

Project Profile

4x4™ Concrete Intersection Replacement

Merced County, California



The Chemical Company

Project:

Intersection Replacement

Location:

Highway 140 and Applegate Road, Merced County, CA

Owner:

CalTrans, California

Concrete Producer:

Allied Concrete Supply, Modesto, CA

Contractor:

R.E. Serrano, Inc.

General Contractor:

W. Jaxson Baker, Inc.

Requirements:

- High-early strength concrete
- 400 psi (2.8 MPa) flexural strength to open to traffic

Products:

Delvo® – extended set-controlling admixture

Glenium® 3030 NS – high-range water-reducing admixture

Pozzolith® NC 534 – accelerating admixture



The name 4x4 Concrete originates from concrete that attains at least 400 psi (2.8 MPa) flexural strength within four hours of placement.



Challenge

General Contractor, W. Jaxson Baker Inc., was challenged with replacing an entire asphalt intersection with concrete within one week. The challenge was issued by CalTrans to minimize disruption to traffic flow and lane closures.

Solution

To meet the aggressive schedule, CalTrans approved the use of BASF's patented 4x4 Concrete system. Concrete Contractor R.E. Serrano Inc. had successfully used the 4x4 Concrete system on other projects and felt that it was an appropriate solution for this challenge because of its user-friendly placement and high-early strength characteristics.

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High-Early Strength Concrete Mixture Proportions

Type III Cement	800 lb/yd ³ (475 kg/m ³)
Water	280 lb/yd ³ (166 kg/m ³)
w/cm	0.35
s/a	0.40

Plastic Properties

Slump: 7 in. (180 mm)
Non-air-entrained

Products

Delvo® extended set-controlling admixture
Glenium® 3030 NS high-range water-reducing admixture
Pozzolith® NC 534 accelerating admixture



Project Facts

- Four intersection quadrants, one replacement per day
- Beams cast and tested to ensure flexural strength
- 30 minute haul time between plant and jobsite – concrete had sufficient working time to consolidate consecutive loads
- 250 yd³ (190 m³) concrete for each of four intersection quadrants
- 1,000 yd³ (765 m³) concrete for entire intersection
- Average flexural strength = 420 psi (2.9 MPa) in 4 hours
- For truck clean up, 32 fl oz (945 mL) of Delvo was used with 20 gallons (76 L) of water to stabilize hydration until the truck returned to the plant for complete washout – this procedure kept the trucks clean

Benefits

- The 4x4 Concrete system was very user friendly and easy to place
- Exceptional high-early concrete strength permitted rapid opening to traffic and minimized lane closures
- Project was completed in only four days
- CalTrans saved over \$250,000 in traffic control costs
- 4x4 Concrete system allowed concrete to be used in lieu of asphalt

More Information

For further information or assistance, contact your local sales representative.

The Admixture Systems business of BASF Construction Chemicals is a leading provider of innovative additives for specialty concrete used in the ready mix, precast, manufactured concrete products, underground construction and paving markets throughout the NAFTA region. The Company's respected Master Builders brand products are used to improve the placing, pumping, finishing, appearance and performance characteristics of concrete.

BASF Construction Chemicals, LLC Admixture Systems

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