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

  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

- Sheldon, Iowa (2006)
  160 ft precast prestressed bridge approach slab pavement

Contact Information

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