

**5-Day Training Workshop
On
“Flood Mitigation”**

Title: Flood Proofing

On: February 17, 2010

At: Islamabad

Organized By: NDMA-UNDP

Sequence of Lecture

- **Definition;**
- **Objectives;**
- **Types of flood proofing;**
- **Structural flood proofing;**
- **Non structural flood proofing;**
- **Flood proofing of building units;**
- **Difference between flood proofing and flood protection.**

What is Flood Proofing?

- Any combination of structural and non-structural additions, changes, or adjustments to structures which reduce or eliminate flood damage to real estate or improved real property, water and sanitary facilities, structures and their contents.
- In hydrologic terms, the process of protecting a building from flood damage on site.
- Flood Proofing is the provision of long term, non structural or minor structural measures to mitigate the effects of floods

Objectives of Flood Proofing

- To avoid the loss of human life;
- To reduce the disruption to normal activities during and after a flood;
- To provide people with the security and motivation necessary to make and sustain improvements in their economic and social welfare and achieve prosperity in an environment that frequently floods.

Types of Flood Proofing

- **Structural Flood Proofing**
- **Non structural Flood Proofing**

Structural Flood Proofing Measures

- **Raising floor levels of homesteads and industrial facilities above flood levels;**
- **Provision of refuge areas or flood shelters;**
- **Ensuring that water supplies and other health related facilities operate throughout floods;**
- **Designing roads to be above peak flood level;**

Structural Flood Proofing Measures

- **Provision of additional bridges or culverts to improve water flows through an area;**
- **Also to ensure embankments or structures are not washed away.**

Non Structural Flood Proofing Measures

- **Institutional measures to coordinate development activities related to flood control and drainage;**
- **Planning developments in flood-prone areas to take account of prevailing hydrological conditions; and**
- **Ensuring hydrological data and analysis are available to those involved with design;**

Flood Proofing of Buildings/Individual Units

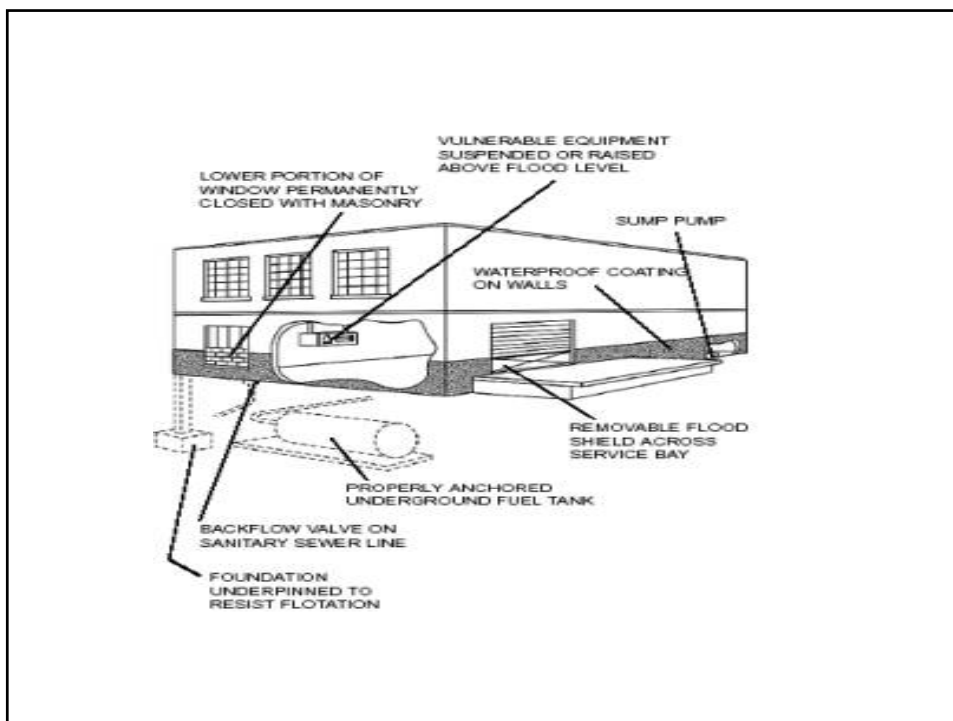
- **Some of the damages from flooding may be minimized by appropriate measures to prevent flood waters from entering properties;**
- **Such measures can include the provision of shelters to secure the building against the entry of flood waters;**
- **Construction of buildings on elevated piers or earth mounds;**
- **Construction of retaining walls around individual buildings, or the use of floodwater resistant material;**

Flood Proofing of Buildings/Individual Units

- **In areas where floodwaters are shallow and slow moving temporary walls comprised of sandbags or masonry may be used to protect individual buildings;**
- **Structures with walls and foundations which are generally impermeable to water can sometimes be made watertight by blocking doorways; and opening to a height above flood level;**

Flood Proofing of Buildings/Individual Units

- The successful exclusion of floodwater from buildings reduces flood losses and promote faster recovery from flooding;





Difference between Flood Proofing and Flood Protection

Flood Proofing: 1

- **Focused on local measures that affect:**
 - one or several households;
 - a village;
 - a small urban areas; or
 - specific infrastructure facilities

Difference between Flood Proofing and Flood Protection

Flood Protection: 1

- **Provides protection for:**
 - all social and economic activities;
 - infrastructure within larger areas ranging from a number of villages to parts of complete districts;

Difference between Flood Proofing and Flood Protection

Flood Proofing: 2

- **Successful flood proofing requires:**
 - public participation;
 - low capital inputs from either the public or private sector or combination of both;
 - a small urban areas; or
 - specific infrastructure facilities

Difference between Flood Proofing and Flood Protection

Flood Protection: 2

- **Also requires public participation but tends to require high capital investment from the public sector**

Difference Between Flood Proofing and Flood Protection

- Flood proofing is applicable both within and outside areas protected by major physical structures;
- Within all flood affected areas, there will be areas not suitable for flood protection for physical, hydrological, social or economic reasons but;
- There flood proofing can be used to reduce the damage and disruption caused by floods and improve the living conditions

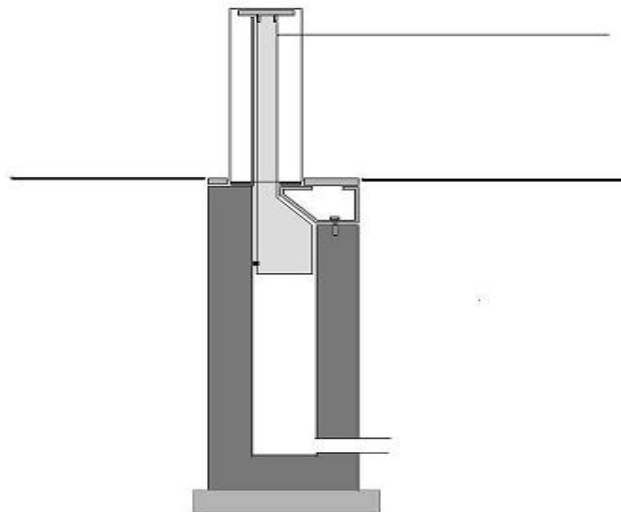
Difference Between Flood Proofing and Flood Protection

- Flood protection measures are designed to give protection against specific flood events
- Flood proofing within a protected area or in protected areas is provided for achieving stability for a longer duration from various flood events of different extremes.

Flood Proofing- Considerations & Tips

- It is most suited to areas with clay soils where floods are frequent, short in duration and less than 3 feet deep;
- Properly constructed walls in good condition should be able to withstand the pressure of 3 feet of water.
- Do not dry floodproof a building in poor structural condition.
- Do not dry floodproof a building more than 3 feet up the walls without an engineer's verification of adequate wall strength.

Complete Flood Proofing – The Netherlands







End of Presentation

Thank You