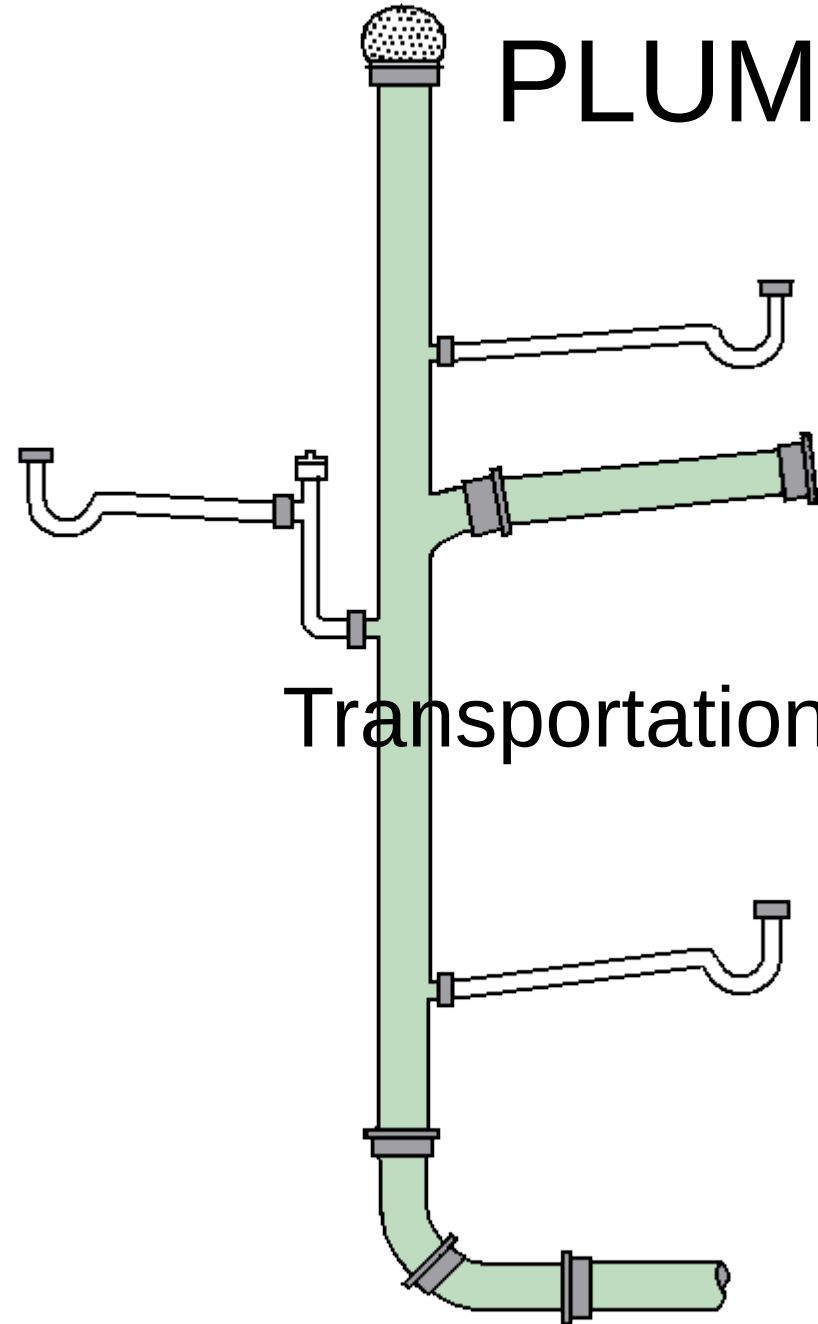
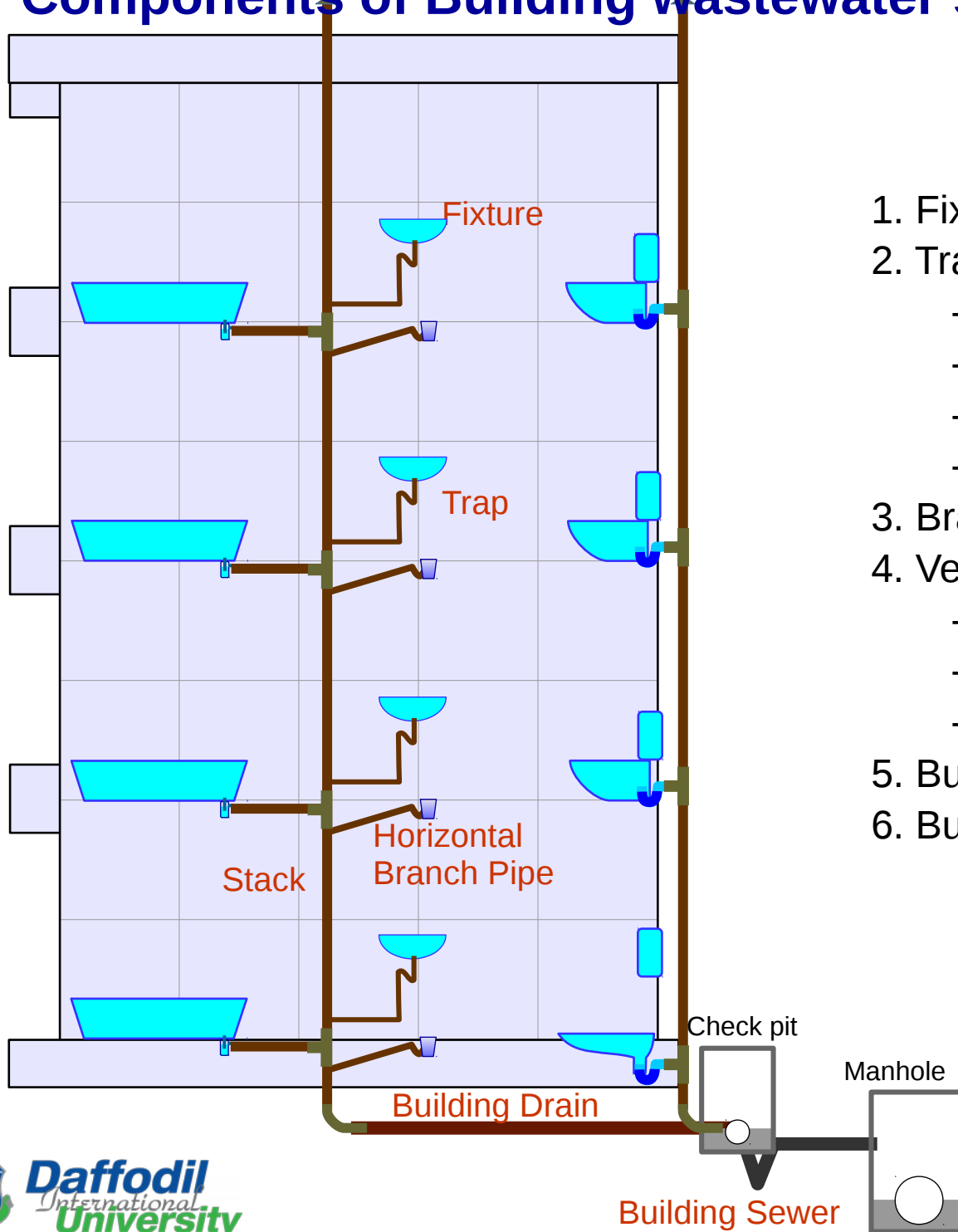


# PLUMBING SYSTEM

Transportation of wastewater in buildings



# Components of Building wastewater system



1. Fixtures
2. Traps
  - Floor Trap
  - Gully Trap
  - P-trap, q-trap, S-trap
  - ... ..
3. Branch pipes
4. Vertical pipes / Stack
  - Single stack system
  - One pipe system
  - Two pipe system
5. Building drain
6. Building sewer

# Components of Building wastewater system: FIXTURES

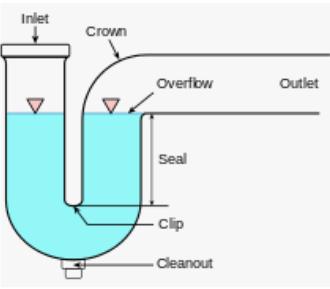
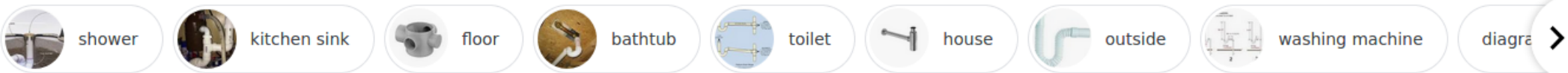


# Components of Building wastewater system: FIXTURES

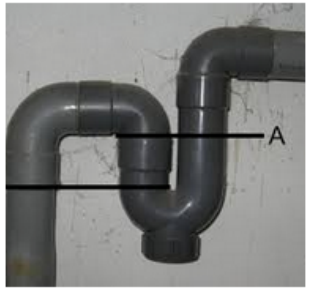
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Fixture Units for Different Sanitary Appliances or Groups

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‡ Wash basin with 32 mm and 40 mm trap have the same load value.	

# Components of Building wastewater system: TRAPS



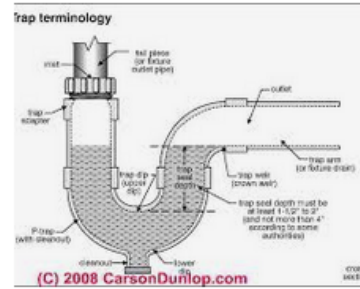
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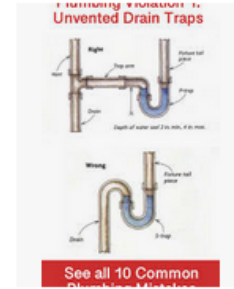
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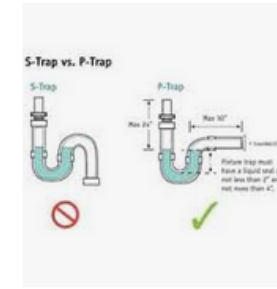
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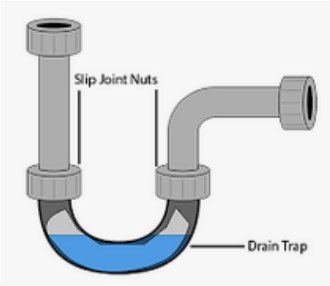
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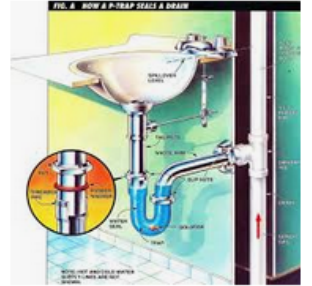
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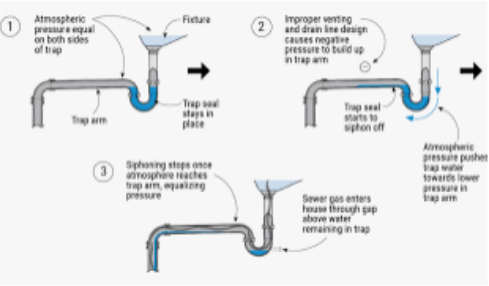
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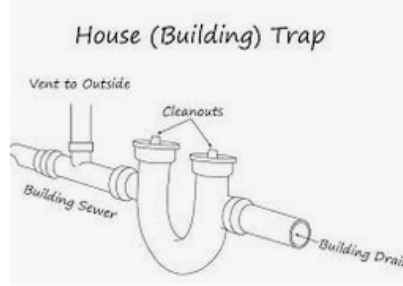
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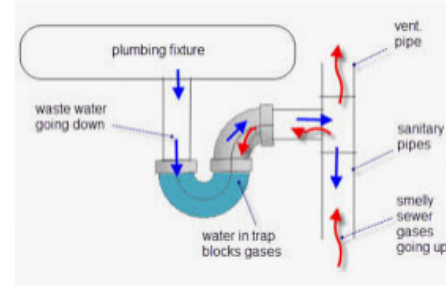
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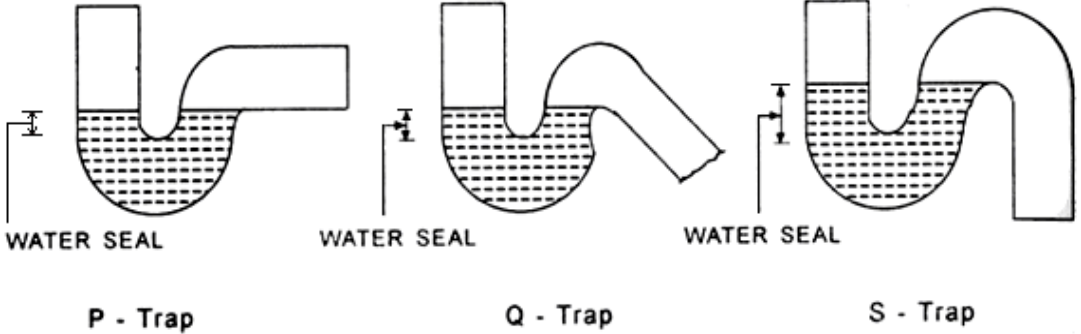
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# Components of Building wastewater system: TRAPS



gully trap



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- toilet
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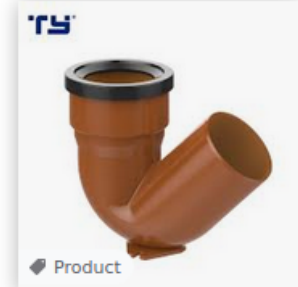
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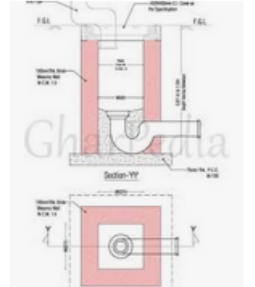
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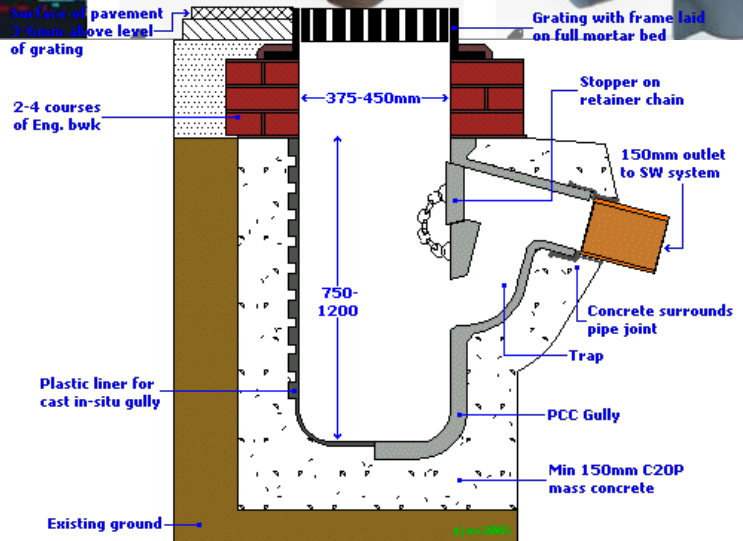
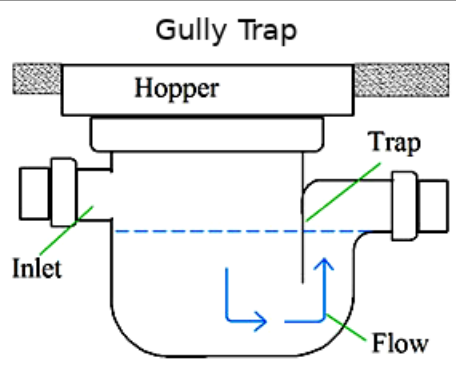
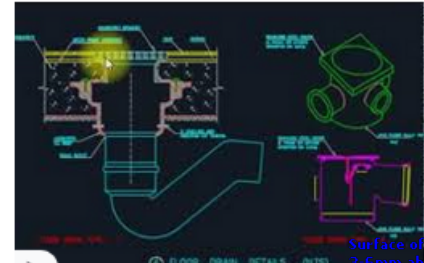
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# Components of Building wastewater system: BRANCH & STACK



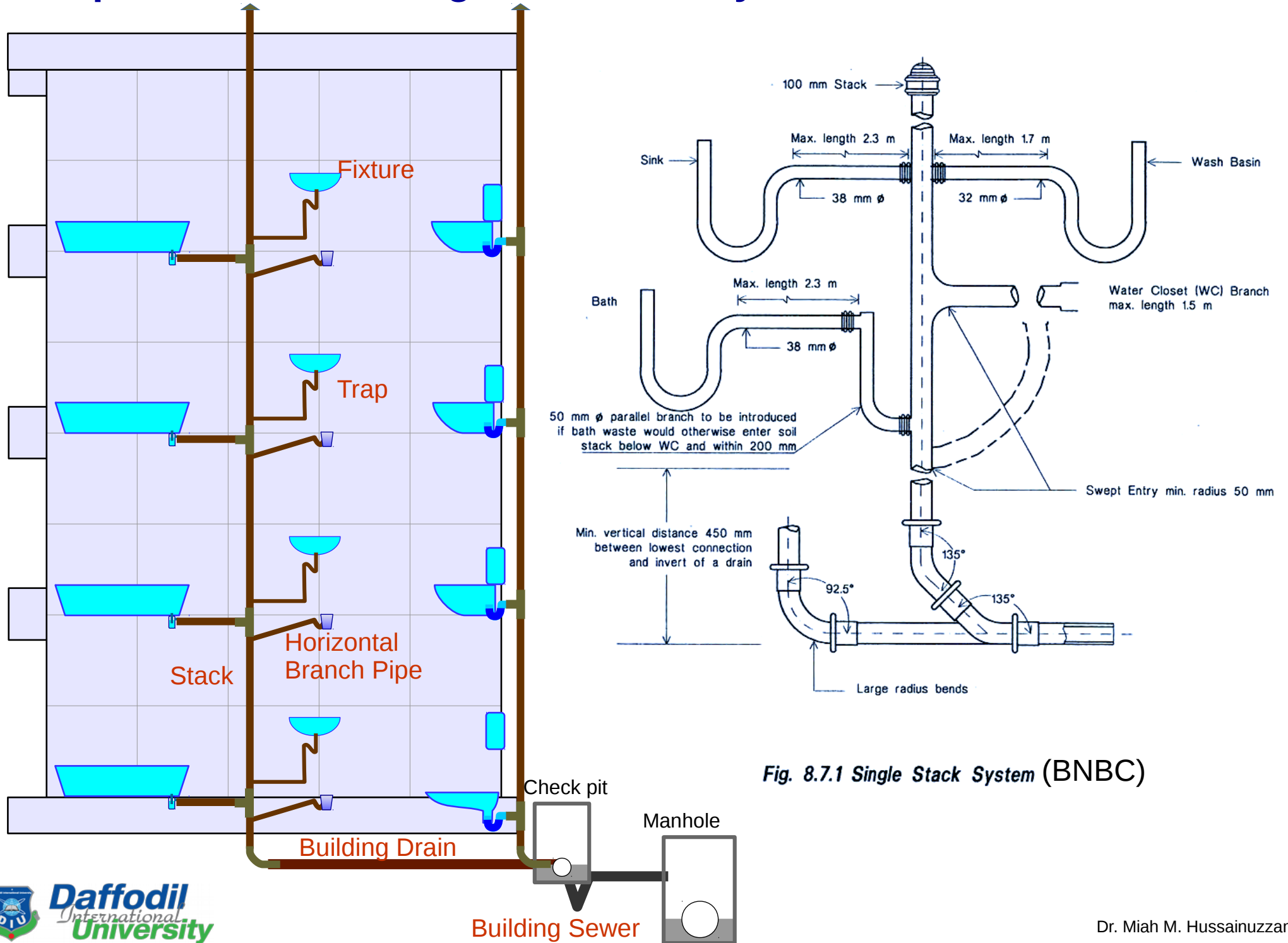


# Components of Building wastewater system: BRANCH & STACK





# Components of Building wastewater system: STACK



# Components of Building wastewater system: STACK

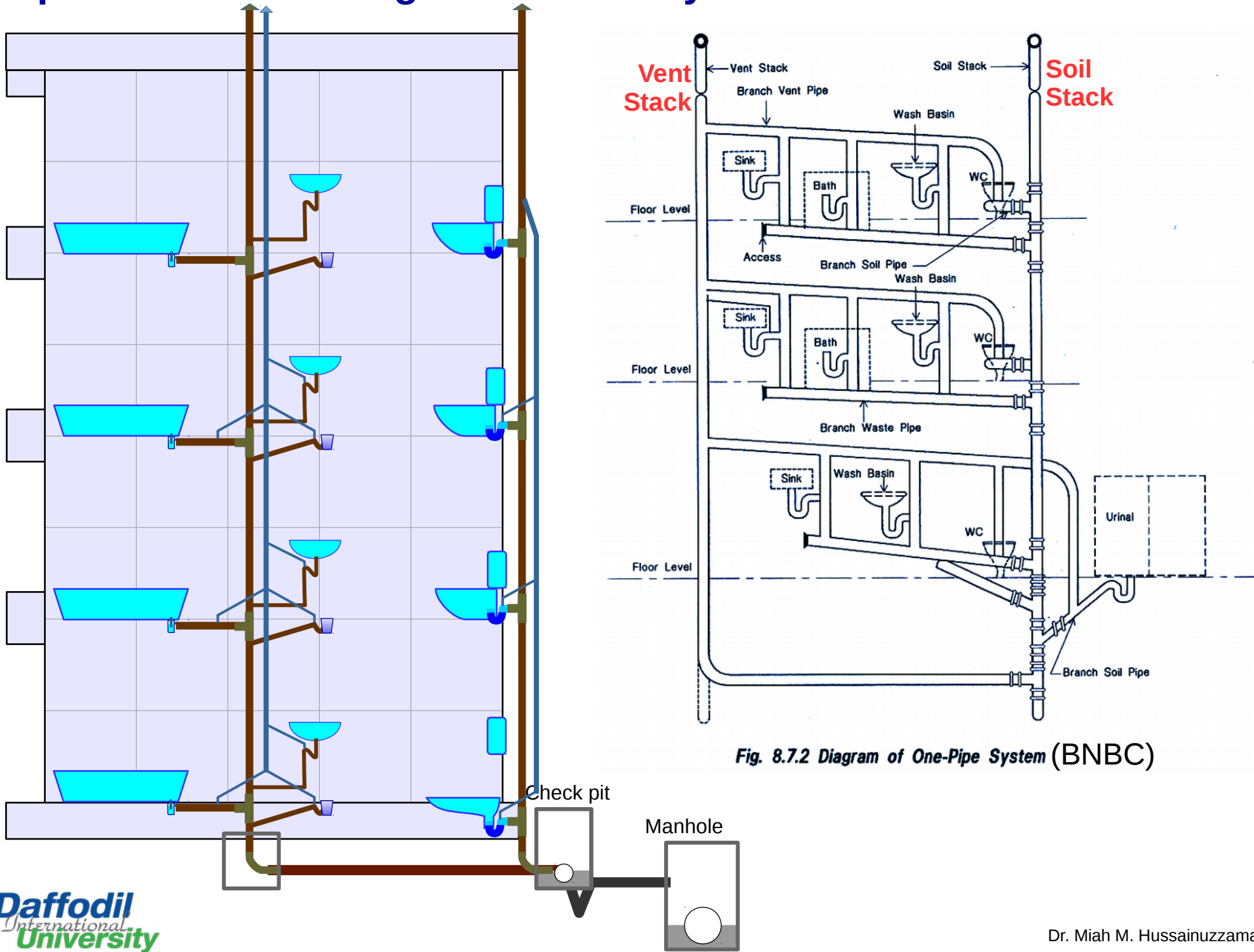
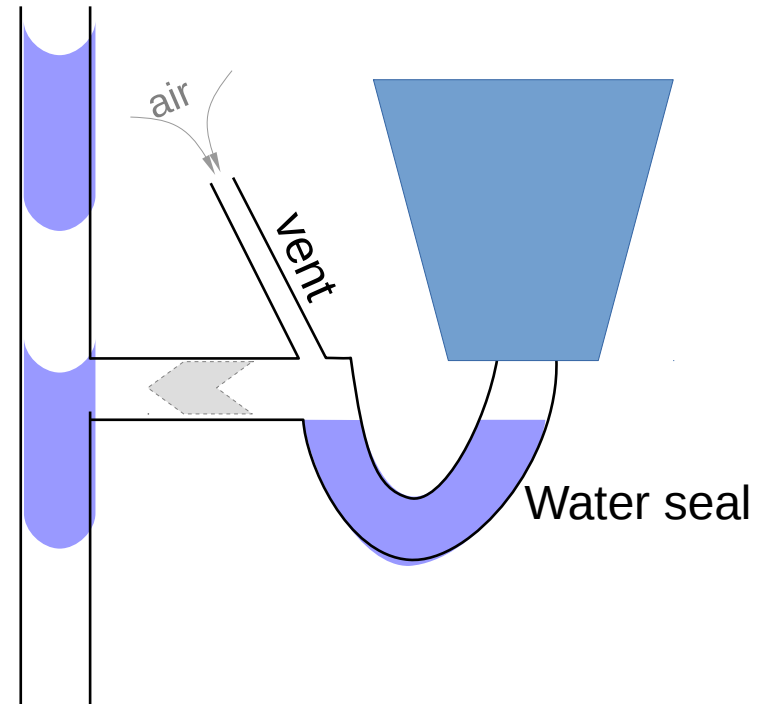
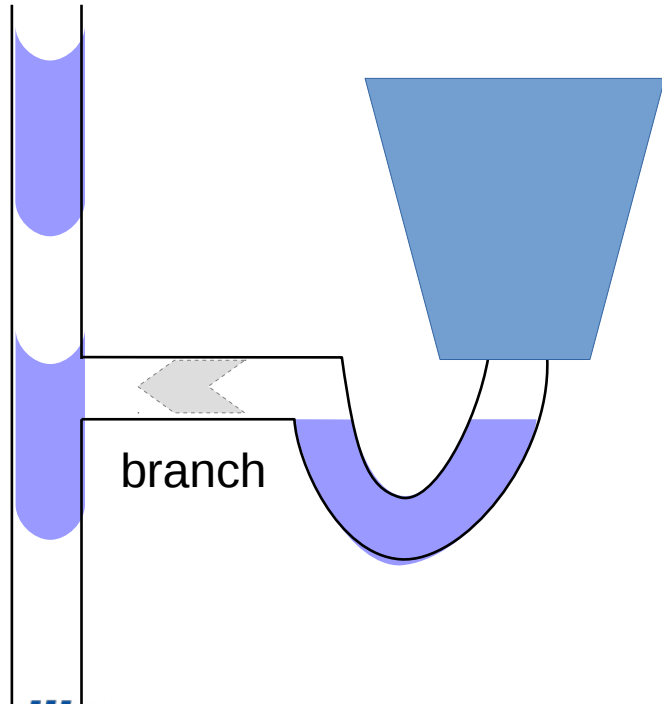
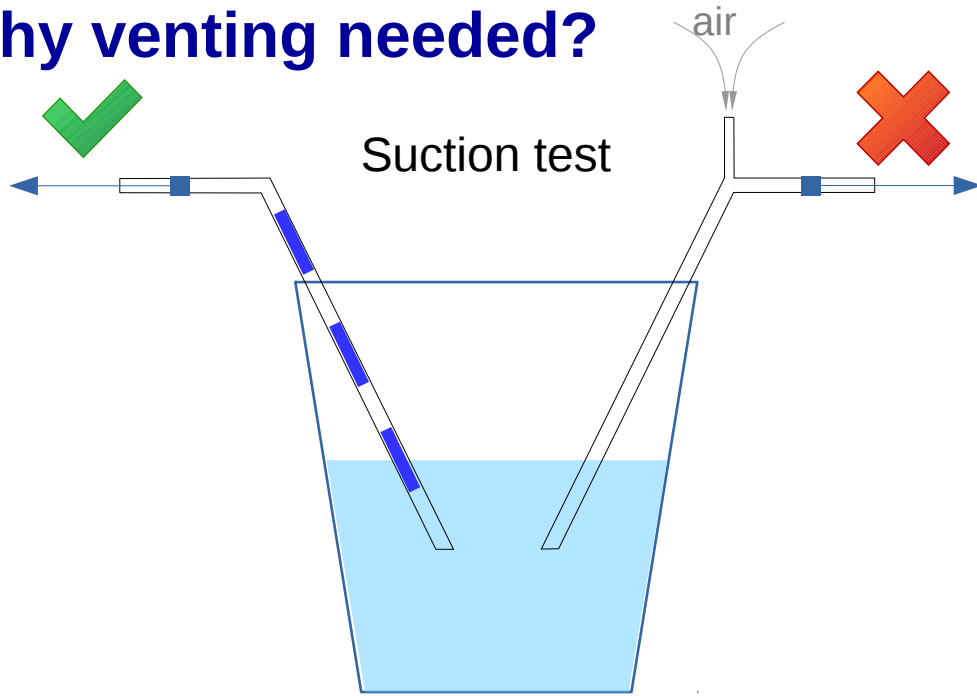


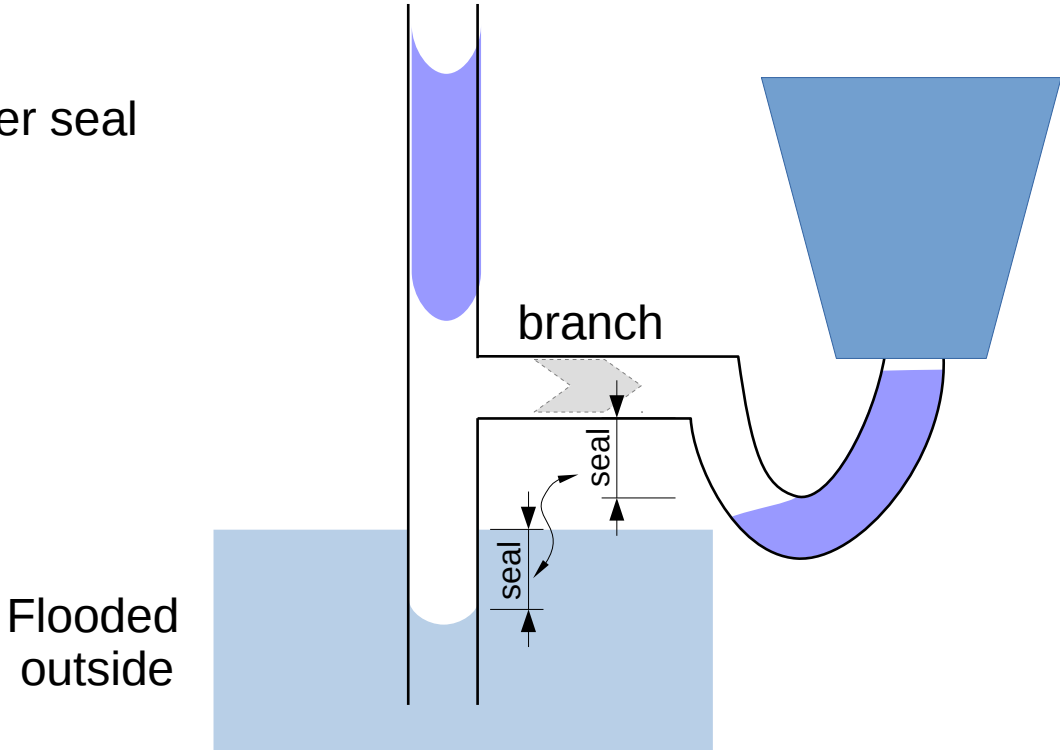
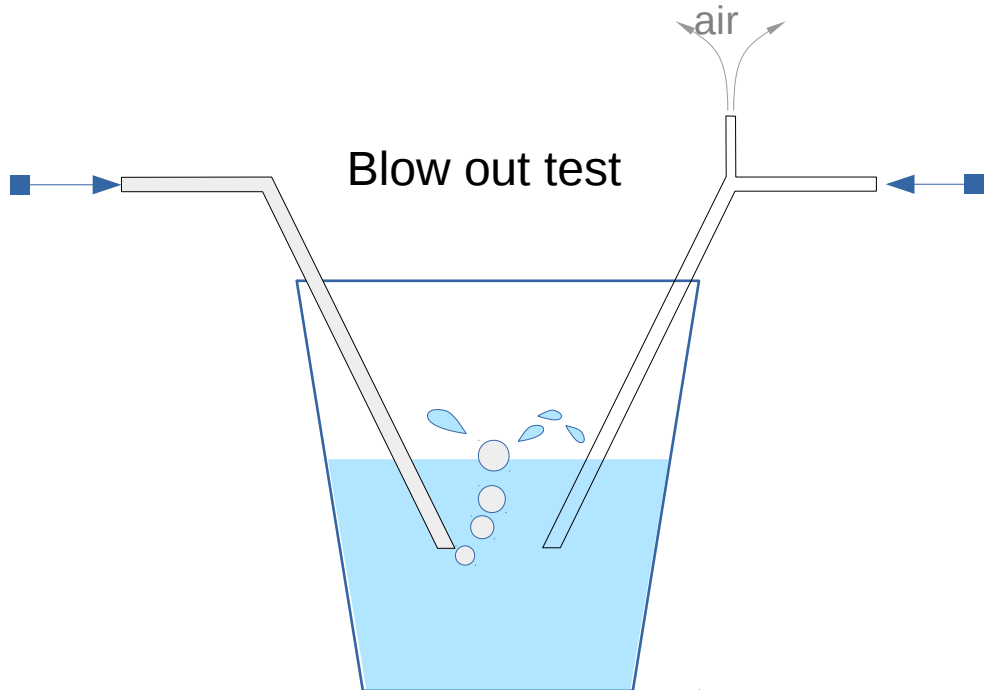
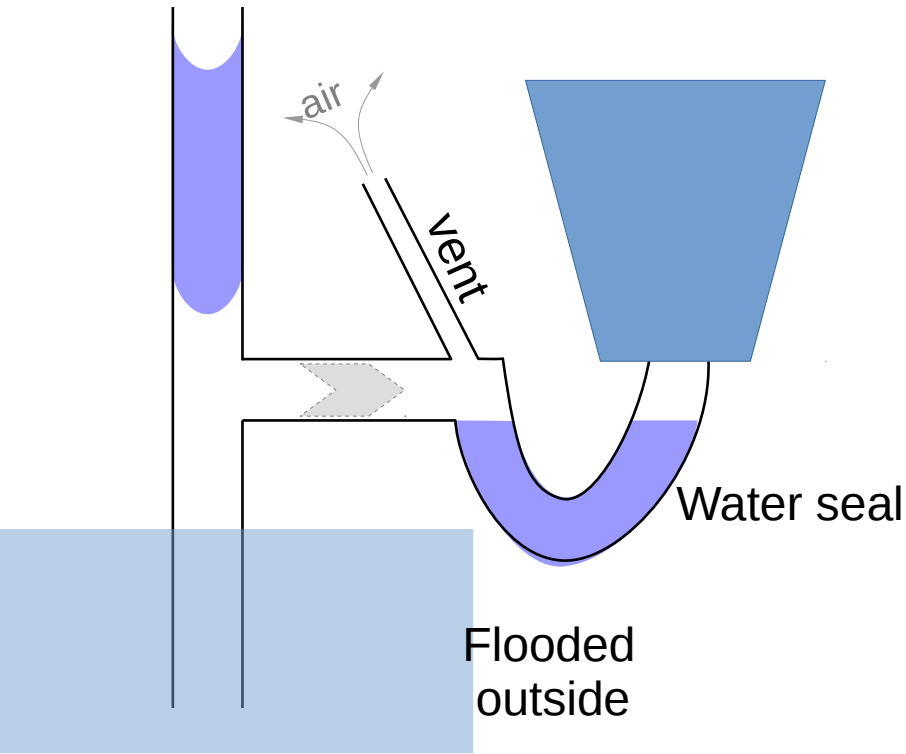
Fig. 8.7.2 Diagram of One-Pipe System (BNBC)



# Why venting needed?



# Why venting needed?





# Components of Building wastewater system: STACK

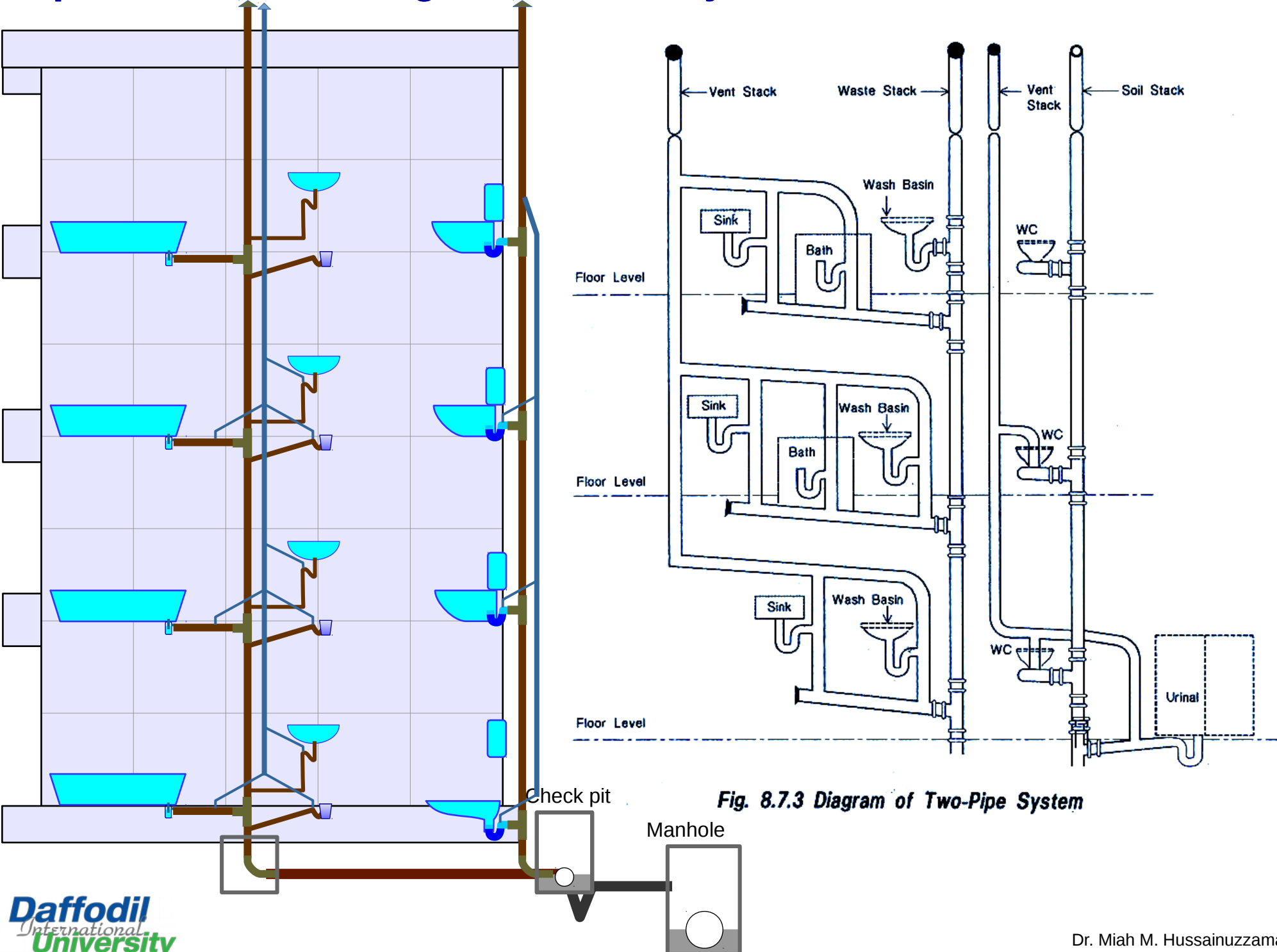


Fig. 8.7.3 Diagram of Two-Pipe System

# Components of Building wastewater system: STACK

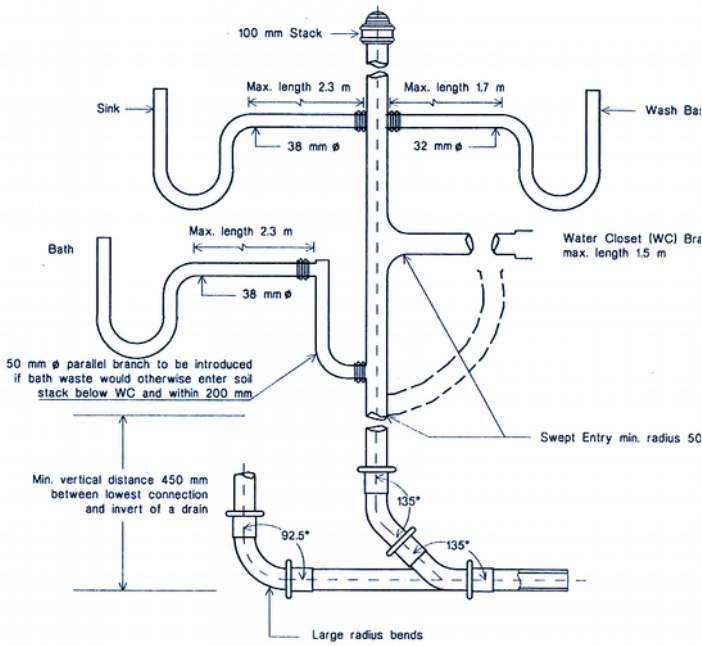


Fig. 8.7.1 Single Stack System

## Single Stack System



Soil pipe

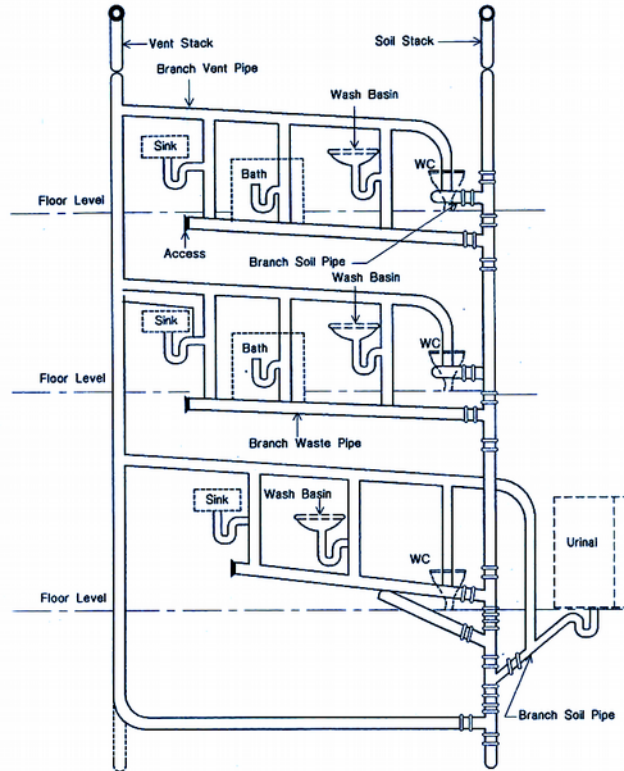


Fig. 8.7.2 Diagram of One-Pipe System

## One Pipe System



Soil pipe



Vent pipe

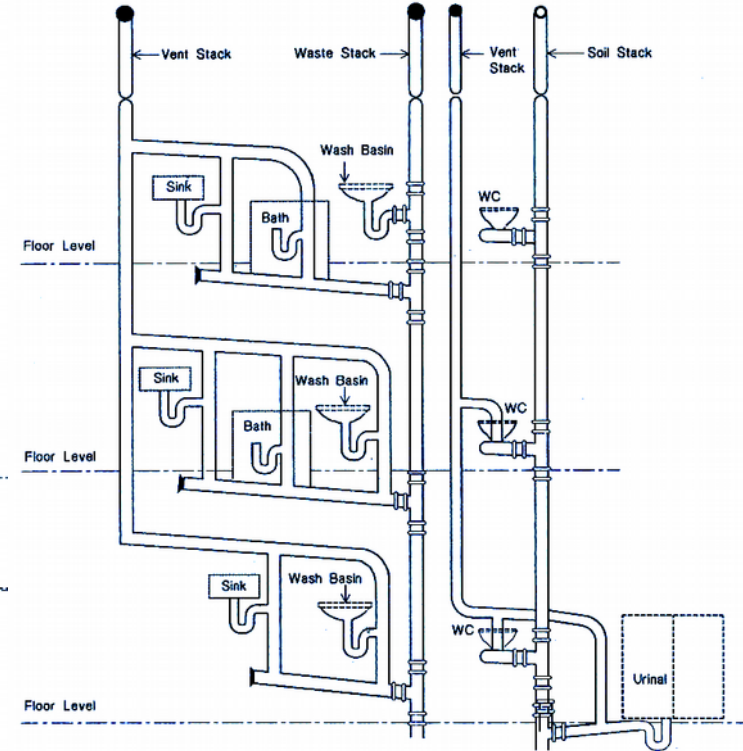


Fig. 8.7.3 Diagram of Two-Pipe System

## Two Pipe System



Soil pipe



Waste pipe



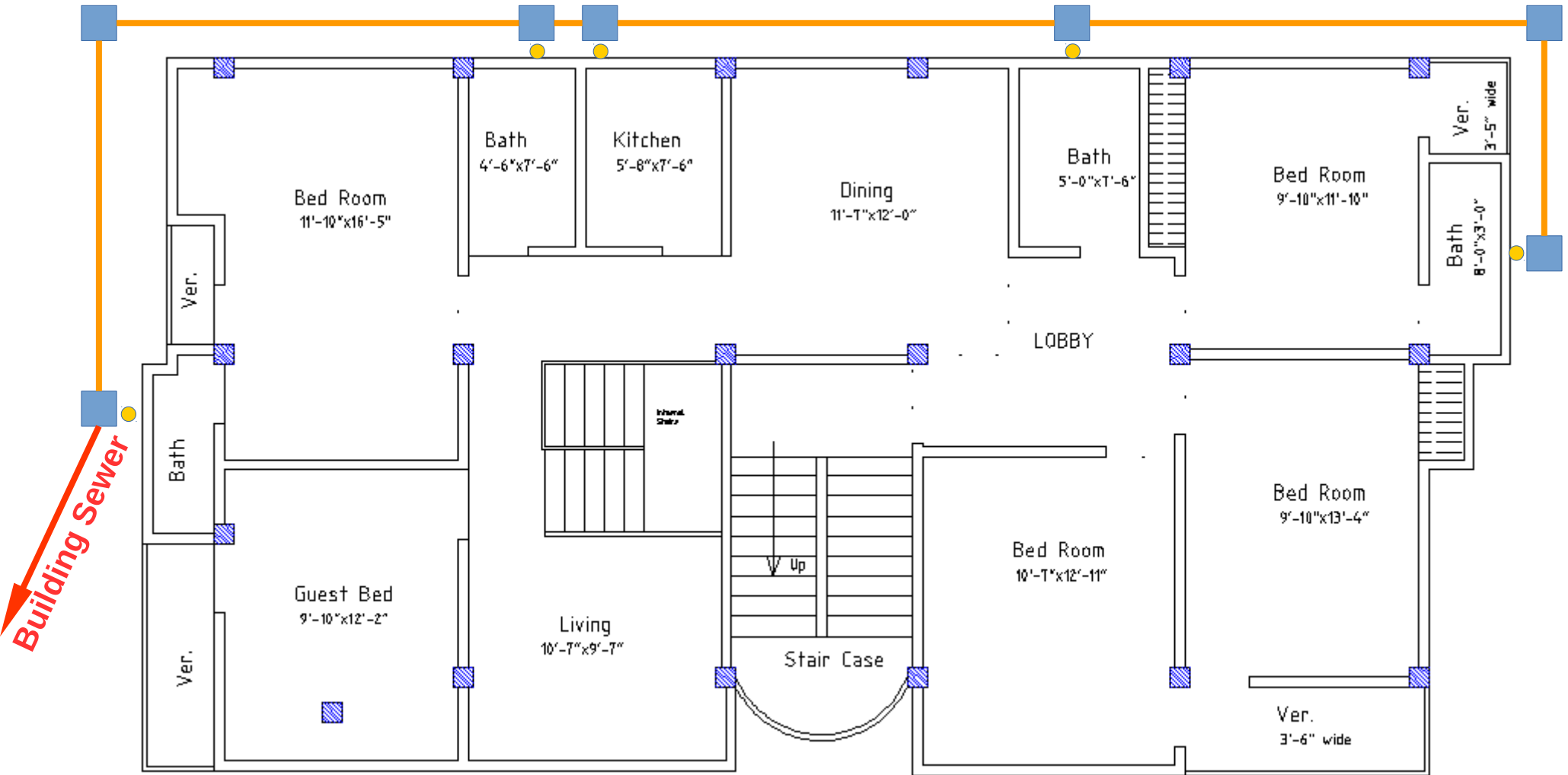
Vent pipe

**Black Water:** includes fecal matter

**Gray Water:** comparatively better than black water



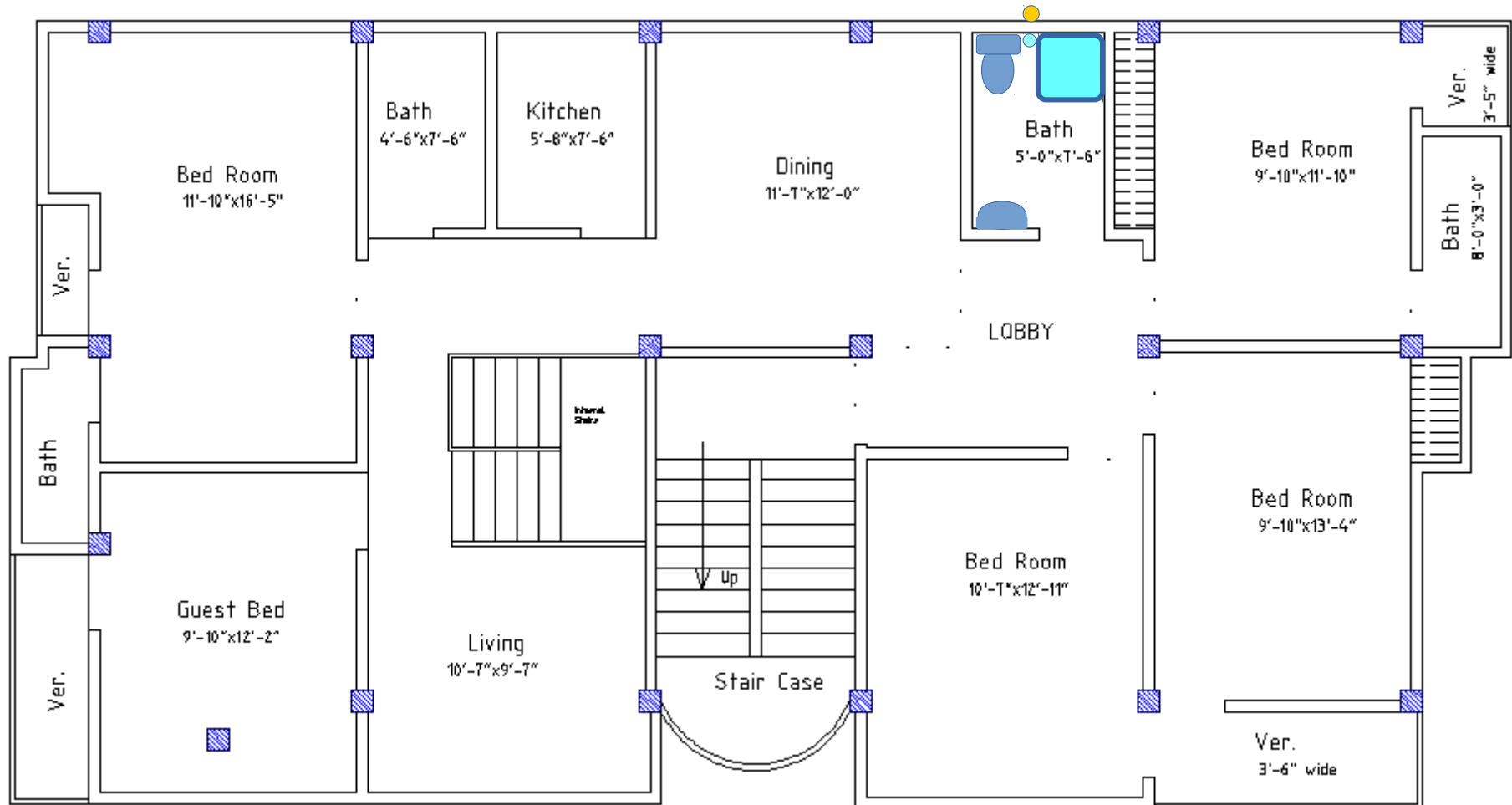
# Components of Building wastewater system: Building Drain



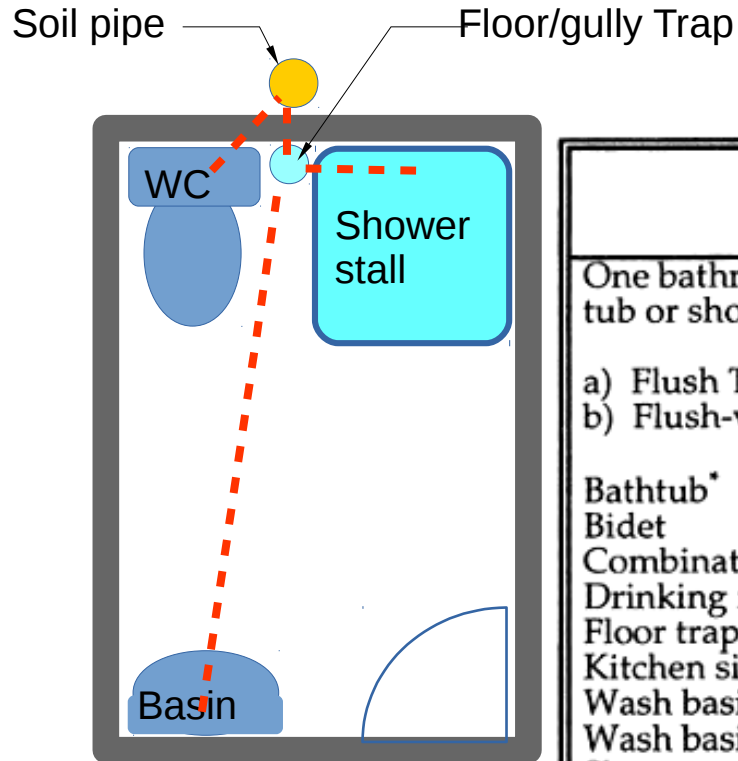
## Building drain

Building drain means that part of the lowest horizontal piping of a drainage system which receives the discharge from soil, waste, and other drainage pipes inside the walls of the building and conveys it to the building sewer, beginning five (5) feet (1.5 meters) outside the inner face of the building wall

# Building wastewater system: Design



# Building wastewater system: Design



**Table 8.7.14**  
**Fixture Units for Different Sanitary Appliances or Groups**

Type of Fixture	Fixture Unit Value as Load Factors
One bathroom group consisting of water closet, wash basin and bath tub or shower stall :	
a) Flush Tank water closet	6
b) Flush-valve water closet	8
Bathtub*	3
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Shower stall, domestic	2
Shower (group) per head	3
Urinal, wall lip	4
Urinal, stall	4
Water closet, tank operated	4
Water closet, valve operated	8

\* A shower head over a bath tub does not increase the fixture unit value.  
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# Building wastewater system: Design

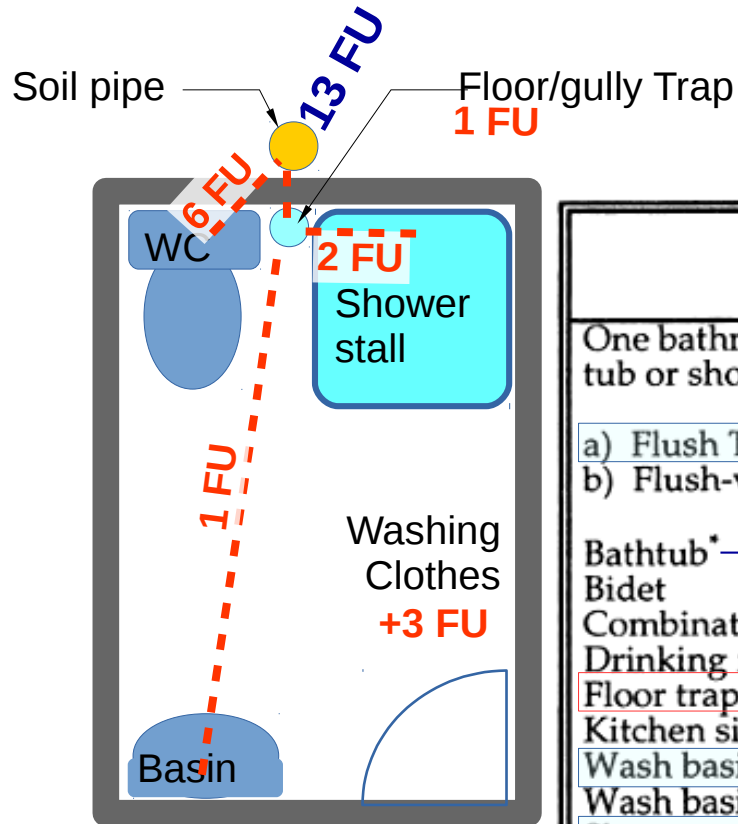
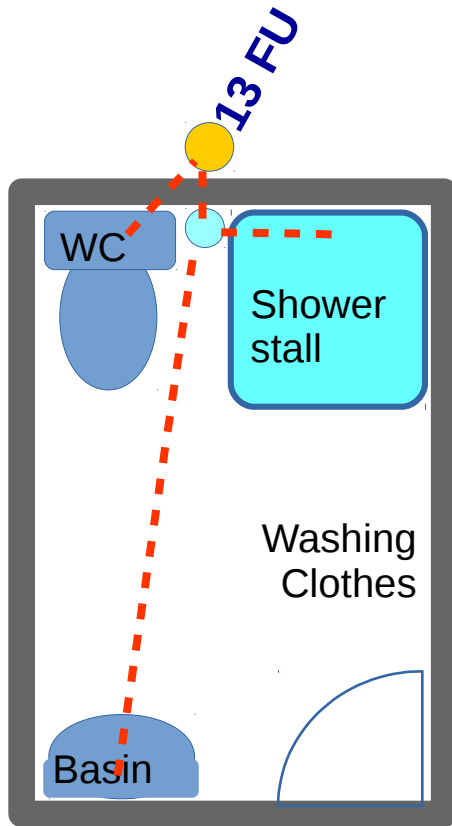


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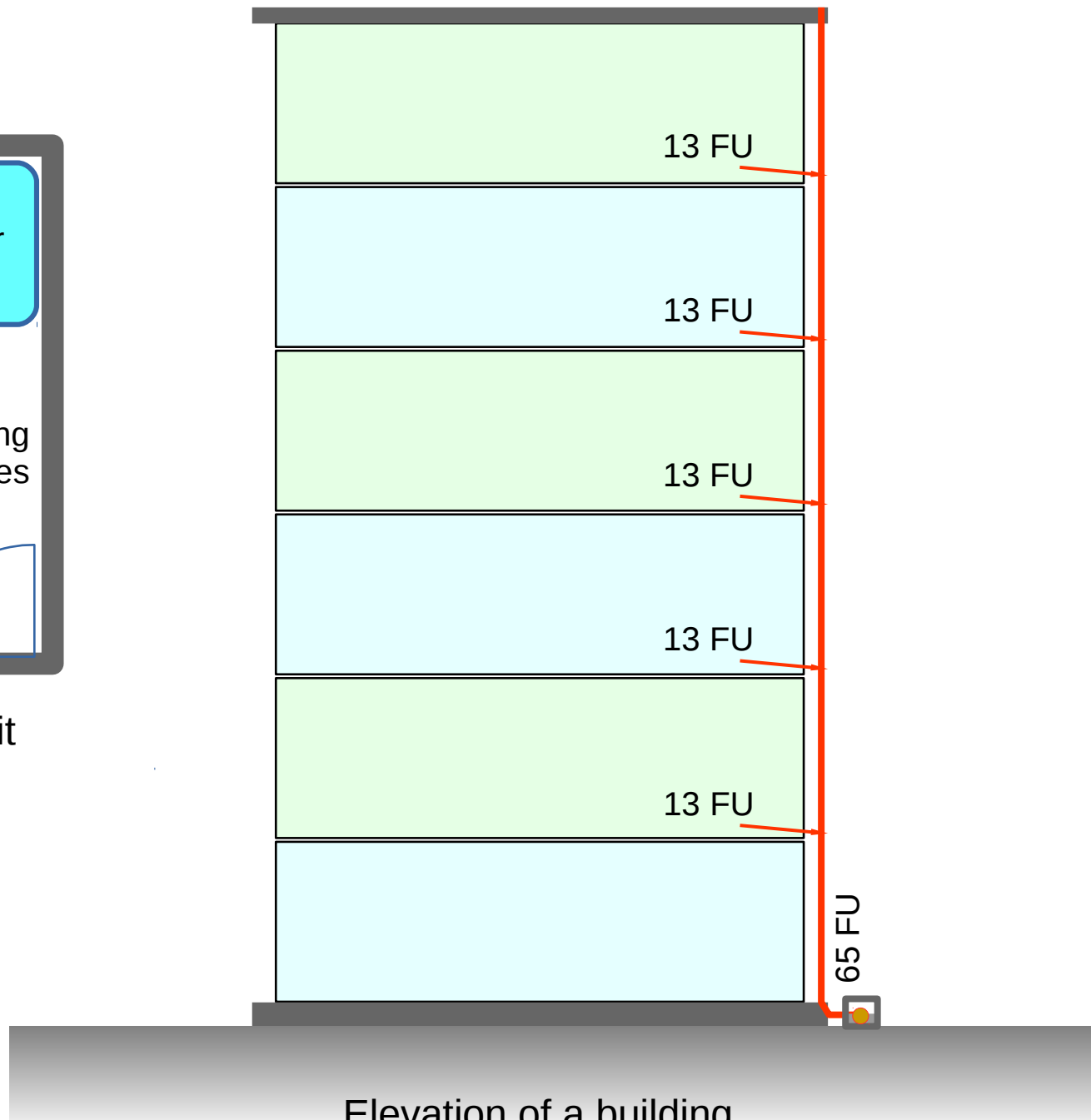
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# Building wastewater system: Design

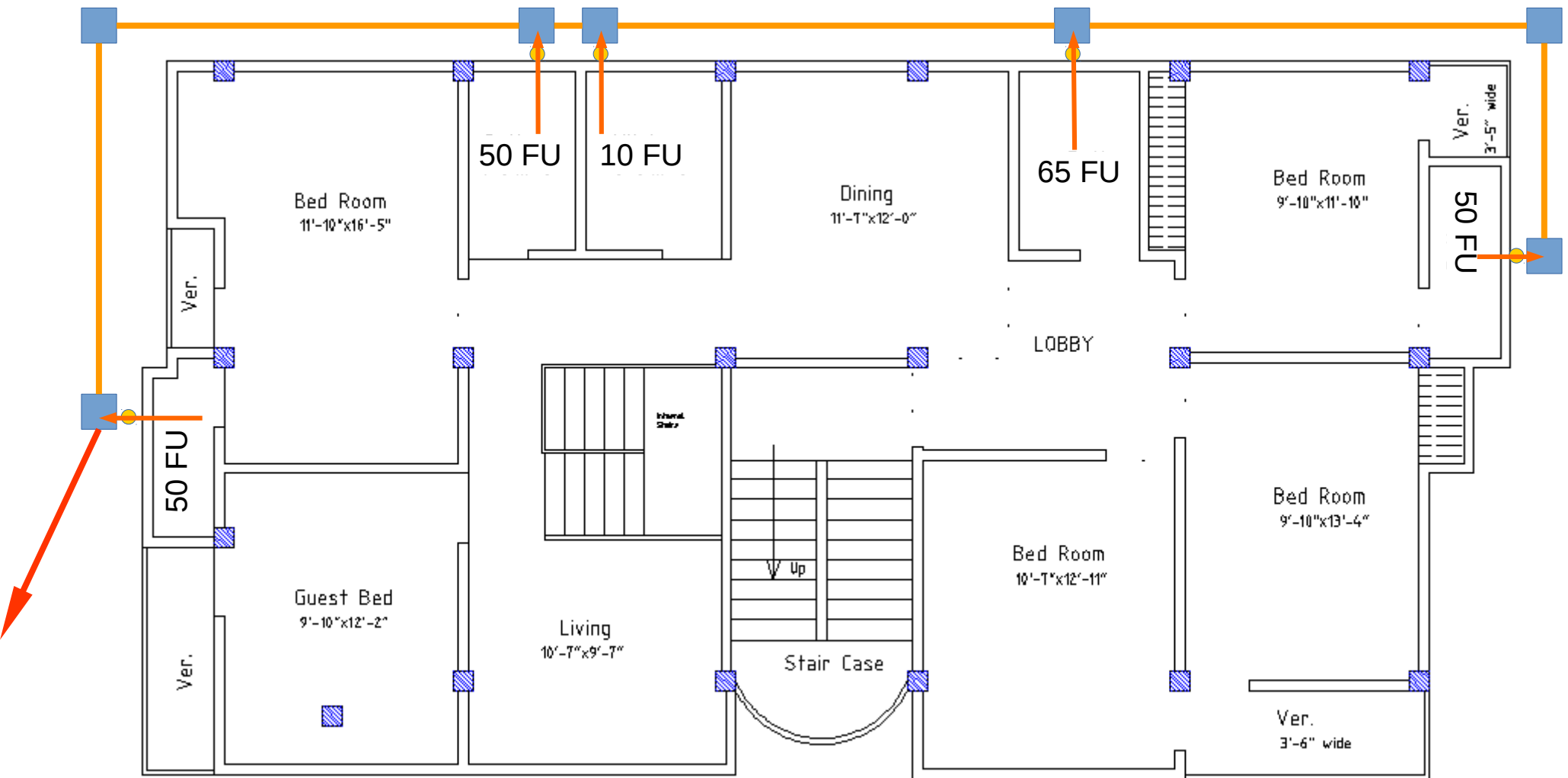


Plan of a toilet unit



Elevation of a building

# Building wastewater system: Design





# Building wastewater system

Mathematical Problem to  
Design building Drain  
Follows in the next lecture.

