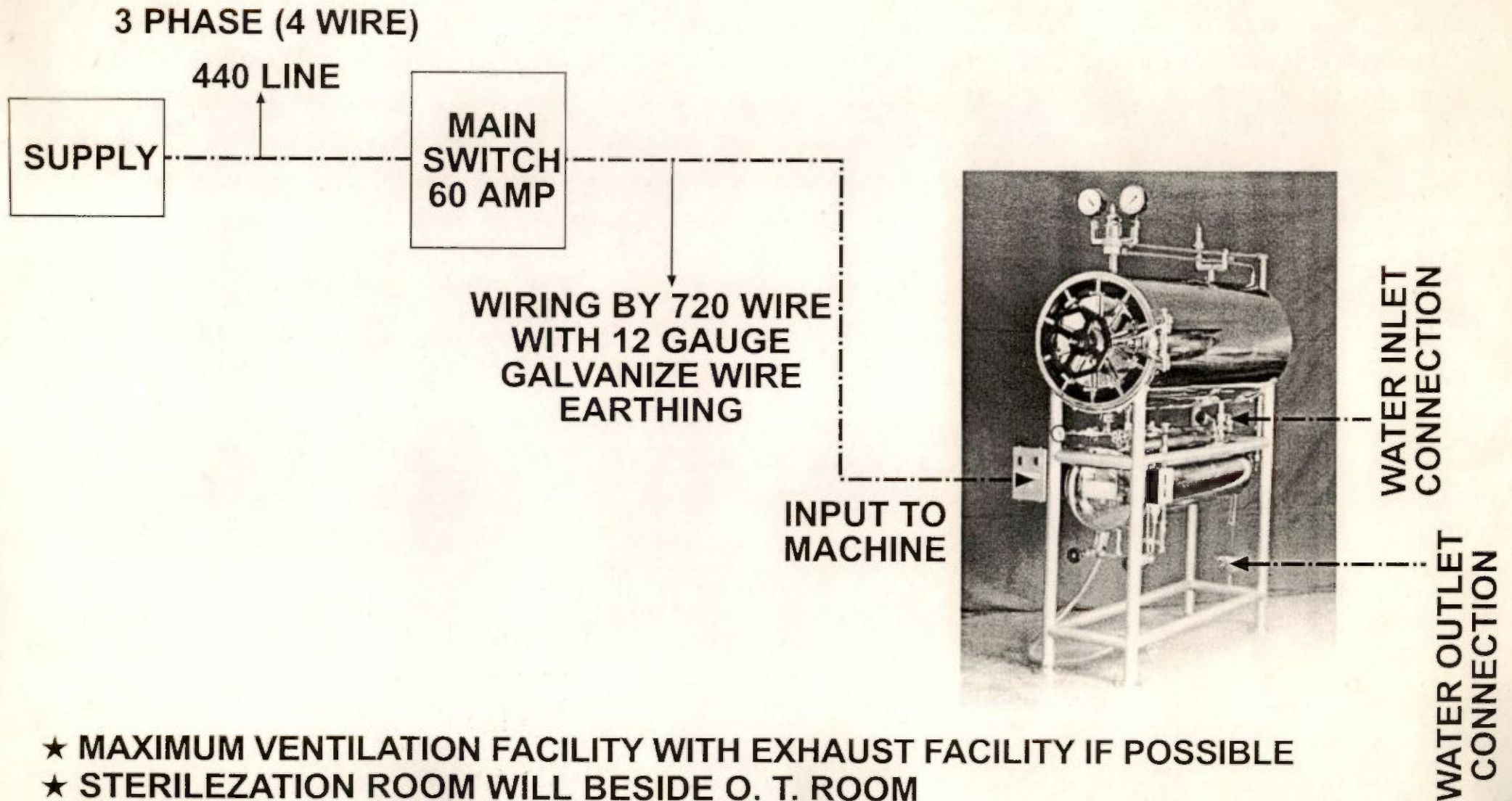


STERILIZER ROOM INSTALLATION CHART



- ★ MAXIMUM VENTILATION FACILITY WITH EXHAUST FACILITY IF POSSIBLE
- ★ STERILEZATION ROOM WILL BESIDE O. T. ROOM

FROM : HOSPOTEX INDIA SERVICES, 94, RAJA DINENDRA STREET, KOLKATA - 700 006

STERILIZER ROOM INSTALLATION CHART

3 PHASE (4 WIRE)

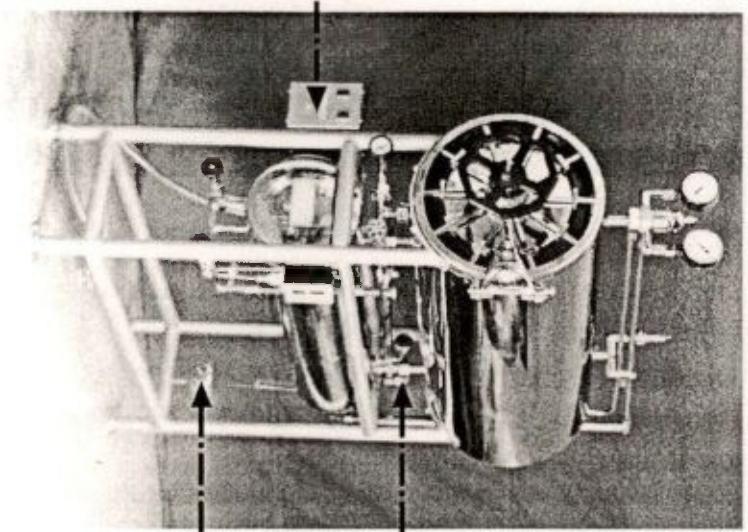
SUPPLY

440 LINE

MAIN SWITCH
60 AMP

WIRING BY 720 WIRE
WITH 12 GAUGE
GALVANIZE WIRE
EARTHING

INPUT TO
MACHINE



WATER INLET
CONNECTION

WATER OUTLET
CONNECTION

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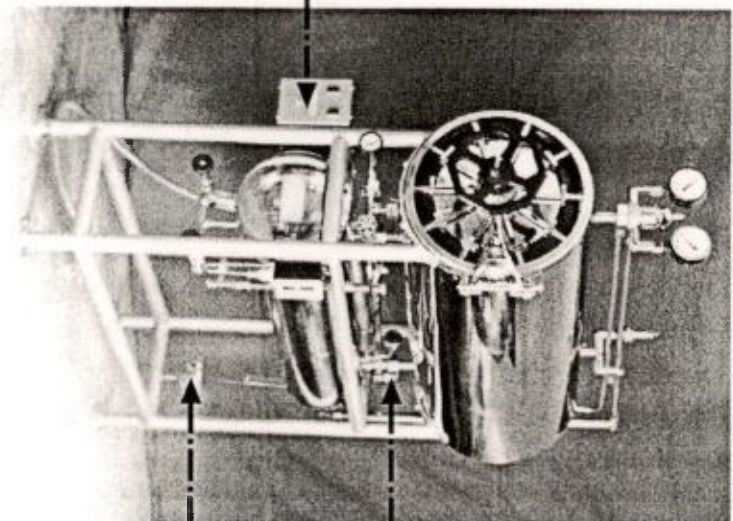
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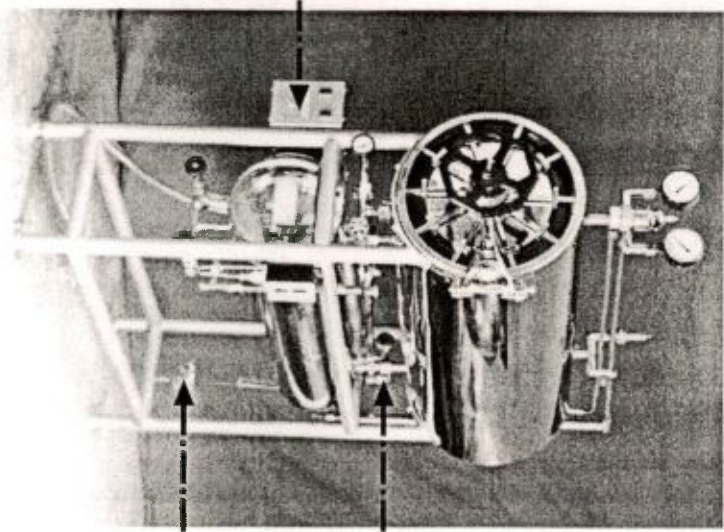
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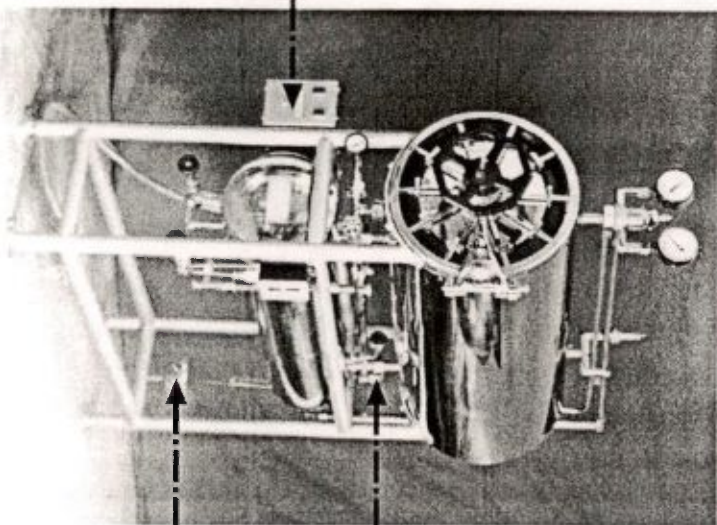
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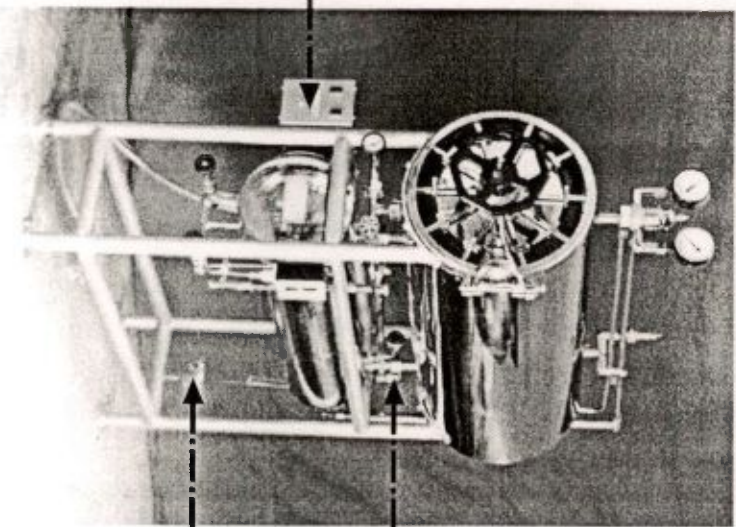
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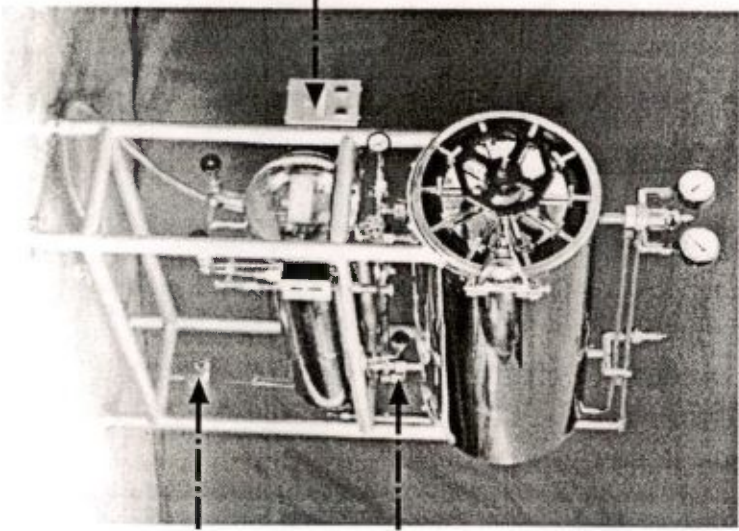
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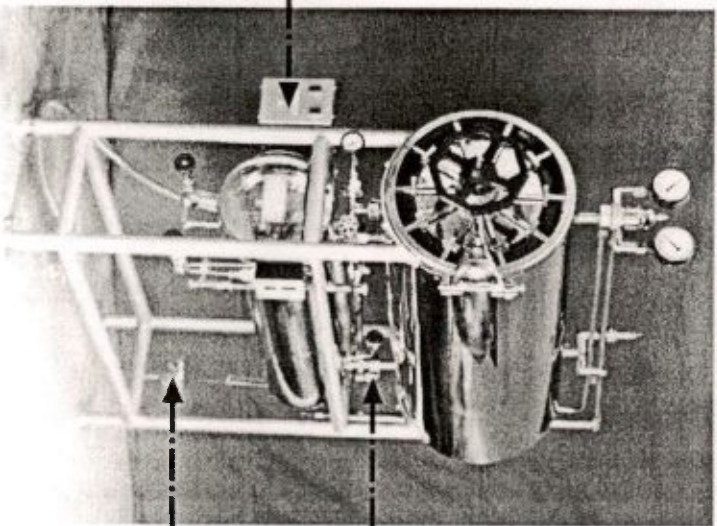
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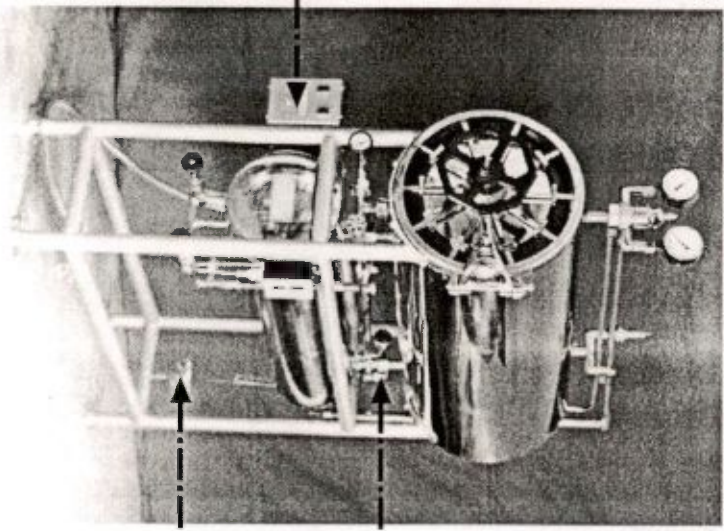
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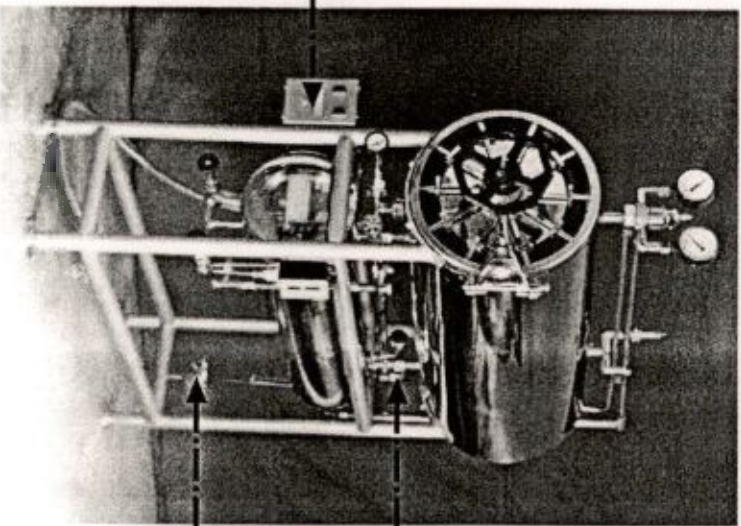
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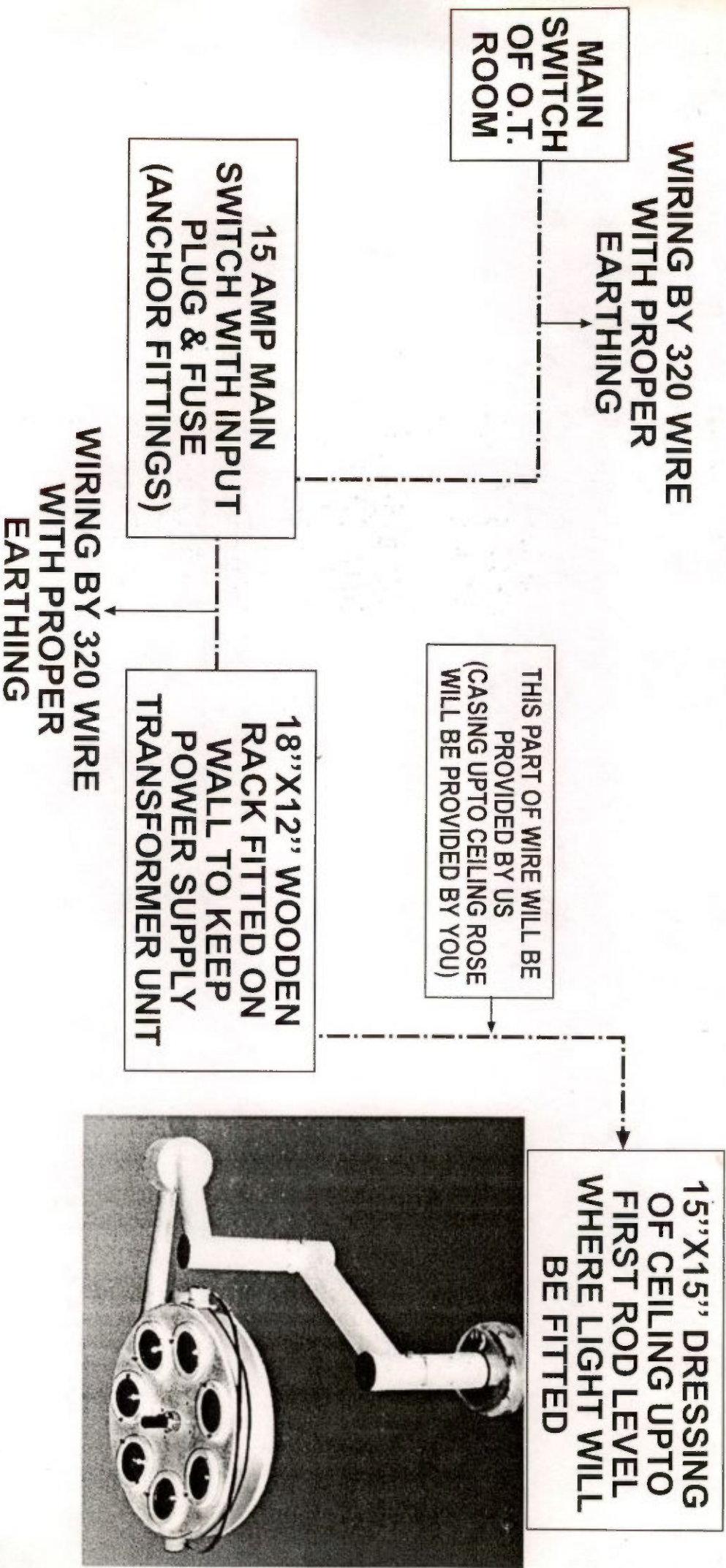
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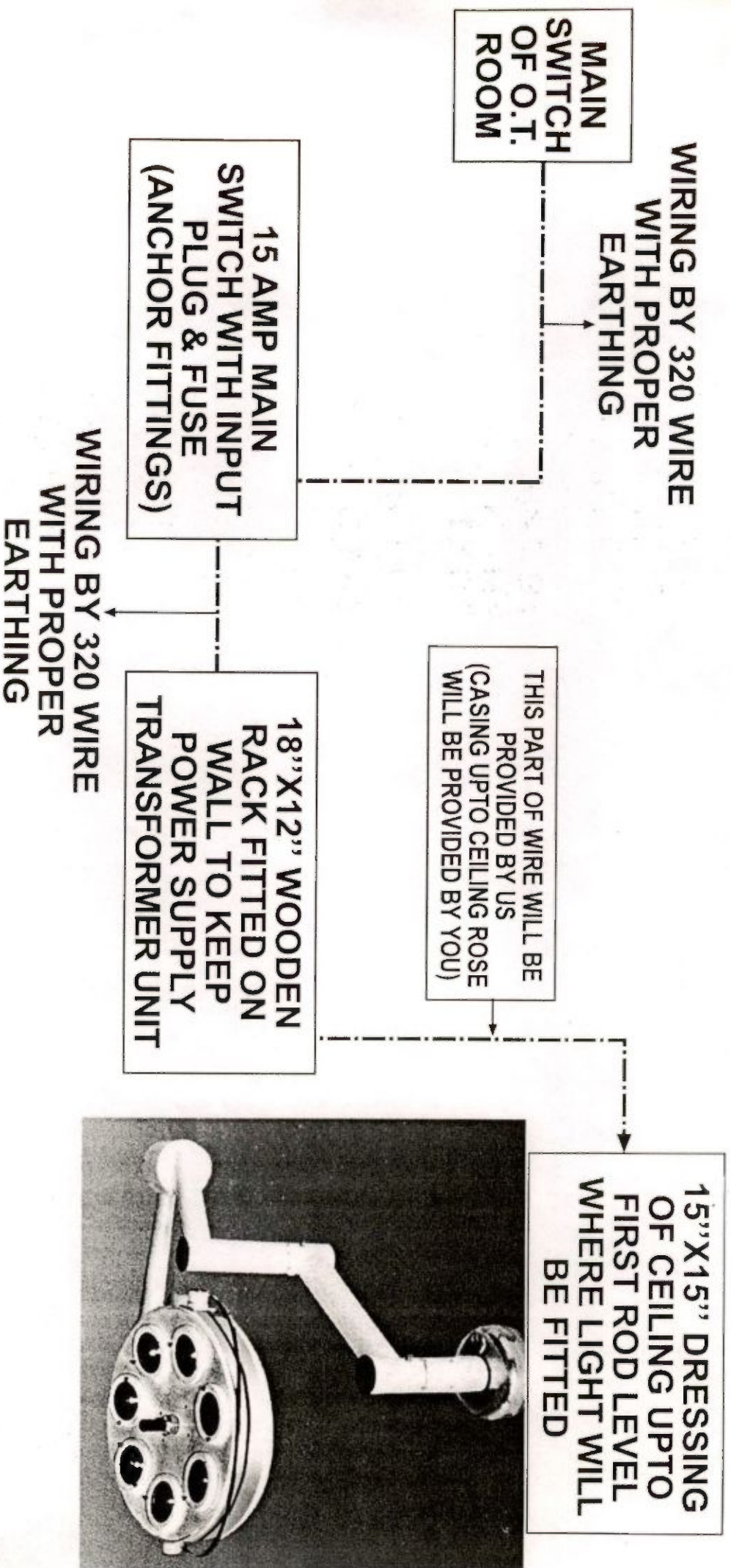
OPERATION CEILING LIGHT INSTALLATION CHART



★ POWER SUPPLY TRANSFORMER UNIT PLACED ON WOODEN RACK MUST BE FITTED AT STANDARD HEIGHT & NEAREST TO O. T. LIGHT FITTINGS

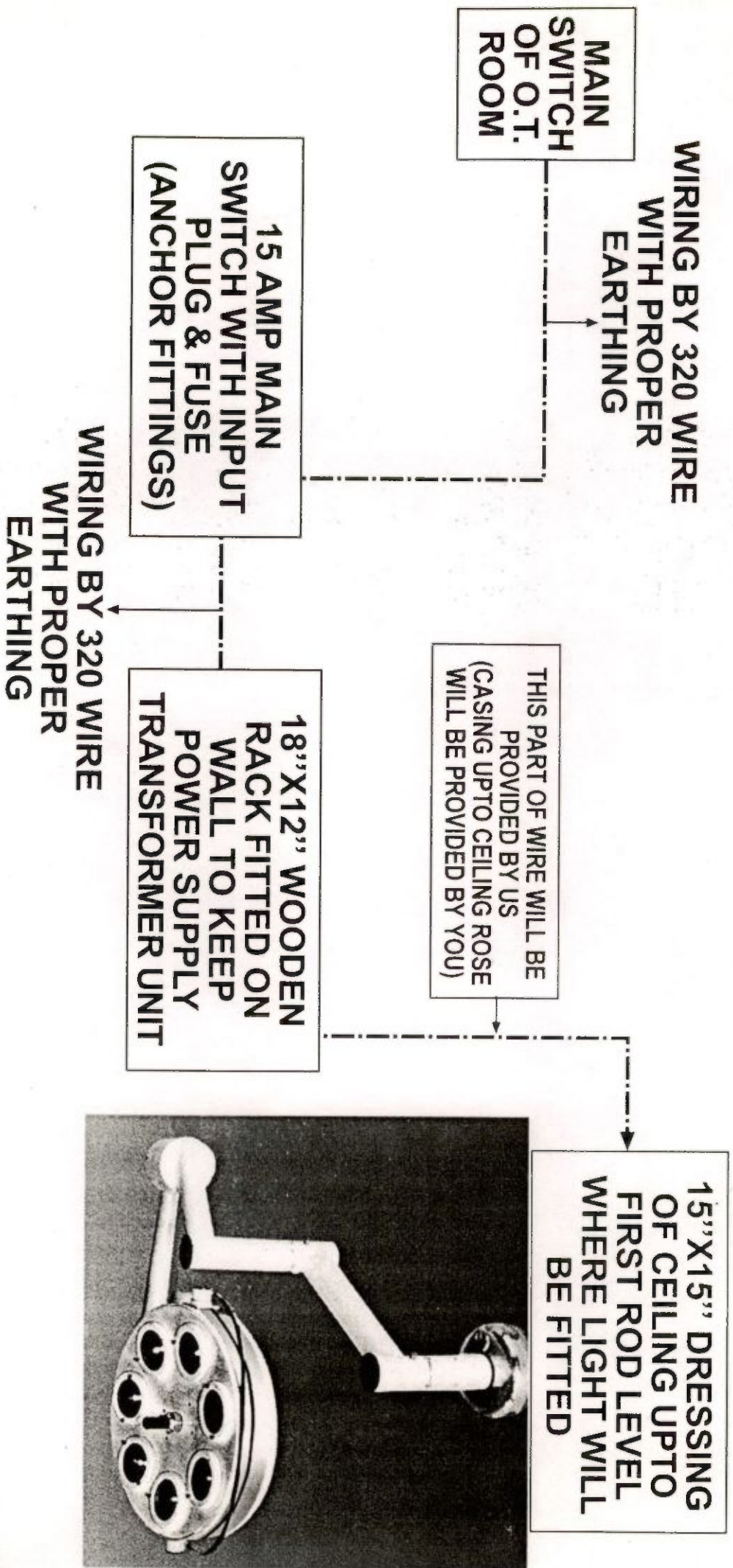
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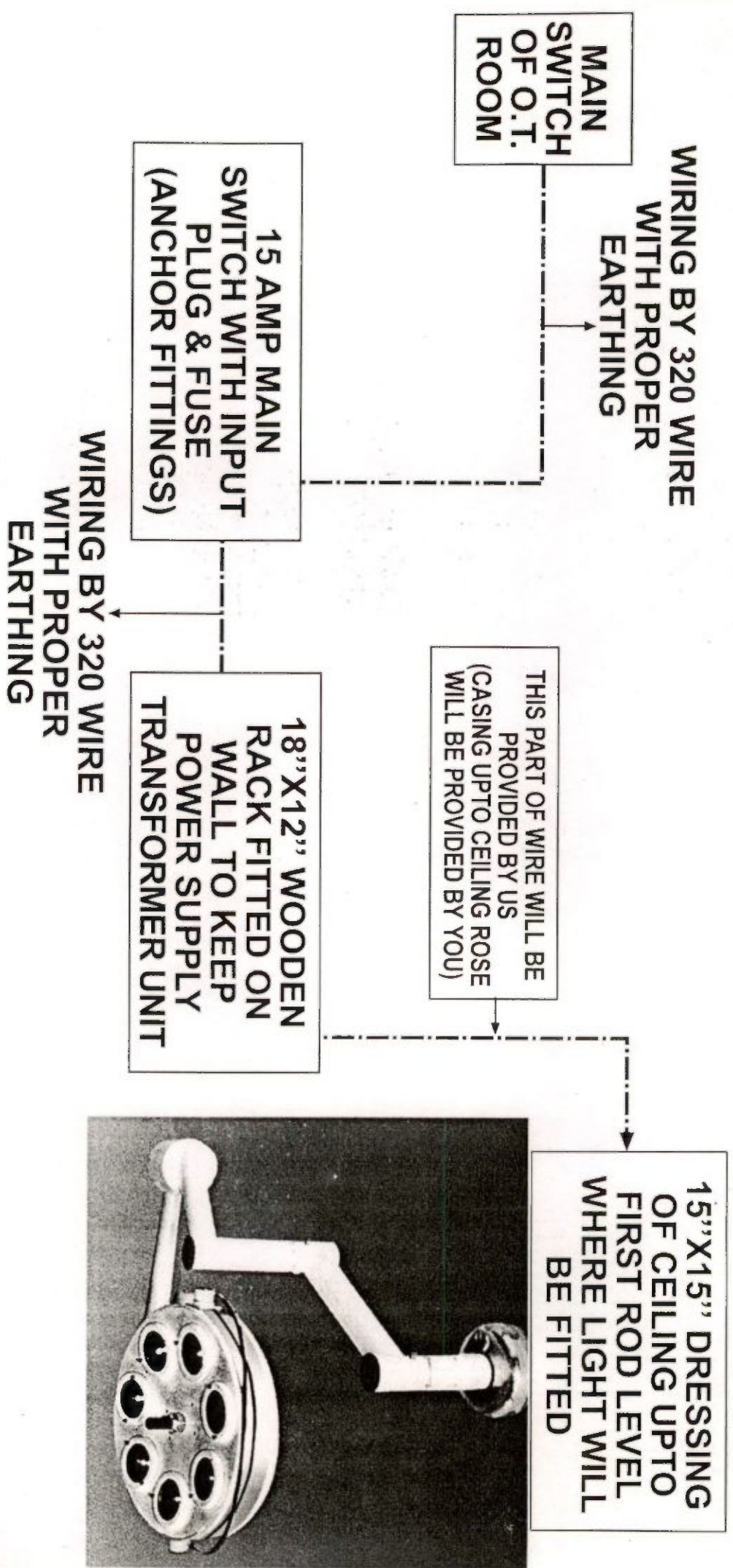
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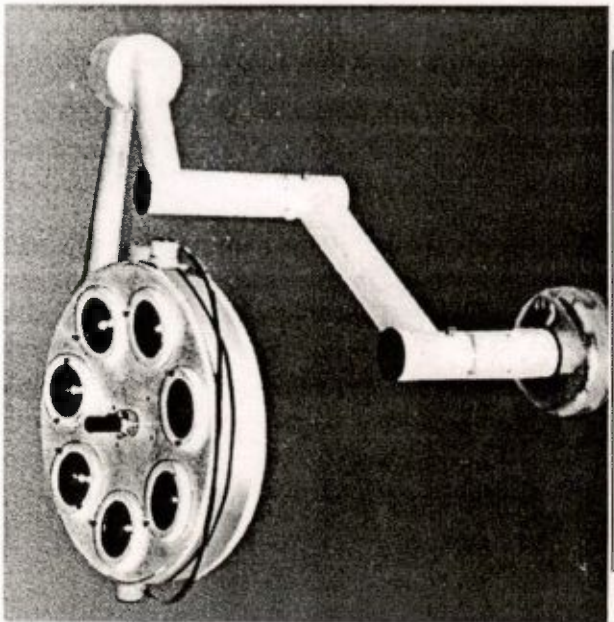
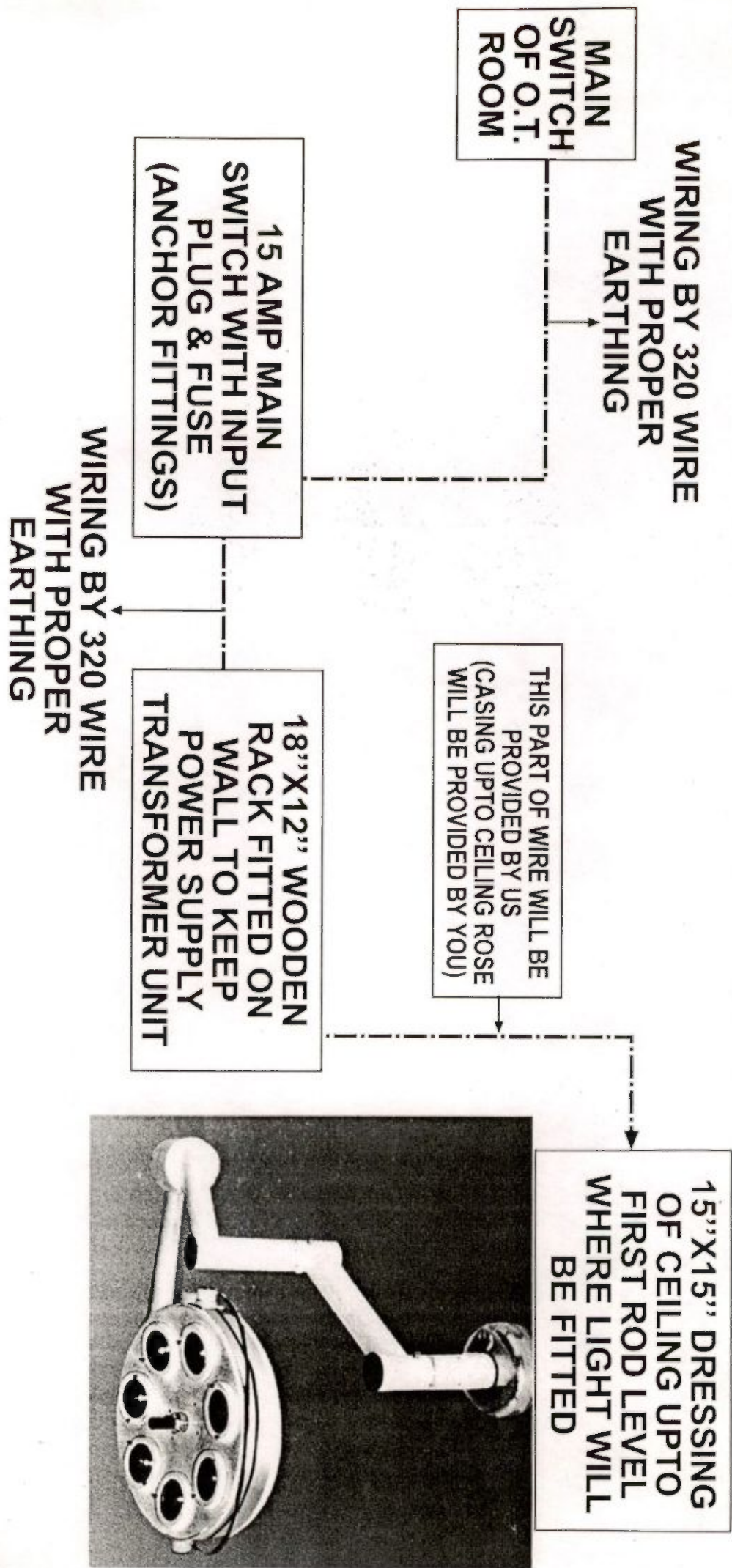
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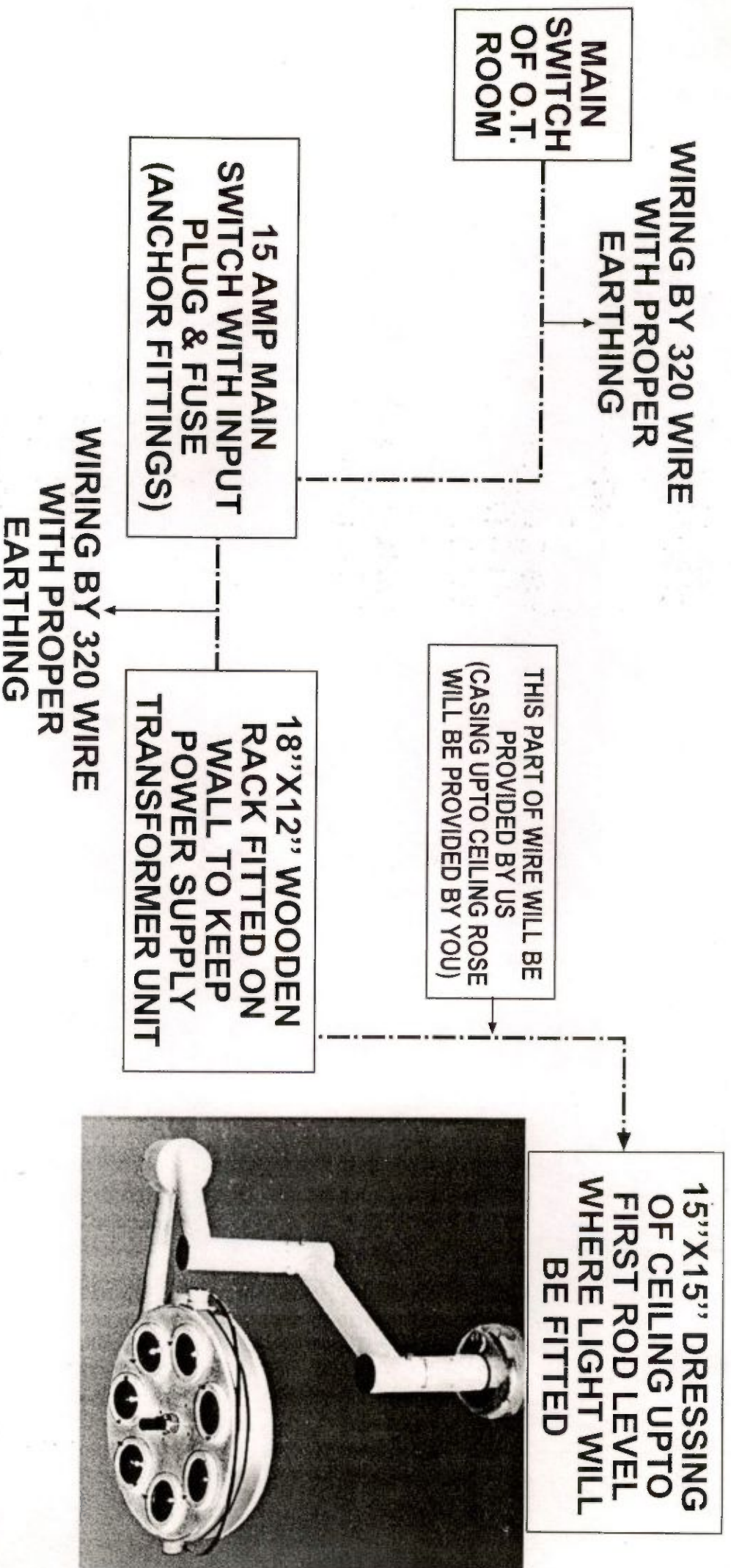
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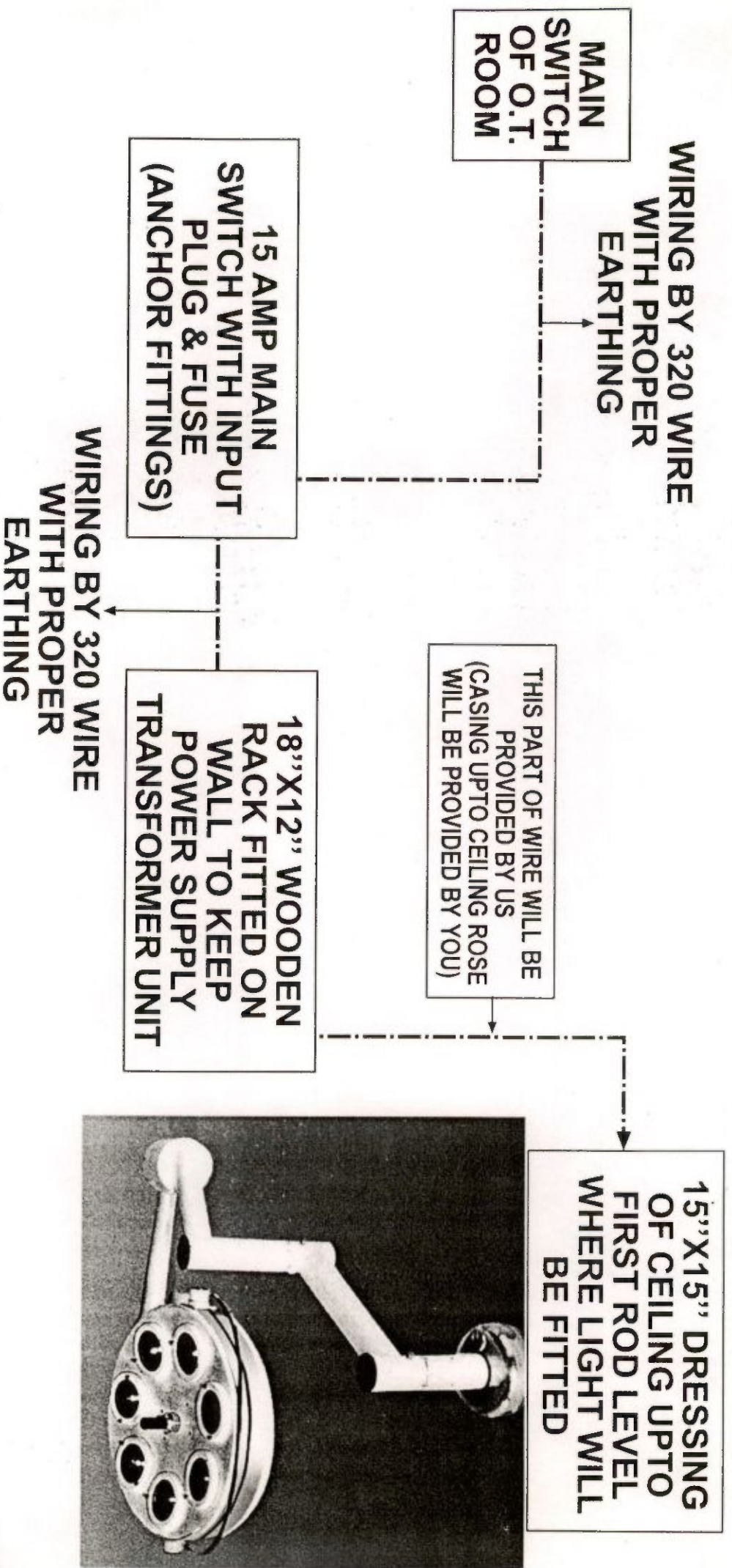
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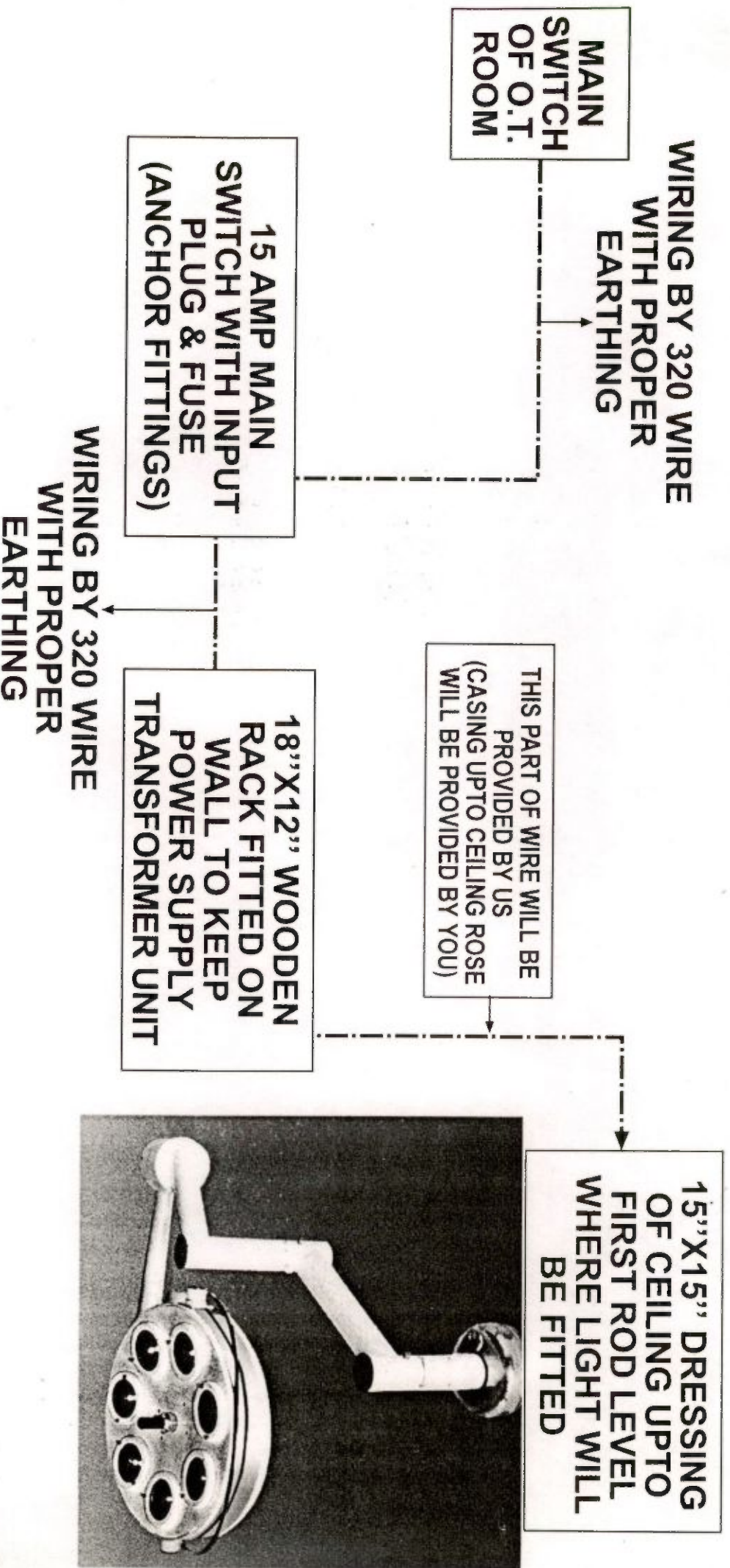
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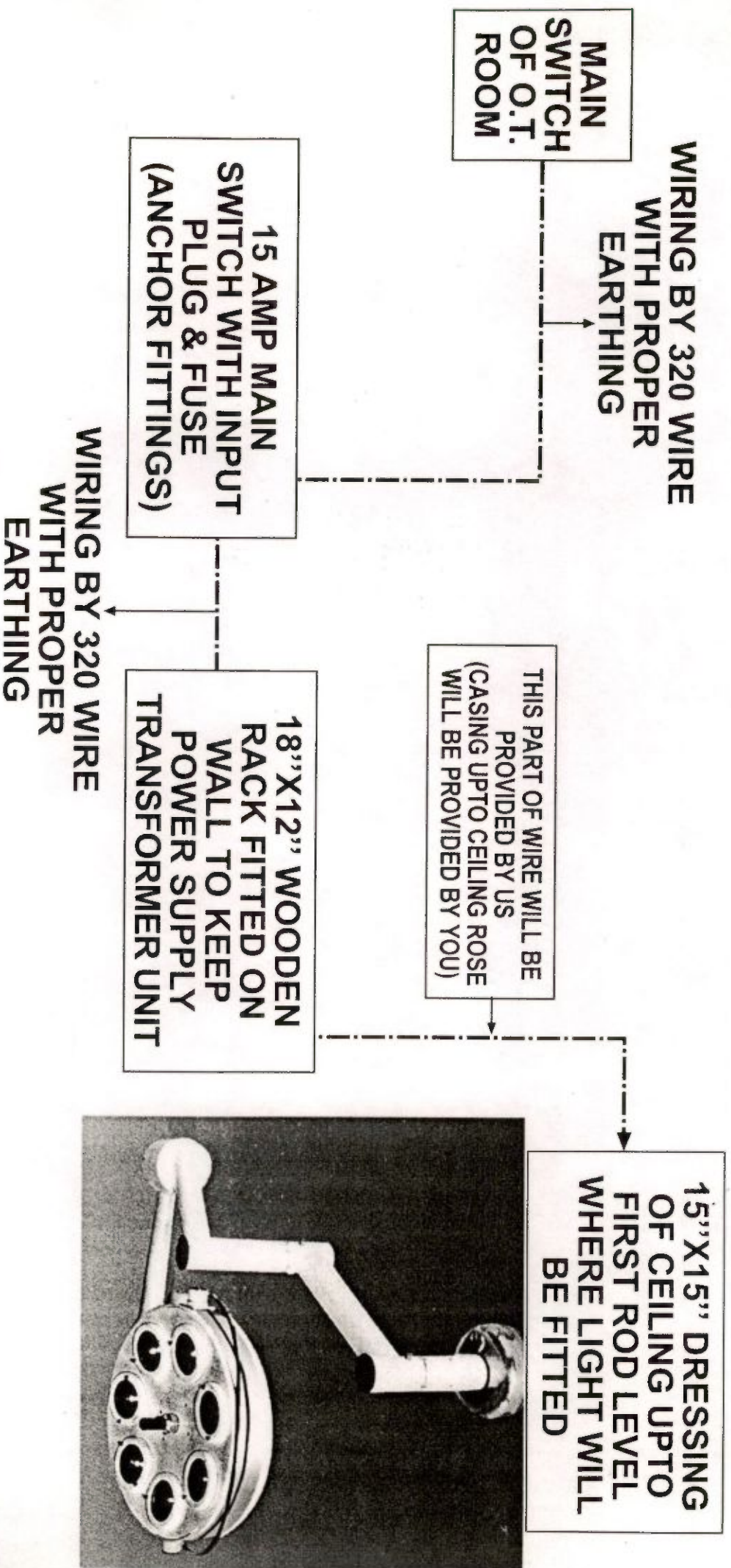
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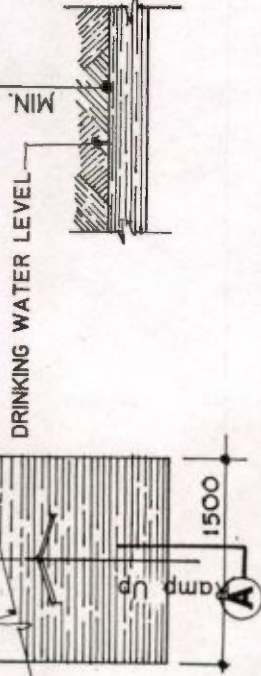
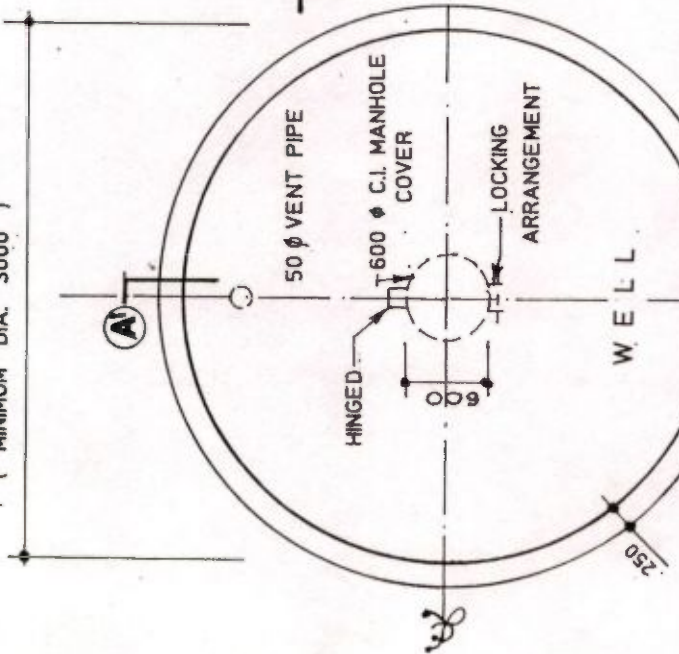
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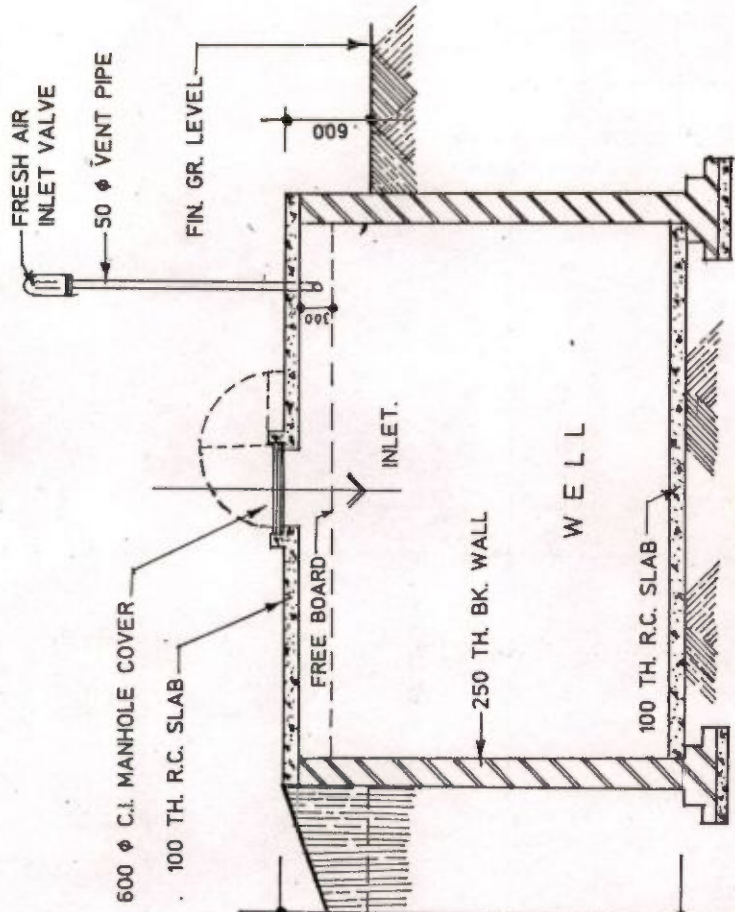
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FROM : HOSPOTEX INDIA SERVICES, 94, RAJA DINENDRA STREET, KOLKATA - 700 006

DIA. OF WELL WILL BE DECIDED
CONSIDERING THE VOLUME OF WASTE
(MINIMUM DIA. 3000)



PLAN OF WELL



SECTION ON A-A'

STATE HEALTH SYSTEM DEVELOPMENT

Project - II

SCHEMATIC DESIGN OF BURIAL PIT ADOPTED FOR RURAL HOSPITALS

(ASSUMING PEAK PERIOD WATER TABLE AS 7.5 M BELOW GROUND LEVEL)

Scale - 1:50

D r g. N o -

SUDA

STATE URBAN DEVELOPMENT AGENCY

**HEALTH WING
"ILGUS BHAVAN"**

H-C BLOCK, SECTOR-III, BIDHANNAGAR, CALCUTTA-700 091
West Bengal

Ref No.SUDA-15/98(Pt-VI)/ 208

Date20.5.2002

From: Adviser(Health)
SUDA

To : The Project Director
IPP-VIII-(Extn.)

----- Municipal Corporation / Municipality

**Sub: Bio-Waste Management Scheme in Maternity Homes & OPD
under IPP-VIII-(Extn.)**

Sir,

Reference is invited to this office communication bearing memo no. SUDA-15/98(Pt-VI)/276 dt. 26.7.2001 (vide copy enclosed) on the above subject .

As you know that the EOP of IPP-VIII-(Extn.) with World Bank's assistance is upto June 30, 2002, a very short period is available for making mentioned provisions under Bio-Waste Management Scheme.

Concerned ULBs are requested to take immediate action on Sl. no. 2 to 4 of this office letter no. SUDA-15/98(Pt-VI)/276 dt. 26.7.2001.

Action taken in the matter may kindly be intimated in due course. It is however, imperative that the said procurement has to be made within 15 June , 2002 and U/C submitted.

Encl: as stated

Yours faithfully,
L. B. Sangay
Adviser(Health) / 22/5

SUDA- 15/98(Pt-VI) 20877
C.C

20.5.2002

The Mayor / Chair person. -----Municipal Corporation / Municipality for favour of
kind information and necessary action.

07c

L. B. Sangay
Adviser(Health) / 22/5

Government of West Bengal
Office of the Chief Engineer
Municipal Engineering Directorate
Bikash Bhavan, South Block, 1st floor, Salt Lake, Kolkata-91

No. ME/0216/4S-42/2001

Dated, the 8th May, 2002

To
The Adviser (Health),
S.U.D.A.



Sub : Release of fund for construction of twin burial pits for Bio-waste Management in O.P.D. cum M.H. under IPP-8 (Extn.) & R.C.H. - Asansol Project.

S i r,

Please refer to the meeting held on 4-4-2002 in the Office chamber of the Chief Engineer, M.E.D. in connection with the above mentioned subject. It was decided that small circular campus pits would be constructed in ten towns out of eleven towns covered under both IPP-8 (Extn.) & R.C.H. programme. Larger size twin pits with shed are to be constructed in Burdwan as the town is not covered under SHSDP-II Programme.

In this connection, I am to enclose herewith the following documents :-

- 1) Estimate (Type-I) and drawing for twin circular campus pits to be constructed in the rear side corner of the Hospital campus.
- 2) Estimate (Type-II) and drawing revised for 40 beds as per the suggestions furnished by the World Bank. These pits are required for Burdwan town only.

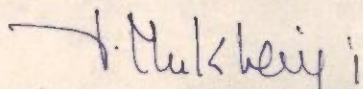
In this connection it may please be noted that some questions have been raised from different sources in respect of construction of campus burial pits as these health units are located in the densely populated areas of the town. The objections need to be considered seriously as the same are associated with the environmental pollution and hazards in the locality. I would, in view of this, request you kindly to get the matter examined from the public health hazard point of view and take appropriate decision as to whether campus pits would be constructed in the other locations (except Burdwan).

If the decision regarding this is in the positive, necessary funds may kindly be arranged to be placed at the disposal of our concerned Engineers. The fund required for construction of the burial pits is (Rs.1.03 x 10 + Rs.2.99 =) Rs.13.29 lakhs for IPP-8 (Extn.) and (Rs.1.03 x 2 =) Rs.2.06 lakhs for R.C.H. - Asansol Programme. A statement showing details of division-wise requirement of fund is also enclosed herewith.

As discussed in the meeting tenders will be invited in W.B. Form no.2911, observing the prevalent Govt. norms for the purpose.

You are requested to please arrange for an early release of fund.

Yours faithfully,


(S. K. MUKHERJEE)
CHIEF ENGINEER, MED.

Enclo : As stated.

08/5/02

No. ME/0216/1/4S-42/2001 Dated, the 8th May, 2002

Copy with a copy of each estimate and drawing forwarded for information and necessary action to :-

1. The Superintending Engineer, West/North/South Circle, M.E. Dte.
- With the request to take preliminary action for inviting tenders so that the works should be completed by 30-6-2002 in all respect. Tenders should, however, be invited on receipt of SUDA's positive decision in this matter and placement of funds at the disposal of concerned Executive Engineers.
2. The Executive Engineer: _____ Division, MED.

(S. K. MUKHERJEE)
CHIEF ENGINEER, MED.

STATEMENT
FOR DIVISION-WISE REQUIREMENT OF FUND FOR
CONSTRUCTION OF TWIN BURIAL PITS

A. IPP-8 (Extn.) Programme :

Sl. No.	Fund to be released	.. Rs.	In favour of
1.	2 x Rs.1.03 lakhs	.. Rs. 2.06 lakh	Executive Engineer, Siliguri Division
2.	3 x Rs.1.03 lakhs	.. Rs. 3.09 "	Executive Engineer Malda Division
3.	2 x Rs.1.03 lakhs	.. Rs. 2.06 "	Executive Engineer Jalpaiguri Division
4.	2 x Rs.1.03 lakhs + Rs.2.99 lakhs	.. Rs. 5.05 "	Executive Engineer Burdwan Division
5.	Rs. 1.03 lakhs x 1	.. Rs. 1.03 "	Executive Engineer Midnapore Division

RCH-Asansol Programme :

1.	Rs. 1.03 lakhs x 2	.. Rs. 2.06 "	Executive Engineer Asansol Division
----	--------------------	---------------	--

TOTAL .. Rs.15.35 lakhs

S.K. Mukherjee
 (S.K. Mukherjee)
 Chief Engineer, MED

08/5/02

TYPE - I

ESTIMATE FOR THE PROPOSED TWIN CIRCULAR CAMPUS BURIAL PITS
FOR INFECTIOUS WASTES OF OPD CUM MH UNDER IPP-VIII

Sl. No.	Description of Items	Quantity	Unit	Rate (Rs. P.)	Amount (Rs. P.)
1	Earth work in excavation of foundation trenches complete.				
a)	Depth of excavation not exceeding 1500mm. (P-35/ 1(a))	38.00	%m3	2973.00	1129.74
b)	Depth of excavation for additional depth beyond 1500 mm. and upto 3000 mm. but not requiring shoring.(P-35/1(b))	36.00	%m3	5497.00	1978.92
2	Earth work in filling in foundation trenches complete.				
a)	With earth obtained from excavation of foundation (P-35/ 2(a))	20.00	%m3	1738.00	347.60
3	Single brick flat soiling of picked jhama bricks sand. (P-39/ 1)	12.00	m2	95.00	1140.00
4	Cement concrete with graded jhama khoa (30mm size) excluding shuttering.				
(a)	In ground floor and foundation 6:3:1 proportion (P-39/ 4(a))	3.00	m3	1623.00	4869.00
5	Hire and Labour charges for shuttering (upto roof of ground floor)				
(a)	25 mm to 30 mm thick wooden shuttering Engineer-in-charge (P-40/ 11(a))	16.00	m2	105.00	1680.00
6	Reinforcement for reinforced concrete work as per drawing and direction.				
a)	For works in foundation, basement and upto roof of ground floor/ upto 4 m.				
(l)	Tor steel/ Mild steel (P-41/ 14(a))	0.262	M.T.	20831.00	5457.72
7	Cement concrete (4:2:1) with graded stone chips (20 mm size) in ground floor and foundation. (P-39/ 5)	4.00	m3	2373.00	9492.00
8	Brick work with 1st class brick in cement mortar (6:1)				
a)	In foundation and plinth (P-43/ 21(a))	28.00	m3	1602.00	44856.00
9	Plaster (to wall, floor, ceiling etc.) with sand and cement mortar (Ground floor)				
(ii)	with 4:1 cement mortar				
a)	15 mm thick plaster (P-111/ 1(ii)(b))	80.00	m2	53.00	4240.00
10	Supplying, fitting and fixing in position G.I. Manhole/ Pit Cover with vein 600 mm size (P-51/ 8(b)(iv)/ S&P)	2	Each	695.00	1390.00

Sl. No.	Description of Items	Quantity	Unit	Rate (Rs. P.)	Amount (Rs. P.)
11	Supplying P.V.C. pipe50 mm dia. (P-61/ 18(B)(vi)/ S&P)	6.00	m	109.00	654.00
12	Supplying P.V.C. coupler.....(P-61/ 19(a)(i)/ S&P)	2	Each	31.25	62.50
13	Supplying and laying polythene sheet (P-51/ 13/ S&P)	14.00	m2	8.00	112.00
14	Supplying angle post (40x40x6)	230.00	Kg	24.00	5520.00
15	Fixing post of iron including base connecting etc complete.	20.00	Each	107.00	2140.00
16	Supplying fitting & fixing Chainlink mesh of approved brand etc complete (50mmx50mmx8g)	45.00	m2	241.00	10845.00
17	Brick edging 75 mm. wide complete as per direction.				
	(b) Brick-on-end edging (250 mm.) depth.(P-138/ 3(b))	16.00	%metre	2470.00	395.20
18	M.S. gate as per approved design including necessary welding.	60.00	Kg	26.00	1560.00

97869.68

Add Contingency @ 5%

4893.48

TOTAL

102763.17

Say,

1.03 Lakhs

(Rupees one lakh three thousands only)

TYPE - II

ESTIMATE FOR THE PROPOSED TWIN BURIAL PITs FOR
INFECTIOUS WASTE OF OPD CUM MH UNDER IPP-VIII

Sl. No.	Description of Items	Quantity	Unit	Rate (Rs. P.)	Amount (Rs. P.)
1	Earth work in excavation of foundation trenches or drains, in all sorts of soil excluding laterite or sand including removing, spreading or stacking the spoils within a lead of 75 m. as directed. The item includes necessary trimming the sides of trenches, leveling, dressing and ramming the bottom, bailing out water etc. as required complete. Depth of excavation exceeding 1.2 m. but not requiring shoring	350.00	cu.m.	22.10	7735.00
2	Compacted earth (clay layer) complete (150 thick compaction at a time.)	135.00	cu.m.	13.00	1755.00
3	Single brick flat soiling of picked jhama bricks including ramming and dressing bed to proper level and filing joints with powdered earth or local sand.	60.00	sq.m.	85.00	5100.00
4	Cement concrete (1:2:4) with 20 mm down graded stone chips excluding shuttering. Pakur variety In ground floor	13.00	cu.m.	2523.00	32799.00
5	Cement concrete (1:3:6) with 30 mm down graded stone metal excluding shuttering. Pakur variety In ground floor	1.00	cu.m.	2052.00	2052.00
6	M.S./Torteeel reinforcement (for reinforced concrete work) including distribution bars, stirrups, binder etc. including supply of rodes, initial straightening and removal of loose rust (if necessary), cutting to requisite length, hooking and bending to correct shape, placing in proper position and binding with 16 gauge black annealed wire at every inter-section, complete as per drawing and direction. In ground floor	6.70	Qtl.	1987.00	13312.90
7	Hire and Labour charges for providing from work of hard wood planking in building works including centering, shuttering and propping etc. for in situ reinforced concrete and plain concrete work of any shape and striping of in due course. In foundation footings and coloumn bases etc. upto plinth level. With 25mm thick planks	62.00	sq.m.	68.00	4216.00
8	Brick work in cement mortar (6:1) In foundation and plinth	9.20	cu.m.	1569.00	14434.80
9	HD Polythene corrugated (approved quality) sheet work (excuding the supporting frame work) fitted and fixed with 10mm dia J or L hook bolts and nuts, limpet and washers etc, complete. (Market Rate) In roof	265.00	sq.m.	300.00	79500.00
10	HD Polythene ridging (with standard lap) fitted and fixed with necessary hook bolts , nuts , washers etc. complete. (Market Rate) Closed fitting adjustable type	21.00	m	250.00	5250.00

Sl. No.	Description of Items	Quantity	Unit	Rate (Rs. P.)	Amount (Rs. P.)
11	M.S. structural work in roof trusses etc. with simple rolled structural members (eg. Angles tees, flats etc. weighing less than 22.3 kg/m) connected to one another with gussets cleats by welding and /or by rivets, bolts and nuts etc. as per design and direction, complete including fabrication hoisting and erection.	25.00	Qtl.	2464.00	61600.00
12	M.S. gate as per approved design made of strong M.S. frame work and intermediate stiffeners and with lining 2.03mm thick M.S. sheets including necessary locking and hanging arrangement fitted and fixed complete, including necessary welding.	60.00	Kg	26.00	1560.00
13	Plaster (to wall, floor, ceiling etc.) with sand and cement mortar including rounding off or chamfering corners as directed and raking out joints or roughening of concrete surace. With (6:1) cement mortar 20 mm thick plaster	48.00	sq.m.	54.00	2592.00
14	Neat cement punning average 1.5 mm. Thick in wall, dado, window, sills, floor, drain etc.using @ 0.152m ³ /100 m ²	48.00	sq.m.	11.00	528.00
15	Supplying and laying polythene sheet (150 gm/sq.m.)	300.00	sq.m.	8.00	2400.00
16	Supplying angle post (40x40x6)	460.00	Kg	24.00	11040.00
17	Fixing post of iron including base connecting etc complete.	40.00	each	107.00	4280.00
18	Supplying fitting & fixing Chainlink mesh of approved brand etc complete (50mmx50mmx8g)	125.00	sq.m.	241.00	30125.00
19	Painting with superior quality ready mixed aluminium paint of approved make and brand including smoothening the surface by sand papering etc. on steel surface. Two coats	200.00	sq.m.	20.80	4160.00

284439.70

Add Contingency @ 5%

14221.99

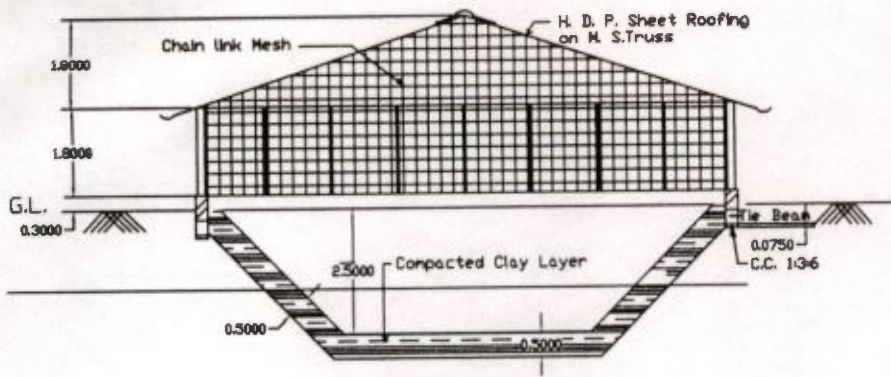
TOTAL

298661.69

Say,

2.99 Lakhs

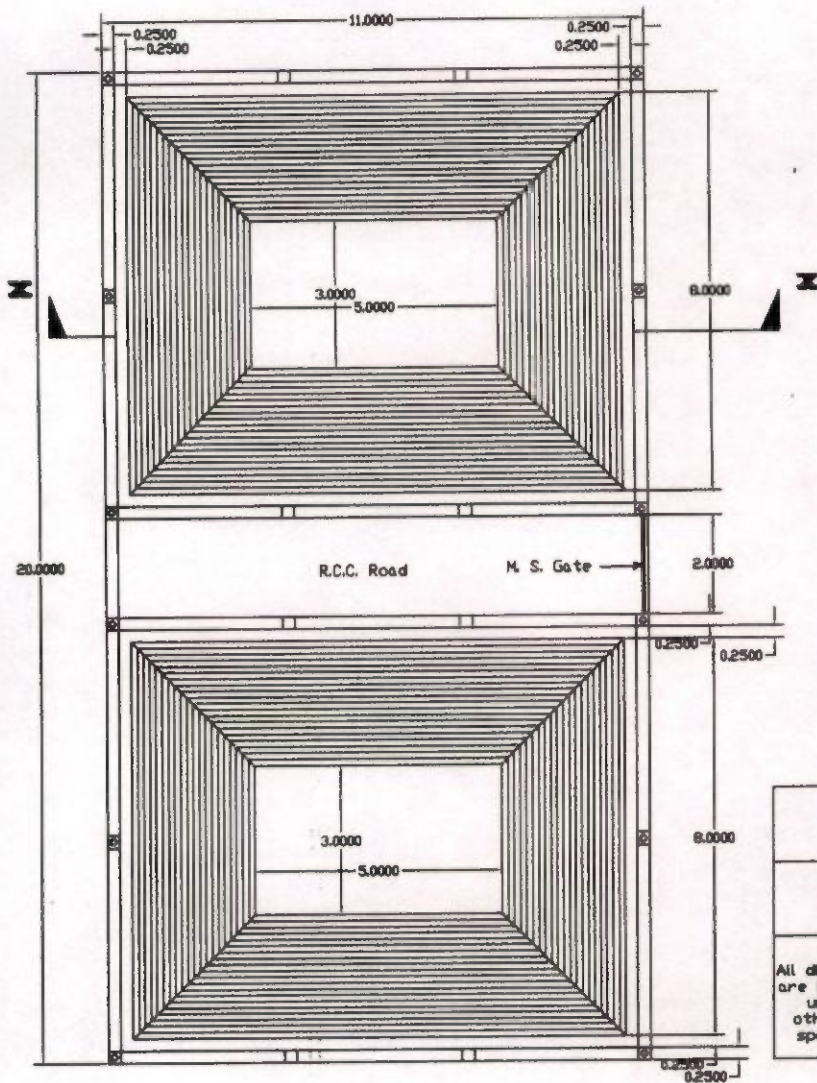
(Rupees two lakhs ninety nine thousands only)



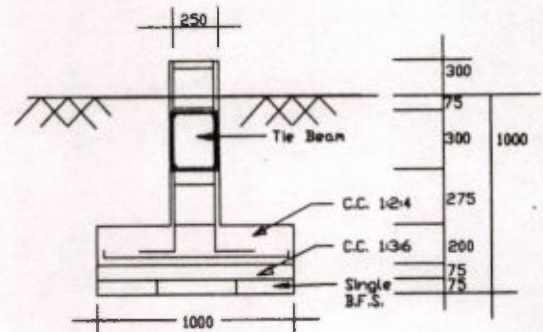
SECTION ON X-X

NOTE : FOR DESIGN DETAILS OF 10.75 M. SPAN M.S. TRUSS, SP : 38 (S & T) 1987, P-194 TABLE 148 MAY BE REFERRED

ONLY TO CARRY TIE BEAM
 ALSO TO CARRY MS COLUMN



PLAN



COLUMN FOUNDATION (IN MM.)

MUNICIPAL ENGINEERING DIRECTORATE GOVT. OF WEST BENGAL	
TWIN BURIAL PIT/ WITH SHED FOR INFECTIOUS WASTE OF OPD CLUM MH	
All dimensions are in metre unless otherwise specified	

SUDA

STATE URBAN DEVELOPMENT AGENCY

HEALTH WING

"ILGUS BHAVAN"

H-C BLOCK, SECTOR-III, BIDHANNAGAR, CALCUTTA-700 091
West Bengal

Ref No.SUDA-15/98(Pt-VI)/208

Date20.5.2002

From: Adviser(Health)
SUDA

To : The Project Director
IPP-VIII-(Extn.)

-----Municipal Corporation / Municipality

Sub: Bio-Waste Management Scheme in Maternity Homes & OPD
under IPP-VIII-(Extn.)

Sir,

Reference is invited to this office communication bearing memo no. SUDA-15/98(Pt-VI)/276 dt. 26.7.2001 (vide copy enclosed) on the above subject .

As you know that the EOP of IPP-VIII-(Extn.) with World Bank's assistance is upto June 30, 2002, a very short period is available for making mentioned provisions under Bio-Waste Management Scheme.

Concerned ULBs are requested to take immediate action on Sl. no. 2 to 4 of this office letter no. SUDA-15/98(Pt-VI)/276 dt. 26.7.2001.

Action taken in the matter may kindly be intimated in due course. It is however, imperative that the said procurement has to be made within 15 June , 2002 and U/C submitted.

Encl: as stated

Yours faithfully,
L.S. Sangupta
Adviser(Health) 22/5

SUDA- 15/98(Pt-VI) 208(1)

C.C

The Mayor / Chair person, -----Municipal Corporation / Municipality for favour of
kind information and necessary action.

20.5.2002

L.S. Sangupta
Adviser(Health) 22/5

SUDA

STATE URBAN DEVELOPMENT AGENCY

HEALTH WING

"ILGUS BHAVAN"

H-C BLOCK, SECTOR-III, BIDHANNAGAR, CALCUTTA-700 091
West Bengal

SUDA 15/98(Pt-V)/276
Hel No.

26.7.2001 Date

From: Adviser (Health),
SUDA

To : The Project Director, IPP-VIII-(Extn.)
----- Municipality/ Municipal Corporation
& RCH Sub-Project Asansol

Sub : Bio-Waste management scheme in Maternity Homes
and OPDs under IPP-VIII-(Extn.), and RCH Sub-Project

Sir,

The undersigned is directed to communicate sanction on the above subject.
The components along with cost for the above scheme is as under:

1. Civil Construction — cost of burial pits [two units at a time]
@ Rs.2.37 lakhs x 13 [11 under IPP-VIII-(Extn.) + 2 under RCH Sub-Project,
Asansol] = Rs.30.81 lakhs. These works may be undertaken by MED as per the
approved engineering design.(enclosed).
2. Purchase of 13 covered cycle vans 1 for each M.H. cum OPD for transportation of the
infected waste from the Health Institution to burial pits
@ Rs.12000.- per MH Cum OPD x 13 = Rs.1,56,000.-
3. (a) Procurement of disposables per MH Cum OPD per year : five no.
of plastic vats with cover, plastic bags (inner lining) of 4 colours
@ Rs.6300/- x 2 (one time replacement) per unit x 13 = Rs.1.63,800/-
(b) Purchase of chemical disinfectants, Kerosine Oil @ Rs.3,000/- per MH Cum
OPD x 13 = Rs.39,000/-
(c) Procurement of rubber gum boots, rubber gloves @ Rs.1500/- per MH Cum OPD
x 13 = Rs.19,500.-
TOTAL of 3 (a) + (b) + (c) = Rs.2.22,300/-

Contd. P-2

Tel/Fax No.: 359-3184

4. Operation and Maintenance :

(a) Salary of Cycle Van Puller @ Rs.100/- per day x 3 days per week
x 52 weeks x 13 = Rs.2,02,800/-

(b) Contingency @ Rs.12,000/- p.a. per MH Cum OPD x 13 = Rs.1,56,000/-

TOTAL of 4 (a) + (b) = Rs.3,58,800/-

GRAND TOTAL 1 + 2 + 3 + 4 = Rs.38,18,100/-

{ IPP-VIII-(Extn.) == Rs.32,30,700/-
RCH Sub-Project Asansol == Rs.5,87,400/- }

Action on Sl.No. 1 will be done by MED and the remaining Sl. Nos. 2 to 4 by ULBs.

Concerned ULBs are requested to take action immediately. CE, MED may please take-up the work, at the earliest and place requisition for placement of fund. The expenditure will be met from the respective project head- innovative scheme.

Yours faithfully
[Signature]
Adviser(Health) 26/7/01

26.7.2001

SUDA-15/98(Pt-V)/276(12)

C.C

CE, MED

Mayor, Chairperson.

-----Municipal Corporation Municipality
For favour of kind information & necessary action.

[Signature]
Adviser(Health) 26/7/01

SUDA

● **STATE URBAN DEVELOPMENT AGENCY**

HEALTH WING

"ILGUS BHAVAN"

H-C BLOCK, SECTOR-III, BIDHANNAGAR, CALCUTTA-700 091
West Bengal

Ref No.

Date

SUDA-15/98(Pt-VI)/ 107

24.04.2002

**From: Adviser(Health)
State Urban Development Agency**

**To: Chief Engineer
Municipal Engineering Directorate**

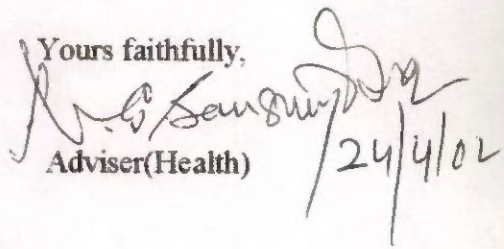
**Sub: Bio-Waste Management scheme in Maternity Homes and OPDs
under IPP-VIII-(Extn.)**

Sir,

Reference is invited to the communication of Chairman, Jalpaiguri Municipality under memo no. 363/M dt. 11.4.2002 on the above subject. (vide copy*)

You are requested to grant your comment on the narration at para I of the said letter.

Encl.: *

Yours faithfully,

Adviser(Health) / 24/4/02

From :

Fax No. 033-359 3184

OFFICE OF THE
MUNICIPAL COUNCILLORS
JALPAIGURI MUNICIPALITY

Phone : Office-30050
Chamber-31096
Residence-30488
Fax : 03561-31096

Sri Sibapada Bhaumik
CHAIRMAN
JALPAIGURI MUNICIPALITY

No. 363 / M

Dated 11/04/12 200 2

To:

The Advisor(Health),
SUDA, ILGUS BHAVAN,
HC-Block, Sector-III,
Salt Lake City,
Kolkata- 700 091.

11 APR 2002

Let us get it
confirmed from
OF MED
15/2
23/4



Sub: Biowaste management scheme in Maternity Homes and OPDs
under IPP-VIII(Extn).

Sir,

In reference to your no. SUDA-15/98(Pt-v)/276 dt.
26.7.2001 on the aforesaid subject, I beg to inform you that
the construction of twice burial pits has been taken up by
the MED in the trenching ground of this Municipality.

You had also provided for 1(one)Cycle Van for trans-
portation of the infected waste. But the trenching ground
is situated at a distance of 15 K.M. from the M.H. and it
is impossible to transport the wastes manually with a Cycle
Van ~~at~~ as such a long distant place.

As such I would request you kindly to provide for a
Mini-Truck whereby the transportation may be done, in lieu
of the Cycle Van. This is very essential. A line in confirma-
tion from your end will be highly appreciated.

Yours faithfully,


Chairman

Jalpaiguri Municipality.

Memo. No. 363/3 / M Dated. 11/4/12

Copy forwarded to the Secretary, Govt. of West Bengal,
Municipal Affairs Department, Writers Buildings, Kolkata-I,
for favour of kind information and necessary action.


Chairman

Jalpaiguri Municipality.

J.S.

Sub: Construction of Burial Pits for disposal of infectious waste under IPP-VIII-(Extn.)

- A. Drawing & cost estimate for construction of burial pits obtained from SHSDP was @ Rs.2.37 Lakhs per pit (2 units at a time).
- B. Drawing & cost estimate for the same obtained from CE, MED indicate cost estimate range of Rs.2.44 Lakhs to Rs.7.17 Lakhs depending upon the area (Memo No. ME/2166/3(1)/4S-42/99 dt.16.10.01).
- C. The aforesaid drawing & cost estimate obtained from CE, MED was sent to ULBs with the request to provide the space in writing for such construction in a convenient location in the area and intimate the same to CE, MED (vide this office memo no. SUDA-15/98(Pt-VI)/479 dt. 2.11.01) with C.C to CE, MED.
- D. The issue as referred to World Bank / GOI on March 1, 2002 vide no. 372 along with the revised drawing & estimate of burial pits as obtained from CE, MED under his office memo o. 3018 dt. 26.2.2002, for recording their " No Objection", with C.C to CE, MED.
- E. The World Bank have granted "Conditional No Objection" on March 11, 2002.

The suggested comments of the Bank's Consultant are to be taken into consideration.

It was further intimated that the Bank financing can be used only for Works completed upto June 30, 2002.

The Highlights of the comments are :-

1. Determinants of the size of the proposed burial pit (the WHO guidelines have been supplied).
2. Availability of adequate land as per the drawings

4/4/02
Mudip
- for follow up
- line of action given down

Land for Construction of Burial Pits
available at the following UAs,
as intimated by concerned P.S./
Chair Person

- 1) English Bazar
- 2) Jalpaiguri
- 3) Durgapur

As learnt from CEA, MED
All are UAs except -
Kharagpur offered
space for construction
of burial pits.

[Signature]
4.4.02

SUDA

STATE URBAN DEVELOPMENT AGENCY

HEALTH WING

"ILGUS BHAVAN"

H-C BLOCK, SECTOR-III, BIDHANNAGAR, CALCUTTA-700 091
West Bengal

Ref No.

Date

SUDA-15/98(Pt-VI)/ 1446

19.03.2002

**From: Adviser(Health)
State Urban Development Agency**

**To: Chief Engineer
Municipal Engineering Directorate**

**Sub: Family Welfare Urban Slums Project- Extended City Component-
Burial Pit for disposal of infectious Wastes.**

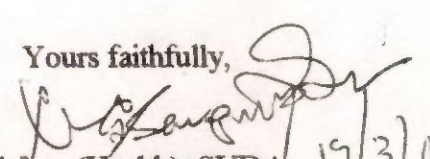
Sir,

Enclosed, kindly find herewith a copy of the letter from Dr.G.N.V.Ramana, Sr. Public Health Specialist, Health, Nutrition and Population, World Bank dt. March 11, 2002 on the above subject which speaks for itself.

This is for favour of kind information and necessary action.

Encl: as stated

Yours faithfully,


Adviser (Health), SUDA

19/3/02

THE WORLD BANK

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT
INTERNATIONAL DEVELOPMENT ASSOCIATION

New Delhi Office
70 Lodi Estate
New Delhi - 110 003
India

Telephone: 4617241/4619491
Cable Address: INTBAFRAD
Mailing Address: P.O. Box 416
Facsimile: 4619393

March 11, 2002

Dr. Gangopadhyaya
Advisor (Health)
State Urban Development Agency
ILGUS Bhavan
H-C Block, Sector III, Bidhan Nagar
Calcutta - 700 091



MAR 2002

Dear Dr. Gangopadhyaya,

*Subject: Family Welfare Urban Slums Project - Extended City Component - Burial Pit
for disposal of infectious Wastes*

Please refer your letter dated March 1, 2002 on the above subject. Our consultants has reviewed the drawings and our comments are attached. Provided the suggested comments are taken in to consideration we have no objection to your proposal. Please note that Bank financing can be used only for works completed up to June 30, 2002.

Comments:

1. We are not able understand on what basis the size of the proposed burial pit has been arrived at. The WHO guidelines (copy attached) suggest much smaller and simpler pits and the superstructure (see attached calculations).
2. We are not sure whether adequate additional land as per the drawings including proposed would be available in the urban areas.
3. As you are aware, all project activities need to be completed by June 30, 2002.

With kind regards,

Sincerely,

A handwritten signature in black ink, appearing to read "G. N. V. Ramana".

G. N. V. Ramana
Senior Public Health Specialist
Health Nutrition and Population

CC:

1. Mr. A. K. Mehra, Director, AP Division, MOHFW, Nirman Bhawan, New Delhi
2. Ms. Nandita Chatterjee, Consultant, WHO, Nirman Bhawan, New Delhi

HOSPITAL WASTE QUANTITY ANALYSIS**A Assumption – 40 Bed General Hospital**

1. Total Health Care Waste per patient per day = 2.2 Kg. Per day
(as per Table 2.5 page 13. State management of notes from health care activities WHO publication)
2. Percentage of infections waste = 1.5% of the total hospital waste
(as per same material as above, page 17, box 2.11)
3. Total Hospital waste for 40-Bed Hospital @ 2.2 kg per day = 88 kg / day
4. Percentage of infected waste 1.8% of 88 kg to be buried / day (as per same material as above, page 13, Table 2.4) = 1.5834 kg / day

B Weight/Volume calculation

1. **(Standard weight/volume ratio for garbage general)**
1 cu mt. Equivalent to 10.70 kg
Volume of infected waste to be buried per day = $\frac{1.584}{10.70} = 0.148$ cu mt

Time taken to fill up the pit of total 133 cum* capacity = $\frac{133 *}{0.148}$ days = 898.64
= say 2¹/₂ years

HENCE IT IS DERIVED THAT THE PROPOSED ONE PIT MEASURING 16M X 2.5 DEEP (SLOPED) CAN BE FILLED IN 2¹/₂ YEARS (CONSIDERING 70% WASTE MATERIAL FILL AND 30% EARTH LAYERING IN BETWEEN.)

OBSERVATIONS

1. As per WHO Recommendations, (see diagram P-109 enclosed , safe burial of infectious Wastes In Hospital Sites no Geo-membrane Is required
2. Liquid if any, is expected to permeate through the under layer of clay hence there is also need for perforated tubes as shown.

3. Consequent to (1) and (2) above, the need for inspection chamber is redundant. The pit shall be used for burying infected wastes and not general waste (refer to first bullet in page-110 paragraph -8.5.3)
4. Slope base of the pit as shown is nor convenient for even layering. It is desirable to provide horizontal base instead of sloped base as per diagram in P-109. WHO document enclosed,)
5. Section detail shown in the proposal drawing is not correct. The corrugation or the roofing material should run along the slope instead of across the slope for draining rainwater. A 2190 mm rise in the truss is too steep. Slope if required should be gentle. It will male the truss cheaper , light and easy to hoist.
6. The abundant use of concrete to built t the superstructure is wasteful and too expensive.
7. Roofing should be rest on 100 dia ms pipes columns placed at economic distance. The truss should be constructed of light weight structure.

RECOMMENDATIONS

1. CALCULATE ACTUAL VOLUME OF INFECTIOUS HOSSPITAL WASTE GENERATED ON THE BASIS OF BED COUNT.
2. CHECK MINIMUM GROUND INCLUDING FENCED AREA , REQUIRED FOR THE PIT
3. PREPARE DRAWING ON THE BASIS OF (1) AND (2) ABOVE
4. PREPARE ESTIMATE ACCORDINGLY
5. MINIMIZE USE OF CONCRETE.
6. THE WHO GUIDE-LINES ENCLOSED.

Safe management of wastes from health-care activities

Edited by

A. Prüss

Department of Protection of the Human Environment
World Health Organization
Geneva, Switzerland

E. Giroult

Ministry of Urban Development and Housing
Paris, France

P. Rushbrook

WHO European Centre for Environment and Health
Rome, Italy



World Health Organization
Geneva
1999

Table 2.3 *Health-care waste generation according to national income level^a*

National income level	Annual waste generation (kg/head of population)
High-income countries:	
— all health-care waste	1.1–12.0
— hazardous health-care waste	0.4–5.5
Middle-income countries:	
— all health-care waste	0.8–6.0
— hazardous health-care waste	0.3–0.4
Low-income countries:	
— all health-care waste	0.5–3.0

^aSources: Commission of the European Union (1995), Halbwachs (1994), Durand (1995).

Table 2.4 *Health-care waste generation according to source size¹*

Source	Daily waste generation ² (kg/bed)
University hospital	4.1–8.7
General hospital	2.1–4.2
District hospital	0.5–1.8
Primary health-care centre	0.05–0.2

¹Source: Economopoulos (1993).

²Data from high-income countries.

Table 2.5 *Total health-care waste generation by region^a*

Region	Daily waste generation (kg/bed)
North America	7–10
Western Europe	3–6
Latin America	3
Eastern Asia	
— high-income countries	2.5–4
— middle-income countries	1.8–2.2 ✓
Eastern Europe	1.4–2
Eastern Mediterranean	1.3–3

^aSources: Durand (personal communication, 1995), Johannessen (1997). Further information may be obtained from International Healthcare Waste Network, 12–14 avenue Paul Vaillant Couturier, 94804 Villejuif, France.

Table 2.6 *Hospital waste generation by waste type (western Europe)^a*

Waste class	Daily waste generation (kg/bed)
Chemical and pharmaceutical waste	0.5
Sharps	0.04
Combustible packaging	0.5

^aSource: Durand (personal communication, 1995). Further information may be obtained from International Healthcare Waste Network, 12–14 avenue Paul Vaillant Couturier, 94804 Villejuif, France.

Box 2.10 Composition of waste from three hospitals in Taiwan, China^a

Material	Percentage (by weight)		
	University hospital	Hospital A	Hospital B
Paper	16	34	51
Plastics	50	21	18
Textiles	10	14	2
Food waste	21	17	7
Metals (sharps etc.)	0.5	1	9
Glass	1	11	8
Others	1.5	2	5

^aSource: Chih-Shan & Fu-Tien (1993), used with permission.

Box 2.11 Average composition of hospital waste in India^a

The data below are average values obtained from 10 large hospitals in Bombay, Calcutta, Delhi, and Nagpur during the period 1993–1996.

Material	Percentage (wet-weight basis)
Paper	15
Plastics	10
Rags	15
Metals (sharps, etc.)	1
Infectious waste	1.5
Glass	4.0
General waste (food waste, sweepings from hospital premises)	53.5

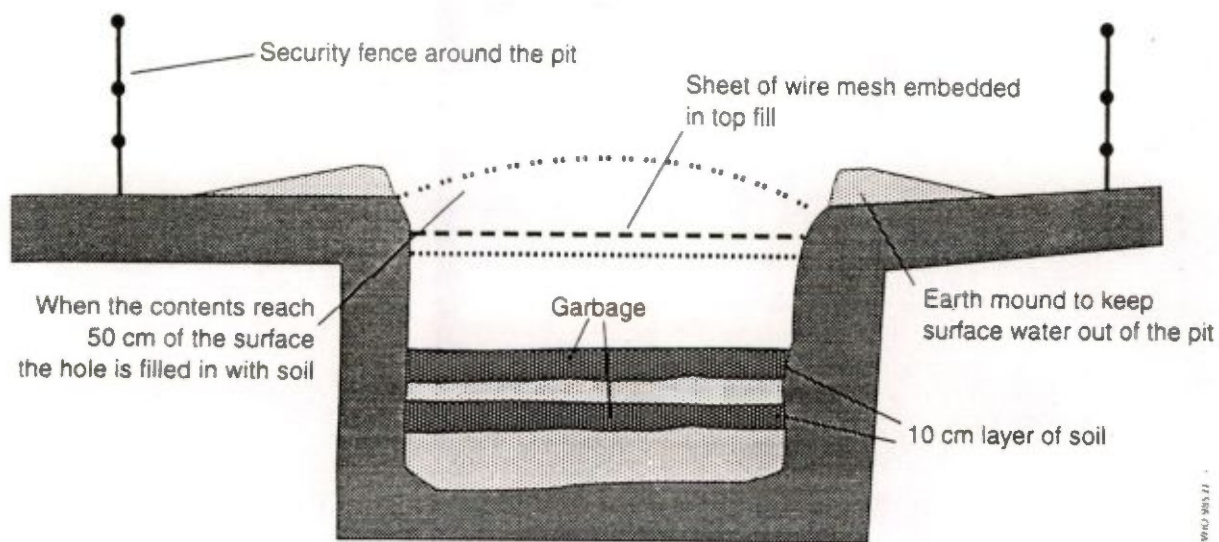
^aSource: National Environmental Engineering Research Institute (personal communication, 1997)

Taiwan), and India, respectively. A survey of general hospitals in Italy yielded characterization data for hazardous health-care waste; these data are summarized in Box 2.12. A typical low heating value of wet hazardous health-care waste in middle-income developing countries would be 3500 kcal/kg (14.65 MJ/kg).

The approximate chemical composition of general health-care waste is usually as follows:

- 50% carbon
- 20% oxygen
- 6% hydrogen
- numerous other elements.

Fig. 8.12 Example of a small burial pit for health-care waste



8.5.2 Encapsulation

Disposal of health-care waste in municipal landfills is less advisable if it is untreated than if it is pretreated. One option for pretreatment is encapsulation, which involves filling containers with waste, adding an immobilizing material, and sealing the containers. The process uses either cubic boxes made of high-density polyethylene or metallic drums, which are three-quarters filled with sharps and chemical or pharmaceutical residues. The containers or boxes are then filled up with a medium such as plastic foam, bituminous sand, cement mortar, or clay material. After the medium has dried, the containers are sealed and disposed of in landfill sites.

This process is relatively cheap, safe, and particularly appropriate for establishments that practise **minimal programmes** for the disposal of sharps and chemical or pharmaceutical residues. Encapsulation alone is not recommended for non-sharp infectious waste, but may be used in combination with burning of such waste. The main advantage of the process is that it is very effective in reducing the risk of scavengers gaining access to the hazardous health-care waste.

8.5.3 Safe burial on hospital premises

In health-care establishments that use minimal programmes for health-care waste management, particularly in remote locations, in temporary refugee encampments, or in areas experiencing exceptional hardship, the safe burial of waste on hospital premises may be the only viable option available at the time. However, certain basic rules should still be established by the hospital management:

- Access to the disposal site should be restricted to authorized personnel only.
- The burial site should be lined with a material of low permeability, such as clay, if available, to prevent pollution of any shallow groundwater that may subsequently reach nearby wells.

- Only hazardous health-care waste should be buried. If general hospital waste were also buried on the premises, available space would be quickly filled up.
- Large quantities (>1 kg) of chemical wastes should not be buried at one time. Burying smaller quantities avoids serious problems of environmental pollution.
- The burial site should be managed as a landfill, with each layer of waste being covered with a layer of earth to prevent odours, as well as to prevent rodents and insects proliferating.

The safety of waste burial depends critically on rational operational practices. The design and use of the burial pit are described in the previous section and illustrated in Fig. 8.12. The bottom of the pit should be at least 1.5 metres higher than the groundwater level.

Table 8.4 Summary of main advantages and disadvantages of treatment and disposal options

Treatment/ disposal method	Advantages	Disadvantages
Rotary kiln	Adequate for all infectious waste, most chemical waste, and pharmaceutical waste.	High investment and operating costs.
Pyrolytic incineration	Very high disinfection efficiency. Adequate for all infectious waste and most pharmaceutical and chemical waste.	Incomplete destruction of cytotoxics. Relatively high investment and operating costs.
Single-chamber incineration	Good disinfection efficiency. Drastic reduction of weight and volume of waste. The residues may be disposed of in landfills. No need for highly trained operators. Relatively low investment and operating costs.	Significant emissions of atmospheric pollutants. Need for periodic removal of slag and soot. Inefficiency in destroying thermally resistant chemicals and drugs such as cytotoxics.
Drum or brick incinerator	Drastic reduction of weight and volume of the waste. Very low investment and operating costs.	Destroys only 70% of microorganisms. No destruction of many chemicals and pharmaceuticals. Massive emission of black smoke, fly ash, toxic flue gas, and odours. Requires highly qualified technicians for operation of the process.
Chemical disinfection ^a	Highly efficient disinfection under good operating conditions. Some chemical disinfectants are relatively inexpensive. Drastic reduction in waste volume.	Uses hazardous substances that require comprehensive safety measures. Inadequate for pharmaceutical, chemical, and some types of infectious waste.
Wet thermal treatment ^a	Environmentally sound. Drastic reduction in waste volume. Relatively low investment and operating costs.	Shredders are subject to frequent breakdowns and poor functioning. Operation requires qualified technicians. Inadequate for anatomical, pharmaceutical, and chemical waste and waste that is not readily steam-permeable.
Microwave irradiation	Good disinfection efficiency under appropriate operating conditions. Drastic reduction in waste volume. Environmentally sound.	Relatively high investment and operating costs. Potential operation and maintenance problems.
Encapsulation	Simple, low-cost, and safe. May also be applied to pharmaceuticals.	Not recommended for non-sharp infectious waste.
Safe burying	Low costs. Relatively safe if access to site is restricted and where natural infiltration is limited.	Safe only if access to site is limited and certain precautions are taken.
Inertization	Relatively inexpensive	Not applicable to infectious waste.

^aMay not apply to more sophisticated, self-contained, commercial methods.

- Effective biodegradation of the biological components of health-care waste if landfill operations are properly carried out.

Drawbacks

- Access restrictions may not always be guaranteed.
- It may be difficult to assess whether the conditions for safe landfill are being met.

Safe burying inside premises

In certain health-care establishments in remote locations, temporary refugee camps, and areas experiencing exceptional hardship, safe burial of wastes on hospital premises may be the only rational option available at times. The design and operation of the burial pit is as described above and illustrated in Fig. 8.12 (page 109). To limit risks to health and of environmental pollution, some basic rules should be applied:

- Access to the disposal site should be restricted to authorized personnel only.
- The burial boundary should be lined with a material of low permeability (e.g. clay), if available.
- Only hazardous health-care waste should be buried.
- Large quantities (over 1 kg) of chemical wastes should not be buried at the same time; burial should be spread over several days.
- The burial site should be managed in the same way as a landfill, with each layer of waste being covered with a layer of earth to prevent development of odours and infestation by rodents and insects.

The safety of waste burial relies critically on operational practices. Safe on-site burial is practicable for only relatively limited periods of time, e.g. 1–2 years, and for relatively small quantities of waste, say up to 5–10 tonnes in total. Where these limits are exceeded, a longer-term solution, involving treatment of the waste or disposal at a municipal solid waste landfill, will need to be found.

Advantages

- Less hazardous than letting waste accumulate and remain accessible.
- Low costs.

Drawbacks

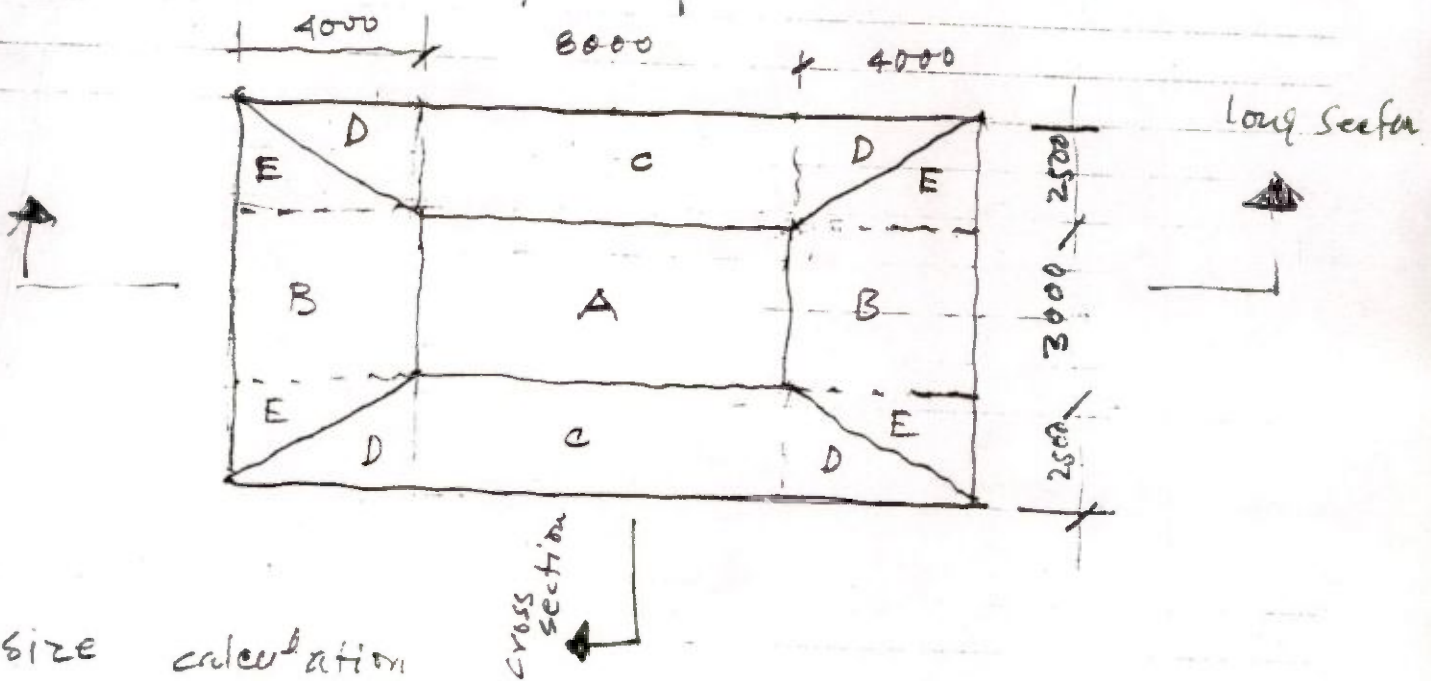
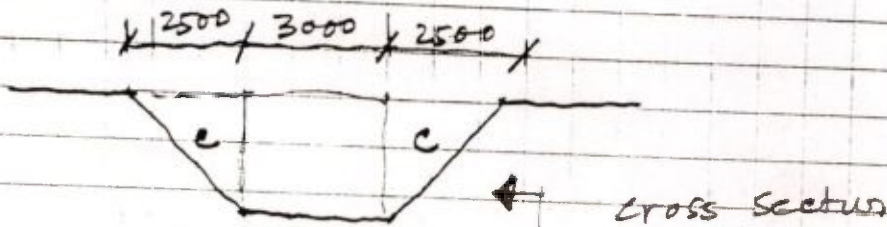
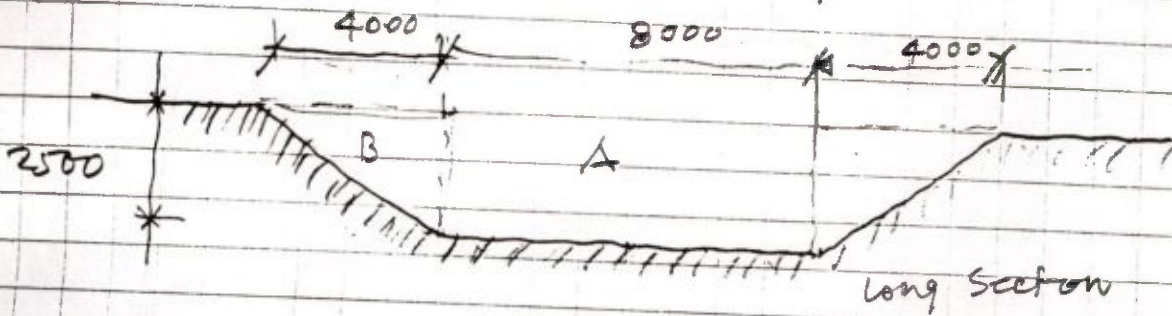
- Risks of pollution in permeable soils if the waste becomes saturated with water.
- It may be difficult to prevent scavenging at all times.

Encapsulation

Encapsulation is recommended as the easiest technology for the safe disposal of sharps. Sharps are collected in puncture-proof and leak-proof containers, such as high-density polyethylene boxes, metallic drums, or barrels. When a container is three-quarters full, a material such as cement mortar, bituminous sand, plastic foam, or clay is poured in until the container is completely filled. After this material has dried, the container is sealed and may be landfilled, stored, or buried inside the hospital premises. It is also possible to encapsulate chemical or pharmaceutical residues together with sharps.

GARBAGE GENERATION ANALYSIS

ASSUMPTION : 40 Bed Hospital



Pit size calculation

A	- 60 cum
B	- 30
C	- 50
D	- 25
E	- 25

190 cum

70% Fill + 30 Earth = 133 cum of WASTE (R.P)

(2)

GARBAGE/HOSPITAL WASTE QUANTITY ANALYSIS

1. ASSUMPTION - 40 BED GENERAL HOSPITAL

2. Total Health Care waste per patient per day = 2.2 Kg. Per day

(as per Table 2.5 Page 13. Safe Management of Wastes from health care activities WHO publication).

3. Percentage of ~~waste~~ of infectious waste = 1.5% of the total Hospital waste. (data as per same material as above, page 17, Box 2.11.)

Total Hospital Waste for 40 bed. hospital @ 2.2 kg per day = 88 kg./day.

Percentage of infected waste to be buried/day = 1.8% of 88 kg = ~~1.584 kg~~ 1.584 kg/day.

Weight/Volume Calculation.

1. Standard weight/volume ratio for garbage (general).

1 cu mt ^{equivalent} to 10.70 Kg.

Volume of infected waste to be buried per day = $\frac{1.584}{10.70} = 0.148$ cu mt

Time taken to fill up the pit of total 133 cu m capacity = $\frac{133}{0.148}$ days = 898.6

= Say 2 1/2 years

Hence it is derived that the given one pit-measuring 16m x 8m x 2.5 deep (slope) can be filled in 2 1/2 years (considering 70% fill and 30% earth layering).

Observations

(3)

1. As per WHO recommendations (See diagram, page 109) for safe burial of hazardous material in hospital sites no Geo-membrane is required.
2. The liquid if any is expected to permiate through the low permeable layer of under clay hence ~~not~~ no need for perforated tubes are required.
3. Condeqment to (1) and (2) above no inspection pit/ man hole etc is required
4. This pit shall be ^{waste} used for only infectious waste. and not all (including non-infectious waste) see Refer to Page 110. Paragraph 8.5.3. bullet # 4.
5. Section detail showing corrugated A/c sheet is not correct. The corrugation should run along the slope and not across the slope as shown. for the truss is too high. ~~This~~ This will make the truss very heavy.
6. 2190 m rise ridge

Recommendations

Infectious
~~Infectious~~

(4)

1. Calculate actual volume of garbage ~~generated~~ generated on the basis of bed count.
2. Check minimum ^{ground} area for the pit and its own ~~boundary~~ fencing required.
3. Prepare drawing on the basis of (1) and (2) above.
4. Prepare estimate accordingly.
5. Minimise using heavy super structure, concrete etc. heavy ~~truss~~ ^{and} ~~tubular~~ ^{R.C.C.} columns. Use appropriate ^{tubular} steel truss (shallow) as per correct drawings.
6. Use the guide lines.

Sub: Construction of Burial Pits for disposal of infectious waste under IPP-VIII-(Extn.)

- A. Drawing & cost estimate for construction of burial pits obtained from SHSDP was @ Rs.2.37 Lakhs per pit (2 units at a time).
- B. Drawing & cost estimate for the same obtained from CE, MED indicate cost estimate range of Rs.2.44 Lakhs to Rs.7.17 Lakhs depending upon the area (Memo No. ME/2166/3(1)/4S-42/99 dt.16.10.01).
- C. The aforesaid drawing & cost estimate obtained from CE, MED was sent to ULBs with the request to provide the space in writing for such construction in a convenient location in the area and intimate the same to CE, MED (vide this office memo no. SUDA-15/98(Pt-VI)/479 dt. 2.11.01) with C.C to CE, MED.
- D. The issue as referred to World Bank / GOI on March 1, 2002 vide no. 372 along with the revised drawing & estimate of burial pits as obtained from CE, MED under his office memo o. 3018 dt. 26.2.2002, for recording their " No Objection", with C.C to CE, MED.
- E. The World Bank have granted "Conditional No Objection" on March 11, 2002.

The suggested comments of the Bank's Consultant are to be taken into consideration.

It was further intimated that the Bank financing can be used only for Works completed upto June 30, 2002.

The Highlights of the comments are :-

1. Determinants of the size of the proposed burial pit (the WHO guidelines have been supplied).
2. Availability of adequate land as per the drawings

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SUDA

STATE URBAN DEVELOPMENT AGENCY

HEALTH WING

"ILGUS BHAVAN"

H-C BLOCK, SECTOR-III, BIDHANNAGAR, CALCUTTA-700 091
West Bengal

Ref No.SUDA-15/98(Pt-VI)/1372

Date ...1.3.2002...

From: Dr.N.G.Gangopadhyay
Adviser(Health)
SUDA

To: Dr.G.N.V.Ramana
Sr. Public Health Specialist
The World Bank
70 Lodi Estate
New Delhi- 110 003

**Sub: Submission of revised drawing & estimate of burial pit for disposal
of clinical waste of OPD cum MHs under IPP-VIII-(Extn.)**

Sir,

I take the privilege of referring our discussion on the above subject at Kolkata on 15.2.2002.

Chief Engineer, Municipal Engineering Directorate has submitted the cost estimate for the purpose along with drawings *. This is for your kind perusal and granting approval at a very early date as EOP is ahead. If you think necessary Mr. S.C Chakraborty, Consultant Architect of World Bank may be advised to take up the issue.

On hearing from you , representatives from MED shall get in touch with Mr. Chakraborty and discuss the issue with him face to face.

Awaiting for your kind reply.
Thanking you.

Encl : As stated *

Yours faithfully,

N.S. Sanyal
1/3/02
Adviser (Health)

No. SUDA-15/98(Pt-VI)/1372(1)

Date..1.3.2002

C.C
CE, MED for favour of kind information.

N.S. Sanyal
1/3/02
Adviser(Health)

Tel/Fax No.: 359-3184

**ESTIMATE FOR THE PROPOSED TWIN BURIAL PITS FOR
MEDICAL WASTE FOR OPD CUM MH**

Sl. No.	Description of Items	Quantity	Unit	Rate (Rs. P.)	Amount (Rs. P.)
1	Earth work in excavation of foundation trenches or drains, in all sorts of soil excluding laterite or sand including removing, spreading or stacking the spoils within a lead of 75 m. as directed. The item includes necessary trimming the sides of trenches, leveling, dressing and ramming the bottom, bailing out water etc. as required complete.				
a)	Depth of excavation exceeding 1.2 m. but not requiring shoring	725.00	cu.m.	22.10	16022.50
2	Earth work in filling in foundation trenches or plinth with good earth, in layers not exceeding 150 cm. including watering and ramming etc. layer by layer complete.				
a)	With carried earth sand or sandy soil supplied by the contractor including cost thereof. (Payment to be made on the basis of previous stack measurement, with due allowance for earth.)	50.00	cu.m.	114.00	5700.00
3	Compacted earth (clay layer) complete (150 thick compaction at a time.)	132.00	cu.m.	13.00	1716.00
4	Single brick flat soiling of picked jhama bricks including ramming and dressing bed to proper level and filing joints with powdered earth or local sand.	109.00	sq.m.	85.00	9265.00
5	Cement concrete (1:2:4) with 20 mm down graded stone chips excluding shuttering.				
a)	Pakur variety In ground floor	22.00	cu.m.	2523.00	55506.00
6	Cement concrete (1:3:6) with 30 mm down graded stone metal excluding shuttering.				
	Pakur variety In ground floor	3.50	cu.m.	2052.00	7182.00
7	Reinforcement (for reinforced concrete work) including distribution bars, stirrups, binder etc. including supply of rods, initial straightening and removal of loose rust (if necessary), cutting to requisite length, hooking and bending to correct shape, placing in proper position and binding with 16 gauge black annealed wire at every inter-section, complete as per drawing and direction.				
a)	In ground floor	15.00	Qtl.	1987.00	29805.00
8	Hire and Labour charges for providing from work of hard wood planking in building works including centering, shuttering and propping etc. for in situ reinforced concrete and plain concrete work of any shape and striping of in due course.				
i)	In foundation footings and column bases etc. upto plinth level.				
a)	With 25mm thick planks	54.00	sq.m.	68.00	3672.00
ii)	In suspended floor and roof slabs, lintels, columns, beams, chujjas, fins, staircase, railing and the like with height of propping and centering not exceeding 4.5 m above plinth level and upto the roof of the ground floor.				
a)	With 25mm thick planks In ground floor	36.00	sq.m.	117.00	4212.00

Sl. No.	Description of Items	Quantity	Unit	Rate (Rs. P.)	Amount (Rs. P.)
9	Brick work in cement mortar (6:1) a) In foundation and plinth	40.00	cu.m.	1569.00	62760.00
10	Asbestos corrugated (approved quality) sheet work (excluding the supporting frame work) fitted and fixed with 10mm dia J or L hook bolts and nuts, limpet and bitumen washers and putty, complete. a) In roof	360.00	sq.m.	248.50	89460.00
11	Asbestos rigging (with standard lap) fitted and fixed with necessary hook bolts, nuts, washers etc. complete. a) Closed fitting adjustable type	34.00	m	223.00	7582.00
12	M.S. structural work in roof trusses etc. with simple rolled structural members (eg. Angles tees, flats etc. weighing less than 22.3 kg/m) connected to one another with gussets cleats by welding and /or by rivets, bolts and nuts etc. as per design and direction, complete including fabrication hoisting and erection.	40.10	Qtl.	2464.00	98806.40
13	M.S. gate as per approved design made of strong M.S. frame work and intermediate stiffeners and with lining 2.03mm thick M.S. sheets including necessary locking and hanging arrangement fitted and fixed complete, including necessary welding.	60.00	Kg	26.00	1560.00
14	Plaster (to wall, floor, ceiling etc.) with sand and cement mortar including rounding off or chamfering corners as directed and raking out joints or roughening of concrete surface. With (6:1) cement mortar a) 20 mm thick plaster	92.00	sq.m.	54.00	4968.00
15	neat cement pointing average 1.5 mm. thick in wall, dado, window, sills, floor, drain etc. using @ 0.150 m ³ /100 m ²	92.00	sq.m.	11.00	1012.00
16	Supply, fitting & fixing of polyhtene pipes with specials etc including perforation of 2.5mm dia holes (upto 30 holes per metre(75 dia pipe).	85.00	sq.m.	82.00	6970.00
17	Supplying and laying polythene sheet (150 gm/sq.m.)	320.00	sq.m.	8.00	2560.00
18	Supplying and geomembrane HDPE 2.5 mm including jointing sealing etc complete.	320.00	sq.m.	3.00	960.00
19	Filling with jhama khoa (75 mm to 150 mm size)	20.00	cu.m.	400.00	8000.00
20	Supplying angle post (40x40x6)	460.00	Kg	24.00	11040.00
21	Fixing post of iron including base connecting etc complete.	40.00	each	107.00	4280.00
22	Supplying fitting & fixing Chainlink mesh of approved brand etc complete (50mmx50mmx8g)	250.00	sq.m.	241.00	60250.00
23	Painting with superior quality ready mixed aluminium paint of approved make and brand including smoothening the surface by sand papering etc. on steel surface. a) Two coats	400.00	sq.m.	20.80	8320.00

501608.90

Add Contingency @ 5%

25080.45

TOTAL

526689.35

Say,

5,26,689/-

(Rupees Five lakhs twenty six thousand six hundred eighty nine only)

**ESTIMATE FOR THE PROPOSED TWIN BURIAL PITS FOR
MEDICAL WASTE FOR OPD CUM MH**

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a)	With carried earth sand or sandy soil supplied by the contractor including cost thereof. (Payment to be made on the basis of previous stack measurement, with due allowance for earth.)	50.00	cu.m.	114.00	5700.00
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a)	In ground floor	15.00	Qtl.	1987.00	29805.00
8	Hire and Labour charges for providing from work of hard wood planking in building works including centering, shuttering and propping etc. for in situ reinforced concrete and plain concrete work of any shape and striping of in due course.				
i)	In foundation footings and column bases etc. upto plinth level.				
a)	With 25mm thick planks	54.00	sq.m.	68.00	3672.00
ii)	In suspended floor and roof slabs, lintels, columns, beams, chujjas, fins, staircase, railing and the like with height of propping and centering not exceeding 4.5 m above plinth level and upto the roof of the ground floor.				
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10	Asbestos corrugated (approved quality) sheet work (exculding the supporting frame work) fitted and fixed with 10mm dia J or L hook bolts and nuts, limpet and bitumen washers and putty, complete.				
a)	In roof	360.00	sq.m.	248.50	89460.00
11	Asbestos rigging (with standard lap) fitted and fixed with necessary hook bolts , nuts , washers etc. complete.				
a)	Closed fitting adjustable type	34.00	m	223.00	7582.00
12	M.S. structural work in roof trusses etc. with simple rolled structural members (eg. Angles tees, flats etc. weighing less than 22.3 kg/m) connected to one another with gussets cleats by welding and /or by rivels, bolts and nuts etc. as per design and direction, complete including fabrication hoisting and erection.	40.10	Qtl.	2464.00	98806.40
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a)	20 mm thick plaster	92.00	sq.m.	54.00	4968.00
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TOTAL

526689.35

Say,

5,26,689/-

(Rupees Five lakhs twenty six thousand six hundred eighty nine only)

Government of West Bengal
Office of the Chief Engineer
Municipal Engineering Directorate
Bikash Bhavan, South Block, 1st floor, Salt Lake, Kol-91
=====

*As discussed
Mr. 27/2/02*

No. ME/3018/4S-42/2000 Pt-III Kolkata. Dated, the 26th February '02

From : Shri S. K. Mukherjee
Chief Engineer, MED.

To : Dr. N.G. Gangopadhyay
Adviser (Health), SUDA



26 FEB 2002

Sub : Submission of revised drawing & estimate
of burial pit for disposal of clinical
waste of OPD cum MH under IPP-8 Extn. &
R.C.H. Asansol.
=====

Sir,

As already discussed with you a revision of the drawing and estimate has been made for burial pits in connection with aforesaid work. The revision was required for providing a shed over the pits for not allowing rain water to get entry into the pits. This will safeguard against :-

- 1) Overflowing of the pits causing nuisance and health hazards.
- 2) Non-decomposition of the waste in the pits by entry of rain water.

A copy of the drawing & estimate is enclosed herewith for your necessary action in this regard and the estimated cost for twin pits comes to Rs. 5,26,689/=.

Meanwhile, as already envisaged, action is being taken to fix a date in consultation with Shri S. Chakraborty, consultant Architect, World Bank so that the same may be recommended from his end for approval by Bank.

Enclo : As stated.

sb/25-2-2002

Yours faithfully,

S. K. Mukherjee
(S. K. Mukherjee)
Chief Engineer, MED
=====

26/2/02

ESTIMATE FOR THE PROPOSED BURIAL PIT FOR MEDICAL WASTE IN RAIGANJ

Sl. No.	Description of Items	Quantity	Unit	Rate (Rs. P.)	Amount (Rs. P.)
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a)	Closed fitting adjustable type	34.00	m	223.00	7582.00
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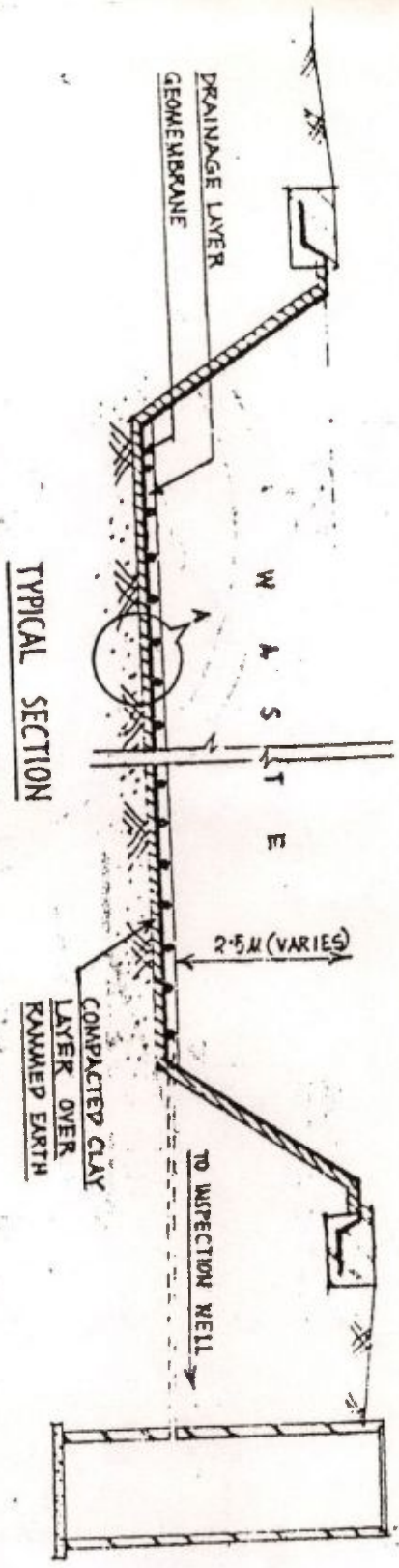
TOTAL

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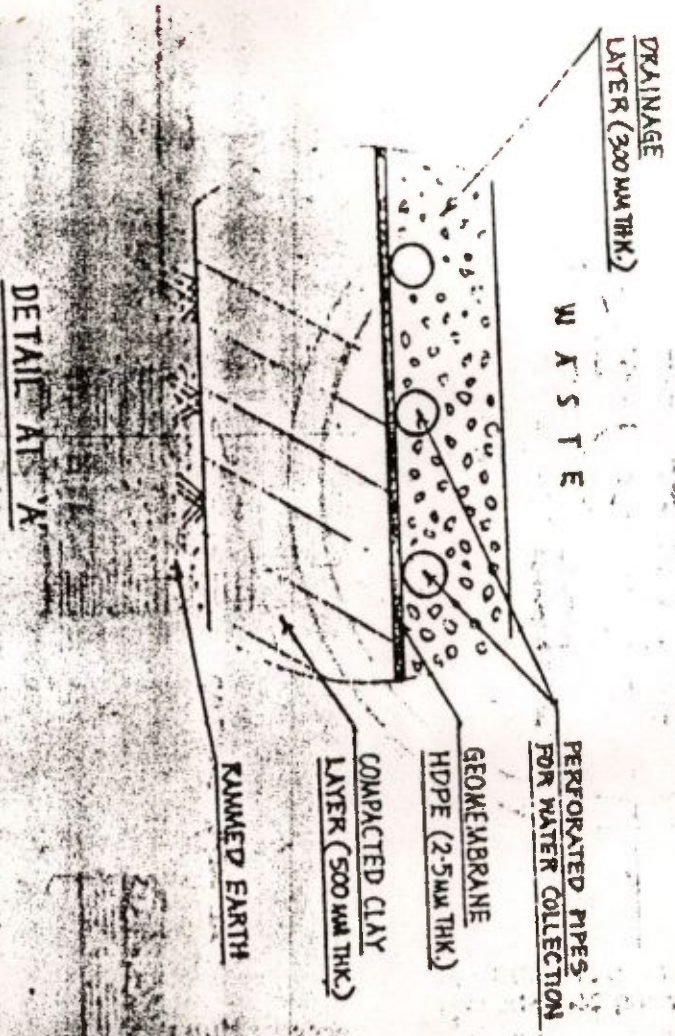
Say,

5,26,689/-

(Rupees Five lakhs twenty six thousand six hundred eighty nine only)



TYPICAL SECTION



DETAIL AT 'A'

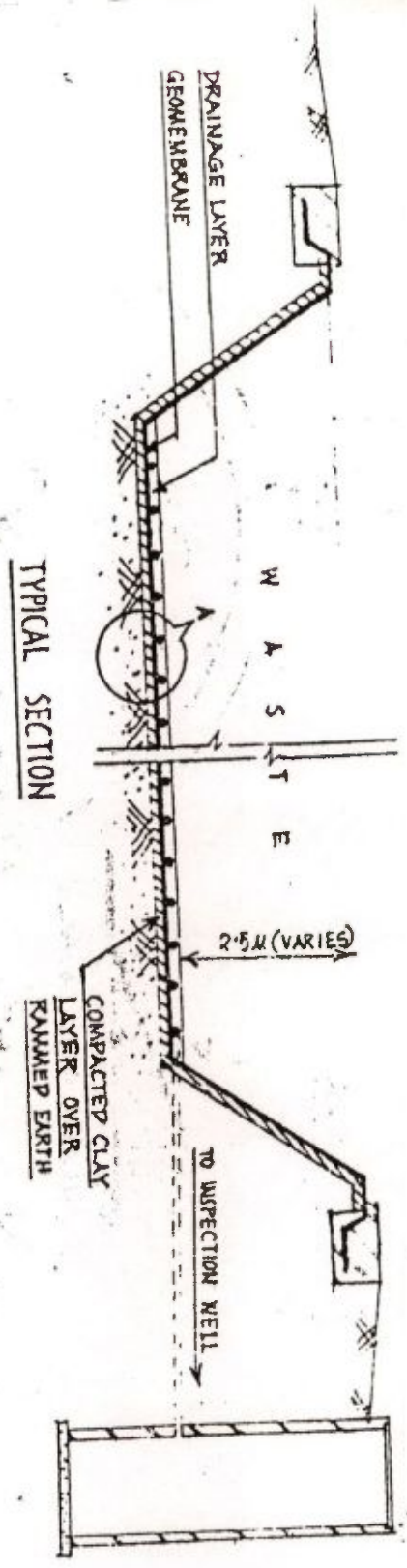
NOTE :
HYDRAULIC CONDUCTIVITY OF COMPACTED CLAY LAYER : 10^{-7} CM/SEC.

STATE HEALTH SYSTEMS DEVELOPMENT PROJECT - II

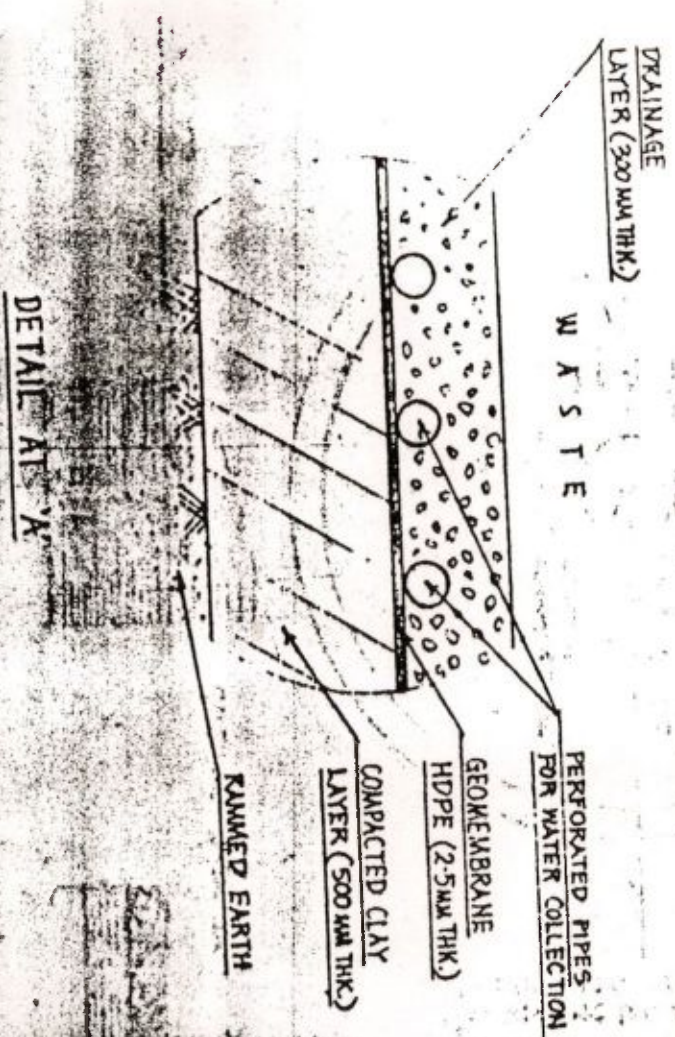
SCHEMATIC DESIGN OF BURIAL PIT
FOR INFECTIOUS WASTE COLLECTION

Basic DRG





TYPICAL SECTION



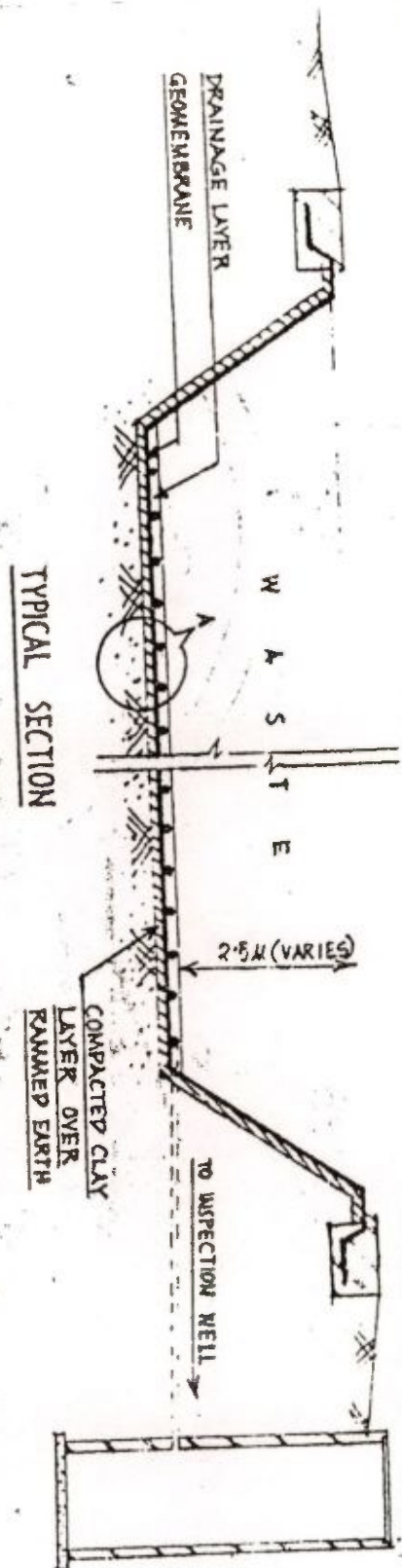
DETAIL AT 'A'



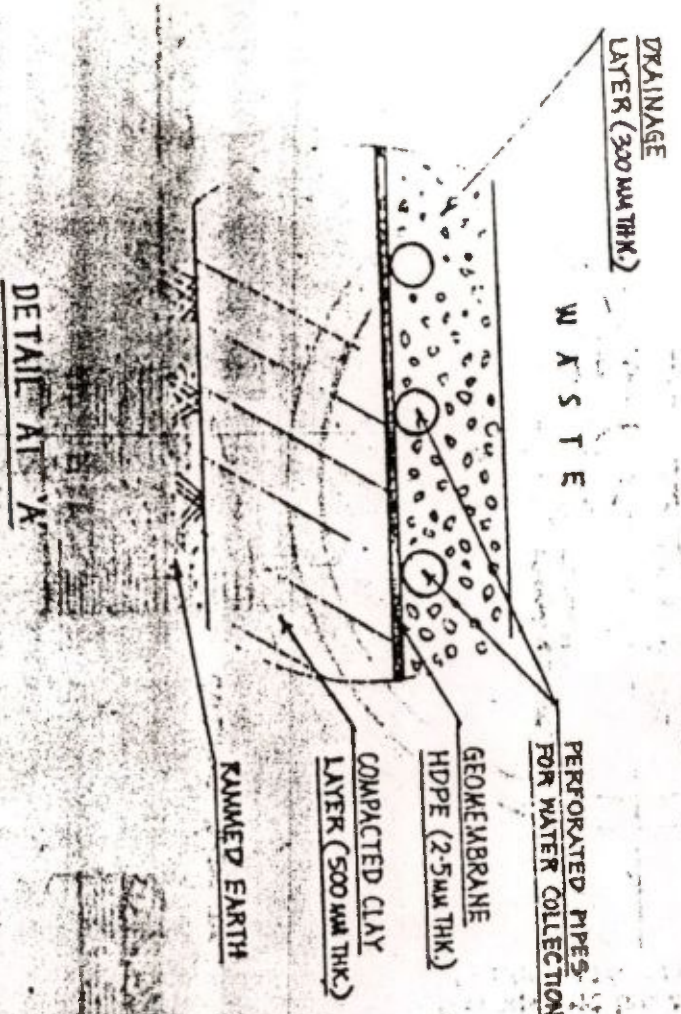
13

NOTE :
 HYDRAULIC CONDUCTIVITY OF COMPACTED CLAY LAYER : 10^{-7} CM/SEC.
 STATE HEALTH SYSTEMS DEVELOPMENT PROJECT - II
 SCHEMATIC DESIGN OF BURIAL PIT
 FOR INFECTIOUS WASTE COLLECTION

BASIC DRG.



TYPICAL SECTION



DETAIL AT 'A'



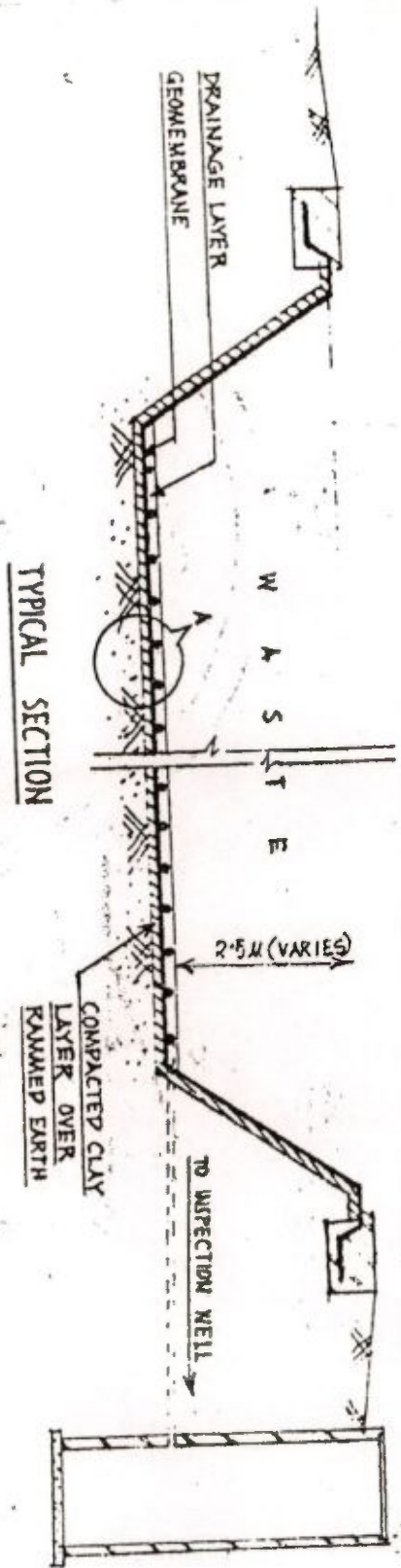
13

NOTE :
HYDRAULIC CONDUCTIVITY OF COMPACTED CLAY LAYER : 10^{-7} cm/sec.

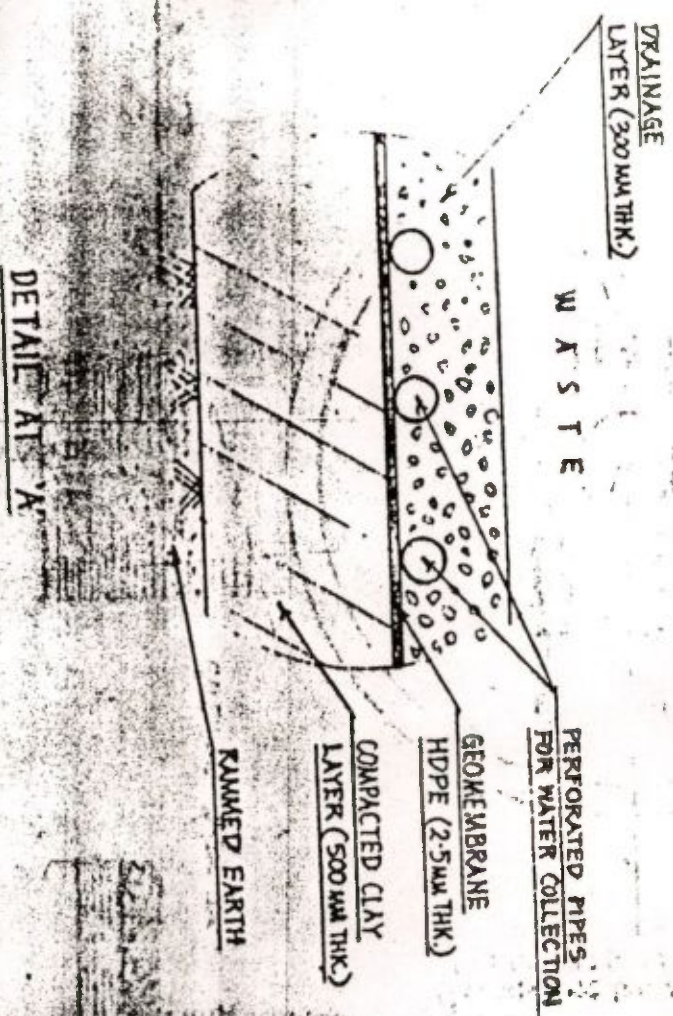
STATE HEALTH SYSTEMS DEVELOPMENT PROJECT - II

SCHEMATIC DESIGN OF BURIAL PIT
FOR INFECTIOUS WASTE COLLECTION

BASIC DRG.



TYPICAL SECTION



DETAIL AT 'A'

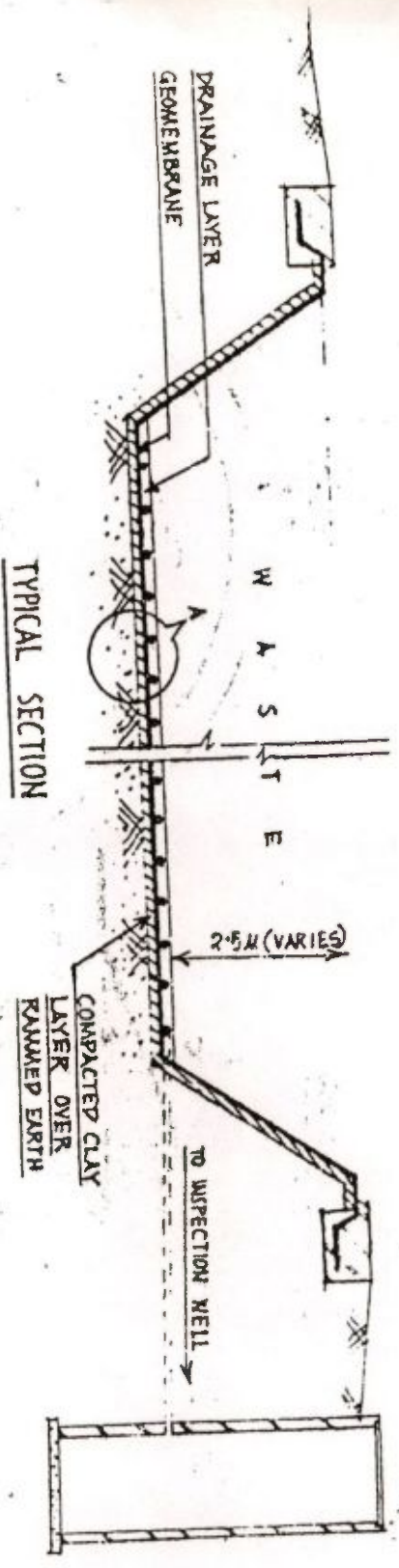
NOTE :
HYDRAULIC CONDUCTIVITY OF COMPACTED CLAY LAYER : 10^{-7} CM/SEC.

STATE HEALTH SYSTEMS DEVELOPMENT PROJECT - II

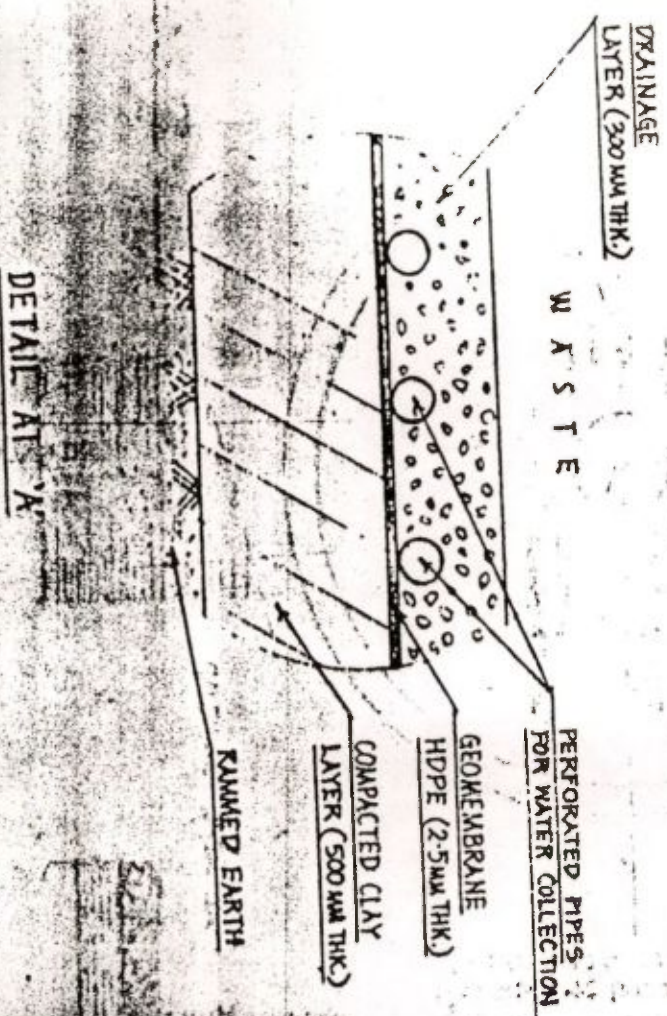
SCHEMATIC DESIGN OF BURIAL PIT
FOR INFECTIOUS WASTE COLLECTION

Basic DRG.





TYPICAL SECTION



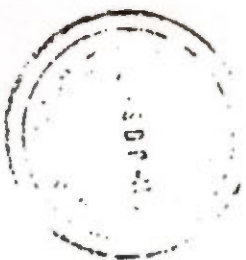
DETAIL AT 'A'

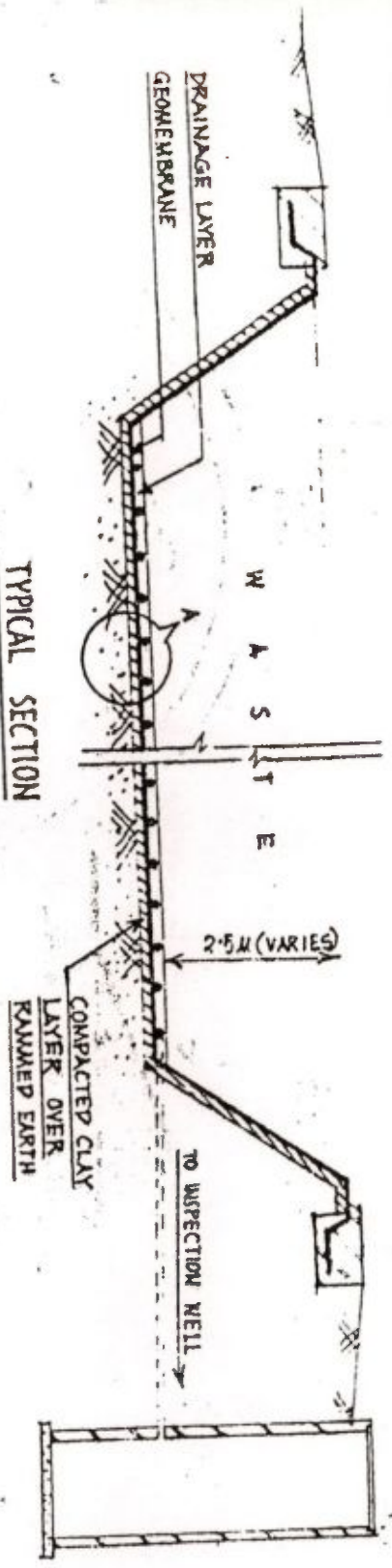
NOTE :
HYDRAULIC CONDUCTIVITY OF COMPACTED CLAY LAYER = 10^{-7} CM/SEC.

STATE HEALTH SYSTEMS DEVELOPMENT PROJECT - II

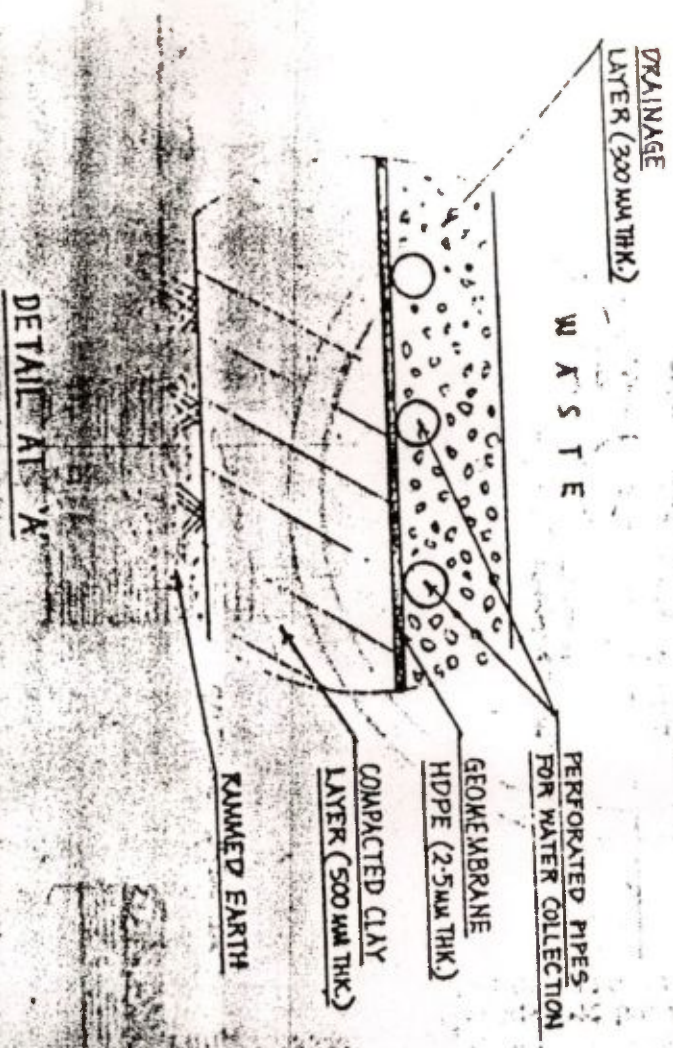
SCHEMATIC DESIGN OF BURIAL PIT FOR INFECTIOUS WASTE COLLECTION

BASIC DRG.





TYPICAL SECTION



DETAIL AT 'A'



13

NOTE :
 HYDRAULIC CONDUCTIVITY OF COMPACTED CLAY LAYER : 10^{-7} CM/SEC.
 STATE HEALTH SYSTEMS DEVELOPMENT PROJECT - II
 SCHEMATIC DESIGN OF BURIAL PIT
 FOR INFECTIOUS WASTE COLLECTION

BASIC DRG.

Sub : Bio-Waste management scheme in Maternity Homes
and ESOPDs under IPP-VIII-(Extn.), and RCH Sub-Project

In conformity with practices adopted on the above subject by West Bengal Health Systems Development Project, as also IPP-VIII, Calcutta; an Action Plan is prepared for Bio-Waste Management for the Maternity Homes cum OPD / ESOPDs constructed under IPP-VIII-(Extn.), and RCH Sub-Project.

THE Cost estimate and the engineering design of burial pits as approved by the World Bank / GOI and sanctioned by the Secretary CMDA for IPP-VIII, Calcutta is placed below for kind perusal.

The components for the action plan in this reports for our projects i.e. IPP-VIII-(Extn.) and RCH Sub-Project Asansol are as under along with cost - estimate :

1. Civil Construction for cost of burial pits [two units at a time] @ Rs.2.37 lakhs x 13 [11 under IPP-VIII-(Extn.) + 2 under RCH Sub-Project, Asansol] = Rs.30.81 lakhs. These works may be undertaken by MED as per the approved engineering design.
2. Purchase of 13 covered cycle vans 1 for each M.H. cum OPD for transportation of the infected waste from the Health Institution to burial pits @ Rs.12000/- per MH Cum OPD x 13 = Rs.1,56,000/-
3. (a) Procurement of disposables per MH Cum OPD per year : five no. of plastic vats with cover, plastic bags (inner lining) of 4 colours @ Rs.6300/- x 2 (one time replacement) per unit x 13 = Rs.1,63,800/-
(b) Purchase of chemical disinfectants, Kerosine Oil @ Rs.3,000/- per MH Cum OPD x 13 = Rs.39,000/-
(c) Procurement of rubber gum boots, rubber gloves @ Rs.1500/- per MH Cum OPD x 13 = Rs.19,500/-
TOTAL of 3 (a) + (b) + (c) = Rs.2,22,300/-
4. Operation and Maintenance :
(a) Salary of Cycle Van Puller @ Rs.100/- per day x 3 days per week x 52 weeks x 13 = Rs.2,02,800/-
(b) Contingency @ Rs.12,000/- p.a. per MH Cum OPD x 13 = Rs.1,56,000/-
TOTAL of 4 (a) + (b) = Rs.3,58,800/-

GRAND TOTAL 1 + 2 + 3 + 4 = Rs.38,18,100/-

{ IPP-VIII-(Extn.) == Rs.32,30,700/- }
{ RCH Sub-Project Asansol == Rs.5,87,400/- }

Page-2

MED may prepare estimate on the standard design for construction of burial pits within the cost indicated above and undertake the construction at an early date.

The cost involved will be met from the respective project head – innovative schemes.

Training programme on the subject for concerned officials may be organised in near future with the assistance of experts from W.B.H.S.D.P.

Submitted for favour of kind perusal and approval. After clearance by the Secretary necessary instructions will be issued to the concerned ULBs and MED with placement of necessary funds.

u. o. no. 5428-15/98 (P. 1) / 06
dt-28.05.2001

22nd August, 2000.ORDER

Administrative approval and financial sanction is hereby accorded to the implementation of bio-waste management scheme in Municipal Hospitals/Maternity Homes/ESOPDs/ Laboratories including Regional Diagnostic Centres created under the F.W. (US) Project -IPP-VIII, Calcutta in 10 (ten) local bodies at the initial phase viz., (i) Nailhati (ii) North Barrackpore (iii) New Barrackpore (iv) Dum Dum (v) Madhyamgram (vi) Rajpur - Sonarpur (vii) Budge Budge (viii) Uttarpara - Kotrung (ix) Bhadreswar and (x) Chandannagar at a total cost of Rs. 29.37 lakhs in the following manner :-

1. Civil construction cost for burial pits [2(two) units at a time] @ Rs. 2.37 lakhs x 10 = Rs. 23.70 lakhs.

2. Purchase of covered cycle vans for transportation of the infected Wastes from the Health Institutions to burial pit @ Rs. 12000 x 10 = Rs. 1.20 lakhs.

3. a) Procurement of disposables per municipality per year : 5 nos of plastic vats with cover, plastic bags (inner lining) of 4 colours @ Rs. 6300 x 2 (one time replacement) per unit x 10 = Rs. 1.26 lakhs.

b) Purchase of chemical disinfectants, Kerosine oil ~~for burning polythene (plastic) bags after emptying the same in the burial pit~~ @ Rs. 3000 per unit x 10 = Rs. 0.30 lakhs.

c) Procurement of rubber gum boots, rubber gloves @ Rs. 1500 per unit x 10 = Rs. 0.15 lakhs.

Total of 3(a), (b) & (c) = Rs. 1.71 lakhs.

Operation and Maintenance :

a) Salary of cycle van puller @ Rs. 100/- per day x 3 days per week x 52 weeks x 10 = Rs. 1.56 lakhs

b) Contingency @ Rs. 12000 p.a. per unit x 10 = Rs. 1.20 lakhs

Total of 4 (a) & (b) = Rs. 2.76 lakhs

Grand Total: 1 + 2 + 3 + 4 = Rs. 29.37 lakhs.

The concerned municipalities shall prepare estimate through the Municipal Engineers based on the standard design of the State Health System Development Project for civil construction of burial pits within the sanctioned cost indicated in this order and shall undertake the construction as early as possible as well as take follow-up actions on the construction of burial pits are completed by December, 2000.

The cost involved will be met from the provision under the head " Innovative Schemes " in the budget of FW(US) Project - IPP-VIII, Calcutta during the project period.

The Chairpersons of the concerned municipalities are being informed.

Project Director,
IPP-VIII & Secretary,
CMDA

(P.T.O)

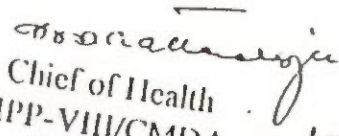
11(RF)
No.12-19/CMDA/FW(US)/IPP-VIII/1-17/2000

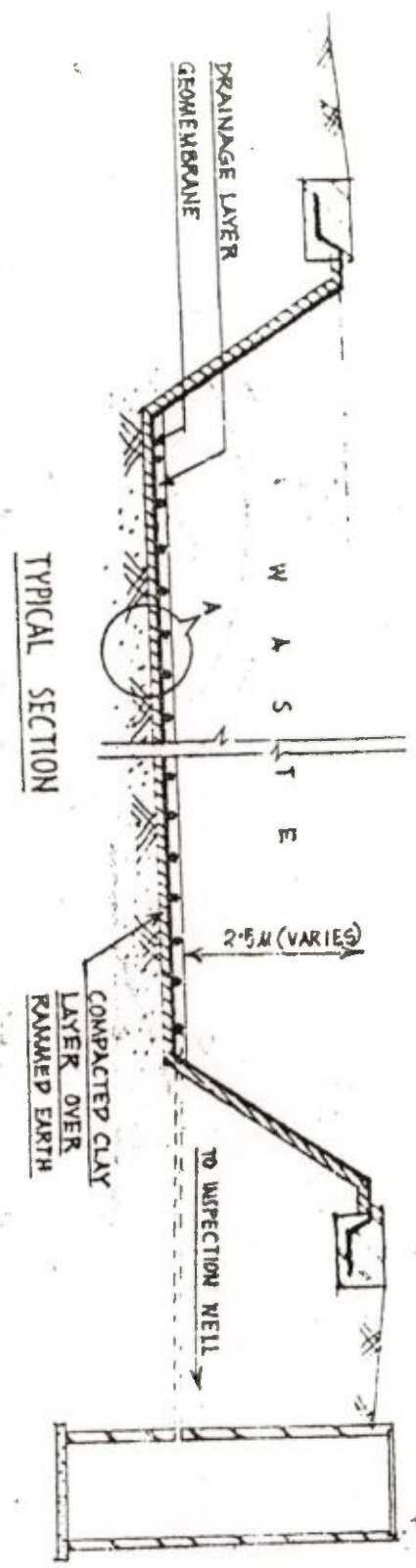
22nd August, 2000.

Copy forwarded for information and necessary action to :-

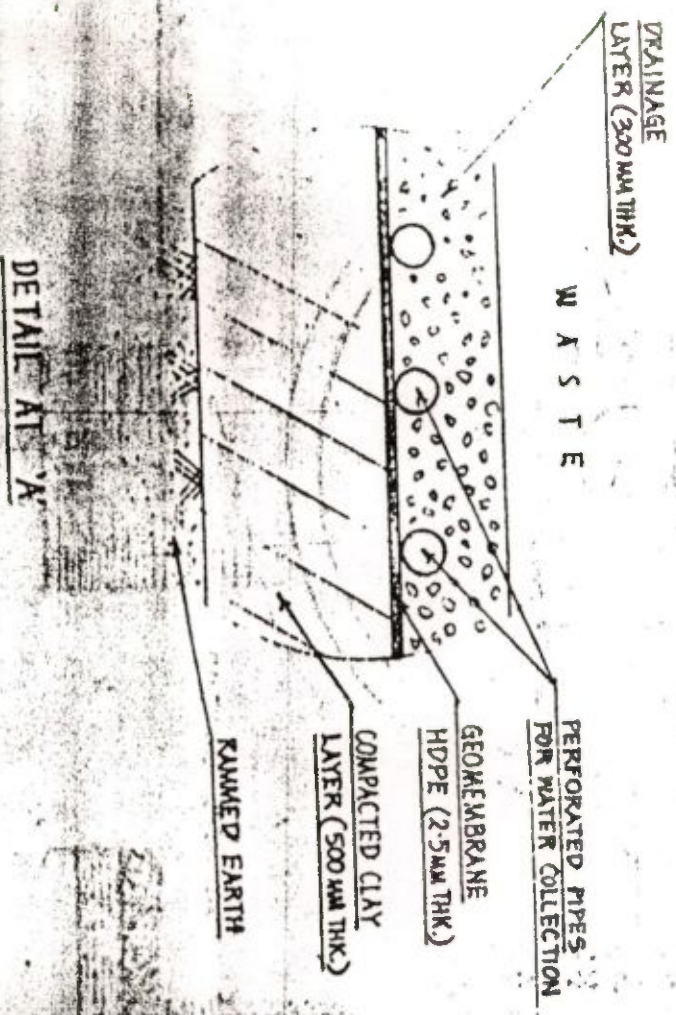
1. The C.E.O., CMDA.
2. The D.G.O.F., CMDA.
3. The Chairperson _____ . A copy each of the standard design and standard estimate prepared by the State Health System Development Project is enclosed. A site map where the burial pits are proposed to be constructed be forwarded to the undersigned along with a certificate from the chairperson that civil construction work for burial pits could be executed within the ceiling limit of sanctioned estimate of Rs. 2.37 lakhs.
4. The C.E.(P &M), CMDA

5. Accounts Officer- I, IPP-VIII, CMDA


Chief of Health
IPP-VIII/CMDA 22/8/2000



TYPICAL SECTION



DETAIL AT 'A'



NOTE :
HYDRAULIC CONDUCTIVITY OF COMPACTED CLAY LAYER : 10^{-7} CM/SEC.

STATE HEALTH SYSTEMS ENGINEERING PROJECT - II

SCHEMATIC DESIGN OF BURIAL PIT
FOR INFECTIOUS WASTE COLLECTION

Basic Dkt.

SUDA

STATE URBAN DEVELOPMENT AGENCY

HEALTH WING

"ILGUS BHAVAN"

H-C BLOCK, SECTOR-III, BIDHANNAGAR, CALCUTTA-700 091
West Bengal

Ref No.

Date

SUDA-15/98(Pt-VI)/ 1300

19.02.2001

From: Adviser(Health)
SUDA

To: Chief Engineer
Municipal Engineering Directorate

Sub: Bio-Waste Management scheme in Maternity Homes and OPDs
under IPP-VIII-(Extn.)—construction of burial pits.

Sir,

Reference is invited to this office communication no. SUDA-15/98(Pt-VI)/ 397 & 479 dt. 20.9.2001 & 2.11.2001 respectively on the above subject.

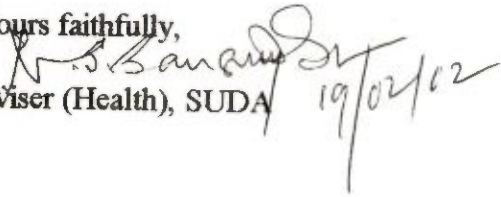
The said issue was discussed with the World Bank Review Mission on February 15, 2002. Construction works on the issue have to be undertaken and completed urgently, say within a couple of months.

It has been advised by the Mission (Dr. G.N.V Ramana, Sr. Public Health Specialist) that the drawing and cost estimate of the burial pits should be vetted by the World Bank. You are therefore requested to make an early appointment with Mr.Subhas Chakraborty, Consultant Architect, World Bank ; and accordingly send one of your engineers versed with the issue to New Delhi for meeting Mr. Chakraborty to explain the drawings and cost estimate.

A feed back on the action taken may kindly be granted to the undersigned in due course.

Encl: as stated

Yours faithfully,


Adviser (Health), SUDA 19/02/02

SUDA

STATE URBAN DEVELOPMENT AGENCY

HEALTH WING

"ILGUS BHAVAN"

H-C BLOCK, SECTOR-III, BIDHANNAGAR, CALCUTTA-700 091
West Bengal

SUDA 15/98(Pt-V) 276
Ref No.

26.7.2001 Date

From: Adviser (Health),
SUDA

To : The Project Director, IPP-VIII-(Extn.)
----- Municipality/ Municipal Corporation
& RCH Sub-Project Asansol

Sub : Bio-Waste management scheme in Maternity Homes
and OPDs under IPP-VIII-(Extn.), and RCH Sub-Project

Sir,

The undersigned is directed to communicate sanction on the above subject.
The components along with cost for the above scheme is as under:

1. Civil Construction — cost of burial pits [two units at a time]
@ Rs.2.37 lakhs x 13 [11 under IPP-VIII-(Extn.) + 2 under RCH Sub-Project,
Asansol] = Rs.30.81 lakhs. These works may be undertaken by MED as per the
approved engineering design.(enclosed).
2. Purchase of 13 covered cycle vans 1 for each M.H. cum OPD for transportation of the
infected waste from the Health Institution to burial pits
@ Rs.12000/- per MH Cum OPD x 13 = Rs.1,56,000/-
3. (a) Procurement of disposables per MH Cum OPD per year : five no.
of plastic vats with cover, plastic bags (inner lining) of 4 colours
@ Rs.6300/- x 2 (one time replacement) per unit x 13 = Rs.1.63,800/-
(b) Purchase of chemical disinfectants, Kerosine Oil @ Rs.3,000/- per MH Cum
OPD x 13 = Rs.39,000/-
(c) Procurement of rubber gum boots, rubber gloves @ Rs.1500/- per MH Cum OPD
x 13 = Rs.19,500/-
TOTAL of 3 (a) + (b) + (c) = Rs.2,22,300/-

Contd. P-2

Tel/Fax No.: 359-3184

4. Operation and Maintenance :

(a) Salary of Cycle Van Puller @ Rs.100/- per day x 3 days per week
x 52 weeks x 13 = Rs.2,02,800/-

(b) Contingency @ Rs.12,000/- p.a. per MH Cum OPD x 13 = Rs.1,56,000/-

TOTAL of 4 (a) + (b) = Rs.3,58,800/-

GRAND TOTAL 1 + 2 + 3 + 4 = Rs.38,18,100/-

{ IPP-VIII-(Extn.) == Rs.32,30,700/- }
{ RCH Sub-Project Asansol == Rs.5,87,400/- }

Action on Sl.No. 1 will be done by MED and the remaining Sl. Nos. 2 to 4 by ULBs.

Concerned ULBs are requested to take action immediately. CE, MED may please take-up the work, at the earliest and place requisition for placement of fund. The expenditure will be met from the respective project head- innovative scheme.

Yours faithfully
L. S. Anand
Adviser(Health) 26/7/01

26.7.2001

SUDA-15/98(Pt-V)/276(12)

C.C

CE, MED

Mayor, Chairperson.

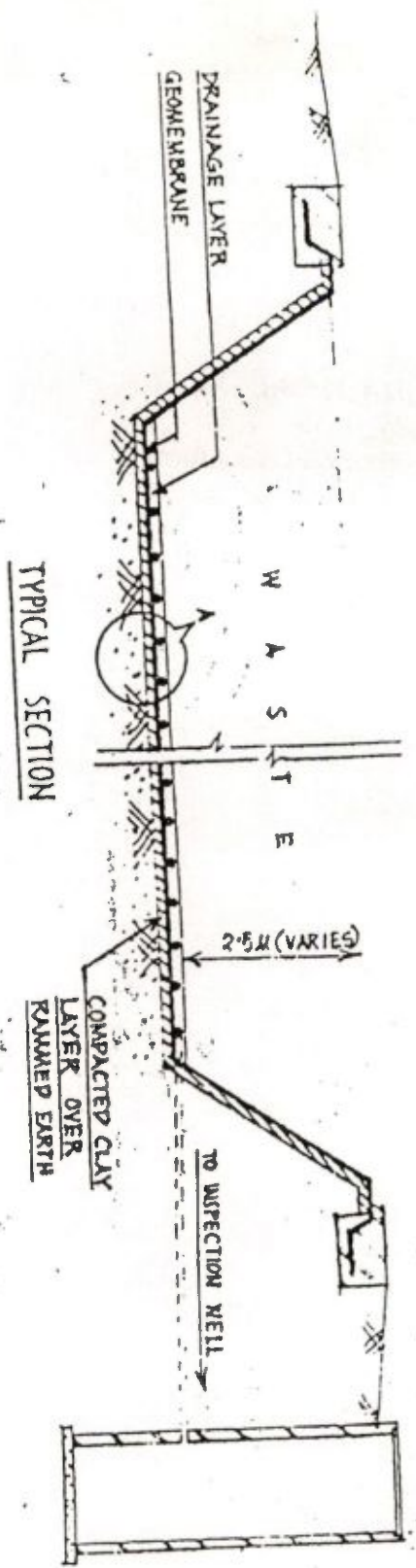
-----Municipal Corporation, Municipality
For favour of kind information & necessary action.

L. S. Anand
Adviser(Health) 26/7/01

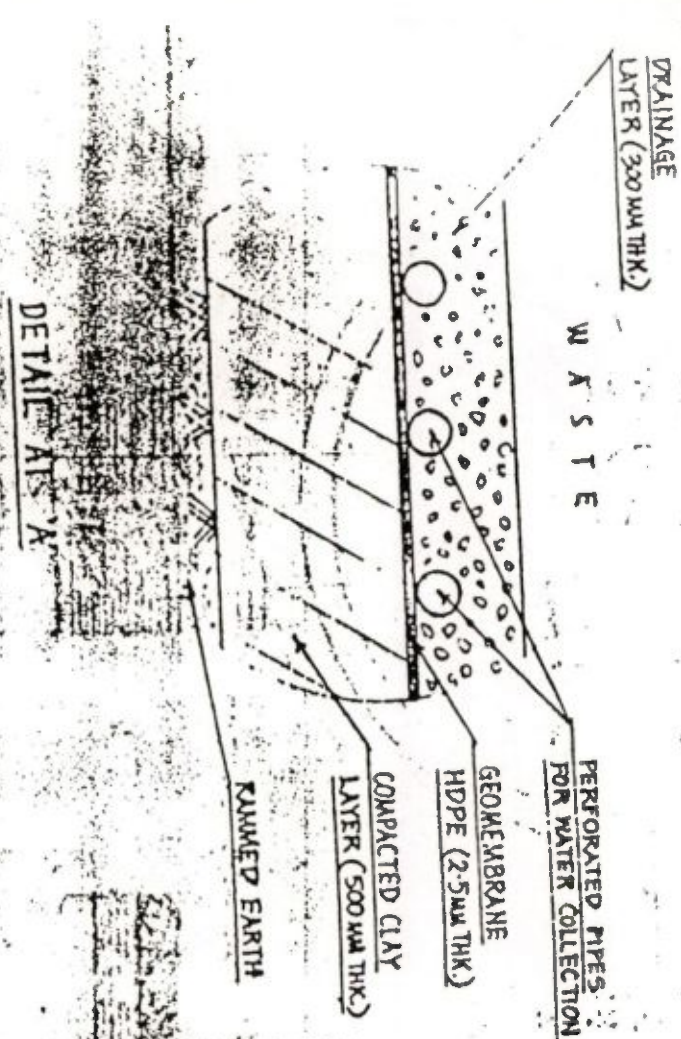
SUDA-15/98(Pt-V)/276(12/2)
C.C
Secretary, MA Dept.
Special Secretary
- for kind information.

26.7.2001

N. J. Sankar
Adviser(Health) 26/7/01



TYPICAL SECTION



DETAIL AT 'A'

NOTE :
 HYDRAULIC CONDUCTIVITY OF COMPACTED CLAY LAYER : 10^{-7} cm/sec
 STATE HEALTH SYSTEMS DEVELOPMENT PROJECT - II
 SCHEMATIC DESIGN OF BURIAL PIT
 FOR INFECTIOUS WASTE COLLECTION

BASIC DRG.



SUDA

STATE URBAN DEVELOPMENT AGENCY

HEALTH WING
"ILGUS BHAVAN"

H-C BLOCK, SECTOR-III, BIDHANNAGAR, CALCUTTA-700 091
West Bengal

Ref No.SUDA-15/98(pt-VI)/479

Date02.11.2001

From: Adviser (Health)
SUDA

To: The Project Director
IPP-VIII-(Extn.)RCH Sub-Project Asansol
_____ Municipality / Municipal Corporation

Sub: Bio-waste management scheme in Maternity Homes and OPDs under IPP-VIII- (Extn) and RCH Sub-Project Asansol- Construction of burial pits.

Sir,

Reference is invited to this office communication nos. SUDA-15/98(Pt-VI)276 & 397 dated 26.07.2001 and 20.09.2001 respectively on the above subject.

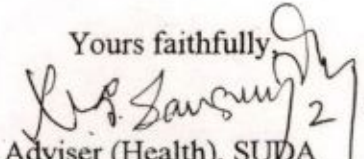
MED have been entrusted with the works relating to construction of burial pits. Necessary fund for the same is being released to MED.

Detailed drawings along with cost estimate for the said construction obtained from MED * is enclosed herewith.

No. of twin burial pits are to be constructed one set for each OPD cum MH. You are requested to provide the space in writing for such construction in a convenient location in the area to C.E, MED under intimation to the undersigned.

The matter is extremely urgent.

Encl. *

Yours faithfully

Adviser (Health), SUDA 2/11/01

SUDA

STATE URBAN DEVELOPMENT AGENCY

HEALTH WING

"ILGUS BHAVAN"

H-C BLOCK, SECTOR-III, BIDHANNAGAR, CALCUTTA-700 091
West Bengal

Ref No.

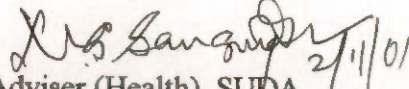
Date

Ref. No.: SUDA-15/98(pt-VI)/479

November 2, 2001

C.C.

C.E. MED - for kind information with reference to his office memo no. ME/2166/3(1)/4S-42/99-III dated 16th October 2001. On getting confirmation regarding site from the ULBs, fund shall be placed as proposed.

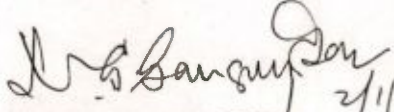

Adviser (Health), SUDA 2/11/01

Ref. No.: SUDA-15/98(pt-VI)/479

November 2, 2001

C.C.

The Chairperson / Mayor _____ Municipality / Municipal Corporation
for favour of kind information and necessary action.


Adviser (Health), SUDA 2/11/01

Government of West Bengal
Office of the Chief Engineer
Municipal Engineering Directorate
Bikash Bhavan, South Block, 1st floor, Salt Lake, Kol-91

No. ME/ / / Kolkata. Dated, the October, 2001

From : Shri S. K. Mukherjee
Chief Engineer, MED.

To : The Superintending Engineer
West/North/South Circle
Municipal Engineering Dte.



Sub : Bio-Waste Management Scheme in Maternity
Homes and O.P.D.s under IPP-8 (Extn.) &
R.C.H. Sub-Project, Asansol-construction
of burial pits.

Ref.: SUDA-15/98 Pt-VI/397 dated: 20-09-2001

Detailed drawings and estimates of the Burial Pits in
connection with the above noted scheme are enclosed herewith for
taking immediate action for inviting tenders. A copy of the letter
under reference is also enclosed in this respect.

He is requested to note that the tenders will have to be
invited in W.B. Form No. 2911 after observing the prevalent Govern-
ment Rules. Adviser, Health (SUDA) is being requested for early
release of fund.

It may also be mentioned here that the space for burial pits
should be obtained from the ULBs in writing in a convenient location
in the area and the No. of twin burial pits are to be constructed one
set for each OPD-Cum-MH.

Encls : As stated.

sd/-

(S. K. Mukherjee)
Chief Engineer, MED

gh/16-10-2001

No. ME/2166/3(C1)/45-42/99^{III} Kolkata. Dated, the 16th October, 2001

Copy with a copy of the enclosure forwarded for information
to :-

✓ The Adviser (Health), S.U.D.A.

- with the request to release fund as early as possible
as detailed in annexed sheet. This is as per discussion
in the meeting held with you at SUDA on 12-10-2001.

S. Mukherjee

(S. K. Mukherjee)
Chief Engineer, MED

16.10.01

Annexure of Memo.No.

FUND Required For
CONSTRUCTION OF BURIAL PITS (IPP-8 & RCH)

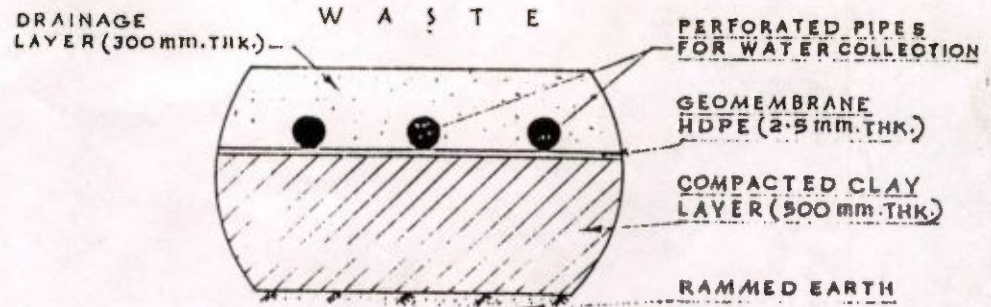
Sl.No.	Fund to be released	In favour of
<u>IPP-8</u>		
1.	Rs. (2.97 + 2.37 =) 5.34 Lakhs	Executive Engr. Siliguri Divn.
2.	Rs. (3 X 2.37 =) 7.11 "	" " Malda Divn.
3.	Rs. (2 X 2.37 =) 4.74 "	" " Jalpaiguri Divn.
4.	Rs. (2X2.37 + 2.43 =) 7.17 "	" " Burdwan Division
5.	Rs. (2.44 X 1 =) 2.44 "	" " Kharagpur Divn. Midnapur
<u>RCH - ASANSOL</u>		
6.	Rs. (2 X 2.37 =) 4.74 "	" " Asansol Division
TOTAL : <u>Rs.31.54</u> Lakhs		

sb/16-10-2001

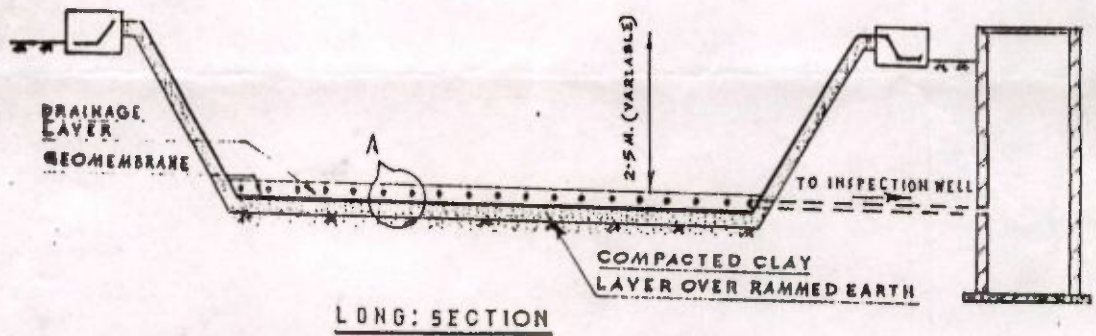
S. K. Mukherjee
(S. K. Mukherjee)
Chief Engineer, MED

16.10.01

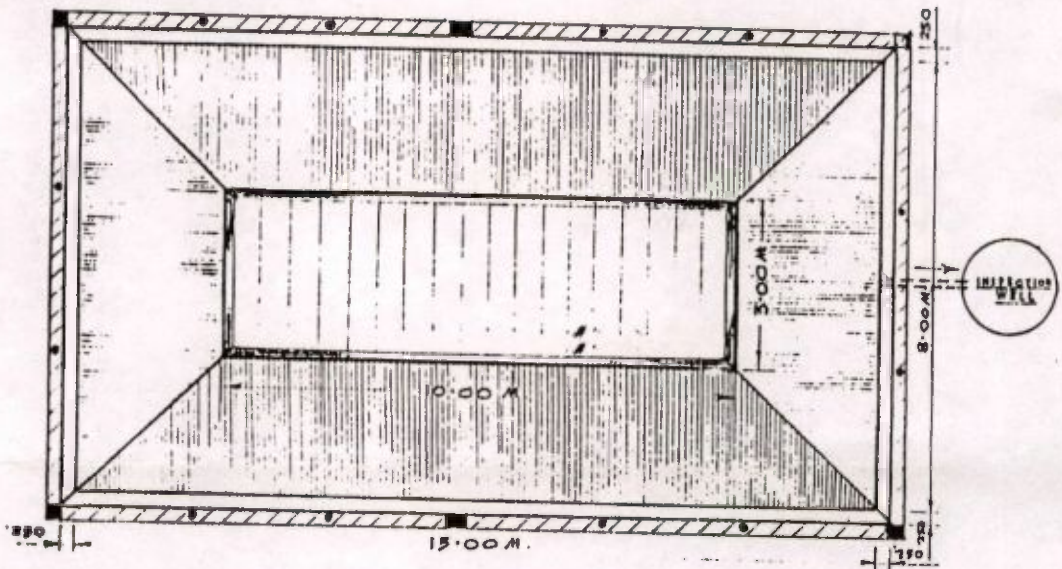
**DETAILS OF BURIAL PITS FOR SECURED LANDFILL OF
INFECTIOUS MEDICAL WASTE.**




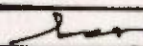
DETAILS AT - 'A'

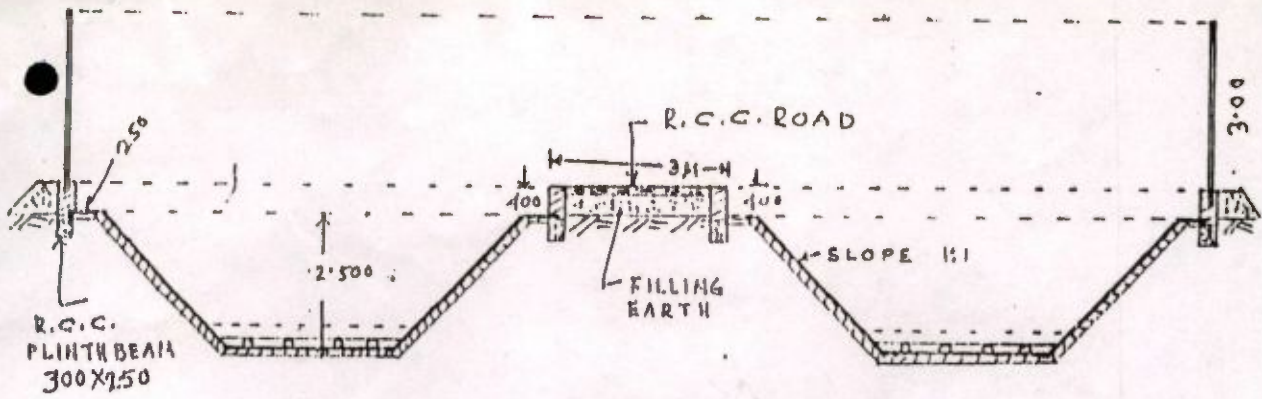


LONG SECTION

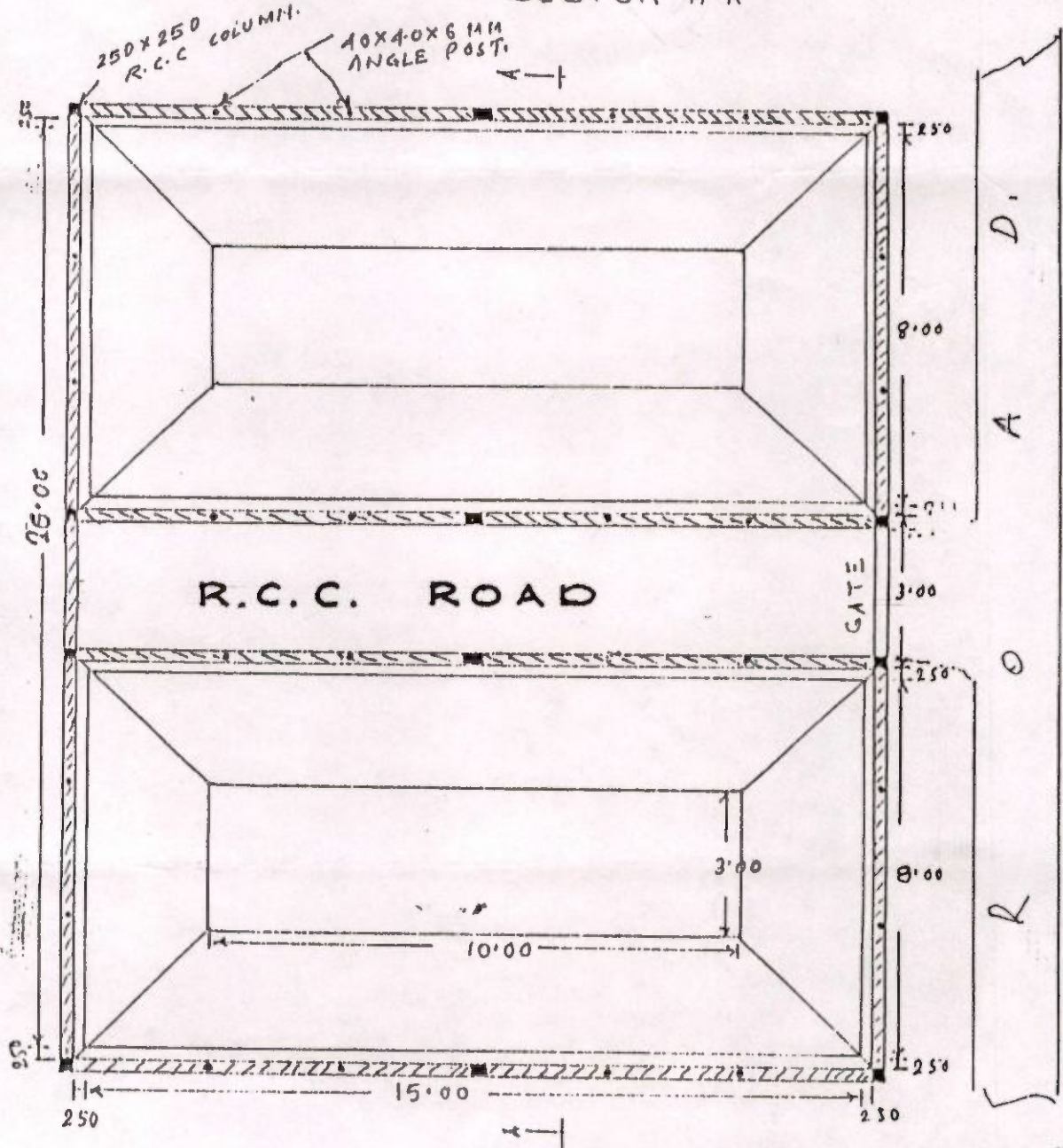


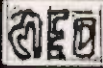

PLAN

 M.E.D / D.M.A GOVT. OF WEST BENGAL			
BURIAL PIT FOR MEDICAL WASTE.			
DRAWN BY A.K. CHOUDHURY	APPROVED BY 	TITLE A.E. E.E. S.E. C.E.	DATE
SCALE.	DRAWING NO. M.E.D/C.E./		



SECTION A-A



 M.E. D. / DMA GOVT. OF WEST BENGAL			
SECTION OF BURIAL PIT FOR MEDICAL WASTE			
DRAWN BY	APPROVED BY	TITLE	DATE
A. K. CHOU- DHURY		A. E.	
		E. E.	
		S. E.	
		C. E.	
SCALE.			
DRAWING NO: M.E.D/C.B.			

SUDA

STATE URBAN DEVELOPMENT AGENCY

HEALTH WING

"ILGUS BHAVAN"

**H-C BLOCK, SECTOR-III, BIDHANNAGAR, CALCUTTA-700 091
West Bengal**

SUDA-15/98(Pt-VI)/397

20.02.01.....

**From: Adviser(Health)
SUDA**

**To: The Project Director
IPP-VIII-(Extn.)
----- Municipality / Municipal Corporation
& RCH Sub-Project Asansol**

**Sub: Bio-Waste management scheme in Maternity Homes and
OPDs under IPP-VIII-(Extn.) & RCH Sub-Project Asansol**

Sir,

Reference is invited to this office communication bearing memo no.SUDA-15/98(Pt-V)/276 dt. 26.7.2001 (vide copy enclosed),on the above subject wherein you were requested to take action immediately.

Most of he OPD cum MH buildings have been constructed and are to be made functioning in no time. Provision of Bio-Waste management is a must for such an operationalised Health Facility. The Bank's assistance for IPP-VIII-(Extn.) has of late been extended upto June 30, 2002. A very short period is therefore avaffable for making such provision.

It is therefore requested to take up the issue right earnest according to the guide line granted to you. The Review Mission of World Bank is scheduled to visit the project soon and therefore implementation of the scheme should be expedited .

A feed back on the subject may kindly be granted to us.

Encl: as stated

Yours faithfully
[Signature]
Adviser(Health) 21/9/01

SUDA-15/98(Pt-V) / 397 (1)

20.9.2001

C.C

The Chairperson / Mayor, ----- Municipality/ Municipal Corporation for favour
of kind information and necessary action.

L. B. Sangrampur
Adviser(Health) 20/9/01

SUDA-15/98(Pt-V) / 397 (1)

20.9.2001

C.C

The Chief Engineer, MED for favour of kind information and taking necessary action urgently. The
requisition for placement of fund may kindly be placed to Health Wing, SUDA immediately.

L. B. Sangrampur
Adviser(Health) 20/9/01

SUDA

STATE URBAN DEVELOPMENT AGENCY

HEALTH WING
"ILGUS BHAVAN"

H-C BLOCK, SECTOR-III, BIDHANNAGAR, CALCUTTA-700 091
West Bengal

SUDA-15/98(Pt-V)/276
Ref No.

26.7.2001 Date

From: Adviser (Health),
SUDA

To : The Project Director, IPP-VIII-(Extn.)
----- Municipality/ Municipal Corporation
& RCH Sub-Project Asansol

Sub : Bio-Waste management scheme in Maternity Homes
and OPDs under IPP-VIII-(Extn.), and RCH Sub-Project

Sir,

The undersigned is directed to communicate sanction on the above subject.
The components along with cost for the above scheme is as under:

1. Civil Construction — cost of burial pits [two units at a time]
@ Rs.2.37 lakhs x 13 [11 under IPP-VIII-(Extn.) + 2 under RCH Sub-Project,
Asansol] = Rs.30.81 lakhs. These works may be undertaken by MED as per the
approved engineering design.(enclosed).
2. Purchase of 13 covered cycle vans 1 for each M.H. cum OPD for transportation of the
infected waste from the Health Institution to burial pits
@ Rs.12000/- per MH Cum OPD x 13 = Rs.1,56,000/-
3. (a) Procurement of disposables per MH Cum OPD per year : five no.
of plastic vats with cover, plastic bags (inner lining) of 4 colours
@ Rs.6300/- x 2 (one time replacement) per unit x 13 = Rs.1.63,800/-
(b) Purchase of chemical disinfectants, Kerosine Oil @ Rs.3,000/- per MH Cum
OPD x 13 = Rs.39,000/-
(c) Procurement of rubber gum boots, rubber gloves @ Rs.1500/- per MH Cum OPD
x 13 = Rs.19,500/-
TOTAL of 3 (a) + (b) + (c) = Rs.2.22,300/-

Contd. P-2

Tel/Fax No.: 359-3184

4. Operation and Maintenance :

(a) Salary of Cycle Van Puller @ Rs.100/- per day x 3 days per week
x 52 weeks x 13 = Rs.2,02,800/-

(b) Contingency @ Rs.12,000/- p.a. per MH Cum OPD x 13 = Rs.1,56,000/-

TOTAL of 4 (a) + (b) = Rs.3,58,800/-

GRAND TOTAL 1 + 2 + 3 + 4 = Rs.38,18,100/-

{ IPP-VIII-(Extn.) == Rs.32,30,700/- }
{ RCH Sub-Project Asansol == Rs.5,87,400/- }

Action on Sl.No. 1 will be done by MED and the remaining Sl. Nos. 2 to 4 by ULBs.

Concerned ULBs are requested to take action immediately. CE, MED may please take-up the work, at the earliest and place requisition for placement of fund. The expenditure will be met from the respective project head- innovative scheme.

Yours faithfully
M. S. Laxminarayana
Adviser(Health) 26/7/01

26.7.2001

SUDA-15/98(Pt-V)/276(12)

C.C

CE, MED

Mayor: Chairperson.-----Municipal Corporation, Municipality

For favour of kind information & necessary action.

M. S. Laxminarayana
Adviser(Health) 26/7/01



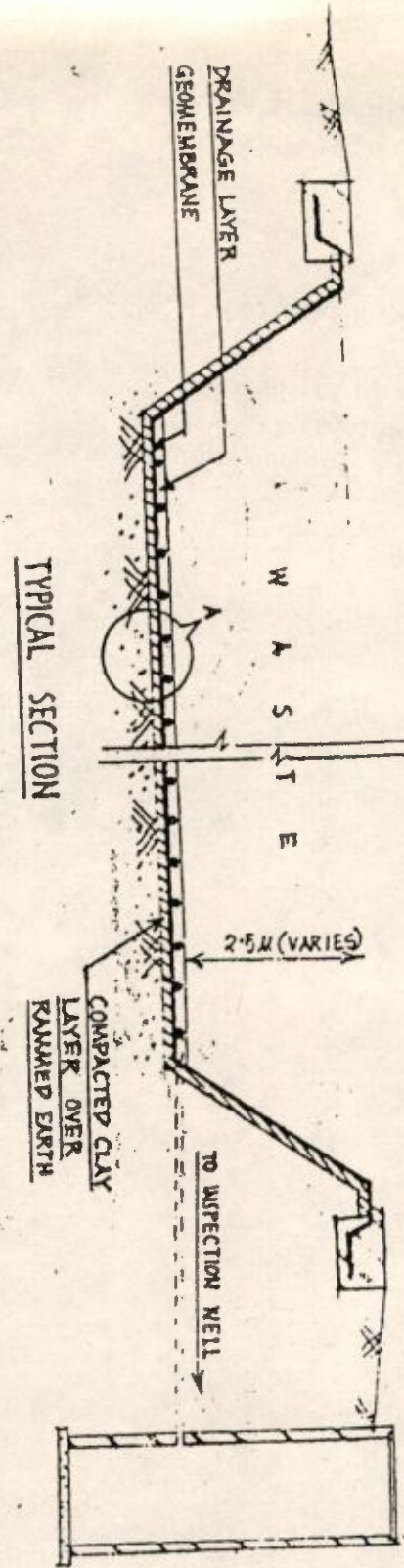
HEALTH WING

SUDA-15/98(Pt-V)/276 (12/2)
C.C
Secretary, MA Dept.
Special Secretary
- for kind information.

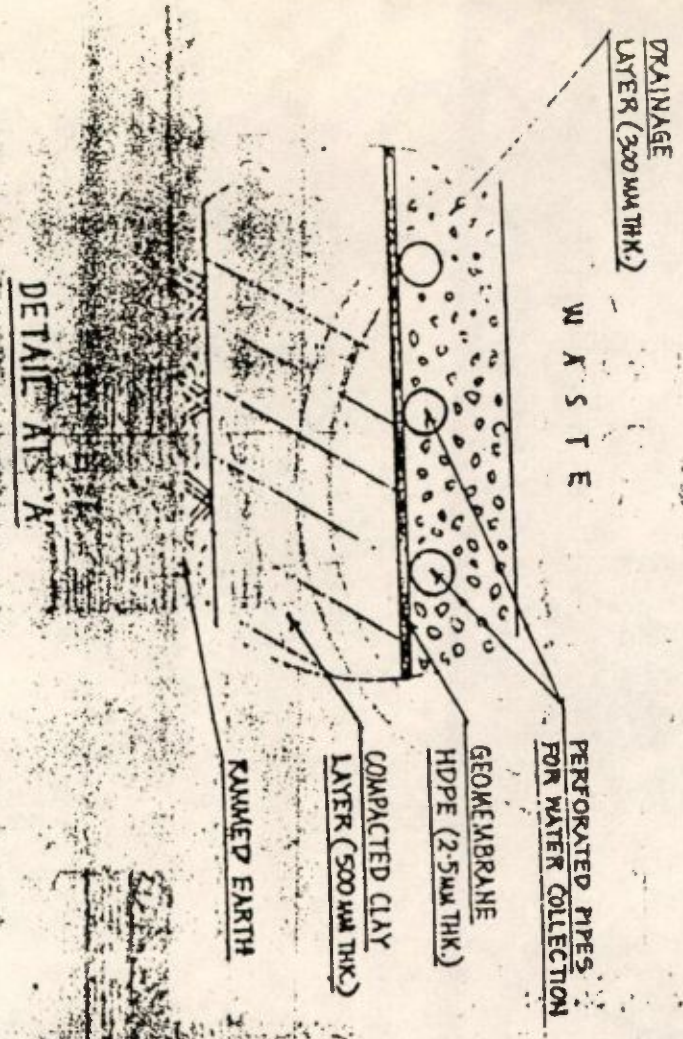
26.7.2001

X. J. Sanyal
Adviser(Health) 26/7/01

One Letterhead



TYPICAL SECTION



DETAIL AT 'A'

NOTE :
 HYDRAULIC CONDUCTIVITY OF COMPACTED CLAY LAYER : 10^{-7} CM/SEC.
 STATE HEALTH SYSTEMS ENGINEERING PRODUCT - II

SCHEMATIC DESIGN OF BURIAL PIT
 FOR INFECTIOUS WASTE COLLECTION

BASIC DRG.



Sub : Bio-Waste management scheme in Maternity Homes
and ESOPDs under IPP-VIII-(Extn.), and RCH Sub-Project

In conformity with practices adopted on the above subject by West Bengal Health Systems Development Project, as also IPP-VIII, Calcutta; an Action Plan is prepared for Bio-Waste Management for the Maternity Homes cum OPD / ESOPDs constructed under IPP-VIII-(Extn.), and RCH Sub-Project.

THE Cost estimate and the engineering design of burial pits as approved by the World Bank / GOI and sanctioned by the Secretary CMDA for IPP-VIII, Calcutta is placed below for kind perusal.

The components for the action plan in this report for our projects i.e. IPP-VIII-(Extn.) and RCH Sub-Project Asansol are as under along with cost - estimate :

1. Civil Construction for cost of burial pits [two units at a time]
@ Rs.2.37 lakhs x 13 [11 under IPP-VIII-(Extn.) + 2 under RCH Sub-Project,
Asansol] = Rs.30.81 lakhs. These works may be undertaken by MED as per
the approved engineering design.
2. Purchase of 13 coverd cycle vans 1 for each M.H. cum OPD for transportation
of the infected waste from the Health Institution to burial pits @ Rs.12000/-
per MH Cum OPD x 13 = Rs.1,56,000/-
3. (a) Procurement of disposables per MH Cum OPD per year : five no.
of plastic vats with cover, plastic bags (inner lining) of 4 colours
@ Rs.6300/- x 2 (one time replacement) per unit x 13 = Rs.1,63,800/-

(b) Purchase of chemical disinfectants, Kerosine Oil @ Rs.3,000/- per MH
Cum OPD x 13 = Rs.39,000/-

(c) Procurement of rubber gum boots, rubber gloves @ Rs.1500/- per MH
Cum OPD x 13 = Rs.19,500/-
TOTAL of 3 (a) + (b) + (c) = Rs.2,22,300/-
4. Operation and Maintenance :
(a) Salary of Cycle Van Puller @ Rs.100/- per day x 3 days per week
x 52 weeks x 13 = Rs.2,02,800/-

(b) Contingency @ Rs.12,000/- p.a. per MH Cum OPD x 13 = Rs.1,56,000/-

TOTAL of 4 (a) + (b) = Rs.3,58,800/-

GRAND TOTAL 1 + 2 + 3 + 4 = Rs.38,18,100/-

{	IPP-VIII-(Extn.)	==	Rs.32,30,700/-
	RCH Sub-Project Asansol	==	Rs.5,87,400/-

Page-2

MED may prepare estimate on the standard design for construction of burial pits within the cost indicated above and undertake the construction at an early date.

The cost involved will be met from the respective project head – innovative schemes.

Training programme on the subject for concerned officials may be organised in near future with the assistance of experts from W.B.H.S.D.P.

Submitted for favour of kind perusal and approval. After clearance by the Secretary necessary instructions will be issued to the concerned ULBs and MED with placement of necessary funds.

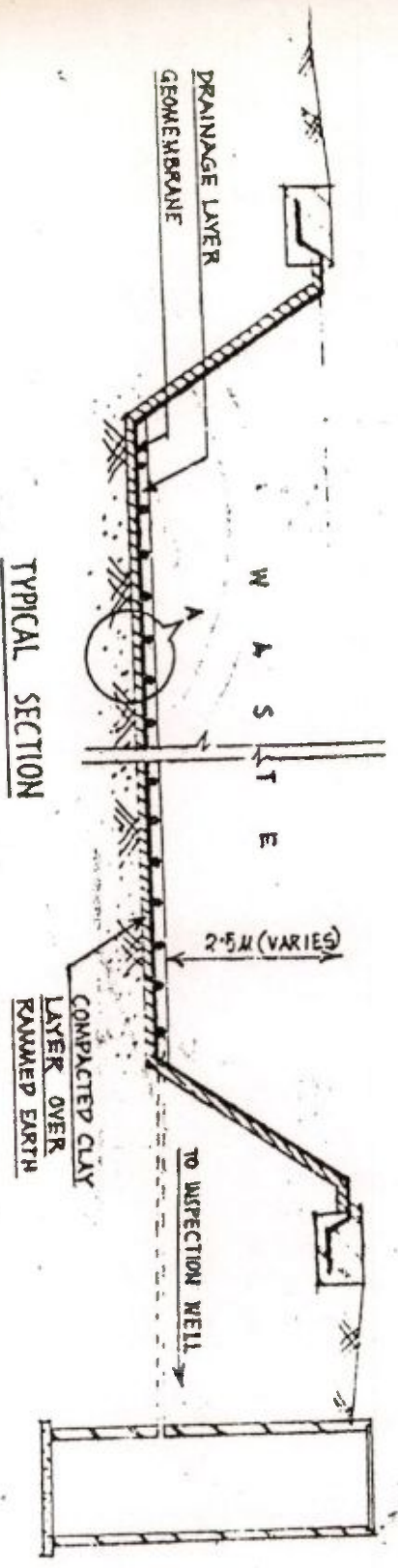
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dt- 28-05-2001

Goswami/N.Sheet/p9-10

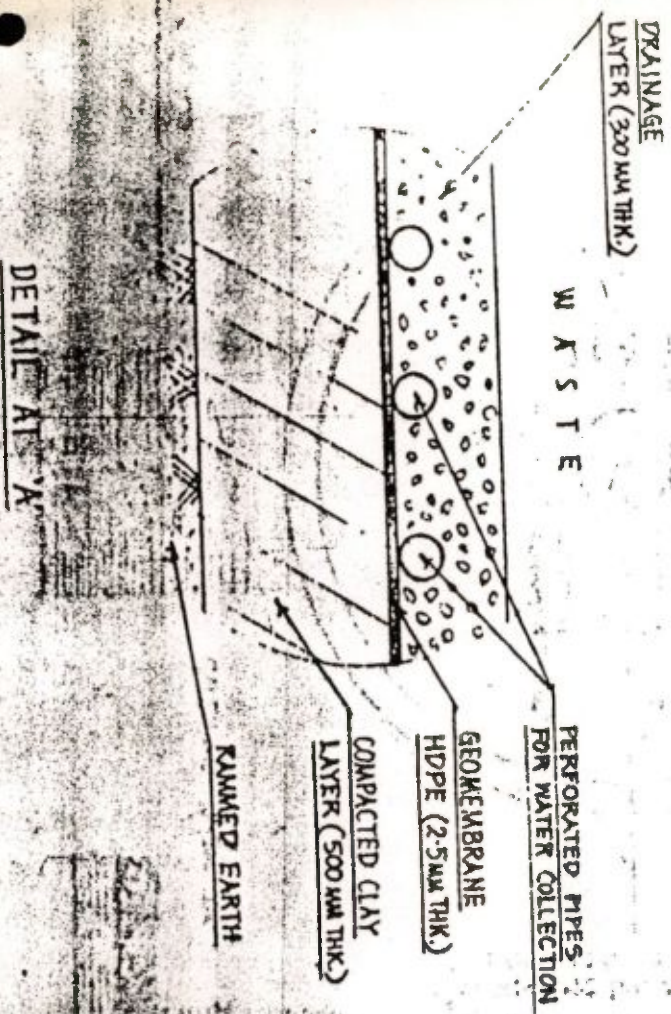
N. S. Sanyal
28/5/01

J. S. Sanyal
31/5

Advisor, Health,
SUDA



TYPICAL SECTION



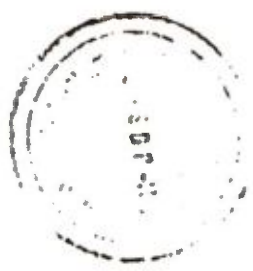
DETAIL AT 'A'

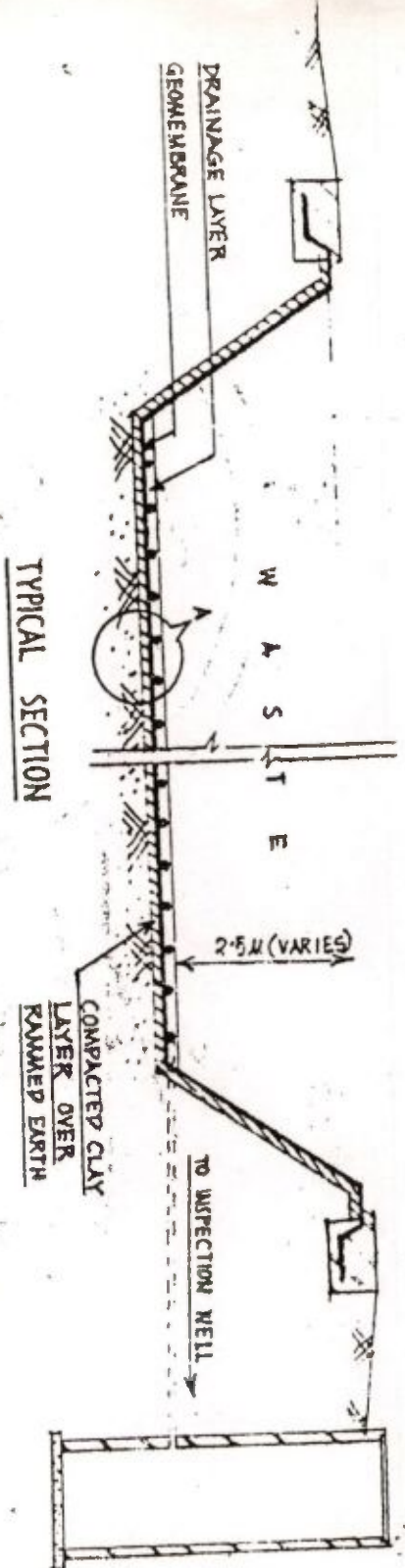
NOTE :
HYDRAULIC CONDUCTIVITY OF COMPACTED CLAY LAYER : 10^{-7} CM/SEC.

STATE HEALTH SYSTEMS DEVELOPMENT PROJECT - II

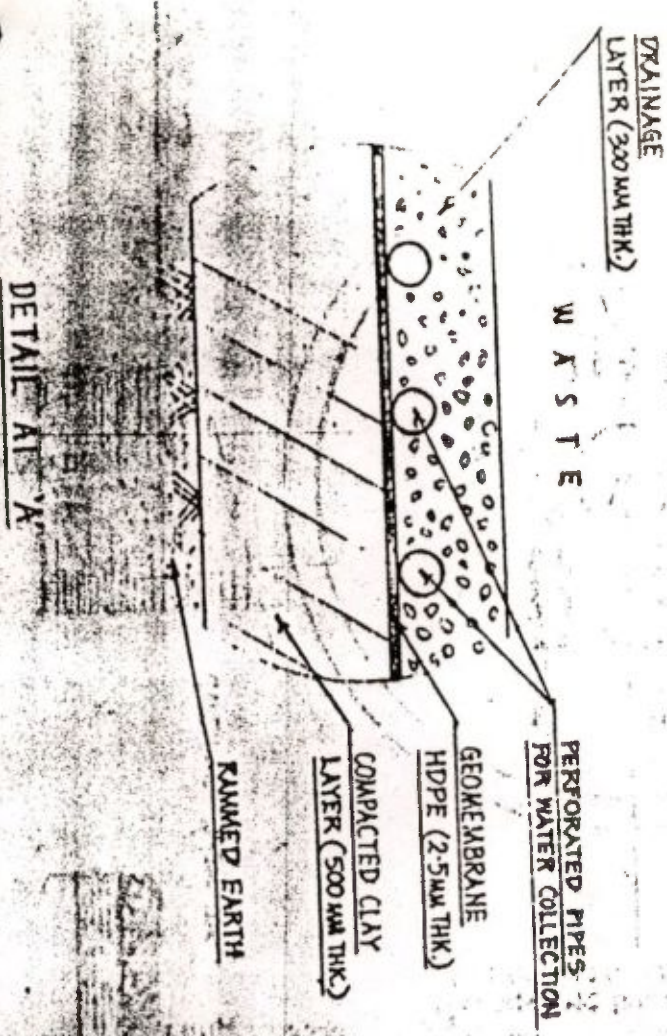
SCHEMATIC DESIGN OF BURIAL PIT
FOR INFECTIOUS WASTE COLLECTION

Basile D.R.





TYPICAL SECTION



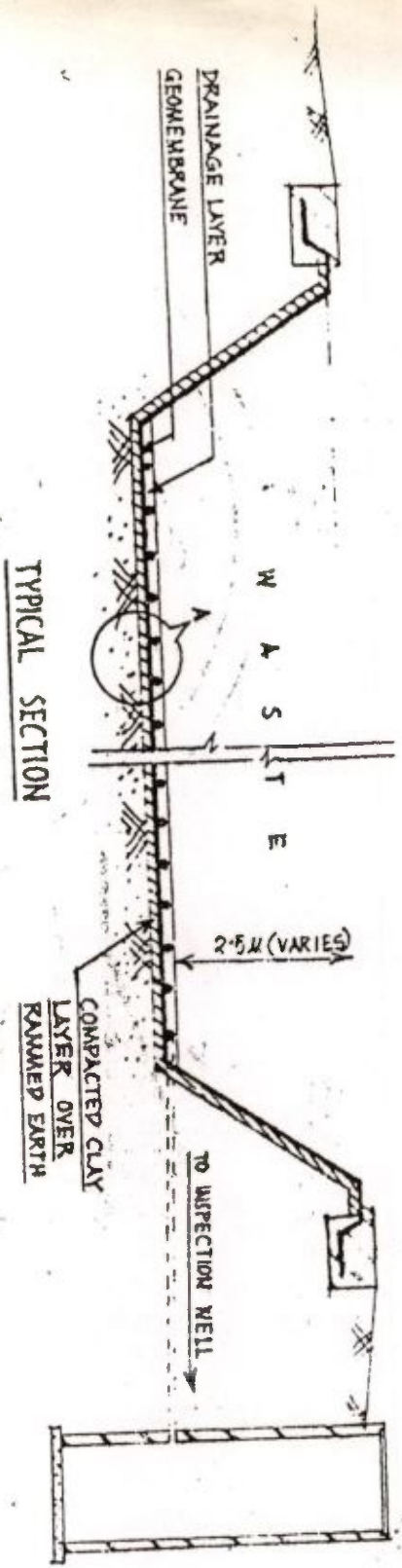
DETAIL AT 'A'

NOTE :
 HYDRAULIC CONDUCTIVITY OF COMPACTED CLAY LAYER : 10^{-7} CM/SEC.
 STATE HEALTH SYSTEMS DEVELOPMENT PROJECT - II

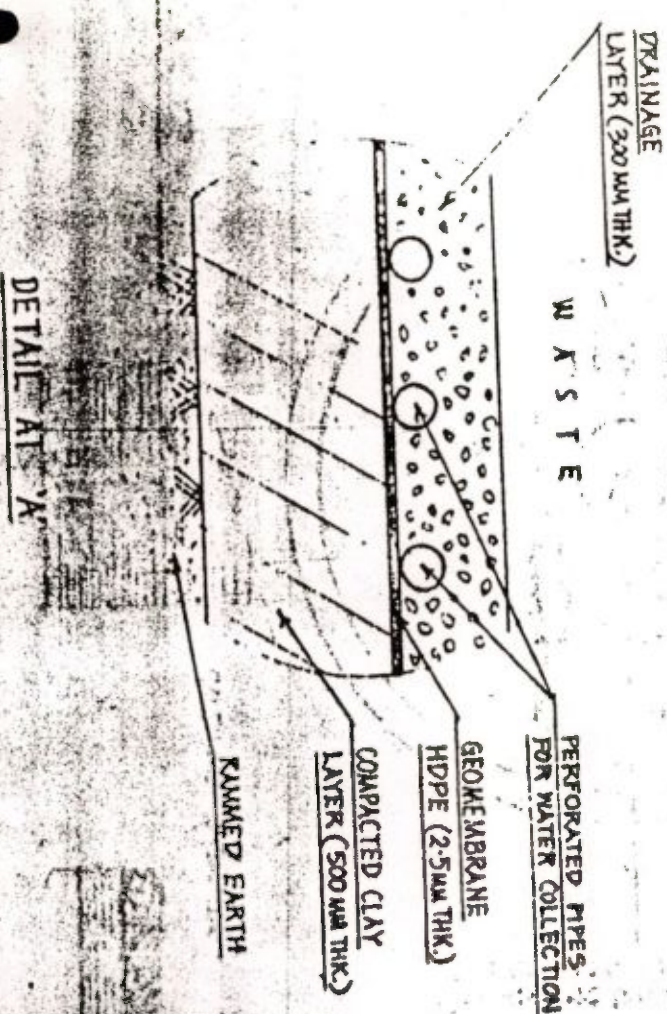
SCHEMATIC DESIGN OF BURIAL PIT
 FOR INFECTIOUS WASTE COLLECTION

BASIC DRG

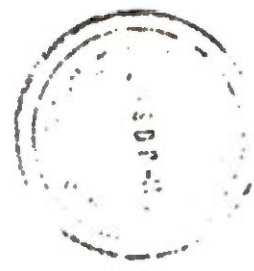




TYPICAL SECTION



DETAIL AT 'A'



13

NOTE :
HYDRAULIC CONDUCTIVITY OF COMPACTED CLAY LAYER = 10^{-7} CM/SEC.

STATE HEALTH SYSTEMS DEVELOPMENT PROJECT - II

SCHEMATIC DESIGN OF BURIAL PIT
FOR INFECTIOUS WASTE COLLECTION

BASILE DRG

ORDER

Administrative approval and financial sanction is hereby accorded to the implementation of bio-waste management scheme in Municipal Hospitals/Maternity Homes/ESOPDs/ Laboratories including Regional Diagnostic Centres created under the F.W. (US) Project -IPP-VIII, Calcutta in 10 (ten) local bodies at the initial phase viz., (i) Nailhati (ii) North Barrackpore (iii) New Barrackpore (iv) Dum Dum (v) Madhyamgram (vi) Rajpur - Sonarpur (vii) Budge Budge (viii) Uttarpara - Kotrung (ix) Bhiadreswar and (x) Chandannagar at a total cost of Rs. 29.37 lakhs in the following manner :-

1. Civil construction cost for burial pits [2(two) units at a time] @ Rs. 2.37 lakhs x 10 = Rs. 23.70 lakhs.
2. Purchase of covered cycle vans for transportation of the infected Wastes from the Health Institutions to burial pit @ Rs. 12000 x 10 = Rs. 1.20 lakhs.
3. a) Procurement of disposables per municipality per year : 5 nos of plastic vats with cover, plastic bags (inner lining) of 4 colours @ Rs. 6300 x 2 (one time replacement) per unit x 10 = Rs. 1.26 lakhs.

b) Purchase of chemical disinfectants, Kerosine oil ~~for burning~~ ^{polythene} (plastic) bags after emptying the same in the burial pit @ Rs. 3000 per unit x 10 = Rs. 0.30 lakhs.

c) Procurement of rubber gum boots, rubber gloves @ Rs. 1500 per unit x 10 = Rs. 0.15 lakhs.

Total of 3(a), (b) & (c) = Rs. 1.71 lakhs.

Operation and Maintenance :

a) Salary of cycle van puller @ Rs. 100/- per day x 3 days per week x 52 weeks x 10 = Rs. 1.56 lakhs

b) Contingency @ Rs. 12000 p.a per unit x 10 = Rs. 1.20 lakhs

Total of 4 (a) & (b) = Rs. 2.76 lakhs

Grand Total: 1 + 2 + 3 + 4 = Rs. 29.37 lakhs.

The concerned municipalities shall prepare estimate through the Municipal Engineers based on the standard design of the State Health System Development Project for civil construction of burial pits within the sanctioned cost indicated in this order and shall undertake the construction as early as possible as well as take follow-up actions on the construction of burial pits are completed by December, 2000.

The cost involved will be met from the provision under the head " Innovative Schemes " in the budget of FW(US) Project - IPP-VIII, Calcutta during the project period.

The Chairpersons of the concerned municipalities are being informed

Project Director,
PP-VIII & Secretary,
CMDA

11(14)

No.12-19/CMDA/FW(US)/IPP-VIII/1-17/2000

22nd August, 2000.

Copy forwarded for information and necessary action to :-

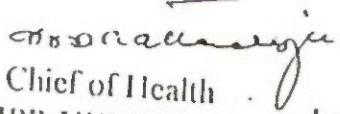
1. The C.E.O., CMDA.

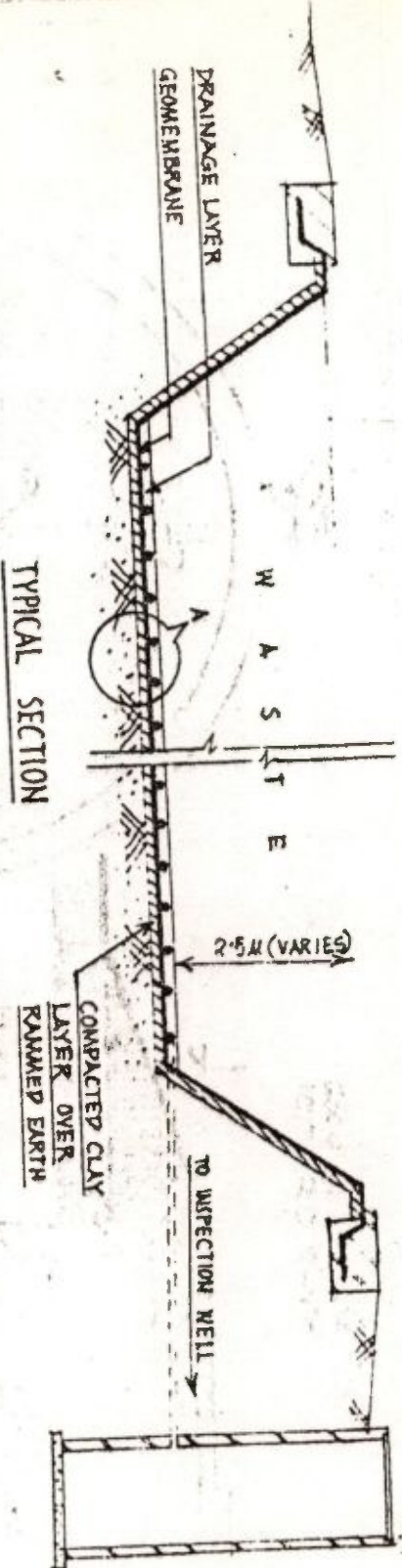
2. The D.G.O.F. , CMDA.

3. The Chairperson _____ . A copy each of the standard design and standard estimate prepared by the State Health System Development Project is enclosed. A site map where the burial pits are proposed to be constructed be forwarded to the undersigned along with a certificate from the chairperson that civil construction work for burial pits could be executed within the ceiling limit of sanctioned estimate of Rs. 2.37 lakhs.

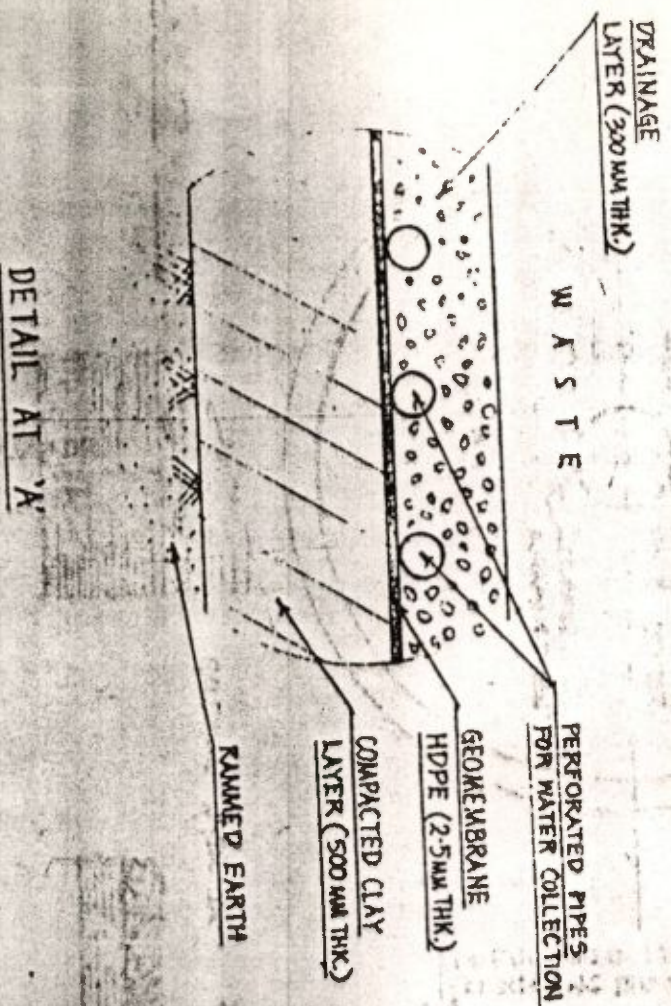
1. The C.E.(P &M), CMDA

Accounts Officer- I, IPP-VIII, CMDA


Chief of Health
IPP-VIII/CMDA 22/8/2000



TYPICAL SECTION



DETAIL AT 'A'



3

NOTE :
HYDRAULIC CONDUCTIVITY OF COMPACTED CLAY LAYER : 10^{-7} CM/SEC.

STATE HEALTH SYSTEMS DEVELOPMENT PROJECT - II

SCHEMATIC DESIGN OF BURIAL PIT
FOR INFECTIOUS WASTE COLLECTION

BASIC DRG.