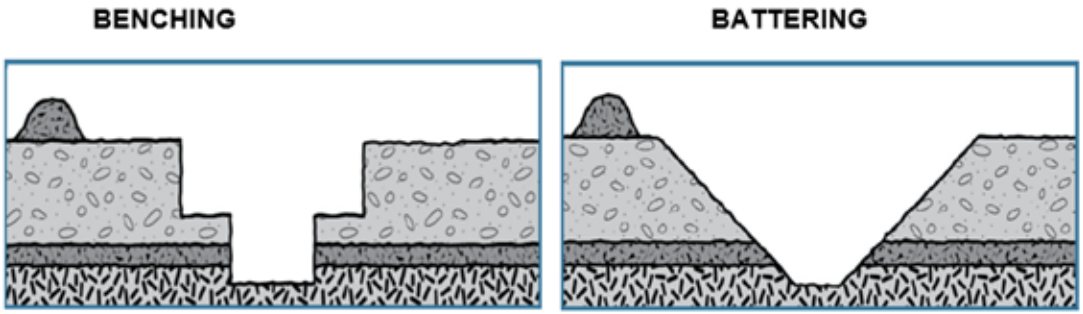
Safe Work Method Statement – Work in or near excavation deeper than 1.5m

This safe work method statement is generic in nature can be used as a guide in developing your SWMS All PCBU's when undertaking high risk construction work are to have in place a Safe Work Method Statement (SWMS). Where there are differences in the control measures to employed between your and this SWMS the higher of the two control measures are to be implemented – this or your own SWMS. This SWMS needs to be reviewed against site conditions upon commencing work. Where site conditions prevent works to be carried out in accordance with this SWMS than another is to be written and Site Supervisor notified.

Name of PCBU/Principal Builder		**Name of Principal Contractor**	Bay Building Services		
Work Activity:	Work on or near excavation 1.5m deep	**Work Location:**			
High Risk Construction Work:	• Trench collapse				
	• Fall from height	**Site Supervisor:**			
	• Mobile equipment	**Emergency Contact:**	1399 766 216	Contact No:	
Date of SWMS	02/04/2018	**Review Date**			
Have workers been consulted about the SWMS?	All workers are required to be consulted with regards to the SWMS and control measures contained in the SWMS.				
Person Responsible for ensuring compliance with SWMS	Different PCBU's/Employers and Contractors will encounter different High Risk activities. All PCBU's/Employers are responsible for reviewing this SWMS against site conditions and ensure work occurs in accordance with the SWMS.				
Person(s) Responsible (for reviewing the SWMS)	PCBU's/Employers should review this SWMS and apply the control measures outlined for the various High Risk activities that they may undertake. Where works cannot occur in accordance with this or your own SWMS contact is to be made with the Site Supervisor.				

Work Step	Hazard for Works	Control Measures for the Hazards
Pre-Start Check at Site	Site hazards may impair works	• Undertake pre-site inspection verify conditions on site will enable works to be carried out in accordance with the SWMS. • Discuss site specific works with the Site Supervisor reviewing site signage, Safety Management Plan, for site specific hazards • Ensure all employees are made aware of any site specific hazards to works • If SWMS are to be changed copy is to be provided to site supervisor

		• Construction Inducted employees and contractors are only allowed to undertake construction works • Only certified and/or licensed personnel are to operate mobile equipment
Prepare Work Area for installation	Slip, trips& falls, Other workers in the area Electrocution Collapse of work area	Unload vehicles in area clear of traffic, plant & equipment. Inspect and clear area of any obstructing material or debris Use team lifting techniques or mechanical means for manual handling Stabilise/compact ground where required Identify any underground services gas, water, electrical. Plan showing location of underground power located in site meter box. Identify all electrical lines in work area and overhead cables and remain outside overhead power no-go zones. Contact site supervisor if works will penetrate the no-go zone
Work near trenches > 1.5 m deep	Trench collapse, slips, trips, falls & engulfment.	**Trench Shoring & Battering** Trenching in excess of 1.5m in depth must reduce the risk of the trench collapsing by ensuring that all sides of the trench are adequately supported by one or more of the following means: - shoring by shielding or other comparable means - benching - battering  **Fig. 2 Benching and Battering** No trades are permitted to enter into a trench and penetrations in excess of 1.5m deep (eg sewer connections) unless they have been safely battered back (preferred method), or it has been properly shored, or the workers are fully protected within a trench shield.

		Shoring should be positioned and fixed from above; never from below. All timber used in ground support should be at least F8 grade hardwood. Trench shoring should not be softwood because this can fail suddenly without warning, whereas hardwood will start to creak loudly when it is becoming overloaded, warning workers to leave the trench immediately. Trades entering into excavations must always wear safety helmets. If Trench shoring is to be employed contact must be made with the Site Supervisor to prepare a JSA for the works to be undertaken. All access and egress to excavations and trenching shall be in the form of a ladder or pre-formed stairs to minimise the risk of injury. Excavation, trenching and penetrations shall be backfilled and stabilised on completion of the task to minimise the risk of injury.
Securing trench > 1.5m deep	Falls, slips & trips.	Trench work should be completed and back filled or concreted on the day of operations. If this is not possible the trench is to be secured. In securing the trench, you must consider: • risks to health and safety arising from unauthorised access to the work area, and • the likelihood of unauthorised access occurring. Methods employed to secure the trench from unauthorised access include: - back filling the trench, screw pile, footing - cover the trench with a trench cover - Erect fencing around the trench preventing immediate access - If leaving a trench open overnight or when absent from the site ensure site fencing is in place and site secure from entry. This may include locking the gates to prevent entry. Contact is to be made with the site supervisor if works cannot be completed in the allocated day requiring the trench to be exposed whilst the site is unattended.
Plant operating near trenches > 1.5m deep	Trench collapse, plant overturning, Engulfment	Mechanical plant, vehicles, storage of materials (including excavated material) or any other heavy loads should not be operated or located in the ‘zone of influence’ of an excavation unless the ground support system installed has been designed by a competent person, for example, a geotechnical engineer, to carry such loads. The zone of influence is determined by a competent person (for example, a geotechnical engineer) and will depend on the ground conditions. It is the zone in which there may be an influence on the excavation, including possible ground collapse.

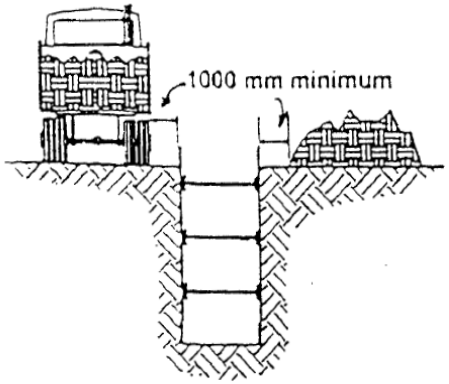


Figure 13a: excavation with shoring designed to carry soil, vehicle and material loads

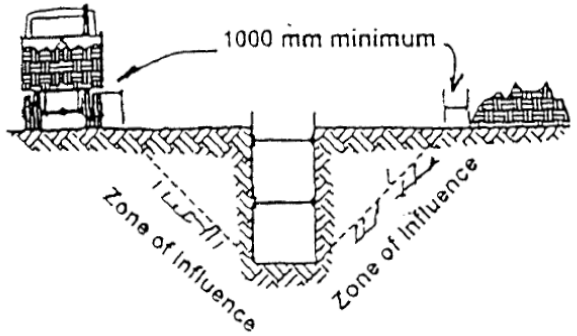


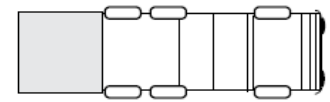
Figure 13b: shoring designed to carry soil loads only

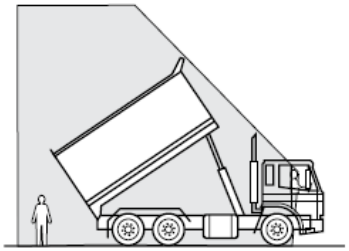
Figure 13 shows an example of:

a) an excavation with shoring that has been designed to carry vehicle and material loads – this may be required where there is limited space around the excavation for vehicle movement and /or material storage, and

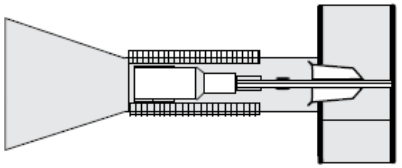
b) an excavation with shoring that has been designed only to carry the load of the excavated faces and the related zone of influence.

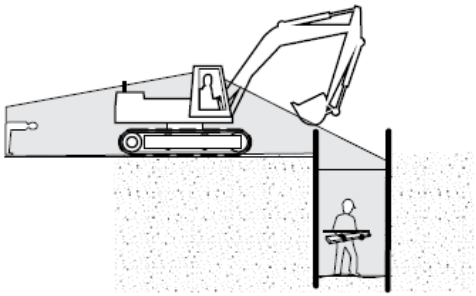
In most cases the excavator should operate as a minimum 1m away from a trench face unless a geotechnical engineer indicates supporting shoring is able to support the excavators load.



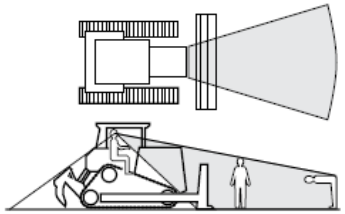


TIP TRUCK

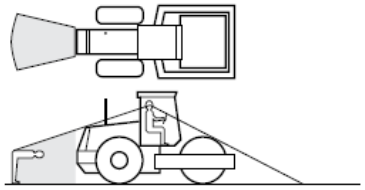




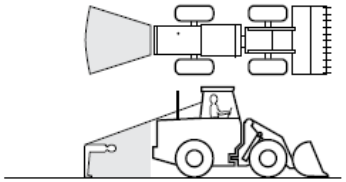
EXCAVATOR



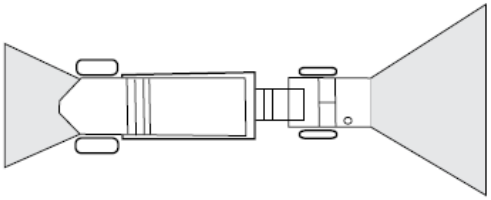
DOZER

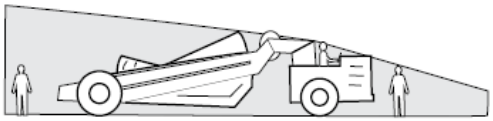


VIBRATING ROLLER

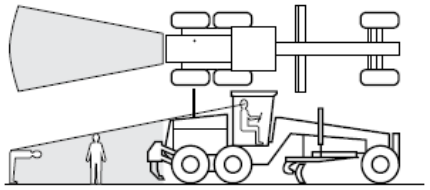


RUBBER TYRED LOADER





RUBBER TYRED SCRAPER



GRADER

		Figure 15: mobile plant operator blind spots ***Operator protection*** Powered mobile plant should be equipped with appropriate combination of operator protection devices, for example, enclosed cabin and seat belts, to prevent the ejection of the operator or the operator being struck by falling objects. Any earthmoving machinery manufactured, imported or originally purchased after 1 January 1989 should have an appropriate operator protective structure fitted. These are either in the form of roll-over protective structures (ROPS) or falling object protective structures (FOPS). ***Operating near excavations*** Powered mobile plant and vehicles should not operate or travel near the edge of an excavation unless the ground support system installed has been designed by a competent person to carry such loads. Physical barriers, such as wheel stoppers, can be one way of restricting plant movement near an excavation (see *Figure 16*). ***Inspection and maintenance*** Regular planned inspection and adequate maintenance should be carried out in accordance with the manufacturer's instructions to ensure safe operation of mobile plant used on excavation work, whether leased, hired or owned. Both mechanical and electrical testing should be done. The following checks should also be carried out: • daily checks by the plant operator on the general condition and maintenance of the plant, and • regular inspections of the plant by a competent person in accordance with the manufacturer/supplier's specifications or relevant Australian Standards. Any plant defects should be reported immediately to the person responsible for maintaining the plant. Where a defect is likely to pose an immediate risk to health and safety the plant should be removed from service until the defect is rectified. Owners of plant and associated equipment should keep logbooks and inspection check sheets containing a full service and repair history. These records should be maintained so as to include any reported defects, kept current and retained for the life of the plant. If the plant is sold, the records should form part of the documentation forwarded upon the sale.
Placement of excavated soils	Trench collapse, overturning of plant, Slips, trips & falls	To reduce the risk of ground collapse, excavated or loose material should be effectively stored or retained away from the excavation. Excavated material should be placed outside the zone of influence. Alternatively, a ground support system should be designed and installed to carry the additional loads, including any ground water pressures, saturated soil conditions and saturated materials.

If excavating in sloping ground, you will need to decide on which side of the excavation to place the excavated material. Things to consider include:

- ground conditions
- access to the excavation
- existing underground services
- the need for earthmoving machinery or vehicles to work or move along beside the excavation
- service installation and backfilling requirements, and
- any manual work being undertaken in the excavation.

Placing material on the lower side of the excavation will reduce the effective height of the excavation (see *Figure 14*) and the risk of material falling or being washed into the excavation.

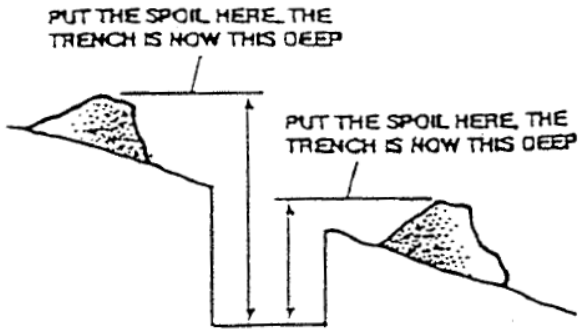


Figure 14 – excavated material impact on effective excavation depth

Placing material on the higher side of the excavation can enable easier backfilling and provide more stable work areas for earthmoving machinery on the lower side.

Care should be taken to ensure that material placed on the high side of the excavation does not increase the risk of ground collapse, or flooding by ponding or holding back runoff water. Excavated material should be placed so that it channels rainwater and other run-off water away from the excavation.

		When a trench is being excavated beside an old service line, the excavated material should be placed on the side opposite the old service line to prevent excessive loading on previously weakened ground. When it is necessary to place excavated material close to a trench due to obstructions such as fences, buildings, or trees, the weight of the excavated material may overload the sides of a trench and the ground support system will need to be strengthened at these locations. There may also be a need to provide barriers, such as toeboards, to prevent the material falling into the excavation. Different soils, when dumped in heaps, will assume a characteristic shape and settle naturally at different slopes. The angle which a sloping face of loose earth makes with the horizontal is sometimes referred to as the angle of repose. However, it is poor practice to relate the safe slope of an excavation to the angle of repose, even though the safe slope may be similar in some types of soil to the angle of repose. •
Use of explosives for creating trenches, removal of rock,	Struck by materials, Dangerous goods Explosion	Any construction work that involves the use of explosives is high risk construction work and a SWMS must be prepared before this work commences. All possession, storage, handling and use of explosives must be carried out in compliance with the relevant dangerous substances/goods or explosives legislation applicable in your state or territory. The transport of explosives must be in accordance with the *Australian Code for the Transport of Explosives by Road and Rail.* Explosives can only be used by a competent person who is licensed in the use of explosives and has experience in the work to be undertaken. If explosives are used in excavation work, a licensed shot firer must be engaged to undertake the work, develop the blast management plan and be responsible for all aspects of the use of explosives in the excavation. The hazards to be considered in the assessment and control of risks include: • storage, transport and use of explosives • ground support requirements • ground vibrations, overpressures from blasting and fly rock • drilling of faces • firing times and preventing access to firing areas, and • clearance of blasting fumes and dust. Blasting should be used on a very limited scale in built up areas. Adequate warning signs should be displayed and controls implemented to prevent material becoming airborne, such as using pegged or weighted blasting mats or similar aids. Public vehicle and pedestrian traffic controls are often required. Ground vibration should be controlled by limiting blast size and the use of delays.