
RTE 896 NB @ RTE 40 – Project Overview

Precast Prestressed Concrete Pavement (PPCP) System

San Antonio, Texas - September 10, 2009
Project Overview

1. Project Team
2. Project Location
3. Project Development
4. Advertise, Bid & Award Process
5. Construction
6. Lessons Learned
1. Project Team

- Sponsor: U.S. Department of Transportation
- Owner: Delaware Department of Transportation
- Design Support: THE TRANSTEC GROUP
- Construction Inspection: AECOM
- Prime Contractor: A-Del Construction Co., Inc.
2. Project Location

• Project justification
  - Location already a candidate for rehabilitation
  - Poor pavement condition - ASR
  - High AADT – High truck percentage
  - Large quantity for PPCP replacement
2. Project Location

• Reasons for using PPCP technology
  ➢ Technology is non-proprietary
  ➢ Technology qualified for Federal Aid
  ➢ Design support provided by FHWA (thru Transtec)
  ➢ Progressive Department open to new technology
  ➢ Innovative Project Team
2. Project Location

• Selection criteria
  ➢ Minimal cross-slope changes
  ➢ Minimal profile changes
  ➢ No underground utilities (MHs) within PPCP limits
  ➢ Construction access – on-site staging area
2. Project Location – RTE 896 NB @ RTE 40
Fact Sheet:

- Scope of work: Replace jointed plain concrete pavement within the RT & LT turn lanes with PPCP
- Functional Class – Principal Arterial
- AADT – 37,679
- % Trucks – 9%
- Pavement Section – 12” PCC over soil cement (assumed)
- Proposed Replacement Area – 3,115 SY
2. Project Location – RTE 896 NB @ RTE 40

- **RTE 896 NB @ RTE 40**
- **Right Travel Lane**
- **RT Travel & Turn Lanes**
- **Double Lt Turn Lanes**
- **Existing PCC**
- **Cast-in-Place**
- **PPCP Replacement Area**
3. Project Development

• Verify Industry Interest
  ➢ “Kick-off” Meeting held on April 15, 2008
  ➢ Precast Supplier Meeting held May 28, 2008
  ➢ Positive feed-back from local contractors
3. Project Development

• Preliminary engineering
  ➢ Coring existing pavement
  ➢ FWD testing
  ➢ Survey – cross-slope and profile data
  ➢ Traffic Control Plans / Traffic Management Plans
3. Project Development

• Preparation of plans
  ➢ Keep it simple – 11” x 17” plan sheet format
  ➢ Bid on PPCP technology only – no design alternates
  ➢ Install slabs under “live traffic conditions”
  ➢ Complete fabrication & installation within 100 CDs
3. Project Development

• Development of new specifications
  • 501532 – Pervious Portland Cement Concrete
  • 501533 – Precast Prestressed Roadway Pavement
4. Advertise, Bid & Award Process

- Advertise
  - Final Plans submitted August 20, 2008
  - Project Advertised on September 1, 2008
  - Mandatory Pre-Bid Meeting on September 18, 2008
  - Bids Received on October 16, 2008
4. Advertise, Bid & Award Process

• Bid
  - Four Bidders: $2,379,388.97 to $3,059,506.72
  - Engineers Estimate: $1,827,070.72
  - Low Bid: 30.32% above EE
  - PPCP Bid Prices: $505.00 SY - $600.00 SY
  - Engineers Estimate for PPCP: $325.00/SY
4. Advertise, Bid & Award Process

- Award process
  - Recommend to award to A-Del on 11/14/2008
  - Pre-construction Meeting held 12/10/2008
  - Time charges began 05/01/2009
    (First Production Day for Panel Fabrication)
5. Construction – Panel Layout

Left Turn Lanes
2 Sections @ ~118’
1 Section @ ~128’
Panel Dimensions: 24’ x 9’-10” x 8”
(38 Panels)

Right Turn/Thru Lane
3 Section @ ~128’
2 Section @ ~138’
Panel Dimensions: 24’ x 9’-10” x 8”
(68 Panels)

Closure Pours

Right Thru Lane
1 Section @ ~118’
1 Section @ ~108’
Panel Dimensions: 12’ x 9’-10” x 8”
(24 Panels)
5. Construction

- **Fabrication**
  - Coordination with Post-Tensioning Supplier
    - ✓ Adjust bar and strand spacing to accommodate ducts
    - ✓ Don’t forget the instrumentation!
  - Shop Drawing Submittal Process
    - ✓ Electronic submittal/review process
  - Panel Sizes
    - ✓ Plan sizes changed by supplier – 10’ L x 12’ or 24’ W
  - Fit-test Requirement
    - ✓ 3-panel demonstration
5. Construction

• Installation
  ➢ Work Hour Restrictions
    ✓ 7:30 PM to 5:30 AM
    ✓ Work Monday evening through Saturday morning only
    ✓ Restore traffic to unrestricted use at the end of each shift
  ➢ No Impact Removal
    ✓ Full-depth perimeter saw cut
    ✓ Remove existing PCC by lift-out technique
  ➢ Pavement Section
    ✓ Existing pavement section 12” PCC
    ✓ Replace with 8” PPCP over 4” pervious concrete
    ✓ Blanket diamond grinding for pavement smoothness
PPCP Panel Delivery to Staging Area – 05/14/2009
Epoxy Application – 05/20/2009
PPCP Panel Installation with Loader – 09/09/2009
Completed Project – 09/08/2009
6. Lessons Learned

• Don’t be afraid!
• PPPPP – allow at least a year from concept to completion
• Texas Toast – a little thicker slab is better
• Be Wary of the Warp – survey, survey & survey!
• Unfamiliar materials = unexpected results
• Don’t rush the fabricator
• Every good project was built by a good team