

TIP sheet

Steep slopes

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RTA minimum requirements

Managers & supervisors must implement measures to control & minimise the health & safety risks associated with working on steep slopes.

RTA worksites shall ensure that all work tasks undertaken on steep slopes are identified and risk assessed.

Work on steep slopes

Examples of steep slope work may include:

- Excavation and earthworks.
- Tree and underbrush clearing.
- Plant and equipment operations, maintenance, repair or inspection.
- Surveys, inspection & site visits.

Risks of steep slopes

Some of the risks associated with work conducted on steep slopes include:

- Overhead utilities.
- Unstable slopes.
- Slips trips & falls.
- Overturning of plant and equipment.
- Interaction of vehicular and pedestrian traffic.

Risk assessment

A steep slope risk assessment and SWMS facilitate the implementation of appropriate control measures, induction & training, monitoring, & workplace surveillance.

Risk assessments shall be specific to the:

- Degree of slope present.
- Soil condition, moisture content, depth, & underlying material.
- Roughness of the terrain; including the presence of boulders and stumps.
- Task undertaken, task location, & local environment.
- Environmental conditions at site, such as weather conditions, water, the possibility of flash floods, siltation, pollution, visibility.
- Potential for site conditions to change.
- Duration of the work task.
- Plant and equipment used. Identify the suitability of the machine in relation to the site.
- The task to be undertaken. The equipment to be used must be fit for purpose and designed for the task.
- The risk assessment of steep slopes shall comply with the RTA Risk Management Procedure.

Risk controls

- No work shall be undertaken on steep slopes when it is raining or the soil on the slope is saturated with water.
- Personnel or equipment should not work directly above one another or at horizontal distances closer than 3 metres.
- A SWMS must be developed for all tasks undertaken on steep slopes.
- When there is a danger of rocks, soil or debris dislodging, no work shall commence until the risks associated with these hazards have been eliminated or reduced to as low as reasonably practicable.
- All mobile plant operators shall ensure that they wear a seat belt at all times during the operation.
- Using more than one of these controls in combination is usually necessary.

Supervision

All tasks undertaken on steep slopes shall be monitored at all times by a competent supervisor sited at a safe distance from the work being undertaken.

Review

Risk Assessments, SWMS, and work procedures must be reviewed & revised when there is evidence that:

- The original assessment is no longer valid or older than 3 years.
- Exposure results in injury/illness.
- A significant change is proposed to work practices or procedures or the place of work to which the assessment relates.

Operation of construction plant on slopes

Concerning the use of construction plant on slopes:

- All construction plant shall be only operated in accordance with the operator's manual and TIP Sheet 007 – Construction Plant & Equipment.
- Where earthmoving or load carrying plant is used, the Safe Working Load (SWL) shall be observed at all times.
- Load carrying buckets shall never be slewed or positioned over personnel.
- When working on a slip clearing, proceed with caution and be watchful of the slope—further falls may occur.

Dozers on slopes

- Debris and loose rocks along dozer breaks should be stabilised before personnel are allowed to work below them.
- Avoid travel across slopes as much as practicable—drive straight up and down slopes. If the machine starts to slide sideways when working across a slope, turn the machine downhill and drop the blade.
- Keep the dozer blade as close to the ground as possible while travelling up or down a steep slope.
- Dozer blades should not be used as a brake for going down a steep slope, except in extreme emergencies.

Excavators on slopes

- Create a level area for the excavator to operate from when working on a steep grade.
- Avoid travel across slopes as much as practicable—drive straight up and down slopes. Where turning is unavoidable, or where ascending or descending, turn as gradually as possible to maintain stability.
- For uphill travel, extend the boom and half full bucket forward and for downhill travel bring the boom and empty bucket close in, in order to maximise stability and traction.
- When descending down a slope, use the same (low) gear range required to climb it.

Front-end loaders on slopes

- Create a level area for the front-end loader to operate from when working on a steep grade.
- Work with the bucket facing uphill in order to maximise stability and avoid tipping.
- Avoid turning, working, or travelling across a slope, as a sharp turn up or down a hill may cause rollover.
- When descending a slope use the same (low) gear range required to climb it.
- When travelling with a loaded bucket, where practicable, descend backward down a slope.
- Never use the 'declutch' brake pedal while descending a grade.
- When clearing road slips, take care that further slips or trees do not fall while moving material. Keep your eye on any material above the machine.

Scrapers on slopes

- When entering sharp turns, fill areas or downgrades, apply retarder and/or service brakes.
- Select the correct gear before travelling downhill. On long downgrades use the engine to assist braking. Avoid 'fanning' the air brake pedal. Repeated light application of the brake may exhaust air pressure faster than the system is able to replenish it, leading to brake failure.
- When turning across a hillside, turn as gradually as possible. A sharp turn up or down the hill may cause overturning.
- When going downhill, operators should not 'kick' their machines out of gear because increased speed may make control of the equipment difficult. Instead, machines should be left in gear and retarders used to control speed, with brakes used as a secondary speed control.

Graders on slopes

- When grading across a slope, avoid blade down-pressure and obstacles, as either can cause the machine to tip. For maximum stability, operate at low speed, lean the front tyres towards the uphill side, and cast material to the downhill side of the machine. Operate on as level a surface as possible when cutting high banks. With the blade raised, the grader is less stable than normal.
- Operators should be alert for rocks, logs, and trees when sloping banks. NOTE: Graders should be kept in gear at all times. They should never be permitted to coast downhill.
- Wherever practicable, avoid turning, working, or travelling across a slope, as a sharp turn up or down a slope may cause rollover.

Competency based training

People undertaking work on steep slopes shall be trained in management of the risks associated with working on slopes, including the procedures adopted for:

- Undertaking specific tasks on slopes.
- The operation of plant and equipment associated with the task, including safety & communication devices.
- Emergency response.

Personal protective equipment

PPE must be:

- Made available.
- Appropriate for the Steep Slopes person & task.
- Used under manufacturer directions.
- Inspected before each use for wear, damage and 'use-by' dates.
- Consistent with risk assessments, SWMS, and equipment manufacturer requirements.

References

- NSW OHS Act 2000 & OHS Regulation 2001.
- AS1470 Health and safety at work – Principles and Practice.
- RTA Risk Assessment Policy 2.0.