

SPECIFICATIONS
&
SPECIAL CONDITIONS
FOR
EXECUTION OF
CIVIL WORKS &
OTHERS

WATER SUPPLY & SANITATION
DEPARTMENT PUNJAB

GENERAL SPECIFICATIONS

Sr. No.	Brief Description	Relevant Code reference (with latest amendment)		Remarks
		Indian Standards (IS)	Pb. PWD Book of specification Chapter No.	
1	2	3	4	5
	Civil Works			
1.	Bricks First class, size 22.86cm x 11.11cm x 6.83cm		3.5	
2	Flat brick tiles Tiles for flooring, tile facing and Tile brick masonry size 22.86cm x 11.43cm x 3.81cm		3.6	
3	Brick ballast		3.7	
4	Cinders		3.10	
5	Coarse and fine aggregate from natural source for concrete	383-1999	3.29,3.30	
6.	Cement Ordinary rapid Portland cement of 43 grade	8112-1989 (reaffirmed 2000)	3.12	JK (Nimbura) , JP (Bulund), Bangur, Birla Chetak, Vikram , ACC, CCI, Ambuja, Laxmi, chetak, DLF, Shree
7.	White Portland Cement	8042-1989	3.13	-do-
8.	TMT Fe 415 Grade	1786-1985 (reaffirmed-2000)	3.22	TISCO/ SAIL/ RASHTRIYA ISPAT/
9.	Brick Masonry First class bricks and cement sand mortar as per specification	2212-1991	11	
10.	Stone Masonry Supply dressing and cutting of stones and bricks.		12	
11.	Corrugated Iron roofing (galvanized)	12093:1987	13.6	TISCO/ JINDAL / BHUSHAN
12.	Asbestos cement (A.C.) sheet roofing		13.7	CHARMINAR / ACC
13.	Bitumen felt water-proofing treatment.		13.11	

Sr. No.	Brief Description	Relevant Code reference (with latest amendment)		Remarks
		Indian Standards (IS)	Pb. PWD Book of specification Chapter No.	
1	2	3	4	5
14. (a)	Fixing of rain water pipe		UPVC 6 kg	FINOLEX/ SUPREME / DIPLAST/ JAIN/ KISSAN
(b)	-do-	2527-1984	13.13	
15.	Khurra, Parnala and spouts		13.15	
16.	Flooring and dados conglomerate, flooring, gray polished flooring, Brick and tile flooring, Dry brick paving, terrazzo flooring, precast terrazzo flooring, white glazed tile flooring, Marble flooring Marble skirting and dados, Kotach stone flooring and other types of flooring and dados.		14	
17.	Plastering, Pointing, white washing and distempering Sand for plaster	1542-1992	15	SNOWCEM/ ROBINSON/ GARWARE/ NEROLEC/ DULUX / ASIAN / ICI
18.	Painting and Varnishing Preparation of surface, priming coat, painting on wood work. Iron and steel work.		16	NEROLAC/ BURGER/ ROYALE (ASIAN) / DULUX / ICI
19.	Steel work Structural steel work, gratings, G.I. Sheet garage doors, sliding shutters, fan hooks, window grill, steel doors and windows and all welding works.		18	TISCO/ SAIL/ RASHTRIYA ISPAT/

Sr. No.	Brief Description	Relevant Code reference (with latest amendment)		Remarks
		Indian Standards (IS)	Pb. PWD Book of specification Chapter No.	
1	2	3	4	5
20.	Proportions of concrete:- Mixing of concrete Protection and curing of concrete construction joints, form work, removal of form work, strength of concrete, finishing and testing of structure and water required for mixing concrete, mortar and curing and plain / RCC structure for storage of liquids.	456-2000, 3370-1965 (Part I,II,III & IV)	10.4-10.11	
21.	Loading and Unloading		4	
22.	Carriage of material		5	
23.	Timber paneled and glazed shutters and windows.	1003 (Part 1 & 2) : 1994		
Water Supply				
1.	Earth work in excavation for pipeline. Excavation of pipe lines, timbering of trenches, removal of water from trenches, depth of trenches, refilling of trenches restoration of surfaces and all relevant works.		28.1 and 28.2	
2. (A)	Cast Iron (Spun) Pressure pipe Class LA Socketted and spigot	1536-2001 and 1538-1993 (reaffirmed 1999)	28.3	ELECTRO STEEL CASTING / KESORAM PIPES
(B)	Ductile Iron Pipe	IS 8329-2000	28.3	ELECTRO STEEL CASTING / JINDAL
3.	Laying Jointing and testing double flanged cast Iron pipe	3114-1994 (reaffirmed - 2000)		

Sr. No.	Brief Description	Relevant Code reference (with latest amendment)		Remarks
		Indian Standards (IS)	Pb. PWD Book of specification Chapter No.	
1	2	3	4	5
4.	All cast Iron fittings such as bends, collars etc.	1538 (Part I to Part 24)-1993		ISI marked
5.	Lead caulking	782-1978		
6.	Sluice valves for water works purposes (50mm - 300mm size).	780-1994		IVC/ KIRLOSKAR
7.	Copper alloy Gate valves, Check valves etc.	778-1994		ISI marked
8.	Cast iron plain ended fittings and plain ended bends	5531-1988 IInd revision (Reaffirmed-1997)		ISI marked
9.	Cast Iron detachable joints	8794-1988		ISI marked
10.	Unplasticised PVC pipes	4985-2000		ISI marked
11.	PVC Pipes & fittings	7834-1987 reaffirmed - 1998		FINOLEX/ RELIANCE/ DIPLAST/ JAIN
12.	Fabricated PVC Fitting	1125-1999 (Part I-IV)		To be used only where injection moulded specials is not manufactured / available in the market
13.	Fabricated PVC fittings for potable water supplies	10124 (part 1-13)-1988		-do-
14.	Asbestos cement (A.C.) pressure pipes class-10 and Laying & joining A.C. Pressure pipe	1592-2003 (IV revision) 8794-1988		
15.	HDPE pipes	4984-1987		DURALINE/ RELIANCE
16.	HDPE fittings for potable water supplies	8008 (Part 1-7) - 1976		-do-
17.	Fabricated HDPE fittings for potable water supplies	8360 (Part 1-3)-1977		-do-
18.	G.I. pipes, class-B	1239-2004 (Part-I) (Reaffirmed 1995)		JINDAL /TATA
19.	G.I. Fittings			UNIK/ SVW / U

Sr. No.	Brief Description	Relevant Code reference (with latest amendment)		Remarks
		Indian Standards (IS)	Pb. PWD Book of specification Chapter No.	
1	2	3	4	5
20.	Water meter (Domestic Type)	779-1994		KARANTI / ANAND/ AQUA / CRESENT
21.	Water meter (Bulk Type Electromagnetic)	2373-1981		CRONE MARSHAL/ ABB/ SIEMENS MAKE
22.	Water meter surface boxes	2104-1981		ISI marked
23.	Bleaching Powder	1065-1989		ISI marked
24.	Surface boxes for sluice valves.	3950:1979		ISI marked
25.	Chlorination equipment for bleaching powder solution feeds displacement type chlorination.	10553 (Part-1-5):1987		
26.	General guidelines for chlorination plants including handling, storage and safety of chlorine cylinder and drum.	10553 (Part I -4)-1983		
Public Health Engineering:				
1.	Water Supply	2065-1983	30.14	
2.	drainage and sanitation	1742-1983	30.13	
3.	Excavation of sewers – alignment and grade, depth, width, timbering and shoring, removal water from trenching and refilling complete		29.1,29.2	
4.	Excavation for storage tanks, pump houses, sumps etc.		29.4	
5.	Glazed stone ware pipe, and fittings	651-1992		ISI marked
6.	Laying, jointing and cutting of glazed stone ware pipes.	4127-1983	29.12	
7.	Sanitary pipe work above ground for	5329-1983	30.11	
8.	Installation of septic tanks Secondary treatment and disposal of septic tank effluent.	2470 (Part I & 2) – 1985		
9.	Biological treatment and equipments, Activated sludge process and its modification.	8413 (Part I-2) – 1982		
10.	Waste stabilization bonds (facultative type)	5611-1987		

Sr. No.	Brief Description	Relevant Code reference (with latest amendment)		Remarks
		Indian Standards (IS)	Pb. PWD Book of specification Chapter No.	
1	2	3	4	5
11.	Filtration equipments, filtration media- sand and gravel	8419 (Part 1 & 2) 1977/1984		
12.	Sludge dewatering equipments vacuum filtration Equipment sludge drying beds, sand gravel of under draw centrifugal equipment	10037 (Part I to 3)- 1983		
13.	Settling Tank (Clarifier equipment) for Water Treatment Plants	10313:1982		
14.	General guidelines for slow sand filters	11401 (Part-1) - 1985		
15.	Equipments for grit removal device	6279-1971		
16.	Sewage screens	6280-1971		
17.	C.I. Manhole covers & frame	1726:1991		EVEREST/ JINDAL
18.	Pre-cast Fiber reinforced RCC manhole cover and frame	12592 (Part I & II) - 1988/1991		ISI marked
19.	Cast iron steps for manholes	5455-1969		ISI marked
20.	HDPE pipes pressure rating PN-4			
	Sanitary Appliances			
1.	Chinaware water closets, wash hand basins, laboratory sinks, urinals, partition plates, bidets, cisterns, & squatting pans	2556 (Part I & 9) - 1994/1995	30	CERA,/ HINDWARE/ JAL SYMPHONY / PARRYWARE
2.	Waste plugs and accessories for sinks and wash hand basins.	3311-1979		
3.	Plastic flushing cistern for water closets and urinals.	7231:1994		ISI marked
4.	Cast iron screw down stop valves and stop & check valves for water works purpose.	9338-1984		ISI marked
5.	Flush valves and fittings for water closets and urinals	9758:1981		ESS ESS / NOVA, JAL

Sr. No.	Brief Description	Relevant Code reference (with latest amendment)		Remarks
		Indian Standards (IS)	Pb. PWD Book of specification Chapter No.	
1	2	3	4	5
6.	Pillar taps for water supply purpose	1795:1982		
7.	Self-closing taps for W/S purpose.	1711:1984		
8.	Plastic bib taps and stop valves	9763:1988		PARYAG or equivalent
9.	Rotational moulded polyethylene water storage tanks	12701:1996		DIPLAST// SINTEX
10.	Brass gate, and check valves for water works purpose.	13114-1991		ISI marked
11.	Stainless steel sinks for domestic purpose.	13983:1994		
Pumping Machinery				
1.	Submersible pumping set	8034-1989 (Reaffirmed 1999)		CALAMA/ KSB/ / WPIL,/ SEEREX /CROMPTON
2.	Submersible Motor	9283-1995		-do-
3.	Switch Board, Control Panel Board.	8623-1993, 13947-1993, 11353-1985		L&T,/ ENGINEERING ENTERPRISES/ HAVELL
4.	Flanged column pipe	1239 (Part - I) - 2004		MEDIUM CLASS
5.	Submersible cable	694:1990 (Reaffirmed 2000)		FINOLEX/ HAVELL/ BCH/KEI/ POLYCAB
6.	Centrifugal Pump	6595-2002		PUMP: KIRLOSKAR/ MATHER PLATT/ KSB/ WPIL. MOTOR: KIRLOSKAR/ CROMPTON,/ SIEMEN/ GEC/ NGEF / BCH/ BHARAT BIJLEE
7.	Reflux Valve , Cast Iron , Gun Metal	5312-1984 778-1984		LEADER / L&T

Sr. No.	Brief Description	Relevant Code reference (with latest amendment)		Remarks
		Indian Standards (IS)	Pb. PWD Book of specification Chapter No.	
1	2	3	4	5
8.	Pressure Gauges	3624-1987		
9.	Power Capacitor.	13340-13341		BCH/EPCOS/ENERCON
10.	Contactors	13947 PART IV		BCH/ SIEMENS (INDIA/ GERMANY) / L&T
11.	Earthing			
12.	Safety Equipment	2678-1987 (Reaffirmed 1996)		
13.	Erection of Pump Set, Electric Motor and Other accessories and main connections.	9694 (Part - II)-1980 (Reaffirmed 1997)		SHALL BE CARRIED OUT AS PER PSEB GUIDELINES.
14.	Panel Board			L&T/ HAVEL/ GE
a.	Motor controlling switch			AE/ MECO/ L&T/ EE, GE
b.	Digital Volt meter range 0-500 V AC Digital Ammeter suitable for 5A CT secondary Current	1248-1993		NIPPON/ ALLIANCE/ ENERCON
c.	Indicating lamp	1901-1978		22.5MM DIA LED TYPE
d.	Starter			L&T,/ SEIMENS,/GE OR EQUIVALENT MAKE
15.	Diesel Engine Upto 20.00k.w. Above 20.00k.w.	10001-1981 10002-1981		KIRLOSKAR OIL ENGINES/ GREAVES/ CUMMINS/ CATERPILLER, COOPER / VOLVO PENTA
16.	Generating Set-Alternator	4722-1968		STAMFORD/ LEROY-SOMERS/KIRLOSKAR GREEN/ CROMPTON/ JYOTI/ GEC/
17.	Single Phase preventer with one CO contact			Minilec

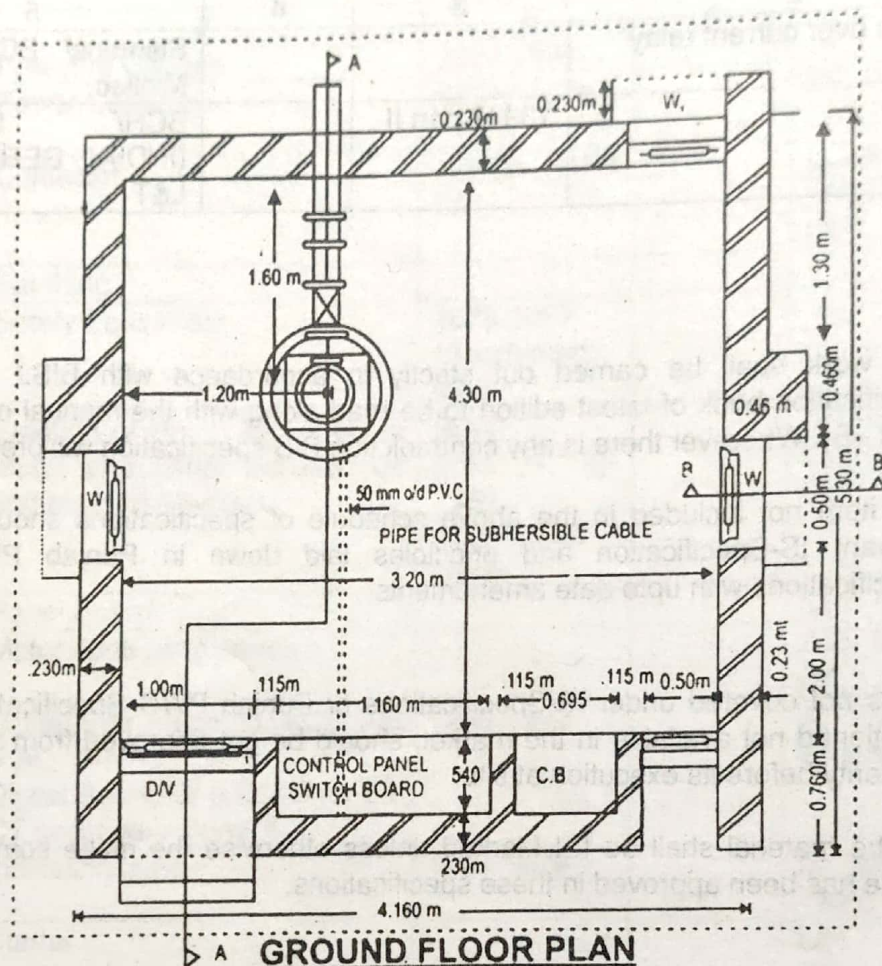
Sr. No.	Brief Description	Relevant Code reference (with latest amendment)		Remarks
		Indian Standards (IS)	Pb. PWD Book of specification Chapter No.	
1	2	3	4	5
18.	Electronic over current relay			Siemens/ BCH/ C&S/ Minilec
19.	M CCB	13947 part II		BCH/ SIEMENS (INDIA/ GERMANY) / L&T

Note:

1. The work shall be carried out strictly in accordance with BIS./ Punjab PWD specification book of latest edition to be read along with the manual of specification (Part -B). Wherever there is any contradiction BIS specification will prevail.
2. Any item not included in the above schedule of specifications should conform to relevant IS-Specification and principles laid down in Punjab PWD Book of Specifications with upto date amendments.
3. Items not covered under IS-Specifications or Punjab PWD Specifications/ or make mentioned not available in the market; should be got approved from the competent authority before its execution at site.
4. All the material shall be ISI Marked unless otherwise the make some other better make has been approved in these specifications.
5. All the material shall be ISI Marked unless otherwise the make some other better make has been approved in these specifications.

STANDARD DESIGN OF PUMP CHAMBER

SIZE = 3.70 mt x 4.30 mt



GROUND FLOOR PLAN

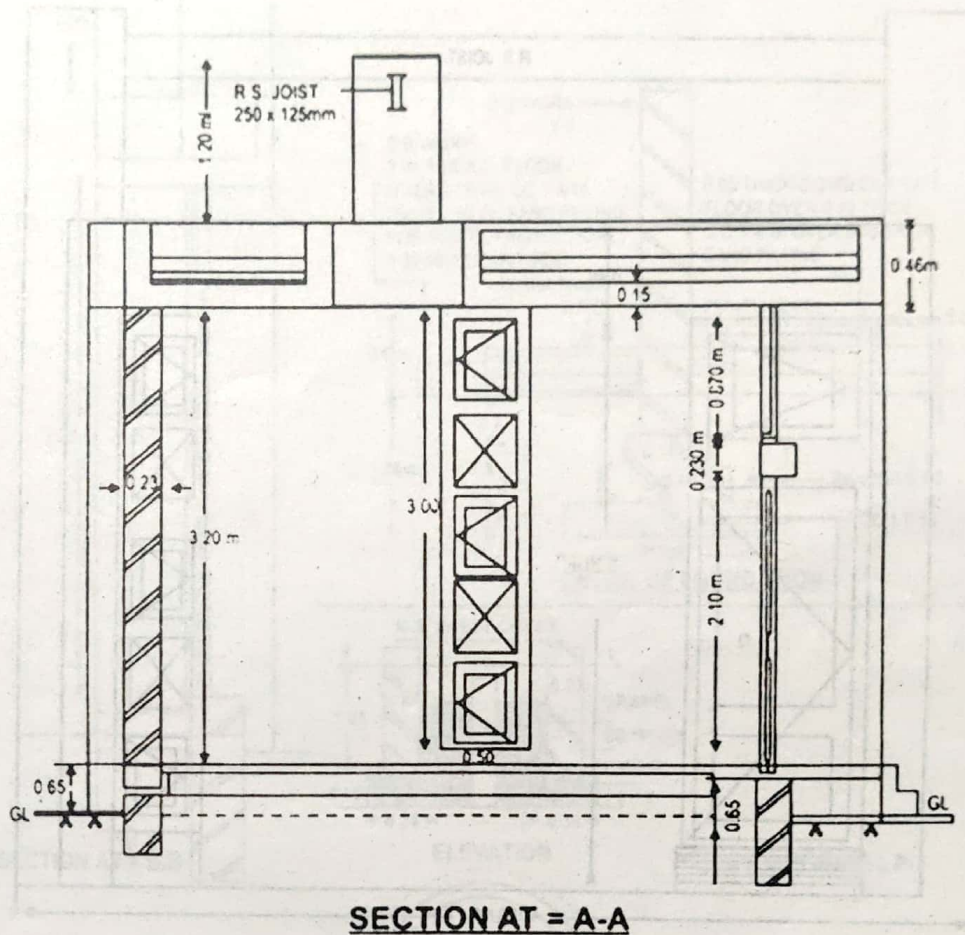
SCHEDULE OF JOINERY

S No.	Type	Size	Sill	Top
1	D	1.0 m x 2.10 m		2.10 m
2	W	0.50 m x 3.0 m	0.15 m	3.20 m
3	V	1.00 m x 0.87 m		

**WATER SUPPLY AND SANITATION DEPARTMENT
PUNJAB**

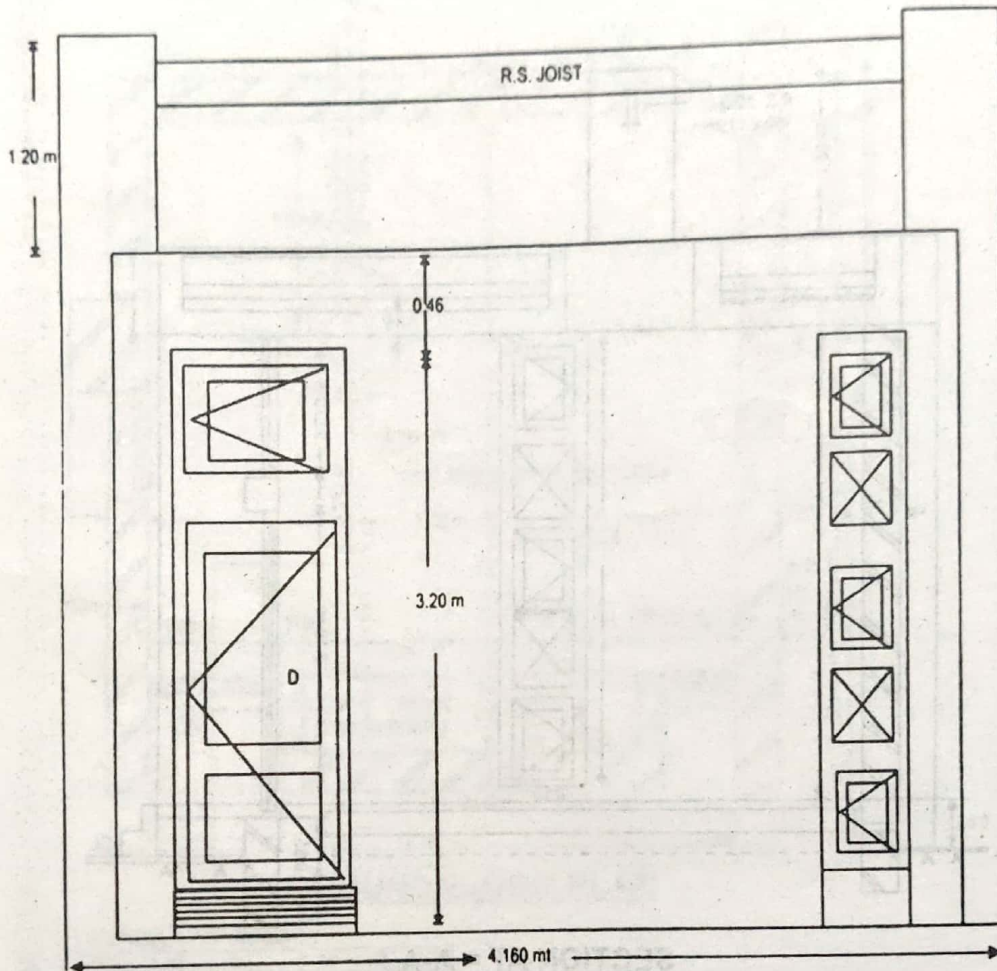
STANDARD DESIGN OF PUMP CHAMBER
SIZE = 3.70 mt x 4.30 mt

D-1-2



WATER SUPPLY AND SANITATION DEPARTMENT
PUNJAB

STANDARD DESIGN OF PUMP CHAMBER
SIZE = 3.70 mt x 4.30 mt

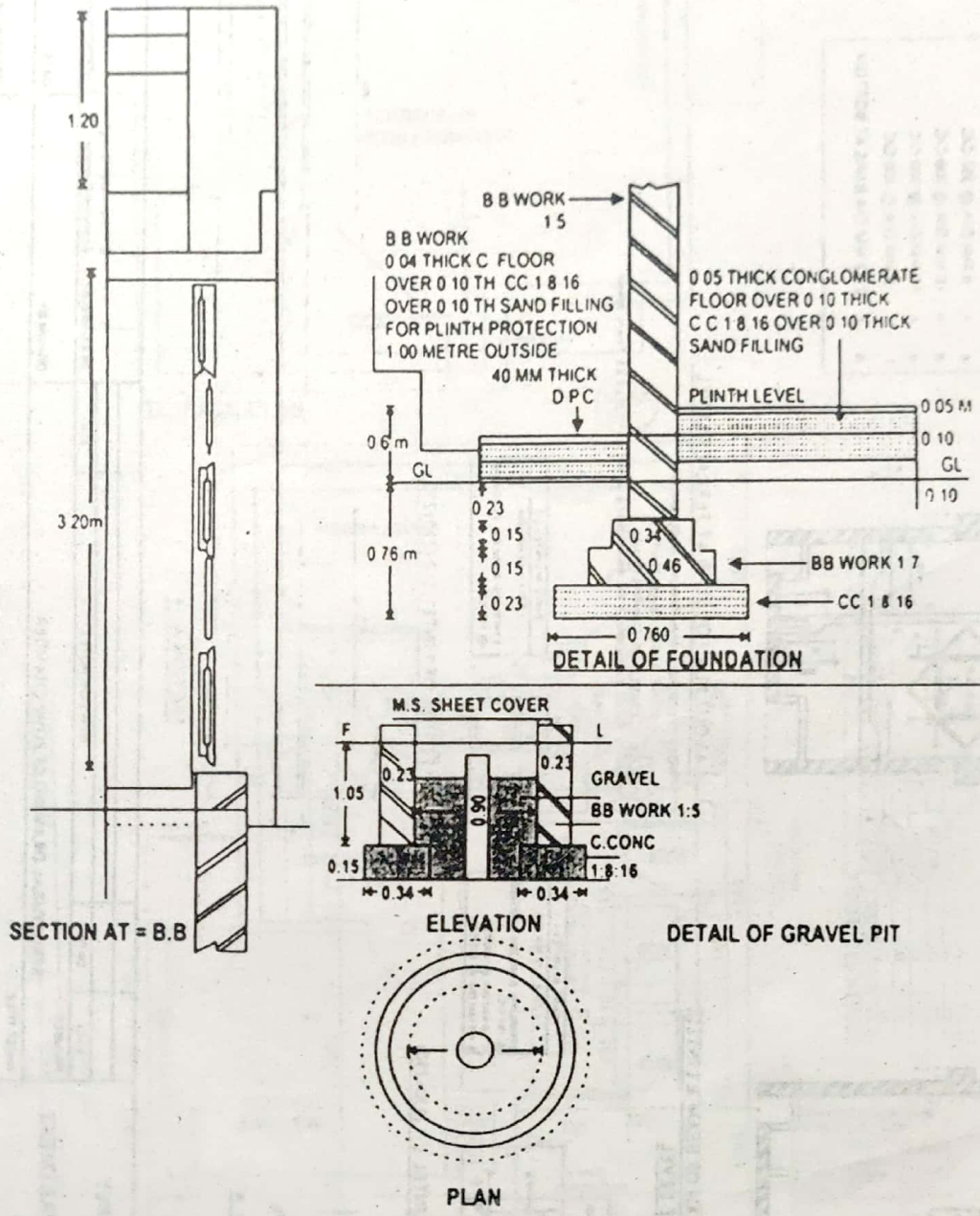


FRONT ELEVATION

WATER SUPPLY AND SANITATION DEPARTMENT
PUNJAB

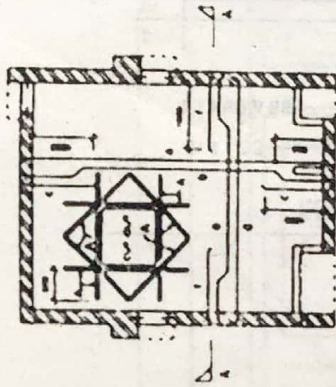
STANDARD DESIGN OF PUMP CHAMBER

SIZE = 3.70 mt x 4.30 mt



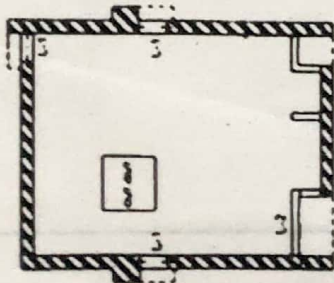
**WATER SUPPLY AND SANITATION DEPARTMENT
PUNJAB**

BARS IN SLAB	
a	10 MM DIA @ 350 CC
b	10 MM DIA @ 350 CC
c	8 MM DIA @ 350 CC
d	10 MM DIA @ 300 CC
e	10 MM DIA @ 300 CC
f	8 MM DIA @ 300 CC
A	2-12 MM DIA BARS AT BOTTOM

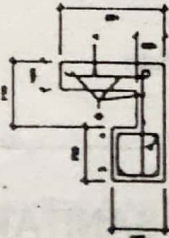


LAYOUT PLAN OF SLAB AT TERRACE LEVEL

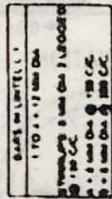
- NOTE
1. SLAB 100MM THICK THROUGHOUT
 2. USE STEEL FODS (PART)
 3. USE M 20 CONCRETE MIX
 4. CLEAR COVER TO ALL REINFORCEMENT NOT TO LESS THAN 20MM



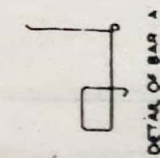
LAYOUT PLAN OF BEAM & LINTEL AT TERRACE LEVEL



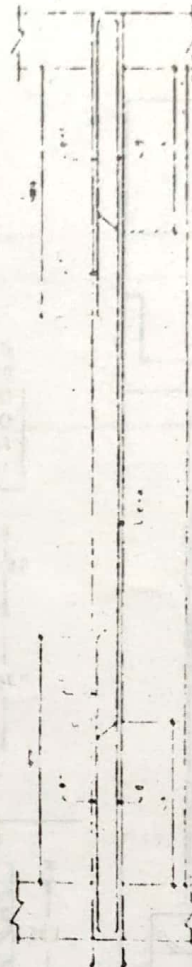
X-SECTION OF LINTEL L-1 (230x230)



X-SECTION OF LINTEL L-2 (230x230)



DETAIL OF BAR A

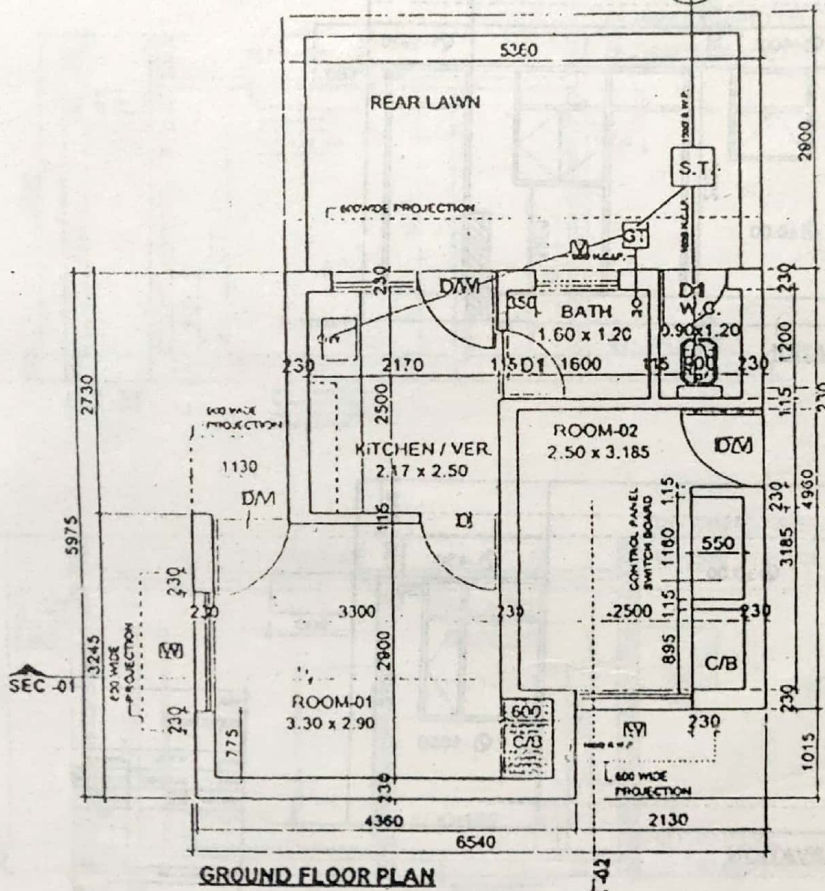
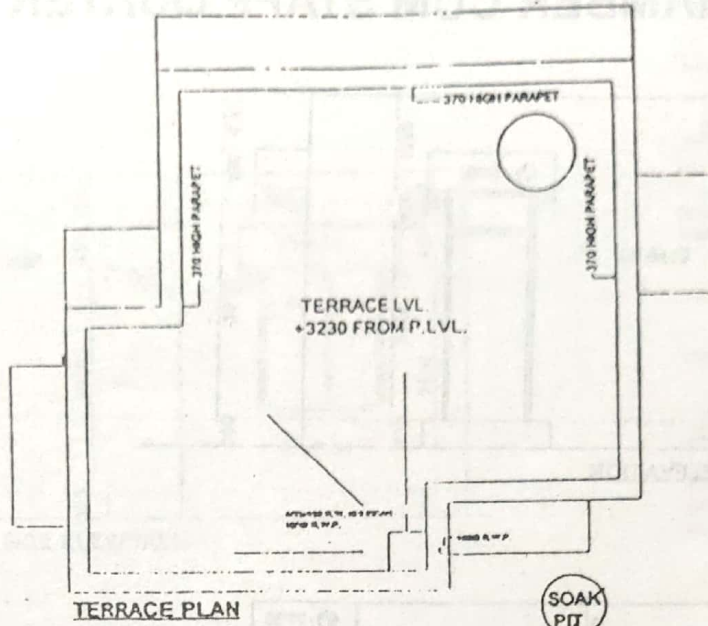


SECTION A-A

WATER SUPPLY
&
SANITATION DEPARTMENT
PUNJAB

NO.	DATE	REVISION NOTES	DESIGNED BY	APPROVED BY
			E. H. M. Singh	
PROJECT	STRUCTURAL DRAWING OF PUMP CHAMBER		DRAWN BY	DATE
SHEET TITLE	DETAIL OF SLAB & LINTELS AT TERRACE LEVEL		SCALE	N T 5
			DRAWING NO.	PC/ST/01

PUMP CHAMBER CUM STAFF QUATER

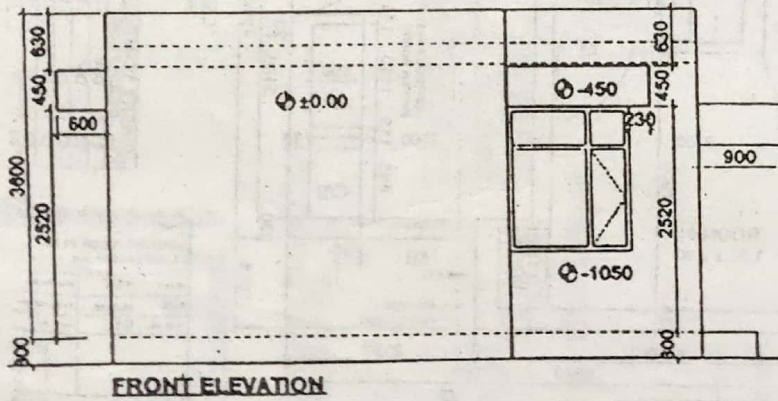
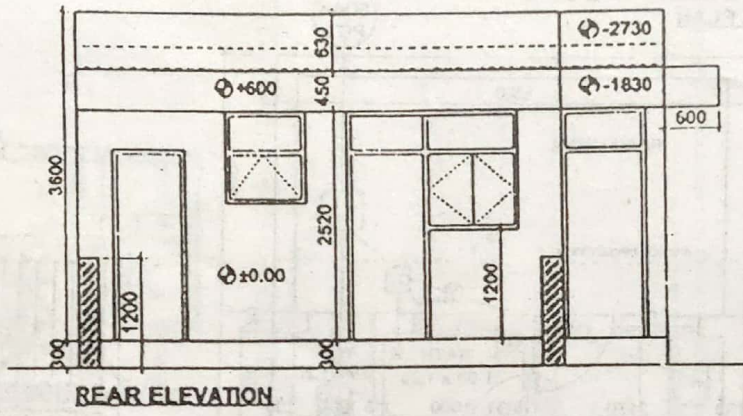
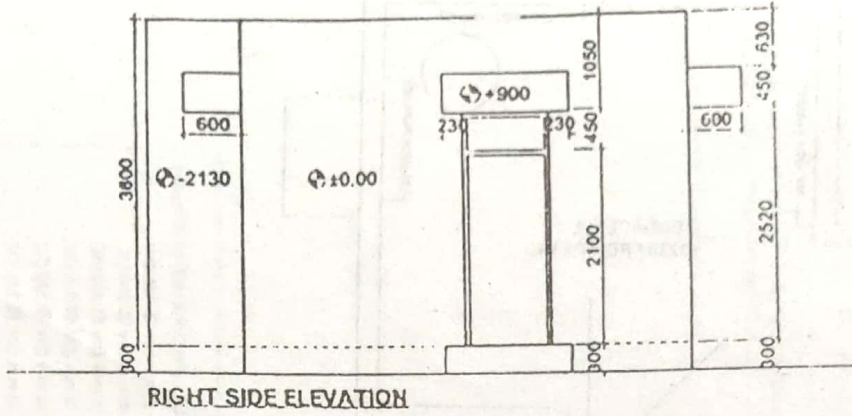


IS No.	DESCRIPTION	SIZES	(INTER LVL. DIFF. LVL.)
01	DW	1000x500	+2520
02	DW	900x2100	+2520
03	D	1400x1000	+2100
04	DT	750x1000	+2100
05	W	1300x1700	+2520
06	V	900x1620	+2520

TITLE			
GROUND FLOOR PLAN & TERRACE PLAN			
SCALE	N.T.S.	DATE	01/11/20
BY	PRASAD	CHECKED BY	
DATE	01		

WATER SUPPLY & SANITATION DEPARTMENT

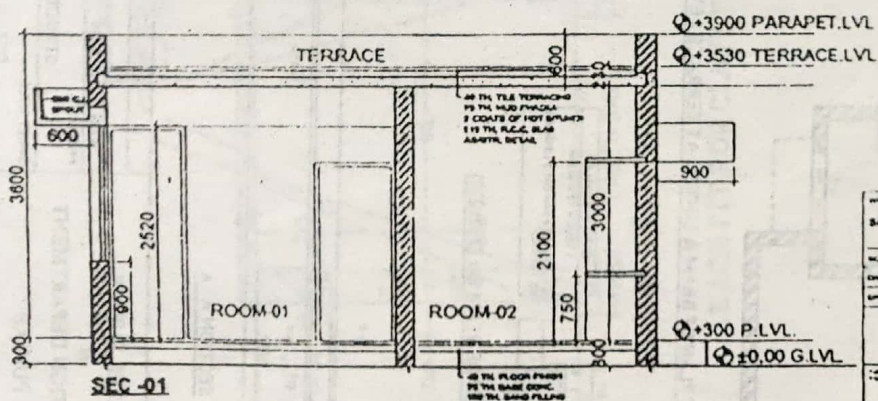
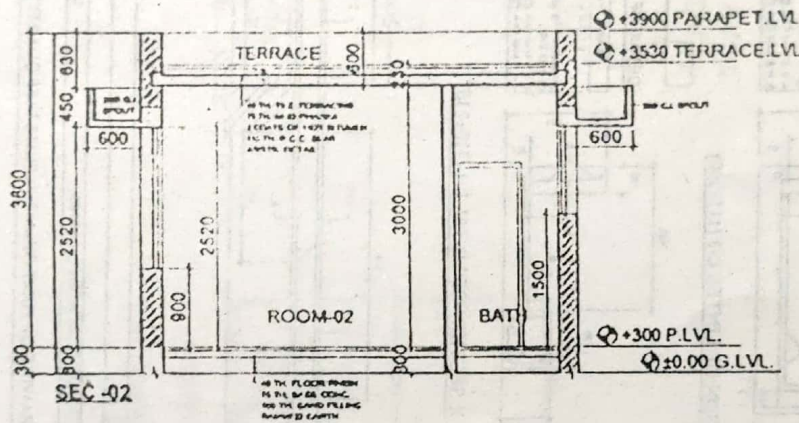
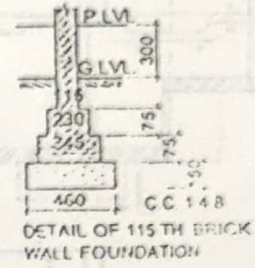
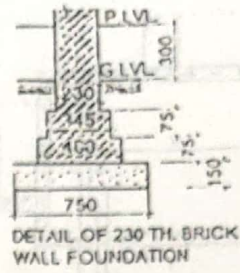
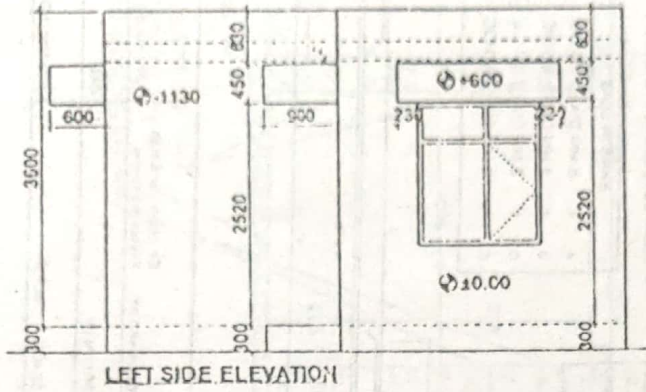
PUMP CHAMBER CUM STAFF QUATER



WATER SUPPLY & SANITATION DEPARTMENT

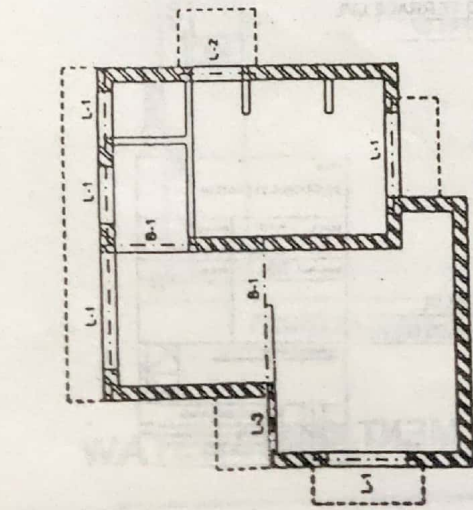
BILL OF MATERIALS			
NO.	DESCRIPTION	QTY	UNIT
01	CEMENT	100	MT
02	BRICKS	10000	NO
03	ROOFING	100	MT
04	PAINT	100	MT
05	IRON RODS	100	MT
06	CONCRETE	100	MT
07	WATER	100	MT
08	SAND	100	MT
09	AGGREGATE	100	MT
10	LABOUR	100	MT

PUMP CHAMBER CUM STAFF QUATER

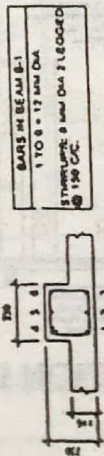


SECTION & ELEVATION			
SCALE	N.T.S.	DATE	
BY	SECTION	CHECKED BY	
DATE	03	REV	
<p>1. All dimensions are in mm unless otherwise specified.</p> <p>2. All dimensions are to be taken as shown.</p>			

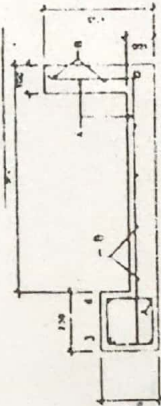
WATER SUPPLY & SANITATION DEPARTMENT



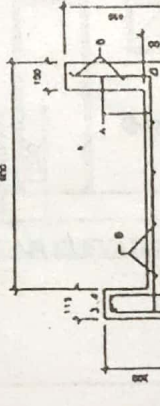
LAYOUT PLAN OF BEAM & LINTEL AT TERRACE LEVEL



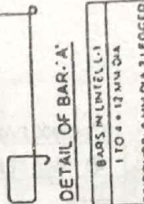
X-SECTION OF BEAM B-1 (230x230)



X-SECTION OF LINTEL L-2 (230x230)

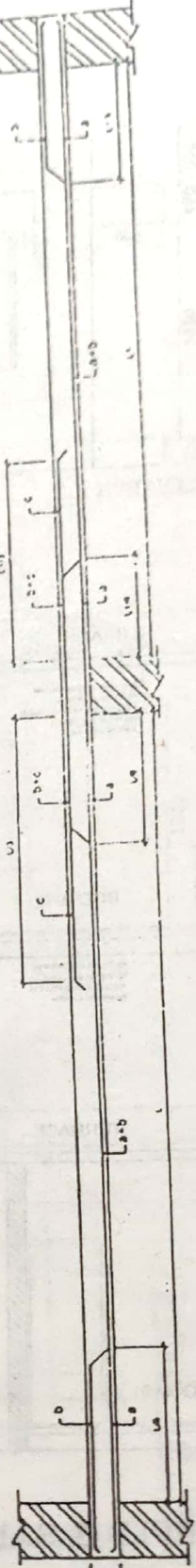


X-SECTION OF LINTEL L-3 (115x300)

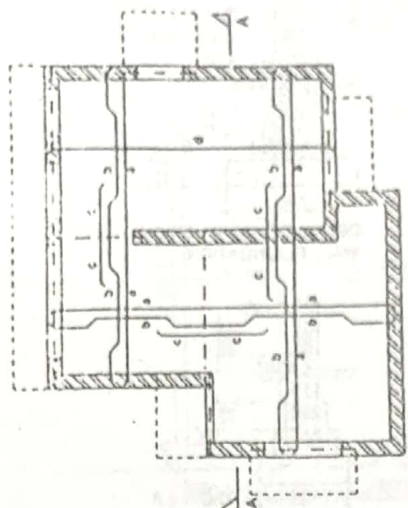


DETAIL OF BAR 'A'

X-SECTION OF LINTEL L-1 (230x230)



SECTION A-A



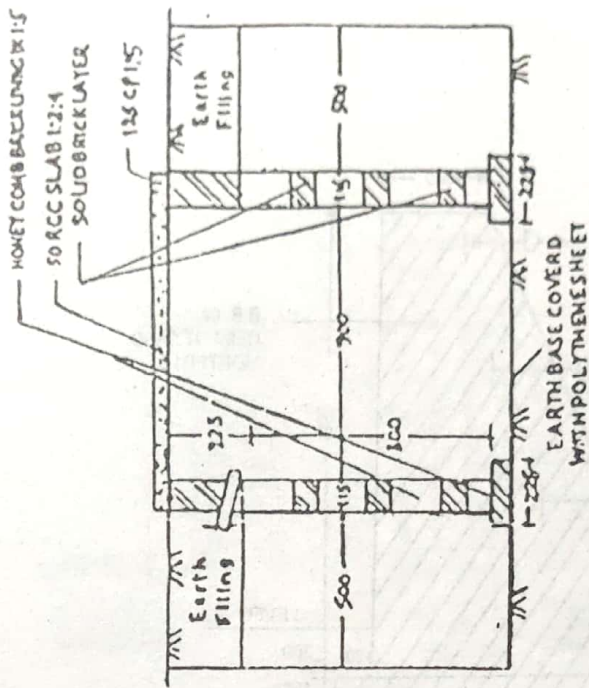
LAYOUT PLAN OF SLAB AT TERRACE LEVEL

- NOTE
1. SLAB 115MM THICK THROUGHOUT.
 2. USE STEEL F₄₁₅ (MATT).
 3. USE M 20 CONCRETE MIX.
 4. CLEAR COVER TO REINFORCEMENT 25 TO LESS THAN 20 MM.

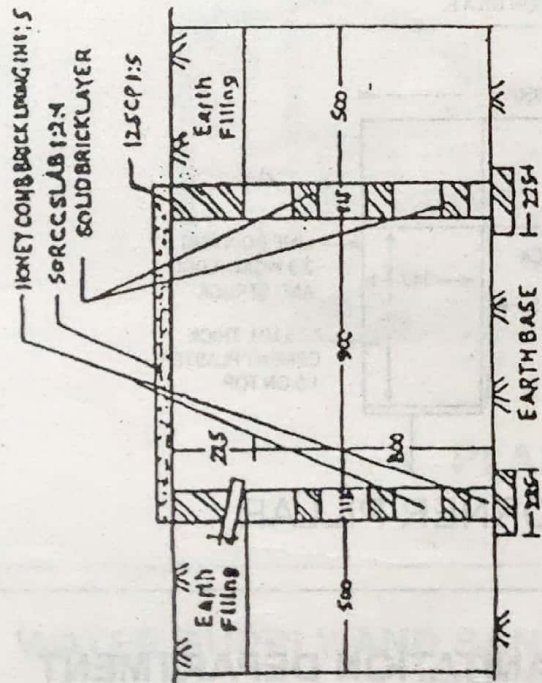
BARS IN SLAB

a	=	8 MM DIA @ 300 CC
b	=	8 MM DIA @ 300 CC
c	=	8 MM DIA @ 300 CC
d	=	8 MM DIA @ 200 CC

WATER SUPPLY & SANITATION DEPARTMENT PUNJAB		DESIGNED BY Er. Harinder Singh Executive Engineer		APPROVED BY	
PROJECT - STRUCTURAL DRAWING OF PUMP CHAMBER CUM STAFF QUARTER		DATE		DATE	
SHEET TITLE - DETAIL OF BEAMS & SLAB AT TERRACE LEVEL		SCALE N.T.S.		DRAWING NO PC/SQ/ST/01	



LEACH PIT WHERE THE WATER TABLE IS LESS THAN 2000 BELOW THE BOTTOM OF LEACH PIT



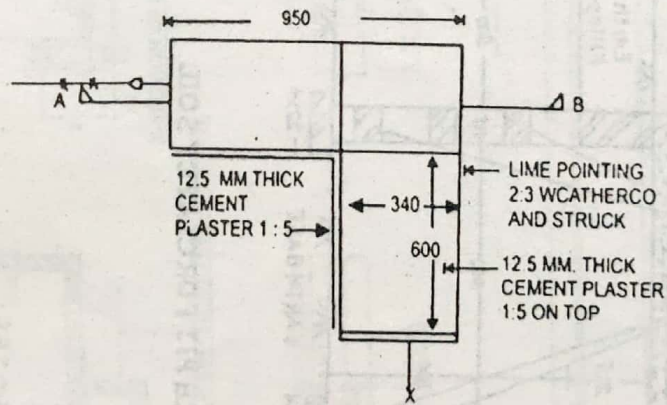
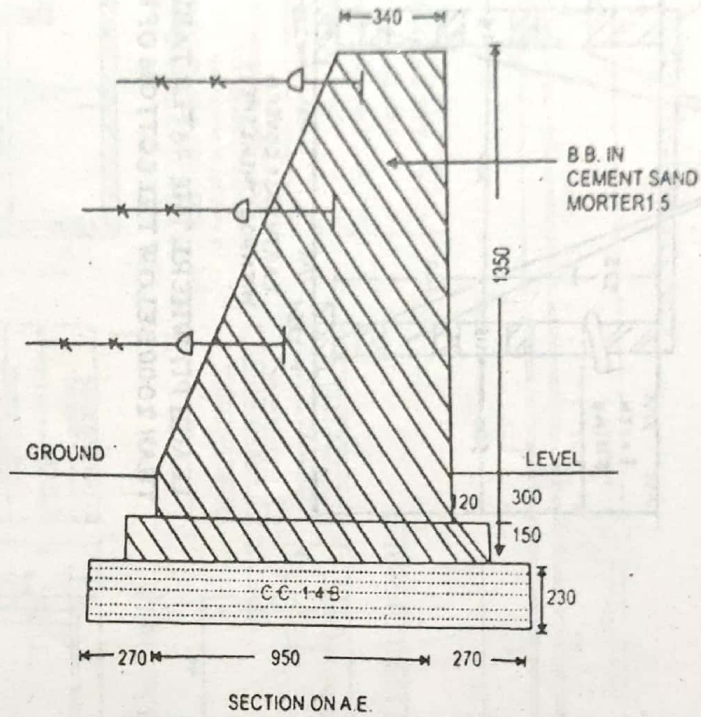
LEACH PIT FOR CLAYEY SOIL

NOTES:

1. ALL DIMENSIONS ARE IN MM
2. DO NOT SCALE THE DRAWING
3. FOLLOW WRITTEN DIMENSIONS

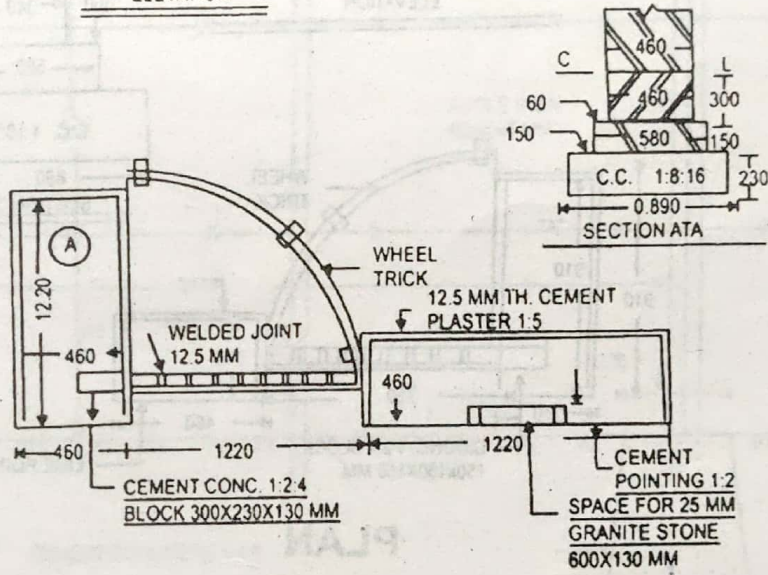
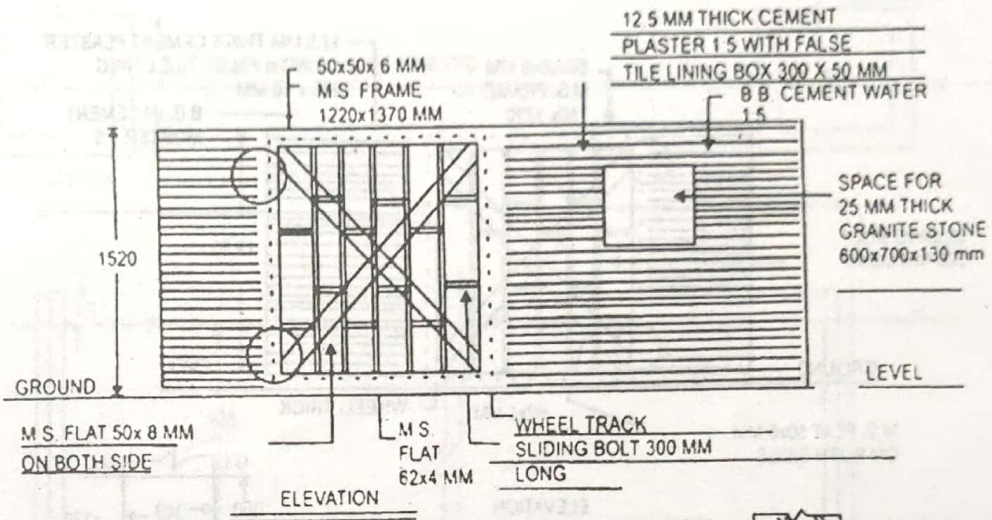
INDIVIDUAL SANITARY LATRINE (LEACH PITS)

DESIGN OF CORNER PILLAR



WATER SUPPLY AND SANITATION DEPARTMENT
PUNJAB

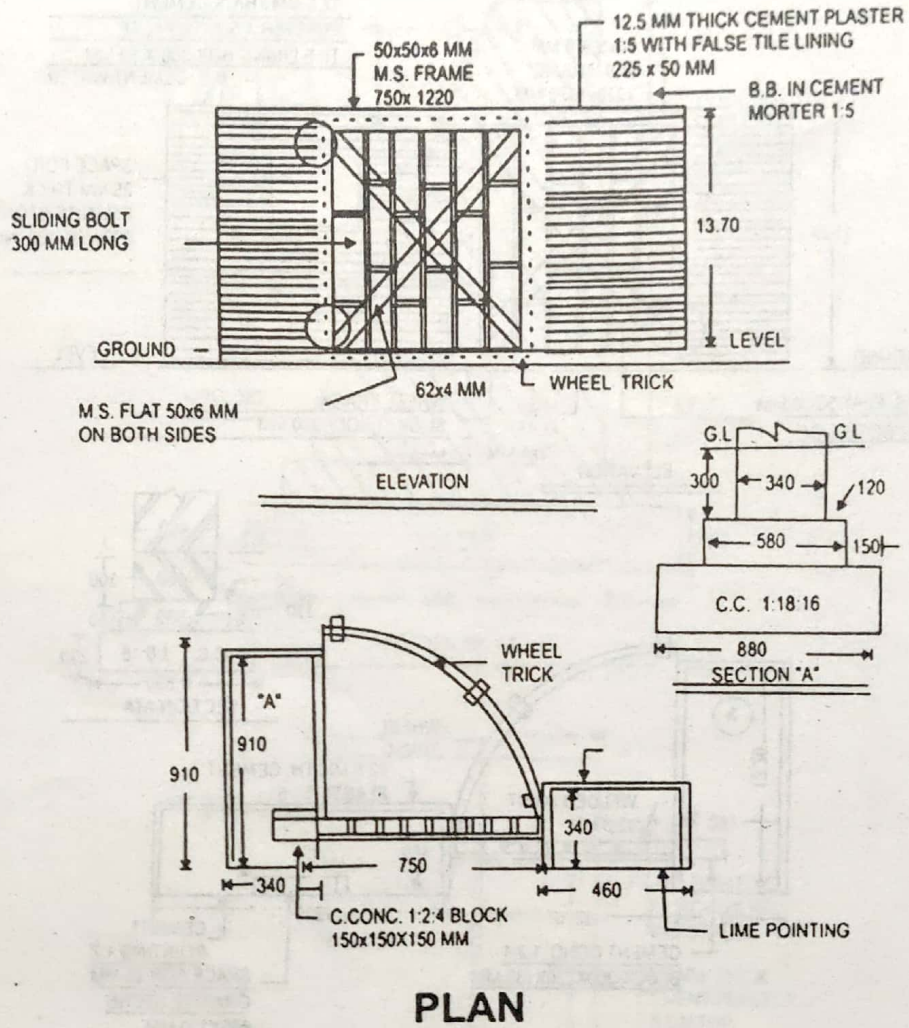
TYPE DESIGN OF STEEL GATE



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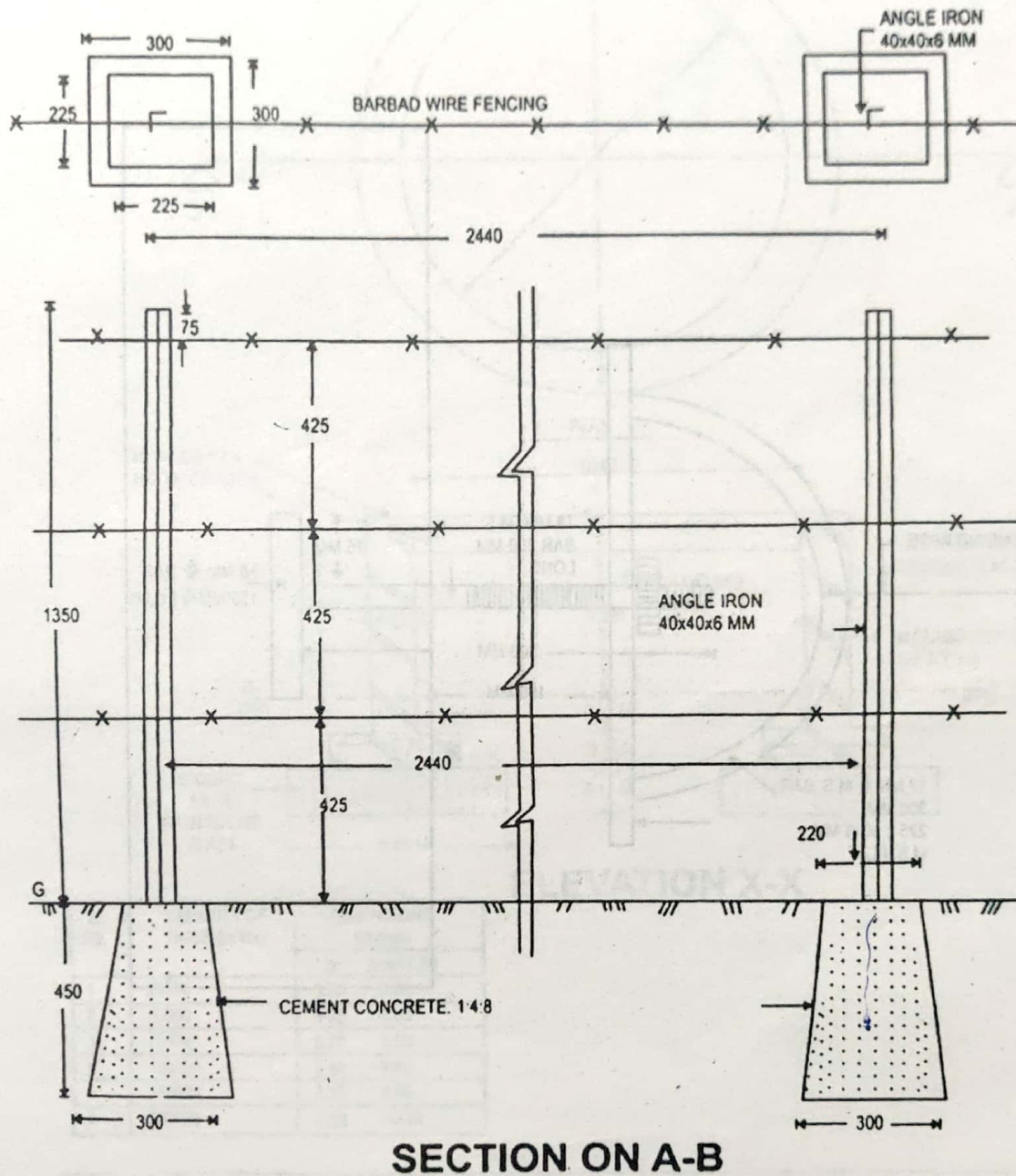
TYPE DESIGN OF WICKET GATE

SIZE = 0.75 MTR X 1.22 MTR.



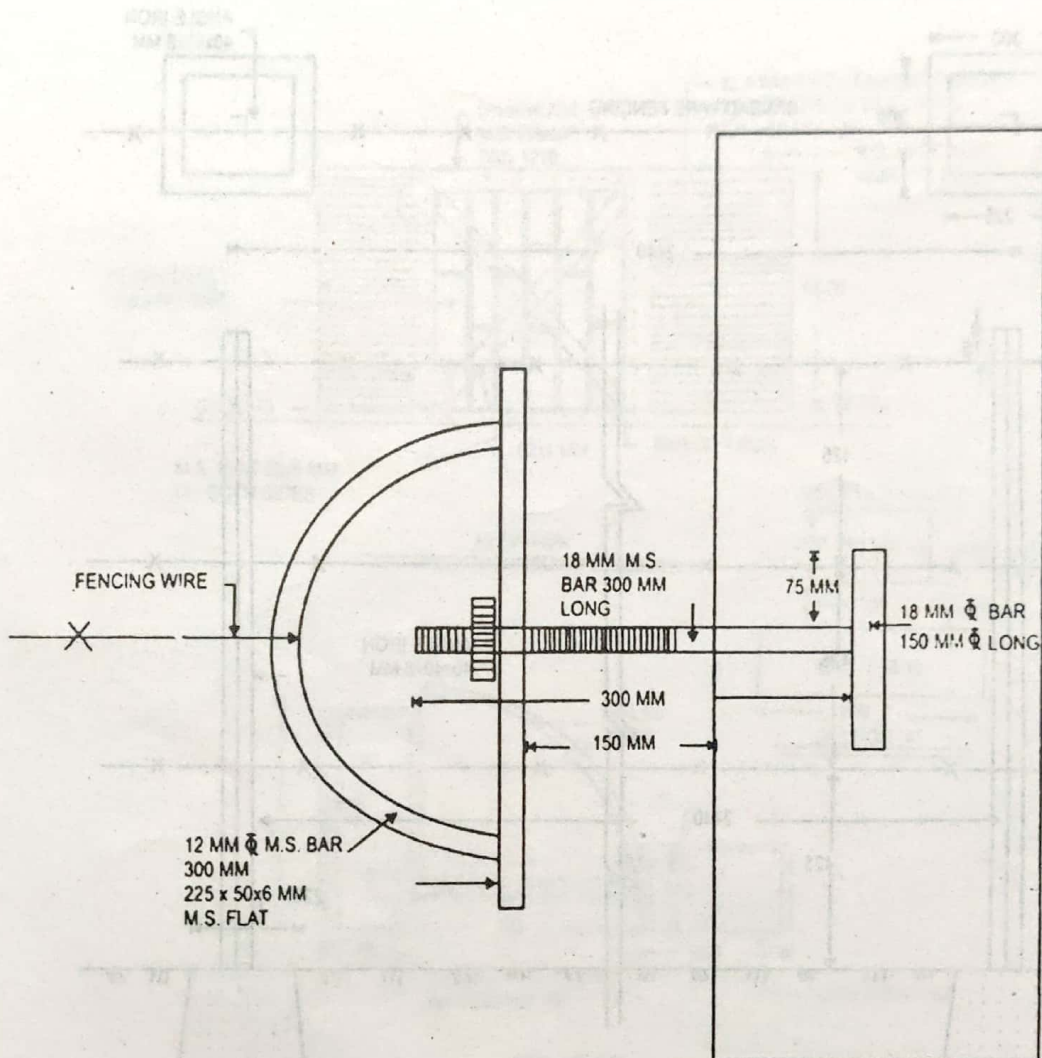
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DESIGN OF PICKET TYPE BARBAD WIRE FENCING



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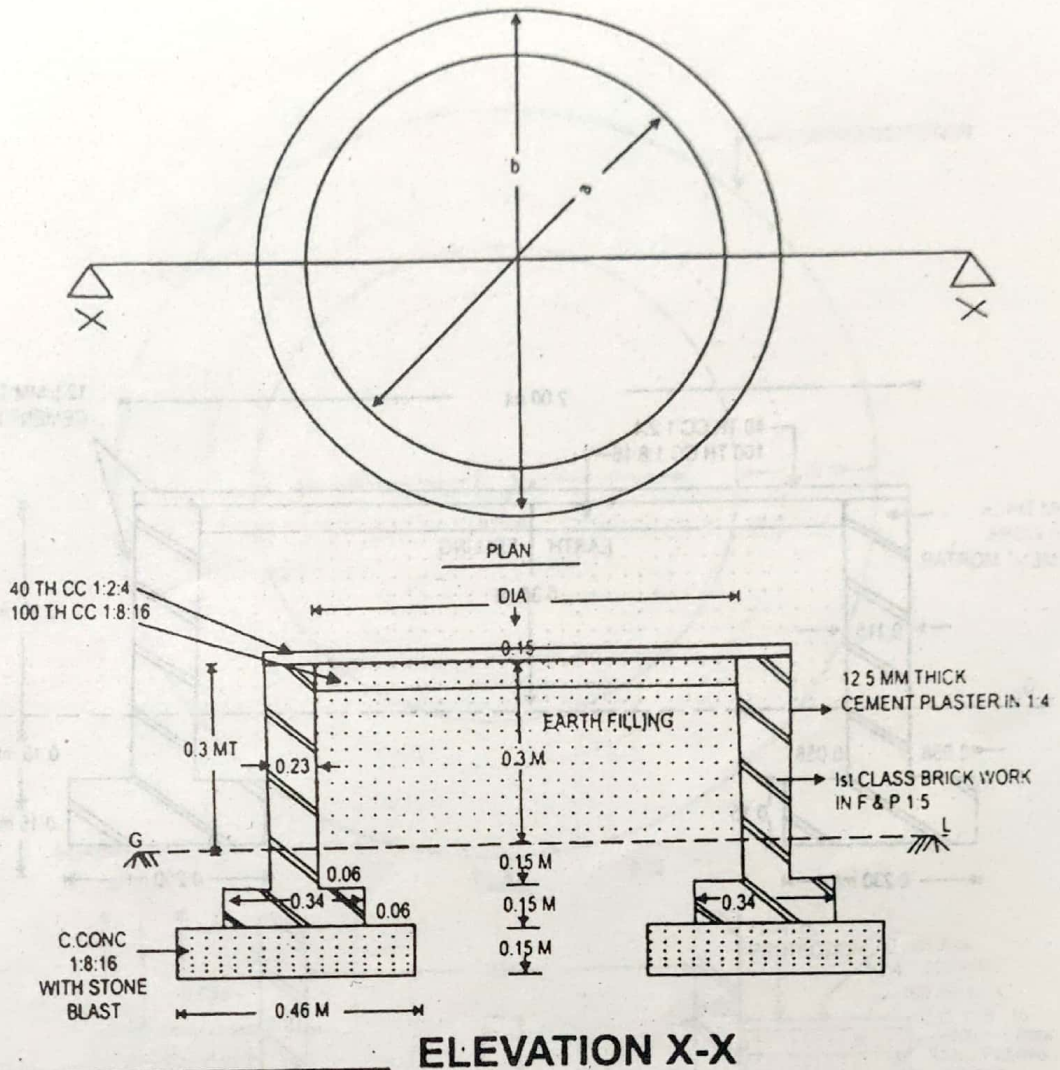
DESIGN OF D-HOOK FOR PICTURE FENCING



SECTION ON A-A

**WATER SUPPLY AND SANITATION DEPARTMENT
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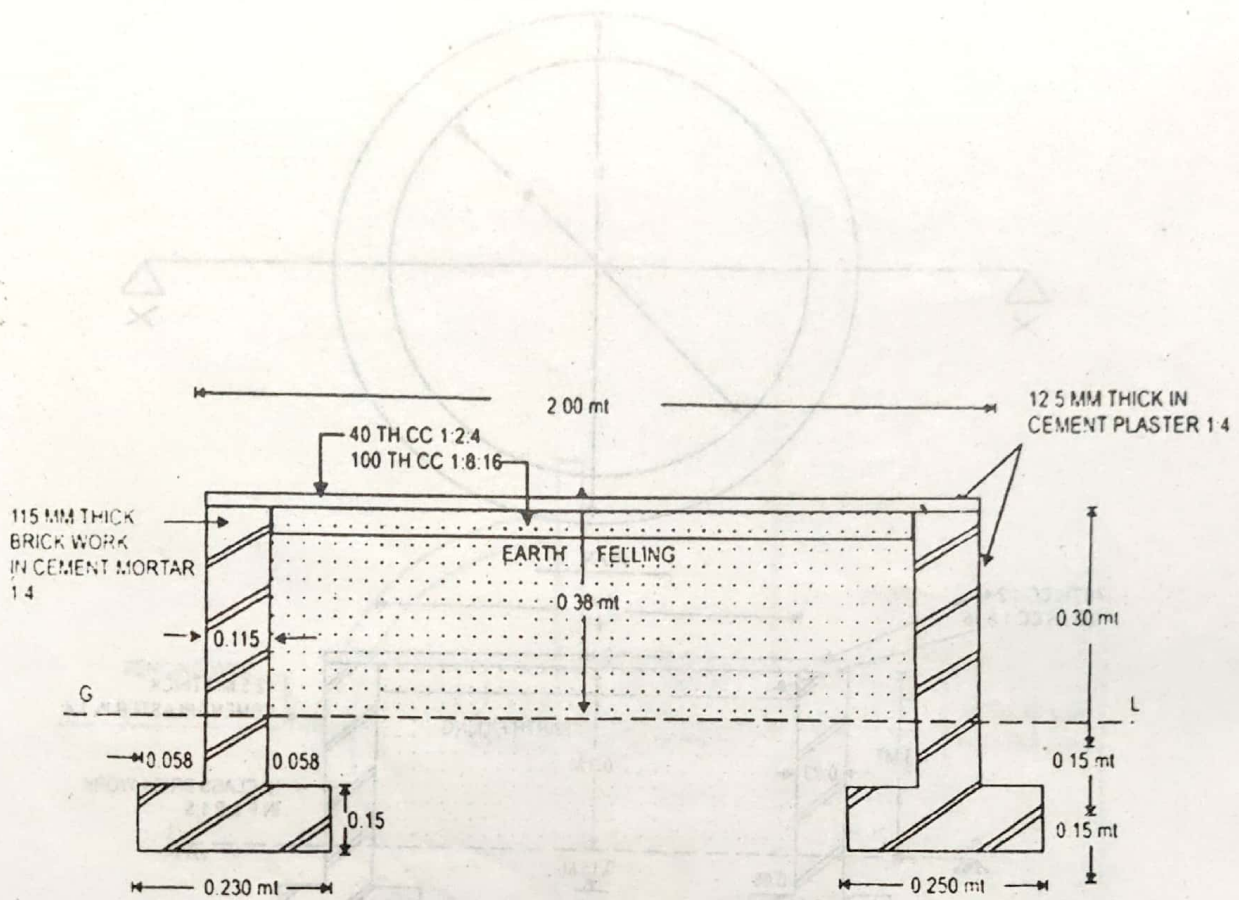
DETAIL OF PLINTH PROTECTION TO OHSR



s. No.	CAPACITY OF OHSR (in ltrs)	DIMENSIONS (in mtrs)	
		a	b=a+1.80
1	25000	3.75	5.55
2	50000	5.05	6.85
3	75000	5.70	7.50
4	100000	5.80	7.80
5	150000	7.16	8.96
6	200000	8.55	10.35

**WATER SUPPLY AND SANITATION DEPARTMENT
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DETAIL PLAN OF FOOT PATH INSIDE WATER WORKS

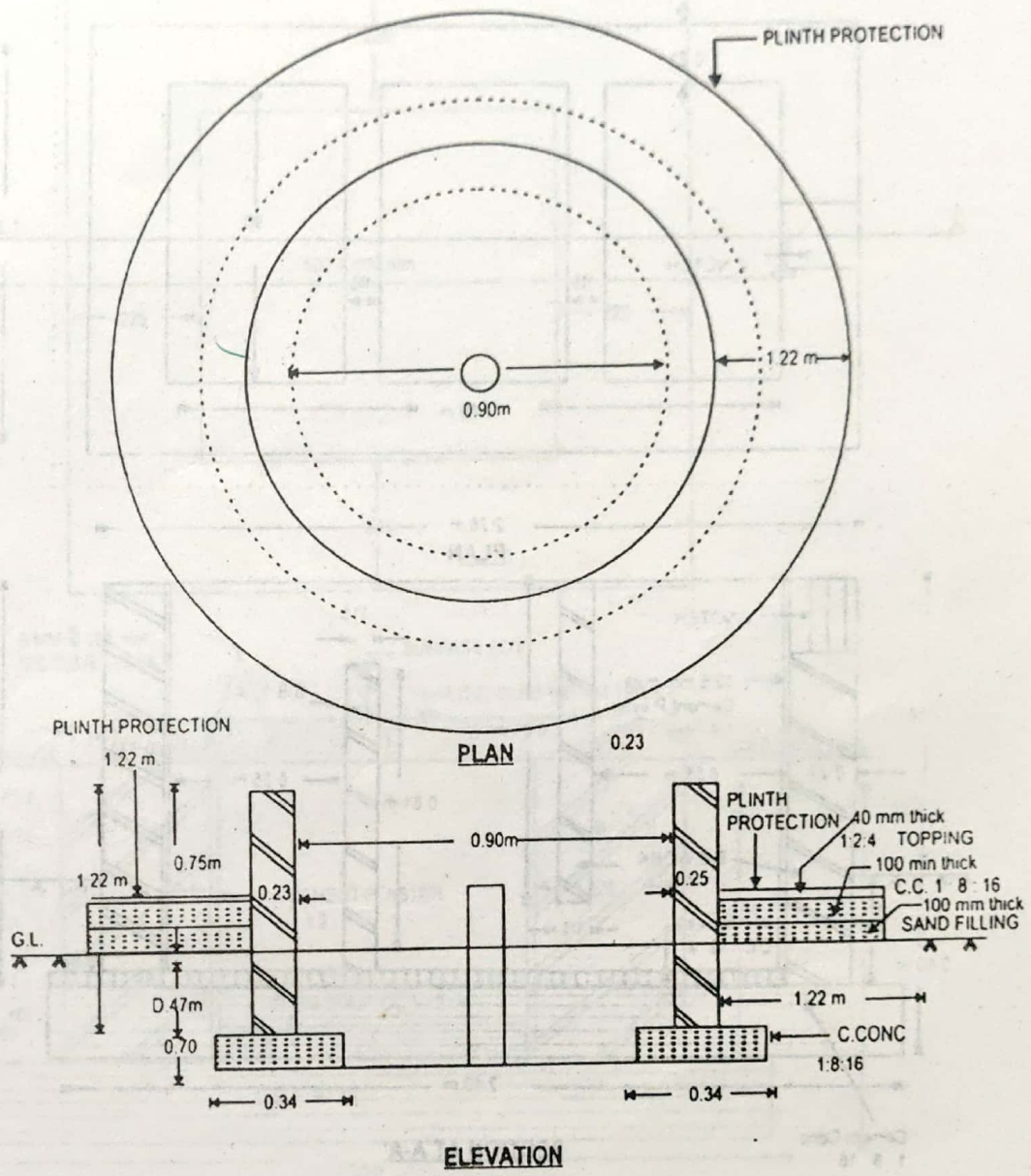


ELEVATION X-X

NO.	DESCRIPTION	QUANTITY	UNIT
1	CEMENT PLASTER 1:4	0.000	SQ. MT.
2	40 TH CC 1:2.4	0.000	CUM.
3	100 TH CC 1:8:16	0.000	CUM.
4	BRICK WORK IN CEMENT MORTAR 1:4	0.000	SQ. MT.
5	EARTH FILLING	0.000	CUM.
6	FOUNDATION	0.000	CUM.
7	FINISH	0.000	SQ. MT.

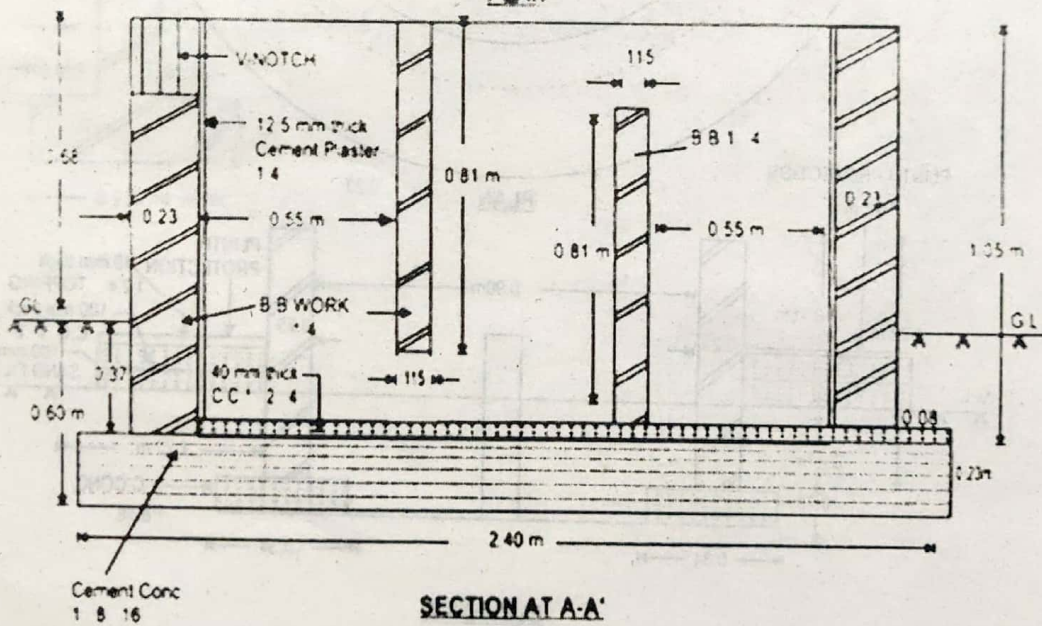
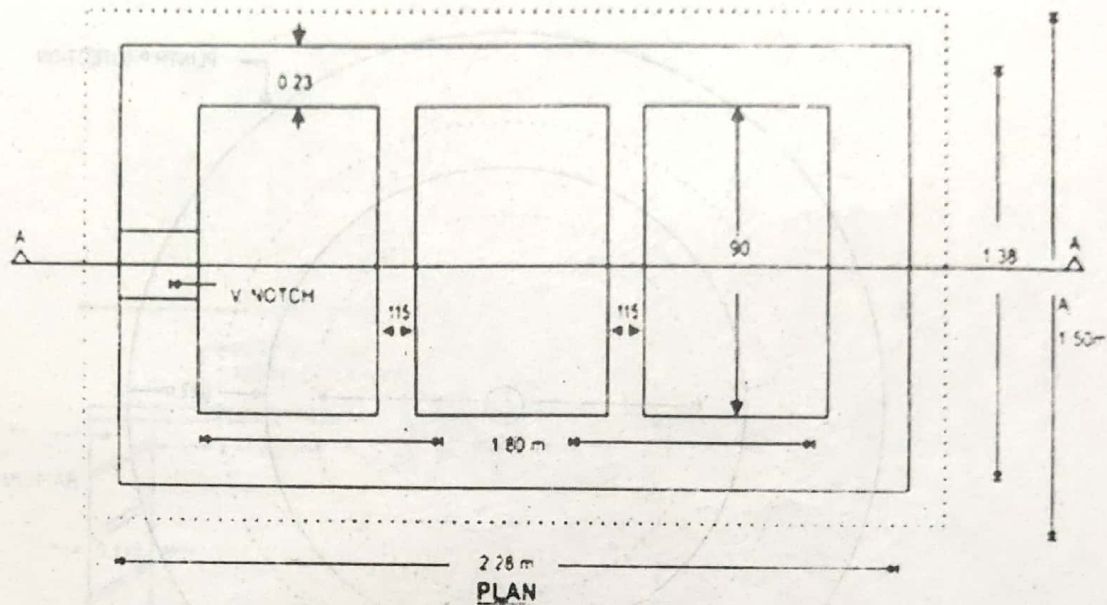
WATER SUPPLY AND SANITATION DEPARTMENT
PUNJAB

DETAIL PLAN OF GRAVEL PIT FOR T/W INSTALLED OUTSIDE PUMP CHAMBER



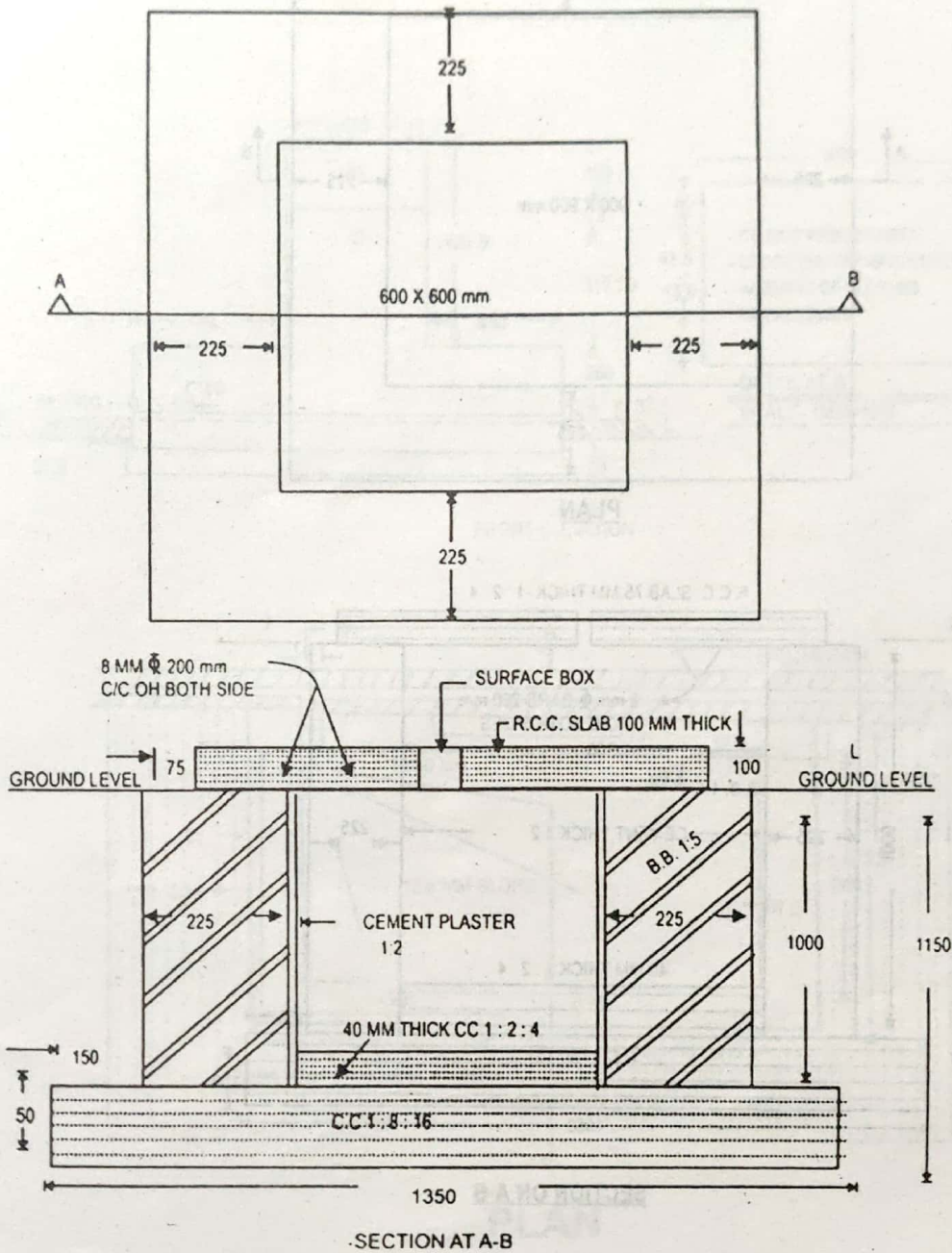
WATER SUPPLY AND SANITATION DEPARTMENT
PUNJAB

DETAIL OF V-NOTCH HAUDI



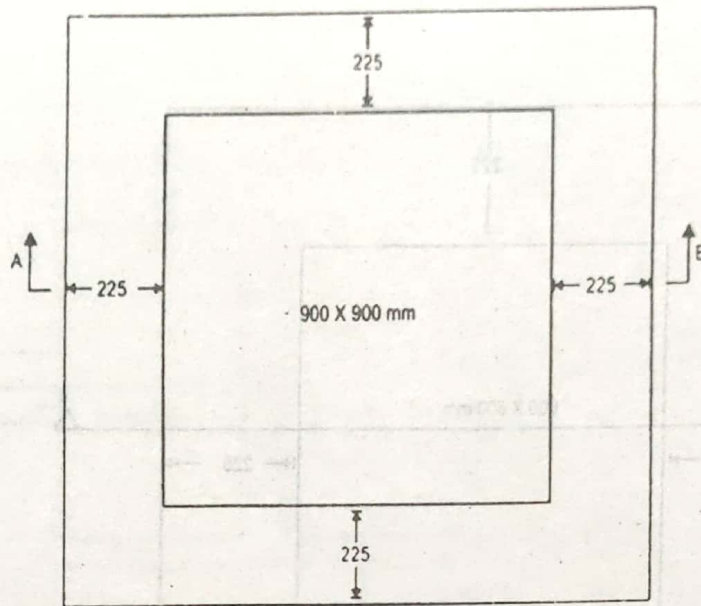
**WATER SUPPLY AND SANITATION DEPARTMENT
PUNJAB**

DESIGN OF SLUICE VALVE HAUDI 0.60 X 0.60

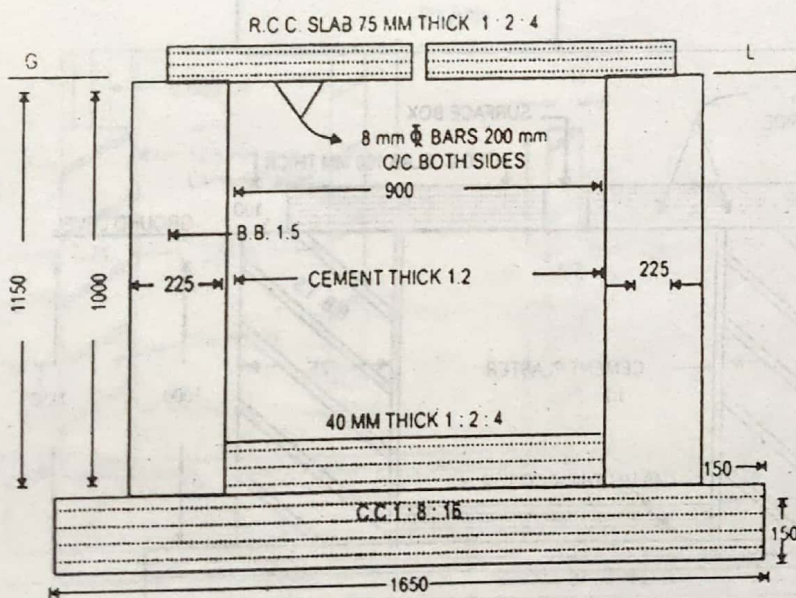


**WATER SUPPLY AND SANITATION DEPARTMENT
PUNJAB**

DESIGN OF SLUICE VALVE HAUDI 0.90 X 0.90



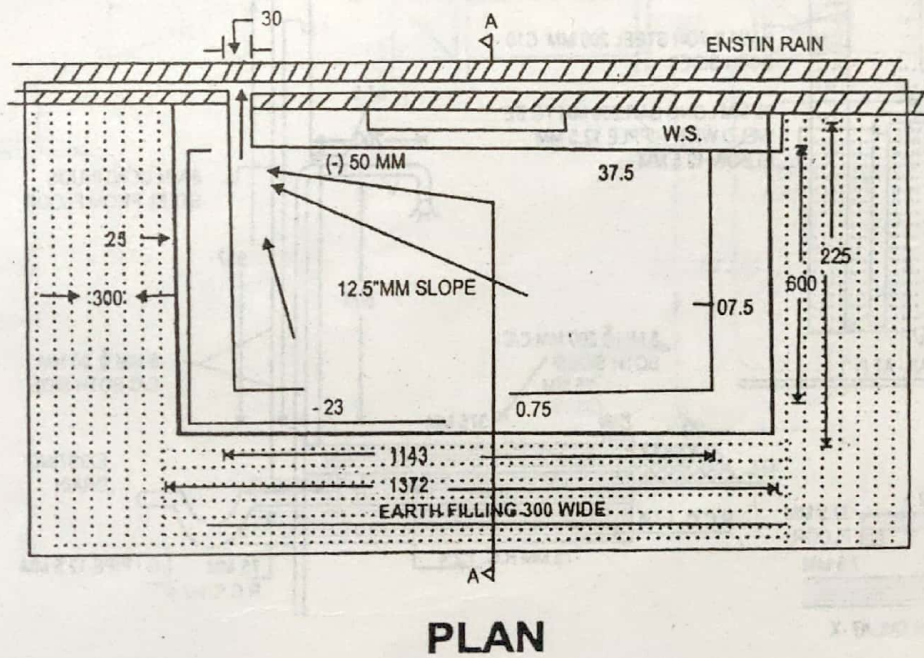
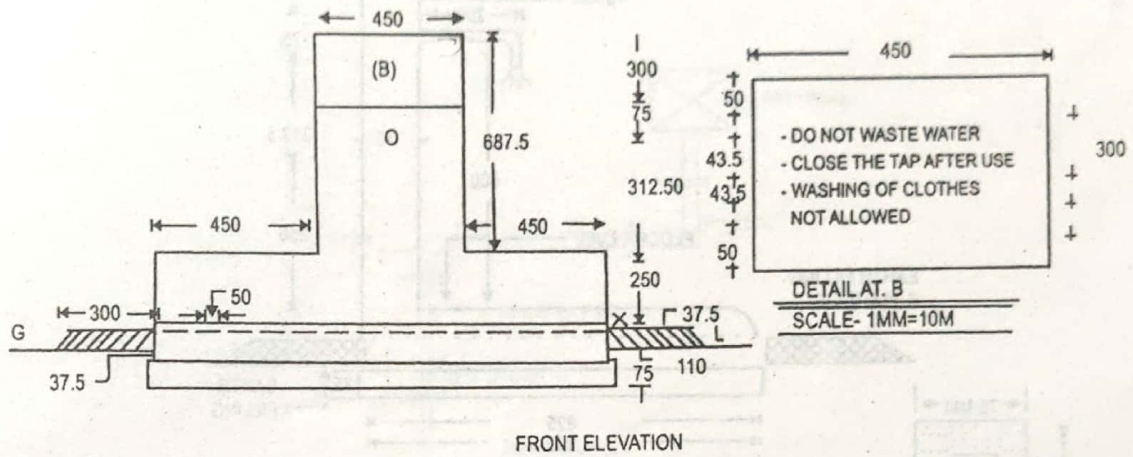
PLAN



SECTION ON A-B

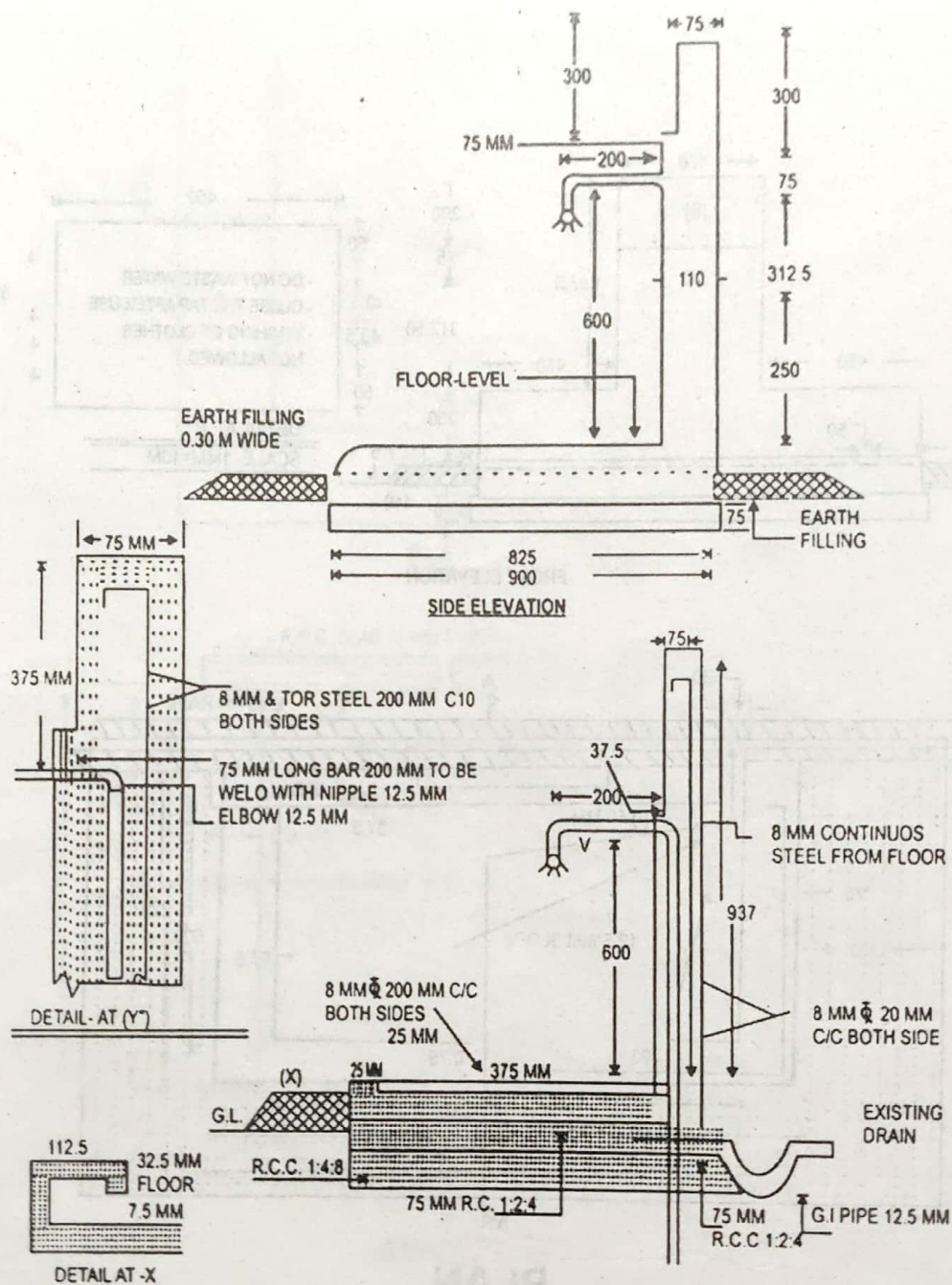
WATER SUPPLY AND SANITATION DEPARTMENT
PUNJAB

DETAIL OF R.C.C. KHURA AND ONE WAY STAND POST



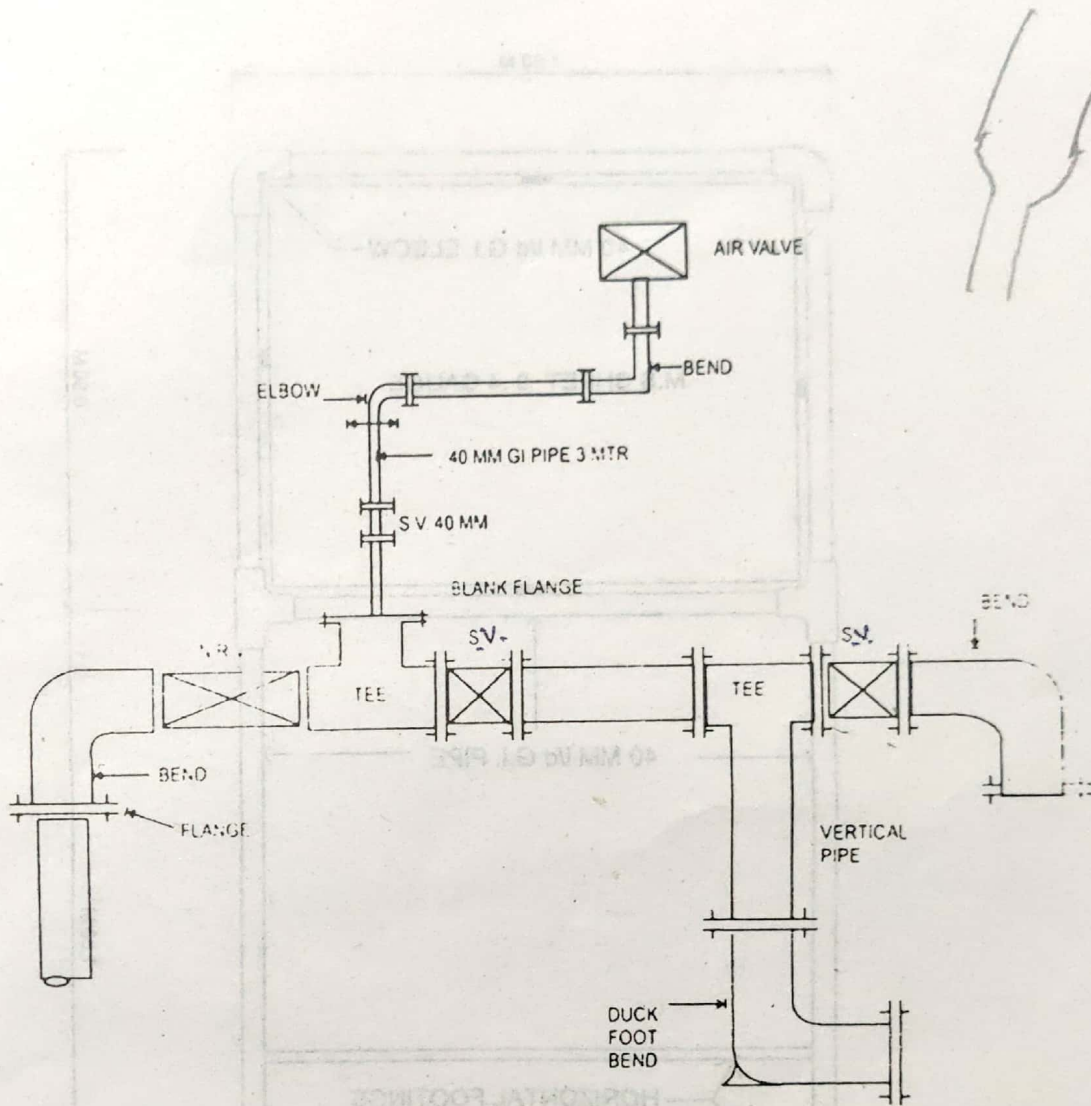
**WATER SUPPLY AND SANITATION DEPARTMENT
PUNJAB**

DESIGN OF SLUICE VALVE HAUDI 0.90 X 0.90



WATER SUPPLY AND SANITATION DEPARTMENT
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DETAIL OF PIPES AND SPECIALS INSIDE PUMP CHAMBER



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DESIGN / DRAWING OF SIGN BOARD

SIZE : 1.60 M X 2.70 M

D-20

