

**Underground Mining of Metalliferous deposits**  
**Professor Bibhuti Bhusan Mandal**  
**Department of Mining Engineering**  
**Indian Institute of Technology, Kharagpur**  
**Lecture 35**  
**Room and Pillar Mining – I**

**ROOM AND PILLAR METHOD-AN OVERVIEW**

- **Room-and-pillar (R&P)** is a mining method whereby a series of rooms (horizontal openings) is extracted, leaving pillars of ore or rock in place between the rooms.
- The pillars of ore are left to support the overlying rock

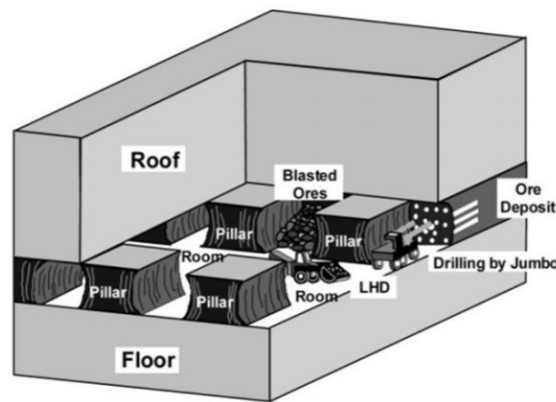


Figure 1. Room and pillar method of working

- The objective of design is to extract the maximum amount of ore that is compatible with safe working conditions.
- The ore left in the pillars is usually regarded as irrecoverable or recoverable only with backfill.
- In this case backfill costs or the potential loss of valuable resource may be a limiting factor in room and pillar mining at greater depths.

**Applicability**

This method is used where the width of ore body is between 3 to 4.0 m to even 18-20 m. With multiple passes there are instances of mining 90 m thick orebody.

- **Host rock/Hangwall:** moderate to strong
- **Orebody:** weak to moderate
- **Dip:** Low(<35 degrees), preferably flat
- **Deposit shape:** Massive, tabular

- **Deposit size:** large extent – not thick
- **Ore grade:** Moderate

**Features:**

- Generally low recovery of resource as pillars needs to be left (40-60%)
- Moderately high production rate
- Recovery can be improved with pillar extraction (60-80%) but caving and subsidence will occur
- Suitable for total mechanization, not labour intensive
- High capital cost associated with mechanization
- Versatile for variety of roof conditions

**Development:**

- In-stope raises – minimum two as per the regulation, so that one raise acts as a ventilation intake raise and the other the return. (eg. 2 x 2 m raise dimension)
- The level interval decides the width of the stope - that is the length between the upper and lower level.(eg. 30 – 60 m level interval)
- The length of the stope, i.e the distance between the terminal raises of a stope; it is also known as the block size and it is usually as per the grade value of the ore deposit. (eg. 60m – 100m)
- Ore draw point development. – Ore drawing is based on the degree of mechanization of the mine. Eg. The ore-drawl in UCIL mines is by LHD (load Haul Dumpers) and LPTD (Low Profile dump Trucks).

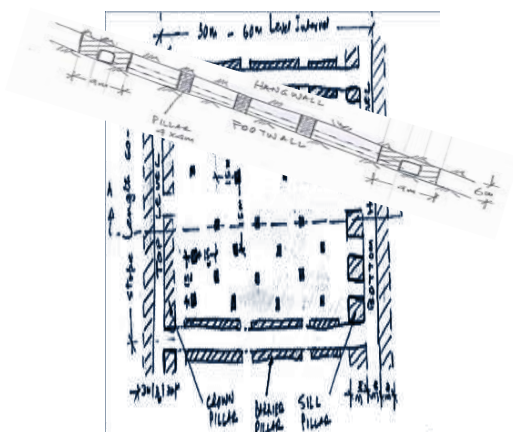


Figure 2. Room and pillar method- Development