ACPA Pennsylvania Chapter / PennDOT
CONCRETE PAVEMENT TOUR / MEETING
August 15-16, 2018
Washington, Pennsylvania

Hosted By
PennDOT Engineering District 12-0
Pennsylvania Turnpike Commission
PennDOT Engineering District 11-0
2018 Concrete Pavement Tour/Meeting Participants

Accurate Profile Grinding
- M Al Adamek
- M Daryl Parker

ACPA Pennsylvania Chapter
- E John M. Becker P.E.
- M Richard R. Juch P.E.

AECOM
- Q Oliver Green P.E.

Anthony Allegra Cement Contractor
- F Joe Allegra
- F David P. Cicillo P.E.

APC
- E Aaron S. Hoover

Bryan Materials Group
- E Justin T. Bryan
- M Thomas J. Bryan

Callahan Paving Products
- E Brian L. Eberhart

CDR Maguire Group, Inc.
- F Dale Rzeinska

Cemex
- M Thomas R. Hunt

Crafco
- E Brian Hatfield

Diamond Products
- M Alan Haynes

The Euclid Chemical Company
- E Jason Roby

FHWA Pennsylvania Division
- M Jennifer A. Albert

The Fort Miller Company
- M Dan E. Mowleman

Gibson-Thomson Engineering
- E Jerome F. Bendo

Golden Triangle Construction
- F Jack Detz
- M Joe Fischer
- M Tim Klimas P.E.
- F Anthony Pastin
- F Beinard Perry
- M Stephen Raffa
- M David W. Schullo P.E.
- M David C. Thomas

Gullsek Construction
- E Brandon Farrell
- M Mark T. Ondrecko
- M Clayton J. Stahl P.E.

Guntert & Zimmerman
- E John E. Eisenhour

Hi Way Paving
- E James R. Truman
- G Edward T. Wessel

Independence Excavating
- F Doug Thomas

Int'l. Grooving & Grinding Assoc.
- E John H. Roberts P.E.

Johnson, Mirmiran & Thompson
- M Thomas A. Carey P.E.

Joseph B. Fay
- F Rich Schoedel

The Lane Construction Corporation
- M Michael D. Blanco P.E.
- M Rob J. Griffin
- M Tim A. Harden
- M Harry J. Jack

Lehigh Hanson Cement Company
- M Dominic J. Jamsa

Mackin Engineering
- E Stephen Janonko
- M Daniel W. Pratt

Matcon Diamond
- M Daniel Matesic

MMFX Technologies
- M Jon Walter

New Enterprise Stone & Lime
- E Lovell A. Jensen

PACA
- M Jim Callio P.E.

PennDOT Executive Office
- M George W. McCauley P.E.

PennDOT BOMO
- M Natalie Boyer
- M Steven L. Koser P.E.
- M Ty Reed

PennDOT BOPD
- M Dale R. Anderson
- M Patricia Baer
- M Garth D. Blidenbaugh P.E.
- M Joseph F. Citruben P.E.
- M Raymond DeArmitt
- M Neal W. Fannin P.E.
- M Sherry Hartman
- M David L. Jarvis, P.E.
- M Terry L. Kohler
- M Marcello J. Lucas
- M Mark Moore P.E.
- M Eugene Orlando
- M Lyle E. Peddircord P.E.
- M Seth Wolfinger

PennDOT District 01
- M Bill Carr
- M Kevin Hesdon
- M Chris Newell

PennDOT District 02
- M Brian Grecco

PennDOT Region 03
- M Robert Jaconski P.E.

PennDOT District 04
- M Ted Deplany
- M Gerald Wertz

PennDOT District 05
- M Daniel Stepaniants

PennDOT District 06
- M Michael W. Robert P.E.
- M Mark H. Sherz

PennDOT District 08
- M Michael Dotter
- M Kevin M. Keefe

PennDOT District 09
- M Kevin M. Greig P.E.
- M Gary R. Maros P.E.

PennDOT District 10
- M Shawn Abraham P.E.
- M Richard J. Pavan P.E.

PennDOT District 11
- M Thomas Adams P.E.
- M John Bernard
- M Steven Sneddon
- M Doug Thompson

PennDOT District 12
- M William H. Bremyrd
- M Dominick A. Caruso P.E.
- M Bryan T. Deagiole
- M E. Scott Facono P.E.
- M William L. Kovach P.E.
- M Stacy Lloyd
- M Jeremy S. Shaneyfelt

Penn State University
- E Jonathan Plaasen

Pennsylvania Turnpike Commission
- E Terry D. Draper
- M Christopher A. Ferry
- F Steve Hrvalch

Quality Engineering Solutions
- M Dennis A. Morlant P.E.
- M Luis Ramirez

S&L Consulting Engineers
- M Kevin W. Loebrich P.E.
- M Jim Lombard

St. Mary's Cement Company
- M Shawn P. Calyn

Swank Construction
- E Geoffrey W. Clarke

Temple University
- M Ahmed Fathim

Tyr Bar
- E Chad Johnson

University of Pittsburgh
- M Katherine R. Cluney
- M Nicole D. Sojour
- M Steven Sachs, P.E., Ph.D.
- M Julie Vantienensosche, P.E., Ph.D.

Volkert
- E Daniel L. Davis

Walsh Construction
- E Thomas J. Becknowitz
- M Kenneth L. Moore

West Virginia Division of Highways
- M Andrew Moys P.E.
- M Susan Thepas P.E.

Wickett
- E Frank Yantky

Legend
- Blue Bus
- Gold Bus
- Lead Trail Vehicle
- Facilitator/Governor
- Meeting Attendee
# 2018 Concrete Pavement Tour

**Tuesday, August 14, 2018**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>6:00–7:00 pm</td>
<td><strong>Sign-In</strong> <em>(at the Doubletree, 340 Racetrack Road, Washington, PA 15301)</em></td>
</tr>
</tbody>
</table>

**Wednesday, August 15, 2018**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:00 am</td>
<td><strong>Sign-In</strong> <em>(at the Doubletree, coffee/snack included with registration)</em></td>
</tr>
<tr>
<td>8:00 am</td>
<td><strong>Welcome</strong> <em>(Introductions /Tour Overview /Safety Briefing)</em></td>
</tr>
<tr>
<td>8:30 am</td>
<td><strong>Buses Load</strong></td>
</tr>
<tr>
<td>8:45 am</td>
<td><strong>Buses Depart</strong></td>
</tr>
</tbody>
</table>

## Concrete Pavement Tour

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:15 am</td>
<td><strong>Blue Bus</strong> <em>(A) I-376, Section A50 &amp; Project Concrete Plant (District 11/Golden Triangle)</em></td>
</tr>
<tr>
<td></td>
<td><em>(Gold Bus)</em> <em>(A) Project Concrete Plant &amp; I-376, Section A50</em></td>
</tr>
<tr>
<td>10:30 am</td>
<td><strong>Both Buses</strong> <em>(1) I-376, Section A56 (District 11)</em></td>
</tr>
<tr>
<td></td>
<td><em>(2) PA-576, Sections 54A/B/C, Southern Beltway (Turnpike)</em></td>
</tr>
<tr>
<td></td>
<td><em>(B) PA-576, Section 55A1 (Turnpike/Independence Excavating)</em></td>
</tr>
<tr>
<td>12:00 pm</td>
<td><strong>Lunch</strong>, Quicksilver Clubhouse <em>(included with registration)</em></td>
</tr>
<tr>
<td>12:45 pm</td>
<td>*<em>(C) PA-576, Section 55B (Turnpike/Joseph B. Fay)</em></td>
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<tr>
<td></td>
<td><em>(3) PA-576, Sections 55A2 &amp; 55C1 (Turnpike)</em></td>
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<tr>
<td></td>
<td><em>(4) SR-50, Section A23 Unbonded Overlay (District 11)</em></td>
</tr>
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<td></td>
<td><em>(5) I-79, Section M10 (District 12)</em></td>
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<td></td>
<td><em>(6) I-79 &amp; Meadowlands Interchange, Section P10 (District 12)</em></td>
</tr>
<tr>
<td></td>
<td><em>(7) I-70/79, Section T20, North Junction (District 12)</em></td>
</tr>
<tr>
<td></td>
<td><em>(D) I-70 Sections T10 &amp; W31 (District 12/The Lane Construction Corporation)</em></td>
</tr>
<tr>
<td></td>
<td><em>(8) I-70/79, Section 20H, South Junction (District 12)</em></td>
</tr>
<tr>
<td></td>
<td><em>(E) I-70, Section 21H, Bentleyville (District 12/Golden Triangle)</em></td>
</tr>
<tr>
<td></td>
<td><em>(9) PA-43, Mon-Fayette Expressway (Turnpike)</em></td>
</tr>
<tr>
<td>5:00 pm</td>
<td><strong>Return to Doubletree</strong></td>
</tr>
<tr>
<td>6:00 pm</td>
<td><strong>Reception at Doubletree</strong> <em>(hors d’oeuvres included w/registration)</em></td>
</tr>
<tr>
<td>7:00 pm</td>
<td><strong>Adjourn</strong> <em>(dinner on your own)</em></td>
</tr>
</tbody>
</table>

*Projects shown in **RED** are stops along the tour, those in **GREEN** are drive-throughs*

**Thursday, August 16, 2018**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:00 am</td>
<td><strong>Sign-In</strong> <em>(for &quot;Thursday Only&quot; participants; coffee/snack included w/registration)</em></td>
</tr>
<tr>
<td>8:00 am</td>
<td><strong>First Session</strong> <em>(see detailed agenda included later in these handouts)</em></td>
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<tr>
<td></td>
<td>Break</td>
</tr>
<tr>
<td>10:00 am</td>
<td><strong>Second Session</strong></td>
</tr>
<tr>
<td>12:00 pm</td>
<td><strong>Adjourn</strong> <em>(box lunches to go, included with registration)</em></td>
</tr>
</tbody>
</table>
**Items of Interest**

- VE Proposal for Phase 5
- Cement Stabilization in lieu of Undercutting
- Temporary widening
- EB shoulder width reduction
- Eliminate crowns in tangent sections – eliminating pavement base drain
- Crushed existing concrete slabs to make 2A subbase
- New standard for Dowel Bar spacing
- Removed the requirement to cut the basket tie-bars

**PROJECT DESCRIPTION**

Full-depth concrete reconstruction, joint repairs of roadway pavement sections, reconstruction of the McClaren Interchange, cement stabilization, minor structure improvements at McClaren Road and mainline 376, updates to guide rail and bridge connections, pavement markings and signs, drainage improvements all within a length of 4.76 Miles STATE ROUTE 376, SECTION A50, in ALLEGHENY COUNTY, FINDLAY AND MOON TOWNSHIIPS, From a point approximately 2,000 feet east of the Business 376 Interchange to a point approximately 1,100 feet east of the Airport Terminal/PA Turnpike Interchange.

**Material Quantities**

- **PLAIN CEMENT CONCRETE PAVEMENT, RPS, 11” DEPTH**
  - 65,800 CY of concrete
- **CEMENT TREATED PERMEABLE BASE COURSE, 4” DEPTH**
  - 24,000 CY of concrete
- **CEMENT SUBGRADE STABILIZATION**
  - 206,600 SY
CONTRACT AMOUNT /DATE LET: $51,596,566.76 (October 20, 2016)
PRIME/PAVING CONTRACTOR: Golden Triangle Construction
OTHER SUBCONTRACTORS: Matcon Diamond (joint sawing/sealing)
MAJOR MATERIAL SUPPLIERS: Cemex (portland cement); Separation Technologies (fly-ash)
PCC THICKNESS/QUANTITIES: 11-inch RPS (216,104 squares bid at $61.70/square yard)
NOTES/SPECIAL COMMENTS: This project included work-ordering in cement stabilization of the base, reducing undercutting resulting in cost-savings of approximately $3.3 million to the Department

This project is also being shadow tested as part of the FHWA/NCPTC Performance Engineered Mixtures pilot study.

Concrete Batch Plant

PROJECT DESCRIPTION: Widening and reconstruction of Interstate 376
CONTRACT AMOUNT /DATE LET: $66,345,696.82  (November 5, 2015)
PRIME/PAVING CONTRACTOR: Swank Construction Company
MATERIAL SUPPLIER: Argos (portland and slag cement)
PCC THICKNESSES/QUANTITIES: 11-inch RPS (176,901 squares); 10-inch RPS (31,258 squares); 8-inch RPS (81,741 squares)
I-376 / Beaver County-Airport

PROJECT DESCRIPTION

Full-depth concrete reconstruction, concrete pavement patching of existing roadway pavement sections, reconstruction and tie-ins at 5 interchanges, subgrade undercuts over entire project, construction of new design/build bridge of Economy Grade Road over I-376, structure rehabilitation/improvements of 4 structures over I-376, updates to guardrail, including new cable guardrail, and bridge connections, pavement markings and signs, and drainage improvements all within a length of 7.51 Miles STATE ROUTE 376, SECTION A56, in ALLEGHENY COUNTY, MOON and FINDLAY TOWNSHIPS and in BEAVER COUNTY, HOPESWELL TOWNSHIP. From a point approximately 13,824 feet east of the Airport Terminal / PA Turnpike Interchange to a point approximately 2,632 feet west of the Beaver County line.

Items of Interest

- Automated Guidance Equipment for Excavation and String-less Paving
- Reconstruction & Tie-Ins at 5 Interchanges
- Additional $1 Million in concrete roadway patching on Interchange Ramps
- Diamond Grind all new pavement for IRI Specifications
- Average 18” Subgrade Undercut over Entire Project
- Existing Roadway Slabs crushed to 4” and Under Gradation for Undercut Backfill
- Deleted 6” Underdrain as a result of undercuts and utilized subgrade outlets
- 4 Temporary Median Crossovers for Multi-Phased MPT and Bi-Directional Traffic
- $1.2 Million Savings for revisions to Temporary Pavement Structure

Material Quantities

- Various Depths of Concrete Roadway Pavement and Shoulders (11”, 10” and 8”)
  - 289,900 SY of Paving / 88,600 CY of Concrete
- Concrete Pavement Patching, Types A, B, and C (10” Depth)
  - 89,000 SY of Patching / 2750 CY of Concrete
- Subgrade Undercut Backfill
  - 64,240 CY of No. 1 Aggregate
  - 80,100 CY of Crushed Concrete (4” & Under Gradation)
I-376 / Beaver County-Airport

PENNDOT DISTRICT 11-0 - Project Owner
Cheryl Moon-Sirianni, P.E. District Executive
Doug Thompson, P.E. Acting Assistant District Executive-Construction
Doug Seeley, P.E. Assistant District Executive-Design
Steve Sneddon, P.E. Assistant Construction Engineer
Andrea Nash Project Designer
Nick Palmieri Project Manager
Steve Cowan Press Officer

Swank Construction Company, LLC - Contractor
632 Hunt Valley Circle, New Kensington, PA 15068

CDR Maguire - Construction Management and Inspection Services
503 Martindale Street, Pittsburgh, PA 15212
<table>
<thead>
<tr>
<th>Sections 54ABC</th>
<th>Findlay Connector</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PROJECT DESCRIPTION:</strong></td>
<td>Construction of four-lane limited access highway</td>
</tr>
<tr>
<td><strong>CONTRACT AMOUNT:</strong></td>
<td>$147.5 million (three projects)</td>
</tr>
<tr>
<td><strong>PAVEMENT JOINT SPACING:</strong></td>
<td>15-foot perpendicular</td>
</tr>
<tr>
<td><strong>BASE:</strong></td>
<td>4-inch ATPB over 4-inch 2A</td>
</tr>
<tr>
<td><strong>SECTION 54A (Western Section)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Prime/Paving Contractor:</strong></td>
<td>Dick Corporation /Golden Triangle Construction</td>
</tr>
<tr>
<td><strong>Project Specifics:</strong></td>
<td>2.3 million cubic yards Class 1 excavation, 25,000 cubic yards Class A, AA, AAA concrete; Concrete course aggregate: river gravel/limestone</td>
</tr>
</tbody>
</table>
| **PCC Thickness/Quantities:** | 12-inch thick PCC (59,400 squares)  
10-inch thick PCC (74,100 squares) |
| **Contract Amount:** | $64,898,184  (let 11/08/2005) 1.36 miles |
| **SECTION 54B (Central Section)** | 
| **Prime/Paving Contractor:** | Mashuda /Golden Triangle Construction |
| **Project Specifics:** | 3.7 million cubic yards Class 1 excavation, 12,500 cubic yards concrete, 2.0 million lbs. rebar; 4.4 million lbs. structural steel, Concrete course aggregate: river gravel/limestone |
| **PCC Thickness/Quantities:** | 12-inch thick PCC (60,000 squares)  
10-inch thick PCC (74,100 squares) |
| **Contract Amount:** | $35,953,665  (let 06/21/2006) 2.27 miles |
| **SECTION 54C (Eastern Section)** | 
| **Prime Contractor:** | Mashuda (original contractor, Smith & Johnson, declared bankruptcy) |
| **Paving Contractor:** | Hi-Way Paving |
| **Project Specifics:** | 4.8 million cubic yards Class 1 excavation, 1.3 million lbs. rebar; 1.2 million lbs. structural steel, 17,000 linear feet 12-inch bearing piles; Concrete course aggregate (slag, river gravel, limestone) |
| **PCC Thickness/Quantities:** | 12-inch thick PCC (33,000 squares)  
10-inch thick PCC (42,000 squares) |
| **Contract Amount:** | $46,604,178  (let 07/21/2006) 2.39 miles |
| **Rehabilitation:** | Partial-depth spall repairs (2015) |
| **Contractor:** | Swank Construction |
PROJECT DESCRIPTION: U.S. Route 22 to Quicksilver Road
Approximately 4 miles in length containing one full interchange and
requiring nearly 5 million cubic yards of excavation. The project
includes 3 mainline bridge structures and one overpass structure. The
mainline interchange will be constructed at Beech Hollow Road. Beech
Hollow Road and SR-980 will be realigned to create an intersection with
Donaldson Road. Candor Road will be reconstructed to include an
overpass structure. The third and fourth mainline structures will carry
PA-576 over Little Raccoon Creek and Quicksilver Road.

CONTRACT AMOUNT /DATE LET: $90,848,268.78 (let November 9, 2016)
PRIME CONTRACTOR: Independence Excavating
PAVING CONTRACTOR: Allega Cement Construction
OTHER SUBCONTRACTORS: Swank Construction Company (joint sawing/sealing)
Lindy Paving (asphalt treated permeable base)
MAJOR MATERIAL SUPPLIERS: Cemex (portland cement)
Separation Technologies (fly-ash)
Hanson (aggregates)
PCC THICKNESSES /QUANTITIES: 12-inches Long-Life Concrete Pavement
188,990 squares bid at $63.00/square yard
BASE: 4-inches ATPB over 6-inches 2A
NOTES/SPECIAL COMMENTS: The passing lane and inside shoulder will be paved first, with load-
transfer assemblies staked to the ATPB, followed by inserting of tie-bars
into the hardened concrete. The second placement of concrete will be
for the driving lane and outside shoulder. End result is one longitudinal
construction joint across the pavement.

Number and location of 12 dowels
for the first concrete placement and the
number and location of the 13 dowels
for the second concrete placement are
both in accordance with RC-20M
(approved September 15, 2016).
### Southern Beltway (US-22 to I-79)

#### Section 55W

- **Length:** n/a
- **Contract Amount:** $954,000
- **Awarded:** Feb. 2016
- **Completion:** Dec. 2016
- **Paving Contractor:** n/a
- **Cubic Yards Excavation:** 50,000
- **Miscellaneous:** 9,000 cubic yards topsoil for infiltration
- **Square Yards PCC:** n/a
- **Unit Cost per Square Yard:** $63.00

#### Section 55A1-1

- **Length:** n/a
- **Contract Amount:** $14,400,000
- **Awarded:** Jan. 2014
- **Completion:** March 2015
- **Paving Contractor:** n/a
- **Cubic Yards Excavation:** 200,000
- **Miscellaneous:** Mainline twin structures 800 foot long
- **Square Yards PCC:** n/a

#### Section 55A1

- **Length:** 3.7 miles
- **Contract Amount:** $95,735,449
- **Awarded:** Nov. 2016
- **Completion:** May 2019
- **Paving Contractor:** Anthony Allega
- **Cubic Yards Excavation:** 5,400,000
- **Miscellaneous:** 7 bridges, 4 local roads, Interchange
- **Square Yards PCC:** 188,990

#### Section 55A2

- **Length:** 3.0 miles
- **Contract Amount:** Over $100m Estimated
- **Awarded:**
- **Completion:**
- **Paving Contractor:** Independence Excavating
- **Cubic Yards Excavation:** 3,300,000
- **Miscellaneous:** 5 bridges, 4 local roads, Interchange
- **Square Yards PCC:** 77,500

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**PA Turnpike 576**
<table>
<thead>
<tr>
<th>55B</th>
<th>55C1-1</th>
<th>55C1-2</th>
<th>55C2-1</th>
<th>55C2-2</th>
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<tbody>
<tr>
<td>3.2 miles</td>
<td>1.7 miles</td>
<td>2.0 miles</td>
<td>3.0 miles</td>
<td>1.0 mile</td>
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<tr>
<td>$95,122,373</td>
<td>$87,161,804</td>
<td>$37,777,778</td>
<td>$23,637,600</td>
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<tr>
<td>Joseph B. Fay</td>
<td>Beaver</td>
<td>Trumbull</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Golden Triangle</td>
<td>Golden Triangle</td>
<td>Golden Triangle</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5,700,000</td>
<td>1,000,000</td>
<td>2,000,000</td>
<td>9,000,000</td>
<td>1,000,000</td>
</tr>
<tr>
<td>2 bridges, 5 local roads</td>
<td>4 bridges, 4 local roads, Interchange</td>
<td>1 bridge 2 local roads</td>
<td>6 bridges, 4 local roads, Interchange</td>
<td>2 bridges, 4 local roads, Roundabout</td>
</tr>
<tr>
<td>124,000</td>
<td>99,545</td>
<td>113,381</td>
<td>188,990</td>
<td>77,500</td>
</tr>
<tr>
<td>$59.00</td>
<td>$60.00</td>
<td>$60.00</td>
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</tbody>
</table>
PROJECT DESCRIPTION: Panhandle Trail to Cecil Reissing Road
This section is approximately 3.2 miles in length, and requires nearly six million cubic yards of excavation. The project includes a five span bridge that is 1,370 feet in length over SR-980. The northern leg of Reissing Road is to be relocated and become Laurel Hill Road, and the southern leg will have a new connection to SR-980. Realignment of the Reissing and Profio Road intersection is also included.

CONTRACT AMOUNT /DATE LET: $90,621,870 (December 14, 2016)
PRIME CONTRACTOR: Joseph B. Fay
PAVING CONTRACTOR: Golden Triangle Construction
OTHER SUBCONTRACTORS: Matcon Diamond (joint sawing/sealing)
MAJOR MATERIAL SUPPLIERS: Cemex (portland cement)
Separation Technologies (fly-ash)
Hanson (aggregates)

PCC THICKNESSES/QUANTITIES: 12-inches Long-Life Concrete Pavement
122,902 squares bid at $59.00/square yard

BASE: 4-inches cement-treated permeable base over 6-inches 2A

SLAB CONFIGURATIONS: Driving lane width is 14-foot, striped at 12-foot with rumble strips placed between the lane stripe and edge of pavement. Outside shoulder slabs (no dowels) are constructed 10-foot wide, resulting in a 12-foot wide effective shoulder. Passing lane and inside shoulders are 12-foot and 4-foot wide. Transverse joint spacing is 15-foot.

NOTES/SPECIAL COMMENTS: The prime contractor will be placing the 2A subbase. Cement treated permeable base will be placed by the paving contractor; concrete paving will be done using string-less paving. Dowels and tie bars will be mechanically inserted.

Number and location of 11 dowels for the passing lane and 13 dowels for the driving lane is in accordance with RC-20M (approved September 15, 2016).
PROJECT DESCRIPTION: 6-inch concrete overlay with 1-inch bituminous bond-breaker

CONTRACT AMOUNT /DATE LET: $19.0 million (2015)
Overlay: $3.9 million; Shoulders: $3.9 million
Full-depth PCC: $14.0 million

PRIME/PAVING CONTRACTOR: Golden Triangle Construction

DESIGN ENGINEER: Mackin Engineering Company

PROJECT LENGTH/THICKNESSES: 4.2 miles of 6-inch nominal to 8-inch thick overlay

SLAB CONFIGURATIONS: Slabs are 6-foot wide by 6-foot wide; slabs are tied with two tie-bars per slab only in the longitudinal joint that separates the travel lanes from the shoulder and in-between the travel lanes and the shoulder

NOTES/SPECIAL COMMENTS: This 4.2 mile long concrete overlay project was bid as an alternative paving material with the option of crack and seat with a bituminous overlay, or a 6-inch unbonded concrete overlay. The $19 million unbonded concrete overlay prevailed over the two bituminous bids by $2.1 million and $3.3 million.

Technologies used for the first time in Pennsylvania included variable thickness concrete overlay, mix design optimization for better long term pavement performance, optimization of the pavement overlay profile, string-less paving and real time smoothness which resulted in a high quality project with a considerable cost savings over the asphalt alternative bids.

The success of the project was due in part to the ability to overcome the various challenges that could have compromised the schedule. These included changes to the grades and curb placement, which forced re-design of a large portion of the project, as well as an unusually rainy spring and summer which required paving crews to work most weekends to stay on schedule.

This project was recognized in 2016 as the Gold Award Winner for Overlays by ACPA. The “Excellence in Concrete Pavement” program recognizes high-quality workmanship in concrete pavement projects, and serves as a way to share information about challenging and highly successful projects.
Interstate 79 is the primary north-south travel corridor in Western Pennsylvania, providing a link between Interstate 80 to the north of Pittsburgh with the Pennsylvania Turnpike (Interstate 76) near Pittsburgh, and Interstate 70 and 68 to the south. When first constructed, the I-79 corridor was very rural in nature, but it has evolved over time to include residential areas, commercial areas and light industrial development as the Pittsburgh area has evolved from a heavily urban population structure to a more decentralized suburban/exurban structure. The area of this project, which is located just to the southwest of Pittsburgh, is now experiencing significant growth due, in part, to the recent expansion of an existing race track to include a new casino and associated entertainment complex and commercial developments.

This project, SR-0079-M10, is a 12-inch thick jointed and doweled plain concrete pavement that was constructed in 1989 between PennDOT Segment 0378 Offset 0000 and Segment 0404 Offset 1382 in the northbound lanes (and in corresponding sections in the adjacent southbound lanes), resulting in a 4-lane project length of about 2.8 centerline miles. It was built with 20-foot unreinforced concrete panels over 4-inches of open-grade subbase over 4-inches of crushed concrete that was obtained by recycling the old concrete roadway into a dense-graded (PennDOT grading 2A) granular subbase.

The profile requirement on the 1989 construction were for a maximum profile index of 7-inches per mile (0.2-inch blanking band), and the constructed pavement profile index values ranged from 5 to 7. Current IRI values (after 21 years of service) average 125.5 and range from 78 to 185 (which reflects the inclusion of two sets of bridge/overpass structures, which contributed to the higher numbers observed), so there has been relatively little loss of ride quality over time, particularly in the context of 20-plus years of service.

At the time of construction, the two-way ADT was 33,300 (including 12 percent heavy trucks) and the projected 2009 design year two-way ADT was 39,404. The most recent traffic measurements (2009) indicate only 25,343 vehicles per day (a downturn that may reflect current economic conditions, or may indicate a problem with current traffic estimates), but with 17% trucks. Traffic numbers and gross weights are expected to rebound as the economy recovers and this region continue to grow.

A new interchange (SR-0079 P10 Meadowlands Interchange) is being constructed partially within the project limits to accommodate the increased racetrack and casino traffic, but this segment of I-79 will remain untouched (except for an area where new dual structures are being installed over the relocated SR-1047 (Manifold Road).

This pavement, like so many others from the 20th century, was designed to handle 20-years of projected traffic loadings. It has achieved or exceeded the design traffic loading - without spending a single dime on maintenance and rehabilitation in the past and none planned for the immediate future - and stands ready to continue to serve Western Pennsylvania by providing a critical link with 4 other major Interstate highways for many years to come.

It is a true zero-maintenance pavement (as well as an example of a sustainable concrete pavement, through its long life and use of recycled materials) and has been recognized for the exceptional service that it has provided through its original design life, as well as for the service that it will continue to provide.
PROJECT DESCRIPTION: Improving an existing half-interchange to a full access split diamond interchange, structural rehabilitation and new dual structures for I-79

CONTRACT/ACTUAL AMOUNT: $22.4 million / $23.2 million

PRIME/PAVING CONTRACTOR: Swank Construction


PCC THICKNESSES/QUANTITIES: 10-inch thick RPS, (20,045 squares)
12-inch thick RPS, (15,178 squares)

BASE: 7-inch thick open-graded stone over 6-inch & 8-inch thick 2A (35,223 squares)

NOTES/SPECIAL COMMENTS: The plain cement concrete pavement, RPS, 12-inches thick, was used along all tie-ins to the Interstate mainline. Once the pavement was outside of the gore/shoulder area it was switched to 10-inch depth RPS for the remainder of the ramps and Manifold Road. The 7-inches of OGS was used under the mainline tie-ins and shoulder widening to maintain a uniform design throughout the cross-section. Outside of those areas 4-inches of ATPB was used. Under the concrete areas the subbase consisted of 6-inches of 2A.

It should also be noted that the connector ramps (BA & BC) along with Manifold Road were bid under the alternate and were designed with a bituminous pavement structure. Work Order Number 014 was written to change this. Net change was an increase of $301,793.
PROJECT DESCRIPTION: This project consists of widening and reconstruction of I-70 from two lanes to three lanes in each direction, the widening of the I-70 westbound ramp to I-79 northbound to two lanes at North Junction (Exit 18) and the reconstruction of the Murtland Avenue Interchange (Exit 19) to eliminate the substandard cloverleaf interchange and replace it with a Diverging Diamond Interchange. Project involves structure related work as follows: Widening and preservation of WB structure spanning SR 1009 (Locust Avenue), Preservation of EB structure spanning SR 1009, Jacking and rehabilitation of WB structure spanning SR 0019 (Murtland Avenue), and Preservation/deck replacement of EB Structure spanning SR 0019. Additionally, the project will include steepened rock slope construction, traffic signals at each ramp junction, new interchange signing including overhead sign structures, pavement markings, guide rail, drainage, complete interchange highway lighting, ITS relocation work, stormwater mitigation, stream relocation, wetland mitigation and other miscellaneous construction.

Project length: 7,430 feet

CONTRACT AMOUNT/KEY DATES: $48,966,425; Notice to proceed 09/02/14; Completed 01/21/18

PRIME/PAVING CONTRACTOR: Golden Triangle Construction

PCC THICKNESSES /QUANTITIES: 14-inch RPS (90,738 squares at $72.00/square yard); 9-inch (17,086 squares at $66.00/square yard); joint spacing 15-foot perpendicular

BASE: 4-inches cement-treated permeable base over 6-inches 2A. A portion of the 2A subbase was obtained by crushing the existing concrete pavement.

NOTES/SPECIAL COMMENTS: A+Bx was used on the project; the low bidder bid concrete pavement. The C-factor for the concrete pavement alternate was $3,072,583.
PROJECT DESCRIPTION:
This mega-project includes reconstruction and widening I-70. The western section (W31, from SR-136/Beau Street to I-79/South Junction) will generally widen Interstate 70 from two lanes to three lanes in each direction. The eastern portion (T10, from I-79/South Junction to the SR-0519 interchange) will reconstruct the four lane section of I-70.

The project includes the lengthening ramp acceleration and deceleration lanes and structure related work as follows: Replacement of the bridge carrying Eastbound I-70 over CSX; construction of two sound wall barriers along Westbound I-70, construction of a retaining wall; and various culvert extensions. Additionally, the project will also include: new interchange signing including overhead sign structures (monopipe); upgrade of existing highway lighting, ITS relocation, drainage, guiderail, pavement markings, stormwater mitigation including detention basin construction, stream relocation, stream mitigation and other miscellaneous construction. Project length: 27,110 feet.

CONTRACT AMOUNT/KEY DATES: $118,230,936; NTP 12/19/2016; Completion 10/19/2020 (estimated)
PRIME/PAVING CONTRACTOR: The Lane Construction Corporation
MATERIAL SUPPLIERS: Cemex (portland cement)
PCC THICKNESSES /QUANTITIES: 14-inches (285,286 squares bid at $63.00/square yard)
BASE: 4-inches Cementitious Treated Permeable Base over 6-inches 2A subbase
NOTES/SPECIAL COMMENTS: A+Bx was used on the project. C-Factor was also used. Contractor bid the Concrete alternate for section W31 ($3,025,630 for concrete; $2,974,787 for bituminous). T10 was designed as concrete pavement.

Added JIT2 and PAMS spray cure to this project; these were not in the original contract.
PennDOT District 12 is responsible for the design, construction and maintenance of I-70 from the West Virginia state line east to New Stanton, PA (Exit 57). Much of the corridor was originally designed and built more than 55 years ago; therefore, many improvements are underway and/or planned to meet modern traffic needs.
To date, 8 improvement projects have been completed, 7 are being constructed, and 5 are in the design phase. PennDOT District 12 will invest nearly $500 million to deliver the improvement projects which will include interchange improvements, bridge replacements or reconstructions, and miles of improved roadway and upgrades to the interstates intelligent transportation systems.
I-70/79 South Junction, Washington County, District 12

Contract Amount:
$37.3 million

PROJECT DESCRIPTION
Reconstruction/Realignment of I-70/79 interchange
Golden Triangle Construction

L-70 SB / W9 (asphalt placed 2014)
- Sta. 1151+50 – Sta. 1157+00
  - Milled 2" depth
  - 1½" 9.5mm Scratch
  - 1 ½ 9.5mm Wearing

Ramp G-4 (concrete placed 2012)
- Sta. 423+69 – Sta. 448+61
  - 12" RPS Conc. Pvmnt. ( 11,400 sy )
  - 4" CTPBC
  - 4" 2A Sub-base

G-3 (Rdwr @ Ex Culvert), PCC placed 2014
- Sta. 151+80 – Sta. 160+34 = Sta. 0+00 – Sta. 0+74
  - 10" PCC
  - 8" 2A Sub-base

I-79 MB & Ramp G-2A (concrete placed 2012)
- Sta. 223+89 – Sta. 289+98
  - 12" RPS Conc. Pvmnt. ( 22,050 sy )
  - 4" CTPBC
  - 4" 2A Sub-base

- Sta. 289+98 – Sta. 291+73 = Sta. 1156+00 – Sta. 1151+50
  - 1 ½ 9.5mm Wearing
  - 2" 19mm Binder
  - 3" 25mm Base
  - 13" RCCP ( 2,150 sy )
  - 4" CTPBC
  - 4" 2A Sub-base

- Sta. 1153+50 – Sta. 1152+50
  - 1 ½ 9.5mm Wearing
  - 2 ½ 19mm Binder
  - 10" 25mm Base
  - 8" 2A Sub-base
PROJECT DESCRIPTION: Total Reconstruction of Interstate 70 in Washington County; including Bentleyville and Ginger Hill Interchanges; 1.9 miles

CONTRACT AMOUNT: $77,894,754

DATE LET: July 16, 2015

ANTICIPATED COMPLETION: December 19, 2018

PRIME/PAVING CONTRACTOR: Golden Triangle Construction

MAJOR MATERIAL SUPPLIERS: LafargeHolcim (portland cement)

PCC THICKNESSES/QUANTITIES: 14-inch (68,895 squares bid at $88.00/square yard); 10-inch (17,233 squares bid at $86.00/square yard)

JOINT SPACING: 15-feet perpendicular

BASE: 4-inch cement treated permeable base over 6-inch 2A subbase over 1-foot #1 Coarse Aggregate undercut

A+Bx Construction of SR-917 (max 150 days, 90 days bid) Phased concrete roadway work on SR-2040 (max 60 days, 40 days bid) Complete concrete ramp Z to SR-917 (max 70 days, 50 days bid)

NOTES/SPECIAL COMMENTS: Intelligent Compaction (embankments, undercuts, 2A and asphalt); Type D Flowable Fill; Concrete roundabout at the Bentleyville Interchange
Concrete Roundabout - Pinwheel Joint Layout (RC-20M)

Divergent Diamond Interchange – Joint Design & Layout (ACPA)

Pave Through

Quadrant
TWENTY-ONE SECTIONS

Design Firms
GAI, Gannett Fleming,
F. R. Harris, HDR,
Johnson Schmidt,
L. Robert Kimball, Mackin,
MS Consultants, SAI,
Skelly & Loy,
Wilbur Smith Associates,
Urban

Construction Firms
CH&D Enterprises,
Dick Corporation,
Maccabee, Manno,
Mashuda, Merlo,
Mosites,
New Enterprise,
Reginella, Swank

Construction projects awarded between 1994 and 2000 totaled $384 million.

52B2
20-foot skewed joints
Travel Lanes
12-foot wide
Outside Shoulder
12-foot wide
Inside Shoulder
4-foot wide

52J
12-inch RPS Pavement;
4-inch ATPB; 4-inch 2A

Shoulders Type 1 Modified
8-inch thick PCC;
4-inch nominal ATPB or
varied depth (1-inch to 4-inch)
ATPB; 4-inch 2A

20-foot skewed joints

Driving/Passing Slab Widths
14-foot/12-foot wide;
Outer Shoulder Slab 10-foot wide;
Inside Shoulder 4-foot wide
Divergent Diamond Interchange

Interstate 70 & Route 19 Interchange
(I-70 Exit 19)
Washington County, PA

Diverging Diamond Interchange (DDI)

Project Information:
The Pennsylvania Department of Transportation is in the process of implementing long term improvements to Interstate 70 in Washington and Westmoreland Counties. The purpose of the improvements is to increase safety and mobility. As part of the improvements, PDEOT will reconstruct I-70 between the junctions with I-79, adding a third lane in each direction and will improve the interchange with Route 19 (Murphy Avenue) in South Osborne Township, Washington County.

The current interchange at Route 19 is a subdivided cloverleaf interchange that was constructed nearly 60 years ago. With the desire to minimize impacts and to account for the traffic on both I-79 and Route 19, a new interchange type was determined necessary.

An innovative interchange called a Diverging Diamond Interchange (DDI), also known as a Double Cross-over Diamond Interchange, will be constructed at this location. The DDI is a new type of interchange that is growing in popularity. The DDI’s primary purpose is to move traffic more efficiently compared to other interchange types. The DDI’s shape is similar to the standard diamond interchange, but the DDI has three distinct differences.

First Difference: Traffic on Route 19 will cross over to the opposite or left side of the roadway within the interchange area.

Second Difference: The left turn movements from Route 19 to the I-70 on ramps will occur from the far left side of the roadway eliminating the need to cross opposing travel lanes. The benefit is free flow left turns onto the I-70 ramps.

Third Difference: The left turn movements from the I-70 exit ramps to Route 19 do not need to cross opposing travel lanes to gain access to the desired lanes on Route 19.

DDI Design Features:
Signing and pavement markings will help guide you through the interchange. This includes post mounted and overhead signs and familiar pavement markings. Additional arrows will be provided in the travel lanes to help guide you through the DDI.

Curbed islands will be constructed to help guide you through the cross-overs.

Concrete plane screens will be installed between the cross overs along Route 19 to prevent distraction by motorists travelling in the opposite direction on your right side.

Traffic Signals will have two phases, unlike three or more phases at other interchanges and intersections.

Contact Information:
Pennsylvania Department of Transportation
Engineering District 12-C
825 North Galatin Avenue Extension
Unionsburg, PA 15401

If you have questions, please contact:
Bryan Lyons, P.E., Project Manager
Telephone: (724) 639-7306
E-mail: blyons@dot.state.pa.us

Anticipated Project Schedule:
Start of Construction: Fall 2014
Completion of Construction: 2017

Facts:
The DDI at Route 19 will be the first of its kind in Pennsylvania. As of December 2013, there are more than thirty (30) DDIs in operation in the United States with more currently under design.

Website:
www.i-70projects.com

Pennsylvania Department of Transportation

U.S. Department of Transportation

Federal Highway Administration

Brothers Prepared: December 2013

HOW TO DRIVE THE DDI:

Route 19 Northbound
(toward Pittsburgh)

➢ To stay on Route 19 - travel through both cross overs (just stay in your lane).
➢ To go east on I-70 - stay to the right and turn right onto the ramp before the southern cross over.
➢ To go west on I-70 - stay to the left through the southern cross over, get into the far left lane and turn left into the ramp after you pass beneath I-79.

Route 19 Southbound
(toward Washington)

➢ To stay on Route 19 - travel through both cross overs (just stay in your lane).
➢ To go west on I-70 - stay to the right and turn right onto the ramp before the northern cross over (as you do now).
➢ To go east on I-70 - stay to the left through the northern cross over, get into the far left lane and turn left into the ramp after you pass beneath I-79.

I-70 Eastbound Exit at Route 19

➢ To exit at Route 19 - utilize the single exit (Exit 19) as there will no longer be two separate exits.
➢ To go north on Route 19 - get into the one of the two left lanes on the ramp. When the light is green, turn left directly into the southbound lanes.
➢ To go south on Route 19 - get into the right lane on the ramp. When the light is green, turn right into the southbound lanes.

I-70 Westbound Exit at Route 19

➢ To exit at Route 19 - utilize the single exit (Exit 19) as there will no longer be two separate exits.
➢ To go south on Route 19 - get into the right lane on the ramp. When the light is green, turn right into the northbound lanes.
### ACPA Pennsylvania Chapter / PennDOT

**Concrete Pavement Meeting**

hosted by

PennDOT Engineering District 12
Pennsylvania Turnpike Commission
PennDOT Engineering District 11

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**Thursday, August 16, 2018**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event Description</th>
</tr>
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<tbody>
<tr>
<td>7:00 am</td>
<td>Sign-In for Meeting (coffee/snacks included with Registration)</td>
</tr>
<tr>
<td><strong>1st Session</strong></td>
<td>Facilitator: Richard R. Jucha, P.E.</td>
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<tr>
<td>8:00 am</td>
<td>Welcome</td>
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<td></td>
<td>John M. Becker, P.E., ACPA/PA</td>
</tr>
<tr>
<td>8:10 am</td>
<td>Tour Overview</td>
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<td>William L. Kovach, P.E., ADE/Construction, PennDOT District 12</td>
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<tr>
<td>8:30 am</td>
<td>PennDOT Initiatives, George W. McAuley, P.E., Deputy Secretary</td>
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<tr>
<td>9:00 am</td>
<td>Topic Overviews (ten minutes each)</td>
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<tr>
<td></td>
<td>New Standards/Specifications (Neal W. Fannin, P.E.)</td>
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<tr>
<td></td>
<td>Performance Engineered Mixtures (Patricia I. Baer)</td>
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<tr>
<td></td>
<td>Just-In-Time Training (Christopher Forry)</td>
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<tr>
<td></td>
<td>Joint Sealing/Filling Issues (David L. Jarvis, P.E.)</td>
</tr>
<tr>
<td>9:40 am</td>
<td>Break</td>
</tr>
<tr>
<td><strong>2nd Session</strong></td>
<td>Facilitator: Steven L. Koser, P.E.</td>
</tr>
<tr>
<td>10:00 am</td>
<td>Roundtable Discussion on Concrete Pavement Topics/Issues</td>
</tr>
<tr>
<td></td>
<td>Joseph F. Cribben, P.E. &amp; John M. Becker, P.E.</td>
</tr>
<tr>
<td>12:00 pm</td>
<td>Adjourn (box lunches to go, included with your registration)</td>
</tr>
</tbody>
</table>

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**Anti-Trust Statement**

The Pennsylvania Chapter of the American Concrete Pavement Association assigns the highest priority to full compliance with both the letter and the spirit of the antitrust laws. It is vital that this event be conducted in a manner consistent with that policy. If at any time during the course of this event, an ACPA Pennsylvania Chapter member or staff or any other attendee believes that a sensitive topic under the antitrust laws is being discussed, or is about to be discussed, they will so advise attendees and halt further discussion. As an attendee, you should likewise not hesitate to voice any concerns that you may have in this regard. It is important to bear in mind that those in attendance at this event may be your competitors. Any discussions of commercial matters with one’s competitors may create the appearance of an antitrust violation, even though there is none. Therefore, such discussion should be avoided at all times, before, during and after this event.
Roundtable Discussion

Observations from Yesterday’s Site Visits 20 minutes
  ◦ Noteworthy Practices
  ◦ Opportunities for Improvement
  ◦ Questions/Comments

Session 1 Follow-Up Questions 20 minutes
  ◦ New Standards/Specifications
  ◦ Performance Engineered Mixtures
  ◦ Just-In-Time Training
  ◦ Joint Sealing/Filling

Discussion Topics 40 minutes
  ◦ Why are non-destructive testing methods/concepts not widely used?
  ◦ Have the new ASR specification created challenges with cool spring temperatures?
  ◦ Why are keyways sometimes required between the mainline & shoulder joint?
  ◦ How is the microwave oven test working for determining water/cementitious ratio?
  ◦ What are challenges that need to be overcome for the use of concrete overlays?
  ◦ How should we be handling dominant joints during design and construction?
  ◦ Does cement stabilization versus undercutting hold promise for future projects?
  ◦ What are some of the best practices being employed for concrete spall repairs?
  ◦
  ◦
  ◦

General Topics for Roundtable Discussion 40 minutes
  ◦ CPQI Initiatives (see next page)
  ◦ Pavement Texture
  ◦ Ride Specifications
  ◦ Training & Education Needs
  ◦
  ◦
  ◦
CPQI Priority Items

- Long Life Concrete Pavements
  - Material Optimization
- ASR Mitigation
  - Testing of aggregates to take place on a three-year cycle
- Jointing
  - Joint issues on hold awaiting issuance of new FHWA Technical Advisory
- Concrete Pavement Rehabilitation
  - New patching standards incorporated into RC standards
  - Full-depth corner repair standard/special provision developed by Turnpike
  - Full-depth longitudinal joint repair standard being developed
- Concrete Overlays
  - Section 523 (formerly ultra-thin white-topping) to be updated to a new Section 541
  - New standards in place for Bonded concrete over concrete, bonded concrete over asphalt, unbonded concrete over concrete
  - Standard change requiring tying of outermost longitudinal joint under consideration
- Life Cycle Cost Analyses
  - Department (Central Office & Districts) have completed review of maintenance cycles (no changes proposed)
  - In industry hands for comment/review. Industry has been asked to provide input on proposed cycles for long life pavements
- Implementation of Pavement ME
  - Designs being done using AASHTO 93 with companion Pavement ME designs
  - Sensitivity of CTE on concrete pavement design being investigated
- Metrics for Construction Quality
  - Performance engineered mixes
  - Ride specifications (507); w/c ratio (530 only)
- Strength & Testing
  - Use of the maturity system for opening to traffic
  - Reevaluating opening to traffic criteria (conventional and accelerated)
- Skid & Surface Texture
  - Evaluating method for how Vanport limestone is being used is under review
  - Evaluating skid characteristics of diamond ground and grooved pavements under consideration
  - NGCS specifications have been approved; to be included in next version of Publication 408
- Just-In-Time Training (JIT2)
  - Turnpike & PennDOT Standard Special Provisions have been/are being used on all Southern Beltway concrete paving projects and select PennDOT projects (e.g., US-422/District 6, I-70/District 12, I-95/District 6, others)
FOLLOW-UP ACTIONS:
Discussions are needed with PennDOT Construction, Pavements, and Structures since approach slabs and moment slabs are considered part of the structure, regarding if joints should be saw-cut or tooled into bridge approach slabs and moment slabs to control cracking.

Kovach suggested that action needs to be taken regarding addressing shoulder joints, whether that be including expansion joint material or other methods.

Robinson stated that, until the specification is formally changed, contractors may make a written request through the District to Central Office allowing them the option to not cut shipping wires.

Fannin stated that the LLCP dowel specification will be revised. The specification currently lists many available dowel types that can be used for LLCP and was based on Minnesota DOT specifications; this list will be replaced by a requirement that use of long-life dowel bars meet specific material requirements.

Becker stated that we have low-speed IRI specifications, but that additional guidance needs to be developed so that when applied to city improvement projects, the project special provisions and quantities should include provisions for additional diamond grinding (if project specifications require curb & gutter to be left in place), reconstructing the curb & gutter so that the contractor can meet appropriate IRI specifications, or if curb & gutter is to be left in place that standard straight-edge requirements be used in lieu of IRI specifications.

Keefe requested that a Next Generation Concrete Surface specification be developed for PennDOT use. Kohler agreed to work with the CPQI in developing a specification.

APPENDIX A
Summary of Topics for Consideration by the Concrete Pavement Quality Committee
(from edited survey responses & meeting commentary)

Improving long term performance
Inconsistencies
Improving Long Life Concrete Pavement specifications
Long life dowel specifications
Joints
  Matching pavement and moment slab joints
  Addressing cracking on approach slabs
  Addressing dominant joints to reduce cracking potential
Improving ride quality
  Guidance on when to use ride specifications on urban projects
Grinding/Grooving
  Total pavement grinding
  NextGen specifications
  Diamond grooving
Materials and workmanship
  Promote best practices
  Incentives for better placement procedures
  Proper sizing of fixed-forms; shimming forms
  Fixed-form paving vs. slip-form paving
  Mix design improvements
Testing
  Innovations for improving quality & construction efficiencies
Rigid Pavement Specifications

501 REINFORCED OR PLAIN CEMENT CONCRETE PAVEMENTS
502 ROLLER COMPACTED CONCRETE PAVEMENT ................................................... NEW/CHANGE 1
503 PROTECTIVE COATING FOR CEMENT CONCRETE PAVEMENT
504 PAVEMENT RELIEF JOINT
505 BRIDGE APPROACH SLABS
506 REINFORCED OR PLAIN CEMENT CONCRETE PAVEMENTS
507 EVALUATION OF CONCRETE PAVEMENT RIDE QUALITY AND PAYMENT OF INCENTIVE
510 LONGITUDINAL GROOVING OF EXISTING CONCRETE PAVEMENT
511 PRESSURE RELIEF JOINT
512 LONGITUDINAL JOINT CLEANING AND SEALING
513 JOINT REHABILITATION
514 DIAMOND GRINDING OF CONCRETE PAVEMENT
515 SAWING AND SEALING OF BITUMINOUS OVERLAYS
516 CONCRETE PAVEMENT PATCHING
517 TRANSVERSE GROOVING OF CONCRETE PAVEMENT FOR RETEXTURING
518 CONTINUOUSLY REINFORCED CONCRETE PAVEMENT PATCHING
520 PERVIOUS CONCRETE PAVEMENT SYSTEM
521 TRANSVERSE JOINT CLEANING AND SEALING
523 ULTRA-THIN PORTLAND CEMENT CONCRETE OVERLAY ..................................... CHANGE 1
525 CONCRETE PARTIAL-DEPTH SPALL REPAIR
526 RUBBLIZING OF CONCRETE PAVEMENTS
527 DOWEL RETROFIT
528 CONCRETE PAVEMENT CROSS-STITCHING
530 LONG-LIFE CONCRETE PAVEMENT ................................................................. NEW/CHANGE 2
540 BONDED CONCRETE OVERLAY OF ASPHALT-SURFACED PAVEMENT .............. NEW/CHANGE 1
545 BONDED CONCRETE OVERLAY OF CONCRETE-SURFACED PAVEMENTS .......... CHANGE 1
548 UNBONDED CONCRETE OVERLAY OF CONCRETE-SURFACE PAVEMENTS ...... NEW/CHANGE 2
590 CRACK CLEANING AND SEALING

Other Applicable Specifications

301 PLAIN CEMENT CONCRETE BASE COURSE ....................................................... CHANGE 2
303 CEMENT TREATED PERMEABLE BASE COURSE ........................................... CHANGE 2
310 CRUSHED AGGREGATE BASE COURSE
312 CRUSHED DENSE GRADED AGGREGATE BASE COURSE
321 AGGREGATE-CEMENT BASE COURSE
322 AGGREGATE-LIME-POZZOLAN BASE COURSE
323 ROLLER COMPACTED CONCRETE BASE COURSE ....................................... CHANGE 1
344 FULL DEPTH RECLAMATION ................................................................. CHANGE 1
350 SUBBASE (CHANGE 3)
360 ASPHALT TREATED PERMEABLE BASE COURSE ......................................... CHANGE 1
658 CONCRETE SHOULDERS, PLAIN CEMENT AND ROLLER COMPACTED .......... NEW/CHANGE 1
701 CEMENT
703 AGGREGATE ................................................................. CHANGE 3
704 CEMENT CONCRETE ................................................................. CHANGE 3
705 JOINT MATERIAL ................................................................. CHANGE 2
706 CONCRETE BONDING COMPOUND
709 REINFORCEMENT STEEL ................................................................. CHANGE 2
711 CONCRETE CURING MATERIALS AND ADMIXTURES
724 POZZOLANS
Performance Engineered Mixtures

The following are test methods that fall under the PEM umbrella and may be new to many agencies, contractors, testing labs, and consultants.

Vibrating Kelly Ball (V-Kelly)
- Test Summary
- Video (mp4 download, 343 mb)

Super Air Meter (SAM)
- Test Summary
- Video (www.superairmeter.com)
- PDF Slideshow (also includes Box Test)

Box Test
- Test Summary
- Video (YouTube)
- PDF Slideshow (also includes SAM)

http://www.cptechcenter.org/pem/

Joints

Concrete Pavement Joint Sealing/Filling

Incentives - Water/Cementitious Ratio

### Table A
Cement Concrete Criteria

<table>
<thead>
<tr>
<th>Class of Concrete</th>
<th>Use</th>
<th>Cement Factor(^{\text{2}}) (lbs./cu.yd.)</th>
<th>Water Cement Ratio(^{\text{3}}) (lbs/lbs)</th>
<th>Minimum Mix Design Compressive Strength (psi) Days</th>
<th>Proportions Coarse Aggregate Solid Volume (cu.ft./cu.yd.)</th>
<th>28-Day Structural Design Compressive Strength (psi)</th>
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</thead>
<tbody>
<tr>
<td>AA</td>
<td>Slip Form Paving</td>
<td>517</td>
<td>611</td>
<td>0.37</td>
<td>0.42</td>
<td>3,000</td>
</tr>
<tr>
<td>AA</td>
<td>Paving</td>
<td>517</td>
<td>611</td>
<td>0.37</td>
<td>0.42</td>
<td>3,000</td>
</tr>
</tbody>
</table>

Notes:
1. Where the cement is replaced by pozzolan, use a water to cement plus pozzolan ratio by weight.
2. The DME/DMM may allow a lower Cement Factor if the mix design is demonstrated to perform adequately.

### Table C
Adjustment for W/C Ratio Incentive

<table>
<thead>
<tr>
<th>W/C Test Result</th>
<th>Incentive Pay Factor</th>
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</thead>
<tbody>
<tr>
<td>0.38 to &gt; 0.37</td>
<td>+0.04</td>
</tr>
<tr>
<td>0.39 to &gt; 0.38</td>
<td>+0.03</td>
</tr>
<tr>
<td>0.40 to &gt; 0.39</td>
<td>+0.02</td>
</tr>
<tr>
<td>0.41 to &gt; 0.40</td>
<td>+0.01</td>
</tr>
<tr>
<td>≤ 0.42 to &gt; 0.41</td>
<td>0.00</td>
</tr>
</tbody>
</table>

Section 530 Excerpt

Incentives – Ride & Smoothness

PennDOT 408  
Section 507

Turnpike Southern Beltway Projects
Long Life Concrete Pavement

**LLCP (530) vs. RPS (506)**

- Enhanced aggregate requirements
- Lower cement contents and w/c ratios
- Optimized aggregate gradations
- Permeability and shrinkage limits
- Ternary mixes allowed
- 7.0% +/- 1.5% plastic air
- High performance dowels
- Longitudinal texture
- White ply-alpha methylstyrene curing compound

---

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- Terry D. Dreher, Pennsylvania Turnpike

**Active Participants**

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- Charles J. Buchanan, P.E., Turnpike
- Joseph F. Cribben, P.E., BOPD/QA
- Joshua T. Freemen, BOPD/Design
- Richard R. Jucha, P.E., ACPA/PA
- Terry L. Kohler, BOPD/QA
- Marcy Lucas, BOPD/Innovations
- J. S. Robinson, P.E., BOPD/Materials

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- Michael S. Hammer, Buzzi-Unicem
- Lowell A. Jensen, New Enterprise
- Dennis A. Morian, P.E., QES
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- Mark B. Snyder, PhD., P.E., PERC
- Clayton J. Stahl, P.E., Gulisek

---

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Robert Bashioum, Turnpike
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Brent L. Trivelpiece, PennDOT BOPD
Jason Zang, PennDOT District 11
This form shows professional development hours that may qualify for continuing education activities at the Concrete Pavement Tour/Meeting, conducted by the Pennsylvania Chapter of the American Concrete Pavement Association, the Pennsylvania Department of Transportation, and the Pennsylvania Turnpike Commission in Washington, PA.

Many licensure and certification agencies require demonstration of continuing professional competency. Individuals required to earn professional development hours should check with their local licensure or certification agency for specific requirements. Compliance is the sole responsibility of the licensee. We assume no responsibility for compliance with licensure requirements of local licensure or certification agencies.

We recommend that participants save, for a minimum of five years, the final program for this conference and any other documents supporting evidence of attendance, should the licensure or certification agency request information from you. Reporting is done on an honor basis, and you are responsible for maintaining your own records.

Please indicate the hours completed and sign and date this form.

<table>
<thead>
<tr>
<th>Time</th>
<th>Topic &amp; Speaker</th>
<th>Hours Available</th>
<th>Hours Claimed</th>
</tr>
</thead>
</table>
| 08/16/2018 8:00 am to 9:45 a.m. | • Tour Overview (William L. Kovach, P.E.)  
• PennDOT Concrete Pavement Initiatives (George W. McAuley, P.E., Deputy Secretary for Highway Administration)  
• Topic Briefings  
  New Standards/Specifications (Neal W. Fannin, P.E.)  
  Performance Engineered Mixtures (Patricia I. Baer)  
  Just-In-Time Training (Christopher Forry)  
  Joint Sealing/Filling Issues (David L. Jarvis, P.E.) | 1.75            |               |

| 08/16/2018 10:00 am to Noon | • Concrete Pavement Roundtable (Joseph F. Cribben, PennDOT/QA & John M. Becker, P.E., ACPA/PA) | 1.75            |               |
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- LafargeHolcim
- Lehigh Hanson

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### Sponsors

A special thank you to the following companies for their contributions towards the cost of the t-shirts provided to the construction workers on our tour, and for defraying the cost for students and professors attending this event

- Accurate Profile Grinding
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- Golden Triangle Construction
- Gulisek Construction LLC
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- James J. Anderson Construction
- KCI Technologies
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- Lane Construction Corporation
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- Milliron & Goodman
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- SAI Consulting Engineers
- Separation Technologies
- Swank Construction Company, LLC
- TyE Bar LLC
- Urban Engineers
- Volkert
- Walsh Construction
## Annual Concrete Pavement Tours/Meetings

<table>
<thead>
<tr>
<th>Year</th>
<th>Tour Host</th>
<th>Meeting Location</th>
<th>Major Projects / Sites</th>
</tr>
</thead>
<tbody>
<tr>
<td>1996</td>
<td>District 4</td>
<td>Dunmore</td>
<td>I-81 &amp; Lackawanna Valley Industrial Highway</td>
</tr>
<tr>
<td>1997</td>
<td>District 4</td>
<td>Dunmore</td>
<td>I-81 &amp; Lackawanna Valley Industrial Highway</td>
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<tr>
<td>1998</td>
<td>District 11</td>
<td>Moon Township</td>
<td>US-22 Reconstruction</td>
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<tr>
<td>1999</td>
<td>District 8</td>
<td>Harrisburg</td>
<td>US-322/Dauphin Narrows Widening/Reconstruction</td>
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<tr>
<td>2001</td>
<td>District 2</td>
<td>State College</td>
<td>I-99 Construction</td>
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<tr>
<td>2002</td>
<td>District 8</td>
<td>New Cumberland</td>
<td>US-15 &amp; Interstate 81</td>
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<tr>
<td>2004</td>
<td>Districts 5 / 8</td>
<td>Morgantown</td>
<td>US-422 (Reading) and I-81 (Lebanon County)</td>
</tr>
<tr>
<td>2005</td>
<td>Turnpike &amp; District 11</td>
<td>Moon Township</td>
<td>Mon-Fayette/Southern Beltway Construction</td>
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<tr>
<td>2007</td>
<td>Turnpike &amp; District 12</td>
<td>Uniontown</td>
<td>MFE/Southern Beltway &amp; Bonded Concrete Overlay</td>
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<td>2015</td>
<td>Districts 11 / 12</td>
<td>Pittsburgh</td>
<td>I-376, PA-50 Unbonded OL, I-70/79 Interchange</td>
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<td>2016</td>
<td>District 5</td>
<td>Wyomissing</td>
<td>I-81 Reconstruction/Unbonded OL &amp; Portland Cement</td>
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<td>2017</td>
<td>District 6 &amp; Turnpike</td>
<td>Valley Forge</td>
<td>US-422, Interstate 95, Turnpike/I-276</td>
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<tr>
<td>2018</td>
<td>Districts 12 /11 &amp; Turnpike</td>
<td>Washington</td>
<td>Southern Beltway, I-376, I-70</td>
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## Open House Tours / Meetings

<table>
<thead>
<tr>
<th>Year</th>
<th>Tour Host</th>
<th>Meeting Location</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>2010</td>
<td>District 12 &amp; NCPTC/FHWA</td>
<td>Collinsville</td>
<td>US-119 Bonded 6x6x6 Concrete Overlay</td>
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<tr>
<td>2013</td>
<td>District 6 &amp; NCC</td>
<td>Philadelphia</td>
<td>Innovative Testing Equipment Demonstrations</td>
</tr>
</tbody>
</table>

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**Wednesday February 20 - Thursday February 21, 2019**  
**Sheraton Harrisburg-Hershey**