

SUMMARY OF QUANTITIES

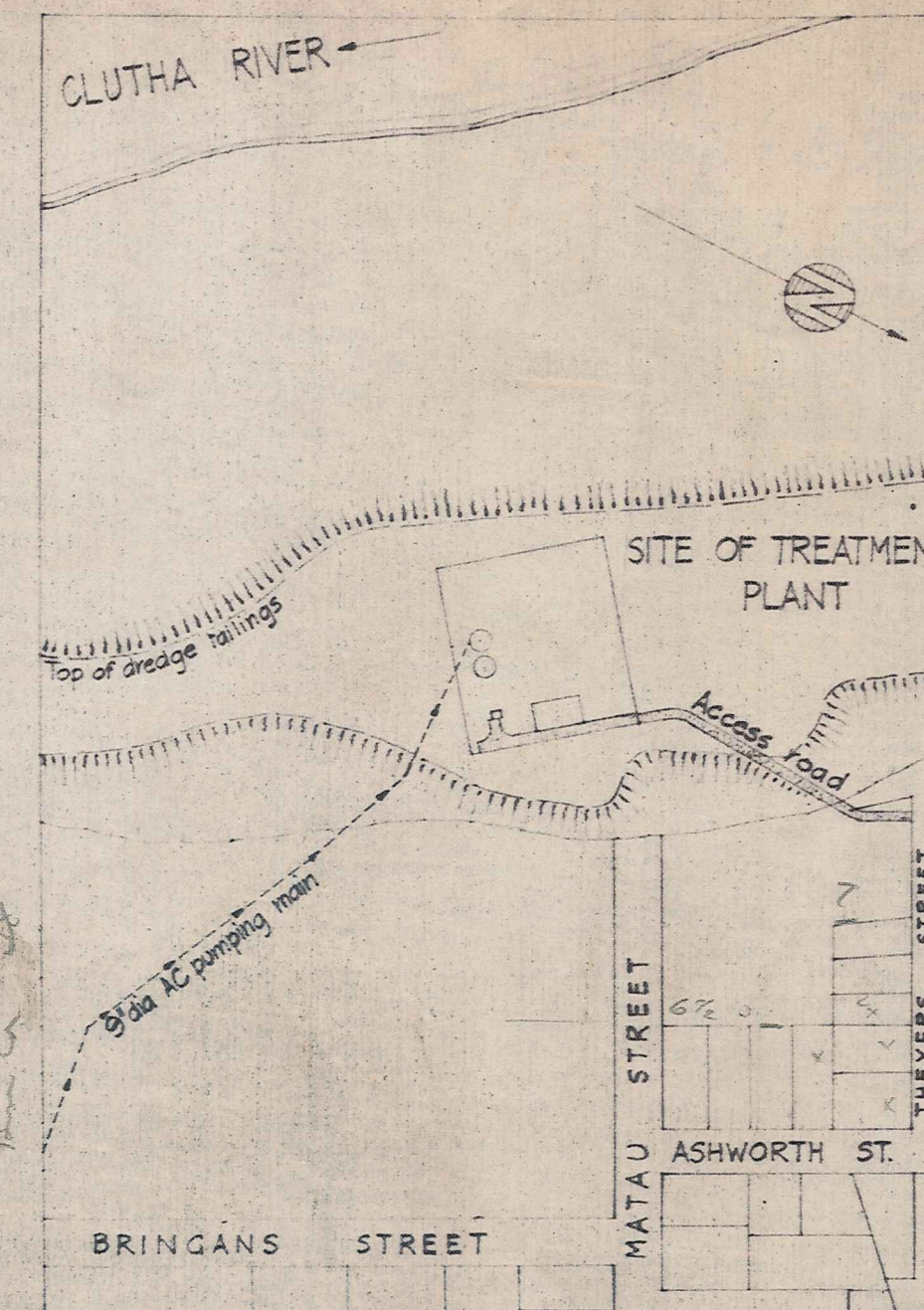
Unit	Excavation	Concrete	Boxing	Reinforcement
Imhoff tanks	550 cu. yd.	155 cu. yd.	12,230 sq. ft.	232 cwt.
Sludge drying beds	126 cu. yd.	12 cu. yd.	20,700 sq. ft.	55 cwt.
Eastern P.S.	134 cu. yd.	52 cu. yd.	35,600 sq. ft.	49 cwt.
Western P.S.	92 cu. yd.	52 cu. yd.	37,100 sq. ft.	48.5 cwt.
Flow Recorder	6.3 cu. yd.	4.8 cu. yd.	4,050 sq. ft.	1.2 cwt.
Operator's Building	3 cu. yd.	2.7 cu. yd.	1,200 sq. ft.	0.8 cwt.
TOTALS	911.3 cu. yd.	278.5 cu. yd.	221,350 sq. ft.	337.0 cwt.

DESIGN DATA

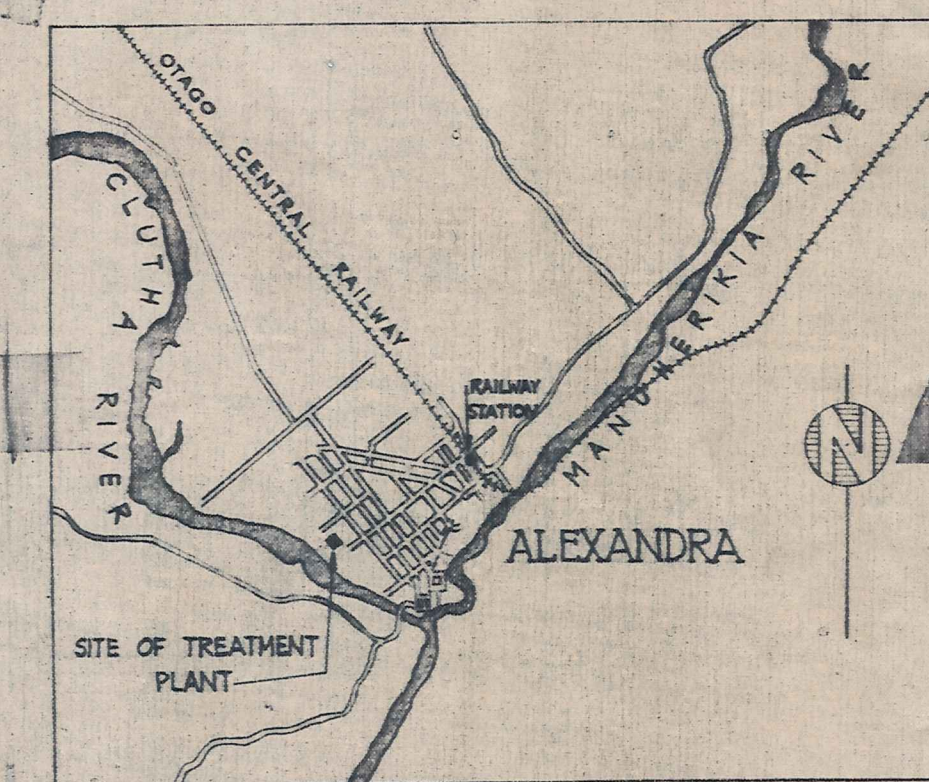
Design population 3,000. Ultimate population 4,500
 Average flow 50 gals./head/day. Peak flow 2.5 x average
 Assumed B.O.D. 0.12 lb./head/day. Assumed susp. solids 0.17 lb./head/day
 Imhoff Tanks 3 hrs. detention average flow
 Surface loading 270 gals./sq. ft./day
 Sludge capacity 3 1/2 cu. ft./head
 B.O.D. reduction assumed 30%
 Sludge Drying Beds Surface area approx. 3/4 sq. ft. per head

All work necessary for disposal of effluent from this point to be done by Alexandra Borough

All work necessary for disposal of under drainage water from this point to be done by Alexandra Borough.



SITE PLAN
SCALE 4 CHAINS = 1 IN.



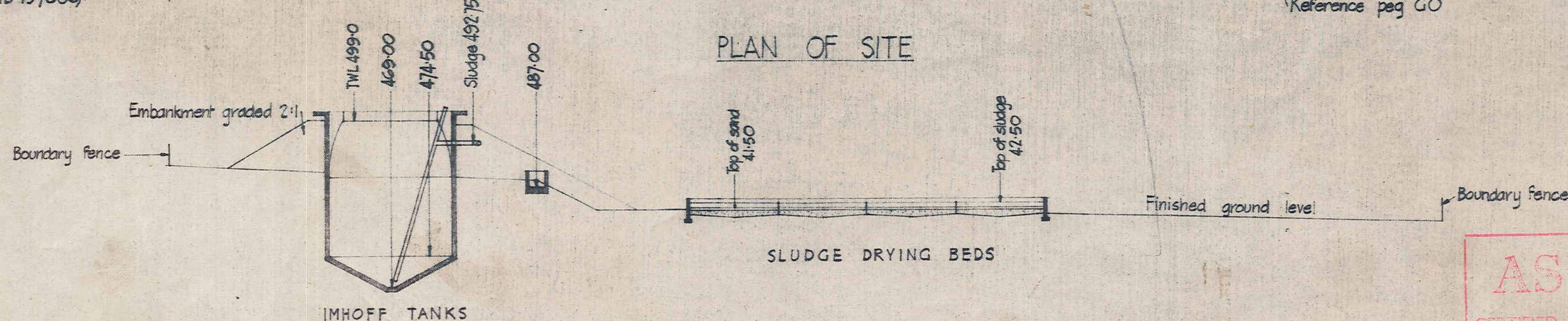
LOCALITY PLAN
SCALE 1 IN. = 1 MILE

Reference peg A2

Reference peg AO (see B912 Sheet 2 - PWD 157084)

Reference peg GO

PLAN OF SITE



SECTION THROUGH WORKS

SCALE 20 FT. = 1 IN.



AS BUILT
 CERTIFIED BY
 DATE 1/6/62

PWD No	Sheet No	SHEET INDEX	Description
159795	1		General arrgt. of Primary Treatment Plant
"	2		Plan & section of proposed pumping mains & sewers
"	3		"Earthworks & setting out plan of Primary Treatment Plant"
"	4		General arrgt. of Primary & future Secondary Treatment Plant
"	5		" " Eastern Sewage Pumping Station
"	6		Reinforcement details " " "
"	7		General arrgt. of Western Sewage Pumping Station
"	8		Reinforcement details " " "
"	9		Miscellaneous details E. & W. Pumping Stations
"	10		Reinforcement schedule Pump Stations
"	11		Details of Flow Recorder at W. Pumping Station
"	12		Site plan of Eastern & Western Pump Stations & Flow Recorder
"	13		General arrgt. of Imhoff Tanks
"	14		Miscellaneous details of Imhoff Tanks
"	15		Reinforcement " " "
"	16		Reinforcement schedule Imhoff Tanks
"	17		Details of Operator's building
"	18		" " Sludge Drying Beds
"	19		Miscellaneous details of Plant site

251

GRAPHIC SCALE:



20 FT. = 1 IN.
4 CH. = 1 IN.

1 MILE = 1 IN.

ORIGINAL SCALE OF INCHES

Drawn	P. J. Taylor	6/59
Checked	W. J. H. H. H. H.	9/59
Designed	W. J. H. H. H. H.	5/59
Design Checked	W. J. H. H. H. H.	10/59
Supervised	W. J. H. H. H. H.	10/59

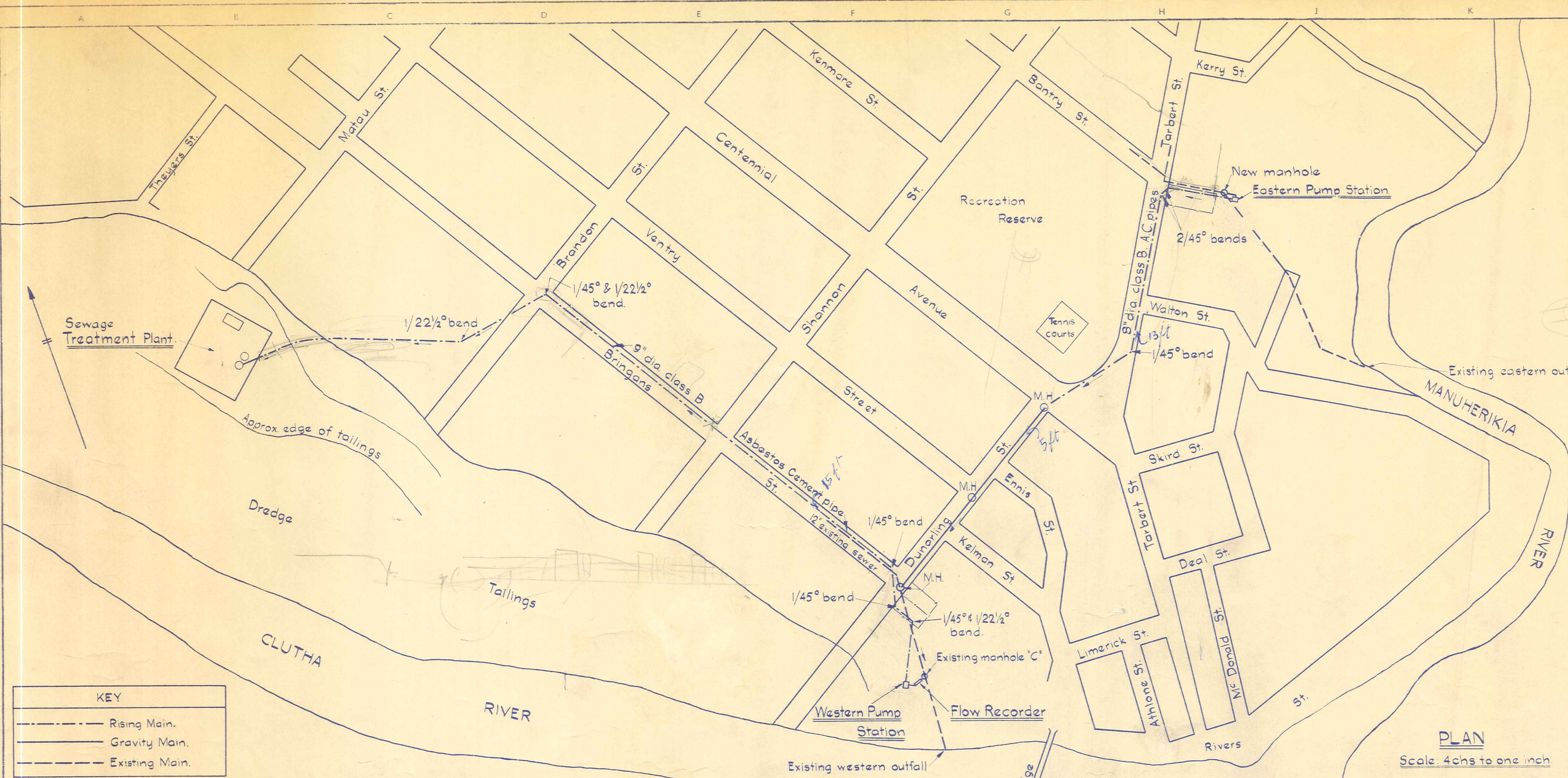
Recommended: *[Signature]*
 Date: 12/10/59
 Approved: *[Signature]*
 Chief Designing Engineer
 District Engineer
 Date: 15/10/59

N. Z.
 MINISTRY OF WORKS
 C. W. O. TURNER
 B.Sc. (HON.) M.E.
 N.Z.E. (HON.) M.E.
 HON. MEMBER IN-CHARGE

ALEXANDRA BOROUGH
 SEWAGE TREATMENT PLANT
 GENERAL ARRANGEMENT OF PRIMARY
 TREATMENT PLANT

SCALE: AS SHOWN
 P.W.D. 159795
 SHEET No. 1 OF 19 SHEETS
 ISSUE

Trading No. 9005



KEY

- Rising Main.
- Gravity Main.
- - - Existing Main.

For site plan of Eastern & Western Pump Stations see P.W.D. 159795 Sheet 12.

REFERENCE

- (1) Plan Alexandra B 695 (P.W.D. 157086) Sheets 2 & 4 of 4
- (2) Plan A 539 Plan of subdivisions and sewerage P.W.D. 157086

Longitudinal Section Western Pumping Station to Treatment Site

Scale: Horiz. 4 chs to one inch. Vert. 40 feet to one inch.

Spot Level Nos	Links	Distances	Reduced Level	Invert level	Cut or Fill to Invert
449.32					
498.30	498.30	32.88	462.84		
	718.30	474.08	462.90		
	1272.24	800.08	463.96		
	1688.54	154.08	465.43		
	2220.30	465.40	465.91		
	2718.30	794.08	469.95		
	2918.29	192.68	469.56		
	2999.28	197.58	469.43		
	3406.29	2248.16	470.45		
	3690.29	2435.60	471.05		
	3990.29	2633.60	470.85		
	4133.32	2727.98	472.06		
	4203.29	2774.15	475.11		
	4247.29	2803.22	488.15		
	4560.60	3010.00	497.50		

9" dia. Class 'B' A.C. Pumping Main

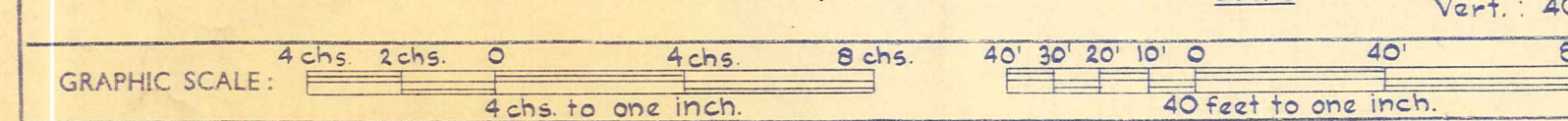
Longitudinal Section Eastern Pumping Station to Western Pumping Station

Scale: Horiz. 4 chs to one inch. Vert. 40 feet to one inch.

Spot Level Nos	Links	Distances	Reduced Level	Invert level	Cut or Fill to Invert
498.30	498.30	32.88	462.84		
	718.30	474.08	462.90		
	1272.24	800.08	463.96		
	1688.54	154.08	465.43		
	2220.30	465.40	465.91		
	2718.30	794.08	469.95		
	2918.29	192.68	469.56		
	2999.28	197.58	469.43		
	3406.29	2248.16	470.45		
	3690.29	2435.60	471.05		
	3990.29	2633.60	470.85		
	4133.32	2727.98	472.06		
	4203.29	2774.15	475.11		
	4247.29	2803.22	488.15		
	4560.60	3010.00	497.50		

8" dia. Class B A.C. pipe

8" Rising Main. Fall: 528' pc. or 1 in 125. Fall: 80' pc. or 1 in 825.



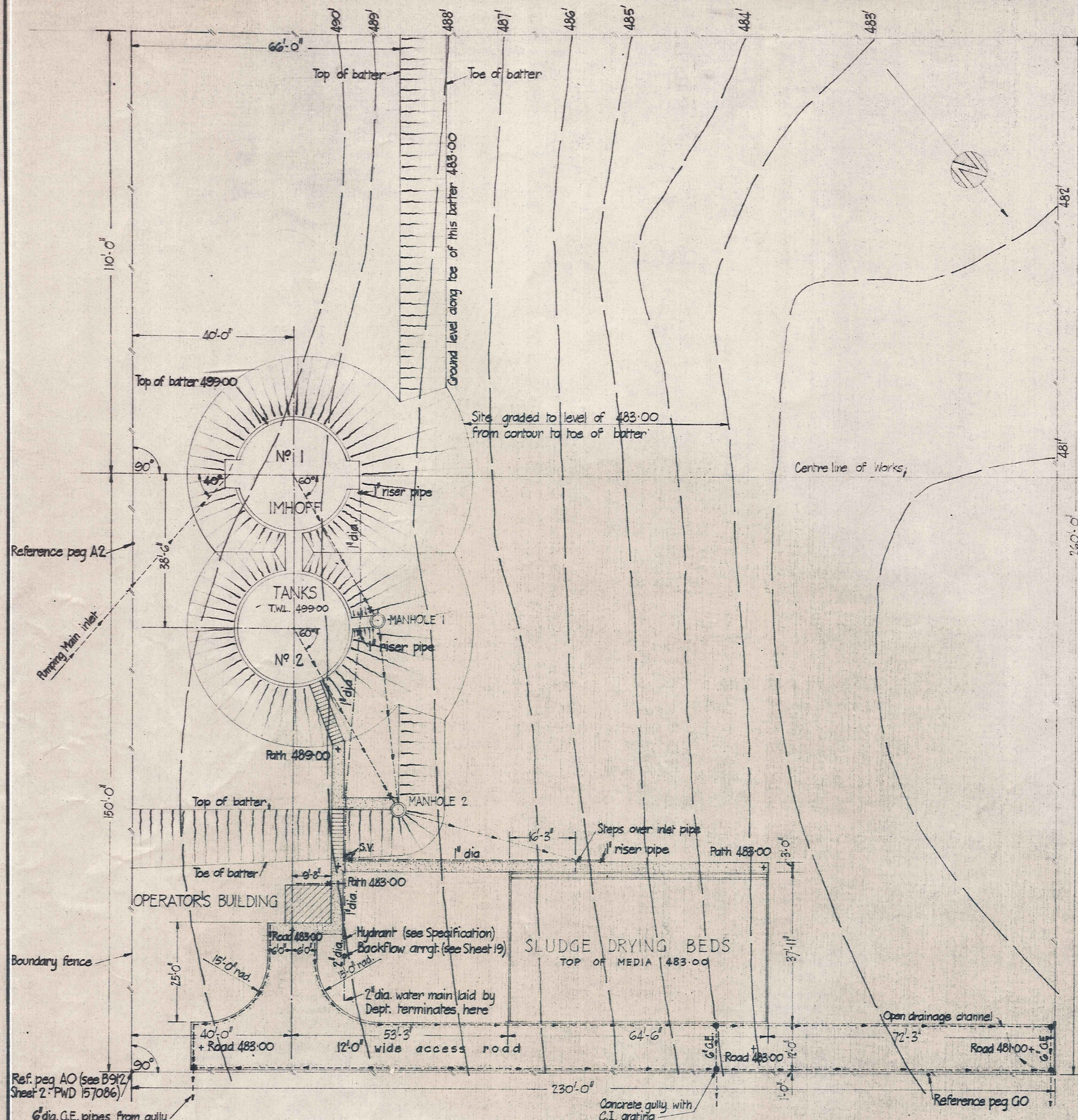
Amendments	By	Appd.	Date	Amendments	By	Appd.	Date

Drawn: *A.G. Murray* 9/59
 Traced: *P. Taylor* 9/59
 Checked: *P. Taylor* 9/59
 Designed: *A.G. Murray* 9/59
 Design Checked: *P. Taylor* 9/59
 Supervised: *P. Taylor* 10/59

Recommended: *R.B. Long* 14/10/59
 Approved: *B.B. Spence* 15/10/59
 Chief Designing Engineer

ALEXANDRA BOROUGH S.T.P.
PLAN AND LONGITUDINAL SECTIONS OF
PUMPING MAINS AND SEWERS

SCALE: As shown
P.W.D. 159795
 SHEET No. 2 OF 19
 ISSUE



- NOTES**
1. All batters graded 2:1
 2. Sealed paths 3'-0" wide
 3. Metalled roadway 12'-0" wide with open drainage channel at edge
 4. Contours shown are existing
 5. For design data see Sheet 1
 6. Water mains

SETTING OUT PLAN OF WORKS

SCALE: 20 FT = 1 IN.

AS BUILT
 CERTIFIED BY *[Signature]*
 DESIGNATION *ASST. ENG.*
 DATE *1/6/62*

2511

GRAPHIC SCALE: 20 FT = 1 IN.

Amendments	By	Appr.	Date	Amendments	By	Appr.	Date	Amendments	By	Appr.	Date

Drawn	PJ Taylor	6/59
Checked	A. H. Crawford	9/59
Designed	PJ Taylor	6/59
Supervised	W. J. [unclear]	10/59

Recommended: *[Signature]*
 Date: 12/10/59
 Approved: *[Signature]*
 Chief Designing Engineer
 District Engineer
 Date: 15/10/59



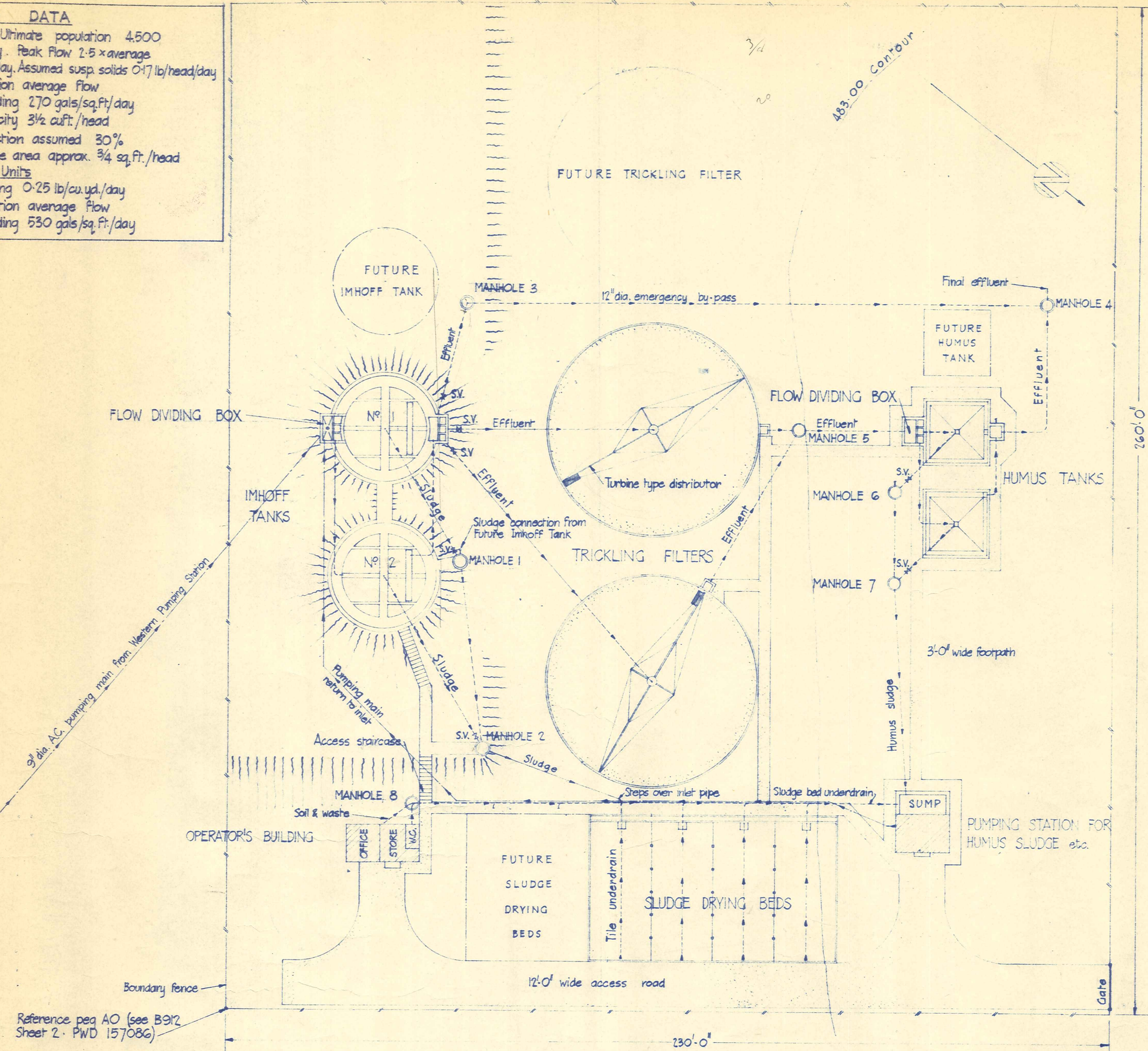
ALEXANDRA BOROUGH
 SEWAGE TREATMENT PLANT
 EARTHWORKS & SETTING OUT PLAN OF
 PRIMARY TREATMENT PLANT

SCALE: 20 FT = 1 IN. FILE: 50/901
P.W.D. 159795
 SHEET No. 3 OF 19 SHEETS
 ISSUE

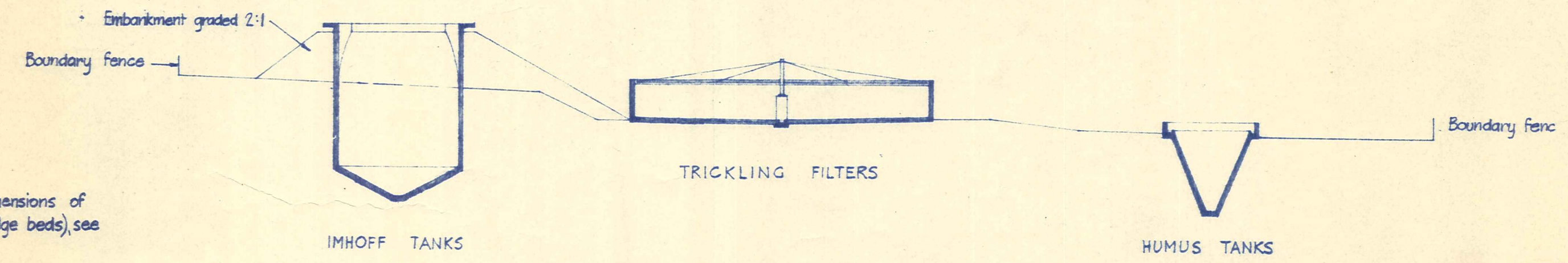
DESIGN DATA

Design population 3000 Ultimate population 4500
 Average flow 50 gals/head/day. Peak flow 2.5 x average
 Assumed B.O.D 0.12 lb/head/day. Assumed susp solids 0.17 lb/head/day
 Imhoff Tanks 3 hrs. detention average flow
 Surface loading 270 gals/sq.ft./day
 Sludge capacity 3 1/2 cu.ft./head
 B.O.D. reduction assumed 30%
 Sludge Drying Beds Surface area approx. 3/4 sq.ft./head

Future Units
 Trickling Filters B.O.D. loading 0.25 lb/cu.yd./day
 Humus Tanks 2 hrs. detention average flow
 Surface loading 530 gals/sq.ft./day



PLAN OF SITE



SECTION THROUGH WORKS
 SCALE: 20 FT. = 1 IN.

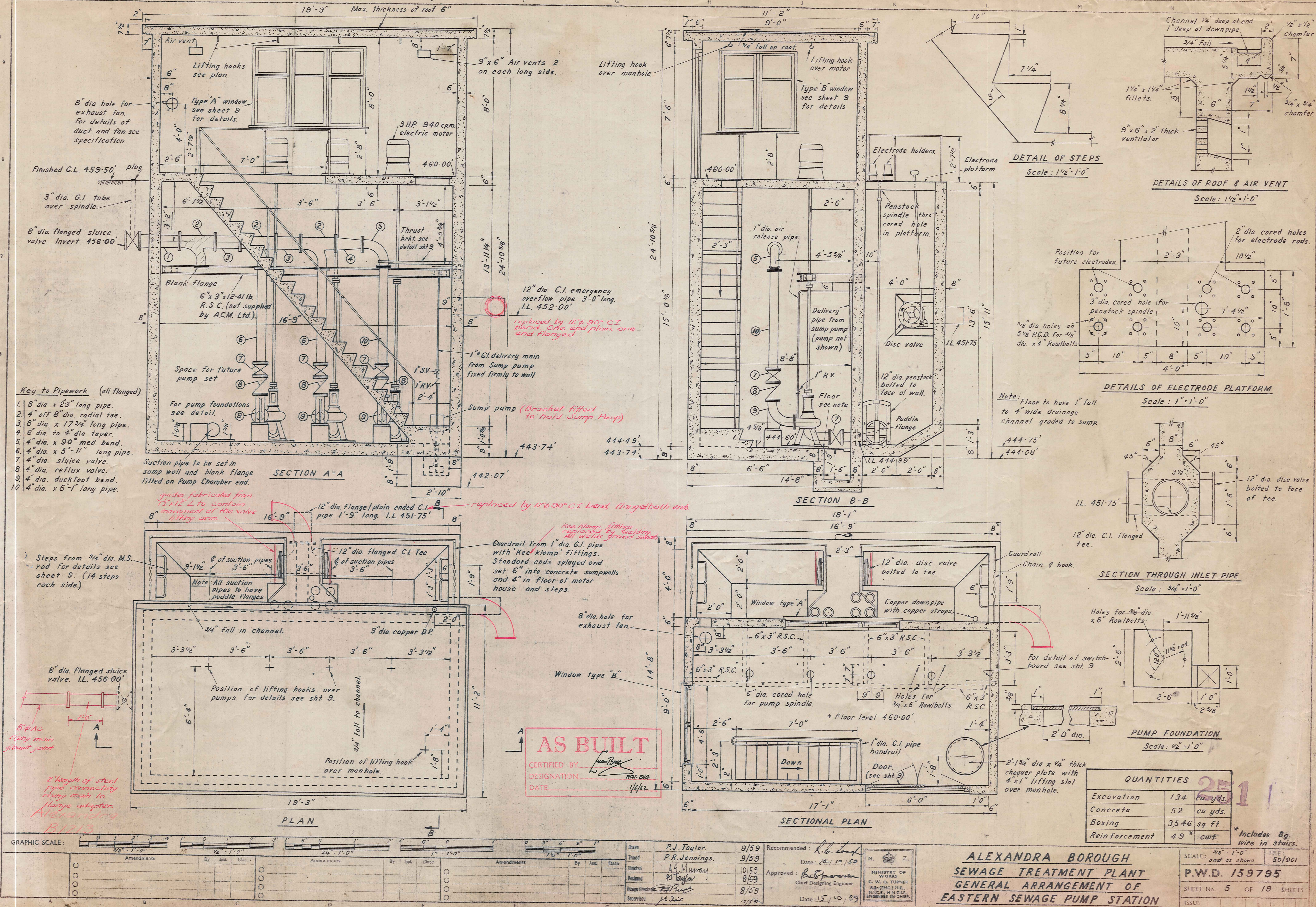
N.B. For earthworks, levels & setting out dimensions of Primary Treatment Plant (Imhoff tank & Sludge beds) see P.W.D. 159795 Sheets 1 & 3.

Layout of Secondary Treatment Plant (Filters, Humus tank & Pumping Station) shown on this drawing is only an indication of possible development & must not be taken as a definite proposal, either in alignment or level.

GRAPHIC SCALE: 20 15 10 5 0 20 40 20 FT. = 1 IN.

Amendments	By	Appr.	Date	Amendments	By	Appr.	Date	Amendments	By	Appr.	Date
○				○				○			
○				○				○			
○				○				○			
○				○				○			

Drawn: R. Taylor Checked: H. H. Crawford Designed: J. H. Smith Approved: J. H. Smith Date: 15/10/59	Recommended: R. H. Smith Date: 14/10/59 Approved: B. H. Smith Chief Designing Engineer District Engineer Date: 15/10/59	N. Z. MINISTRY OF WORKS C. W. O. TURNER (L.C. (ENG.) M.E. RICE, HANLEY ENGINEERS & ARCHT.	ALEXANDRA BOROUGH SEWAGE TREATMENT PLANT GENERAL ARRANGEMENT OF PRIMARY & FUTURE SECONDARY TREATMENT PLANT.	SCALE: 20 FT. = 1 IN. FILE: 50/901 P.W.D. 159795 SHEET No. 4 OF 19 SHEETS ISSUE:
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SECTION A-A

Note: Cover to be 2" except where shown otherwise.
Bend rods aside to clear pipes where necessary.

Hand-drawn structural drawing of a rectangular building foundation and wall section. The drawing shows a cross-section of a foundation with a central wall and two side walls. The central wall has a large rectangular opening (manhole) with a note "Note: Manhole not shown." and "8g. wire ties". The side walls have a series of horizontal reinforcement bars (E21, E19, E18) and vertical reinforcement bars (E22, E24, E23, E27, E28). The foundation has a series of horizontal reinforcement bars (E21, E19, E18) and vertical reinforcement bars (E22, E24, E23, E27, E28). The drawing includes numerous dimensions and labels for reinforcement bars (E1 through E50) and their spacing. A note at the bottom right says "Note: Manhole not shown." and "8g. wire ties". The drawing is a technical sketch of a foundation and wall section.

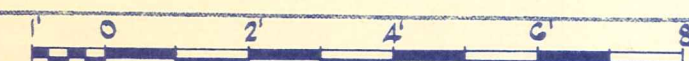
Hand-drawn schematic diagram of a mechanical system, likely a boiler or engine, showing various components and dimensions. The diagram includes a central rectangular area with a grid of circles, surrounded by various pipes, valves, and structural elements. Dimensions are given in inches (e.g., 15", 9", 1/2" dia). Labels include E3, E30, E26, E32, E4, E18, E12, E4, E10, E20, E21, and E3. A north arrow is present in the bottom left corner.

Note: Cut or bend aside E12, E10 & E21 rods as necessary at manhole to give 1½ cover.

Diagram illustrating a zigzag wire tie connection between a wall and a slab. The tie is labeled "8g. wire ties 2'-0" long." and is shown connecting the wall to the slab. The wall is labeled "E61" and the slab is labeled "E53".

A schematic diagram of a vertical pipe assembly. At the top, a horizontal line is labeled "E30". Below this, the pipe has a flange-like section with a central circular opening labeled "12" dia. inlet pipe". This section is flanked by two vertical lines labeled "E29". Below the inlet pipe section, the pipe continues downwards with a label "E27 or E28" at the bottom.

GRAPHIC SCALE :



Amendments				By	Appt.	Date	Amendments				By	Appt.	Date	Amendments				By	Appt.	Date
☐							☐							☐						
☐							☐							☐						
☐							☐							☐						
☐							☐							☐						

Drawn	PJ Tanov	8:59	Recommended :	<i>K. L. Long</i>
Traced	J. Kensington	9:59	Date:	14 / 10 / 59
	<i>John Dent</i>	10:59	Approved:	<i>BWS pinner</i>
Designed	<i>DK Brady</i>	7:59	Chief Designing Engineer	
Design Checked	<i>K. L. Long</i>	8:59	Date:	15 / 10 / 59
Supervised	<i>K. L. Long</i>	9:59		

Recommended : *H. L. Long*
Date : *14 / 10 / 55*
Approved : *B. W. Spence*
Chief Designing Engineer
Date : *15 / 10 / 55*



ALEXANDRA BOROUGH S.T.P.
EASTERN SEWAGE PUMPING STATION
REINFORCEMENT DETAIL

SCALE: $\frac{3''}{8} = 1' - 0''$	FILE: 50/901
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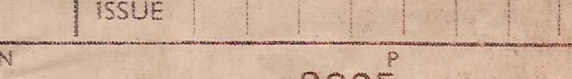
P.W.D. 159795

SHEET No. 6 OF SHEETS

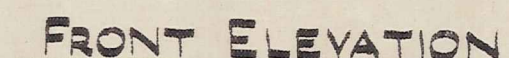
[illegible]

Tracing No. 9005

R. E. OWEN, Government Printer, Wellington, New Zealand—1957



ISSUE

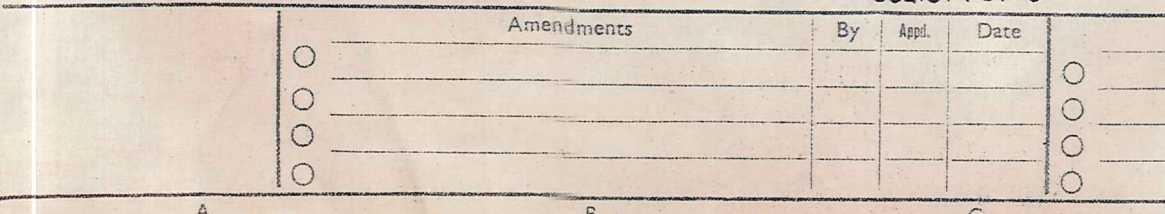
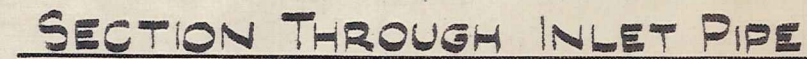


AS BUILT

CERTIFIED BY: *John Brown*

DESIGNATION: *PSST. ENG*

DATE: *1/6/62.*

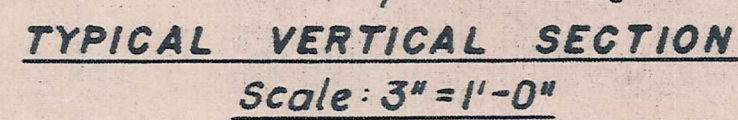


9/59	Recommended :	<i>Robert</i>
9/59	Date :	12 / 10 / 59
10/59	Approved :	<i>B. S. Pomeroy</i>
7-59	Chief Designing Engineer	
8/59		
10/59	Date :	15 / 10 / 59

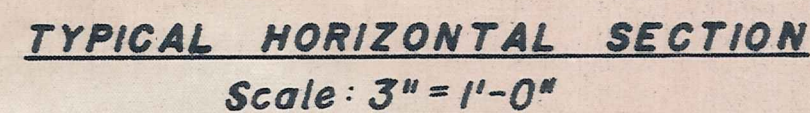
N.  Z
MINISTRY OF
WORKS
C. W. O. TURNER
B.Sc.(ENG.) M.E.,
M.I.C.E., M.N.Z.I.E.,
ENGINEER-IN-CHIEF

ALEXANDRA BOROUGH
SEWAGE TREATMENT PLANT
WESTERN SEWAGE PUMP STATION
REINFORCEMENT DETAILS

SCALE: $\frac{3}{8}$ " = 1'-0"	FILE: 50/90
P.W.D. 159795	
SHEET No. 8	OF 19 SHEET
ISSUE	

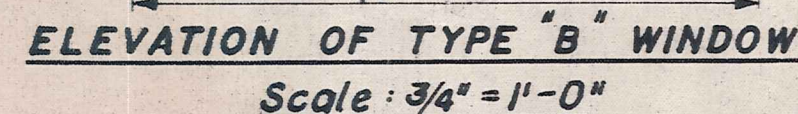


Door to be provided with suitable Mortice Lock and two 8" tower bolts. (top and bottom on inside of door.)

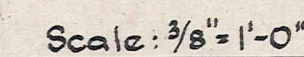
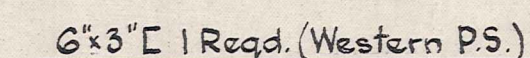
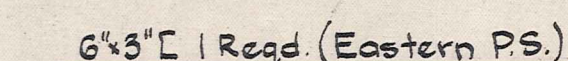
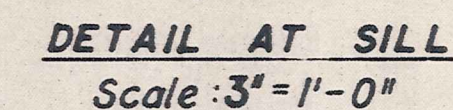
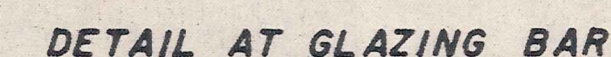


Out of $\frac{3}{4}" \phi$ - 3'-9" long bar.
After fabrication to be galvanized

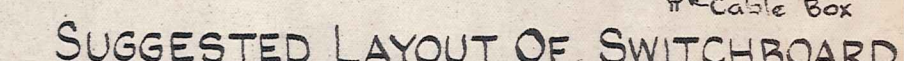
Alexander
B1213



Scale: $1\frac{1}{2}'' = 1'-0''$



Note: 1. Holes for $\frac{5}{8}$ " dia. bolts to be drilled $\frac{1}{16}$ " dia.
2. Holes for fixing shaft bracket to be site drilled.
3. All bolts $\frac{5}{8}$ " dia.



MISCELLANEOUS DETAILS E. & W. PUMPING STATION.

	Name.	Date.	Date.	Amendment.	Signature.
Dram	Adapted & P Taylor	9/59			
Trace	P.R.J. & K.W.G.	9/59			
Dr. Checkoff	Z Winkler	10/59			
Designed	P Taylor				
Des. Checkoff					
Supervised	J.S. Zeit	10/59			

Recommended:	<i>L.B. Laugh</i>	 N. Z. MINISTRY OF WORKS C. W O TURNER INC. (INC IN L.E.) P.O. BOX 142, L.L.E. "ENGINEER-IN-CHIEF"	Scale: — As shown.
Date:	14/10/59		Sheet 9 of 50/90!
Approved:	<i>B.W. Spence</i> Chief Designing Engineer		19 Sheets.
Date:	15-10-59		

P.W.D. 159795

Tracing No. 9005

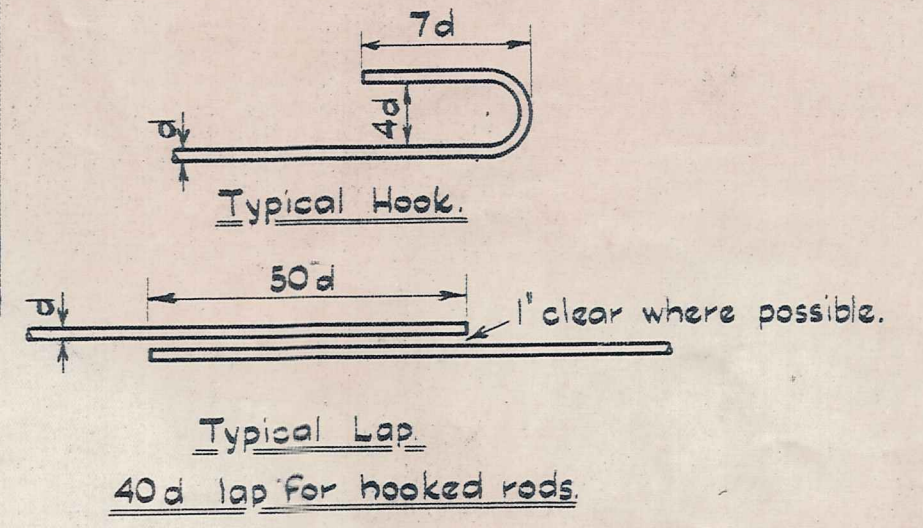
M
(Revised 1/57)

EASTERN PUMPING STATION

ROD DIA	No	LENGTH	BENDING DIAGRAM	ROD DIA	No	LENGTH	BENDING DIAGRAM
E1	1/2"	39	11'-9" A=10'-10"	E49	1/2"	4	10'-0"
E2	"	12	19'-9" " 18'-11"	E50	"	2	10'-6"
E3	"	41	12'-0" " 11'-3"	E51	3/8"	30	14'-0"
E4	"	8	6'-3" " 5'-6"	E52	"	32	16'-9"
E5	"	4	9'-0" 3'-8" 5'-5"	E53	"	32	17'-9"
E6	"	5	16'-6" 3'-6" 9'-8" 3'-9"	E54	1/2"	16	15'-0"
E7	"	5	15'-0" Straight - no hooks.	E55	3/8"	28	9'-6"
E8	"	4	16'-0" A=5'-4"	E56	"	28	15'-0" A=14'-4"
E9	"	2	14'-0" " 3'-4" 9'-8" 1'-1/2"	E57	1/2"	14	18'-6" " 17'-9"
E10	"	4	11'-4" 1'-2" 10'-3"	E58	3/8"	4	14'-0" " 13'-5"
E11	"	3	9'-0" Straight - no hooks.	E59	"	5	20'-0" " 19'-6"
E12	"	34	10'-6" A=9'-8"	E60	"	5	4'-6"
E13	"	2	9'-0" " 8'-3"	E61	"	61	3'-3"
E14	"	8	3'-6" " 2'-7"	E62	"	28	9'-0"
E15	"	4	4'-0" " 3'-3"	E63	"	10	3'-3"
E16	"	24	7'-6" " 6'-9"	E64	1/2"	46	3'-3"
E17	"	4	7'-0" " 6'-3"	E65	"	4	6'-3"
E18	"	2	17'-0" " 16'-3"	E66	"	2	9'-6"
E19	"	12	18'-6" " 17'-9"				
E20	"	4	3'-6" " 2'-8"				
E21	"	4	8'-6" " 7'-9"				
E22	3/8"	91	14'-6" Straight - no hooks.				
E23	1/2"	35	6'-3" 3'-1"				
E24	"	16	15'-0" Straight - no hooks.				
E25	"	51	14'-0" " " "				
E26	"	4	16'-9" 14'-10" 2'-0"				
E27	"	2	5'-6" Straight - no hooks				
E28	"	2	5'-0" " " "				
E29	"	4	6'-8" 2'-1" 1'-5" 4 1/2" 2'-1" 4 1/2"				
E30	"	4	7'-3" 6'-2 1/2"				
E31	"	2	5'-0" Straight - no hooks.				
E32	"	4	1'-10" " " "				
E33	"	13	6'-0" A B C D E ~ 2'-6" 2'-8 1/2" 1'-5" ~				
E34	"	13	11'-0" 2'-9" 2'-7" 2'-9" 1'-6" 2'-11"				
E35	"	2	5'-9" ~ 3'-0" 2'-0" 1'-1" ~				
E36	"	2	5'-9" ~ 4'-1" 11" 6' ~				
E37	"	2	10'-6" 2'-9" 3'-1" 2'-1" 1'-1" 2'-9"				
E38	"	2	10'-6" 2'-9" 4'-2" 10" 6' 2'-10"				
E39	"	2	19'-0" 12'-11" 2'-8" 1'-5" ~				
E40	"	2	24'-0" 13'-0" 2'-9" 1'-6" 2'-9"				
E41	"	1	19'-0" 13'-10" 2'-2 1/2" 1'-1" ~				
E42	"	1	18'-6" 15'-11" 11" 6" ~				
E43	"	1	23'-9" 13'-10" 2'-2 1/2" 1'-2" 2'-9"				
E44	"	1	23'-6" 16'-0" 11" 6" 2'-10"				
E45	"	4	8'-3" A=7'-6"				
E46	"	32	12'-0" " 11'-3"				
E47	"	4	16'-6" " 15'-7"				
E48	"	16	18'-6" " 17'-9"				

NOTES

Reinforcement schedule prepared on use of plain round M.S. bars.
Except for E50 & W46 all bars dimensioned outside to outside.
All short bends to have inside radius of 2x bar diameters.



WESTERN PUMPING STATION

ROD DIA	No	LENGTH	BENDING DIAGRAM	ROD DIA	No	LENGTH	BENDING DIAGRAM
W1	1/2"	39	11'-9" A=10'-10"	W48	3/8"	30	16'-6" 9'-8"
W2	"	12	19'-9" " 18'-11"	W49	"	30	18'-0" Straight - two hooks.
W3	"	41	12'-0" " 11'-3"	W50	1/2"	15	15'-0" no hooks
W4	"	8	6'-3" " 5'-6"	W51	3/8"	26	10'-8" 7'-3"
W5	"	4	9'-0" 5'-5 1/2"	W52	"	26	16'-0" A=15'-4"
W6	"	5	16'-6" 9'-8" 3'-9"	W53	1/2"	13	18'-0" " 17'-3"
W7	"	5	15'-0" Straight - no hooks.	W54	3/8"	4	15'-0" " 14'-5"
W8	"	4	16'-0" A=5'-4"	W55	"	5	19'-6" " 18'-9"
W9	"	2	14'-0" " 3'-4" 9'-8" 1'-1/2"	W56	"	5	4'-6" 1'-6" 1'-0" 1'-2"
W10	"	4	11'-4" 1'-2" 10'-3"	W57	"	59	3'-3" A=2'-7"
W11	"	3	9'-0" Straight - no hooks.	W58	1/2"	4	6'-8" 2'-1" 45° 1'-5" 45° 2'-1"
W12	"	38	10'-6" A=9'-8"	W59	3/8"	10	3'-3" " 2'-6"
W13	"	2	9'-0" " 8'-2"	W60	"	6	6'-3" 3'-0 1/2"
W14	"	28	7'-6" " 6'-9"	W61	3/8"	26	10'-0" 6'-0"
W15	"	2	17'-0" " 16'-3"	W62	1/2"	48	3'-9" Hooked one end only.
W16	"	12	18'-6" " 17'-9"	W63	"	2	9'-6" 1'-2" inside radius
W17	"	4	3'-6" " 2'-8"				
W18	"	4	8'-6" " 7'-9"				
W19	3/8"	91	13'-6" Straight - no hooks.				
W20	1/2"	35	6'-3" 3'-1"				
W21	"	16	13'-6" Straight - no hooks.				
W22	"	55	12'-9" " " "				
W23	"	6	14'-9" A=13'-8 1/2"				
W24	"	2	14'-3" " 13'-2 1/2"				
W25	"	2	14'-0" " 12'-11 1/2"				
W26	"	2	5'-10" Straight - no hooks.				
W27	"	11	6'-9" A B C D E ~ 3'-0" 3'-1" 1'-5" ~				
W28	"	11	11'-9" 2'-9" 3'-1" 3'-2" 1'-5" 2'-9"				
W29	"	2	7'-0" ~ 3'-3" 2'-11" 1'-4" ~				
W30	"	2	6'-9" ~ 4'-1" 1'-11" 10" ~				
W31	"	2	11'-9" 2'-9" 3'-4" 2'-11" 1'-4" 2'-9"				
W32	"	2	11'-6" 2'-9" 4'-4" 1'-10" 10" 2'-9"				
W33	"	2	6'-6" ~ 5'-1" 9" 4" ~				
W34	"	2	11'-6" 2'-9" 5'-4" 8" 4" 2'-9"				
W35	"	3	19'-0" 11'-10" 3'-3" 1'-5" ~				
W36	"	3	24'-0" 11'-11" 3'-3" 1'-5" 2'-10"				
W37	"	1	18'-9" 13'-6" 2'-3" 1'-0" ~				
W38	"	1	18'-6" 15'-6" 1'-2" 6" ~				
W39	"	1	22'-6" 13'-7" 1'-9" 1'-0" 2'-8"				
W40	"	1	23'-6" 15'-7" 1'-2" 6" 2'-9"				
W41	"	4	8'-3" A=7'-6"				
W42	"	32	12'-0" " 11'-3"				
W43	"	4	16'-6" " 15'-7"				
W44	"	14	18'-6" " 17'-9"				
W45	"	4	10'-0" 2'-2" 2'-3" 4'-0"				
W46	"	2	10'-6" 2'-3" int. dims.				
W47	3/8"	28	14'-0" Straight - no hooks.				

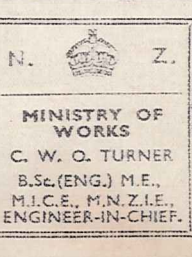
AS BUILT
CERTIFIED BY: *[Signature]*
DESIGNATION: *[Signature]*
DATE: 1/6/62

GRAPHIC SCALE:

Amendments	By	Appr.	Date	Amendments	By	Appr.	Date	Amendments	By	Appr.	Date

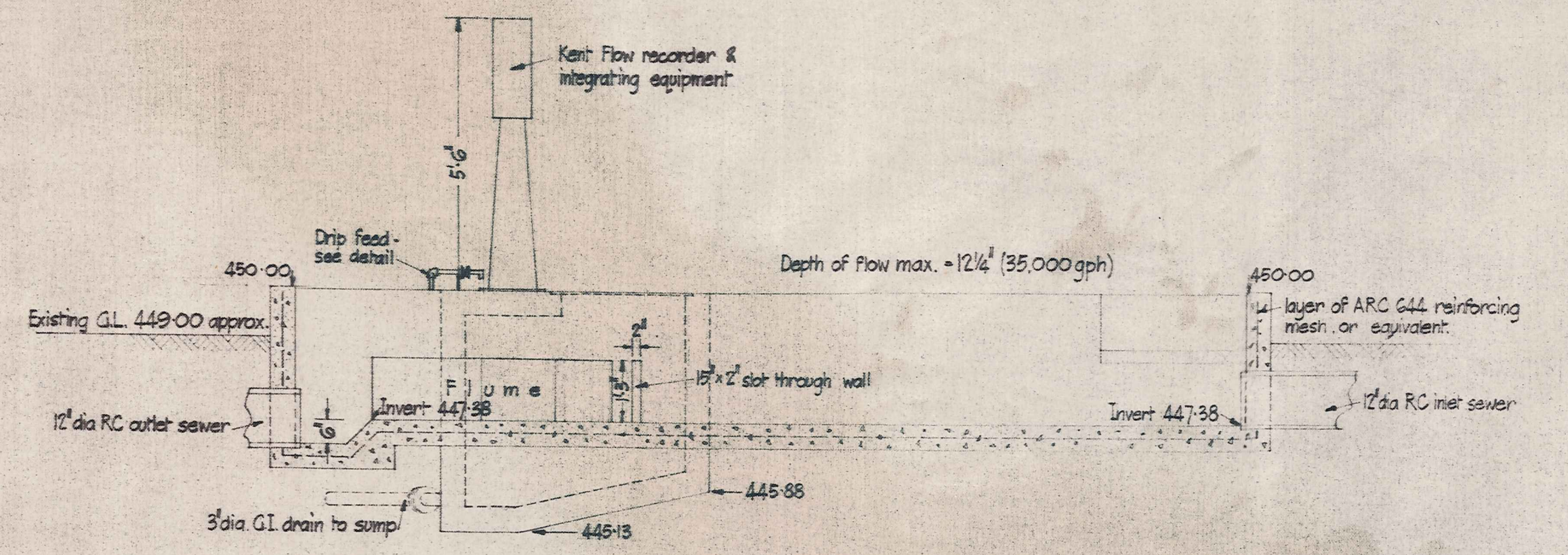
Drawn: G.R.Crawford, 9-59
Traced: G.R.C., 9-59
Checked: J.S. Zier, 10-59
Designed: *[Signature]*
Design Checked: *[Signature]*
Supervised: *[Signature]*

Recommended: *[Signature]*, Date: 14/10/59
Approved: *[Signature]*, Chief Designing Engineer, Date: 15/10/59

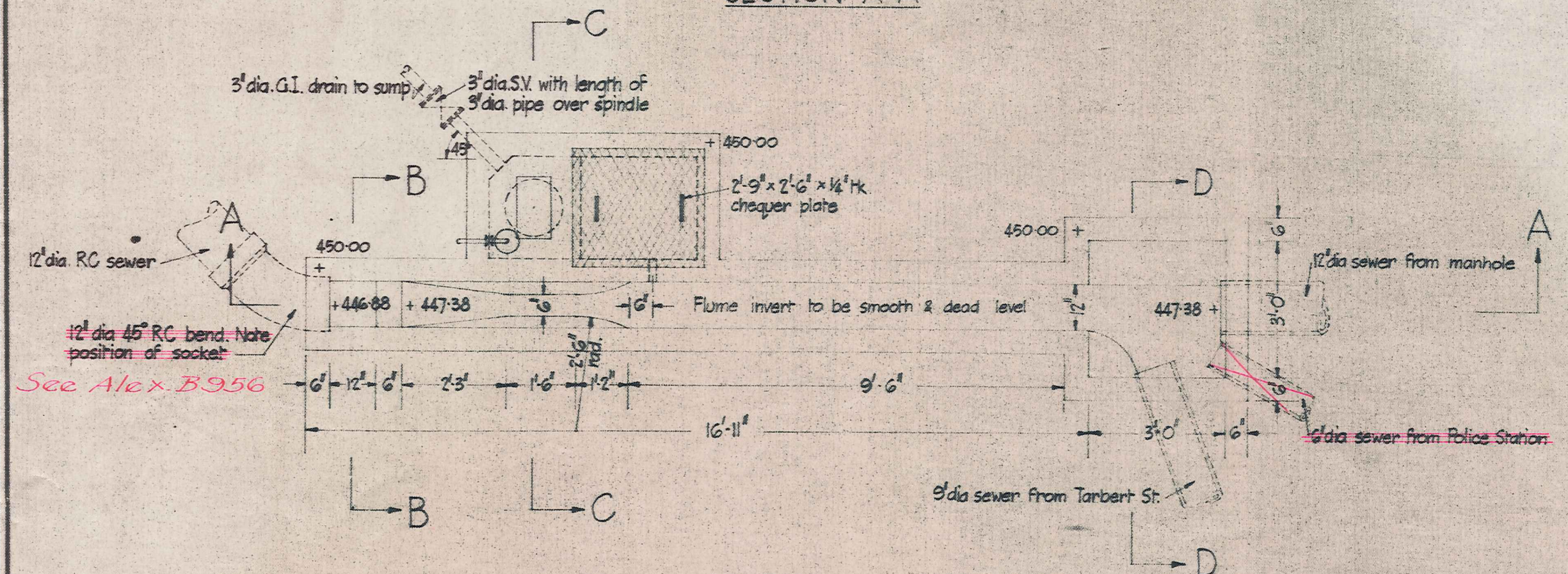


ALEXANDRA BOROUGH
SEWAGE TREATMENT PLANT
REINFORCEMENT SCHEDULE - PUMPING STATIONS

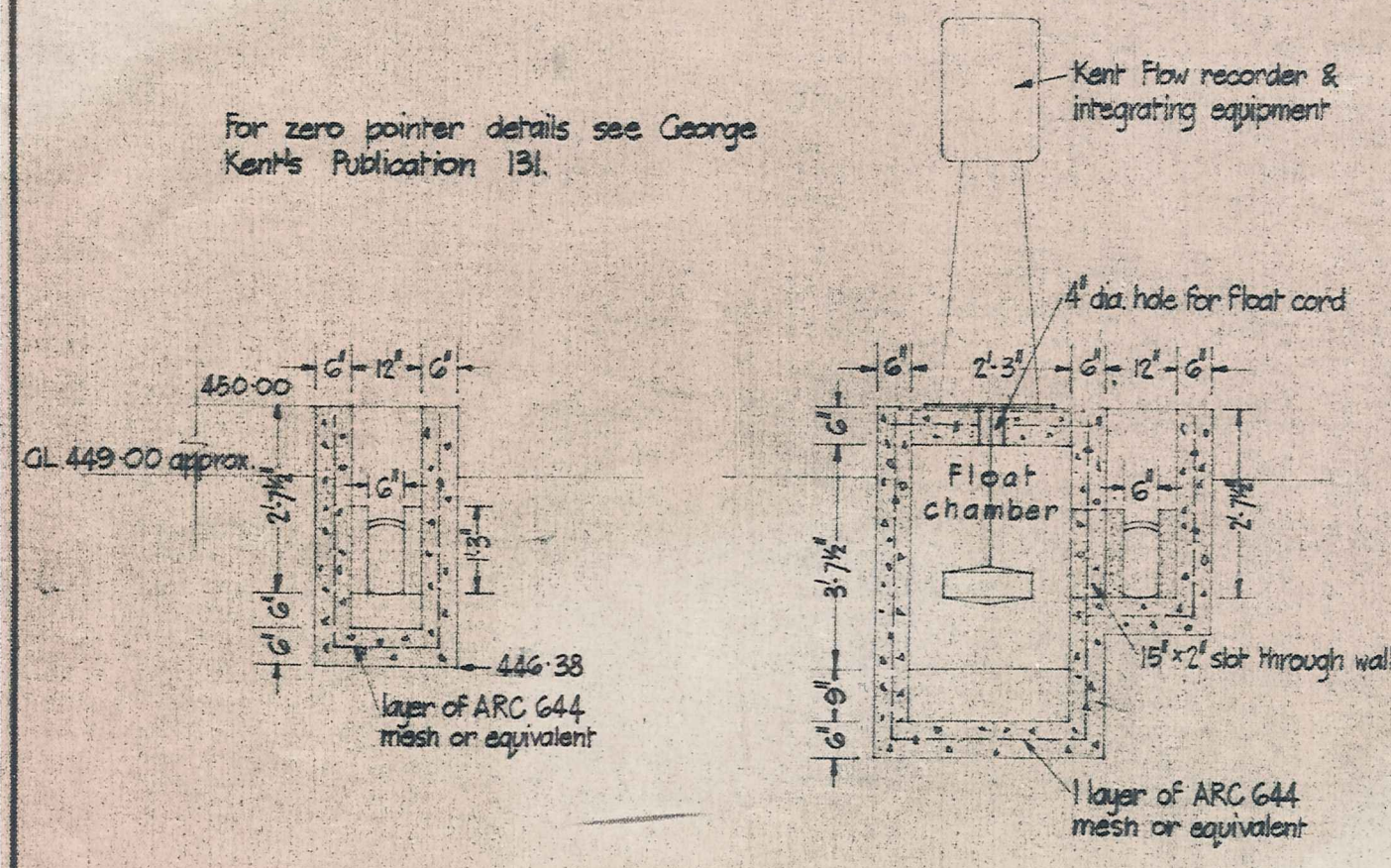
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P.W.D. 159795
SHEET No. 10 OF 19 SHEETS
ISSUE: *[Signature]*



SECTION A-A

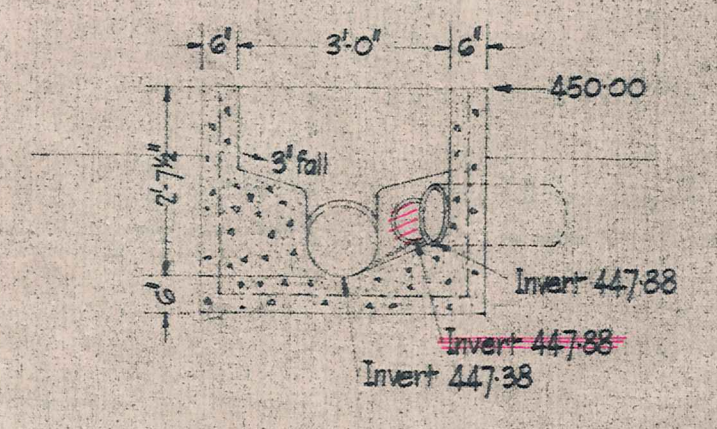


PLAN
SCALE: 3/8" = 1'-0"

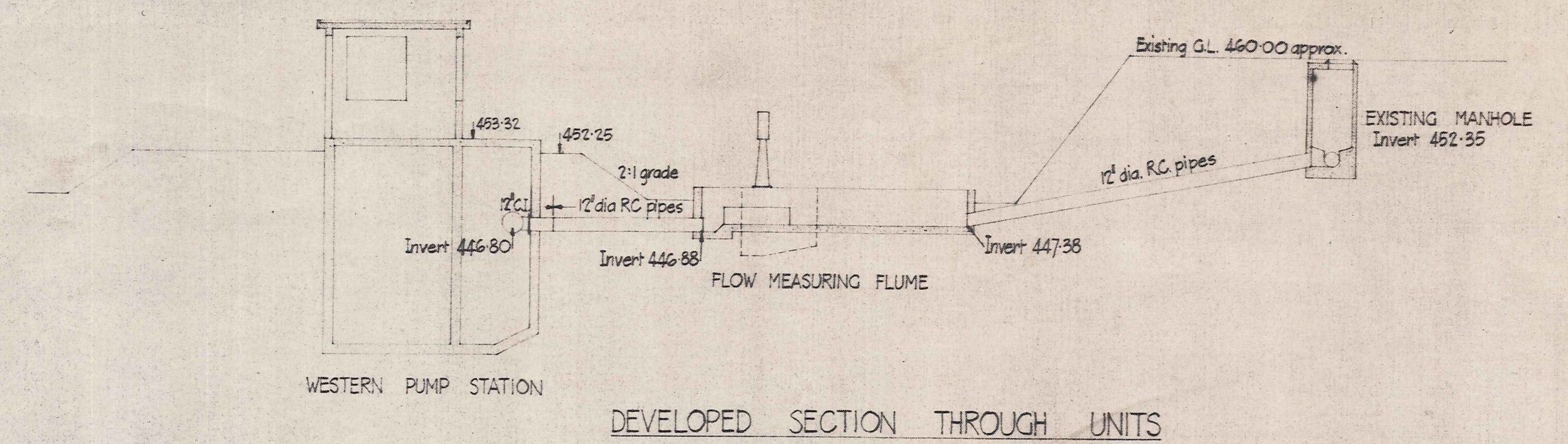


SECTION B-B

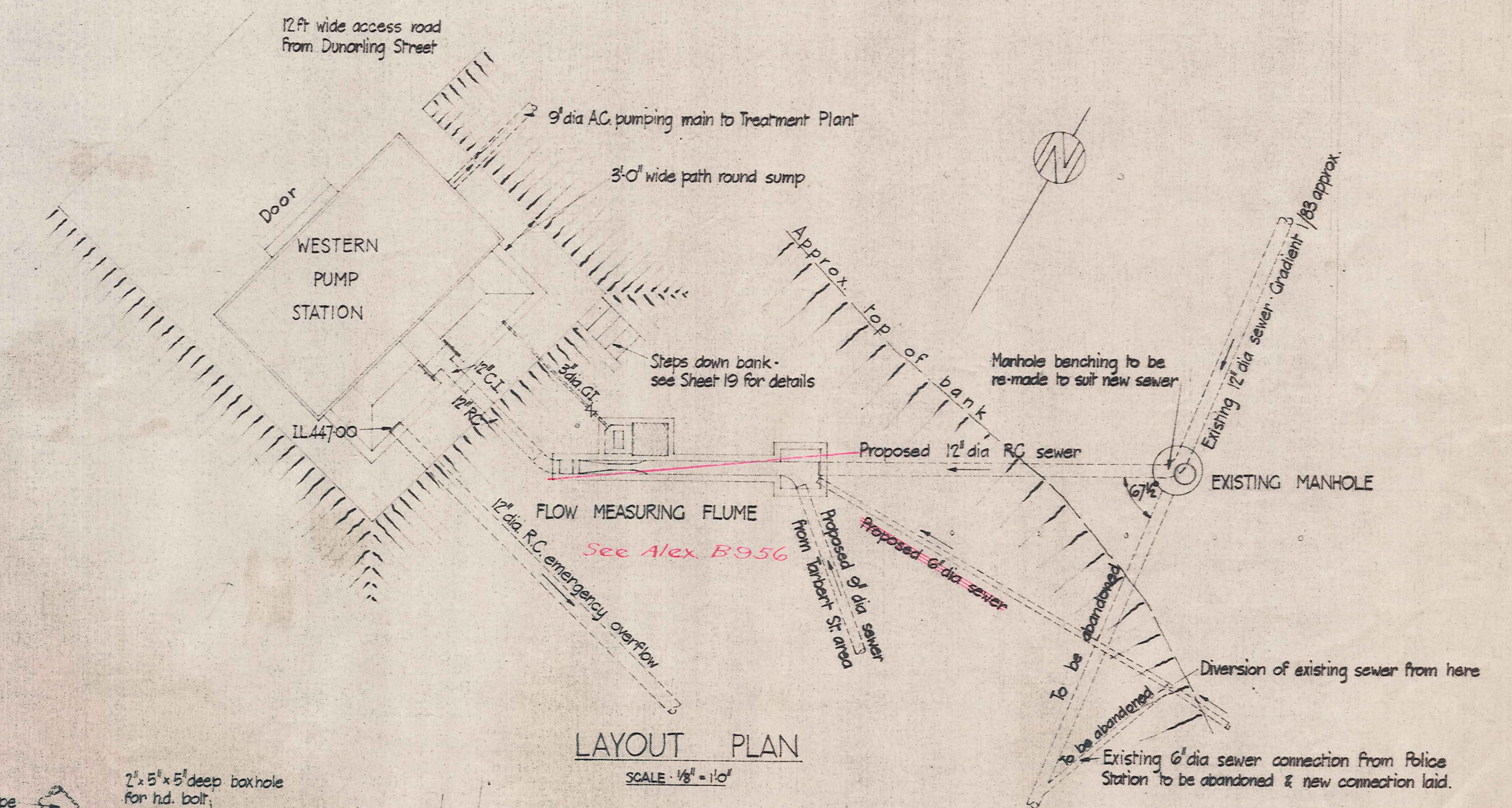
SECTION C-C



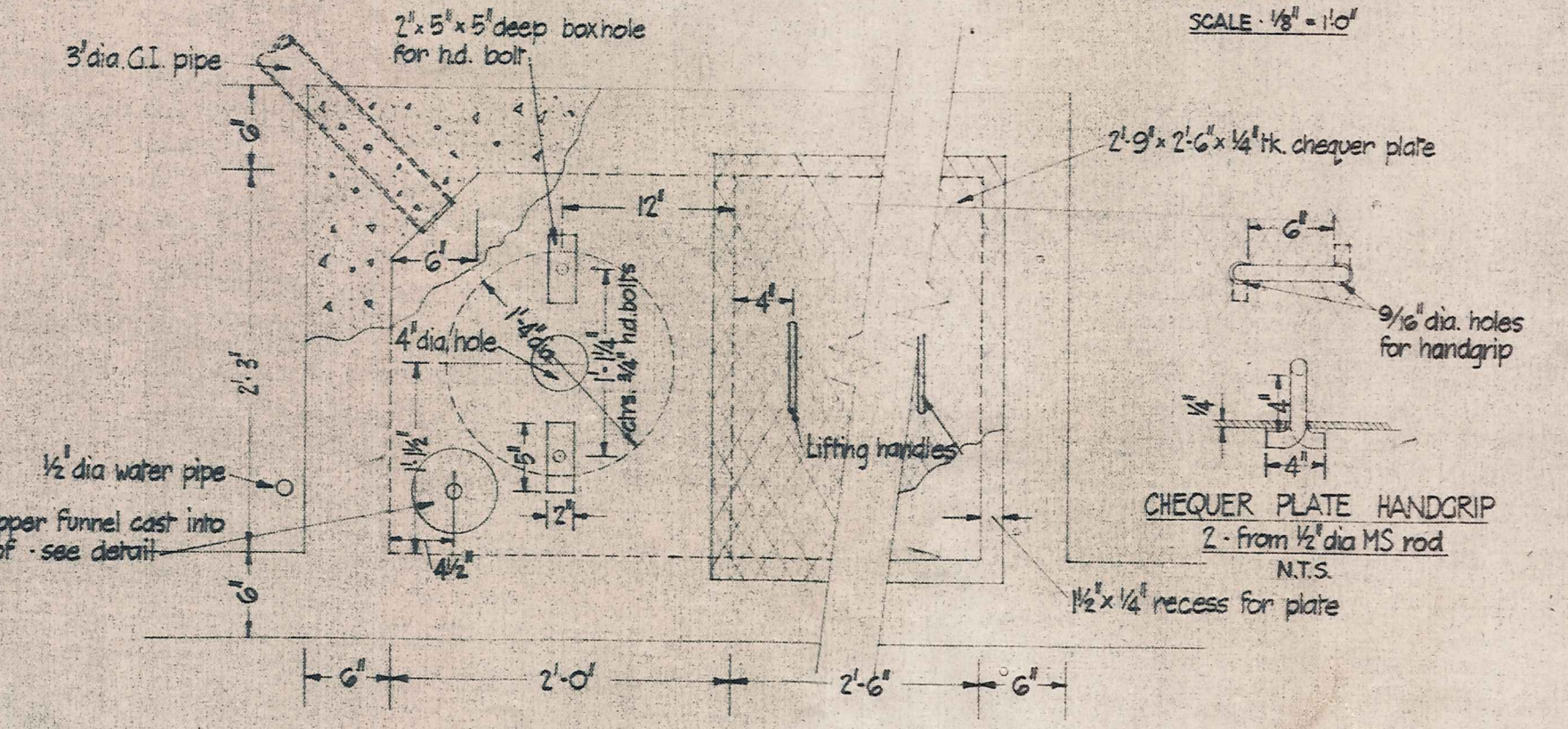
SECTION D-D



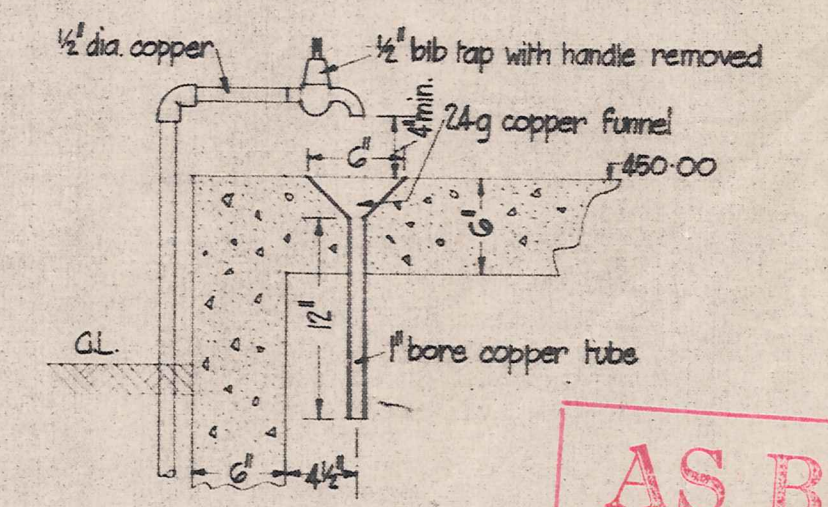
DEVELOPED SECTION THROUGH UNITS



LAYOUT PLAN
SCALE: 1/8" = 1'-0"



RECORDER FIXING DETAILS
SCALE: 1" = 1'-0"



DRIP FEED DETAILS
SCALE: 1" = 1'-0"

AS BUILT
CERTIFIED BY
DESIGNATION
DATE: 1/6/82

435.00 average W.L. in river
448.00 Flood
458.00 very high Flood
Alexander B1213

N.B. This drg. to be read in conjunction with Kent's Drg 4720C & instructions.
All walls & floors reinforced with layer of ARC G44 or equivalent (5-17 lb/sq.yd) mesh. Minimum lap 1 1/2 x mesh.
Final alignment of units & earthworks to be decided by Engineer.
Flume contours must be smooth & dead accurate.

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

ORIGINAL SCALE OF INCHES

Amendments				Amendments				Amendments			
By	App.	Date		By	App.	Date		By	App.	Date	

Drawn: R. Taylor

Checked: D. Umbers

Designed: R. Taylor / Geo. Kent Ltd.

Design Checked: [Signature]

Supervised: [Signature]

9/59

10/59

Recommended: [Signature]

Approved: [Signature]

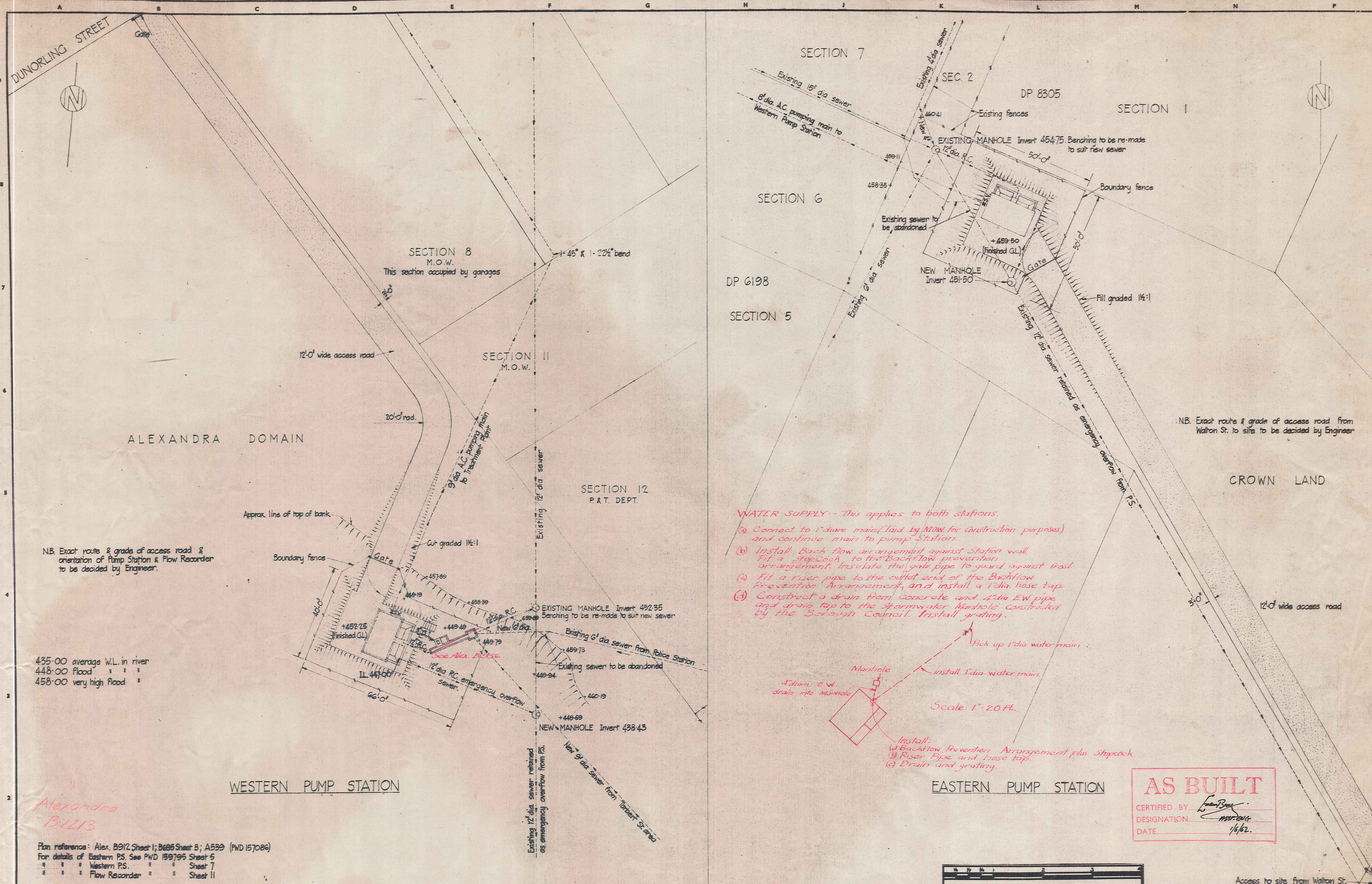
Chief Designing Engineer

District Engineer

Date: 15/10/59

ALEXANDRA BOROUGH
SEWAGE TREATMENT PLANT
DETAILS OF FLOW RECORDER AT WESTERN
PUMP STATION

SCALE: AS SHOWN
FILE: 50/901
P.W.D. 159795
SHEET No. 11 OF 19 SHEETS
ISSUE



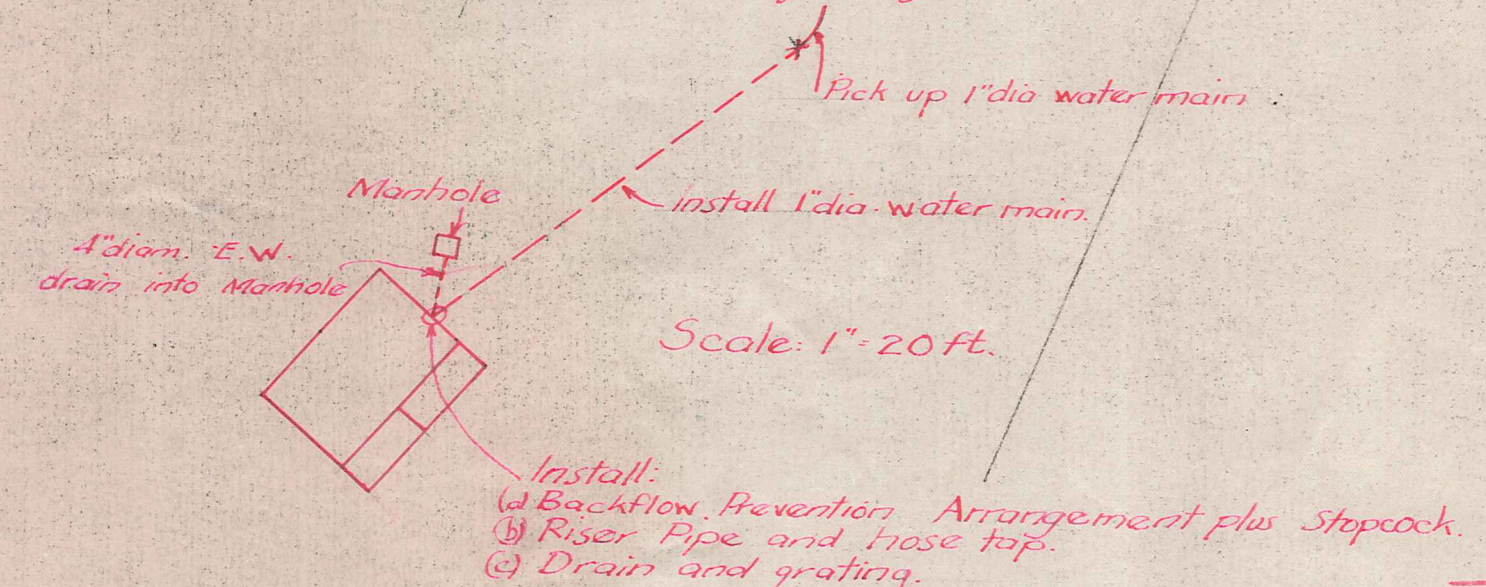
NB. Exact route & grade of access road & orientation of Pump Station & Flow Recorder to be decided by Engineer.

435.00 average W.L. in river
448.00 Flood
458.00 very high flood

Alexandra
B1213

Plan reference: Alex. B912 Sheet 1; B695 Sheet 3; A539 (PWD 157086)
For details of Eastern P.S. See PWD 159795 Sheet 5
" " " " " " " " Sheet 7
" " " " " " " " Sheet 11

- WATER SUPPLY:-** This applies to both stations.
- (a) Connect to 1" dia. main (laid by M.O.W. for construction purposes) and continue main to pump station.
 - (b) Install Backflow arrangement against Station wall. Fit a stopcock to the Backflow prevention arrangement. Insulate the gate pipe to guard against frost.
 - (c) Fit a riser pipe to the outlet end of the Backflow Prevention Arrangement, and install a 1" dia. hose tap.
 - (d) Construct a drain from concrete and 4" dia. E.W. pipe and drain tap to the stormwater Manhole constructed by the Borough Council. Install grating.



AS BUILT

CERTIFIED BY: *[Signature]*
DESIGNATION: *ASS. ENG.*
DATE: *1/6/62.*

GRAPHIC SCALE: 20 FT. = 1 IN.

ORIGINAL SCALE OF INCHES

Amendments				Amendments				Amendments			
By	Appr.	Date		By	Appr.	Date		By	Appr.	Date	

Drawn	D. Taylor	9/59	Recommended	H. B. [Signature]
Checked	J. A. [Signature]	10/59	Date	12/10/59
Designed	D. Taylor	9/59	Approved	C. W. O. TURNER
Design checked	[Signature]	10/59	Chief Designing Engineer	
Supervised	[Signature]	10/59	District Engineer	
			Date	15/10/59

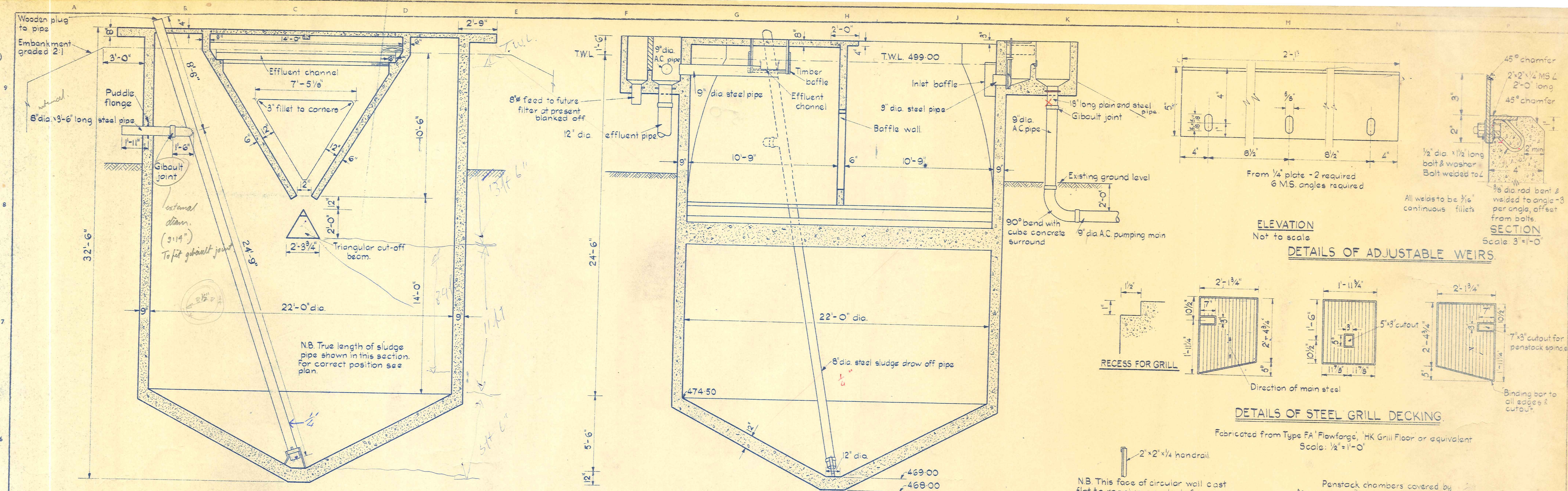
N.	Z.
MINISTRY OF WORKS	
C. W. O. TURNER	
B.Sc.(Eng.) M.E.	
M.C.E. (HON.)	
ENGINEER-IN-CHIEF	

ALEXANDRA BOROUGH
SEWAGE TREATMENT PLANT
SITE PLAN OF EASTERN & WESTERN PUMP STATIONS & FLOW RECORDER.

SCALE: 20 FT. = 1 IN. FILE: 50/901
P.W.D. 159795
SHEET No. 12 OF 19 SHEETS
ISSUE

M

(Revised 1/57)

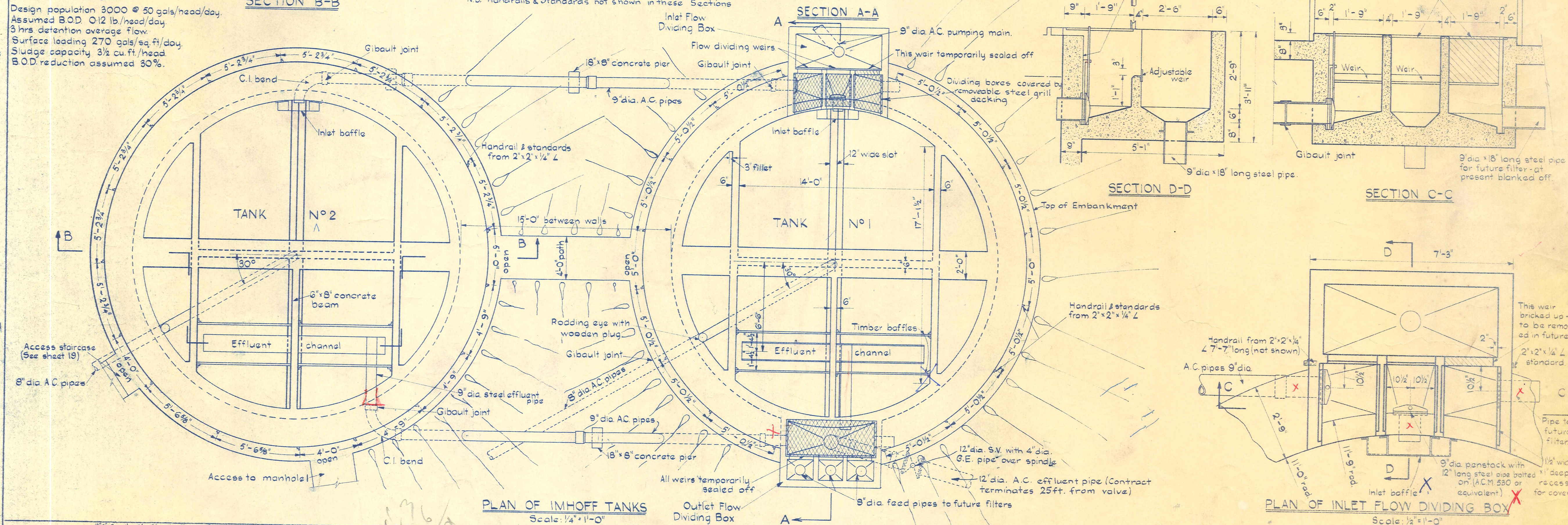


Design Data
Design population 3000 @ 50 gals/head/day.
Assumed BOD 0.12 lb./head/day.
3 hrs detention average flow.
Surface loading 270 gals/sq.ft./day.
Sludge capacity 3 1/2 cu.ft./head.
BOD reduction assumed 30%.

SECTION B-B

N.B. Handrails & Standards not shown in these Sections

SECTION A-A



GRAPHIC SCALE: 1" = 10'-0"

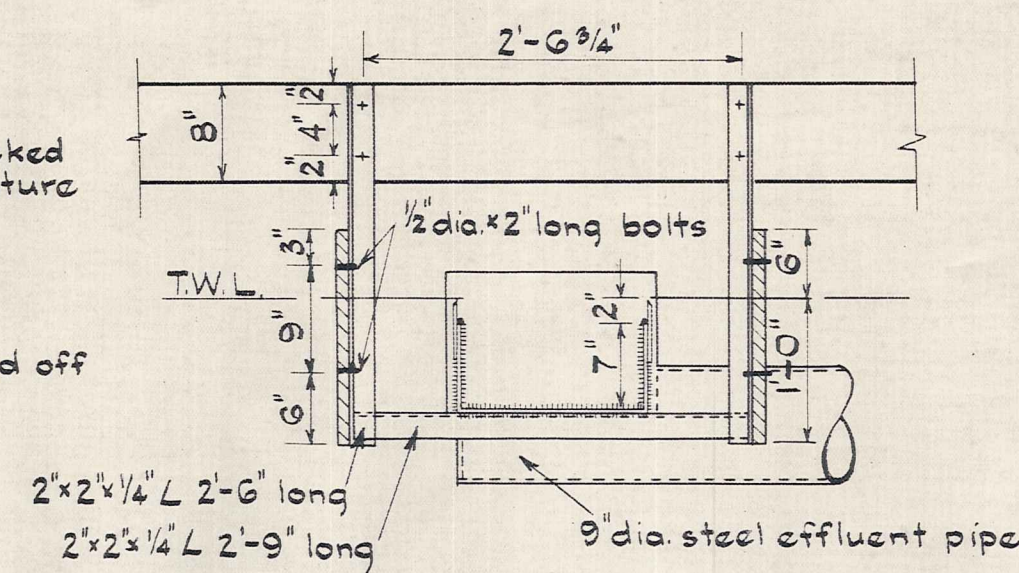
Drawn	P. Taylor	6/59
Checked	A. H. Crawford	9/59
Designed	A. H. Crawford	5/59
Design Checked	P. Taylor	6/59
Supervised	J. H. Zito	10/59

Recommended: R. G. Lough
Date: 14/10/59
Approved: B. W. S. Palmer
Chief Designing Engineer
Date: 15/10/59

N. Z.
MINISTRY OF WORKS
C. W. O. TURNER
B.Sc.(Eng), M.E.
M.C.E., M.N.Z.E.
ENGINEER-IN-CHIEF

ALEXANDRA BOROUGH
SEWAGE TREATMENT PLANT
GENERAL ARRANGEMENT OF IMHOFF TANKS

SCALE: As shown
FILE: 50/901
P.W.D. 159795
SHEET No. 13 OF 19 SHEETS
ISSUE



SECTION C-C

Scale: $\frac{1}{2}$ in. = 1 ft.

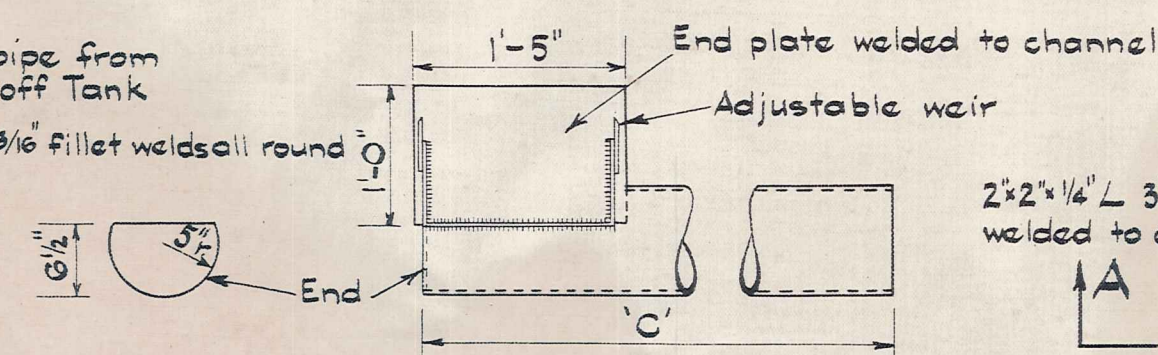
Scale: $\frac{1}{2}$ in. = 1 ft.

SECTION B-B

Scale: $\frac{3}{4}$ in. = 1 ft

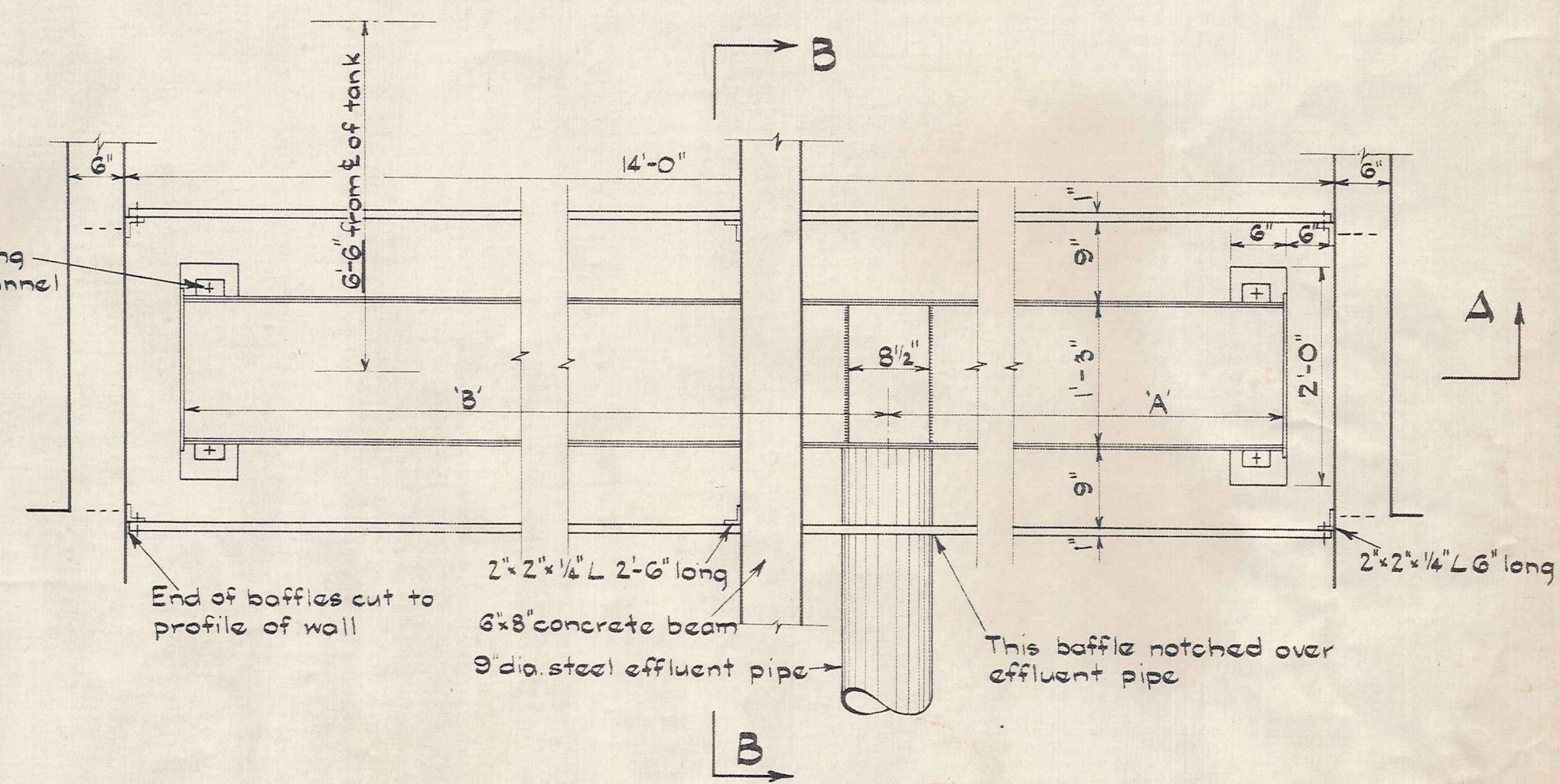
SECTION A-A

Scale: $\frac{3}{4}$ in. = 1 ft.



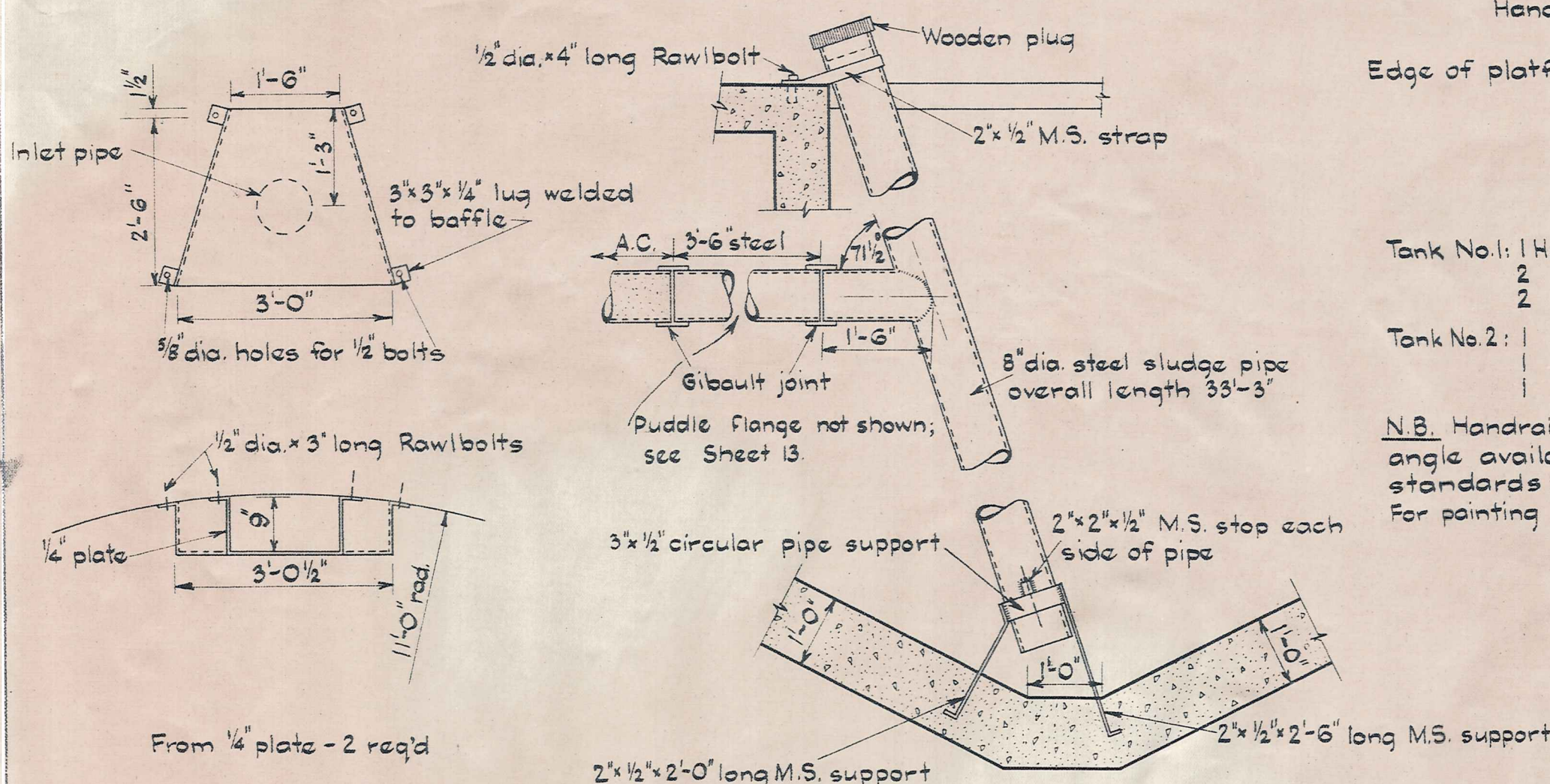
STEEL EFFLUENT PIPE

Scale: $\frac{3}{4}$ in. = 1 ft



PLAN OF EFFLUENT CHANNEL

Scale: $\frac{3}{4}$ in. = 1 ft.

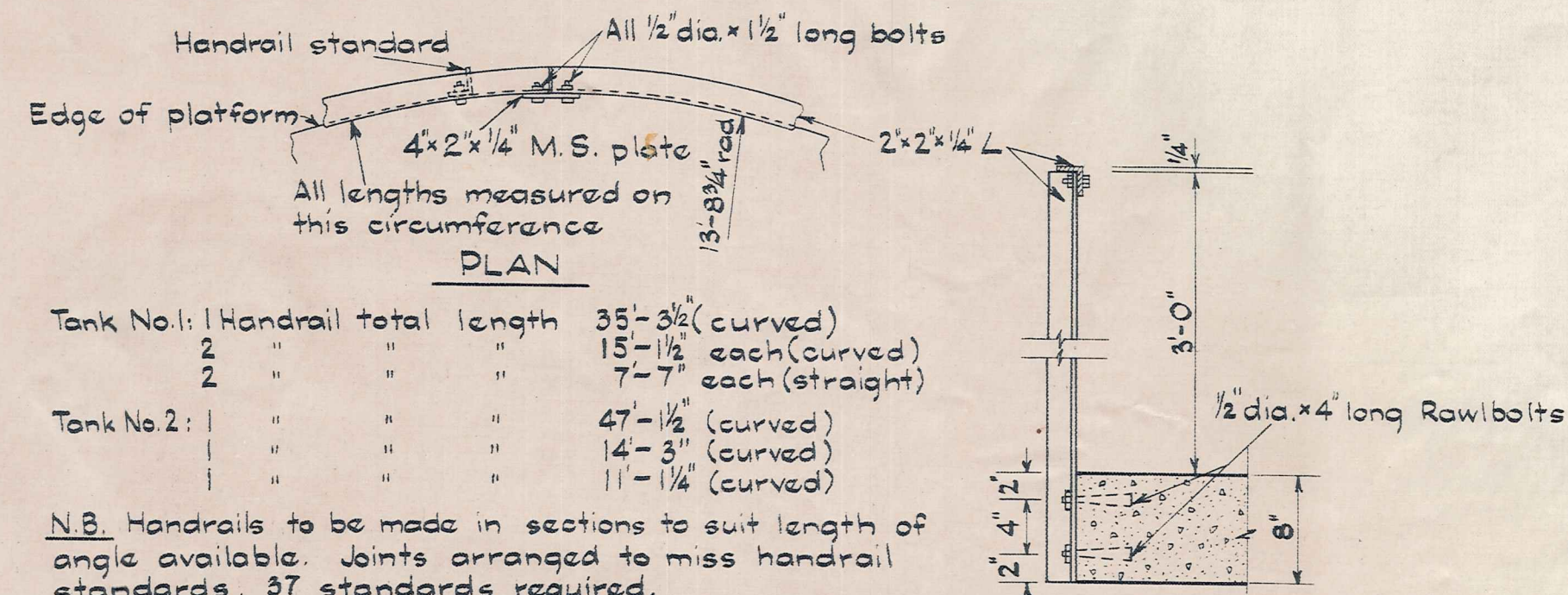


INLET BAFFLE

Scale: $\frac{1}{2}$ in = 1 ft.

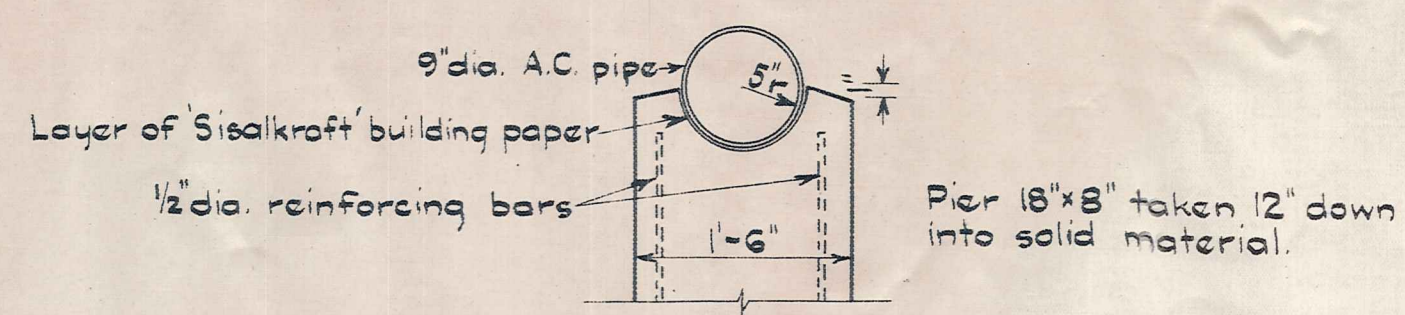
SLUDGE PIPE DETAILS

Scale: $\frac{1}{2}$ in = 1 ft



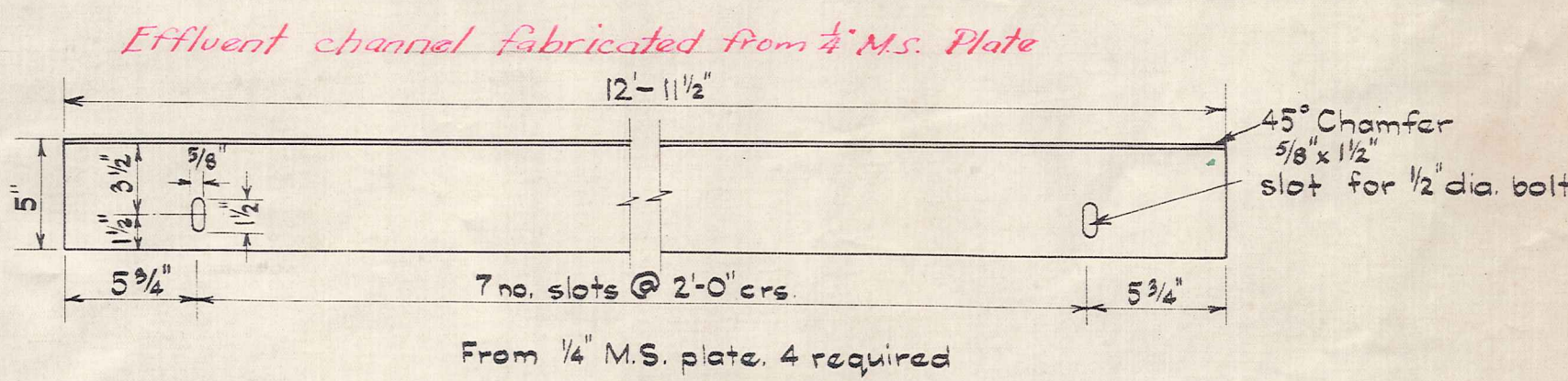
HANDRAIL DETAILS

Scale: 1 in = 1 ft



PIER DETAILS

Scale: $\frac{3}{4}$ in = 1 ft



ADJUSTABLE WEIR

Scale : $1\frac{1}{2}$ in. = 1 ft.

N.3 All welds to be $\frac{3}{16}$ " continuous fillet welds completely sealed.
For design data see Sheet 13.

AS BUILT

CERTIFIED BY W. B. [Signature]
DESIGNATION ASST EN
DATE 1/6/62

Drawn	P Taylor	6/5
Traced	K W Graham	8/5
Checked	A W Crawford	9/5
Designed	Officer	5/5
Design Checked	P Taylor	6/5
Supervised	S. Dait	10/5

Recommended : *[Signature]*
Date : 14 / 10 / 59

Approved : *[Signature]*
Chief Designing Engineer

Date : 15 / 10 / 59

N.  Z.

MINISTRY OF
WORKS

C. W. O. TURNER
B.Sc.(ENG.) M.E.,
M.I.C.E., M.N.Z.I.E.,
ENGINEER-IN-CHIEF.

ALEXANDRA BOROUGH
SEWAGE TREATMENT PLANT
MISCELLANEOUS DETAILS OF IMHOFF TANK

SCALE: As Shown	FILE: 50/901
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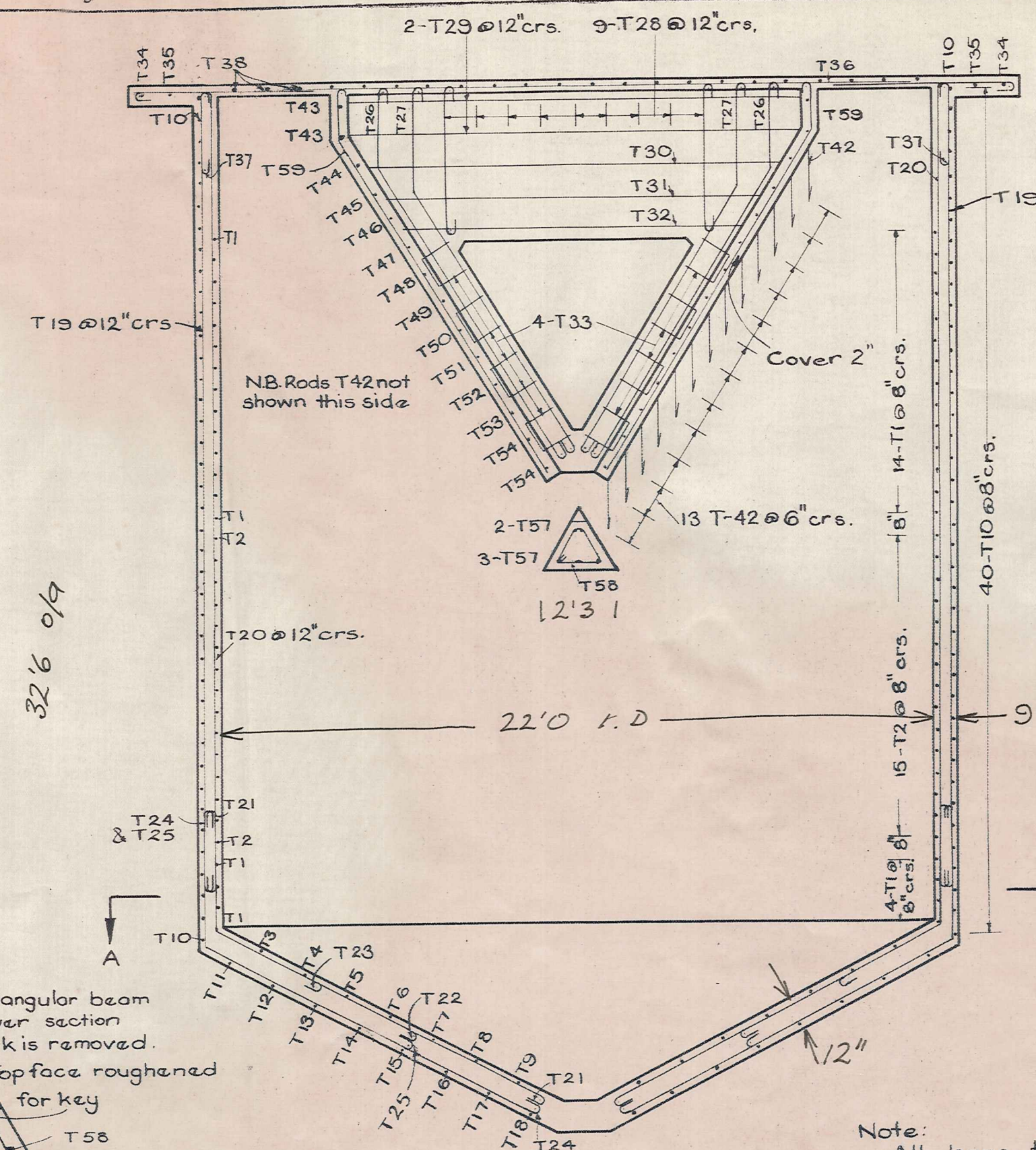
P.W.D. 159795

SHEET No. 14 OF 19 SHEET

ISSUE

M

(Revised 1/57)

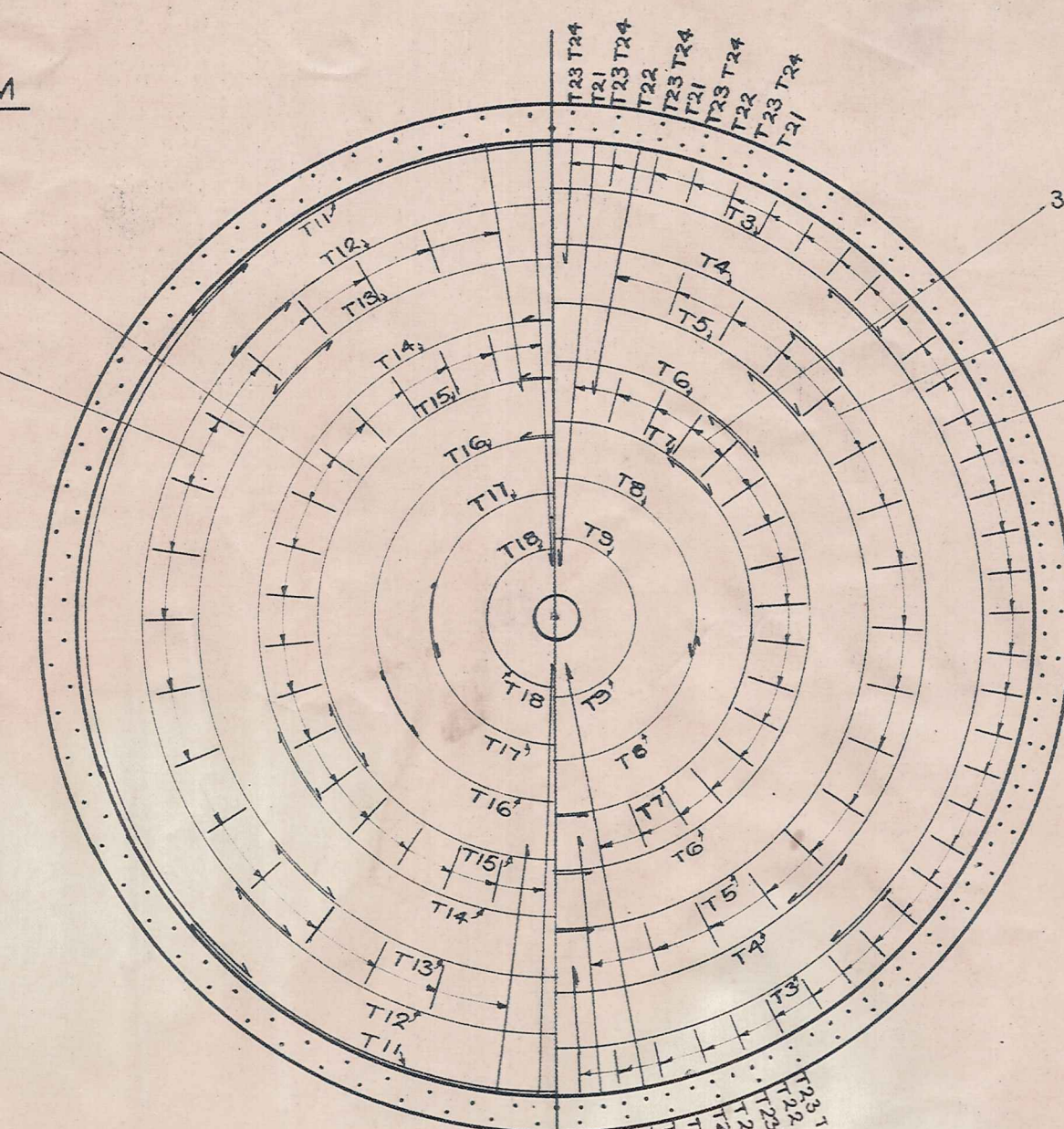


DETAIL OF CUT-OFF BEAM

Scale: 3/4" = 1'-0"

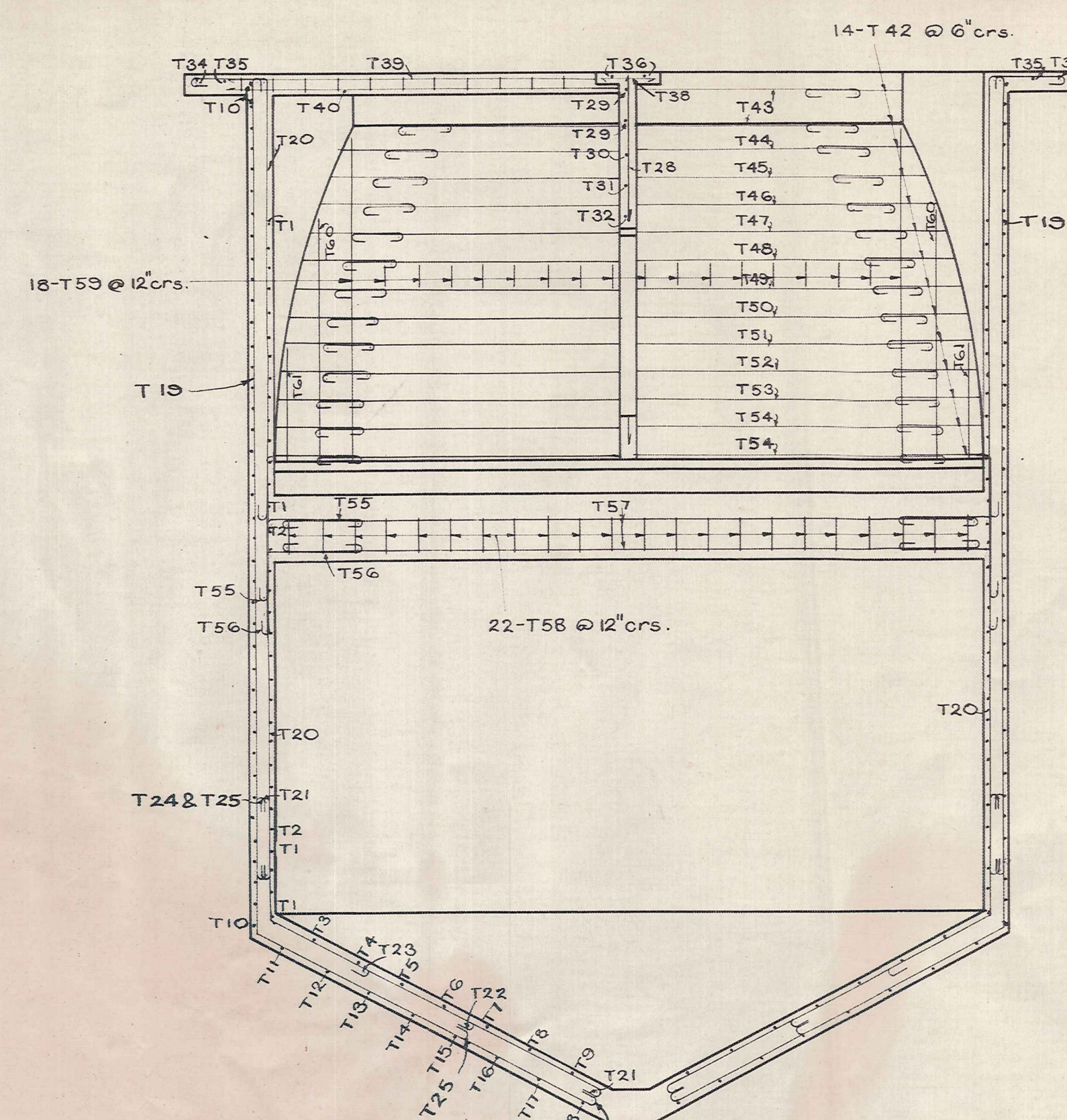
35-T24 @ 2'-0" c/s.

35-T25 @ 2'-0" c/s.

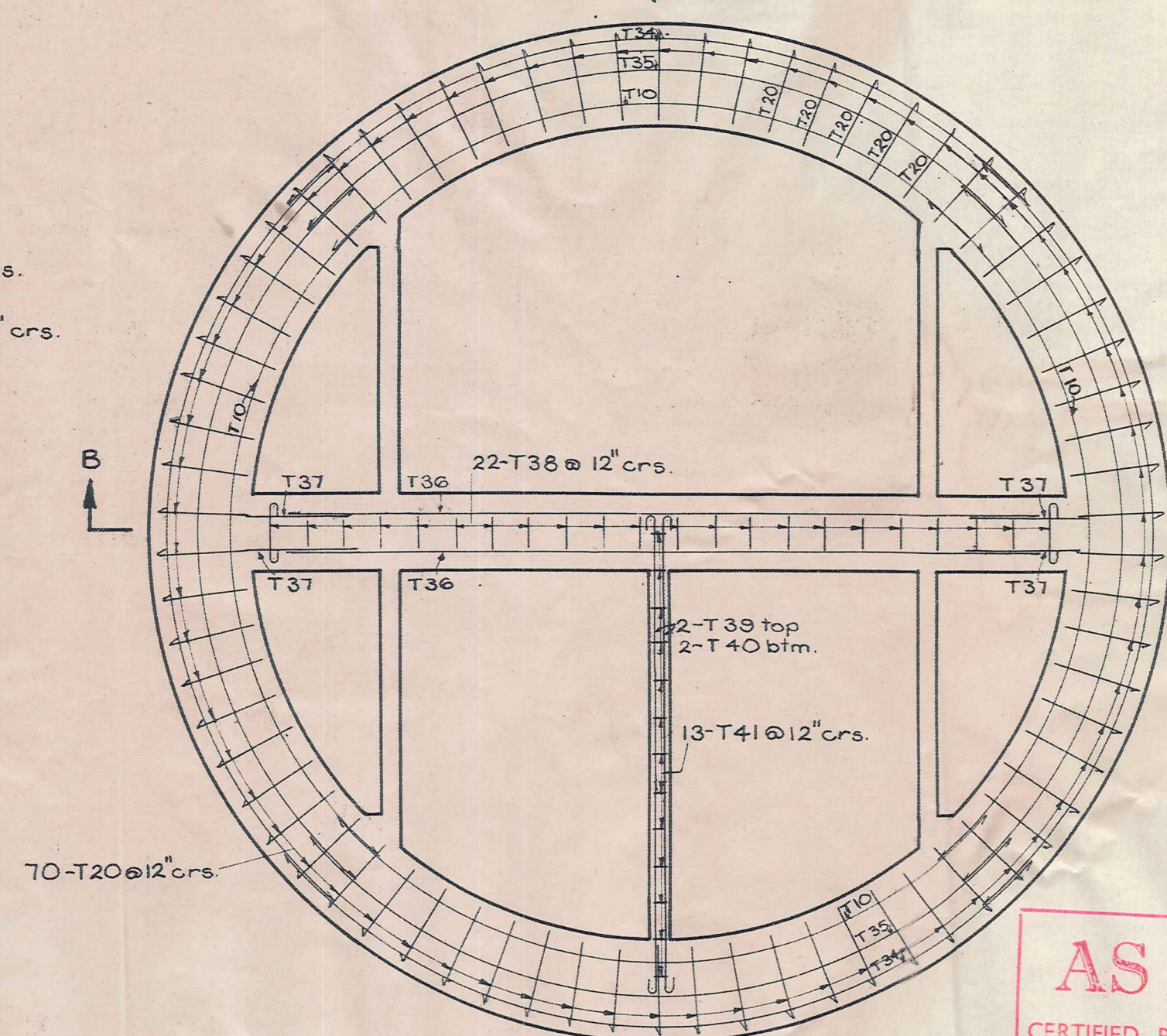
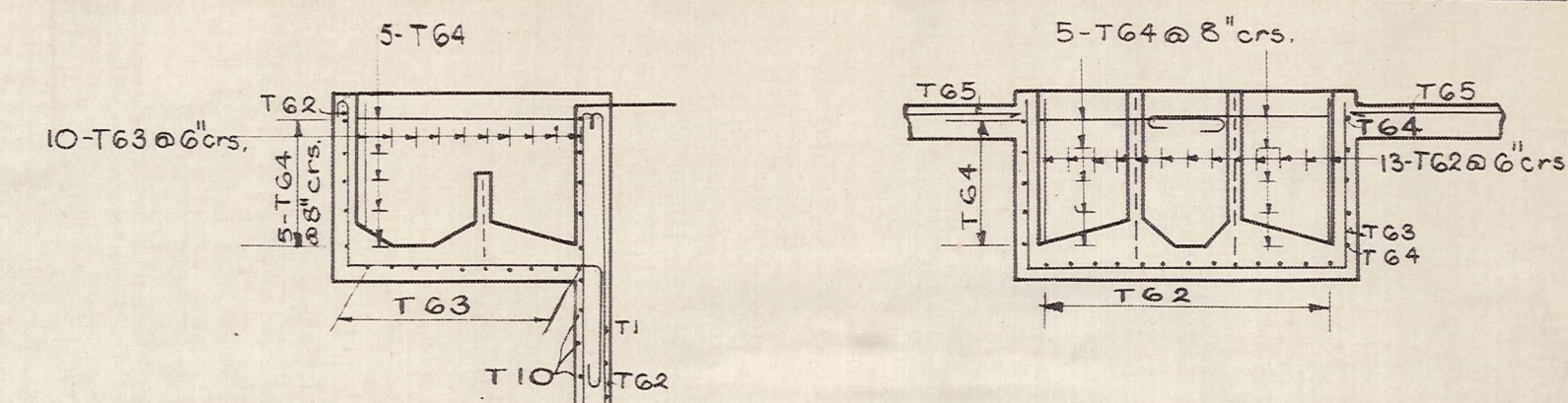


HALF SECTION LOWER FACE HALF SECTION UPPER FACE

SECTION A-A



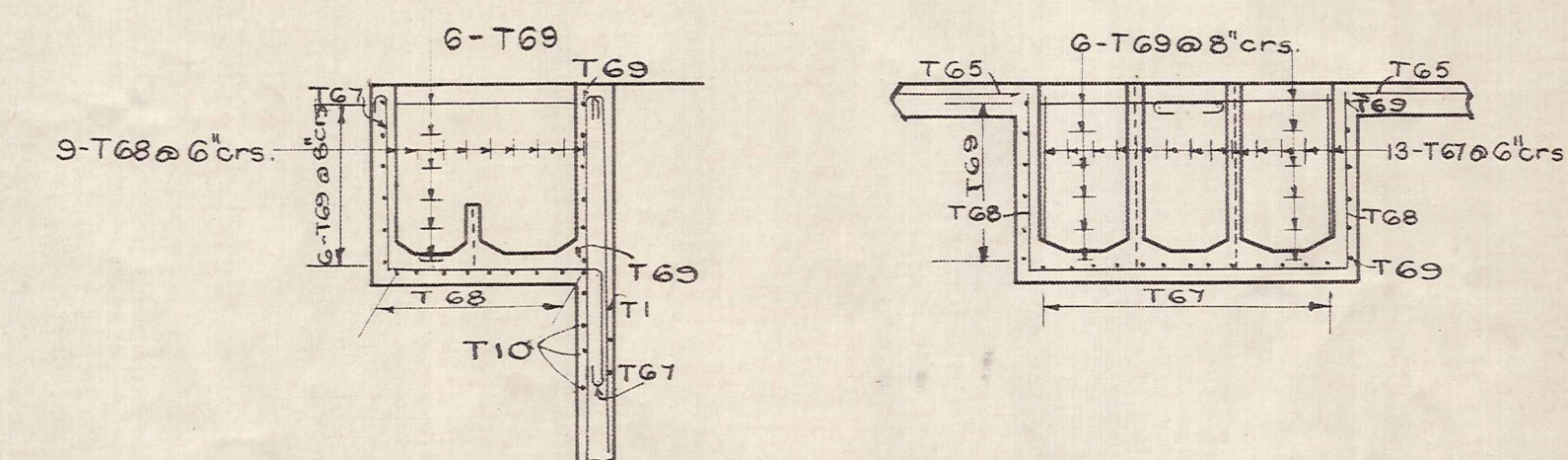
SECTION C-C

PLAN IMHOFF TANK No. 2
SHOWING STEEL IN WALKWAYS & BEAMS

SECTION D-D

INLET DIVIDING BOX

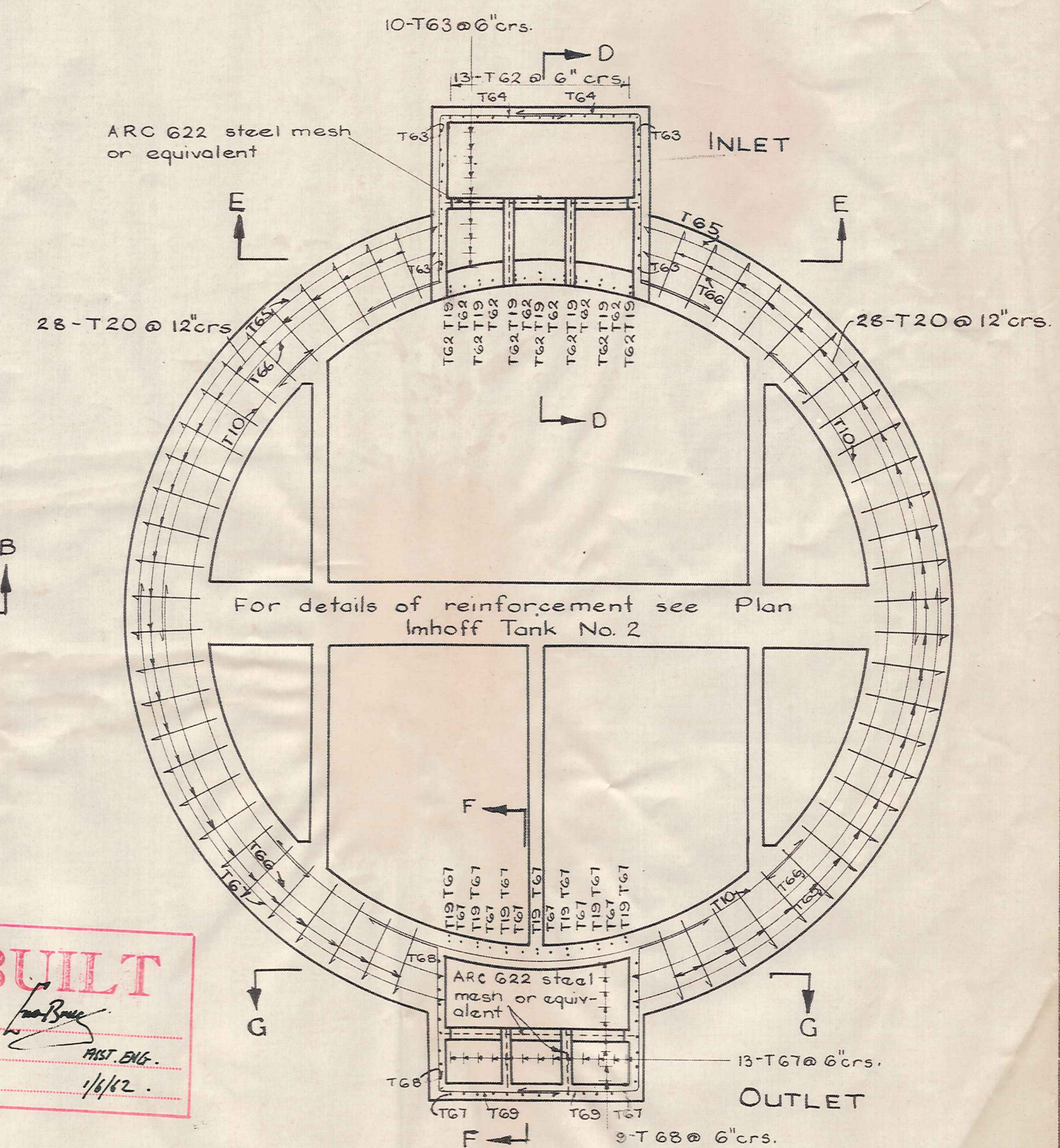
SECTION E-E



SECTION F-F

OUTLET DIVIDING BOX

SECTION G-G



PLAN IMHOFF TANK No. 1.

AS BUILT

CERTIFIED BY
DESIGNATION
DATE

1/4/52

GRAPHIC SCALE: 1/4" = 1'-0"

Amendments	By	Appd.	Date
○			
○			
○			

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

Amendments	By	Appd.	Date
○			
○			
○			

Drawn	B. Taylor	7/57
Traced	M. J. Clark	2/58
Checked	A. H. Crawford	9/59
Designed	D. K. Brady	6/59
Design Checked	B. Burt	6/59
Supervised	J. Burt	10/59

Recommended	B. Burt	1/4/52
Approved	B. Burt	1/4/52
Chief Designing Engineer		
Date	1/4/52	

N. Z.	MINISTRY OF WORKS
C. W. O. TURNER	ENGINEER-IN-CHIEF

ALEXANDRA BOROUGH SEWAGE
TREATMENT PLANT
REINF. DETAILS OF IMHOFF TANKS.

SCALE: 1/4" = 1'-0"	FILE: 50/901
P.W.D. 159795	
SHEET No. 15 OF 19 SHEETS	
ISSUE	

ROD	DIA.	NO.	LENGTH	BENDING DIAGRAM	NOTES
T 1	5/8"	144	20'-9"		4 bars per circuit
T 2	7/8"	120	22'-0"		4 "
T 3	1/2"	8	18'-0"		4 "
T 4	"	8	16'-0"		4 "
T 5	"	6	17'-6"		3 "
T 6	"	6	14'-9"		3 "
T 7	"	6	12'-0"		3 "
T 8	"	4	12'-9"		2 "
T 9	"	2	14'-6"		
T 10	"	320	20'-9"		4 bars per circuit
T 11	"	8	19'-6"		4 "
T 12	"	8	17'-6"		4 "
T 13	"	8	16'-0"		4 "
T 14	"	6	16'-9"		3 "
T 15	"	6	14'-0"		3 "
T 16	"	6	11'-3"		3 "
T 17	"	4	11'-6"		2 "
T 18	"	2	12'-0"		
T 19	"	154	25'-9"	Straight - 2 hooks	
T 20	"	126	28'-0"		
T 21	"	70	16'-0"		
T 22	"	70	11'-6"		
T 23	"	140	8'-3"		
T 24	"	70	16'-6"		
T 25	"	70	12'-0"		
T 26	"	4	14'-0"		
T 27	"	4	13'-6"		
T 28	"	18	5'-6"		
T 29	"	4	17'-6"	Straight - 2 hooks	
T 30	"	2	16'-3"		
T 31	"	2	15'-0"		
T 32	"	2	13'-9"		
T 33	3/8"	16	2'-10 1/2"		
T 34	1/2"	4	23'-3"		
T 35	"	4	22'-0"		
T 36	"	4	20'-6"		
T 37	"	8	6'-6"		
T 38	3/8"	44	2'-3"	Straight - 2 hooks	
T 39	1/2"	4	13'-9"	"	
T 40	"	4	12'-3"	Straight - 1 hook	
T 41	8g.	26	1'-6"		Internal dims. shown
T 42	1/2"	112	6'-0"		
T 43	"	8	15'-0"	Straight - 2 hooks	
T 44	"	4	15'-9"	"	
T 45	"	4	16'-9"	"	
T 46	"	4	17'-3"	"	
T 47	"	4	18'-3"	"	

Alexandra
B1213

ROD	DIA.	NO.	LENGTH	BENDING DIAGRAM	NOTES
T 48	1/2"	4	18'-6"	Straight - 2 hooks	
T 49	"	4	19'-0"	"	
T 50	"	4	19'-3"	"	
T 51	"	4	19'-9"	"	
T 52	"	4	20'-0"	"	
T 53	"	4	20'-3"	"	
T 54	"	8	20'-3"	"	
T 55	3/4"	8	6'-6"		
T 56	"	8	6'-6"		
T 57	"	10	22'-9"	Straight - 2 hooks	
T 58	3/8"	44	5'-0"		Internal dims. shown
T 59	1/2"	72	14'-0"		
T 60	"	8	9'-3"	Straight - 1 hook	
T 61	"	8	4'-6"	"	

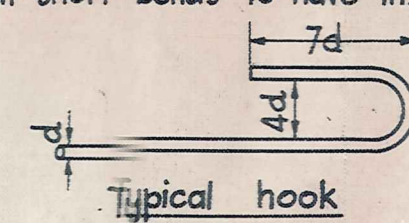
Bars T1-T61 required in both Tanks; Bars T62-T69 required only in Tank No. 1.

T 62	1/2"	13	12'-0"		
T 63	"	10	13'-4"		
T 64	"	10	12'-9"		
T 65	"	4	18'-6"		
T 66	"	4	17'-3"		
T 67	"	13	11'-3"		
T 68	"	9	13'-10"		
T 69	"	12	12'-0"		

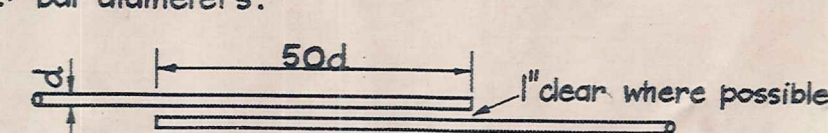
Steel reinforcing mesh weight 8.64 lb/sq. yd. (ARC 622 or equivalent) - 48 sq. ft. total

NOTES

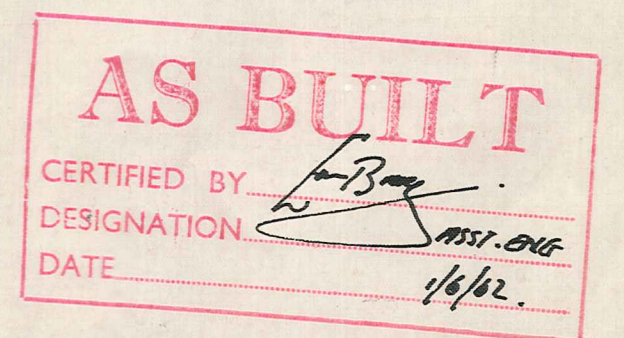
Reinforcement schedule prepared on use of plain round M.S. bars.
Radial dimensions of curved bars measured to inner face of bar.
Except for T41 & T58, bars dimensioned outside to outside.
All short bends to have inside radius of 2x bar diameters.



Typical hook



Typical lap
40d lap for hooked rods

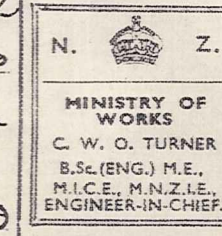


GRAPHIC SCALE:

Amendments	By	Appr.	Date	Amendments	By	Appr.	Date	Amendments	By	Appr.	Date
○				○				○			
○				○				○			
○				○				○			
○				○				○			

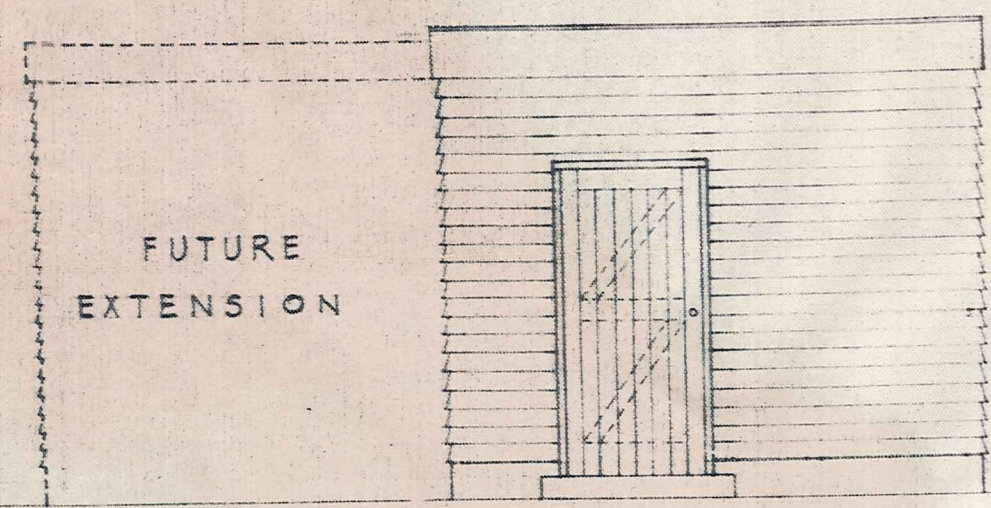
Drawn	P. Taylor	6/59
Traced	P. Taylor	8/59
Checked	A. K. Crawford	9/59
Designed	D. K. Brady	6-59
Design Checked	L. Burt	6/59
Supervised	J. B. 2015	10/59

Recommended	R. B. Long	Date: 12/10/59
Approved	B. S. Brown	Chief Designing Engineer
Date	15/10/59	

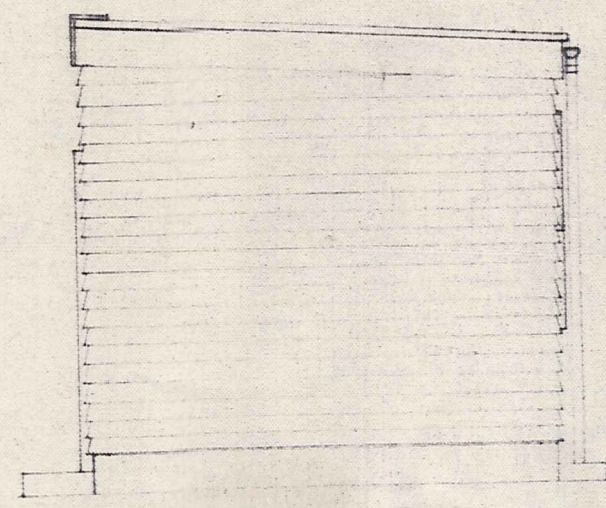


ALEXANDRA BOROUGH
SEWAGE TREATMENT PLANT.
REINFORCEMENT SCHEDULE - IMHOFF TANKS.

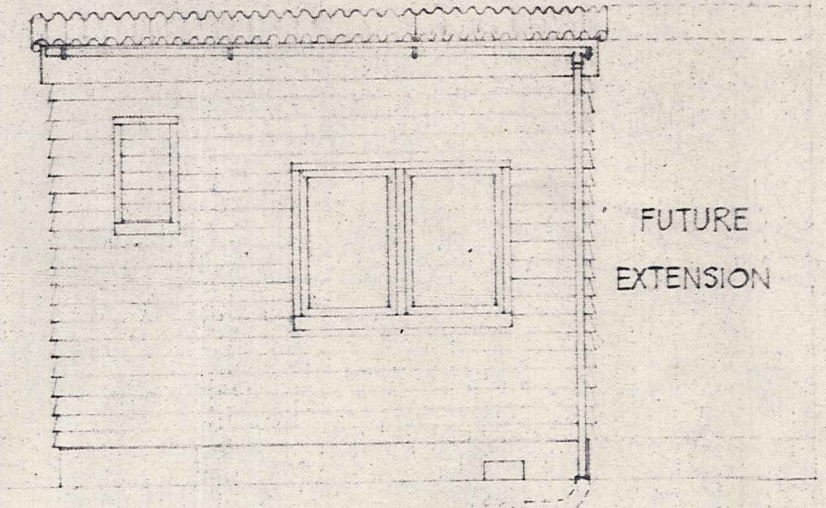
SCALE: NOT TO SCALE	FILE: 50/901
P.W.D. 159795	
SHEET No. 16 OF 19 SHEETS	
ISSUE	



FRONT ELEVATION



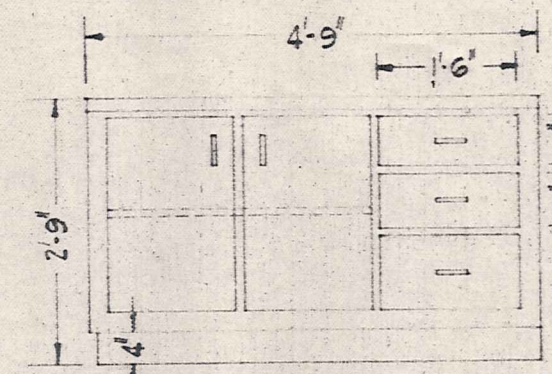
SIDE ELEVATION



REAR ELEVATION

REINFORCEMENT SCHEDULE					
Rod	Dia	Length	No	Remarks	
a1	1/2"	10' 9"	4	straight	Foundation wall
a2	1/2"	9' 6"	4	straight	"

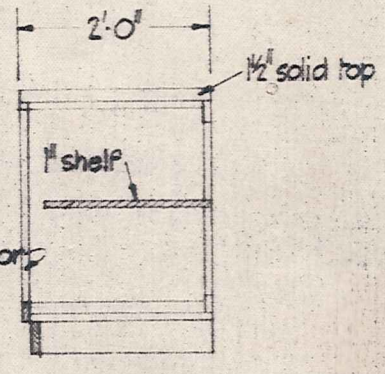
HRC 666 or equivalent 3.53 lb/sq yd steel mesh reinforcement in floor. Quantity 106 sq. ft. (nett area)
Minimum lap 1 1/2 x mesh



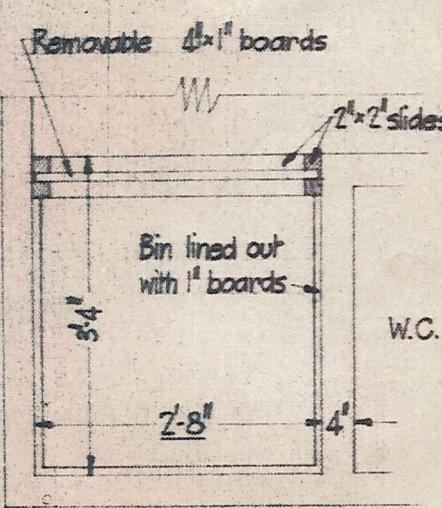
ELEVATION

WORK BENCH

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



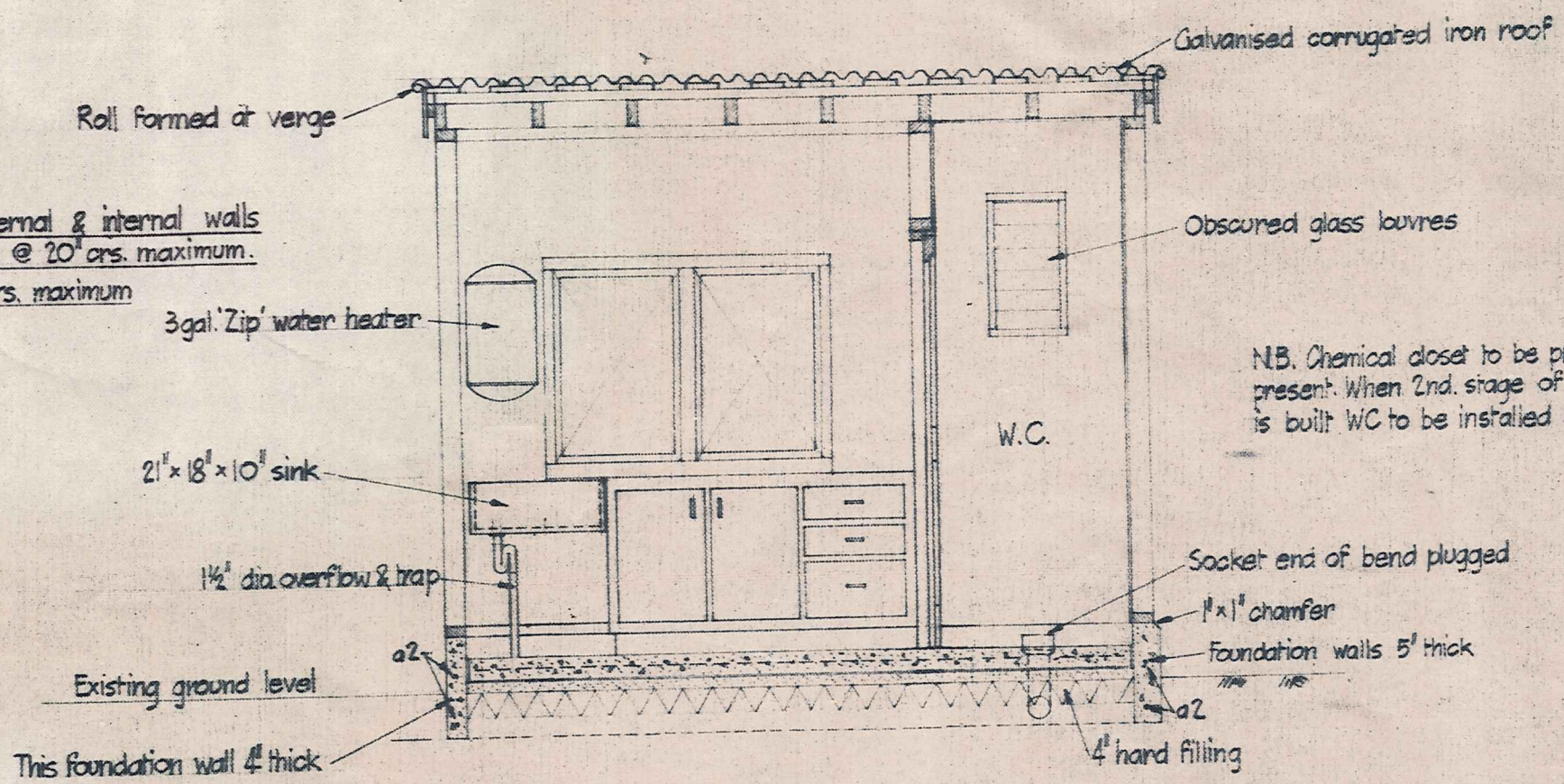
SECTION



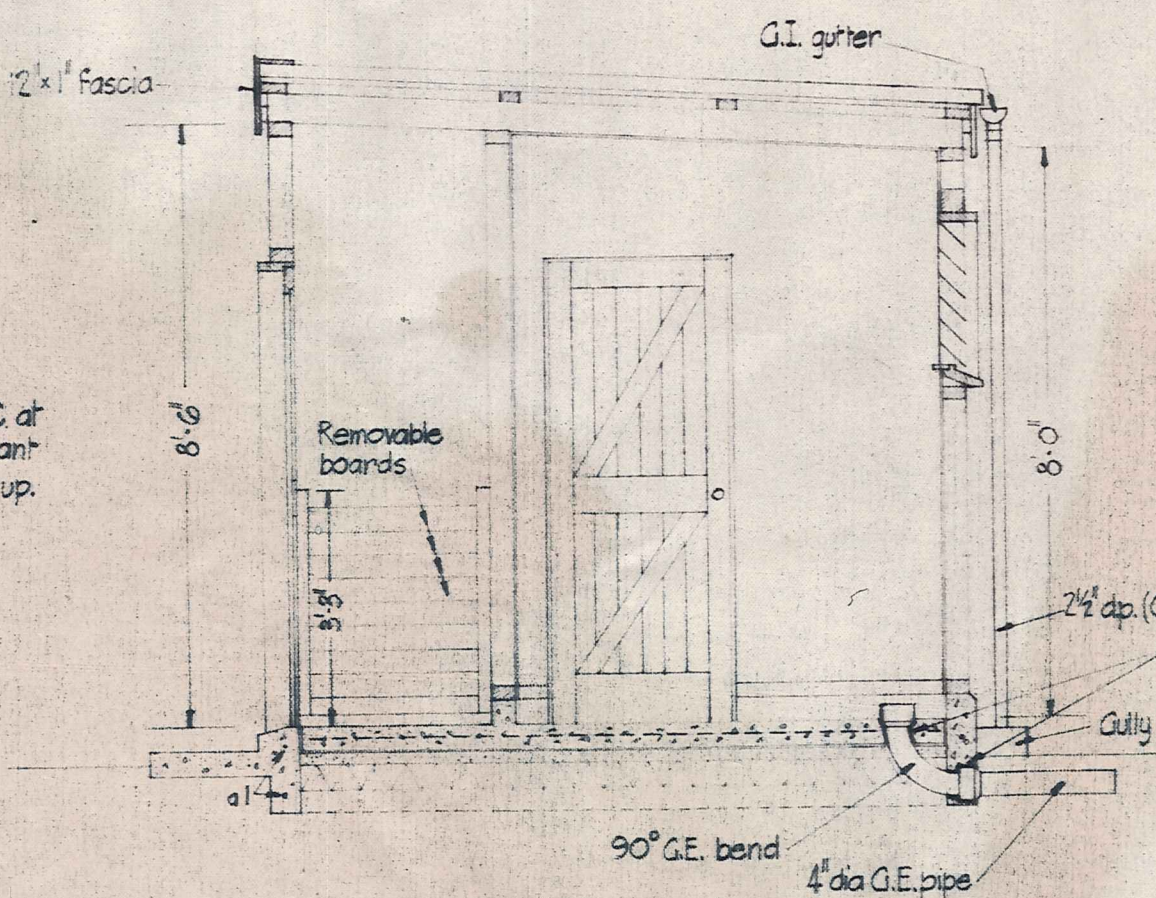
LIME BIN

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

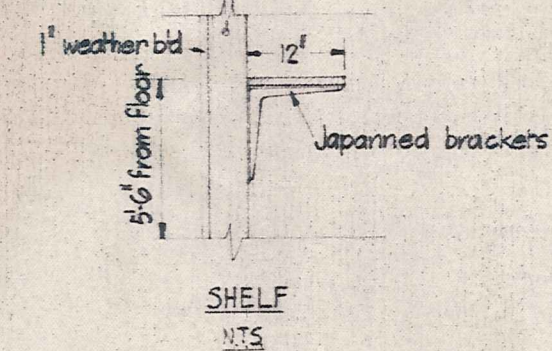
N.B. All studs in external & internal walls to be 4x2 members @ 20' crs. maximum.
Rafters 5x2 @ 20' crs. maximum



SECTION A-A

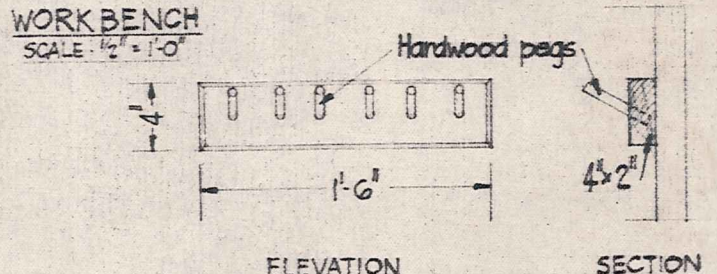


SECTION B-B



SHELF

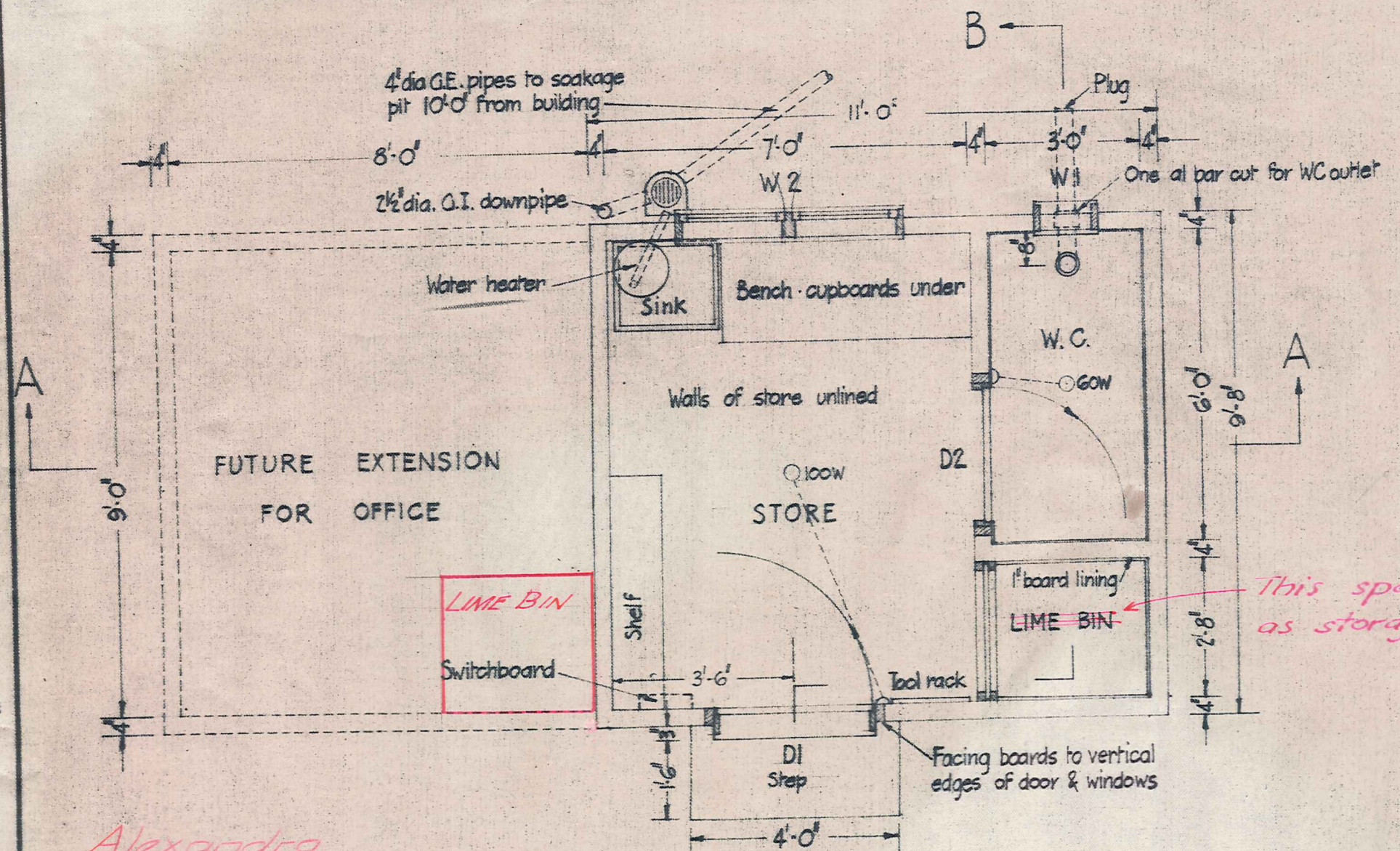
NTS



ELEVATION

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

JOINERY DETAILS

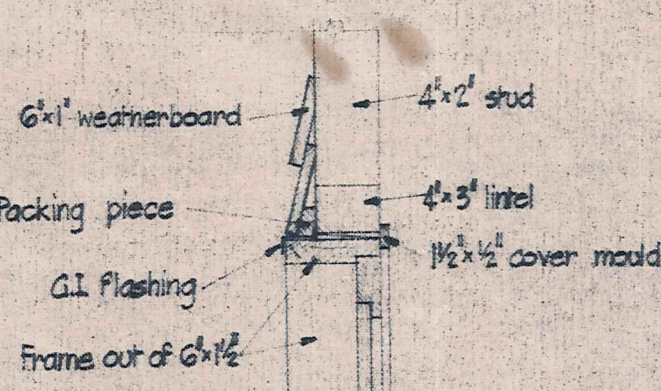


PLAN

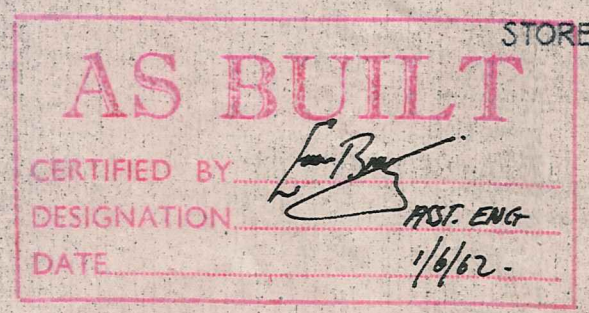
SCALE: 3/8" = 1'-0"

ORIGINAL SCALE OF INCHES

This space is used as storage space



SECTION DOOR D1



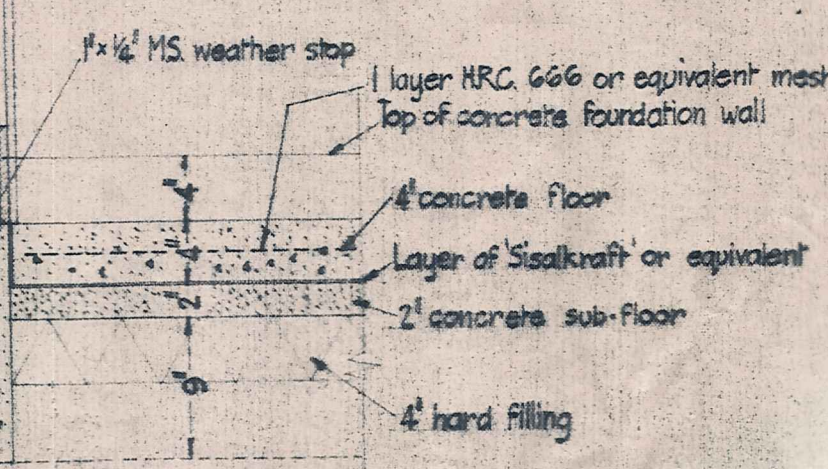
AS BUILT

CERTIFIED BY

DESIGNATION

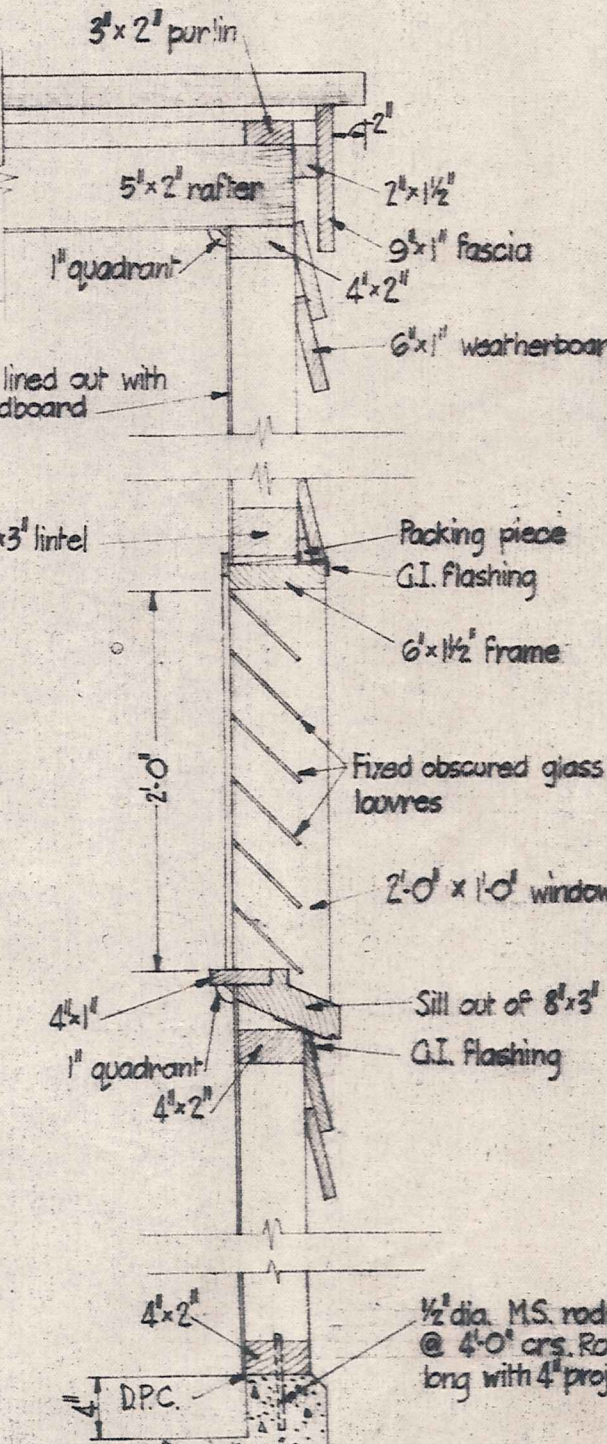
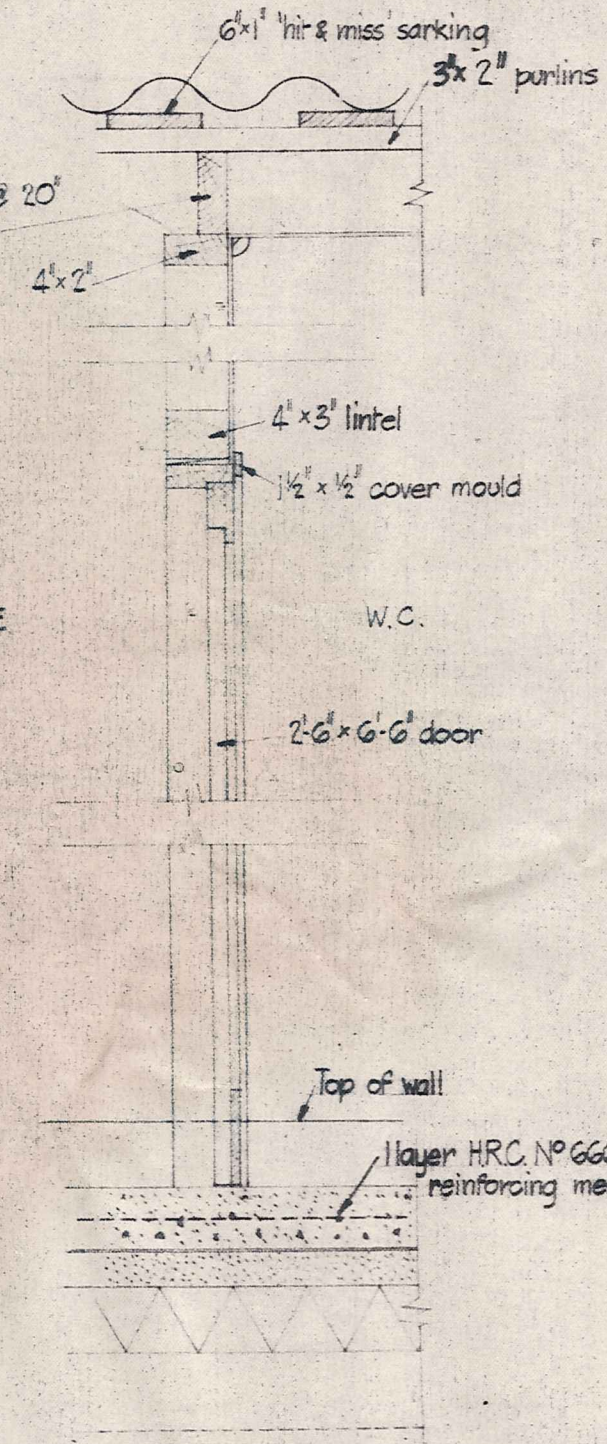
DATE

1/4/62

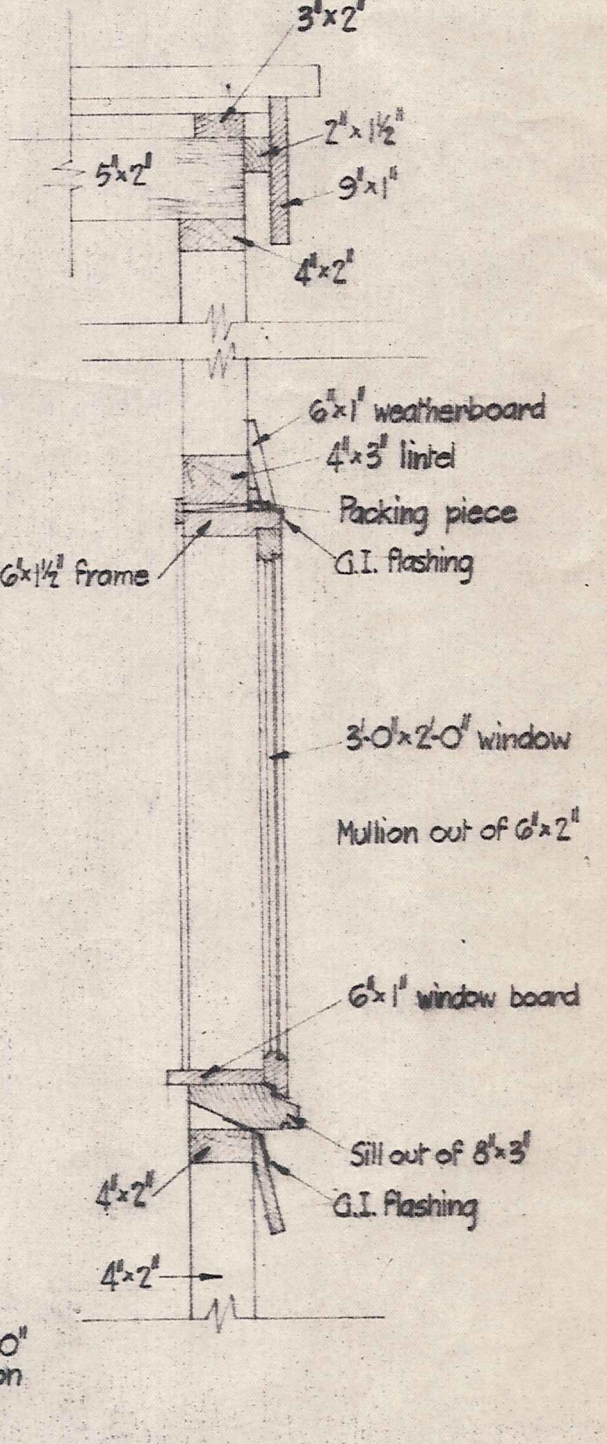


SECTION DOOR D2

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

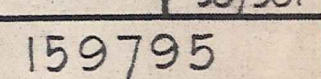
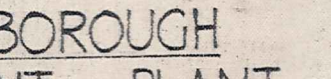
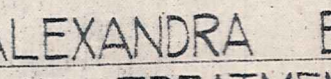
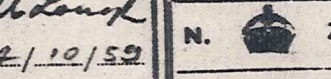
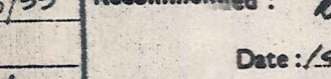
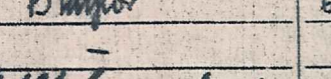
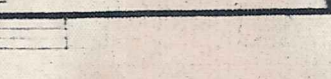


SECTION WINDOW W1



SECTION WINDOW W2

GRAPHIC SCALE:



SCALE: AS SHOWN

P.W.D. 159795

SHEET No. 17 OF 19 SHEETS

ISSUE

Tracing No. 9005

ALEXANDRA BOROUGH
SEWAGE TREATMENT PLANT
DETAILS OF OPERATOR'S BUILDING.

MINISTRY OF
WORKS
C. W. O. TURNER
S.E. (ENG.) M.E.
N.C.E. (N.Z.)
ENGINEER-IN-CHARGE

Recommended: *Adams*
Date: 14/10/59
Approved: *Bray*
Chief Designing Engineer
District Engineer
Date: 15/10/59

By *P. Taylor* 6/59
Checked *A. H. Crawford* 9/59
Designed *P. Taylor*
Supervised *J. S. Davis* 10/59

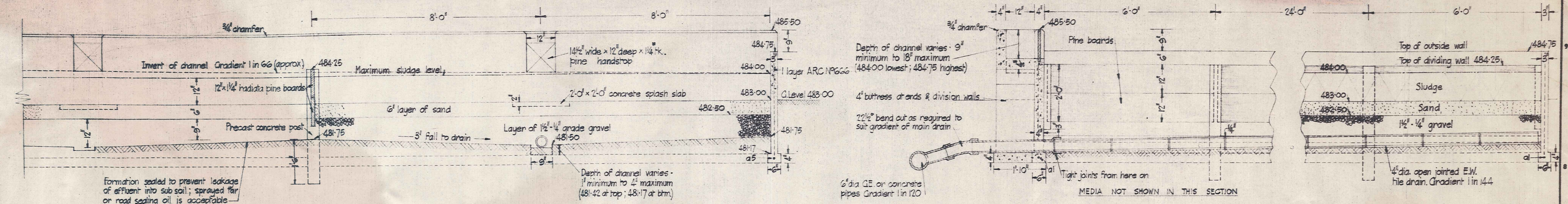
Amendments

Amendments

Amendments

Amendments

M
(Revised 1/57)



1 layer of ARC 666 mesh or approved equivalent placed centrally in all walls. Minimum lap 1 1/2 mesh. Net area 740 sq. ft. (wt. 3.53 lb/sq. yd.)

Rod	Dia	Length	Diagram	No	Remarks
a1	3/8"	22'-3"	straight - no hooks	18	Channel & long wall
a2	"	14'-8"	"	3	Channel wall
a3	"	7'-7"	"	2	"
a4	"	3'-3"	"	65	"
a5	"	20'-0"	straight	4	footing - outer walls
a6	"	7'-9"	"	15	Precast post

REINFORCEMENT SCHEDULE

Reinforcement detailed as plain round MS bars. All dimensions are out to out. All bends 2d inside radius.

DESIGN DATA
Total area 2300 sq. ft. Design population 3000 persons.
Surface area approx. 3 1/2 sq. ft. per person

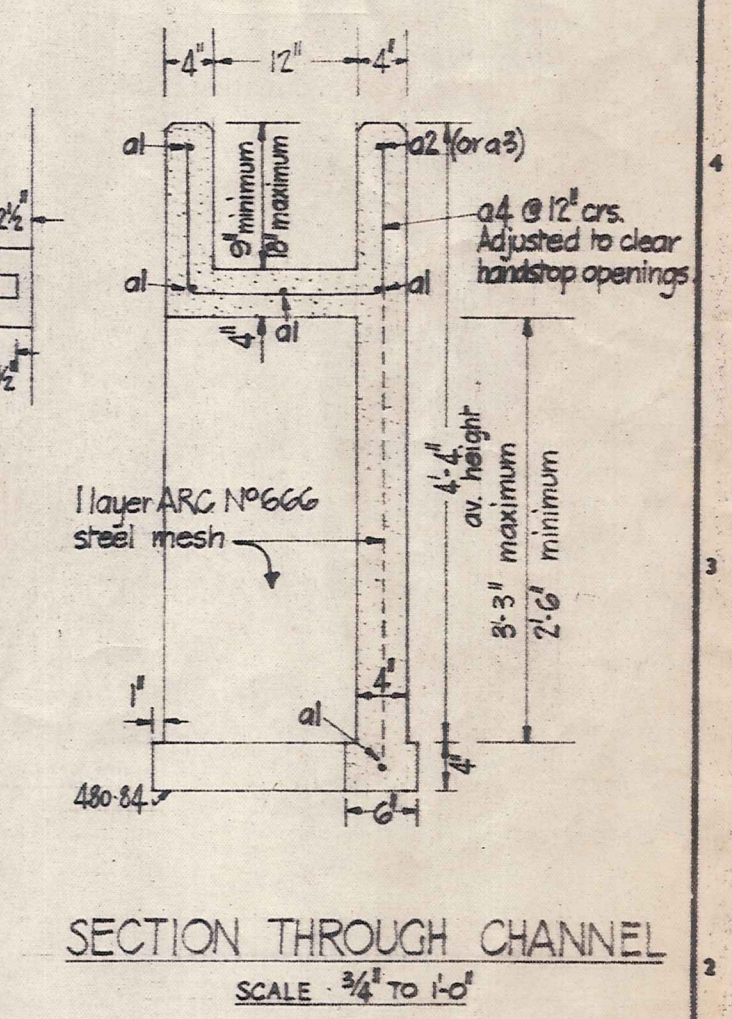
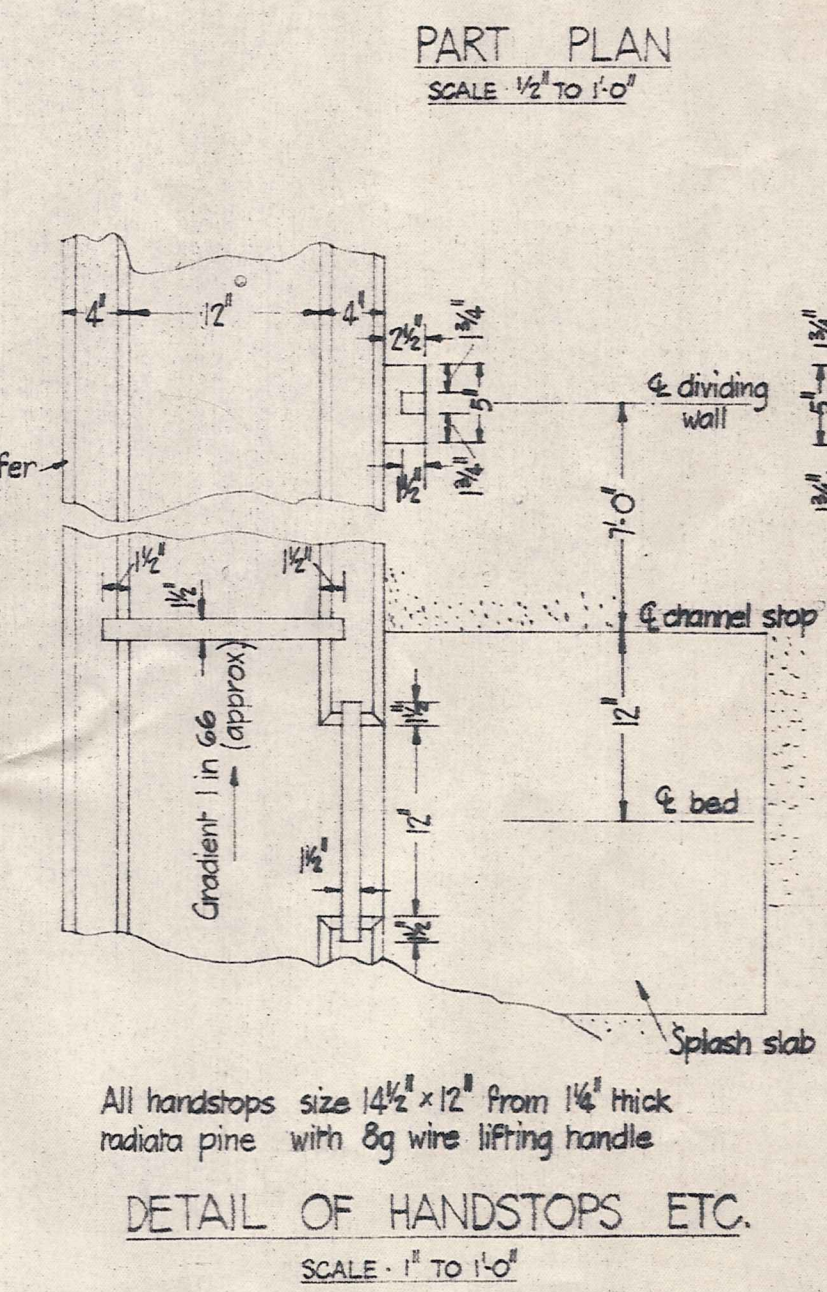
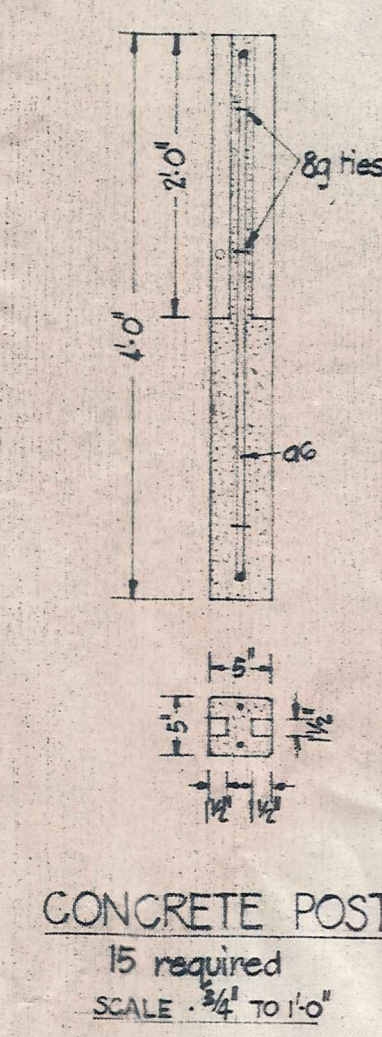
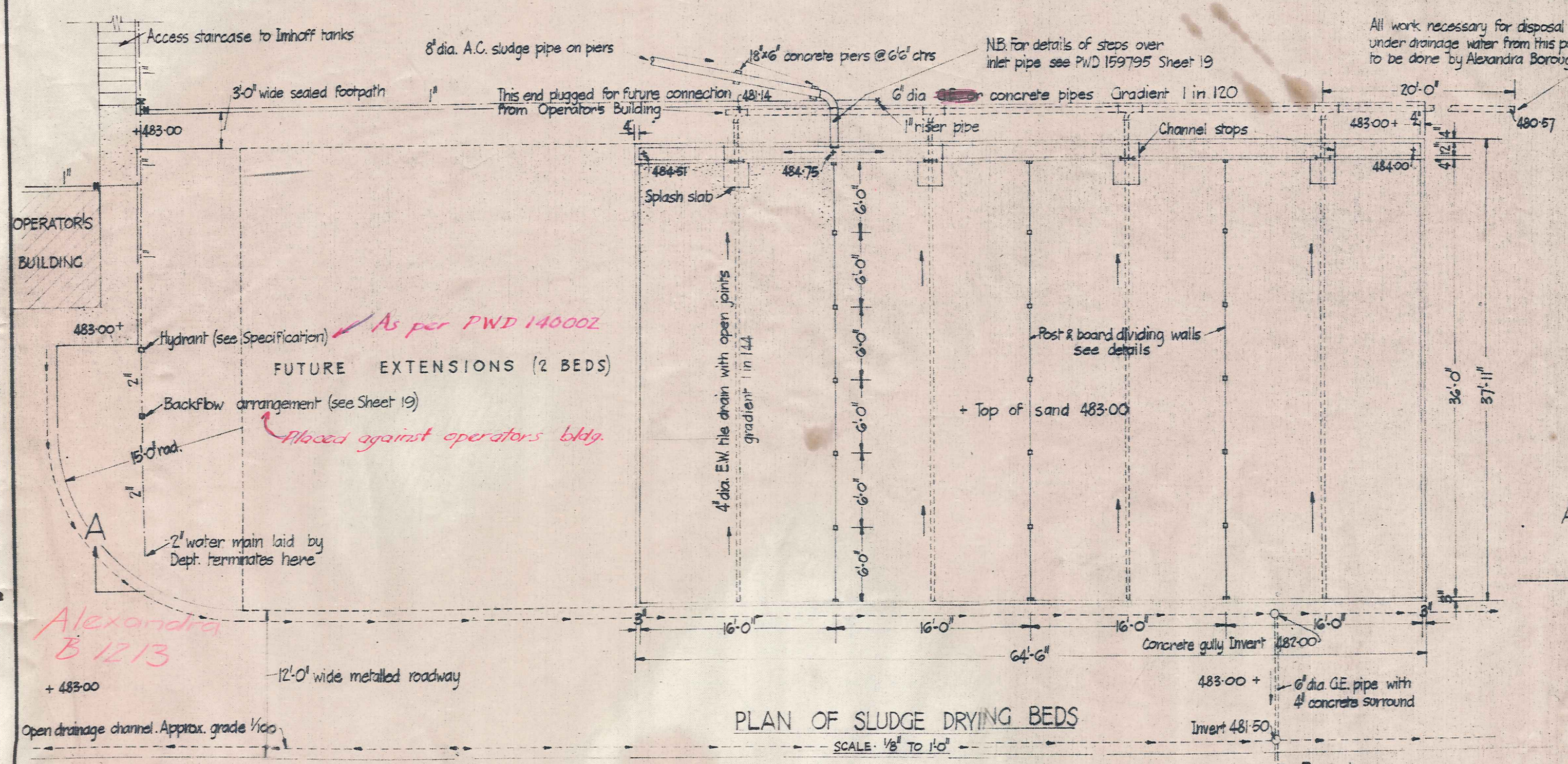
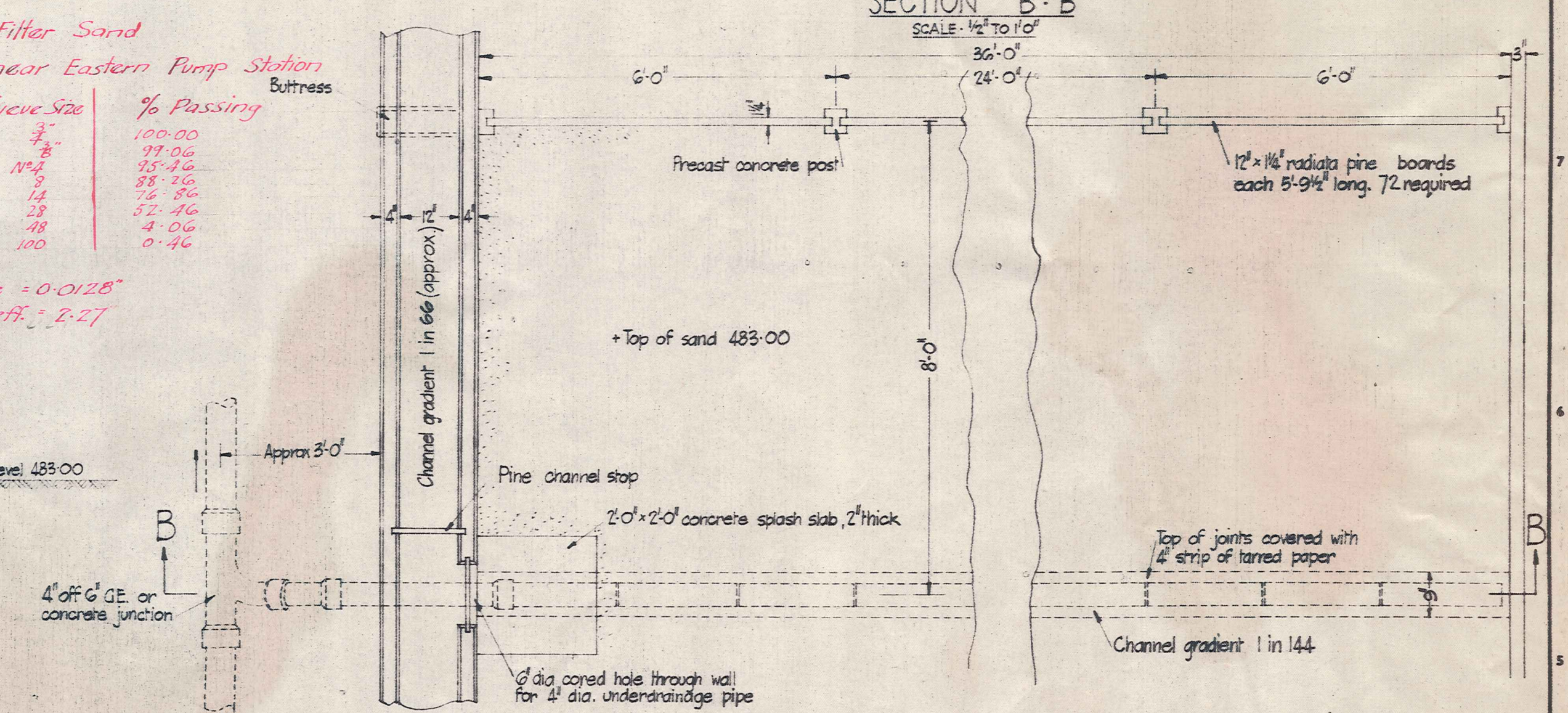
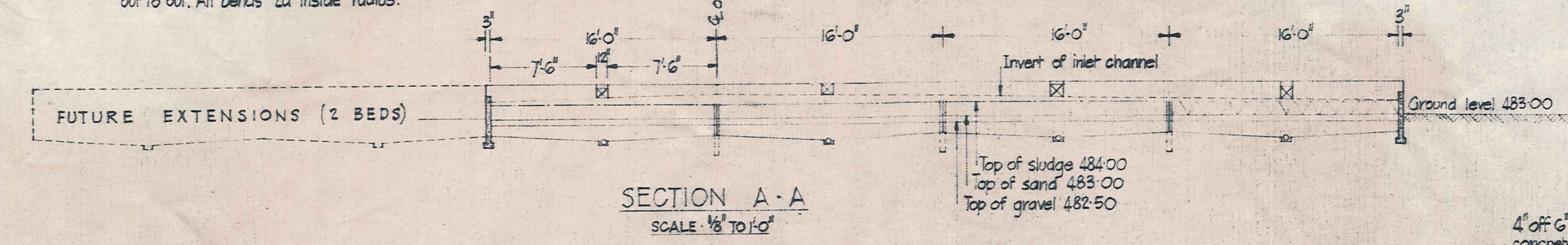
Gravel
Screened Material from Dredge Tailings.

Screen Size	% Pass
1/2"	100
3/8"	100
3/4"	100
1"	100
1 1/2"	100
2"	100
2 1/2"	100
3"	100
3 1/2"	100
4"	100
4 1/2"	100
5"	100

Filter Sand
Obtained from pit near Eastern Pump Station

Sieve Size	% Passing
3"	100.00
2 1/2"	99.06
2"	95.46
1 1/2"	88.46
1 1/4"	76.46
1 1/2"	52.46
1 1/4"	4.06
1"	0.46

Effective Size = 0.0128"
Uniformity Coeff. = 2.27



AS BUILT
CERTIFIED BY *Jan B...*
DESIGNATION *MSD BUC*
DATE *1/6/62*

534

GRAPHIC SCALE:				Amendments				By				Date			
0	1	2	3	0	1	2	3	0	1	2	3	0	1	2	3

Drawn	Checked	Designed	Supervised	Date
D. Taylor	H. M. Crawford	D. Taylor	J. S. Dace	1/5/59

Recommended: *H. B. Long*
Date: 1/4/10/59

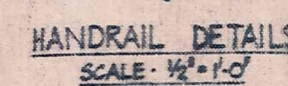
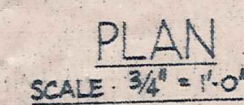
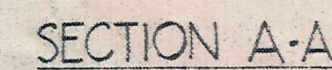
Approved: *B. S. ...*
Chief Designing Engineer
District Engineer
Date: 1/5/10/59

N. C. Z.
MINISTRY OF WORKS
C. W. O. TURNER
S.E. (SINCE) M.E.
M.C.E. M.A.S.T.
ENGINEER-IN-CHIEF

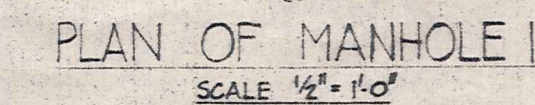
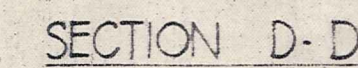
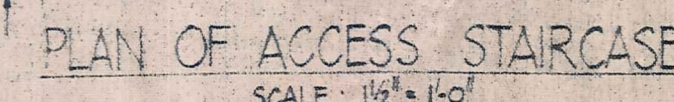
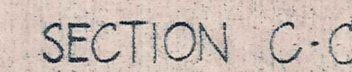
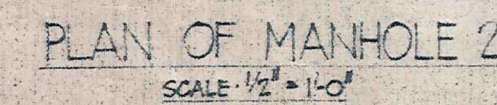
ALEXANDRA BOROUGH
SEWAGE TREATMENT PLANT
DETAILS OF SLUDGE DRYING BEDS.

SCALE: AS SHOWN
P.W.D. 159795
SHEET No. 18 OF 19 SHEETS
ISSUE

Tracing No. 9005



ORIGINAL SCALE OF INCHES



NB. At the Eastern & Western pump stations a similar arrangement on the 1" dia. G.I. supply pipe is required.

ALEXANDRA BOROUGH
SEWAGE TREATMENT PLANT
MISCELLANEOUS DETAILS AT PLANT SITE.

SCALE: AS SHOWN	FILE: 50/901
P.W.D. 159795	
SHEET No. 19 OF 19 SHEETS	
ISSUE	