Tech Letter

Field Testing Verifies Advantages of Fly Ash in Concrete

Recent tests performed by an independent testing laboratory verify the long-term strength gain characteristics of fly ash in concrete. The following data offers further evidence of the advantages of using fly ash in concrete mix designs.

Two concrete mixes, as shown below, were batched at a ready-mix concrete plant, delivered, and placed at a jobsite where slump was adjusted to 6"±1" for ease of placement. Concrete samples were taken by concrete technicians and tested for slump and temperature and cylinders were molded to test compressive strength. The two mixes were placed into the same slab with no apparent variation in color.

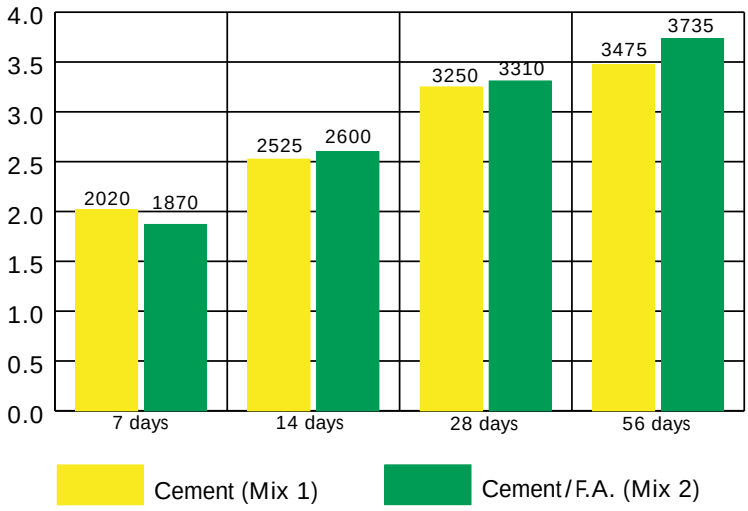
Mix One: 470# Cement

WC Sand . . . . . 1485#
1" Rock. . . . . 1757#
Water . . . . . 308#
Cement. . . . . 470#
Tested at 5 1/2" Slump

Mix Two: 400# Cement
70# Fly Ash

WC Sand . . . . . 1475#
1" Rock . . . . . 1745#
Cement . . . . . 400#
Fly Ash*. . . . . 70#
Tested at 6 1/2" Slump

**Break Results*



**ASTM C 618 Fly Ash from Mohave Generating Station, Laughlin, NV*

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Conclusions

- Fly ash concrete shows excellent results on the strength gain curve.
- Strength gain at later ages indicates pozzolanic activity between the fly ash and by-products from the hydration of the portland cement. These hydration by-products are no longer available for leaching out of the concrete or for undesirable secondary reactions.
- The fly ash mix had a higher slump and was easier to finish with equal mixing water. Equal slumps would result in a lower w/c ratio and approximately 200 psi higher strength at 28 days for Mix #2.
- ASTM C 618 fly ash incorporated into a standard concrete mix design will produce less permeable, stronger, and more durable concrete.

Consult your Boral representative for further information on the advantages of fly ash in concrete. The Boral technical staff is prepared to assist you in developing the most durable concrete possible.

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