRACTOR TO RESTRICT WORKING AREA TO 50' WIDE COUNTY ROAD RIGHT-OF-WAY FROM PROJECT BEGINNING TO END OF COUNTY ROADS NEAR STATION 200+00.
8. EASEMENTS THROUGH WOODED SECTIONS ON FLOOD PLAIN AREA AS SHOWN.

THRUST RESTRAINT NOTES

R-1 48" - 90° BEND - PROVIDE 40 SQ. FT. REACTION BLOCKING AND RESTRAIN ALL JOINTS FROM 90° BEND TO 170 FEET BOTH DIRECTIONS. PULL STRENGTH DECREASING LINEARLY FROM 200,000 lbs TO 0 AT 170 FEET.

R-2 48" - 45° BEND - PROVIDE 40 SQ. FT. REACTION BLOCKING AND RESTRAIN ALL JOINTS FROM 45° BEND TO 32 FEET BOTH DIRECTIONS. PULL STRENGTH DECREASING LINEARLY FROM 40,000 IBS. TO 0 AT 32 FEET.

R-3 48" - 22 ½° BEND - CONTRACTOR CAN PROVIDE THRUST RESTRAINT WITH EITHER OF TWO ALTERNATE METHODS.
A. PROVIDE 40 SQ. FT. REACTION BLOCKING.
B. RESTRAIN ALL JOINTS FROM 22 ½° BEND TO 32 FEET BOTH DIRECTIONS. PULL STRENGTH DECREASING LINEARLY FROM 22,000 IBS. TO 0 AT 32 FEET.

R-4 48" - TEMPORARY PLUG AT MAIN END - PROVIDE 40 SQ. FT. REACTION BLOCKING AND RESTRAIN ALL JOINTS FROM PLUG TO 140 FEET FROM PLUG. PULL STRENGTH DECREASING LINEARLY FROM 140,000 IBS. TO 0 AT 140 FEET. TEMPORARY REACTION BLOCKS TO BE REMOVED AFTER SUCESSFULLY COMPLETING HYDROSTATIC TEST.

R-5 48" - 67° BEND - PROVIDE 40 SQ. FT. REACTION BLOCKING AND RESTRAIN ALL JOINTS FROM 67° BEND TO 95 FEET BOTH DIRECTIONS. PULL STRENGTH DECREASING LINEARLY FROM 110,000 IBS. TO 0 AT 95 FEET.

R-6 48" - PRESSURE TEST AGAINST 48" BUTTERFLY VALVE AT APPROXIMATE STATION No. 306+90 - RESTRAIN ALL JOINTS FROM 48" BUTTERFLY VALVE TO 240 FEET FROM VALVE. NO BLOCK REQUIRED.

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18. SOIL BORING LOGS
19. SOIL BORING LOGS
20. SOIL BORING LOGS
21. PILE BENT DETAIL
22. MISCELLANEOUS DETAILS
23. MISCELLANEOUS DETAILS

7-04-017-S

NO.	DESCRIPTION	DATE
	REVISIONS	

GRAND STRAND WATER & SEWER AUTHORITY

BLACK, CROW AND EIDSNESS, INC.
ENGINEERS

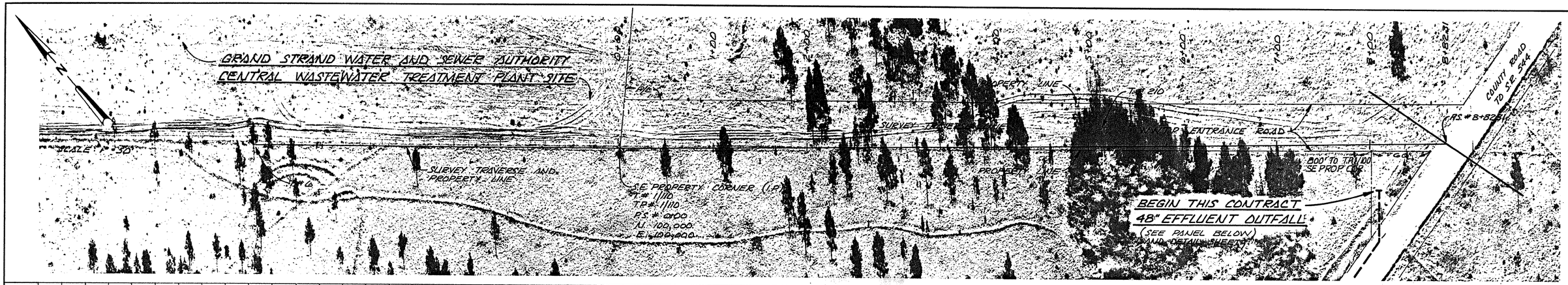
DRAWN BY: B.W. | DATE: SEPT. 1978
CHECKED BY: | FILE NO.: CA68503.81
SCALE: 1" = 400'

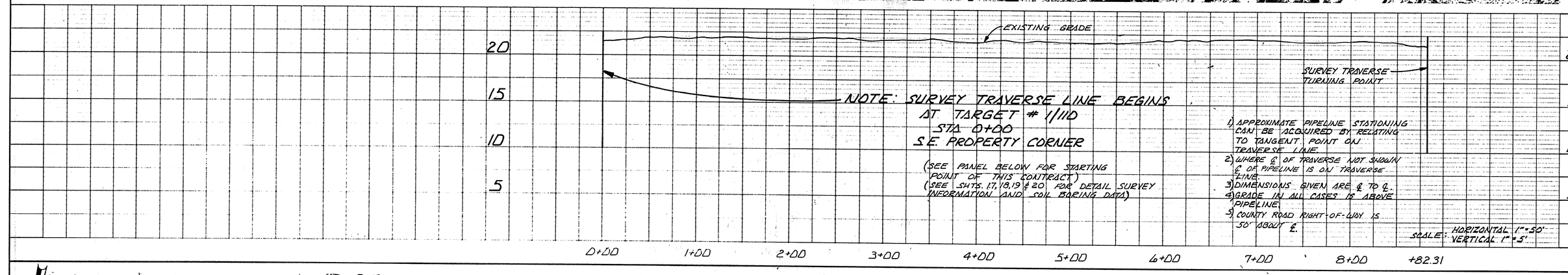
48" EFFLUENT OUTFALL PIPELINE

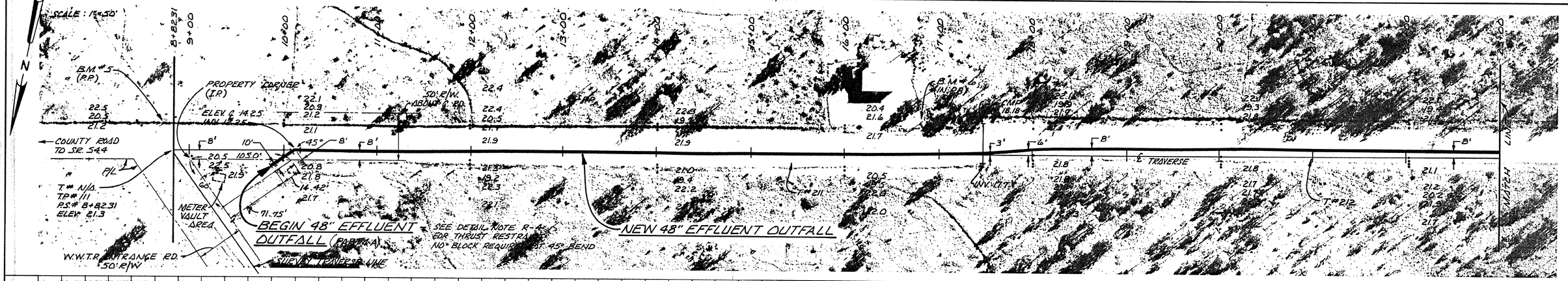
SHEET NO. 3

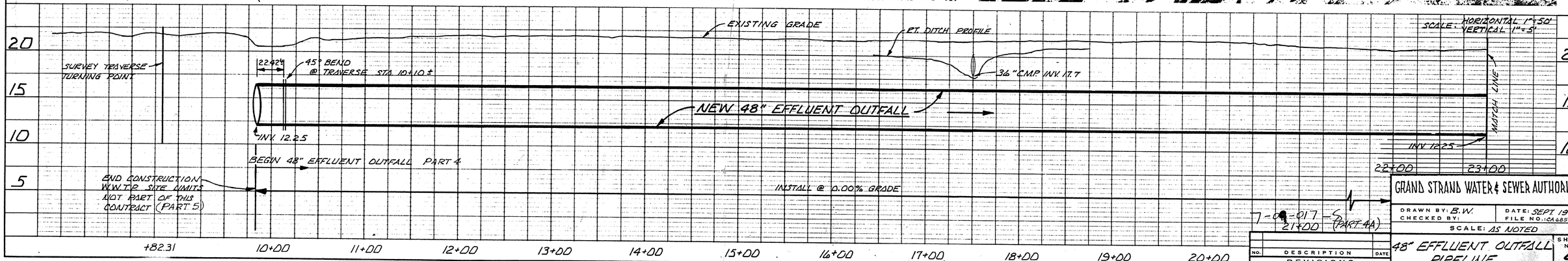
C 450381-03

SEP 29 1978









GRAND STRAND WATER & SEWER AUTHORITY

DRAWN BY: B.W. DATE: SEPT 1978
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7-09-017-S (PART 4A)

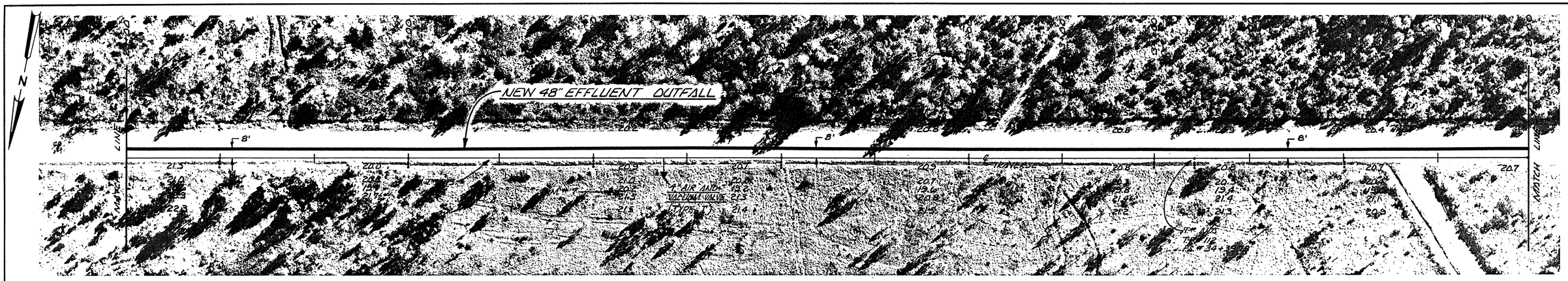
NO.	DESCRIPTION	DATE
	REVISIONS	

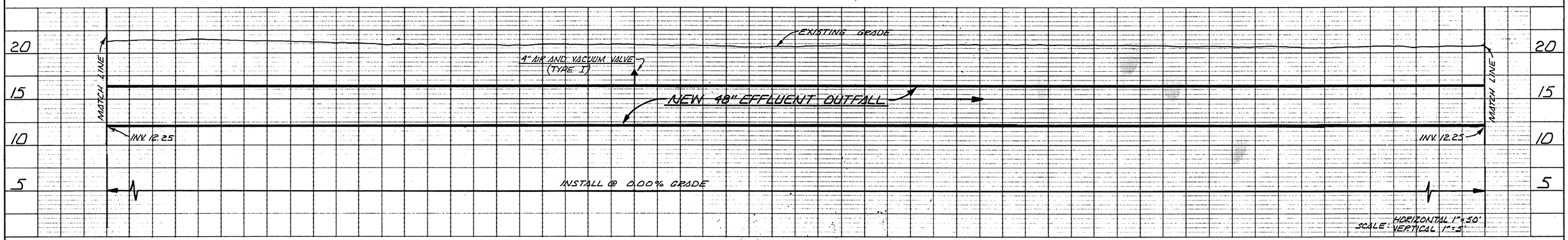
48" EFFLUENT OUTFALL PIPELINE

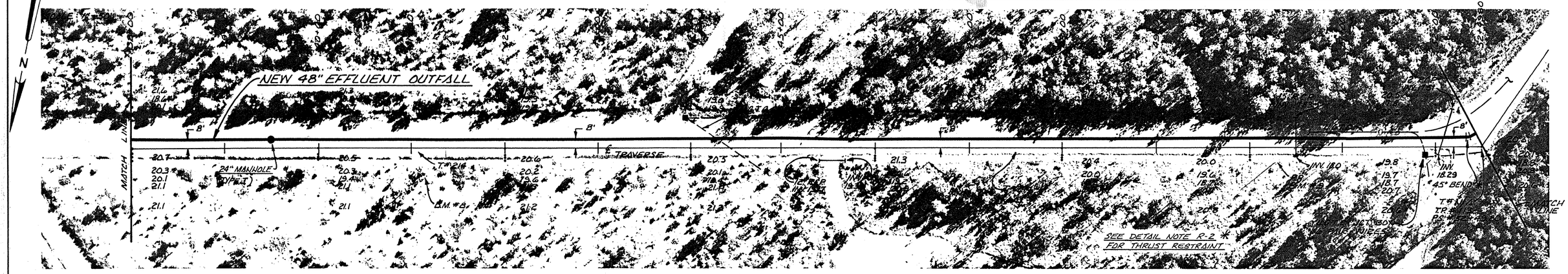
SHEET NO. 4

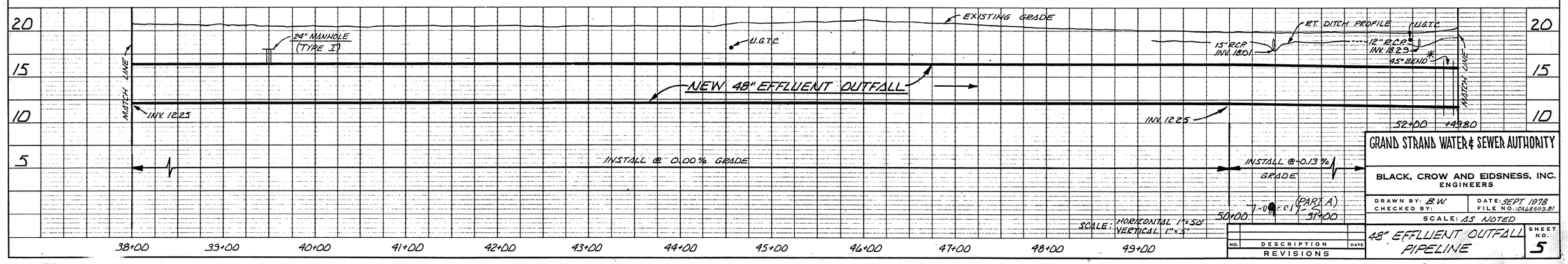
BLACK, CROW AND EIDSNESS, INC.

SEP 29 1978









GRAND STRAND WATER & SEWER AUTHORITY

BLACK, CROW AND EIDSNESS, INC.
ENGINEERS

DRAWN BY: B.W. | DATE: SEPT 1978
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48" EFFLUENT OUTFALL PIPELINE

SHEET NO. 5

NO.	DESCRIPTION	DATE
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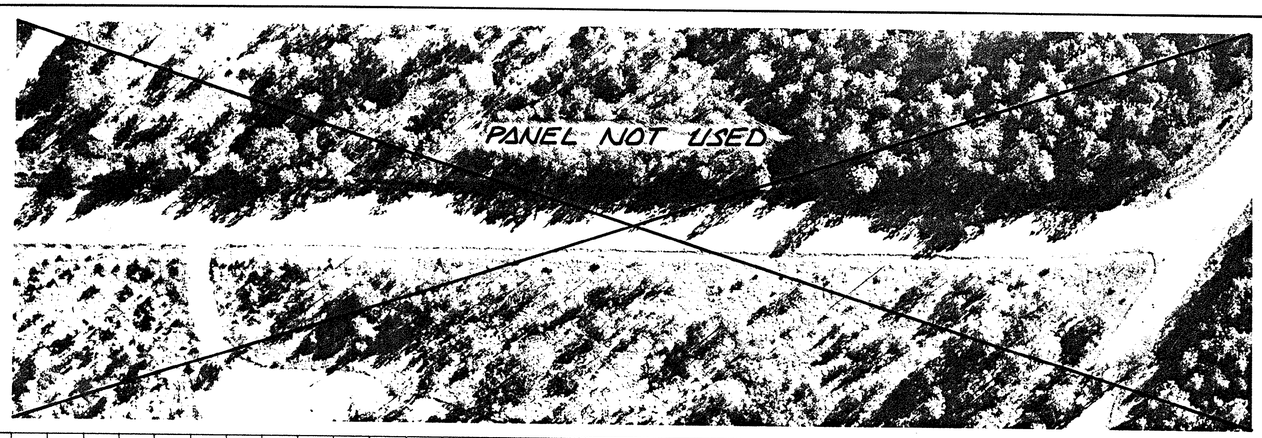
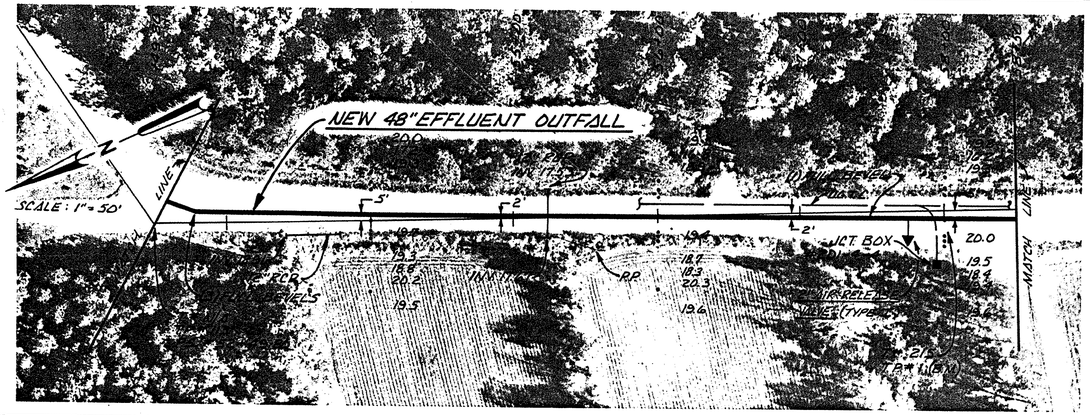
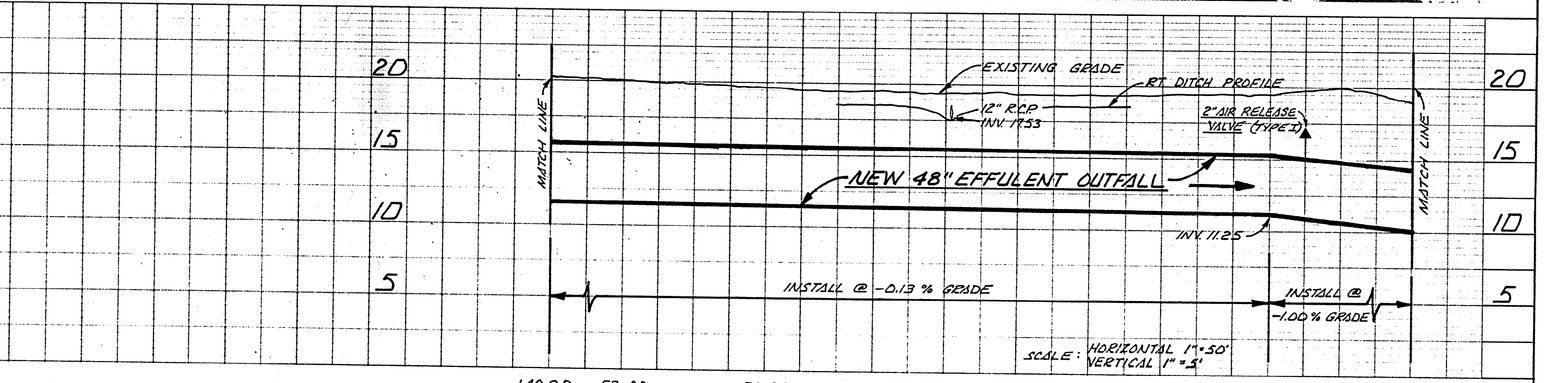
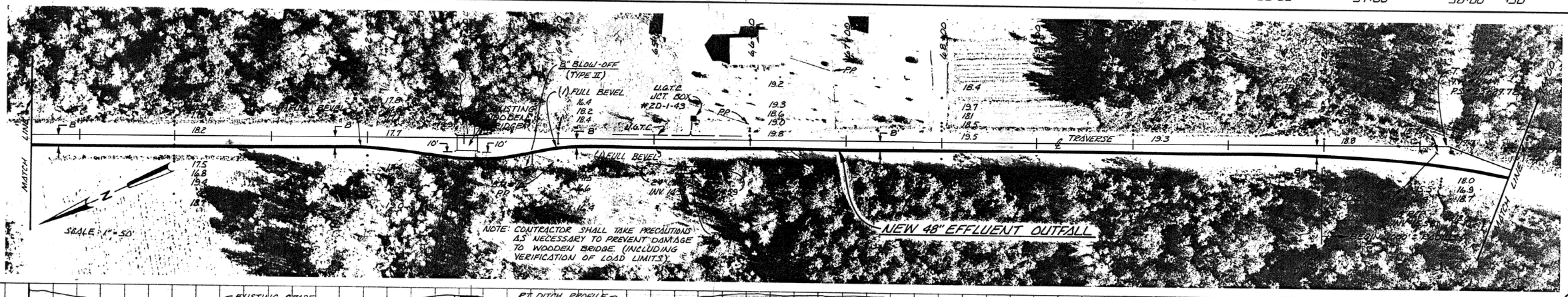
C 450381-03

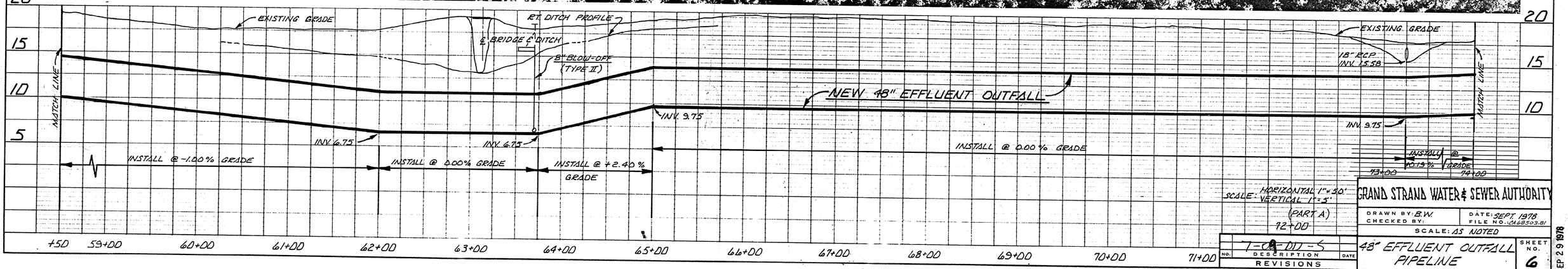
SEP 29 1978











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48" EFFLUENT OUTFALL PIPELINE

SHEET NO. 6

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BLACK, CROW AND EIDSNESS, INC.
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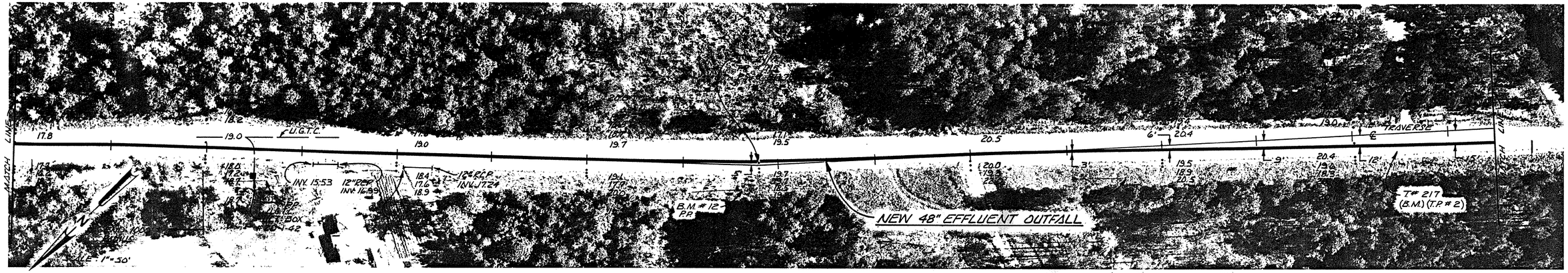

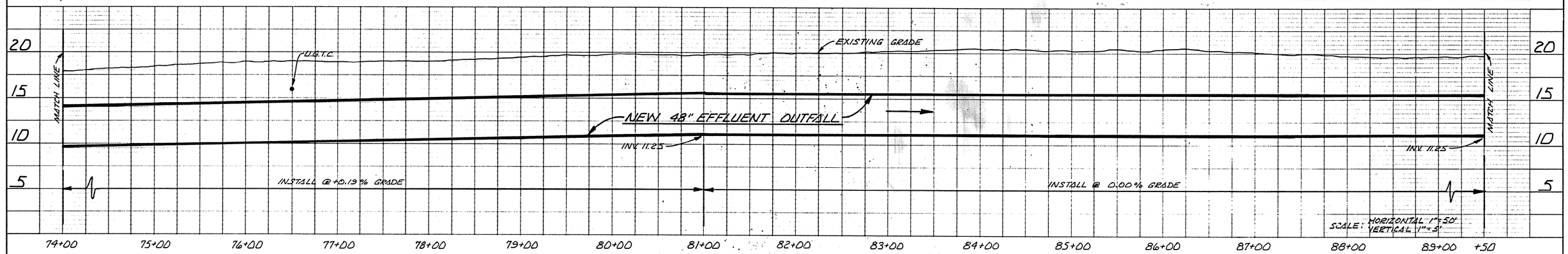

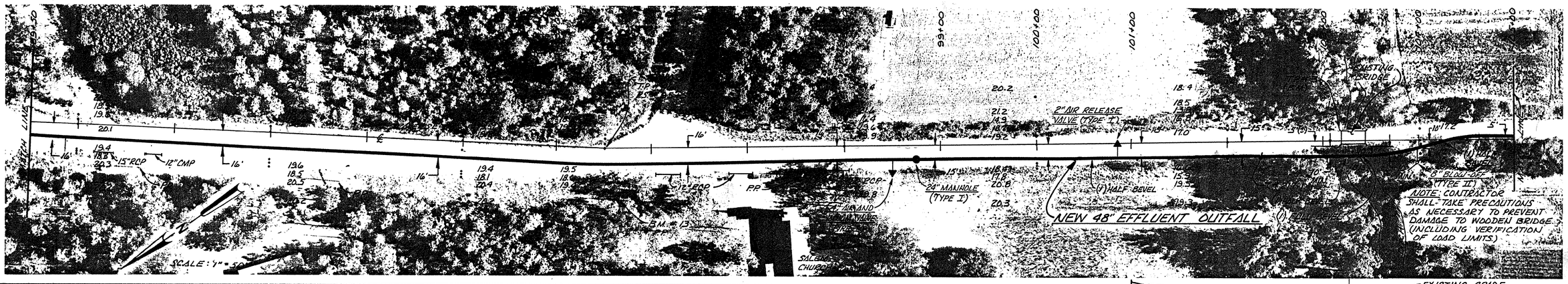

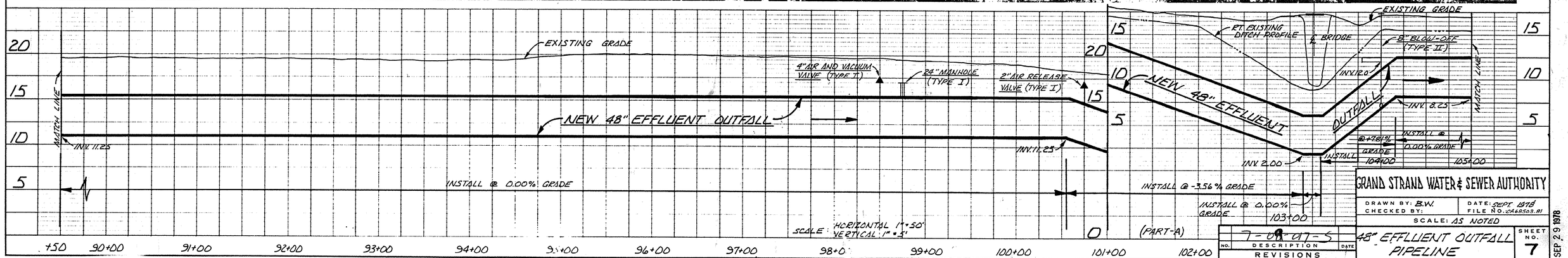

GRAND STRAND WATER & SEWER AUTHORITY

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48" EFFLUENT OUTFALL PIPELINE

SHEET NO. 7

BLACK, CROW AND EIDSNESS, INC.
ENGINEERS

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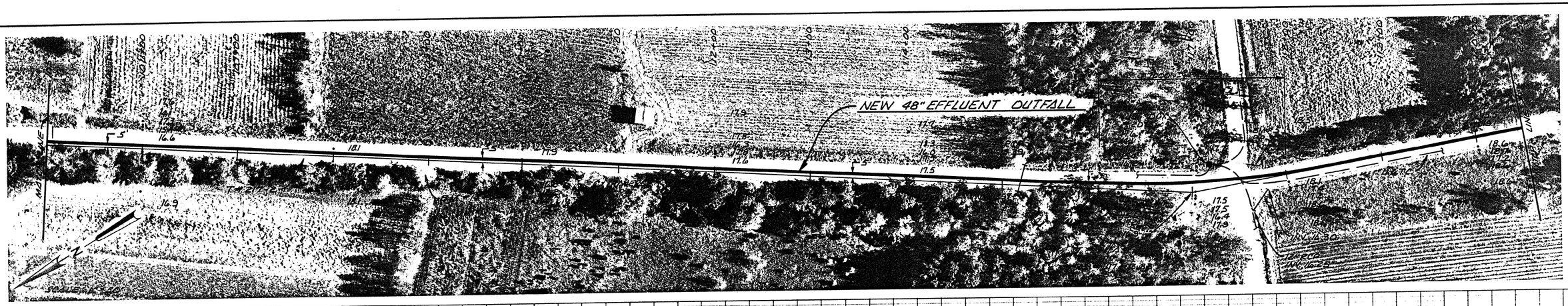
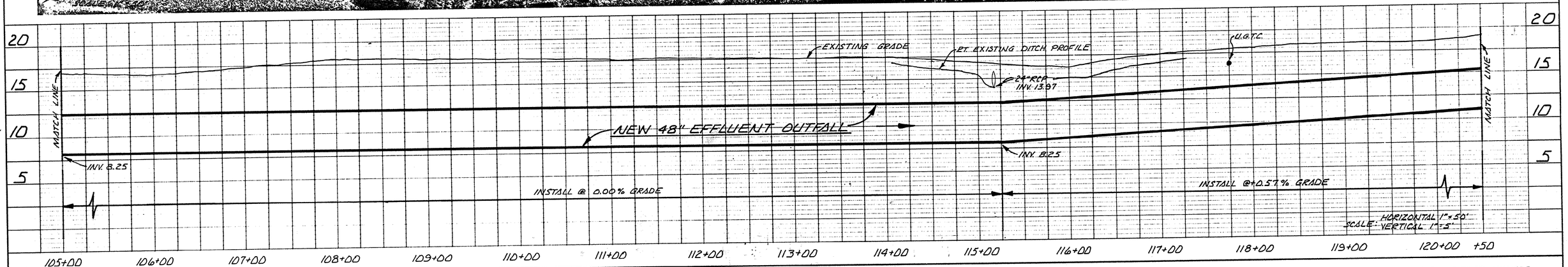
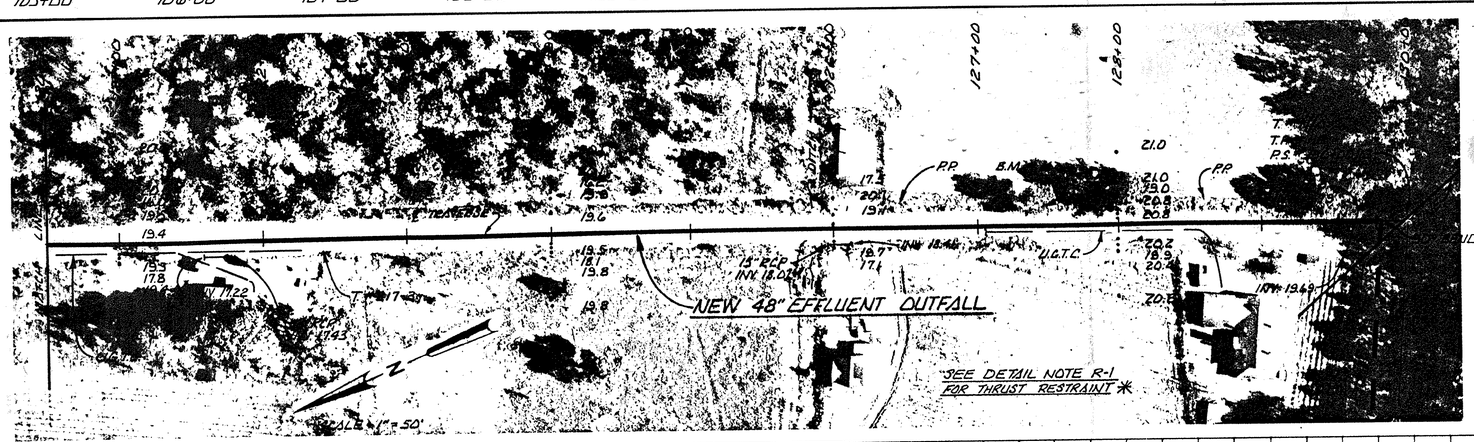
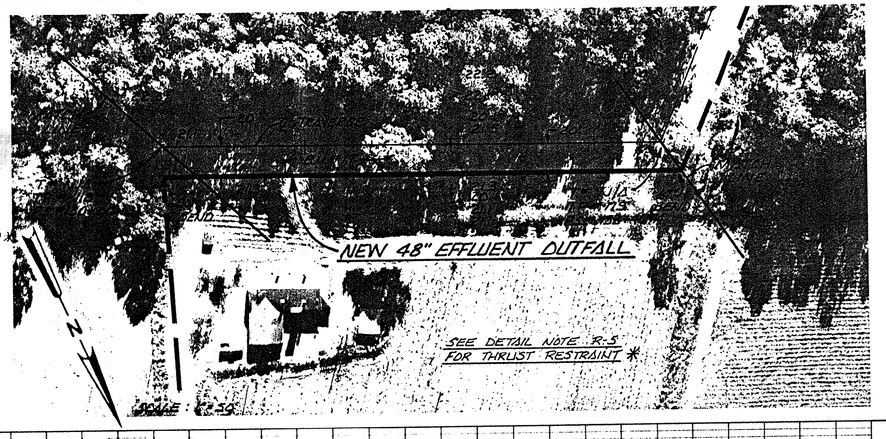
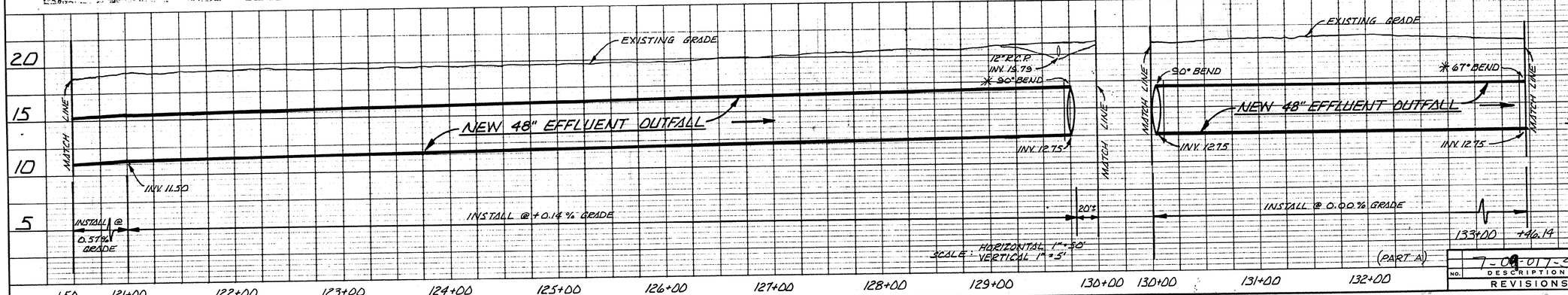
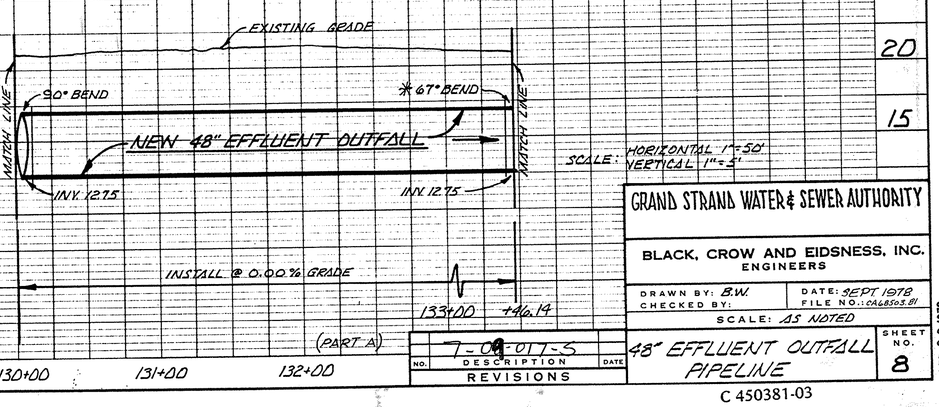












(PART A)

NO.	DESCRIPTION	DATE
	REVISIONS	

GRAND STRAND WATER & SEWER AUTHORITY

BLACK, CROW AND EIDSNESS, INC.
ENGINEERS

DRAWN BY: B.W. | DATE: SEPT 1978
CHECKED BY: | FILE NO.: CAL8503.81

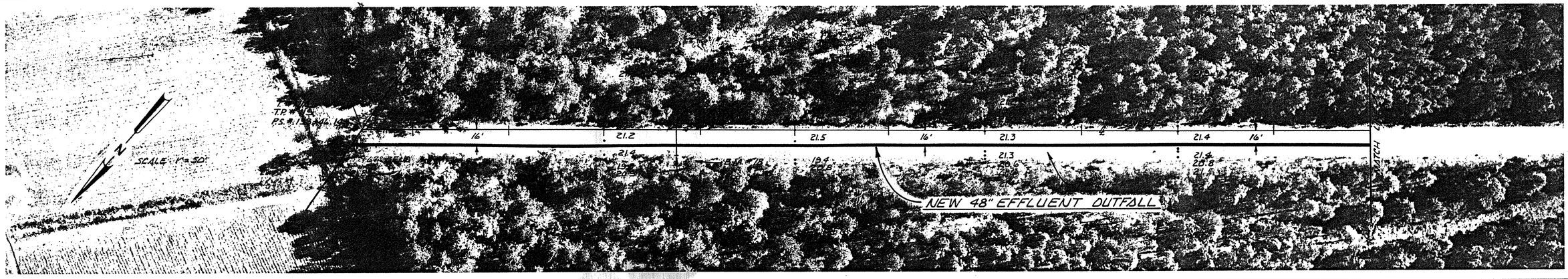
SCALE: AS NOTED

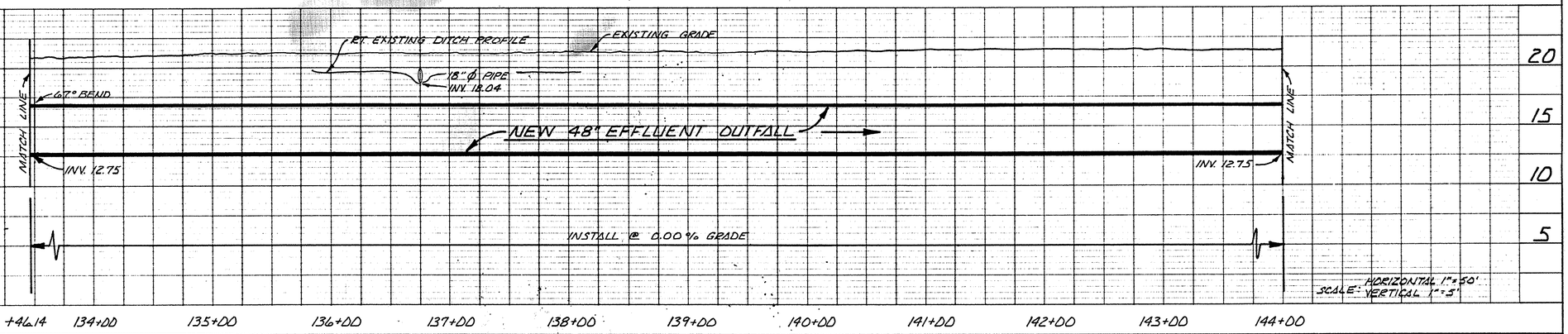
48" EFFLUENT OUTFALL PIPELINE

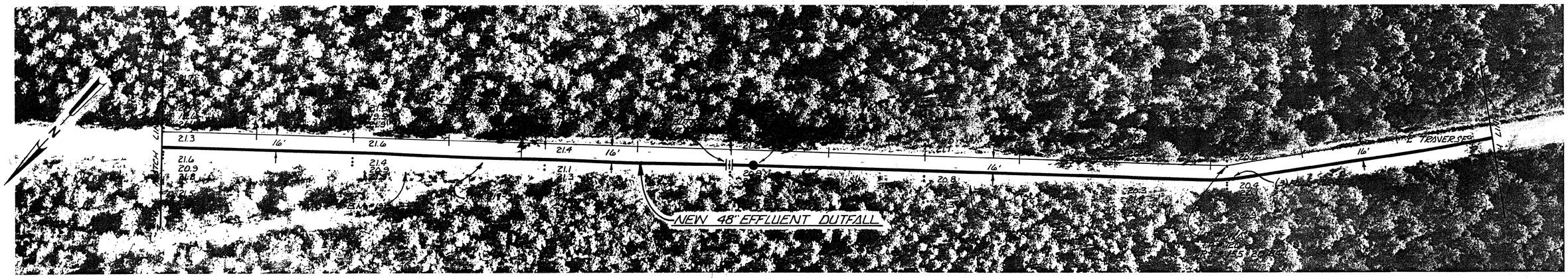
SHEET NO. 8

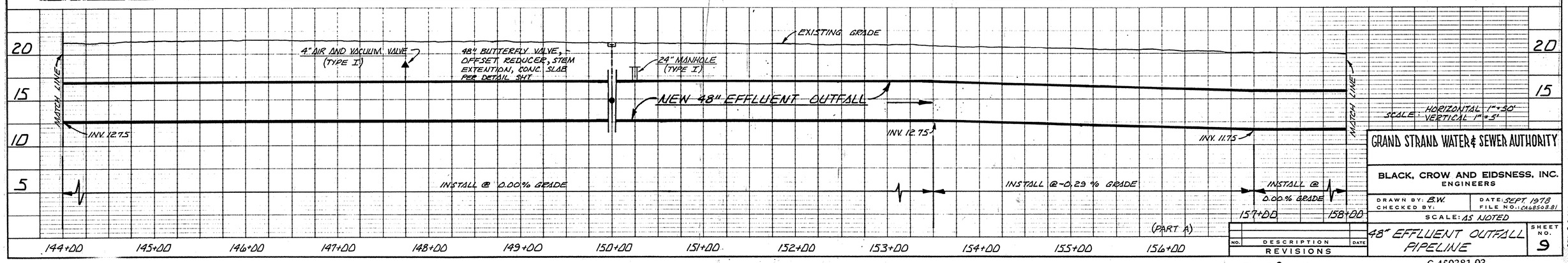
SEP 29 1978

C 450381-03









(PART A)

GRAND STRAND WATER & SEWER AUTHORITY

BLACK, CROW AND EIDSNESS, INC.
ENGINEERS

DRAWN BY: B.W. | DATE: SEPT. 1978
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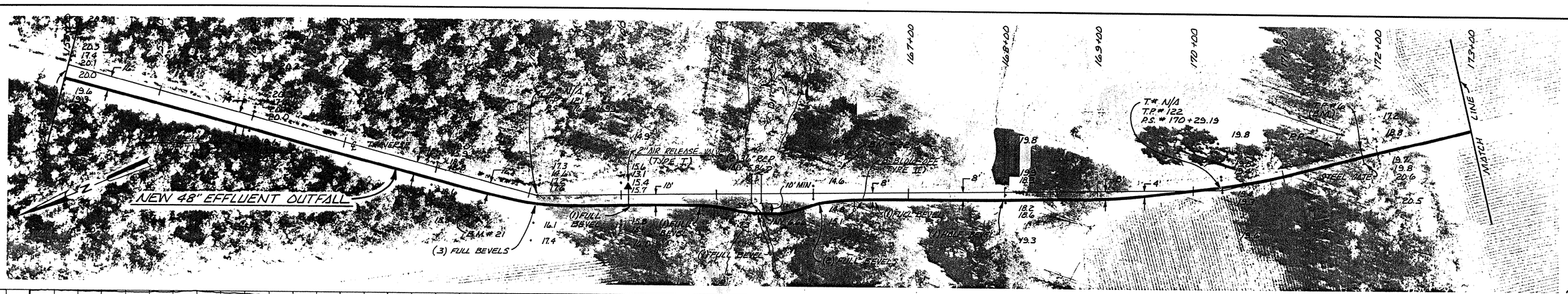
48" EFFLUENT OUTFALL PIPELINE

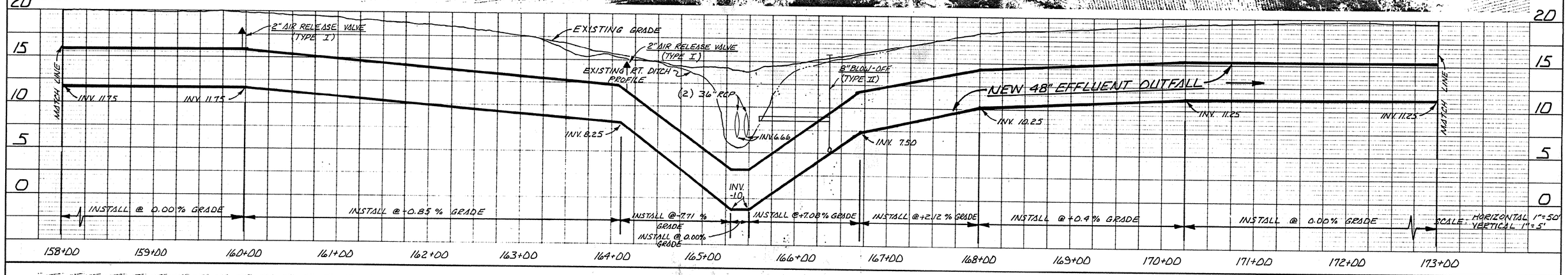
SHEET NO. 9

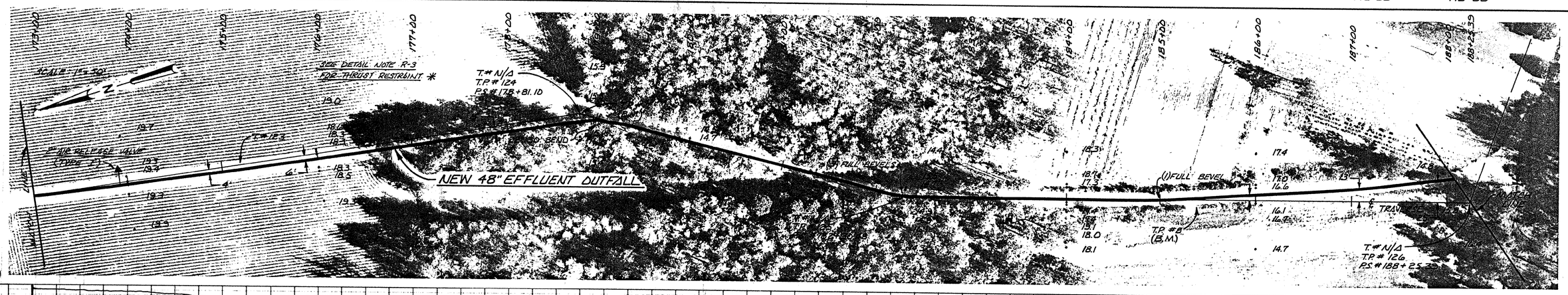
C 450381-03

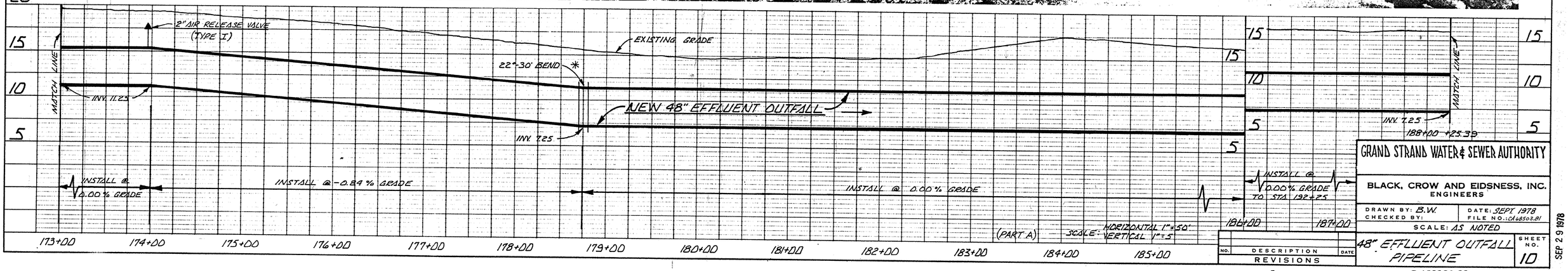
7-09-017-S

SEP 29 1978









GRAND STRAND WATER & SEWER AUTHORITY

BLACK, CROW AND EIDSNESS, INC.
ENGINEERS

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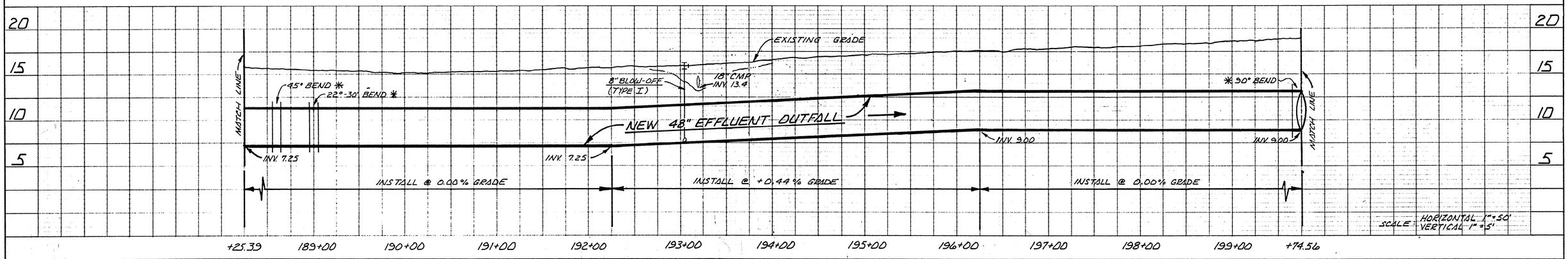
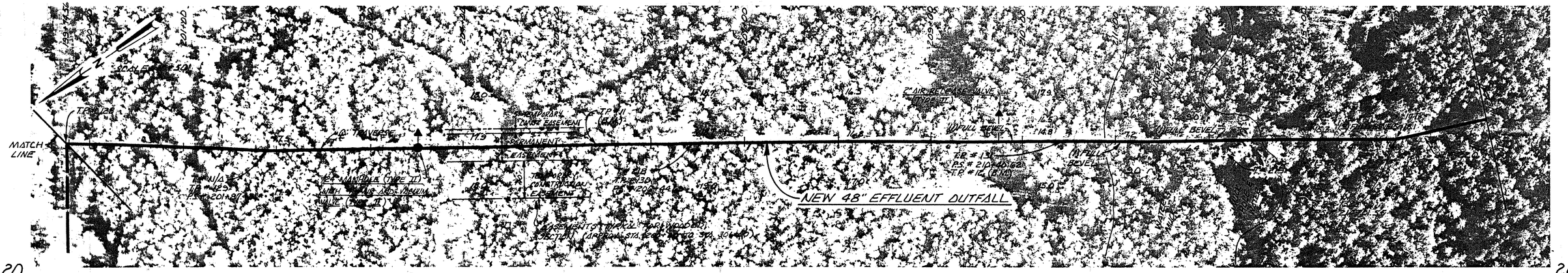
48" EFFLUENT OUTFALL PIPELINE

SHEET NO. 10

SEP 2 9 1978

C 450381-03





GRAND STRAND WATER & SEWER AUTHORITY

BLACK, CROW AND EIDSNESS, INC.
ENGINEERS

DRAWN BY: BW | DATE: SEPT. 1978
CHECKED BY: | FILE NO.: 12468503.81

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48" EFFLUENT OUTFALL PIPELINE

SHEET NO. 11

NO.	DESCRIPTION	DATE

REVISIONS

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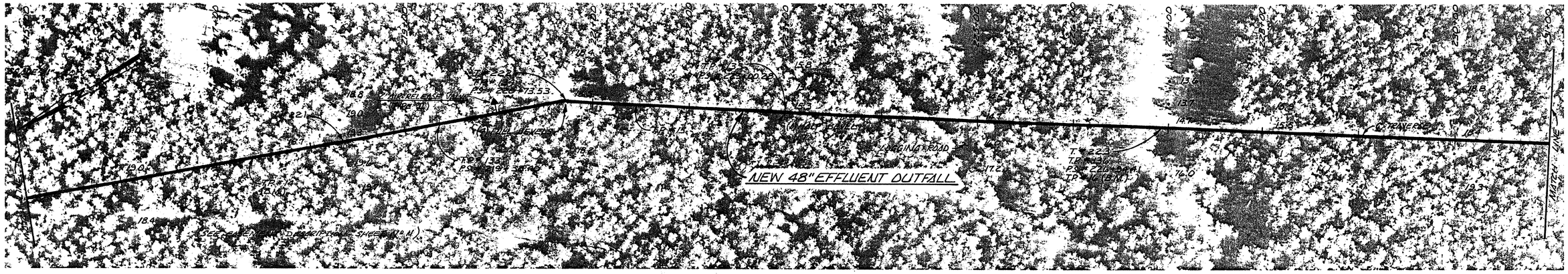
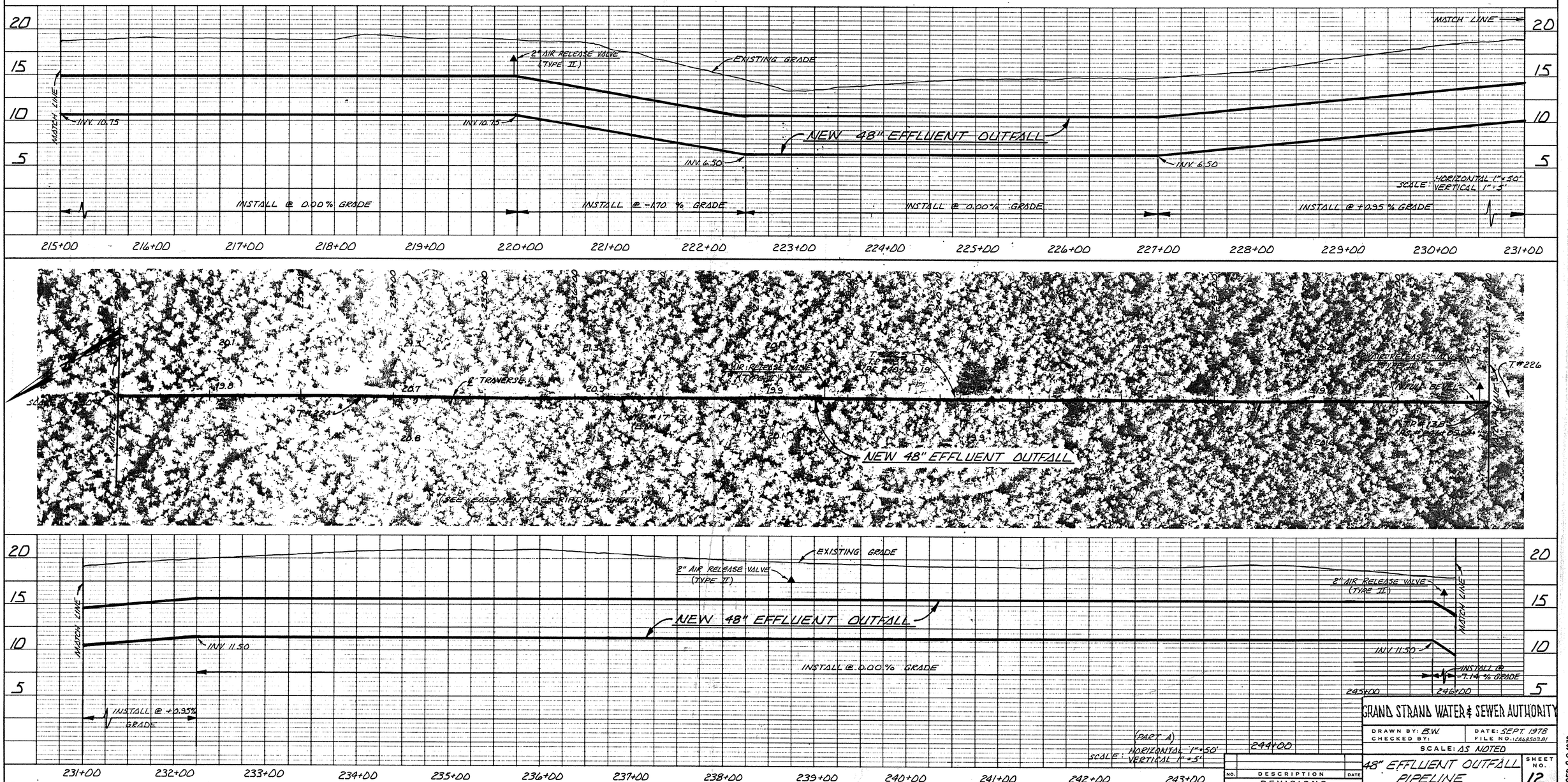
C 450381-03





GRAND STRAND WATER & SEWER AUTHORITY

DRAWN BY: B.W.	DATE: SEPT. 1978
CHECKED BY:	FILE NO.: CA&S503.81

SCALE: AS NOTED

NO.	DESCRIPTION	DATE
	REVISIONS	

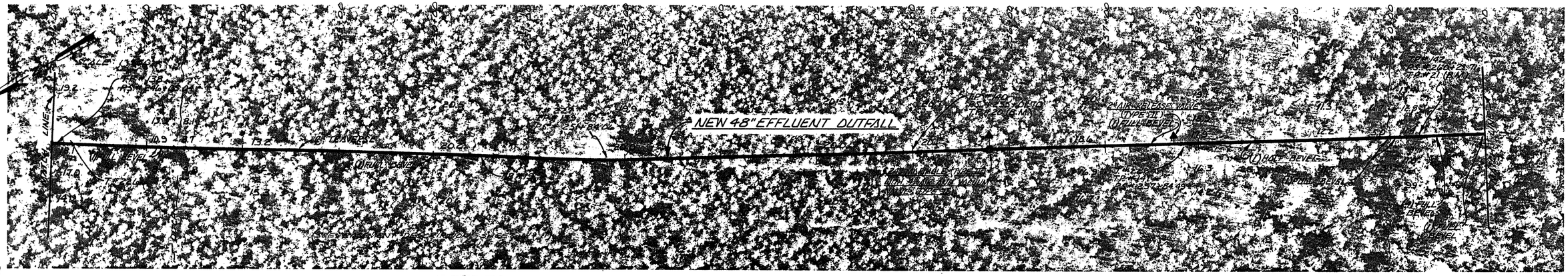
48" EFFLUENT OUTFALL PIPELINE

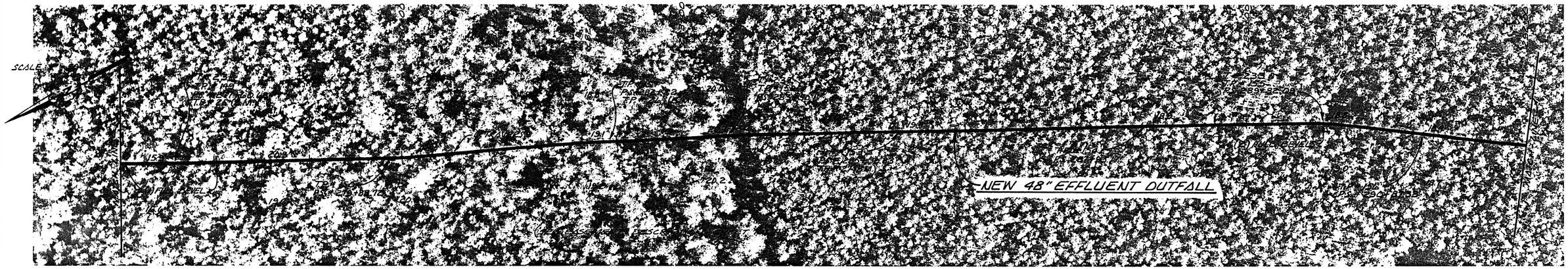
SHEET NO. 12

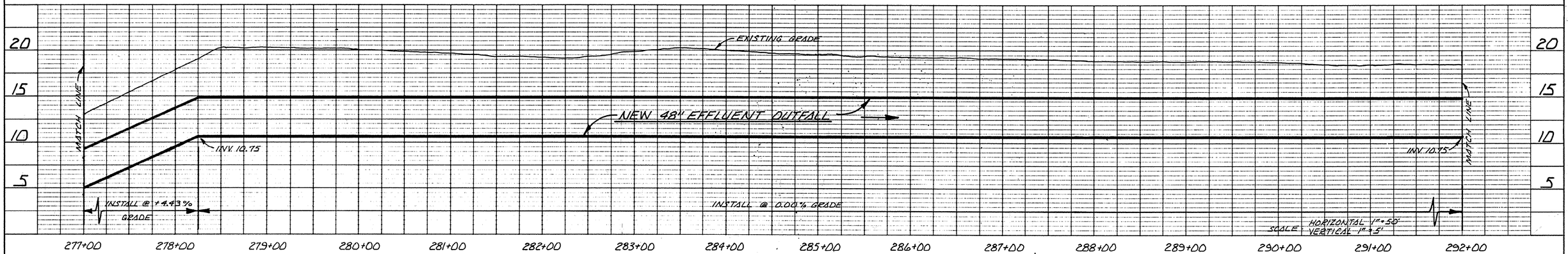
SEP 2 9 1978

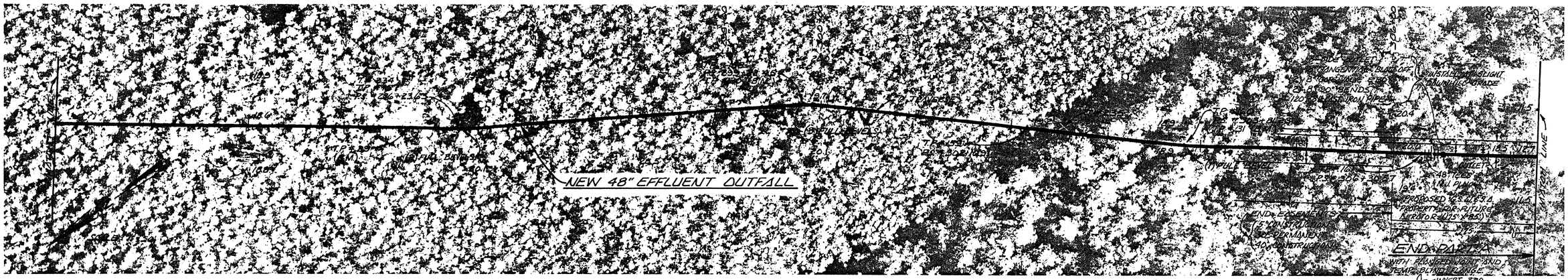
BLACK, CROW AND EIDSNESS, INC.

C 450381-03


NEW 48" EFFLUENT OUTFALL
2" AIR RELEASE VALVE (TYPE II)
(1) FULL BEVEL
(1) HALF BEVEL
(1) FULL BEVEL
TRAVERSE
TRAVERSE
TRAVERSE







NOTES:

1) SEE THRUST RESTRAINT NOTE R-6 FOR RESTRAINING FOR PRESSURE TEST.
2) 48" TEES SHALL BE LOCATED AS SHOWN 90° APART PLUS OR MINUS 1°.
3) BOTH 48" TEES SHALL HAVE MECH. JT. OUTLETS AND PLUGS. TEE AT STATION 306+35 SHALL HAVE FLANGED JOINTS.
4) 48" BUTTERFLY VALVE SHALL HAVE FLANGED JOINTS.
5) 12" AIR INTAKE AND PRESSURE RELEASE SHALL CONSIST OF 12" VERTICAL FLANGED OUTLET, 12" FLANGED PIPE, 12" FLANGED 90° BEND WITH A 12" OPEN FLANGE WITH WIRE MESH GUARD. 90° BEND SHALL FACE IN A SOUTHERLY DIRECTION.

(PART A)
SCALE: HORIZONTAL 1"=50'
VERTICAL 1"=5'

GRAND STRAND WATER & SEWER AUTHORITY

DRAWN BY: B.W.	DATE: SEPT. 1978
CHECKED BY:	FILE NO.: 1448503.01

SCALE: AS NOTED

NO.	DESCRIPTION	DATE
	REVISIONS	

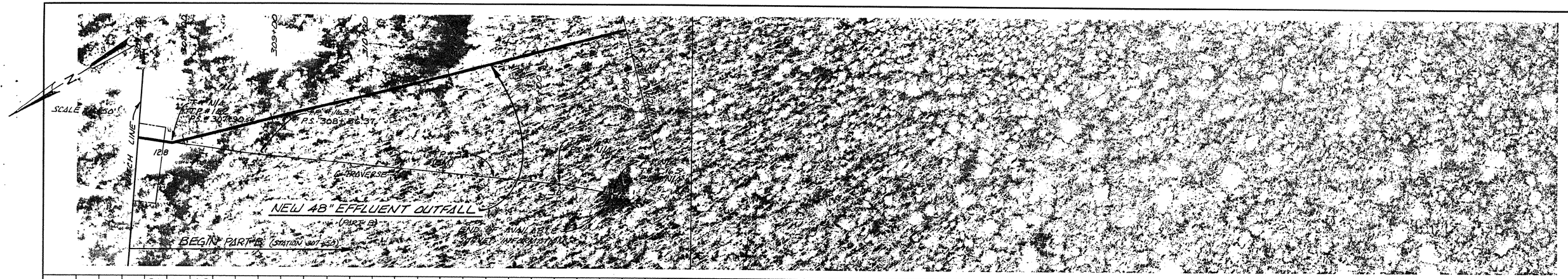
48" EFFLUENT OUTFALL PIPELINE

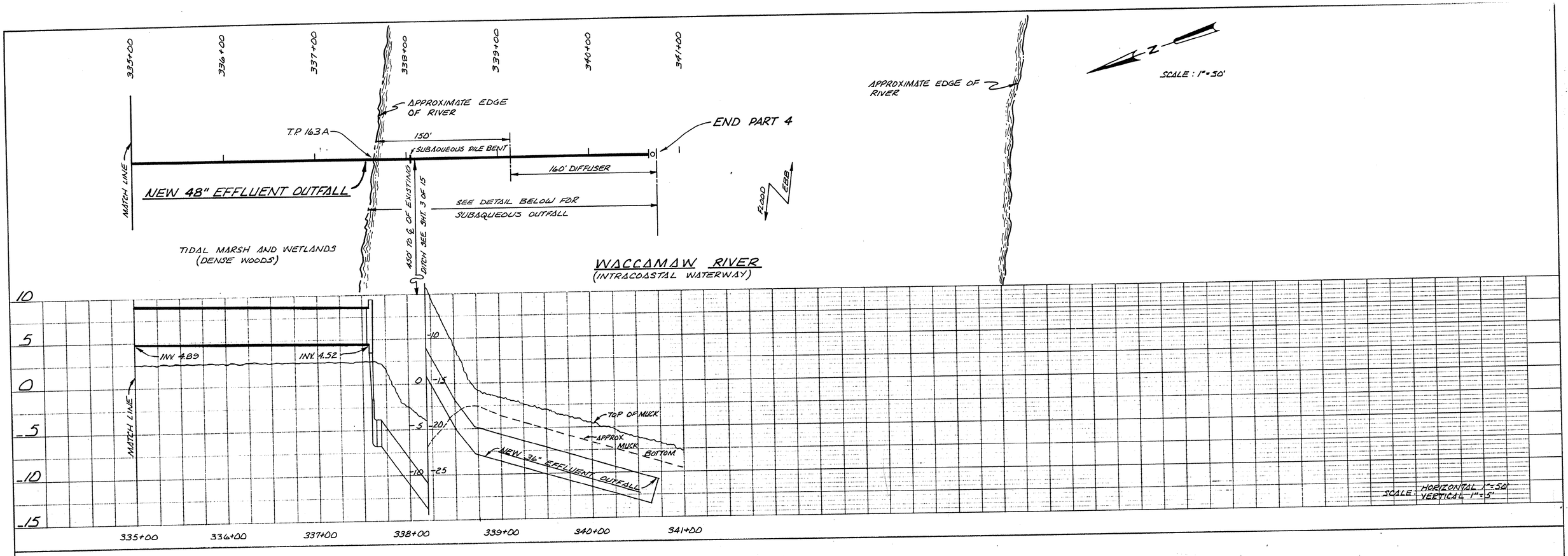
SHEET NO. 14

BLACK, CROW AND EIDSNESS, INC.
ENGINEERS

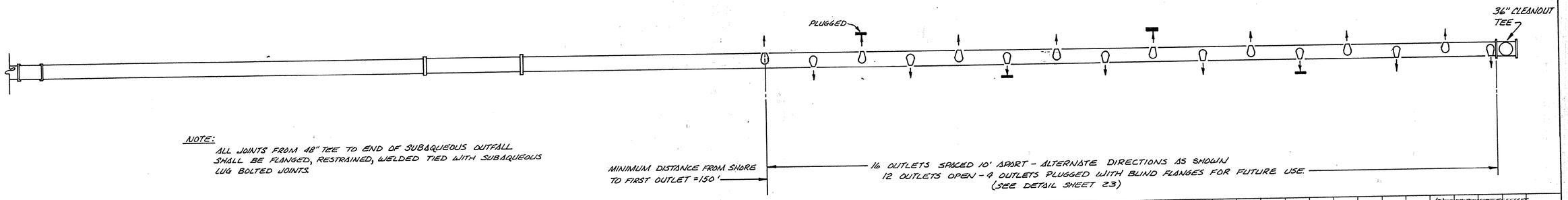
C 450381-03

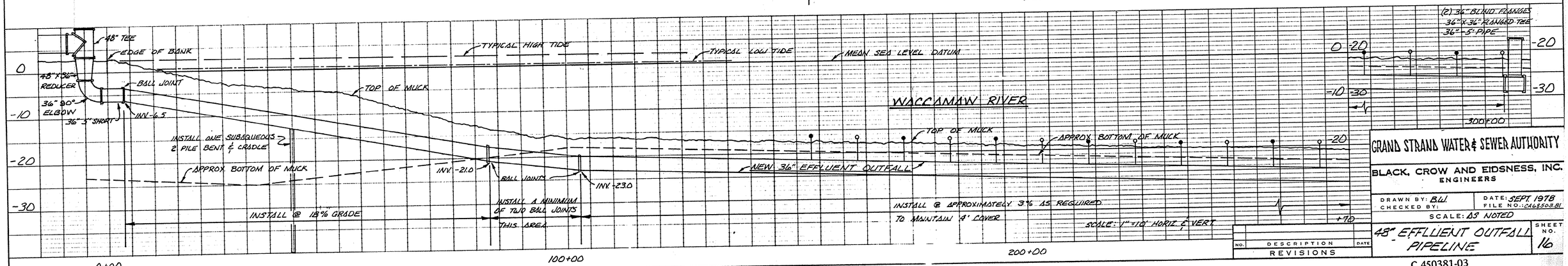
SEP 29 1978


SCALE 1"=50'
N
308+00
309+00
P.I. N14°-16'-37"E
P.S. 308+86.37
P.I. N 16°-37'-30"E
P.S. 307+90.64
12.0
12.0
N/F
N/F
N/F



SUBAQUEOUS OUTFALL DETAIL





GRAND STRAND WATER & SEWER AUTHORITY

BLACK, CROW AND EIDSNESS, INC.
ENGINEERS

DRAWN BY: BLJ
CHECKED BY:
DATE: SEPT 1978
FILE NO.: 2468303.81

SCALE: AS NOTED

48" EFFLUENT OUTFALL PIPELINE

SHEET NO. 16

NO.	DESCRIPTION	DATE
	REVISIONS	

C 450381-03

7-09-017-S

GRAND STRAND WATER AND SEWER AUTHORITY LISTINGS
685-7610-2

* 100,000/100,000 assumed @ 1/110 (SE property corner of plantsite). Bearing assumed S 45° 30' 00" E BTW 5 and 1/110 from deed description.

Location	Traverse Point #	Aerial Target #	N Coordinate	E Coordinate	Elevation
Plantsite	50	#control pt	100643.78	100109.05	20.8
	5	#S.W. prop. cor.	100640.45	99348.28	22.2
	4	(N/SW corner)	100826.46	99338.77	21.2
	3	(NW corner)	101435.34	100046.84	20.8
	53	#NW cor pre mark	101364.31	100114.98	20.5
	2	#NE cor.	100692.32	100801.03	20.2
	6	Between 5 & 1/110	100000.00	100000.00	22.1
	1/110	#110 (S.E. prop cor.)			21.4
Outfall Line	111	#210	99388.52	100636.05	21.9 21.4
		#211	99263.86	99987.58	21.1
		#212	99143.65	99445.75	21.6
		#213	99026.30	98865.80	21.1
	112		98875.72	98130.51	20.8
		#214	98745.67	97482.02	20.7
		#214-1	NA	NA	20.3
	113		98515.33	96356.74	20.4
		#215		"	19.9
		#216			19.1
	114		96602.33	95545.47	17.6
	115		95982.94	94962.35	19.7
		#217			19.6
	116		94908.88	94107.70	20.1
		#217-1			15.7
		#217-2			17.5
	117		93142.47	92877.08	18.1
		#217-3			18.9
	118		91934.45	92406.89	21.2
	119		92082.43	92094.12	21.0
		#217-4			21.0
		#217-5			21.6
	120		90602.04	90501.09	20.6
	121		89968.80	90026.84	17.6
	122		89298.47	89771.82	19.3
	124		88454.91	89652.89	15.6
	125		88155.50	89472.82	15.0
	126		87587.35	89296.41	16.7
	127		87270.86	89720.24	16.3
	128		86943.04	90246.73	18.9
(Enter Woods)	129		86769.35	90123.58	17.5
	130	#218	86381.46	89881.54	18.8
	131		86047.30	89669.24	14.7
		#219			6.4
Outfall Line (continued)	132		85744.14	89473.41	18.0
		#220	85723.97	89463.96	18.2
		#221	NA	NA	17.1
	133		85239.52	89289.22	19.3
	134	#222	85112.15	89245.13	18.5
	135		84923.01	89120.16	13.4
	136	#223	84589.86	88909.57	14.8
		#224	NA	NA	20.5
	137	#225	83474.64	88194.70	19.1
	138		82981.04	87878.94	18.1
		#226	82963.94	87872.42	17.6
	139	#227	82489.85	87572.36	19.9
	140		82212.08	87418.28	20.0
	141	#228	81962.43	87285.48	17.8
	142		81747.23	87170.17	11.3
	143		81560.10	87072.67	18.8
	144		81406.36	86988.53	14.0
	145		81310.97	86938.27	19.1
		#229	81315.56	86939.10	19.1
	146		80839.08	86690.92	19.8
		#230	NA	NA	20.4
	147		80572.68	86543.65	19.1
	148		80349.92	86426.03	16.8
	149	#231	80218.14	86375.56	16.1
	150		80014.59	86254.82	20.1
	151		79801.52	86158.88	19.1
	152	#232	79686.39	86103.63	20.5
	153		79526.93	86018.58	19.5
	154		79290.84	85904.21	18.9
	155	#233	79124.25	85815.10	18.9
	156		79038.76	85753.73	18.6
	157	#234	78592.84	85455.79	20.0
	158		78278.87	85282.07	19.8
	159		78095.12	85136.45	19.3
		#235	NA	NA	19.2
	160		77968.66	85031.53	18.7
	161		77763.16	84890.31	20.0
	162	#236	77632.01	84798.93	12.8
	163*		77556.46	84740.60	4.5
	164		77289.10	84546.60	3.0 Open
	165	#237	77241.87	84507.54	2.8 End
Connecting Traverse	301		99479.30	101195.47	22.3 S
	302		99918.59	102364.14	21.8 S
	303		101445.57	100685.52	20.7 S

* 163A POINT AT RIVERS EDGE SEE SHEET 16

Note: See legend for typical callouts.

Photo ID Points	211	#	99263.86	99987.58	21.1
	212	#	99143.65	99445.75	21.6
	213	#	99026.30	98865.80	21.1
	214	#	98745.67	97482.02	20.7
	214-1	#			20.3
	112-A		98645.89	96939.23	
	113-1		98134.44	96205.09	
	113-2		97238.15	95828.45	
	114-1		95808.64	94813.83	
	114-2		95306.77	94379.19	
	116-1		94679.40	93950.62	
	116-2		94277.32	93674.20	
	117-1		93081.71	92842.32	
	119-1		91575.82	91548.44	
	119-2		91137.05	91037.35	
	121-1		89309.71	98772.43	

Location	Traverse Point #	Aerial Target #	N Coordinate	E Coordinate	Elevation

BENCH MARKS ON EFFLUENT OUTFALL LINE

Station	Elevation	Description
BM #5	22.89	Nail in power pole across road from T.P. #111.
BM #6	22.92	Nail in power pole by house on S. side road near sta's 16+00/sta 17+00.
BM #7	22.49	Nail in 8-inch pine on N. side road near sta's 27+00/sta 28+00.
BM #8	22.17	Nail in 8-inch pine on N. side road near sta 40+00/sta 41+00.
BM #9	21.96	Nail in power pole on N. side road before 90 degree bend. Near sta 53+00/T.P. #113.
TP #1	19.83	Tack in hub on T. #215.
BM #10	19.36	Nail in power pole on W. side road near sta 65+00/T. #216.
BM #11	20.28	Nail in power pole on E. side road near sta 72+00/sta 73+00/T.P. #114.
BM #12	20.91	Nail in power pole on W. side road by T.P. #115.
TP #2	19.66	Tack in hub of T. #217.
BM #13	20.97	Nail in power pole across road from T.P. #116 by Salem Church.
TP #3	17.39	Nail set in bridge on E. side near sta 103+30.
BM #14	19.35	Nail in oak tree on W. side road near sta's 109+00/110+00.
BM #15	19.53	Nail in power pole at PI of dead end road near sta's 117+00/118+00/T.P. #117.
BM #16	21.99	Nail in pine tree ≅80 feet N. of cable gate on E. side road near sta's 129+00/T.P. #118.
BM #17	Not used	
BM #18	23.17	Nail in 14-inch pine on W. side road through private property near sta's 137+00/138+00.
BM #19	25.43	Nail in 12-inch pine on W. side of private property road near sta's 146+00/147+00. *Possibly disturbed.
BM #20	23.26	Nail in 14-inch pine on W. side road near sta's 152+00/153+00.
BM #21	Not used	
BM #22	18.31	Nail in 20-inch pine in pigpen near sta's 166+00/167+00.
TP #6	19.69	2 x 2 by steel gate on E. side road near sta's 172+00/173+00.
TP #7	18.86	Nail w/blue flgn set in short tree by T.P. #124.
TP #8	17.86	2 x 2 w/blue flgn on W. side road near sta's 185+00/186+00.
TP #9	16.34	2 x 2 w/blue flgn by T.P. #127.
TP #10	17.45	2 x 2 w/blue flgn on N. side road near sta 197+00/198+00.
BM #23	20.70	R/R spike set in 24-inch pine 20' N. T.P. #128.
TP #11	19.17	2 x 2 w/blue flgn on cleared line near sta's 205+00/206+00.
TP #12	14.85	Tack on T.P. #131 2 x 2 w/blue flgn 3/4 up slope on cleared line.
TP #14	18.98	2 x 2 w/blue flagn on cleared line near sta's 217+00/218+00.
TP #15	17.52	2 x 2 w/blue flgn near sta's 221+00/222+00.
TP #16	14.80	Tack on T.P. #136 sta 226+94 41.
TP #17	22.73	Nail in 8-inch pine near sta's 236+00/237+00.
TP #18	21.81	Nail in 5-inch pine near sta's 243+00/244+00.
TP #19	20.41	2 x 2 w/blue flagn on cleared line near sta's 250+00/251+00.
TP #20	20.02	Tack on T.P. #140 sta 225+01.7.
TP #21	11.63	Tack on T.P. #142 sta 260+28.71.
TP #22	14.76	Tack on T.P. #144 sta 264+15.14.
TP #23	21.94	Pk nail w/blue flgn in top of stump near sta's 268+00/269+00.
TP #24	19.08	Tack on T.P. #147 sta 273+60.26.
TP #25	16.96	Hub w/blue flagn by T.P. #149 sta 227+60.
TP #26	19.10	On T.P. #151 sta 282+22.40.
TP #27	19.43	Tack on T.P. #153 sta 285+30.83.
TP #28	18.90	Tack on T.P. #155 sta 289+82.09.
TP #29	19.40	2 x 2 w/blue flgn on cleared line near sta's 295+00/296+00.
TP #30	19.75	Tack on T.P. #158 sta 299+82.45.
TP #31	18.85	Tack on T.P. #160 sta 303+81.23.
TP #33	4.41	60 D nail in stump near sta's 311+00/312+00.

MISC. LEGEND
B.S. ..... BACK SITE
OCC. ..... OCCUPIED
STA. ..... STATION
F.S. ..... FRONT SITE

REVISIONS				
NO.	CORD.	DESCRIPTION	DATE	APPROVED

48" EFFLUENT OUTFALL LINE TRAVERSE

BEGIN OUTFALL LINE TRAV

OCC. B.S.	STA. F.S.	ANGLE (CLOCKWISE) DISTANCE
LOC PT	E ANGLE	32 1/110 111 84 42 29.7 882.309
111	99388.5173 *	100636.0488 *
1/110 111	112 304 33 41.3	2557.478
112	98875.7239	98130.5076
111	112 113 180 04 54.2	1810.009
113	98515.3333	96356.7401
112	113 114 124 27 57.0	2077.919
114	96602.3285	95545.4694
113	114 115 200 17 30.2	850.688
115	95982.9425	94962.3476
114	115 116 175 14 14	1372.600
116	94908.8817	94107.6990
115	116 117 176 21 15.2	2152.819
117	93142.4715	92877.0794
116	117 118 166 24 11	1296.296
118	91934.4540	92406.8909
117	118 119 274 03 11.3	346.01
119	92082.4349	92094.1217
118	119 120 111 46 43	2174.700
120	90602.0404	90501.0892
119	120 121 169 43 52.5	791.143
121	89968.7968	90026.8427
120	121 122 163 59 55.7	717.196
122	89298.4724	89771.8227
121	122 124 167 11 47.5	851.907
124	88454.9089	89652.8850
122	124 125 202 59 51	349.38
125	88155.5039	89472.8209
124	125 126 166 13 34.7	594.91
126	87587.3508	89296.4125
125	126 127 109 30 02.3	528.959
127	87270.8622	89720.2434
126	127 128 175 09 32.7	620.204
128	86943.0399	90246.7275
127	128 129 273 25 39	212.911
129	86769.3536	90123.5846
128	129 130 176 37 39	457.211 * 130=X 218
130	86381.4646	89881.5433
129	130 131 180 27 51.3	395.902
131	86047.2981	89669.2436
130	131 132 180 25 59.7	360.910
132	85744.1393	89473.4101
131	132 133 167 11 25.5	537.187
133	85239.5153	89289.2240
132	133 134 179 02 41	134.788 * 134=X 222
134	85112.1450	89245.1264
133	134 135 194 21 25.3	226.693
135	84923.0078	89120.1590
134	135 136 178 50 36	394.125 * 136=X 223
136	84589.8579	88909.5748
135	136 137 180 21 48.8	1324.677 * 137=X 225
137	83474.6356	88194.6984
136	137 138 179 56 50	585.95
138	82981.0435	87878.9386
137	138 139 179 21 46.8	579.018 * 139=X 227
139	82489.8520	87572.3563
138	139 140 177 02 42.3	317.64
140	82212.0804	87418.2844
139	140 141 178 59 40	282.779 * 141=X 228
141	81962.4253	87285.4828
140	141 142 180 10 31.3	244.144
142	81747.2315	87170.1662
141	142 143 179 20 07	211.004
143	81560.1043	87072.6669
142	143 144 181 10 12	175.26
144	81406.3624	86938.5273
143	144 145 179 05 34.8	107.82
145	81310.9728	86938.2682
144	145 146 179 52 41.5	532.79
146	80839.0804	86690.9167

OCC. B.S.	STA. F.S.	ANGLE (CLOCKWISE) DISTANCE
145	146 147 191 16 20.5	304.400
147	80572.6776 *	86543.6451 *
146	147 148 178 53 56	251.895
148	80349.9246	86426.0348
147	148 149 179 37 24.5	148.517 * 149=X 231
149	80218.1368	86357.5565
148	149 150 179 19 27.3	228.003
150	80014.5907	86254.8221
149	150 151 177 27 36.8	233.677
151	79801.5184	86158.8788
150	151 152 181 23 42.3	127.702 * 152= X 232
152	79686.3875	86103.6274
151	152 153 182 26 09.3	180.718
153	79526.9304	86018.5840
152	153 154 177 46 32.3	262.34
154	79290.8364	85904.2078
153	154 155 182 17 36.8	188.919 * 155= X 233
155	79124.2504	85815.1039
154	155 156 187 31 54.8	105.24
156	79038.7583	85753.7317
155	156 157 178 04 32	536.299 * 157= X 234
157	78592.8366	85455.7879
156	157 158 175 12 24	358.82
158	78278.8710	85282.0715
157	158 159 189 26 25	234.458
159	78095.1174	85136.4515
158	159 160 181 17 12.8	164.32
160	77968.6582	85031.5272
159	160 161 174 48 47.3	249.339
161	77763.1614	84890.3145
160	161 162 180 22 16	159.846 * 162 = X 236
162	77632.0109	84798.9347
161	162 163A	167° 35' 16" 2974.24'
163		
111	112 212 0 03 09.5	1342.25 * PHOTO ID X 212
212	99143.6468	99445.7461
111	112 211 359 45 41	1897.20 * X 211
211	99263.8638	99987.5792
111	112 213 359 59 35	750.55 * X 213
213	99026.3039	98865.7973
111	112 214 180 13 36	661.40 * X 214
214	98745.6728	97482.0196
111	112 901 180 38 48	1213.25 * 112A
901	98645.8887	96939.2262
113	114 902 0 18 44.5	1668.07 * 113-1
902	98134.4387	96205.0873
113	114 903 1 00 41.5	695.95 * 113-2
903	97238.1478	95828.4539
113	114 904 199 41 23	1079.46 * 114-1
904	95808.6426	94813.8297
113	114 905 199 00 47	1743.18 * 114-2
905	95306.7707	94379.1904
118	117 906 193 40 01	1874.74 * 116-1
906	94679.4046	93950.6188
118	117 907 193 49 02	1386.83 * 116-2
907	94277.3236	93674.2043
118	117 908 8 30 36	70.00 * 117-1
908	93081.7140	92842.3155
118	119 909 111 48 20	744.60 * 119-1
909	91575.8161	91548.4417
118	119 910 112 51 51	1417.93 * 119-2
910	91137.0516	91037.3455

GRAND STRAND WATER & SEWER AUTHORITY

BLACK, CROW AND EIDSNESS, INC.
ENGINEERS

DRAWN BY: BW | DATE: SEPT 1978
CHECKED BY: | FILE NO.: 1468508.81
SCALE: NONE

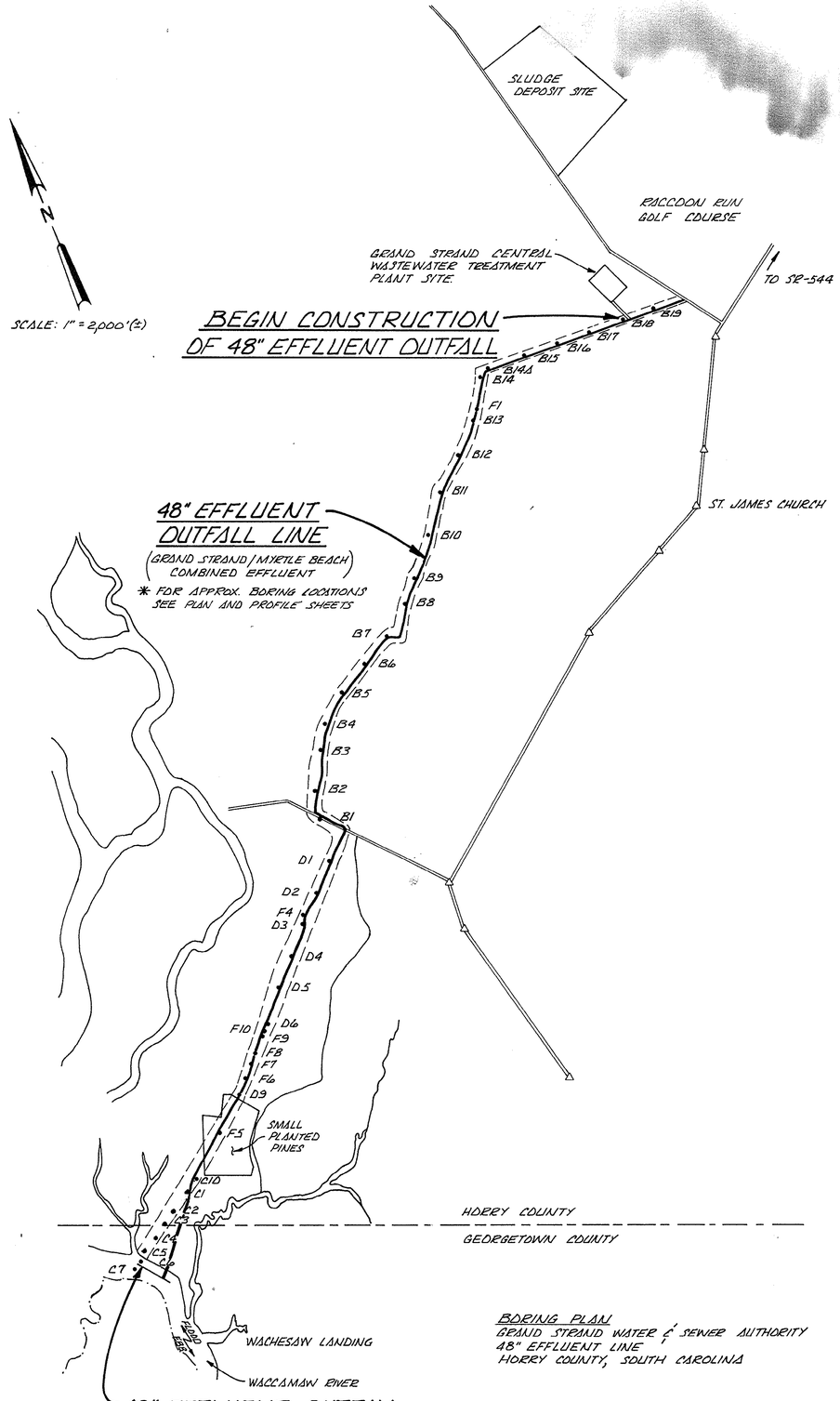
48" EFFLUENT OUTFALL SURVEY AND B.M. DATA | SHEET NO. 17

C 450381-03

SEP 29 1978

7-09-017-5

REVISIONS			
NO.	DESCRIPTION	DATE	APPROVED



BORING PLAN
GRAND STRAND WATER & SEWER AUTHORITY
48" EFFLUENT LINE
HORRY COUNTY, SOUTH CAROLINA

48" EFFLUENT OUTFALL
END OF CONSTRUCTION

BORING LEGEND:

- STANDARD TEST BORING (ASTM D1586-67)
- HAND AUGER BORING
- PREDOMINANTLY SAND AND SILTY SAND
- CLAYS, CLAYEY SILT AND CLAYEY SAND, SILT
- ORGANIC PEAT, SILT AND WOOD FRAGMENTS
- POTENTIALLY CORROSIVE BLUE-GRAY SILTY SAND AND CLAYEY SILT WITH PH VALUES NEAR NEUTRAL AND SULFIDE PRESENT.
- CORROSIVE BLACK SAND AND CLAY WITH LOW PH AND RESISTIVITY
- 4.5 PH VALUE
- 1234 RESISTIVITY (OHMS/CM³)
- 10 PENETRATION RESISTENCE IN BLOWS PER FOOT (PENETRATION IS THE NUMBER OF BLOWS OF A 140lb HAMMER FALLING 30" REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.)
- ▽ DEPTH OF WATER LEVEL
- PBH..... PUSHED BY HAND
- WOH..... WEIGHT OF HAMMER

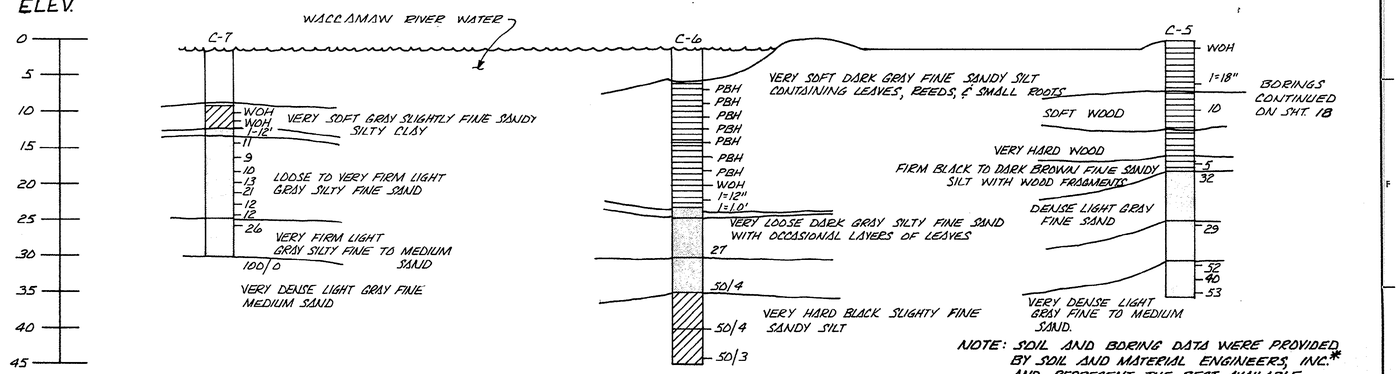
FOR B, C, AND D LOCATIONS BORING AND SAMPLING MEETS ASTM D-1586 AND CORE DRILLING MEETS ASTM D-2113.

F LOCATIONS REPRESENT HAND AUGER WITH DYNAMIC CORE PENETRATION TESTS

GROUNDWATER LEVEL @ BORING LOCATIONS *

Boring	Depth of Water Level (ft.)	Boring	Depth of Water Level (ft.)
B-1	2.0	D-1	7.0
B-2	1.7	D-2	6.0
B-3	4.7	D-3	10.5
B-4	1.0	D-4	10.0
B-5	2.0	D-5	Dry and caved to 5.0'
B-6	2.5	D-6	6.0
B-7	1.1	D-9	12.0
B-8	1.5	D-10	7.5
B-9	2.0		
B-10	2.0	F-1	1.0
B-11	0.75	F-2	1.0
B-12	0.8	F-3	1.2
B-13	3.6	F-4	1.0
B-14	2.0	F-5	Dry
B-15	0.75	F-6	2.0
B-16	0.5	F-7	6.5
B-17	1.5	F-8	1.0
B-18	2.0	F-9	6.0
B-19	1.0		

* FOR APPROX. BORING LOCATIONS SEE PLAN AND PROFILE SHEETS



NOTE: IDEALIZED GEOLOGIC PROFILES

IDEALIZED GEOLOGIC PROFILES ARE ALSO INCLUDED TO SUMMARIZE SUBSURFACE CONDITIONS. THE PROFILES WERE DEVELOPED BY PLOTTING TO SCALE THE SOIL AND GROUNDWATER CONDITIONS AT THE BORING LOCATIONS AND EXTRAPOLATING BETWEEN BORINGS. BASED UPON THE RELATIVELY LARGE DISTANCE BETWEEN PRACTICALLY ALL BORING LOCATIONS, AND THE INHERENT THIN BEDDED AND ERRATIC STRATIGRAPHY OF THE PLEISTOCENE AND RECENT AGE MATERIALS, THESE PROFILES CAN ONLY PROVIDE A GENERAL INSIGHT INTO THE BASIC SOIL AND GROUNDWATER CONDITIONS ALONG THE PROPOSED ROUTE. THE ENGINEER AND SOIL CONSULTANT ASSUME NO RESPONSIBILITY FOR PREDICTING SOIL CONDITIONS BETWEEN BORINGS.

SOIL BORING LOG

SCALE: HORIZONTAL 1" = 20'
VERTICAL 1" = 10'

NOTE: SOIL AND BORING DATA WERE PROVIDED BY SOIL AND MATERIAL ENGINEERS, INC.* AND REPRESENT THE BEST AVAILABLE INFORMATION AT THE TIME OF THIS PROJECT. BLACK, CROW & EIDSNESS, INC. ASSUMES NO RESPONSIBILITY FOR THE ACCURACY OR UNIFORMITY OF THIS DATA.

* SOIL AND MATERIAL ENGINEERS, INC.
3109 SPRING FOREST ROAD
RALEIGH, N.C. 27604

GRAND STRAND WATER & SEWER AUTHORITY

BLACK, CROW AND EIDSNESS, INC.
ENGINEERS

DRAWN BY: B.W.	DATE: SEPT. 1978
CHECKED BY: JDH	FILE NO.: CA6850.81
SCALE: AS NOTED	

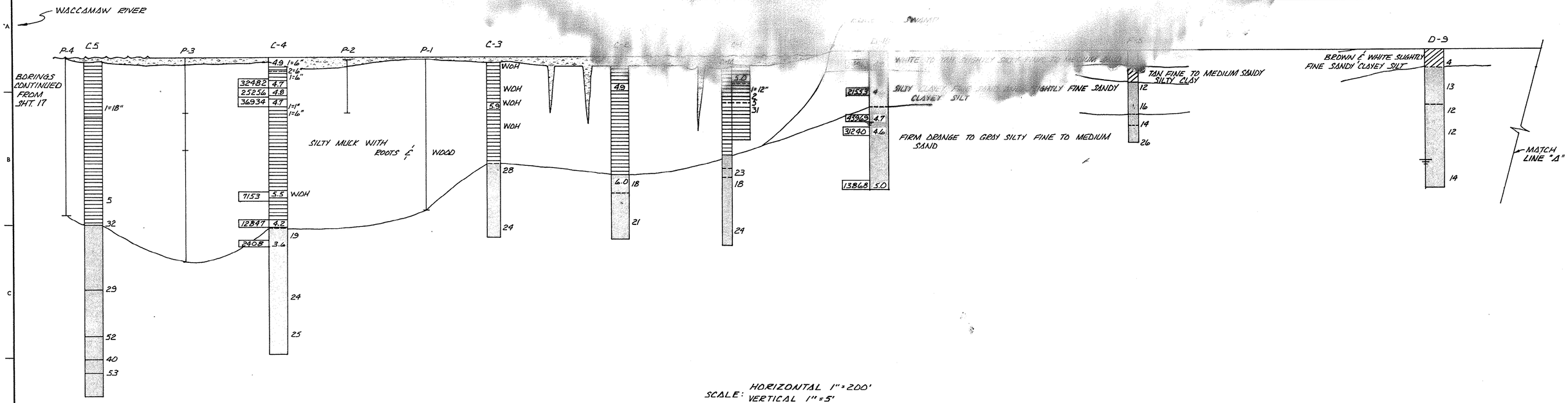
48" EFFLUENT OUTFALL
SOIL BORING LOGS

SHEET NO. 18

7-09-018

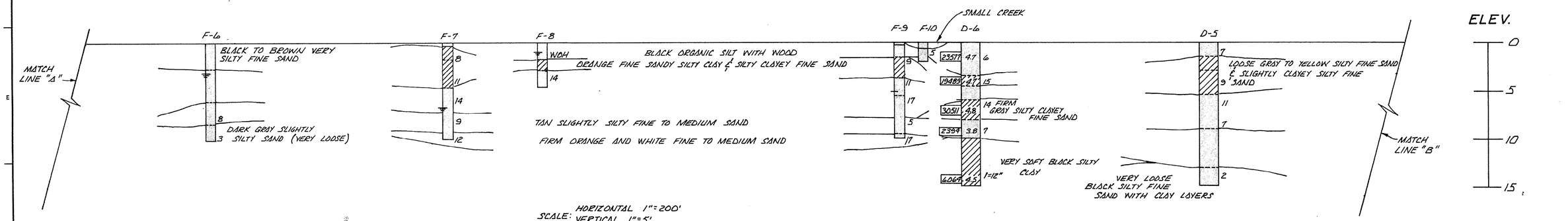
C 450381-03

REVISIONS		
DESCRIPTION	DATE	APPROVED



SCALE: HORIZONTAL 1" = 200'
VERTICAL 1" = 5'

SOIL BORING LOG



SCALE: HORIZONTAL 1" = 200'
VERTICAL 1" = 5'

SOIL BORING LOG

SCALE: HORIZONTAL 1" = 200'
VERTICAL 1" = 5'

BORING LEGEND:

- STANDARD TEST BORING (ASTM D1586-67)
- HAND AUGER BORING
- PREDOMINANTLY SAND AND SILTY SAND
- CLAYS, CLAYEY SILT AND CLAYEY SAND, SILT
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- 1234 RESISTIVITY (OHMS/CM³)
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- ▽ DEPTH OF WATER LEVEL
- PBH..... PUSHED BY HAND
- WDH..... WEIGHT OF HAMMER

NOTE: SOIL AND BORING DATA WERE PROVIDED BY SOIL AND MATERIAL ENGINEERS, INC.* AND REPRESENT THE BEST AVAILABLE INFORMATION AT THE TIME OF THIS PROJECT. BLACK, CROW & EIDSNESS, INC. ASSUMES NO RESPONSIBILITY FOR THE ACCURACY OR UNIFORMITY OF THIS DATA.

* SOIL AND MATERIAL ENGINEERS, INC.
3109 SPRING FOREST ROAD
RALEIGH, N.C. 27604

7-09-19

C 450381-03

GRAND STRAND WATER & SEWER AUTHORITY

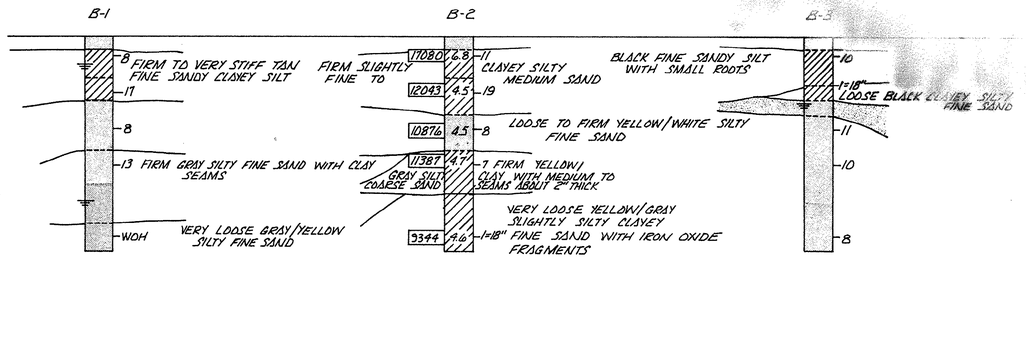
BLACK, CROW AND EIDSNESS, INC.
ENGINEERS

DRAWN BY: B.W. DATE: SEPT. 1978
CHECKED BY: DH FILE NO.: 24650.81
SCALE: AS NOTED

48" EFFLUENT OUTFALL
SOIL BORING LOGS

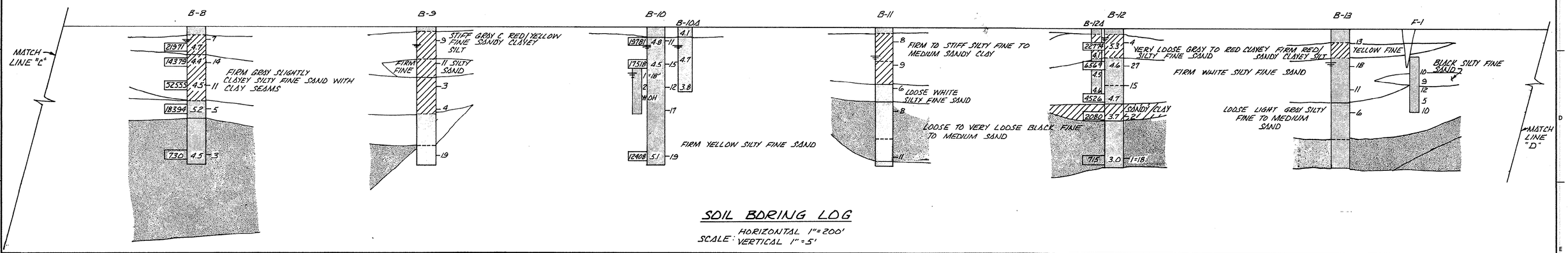
SHEET NO. 19

REVISIONS			
NO.	DESCRIPTION	DATE	APPROVED



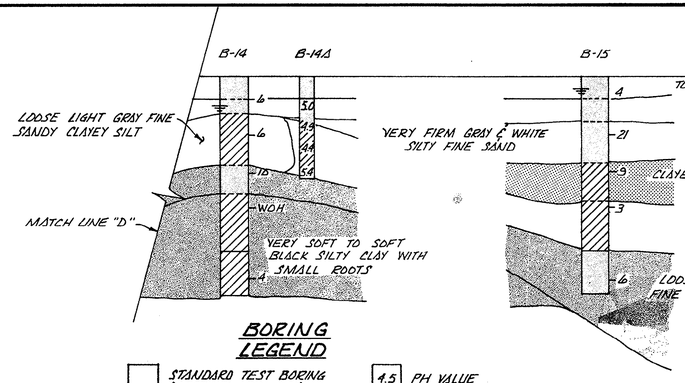
SOIL BORING LOG

SCALE: HORIZONTAL 1"=200'
VERTICAL 1"=5'



SOIL BORING LOG

SCALE: HORIZONTAL 1"=200'
VERTICAL 1"=5'



BORING LEGEND

- STANDARD TEST BORING (ASTM D1586-67)
- HAND AUGER BORING
- PREDOMINANTLY SAND AND SILTY SAND
- CLAYS, CLAYEY SILT AND CLAYEY SAND, SILT
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- 4.5 PH VALUE
- 1234 RESISTIVITY (OHMS/CM³)
- ID PENETRATION RESISTENCE IN BLOWS PER FOOT (PENETRATION IS THE NUMBER OF BLOWS OF A 140lb. HAMMER FALLING 30" REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.)
- ▽ ....DEPTH OF WATER LEVEL
- PBH.....PUSHED BY HAND
- WDH.....WEIGHT OF HAMMER

SOIL BORING LOG

SCALE: HORIZONTAL 1"=200'
VERTICAL 1"=5'

NOTE: SOIL AND BORING DATA WERE PROVIDED BY SOIL AND MATERIAL ENGINEERS, INC.* AND REPRESENT THE BEST AVAILABLE INFORMATION AT THE TIME OF THIS PROJECT. BLACK, CROW & EIDSNESS, INC. ASSUMES NO RESPONSIBILITY FOR THE ACCURACY OR UNIFORMITY OF THIS DATA.

* SOIL AND MATERIAL ENGINEERS, INC.
3109 SPRING FOREST ROAD
RALEIGH, N.C. 27604

GRAND STRAND WATER & SEWER AUTHORITY

BLACK, CROW AND EIDSNESS, INC.
ENGINEERS

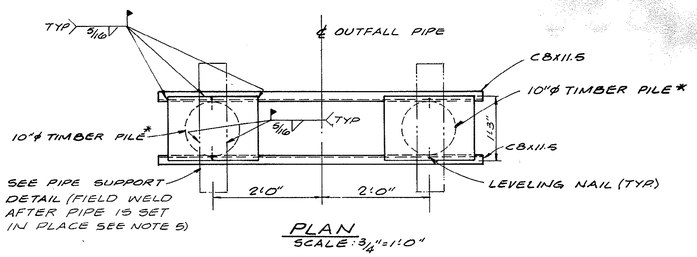
DRAWN BY: BW | DATE: SEPT. 1978
CHECKED BY: DBM | FILE NO. 1CAGB503.81
SCALE: AS NOTED

48" EFFLUENT OUTFALL
SOIL BORING LOGS

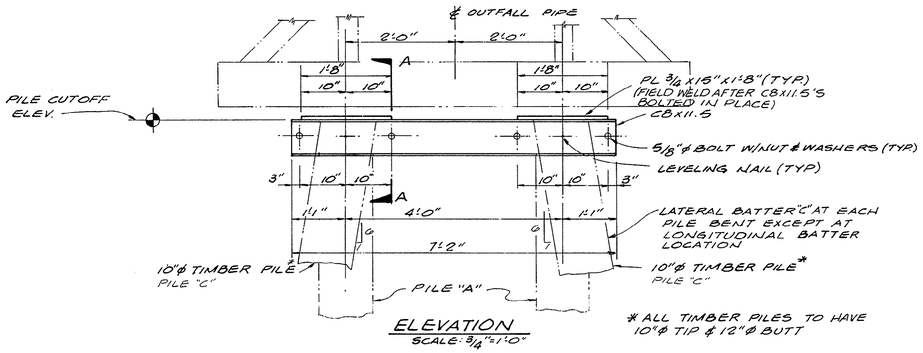
SHEET NO. 20

7-09-020 C 450381-03

REVISIONS			
NO.	DESCRIPTION	DATE	APPROVED



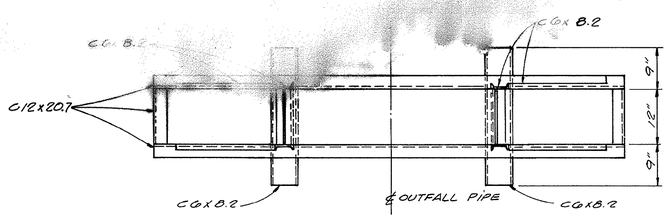
PLAN
SCALE: 3/4"=1'-0"



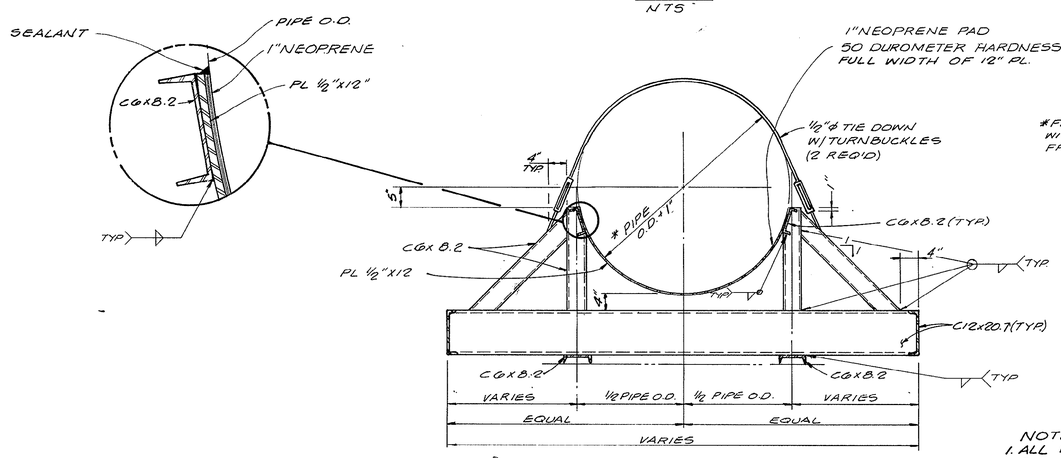
ELEVATION
SCALE: 3/4"=1'-0"

* ALL TIMBER PILES TO HAVE 10"ϕ TIP & 12"ϕ BUTT

PILE CAP DETAILS



PLAN
N.T.S.

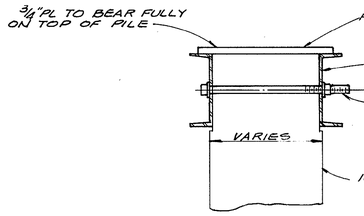


SECTION
N.T.S.

*FINAL O.D. BASED ON 48" PIPE WITH MATERIAL TO BE SELECTED FROM ALTERNATE BIDS.

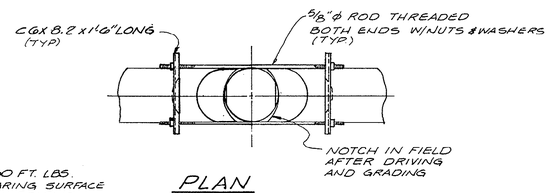
NOTES:
1. ALL WELDS TO DEVELOP FULL STRENGTH OF MEMBER
2. ALL STRUCTURAL STEEL FOR PILE CAP AND PIPE SUPPORT MEMBERS TO BE ASTM A242 "WEATHERING STEEL".
3. ALL TOP OF PILES TO BE GRADED AND CUT TO MATCH FINAL ELEV. @ EACH BENT LOCATION.
4. SEE PLAN & PROFILE SHEETS FOR FINAL GRADES.
5. PIPE SUPPORT TO BE ALIGNED WITH ℄ OF PIPE BEFORE WELDING TO PILE CAP.

PRESTRESSED CONCRETE PIPE SUPPORT DETAIL

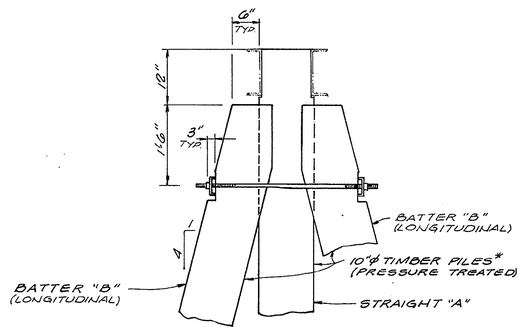


SECTION A-A
SCALE: 1 1/2"=1'-0"

** TORQUE BOLTS TO 150 FT. LBS. W/ MIN. 2 1/2" FLAT BEARING SURFACE TO PROVIDE UNIFORM BEARING FOR WEB OF EACH CHANNEL.



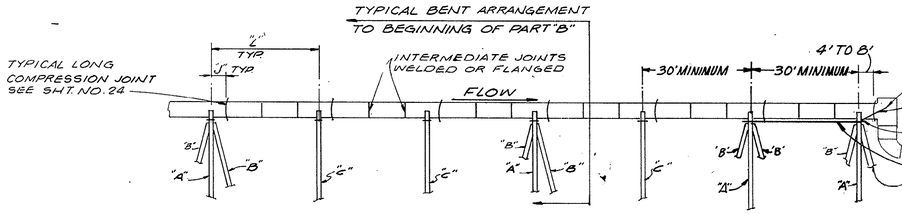
PLAN
SCALE: 3/4"=1'-0"



ELEVATION
SCALE: 3/4"=1'-0"

BATTERED PILE DETAILS

TYPICAL BENT ARRANGEMENT
TO BEGINNING OF PART "B"



CONCRETE PIPE ALTERNATE "ELEVATION"
N.T.S.

DIMENSION "L" SHALL NOT EXCEED 50'-0"
DIMENSION "J" EQUALS 0.15 x L PLUS OR MINUS 1 FT.

THREADED RODS SHALL BE CORTEN STEEL OR GALVANIZED AND COAL TAR EPOXY COATED AS PER SPECIFICATIONS SECTION 09900 FOR GALV PIPE.

EYEBOLTS SHALL BE GALV STEEL

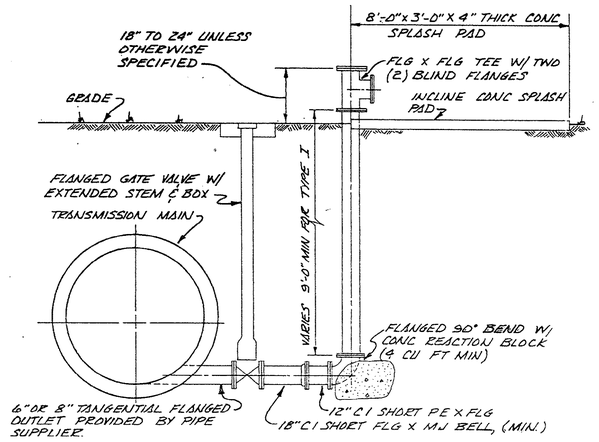
FOR STEEL PIPE ALTERNATE SEE SHT. NO. 24

7-09-021

GRAND STRAND WATER & SEWER AUTHORITY	
BLACK, CROW AND EIDSNESS, INC. ENGINEERS	
DRAWN BY: GEK	DATE: SEPT, 1978
CHECKED BY:	FILE NO. 1CA68928.81
SCALE: AS NOTED	
PILE BENT DETAILS	SHEET NO. 21

REVISIONS				
NO.	CORD	DESCRIPTION	DATE	APPROVED

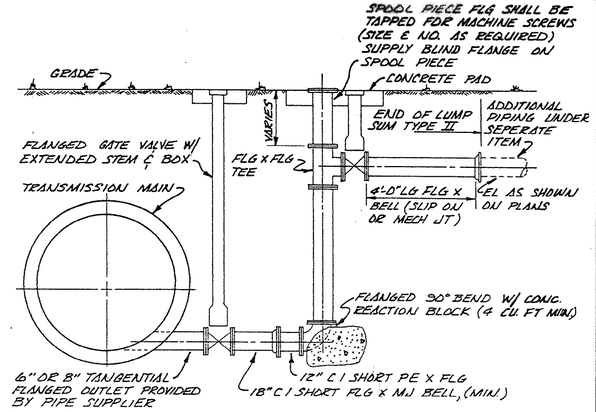
NOTE: WHERE VERTICAL STRAIGHT PIPE EXCLUDING FITTINGS EXCEEDS 9'-0" EXTRA LENGTH WILL BE PAID FOR UNDER SEPERATE ITEM.



6" OR 8" BLOW-OFF (TYPE I)

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

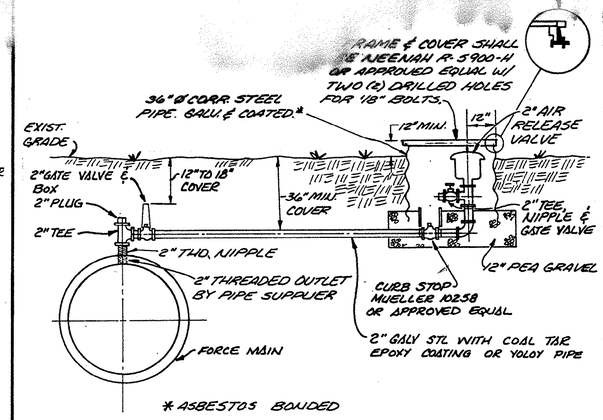
NOTE: WHERE VERTICAL STRAIGHT PIPE EXCLUDING FITTINGS EXCEEDS 9'-0", EXTRA LENGTH WILL BE PAID FOR UNDER SEPARATE ITEM.



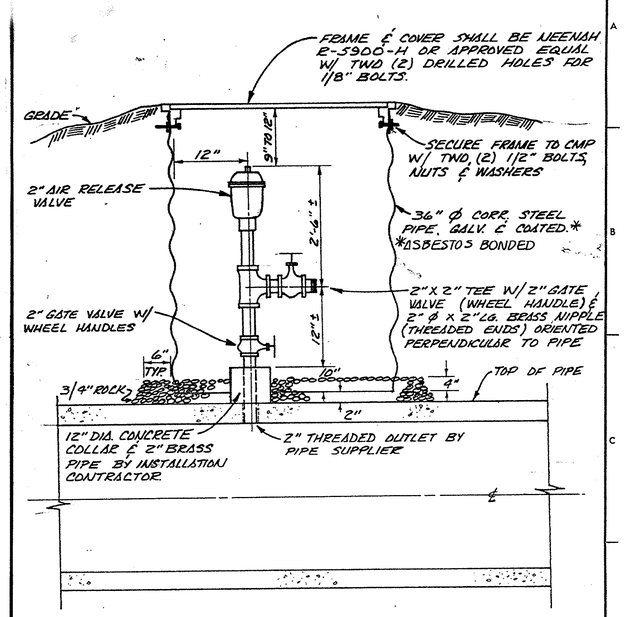
6" OR 8" BLOW-OFF (TYPE II)

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

SECURE FRAME TO CMP W/ TWO (2) 1/2" BOLTS, NUTS AND WASHERS

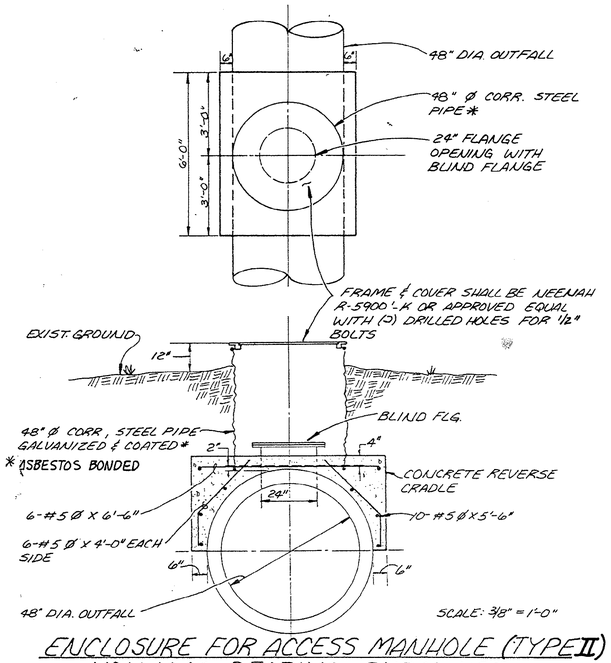


2" AIR RELEASE VALVE ENCLOSURE (TYPE I) OFFSET LOCATION N.T.S.



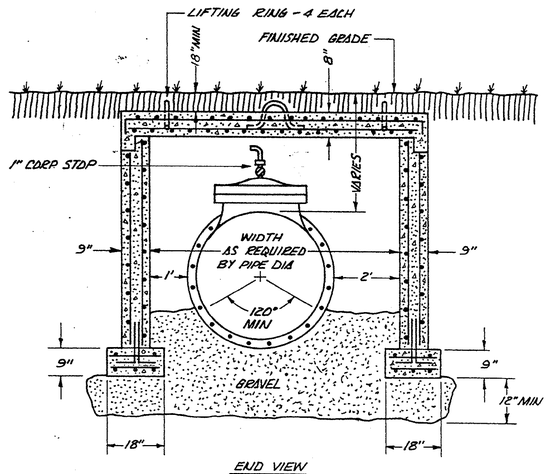
2" AIR RELEASE VALVE ENCLOSURE (TYPE II)

N.T.S.



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

ENCLOSURE FOR ACCESS MANHOLE (TYPE II) NON-LOAD BEARING, RURAL USE



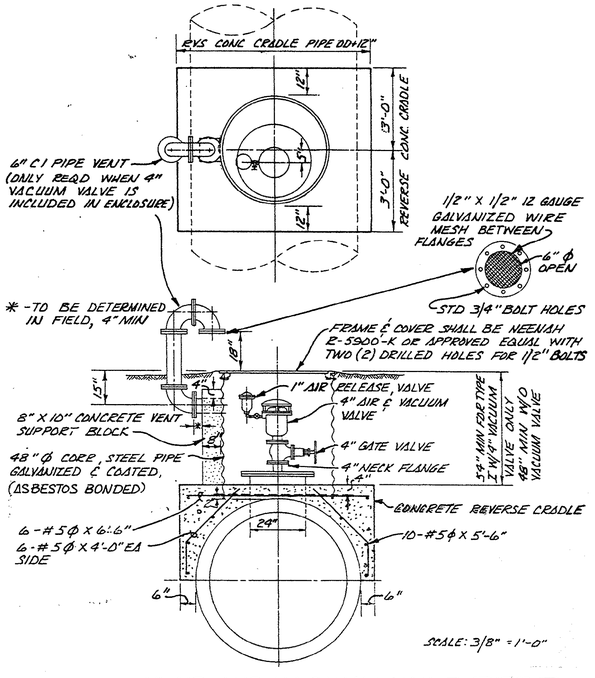
END VIEW

THE INSIDE DIMENSION PARALLEL TO PIPE EQUALS 6 FEET.

REINFOECING
TOP SLAB - #4 BARS 6" O.C. EACH WAY TOP & BOTTOM
WALLS - #4 BARS 9" O.C. EACH WAY, INSIDE & OUTSIDE
FOOTING - #4 BARS 6" O.C. EACH WAY, TOP & BOTTOM
2-1/2" COVER ON REBAR

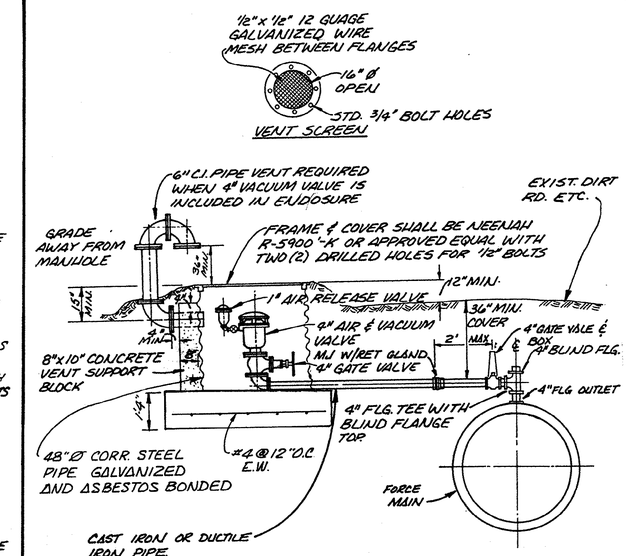
TYPICAL ACCESS MANHOLE (TYPE I)

NTS



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

4" AIR AND VACUUM VALVE TYPE II



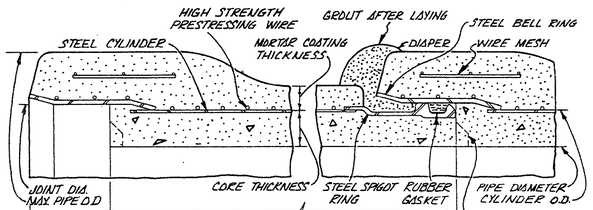
4" AIR & VACUUM VALVE TYPE I OFF-SET LOCATION

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

GRAND STRAND WATER & SEWER AUTHORITY	
DRAWN BY: B.W.	DATE: SEPT. 1978
CHECKED BY:	FILE NO. 1CA68503.81
SCALE: AS NOTED	
DETAILS	SHEET NO. 22

7-09-022 1CA68503.81-03

JOINT RINGS METALIZED TO .004 MINIMUM THICKNESS ON EXPOSED SURFACES.

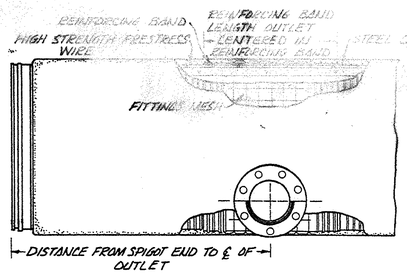


*MFD. IN ACCORDANCE WITH AWWA C 301 SPECIFICATIONS

PIPE DIAMETER	CORE THICKNESS	JOINT DEPTH	JOINT DIAMETER	CYLINDER O.D	WT. #/L.F. (APPROX)	MAXIMUM PIPE O.D
16"	1"	3-1/4"	18-1/2"	18"	140	22-1/2"
18"	1-1/8"	3-1/4"	20-3/4"	20-1/4"	155	24-3/4"
20"	1-1/4"	3-1/4"	23"	22-1/2"	185	27"
24"	1-1/2"	3-1/4"	27-1/2"	27"	240	31-1/2"
30"	1-7/8"	3-1/4"	34-1/4"	33-3/4"	350	38-1/4"
36"	2-1/4"	3-3/8"	41"	40-1/2"	475	45"
42"	2-5/8"	3-3/4"	47-1/4"	47-1/4"	590	51-1/4"
48"	3"	3-7/8"	54"	54"	760	58"

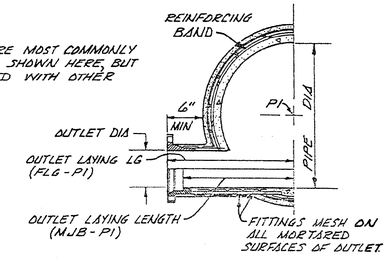
PRESTRESSED CONCRETE LINED CYLINDER PIPE (LCP)

N.T.S.

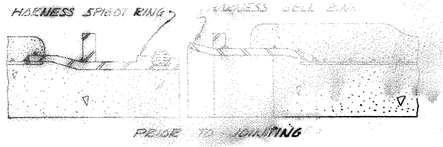


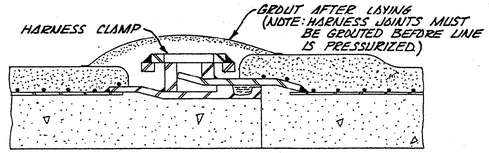
* OUTLETS ARE LOCATED AS CLOSE AS POSSIBLE TO BELL OR SPIGOT END IN 16 THRU 24" PIPE. IN PIPE SIZES 30" AND LARGER THESE OUTLETS ARE USUALLY PLACED 4'-5' FROM EITHER END OF THE PIPE UNLESS A MORE ACCURATE LOCATION IS REQUIRED.

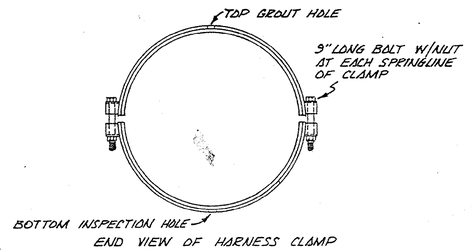
TANGENT OUTLETS ARE MOST COMMONLY FLANGE OR MJB AS SHOWN HERE, BUT COULD BE FURNISHED WITH OTHER JOINT ENDS.



TYPICAL TANGENT OUTLET

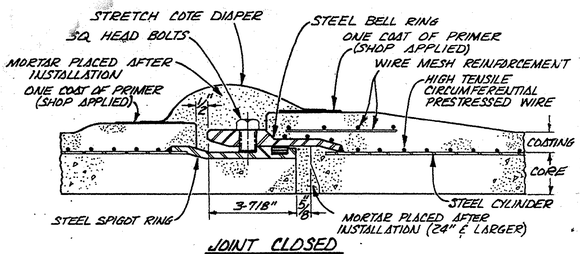




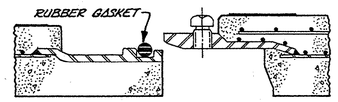


CLAMP TYPE HARNESS JOINT FOR PRESTRESSED CONCRETE PIPE

REVISIONS			
NO.	DESCRIPTION	DATE	APPROVED



JOINT CLOSED



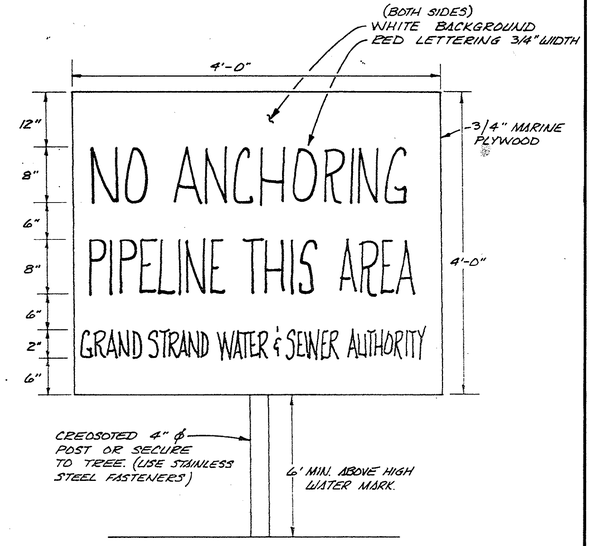
JOINT OPEN

OPERATIONS TO BE PERFORMED IN THE FIELD

1. INSPECT BELL TO INSURE THAT INSIDE SURFACE IS SMOOTH. BOLTS MUST NOT BE RECESSED INTO, OR PROJECT BEYOND BELL. IF BELL IS NOT SMOOTH RESET BOLTS.
2. MAKE JOINT PUSHING SPIGOT HOME UNTIL COATING MORTAR IS LESS THAN 1/2" FROM BELL.
3. TIGHTEN BOLTS AROUND THE BELL UNTIL FULLY ENGAGED.
4. PLACE SPECIAL DIAPER (REMOVE PAPER ATTACHED) ON PIPE AND TIGHTEN STRAPPING. GROUT JOINT WITH MORTAR. REMOVE PAPER FROM SEPARATE 18" LONG DIAPER. PATCH AND PLACE OVER OPENING TO COVER MORTAR. (IN COLD WEATHER, HEAT STIFF DIAPER TO ABOUT 60° F FOR EASY PLACEMENT AROUND JOINT)

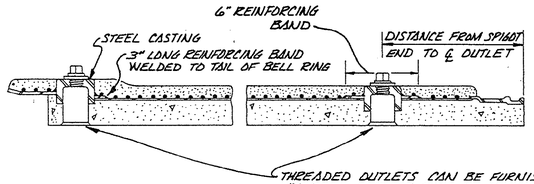
BELL BOLT TYPE JOINT FOR REINFORCED CONCRETE PRESSURE PIPE

NOTE: SIGN TO BE LOCATED ON BOTH SIDES OF RIVER.

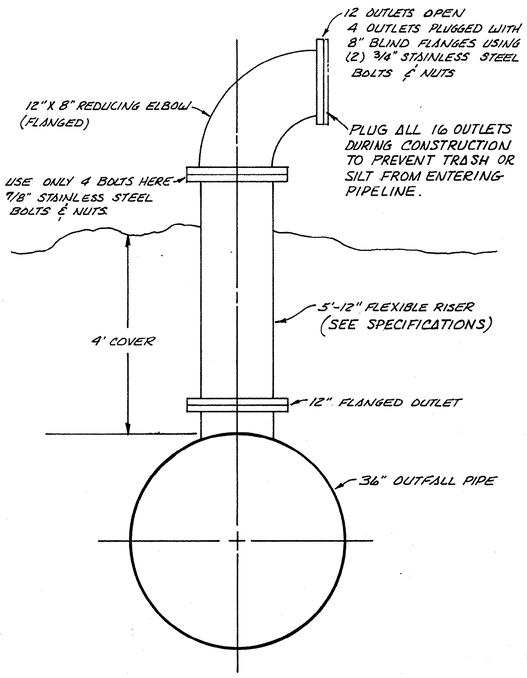


PIPELINE WARNING SIGN

N.T.S.



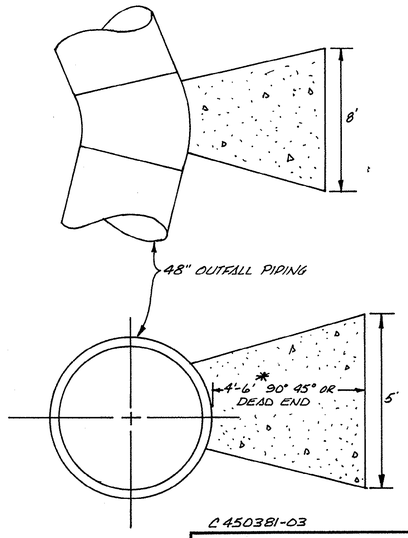
TYPICAL THREADED OUTLETS FOR PRESTRESSED CONCRETE PIPE



TYPICAL DIFFUSER OUTLET

TYPICAL REACTION BLOCKING FOR 48" MAIN

90°, 45° ℄ 22½° BENDS AND TEMPORARY DEAD END



* 22½° BEND REQUIRES 5' TO 7'

C 450381-03

GRAND STRAND WATER & SEWER AUTHORITY

BLACK, CROW AND EIDSNESS, INC. ENGINEERS

DRAWN BY: BW | DATE: SEPT. 1978
CHECKED BY: | FILE NO. CA68508.81

SCALE: AS NOTED

DETAILS | SHEET NO. 23

07-09-023

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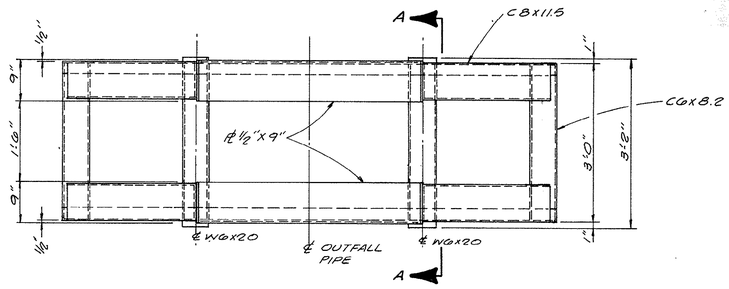
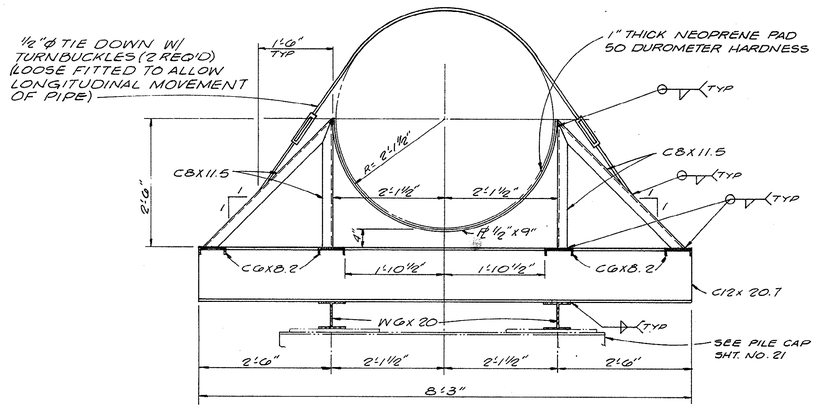
NO.	DESCRIPTION	DATE	APPROVED

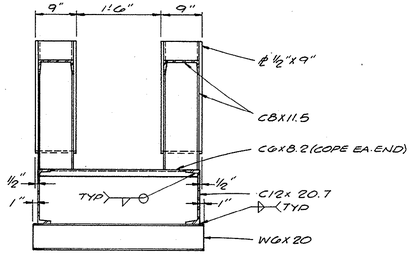


PLAN
SCALE: 3/4"=1'-0"



SECTION
SCALE 3/4"=1'-0"

ALTERNATE STEEL PIPE SUPPORT DETAIL

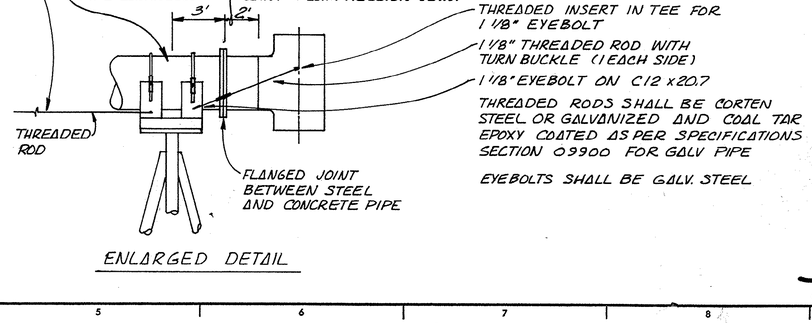


SECTION A-A

STEEL PIPE ALTERNATE "ELEVATION"

N.T.S.

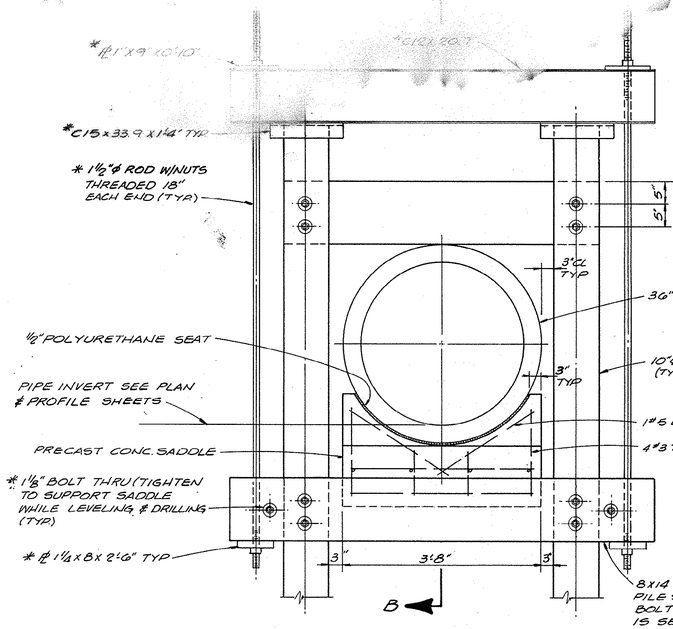
SEE SHT. NO. 21 FOR PILE BENT DETAILS
SEE SHT. NO. 21 FOR NOTES



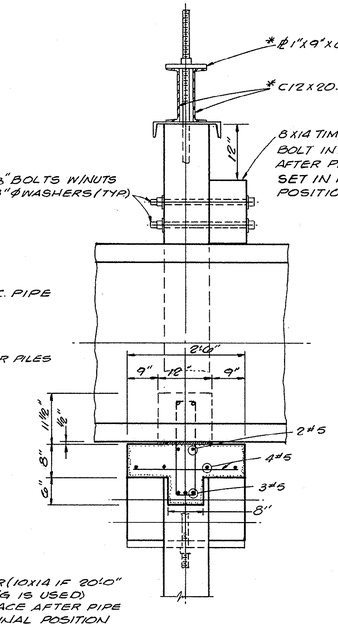
THREADED RODS SHALL BE CORTEN STEEL OR GALVANIZED AND COAL TAR EPOXY COATED AS PER SPECIFICATIONS SECTION 09900 FOR GALV PIPE

EYEBOLTS SHALL BE GALV. STEEL

ENLARGED DETAIL



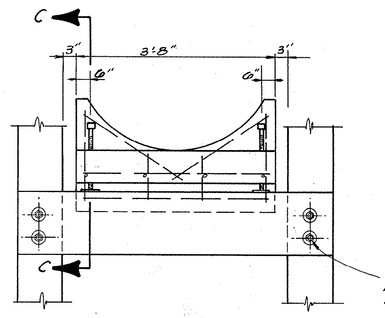
ELEVATION
SCALE: 3/4"=1'-0"



SECTION B-B
SCALE: 3/4"=1'-0"

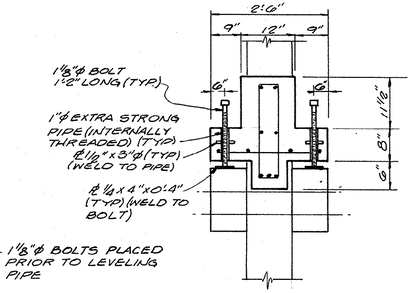
*PROPOSED LEVELING MECHANISM COMPONENT

SUBMERGED BENT DETAILS



ELEVATION
SCALE: 3/4"=1'-0"

NOTE:
FOR NOTES AND DETAILS NOT SHOWN SEE DETAILS ABOVE



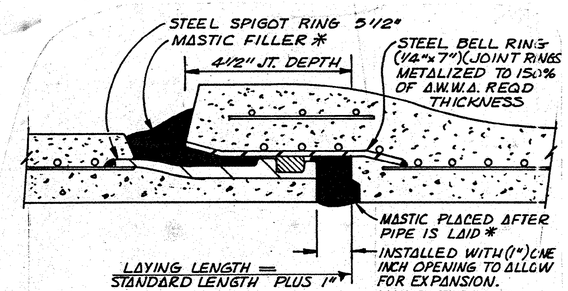
SECTION C-C
SCALE: 3/4"=1'-0"

ALTERNATE LEVELING DETAILS

7-09-028

GRAND STRAND WATER & SEWER AUTHORITY	
BLACK, CROW AND EIDSNESS, INC. ENGINEERS	
DRAWN BY: GEK	DATE: OCT. 27, 1978
CHECKED BY: JOH	FILE NO.: C-88503.81
SCALE: AS NOTED	
PILE BENT DETAILS	SHEET NO. 24

REVISIONS			
NO.	DESCRIPTION	DATE	APPROVED

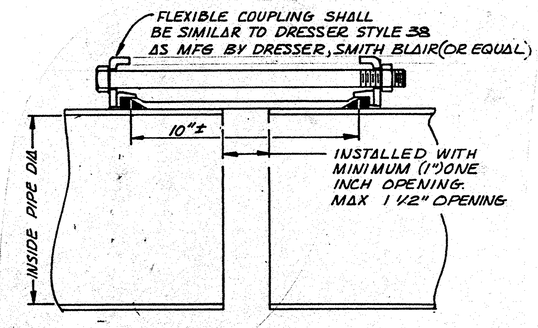


* MASTIC FILLER INSIDE AND OUT SHALL BE FLEXIBLE MATERIAL WITH BUTYL RUBBER BASE RUBBER-NECK: KT SNYDER GS-79 BY GENERAL SEALANTS OR EQUAL

AT LEAST ONE LONG JOINT (SOIL CONSERVATION JOINT) SHALL BE PROVIDED FOR PRESTRESSED CONCRETE PIPE ABOVE GRADE NEAR EACH PILE BENT, EXCEPT WHERE NOTED OTHERWISE.

TYPICAL FLEXIBLE JOINT DETAIL FOR PIPE ABOVE GRADE

PART B - PRESTRESSED PIPE ALTERNATE



ONE FLEXIBLE COUPLING SHALL BE LOCATED AT EACH PILE BENT BETWEEN CRADLES FOR STEEL PIPE ALTERNATE

TYPICAL FLEXIBLE JOINT DETAIL FOR PIPE ABOVE GRADE

PART B - STEEL PIPE ALTERNATE

GRAND STRAND WATER & SEWER AUTHORITY

BLACK, CROW AND EIDSNESS, INC.
ENGINEERS

DRAWN BY: BW | DATE: SEPT 1978
CHECKED BY: [illegible] | FILE NO: CA68503.01

SCALE: AS NOTED

DETAILS | SHEET NO. 25

7-09-025

C450381-03