DGVP Double Slide Rail Installation Method

July 2010

Introduction

The Krings International France (KIF) DGVP double slide rail shoring system can be used for trenches up to 12m wide and 6m deep. Each module is 4.4m long. The following document outlines the sequence for installing the DGVP double slide rail system.

It is important to keep the slide rails vertical and the arrangement square. This can be achieved simply using a spirit level and by measuring diagonals.

SAFETY

Lifting, handling, pulling, dragging

- Handling should be carried out as close to the ground as possible.
- Lifting chains must be chosen to suit the weight being handled and must be certified.
- To prevent the accidental detachment of the load use only load hooks with safety catches.
- The load must be slung in such a way that the shoring is kept in a horizontal position and swinging is kept to a minimum.
- Shoring should be lowered onto level and firm ground.
- Do not stand within the pivoting range of the excavator or crane or beneath suspended loads.
- A load operator must stand to the front of the excavator and be in eye contact with the machine operator.

Measures to reduce hazards

- The safety of persons on site is paramount and should be enhanced with the aid of appropriate signs, cones, warning tapes and safety staff trained and deployed for the purpose of preventing accidents.
- The risk of instability as a consequence of wind loads when setting up or using shoring must be considered.
- Shoring must be secured against accidental impacts and set up in an area of sufficient size and on firm ground.
- Care must be taken to look out for and avoid contact with overhead cables when handling, installing and removing shoring.
- Where the ground is sloping or uneven, the shoring should be set up, if possible, at right angles to the slope.

Reasons for taking parts out of service

Before use, all shoring components must be checked for their correct function. Reasons for taking parts out of service include:

- Missing or broken parts such as nuts, pins or locking pins
- Severely worn or damaged parts, including panels with holes
- Loose nuts and bolts – check and tighten all nuts and bolts before using

Faulty parts must be replaced or repaired. Only original replacement parts from the manufacturer or TSNZ may be used. Repairs must be carried out by TSNZ or carried out by another party only when in authorised in writing by TSNZ.

In all cases of doubt always consult TSNZ or your local officially appointed TSNZ agent.

LIMITATIONS AND GUIDELINES

The DGVP double slide rail system is designed and certified to operate at maximum loads. If the user or operator is unsure of the loads likely to be encountered at a specific site, professional engineering advice should be sought to determine this.

Typical site conditions which affect lateral loads due to earth pressure are:

- Depth of excavation
- Soil types
- Ground water levels
- Surcharge loads, for example;
  - one or other sides of the excavation may have adjacent ground which slopes down towards the excavation
  - buildings or other structures close to the excavation
  - traffic close to the excavation
- Differential surcharges – where the extra loading is on one side of the trench only.
- The width of the excavation and shoring

Other limitations and recommendations:

- Always use the Plate Protector supplied to ensure that panels are not damaged
- Keep the installation vertical and square at all times
- Ensure that lifting equipment has sufficient capacity to install and recover the system components – generally, a 30 tonne excavator, or bigger, is recommended for primary excavation and installation, together with a smaller excavator or crane to lift components into place..

EQUIPMENT

Checklist:

- Am I trained for the task?
- Am I wearing the correct PPE (Personal Protective Equipment) for this task?
- Do I require assistance from a licensed machinery operator- eg cranes?
- Do I have the correct tools for the task?
- What are the safety devices being used on site – eg chains etc?
- Is the work are cleared of debris, tools etc?

Equipment:

A certified lifting chain with the correct leg lengths for the size of the equipment being lifted must be used. Such a lifting chain must be appropriately rated to lift and handle components and assemblies, which may weigh up to 4.5 tonnes.

Personal protective equipment (PPE)

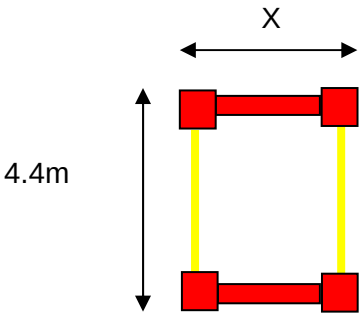
Safety boots, gloves, hard hat, gloves, high visibility vest or jacket

Tools recommended

Lifting chains and shackles
Ring spanners to suit nuts and bolts supplied
Spirit level
Tape measure

METHOD

1) Excavate a trench approximately1.5m deep by 4.4m by X, the overall width of the Slide rails and bogie car assembly. (Figure 1)



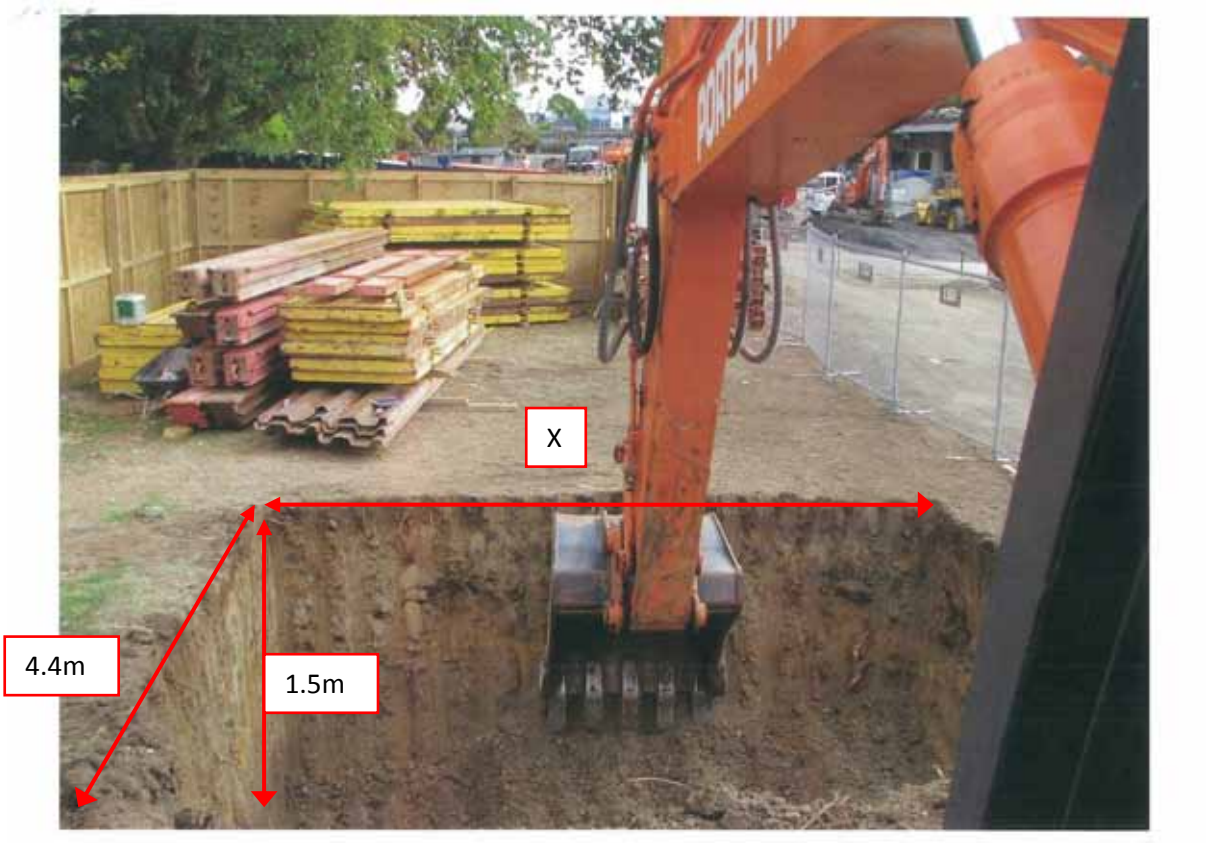


Figure 1

2) Lower the double slide rails complete with boogie car (transverse frame assembly) into the excavation and ensure it is plumb and square to the trench line. If the ground is hard it may be necessary to hold the assembly in place with a crane or second excavator until it has sufficient embedment to stand alone. The double slide rail assembly is then be pushed into the ground using a full excavator bucket on the top of each of the slide rails in turn. During installation, the boogie car should be set to the middle of the slide rails to provide the greatest strength and rigidity. Once fully installed, the boogie car can be raised to provide clearance for the installation of pipe or other work in the trench. It is locked at the required height by inserting boogie car locking pins in the double slide rail. (Figure 2, Figure 3)

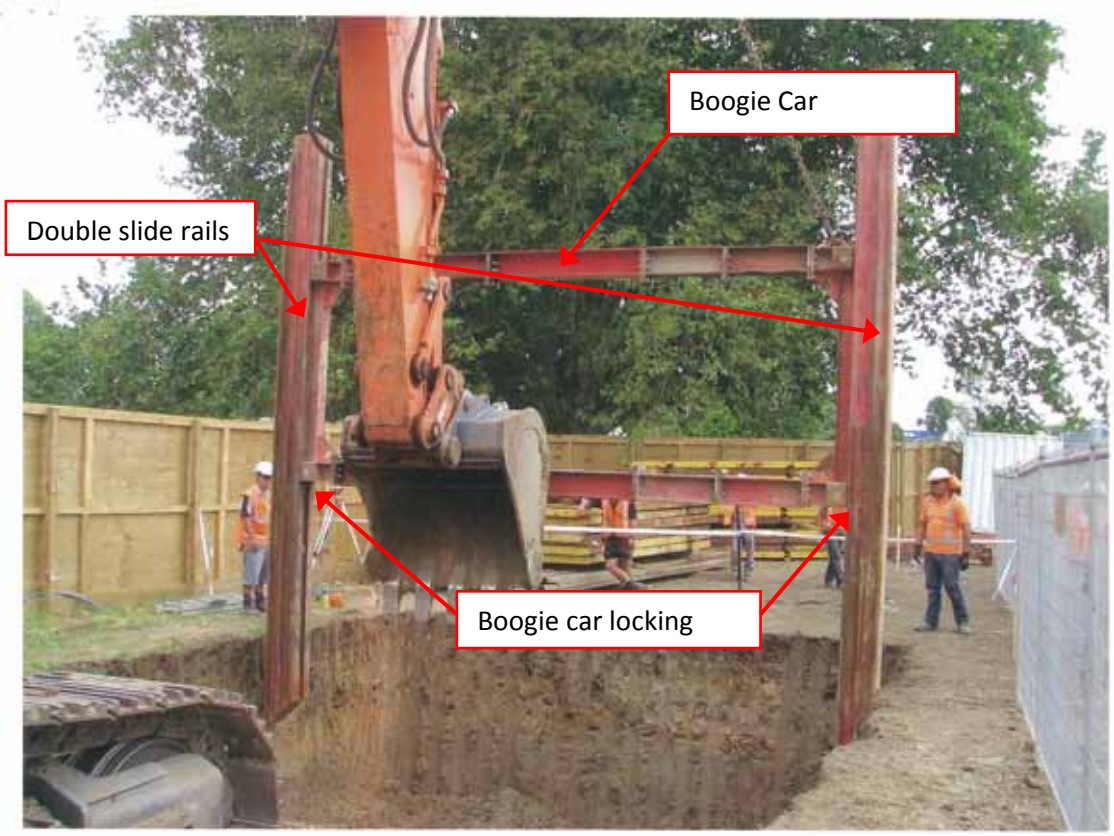


Figure 2

Figure 3

3) Lower base plates into the outer slide rail of the double slide rail system. The base plates must sit parallel to each other in order for the next double slide rails to be installed. Do not push these base plates into the ground. (Figure 4) Ensure that the branding on the panels faces the inside of the trench. Measure the distance between the free ends of the panels to ensure they are the correct width to receive the next frame assembly.

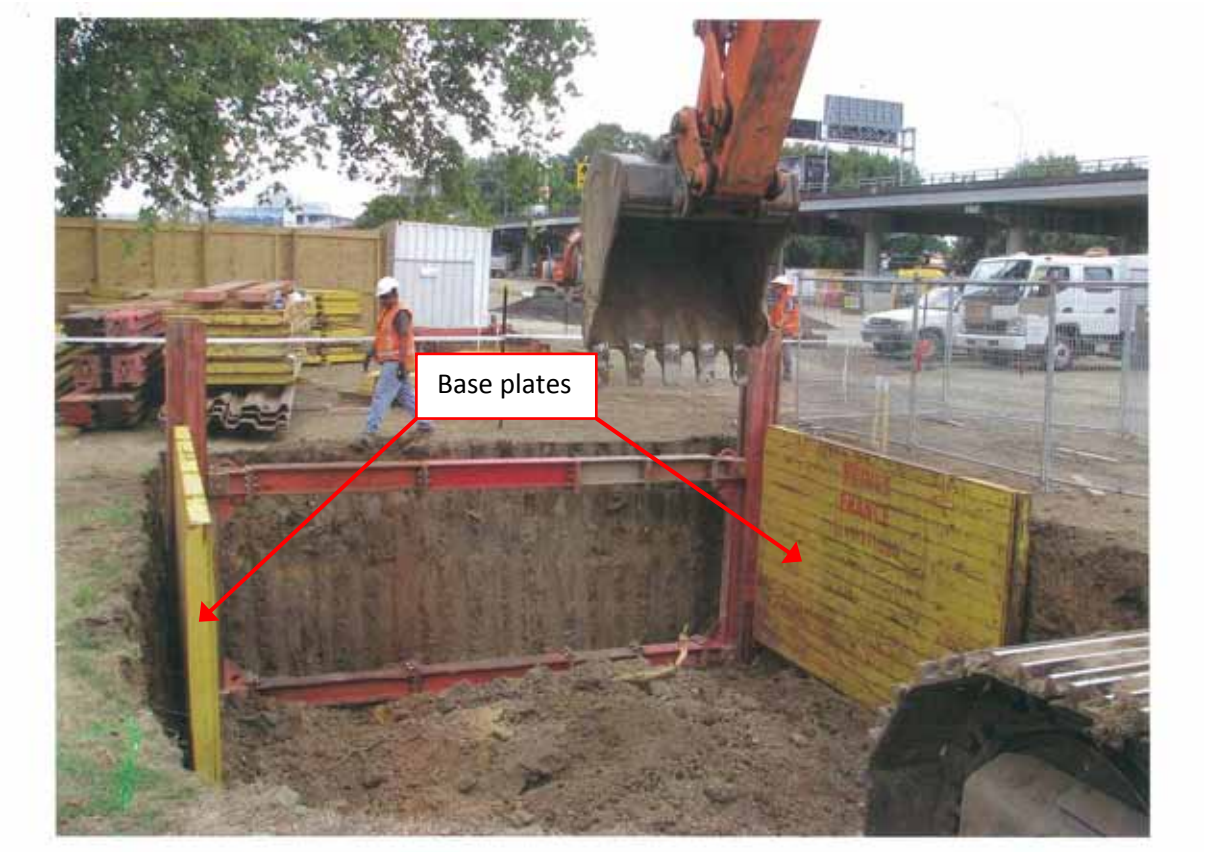


Figure 4

4) Lower the next double slide rail assembly, complete with boogie car, into excavation. The base panels must be aligned with the outer slide rails. Using the excavator bucket push the double slide rail and boogie car assembly into soil, ensuring it is plumb. Lock the boogie car at the required height using the boogie car locking pins. (Figure 5, Figure 6)

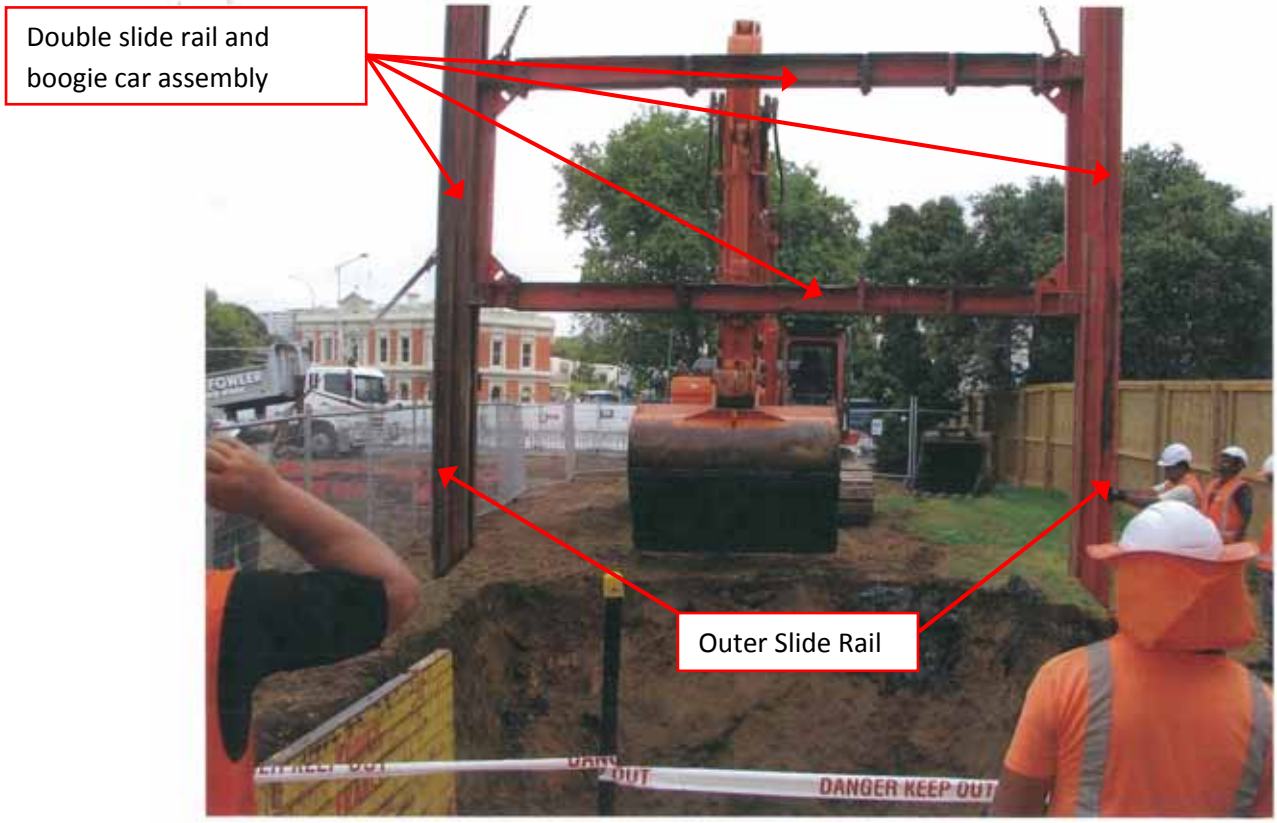


Figure 5

Figure 6

5) Depending on the depth of the excavation, extension plates may need to be dropped in on top of the outside base panels. The extension plates and base plates are connected using locking pins placed into the lifting points. Push the combination of panels to the depth required before inserting panels into the inside slides. Lower base panels into the inner slide rails and slide them down past the outer panels. They will drop to the full depth of the excavation as the excavation progresses. (Figure 7)

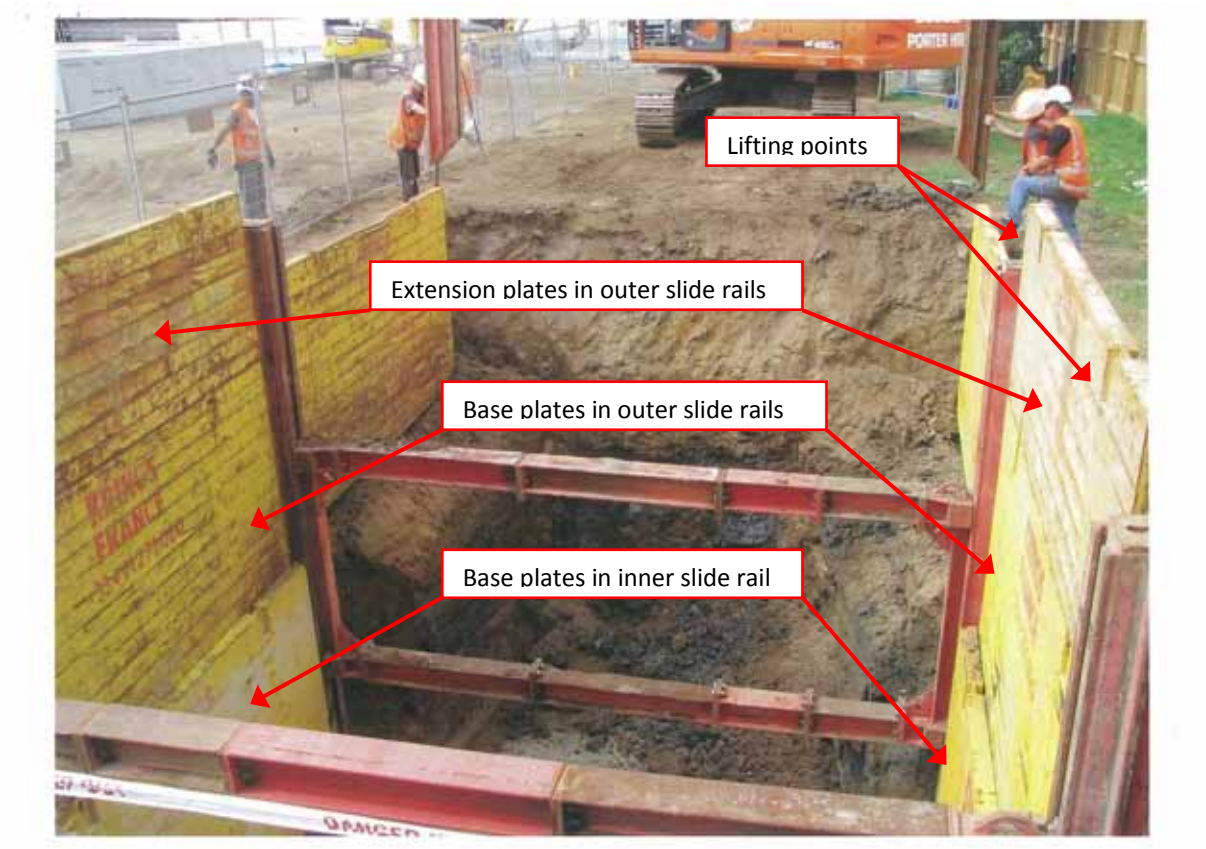


Figure 7

6) Excavate trench to full depth pushing down the inner base plate as the excavation progresses.

7) To extend Double slide rail shoring system repeat steps 3 – 6. (Figure 6, Figure 7, Figure 8)

Figure 8

8) Once installed and excavated to depth, raise the boogie car assembly to allow work to proceed at the required depth. Lock the boogie car into place using the pins provided. (Figure 9)

Figure 9