

**Project:**

Alamo Truck Stop

**Location:**

Sparks, Nevada

**Owner/s:**

Petro Oil Co.

**Concrete Producer:**

American Ready Mix

**Concrete Contractor:**

Quality Concrete Construction

**Requirements:**

High-early strength, durable concrete

Air-entrained concrete

**Products Used\*:**

MasterGlenium® 3030 – high-range water-reducing admixture

MasterSet® DELVO – extended set-controlling admixture

MasterSet AC 534 – accelerating admixture

MasterAir® AE 90 – air-entraining admixture

HPP Fibers

**Market Sector:**

Paving

## Project Profile

### Strength-on-Demand Concrete

#### Alamo Truck Stop Weigh Scale



### The Challenge

The Alamo truck stop weigh scale in Sparks, Nevada is a major source of revenue for the city. An estimated five semi-trucks, weighing approximately 150,000 to 160,000 lb (68,180 – 72,730 kg) each, use the scale every hour to accurately determine their load. The scale is open 24 hours/day, 7 days/week with an estimated annual throughput of 43,800 big-rig tractor-trailers. The asphalt around the approach and exit areas of the scale ruts severely due to the constant low-speed start-and-stop truck traffic entering and exiting the scale and historically has been repaired on an annual basis.

# Alamo Truck Stop Weigh Scale

The Petro Oil Co. was interested in a fast-track concrete replacement of the deteriorated asphalt to minimize the scale closure time and to increase the life of the scale to 10 – 15 years before repairs were needed. American Ready Mix was asked to develop a mixture that would achieve high-early strength and stand up to the deterioration caused by the heavy truck traffic loads.

## The Solution

To meet the project requirements and minimize the scale closure time, American Ready Mix developed a quality, high-early compressive strength concrete mixture using BASF's patented 4x4 Concrete technology. The project began by milling out about 3 in. (75 mm) of asphalt with thickened edges at the approach portion of the scale. Approximately 3 in. (75 mm) of 4x4 Concrete was then easily placed over the asphalt in a whitetopping application. Shortly thereafter (about 2 hours after placement), the contractor was able to saw cut the joints of the newly repaired area. The 4x4 Concrete system achieved a flexural strength of 440 psi (3 MPa) and a compressive strength of 3,870 psi (26.7 MPa) at 8 hours after placement and, to the delight of the owner, the scale was quickly returned to service.

## High-Early Strength Concrete Mixture Proportions

Cement, Type III	800 lb/yd <sup>3</sup> (475 kg/m <sup>3</sup> )
Water	250 lb/yd <sup>3</sup> (148 kg/m <sup>3</sup> )
w/cm	0.31
s/a	0.40

## Plastic Properties

Slump	7 - 8 in. (180 - 200 mm)
Air Content	8 - 10%

## Project Facts and Benefits

- The 4x4 Concrete system was used in a 3 inch (75 mm) whitetopping overlay application
- Ambient temperature: 62 °F (16.7 °C) day, 32 °F (0 °C) night
- 30 yd<sup>3</sup> (23 m<sup>3</sup>) of 4x4 Concrete was placed
- Saw cuts were placed on 4 ft (1.2 m) centers, 1in. (25 mm) deep (1/3 the depth of overlay)
- Compressive Strength: 3,860 psi (26.6 MPa) @ 8 hours  
6,260 psi (43.2 MPa) @ 41 hours  
7,290 psi (50.3 MPa) @ 7 days  
8,160 psi (56.3 MPa) @ 28 days
- Flexural Strength: 425 psi (2.9 MPa) @ 8 hours  
730 psi (5.0 MPa) @ 41 hours  
770 psi (5.3 MPa) @ 7 days  
800 psi (5.5 MPa) @ 28 days
- The weigh scale was opened to traffic quickly
- The 4x4 Concrete system is expected to provide significantly longer service life compared to the asphalt
- The minimized closure time resulted in increased revenue

## More Information

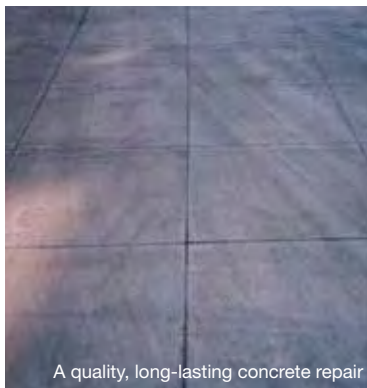
The Master Builders Solutions brand brings all of BASF's expertise together to create chemical solutions for new construction, maintenance, repair and renovation of structures. Master Builders Solutions is built on the experience gained from more than a century in the construction industry.

The know-how and experience of a global community of BASF construction experts form the core of Master Builders Solutions. We combine the right elements from our portfolio to solve your specific construction challenges. We collaborate across areas of expertise and regions and draw on the experience gained from countless construction projects worldwide. We leverage global BASF technologies, as well as our in-depth knowledge of local building needs, to develop innovations that help make you more successful and drive sustainable construction.

The comprehensive portfolio under the Master Builders Solutions brand encompasses concrete admixtures, cement additives, chemical solutions for underground construction, waterproofing solutions, sealants, concrete repair & protection solutions, performance grouts, performance flooring solutions.



4x4 Concrete was easy to place



A quality, long-lasting concrete repair

\*Effective January 1, 2014, the names of BASF's Master Builders Solutions brand products have changed:  
Glenium 3030NS became MasterGlenium 3030  
Delvo Stabilizer became MasterSet DELVO  
Pozzolith NC 534 became MasterSet AC 534  
MB AE 90 became MasterAir AE 90

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