

adbri MASONRY

How to Build a Better Block Swimming Pool



Adbri has developed a system of using concrete blocks to build a pool. There is virtually no limit to what shape or size that can be built. This brochure describes typical procedures for building domestic swimming pools including 'wet edge' pools with Adbri concrete masonry. Because site conditions vary, it is recommended that professional design advice be obtained from an engineer.



Besser blocks, as well as being an advantage in the construction of swimming pools can also be used in the construction of a screen wall if required.

In swimming pool construction it is important for the walls and floor to be structurally integrated to ensure maximum strength and a permanently water-tight structure. The combination of a reinforced concrete floor and reinforced Besser Block walls achieves these objectives.

The pool walls are constructed with Besser hollow blocks and reinforced with steel rods placed in the cores, which are then completely filled with concrete.

An important part of this construction method is that the floor slab should be poured and the walls filled with concrete in one continuous operation so that the floor and walls become a single reinforced concrete structure.

The techniques described in this brochure are suitable for domestic swimming pools, either totally inground, with coping beams not more than 500mm above ground, or completely out of ground with a cantilevered walkway or a 'wet edge'.

The finishing touch to your pool... Adbri pavers. Choose from our wide range of shapes and fashion colours.

Wall Construction

After excavation, the walls can be set out to approximate dimensions in the normal way for blockwork. Conventional footings are not required, but a firm and level base is necessary so that walls will be plumb and straight. This is easily provided by placing a concrete pad 50mm to 75mm thick and 220mm wide on which the bottom course is laid (figure 1).

The first course consists of 20.45 blocks with mortar between foundation and blocks. The blocks are placed together without mortar in the 'perps'. A sloping floor can easily be achieved by providing 200mm steps in the first course (figure 2).

Subsequent courses are laid using 20.48 blocks with mortar in the bed joints only, and one 20.21 block at each corner with the appropriate end and side knocked out. Horizontal steel reinforcement is placed in accordance with the designs as shown in the following general specification as the walls are built up.

The top course consists of 20.61 blocks laid with open ends facing out for coping beams or cantilevered walkways. These are then 'stack-bonded' together to the 20.48 blocks using a waterproof adhesive. Formwork is then used to provide a coping or walkway of the desired width. Between the blocks in the top course, use a small amount of waterproof adhesive to glue them together. Some formwork will be necessary for pouring the coping beam or suspended cantilevered walkway. Curved walls can be built if required. 20.48 blocks are used in the top course for decking walkways or 'wet edge' construction.

Plumbing - General Information Guide Only

Installation of filtration plant and pipe work should be carried out in accordance with the manufacturer's instructions. The skimmer box should be installed in the top course at the end of the pool facing the direction of prevailing winds. A small amount of timber formwork may be necessary to retain concrete around the skimmer box (figure 2).

The main drain complete with hydrostatic pressure relief valve should be placed at the lowest point of the floor (figure 2). In clay or other heavy soils, a pit approx. 500mm square x 500mm deep should be dug where the main drain is to be placed and filled with coarse gravel.

The suction line from the main drain should pass under the bottom course and rise to the skimmer box outside the wall. Never install pipes in the cores of the blocks as a weakness in the wall will result. The water line to the pool should be located so as to impart a circular flow to the water in the pool or as recommended by the equipment supplier.

Please note detailed plumbing design should be sought from the pool contractor and that information could replace above details.

Steel Reinforcement

After blockwork and plumbing are complete the foundation is trimmed to shape and bedding sand placed about 50mm to 75mm thick. A vapour barrier is then placed and the mesh reinforcement for the floor laid. Starter bars are then placed in the walls in accordance with the design and tied to the floor mesh (figure 1). Vertical steel is then placed into the wall, lapping the starter bars as shown in the wall detail sketch.

Concrete

Rapid placement of floor and wall concrete in a continuous operation is important and it is recommended that concrete be pumped into place, starting with the floor (figure 3). Note: When ordering pre-mixed concrete it is very important to tell the supplier that the concrete will be pumped. Concrete for the floor should have 75mm to 150mm slump and be vibrated into place. The bottom course of the walls must be completely filled with concrete. The floor is screeded and a curve formed at the floor wall junction.

As soon as the floor concrete is in place, fill the walls with 125mm to 150mm slump concrete. Concrete in the walls is rodded to ensure that no air pockets remain. Concrete in the walls must NOT be vibrated. Concrete must be correctly cured to avoid cracking. The pool is then ready for finishing trades ie: plastering, tiling or painting.

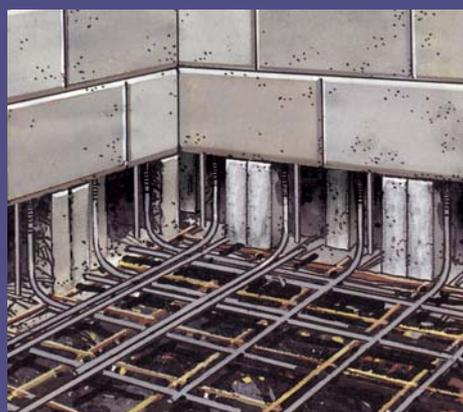


Figure 1

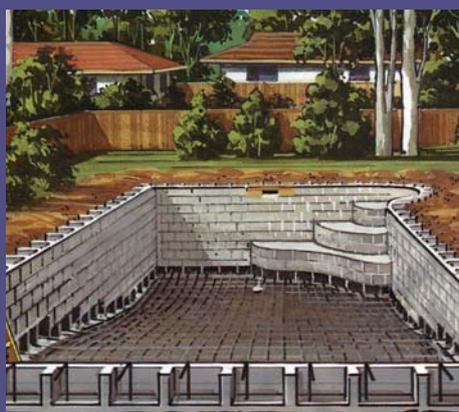


Figure 2



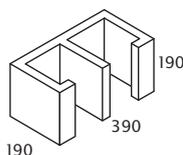
Figure 3

Block Types:

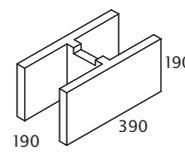
Only 4 block types are required: 20.45, 20.48, 20.21 and 20.61. For the bottom course, a 20.45 block is used to avoid a mortar joint through the wall.

The body of the wall is built using 20.48 blocks layed in running bond. As these blocks have open ends, they form large cavities down which concrete can be easily poured into. Also, as there are no mortar joints continuous from inside face to outside face, there is minimal chance of leaks.

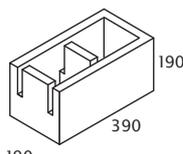
The corners of the pool are constructed with 20.21 blocks, which are required in each corner. Removal of knock-out sections allows horizontal steel to continue around the corners. The top course is formed using the 20.61 block for both coping and cantilever walkways and 20.48 blocks for decking and 'wet edge' construction.



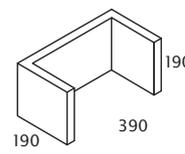
20.45
Special Cleanout
(ex-Brisbane)



20.48
"H" Block

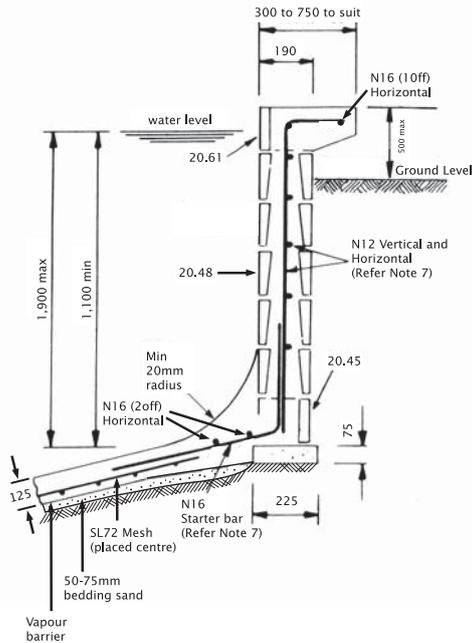


20.21
Corner Bond
Beam

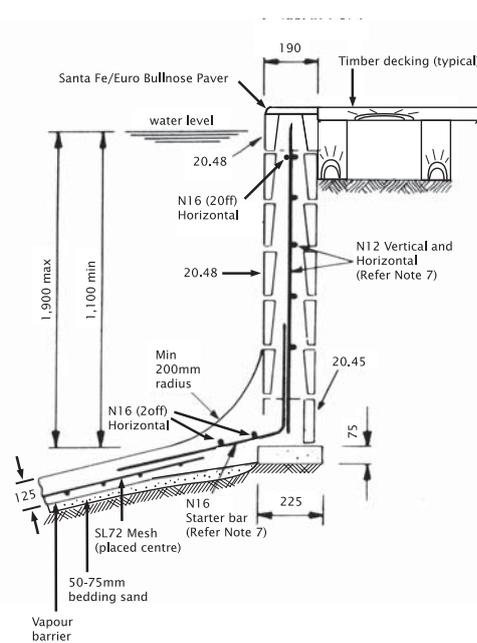


20.61
Pier

Typical inground Besser Block pool details (not to scale)

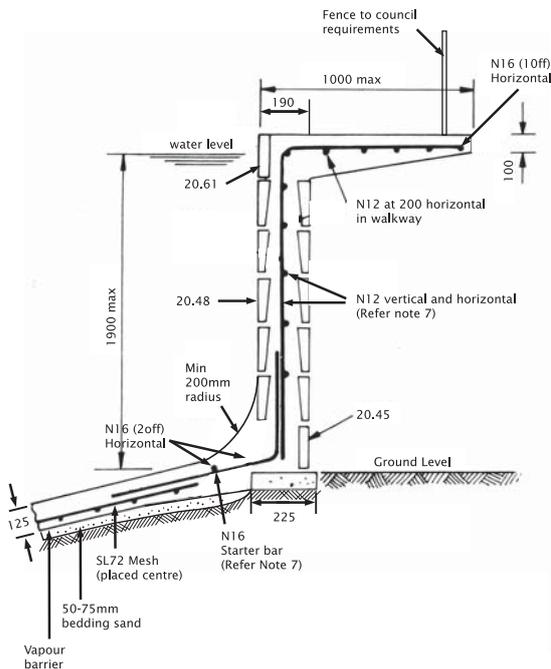


Coping/Walkway Detail

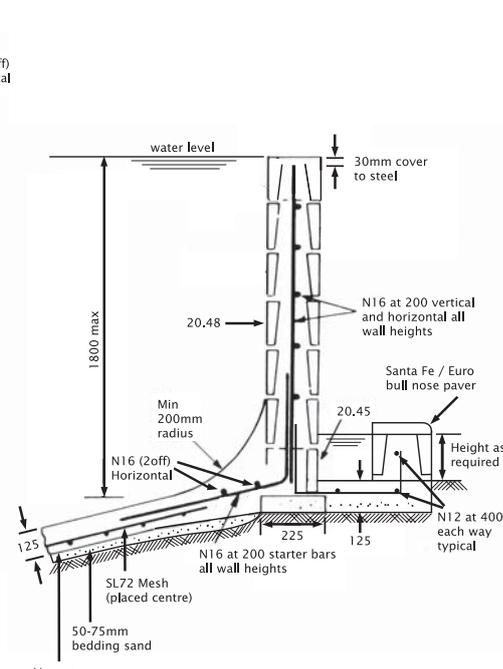


Decking Walkway Detail

Typical out of ground Besser Block pool details (not to scale)



Coping/Walkway Detail



Infinity Pool Edge Detail

NOTE

The details shown are typical only and are provided to assist pool owners, contractors and designers in the general structural use of Besser blocks for swimming pools. Mandatory requirements for submission to council are the responsibility of the pool owner.

General Specification

- All design, workmanship and materials shall be in accordance with Australian Standards.
 AS 3600 Concrete Structures
 AS 3700 Masonry Structures
 AS 2783 Reinforced Concrete for small swimming pools
 AS 1170 Loading Code
- Block types used are 20.21, 20.45, 20.48 and 20.61 by Adbri Masonry.
- Characteristic compressive strength of concrete to be N20 at 75mm to 150mm slump for floor and 125mm to 150mm slump for walls.
- Floor concrete to be vibrated and wall concrete to be rodded only.
- Floor concrete to be 125mm thick.
- Reinforcement shall be as indicated on cross sections.
- Starter bars, vertical and horizontal reinforcement to be placed every 200mm centres for walls over 1200mm high and 400mm for walls under 1200mm high. Lap to floor mesh to be 600mm. Lap to wall steel to be 450mm. Lap for horizontal bars to be 450mm and stagger every alternate course. Increase lap to 600mm at corners.
 Note: Wet Edge reinforcement to be as shown in 'Wet Edge' details for all wall heights. Lap Bars as above.
- Cover to reinforcement. Place all steel in centre of floor slab and wall blocks.
- Suitable for site classifications Class M or better. Seek professional engineering advice for other site classifications.
- Minimum bearing capacity of foundation material to be 100kPa.
- Earthquake design has not been considered. Seek advice from council if required.
- Out of ground designs are suitable for length of side not greater than 12 metres. Seek professional engineering advice for larger pools.