AASHTO TIG
Promoting the use of
Precast Concrete Pavement Systems

Highways for Life
PCPS Showcase
NJ DOT, Mt. Arlington NJ
Timothy J. LaCoss
Our Mission

To promote the use of Precast Concrete Pavement Systems for the Repair, Rehabilitation and Reconstruction of PCC Pavements to transportation agencies and owners nationwide.
PCPS Basics

- Fabricated off-site
- Transported to the project site
- Installed on a prepared sub-base foundation
- No field curing or time to achieve strength
- Two main classifications of PCPS
  - Jointed Systems
  - Prestressed Systems
PCPS General Terminology

- Load transfer mechanism with new or existing pavement
- Pretension in transverse direction option (PPCP)
- Structural capacity for handling
- Friction reducing interlayer or filler material (N.T.S.)
- Slab length
- Post-tensioning option (PPCP)
- Grouting materials
- Load transfer mechanism with new or existing pavement
- Pretension in transverse direction option (PPCP)
- PCC thickness, material properties
- Existing structure
Continuous Paving

Intermittent Full Depth Repairs of PCC Pavements

Applications: airport runways & taxiways, heavily traveled highways, ramps, toll plazas, intersections, crosswalks, ports-docks, bus pads, smart-sensor embedment's, bridge approach slabs, pavement under bridges – vertical clearance
Benefits of PCPS

- Cast under ideal conditions
- Long life expectancy with low maintenance
- Placement in a short time frame – congestion & safety
- Less Risk to owner/contractor
- Growing documentation of performance history
- Established industry, method and technology
- Staged construction is possible
- Installation not affected by adverse weather conditions

- Supported by FHWA, AASHTO, ACPA, NPCA, PCI
- Reduced Work Zone timeframe
- Choice of surface Textures
- Pre-approval of PCPS System is possible
- Pre-existing specifications are available
- Generic specifications are available
- Economically competitive with alternative PCC pavement treatments
Snapshot of Precast Concrete Pavement Systems in the USA (2006)

- Precast Prestressed Concrete Pavement System
  - Precast/ Prestressed Concrete Paving System (non-proprietary)
    - Pre-stressed/Post-tensioned Panel system
    - FHWA Sponsored (CPTP program)

- Conventionally Jointed Precast Concrete Pavement Systems
  - Uretek USA System (proprietary)
    - Precast Panels on HDP foam with ‘Stitch in Time’ load transfer device
  - Kwik Slab System (proprietary)
    - Slab on grade, full load transfer, grout bed
  - Ft. Miller – Super-slab System (proprietary)
    - Slab on grade with full load transfer, grout bed
  - Michigan - Precast Full Depth Replacement/ DBR (non-proprietary)
    - Slab on flowable fill or HDP – dowels on top
Uretek USA Method

Uretek USA, Inc.
P.O. Box 1929
Tomball, TX 77377-1929

www.uretekusa.com
KWIK SLAB AND KWIK JOINT COUPLER

(Patent Pending, U.S. Ser. No. 10/814,583)
KWIK JOINT couplers are cast into the KWIK SLABS at the precast yard.
Ft. Miller Super-Slab

Ft. Miller Company
P.O. Box 98
Schuylerville, New York 12871
(518)696-5000
www.fortmiller.com
Two Types of Slabs (and Subgrade Surface Profiles)

- Single Plane
- Warped Plane
3 – D Supergrading (Above)

9A Ramp
Tarrytown, NY

All slabs warped
• All slabs trapezoidal (pie shaped)
• Traffic continuously maintained
Precast Prestressed Concrete Pavement

FHWA-HI PT
Sam Tyson
(202)366-1326
www.precastpavement.com
Precast Full Depth Replacement / Dowel Bar Retrofit Method
Full Depth Repair/Dowel Bar Retrofit
# AASHTO TIG Specifications & Guidelines for PCPS

| 1. Guidance and Considerations for the **Design** of Precast Concrete Pavement Systems |
| 2. Generic Specification for **Fabricating and Constructing** Precast Concrete Pavement Systems |
| 3. Generic Specification for Precast Concrete Pavement System **Approval** |
| 4. Precast Concrete Pavement Systems for Rapid Pavement Repair and Replacement: **Basic Information and Commentary** |

Available at [WWW.AASHTOTIG.ORG](http://WWW.AASHTOTIG.ORG) under the PCPS dropdown menu
www.aashtotig.org
What’s available on-line?

- Detailed information about each of these 5 leading Precast Paving Systems.
- Design Guideline Specifications
- Construction Guideline Specifications
- Approval Guidelines for PCPS
- Research Reports
- Proven Agency Specifications
Joint Work Effort
AASHTO & FHWA

Highways for **LIFE**

Long lasting
Innovative
Fast construction
Efficient and safe
PCPS Projects in 2007, 2008 & 2009

- NYSTA I-95 (CT-State line/Mamaroneck River to Cross Bronx Expressway)
- NYSTA I-190 (Buffalo)
- NYSDOT - Nassau-Queens Expressway, Staten Island-West shore Expressway
- NJ DOT I-280 & Rt. 21 (Trenton)
- Toronto, Canada (Downtown, Hwy 427)
- Illinois State Toll Authority (I-290/I-294 & I-88 & I-355)
- Iowa DOT (precast bridge approaches)
- DELDOT, intersection Rt. 896 & Rt. 40 (Bear, DE)
- Highways for Life Projects
  - Virginia DOT I-66 Interchange Ramp
  - Florida DOT (Daytona) - Intersections
  - CALTRANS I-15 - Mainline
  - NYSDOT I-88 Bridge Approach Slabs (Central NY)

HfL/AASHTO TIG Sponsored Product Showcase
Coming Soon !!!
Conclusions

- The technical framework, treatment philosophy, and PCPS systems are in place
  - For continuous and intermittent repairs
  - For all types of dimensional road geometries
- It is a proven pavement treatment alternative that fits well into Accelerated Construction Practices
- Aggressive Educational Outreach effort underway by FHWA / AASHTO-TIG on PCPS, creating market demand.
- The Momentum is growing…FAST!!!
Thank you!

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To find out more details about Precast Pavements look at
WWW.AASHTOTI.G.ORG