UNIT-VI
SANITARY FITTINGS
RANGE

- By the end of this unit, you will be able to learn:
  - PRINCIPLE OF SIPHON
  - TYPES OF FLUSHING MECHANISMS
  - DRAINAGE SYSTEM
  - TYPES OF TRAPS
SANITARY FITTINGS

- **SINKS & BASIN**: They are meant for washing purposes.
- **USAGE OF SINKS**:
  - Sinks are made of different materials according to the purpose for which they are intended:
    - A. Heavily galvanized iron for heavy pot wash.
    - B. Stainless steel for general purpose.
  - Basins are made of porcelain.
  - Provision of hot & cold water supply
  - Cockroach trap
SIPHON (SYPHON)

- It is a continuous tube that allows liquid to drain from a reservoir through an intermediate point that is higher or lower than a reservoir.
- The flow being driven by the difference in hydrostatic pressure without any need for pumping.
W/C, BIDETS
FLUSHING MECHANISMS

- WATER CLOSET
- Flushing the toilet, pours large quantities of water in the bowl hence fills the siphon tube.
- FLUSHING MECHANISM can be of two types:
  - 1) FLUSHING CISTERN
  - 2) FLUSH VALVE
- Flushing cisterns are of two types:
  - A. PLUNGER TYPE
  - B. BELL TYPE
PLUNGER TYPE CISTERN

- A. CISTERN
- B. FLUSH LEVER
- C. FLUSH PIPE
- D. SIPHON
- E. SYPHON DOME
- F. PERFORATED PLUNGER PLATE
- G. Flexible plate
- H. Rod connecting plunger plate & hook.
- J. To flush lever

Figure 1: Cross-section thro' syphonic cistern

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The siphon type extends at least 1.5 inches above the highest water line.

Water is forced up through the dome & into the syphon tube.

The water begins to fall under gravity.

Flexible plunger plate is pushed away from the perforated plate.

Air rushes in to break the syphon.
BELL SYPHON CISTERN

- A – CISTERN
- B – FLUSH LEVER
- C – FLUSH PIPE
- D – STAND PIPE
- E – BELL SHAPED DOMES

Figure 4: Cross-section thro' bell syphon cistern
BELL SYPHON CISTERN

- Water moves into the lower compartment of the cistern & some water is pulled up inside the bell by surface tension.
- Release of chain causes displacement of water by the bell & forced up inside the bell & over the top of the stand.
- Syphon starts & as air enters the bell, flushing ceases & the cistern refills. It is also called as "PULL & CLANK".
FLUSH VALVE

- They are used to provide frequent flushes.
- High pressure is required.
- The flush valve is directly connected to the central water system.
- There is no cistern provided.
FLUSHING CISTERNS

- Cistern can also be of following types:
  1) AUTOMATIC URINAL CISTERNS
  2) PRESSURE CHAMBER CISTERNS
  3) RETROFIT DIRECT FLUSH CISTERNS

- By retrofit we mean to replace existing part etc. with updated parts or systems.
AUTOMATIC URINAL CISTERNs

- Syphon dome & plunger assembly are omitted & the top of the syphon tube is below the top water line.
- As water fills the cistern & reaches the top of the tube, water pours over the top of the syphon lip & down the flush pipe.
- This starts the syphon & the cistern flushes.

Figure 8: Automatic cistern at activation

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PRESSURE CHAMBER CISTERNS

- PRESSURE CHAMBER - A
- INLET FOR WATER - B
- ONE WAY VALVE - C
- FLUSH VALVE IN THE LARGE BORE OUTLET - D
- FLUSH LEVER - E
- F. AIR - F

Figure 11: Pressure Chamber Flush Tank

Figure 12: Discharge of Pressure Cistern
The retrofit direct flush cistern uses a sensor operated system that automatically flushes the fixture when user departs.

A solenoid is used to activate the flush from a 6 volt battery inside the unit that powers the vision system.
DRAINAGE SYSTEM

- DRAIN PIPE
  soil pipe or waste drain pipe
- STACK PIPE. Its upper end has a VENT which extends to above the roofline.
- BUILDING DRAIN collects all building sewage.
- BUILDING SEWER
- SEPTIC TANK
INSPECTION CHAMBERS

- Septic tanks are large, enclosed sewage holding tanks buried in the soil.
- From one side, sewage flows in while effluent (liquid sewage) drains out from the other side into a series of connected pits called as CESSPOOLS.
Since the drainage system works on the gravitational force, the system should be open, clean & free from any types of blockages.

Most of the plumbers use AUGERS, RODS & SNAKES. These equipments are flexible & do not coil within the pipes & make turns as pipe turns.
1. WIRE ROOTER 2. AUGER
3. PLUNGER 4. AUGER
CLEARANCE OF BLOCKAGES

- Blockage in drain can be cleared by having sufficient & suitable access points.
- Access points should be one of four types. They are:
  A. RODDING EYES:  
  B. ACCESS FITTING  
  C. INSPECTION CHAMBERS  
  D. MANHOLES:
1. RODDING EYE
2. INSPECTION CHAMBER
3. MANHOLE
SETTING OF ACCESS POINTS

- Access points should be provided at the following points:
  1. On or near the head of each run
  2. At a bend, change of gradient (a sloping part of a road)
  3. At a change of pipe size
  4. At a junction
TRAPS

DEFINITION
Traps can be classified on the basis of:

SHAPE:
  a. P- trap
  b. Q- trap
  c. S-trap

USE:
  a. Floor trap
  b. Gully trap
  c. Intercepting trap
  d. Grease trap
**P TRAP & Q TRAP**

- **P,Q,S-TRAP**: They are used for bath sink & lavatories. They are made with enlarged mouth so that the waste pipe may be thoroughly flushed out.
S-TRAP

- They are also used for bath sink & lavatories. They are made with enlarged mouth so that the waste pipe may be thoroughly flushed out.
FLOOR TRAP

- They are used to admit waste water (sullage) from the floors of rooms, kitchen, baths etc.
- They are provided with C.I. grating at the top to prevent the entry of solid & larger sticky matter.
GULLY TRAP

- Present at the junction of a room or a roof drain & the other drain coming from bath, kitchen etc.
INTERCEPTING TRAP

- It is provided at the junction of a building sewer & a municipal sewer so as to prevent the entry of the foul gases of the municipal sewer in the building drainage system.
Oil & greases are separated by passing the flow through a grease trap. It is having baffles which retards the flow of water & the grease accumulates on the top as scum layer. It is then removed manually.
REVIEW

- SINKS, WASHBASIN & BIDETS
- SIPHON PROCESS
- FLUSHING CISERNS
- DRAINAGE SYSTEM & ACCESS POINTS
- EQUIPMENTS USED FOR CLEANRING BLOCKAGES
- TYPES OF TRAPS
ASSIGNMENTS

- Explain PLUNGER & BELL type flushing cistern
- What is SIPHON?
- Explain the following
  - A) trap  b) water seal  c) rodding eyes  d) wire rooters
  - E) Gully trap  f) Intercepting trap  g) Grease trap  h) Stack pipe
  - i) Septic tank  j) Cesspool  k) Bidet
- Explain the functioning of AUTOMATIC URINAL CISTERN
REFERENCES

- PLUNGER, BELL TYPE, PRESSURE CHAMBER, AUTOMATIC URINAL CISTERN CISTERN: http://www.users.waitrose.com/~ttagrevatt/vlav/works_cisterns.html
REFERENCES

➢ EQUIPMENT USED FOR CLEANING BLOCKED DRAINS: http://www.draindomain.com/how%20to%20clear%20a%20blocked%20drain.html

➢ ACCESS POINTS IN DRAINAGE SYSTEM:
  ➢ http://en.wikipedia.org/wiki/Manhole

➢ TEXT BOOK OF HOTEL MAINTENANCE BY N.C. GOYAL & K.C. GOYAL
THANK YOU

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