SCDOT Use Of PCCP In Design-Build Contracts

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Overview of PCCP use in Design Build (DB)

- Pavement Selection Process
  - EDM 15 & Pavement Advisory Committee
  - Select 1 Pavement Type
- Past
  - New Location Interstate
- Present
  - Widening with Reconstruction Interstate
- Future
  - ?????
Past DB PCCP Projects

- I-520 Aiken, Accepted 2009
  - New location Interstate
Current DC PCCP Projects

- I-85/I-385 Intersection, Greenville, Awarded 2014
  - Widen Existing PCCP I-385 and place unbonded overlay

- Creation of Design-Build Group 2014

- I-77 Richland, Awarded 2015
  - Widen existing CRCP with JPCP. Overlay existing and new PCCP.
  - Widen existing HMA with JPCP and overlay with HMA. Miles
Current DC PCCP Projects

- Port Access Road, I-26 Charleston, Awarded 2016
  - New JPCP for new port terminal traffic to I-26
  - Rehabilitate existing routes

- I-20 Lexington, Awarded 2016
  - Remove and replace existing JPCP.
  - Rehabilitate existing HMA, widen with JPCP and overlay.
Current DC PCCP Projects

- I-85 Widening Cherokee, Awarded 2016
  - Reconstruct existing interstate and widen
  - Reconstruct/Rehabilitate numerous intersecting non-interstate routes
  - More about this in a minute......
Common Threads PCCP DB SCDOT

- Currently only utilizing jointed plain sections, 15’ Joints

- Prefer 14’ wide outside slab if no widening planned in foreseeable future

- Prefer full depth shoulders coordinated with future widening where applicable

- Allow recycled PCCP Coarse Agg. if coming from existing pavement on project location

- Prefer a stabilized non-erodible base, HMA or CSAB

- Testing use of non-woven geotextile bond breaker
I-85 Widening Mile Marker 77-96

- There were a few bumps along the way

- Mile Marker 77 – 80
  - Existing 3 lane HMA Section. Only Rehabilitation

- Mile Marker 80 – 96
  - Existing 2 lane HMA Section. Widen and Rehabilitate
  - Recent OGFC replacement on 88 – 96

- Investigation began Late Summer 2015
  - Progress was hampered by rains and traffic control issues
  - RFQ Jan 2016
Priorities

- 77 – 80: Identify any grade changes that may affect bridge clearances.
  - Decided the pavement needed minimum of 5 inches rehabilitation plus some additional structure.

- 80 – 96: Identify Pavement Type
Then This Happened Over a Large Portion of Our State
Wrinkles in the Plan

\[
\text{VPI} = 1017 + 25.00 \\
\text{Elev.} = 834.93
\]
Long Buildup Sections
Grade Changes 80 – 96

- Majority of Sections were fill or buildup
- Max cut 3.5 feet
- Max fill 3 feet
- Average Fill 11 inches
- 15% greater than 1 foot 10 inches
- 85% greater than 3 inches
Mainline Design Considerations

- Minimum of 5 inches rehab plus structure 77 – 80
  - Do we have to maintain 3 lanes of traffic?

- Significant grade changes 80 – 96

- 80 – 96 NB, HMA in relatively good condition somewhat under design on existing structure

- 80 – 96 SB, HMA more so under design and had issues with mixture quality, especially from 93 to 80.
Final Decision - Mainline

- 13 inches PJCP
- 1 ½ inch dowels
- 14 foot wide outside slab (marked to 12 feet travel lane)

- New location and cut section base: 450 psy HMA Base
- Variable milling depths for unbonded overlay on existing HMA
- 77 – 80 section, inlaid PCC pavement same section as 80 – 96
Ramps and Non-Interstate Routes

- 4 New Ramps
- 29 New Location Roads
- 33 Locations Rehabilitation of Existing Routes and Ramps
- Allowed more freedom on this than in previous Design Build RFP’s
- Ended up with a relatively even amount of money between HMA and PCC pavements in schedule of values
Design Build Future and Lessons Learned

- Another phase of I-85 widening coming up with a similar scope

- Several big projects coming including Carolina Cross Roads, > $1 Billion

- Get pavement design unit involved earlier in the process to allow for more coordination in development of preliminary plans
Questions