Planning for a Smooth Ride

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ODOT District 2

ODOT 322 (09)
Wood County Route 199
SLM 6.80 – 14.82
History

- Route last paved in 1987
  - Project 292 (87)
  - 404 mixture

- 2008 PCR 63
  - High Frequent (HF) Edge Cracking
  - Medium Occasional (MO) Rutting
  - High Occasional (HO) Longitudinal Cracking
2005 FPO Master Craftsman
What to Do?

• Mill & Fill
  • Additional cost to mill
  • Concerns of thin shoulders

• Overlay
  • Pavement decent
  • Some rutting
  • Curves were a concern
Shoulder Concerns
Centerline Concerns
Overlay

- Full Depth Repair
  - Get worst areas, primarily on shoulder
- Partial Depth Repair
  - Concerns on curves

- Additional Structure
  - Need a pre-leveling course
  - Didn’t want too much additional thickness
Final Decision

- Pavement Repair
  - Full Depth
    - Use 301 to address shoulders
  - Partial Depth
    - Used Type-II at 3” to address the curves
- Two courses
  - 1” 9.5mm Leveling Course
  - 1” 424B (Smoothseal) surface course
We’re Ready to Go…Right?

- Notices some ruts
  - Are they real?
- How to address?
  - Call the people with the cool toys
    - Office of Innovation, Partnerships, & Energy
      - Formerly part of the Office of Pavement Engineering
      - Brian Schleppi & Dan Radanovich
  - Helped on previous projects
    - Intersection repairs
Rutting Concerns
What about the Rutting?

• What could they do?
  • Provide road profile / IRI data
    • Look for isolated poor ride locations

• Use Transverse Profiler
  • Help provide rut information
A Transverse What?

- Does line scans across the pavement
  - A line scan laser

- Uses 2 sensors on each side of van
  - Scans 640 points in just over 7’
Multi-Purpose Van
7 Foot 7 Foot 1 FT Overlap
High Speed Opticator
Line Scan Laser

7 Foot 1 FT Overlap 7 Foot
Rut Data

- Each lane was run
  - Looked at data
    - Rut depth (each wheel path)
    - Rut width (each wheel path)
    - Cross-sectional area of rut
### Rut Data

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## Rut Data

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Data SAYS

- Average Rut: .34 in
- Average Area: 21.1 in²

- Average Rut: .42 in
- Average Area: 29.1 in²
Are We Sure?

- Several locations showed RWP ruts of greater than ½”
  - Address with full-depth shoulder repairs
  - This was throughout the project.
- Several isolated locations showed average LWP and RPW ruts around ½”
  - Address these location with partial depth repairs
Additional Quantity

- We want a 1” leveling course
  - Now must account for irregularities

- We ended up providing an additional 500cy
  - Gets the 1” leveling course, instead of \( \frac{7}{8} \)”
Contractor Question

- Do you want 1” of material?
- Or, try to maintain quantity?

Answer: Both. Material is accounted for
  - We hope
Project Proceeds

- Pavement repairs
- Leveling course
- Surface
Remember the Simple Things

- ODOT and the contractor worked together
  - “Partnering”
    - Open communication on the project

- Both parties wanted a nice job
  - We paved after November 1st
    - Contractor utilized manpower and equipment
    - Crew took pride in their work
Soooo....Did Our Plan Work?

- For the primary function...yes
  - We had good quantity for the intermediate course
  - 4392 tons planned
  - 4618 tons used
    - Some was used elsewhere

- Concerns were addressed
Bonus: A Smooth Pavement

- Not too smooth at first
  - Original Info
    - Up direction = IRI of 110
      - 41 tenths that exceeded and IRI of 100
    - Down direction = Average IRI of 100
      - 37 tenths that exceeded an IRI of 100
  - Remember…this is 21 year old pavement
How Smooth?

- Gradually getting better
  - After the intermediate
    - NB average IRI of 56
    - SB average IRI of 51
Smooth as Babies Skin
Now...How Smooth?

- Project data
  - Up Direction
    - Contractor Data average IRI of 31.2
      - Range 22.4 - 53.6
  - Down Direction
    - Contractor Data average IRI of 32.3
      - Range 24.7 – 50.2
Very Smooth Indeed

- Smoothest Project in D2
- Only six sections did not receive maximum incentive (105%)
  - Over 96% of project had maximum incentive
  - All sections had incentive (IRI < 60)
- Over $41,000 paid in incentive
  - Proposal Note 470
Summary

• Transverse Profiler can provide rut information

• Use the data to provide adequate materials to the paving crews
  • And provide adequate repair quantities

• Project and end-users will benefit
Lessons Learned

• Trust the data (to a certain degree)
  • It provides an idea for pavement repair
    • Look at this more closely in the future
• We were very close in quantity
• It helps the final product
  • Gives the paving crew adequate material
  • Improved smoothness
• Caution: See the existing roadway before deciding
OOPS!

- You can never have enough repair set up
- Ended up adding repair quantities
  - Could have used more full depth repair on the shoulders
  - Used some partial depth repair on shoulders
    - Sacrificed some mainline partial depth repair
We Hope To Do It Again

- It will help on overlays
  - A few planned in 2011 (Smoothseal)
- Trust the data
  - Provide quantity that the data shows
- Fine tune our process
  - It worked on one job
    - Use future projects to fine-tune our process
    - Improve accuracy
"The bitterness of poor quality remains long after the sweetness of meeting the schedule has been forgotten"
Questions?