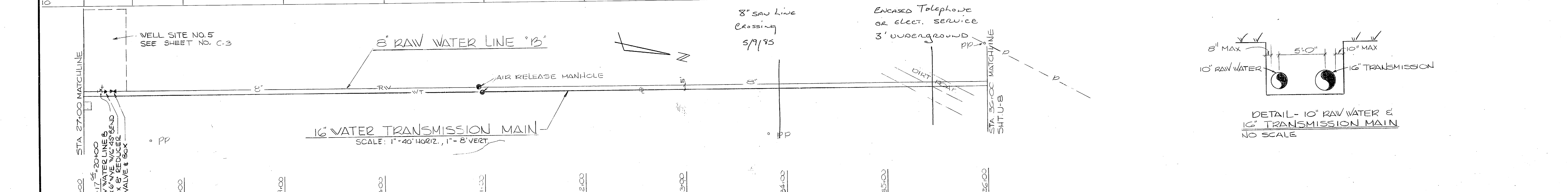
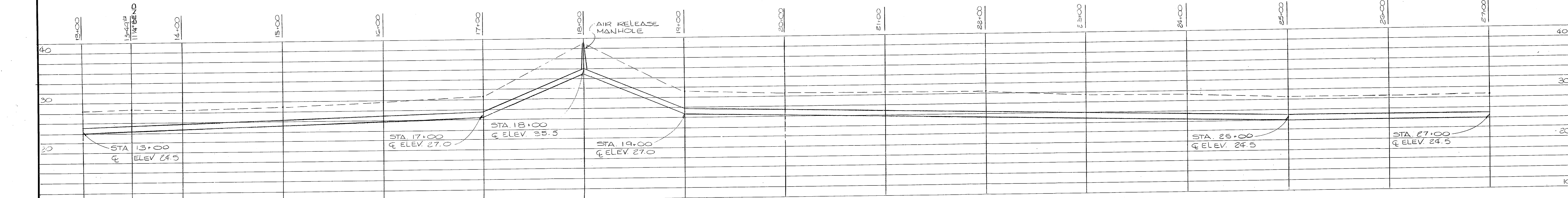
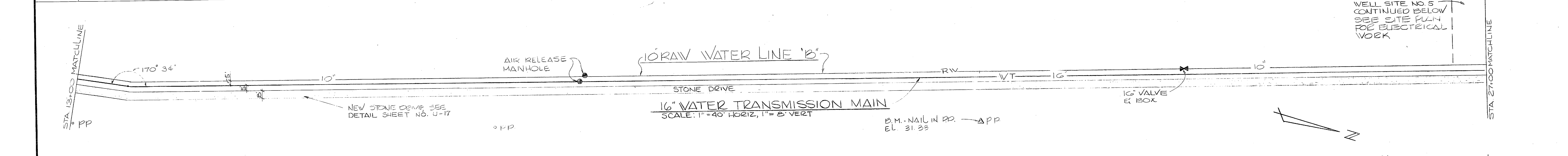
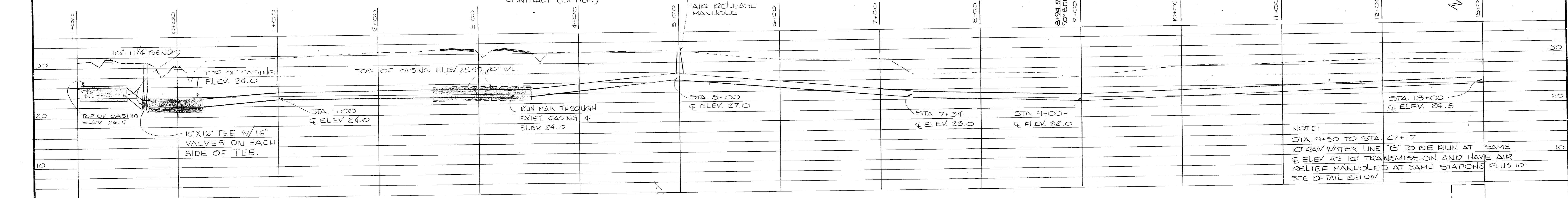
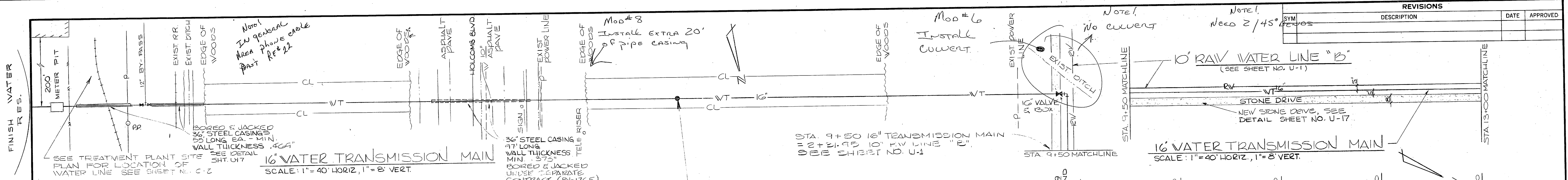


REVISIONS		DATE	APPROVED
SYM	DESCRIPTION		
1	REVISED		



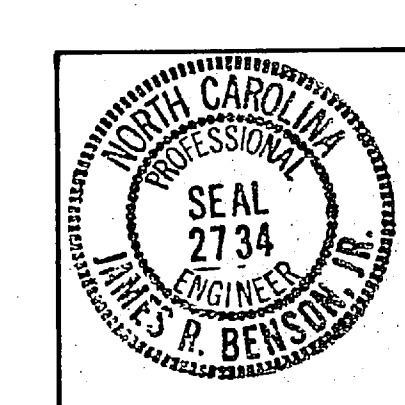
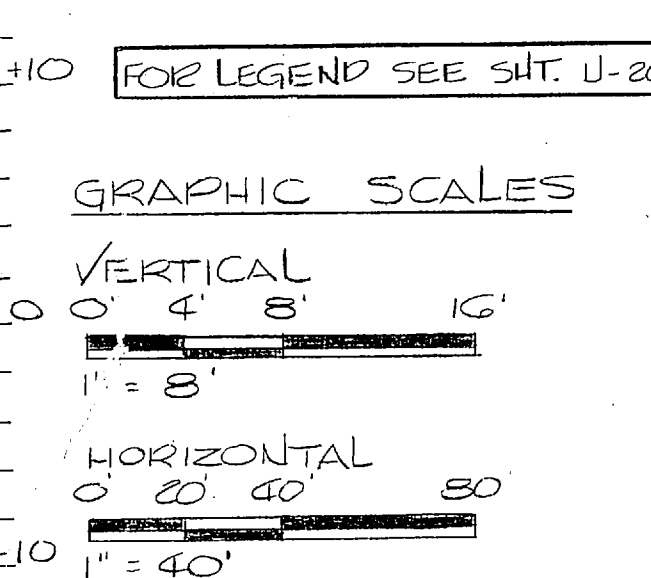
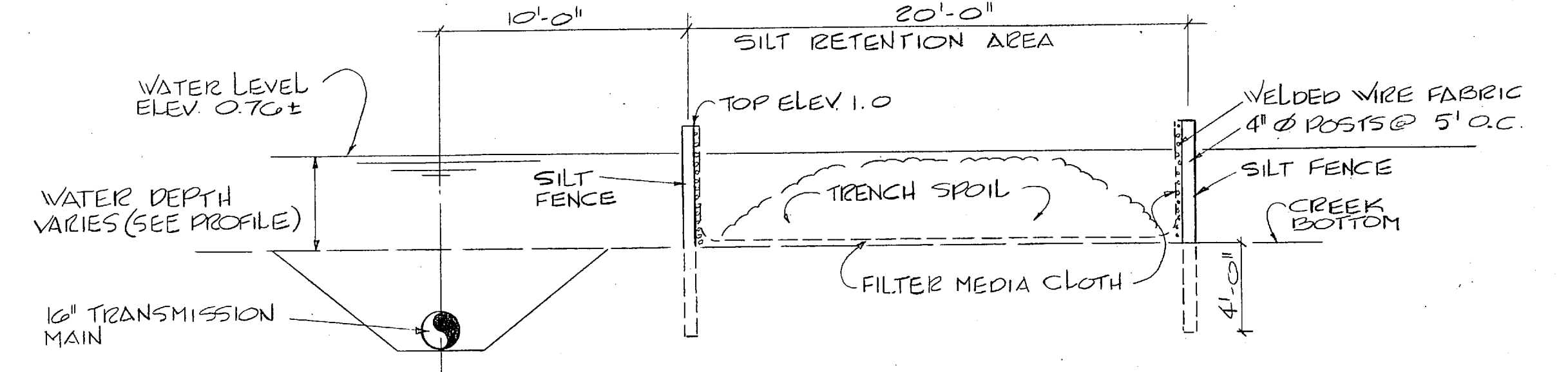
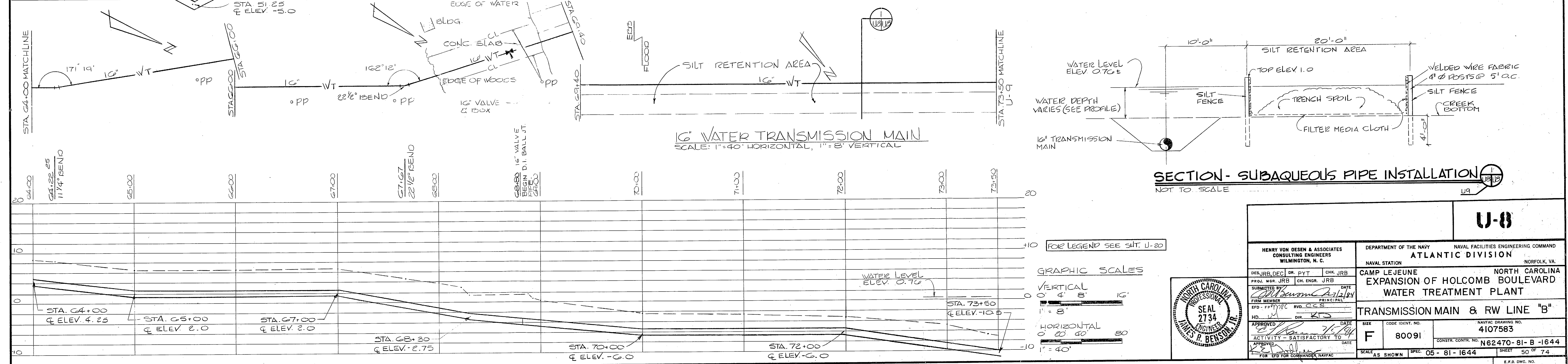
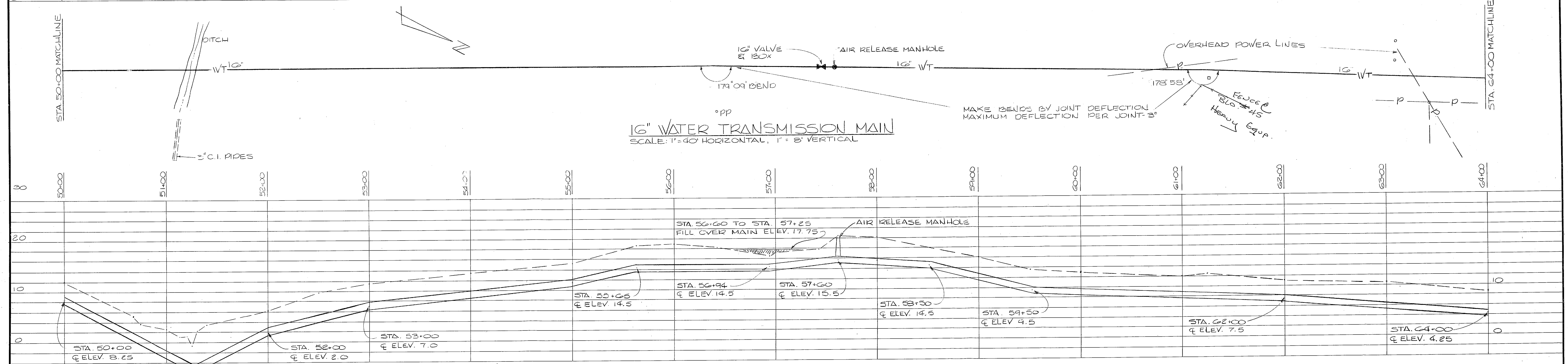
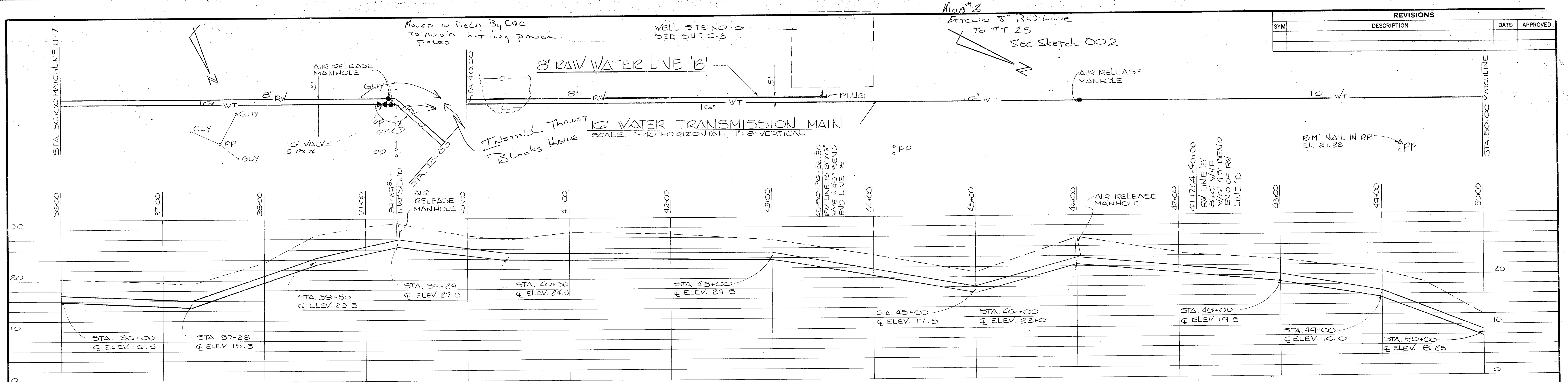
FOR LEGEND SEE SH. U-20

GRAPHIC SCALES  
VERTICAL 0" 2' 4" 8" 16"  
1"=8'  
HORIZONTAL 0" 20' 40' 80"  
1"=40'

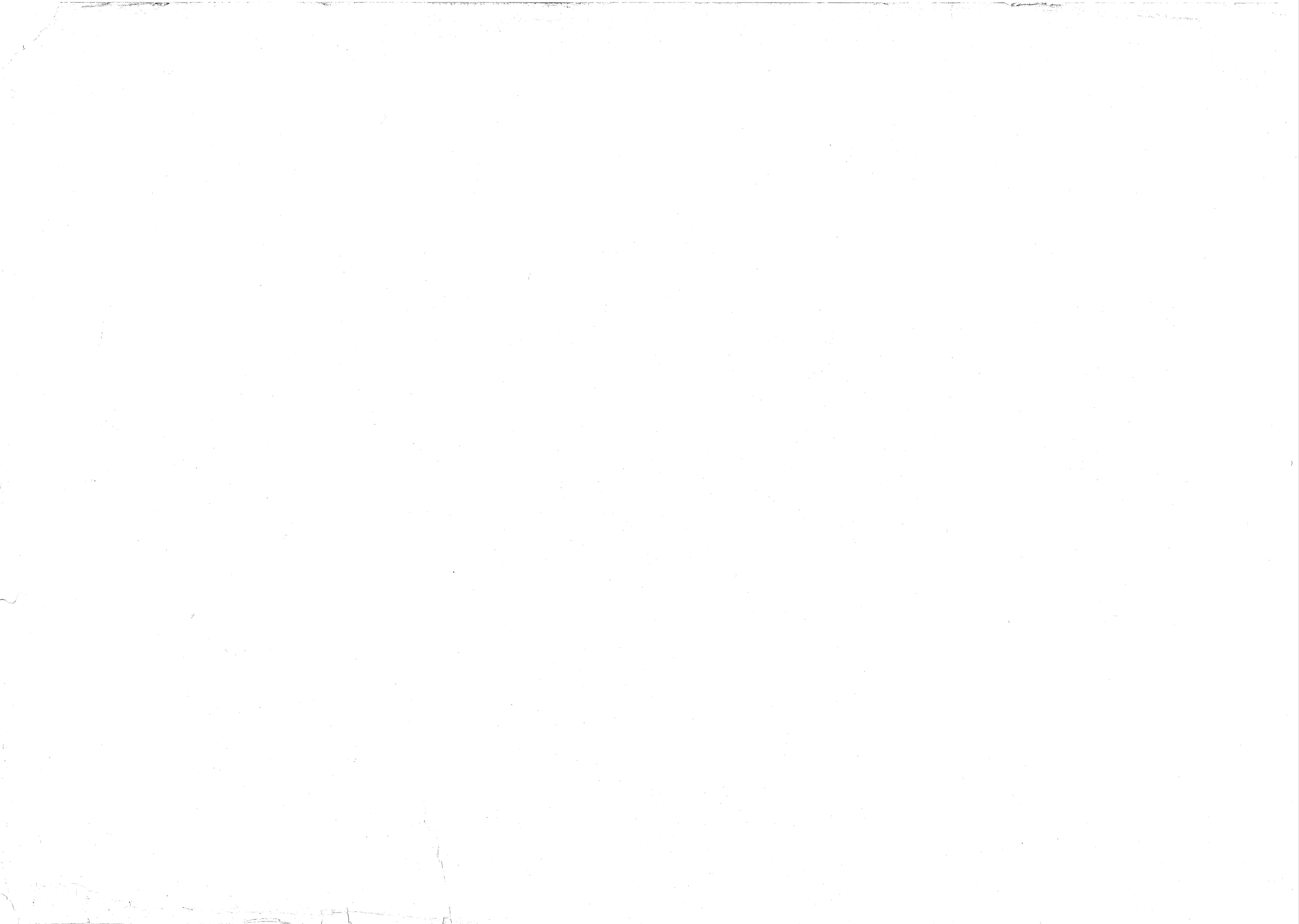
<b>U-7</b>	
HENRY VON OESSEN & ASSOCIATES CONSULTING ENGINEERS WILMINGTON, N. C.	DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND ATLANTIC DIVISION NORFOLK, VA.
DESIGNED BY SMC CHECKED BY JRB SUBMITTED BY JRB DATE 1/14/84 BY JRB REV. C.C.S.	NAVAL STATION CAMP LEJEUNE NORTH CAROLINA EXPANSION OF HOLCOMB BOULEVARD WATER TREATMENT PLANT
APPROVED BY JRB DATE 1/14/84 ACTIVITY - SATISFACTORY TO DATE	TRANSMISSION MAIN & RW LINE "B"
SCALE AS SHOWN	SPEC. 05-81-1644
SHEET 49 OF 74	NAVFAC DRAWING NO. 4107582 CONSTR. CONTR. NO. N62470-81-B-1644



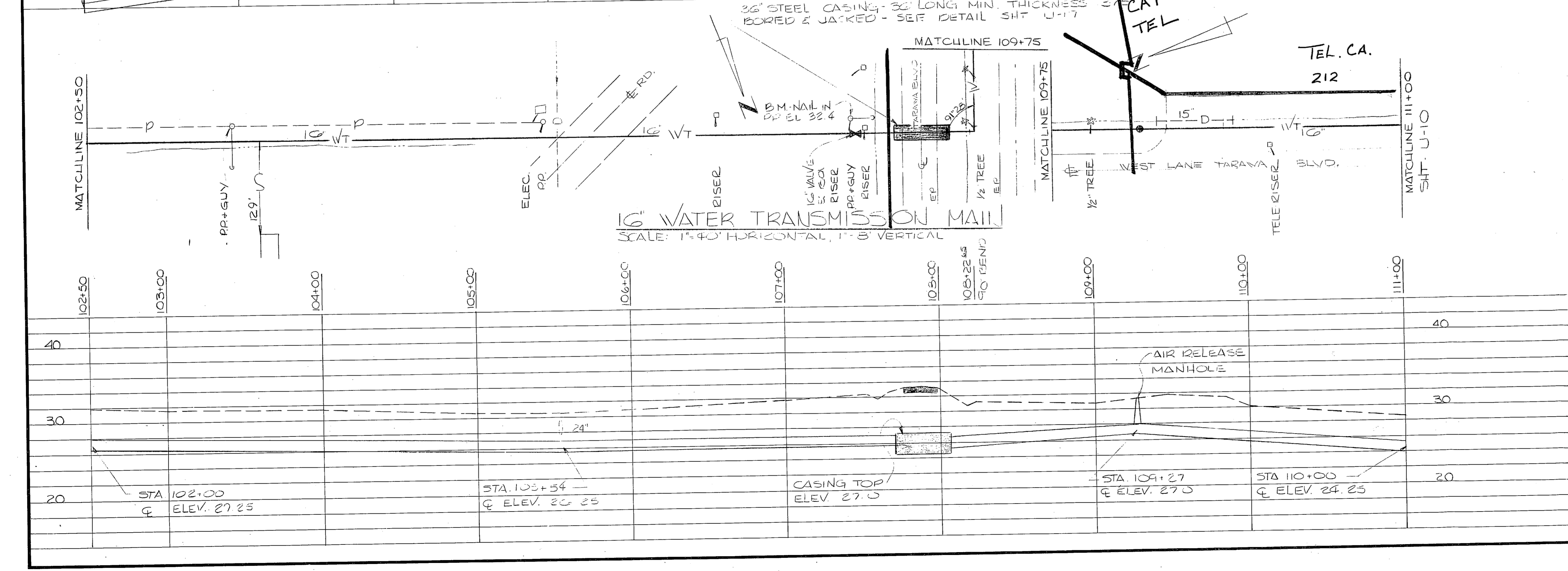
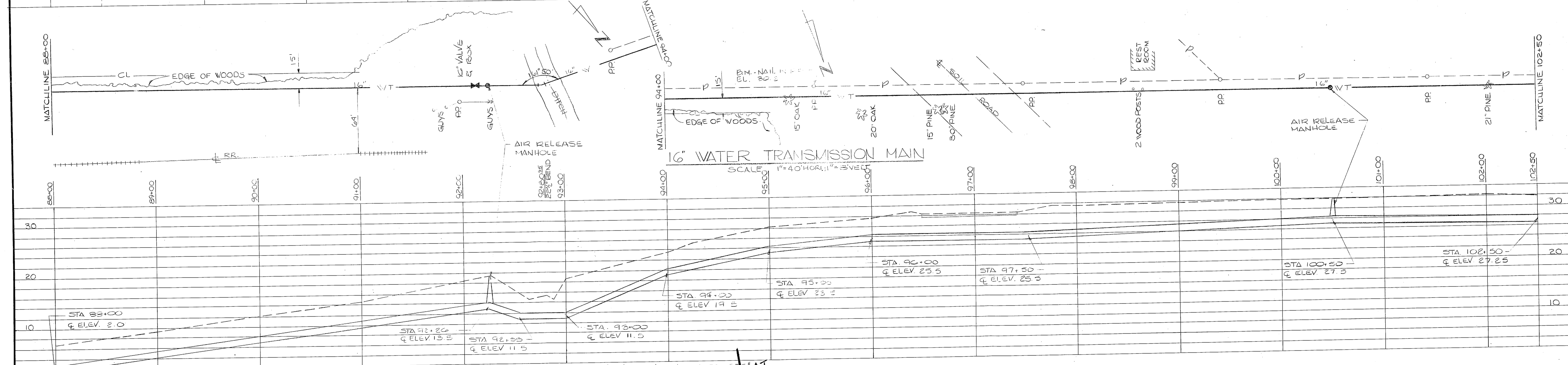
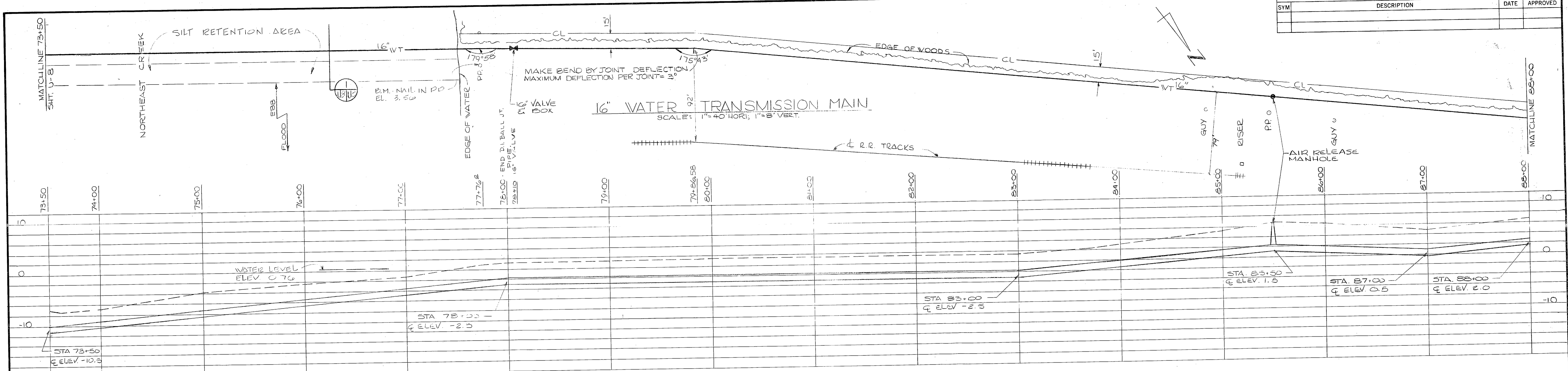
REVISIONS			
SYM	DESCRIPTION	DATE	APPROVED



<b>U-8</b>	
HENRY VON OSEB & ASSOCIATES CONSULTING ENGINEERS WILMINGTON, N. C.	
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND ATLANTIC DIVISION NORFOLK, VA.	
CAMP LEJEUNE EXPANSION OF HOLCOMB BOULEVARD WATER TREATMENT PLANT	
<b>TRANSMISSION MAIN &amp; RW LINE "B"</b>	
DESIGNED BY: JRB CHECKED BY: JRB DATE: 7/1/74 ACTIVITY: SATISFACTORY TO DATE	NAVY DRAWING NO. 4107583 N62470-81-B-1644 SHEET 50 OF 74
APPROVED BY: [Signature] DATE: 7/1/74	SIZE: F CODE IDENT. NO.: 80091 SCALE: AS SHOWN SPEC: 05-81-1644

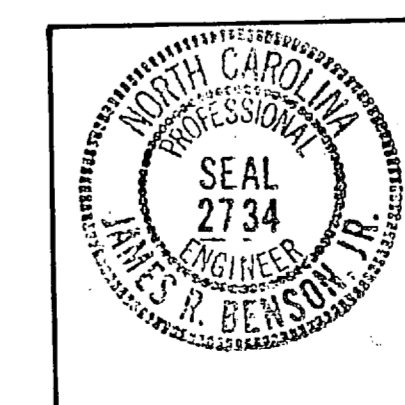


SYM	REVISIONS	DATE	APPROVED



FOR LEGEND SEE SH. U-22

GRAPHIC SCALES  
VERTICAL  
0" = 4' 5"  
1" = 8'  
HORIZONTAL  
0" = 20' 40"  
1" = 40'



HENRY VON OESSEN & ASSOCIATES CONSULTING ENGINEERS WILMINGTON, N. C.		DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND ATLANTIC DIVISION NAVAL STATION	
DES. JRB, DEC	DR. SMC	CHK. JRB	
PROJ. MGR. JRB	CH. ENGR. JRB	DATE	
SUBMITTED BY	DATE	PRINCIPAL	
FIRM MEMBER	DATE	DATE	
NO. 121	DATE	DATE	
ACTIVITY - SATISFACTORY TO	DATE	DATE	
FOR USE FOR COMMANDER, NAVFAC	DATE	DATE	
CAMP LEJEUNE EXPANSION OF HOLCOMB BOULEVARD WATER TREATMENT PLANT		TRANSMISSION MAIN	
SIZE	CODE IDENT. NO.	NAVFAC DRAWING NO.	
F	80091	4107584	
SCALE	SPEC	CONSTR. CONTR. NO.	
AS SHOWN	05-81-1644	N62470-81-B-1644	
SHEET 51 OF 74		E.T.S. DWG. NO.	
		207584	

FLANGES & BOLTING USA STD. B 16.1-1967										GASKETS USA STD. B 16.21-1962			
SIZE OF PIPE	DIA OF FLANGE	THICKNESS OF FLANGE	DIA OF B.C.	NO. OF BOLTS	DIA OF BOLT	LENGTH OF BOLT	SIZE OF GASKET	STD PIPE 125 * PRESSURE					
								LBS OF LEAD AWWA STD	LBS OF YARN	FT OF BRAIDED HEMP	FT OF J-M #210 ASBESTOS YARNING ROPE		
1	4 1/4	7/16	3 1/8	4	1/2	2	18x25	2 1/2 DP 3" TO 20"	2 RINGS 5/8 SQ 4" TO 14" JTS	3 RINGS 1/2 DIA. 4" TO 6" JTS.			
1 1/2	4 3/8	1/2	3 7/8	4	1/2	2	18x3	2 1/2 DP 24" TO 36"	2 RINGS 5/8 SQ 16" TO 48" JTS	3 RINGS 5/8 DIA. 8" TO 14" JTS.			
2	5	9/16	4 3/4	4	5/8	2 1/4	28x4 1/8	3" DP 42" & UP		4 RINGS 5/8 DIA. 16" TO 48" JTS.	4.0		
2 1/2	5 1/2	5/8	5 1/2	4	5/8	2 1/2	28x4 7/8		6.50	.18	3.0	5.6	
3	6	11/16	6	4	3/4	2 3/4	32x5 3/8		8.00	.21	4.0	7.1	
3 1/2	7	1/2	7	8	5/8	3	4 x 6 3/8					8.8	
4	7 1/2	3/4	7 1/2	8	5/8	3	4 1/2 x 6 7/8					10.4	
4 1/2	8	13/16	8 1/2	8	3/4	3 1/4	5 1/8 x 7 1/4		11.25	.31	5.2	12.3	
5	8 1/2	15/16	9 1/2	8	3/4	3 1/4	6 5/8 x 8 3/4		14.50	.44	6.4	14.0	
6	9	1/2	9 1/2	8	3/4	3 1/4	8 5/8 x 11		17.50	.53	7.4	15.7	
6 1/2	10	13/16	10 1/2	8	3/4	3 1/4	10 1/2 x 13 1/8		20.50	.61	8.4	17.4	
8	11	1/2	11 1/4	12	7/8	4	12 3/4 x 16 1/8		24.00	.81	9.6	19.0	
8 1/2	13 1/2	17/16	14 1/4	12	1	4 1/2	14 x 17 3/4		33.00	1.00	10.6	20.7	
10	16	1 1/4	17	12	1	4 1/2	16 x 20 1/4		36.90	1.25	11.8	22.0	
12	19	1 3/8	18 3/4	16	1 1/8	5	18 x 21 5/8		40.50	1.50	14.0	25.2	
14	21	1 7/8	21 1/4	16	1 1/8	5	20 x 23 7/8		52.50	2.06	18.0	30.1	
16	23 1/2	2 1/8	22 3/4	20	1 1/2	5 1/2	24 x 28 1/4		64.75	3.00	20.0	35.0	
18	25	2 1/4	25	20	1 1/2	6 1/4	30 x 34 1/4		77.25	3.50	23.0	40.0	
20	27 1/2	2 3/8	29 1/2	20	1 1/2	7	36 x 41 1/4		104.25	4.00	26.0	46.5	
24	32	3 1/8	36	28	1 1/2	7 1/2	42 x 48						
24	32	2 3/8	42 3/4	32	1 1/2	7 3/4	48 x 54 1/2		119.00				
30	38 3/4	2 3/8	49 1/2	36	1 1/2	8 1/2	54 x 60 7/8						
36	46	2 5/8	56	44	1 3/4	8 3/4	60 x 67 1/4						
42	53	2 3/4	62 3/4	44	1 3/4	8 3/4	72 x 80 1/2						
48	59 1/2	3	69 1/4	52	1 3/4	9 1/2							
54	66 1/4	3 1/8	76 1/4	60	1 3/4								
60	73	3 1/2	82 1/2	60	1 3/4								
72	86 1/2	4	98 1/2	60	1 3/4								

LONG STUDS 2 THDS & 2 NUTS

5 1/2"  
6"  
7"  
8"  
9"  
10"  
11"

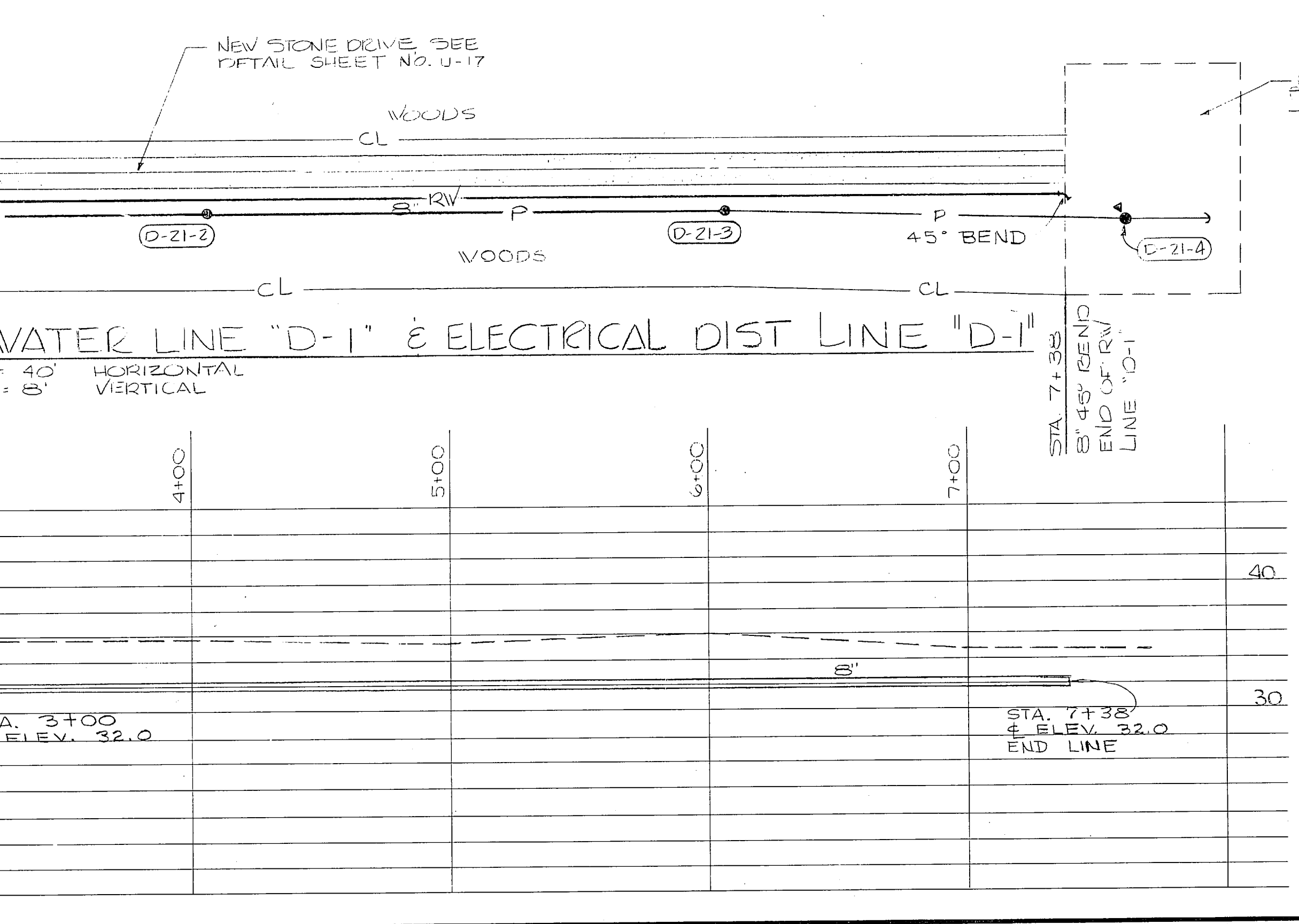
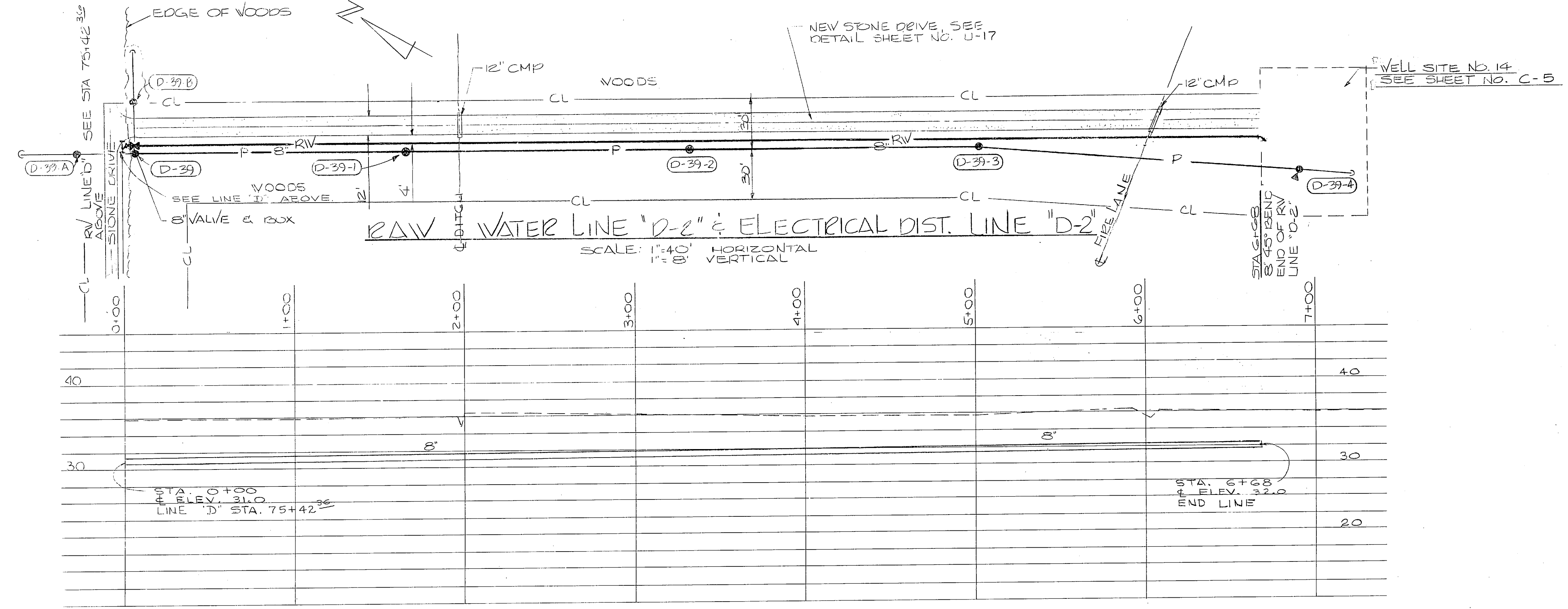
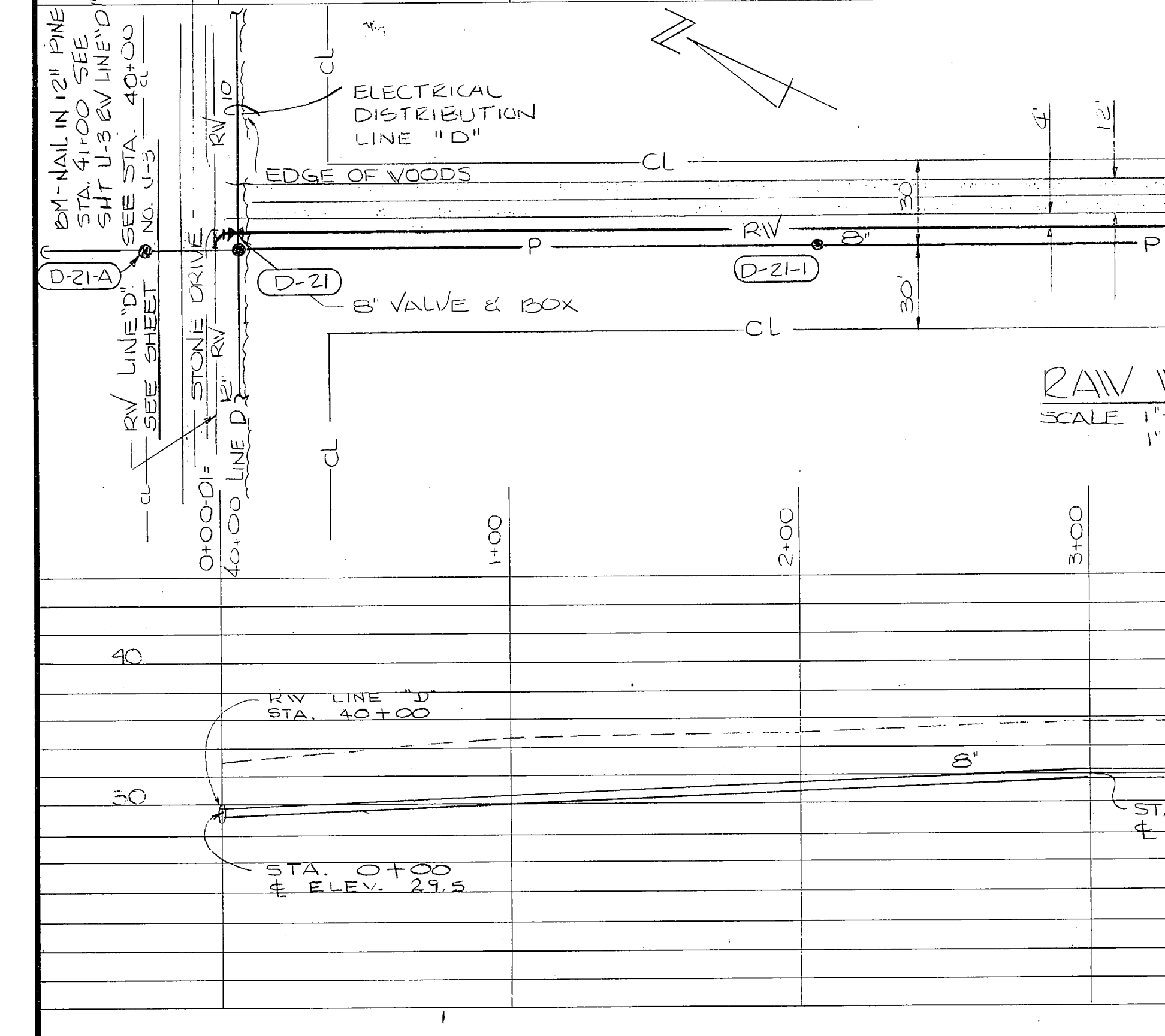
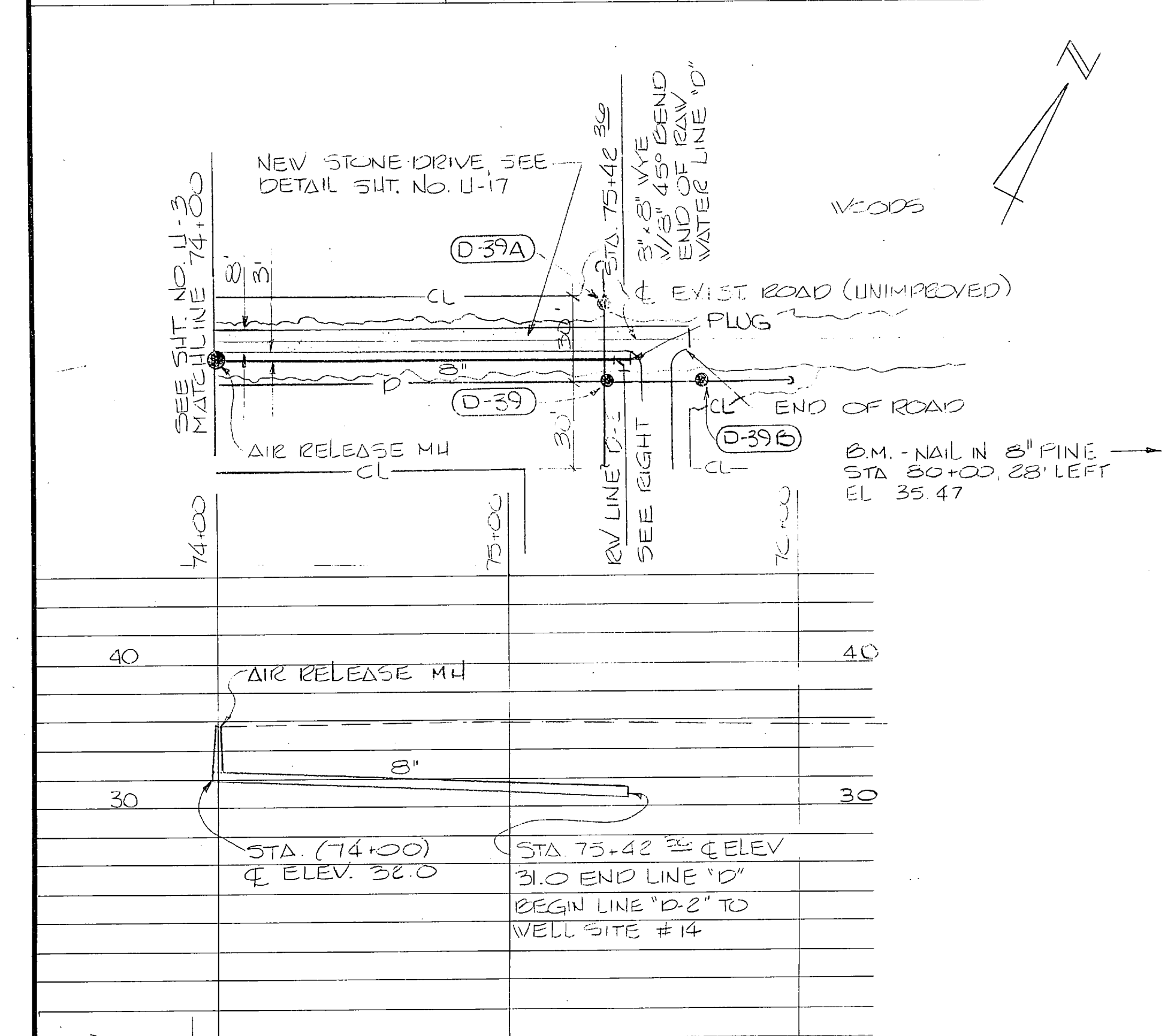
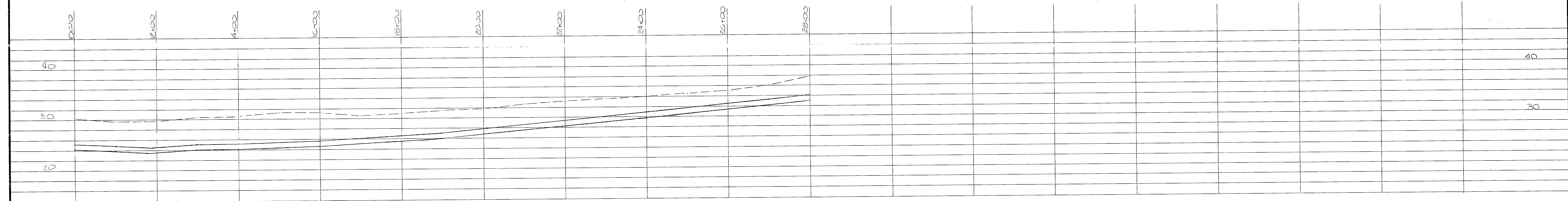
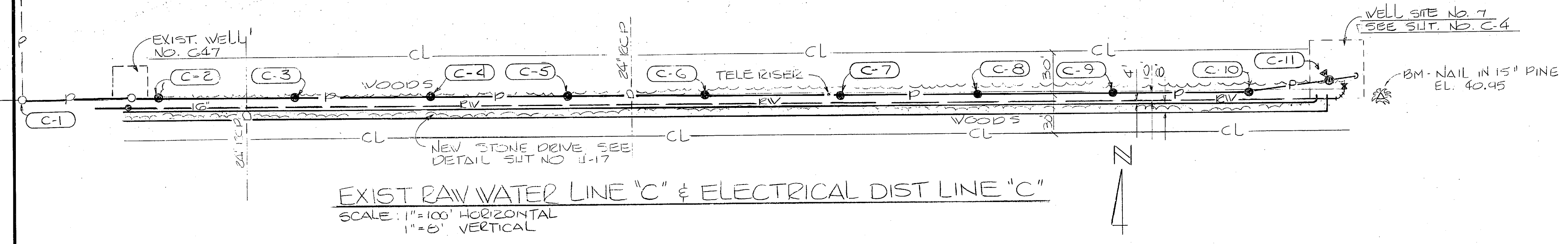
\* STUDS - 1/4" OF TWO EACH END

1/8" - 1/8" OF TWO EACH END  
1/4" - 1/4" OF TWO EACH END  
3/8" - 3/8" OF TWO EACH END  
1/2" - 1/2" OF TWO EACH END

3524-4C-1F  
REV 12-30-58  
REV 6-1-59

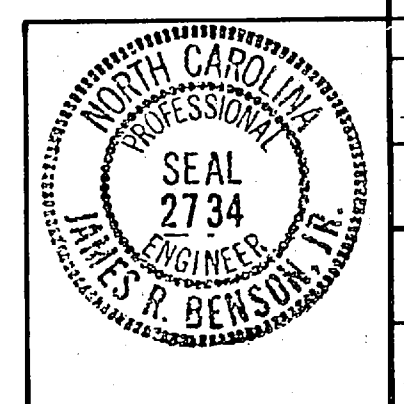
BOLT HOLE 1/4" LARGER TO & INC 48" 54" & UP

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVED



FOR LEGEND SEE SUT U-20

GRAPHIC SCALES  
 VERTICAL  
 0' 4' 8' 16'  
 1" = 8'  
 HORIZONTAL  
 0' 20' 40' 80'  
 1" = 40'



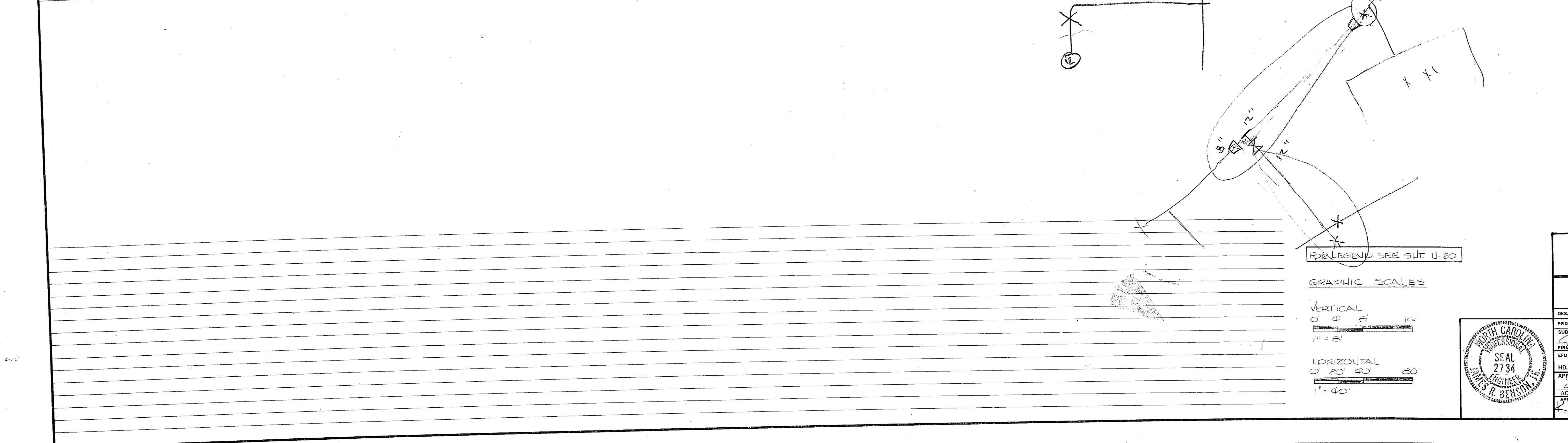
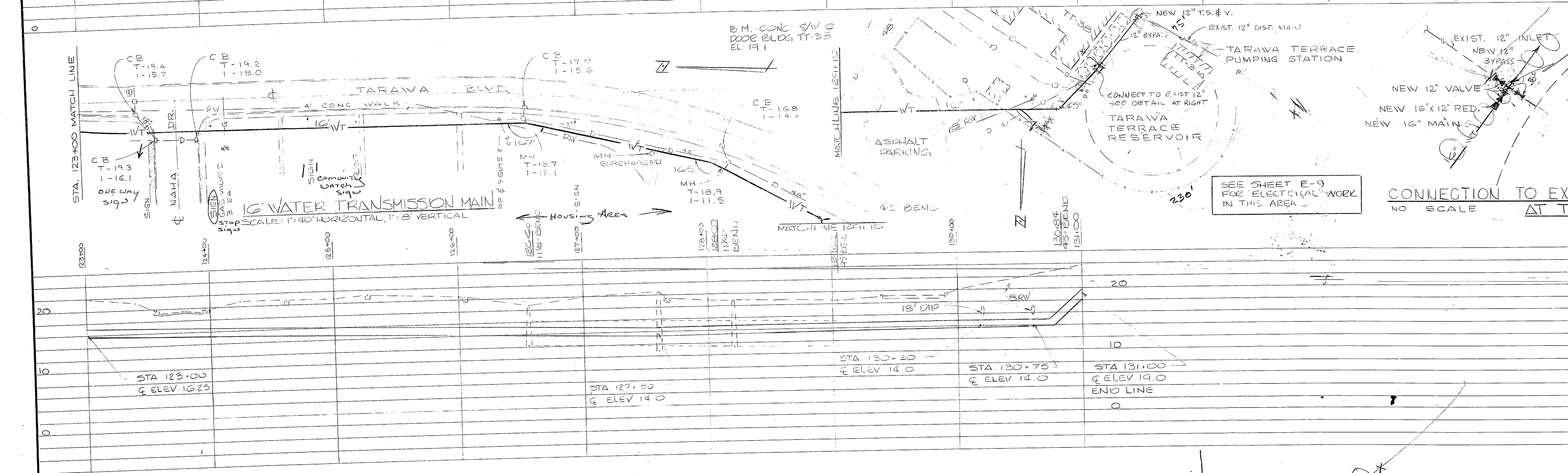
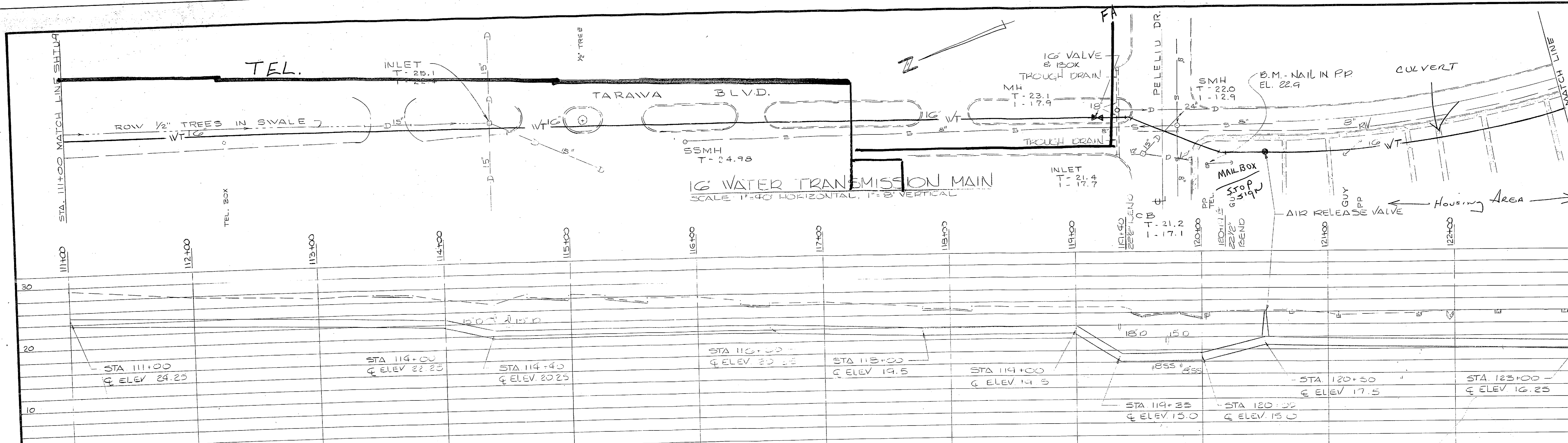
U-4

HENRY VON OESSEN & ASSOCIATES CONSULTING ENGINEERS WILMINGTON, N. C.		DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND ATLANTIC DIVISION NORFOLK, VA.	
DES. JRB/DEC	DR. SMC/PYT	CHK. JRB	DATE
PROJ. WSR/JRB	CH. ENGR. JRB	DATE	DATE
SUBMITTED BY James R. Bersohn		DATE 2/2/48	
LINE NUMBER		PRINCIPAL	
APP. WSR	RVD. C. S.	DATE	DATE
NO. 1	CHK. WSR	DATE	DATE
APPROVED		DATE	DATE
ACTIVITY - SATISFACTORY TO		DATE	DATE
FOR ENG. FOR COMMANDER, NAVFAC		DATE	DATE
SIZE	CODE IDENT. NO.	NAVFAC DRAWING NO.	
F	80091	4107579	
SCALE	CONSTR. CONTR. NO.	AS SHOWN	62470-81-B-1644
SHEET	46	OF	74
E.P.A. DWG. NO.			207579



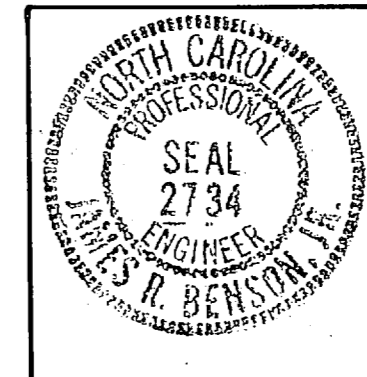
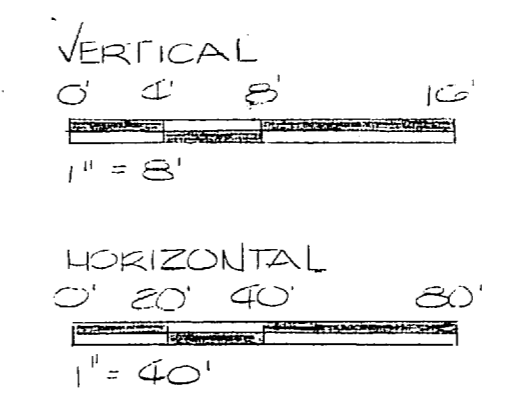


REVISIONS		
SYM	DESCRIPTION	DATE APPROVED



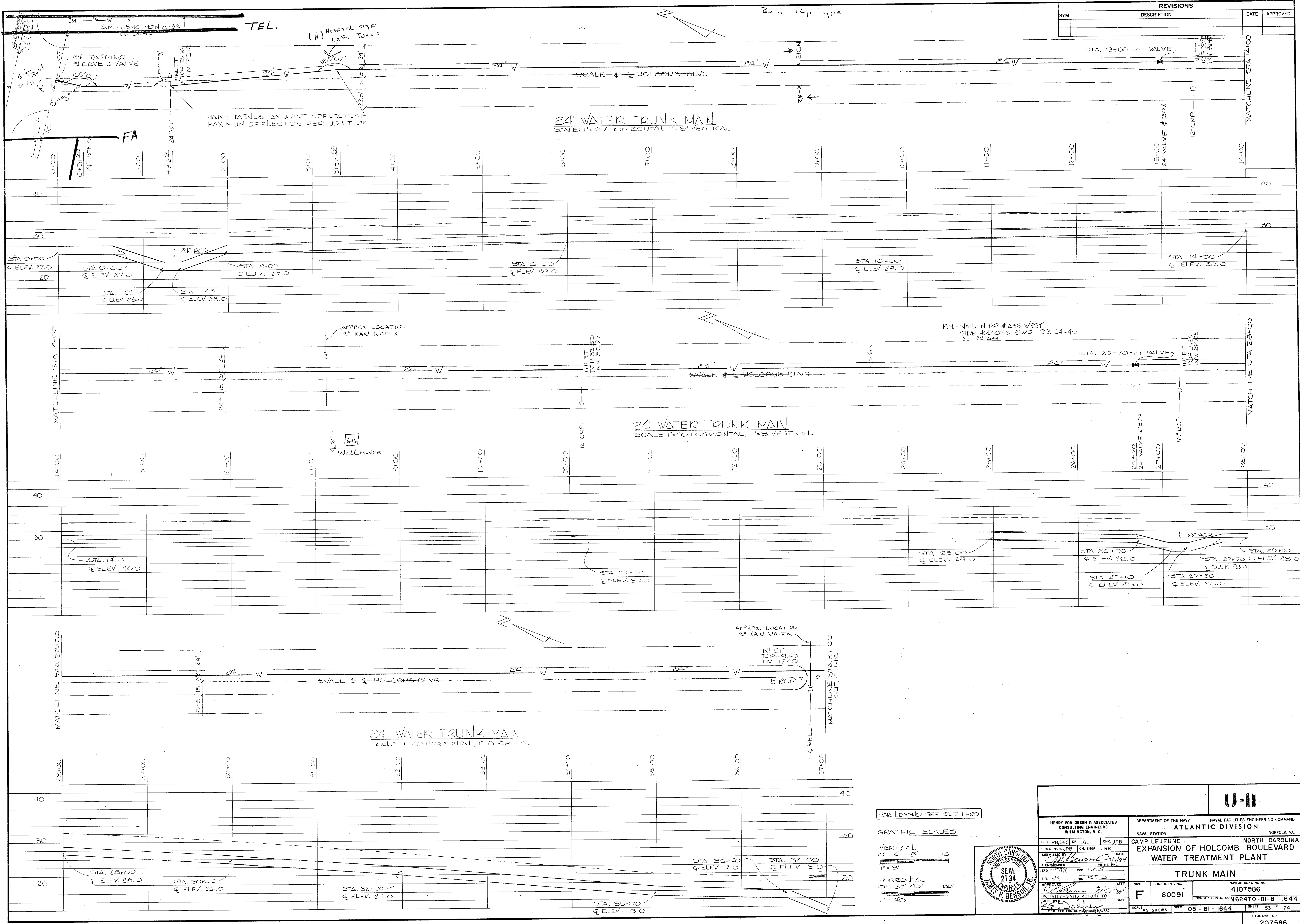
FOR LEGEND SEE SHEET U-20

GRAPHIC SCALES



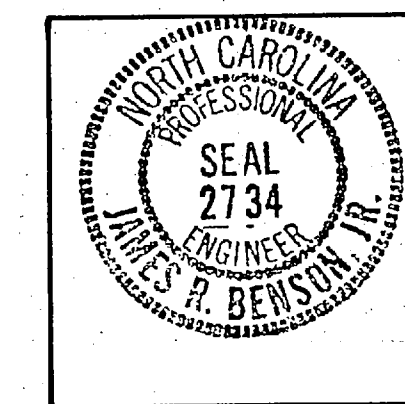
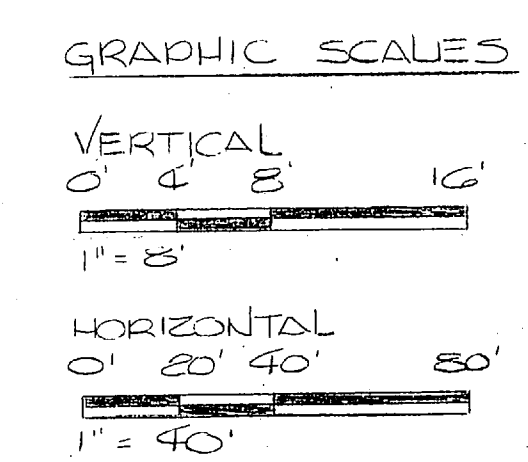
<b>U-10</b>	
HENRY VON OESSEN & ASSOCIATES CONSULTING ENGINEERS WILMINGTON, N. C.	
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND ATLANTIC DIVISION NORFOLK, VA.	
NAVAL STATION CAMP LEJEUNE NORTH CAROLINA	
EXPANSION OF HOLCOMB BOULEVARD WATER TREATMENT PLANT	
TRANSMISSION MAIN	
APPROVED: <i>[Signature]</i> DATE: 7/1/74	NAVAC DRAWING NO.: 4107585
ACTIVITY - SATISFACTORY TO DATE: 7/1/74	CONSTR. CONTR. NO.: N62470-81-B-1644
SCALE AS SHOWN: 05-81-1644	SHEET 52 OF 74
207585	

1



REVISIONS			
SYM	DESCRIPTION	DATE	APPROVED

FOR LEGEND SEE SHT. U-20



HENRY VON DESEN & ASSOCIATES CONSULTING ENGINEERS WILMINGTON, N. C.		DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND ATLANTIC DIVISION NORFOLK, VA.	
		NAVAL STATION CAMP LEJEUNE EXPANSION OF HOLCOMB BOULEVARD WATER TREATMENT PLANT	
DES. JRB, DEC PROJ. MGR. JRB SUBMITTED BY DATE REV. JCS RVD. JCS DIR. JCS	DR. LGL CH. ENGR. JRB DATE RVD. JCS DIR. JCS	NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 2734 JAMES R. BENSON	
APPROVED DATE ACTIVITY - SATISFACTORY TO APPROVED DATE		SIZE <b>F</b>	CODE IDENT. NO. <b>80091</b>
SCALE AS SHOWN SPEC. 05 - 81 - 1644		NAVFAC DRAWING NO. <b>4107586</b>	SHEET 53 OF 74

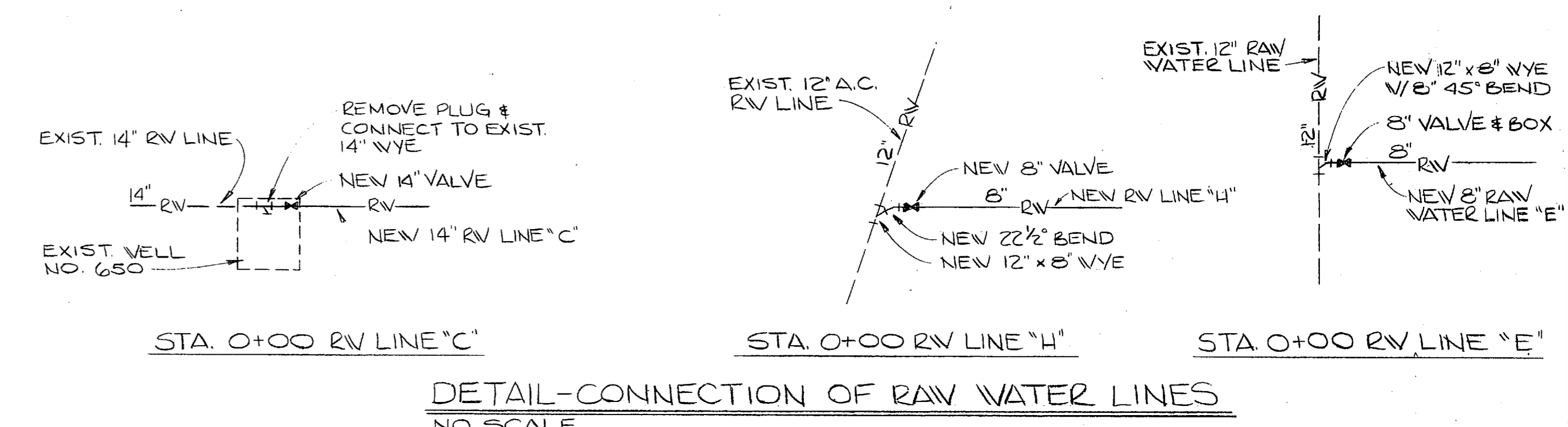
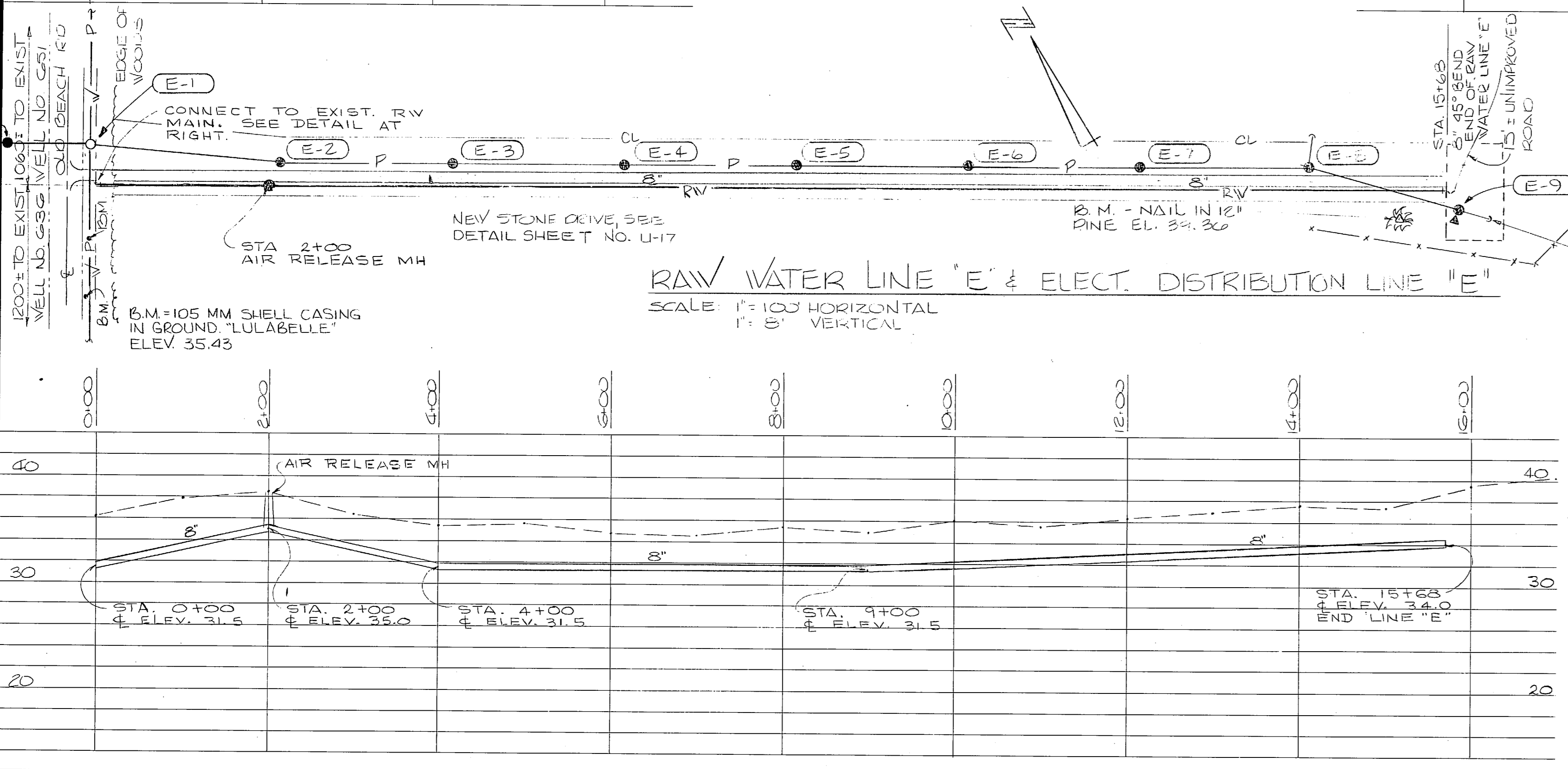
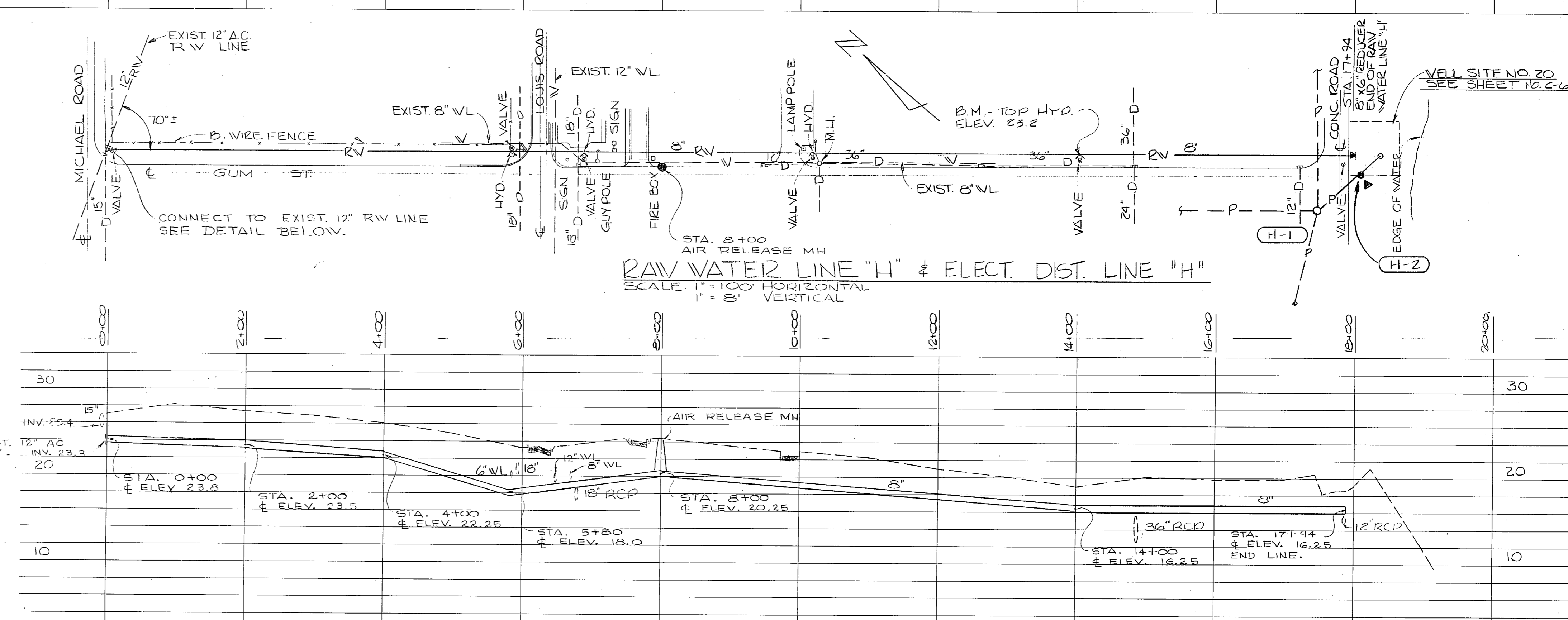
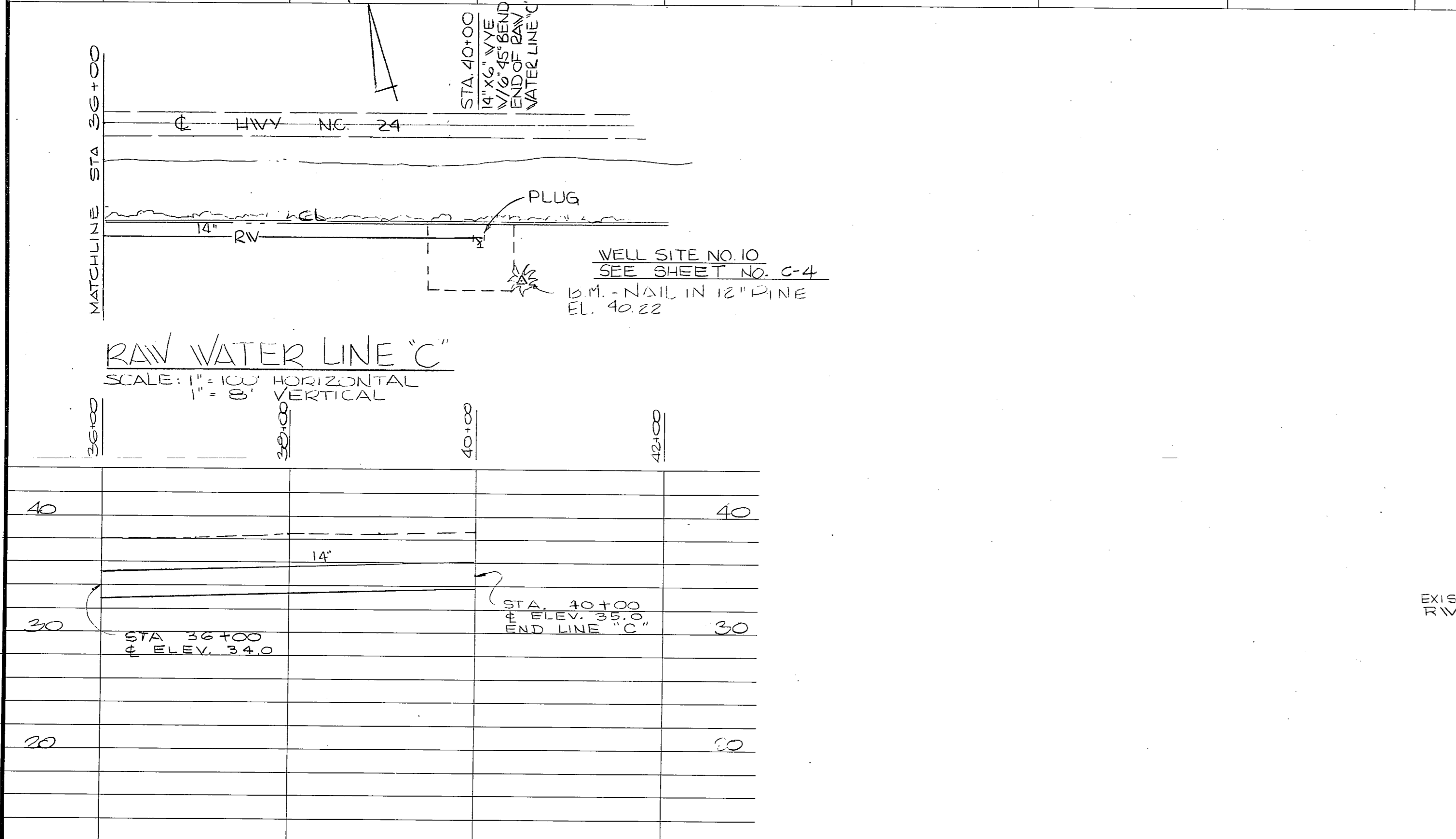
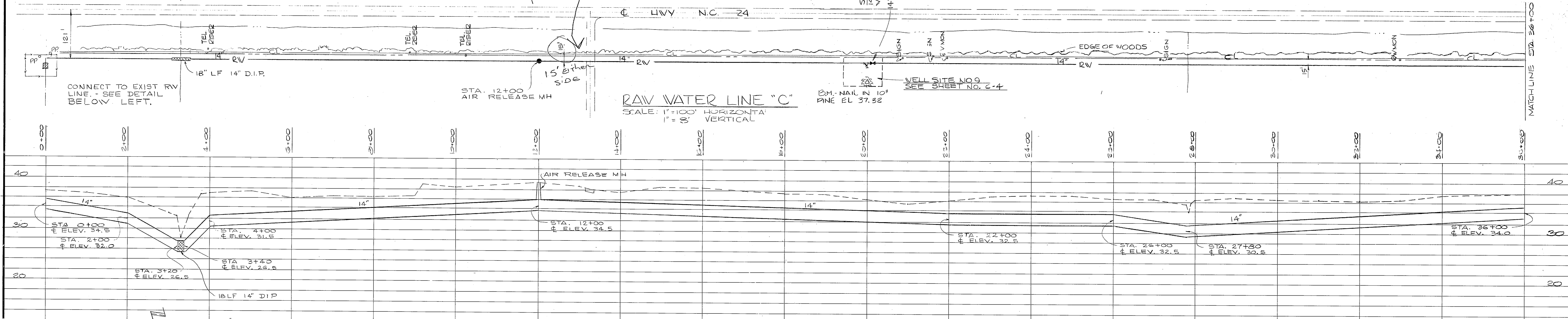
U-11



Mod #5  
Provide extra clearing on either side of pipe

See A/C Ltr. 2/5/85

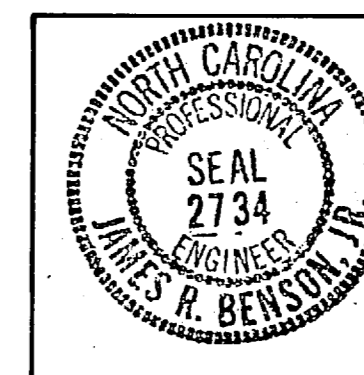
REVISIONS			
SYM	DESCRIPTION	DATE	APPROVED



FOR LEGEND SEE SUT U-20

GRAPHIC SCALES

VERTICAL	0 2 4 8 12
1" = 8'	
HORIZONTAL	0 50 100 200
1" = 100'	



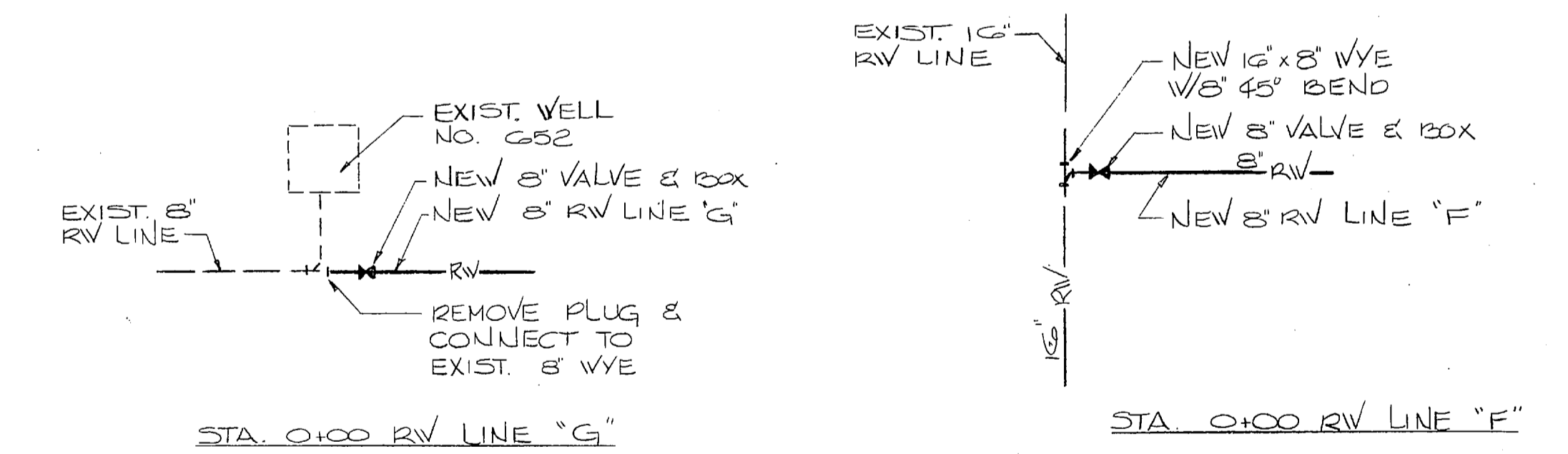
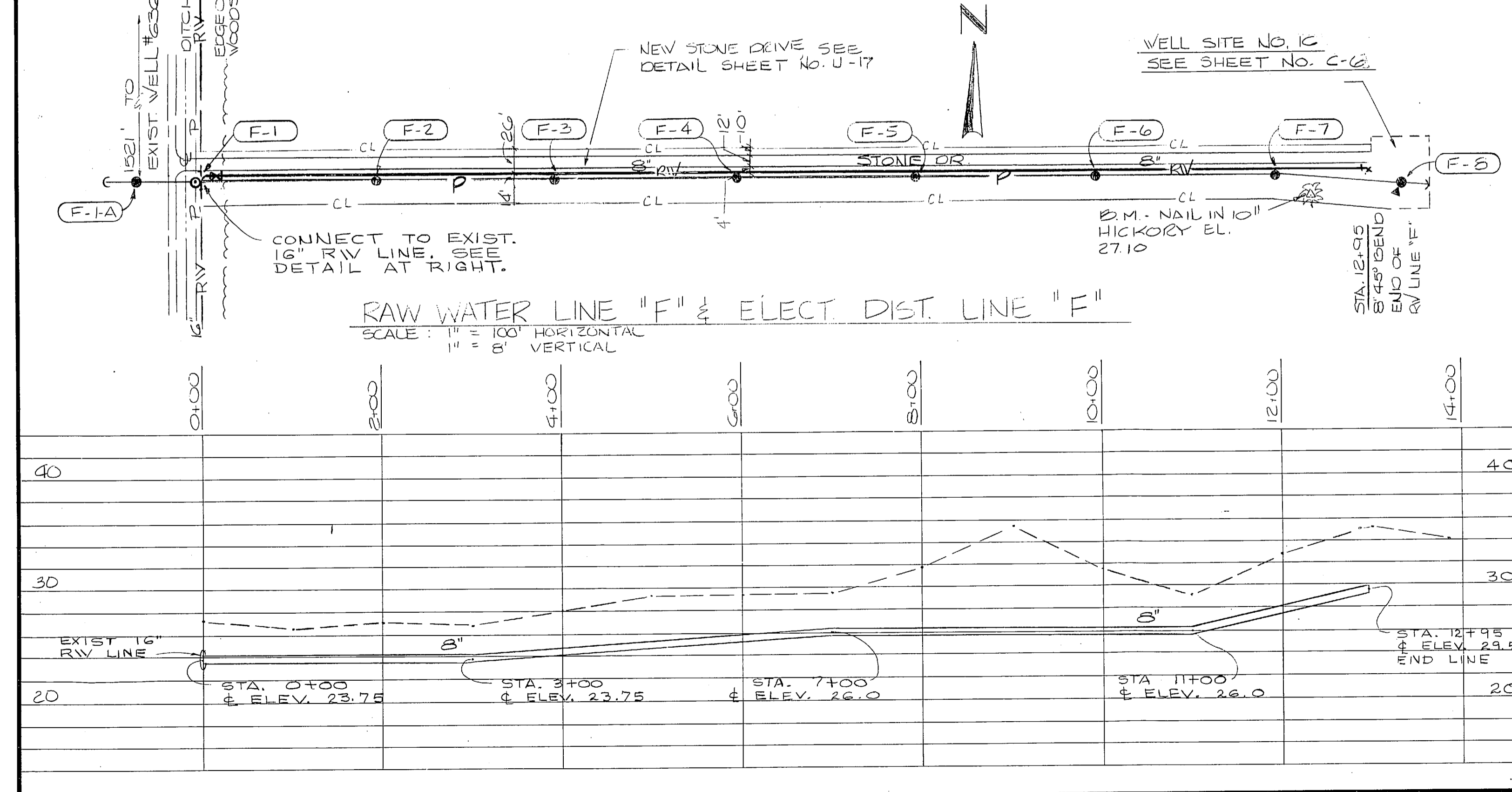
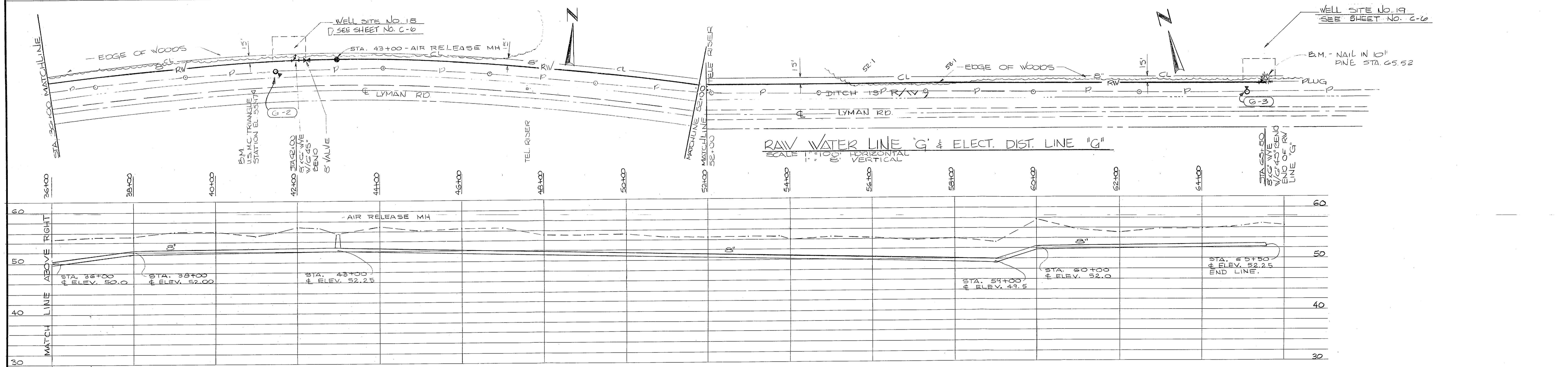
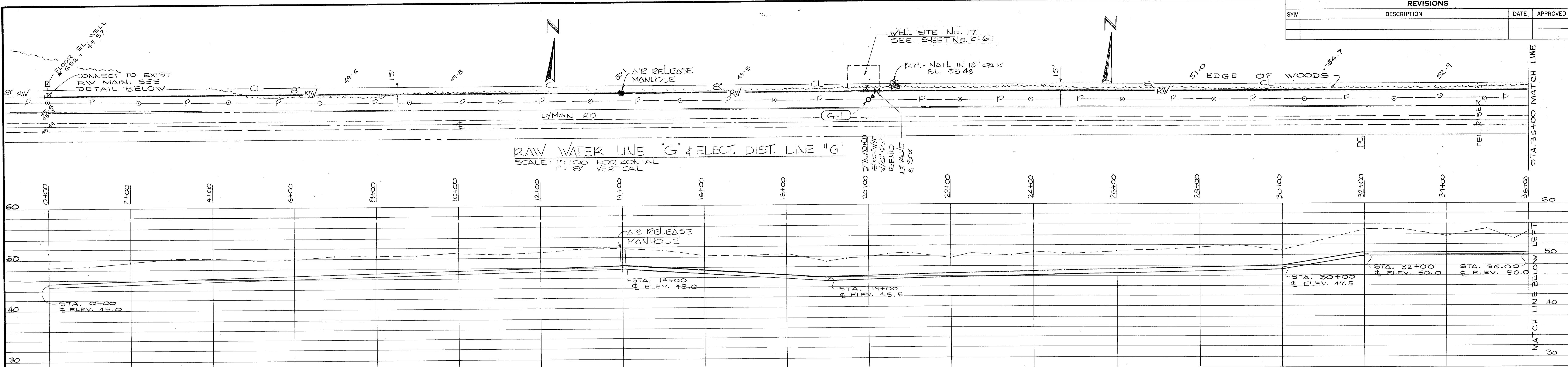
HENRY VON DESEN & ASSOCIATES CONSULTING ENGINEERS WILMINGTON, N. C.		DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND ATLANTIC DIVISION	
		NAVAL STATION CAMP LEJEUNE NORTH CAROLINA	
PROJ. MGR. JRB DESIGNED BY JRB CHECKED BY SMC DATE 11/84		NAVFAC DRAWING NO. 4107580	
SUBMITTED BY JRB DATE 11/84		ACTIVITY - SATISFACTORY TO	
APPROVED BY JRB DATE 11/84		CONSTRUCTION NO. N62470-81-B-1644	
SEAL JAMES R. BENSON PROFESSIONAL ENGINEER NO. 2734 STATE OF NORTH CAROLINA		SCALE AS SHOWN SHEET 47 OF 74	

U-5

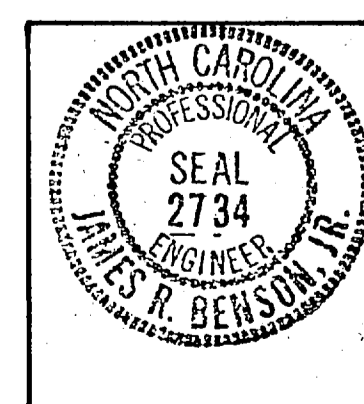
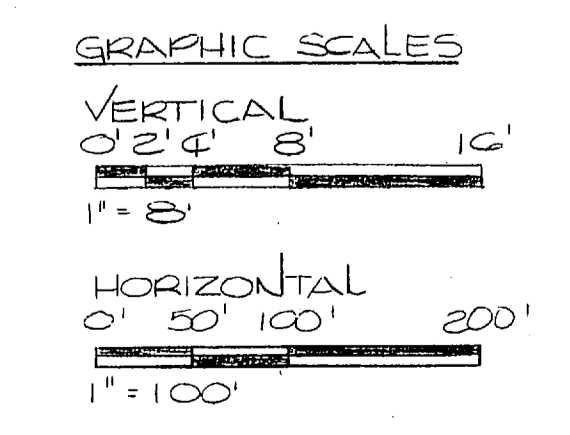
207580



REVISIONS			
SYM	DESCRIPTION	DATE	APPROVED



FOR LEGEND SEE SHEET U-20

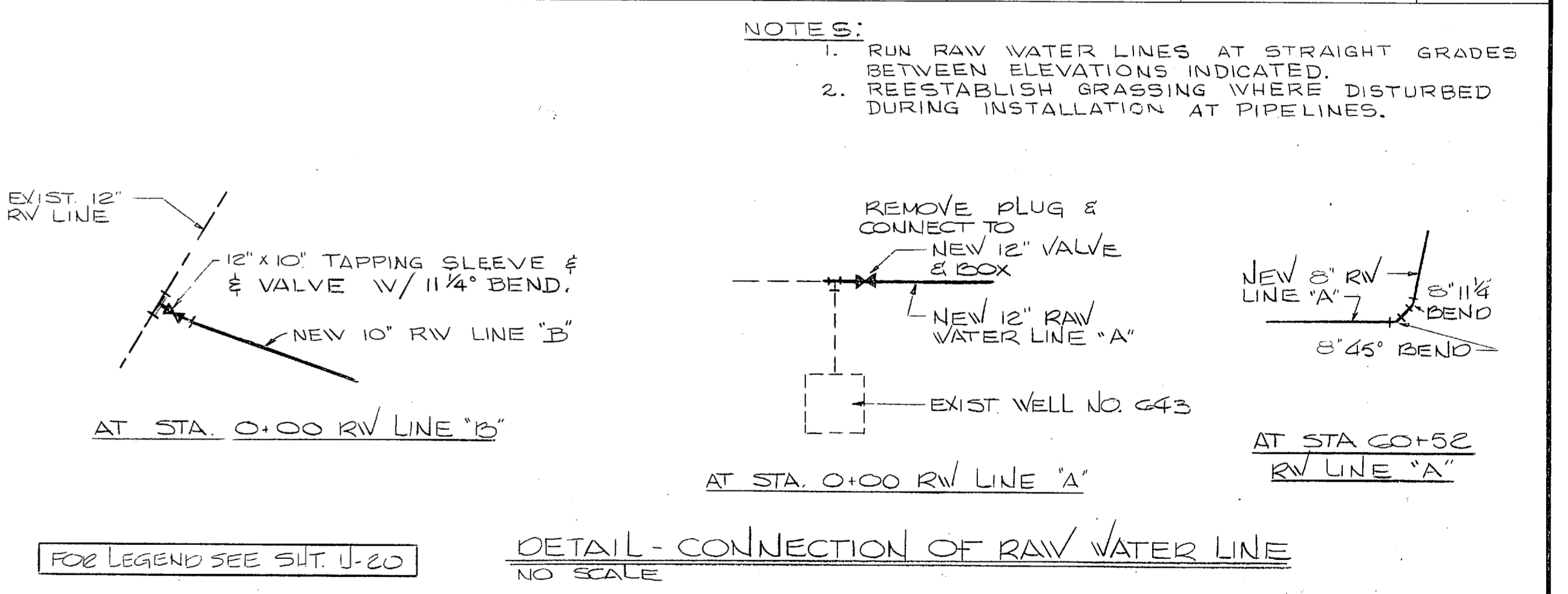
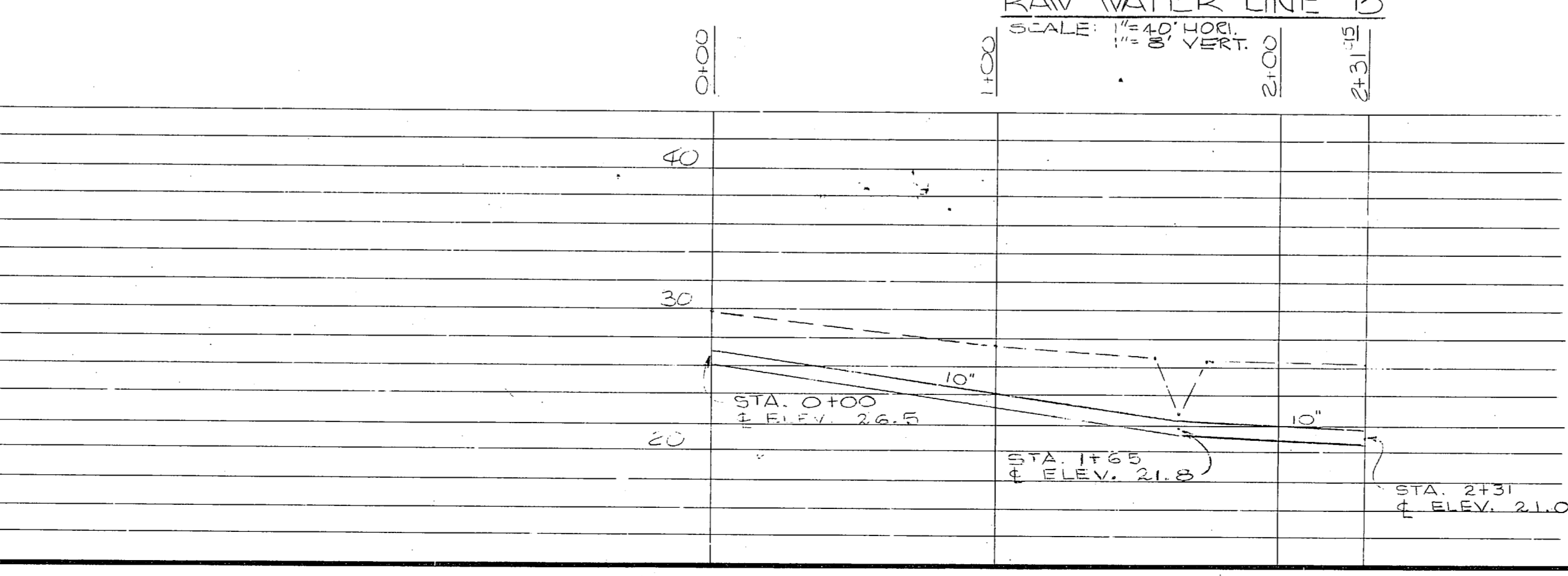
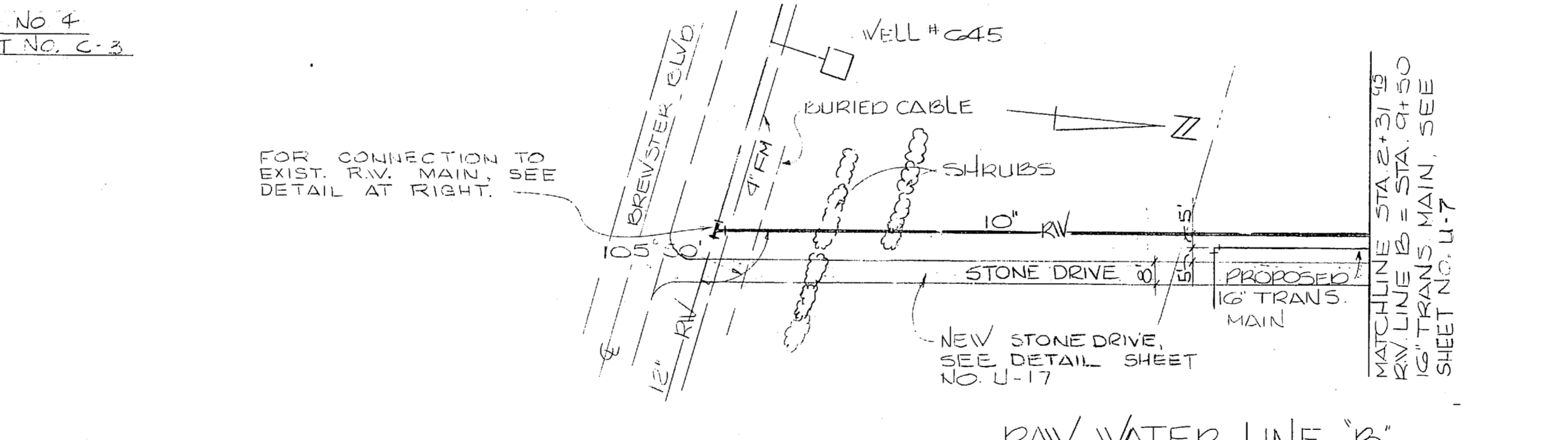
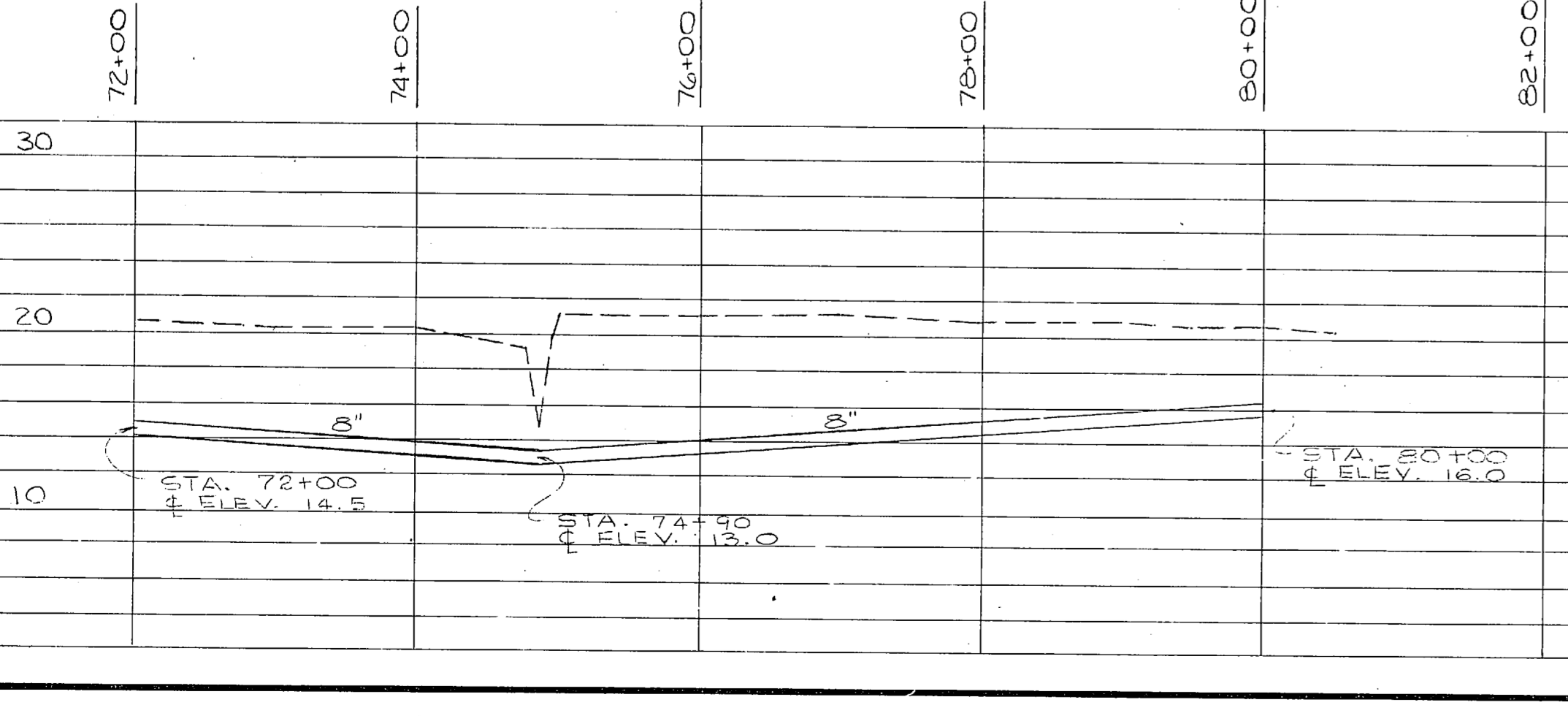
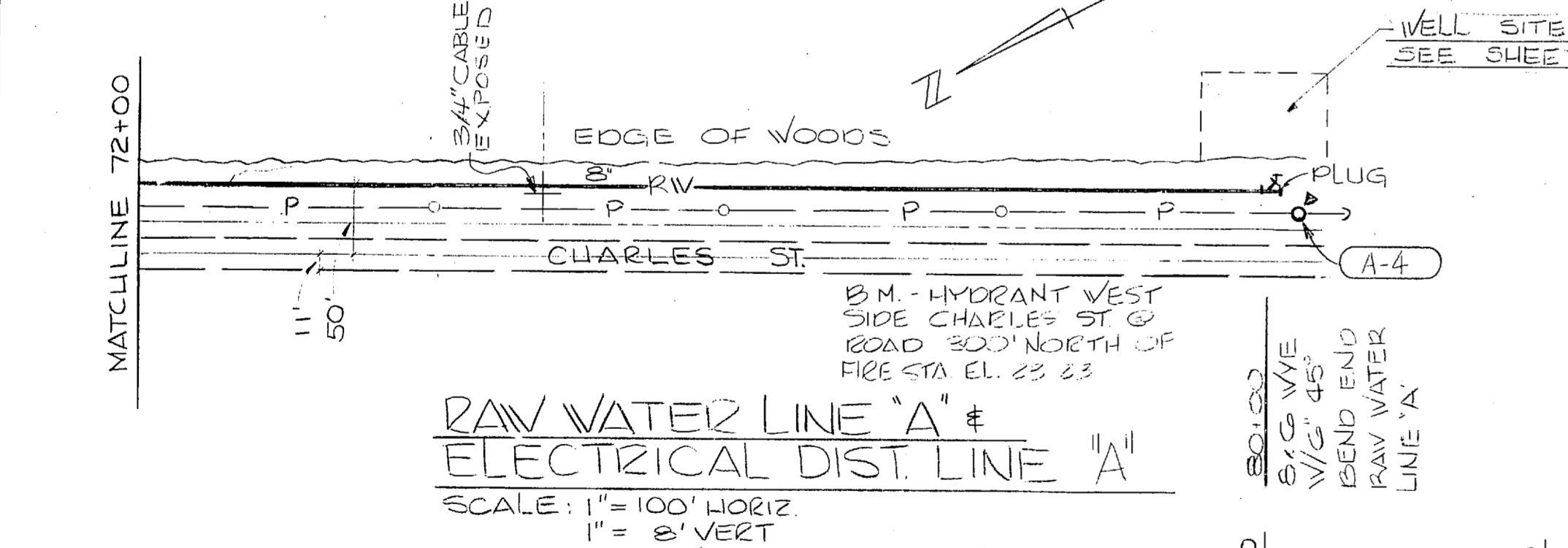
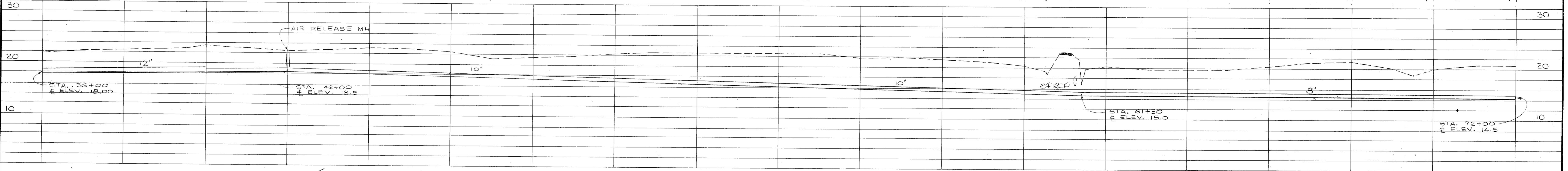
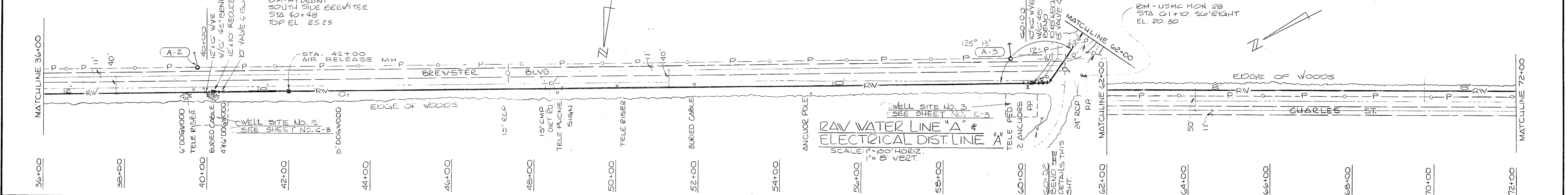
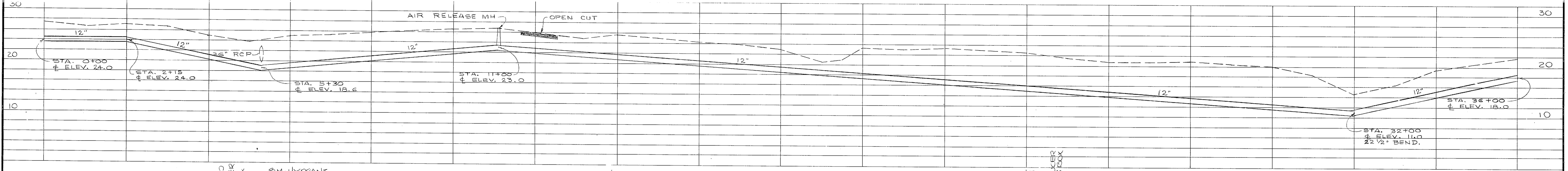
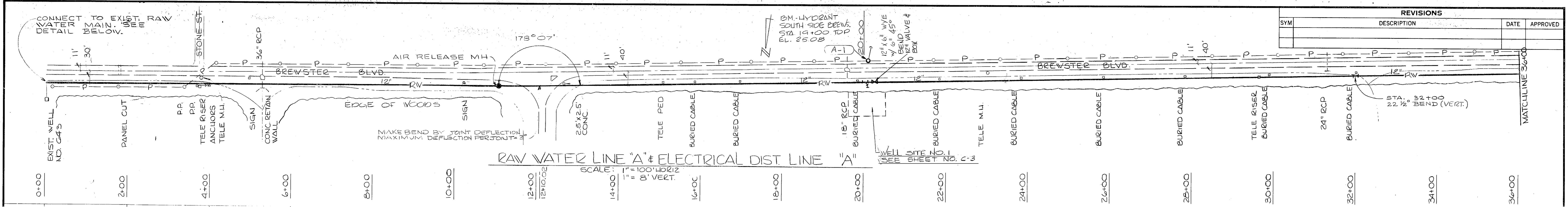


HENRY VON DEREN & ASSOCIATES CONSULTING ENGINEERS WILMINGTON, N. C.		DEPARTMENT OF THE NAVY NAVAL STATION ATLANTIC DIVISION NORFOLK, VA.	
		CAMP LEJEUNE NORTH CAROLINA EXPANSION OF HOLCOMB BOULEVARD WATER TREATMENT PLANT	
DES. JRB, DEC PROJ. MGR. JRB SUBMITTED BY DATE REV. C.S. NO. 2734 DATE	CHK. JRB CH. ENGR. JRB DATE DATE	SIZE F	CODE IDENT. NO. 80091
APPROVED DATE ACTIVITY - SATISFACTORY TO DATE		NAVFAC DRAWING NO. 4107581	CONSTR. CONTR. NO. N62470-81-B-1644
SCALE & S. SHOWN 05-81-1644		SHEET 48 OF 74	E.F.D. DWG. NO. 207581





REVISIONS			
SYM	DESCRIPTION	DATE	APPROVED



FOR LEGEND SEE SUT U-20

GRAPHIC SCALES

VERTICAL  
 0 2 4 8 16  
 1" = 8'

HORIZONTAL  
 0 20 40  
 1" = 40'

HORIZONTAL  
 0 80 100 200  
 1" = 100'

U-1

HENRY VON OESSEN & ASSOCIATES  
 CONSULTING ENGINEERS  
 WILMINGTON, N. C.

DEPARTMENT OF THE NAVY  
 NAVAL FACILITIES ENGINEERING COMMAND  
 ATLANTIC DIVISION  
 NORFOLK, VA.

NAVAL STATION  
 CAMP LEJEUNE  
 EXPANSION OF HOLCOMB BOULEVARD  
 WATER TREATMENT PLANT

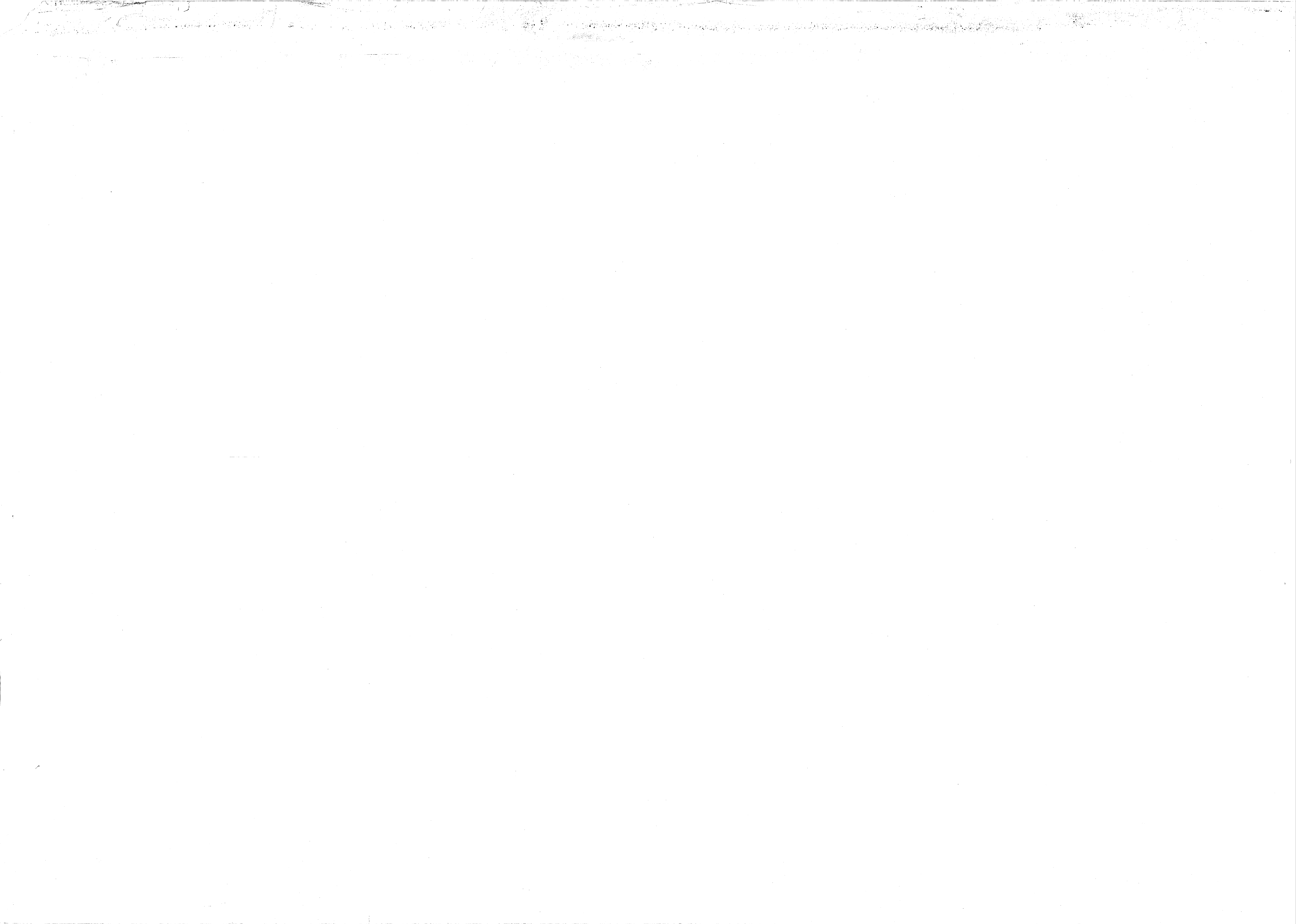
RAW WATER LINES 'A' & 'B'

NAVAFAC DRAWING NO. 4107576

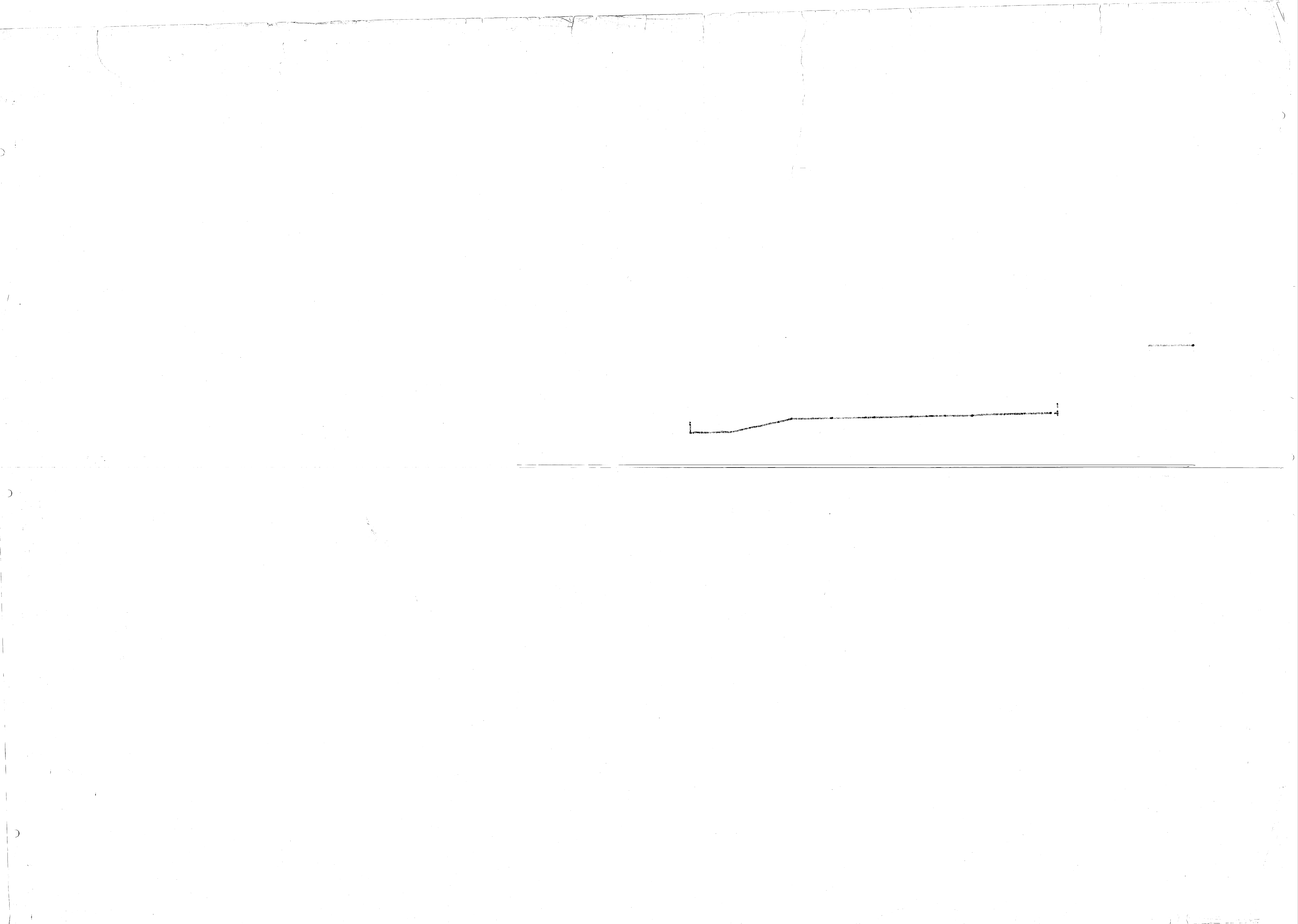
80091

SCALE: AS SHOWN SPEC: 05-81-1644 SHEET: 43 OF 74

207576





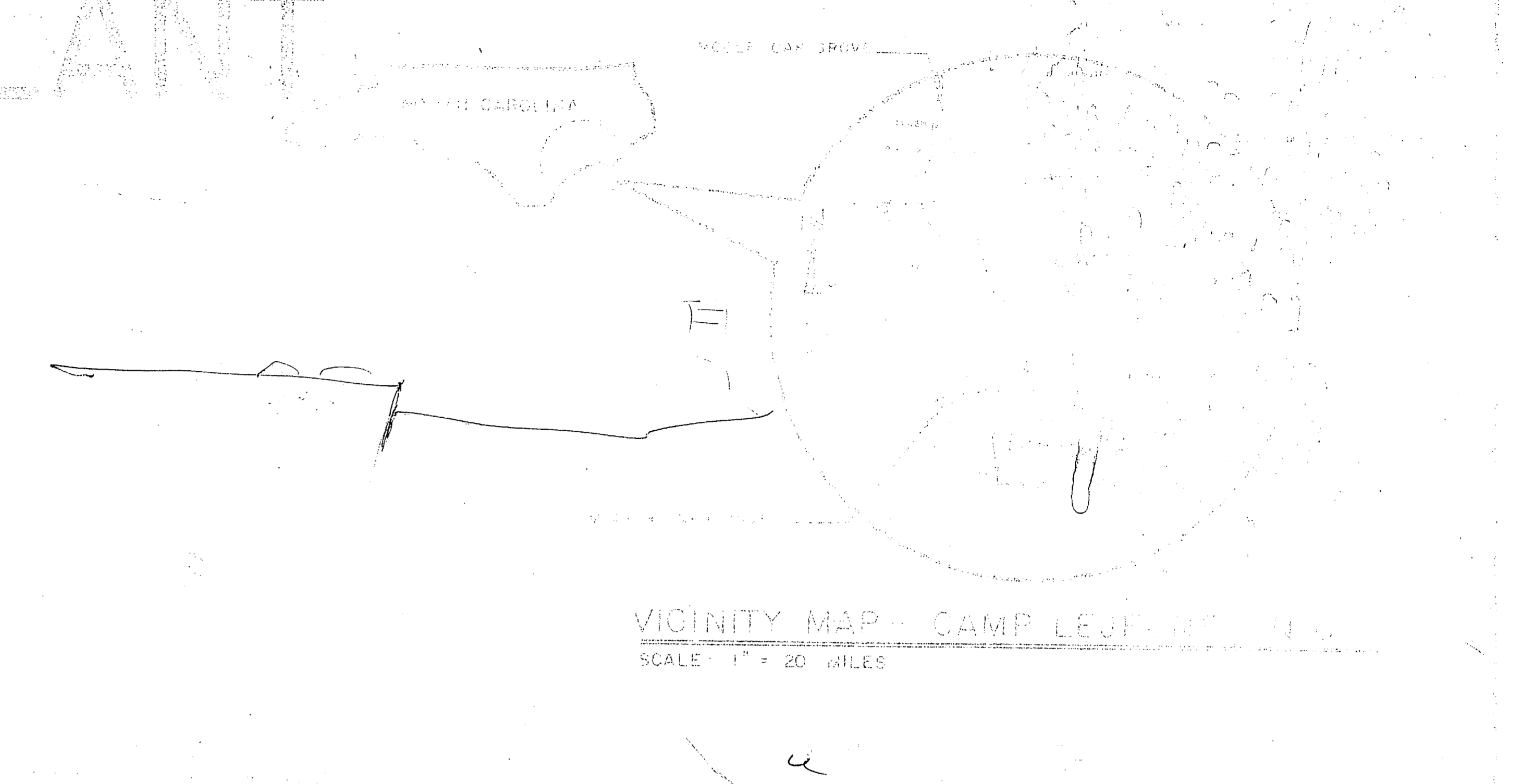
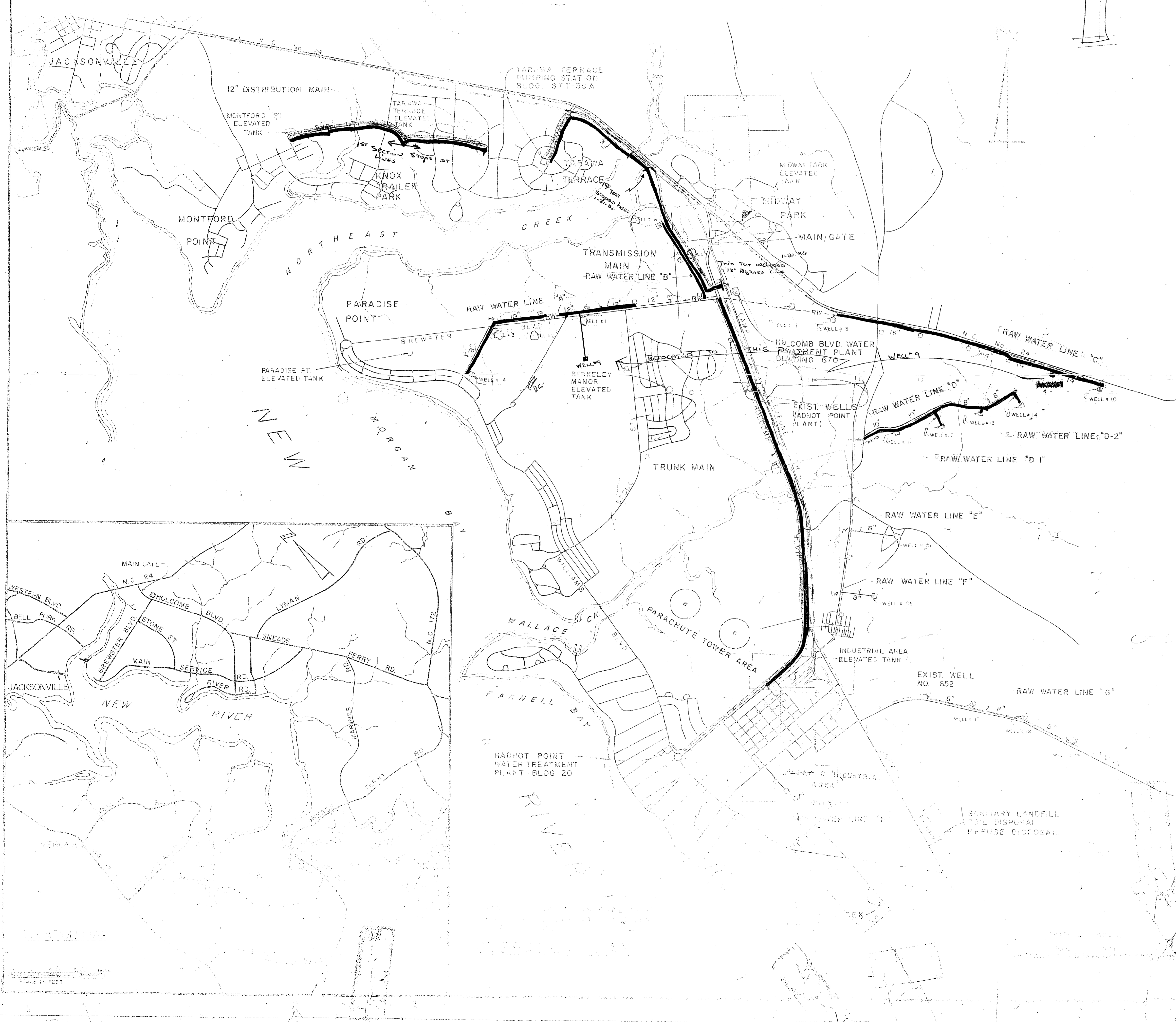


# EXPANSION OF HOLCOMB BLVD. WATER TREATMENT PLANT

MARINE CORPS BASE

CAMP LEJEUNE, NORTH CAROLINA

SYM	DESCRIPTION	DATE	APPROVAL



## SCHEDULE OF DRAWINGS

SHEET NO.	NAVPAC DRAWING NO.	TITLE	SHEET NO.	NAVPAC DRAWING NO.	TITLE
CS-1	4107531	LOCATION & VICINITY MAPS	U-8	4107561	RAW WATER LINES 'G' & 'H'
C-1	4107532	SITE PLAN	U-7	4107562	TRANSMISSION MAIN 5" RW LINE 'B'
C-2	4107533	PIPING PLAN	U-8	4107563	TRANSMISSION MAIN 6" RW LINE 'C'
C-3	4107534	WELL SITES 1 THRU 6	U-9	4107564	TRANSMISSION MAIN
C-4	4107535	WELL SITES 7 THRU 10	U-10	4107565	TRANSMISSION MAIN
C-5	4107536	WELL SITES 11 THRU 15	U-11	4107566	TRUNK MAIN
C-6	4107537	WELL SITES 16 THRU 20	U-12	4107567	TRUNK MAIN
A-1	4107541	TREATMENT PLANT-1 ST FLOOR	U-13	4107568	TRUNK MAIN
A-2	4107542	TREATMENT PLANT-2 ND FLOOR	U-14	4107569	TRUNK MAIN
A-3	4107543	TREATMENT PLANT-ELEVATIONS	U-15	4107570	TRUNK MAIN
A-4	4107544	TREATMENT PLANT-BUILDING SECTIONS	U-16	4107571	TRUNK MAIN
A-5	4107545	TREATMENT PLANT-WALL SECTIONS	U-17	4107572	TRUNK MAIN
A-6	4107546	TREATMENT PLANT-WALL SECTIONS	U-18	4107573	DISTRIBUTION MAIN
A-7	4107547	TREATMENT PLANT-ROOF PLAN	U-19	4107574	DISTRIBUTION MAIN
A-8	4107548	RAW WATER PUMP STATION	U-20	4107575	DISTRIBUTION MAIN
A-9	4107549	FINISH WATER PUMP STATION	EU-1	4107576	AERIAL DISTRIBUTION-SITE PLAN
S-1	4107550	TREATMENT GALLERY FND. PLAN	EU-2	4107577	SCHEDULE OF PIPES
S-2	4107551	TREATMENT GALLERY ROOF PLANS	E-1	4107578	ELECTRICAL-SITE PLAN
S-3	4107552	FOUNDATION & FIRST FLOOR PLANS	E-2	4107579	ELECTRICAL-PIPE GALLERY
S-4	4107553	SECOND FLOOR & ROOF PLANS	E-3	4107600	ELECTRICAL-TREATMENT ADDITION
S-5	4107554	SECTIONS & DETAILS	E-4	4107601	ELECTRICAL-FILTER GALLERY
S-6	4107555	STRUCTURAL SCHEDULES	E-5	4107602	ELECTRICAL-EXISTING PUMP HOUSE
S-7	4107556	FILTER PLAN & SCHEDULE	E-6	4107603	ELECTRICAL-RAW WATER PUMP STATION
S-8	4107557	ACID & CHLORINE STORAGE	E-7	4107604	ELECTRICAL-FINISH WATER PUMP STATION
S-9	4107558	ACID & CHLORINE STORAGE	E-8	4107605	ELECTRICAL-TYPICAL WELL HOUSE
S-10	4107559	RAW WATER RESERVOIR	E-9	4107606	ELECTRICAL-EXISTING WELL HOUSE
S-11	4107560	RAW WATER RESERVOIR	E-10	4107607	ELECTRICAL-TARAWA TERRACE
S-12	4107561	RAW WATER RESERVOIR - ALTERNATE			
S-13	4107562	FINISH WATER RESERVOIR			
S-14	4107563	FINISH WATER RESERVOIR			
S-15	4107564	FINISH WATER RESERVOIR			
S-16	4107565	RESERVOIR-MISC DETAIL (19" SECTION)			
M-1	4107566	FILTER PIPING & PLANS			
M-2	4107567	EQUIPMENT & PIPING			
M-3	4107568	ACID & CHLORINE SYSTEMS			
M-4	4107569	RESERVOIR UNDERBAY SYSTEMS			
M-5	4107570	PUMP STATION PIPING PLANS			
M-6	4107571	FINISH WATER PUMP STATION			
M-7	4107572	TARAWA TERRACE PUMP STATION (Last Sec.)			
M-8	4107573	TREATMENT PLANT-HVAC PLAN			
M-9	4107574	TREATMENT PLANT-PLUMBING PLAN			
M-10	4107575	CONTROL & FLOW DIAGRAM			
U-1	4107576	RAW WATER LINES "A" & "B"			
U-2	4107577	RAW WATER LINE "C"			
U-3	4107578	RAW WATER LINE "D"			
U-4	4107579	RAW WATER LINES "D-1" & "D-2"			
U-5	4107580	RAW WATER LINES "E" & "H"			

Note: First line tested at 1/2 times working pressure, before classification of pipes. All maximum pressure stress of C900 pipe was reduced, OK'd by 12. heavy not to return.

Water Samples Taken:  
12" D. main 4 samples 3/17/86  
24" T. main 4 samples 3/17/86

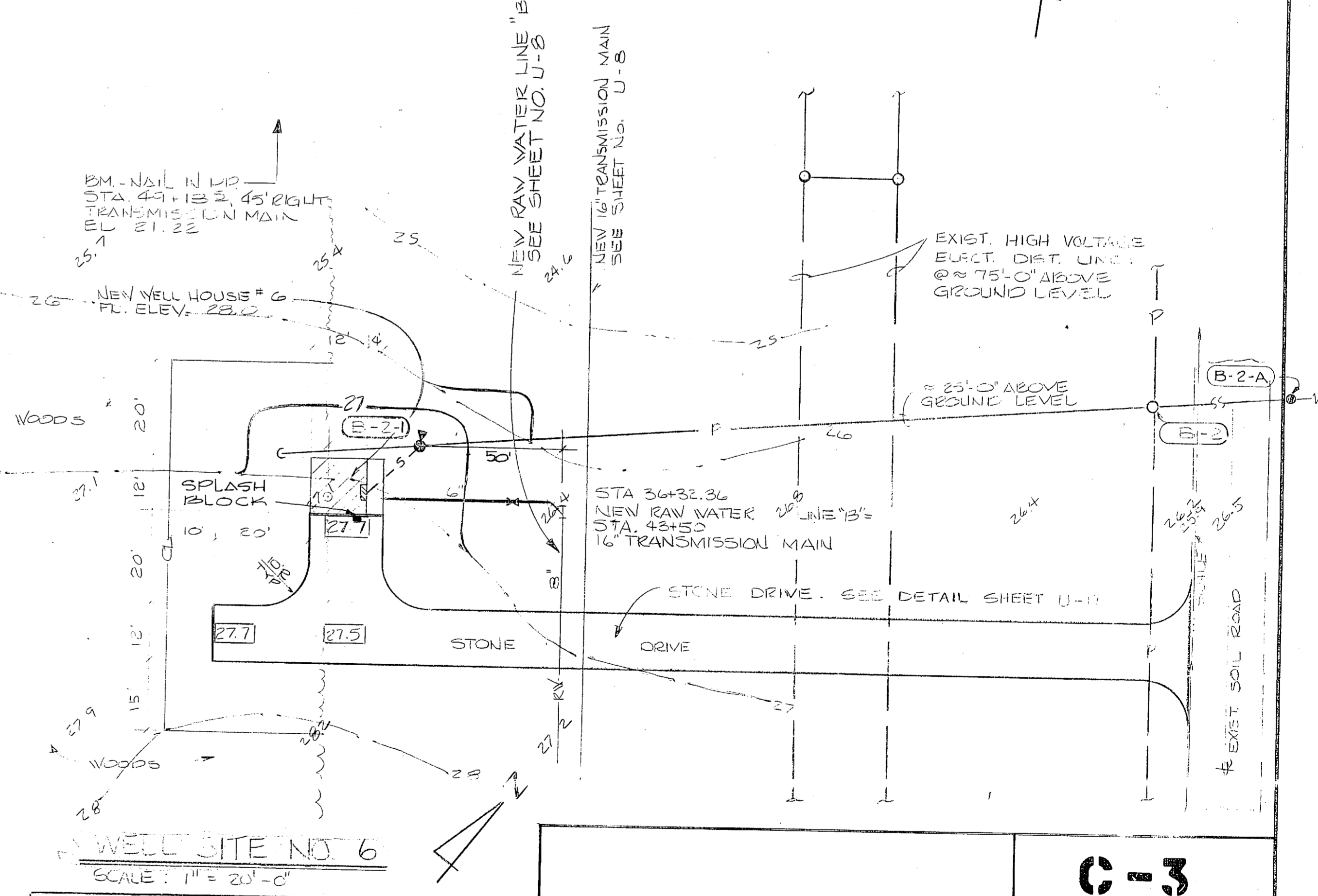
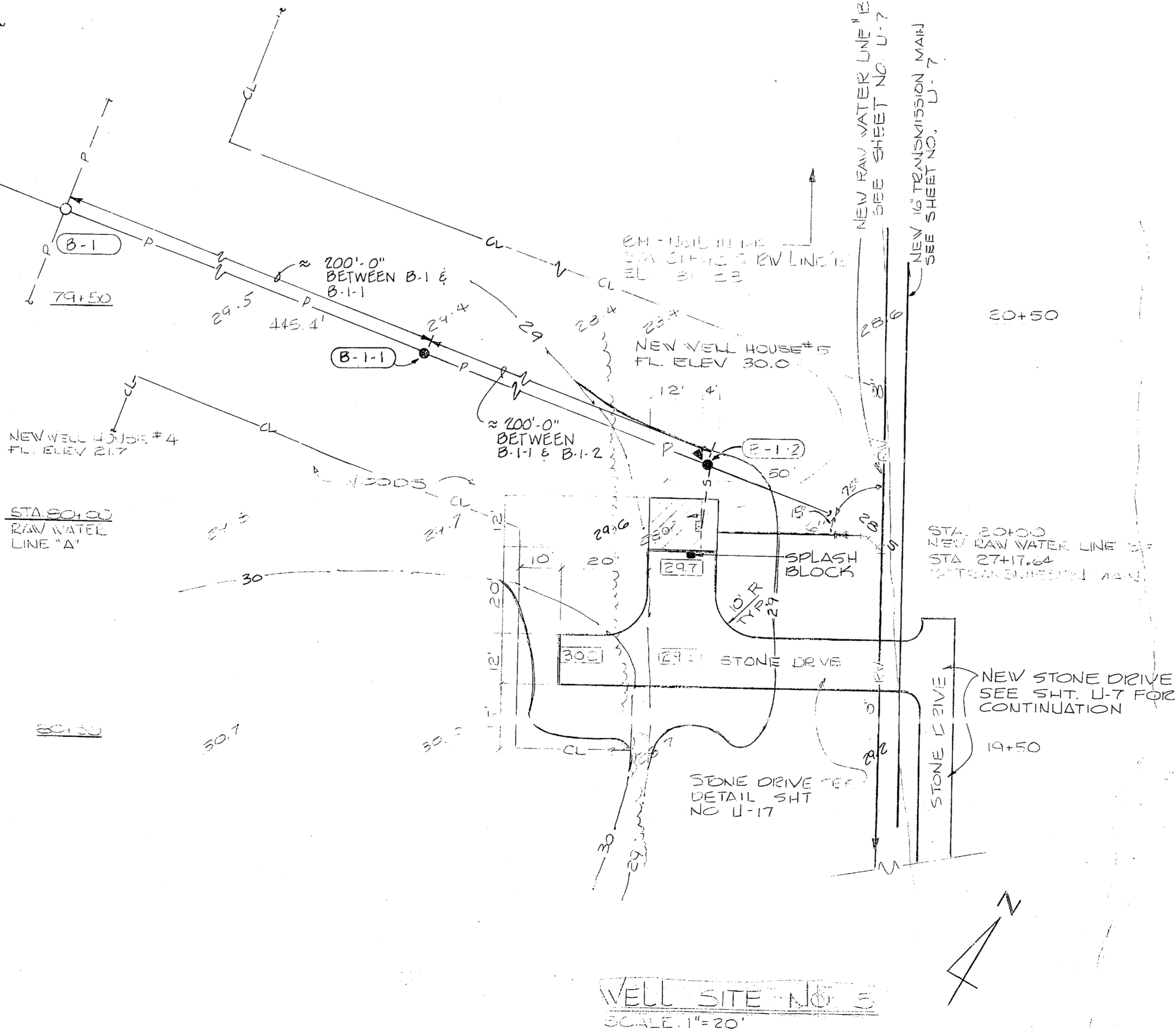
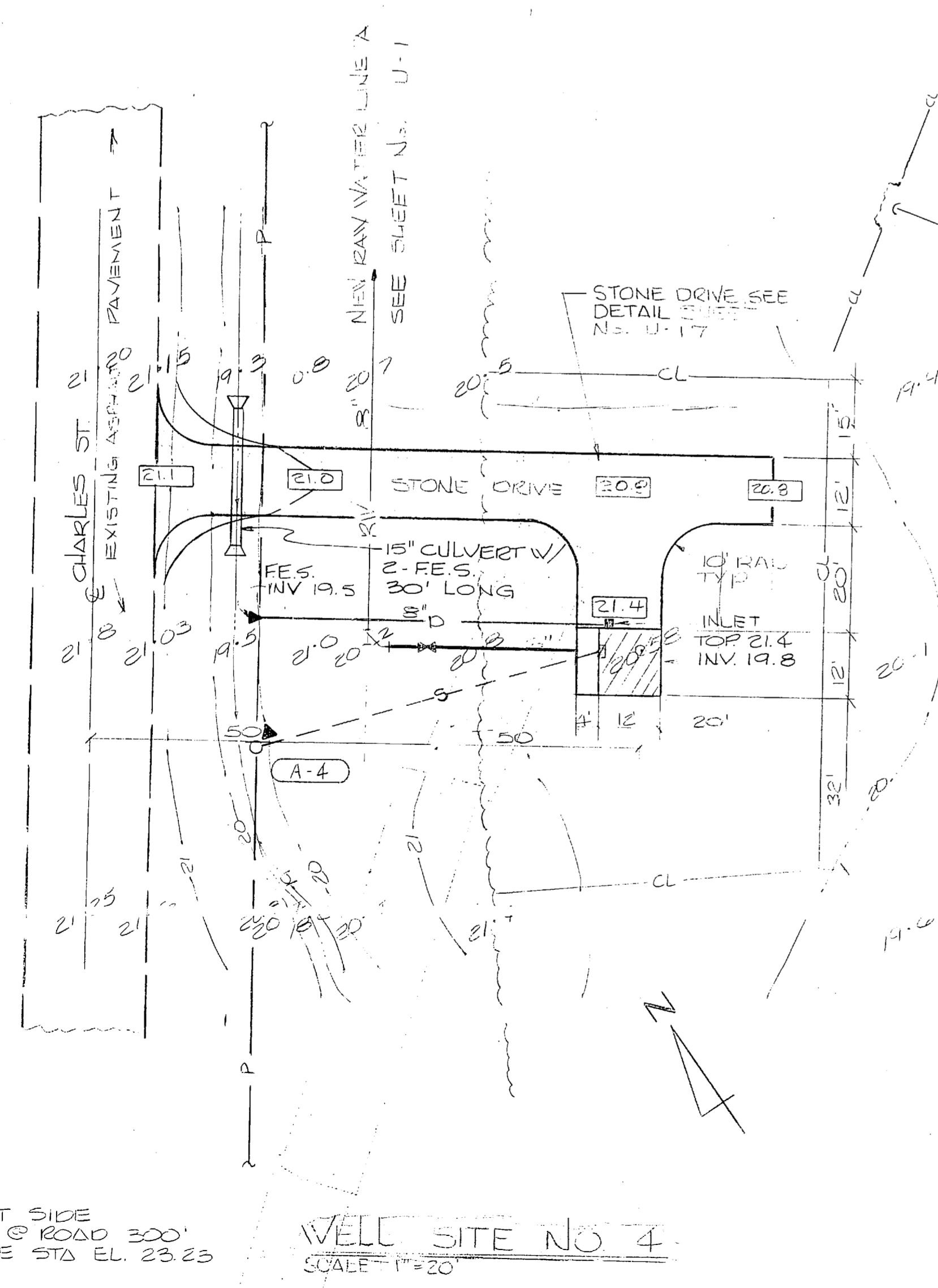
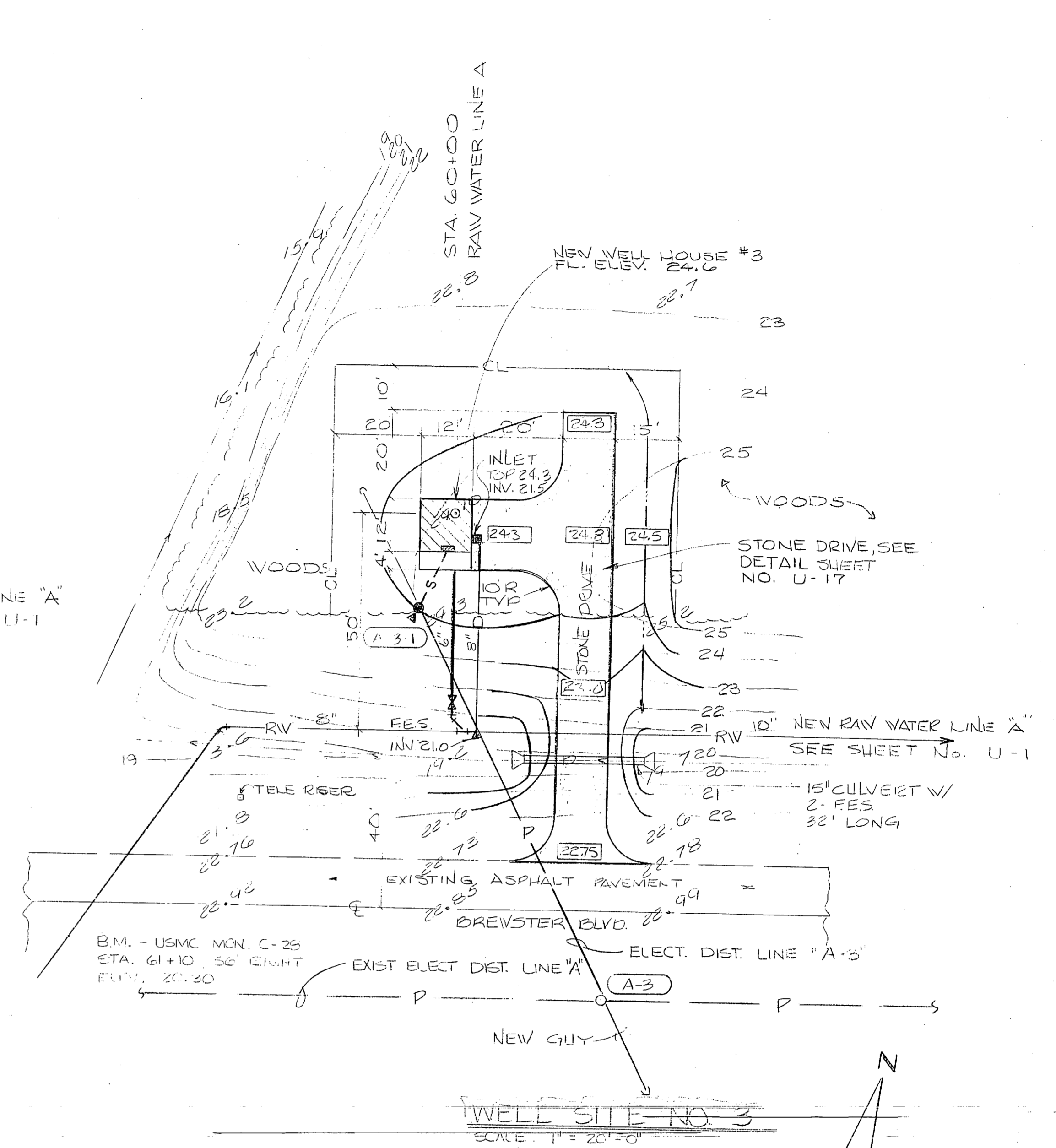
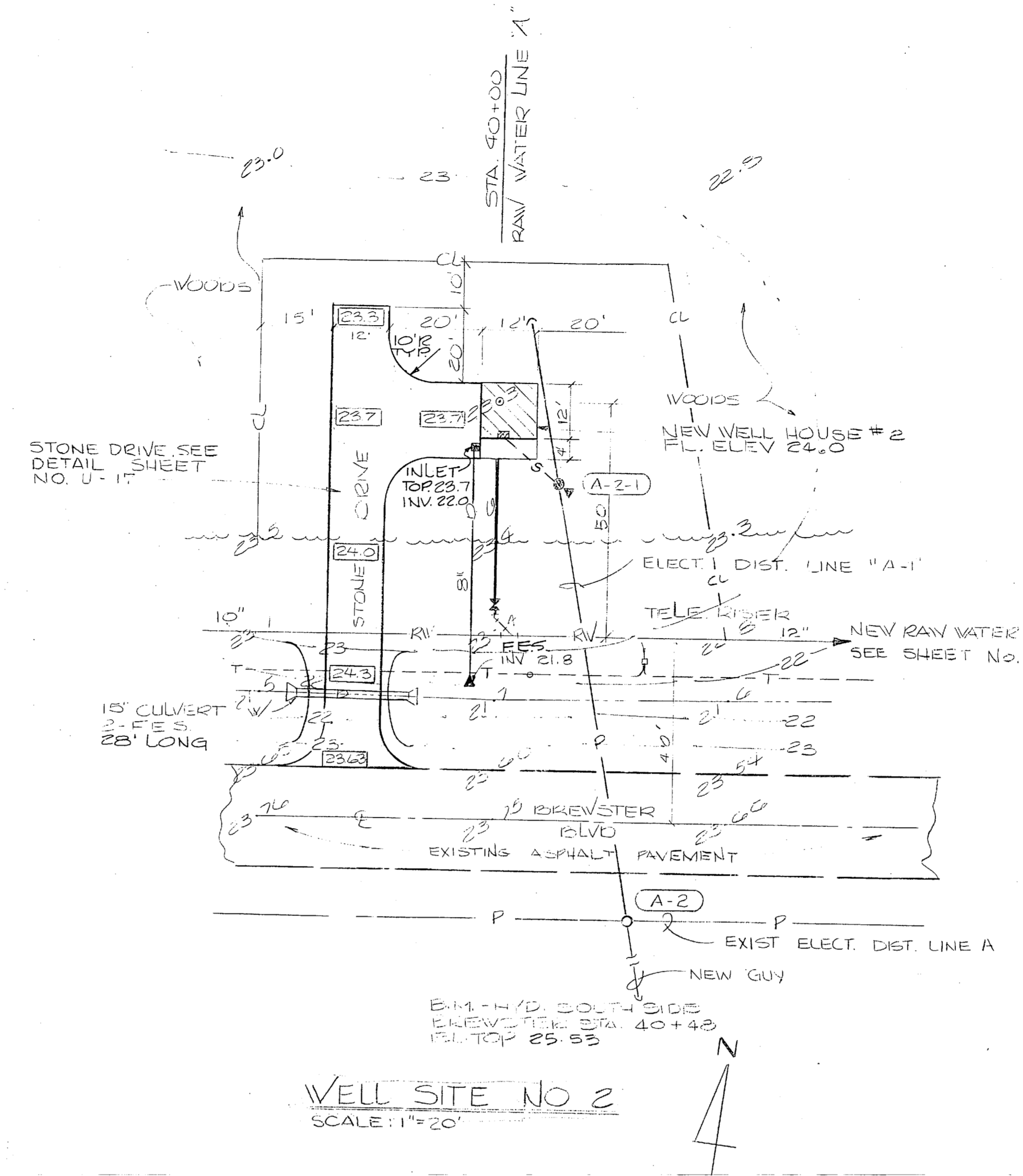
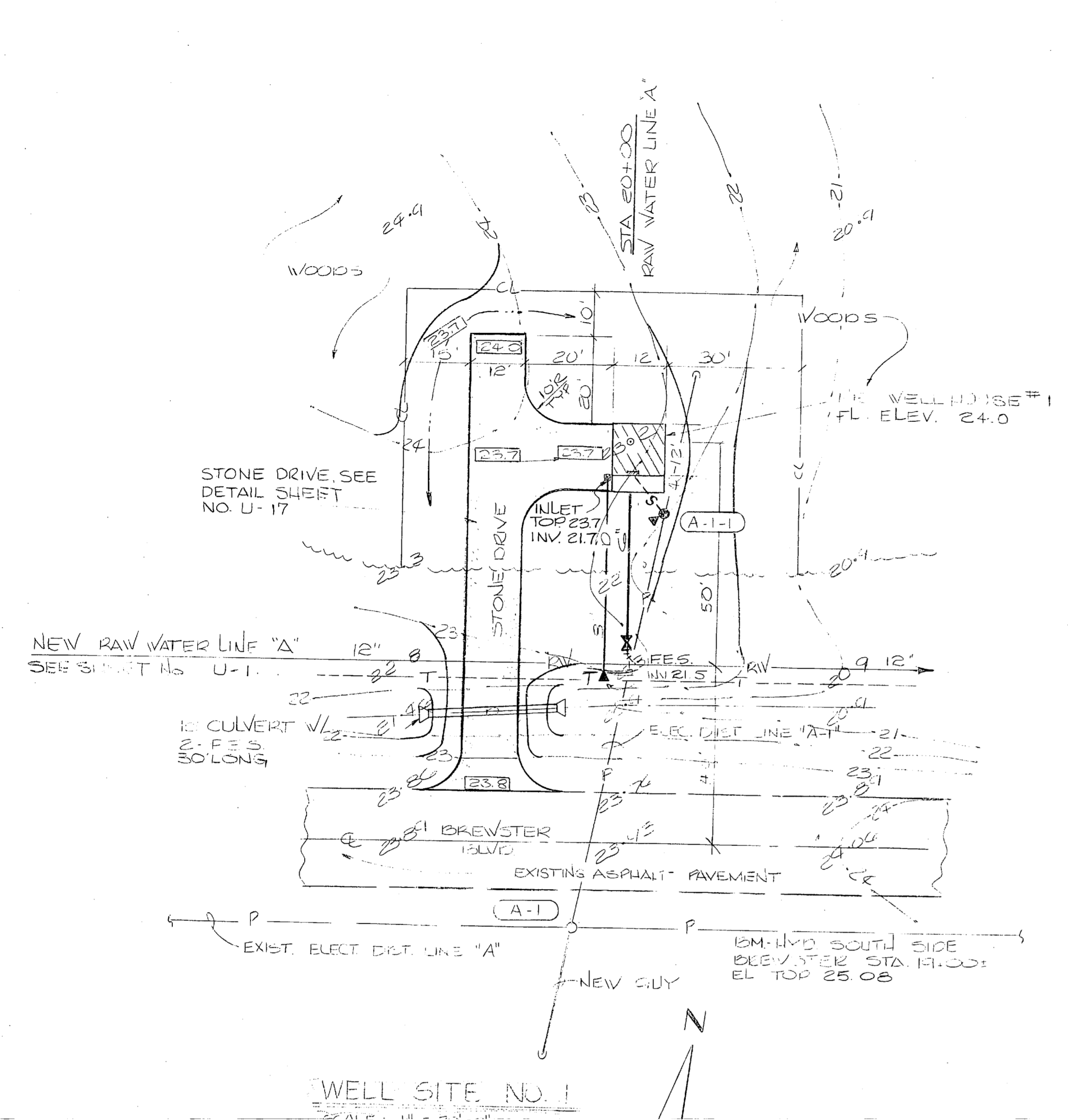
Relocated Well #9 to Sineads Blvd. Meas #20 total approx 600' Active "C900"

Line Flashing was tested with samples approved

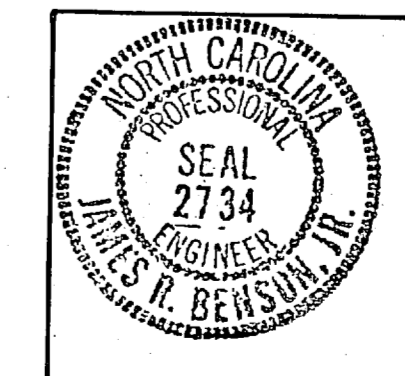
ATLANTIC DIVISION  
CAMP LEJEUNE  
MARINE CORPS BASE  
WATER TREATMENT PLANT  
LOCATION & VICINITY MAP



REVISIONS			
SYM	DESCRIPTION	DATE	APPROVED



BM-LYD WEST SIDE  
CHARLES ST @ ROAD 200'  
NORTH OF FIRE STA EL. 23.23



**C-3**

FOR LEGEND SEE SHT U-20

HENRY VON OESSEN & ASSOCIATES CONSULTING ENGINEERS WILMINGTON, N. C.		DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND ATLANTIC DIVISION NAVAL STATION NORFOLK, VA.	
DR. JRB	DEC. DR. P.Y.T.	CHK. JRB	
SUBMITTED BY: JRB		DATE: 1/14/80	
FIRM MEMBER: JRB		PRINCIPAL: JRB	
NO. 2734		DATE: 1/14/80	
APPROVED: JRB		DATE: 1/14/80	
ACTIVITY - SATISFACTORY TO: JRB		DATE: 1/14/80	
FOR EDS FOR COMMANDER NAVFAC		SCALE: AS SHOWN SPEC: 05-81-1644	

CAMP LEJEUNE EXPANSION OF HOLCOMB BOULEVARD WATER TREATMENT PLANT		NORTH CAROLINA	
WELL SITES 1 THRU 6		NAVFAC DRAWING NO. 4107537	
SIZE: F	CODE IDENT. NO. 80091	CONTRACT NO. N62470-81-B-1644	
SHEET 4 OF 74		E.F.D. DIV. NO. 207537	

