

Urban Flood

Question(1):What are the causes of urban flood?

Question(2):What are the possible solutions of urban flood?

2 important terms:

(1)Volume of water

(2)Peak of flow

Civil engineering importance of run-off: Urban flood

(Means water clogging for certain period)

Peak of flow: If 5 inch water is clogged on a road for 24 hours daily life of the citizens would be disrupted. Even the clogging lasts for 1 hour the problem will be less acute. So time is a factor. What is the volume? What is the time? Speed of flow determines how much time will be taken to drain away the water. If we can drain the water at a large speed we can solve the problem more efficiently and promptly. But if it takes a significant period of time the problem will persist for a long period of time.

SUB-SURFACE RUN-OFF: Through the unsaturated layer. Fast, but lower than surface run-off.

Ground Water flow: It does not always mean that water will flow from GWT to the channel. In real world the scenario can be different if the channel is at high level.

Again urban flood: The surface runoff is meant as urban flood. Drainage is the process of dewater the clogged surface run-off. If the whole urban area is covered with buildings and roads there is no scope of infiltration and percolation. So, we will have to design drainage system to drain away the 100% surface run-off portion. But if I theoretically allow 70% water to infiltrate and 30% remains on the surface, 70% problem is solved. So, to ensure estimated infiltration and percolation we will have to ensure uncovered land. So we will have to ensure the proper proportioning of surface run-off, sub-surface run-off and ground water flow. Proper planning is necessary along with dam, bare or uncovered land. In Bangladesh most of the city infrastructures are developed by the real estate sector. So when they buy a land costing up to Tk. 20,000 per square feet then they try to use the every single inch. According to RAJUK, the controlling body of the house authority, every single house must keep a specified amount of bare land around its surroundings. It has enacted some laws such as FAR (Floor Area Ratio) which implies, a house

having a specified area at the ground must maintain some specified bare land depending on the size of the house, nearby infrastructures such as roads, market, building etc. So, every structure should be planned so that there exists adequate bare land so that the water can be properly infiltrated, percolated and drained through it's own area (This is a possible solution of urban flood).

The city Dhaka is surrounded by the river Buriganga. Again we assume that all the water that flows through surface run-off reach at Buriganga. If there is enough free space to infiltrate let we assume that 30% of precipitated water will flow as surface run-off and rest of the water (70%) will infiltrate through the uncovered land and ultimately reaches at Buriganga . The portion of surface run-off reaches the river at first .In the meantime the infiltrated portion also reaches the river. By this time the percolated ground water flow also meets the river. All the water portion flows from upstream to the downstream. So, whole of the water can pass through the river safely due to arrival of the flows at different times. This is the engineering solution. The whole volume of water is drained at different times. So the engineering planning should be such that for example 40%of water passes through surface run-off, 30% through sub surface runoff and rest of the 30% through ground water flow.