Cold In-Place Recycling in Tampa

Ken Holton, P.E.
Street Maintenance Engineer
City of Tampa Stats

- Tampa has 2,600 lane miles of roadways
- Tampa uses the MicroPAVER system
- Currently the City of Tampa’s average PCI is 45
- At current funding levels Tampa’s paving cycle is 42 years
- Tampa has an In-House Resurfacing Crew for Conventional Paving
- The City recognizes the need to use alternative processes to meet these challenges
  - Reclamite
  - Micro-Surfacing
  - Hot In-Place Recycling
  - Central Plant Recycling
  - Cold In-Place Recycling
ASCE Report Card shows more failing grades

- Currently the U.S. infrastructure’s overall GPA = D
- Driving on roads in need of repair costs Florida motorists $1.1 Billion a year in vehicle repairs, $82/person.
- Congestion costs Americans $63.2 Billion per year. On average, Americans spend 3.5 billion hours a year in traffic.
  - Tampa $742/per year
  - Tampa’s Average PCI is 45, or an F!
Maintaining the City of Tampa streets involves maintenance activities in a Pavement Management approach. We take care of roads in good, fair and poor condition to better stretch the dollars available.
Budget???
FY 2001 Through FY 2011

Asphalt Prices Increase

Funding Increase
FY 2001 Through FY 2011

Pavement Area Condition at Last Inspect

Annual Condition Plot (Arithmetic Avg.)

Avg Condition

Years

Condition at Last Insp

Pavement Area

Failed Serious Very Poor Poor Fair Satisfactory Good
5-Year Plan
Tampa’s CIR Selection Process

- Tampa uses the MicroPAVER PMS to identify potential candidates for CIR
- With a PCI Average of 45, many of our roads are candidates!
- Perform a visual inspection of the identified sections
- Utilize in-house staff to formulate and design the projects
CIR Candidate

Our most common distresses:

- Alligator Cracking
- Pot holes
- Poor ride quality
- Oxidation

South Lois, Tampa 2007
CIR Candidate

- Transverse and Longitudinal cracking
- Rutting
- Oxidized, raveled pavement
- Some structural deficiencies
- UGLY!!!
Tampa’s CIR Selection Process

- Pass on limits of work to CIR Contractor
- Schedule coring of roadway to determine asphalt thickness and base type
- Make a final determination on whether the roadway is a CIR Candidate
Tampa’s CIR Design Process

- The City also works collaboratively with the CIR Contractor and the independent AMRL accredited laboratory.
- PRI Asphalt Technology performs the CIR mix design for our CIR Contractor (E.J. Breneman, L.P.)
- At the pre-construction meeting we review the mix design and project scope for each road.
The anatomy of a CIR project

Independence Parkway 2003

- Project was a City/Contractor Partnership
- Project was 23,000 square yards
- Average hot mix depth was 3 ¼ inches
- Average soil cement depth was 10 ½ inches
- Traffic levels reached over 1,000 cars an hour during peak times, 20,000 ADT
- Project called for lowering the road at least 2 inches for HMA surface course
Independence Parkway Before
One of the first steps is to core the roadway.
Often times, the cracking network penetrates the full depth of the mix.
Recycled pavement being placed into the paver
Quick return to traffic after compaction

Independence Parkway, Tampa 2003
With the cracking network gone the CIR is ready for traffic, then HMA overlay.
Approximately one year after completion
Approximately 8 years after completion
Economic & Environmental Benefits to Tampa

- Asphalt can be recycled 100%
- In some cases provides a base for the first time
- Recycling stops depletion of natural resources
- Recycling offers significant energy savings
- Stretches roadway funding
- It is a less disruptive alternative to conventional methods
- Roadway remains open during construction
- Recycling saves time
Cost Effectiveness of the CIR Process

- The CIR warranty is 36 months
  - Fatigue Cracking: Replace any 500’ section that has a fatigue cracking rating exceeding low severity for more than 10%
  - Rutting: Limit rutting of a ½ inch depth ½ the length of any 500’ segment
  - Potholes: Repair any potholes over 9 square feet in surface area or any 500’ lane segment over 5% surface area
Challenges faced dealing with Decision Makers

- Tampa Administration trusts our Pavement Management Staff and supports decisions.
  - Educating Management on importance of consistent, dedicated funding source
  - Importance on the proper amount of funding
  - Pavement Management Staff needs to do a better job of salesmanship
Thank you