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**Code for design of dewatering and draining in open pit mine of
coal industry**

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1 General

1.0.1

This specification is formulated to standardize the dewatering and drainage design of open-pit mines, prevent and reduce water damage, ensure production safety, and improve production efficiency.

1.0.2

This code is applicable to the dewatering and drainage design in the preliminary feasibility study, feasibility study and engineering design stages of newly-built, reconstructed and expanded open-pit coal mines.

1.0.3

The dewatering and drainage design of open-pit coal mines should actively adopt domestic and foreign advanced technology, practical experience and mature and reliable new technologies, new processes, new equipment and new materials.

1.0.4

Drainage and drainage shall be carried out simultaneously with the design of open-pit coal mines. The technical proposal shall be determined by technical and economical comparison.

1.0.5

In addition to implementing this code, the dewatering and drainage design of open-pit coal mines should also comply with the current relevant national standards.

2.1.1 Hydrogeological condition hydrogeological condition

The general term for groundwater burial, distribution, recharge, runoff and discharge conditions, water quality and quantity, and its formation geological conditions.

2.1.2 Dewatering

According to reasonable economic and technical principles, various drainage projects are used to drain the aquifer that threatens the mining, transportation, and soil discharge of open-pit mines.

2.1.3 Groundwater control groundwater control

According to reasonable economic and technical principles, water interception and drainage works are adopted to carry out water interception and drainage of aquifers that threaten open-pit mining, transportation, and soil discharge.

2.1.4 Open-pit drainage

Adopt reasonable technical and economical drainage methods to eliminate atmospheric precipitation, surface water catchment, and groundwater infiltration into the open-pit mining field, and technical measures to ensure safe work in the mining field.

2.1.5 Surface water prevention and drainage

Technical measures to prevent surface water from flowing into the open-pit mine excavation site or dump site, improve the stripping efficiency of the open-pit mine, and ensure the safety of the excavation site or dump site.

2.1.6 Prevention and control of groundwater and surface water

A general term for groundwater control, mining site drainage, and surface waterproofing and drainage.

2.1.7 Movable substation

It is composed of primary side power supply device, power transformer, secondary side power distribution and protection device, chassis and protective casing, and can be moved as a whole or disassembled and moved as a complete set of power transformation and distribution device.

2.1.8 Distributed control system distributed control system

A microprocessor-based control system for centralized monitoring, operation, management and decentralized automatic control of the production process.

2.2.1 Normal rainfall runoff

a_j --the runoff coefficient of each section;

F_j -- catchment area of each section;

H_1 --Monthly average precipitation in the multi-year rainy season;

Q_1 --Normal rainfall runoff.

2.2.2 Storm runoff

a_i --the runoff coefficient of each segment;

F_i --catchment area of each section;

H_2 - the amount of rainstorm in the time period T of the design rainstorm return period;

Q_2 --storm runoff in time period T .

2.2.3 Water inrush coefficient

M --thickness of floor waterproof layer;

p --head pressure on the aquifer of the bottom plate;

T_s --water inrush coefficient.

2.2.4 Drainage water quality of mining sites

SS - suspended matter;

COD_{Cr} - chemical oxygen demand.

3.1 General provisions

3.1.1

The dewatering and drainage design of the preliminary feasibility study stage of the open-pit mine should be prepared according to the reviewed and filed detailed investigation or exploration geological report; the feasibility study stage and preliminary design stage should be prepared according to the reviewed and filed exploration geological report.

3.1.2

Ore fields with complex hydrogeological conditions should comply with the current national standard "Code for Hydrogeological and Engineering Geological Exploration in Mining Areas" GB 12719 and the requirements for mine water prevention and control. The reliability of hydrogeological exploration data and the degree of hydrogeological exploration should be analyzed and evaluated. When the hydrogeological survey data cannot meet the design requirements for dewatering, a supplementary hydrogeological survey requirement should be put forward.

3.1.3

When surface water has a recharge effect on groundwater drainage, measures such as diversion, seepage prevention, and interception should be taken for the surface water system.

3.1.4

In the following situations, groundwater control measures such as dewatering or blocking must be taken.

- 1 Groundwater has a serious impact on the mining, transportation and soil discharge of open-pit mines;
- 2 The groundwater reduces the stability of the open-pit mine slope, and the slope of the excavation site or the slope of the dump site may become unstable;
- 3 The aquifer with high water pressure and rich water content in the coal seam floor may produce water inrush during the mining process.

3.1.5

When pre-draining is used to lower the groundwater level, the pre-draining time and water level lowering depth should be determined according to the strength requirements of the stripping advancement and development of the descending section, and in combination with the hydrogeological conditions.

3.1.6

For open-pit mines with special groundwater control engineering or open-pit mines where groundwater is harmful to mining, a groundwater dynamic observation system should be