

**We are often asked why the footings we offer are considerably more expensive than those of other silo suppliers. Typically, the comparison is between an engineered footing constructed with deep excavated beams against a slab poured on top of the ground. So why the difference?**

### **The Depth of the Excavation for the Footing**

The Kotzur engineered footing is designed to have the perimeter of the footing (where the majority of the load is) sitting on stable, high load bearing soil well below natural ground level. Often it is necessary to have a soil test undertaken to determine the desired depth and the strength of the soil. Both of these factors influence the final footing design. The advantages of this footing design are:

- The soil has higher strength at lower depths
- The soil at lower depths is more stable – especially in deep clays. This means that it is less likely to move.
- Wetting of the soil (during wetter months of the year) has less influence on the soil strength and movement at depth.

### **The Thickness of the Concrete at the Edge**

The strength of a concrete slab is directly related to its thickness – in particular of the depth of edge beam.

To be strong, it needs to maintain the thickness for the entire perimeter. Therefore if there are step downs (e.g. for aeration), then there is often a corresponding increase in the depth of the beam. Kotzur engineered footings usually have at least 750mm thick edge beams (both below and above ground) and are often excavated to a depth in excess of 450mm.

The key design criteria being to ensure the slab is strong enough to withstand any local soil movement without cracking and compromising the gas seal of the silo.



### **Steel Reinforcing**

Kotzur engineered footings are designed with sufficient reinforcing to comply with Australian Standards and also to ensure the beam is sufficiently reinforced to control cracking.

**Footings which are not adequately designed are at risk of failure problems, including:**

- Significant cracking damage to the footing.
- Movement of the silo.
- Damage to the silo unload system rendering them inoperable.
- Damage to aeration systems.
- For footings sitting on top of ground, rain washing away soil undermining the footing.
- Animals, (mice and rabbits) burrowing under the footing causing it to weaken.
- Insects finding harbor in the cracks.
- Water leakage into the silo.
- Fumigant leakage rendering the silo unsealed (as required to meet minimum fumigation standards).
- Damage to conveyors and walkways.
- Damage to the silo structure itself (wall buckling).

***At Kotzur, we are committed to sound engineering design. This provides the owner with a silo suitable for reliable operation over a long period.***