



MASONRY SWIMMING POOLS



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MASONRY SWIMMING POOLS

1. PLANNING

NZS 4441:1985 Code of Practice for Swimming Pools and NZS 5826:2000 Code of Practice for the Operation of Swimming Pools govern the safe operation of swimming pools and need to be consulted during the planning, design and construction of the pool.

This information describes the construction of a Swimming pool specially designed for "Firth Masonry" and includes full details of wall and floor construction, reinforcing and drainage details.

Should it be desired to alter depth, structure or shape outside the scope of this pamphlet or where adverse site conditions exist, the services of a Structural Engineer should be sought, as each deviation will present its own special requirements.

Before constructing your pool, make a survey on the following factors:

- Paved areas and Pool Fencing (need to comply with the Fencing of Swimming Pools Act)
- Access to House
- Access to toilet and dressing facilities
- View of pool from house
- View/privacy of pool from neighbours
- Shelter from wind
- Orientation to sun
- Shade from house, neighbours
- Relationship with garden, trees
- Location of pump/filter unit (consider the noise made by the pump/filter)
- Connection to storm water drains
- Access to water supply
- Location of underground services

2. DESIGN

Consider:

- Use
- Size and shape
- Depth
- Finishes and details
- Accommodation of lights, ladders, skimmer boxes
- Water circulation
- Filtration
- Safety – owner controlled access to pool enclosure

The size of the pool is naturally determined by individual requirement but where cost or available space are the limiting factors then a 6m x 3.6m pool is the smallest size recommended. With a recommended water depth of 1.3m and 28,100 litre capacity, this pool is for swimmers only and is not large or deep enough to take a springboard. Diving boards are not recommended in pools less than 9m long and 2.4m deep.

The rectangular shape remains the most practical pool shape and is of course best suited to concrete block construction. However other shapes are possible.

3. REGULATIONS

Determine the planning requirements by consulting the local territorial authority.

Swimming pools require a building consent. Some authorities may require design calculations or a producer statement from a Structural Engineer. Submit two copies of the building plans, showing size of pool, details of construction, drainage and plumbing, site plan showing position of existing building, swimming pool and distances to boundaries.

The basis for the structural design of this swimming pool is NZS 4203:1992 Code of Practice for General Structural Design and Loadings for Buildings, NZS 4230:2004 Design of Reinforced Concrete Masonry Structures and NZS 4229:1999 Concrete Masonry Buildings Not requiring Specific Design.

4. LAND

Consider the effects of the water table on pool depth and under pool drainage. Consider access and manoeuvring space for excavator and methods of soil disposal.

SPECIFICATION

5. CONSTRUCTION

All work shall comply with the NZ Building Code, NZS 4210:2001 Masonry Construction and to Code of Practice for Swimming Pools NZS 4441:1985.

6. SETTING OUT

Mark out pool area using timber profiles and string lines.

Set tops of profiles level using dumpy level or water filled hose system. String lines marking outside of pool walls should be accurately placed and checked for squareness.

Peg out area to be excavated. Sides of excavation should be cut approximately 300mm larger all round than the outside wall dimension to allow for back filling and drainage. Indicate depths and where spoil is to be spread if not to be removed from site.

7. EXCAVATION

Allow access of at least 2.4m wide plus manoeuvring room for digger and readymix concrete trucks. Inform excavator of location of underground services, and their respective depths, before work commences. Hand trim bottom of excavation to desired level.

8. DRAINAGE

a). Subgrade Drainage

To prevent the possibility of ground water pressure lifting the pool out of the ground when empty, lay a 100mm perforated plastic pipe or equivalent system round the perimeter of pool footing and one cross line under the deepest part of the pool linking the perimeter drain.

Discharge to outfall or elsewhere other than that for pool outlet drain. Ensure adequate falls. Total underslab area should be covered with a 100mm layer of free draining hardfill. If drainage is not available, fit hydrostatic pressure release valve to floor even where outfall is available. This is a recommended safety measure.

b). Pool Drainage

After completion of excavation, set main 38mm copper or PVC outlet drain in position. Level should be checked at this point to ensure finished floor will have a slight fall from all directions towards the outlet. Standard copper or PVC fittings are available with manufacturer's installation instructions.

9. FLOOR CONSTRUCTION

Screed and compact levels and falls as required. 100mm of free draining hardfill topped with 25mm of 6.5mm down stabilised hardfill rolled with a vibratory roller to produce a hard unyielding base for the slab.

Lay 125mm thick reinforced concrete slab and integral reinforced wall footings. The floor and footings are to be 20Mpa Firth readymix concrete containing Xypex additives.

Floor reinforcement consists of 665 HRC mesh sheets, cut, placed and lapped. Set reinforcing 50mm above hardfill. Support on 50mm concrete pieces or plastic stools.

Wall footing consists of a thickening round the perimeter of the floor slab with additional reinforcing and wall starter bars as detailed. Tie starter bars to HRC mesh with black iron tie-wires accurately located to ensure that they match the hollow cores of the concrete block walls.

Cut reinforcing bars to lengths required using bolt cutters and form bends to minimum radius of six diameters. Lay concrete slab in one continuous operation without any construction joints. Compact concrete into position and screed with falls to main outlet. Finish surface with steel trowel. Main outlet fitting must be properly bonded into concrete for water tightness. Flood slab with water as soon as it has hardened. Keep slab wet for seven days for full curing.

10. BLOCKWORK

Blockwork is laid by building the corners first and working towards the centre of the wall with each block levelled lengthwise and crosswise and aligned along a string. The first course of the blocks on the footing are threaded around starter bars and laid in a full mortar bed, with only the face shell bedding for the upper courses.

The vertical rods are tied with black iron tie-wire to starters. Place horizontal reinforcing as the work proceeds. Clean mortar from cores at each course. It is essential that walls are kept true and plumb.

11. GROUTING CORES

If the total height of the block work cannot be completed at one time then fill to a level below top of block so that the continuous plane of weakness is not found. The grout is to be 17.5 Mpa Firth Readymix.

Note: It is especially important to ensure that the blockwork cores are free of mortar prior to grouting.

12. FITTINGS

Box for or leave openings for fittings previously selected. Lay electrical cords prior to grouting.

13. CURING

Cure block walls for seven days under wet sacking which has been kept damp, before placing and compacting backfill.

14. BACKFILL

Backfill over field tiles with free draining granular material or Pea metal. Do not overstress the walls by operating heavy equipment on the fill, or by impacting against them with large masses of moving earth.

15. COPING

The coping should provide:

A visual edge to the pool

A non-skid walking surface

A handhold for swimmers

A barrier to prevent surface water on surrounding surfaces from draining back into the pool adding dirt and discoloration.

INTERIOR FINISH

16. PLASTERING

If a plaster finish is desired allow for one slush coat followed by a flanking coat of plaster to give a finished thickness of 10mm.

A neat easy to clean detail involves tiling the top 150mm of pool walls between coping and plaster finish.

For best results apply paint finish over plastered blockwork.

17. PAINTING

The masonry blockwork can be painted with chlorinated rubber or 100% acrylic paint. Painting applied in accordance with the manufacturer's specification. Particular attention to the surface preparation of the blockwork or plaster finish is important because defects such as blistering or peeling could occur.

18. PLUMBING

All pipe work and installation of plumbing systems is to be in accordance with the NZ Building Code.

19. PAVING

All variety of materials for pool area paving are available, such as:

Firth concrete paving

Firth bricks

Firth Designer Concrete

Hinuera paving

Treated timber

Note: It is recommended that an appropriate paving surface sealer is used after installation to assist in durability and ease of cleaning.

The essential features are:

Non slip

Adequate drainage from paved areas

Adequate fall away from pool edge 1:50 is recommended.

20. FILTERING

An efficient filter is essential for proper pool maintenance.

Types available are:

- Sand Filter
- D E Type Filter
- Cartridge Filter
- Ozone Water Purification

Filtration and water recirculation equipment shall be of an approved type and installed in accordance with the manufacturer's instructions.

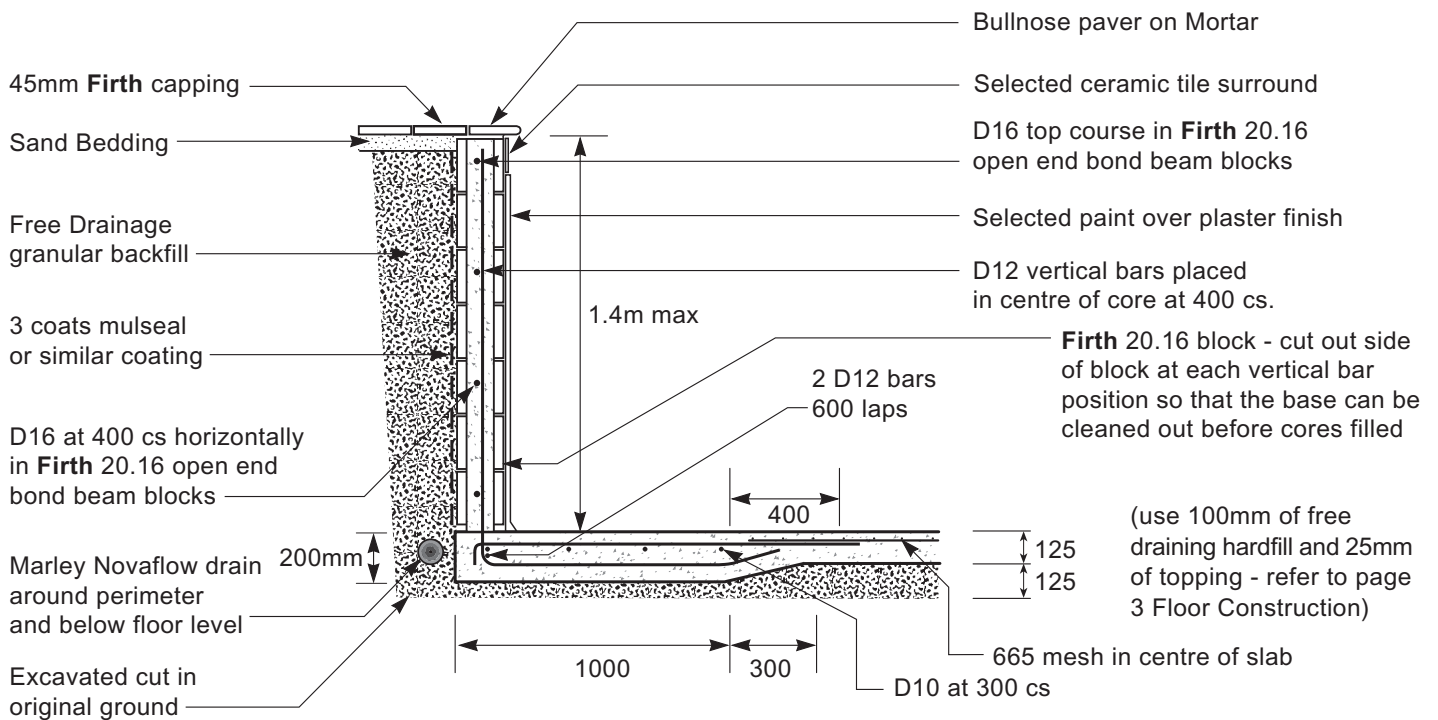
21. ELECTRICAL

All work shall be done by a registered electrician to comply with the Electrical Regulations.

22. FENCING

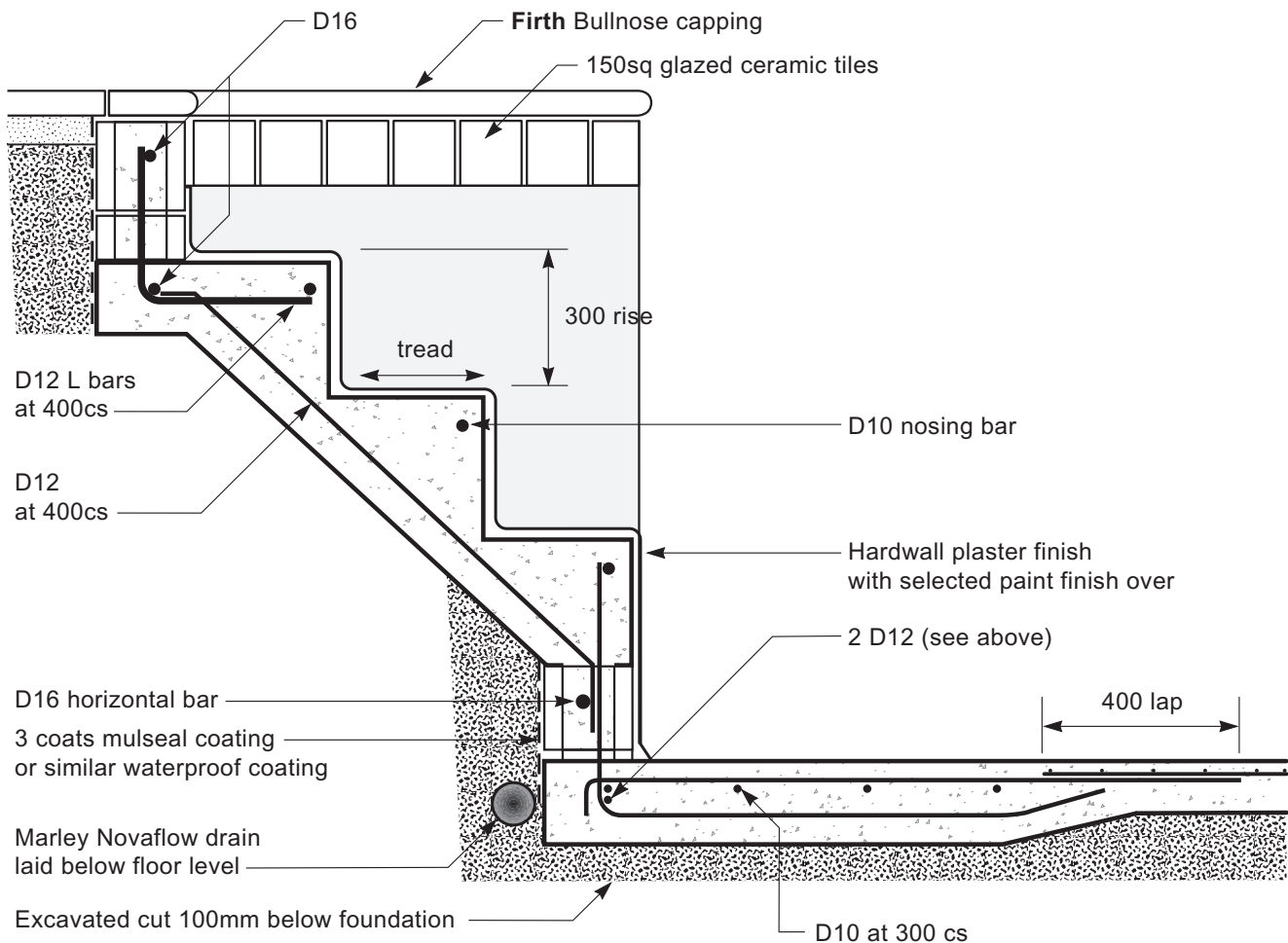
Fencing around the pool is required by Territorial Authorities and has to comply with the Fencing of Swimming Pools Act. The fence must enclose the pool area. Contact your Territory Authority for specific information on pool fencing.

WALL TO FLOOR DETAIL



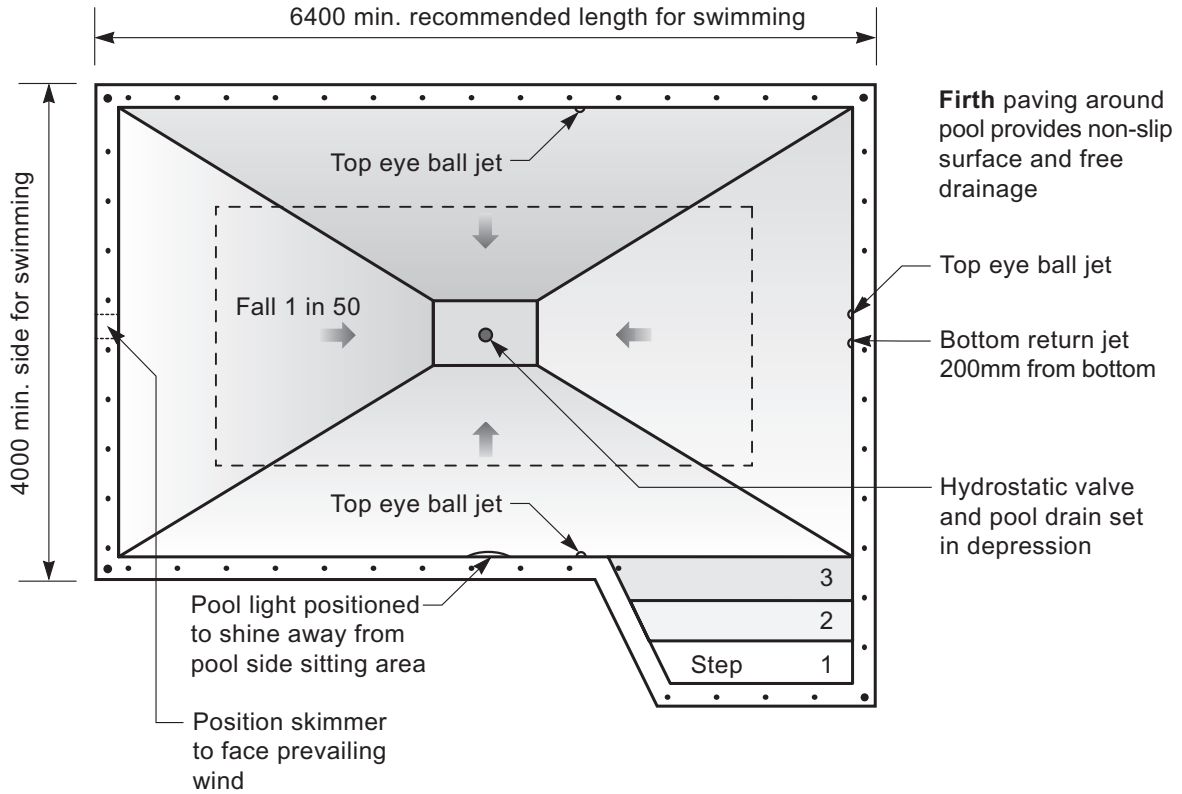
Wall to floor detail

TYPICAL STEP DETAIL



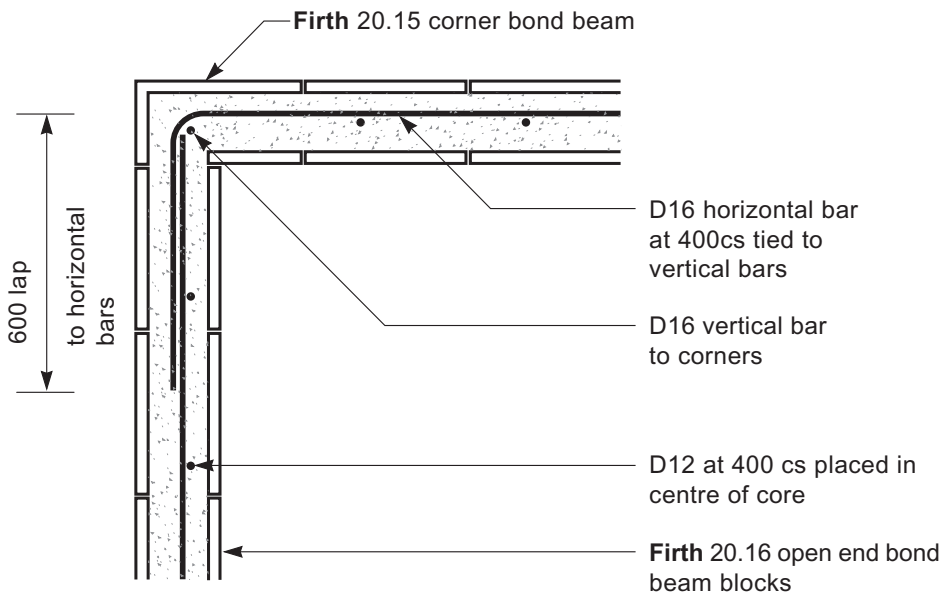
Typical Step Detail

TYPICAL PLAN LAYOUT



Typical Plan Layout

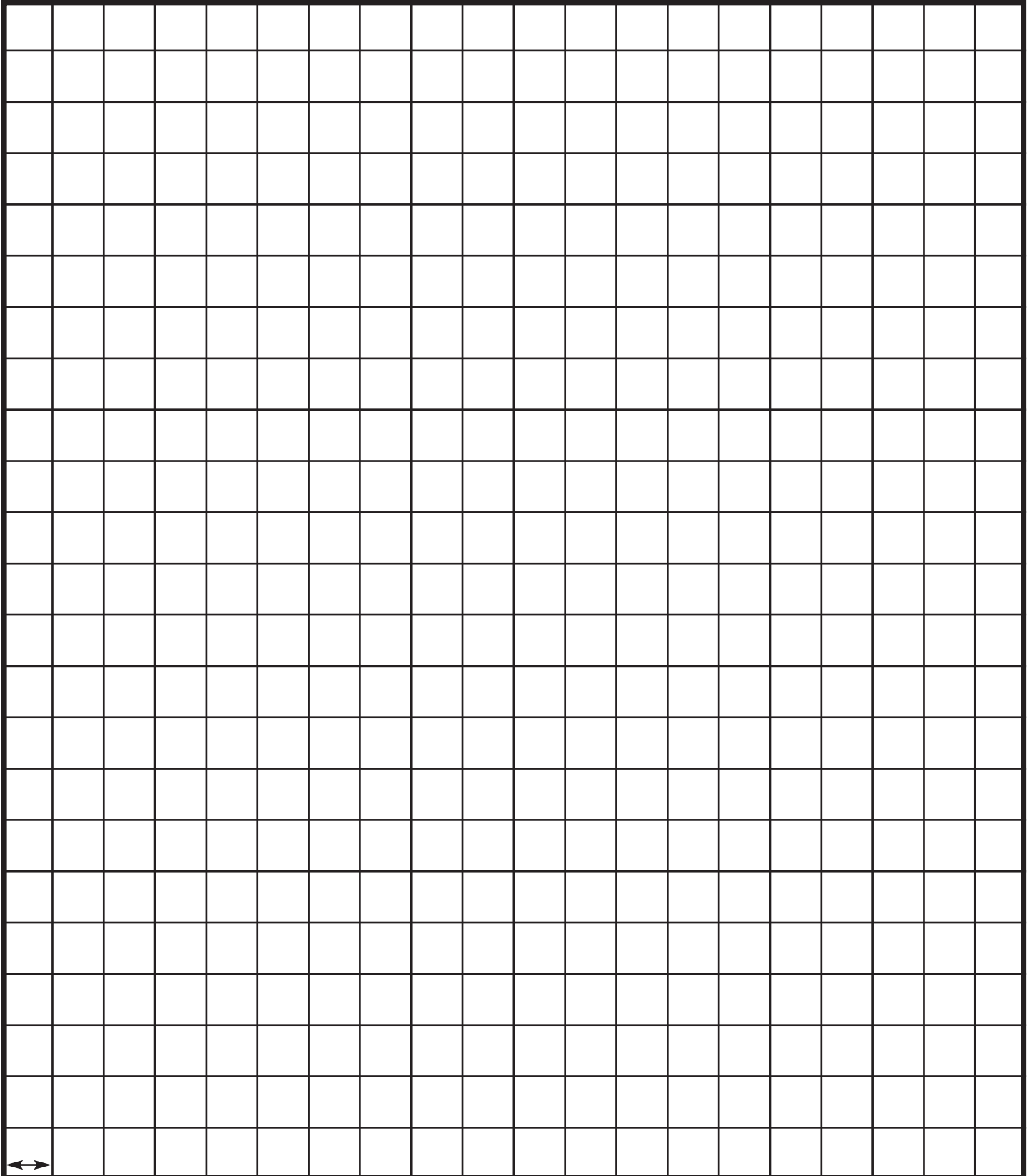
CORNER DETAIL OF STEEL REINFORCING



Corner Detail of Steel Reinforcing

NAME _____

ADDRESS _____



400 block size

Scale 1:50

PLAN OF PROPOSED SWIMMING POOL

Using block module draw outline of swimming pool showing position of steps, skimmer, lights, filter, jets