Full-Depth Reclamation Using Cement

Capital Projects Manager
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GENERAL PRESENTATION OUTLINE

- City of Milton Statistics
- Why Milton Uses FDR
- FDR Candidates
- FDR Process
- Questions?
CITY OF MILTON STATISTICS

- 39 square miles
- Population = ~38,000
- Incorporated in December 2006
- 174 miles of paved roads
  - $2.0 million/year
- 13 miles of gravel roads
- Local Maintenance & Improvement (LMIG) Grant
  - GDOT awards $380k/year
- Over last 10 years, successfully used FDR process on 13 centerline miles
Full-Depth Reclamation is a pavement rehabilitation technique in which the full flexible pavement section and a pre-determined portion of the underlying materials are uniformly crushed, pulverized or blended, resulting in a stabilized base course (SBC); further stabilization may be obtained through the use of available additives.
WHY DO WE USE FULL DEPTH RECLAMATION?

To widen the streets, allowing safer travel for the motoring public and bicyclists.
WHY DO WE USE FULL-DEPTH RECLAMATION?

Normal Pavement Rehabilitation techniques and widening sometimes do not work well together.
WHY DO WE USE FULL-DEPTH RECLAMATION?

Completely erases deep pavement crack patterns, thereby eliminating the potential of reflective cracking.
WHY DO WE USE FULL-DEPTH RECLAMATION?

When patching and paving is not cost-effective. When testing determines it to be the best rehabilitation treatment.
WHY DO WE USE FULL-DEPTH RECLAMATION?

- Greener approach to road repair
- Increased structural capacity
- Increased durability (compared to granular base materials)
- Saves time and eliminates road closures (traffic is on the FDR the same day)
WHY DO WE USE FULL-DEPTH RECLAMATION?

Reduced impacts on the community during construction.
CANDIDATES FOR FDR

- Major collector roads
- Minor collector roads
- Major residential roads
- Gravel roads
- Parking lots
CANDIDATES FOR FDR
PREPARING FOR FDR CONSTRUCTION

- Coring to depth of 3’ to find out the existing pavement component structure and subgrade
- Analysis of existing conditions to provide the best rehabilitation option: FDR, Major Patch and Pave, or Minor Patch and Pave
- Determine best FDR additive (foamed asphalt or cement) for the road
- Provide the city with a mix-design and the cross section that will perform the best for volume and type of traffic
FDR CONSTRUCTION EQUIPMENT

- 2’ Milling Machine
- Road Reclaimer
- Motor Grader
- Pad-Foot Vibratory Roller
- Pneumatic Roller
- Smooth Drum Vibrator/Static Roller
- Water Truck
- Spreader Truck
- Loader
Construction Sequence

- Project Layout, Staking, Utility location, & mailbox relocation.
- 2' widening cut into the shoulder to the depth of the project design with a 2' milling machine. Material hauled off & can be used for shoulder rehabilitation.
- Mixing of road starts behind milling machine & material is rolled and graded into the widening trench. This saves on haul off amounts.
- Spreading of Portland and 2nd pass of mixing begins when all haul off has been completed.
- QA/QC testing & proof roll is completed. Any soft spots remixed.
- 2' binder course is placed to seal off the road from the elements & traffic as soon as possible.
- Final 1.5” topping is placed.
TYPICAL SURFACE TREATMENTS

- Hot Mix Overlay
- Cold Mix Overlay
- Chip Seal
- Cape Seal
- Micro-Surfacing
- Slurry Seal
FDR CONSTRUCTION PROS

- Allows otherwise unsuitable on-site materials to be turned into strong, structural base or sub-base material.
- Completely erases deep pavement crack patterns, thereby eliminating the potential of reflective cracking.
- Substantial savings.
- Less construction time.
- Pulverized layers along with stabilizing additives become a homogenous, well-graded material with improved structural characteristics.
- Profile and Cross Slope can be adjusted.
- Widening can be easily accomplished.
Too high a treatment can develop

- Strengths that adversely affect the flexibility of the stabilized material
- Decreased ability to manage repeated loading
- Shrinkage cracking

Requires experienced and qualified FDR contractor

Occasional run in with utilities
BEFORE

- Four-lane parkway in a high traffic area of Milton
- Heavy truck and MARTA (bus) traffic
- Base issues
- Parkway irrigation issues
Nine years later!
QUESTIONS?

Matt Fallstrom
Capital Projects Manager
City of Milton, Georgia
QUESTIONS?