CIVIL ENGINEERING DRAWING
(4th Semester)

Chapter :-1

Detailed Drawing of culvert

1.1

Draw half top plan and half sectional plan (combined) and half front view and half sectional front view (combined) of a single slab type culvert from the following data:

a)Clear span : 1500

b) Bed level at G.L.

c) Thickness of deck slab: 220

d) Thickness of wearing coat: 80

e) Road width: 4000

f) Height of top of deck slab from G.L.: 1200

g) Bearing of slab on abutment: 300

h) Depth of foundation for abutment: 1000 below G.L.

i) Thickness of abutment: 500

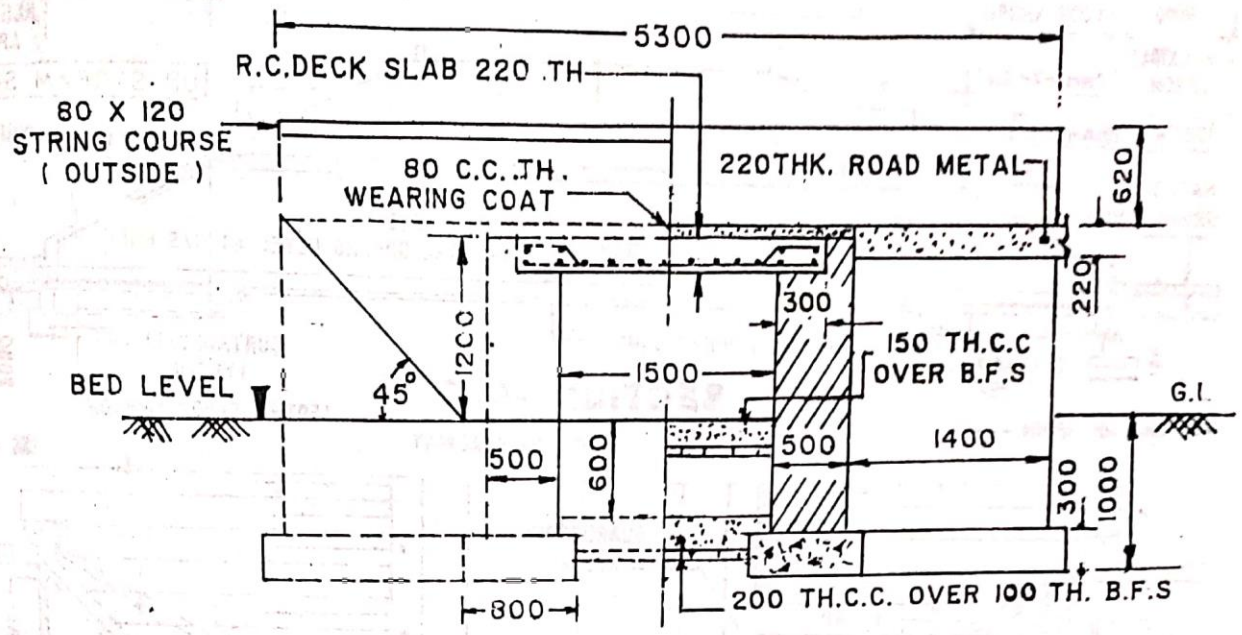
j) Width of C.C. bed for abutment: 800, thickness: 300

k) Bed slab: C.C. 150 over B.F.S. Wing wall straight turned 90° at the end of abutments, have same section as abutment, length 1400.

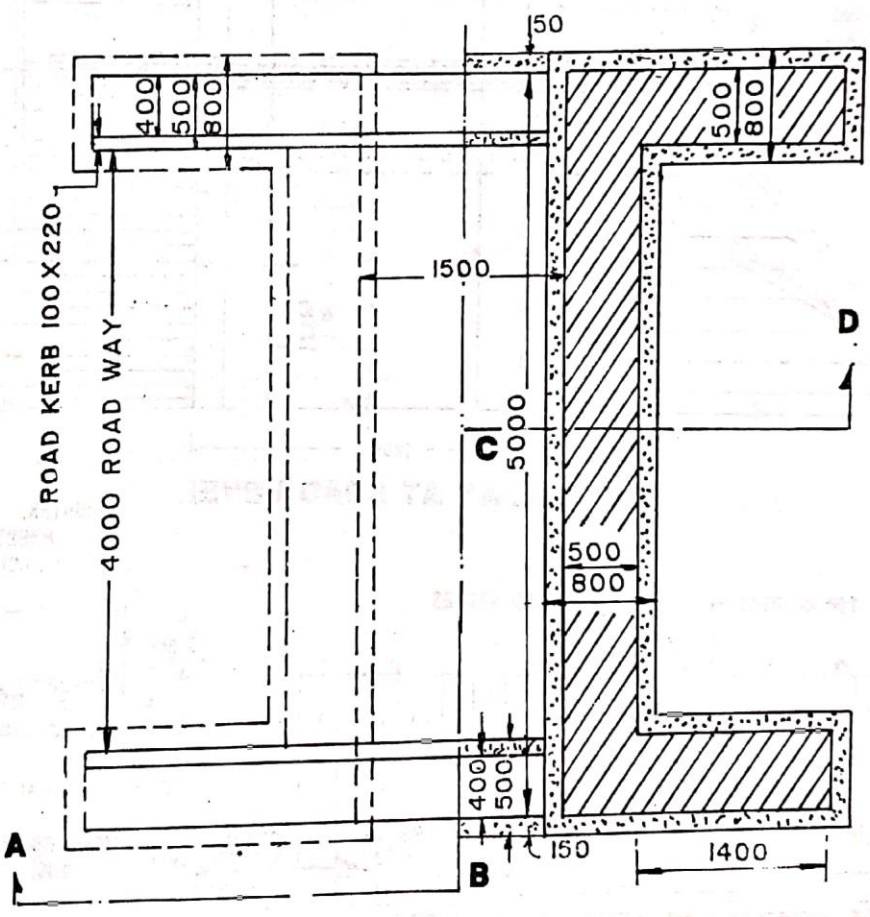
m) Parapet - Height 620 above wearing coat with road kerb 100 x 220 finished with string course (outside) 80 x 120.

n) Suitable curtain walls is to be provided on both sides of depth 1000 below G.L. with cement concrete bed (width 500, thickness 400) and brick work up to top of floor level (width 400, height 600) to hold the floor at the ends of abutment walls.

SLAB CULVERT



HALF FRONT VIEW AND SECTIONAL FRONT VIEW (COMBINED) ON A, B, C, D

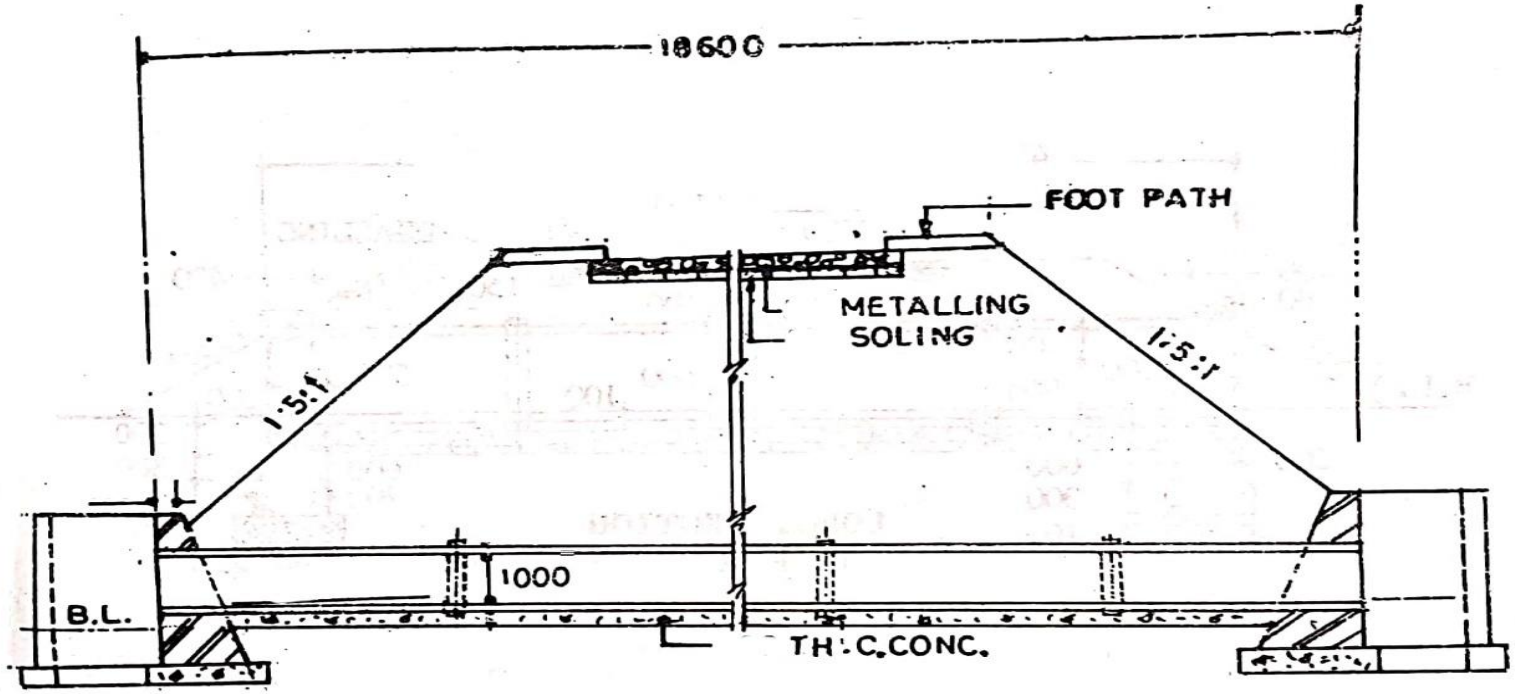


HALF TOP PLAN AND HALF SECTIONAL PLAN (COMBINED)

ALL DIMENSION AREIN MM

1.2

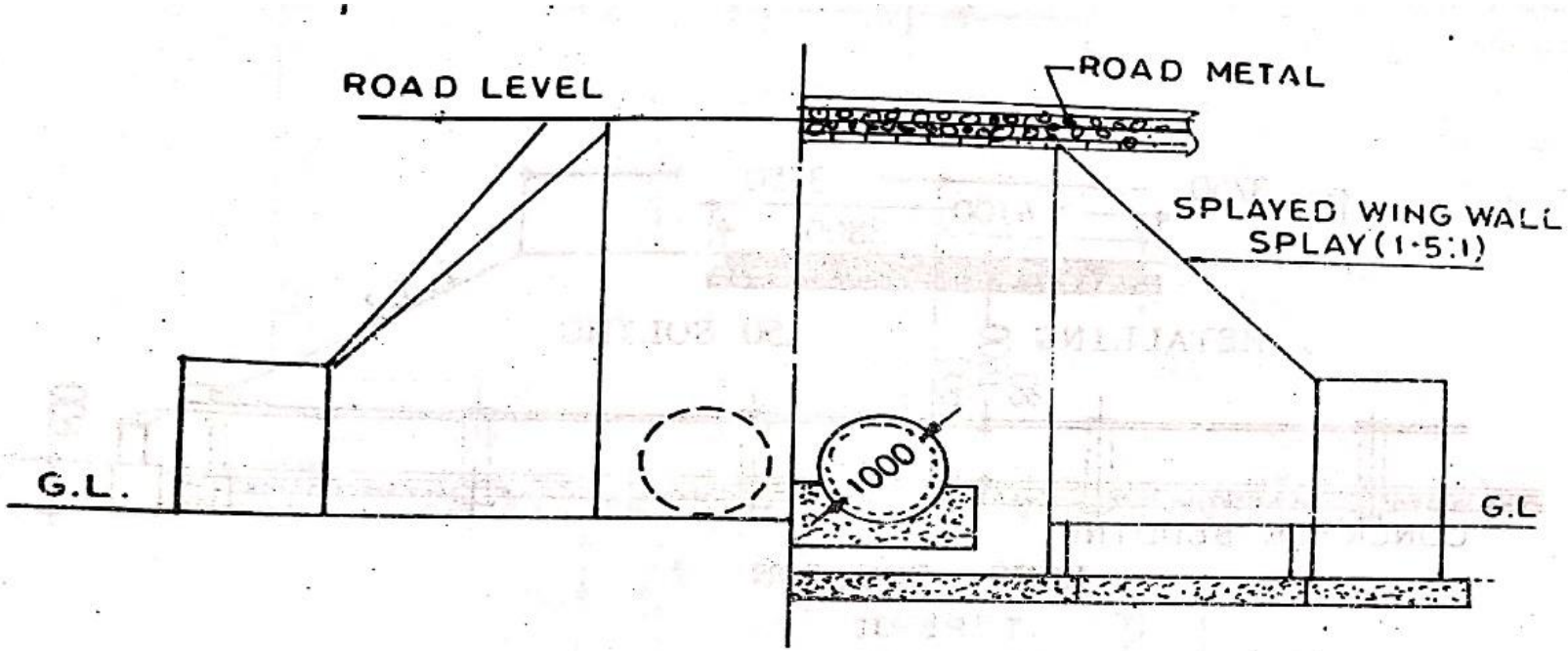
Draw a longitudinal section of 100mm dia double hume pipe culvert of 18.6m barrel length.



LONGITUDINAL SECTION

1.2

Draw a half sectional elevation of 100mm dia double hume pipe culvert of 18.6m barrel length.



HALF SECTIONAL ELEVATION

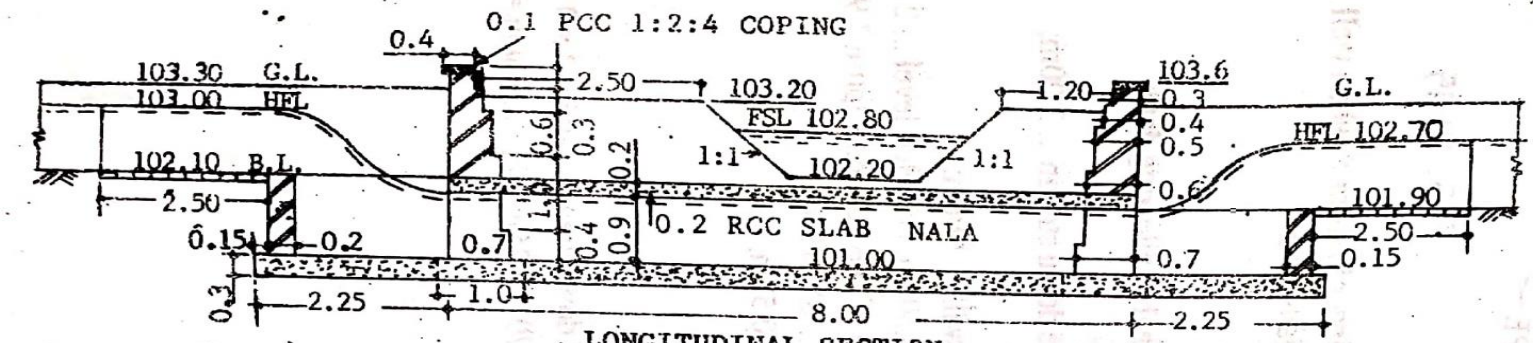
ALL DIMENSIONS IN mm R.C.mm

Chapter :-2

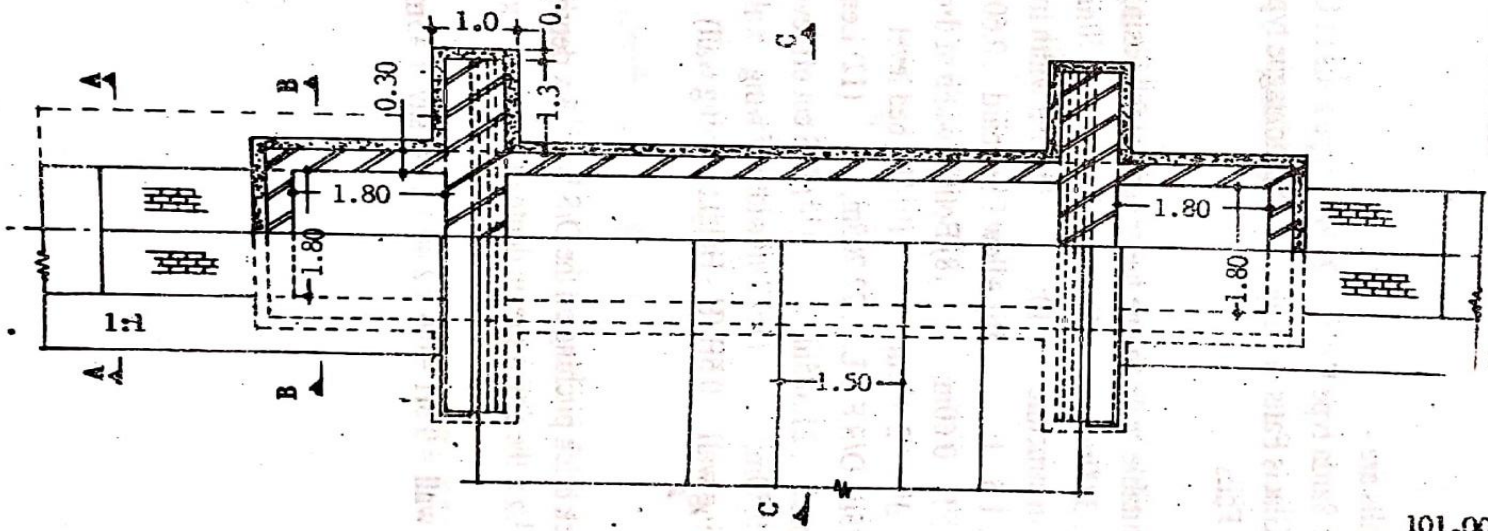
Irrigation Structure

2.1

Draw a detailed plan and cross-sections of a drainage syphon showing all details of construction as per data given below:
Bottom width of the drainage 1.80m
Side slope 1:1
Bed level U/S 102.10m
Bed level D/S 101.90m
H.F.L. U/S 103.00m
H.F.L. D/S 102.70m
Canal bed level 102.20m
F.S.L. 102.80m
Bed width 1.60m
Side slope 1:1
Bank level 103.20m
There are inspection roads 2.50m wide at left bank and 1.20m wide at right bank.
Natural ground level 103.30m.
Vent size syphon 1.80m x 0.90m (depth) one number with 30 cm wide abutments and 20 cm thick R.C. roof.
Bed level 101.00.
Size of U/S cistern: 1.80m x 1.80m built up with 20 cm thick brickwork (1:4) on all three sides. The entire foundation is of 30 cm thick cement concrete 1:3:6.
The wing walls are of return type 1.30m long 1.10m wide having the same foundation as that of syphon Base width 70 cm; top width 30 cm and built up for heights 40 cm; 100 cm; 60 cm and 30 cm with one side offisets at its earth retaining face.
10 cm thick dry brick pitching shall be provided for both U/S and D/S sides of the drain for a length of 2.50m.

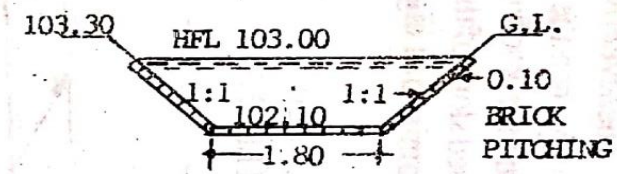


LONGITUDINAL SECTION

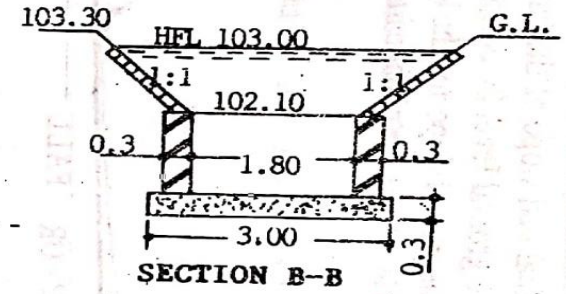


HALF TOP AND FOUNDATION PLAN

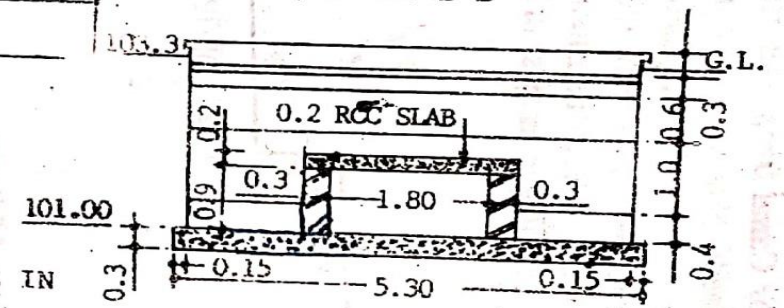
DRAINAGE SYPHON



SECTION A-A



SECTION B-B



SECTION C-C

DIMENSIONS ARE IN METRES

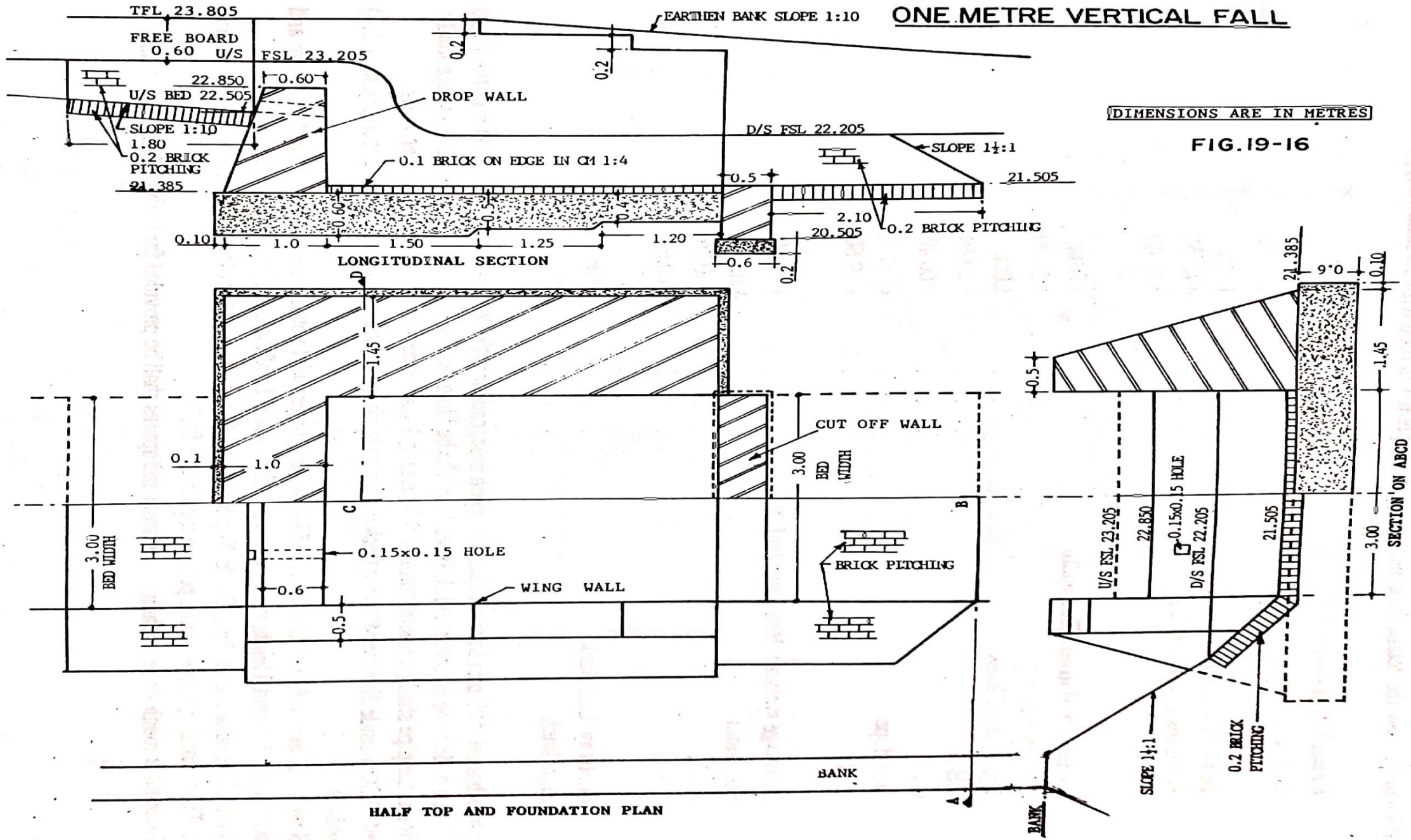
2.2

Draw to a suitable scale an one meter vertical fall basing on the following data:
(a) Bed width of canal ... 3.00m;
(b) Slope of top of bank in structure... 1:10;
(c) Side slope of bank... 1.5 : 1;
(d) Top width of drop wall... 0.60m;
(e) Crest level of drop wall... 22.850m;
(f) U/S F.S.L. ... 23.205m, D/S F.S.L. ... 22.205m;
(g) Top level of D/S apron... 21.385m;
(h) Width of cut off ... 0.50m;
(i) Bottom width of wing wall... 0.6H (H - Height of wing wall).
(j) Depth of water... 0.70m;
(k) Bed width in the down stream ... 3.00m;
(l) Allow free board ... 0.60m;
(m) Bottom width of drop wall ... 1.00m;
(n) U/S bed level ... 22.505m, D/S Bed level.. 21.505m;
(o) Length of D/S concrete apron 3.95m;
(p) D/S cut off level ... 20.505m;
(q) Top width of wing wall... 0.50m;

ONE METRE VERTICAL FALL

DIMENSIONS ARE IN METRES

FIG.19-16

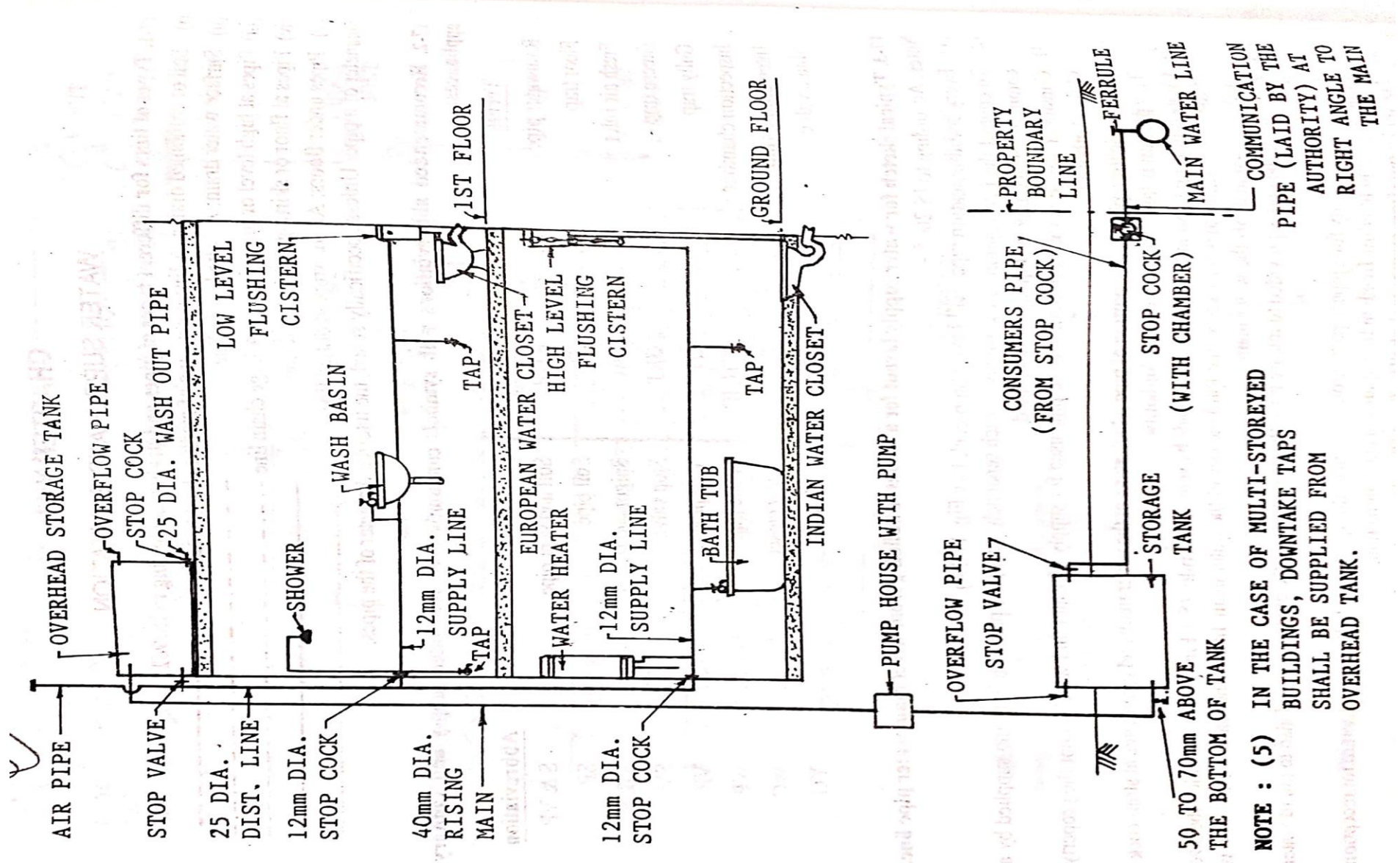


Chapter :-3

Plumbing and Sanitary Connections of a Two - Roomed Building

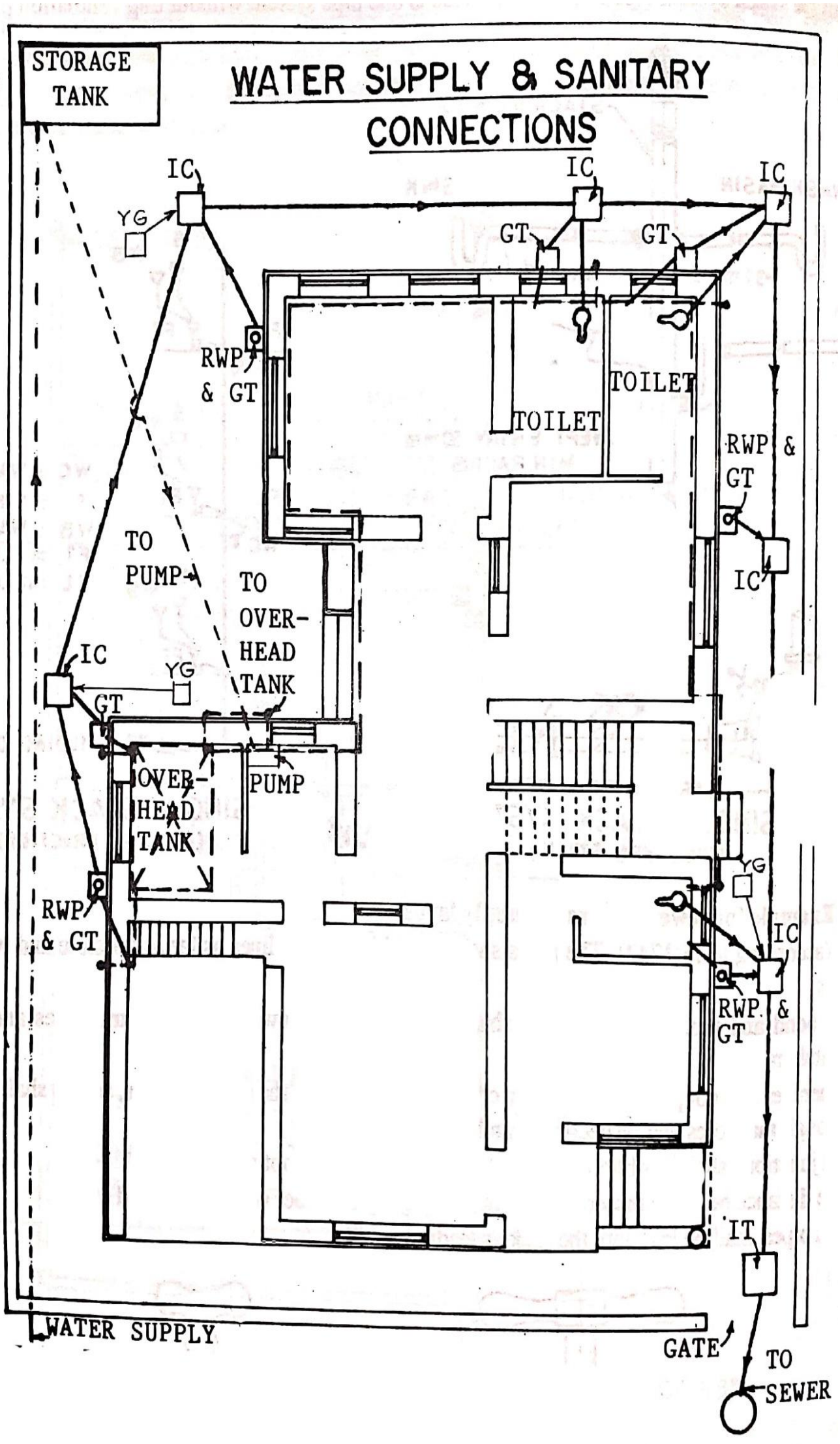
3.0

Draw a typical section sketch for water supply layout of doubly storeyed building.



3.0

Draw a plan of water supply and sanitary connection showing
Inspection chamber,
Inspection trap,
Gully trap,
Rain water pipe,
Yard gully,
pipe vertically down then enter above lintel,
Sewer pipe,
Water supply line below G.L and water supply above G.L.


STORAGE TANK
WATER SUPPLY & SANITARY CONNECTIONS
IC
YG
GT
RWP & GT
TOILET
TO PUMP
TO OVER-HEAD TANK
OVER-HEAD TANK
PUMP
IT
WATER SUPPLY
GATE
TO SEWER

Chapter :-4

Detailed Drawing of Septic Tank up to Fifty user with Soak Pit and Necessary Connection from the Water Closet

4.0

Draw a septic tank up to 50 user with soak pit.