Water Management | Precast | Retaining Walls

Precast Chamber Installation Manual

Type : **‘Flat Pack’**

System : **Bolted Panels**

Introduction

This manual gives guidance on how to install a Marshalls CPM Precast Concrete Tank of the following type

Type: Flat Pack
System: Bolted panels

The manual will also provide the specification for in-situ concrete works required in addition to the pre-cast concrete assembly.

Drawings

Drawings will be referenced and issued under cover of a Marshalls CPM 'Drawing Issue Sheet'. Only construction issue drawings should be used.

Health and Safety

A Risk Assessment for 'Handling of Non standard Products' is also included.

Marshalls CPM is committed that its products are designed and manufactured to ensure the safety of users. Installation of products involves breaking ground and is thus considered as construction work under the Construction (Design and Management) Regulations 2015.

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In-situ Concrete Specification

To be in accordance with 'Civil Engineering Specification for the Water Industry'

Specific requirements

Blinding	*Strength class C12/15*
Foundations	*Strength class C 32/40 with a max w/c ratio of 0.55*
Slabs	*Concrete to be strength class C 28/35 with a max w/c ratio of 0.55*

Lifting and Handling

All components supplied will utilize a threaded lifting socket system. The system allows both unloading from lorries and to 'tilt' into position during erection.
Wall panels will also have threaded sockets for erection purposes and are used to plumb the wall panels.

Assembly Sequence Summary

The following is the recommended assembly and casting sequence

1. Lay granular foundation
2. Place precast base slab if being supplied or cast in-situ slab
3. Position and plumb the shorter end panels
4. Position long side panels and bolt to end panels
5. Grout in dowels to top wall panels if detailed
6. Place cover slab and grout in dowels if detailed.

Assembly and Construction Details

A 150-200mm granular foundation should be placed. The depth will depend on ground conditions i.e. in poor ground a deeper foundation will be required.

If a precast base slab is being supplied, it is important it sits level and is bedded evenly on the foundation stone. It is generally advisable to use a 15-20mm final leveling screed. This should be a sharp sand / cement mix.

Place the base slab and check for level.

The wall panels are placed on leveling shims set to level. The shims should be plastic 70mm square.

Push pull props can be used to plumb the wall panels utilizing the cast in sockets for the prop brackets. The prop brackets can be drilled into the base slab if 'Kelly Blocks' are not being used.

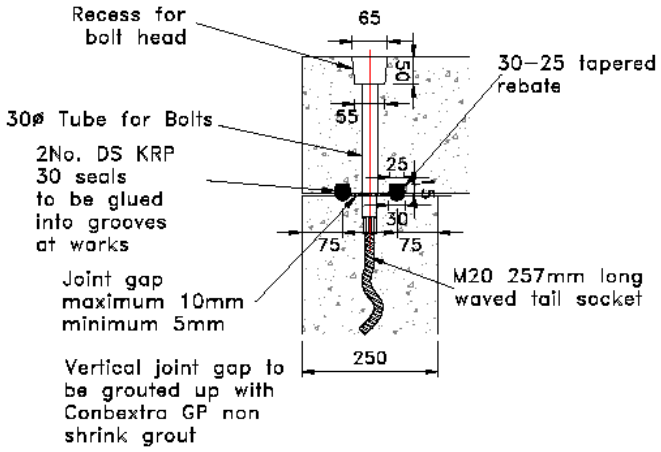
The end panels are positioned first and set to the correct dimension.

The longer side wall panels can now be positioned. They are also set on leveling shims so the correct level can be achieved. If the bolts are placed through the holes it will allow correct alignment.

The panels can now be bolted together. Depending on the weight of the panels, it may be beneficial to just take the strain of the weight using the lifting plant. This will allow the panels to slide over the shims when being joined. Smaller panels should be Ok to be pulled together using the bolts as the panel can slide over the plastic shims.

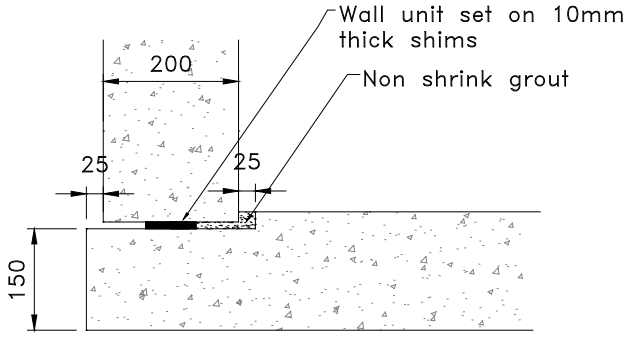
The bolts should be tightened up evenly both sides so the panels are pulled together square. Also the bolts should be tightened sequentially and partially tightened each time.

The panels should be bolted until the seals are squashed minimum 5mm, maximum 10mm joint gap between the panels.



CORNER JOINT DETAIL

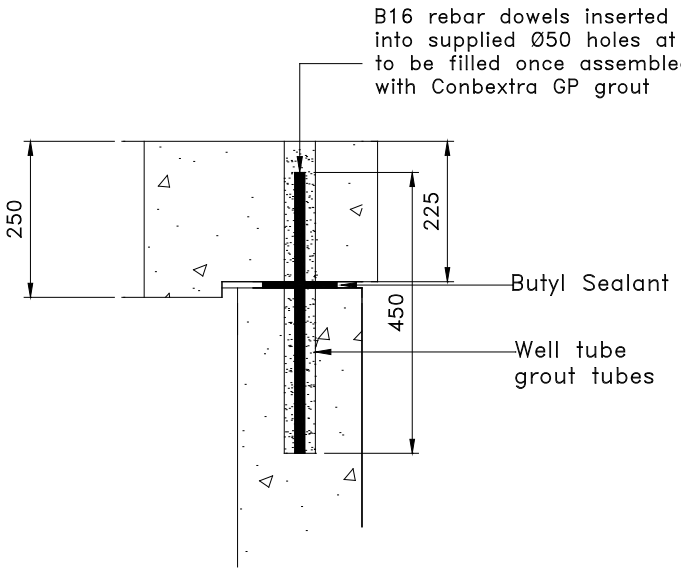
When all four sides are bolted up the panels have to be grouted. Sand can be placed around the outside of the panels to prevent grout loss. A general high strength grout should be used, but Marshalls CPM recommend Fosroc 'Conbextra GP' (see details in Appendix B).



BASE / WALL DETAIL

Any internal screed etc can now be cast and plant installed prior to placing the cover slab.

Cover slabs subject to traffic loading will be dowelled in place. The dowels are set into the top of the wall panels again using ‘Conbextra GP’ grout or similar. The cover slab positioned on butyl or bitumastic sealant as supplied and the dowel holes grouted to finished level. The butyl sealant should be placed over or around the dowels to retain the grout.



DOWEL JOINT DETAIL

Backfilling to the chamber should be in accordance with the contract specification.

APPENDIX A

RISK ASSESSMENTS

APPENDIX B

CONBEXTRA GP GROUT