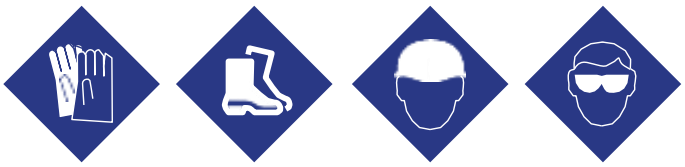
Vertical Shores

Hazard and Risk Assessments

Before using this equipment, the job you are doing must be assessed for foreseeable hazards and risks and appropriate measures to eliminate, control or reduce those risks must be taken before you commence work.

Suggested PPE (Personal Protective Equipment):



Protective Gloves **Protective Footwear** **Hard Hat** **Eye Wear**

Note: PPE must be suited to the risks and person(s) using the equipment.

Safety Instructions:

1. **Operating Instructions** – Before using this equipment ensure you have read the 'Operating Instructions' and taken note of the 'Hazards and Risks' detailed on this instruction sheet and taken all necessary steps to prevent injury.
2. **Personal Protective Equipment** – Use appropriate personal protective equipment for the job.
3. **Installation Advice** – The safe use and application of Vertical Shores must be in accordance with AS3610, the Occupational Health and Safety Act, approved Codes of Practice and any other regulatory requirements. Consultation with a qualified engineer is advised.
4. Keep hands/fingers away from pivot/pinch points at all times. Serious injury can occur when carrying vertical shores, always use the outside of the rail.

HAZARD: Risk of Structural Collapse and Crushing

... Incorrectly installed Vertical Shores may cause trench collapse.
... Consultation with a qualified engineer is advised.

Inspection

The designated competent person shall ensure that all excavation work is done in compliance with the requirements of the Local OH&S Authority Standard for excavations.
They will inspect all components of the shoring system prior to use, as well as daily inspections or when job site conditions change. Any damaged, defective or inadequate components shall be repaired or replaced.

Safety Recommendations

A competent person needs to understand the regulations relating to OH&S and determine proper protective system requirements. The competent person shall be experienced and knowledgeable in trenching and excavation procedures.

Vertical Shores

Vertical Shores are composed of vertical rails and hydraulic cylinders, which are manufactured from aluminium.

Vertical Shores can have one, two, three, or four cylinders depending on the length of the rails, those with 3 or 4 cylinders use heavy duty rails.

Single and double cylinder Vertical Shores are typically installed and removed from the top of the trench by manual means using Shore Hire installation tools, but larger systems are typically installed and removed by the excavator.

Shore Hire supplies different systems depending on the size of the excavation and ground conditions encountered. Always ensure that the system you have selected is suitable for the ground conditions on your site.

Include surcharge load in your calculations when determining your shoring requirements. Surcharge loads include:

i. SITE TRAFFIC

ii. ADJACENT TRAFFIC

iii. EXCAVATED SPOIL FROM THE EXCAVATION

iv. NEARBY BUILDING

v. EXCAVATOR OR CRANE

Equipment Required to Install Vertical Hydraulic Shoring:

i. VERTICAL HYDRAULIC SOLDIER SHORING UNITS = 3 MINIMUM

ii. HYDRAULIC FLUID HAND PUMP/HOSE

iii. INSTALLATION/REMOVAL HOOK

iv. RELEASE TOOL

Release/Removal Tools – The release tool is required to remove the hose from the Vertical Shore after installation and release pressure from the cylinder prior to removal of the Vertical Shore from the excavation. Removal hook is used in conjunction with the release tool to remove Vertical Shore from the excavation.

Installation Procedures

Vertical Shores should only be used in stable soils that will stand up throughout the excavation. The following operating procedures are appropriate.

1. Complete the excavation.
2. Place Vertical Shore perpendicular to trench.
3. Unfold shore to open position.
4. Connect the female coupler on the pump hose to the male coupler on the Vertical Shore.
5. Prime the system by pumping enough fluid to initiate movement of cylinder.
6. Vertical Shore should now be expanded to a position slightly less than the inside dimensions of the excavation.
7. Place the release tool in the handle and suspend the Vertical Shore at its intended location in the excavation (ensure that the top hydraulic cylinder is between 300mm and 600mm below the surface, and that the lower cylinder is no greater than 1200mm from the bottom of the trench. NOTE: In Victoria, the rail must be at the bottom of the trench).
8. Pump the system to pressure desired (750psi to 1000psi) or 51 bar to 69 bar, momentarily monitor pressure gauge for loss, and then release hydraulic coupler from cylinder by use of the release tool.
9. If the trench is too wide for the Vertical Shore in use, fluid will be expelled from a small hole in the topside of the cylinders. If this occurs, obtain a wider Vertical Shore, or change extension spaces.
10. Release pressure from the pump hose by opening the bypass valve on the hydraulic pump. This relief will be indicated by the pressure gauge on the pump.
11. Care must be taken to ensure that the hydraulic connections are kept clean during removal and reconnection to next Vertical Shore.
12. Connect the hose assembly to the next Vertical Shore to be installed.
13. Vertical Shores must be installed in a system of minimum 3 units.

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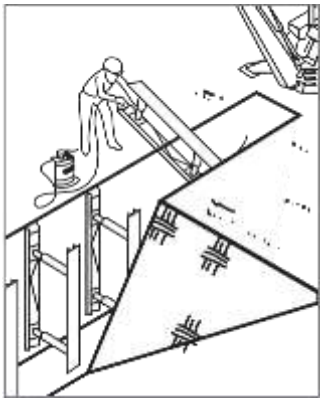

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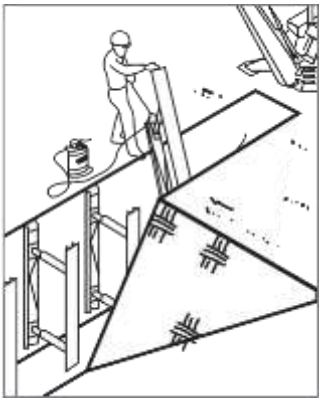

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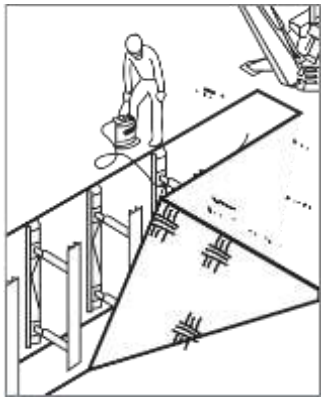

Removal Procedure

To remove Vertical Shores from the excavation the following procedure is suggested:

1. While standing in a safe position next to the trench, place the installation hook inside the handle of the rail with the hydraulic coupler. This rail must be on the same side of the trench as you are standing. Then insert the removal hook into the handle of the other rail on the opposite side of the trench.
2. Relieve the pressure on the cylinders in the Vertical Shore by use of the release tool. The tool is used to press on the male connector on the top of the cylinder allowing shoring fluid to escape into the excavation. Ensure hook is attached to rail. Initially release a small amount of fluid from the cylinder and observe the shoring system for any
soil movement.

   Take care to remain in a safe position during continued pressure release in cylinder. After observing the effect of pressure release upon the system complete fluid removal until the cylinder has been compressed to desired position.

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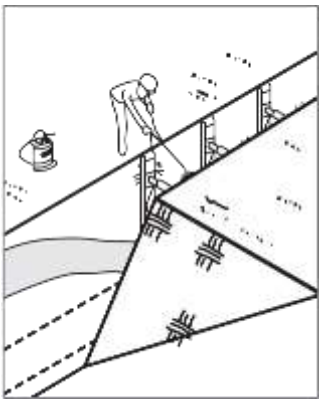

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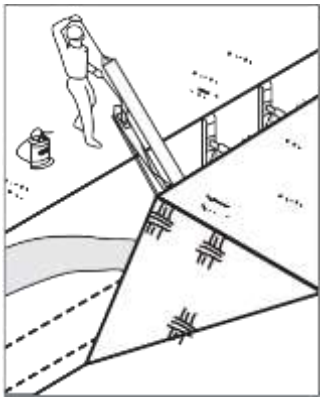

3. After pressure has been relieved on the cylinder, pull the removal hook towards you and lift the unit sideways out of the excavation.
4. Continue this procedure until all units are removed from the excavation.

PLEASE NOTE: Final removal procedure to be determined by the competent person on the job site based on backfill requirements.

RISK ASSESSMENT (1= HIGH RISK, 5 = LOW RISK)

Risk (Ranking)	Description	Control
1	Vertical Shores should only be installed in stable soil that will stand throughout excavation. Do not use vertical shoring in unstable soils, this could cause personal injury/death.	Always ensure no person enters the excavation before the vertical shoring has been installed.
1	Install Vertical Shores in a system of minimum 3 units and within trench widths and depths appropriate for cylinder spacings and extension sizes.	Install as per operating instructions at all times.
1	Installing vertical shoring without following the operating instructions may cause the system to fail or cause trench collapse.	Adhere to operating instructions to ensure that the vertical shoring are installed in the correct manner.
3	Cuts ad grazes may occur from improper handling procedure.	Observe safety procedures. Always wear PPE.
2	Be aware of pinch points on Vertical Shores, hands and fingers should never be place within the pinch points.	Follow safety procedure and operating instructions. Wear appropriate PPE.

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