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Construction Material

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BUILDING STONES

CONSTRUCTION MATERIAL

- THE MATERIAL WHICH IS USED FOR THE CONSTRUCTION WORK IN ITS ORIGINAL FORM IS KNOWN AS CONSTRUCTION MATERIAL.

STONES

Stones and their types

Igneous Rocks



basalt



gabbro



granite



obsidian



pumice

Sedimentary Rocks



breccia



conglomerate



limestone



sandstone



shale

Metamorphic Rocks



gneiss



marble



metaquartzite

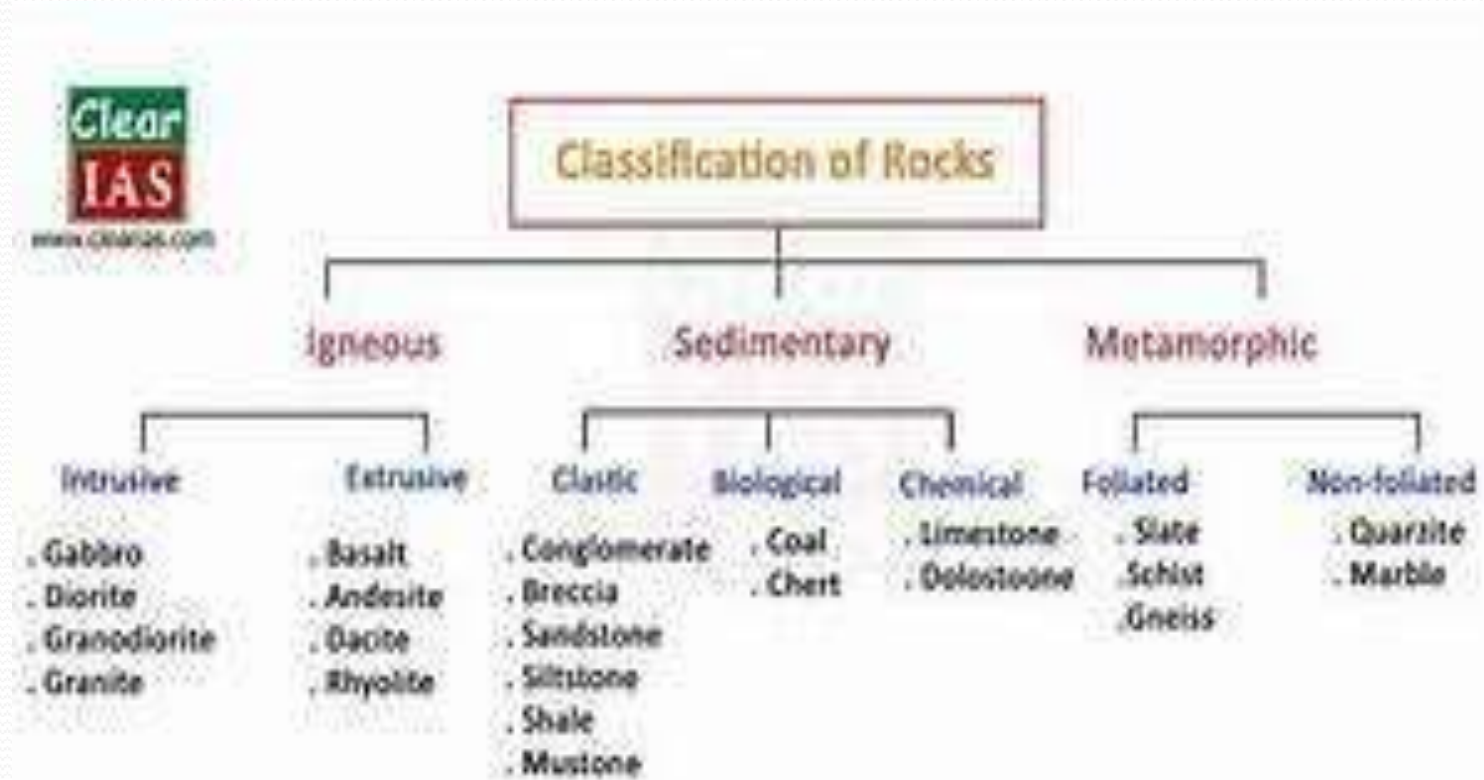


schist



slate

CLASSIFICATION OF ROCK



QUARRYING OF STONE

- THE PROCESS OF TAKING OUT STONE FROM NATURAL ROCK BEDS IS KNOWN AS QUARRYING OF STONE .

METHOD OF QUARRYING



QUARRYING
WITH
HAND
TOOLS



QUARRYING BY USE OF CHANNELLING MACHINES



QUARRYING BY BLASTING



DRESSING OF STONE

A QUARRIED STONE HAS ROUGH SURFACE SO THEY ARE DRESSED TO OBTAIN A REGULAR SHAPE



SOME COMMON TESTS ON BUILDING STONE

- ACID TEST
- CRUSHING TEST
- SMITHS TEST
- WATER ABSORPTION TEST

WALL

1. Purpose of wall
2. Classification of wall-Load bearing & non-load bearing, Dwarf, Retaining, Breast wall partition wall
3. Classification of wall as per material construction- Brick, Stone, Reinforced concrete, Reinforced brick, Precast, hollow, solid concrete block & Composite masonry wall
4. Partition wall: Brick partition, Hollow block, Glass partition, Concrete, Plaster, A.C or G.I sheet, Timber partition
5. Mortar: Types & Its preparation

WALL

- It is a structure define an area carries a load or provides shelter or security. There are many kinds of wall.
- Eg: Brick wall, stone wall, pre- cast wall etc.

OF WALL

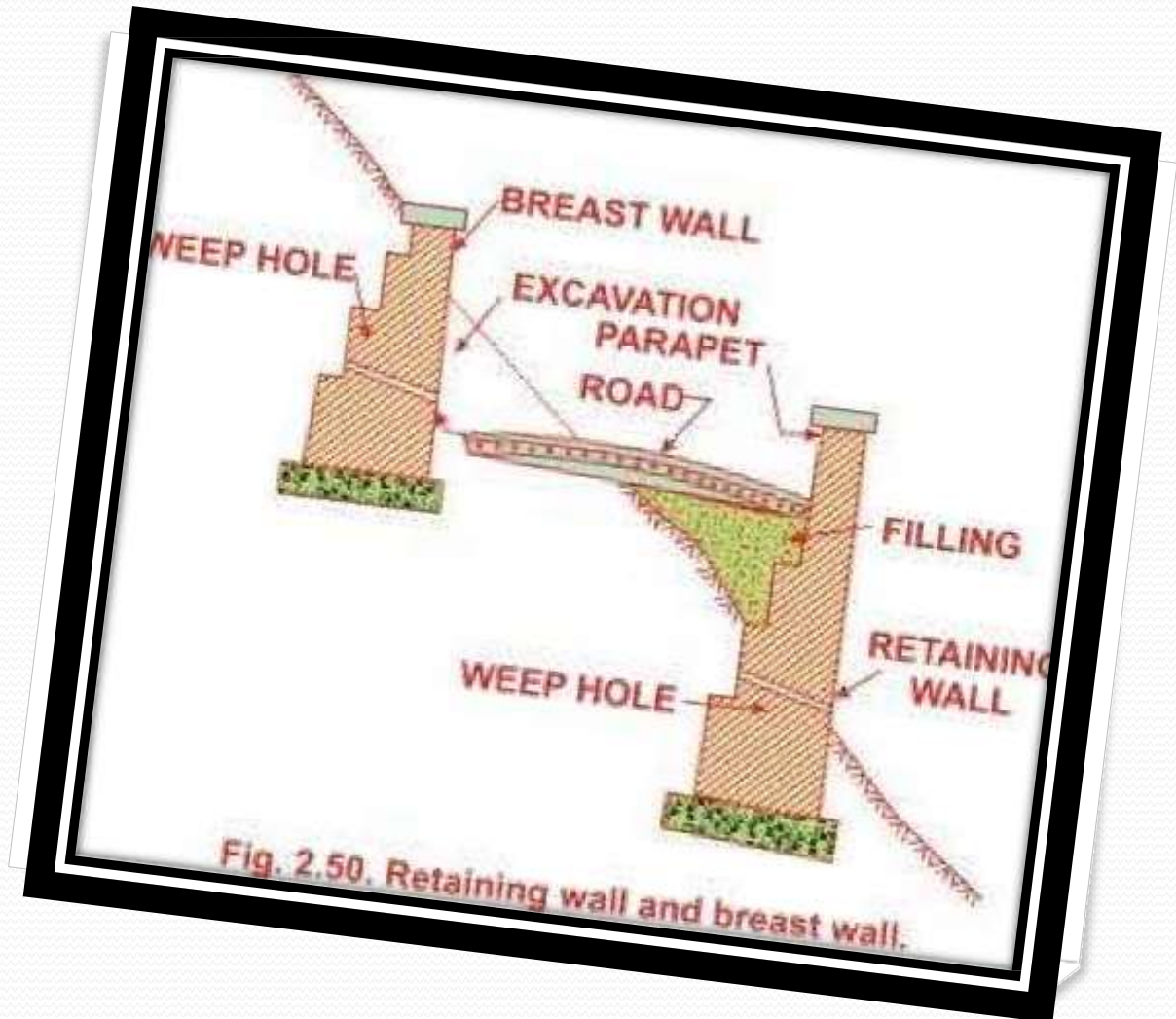
- These are used to divide the available space of the building
- These afford security from bad elements
- Privacy
- Support
- Protection against heat, cold, sun etc.

CLASSIFICATION OF WALL

- **Load bearing wall:** A wall which is constructed to support above slab or load including their own load is known as load bearing wall.
Example: masonry wall, precast concrete wall etc.
- **Non load bearing wall:** The wall which serve as screen for privacy and does not take any load except their own load called non bearing wall.
Example : partition wall
- **Retaining wall:** Retaining wall is a structure stand off to protect freshly cut or old surface of a natural hill. Retaining wall is provided to the down side of the road.
- Retaining wall used for support artificial cutting.

BREAST WALL

- Breast wall is a structure stand off to protect freshly cut or old surface.
- Breast wall is provided to the upper side of the road in hilly area.
- Height of breast wall should not exceed 3m.



CLASSIFICATION OF WALLS PER MATERIAL

- **Brick wall:** Wall constructed of bricks are called brick or brick masonry wall.
- **Stone wall:** Wall constructed of stone are called stone wall.
- **Reinforced Brick wall:** It is a type of wall, brick masonry is strengthened by providing mild steel flats, hoop iron or bars.

REINFORCED CONCRETE WALL

- Wall constructed of reinforced concrete are called reinforced concrete wall. Reinforcement is provided before placing concrete or after placing concrete, such wall constructed as retaining wall.

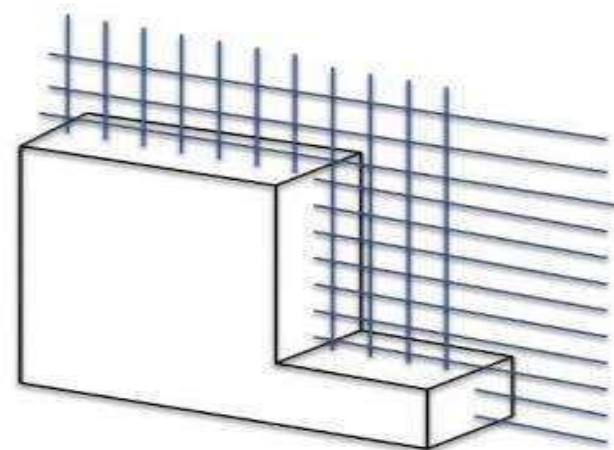


Fig. 1 A reinforced concrete wall

PRECAST HOLLOW CONC.BLOCK WALL

- In this wall concrete blocks are used.
- These are stronger than bricks, no. of joints are less.



PARTITION WALL

- It may be defined as a wall built of brick, studding, glass or other material provided for the purpose of one room or portion of a room from another. It is a type of non-load bearing wall.

Types of partition wall-

- Brick
- Hollow block
- Glass
- A.C or G.I sheet
- Timber Partition
- ETC.

Requirements of a good partition wall-

- It should be cheap.
- It should be light in weight.
- It should be fire resistant.
- The section of wall should be thin.



MORTAR

- Mortar is a plastic mixture of binding material (Like: Cement, Lime, Mud etc.) Fine aggregates & water.

Function of mortar:

- To bond bricks or stone in the construction of brick or stone masonry.
- To distribute the load uniformly on the lower layers.
- To cover exposed surfaces of wall & joints with plaster or pointing to provide smooth, hard surface.
- To fill empty joints by grouting.

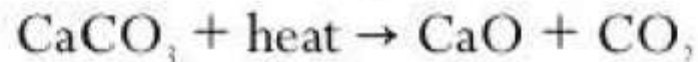
CLASSIFICATION OF MORTAR

Cement mortar:

- The paste is prepared by mixing cement and sand in suitable proportions in addition to water.
- The general proportion is 1 part of cement to 2-8 parts clean sand.
- These mortars must be use within half an hour, i.e.; before initial setting time of the cement.
- This type is used for all engineering works where high strength is desired such as load bearing walls, deep foundations, flooring etc.

LIME MORTAR

- **Lime mortar** is a type of mortar composed of lime and an aggregate such as sand, mixed with water.
- Lime mortar is primarily used in the conservation of buildings originally built using lime mortar, but may be used as an alternative to ordinary portland cement.
- A **lime kiln** is used to produce quicklime through the calcination of limestone (calcium carbonate).



SPECIAL MORTAR

- Mud mortar
- Cement clay mortar
- Light & heavy mortar
- Decorative mortar
- Fire resistance mortar
- Plasticized mortar
- Latex-based polymer SBR (Styrene butane rubber)

PREPARATION OF MORTAR

*Mortar is prepared in the following way

- First, Clean dry sand is spread in a uniform layer on pucca platform . On it the requirement quantity of cement is uniformly spread . Then the whole mass is mixed dry with the help of spades till the whole mass become uniform in color.

Then a depression is made in the middle of the mass & the required quantity of water is added . It is done gradually till the water is completely absorbed by the dry mass. Care is taken not to let the water flow out. The wet mass of mortar is then worked with spades to have a mortar of uniform consistency.

When mortar is required in large quantity, it is prepared by mixing in mechanical mixers. Normally, a pan mixer is used for mixing the mortar. The mixed mortar is then poured out for use. Mortar should be tested for crushing strength, adhesiveness, setting time & tensile strength.

THANK YOU

