Civil 4th sem

PUBLIC HEALTH AND IRRIGATION ENGINEERING DRAWING

LEARNING OBJECTIVES

After undergoing the subject, students will be able to:

- Draw the drawings of traps, manholes and inspection chambers
- Draw the drawing of water supply plan of building
- Draw the sewerage plan of buildings
- Draw the drawing of channel (L-section and cross-section)
- Draw and demonstrate cross-section of an earthen dams
- Draw layout plan of a canal head works
- Read and interpret the Public Health and Irrigation Engineering Drawings

Drawings Exercises

PART A

WATER SUPPLY AND WASTE WATER ENGINEERING DRAWING

GENERAL:

Forunderstandingoftheprinciplesandpracticesofwatersupplyarrangementsinbuildingisessentialfortheircorrectinstallation,operationandefficientfunctioning.Thedefinitionsofthefollowingtermsshouldknow.

1.**Residualheadoravailablehead:**Itisthepressureheadavailableatanyparticularpointinthedistributionsystem.

2.**PlumbingSystem:**Itistheentiresystemofpipesfixtures,appliancesetcforprovidingwatersupplyanddrainagetobuilding.

3.**Watermainorstreetmain:**Thisisthewatersupplypipeforpublicorcommunityuseandmaintainedbylocaloradministrativeauthority.

4.**Servicepipe:**Anypipeusedforconveyingwaterfromwatermaintoanybuildingorpremisesanditissubjectedtowaterpressurefromthewatermainiscalledservicepipe.

5.**Communicationpipe:**Thepartoftheservicepipe,extendingfromthewatermainuptoandincludingthestopcock,whichisundercontroloftheauthorityiscalledcommunicationpipe.

6.**Supplypipe:**Thepipewhichextendsfromthestopcockuptotheballcockorentranceofthestoragetankifanyandsubjectedtowaterpressurefromthewatermainiscalledsupplypipeanditisunderthecontrolofconsumer.

7.**Distributionpipe:**itisthepipeconnectingthestoragetanktothevarioussanitaryfixtures,tapsetcforthepurposeofdistributionofwaterinsidethebuilding

8.Watersupplyfittings

(i)

StopCock: Stopcockisacontrolvaluefixedbytheauthorityattheendofcommunicationpipe.Itisfixedinthestreet,closetotheboundarywallinanaccessiblepositioninasuitable

DRAINAGECONNECTIONSTOBUILDING:

ThewastewatercomingfromKitchens,Bathrooms,waterClosets,Urinalsetchastobeproperlydrain edinordertomaintainhealthyenvironment.Ifthewastewaterisnotdrained,itleadstostagnationinand aroundthebuildingcausingnuisance.

Requirementsofgooddrainagesysteminbuildings:

1.Thefoulmattershouldbequicklyremovedawayfromthesanitaryfixtures

2.Thedrainagesystemshouldbeabletopreventtheentryofgases,verminetcfromthesewersintotheb uildings

3.Thedrainagepipesshouldbestronganddurable

4.Thepipesandjointsshouldbeairtighttopreventanyleakageofwastewaterorgases

5.Thenetworkofpipesshouldhavesufficientaccessibilityforinspection,cleaningandremovingobstr uctions

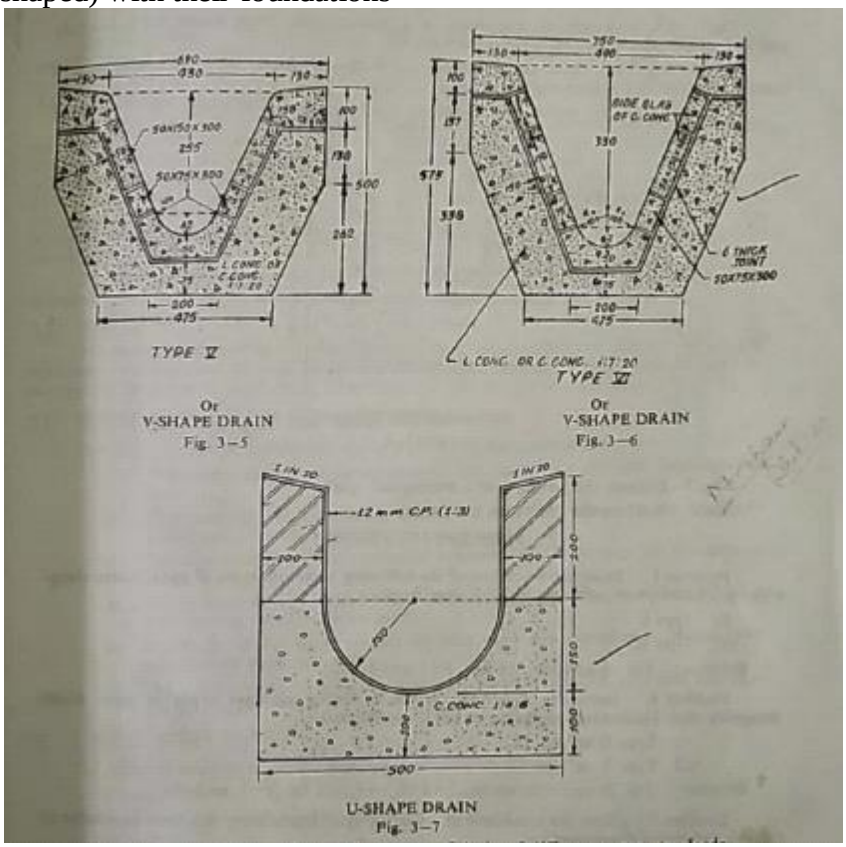
6.Thelevelsofbuilding,sewerandotherpointsofoutletshouldbefixedaccurately

7.Thepipesshouldbeofnon-absorbentmaterial

Unit- 1

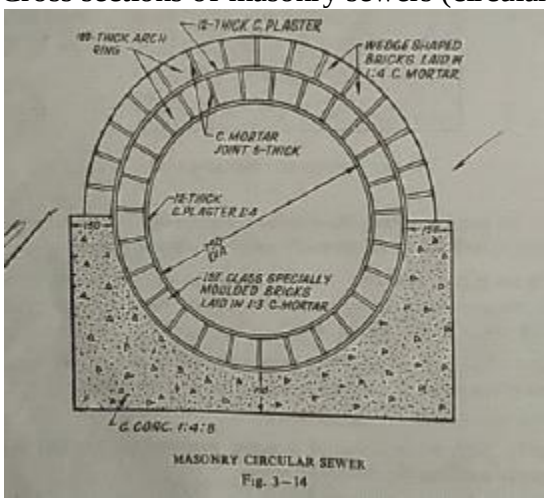
Drains and Sewers

Cross section of standard types of open drains (circular, V-shaped and U-shaped) with their foundations

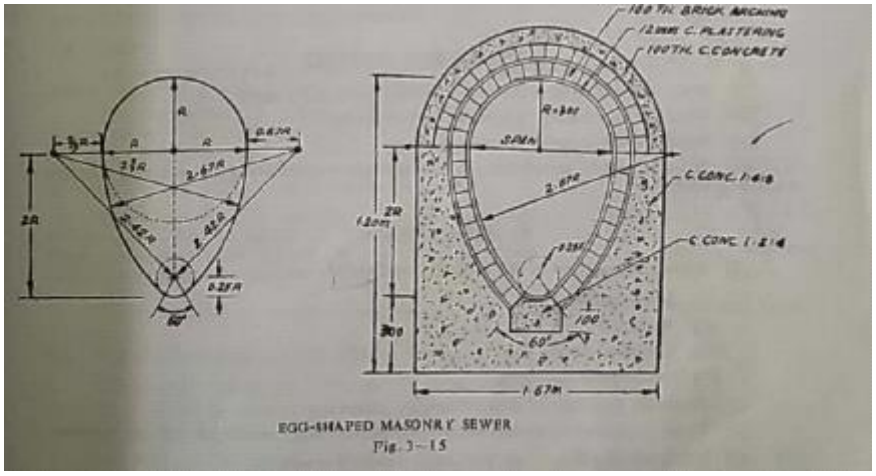


Cross section of earthen ware and RCC sewer pipes

Cross sections of masonry sewers (circular and egg shaped)



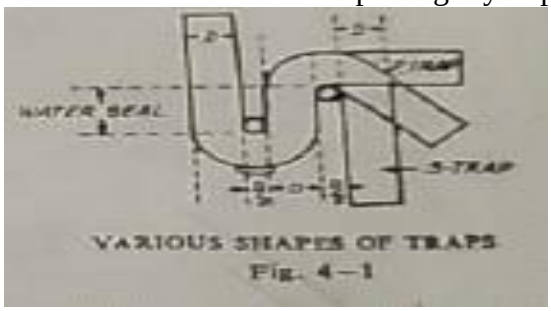
MASONRY CIRCULAR SEWER
Fig. 3—14



EGG-SHAPED MASONRY SEWER
Fig. 3—15

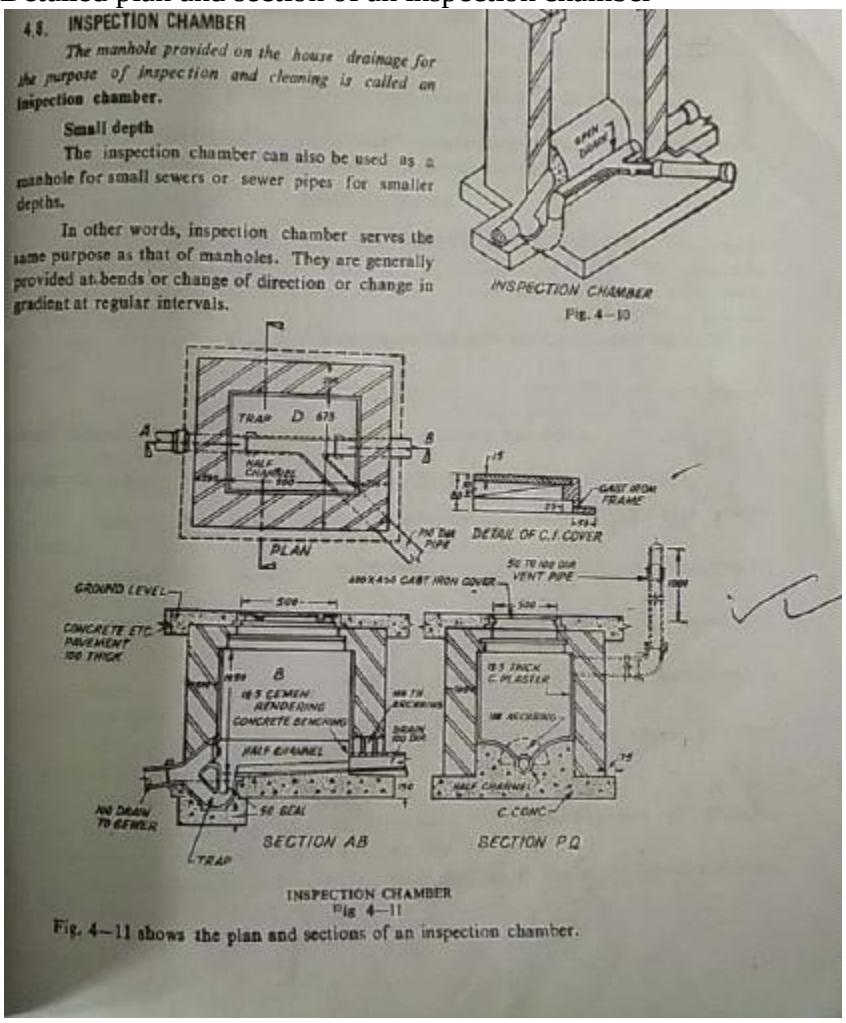
2. Traps, manholes and inspection chamber

Detailed section of floor trap and gully trap



VARIOUS SHAPES OF TRAPS
Fig. 4—1

Detailed plan and section of an inspection chamber



4.8. **INSPECTION CHAMBER**

The manhole provided on the house drainage for the purpose of inspection and cleaning is called an **inspection chamber.**

Small depth

The inspection chamber can also be used as a manhole for small sewers or sewer pipes for smaller depths.

In other words, inspection chamber serves the same purpose as that of manholes. They are generally provided at bends or change of direction or change in gradient at regular intervals.

INSPECTION CHAMBER

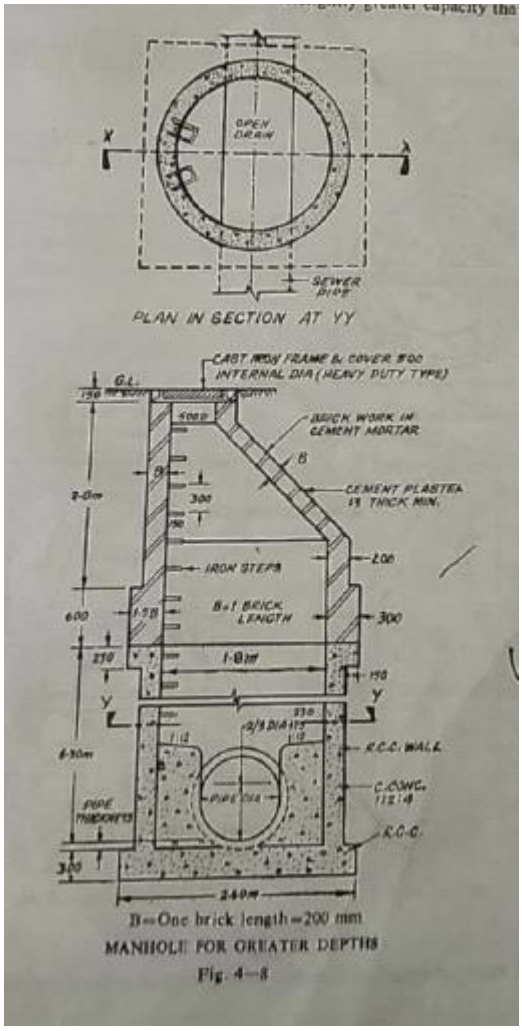
Fig. 4—10

INSPECTION CHAMBER

Fig. 4—11

Fig. 4—11 shows the plan and sections of an inspection chamber.

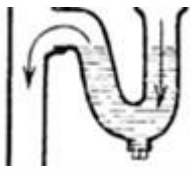
Detailed plan and section of a manhole



IMPORTANT QUESTIONS

Section –A

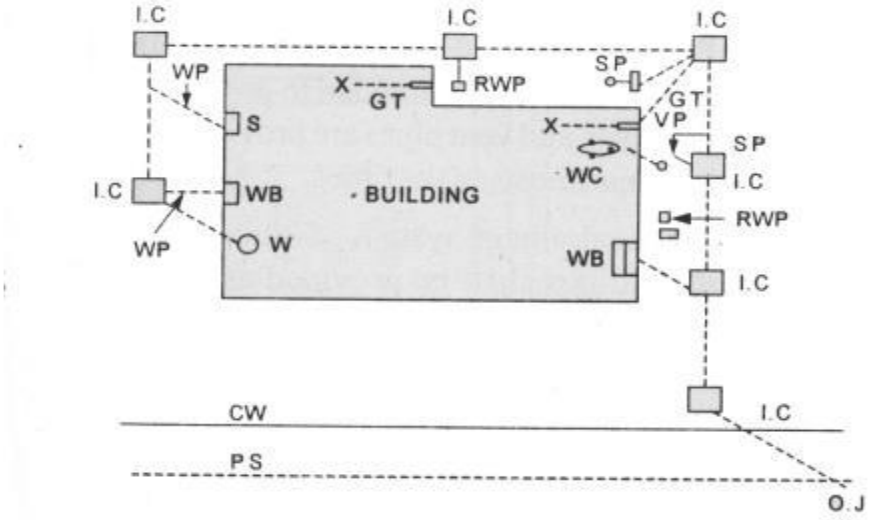
1. Name the open drains provided for conveying water from kitchens, bathroom and rain water to main sewers.
2. The_____are used for preventing foul gas from sewers to back flow in the house.
3. Which type of trap is shown by the figure below?



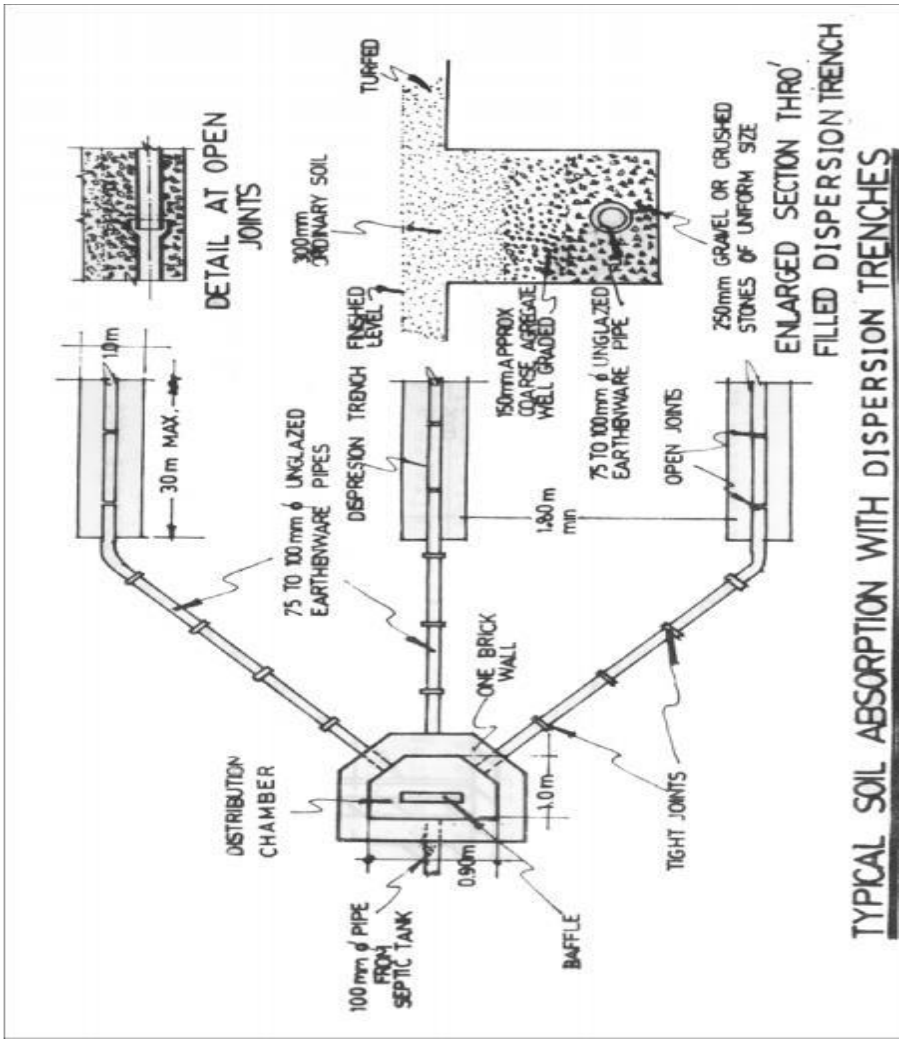
4. In office building what is the requirement of a water closet for 50 persons?
5. 90% of urban water supply and sanitation services are currently in the
6. traps are used for receiving waste water from kitchen sinks, baths and rain and surface water

_____

LayoutofSingleStoreyBuildingDrainageSystem

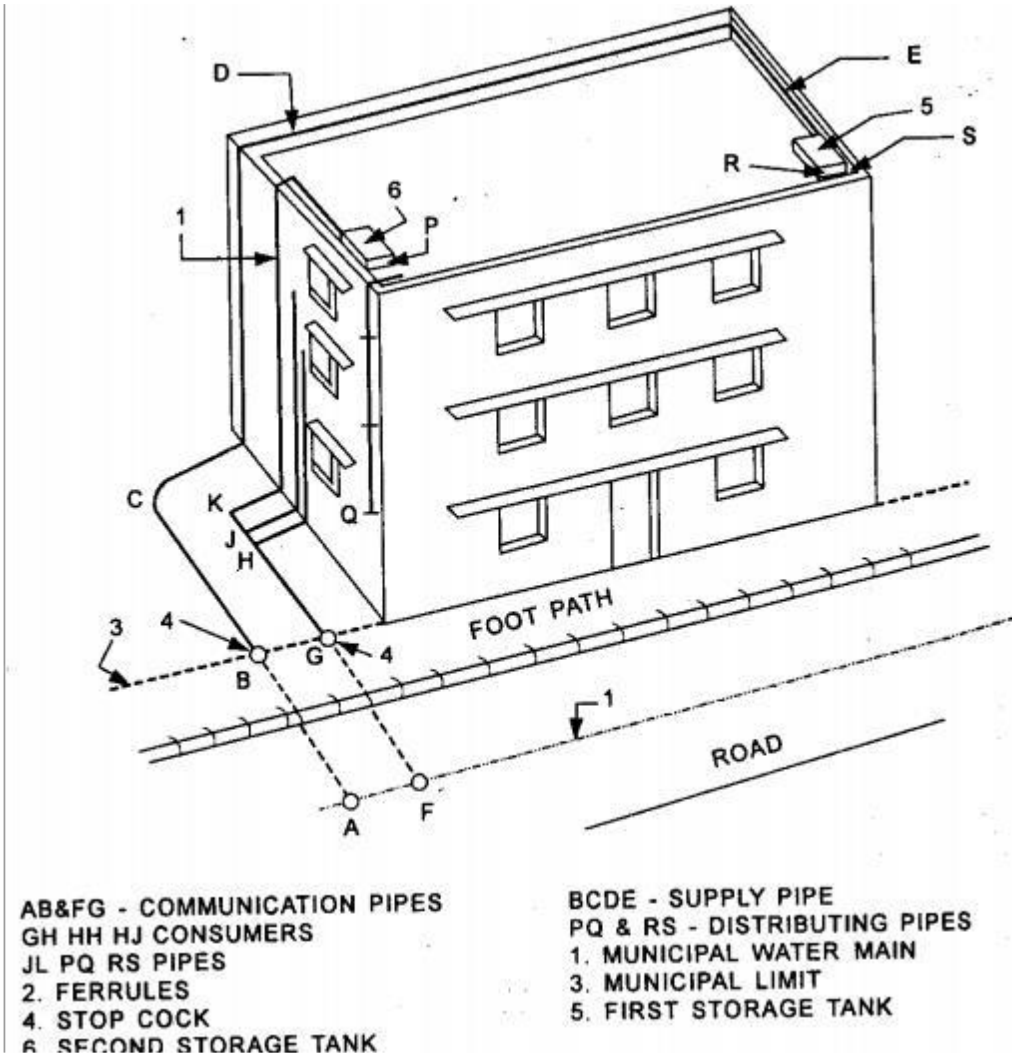


I.C. - INSPECTION CHAMBER
W.S - WASH BASIN
WC - WATER CLOSET
SP - SOIL PIPE
RWP - RAIN WATER PIPE
CW - COMPOUND WALL
O.J - OBLIQUE JUNCTION
W - WATER COOLER
WP - WASTE PIPE
S - SINK
VP - VENT PIPE
GT - GULLY TRAP
PS - PUBLIC SEWER



DISPERSION TRENCH

CHAPTER 4
LAYOUTOFVARIOUSWATERSUPPLYANDSANITARYFITTINGSIN



Section –B

IMPORTANT QUESTIONS

1. Draw Cross section of standard types of open drains (circular, V-shaped and U-shaped) with their foundations.
2. Cross section of earthen ware and RCC sewer pipes.
3. Cross sections of masonry sewers (circular and egg shaped)
4. Draw Cross section of manholes and inspection chamber.
5. Draw free hand detailed section of floor trap and gully trap.
6. Draw detailed plan and section of an inspection chamber.
7. Draw detailed plan and section of a manhole .