NSD SYSTEM

Drilling system without scaffolding for earth reinforcement and anchor installation

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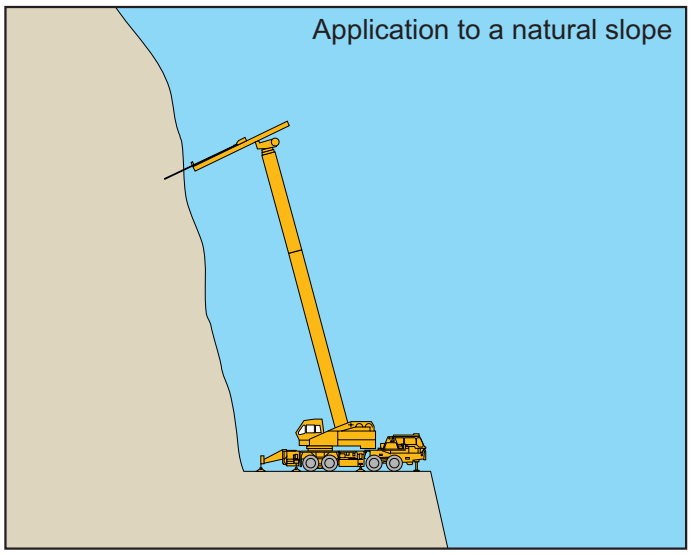
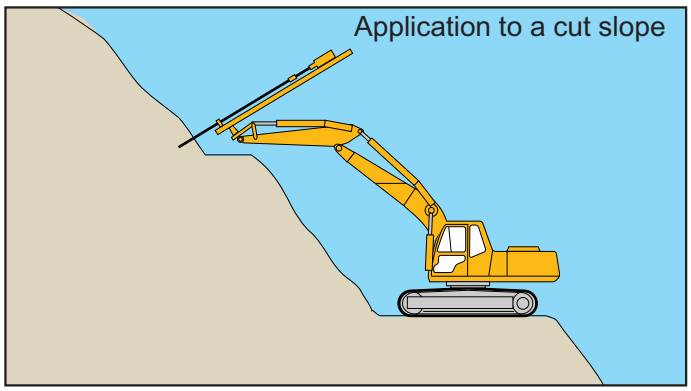
"NSD system" is the name given to a group of drilling methods for earth reinforcement on slopes without using scaffolds. NSD system is developed to improve safety and productivity and to cope with various site conditions in terms of slope geometry or construction scale. Traditional slope drilling for earth reinforcement and anchor installation has required scaffolding to set up the drilling machine on the slope. It normally takes manual labor for days to prepare scaffolding. Especially for long slopes, this requires a large amount of scaffold members and man power, resulting in considerable increase in the cost for temporary work and in major constraint on the construction program. NSD system which eliminates the scaffolding consists of 5 different methods that can be selected to use according to drill depth (reinforcing member or tendon length), slope gradient and slope length. 3 methods are described here.

Sky Drill Method

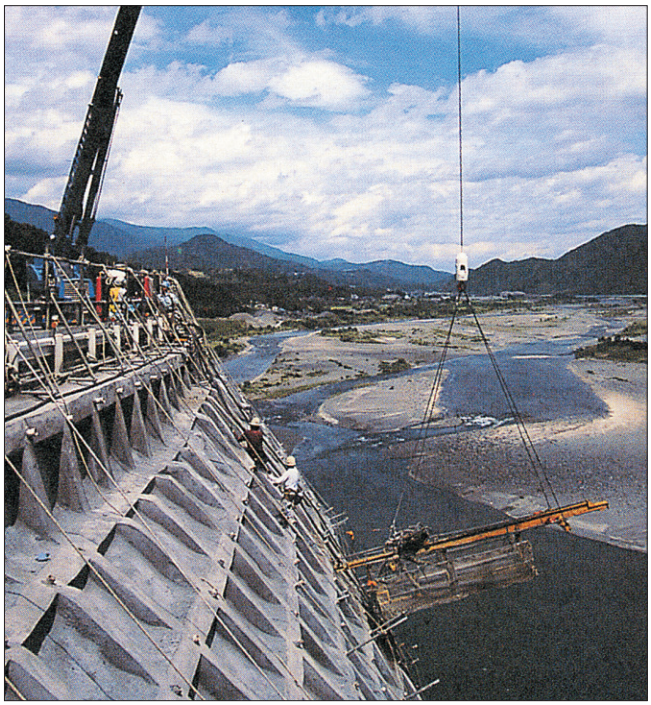
"Sky Drill" method is a system where drilling equipment (Sky-Drill machine) is attached to the top of the crane boom or the backhoe arm to allow slope drilling and smooth and quick mobilization within the turning radius of the rig. Reactive force is provided by the crane boom itself so no special device for this purpose is required. Borehole length is 5 m in standard configuration and 8.0 m is possible by using a expandable guide cell.

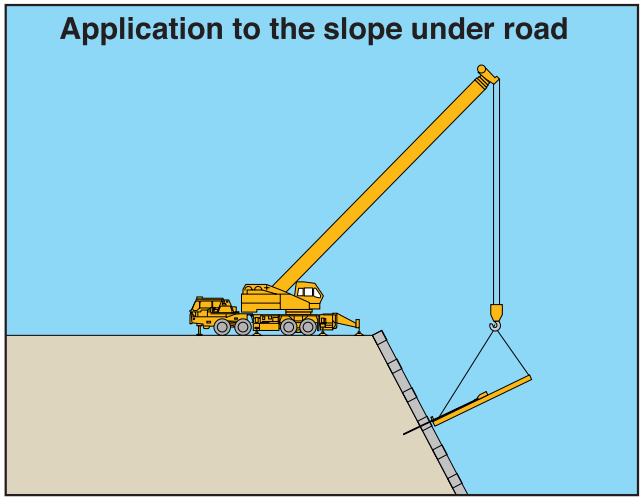




Hung Drill Method

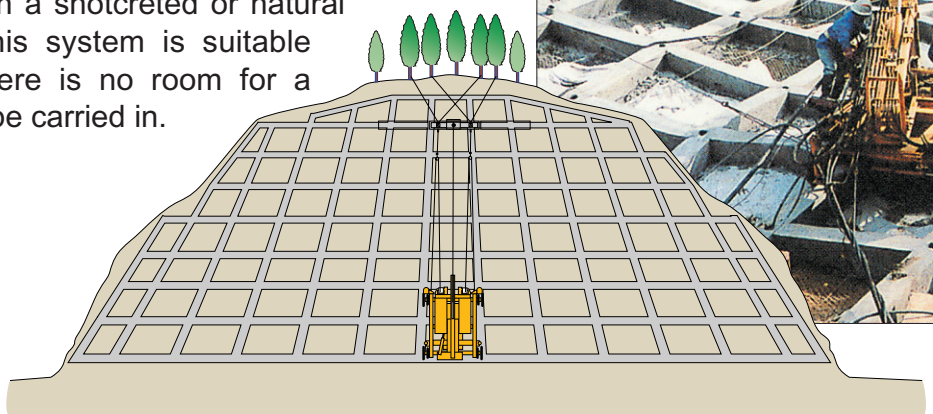
"Hung Drill" method is applicable to a very high slope or slope under a road where the crane boom cannot reach. The drilling machine equipped with a hydraulic drifter for double-wall pipe drilling is hoisted by a crane to do slope drilling. The hydraulic drifter which allows drilling for anchors widens the range of slope drilling application.





Winch Drill Method

"Winch Drill" method is characterized by the winch system, whereby the winches which are positioned up on the slope move a drill rig on the slope by winding/unwinding wires attached to it. The rig is equipped with a hydraulic drifter which allows drilling for anchors. The wheel track of the rig is adjustable so that it can run on grid beams as well as on a shotcreted or natural slope. This system is suitable where there is no room for a crane to be carried in.



Application to a slope with retaining cribs

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