

Continental Cement Company

What Does Additional Water Do To Concrete?

Concrete delivered to projects generally has a slump of 3-5 inches. If the driver adds water at the job site:

- It will reduce the durability and strength of the concrete.
- It will increase setting times at moderate temperatures.
- It will increase the cracking potential of the concrete due to shrinkage!

Think BEFORE ADDING MORE WATER TO CONCRETE

IF ONLY ONE GALLON OF WATER IS ADDED TO A TYPICAL CUBIC YARD OF 3000 PSI CONCRETE MIX

The slump increases about one inch.

The compressive strength is reduced by as much as 200 psi.

The effect of about 1/4 bag of cement is lost.

The potential for shrinkage (cracking) increases.

The possibility of moisture penetration through the concrete increases.

The freeze-thaw resistance is reduced.

The resistance to attack by deicing salt and fertilizer decreases.

The possibility of scaling increases.

WATER ADDED:

GALLONS PER
CUBIC YARD

1
2
3
4
5
6

SLUMP INCREASE:

INCHES
(APPROX.)

1
2
3
4
5
6

STRENGTH REDUCTION:

IN PSI

IN %

200
400
600
800
1000
1200

7
13
20
27
33
40

**WE RECOMMEND THAT THE CUSTOMER ASSUME
RESPONSIBILITY FOR WATER ADDED AT THE JOB SITE**



MISCELLANEOUS CONCRETE TIDBITS...

HOT WEATHER

A 20°F increase in concrete temperature can reduce setting times by 2 hrs. or more.

A 20°F increase in concrete temperature can reduce slump 1-1½ inches.

As a general rule, an increase of 1.5°F in aggregate temperature will increase concrete temperature about 1°F.

As a general rule, a 10°F increase in cement temperature will increase concrete temperature about 1°F.

COLD WEATHER

Setting times increase about 33% for each 10°F drop in concrete temperature.

2 gallons of additional water per cubic yard can increase setting times up to 1 hr.

As a general rule, a 5°F increase in water temperature will increase concrete temperature by 1°F.

CYLINDERS

You can expect up to 61% strength loss for insufficient consolidation.

You can expect a 26% strength loss for cylinders left in the field for 7 days exposed to warm temp.

MIXING

70-100 revolutions (at mixing speed) is essential to produce high quality ready mixed concrete. An additional 30 revolutions is required if water is added at the job site.

REMINDER

CURING & AIR ENTRAINMENT are critical factors in producing durable concrete that will withstand the freeze-thaw cycles experienced in the Midwest.