Kelcrete (Qld) Pty Ltd Slipform Kerblayers

Since 1973

We would like to share some insights into the kerbing industry and the differences between the two methods of kerbing.

Slipform Kerbing vs Dry Extruder Kerbing

CONCRETE USED

Slipform Kerbing Concrete is supplied in accordance with *AS 1379 Specification and Supply of Concrete*. The concrete mix is ordered with a designated slump of 30 to 40 mm, this allows the concrete to arrive on site in a plastic state ensuring workability and cohesiveness with no interference from third parties.

Why is this important? Because it puts the onus on the concrete supplier for the quality of the concrete delivered to the site. The concrete will have the optimum water to cement ratio as per mix design which is critical to the hydration process. *Hydration* is a chemical reaction between cement, water and other materials that is required to give the concrete kerb its strength and durability.

Dry Extruder Kerbing The concrete used with dry extrusion machines does not have a designated slump as such, the methodology applied is to deliver the concrete to site slightly dry on arrival. It is up to the person in charge of placement to determine the moisture content they require. This is totally allowable under the *AS 2876 Concrete Kerbs and Channels (Gutters)* - we refer to section 5.1.3 including the notes.

However, this method has danger written all over it and the question which needs to be asked is, who is responsible for the concrete quality and performance? It is impossible to get uniformity in a dry concrete mix when adding water to the rear of a concrete truck on site.

If the concrete being used is placed incorrectly with inadequate water the required concrete compaction will not occur. Also, the water to cement ratio will not allow the long-term hydration process to continue and this is required to give the concrete kerb its strength and durability.

What is the motivation for dry extruder kerb contractors to place the concrete dry?

- Dry concrete helps to keep the kerb line straight
- Dry concrete flows down the concrete chute easier
- Dry concrete yields better
- Dry concrete is easier to finish.

COMPACTION

Slipform Kerbing The process uses vibrators to give the compaction to the kerb. By using vibration this expels the entrapped air and packs the aggregate particles together to increase the density of the concrete which increases significantly the strength and general durability. Using vibration for concrete compaction is classed as world best practice for concrete density.

Dry Extruder Kerbing The process uses a mechanical compaction system which pushes the concrete through the kerb mould and allows the machine to move forward. If the compaction system is not properly maintained to manufacturers standards, the ramming mechanism can become sloppy as bushes and bars wear out failing to compact the concrete properly.

Incorrectly built moulds - It is common practice for contractors not to build their kerb moulds to manufacturers standards by deleting out compaction indents to save costs in mould construction. By doing this you will receive a poorly compacted kerb which means reduced strength and durability.

Another common factor used by contractors which affects concrete compaction is increasing the speed of the ramming system from the manufacturer's design. Good for production, bad for concrete compaction, bad for kerb quality.

CURING

Curing is extremely important to the overall result of the strength and durability of the product.

Slipform Kerbing uses a concrete mix with sufficient water to slow down the evaporation from the kerb too quickly. Evaporation is one of the main causes of shrinkage cracking. Good moisture retention keeps the hydration process active. This allows the kerb to keep strengthening through the curing process and achieving its maximum strength over time.

Dry Extruder Kerbing Curing is impossible to achieve as there is no moisture in the concrete from the start and what is available is lost very quickly through evaporation from the atmosphere and absorption from the ground it is laid on. Hence why dry extrusion is prone to shrinkage cracks and spalling.

CONCRETE TESTING

Slipform Kerbing The concrete can be correctly tested and measured for slump consistency. The consistency of the concrete slump is of the utmost importance and essential to ensure concrete consistency, quality and strength which is delivered to the site by the concrete supplier who is responsible for the quality of their product.

Dry Extruder Kerbing cannot be correctly measured, nor can it have consistent moisture content if water is being continually added to the rear of the concrete load to suit the machine operator and not to a specification. When something cannot be measured then it cannot be guaranteed.

Concrete core testing is the only method which will indicate the true strength of a kerb product as it takes into account the concrete and the placement method as done with Asphalt Paving.

CONCLUSION

The above comparisons of the two different forms of kerbing are to highlight the significant differences between the two methods of kerbing. How do the structural problems with Dry Extrusion Kerbing go unnoticed? Simple slurry - it hides honeycombing and voids in the concrete. Dry extrusion may be aesthetically pleasing, but it is structurally flawed.

Slipform Kerbing we believe when assessing cost/value of the product cannot be measured just by monetary methodology. It should also be measured on structural benefits, the durability of the product and the whole term of life of the product so the true value is exposed.