

Rock Slope Stabilisation and Rockfall Protection

Rock bolts, drapery mesh, shotcrete and catch fences hold unstable rock in place or stop falling blocks before they reach people and roads.

CAN BE CONSIDERED WHERE

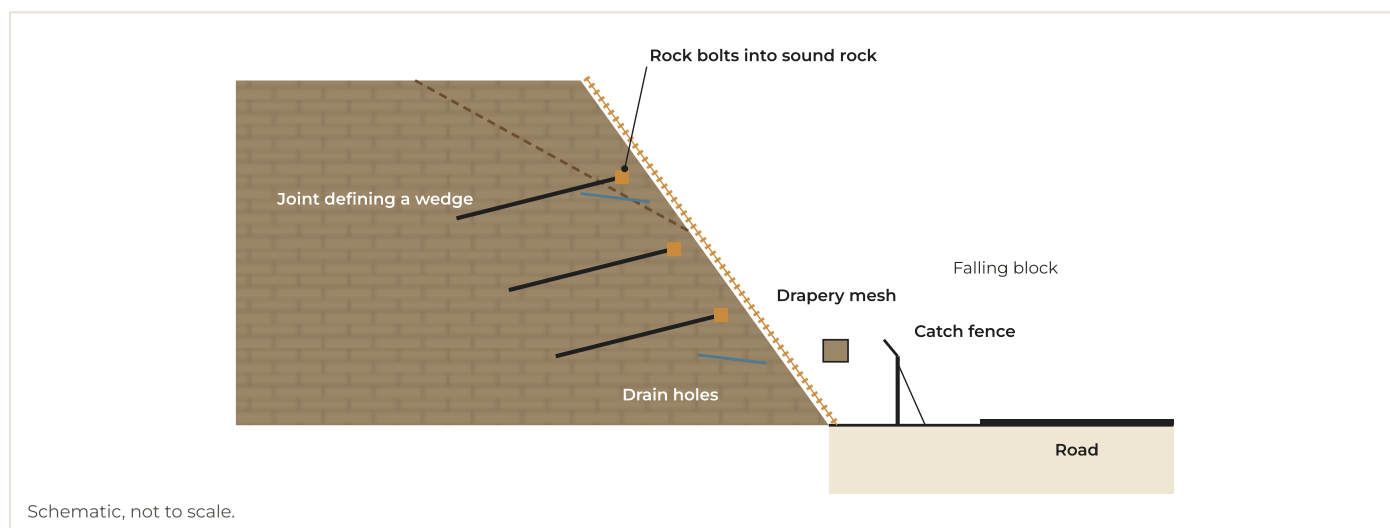
- Road and rail cuttings and highway slopes in rock.
- Platforms and excavations cut into rock in mountainous terrain.
- Faces with loose blocks, wedges or weathered zones.
- Protection of roads, structures and people below steep slopes.

LIMITATIONS

- Stability depends on the joint pattern, which varies along the slope and must be mapped.
- Access on steep faces needs rope access or specialist plant.
- Mesh and fences are designed for a block size and energy; larger events need other measures.

HOW IT WORKS

The slope is mapped to identify joints, wedges and loose blocks. Loose material is scaled off by hand or machine. Unstable blocks are pinned with rock bolts or dowels drilled through them into sound rock and grouted; larger wedges may need tensioned anchors.



DESIGN INPUTS

- Geological and discontinuity mapping of the slope.
- Rockfall hazard assessment: block sizes, trajectories and energies.
- Slope geometry, access and the assets to be protected.
- Groundwater conditions.
- Design life and maintenance access.

EXECUTION CONTROLS

- Bolt position, length, inclination and grouting recorded for each bolt.
- Proof testing of a proportion of bolts and anchors.
- Mesh overlaps, fixing and anchorage inspected.
- Drain holes installed and flowing.
- Exclusion zones maintained below the work at all times.

VERIFICATION AND ACCEPTANCE

Design intent: What is required

Stability and rockfall protection criteria agreed with the consultant.

Production control: What was done

As-built records of scaling, bolts, mesh, drains and fences.

Acceptance: What was proven

Bolt and anchor test results and final inspection of the slope.

DELIVERABLES

Method statement and risk assessment · Slope mapping and hazard assessment · Bolt and anchor records · Test results · As-built drawings · Inspection and maintenance plan