Harbours

A harbour can be defined as a sheltered area on a coast where vessels (such as ships, large boats) could be launched, built or taken for repair; or could seek refuge in time of storm; or provide space for loading and unloading of cargo and passengers.

Site Selection of Harbour

- Selected site should be safe from strong waves, the shore must be strong enough to accommodate all required equipment.
- The main harbour components such as ports, docks, terminals and the equipment associated with harbour activities should be situates accordingly so that their activities are not hindered due to misplacement.
- The harbour site should be protected and preserved against all types of pollution.
- Harbour accessibility to the waterfront (land alongside water body) from public transport access points should be integrated with the road, railway and airlines network.
- The site should have large basin with adequate depth to provide suitable condition for large vessels like ships.
- The site should have low tidal range and small tidal currents.

Harbours are broadly classified as:

- Natural harbours
- Semi-natural harbours
- Artificial harbours
- Military harbours
- Refuge harbours
- Commercial harbours

Natural harbours:

- It refers to the place where the surrounding land area on the coast is convenient and there is an elevated part of the land which protects the body of water
- With the rapid development of navies engaged either in commerce or war, improved accommodation and facilities for repairs, storage of cargo and connected amenities had to be provided in natural harbours.
- The size and draft of present day vessels have necessitated the works improvement for natural harbours.
- The factors such as local geographical features, growth of population, development of the area, etc. have made the natural harbours big and attractive. Bombay, Marmagao and Kandla are, examples of natural harbours.

Semi-natural harbours:

- This type of harbour is protected on sides by headlands protection and it requires man-made protection only at the entrance.
- Vishakhapatnam is a semi-natural harbour.

Artificial Harbours:

- These are generally built as river ports/ seaport based on the need and at any favourable water body location. The harbours are built by artificially constructing large structures that provide suitable anchorage and deep water, such harbours are called artificial or man-made harbours.
- Examples- Tuticorin seaport of Tamil Nadu.

Military Harbours:

- These are situated near any naval base in which military vessels and their armoury can be received, stored and dispatched.

Refuge Harbours:

- It provides shelter to ships during bad weather.
- It is located at place where adequate depth of water available which provide good anchorage.

Commercial Harbour:

- It provides large storage capacity, large space for exchange of cargo, and sufficient fuel capacity tankers.

Layout of Harbour

A typical layout of harbour is shown above which consist of following components

- **Berth:** It is a place in the dock which is constructed to manoeuvre ships. This place can also be used for a ship to dock or anchor during exchange of cargo.

- **Pier :** A large platform extending from a coast or shore over water which is supported by pillars or piles, used to secure, protect and provide multipurpose activities associated with ships or boats
- **Breakwater or Mole:** It is a stone or concrete made barrier which is built into a body of water to protect a coast of harbour against the force of tides.
- **Jetty:** These are the structures in the form of piled projections and they are built out from the shore to deep water. It protects harbour against tides.
- **Wharf:** The place at which ships tie up for docking. It is an artificially made fixed reinforced platform where ships are loaded and unloaded.

Ports

- The term port is used to indicate a harbour where terminal facilities, such a stores, landing of passengers and cargo, etc. are available.
- a harbour consists of the waterways and channels as far as the pier head lines and a port includes everything on the landward side of those lines i.e. piers, slips, sheds, tracks, handling equipment, etc.

Classification:

Depending upon the location, the ports can be classified as:

- Canal ports
- River ports
- Sea ports

Requirements of good ports:

- It should get good tonnage i .e. charge per tonne of cargo handled by it.
- It should have good communication with the rest of country.
- It should be populous

- It should be advance in culture, trade and industry.
- It should be a place of defence and for resisting the sea-borne invasion.
- It should afford shelter to all ships and at all seasons of the years.

Docks

A dock is an artificial basin for the use of vessels. It is an area of water between two piers or alongside a pier that is used for loading, unloading and repair of ships.

Classification:

1. **Dry dock:** It is provided with dock gates so that the water in it can be emptied and allowed investigation, repair and maintenance of the underwater parts of the ships.
   The unique construction allows the water to be filled up in an area, also known as a lock so that vessels can be manoeuvred in and out of the area. Once the vessel enters the dry dock, the gates are closed and the seawater is drained out.

2. **Wet or impounding dock:** In this type of dock the water is impounded (enclosed) by dock gates so that ships remain afloat at low tide and exchange of cargo takes place. The lock and gate system facilitates maintenance of a constant level of water and allows passage of ships.

Inland waterways

Inland water transport consists of transport by rivers, canals and lakes.

Advantages:

1. Low Cost:

Rivers are a natural highway which does not require any cost of construction and maintenance. Even the cost of construction and maintenance of canals is much less or they are used, not only for transport purposes but also for irrigation, etc. Moreover, the cost of operation of the inland water transport is very low. Thus, it is the cheapest mode of transport for carrying goods from one place to another.

2. Larger Capacity:

It can carry much larger quantities of heavy and bulky goods such as coal, and, timber etc.

3. Flexible Service:

It provides much more flexible service than railways and can be adjusted to individual requirements.

4. Safety:

The risks of accidents and breakdowns, in this form of transport, are minimum as compared to any other form of transport.

Disadvantages:

1. Slow:

Speed of Inland water transport is very slow and therefore this mode of transport is unsuitable where time is an important factor.

2. Limited Area of Operation:

It can be used only in a limited area which is served by deep canals and rivers.

3. Seasonal Character:

Rivers and canals cannot be operated for transportation throughout the year as water may freeze during winter or water level may go very much down during summer.

4. Unreliable:

The inland water transport by rivers is unreliable. Sometimes the river changes its course which causes dislocation in the normal route of the trade.

5. Unsuitable for Small Business:

Inland water transport by rivers and canals is not suitable for small traders, as it takes normally a longer time to carry goods from one place to another through this form of transport.