Scaffolding & Underpinning
Scaffolding

- Definitions
  - It’s a temporary structure to provide a platform at different levels of a building for workers and Materials.
  - It is used when height of wall or column or other structural member of a building exceeds about 1.5m.
Component Parts

- **Standards**:- These are vertical members of the frame work, supporting on the ground or embedded into the ground.

- **Ledgers**:- these are the horizontal members, running parallel to the wall.

- **Braces**:- These are diagonal members fixed on standards.
Component Parts

- **Putlogs:** These are the transverse members, placed at right angles to the wall with one end supported on ledgers and other end on the wall.

- **Boarding:** These are horizontal platform to support workmen & material; these are supported on putlogs.

- **Guard Rail:** This is a rail, provided like a ledger, at the working level.
Components Parts

FIG. 18.8. BRICK LAYERS SCAFFOLDING.
Scaffolding
Definition

- **Scaffold**
  - It is the temporary support system provided for the construction & maintenance purposes.
  - It consists of supports and a working plate form for workers and Materials.

- **Scaffolding**
  - Method of construction of scaffolds is called scaffolding.
Types of Scaffolding

- Following are the types of scaffolds
  1. Single Scaffolds
  2. Double Scaffolds
  3. Ladder Scaffolds
  4. Cantilever Scaffolds
  5. Suspended Scaffolds
  6. Steel or Tubular Scaffolds
Single Scaffolds

- It consists of Standards, Putlogs, Ledgers, Wooden boards, Braces.
- Used for Ordinary Buildings.
- It is also known as Brick-layers Scaffolding.
- It is commonly used for brick-laying and also called putlog scaffolding.
Single Scaffolding

1.2 m
Single Scaffolding
Double Scaffolding

- It consists of two rows of standards.
- The first row is placed at 20 to 30 cm away from the wall, while the other frame work is placed at 1 m distance from first one.
- Raking shores are provided.
- Used for superior works.
- It is also called as Independent Scaffolding.
Double Scaffolding

WALL

STANDARDS

SHORING

PUTLOGS

LEDGERS

G.L.
Double Scaffolding
Cantilever Scaffolding

- It consists of cantilever, standards, putlogs.
- It is used under following circumstances:
  - Ground is weak to support.
  - Construction of upper part of the wall is to be carried out.
  - It is required to keep the ground, near wall, free for traffic.
Cantilever Scaffolding
Cantilever Scaffolding
Suspended Scaffolding

- It consists of:
  - Ropes
  - Working platforms
Ropes can be raised
Manually or mechanically
Used for light construction
and finishing works of multistory buildings.
Suspended Scaffolding
Steel or Tubular Scaffolds

- It consists of
  - Steel tubes (1-1/2” – 2-1/2” diameter)
  - Coupler or Clamps (to hold pipes in different positions)
  - Prop nuts (to hold single pipes)
  - Bolts, Nuts & washers
  - Wedge & Clip
Scaffold pipes
Coupler or Clamps
Scaffold fittings

Double coupler

Swivel coupler

Putlog clip

Base plate
Scaffold fittings

Typical steel scaffold fittings
Prop nuts, clamp and fasteners
Wedge & Clip
Under-Pinning

• Definition:-

The process of placing a new foundation under an existing one or strengthening an existing foundation is called as Underpinning of foundations.
Purposes

- To strengthen the shallow foundation of existing building when a building with deep foundation is to be constructed adjoining it.
- To strengthen the existing foundation which has settled and caused cracks in the wall.
- To deepen the existing foundation (resting on poor strata so as to rest it on deeper soil strata of higher bearing power.
- To construct a basement in the existing building.
Methods

• Pit Method
• Pile Method
Pit method

- Old wall is supported by a bearing plate, steel beam and jacks.
- Excavation up to new depth is carried out.
- Foundation is provided.
- P.C.C (1:2:4) is provided for new foundation.
- For proper joint b/w old and new work, strengthening and to avoid settlement vertical steel bars may be added.
Pile method

- Piles are driven at regular interval.
- Piles are connected by concrete or steel needles, penetrating through wall.
- These beam incidentally act as pile cap.
- Used in clayey soil & water logged areas.