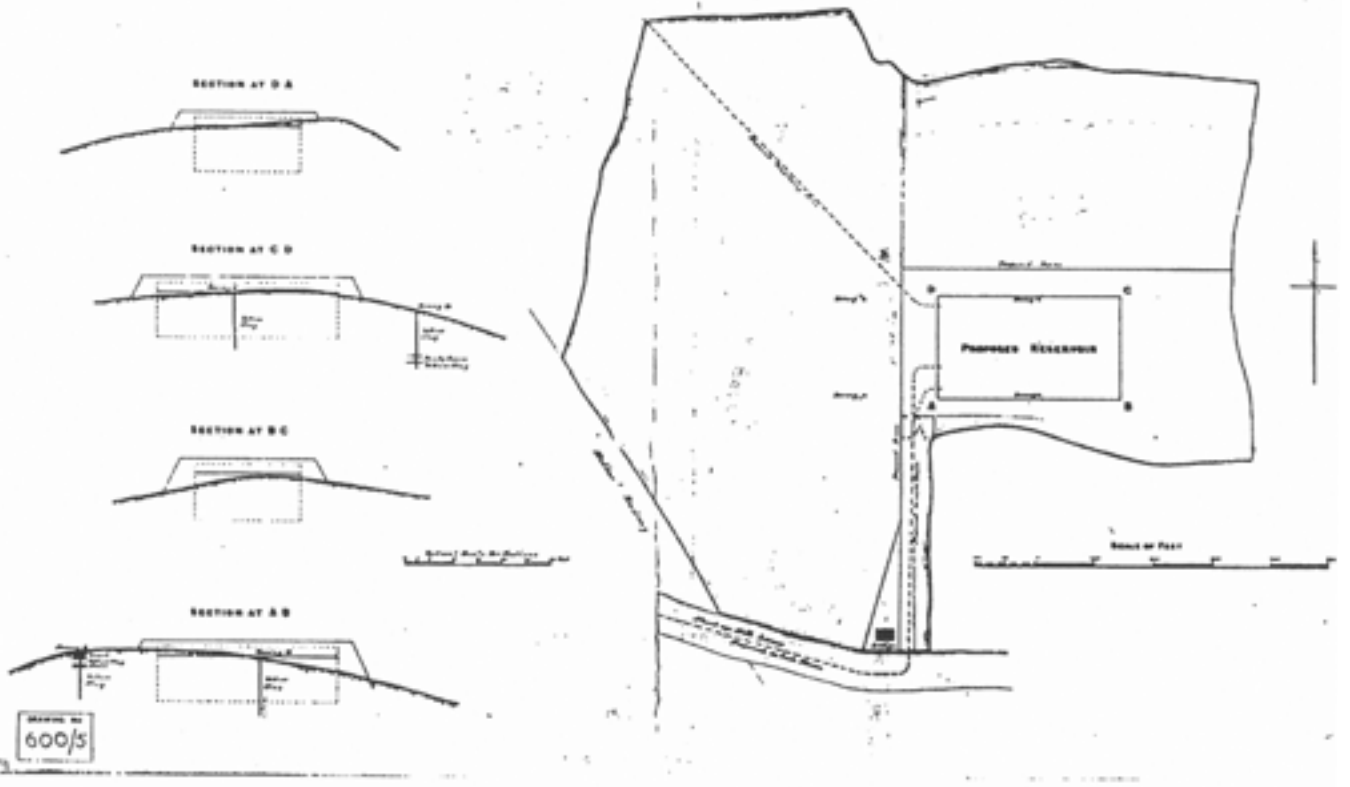


C J W W

PROPOSED RESERVOIR AT MILBURN

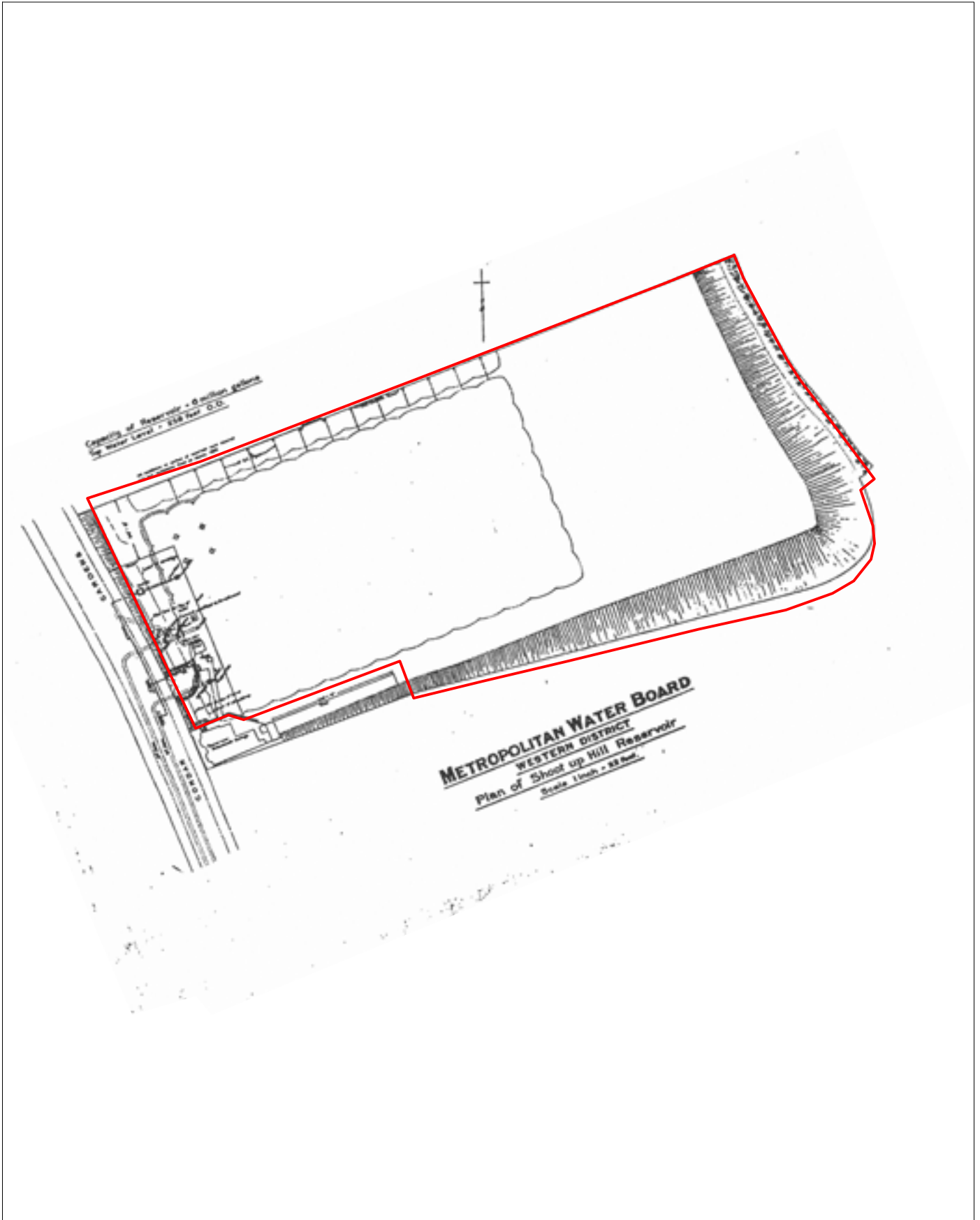


 Site Boundary



Not to scale

Figure 13:
Sections of the Reservoir
and the original ground level



 Site Boundary



Scale at A4: 1:1250
0 20 m

Figure 14:
Plan of Shoot up Hill
Reservoir from the
Metropolitan Water Board



 Site Boundary



Scale at A4: 1:500
0 10 m

Figure 15:
Proposed Development -
Ground Floor



 Site Boundary



Scale at A4: 1:500
0 10 m

Figure 16:
Proposed Development -
Lower Ground Floor



 Site Boundary




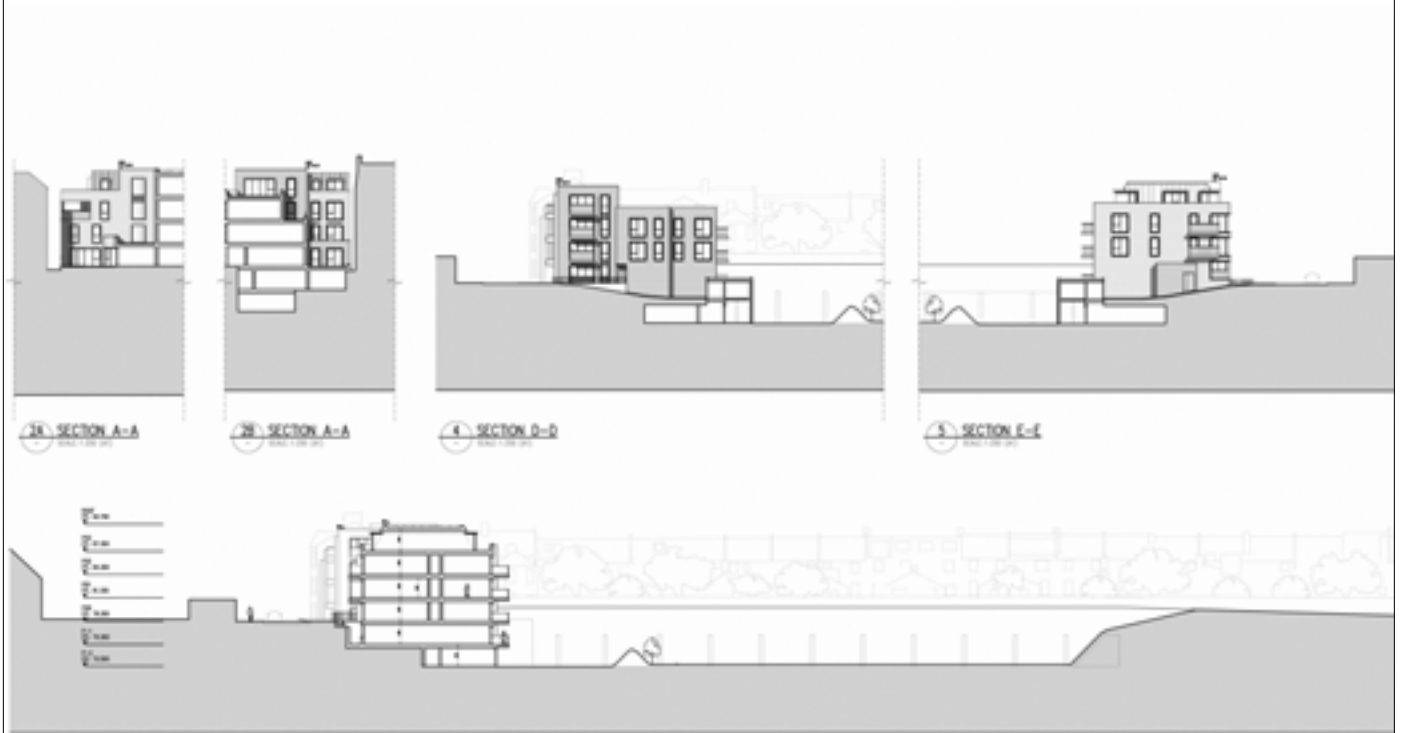
Scale at A4: 1:750
0  20 m

Figure 17:
Proposed Development -
Basement



 Site Boundary



Not to scale

Figure 18:
Proposed Development - Site
Sections



Plate 1: Large bank at the south of the site



Plate 2: Evidence of the reservoir above ground



Plate 3: Reservoir furniture



Plate 4: Electricity Sub station at the northwest of site



Plate 5: View up at the brick arches within the reservoir

Appendix 1

RSK Geo-technical information (RSK 2009)

LEGEND

- ◆ Borehole Location
- ◆ Probed Hole Location
- ▣ Japanese Knotweed Identified

Rev	Date	DESCRIPTION	MOVED	NT	NT
P1	23.11.09	FIRST ISSUE			

RSK
GROUP PLC

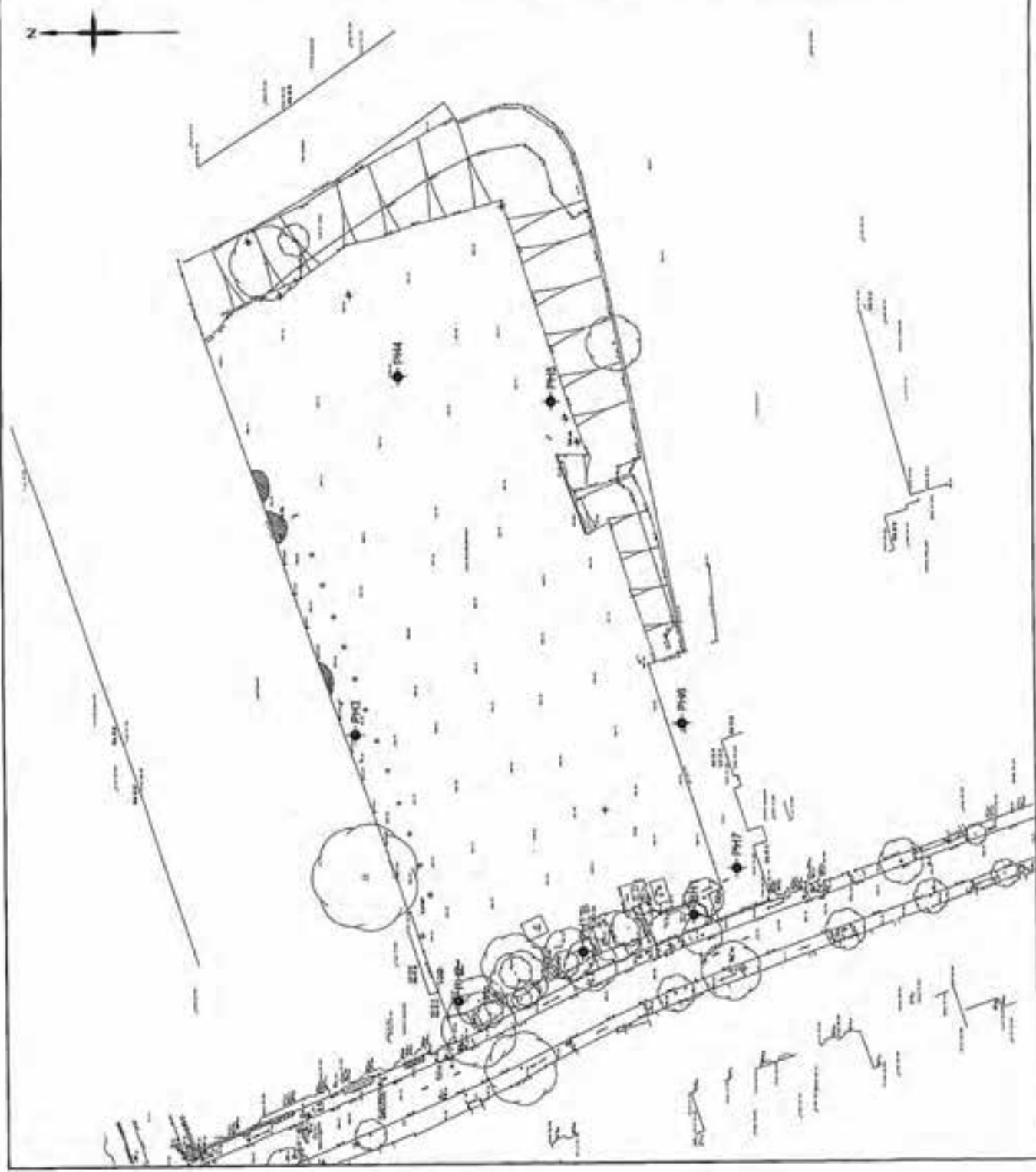
18 Progress Road
London
United Kingdom

LINDEN HOMES LIMITED

GONDAR GARDENS,
LONDON

SITE PLAN

Client	Date	Number	Date	Approved	Date
MDW	23.11.09	NT	23.11.09	NT	23.11.09
Scale	1:750	Log Size	A3	Checked	DT
Project No.	23283 (LD1)		Drawing No.	23283 (LD1).dwg	
Client No.	23283 (LD1)		Sheet	P1	



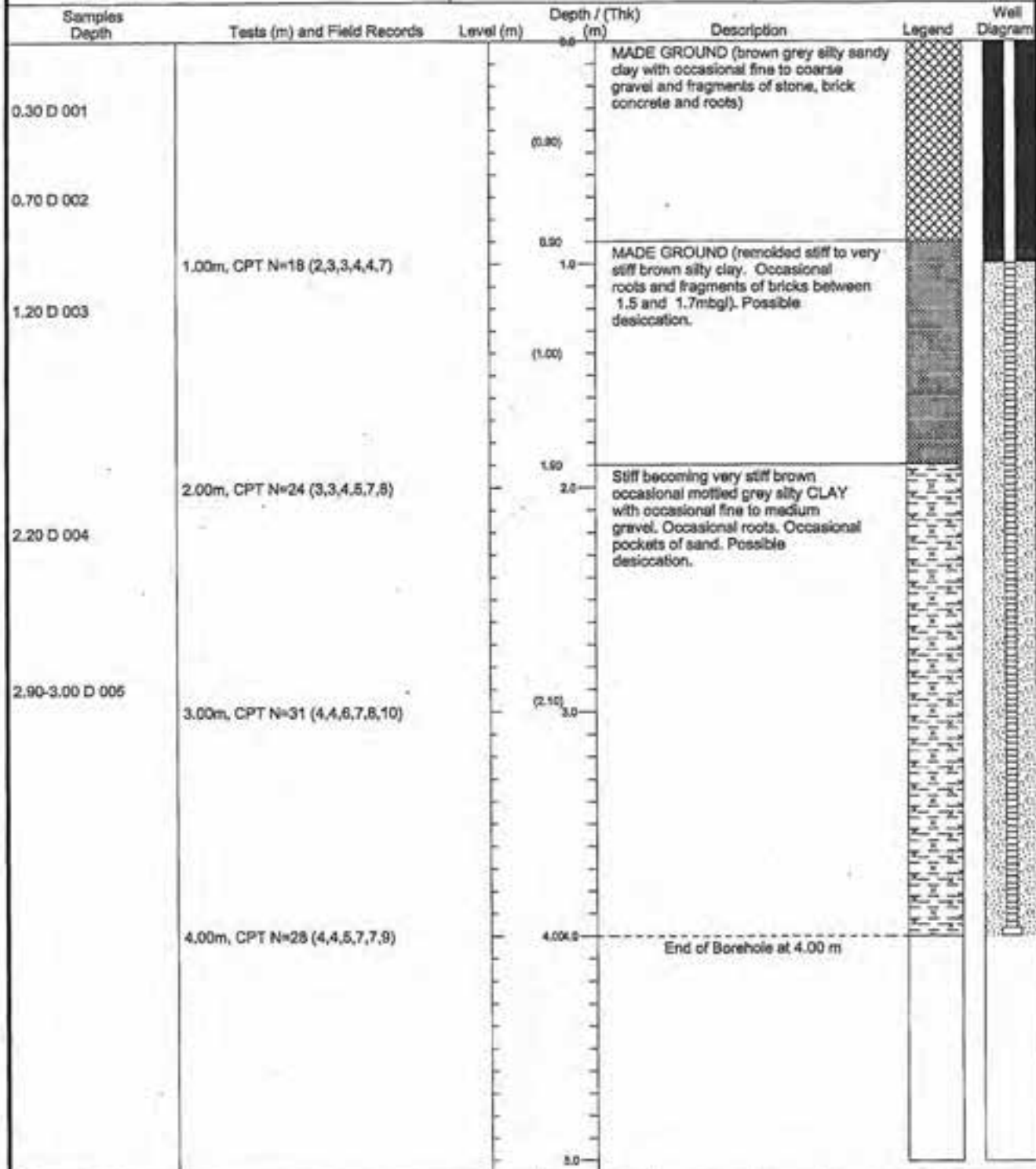
Client: LINDEN HOMES LTD
 Site: GONDAR GARDENS, LONDON
 Project No: 23283



Boring Method: Competitor Rig
 Date: 17/11/2009 - 17/11/2009
 Driller: MB Drilling
 Logged By: NT

Ground Level: -
 Top of Casing Elevation (m): -

Record of: PH1
 Sheet 1 of 1
 Scale, 1:25



General Remarks:
 Groundwater was not encountered. Hand vane at 1.0m and 2.0m is greater than 240kPa.

Water Strikes		Chiselling			Borehole and Casing Details			
Strike Σ	Level ∇	From: (m)	To: (m)	Time: (hr's)	Borehole		Casing	
					Depth (m)	Diam. (mm)	Depth (m)	Diam. (mm)
No Groundwater Encountered								

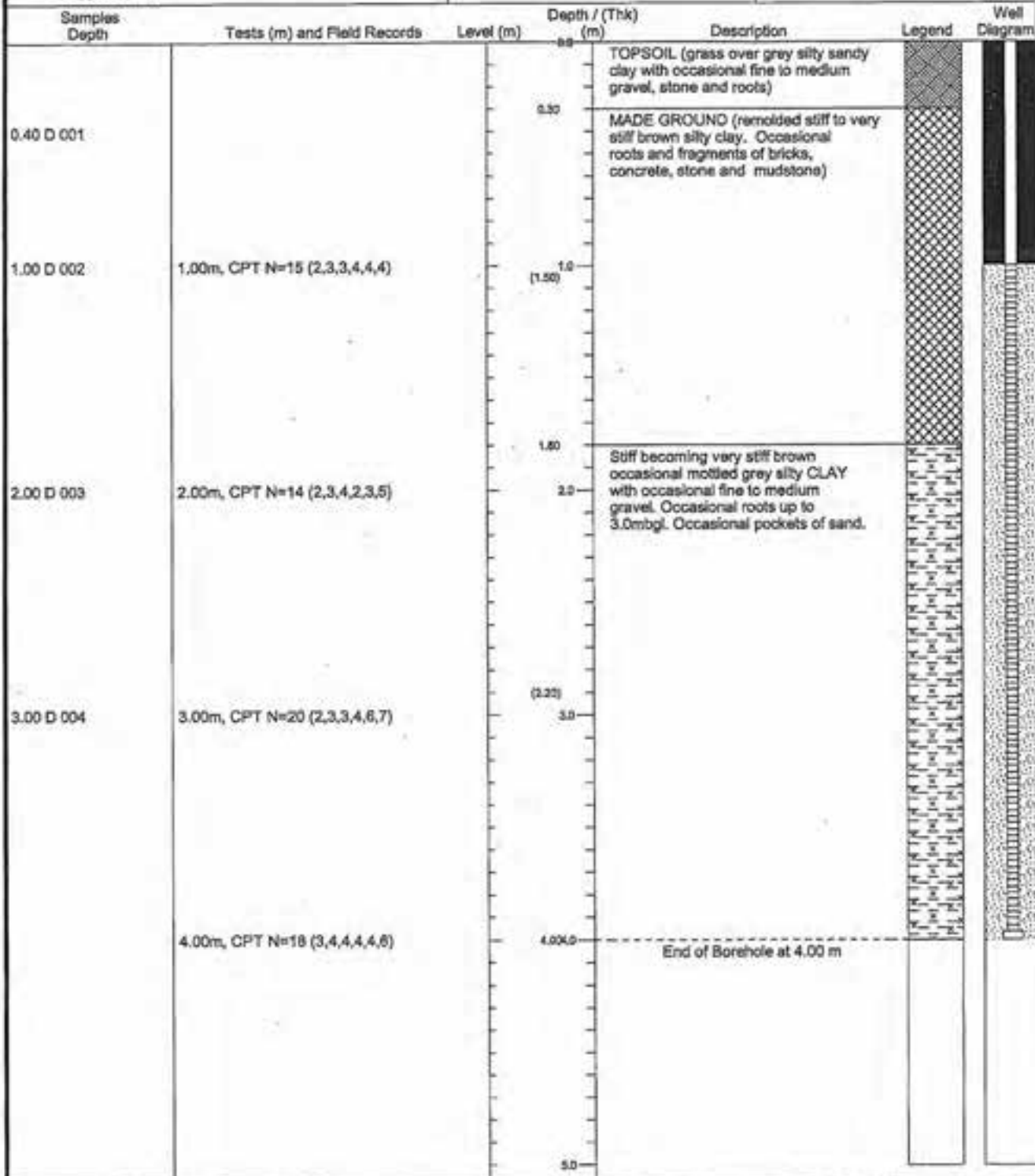
Client: LINDEN HOMES LTD
 Site: GONDAR GARDENS, LONDON
 Project No: 23283



Boring Method: Compelitor Rig
 Date: 17/11/2009 - 17/11/2009
 Driller: MB Drilling
 Logged By: NT

Ground Level: -
 Top of Casing Elevation (m): -

Record of : PH2
 Sheet 1 of 1
 Scale, 1:25



General Remarks:
 Groundwater was not encountered.

Water Strikes		Chiselling			Borehole and Casing Details			
Strike	Level	From:	To:	Time:	Borehole		Casing	
∩	⊕	(m)	(m)	(hr's)	Depth (m)	Diam. (mm)	Depth (m)	Diam. (mm)
No Groundwater Encountered								

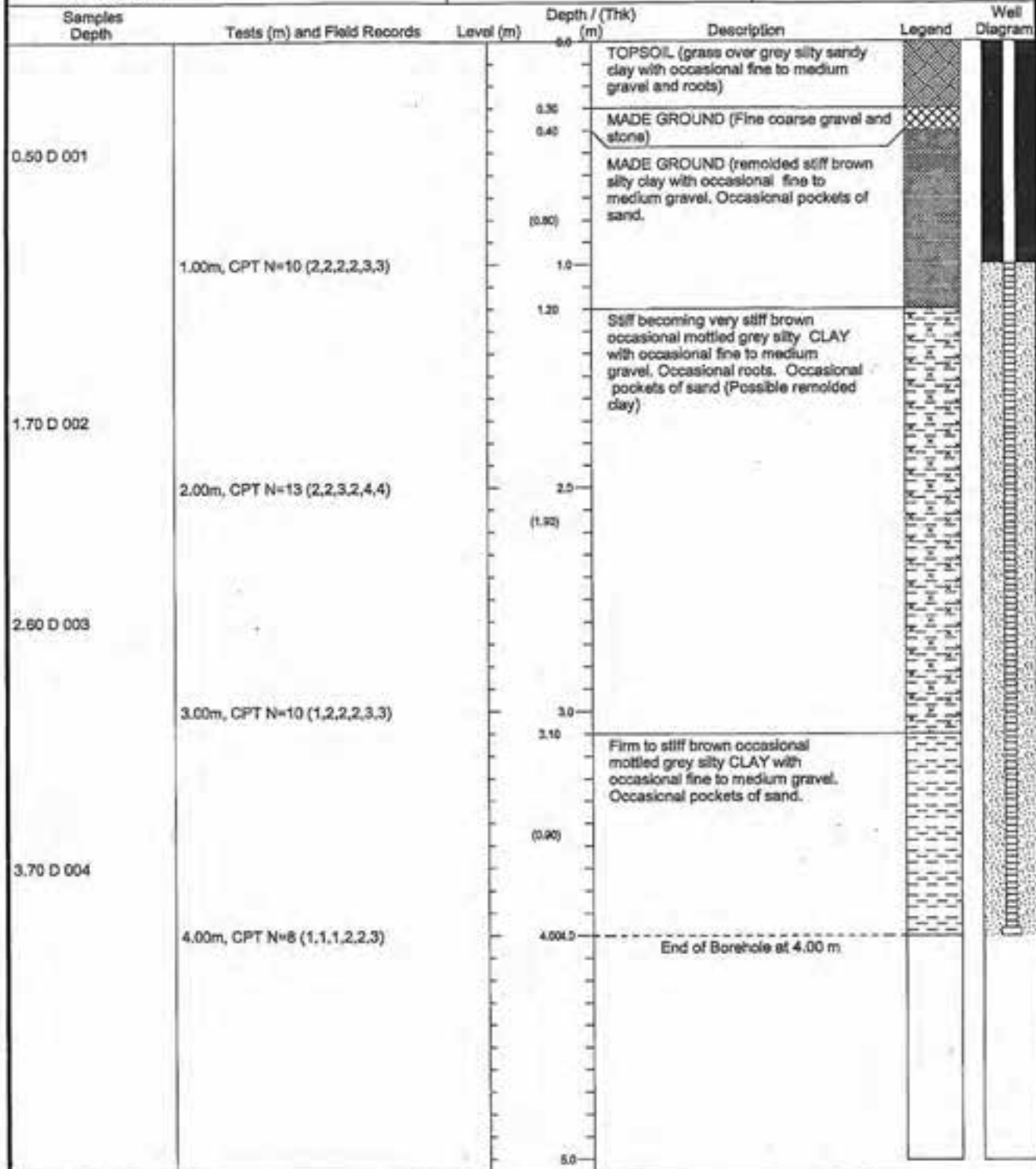
Client: LINDEN HOMES LTD
 Site: GONDAR GARDENS, LONDON
 Project No: 23283



Boring Method: Competitor Rig
 Date: 17/11/2009 - 17/11/2009
 Driller: MB Drilling
 Logged By: NT

Ground Level: -
 Top of Casing Elevation (m): -

Record of: PR3
 Sheet 1 of 1
 Scale, 1:25



General Remarks:
 Groundwards was not encountered. Hand vane at 2.0m is greater than 240kPa.

Water Strikes			Chiselling			Borehole and Casing Details			
Strike	Level		From:	To:	Time:	Borehole		Casing	
Σ	Σ		(m)	(m)	(hr's)	Depth (m)	Diam. (mm)	Depth (m)	Diam. (mm)
No Groundwater Encountered									

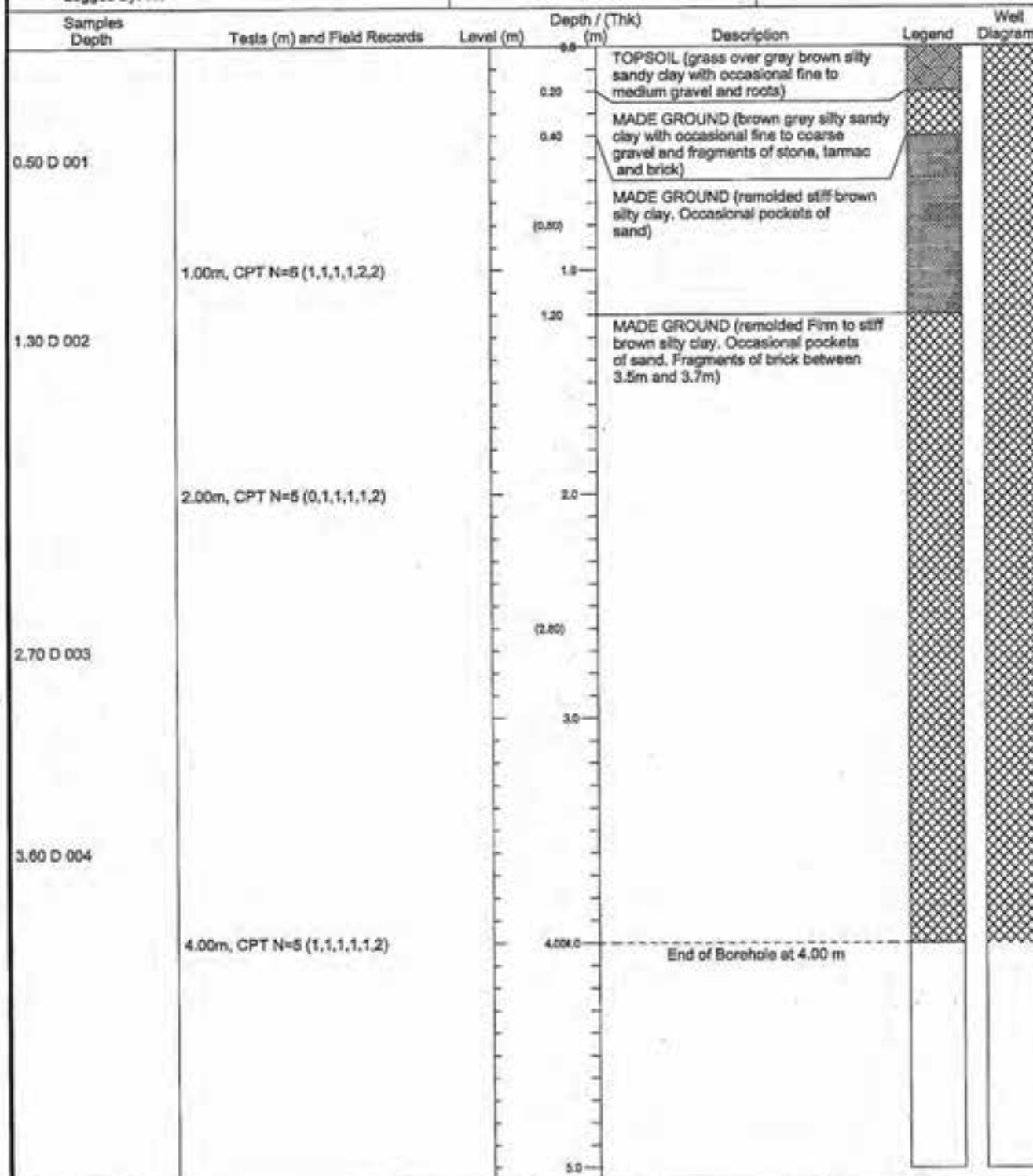
Client: LINDEN HOMES LTD
 Site: GONDAR GARDENS, LONDON
 Project No: 23283



Boring Method: Competitor Rig
 Date: 17/11/2009 - 17/11/2009
 Driller: MB Drilling
 Logged By: NT

Ground Level: -
 Top of Casing Elevation (m): -

Record of: PH4
 Sheet 1 of 1
 Scale, 1:25



General Remarks:
 Groundwater was not encountered. Hand vane at 2.0m (100kPa) and 3.0m (70kPa).

Water Strikes		Chiselling			Borehole and Casing Details			
Strike	Level	From:	To:	Time:	Borehole		Casing	
Σ	∇	(m)	(m)	(hr's)	Depth (m)	Diam. (mm)	Depth (m)	Diam. (mm)
No Groundwater Encountered								

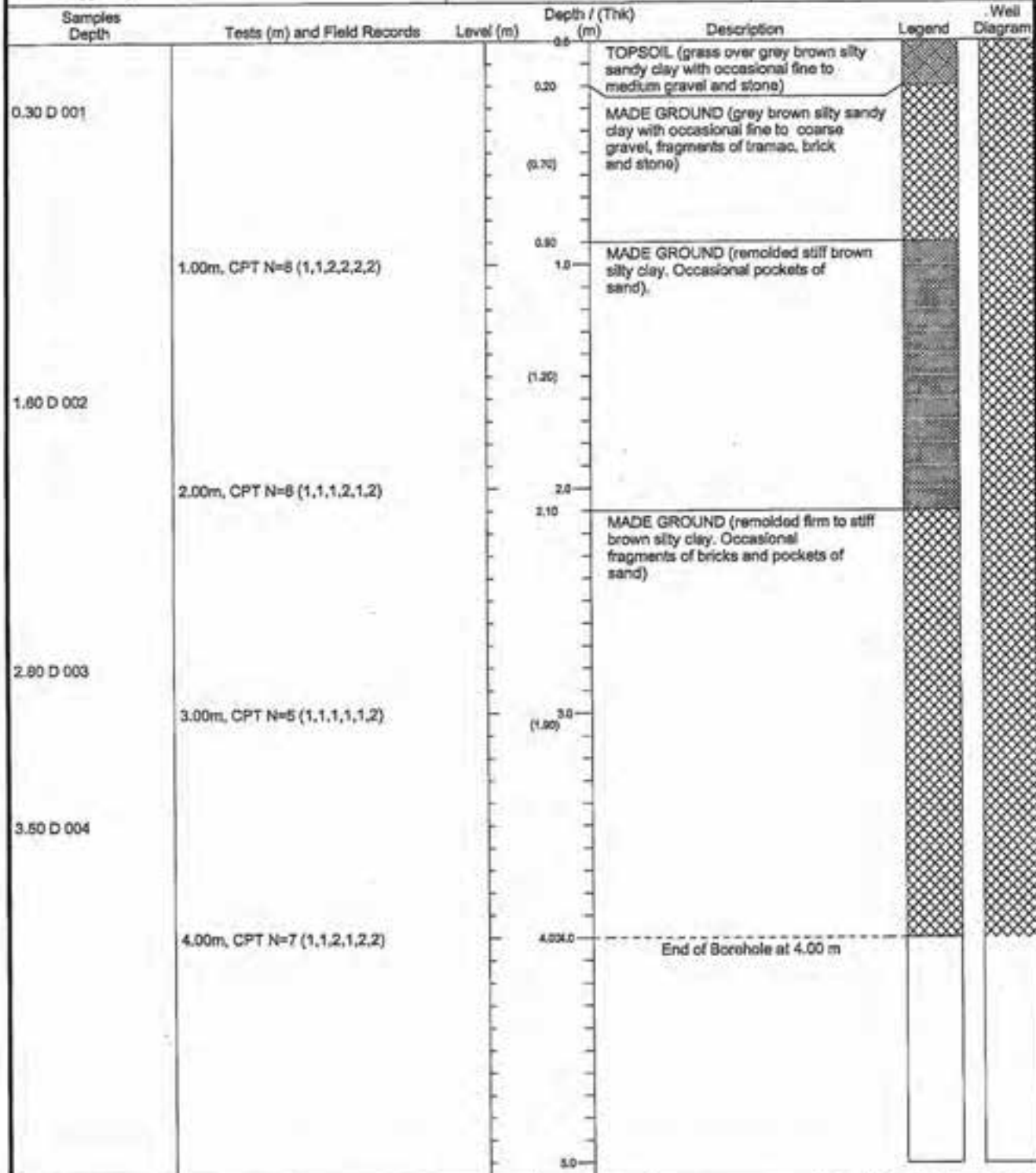
Client: LINDEN HOMES LTD
 Site: GONDAR GARDENS, LONDON
 Project No: 23283



Boring Method: Competitor Rig
 Date: 17/11/2009 - 17/11/2009
 Driller: MB Drilling
 Logged By: NT

Ground Level: -
 Top of Casing Elevation (m): -

Record of : PH5
 Sheet 1 of 1
 Scale, 1:25



General Remarks:
 Groundwater was not encountered.

Water Strikes		Chiselling			Borehole and Casing Details			
Strike	Level	From	To	Time	Borehole		Casing	
☒	☒	(m)	(m)	(hr's)	Depth (m)	Diam. (mm)	Depth (m)	Diam. (mm)
No Groundwater Encountered								

Client: LINDEN HOMES LTD
 Site: GONDAR GARDENS, LONDON
 Project No: 23283

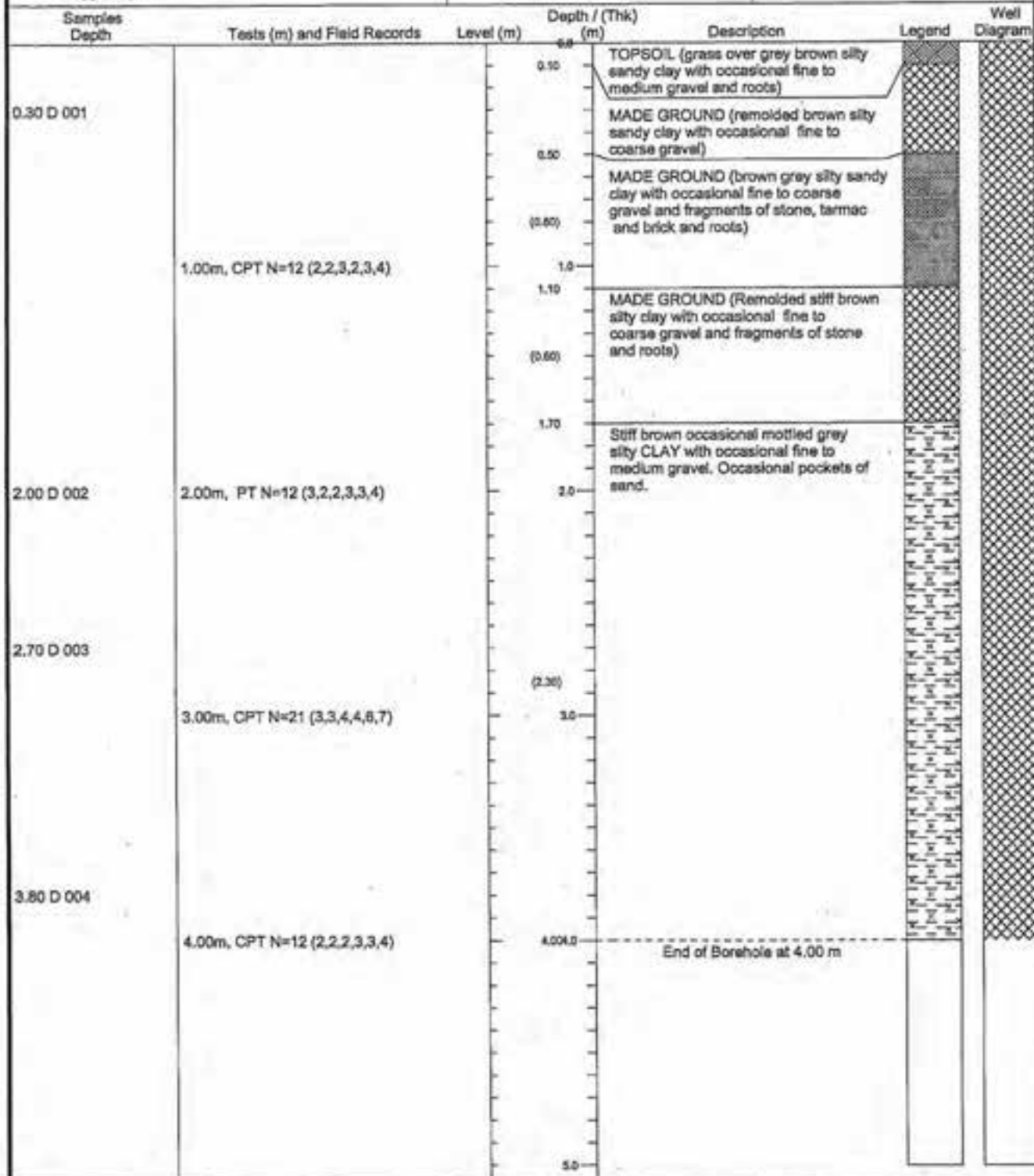


Record of : PH6

Boring Method: Competitor Rig
 Date: 17/11/2009 - 17/11/2009
 Driller: MB Drilling
 Logged By: NT

Ground Level: -
 Top of Casing Elevation (m): -

Sheet 1 of 1
 Scale: 1:25



General Remarks:
 Groundwater was not encountered.

Water Strikes		Chiselling			Borehole and Casing Details			
Strike Σ	Level Σ	From: (m)	To: (m)	Time: (hr's)	Borehole		Casing	
					Depth (m)	Diam. (mm)	Depth (m)	Diam. (mm)
No Groundwater Encountered								

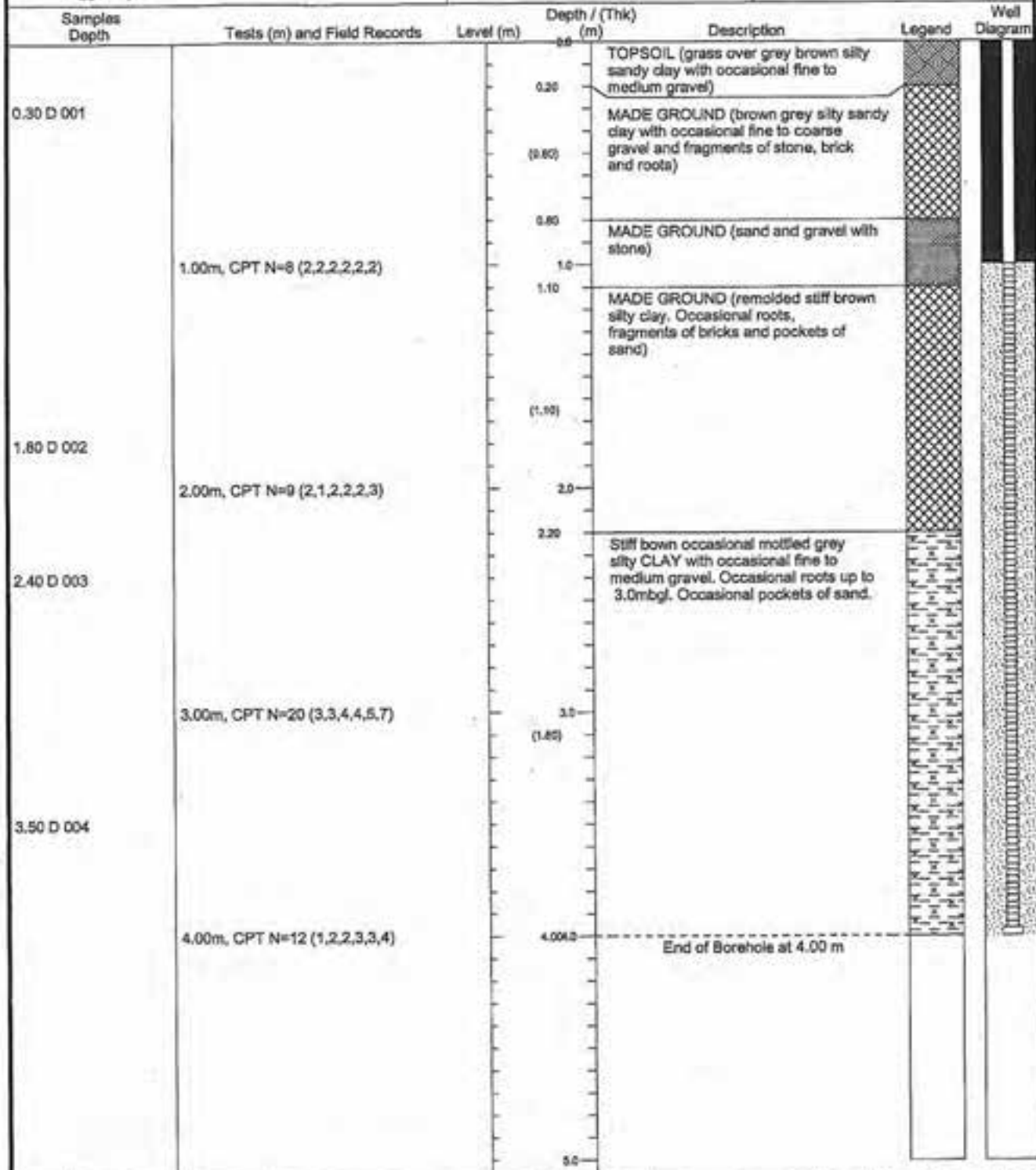
Client: LINDEN HOMES LTD
 Site: GONDAR GARDENS, LONDON
 Project No: 23283



Boring Method: Competitor Rig
 Date: 17/11/2009 - 17/11/2009
 Driller: MB Drilling
 Logged By: NT

Ground Level: -
 Top of Casing Elevation (m): -

Record of : PH7
 Sheet 1 of 1
 Scale, 1:25



General Remarks:
 Groundwater was not encountered.

Water Strikes		Chiselling			Borehole and Casing Details			
Strike	Level	From:	To:	Time:	Borehole		Casing	
SZ	▼	(m)	(m)	(hr's)	Depth (m)	Diam. (mm)	Depth (m)	Diam. (mm)
No Groundwater Encountered								

Appendix 2

Inspection Report of the reservoir (Lewin, Fryer and Partners, 1975)

from I Home

RESERVOIRS ACT, 1975

SHOOT-UP HILL RESERVOIR

LEWIN, FRYER & PARTNERS
CONSULTING ENGINEERS

RESERVOIRS ACT, 1975

SHOOT-UP HILL RESERVOIR

Reservoirs Act, 1975

Inspecting Engineers Certificate under Section 10 (5)

I, Eric Charles Reed of Lewin Fryer and Partners, Grove House, 100 High Street, Hampton, Middlesex, being a member of the All Reservoirs Panel, appointed by the Thames Water Authority to carry out an inspection of the reservoir known as Shoot-Up Hill Reservoir situated at the north west of London adjacent to Gondar Gardens, West Hampstead, NW6 in the London Borough of Camden, National Grid Reference TQ 248 58532, made a report of that inspection on *15th March 1988* which does not include recommendations as to measures to be taken in the interest of safety.

That report includes also a recommendation that the next inspection should be within 10 years of the date of the inspection.

Dated this *15th* day of *March* *1988*

Signed

E. Reed.

All Reservoirs Panel
Lewin, Fryer and Partners

Thames Water

Reservoirs Act 1975

Shoot-Up Hill Reservoir

Report of the Result of an Inspection made under Sections 10 and 26 of the Reservoirs Act 1975.

by

E.C. Reed OBE, DFC, C.Eng.FICE,

Date of Report:

fifteenth March 1988.

Reservoirs Act 1975

Report on the Result of an Inspection made under Section 10 and 26 of the Act

Periodical Inspection of the Reservoir

Name and Situation of the Reservoir

The Shoot-Up Hill Reservoir is situated to the north west of London adjacent to Gondar Gardens, West Hampstead, N.W.6 in the London Borough of Camden.

The National Grid Reference is TQ 24858532.

Name and Address of Engineer

E.C. Reed O.B.E., D.F.C., C.Eng., F.I.C.E.,
Lewin, Fryer and Partners
Grove House
100 High Street
Hampton
Middlesex TW12 2ST

Name of Panel of which Engineer is a Member

The Inspecting Engineer is a member of the All Reservoirs Panel constituted under the Reservoirs Act, 1975.

Name and Address of Undertaker

Thames Water
Central Division
New River Head
173 Rosebery Avenue
London E.C.1

Dates of Inspection

10th November 1987 External Inspection

15th January 1988 Internal Inspection

Engineers Findings

1. Description of the Reservoir

The Shoot-Up Hill Reservoir was constructed in 1874 and was not considered by successive panel engineers qualified under the terms of the Reservoirs (Safety Provisions) Act, 1930 and employed by the Metropolitan Water Board to come within the meaning of that Act. With the enabling of the Reservoirs Act 1975 a re-evaluation of the position under the new legislation has been carried out resulting in the Undertaker on legal advice re-designating the reservoir as a large raised reservoir.

The reservoir is a brick structure constructed as a tank and is founded on Yellow Clay according to the old drawings. The internal dimensions into the bays are 92.41 metres long and 53.17 metres wide and the average height to top water level is 5.72 metres. The walls are constructed of lateral brick arches supported by brick counterforts on the inside. From an examination of the old drawings the outer face of the walls is water proofed by a puddle clay wall. This puddle wall is in turn supported by earth banks on all sides. On the north, west and east the fill is to roof level; on the south there is a slopping embankment immediately adjacent to the puddle wall. The north side has a puddle sandwich between the brick arches of the reservoir and a similar set of brick arches which indicate the intention to build another reservoir of similar design to the north of the existing. The reservoir is buried in the existing ground virtually over the length of the west side with a very small bank some 20 metres from the wall. On the north side there is a small bank some 10 metres from the wall. A flat plateau at roof level extends some 60 metres beyond the east wall. The greatest height of embankment is in the south east corner reducing rapidly to level fill half way along the south side (going west). Where banks exist they are of slopes roughly one vertical to two horizontal.

The roof is of brick arch construction believed to be two bricks thick with 0.5 metre brick main beams supported on brick columns across the reservoir in a north-south direction and brick secondary beams running along the length of the reservoir in an east-west direction. The floor is 300 mm of concrete. The roof is covered with soil and grassed.

The supply to the reservoir is through a 600mm C.I. pipe, the outgoing supply is a 600 mm C.I. situated below the floor of the reservoir. A 600 mm C.I. emptying drain is joined by a 750 mm C.I. overflow pipe with a 900 mm bellmouth at top water level. This drain discharges into a pit at the toe of the embankment which is connected to a drain in Gondar Gardens by a 400 mm C.I. pipe.

150 mm and 300 mm C.I. pipes provide protection for level control. All of the above are situated at the west end of the reservoir. Access is down a concrete/york stone staircase.

2. The Inspection

The first inspection was to look at the surface features of the reservoir. The operational requirements relating to the supply of the area must control the timing of the inside inspection. The surface of the reservoir was inspected in an anti-clockwise direction from the entrance to the site in Gondar Gardens at the west wall of the reservoir. The banks and the surface of the reservoir were found to be in good order and reasonably well maintained.

The site of the slip which was observed on the 19th March 1979 was carefully examined. The refurbishing of the bank in this area is satisfactory.

On this visit I was handed copies of various correspondence dealing with the decision to consider the reservoir a "large raised reservoir" under Section 1 of the Act and which included details of the embankment slip, correspondence and photographs, old reservoir record drawings and annual reports on previous inspections.

On the 15th January 1988 the reservoir was emptied and inspected, by proceeding in a anti-clockwise direction from the south west corner, examining the walls, counterforts and roof of the external bays. The roof beams and arches were then examined, together with the floor in bays along the length of the reservoir. The inlet - outlet valves had been tested and were in sound condition, overflow and drainage pipes were inspected. Previously this reservoir had not been considered to come within the Reservoir (Safety Provisions) Act, 1930 but the similar provisions relating to operational inspections and reports that Thames Water apply to Statutory Reservoirs had been applied to this reservoir and these records were examined. I also had the opportunity to examine the old drawings at full size.

The condition of the walls, piers and roof of this reservoir for one of a hundred years old was in very good condition, small cracks in some beams were noted and recorded. A hair crack along most of the arches about half way between springing and peak was evident. In both cases it would be my view that a probable cause of this was ground movement due to bombing in the 1939/45 hostilities. This can only be an opinion but a better reason than settlement.

The concrete floor is cracked in a number of places and the quality of the concrete surfaces is bad. This floor is founded on clay and from the way it was formed in construction cracks could be expected. From an operational viewpoint it would be prudent to repair this floor when an opportunity arose.

3. Findings and Recommendations

See Schedule 2 Reports 1986 No.468.

- (i) I find that the undertakers are complying with their obligations under Section 11 of the Act.
- (ii) The water level is recorded daily for operational purposes but for the purposes of Section 11 should be recorded weekly together with any instance of overflow.
- (iii) There are no recommendations involving alterations or additions to the works etc.
- (iv) No movement of the surrounding land was observed. The slip on bank at the south east corner was studied. No indications of movement internally were evident. The slip was contained in the bank and the most probable cause was high water table generated by run off from the roof. The measures taken to affect stability have been satisfactory.
- (v) The lowering of the reservoir water level can be rapidly achieved by discharge on to the district. The overflow and waste weir are to a pit outside the bank and then to a surface water sewer. The original discharge was to a stream some distance away and care should be taken to ensure that the old discharge is effectively sealed.
- (vi) No alterations which affect the level to which the water is stored have taken place.
- (vii) The margin between roof level and overflow is adequate.
- (viii) This matter has been referred to under item (v) above. The means of controlling the inflow and outflow either to the district or through the drain is adequate.

I find that the reservoir is in sound condition, that there are no recommendations I wish to make in the interest of safety and that the next inspection of this reservoir should be within 10 years of the date of this inspection.

The Supervising Engineer should:

- (i) watch the slopes of the banks and particularly the area of the slip for movement, especially after very heavy rainfall.
- (ii) Ensure the maintainance of the inspection and record system.
- (iii) Be satisfied that the old discharge culvert is effectively blocked at the emptying pit.
- iv) The north wall is adjacent to property not now in the ownership of the undertaker. Should future developments take place on the land that supports the north wall, the Supervising Engineer should draw the attention of the undertaker to the support required to protect the reservoir.

Date this *Fifteenth* day of *March* 1988.

Signed

Elkeed .

Panel A.R
for Lewin, Fryer and Partners

RESERVOIRS ACT, 1975

SHOOT-UP HILL RESERVOIR

ANNEX TO THE REPORT. SECTION 26

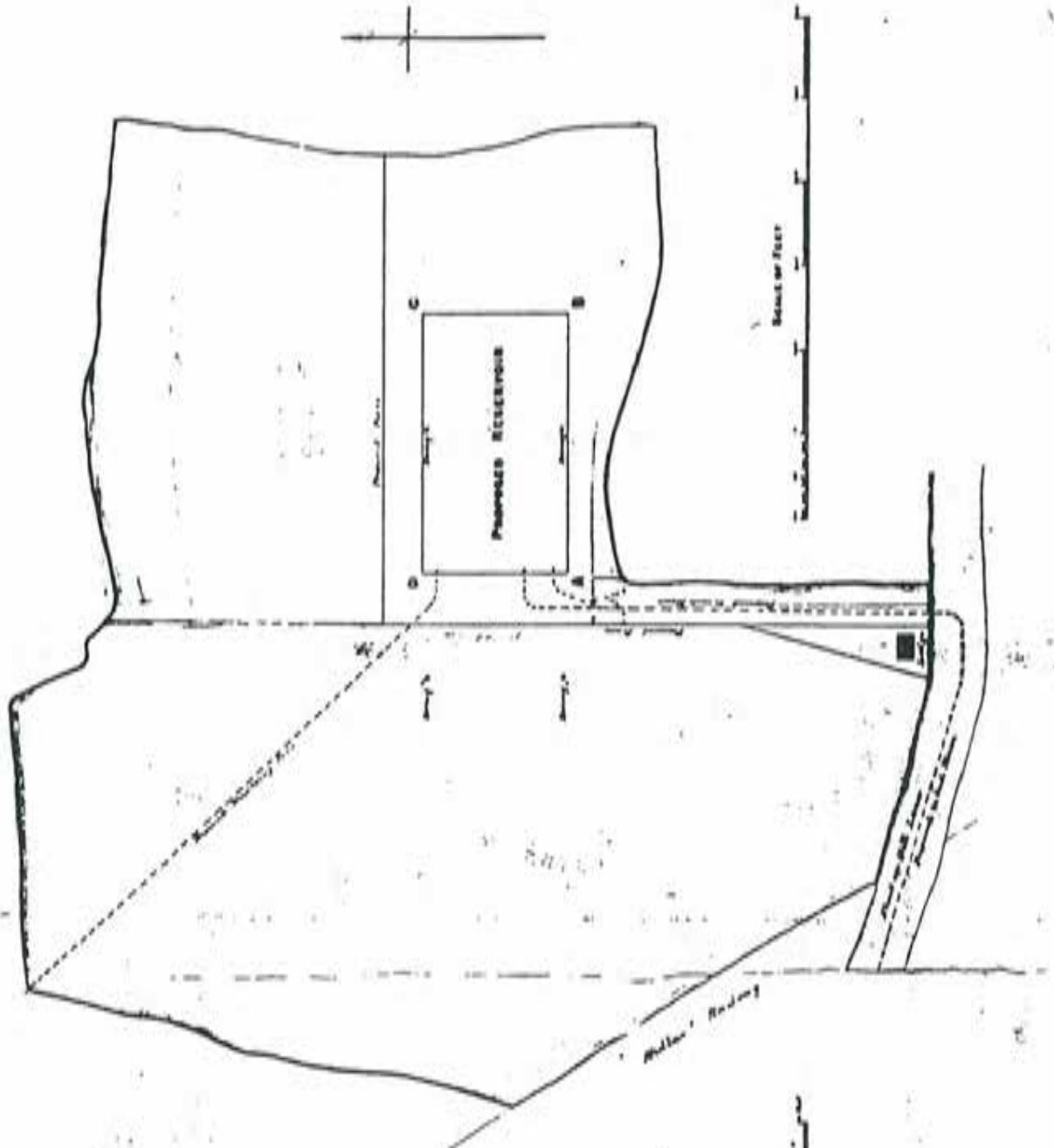
The Shoot-Up Hill Reservoir was constructed before the commencement of the Reservoirs (Safety Provisions) Act, 1930, and was not inspected under the provisions of that Act. Section 26 (2) of the Reservoirs Act, 1975 requires that on "first inspection of the reservoir under this Act the inspecting engineer shall annex to his report drawings and descriptions giving, so far as he can, the like information of the works actually constructed....."

The description of the reservoir I have included in the body of my report under "Description of the Reservoir".

A file including 21 drawings which so far as I can give the like information of the works actually constructed, is enclosed.

E. Reed.

PROPOSED RESERVOIR AT HILBURN



SECTION AT D A



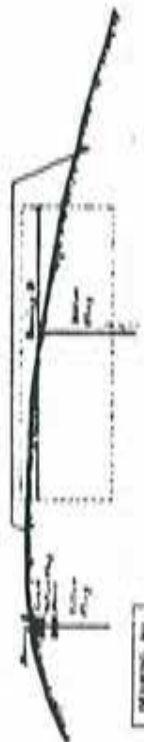
SECTION AT C D



SECTION AT B C



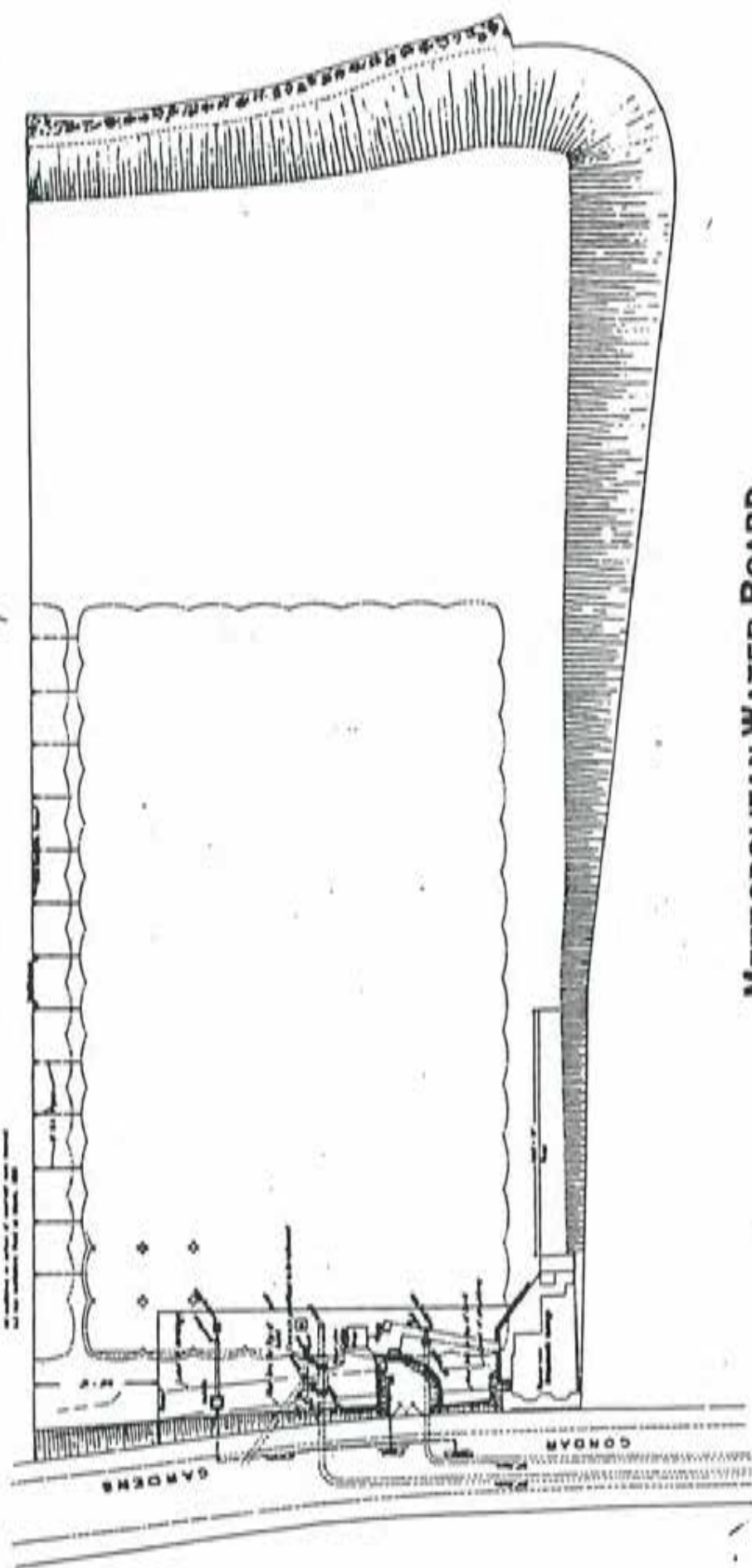
SECTION AT A B



DRAWING NO. 600/5

H. H. R. P.

Capacity of Reservoir - 6 million gallons
Top Water Level - 258 feet O.D.



METROPOLITAN WATER BOARD

WESTERN DISTRICT

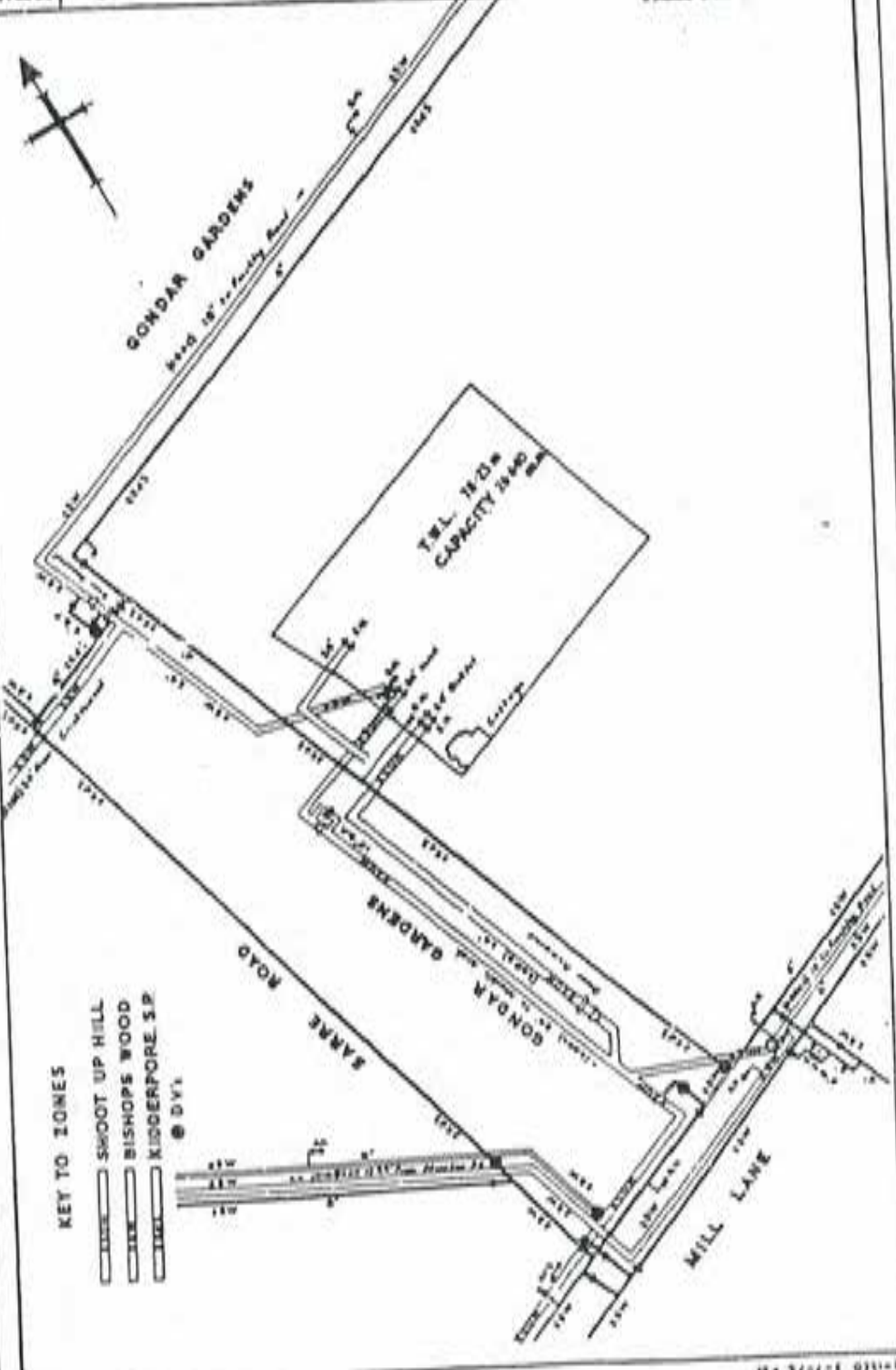
Plan of Shoot up Hill Reservoir

Scale 1 inch = 33 feet.

288 000/53

9 10 11 12 13 14 15 16 17 18

PREPARED BY: METROPOLITAN WATER DIVISION
DRAWING NO: L 600/44
DATE: 1944
PROJECT: SHOOT UP HILL RESERVOIR MAINS DIAGRAM



- KEY TO LINES
- SHOOT UP HILL
 - BISHOPS WOOD
 - KIDDERPORE, S.P.
 - ⊙ D.V.'s

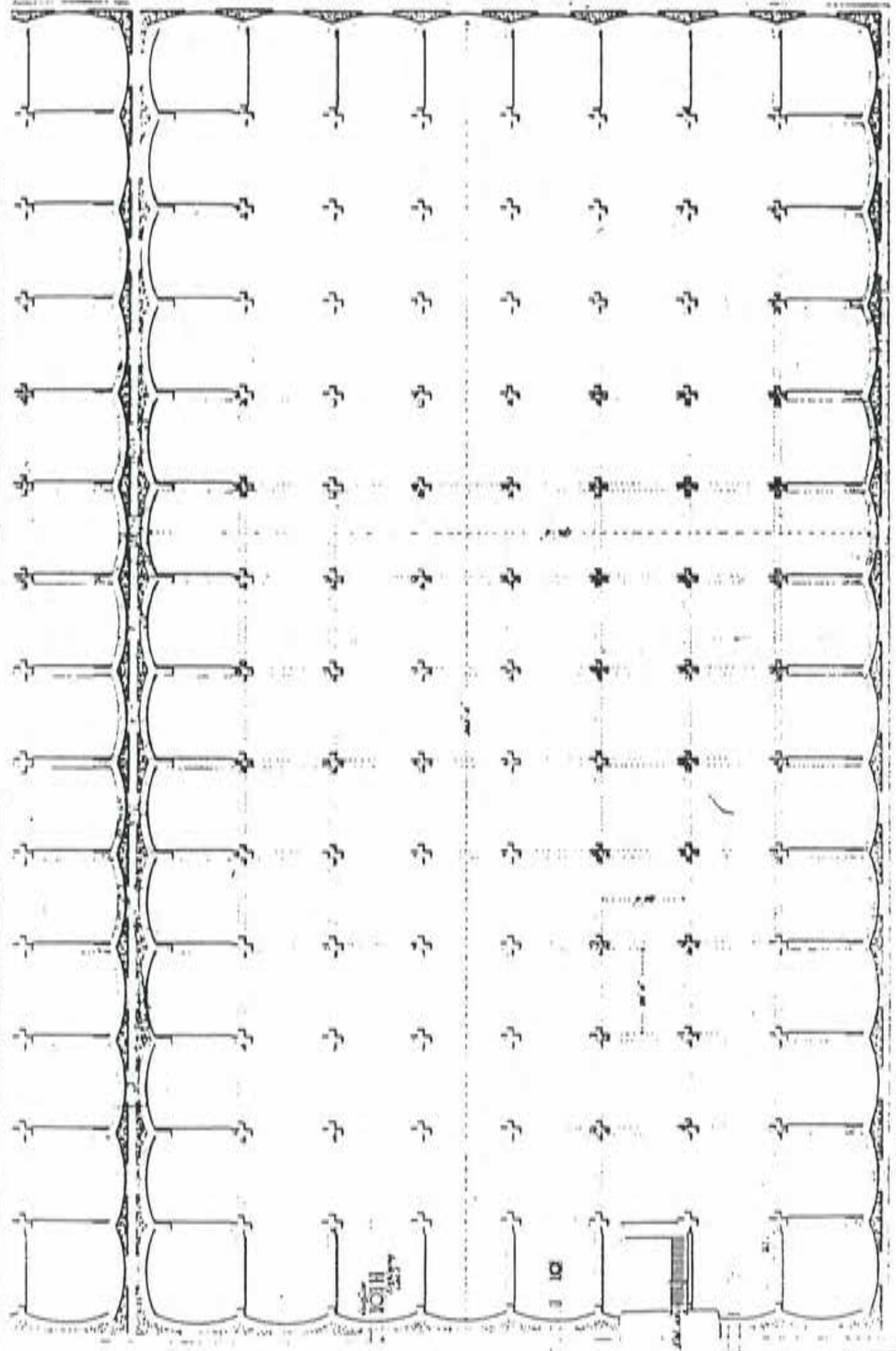
30 32 34 36 38 40 42 44 46



1944

GRAND JUNCTION WATER WORKS

— LOVELL RESERVOIR AT MILBURN —



TOILET

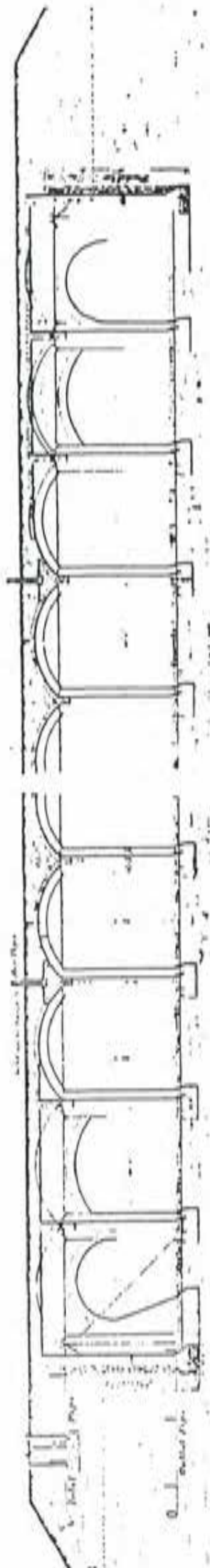
10

1000 - feet

PLAN

630

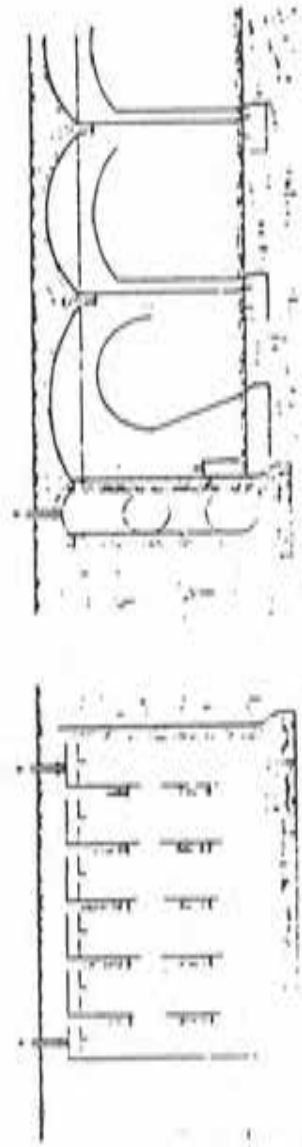
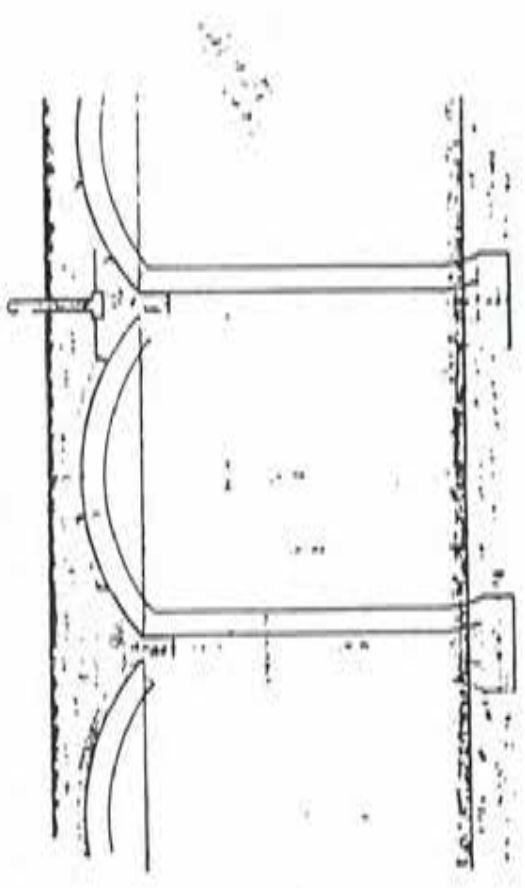
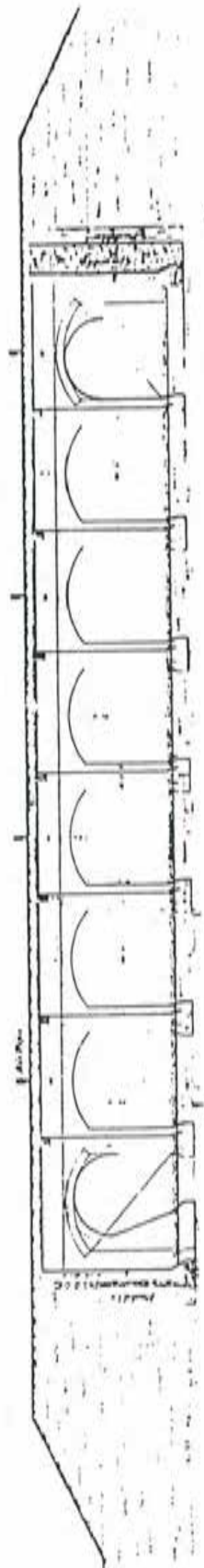
PROPOSED RESERVOIR AT HILBURN



SECTION AB

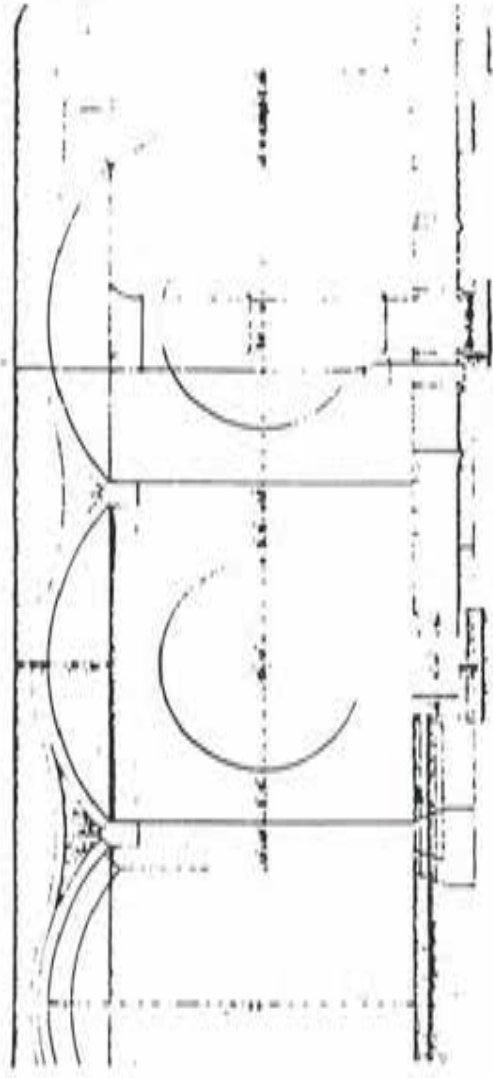
SECTION CD

SCALE - FEET

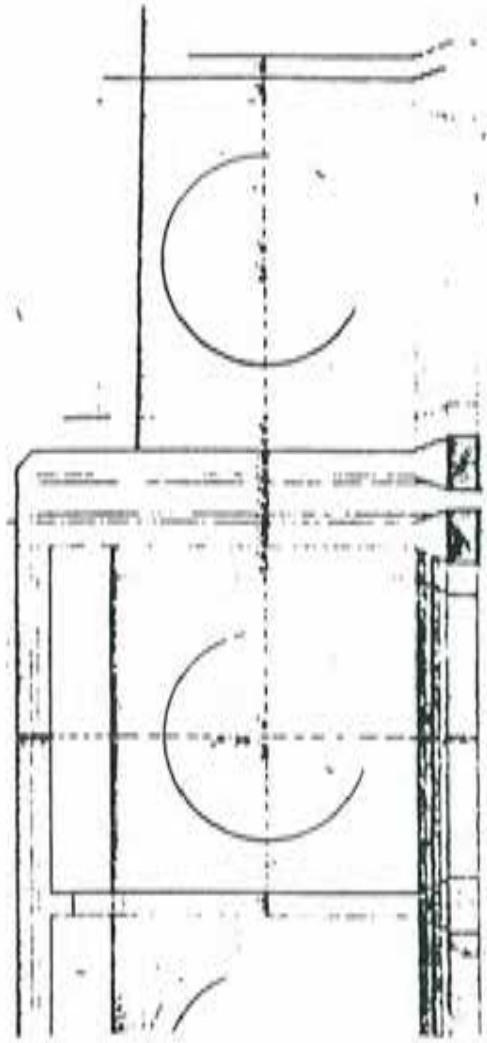


PROPOSED REBERVODIA AT MILBURN

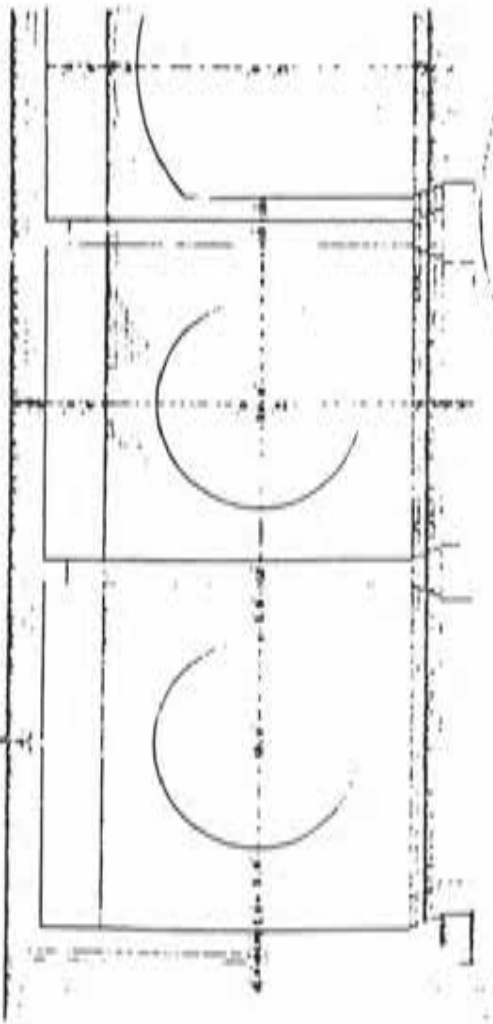
12/15/24



SECTION A-B



SECTION E-F



SECTION C-D



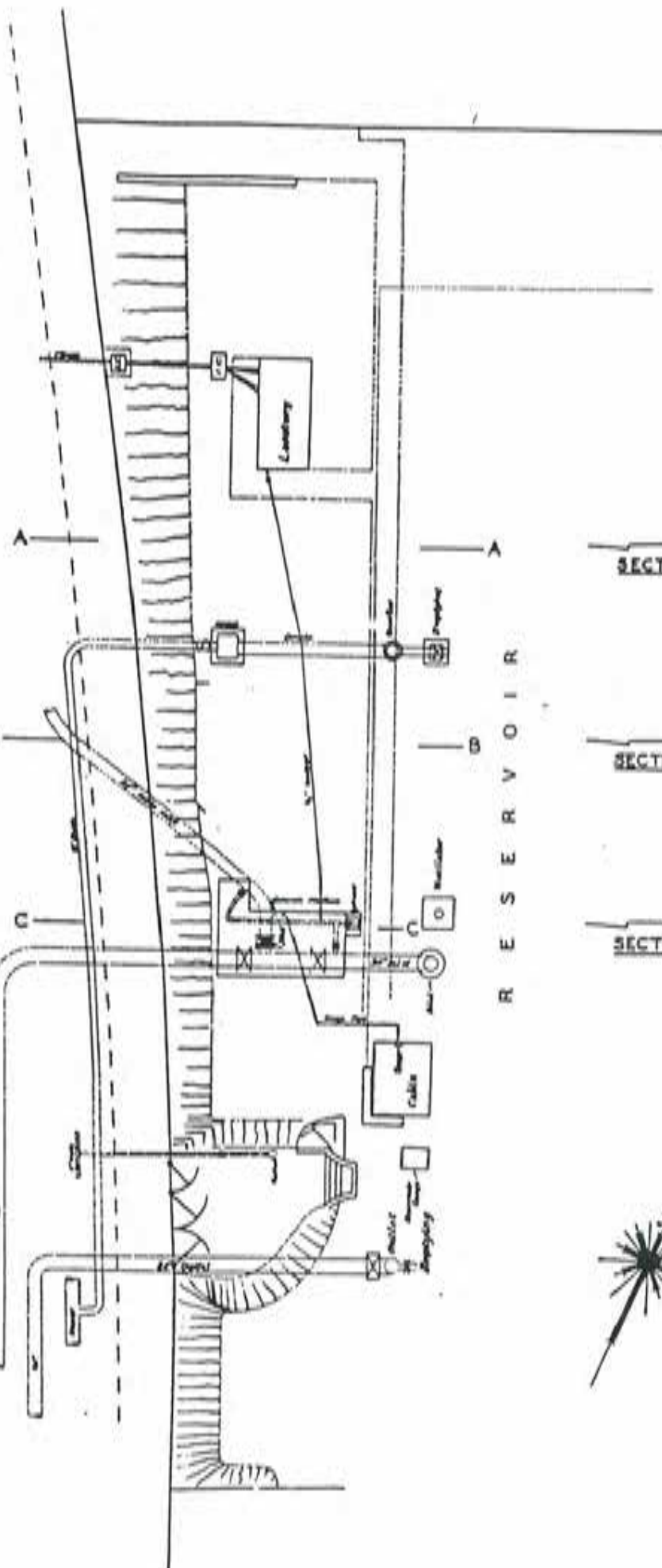
PLAN

00/A

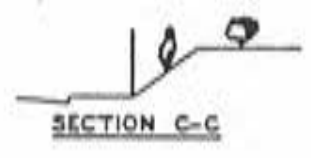
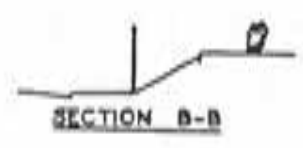
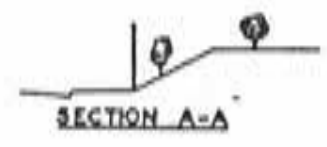
12/15/24

G A R D E N S

G O N D A R



SCALE: 10 FEET TO 1 INCH.



June 1913

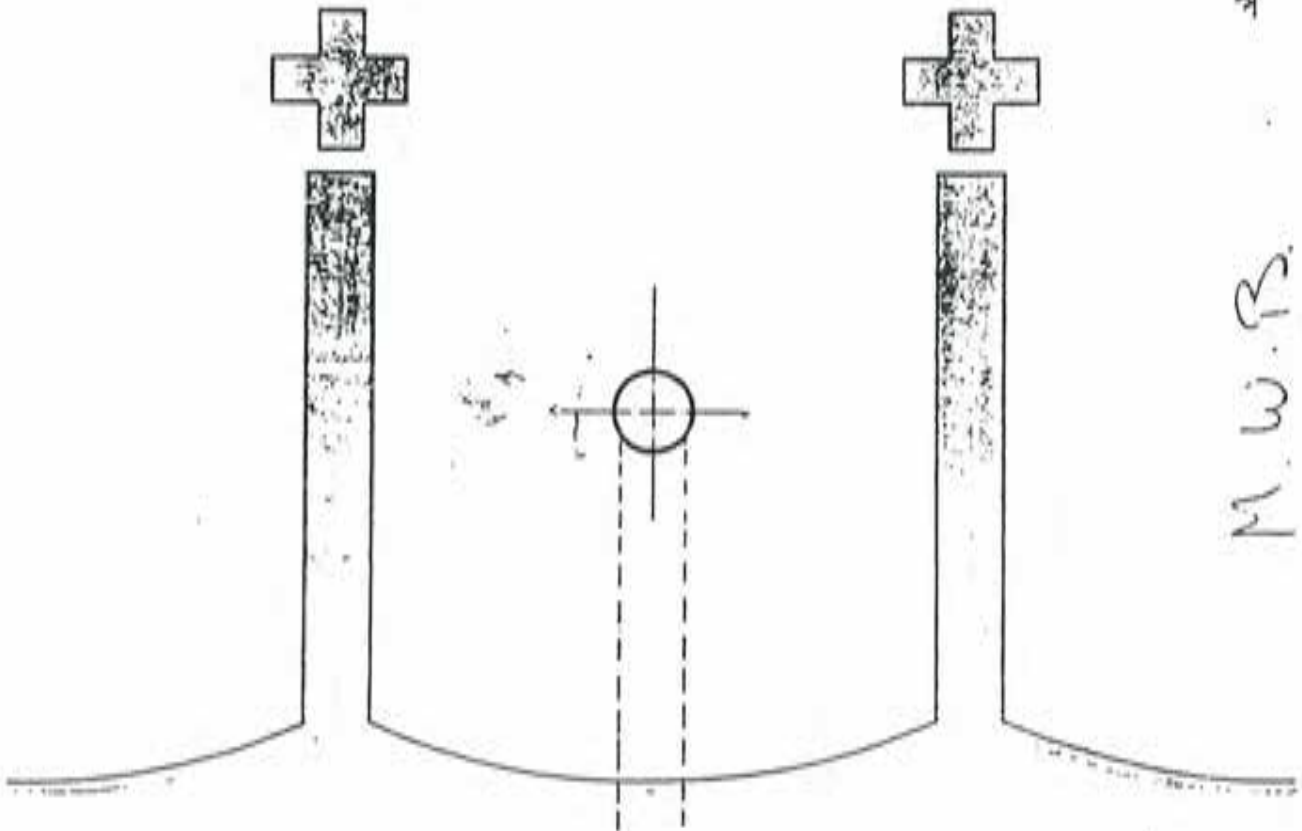
H. F. CRONIN

SHOOT-UP HILL RESERVOIR IMPROVEMENTS TO BANK

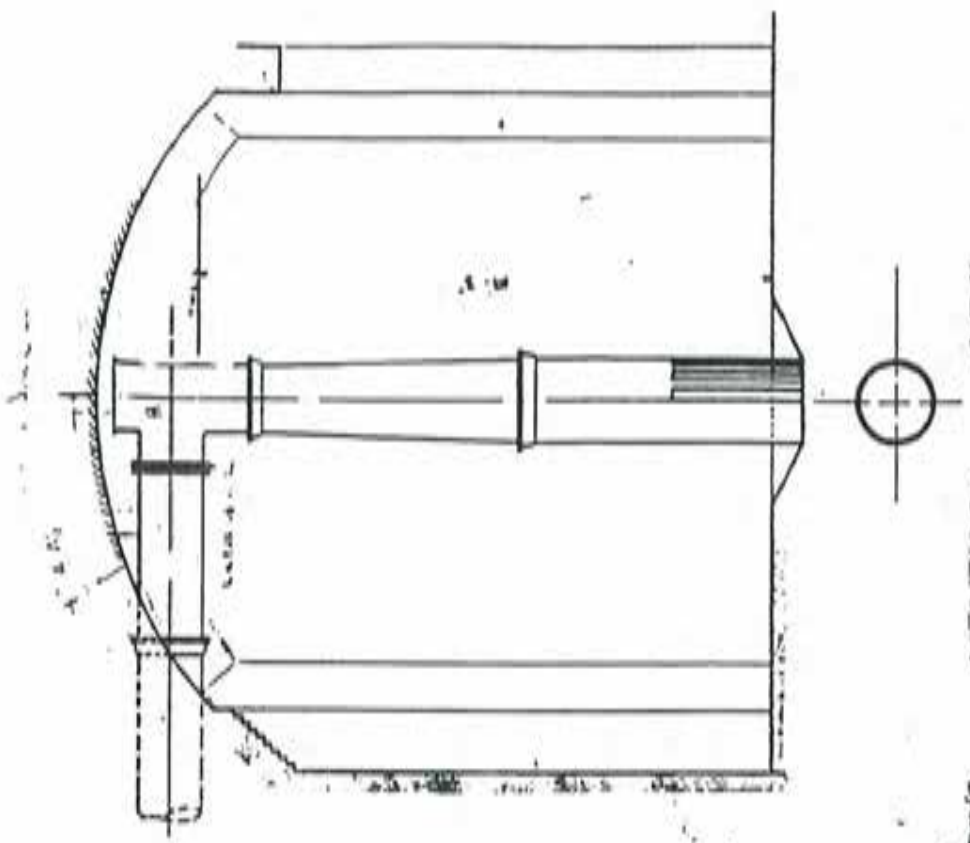
METROPOLITAN WATER BOARD

REVISION NO. 1

Checked	...
Drawn	...

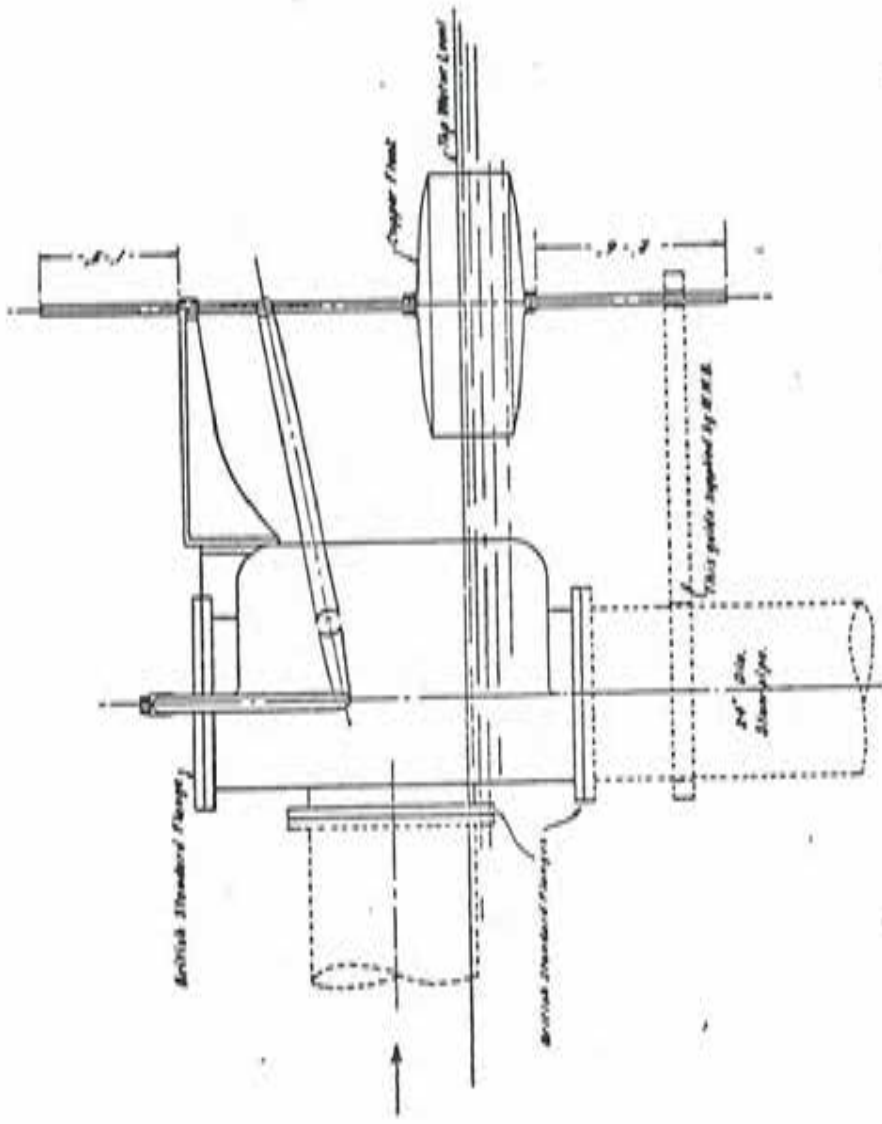


M.W.B.



Inlet Pipe
 School - up - Hill Reservoir
 Sheet 2 of 2

0600/38



METROPOLITAN WATER BOARD
WESTERN DISTRICT.

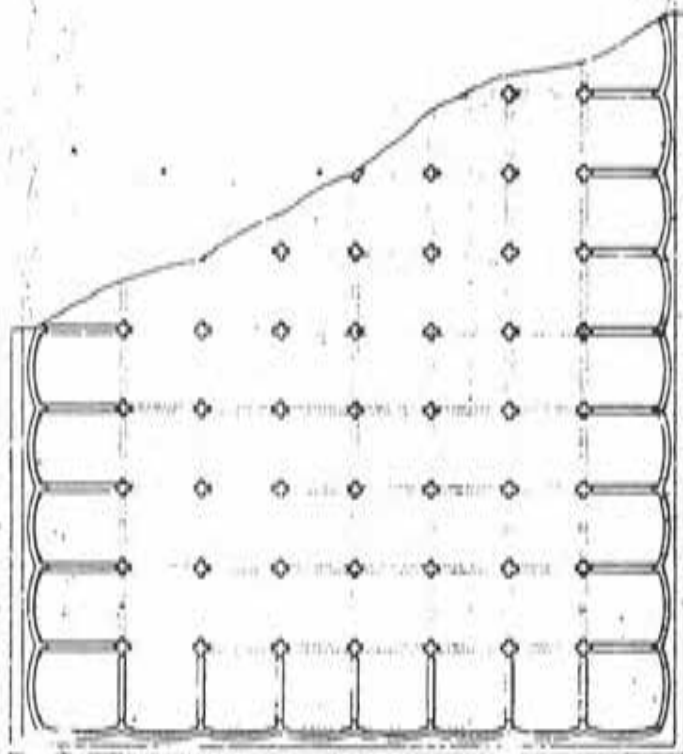
SHOOT - UP - HILL RESERVOIR.
24" DIA. EQUILIBRIUM FLOAT VALVE.

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

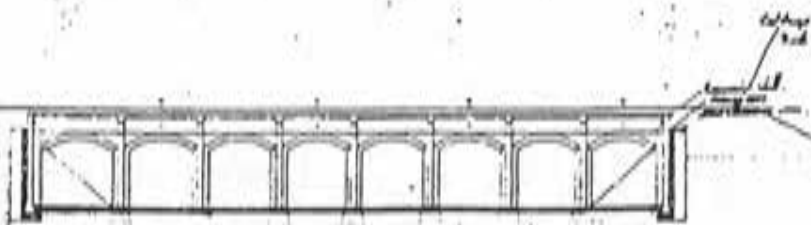
DES. 100000

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— ARCHITECTURAL PLAN —



— SECTION THROUGH THE VAULT —



— SECTION THROUGH THE VAULT —

— COVERED RESEAU —

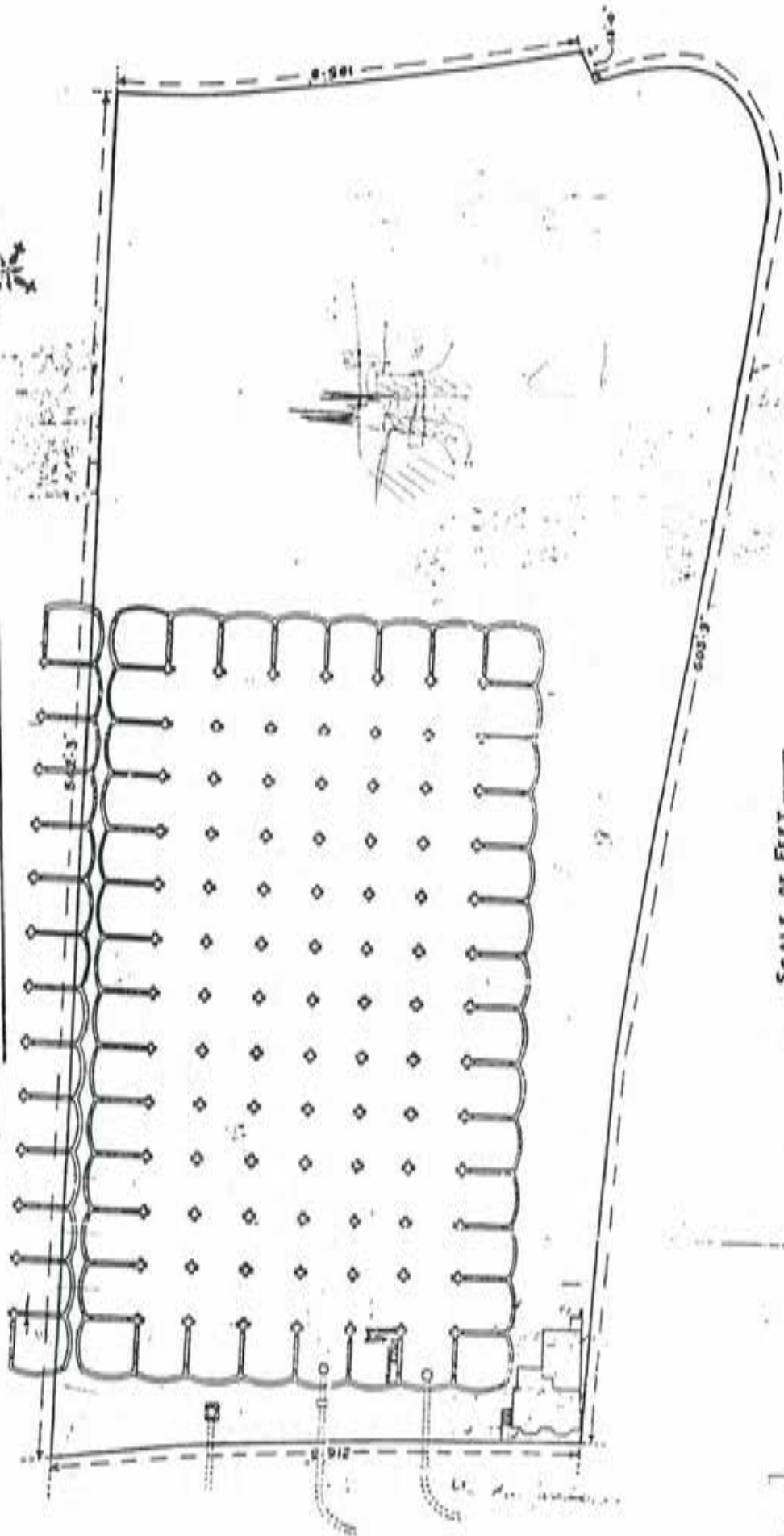
— SCALE IN METERS —

D. 600/36

WEST MIDDLESEX WATER WORKS

Plan showing Boundaries of Land at Sheet 1/3 Mill proposed to be

acquired from the Grand Junction Water Co



SCALE OF FEET

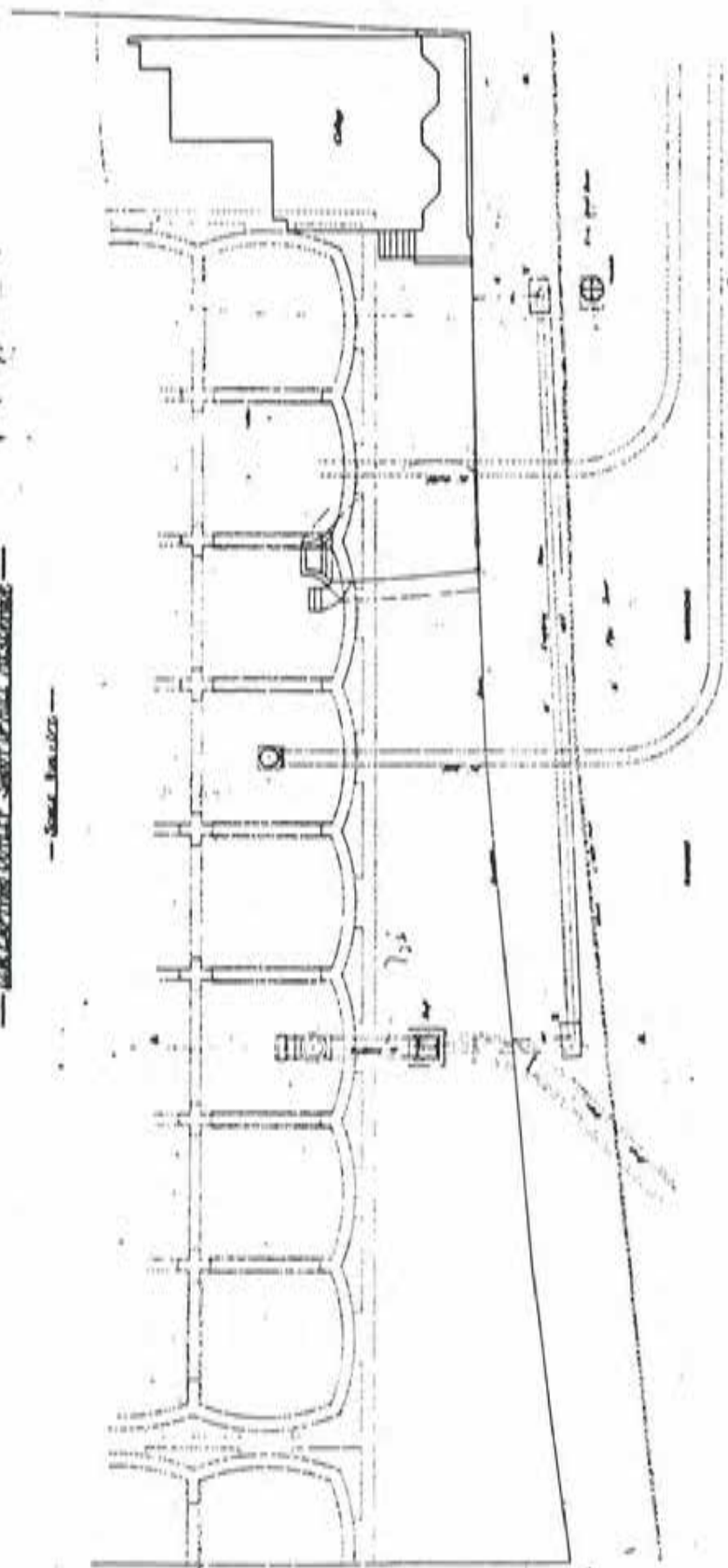


600/20

EST MIDDLESEX WATERWORKS

Plan of Existing Works, Sept. 1884

Scale 1/4 inch = 1 foot



600/26

C. J. W. W. SHOOT-UP HILL

SECTION SHOWING FALL OF CULVERT

HORIZONTAL SCALE 1/4" = 20' VERTICAL OF 1" = 10'

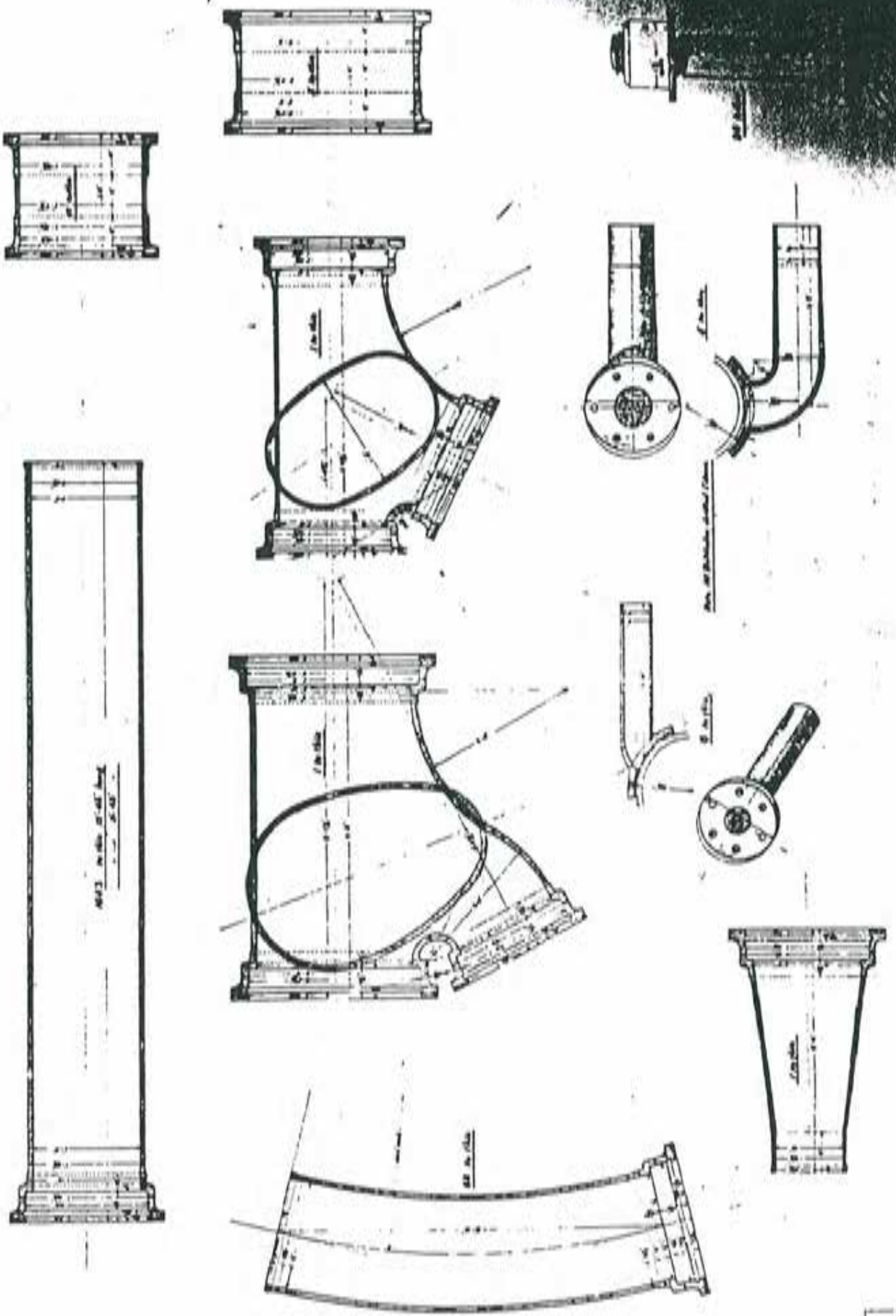


600/7

1A2 1A3 1A4

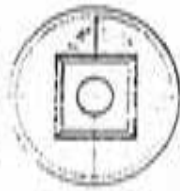
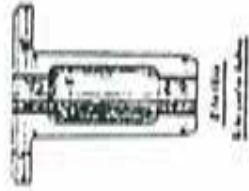
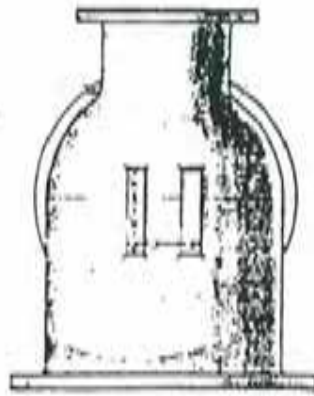
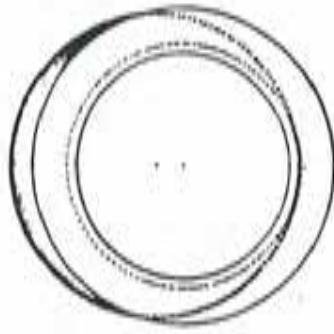
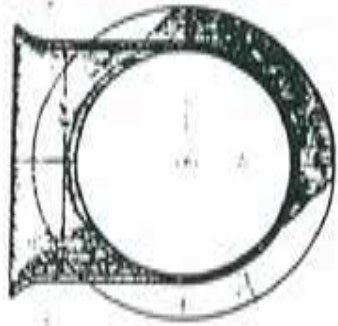
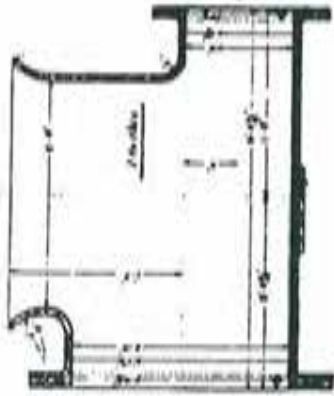
C. F. MIDDLESEX WATER WORKS

18 in. Main for Supply to Swoot at Mill Reservoir

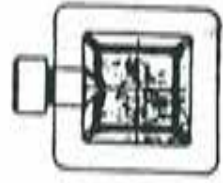
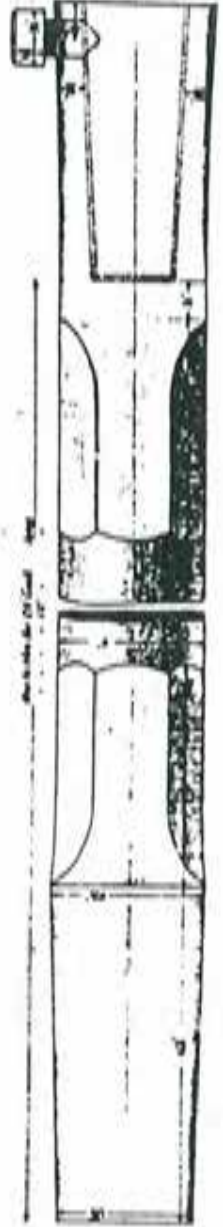


WEST MIDDLESEX WATER WORKS

Castings & Foundry for Sewer up Mill Reservoir

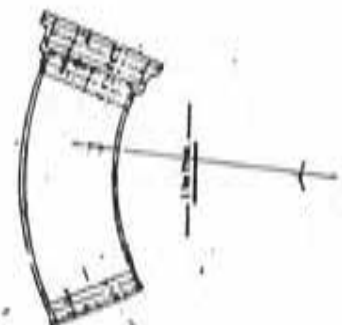
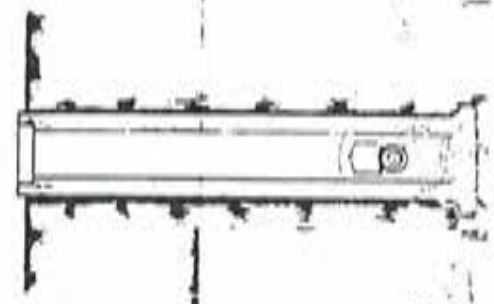
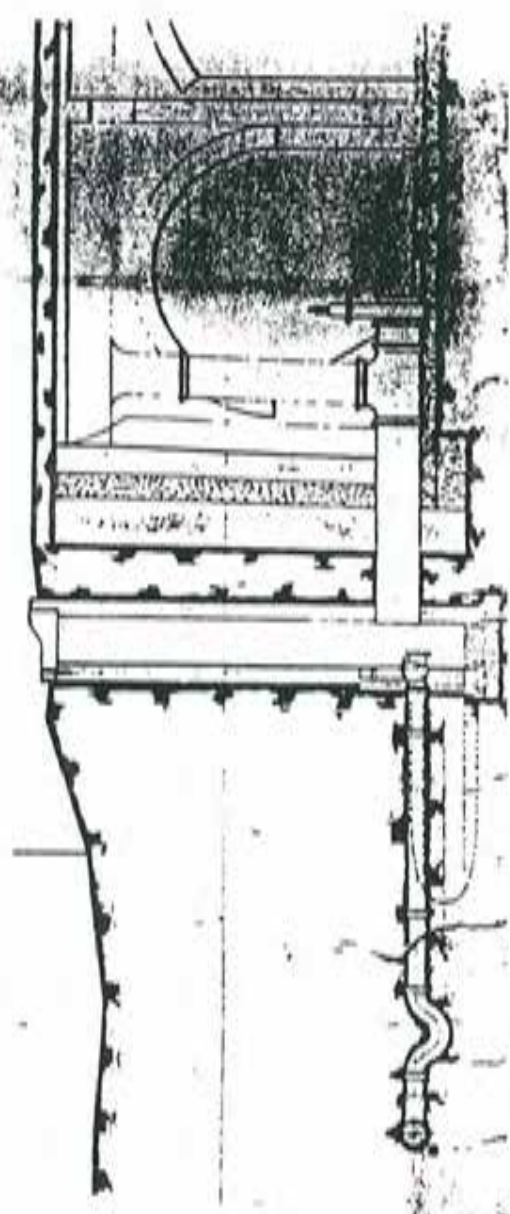
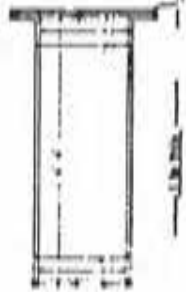
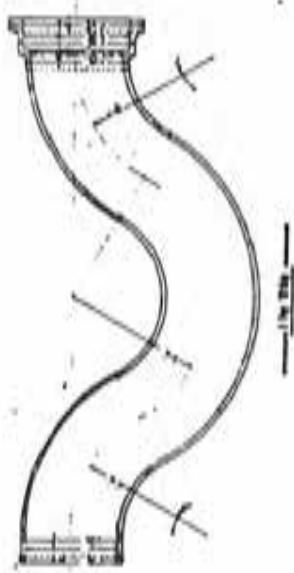
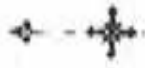
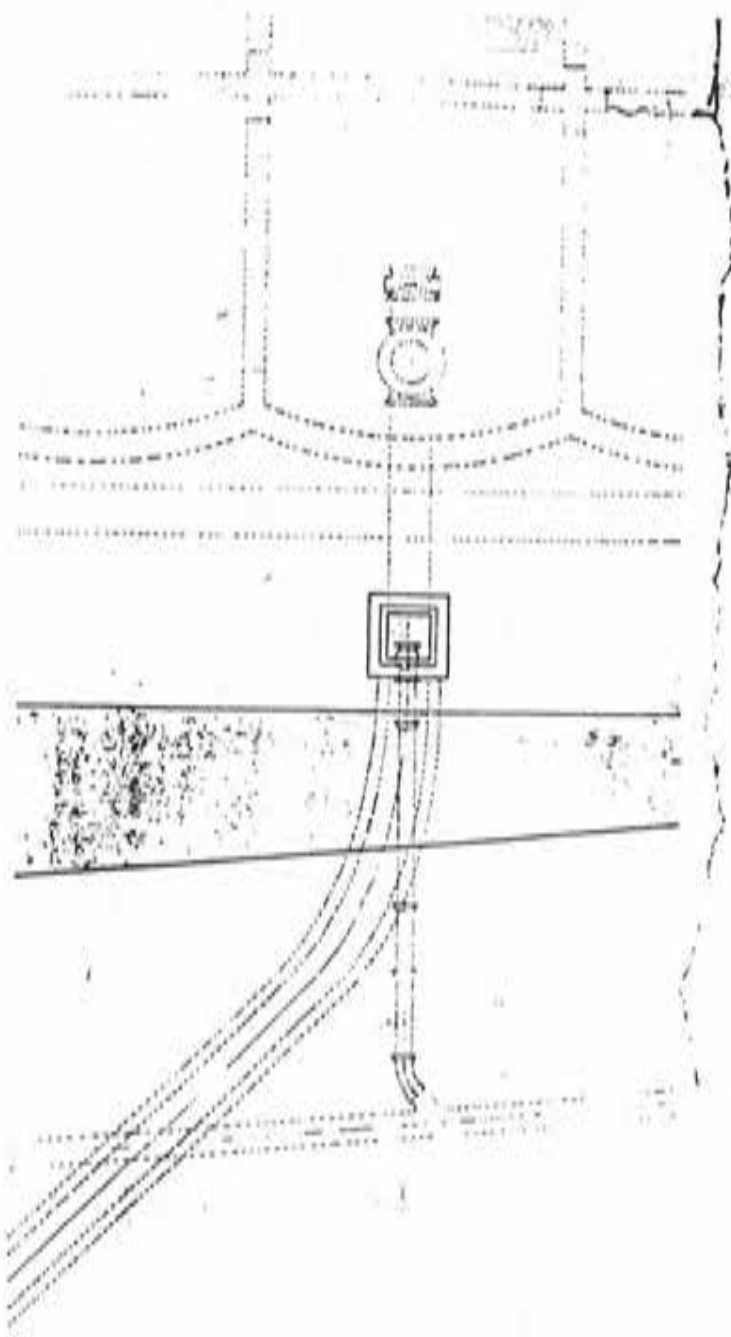


Scale 1/4" = 1'-0"



Checked
by
S. M. ...
Engineer

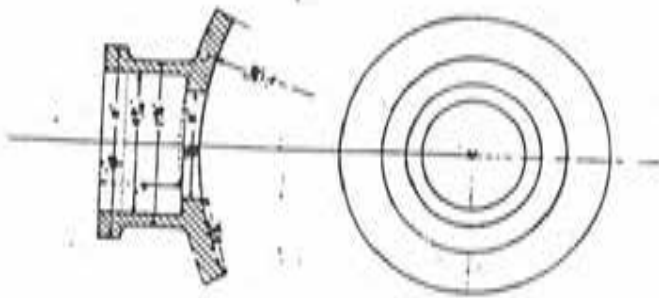
— Road's line in east front —



1/20

16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45

45



600/28

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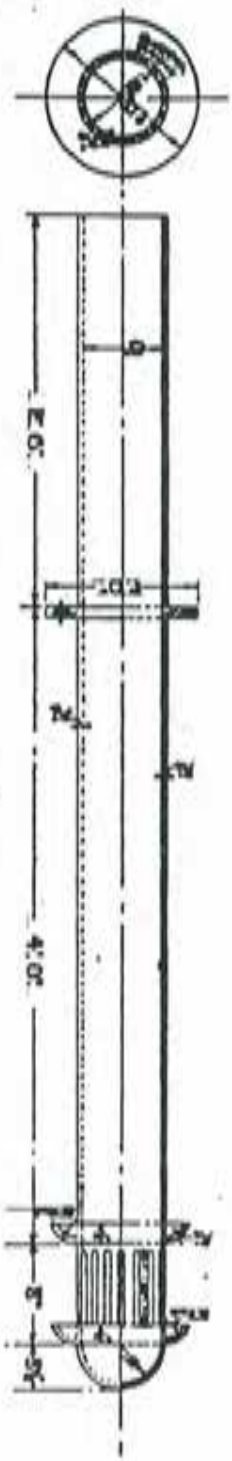
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SHELDON

Project No.	D.600/40
Plan No.	
Scale	
Author	
Checked	
Approved	

METROPOLITAN WATER BOARD
WESTERN DISTRICT
 Air Pipe for Shoot-up-Hill, Reservoir.
 SCALE 1/8 INCHES TO ONE FOOT



(Handwritten signature)

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