Maintaining Recreational Trails - Best Practices

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Research Efforts
LRRB 876
MnDOT Research

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- Technical Advisory agencies
- DNR, Three Rivers Parks, Eagan, Ottertail County, Roseville
LRRB 876 Preventive Maintenance for Recreational Trails

• Why?
  – Vast network of trails throughout Minnesota
    • Cities, Counties, and State trails
    • Many uses
      – Recreational
      – Commuter
      – Fitness Training
      – Complete Streets
  – Expensive to build
    • Due to limited access, multiple uses of ROW
  – Deteriorate from Environmental Aging
Why Practice Preventative Maintenance?
New Paving is Very Costly
Paving is Difficult
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• Task 1
  □ List all commonly used products
  □ 3 types of surface treatments
    • Fog Seal
    • Chip Sealing
    • Slurry
  □ Crack sealing
    • Rout and seal
    • Clean and seal
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- Developed or modified Mn/DOT specifications
  - Only non proprietary specifications or special provisions included
Task 2

• Applied different products to evaluate the following.
  – Ease of construction
  – User issues
  – Prolong life of trails
  – Fix issues on the trails

• Testing used
  – Sand patch (texture)
  – NCAT Permeameter (waterproofing)
Locations of PM Treatments

- Crack Sealing – Eagan, Three Rivers Parks
- Chip Sealing – Roseville, McCarrons Drive
- Fog Sealing: Multiple Locations

  DNR Gateway: CRS-2pd & CSS-1h, Patching
  TRPD: CSS-1h
  Roseville: CRS-2pd, Gilsonite, Liquid Roads, Fog Seals Over Chip Seals
  Eagan: CSS-1h, CRS-2pd (short section)

- Local Control Sections
Crack Sealing Methods:

- Routed Single Blade Width Precision Fill & Overband
- Clean & Seal, Plus Mastic Repairs
Chip Sealing

- Very cost effective
- Does excellent job of protecting HMA
  - Mn/DOT study shows life extension of HMA pavement. Trails should be similar.
- Use small chips ⅛ minus “Trail Mix”
  - Larger chips cause complaints from user due to roughness.
- Downside- Large equipment could damage weak structured trails
Chip Sealing with Dresser Trap Rock \( \frac{1}{8} \) Trail Mix
Fog Sealing:

- **CSS-1h / Gilsonite (CS-41)**
  - 0.12 - 0.14 gsy for Optimal Coverage
  - Soaks into Pavement

- **CRS-2pd**
  - 0.8 - 0.13 gsy for Optimal Coverage
  - Stays on Surface
Initial Testing Requirements

- Sand Patch Testing (ASTM E965)
- NCAT Permeameter Testing
- Record Construction Details
- Improve Planning for PM projects
What was accomplished

• Help improve current methods, planning and timing of PM treatments
• Encourage development of new methods
• Demonstrate best practices for maintaining trail systems
• Draft PM manual for Recreational Trails
• Networking of information between agencies and with contractors
• Three Rivers User Satisfaction Survey
Other Benefits of this project

• Help improve current methods,
  – Planning Phase for Cities & Counties

• Help develop new methods
  – Demonstrate Application Installations

• Best Practices for Maintaining Trail Systems

• Demonstrated we can prevent deterioration from oxidation, infiltration, UV damage

• Renew Surface Appearance-performance
Future Research Needs

- Refinement of Pavement Management Systems for Trails
- Additional treatment performance follow up
- Mix Design & Construction Improvements
- Patching & Reactive Maintenance Needs
Conclusions

• Trail Owners cannot afford to do nothing to maintain their trails
  – All products used provided some benefits
  – Surface treatments need to consider trail user perceptions and safety
  – Pavement structure needs consideration
  – Fog Sealing will maintain the trail surface
    • Start at construction on a regular schedule
    • User Polymer Modified Products on older trails
Questions?