



For All Your Ready Mix Needs

### Slump 101



The slump test, ASTM C143, is the most generally accepted method used to measure the consistency of Concrete. The test equipment consists of a slump cone, and a steel rod with a hemispherical shaped end. The dampened slump cone, placed upright on a flat, non-absorbent surface, should be filled in three layers of approximately equal volume. Each layer is rodded 25 times. Following rodding, the last layer is struck off and the cone is slowly removed vertically as the concrete subsides or settles to a new height. The empty slump cone is then placed upside-down next to the settled concrete. The slump is the vertical distance the concrete settles, measured to the nearest ¼ inch, from the top of the slump cone to the displaced original center of the subsided concrete.

The slump test should be started within 5 minutes after the sample has been obtained and the test should be completed in 2 ½ minutes, because the concrete loses slump with time.



### Adding Jobsite Water and The Consequences

Sierra Ready Mix follows the standards set by the IOAC Governing body in regard to concrete poured in the Las Vegas Valley. The guidelines set are for a .45 water/cement ratio and a 4000psi strength. Type V cement (sulfate resistant) along with flyash allows us to make a mix designed to minimize sulfate attacks from sulfates in our native soils. With these standards set we would like to give our customers the recommendation that they follow these standards also. In designing the mixes needed the addition of water on the jobsites will cause the specified mix to no longer meet the standards mentioned. The following information will illustrate how water not only affects strength but also the water/cement ratio.

- Adding 1 gal/yd<sup>3</sup> of concrete will increase your slump 1 in.
- Adding 1gal/yd<sup>3</sup> of concrete will decrease your strength by 5%.
- Adding 1 gal/yd<sup>3</sup> of concrete will waste the effect of 24lb/yd of cement.
- Adding 1 gal/yd<sup>3</sup> will increase shrinkage by 10%.

When we design a mix we normally design 1000psi beyond what your requirements are. Concrete strength cylinders cast in the field can experience many factors that will affect 28-day compressive strength. The extra strength that we design is there to overcome these factors:

- Errors in sampling the load and casting the cylinders.
- Improper protection and curing of the cylinders on-site.
- Improper transportation of the cylinders to the testing lab.
- Mistakes made in capping and breaking cylinders.

Our most popular mix is #911; it is designed at 4500 psi, a .45 water to cement ratio, and a 4-inch slump. Mix #911 regularly breaks at 5500 psi. So let's say that mix #911 is poured at a 6-inch slump, we assume that 2 gallons of water per yard would be used to increase the slump from 4 to 6 inches. This would reduce strength by 10%, making it 4950 psi. We would now have less protection against other factors that may affect strength.

Here are guidelines on how adding water will effect mix #911 regarding water cementitious ratio (this mix is designed with 272 lb of water and 606 lbs of total cementitious):

Water Added per yard	Resulting Water to Cementitious Ratio
0 gal	.45
1 gal	.46
2 gal	.48
3 gal	.49
4 gal	.50
5 gal	.52

We are able to offer you any mix that you want at whatever slump you require while maintaining the water to cement ratio. We use Euclid Chemicals water reducers and superplasticizers, and it is these chemicals that allow us to achieve any slump. If you would like to pour a mix wetter than it is designed please contact our sales department and express your needs. If you give us enough lead-time we will test the mix and have the ability to make adjustments in order to produce a concrete mixture that perfectly meets your needs. Please do not hesitate to contact us regarding your special needs.

