Phi Group
Montis Court
Bouncers Lane, Cheltenham
Gloucestershire, GL52 5JG
T: 01242 707600
E: southern@phigroup.co.uk
W: www.phigroup.co.uk

OPERATION & MAINTENANCE - PERMACRIB

1. INTRODUCTION

The Permacrib retaining wall system is a gravity structure built at a batter of 4:1 (14° from Vertical) such that the weight of the wall resists the pressures exerted on it from the ground behind. It comprises treated timber components to create a crib structure that is filled with inert crushed stone. The depth of the structure will increase with the height of the wall.

Materials used:-

Crib Components:	Radiata Pine Timber treated to User Class 4
Reinforcing elements:	None used as this is a gravity structure
Fill to the structure:	Crushed granular fill with no fines
Foundation:	Concrete strip footing

2. PHI GROUP DESIGN DRAWINGS

Issued to suit project

3. CONSTRUCTION METHODS

As per the standard detail drawings read in conjunction with project specific Works Package Plan.

4. MAINTENANCE PROCEDURES

Any long term maintenance is basically periodic visual inspections to detect damage or abnormalities. Any damage detected should be reported and advice on repair should be sought from Phi Group. These would be typically annually, but will vary depending on the location of the wall and what it is supporting.

Abnormalities may include, but not limited to: localised bulging of the face; broken components; damage by impact or vandalism; vegetation on the face; excessive water through the face.

No requirement for any cleaning is anticipated.

If any fencing has been installed at the top of the wall to prevent falls, this will need to be inspected to ensure it remains adequate. Typically any fencing will not last as long as the structure and will need to be replaced during the lifespan of the retaining wall.

A rear of wall drain will have been installed at construction stage, so the relevant catch pit, manhole or soak away within the development should also be checked annually to ensure this can still flow.

5. POINTS TO BE AWARE OF

5.1 Minor impact damage

Individual split, broken or damaged timber components will not affect the structural capacity of the wall and can be repaired locally if required. If several components are broken in the same area such that it will affect other parts of the wall or loss of the infill stone, advice should be sought from Phi Group or a structural Engineer.

5.2 Major impact damage

As with any structure, affected areas may require re-building with localised support of the fill behind. Advice should be sought from Phi Group or a structural Engineer.

5.3 Fire damage

Local damage from small fires should not adversely affect the performance of the retaining wall as the Permacrib Timber, surrounded by crushed stone, does not burn readily. But after a fire the components should be inspected for damage and advice should be sought from Phi Group or a structural Engineer.

5.4 Settlement

The “method compaction” guidance within Specification for Highways Works; Series 600 is based upon achieving over 90% compaction. It follows that some post-construction consolidation should be expected. The Permacrib system is also a flexible structure that can accommodate differential settlement caused by seasonal moisture changes, so some minor movements will occur over its lifespan.

5.5 Excavation near the wall

Excavation behind the retaining wall may affect the structure but it will be based on how close and to what depth the excavation is carried out. Also the plant used to carry out the excavation can damage and exert large loadings on the wall. If any excavations are required behind the wall advice should be sought from Phi Group first.

Excavation in front of the wall may undermine the structure. Any excavation deeper than 500mm may have the potential to undermine the retaining wall foundations leading to settlement and possible collapse. Any excavation in front of the wall should be checked by a structural Engineer or further advice sought from Phi Group

5.6 Vegetation

The Permacrib system is a crib structure filled with inert crushed stone, so it is not expected to be susceptible to vegetation establishment from within the wall.

However, planting bags may have been installed in the wall to aid climbing plants to establish across the face by having localised pockets of soil for the plants roots. Thus the system can accommodate vegetation on the face such as grasses, ivies or small shrubs as these cause no detriment to the design. However, any shrub or plant with trunk greater than 15mm should be removed as it can reduce the walls durability and can cause damage internally to the structure.

5.7 Water

The Permacrib retaining wall has crushed stone within and behind the wall with a rear wall drain to remove the water away. Thus the wall should have very little evidence of water within it. If water is coming through the face this would mean excessive water is coming from behind the structure and should be investigated to find the water source and remove it. It may also mean the drain exit has become blocked and needs to be cleared.

6. DEMOLITION AND DISMANTLING

No demolition should be undertaken without reference to Phi Group or a Structural Engineer.

7. RESIDUAL RISKS

As with any type of retaining structure, falling from height is a residual risk. When Phi Group installs a retaining structure it will normally have a fence already built in to the top. Occasionally post void formers will be left in the top for the Main Contractor to install a fence after our works are complete. This will ensure that falling from height from the top of the structure has been addressed, but the fencing will need to be maintained for the lifespan of the structure by others.

Retaining structures can be climbed by people and this may also be an issue. The Contractor will need to take any necessary steps to bring this to the end-users attention.

8. PRODUCT LITERATURE & BBA CERTIFICATION

Visit the Phi Group website at www.phigroup.co.uk for Brochure and further details.