Pavement Management

July 2015

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Pavement Treatment Options

Classification	Treatment	Asphalt	Concrete
Overlays	Mill & Overlay	✓	
	Asphalt Overlay	✓	✓
	Ultrathin Bonded Asphalt Wearing Surface (UBAWS)	✓	✓
Surface Treatments	Microsurfacing	✓	
	Chipseal, slurry seal, cape seal, fog seal…	✓	
	Diamond Grinding		✓
	Selective Joint Grinding		✓
Structural Treatments	Cracksealing	✓	✓
	Dowel Bar Retrofit		✓
Patching	Partial Depth Concrete Patching		✓
	Asphalt Patching	✓	✓
	Temporary Patching	✓	✓
Replacement	Full-Width Concrete Replacement		✓
	Selective Slab Replacement		✓

Overlays

- Mill & Overlay
- Asphalt Overlay
- UBAWS

Asphalt	Concrete
✓	

Mill & Overlay

- Replace/upgrade curb ramps
- Remove 2” of asphalt by cold milling
- Repair underlying base
- Pave with 2” of asphalt
  - Aggregate (rock & sand)
  - Asphaltic concrete
- When overlaying concrete slabs, cracks reflect through after a couple of years

Asphalt	Concrete
✓	✓

Asphalt Overlay

- Replace/upgrade curb ramps
- Cold mill as-needed for drainage
- Pave with 2” of asphalt
  - Aggregate (rock & sand)
  - Asphaltic concrete
- When overlaying concrete slabs cracks reflect through after a couple of years

Asphalt	Concrete
✓	✓

UBAWS
(Ultrathin bonded asphalt wearing surface)

- Replace/upgrade curb ramps
- Cold mill as-needed for drainage
- Pave with ¾” modified asphalt material
  - Asphalt emulsion sprayed directly in front of paver
  - Aggregate (rock & sand)
  - Asphaltic Concrete (petroleum)
  - Polymer
- Reflective cracking

Surface Treatments

- Microsurfacing
- Chipseal, slurry seal, cape seal, fog seal
- Diamond Grinding
- Selective Joint Grinding

Asphalt	Concrete
✓	

Microsurfacing

- Replace/upgrade curb ramps
- Thin layer, 1/4”- 3/8” thick
  - Asphalt emulsion
  - Water
  - Aggregate (granite or slag)
  - Portland Cement
  - Polymer Binder

- Wearing course, seals surface, extending asphalt life, providing consistent appearance
- Lasts about 7 years

Asphalt	Concrete
✓	

Chipseal and other seals

- Oil sprayed on pavement
- Chips spread over oil and rolled-in
- NOT RECOMMENDED

Asphalt	Concrete
	✓

Diamond Grinding

- Specialized equipment is used to grind off high points in order to create a smooth ride
- Mostly used on highways
- Reduces pavement thickness
- Taking off high spots leaves inconsistent appearance

Asphalt	Concrete
	✓

Selective Joint Grinding

- Joints ground to reduce deflection and bumps
- Taking off high spots leaves inconsistent appearance

Structural Treatments

- Cracksealing
- Dowel Bar Retrofit

Asphalt	Concrete
✓	✓

Crack and Joint Sealing

- Rubberized sealant
- Keeps out water and incompressibles (rocks)
- Prevents damage due to freeze-thaw
- Extends pavement life

Asphalt	Concrete
	✓

Dowel Bar Retrofit

- Slots cut into the pavement at joints, and dowel bars installed in order to transfer loads
- Typically only performed on highways
- Often followed by diamond grinding

Patching

- Partial Depth Concrete Patching
- Asphalt Patching
- Temporary Patching

Asphalt	Concrete
	✓

Partial Depth Concrete Patching

- Damaged concrete removed to a depth of 2-4” by mill or jack-hammer
- Area is thoroughly cleaned
- Special concrete mix used to patch
- Investigated Chesterfield’s operation this spring
  - Specialized equipment
  - Significant labor
  - Very slow process
  - Still looks like a patch

Asphalt	Concrete
✓	✓

Asphalt Patching

- Damaged concrete or asphalt removed to a depth of 2-4” by mill
- Area blown out
- SS-1 Tack (sticky oil) spread over surface
- Asphalt spread and compacted
- Non-uniform appearance

Asphalt	Concrete
✓	✓

Temporary (Pothole) Patching

- Cold-patch asphalt placed in hole as temporary measure
- Material is malleable at room temperature and can be stored for long periods of time, thus allowing for quick deployment.

Replacement

- Full-Width Concrete Replacement
- Selective Slab Replacement

Asphalt	Concrete
	✓

Full-Width Concrete Replacement

- Full replacement of concrete
- Steel reinforcement at joints
- 4” Aggregate base
- 8” Concrete

Asphalt	Concrete
	✓

Selective Slab Replacement

- Deteriorated slabs replaced
- Steel reinforcement drilled into adjacent slabs and added to new joints
- 4” Aggregate base
- 8” Concrete
- Results in mismatched slabs
- Results in rougher ride

Curb Ramp Replacement

- Compliance with ADA
- About 25 specific requirements
  - Grades/Slopes
  - Widths
  - Level Landing
  - Detectable Warning
  - Color Contrast
- MoDOT checklist is 19 pages
- Triggered by “alteration” to the street

Ramp Replacement Required
2014 FHWA/DOJ Clarification

Maintenance

- Crackfilling and Sealing
- Surface Sealing
- Chip Seals
- Slurry Seals
- Fog Seals
- Scrub Sealing
- Joint Crack Seals
- Joint Repairs
- Dowel Bar Retrofit
- Spot High-Friction Treatments
- Diamond Grinding
- Pavement Patching

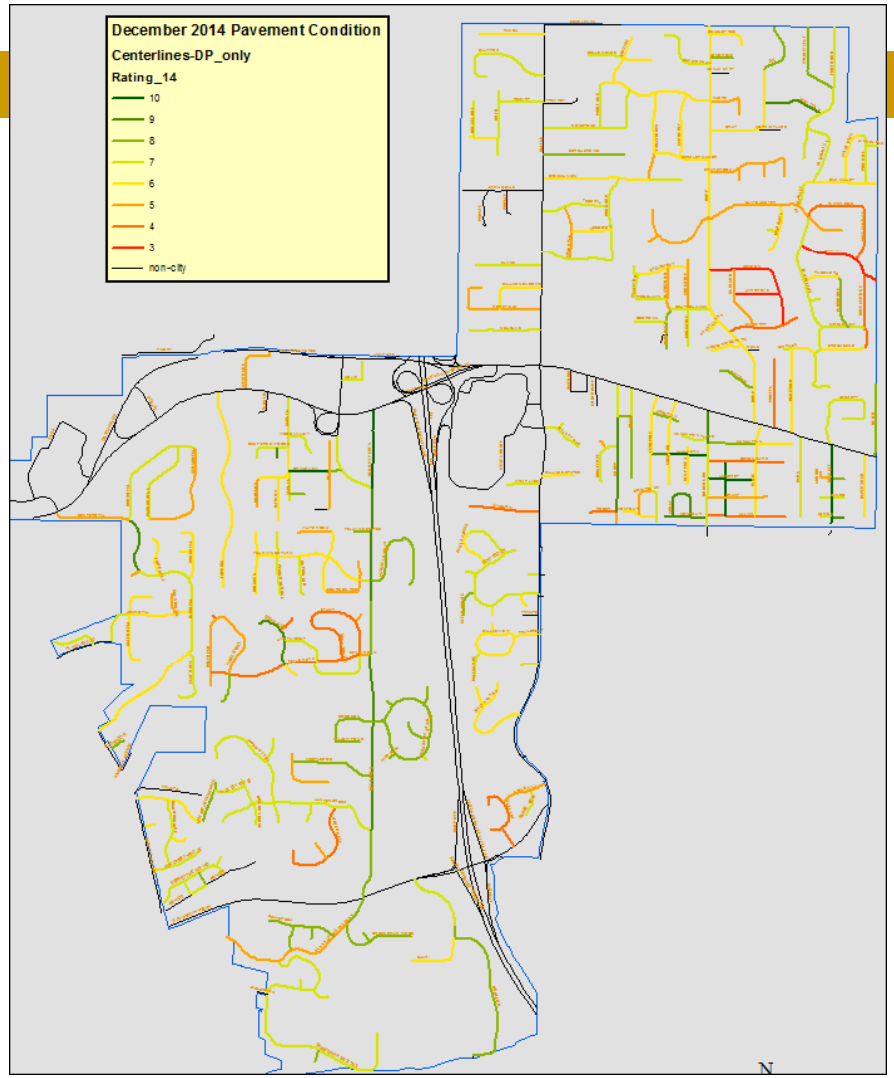
Alterations

- Open-graded Surface Course
- Cape Seals
- Mill & Overlay
- Hot In-Place Recycling
- Microsurfacing
- Asphalt Overlay
- Asphalt & Concrete Rehabilitation and Reconstruction
- New Construction

Annual Pavement Evaluation

- Performed each winter
- Each street evaluated
- Scale of 1-10 in accordance with PASER
  - Industry standard developed by Univ. of Wisc.
- Data being compiled and converted to GIS
  - GIS (Geographic Information System)
  - Allows for mapping and analysis
  - Data previously only kept on paper

December 2014 Street Conditions



December 2014 Street Conditions

Streets scoring below 5

- Circled streets have/are being repaired in 2015

Hargrove Dr.	3
Kendon Dr.	3
Serama Dr.	3
Bayberry Ln.	4
Beaver Dam Rd.	4
Breezeridge Dr.	4
Briar Fork Ct.	4
Crab Thicket Ln.	4
Devonshire Ave.	4
Fawnridge Dr.	4
Harwood Rd.	4
Hollyhead Ct.	4
Lillian Ave.	4
Roger Ln.	4
Sateen Dr.	4
Stump Rd.	4
Tree Top Ln.	4
Vinetta Dr.	4
Whitehorse Ln.	4
Winslow Ln.	4

Andre Dr.	5
Anduin Ct.	5
Apple Hill Ln.	5
Beaver Dam Rd.	5
Belle Meade Rd.	5
Bourbon Red Dr.	5
Briarbrook Tr.	5
Camberwell Dr.	5
Candlewick Dr.	5
Cedaroyal Dr.	5
Centeroyal Dr.	5
Christine Ave.	5
Claychester Ct.	5
Claychester Dr.	5
Crestroyal Ct.	5
Devereaux Dr.	5
Dontaos Dr.	5

Fairoyal Drive Ct.	5
Grant Pl.	5
Grupp Rd.	5
Hollyhead Dr.	5
Lawnwood Dr.	5
Marlann Dr.	5
Oge Ave.	5
Old Dougherty Ferry Rd.	5
Ridgebrook Rd.	5
Ridgefield Dr.	5
Stump Ct.	5
Wendover Ln.	5
Westledge Ct.	5
Westmark Dr.	5
White Rock Ct.	5
Whitehorse Ct.	5

Additional streets being repaired this year:
6-Bansbach,Camberly, Kinstern, Point Oak, Twin Pine, Woodbridge Park
7-Chaltenham, Ironstone, Movie

Prioritization for 2016

- Streets scoring 3, 4, or 5
- Complete full neighborhoods (e.g. Bayberry)
- Replace longer runs of concrete
- Evaluate new technologies
- Develop long-term plan

Questions

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