Wuhan University of Technology

Excellent Course

Blasting Engineering

Chapter 7: Driving Blasting

Contents:

Section 1: Drifting

Drifting and shaft sinking engineering means excavations of drifts, shafts and chambers made in underground space to complete stoping and other mining projects.

drafts

In underground mines, drafts mean horizontal roadways excavated in rock mass or ore bed and not leading to the surface.

adits

Adits mean horizontal roadways excavated in underground space and leading to the surface.

Working face and blastholes arrangement

According to the position and function of blastholes in drifting, they can be divided into three classifications, which are cut holes, auxiliary holes and trim holes. Trim holes consist of roof holes, flank holes and bottom holes.

1

cut holes

Cut holes are used to generate new free surface and create advantage for following blasting.

2

auxiliary holes

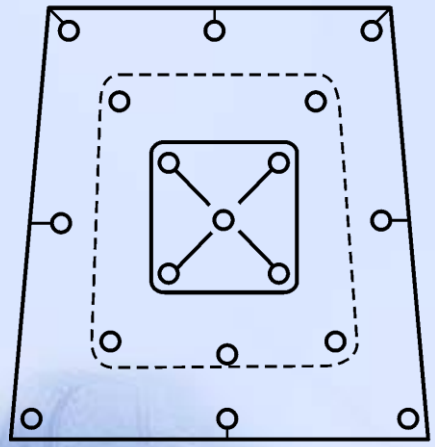
Auxiliary holes play the most important role in crushing rock. With the help of new free surface created by cut holes, a large crater can be excavated by blasting auxiliary holes.

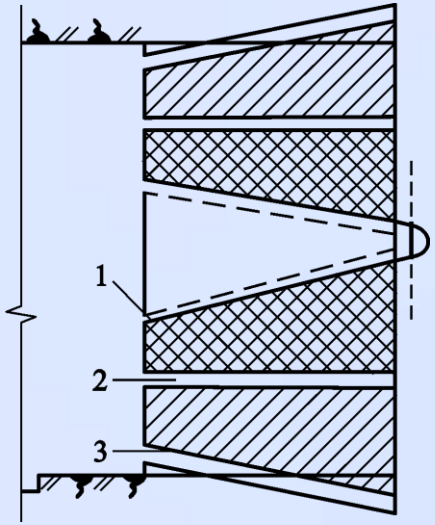
3

trim holes

Trim holes are used to make the shape, cross section and outline of roadways excavated accordant with the design.

blastholes





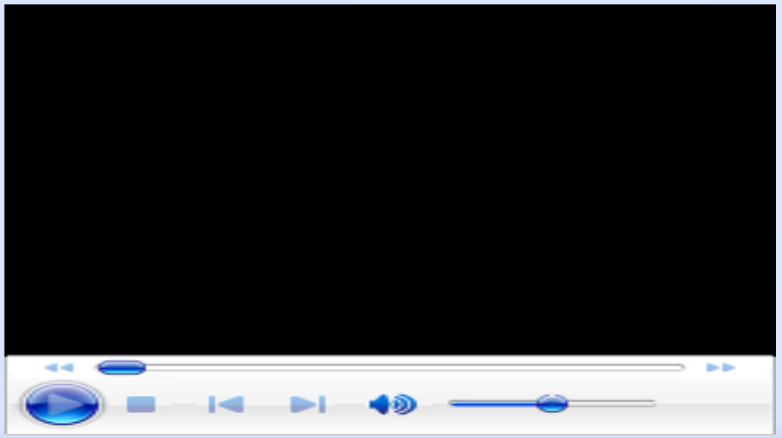
blastholes:

1—cut hole

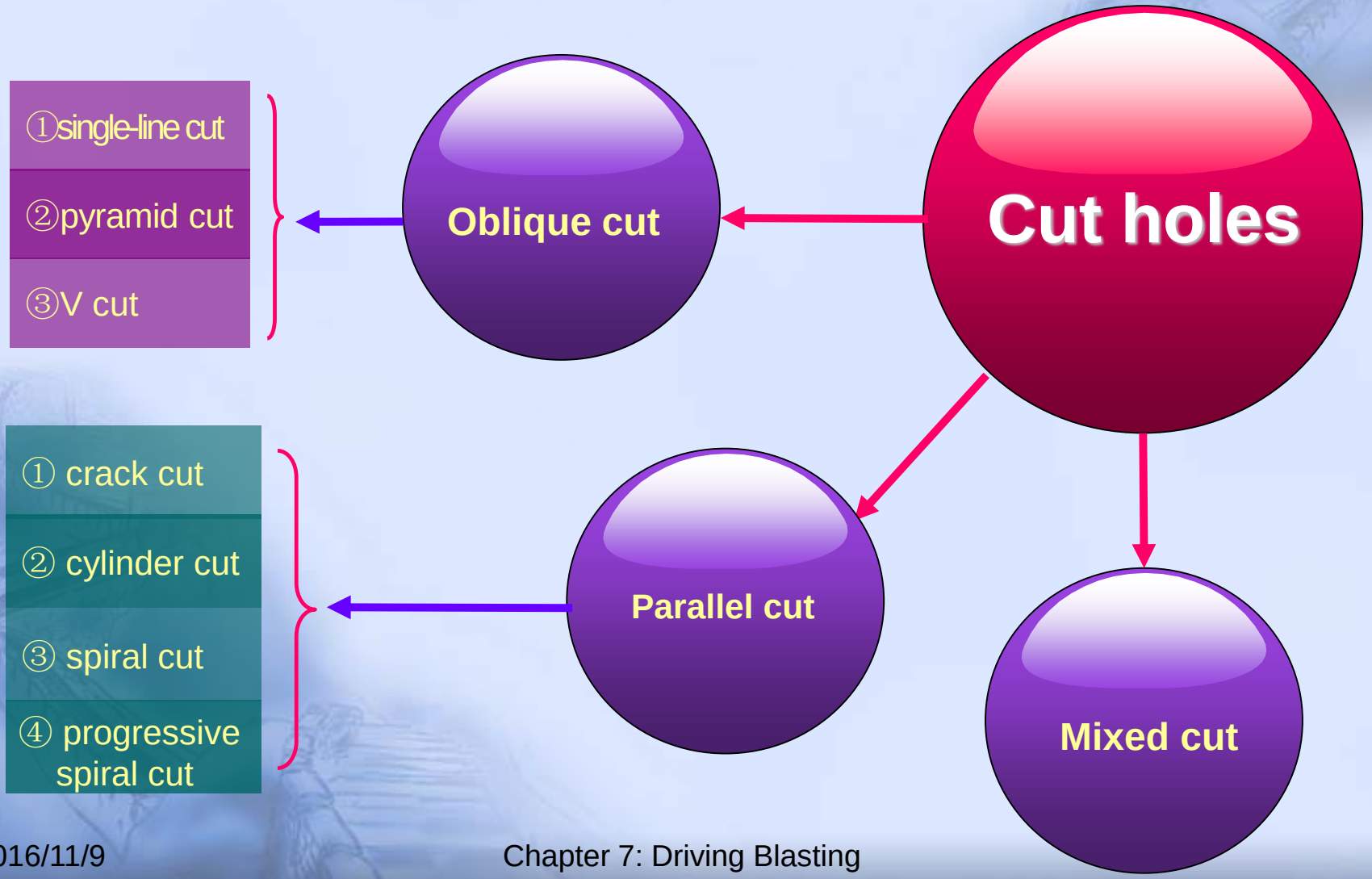
2—auxiliary hole

3—trim hole

VIDEO

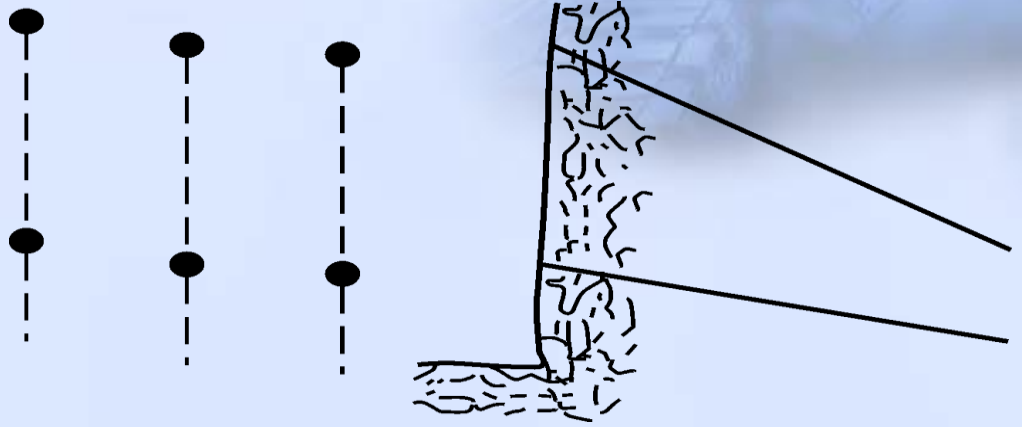


Cut Holes


Cut holes
Oblique cut
①single-line cut
②pyramid cut
③V cut
Parallel cut
① crack cut
② cylinder cut
③ spiral cut
④ progressive spiral cut
Mixed cut

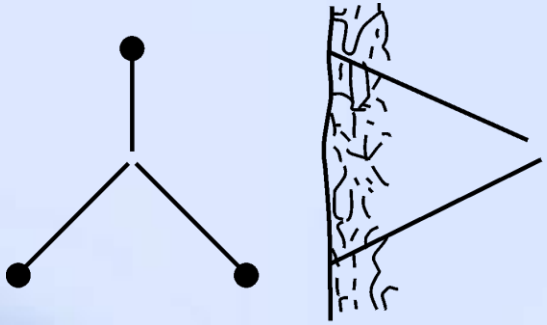
Diagrams of cut holes（1）

Single-line cut

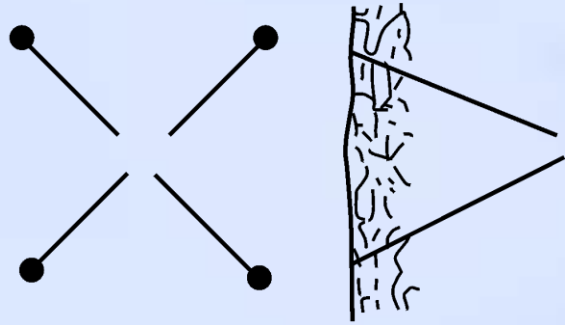


pyramid cut

（a）triangle cut
（b）rectangular cut



(a)



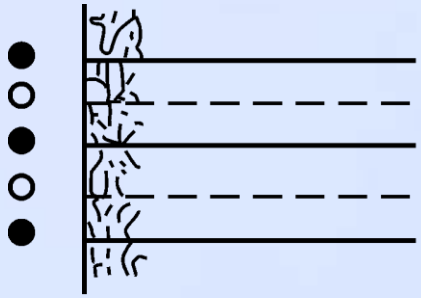
(b)

Diagrams of cut holes（2）

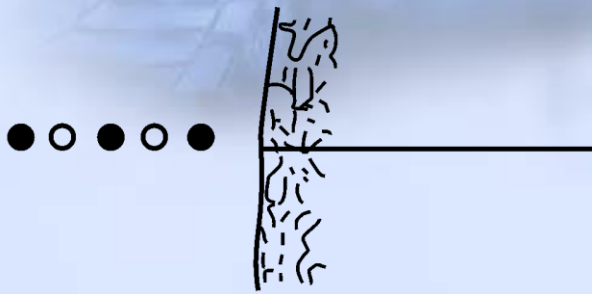
crack cut

(a)vertical crack cut

(b)Horizontal crack cut



(a)

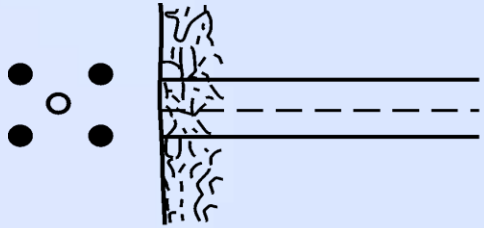


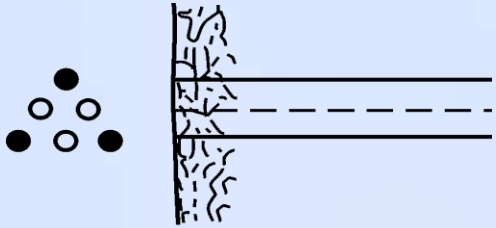
(b)

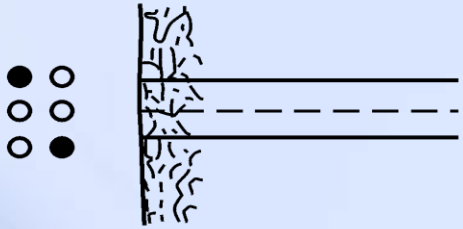
cylinder cut

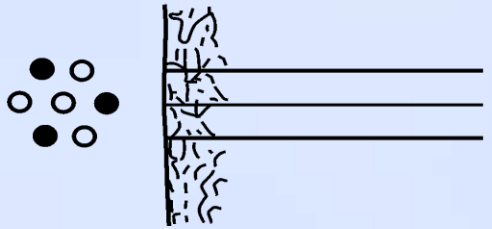
●—charging hole

○—bum hole

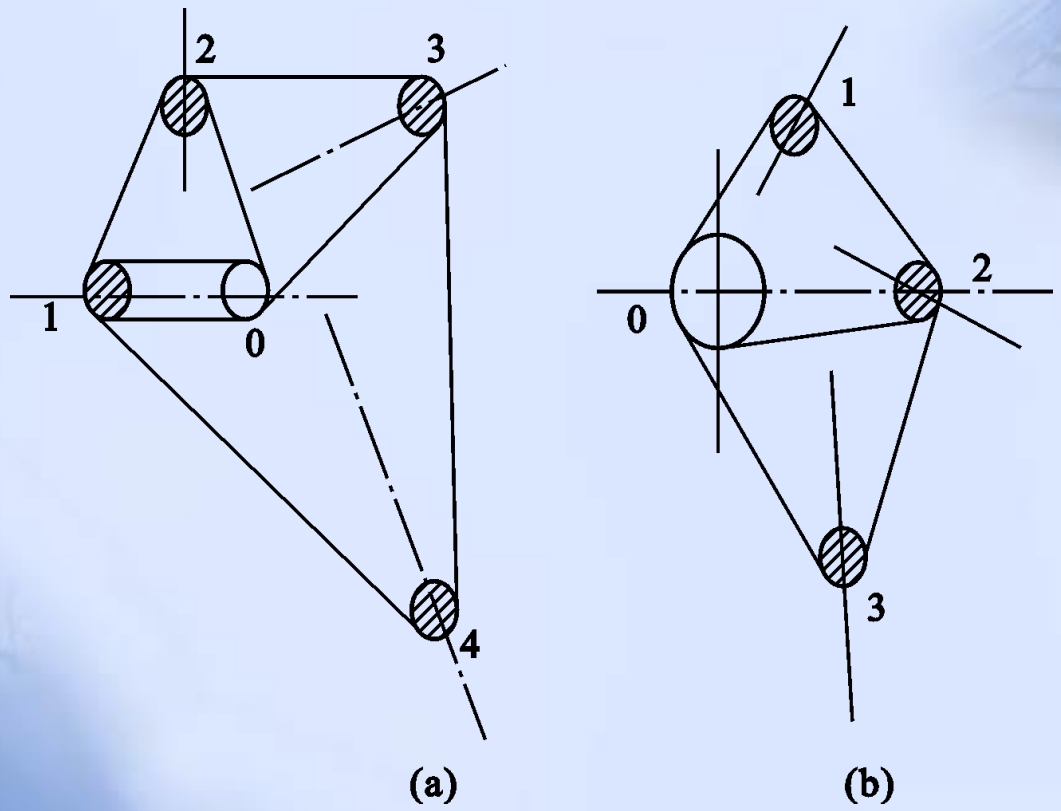








Diagrams of cut holes（3）

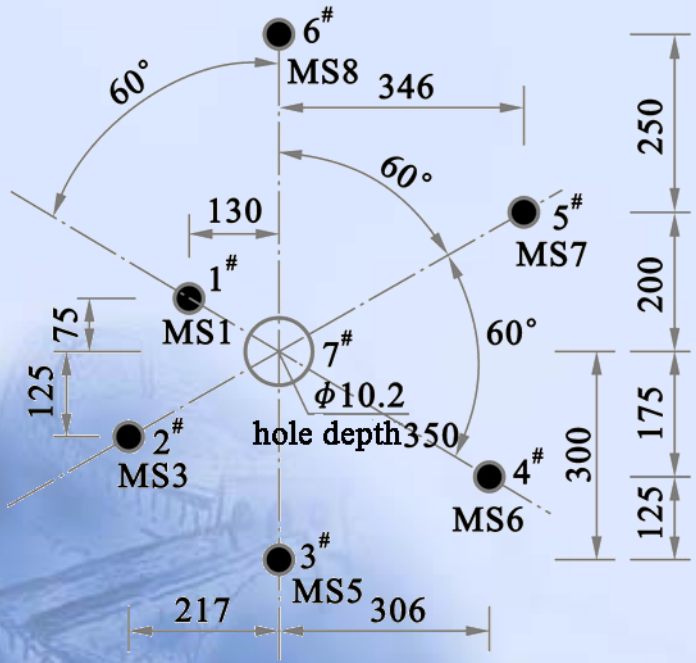


spiral cut

（a）small diameter bum hole

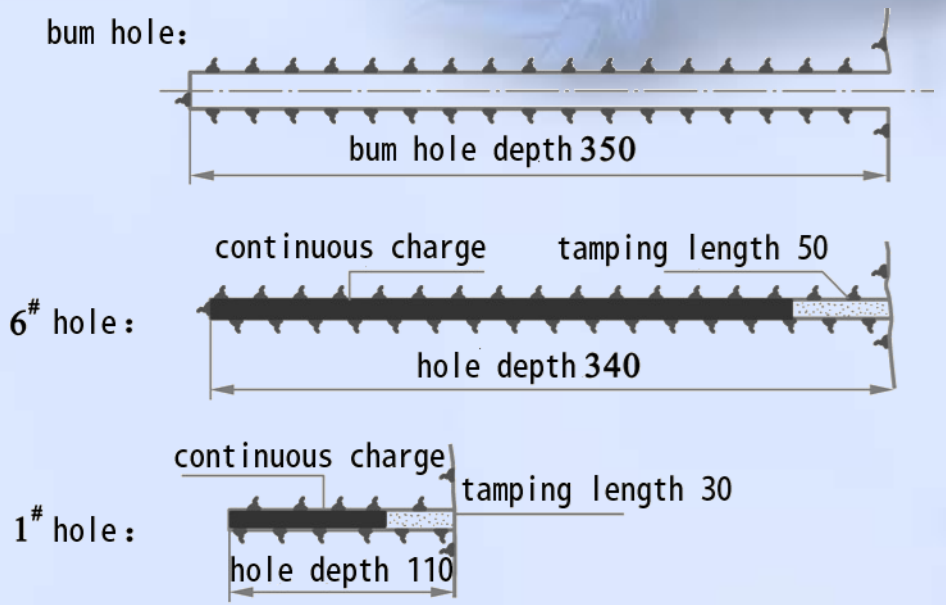
（b）large diameter bum hole

Diagrams of cut holes（4）



(a)

(a) holes arrangement



(b)

(b)Charging structure

progressive spiral cut（cm）

Blasting Parameters

1） borehole diameter

A

2）hole depth

B

3）boreholes number

C

4）explosive consumption

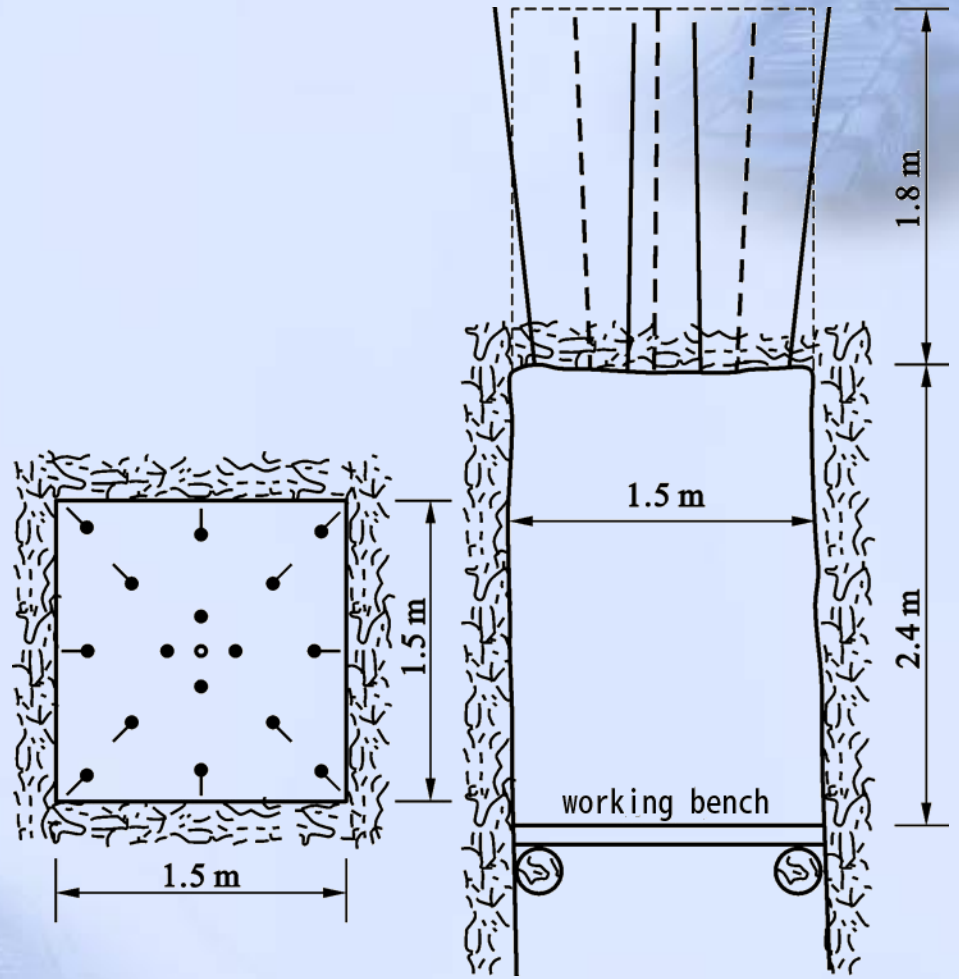
D

Section 2: Shaft Sinking Blasting(1)

1) short-hole blasting

raising

2) deep-hole blasting



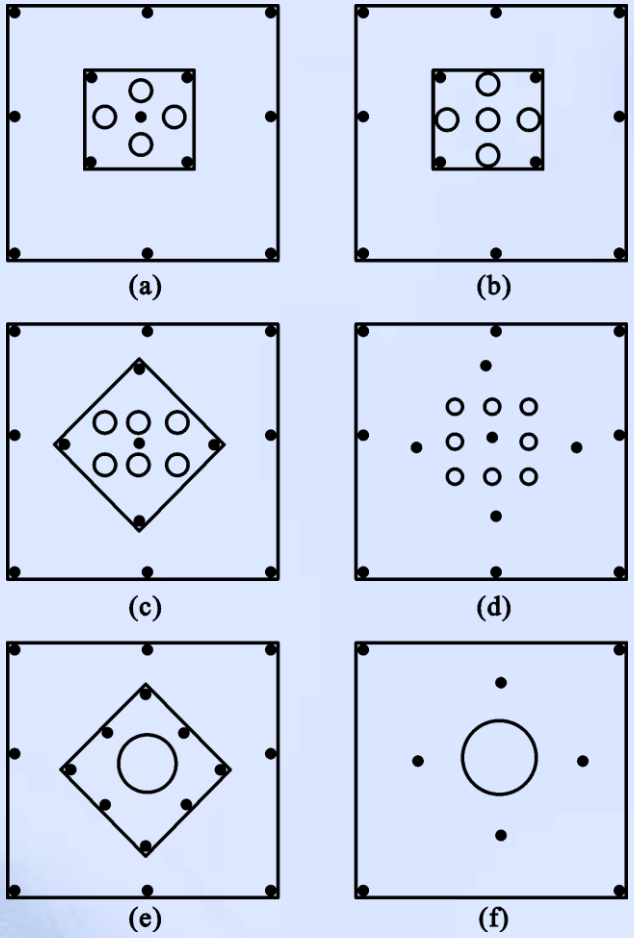
short-hole blasting

Section 2: Shaft Sinking Blasting(2)

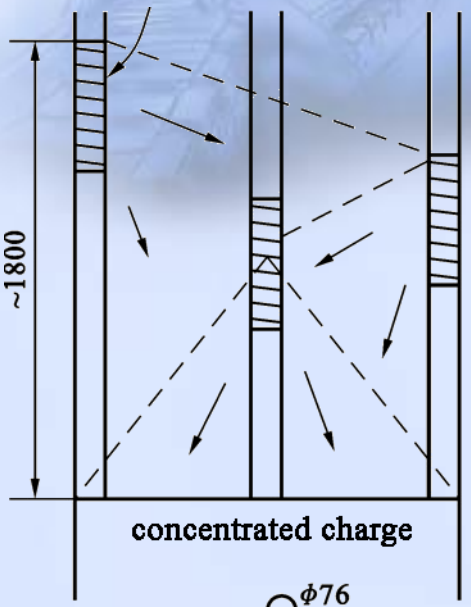
1) short-hole blasting

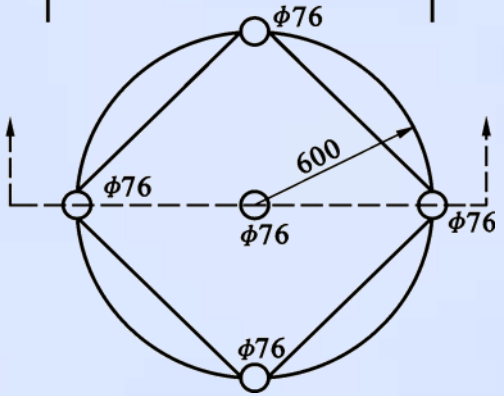
raising

2) deep-hole blasting



Typical slotting patterns





Crater cut


Thank You !
Wuhan University of Technology