

Interstate 57 Precast Prestressed Concrete Pavement

Project Information

Constructed: December 2005

Project Location: Northbound Interstate 57 near Sikeston, Missouri
(approximately 10 miles north of I-55/I-57 interchange)

Project Length: 1,010 ft (full-width pavement: 38 ft wide, including traffic lanes and integral shoulders)

Fabrication

Contractor: CPI Concrete Products, Memphis, TN

Number of panels fabricated: 101

Panel Dimensions: 38' x 10'

Panel Thickness: 5 5/8" to 10 7/8"

Pretensioning: Base Panels: 8-0.5" Gr. 270 strands
Joint Panels: 12-0.5" Gr. 270 strands



Construction

Installation Contractor: Gaines Construction, Wentzville, Missouri

Post-Tensioning Contractor: K. Bates Steel Service, St. Louis, Missouri

Pavement Structure: 4" permeable asphalt-stabilized base over
4" Type 1 base

Panel Installation Rate: 12 panels/6 hours

Post-Tensioning: Monostrand tendons, 0.6" Gr. 270 strand at 2 ft on center



Instrumentation

Completed by: University of Missouri-Columbia

Number of Instrumented Precast Panels: 7

Instrumented Rebars: 39

Vibrating Wire Strain Gages: 14

Strand Meters: 4

Thermocouples and iButton® Temperature Sensors: 45

Monitoring of: curing/hydration, pretensioning stress transfer, post-tensioning stress transfer, in-service performance (strain and temperature monitoring, joint movement, visual inspection)



Benefits of Precast Prestressed Concrete Pavement

- ✓ Expedited Construction
 - Faster opening to traffic*
 - Weekend or nighttime construction*
- ✓ Improved Quality and Performance
 - Controlled fabrication conditions*
 - Proven performance of cast-in-place prestressed concrete pavements*
- ✓ Reduced Slab Thickness
- ✓ Reduced Cracking and Number of Joints
- ✓ Ability to Span Voids and Non-ideal Base Layers
 - Prestress can be adjusted to account for voids and “soft” underlying base materials*

Where else has Precast Prestressed Concrete Pavement been used?

- Georgetown, Texas (2002)
 - 2,300 ft frontage road pavement along Interstate 35*
- El Monte/Los Angeles, California (2004)
 - 248 ft of mainline pavement on Interstate 10*
- Red Dog, Alaska (2002)
 - Truck apron for 200-ton mining trucks at Red Dog Mine*
- LaGuardia Airport (2002)
 - 100 ft of taxiway pavement*
- Lambert-St. Louis International Airport (2002)
 - 25 ft x 25 ft test panel for taxiway pavement*
- *Future Project:* Sheldon, Iowa (2006)
 - 160 ft precast prestressed bridge approach slab pavement*
- *Future Project:* Indianapolis, Indiana (2007)
 - Replacement of pavement under a bridge overpass with a “thinner” pavement section*

Precast
Pavement



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Contact Information

Missouri DOT
John P. Donahue, P.E.
(573) 526-4334
John.Donahue@modot.mo.gov



FHWA
Samuel S. Tyson, P.E.
(202) 366-1326
Sam.Tyson@dot.gov



Transtec
David K. Merritt, P.E.
(512) 451-6233
dmerritt@thetranstecgroup.com

