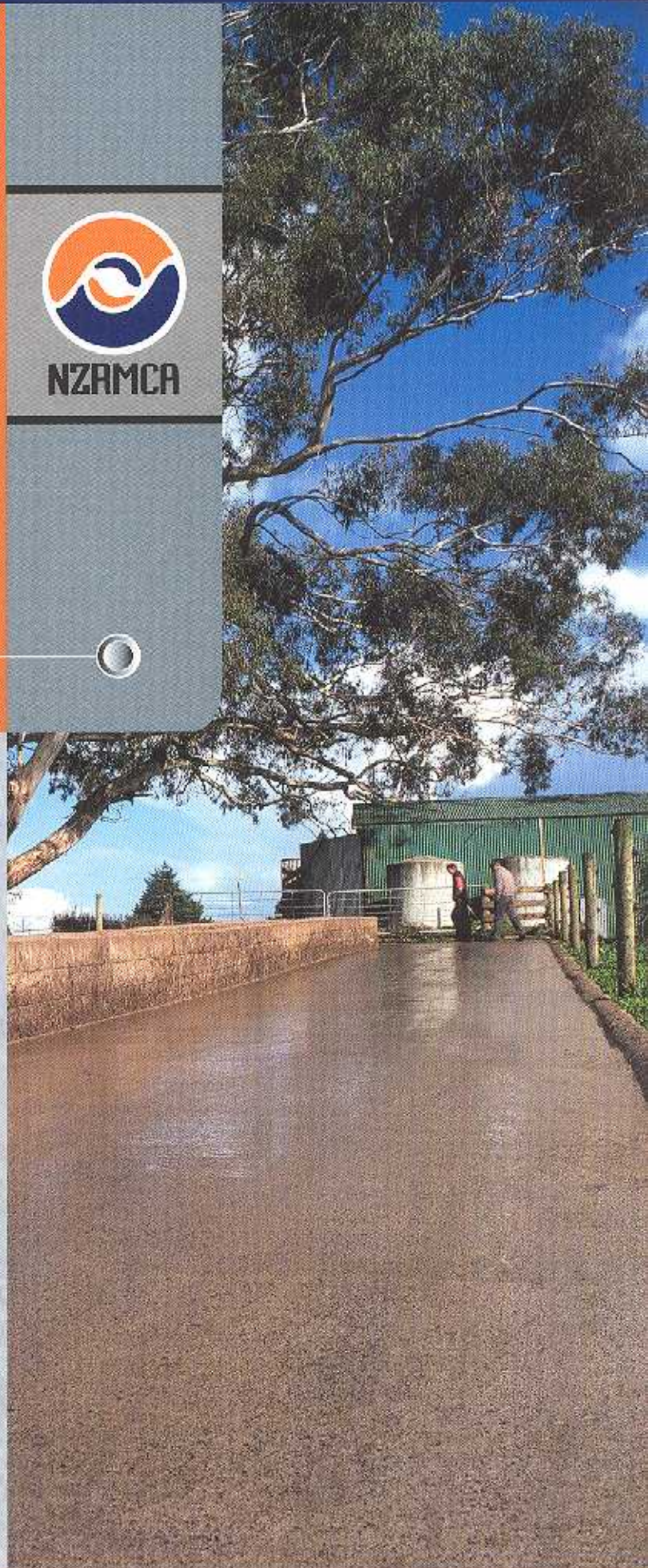




NZAMCA

Farm Concrete Guidelines

- FARM DAIRIES
- RACEWAYS
- FEED PADS
- SILAGE PITS



When buying ready mixed concrete for the farm the importance of using a higher strength concrete must not be underestimated. When laid in accordance with proper procedures a higher strength concrete will give you a durable surface that will last the distance and deliver a very good long term investment.

As special concrete can be supplied to improve chemical resistance to acid attack from milk and urine, ask your concrete supplier for advice before you start your project.

STRENGTH

Always use ready mixed concrete from a NZRMCA Audited Plant as per NZS 3104.

Concrete should have a minimum compressive strength of **25MPa**, but this needs to be increased to **30MPa** in high wear areas. The nominal thickness of slab should be a minimum of 100mm.

Audited Plants can be viewed online at www.cca.org.nz/RMCA/rmca/

SLUMP

Slump at the point of delivery should be 100mm or less.

Never add water to the concrete on site without permission from the supplier. Super plasticiser should be used to obtain a higher slump.

If you are more than 1 hour driving distance from the concrete plant you may require a retarding admixture to be added at the plant.

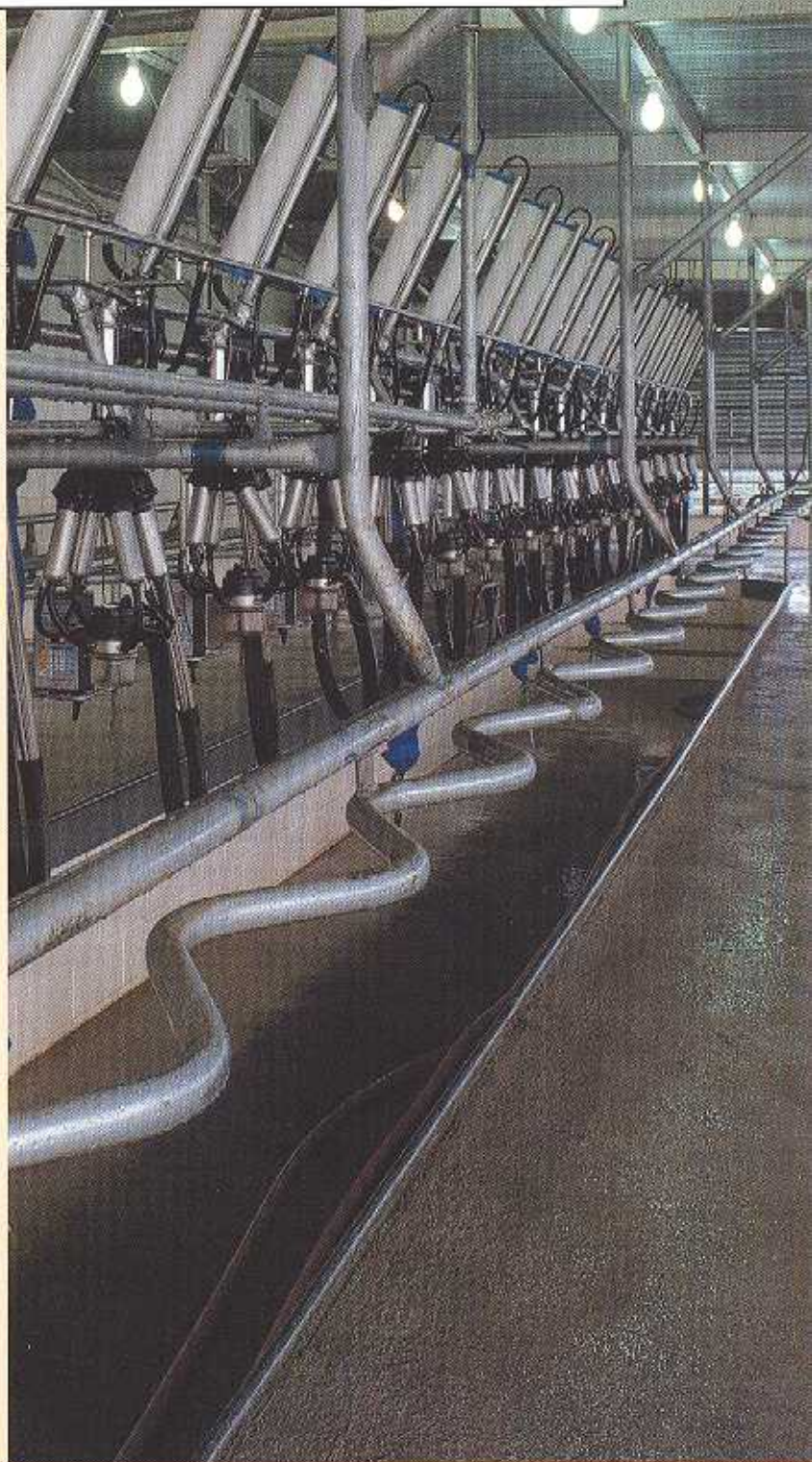
AGGREGATE SIZE

Aggregate size should be maximum 20mm stone, which will give lower shrinkage.

Fine aggregate mixes are inappropriate in this environment due to lower durability.

SITE ACCESS

As concrete trucks when loaded are very heavy it is recommended that the tanker roadway be completed before work on the farm dairy starts. Where access is difficult you may consider using a concrete boom pump.



PLACING

It is recommended you use a member of the New Zealand Master Concrete Placers Association who will be able to:

- A Screed the concrete to correct levels.
- B Compact the concrete using a mechanical vibrating screed or poker vibrator to give dense concrete.
- C Bull float to close off the surface.
- D Power float the surface after the concrete has stiffened to give durability.
- E Provide the type of non-slip finish required.
- F In hot windy conditions use an anti-evaporative spray to prevent plastic cracking as per manufacturer instructions.

CURING

To obtain a hard surface the concrete must be cured by one of the following:

- A Apply water on a continual basis by either ponding or sprinkler for 7 days.
- B Cover with polythene for 7 days to hold in the moisture.
- C Apply a proprietary curing membrane to manufacturer's specification.
- D Loading on the concrete should be avoided for 28 days, by which time the designated strength will be achieved. Ask your supplier for advice if you require an early high strength.

PROTECTION AGAINST THERMAL MOVEMENT

It is good practice to cover the concrete especially the first night to protect it from extreme temperature variations.

JOINTING

All concrete shrinks and the aim of control joints or saw cuts is to control the cracks in straight lines where you want them to happen. The control joint or saw cut should be $\frac{1}{3}$ of the slab depth at approximately 3m intervals. The cuts should be made as soon as the concrete is hard enough to cut, preferably within 24-48 hours after pouring. Fill the cuts with a suitable flexible sealant.

There are also proprietary crack inducers available which are effective and neat. Ask your contractor/designer how he intends to provide for shrinkage control joints.

Make sure there are control joints on the plan and ensure the contractor is aware of these.

SUB BASE

It is important you have the correct compacted sub base to avoid settlement and hence cracking.

WEATHER

Never pour concrete if rain is forecast, as this will damage the surface giving poor durability making it virtually impossible to repair.

SPECIAL CONCRETE

Concrete is an alkaline material and contact with any acid will result in some chemical damage. To reduce this a special proprietary finish may be applied or special concrete can be supplied. Ask your supplier for advice.



REINFORCING

Reinforcing is in your concrete to control shrinkage, to carry load and to act as a dowel to stop settlement of slabs. Welding steel mesh to the dairy helps to reduce stray voltage. Always lay the mesh on chairs at recommended centres to keep it off the ground.

Do not use calcium chloride accelerator with steel mesh as it increases the likelihood of corrosion.

Polypropylene fibres reduce the risk of plastic cracking, but they do not control drying shrinkage and are not a replacement for steel mesh as they perform a different function.

GENERAL

It pays to discuss your concrete requirements with your concrete supplier beforehand to ascertain what is required so that the supplier can supply concrete fit for purpose.

A meeting with the contractor, farmer and concrete supplier beforehand to confirm areas of responsibility is a very good idea.

Additional information is freely available from any New Zealand Ready Mixed Concrete Association member:

