

Obtaining Map & Survey

Basic of Maps and Sections

Stope, Tunnel, Borehole Surveys

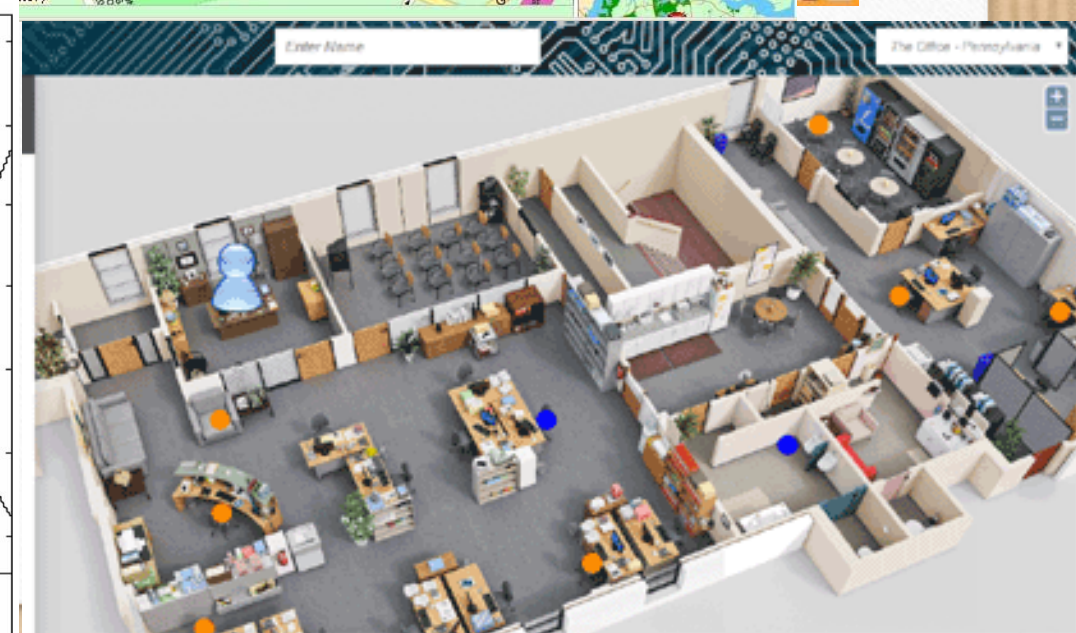
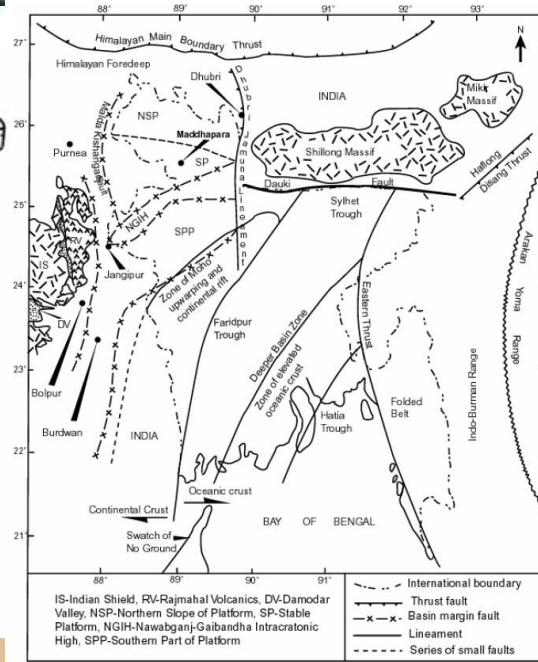
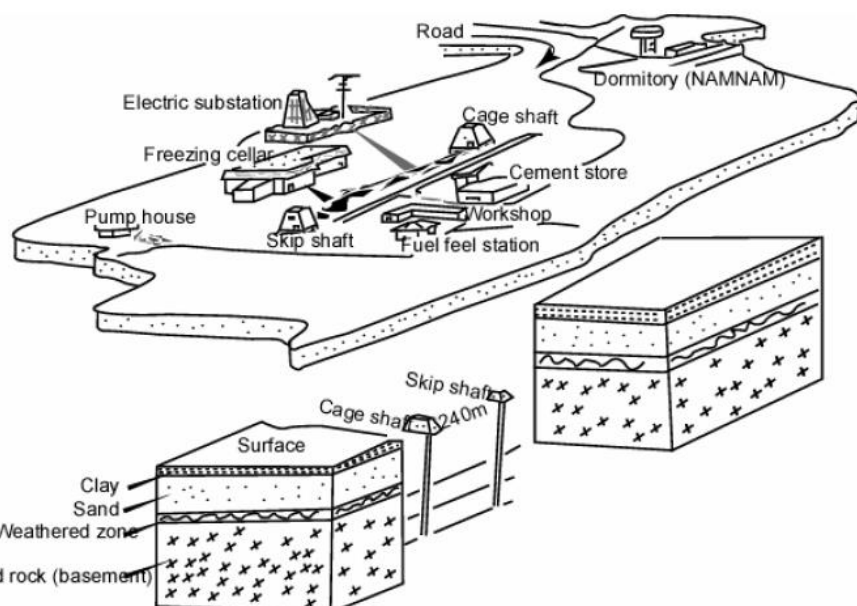
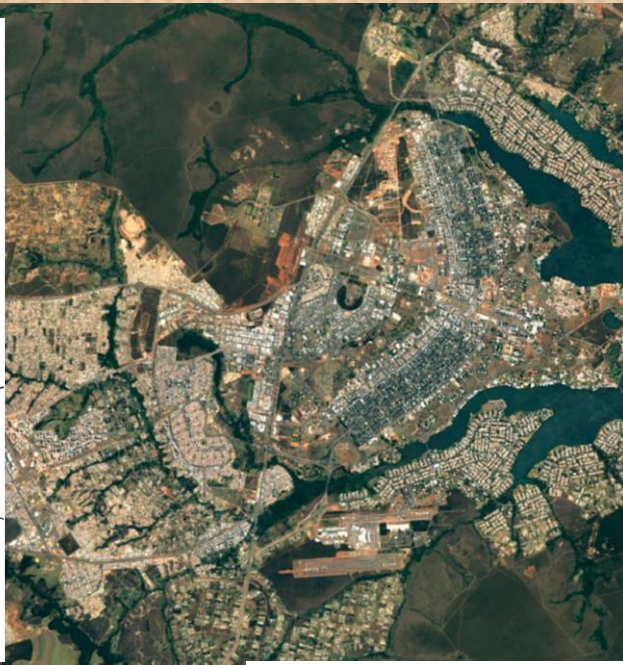
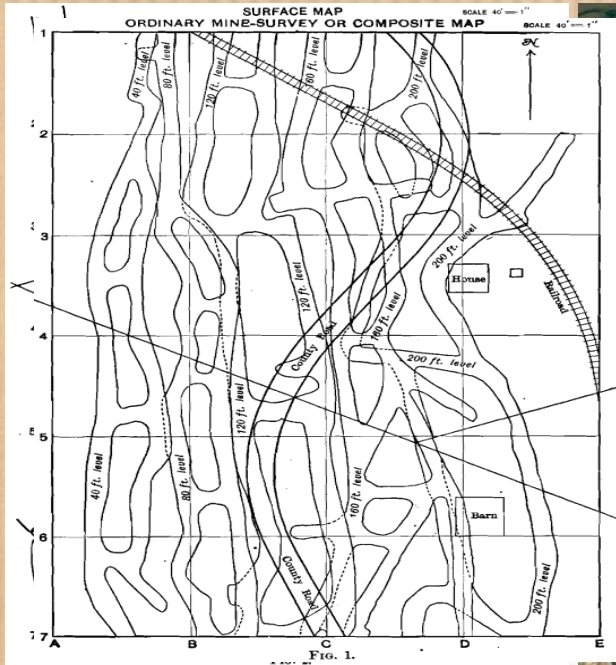
Coal Mine (UG) and Open-pit Surveys

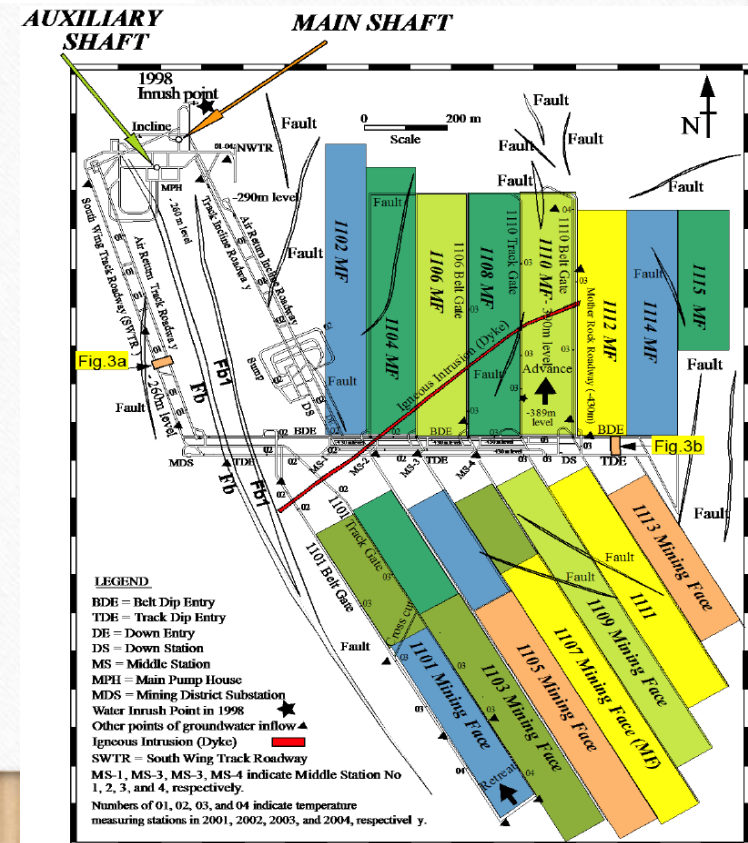
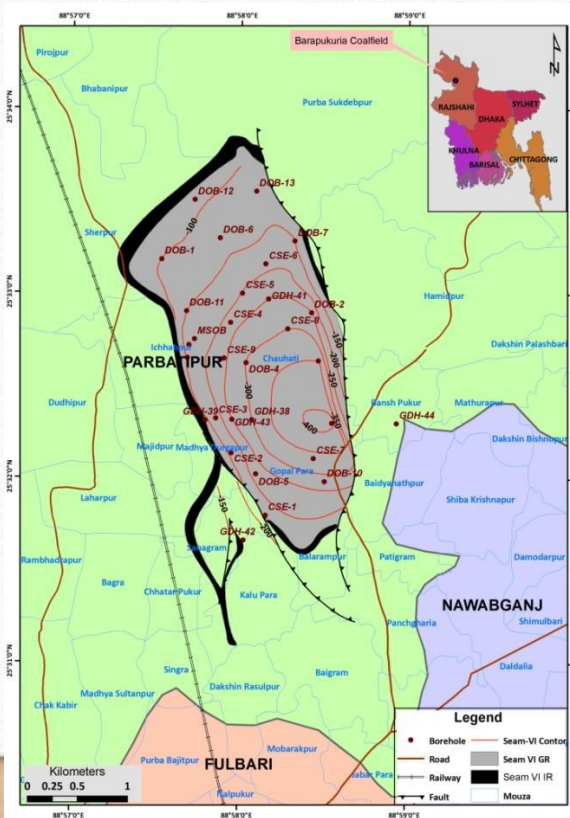
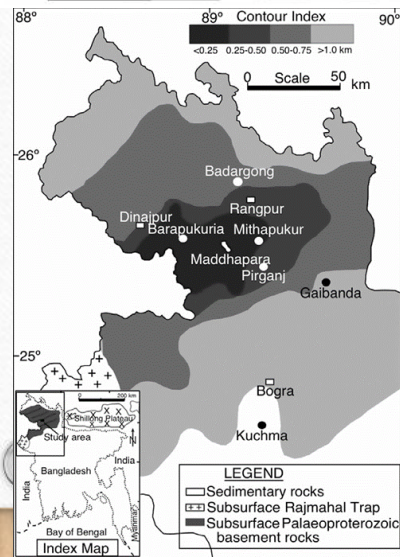
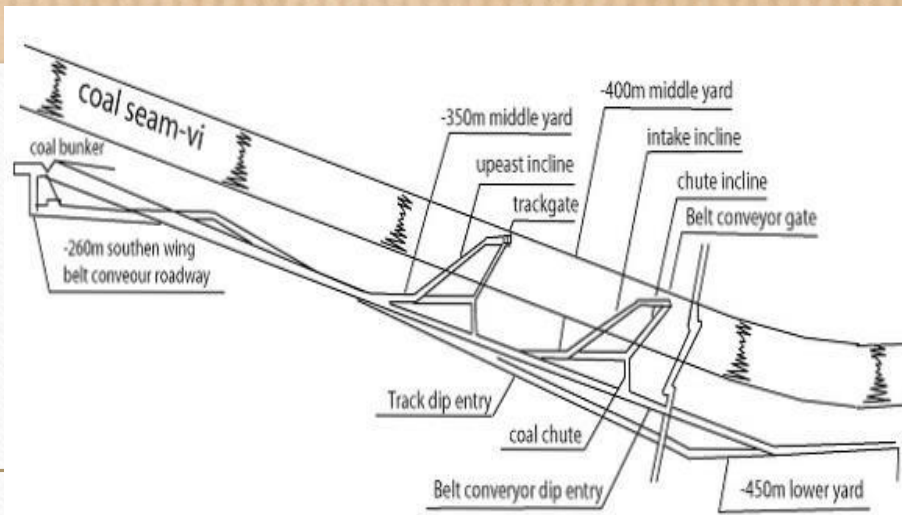
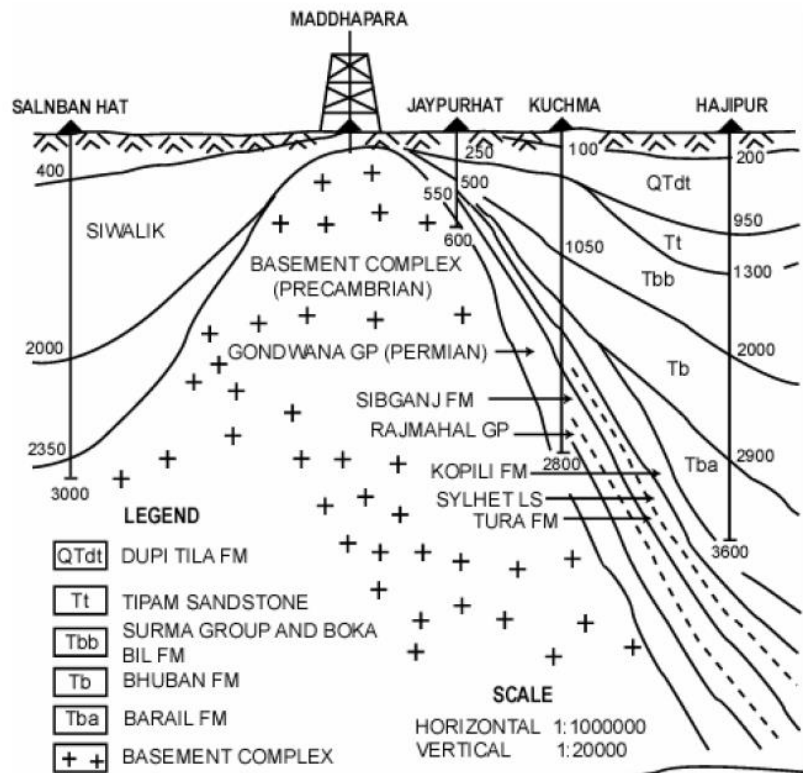
Maps

- **A mine map** represents pictorially the result of survey. Depending on the scale used, part or all of the survey is represented on the sheet.
- The maps of our large mines are usually prepared with the greatest care. The mine management is interested in number of different maps, each of which serves a definite purpose.

Usually the following are available:

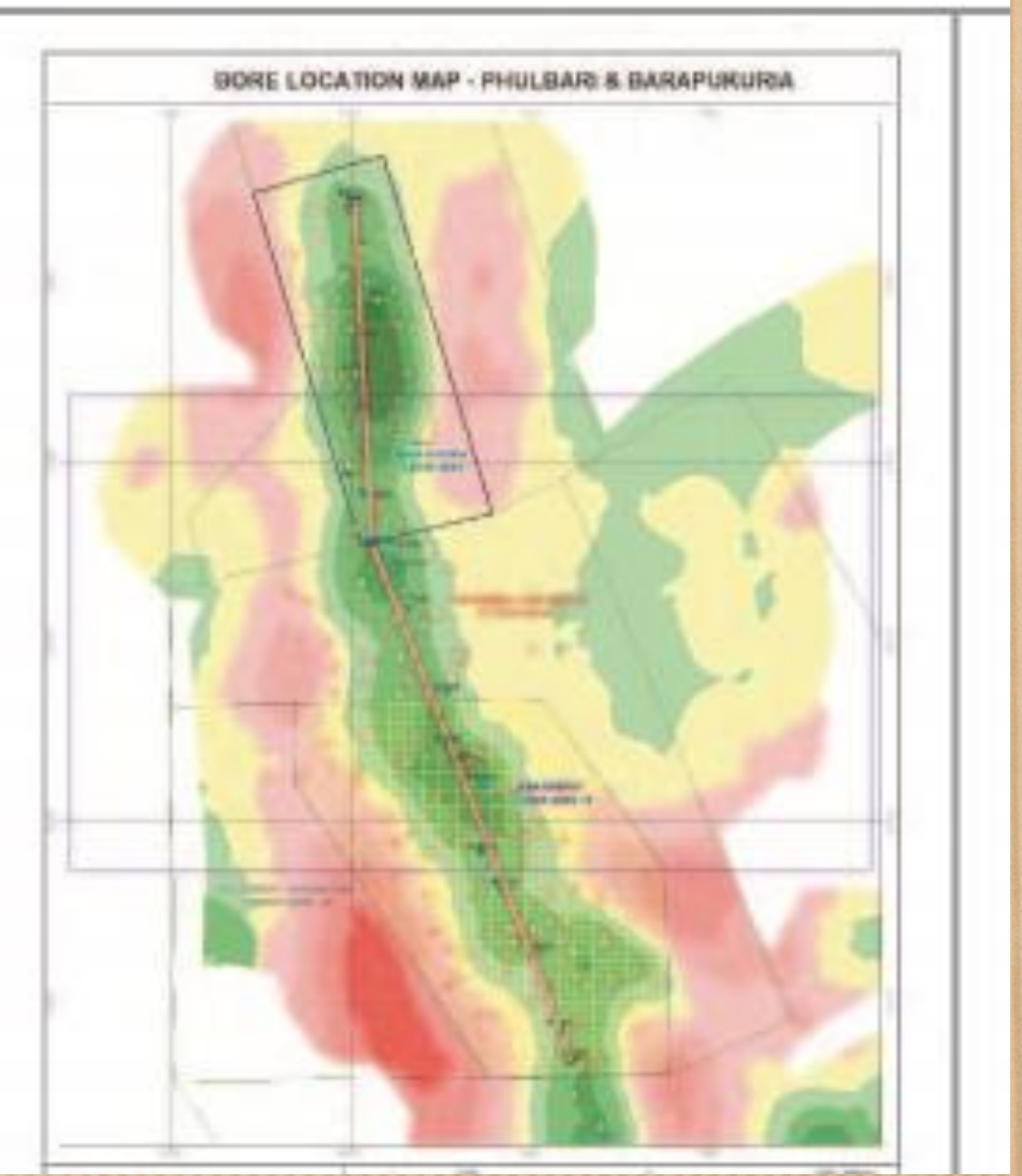
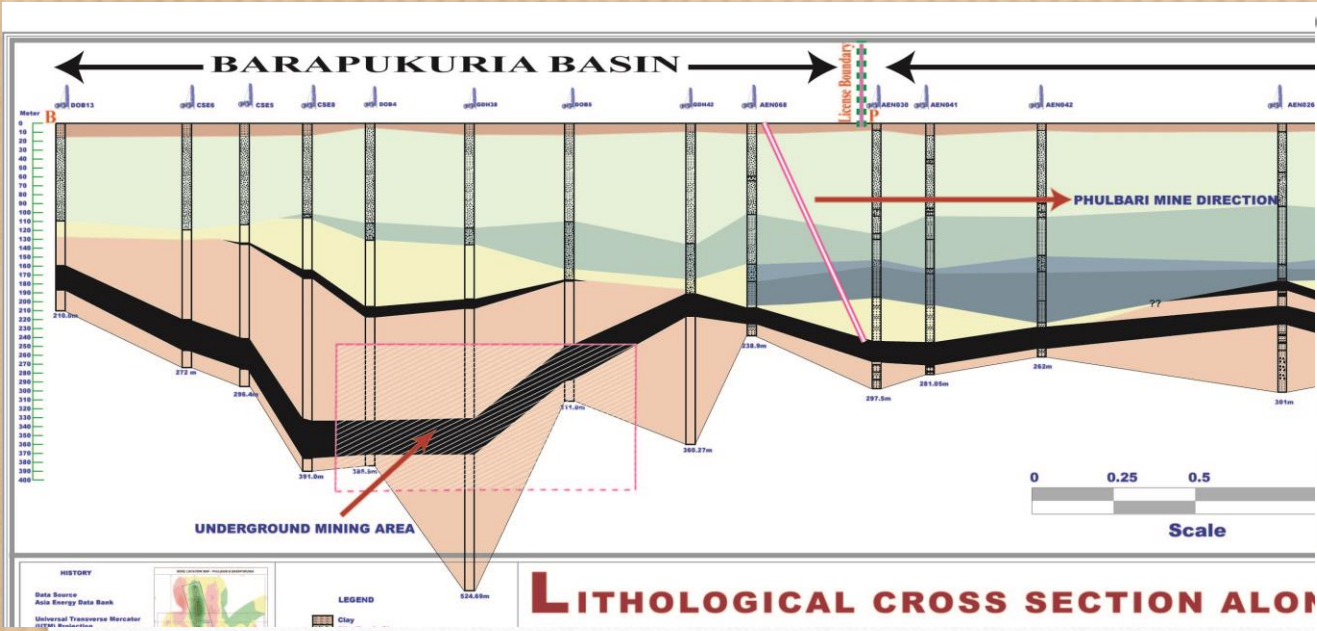
- 1. A map of the surface property**
- 2. A map showing improvements-building, facilities, roads etc.**
- 3. A topographic map**
- 4. A surface geologic map**
- 5. A head-office map**
- 6. A map of underground workings**
- 7. A map used exclusively for plotting UG geology**
- 8. An assay map**
- 9. A Ventilation map**



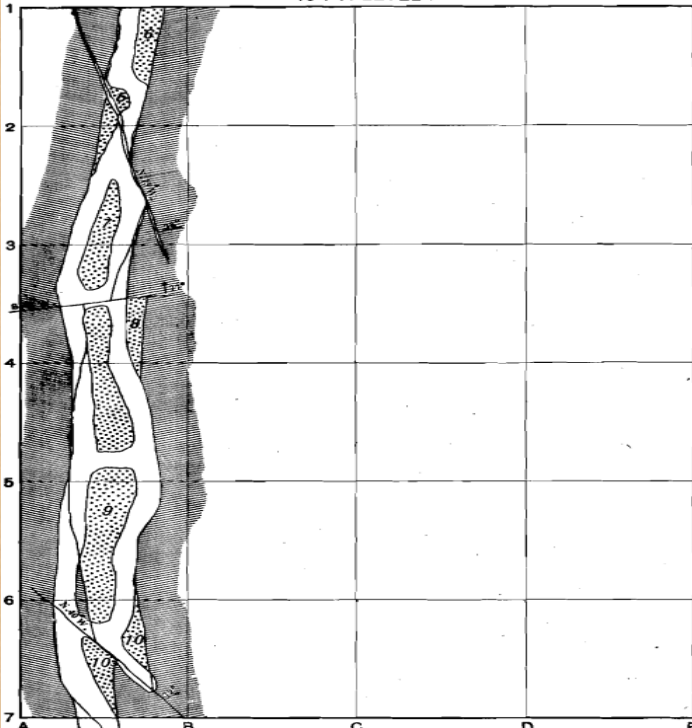


Sections

- **By a section** is meant a vertical cut or projection through mine workings along a specific line.
- It could be through a line of number of drilling well to prepare (cross)-section map.



40 FT. LEVEL



LEGEND

		
FOOT-WALL	ORE	HANGING-WALL

FIG. 3.

200 FT. LEVEL

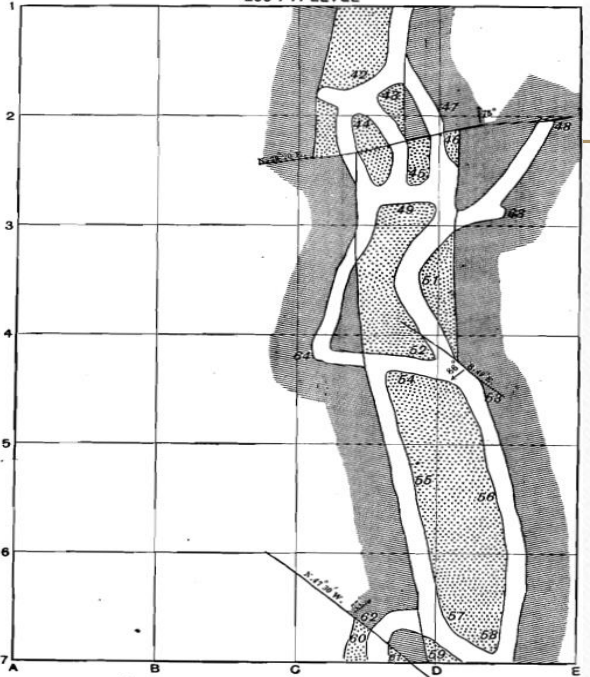
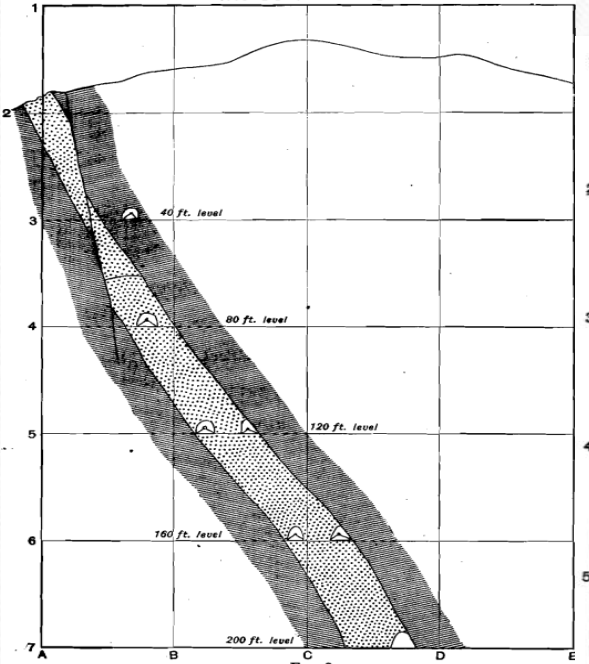


FIG. 7.

VERTICAL SECTION ON LINE 1



LEGEND

		
FOOT-WALL	ORE	HANGING-WALL

FIG. 8.

VERTICAL SECTION ON LINE 7

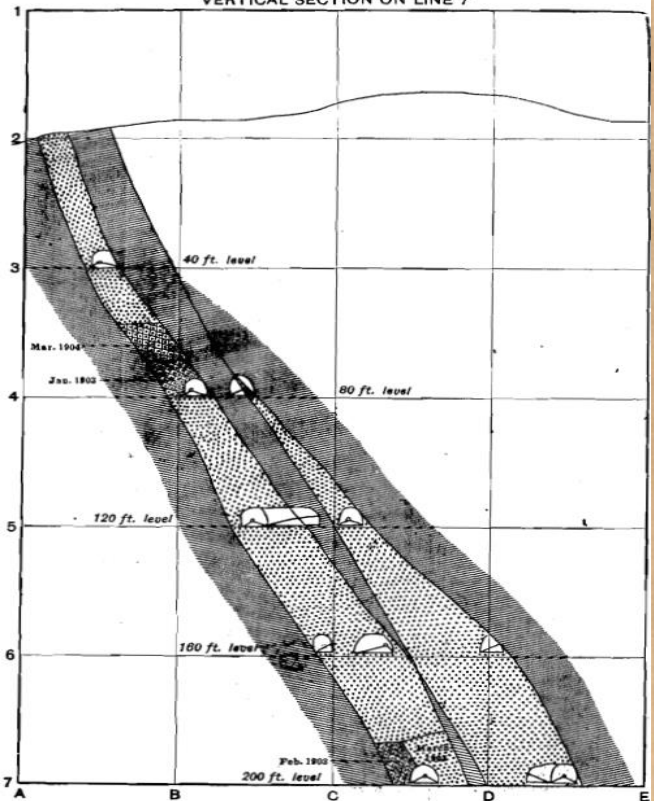
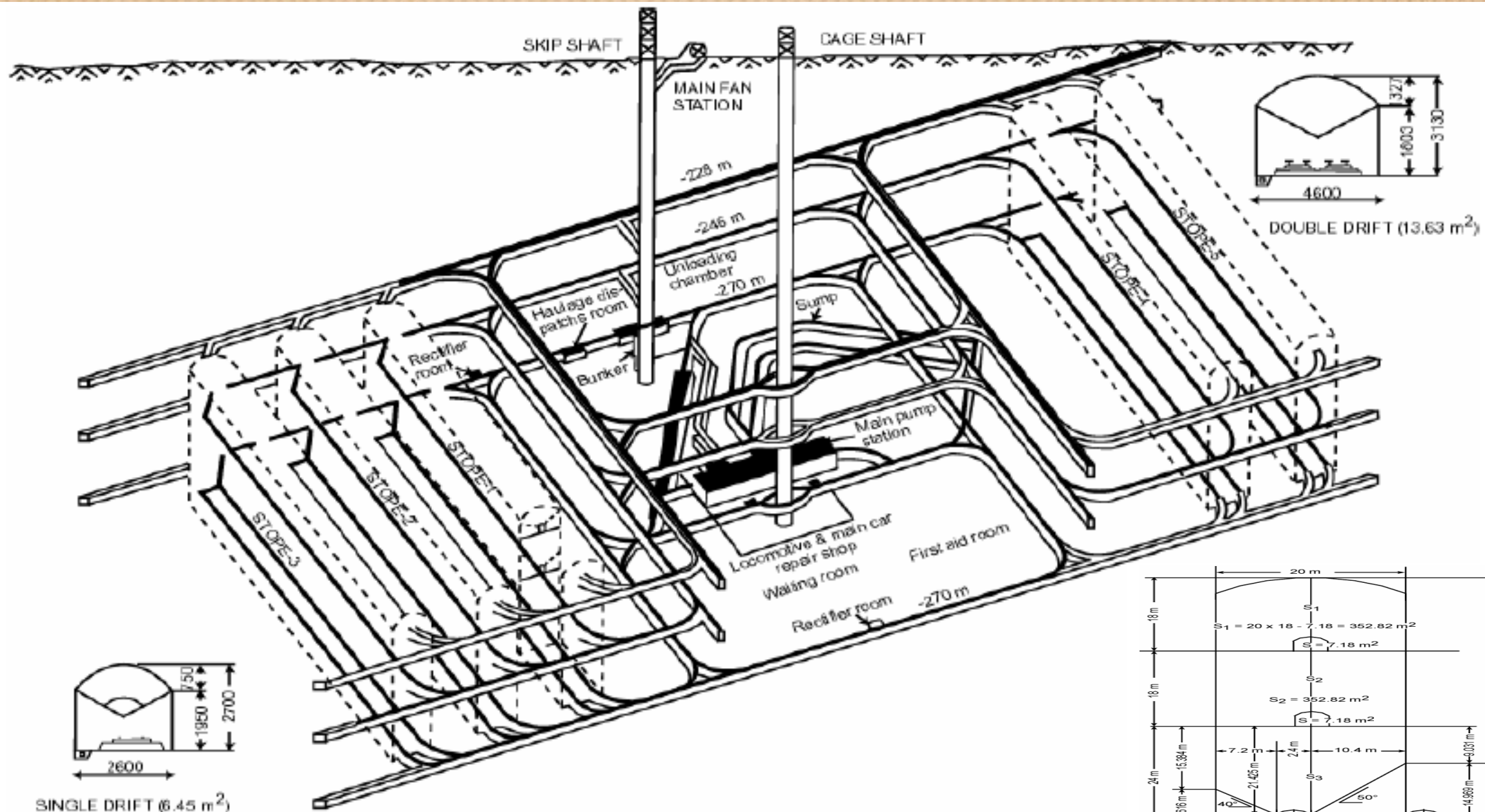


FIG. 14.



SKIP SHAFT

CAGE SHAFT

MAIN FAN STATION

-228 m

-246 m

Unloading chamber
-270 m

Haulage dispatch room

Rectifier room

Bunker

Sump

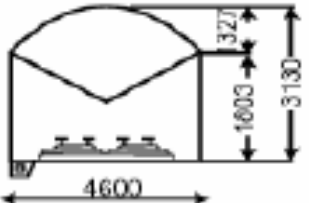
Main pump station

Locomotive & main car repair shop

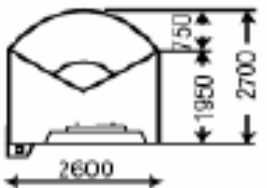
Waiting room

First aid room

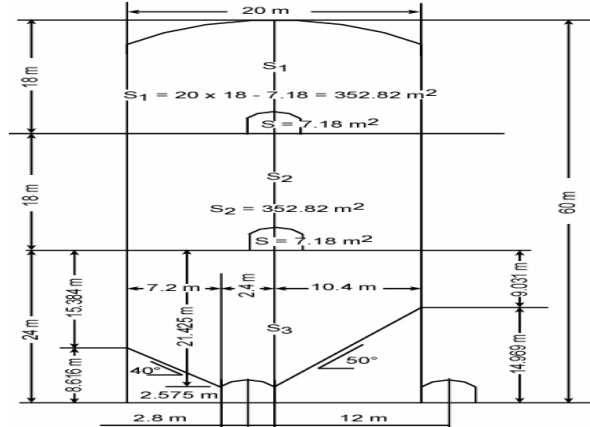
Rectifier room
-270 m



DOUBLE DRIFT (13.63 m²)



SINGLE DRIFT (6.45 m²)



Stope Surveys

Stope surveys are needed for correct outlines of the boundaries of the workings, and for computing tonnage. The operating department of the mine needs to know just where raises may be started and drifts run in order to keep under or out of the ore. Furthermore it focus on-assess and facilitate ventilation and shot design.

Tunnel Surveys

- **Tunnel surveying** is a type of underground surveying for the construction of tunnels. Tunnel surveys are made for the purpose of establishing and controlling the center line along which the tunnel is to be driven.
- The tunnel may represent a straight line between two selected points or it may be series of tangents connected by simple curves, reverse curves, or spirals.
- Are railroad, subways, divergent tunnels for dam, mining work etc.

Methods and Procedure of Tunnel Surveying

Special instructions on the type of survey and the equipment that must be used in the tunnel surveying procedure, for the tunnel construction are initially given by the planners.

The basic procedure of tunnel surveying is to align the center line in the ground and transfer that to the tunnel. This also involves leveling the surface on the ground and the internal of the tunnel.



The steps that are involved in the tunnel surveying are detailed in the following points:-

1. The initial procedure is to carry out a preliminary survey that is later made more precise by surveying the line on the surface of the area under consideration.
2. From the start of the excavation, as a part of tunnel construction, it is essential to keep up even minute accuracy with the center line that is already marked. When a new area of excavation is commenced, the center line of the before finished work has to be carried forward over the new face. No shifting of the center line in vertical or horizontal direction is accepted, when the opposite faces meet with adjacent headings.
3. Ordinary engineers transit and properly handled works give satisfactory results for the construction of short tunnels.

4. Tunnel transit that is large and sophisticated, is fitted to a striding level, that helps in keeping the transverse axis horizontal. This is necessary for long tunnel construction.
5. The instruments above mentioned should undergo periodic maintenance, calibration as well as checking.
6. The procedure of leveling is carried out in a normal way. But areas with steep slopes are measured with utmost care. This is ensured by having equal values for backsight and foresight. This would reduce the errors that are caused by the human, like improper or mal -adjustments of the instruments.
7. There are two methods that can be employed to measure the horizontal distances. They are stepping and inclined sights. Any of these methods can be employed based on the area under consideration and convenience.

Coal Mine Surveying

- **Mine surveying** is the practice of determining the relative positions of points on or beneath the surface of the earth by direct or indirect measurements of distance, direction & elevation.
- Coal mine surveying deals with the activities of taking detail and recording the information in the notebook vary, depending more or less on the mine.
- At some properties the technique become very similar to metal mine surveying.

preparation plant

raw-coal breaker

raw-coal silo

thermal dryer

raw-coal conveyor

clean-coal silo

ventilation shaft

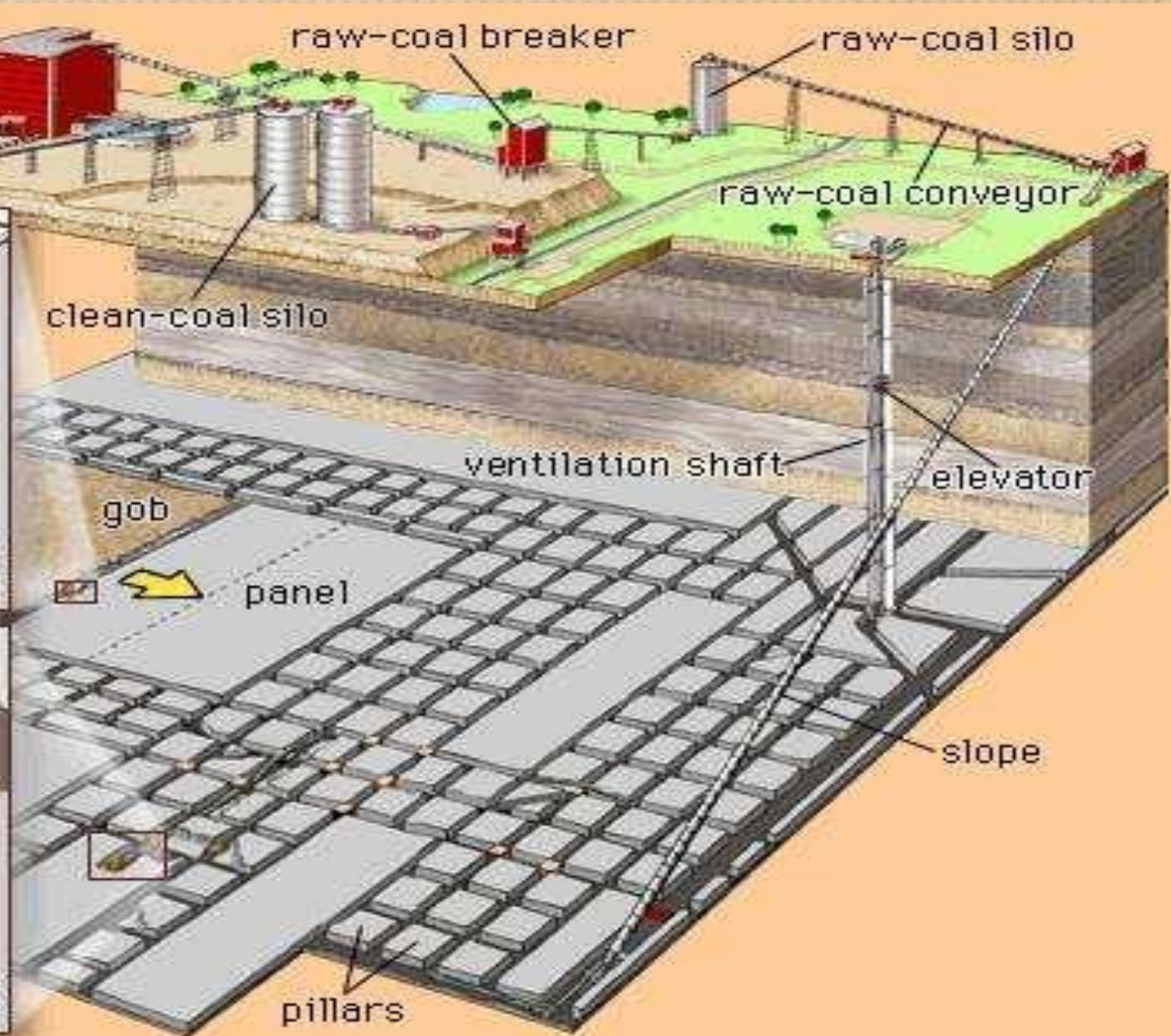
elevator

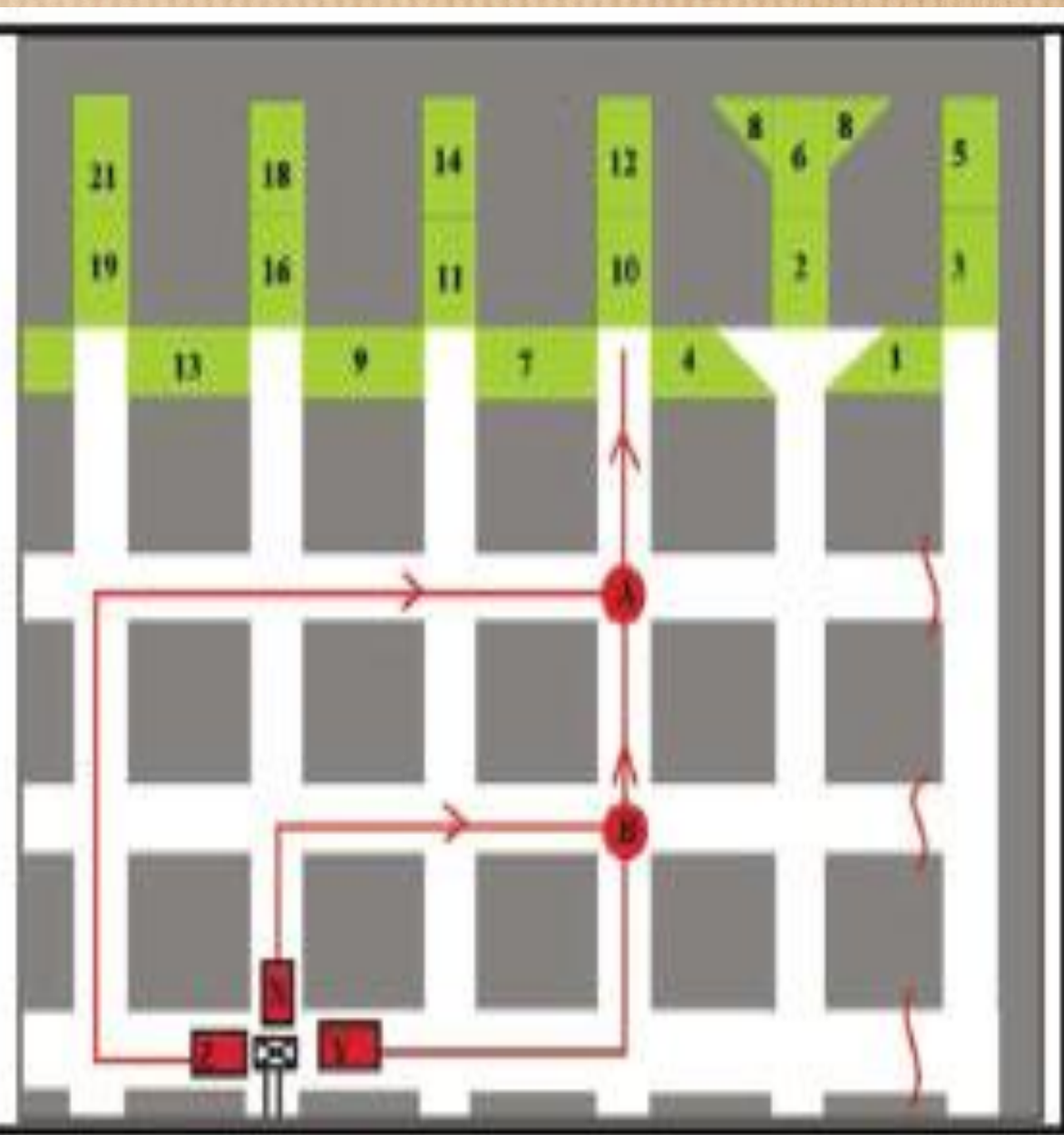
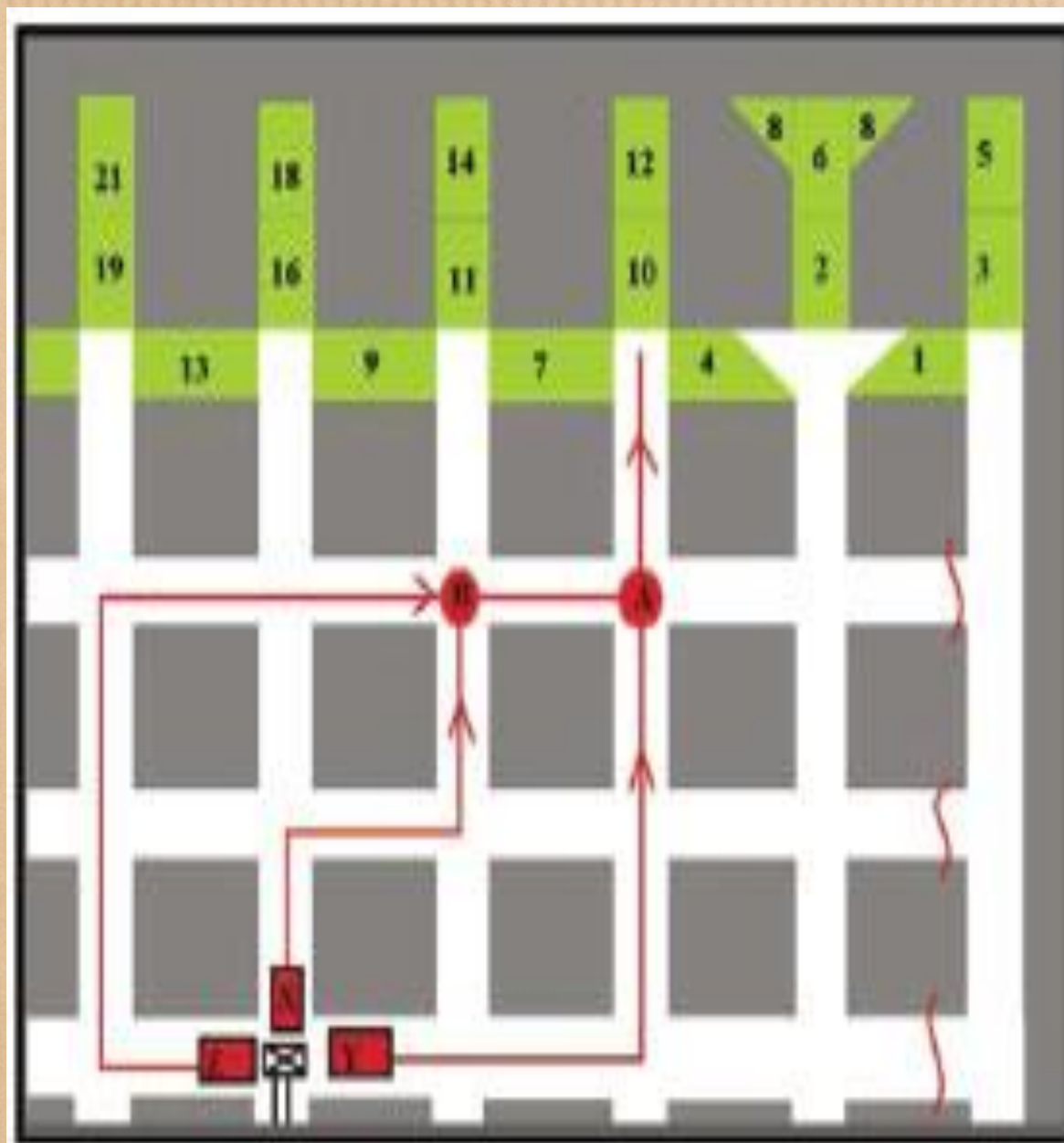
gob

panel

slope

pillars





Open-pit Surveys

- In general, survey techniques for surface mining are similar to those used in other applications of plane surveying, such as highway location, excavation layout, and earth dam work.
- The major difference between open-pit and underground surveying is rapid change of contours. The ore extraction (tonnage removed) in a given period is often significantly higher, since large-capacity earth-moving machinery and mechanized conveying systems can be used.
- The scale of operation is as much as 10 square miles.