What’s Next (MERO)

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2019 Partners in Quality Road Tour
What’s Next?

- Collaboration
- LTPPBind
- Low Permeability Surfaces
- AC Quantity & Quality
Quality of Asphalt Session

- Held December 11, 2018
- ORBA and MTO construction and material experts participated
- Session goals:
  - Provide high-quality asphalt pavements across Ontario
  - Develop approach for consultation and engagement that provides transparency and build a template for constructive long-term relationship between ORBA and MTO to deliver the best outcomes for Ontario
  - Future goals for both parties
- Overall, meeting was positive and informative
Quality of Asphalt Session Covered

- Session included presentations by both parties, survey results, facilitated round table & group discussions on:
  - Ministry Expectations, State of the Industry & Future Direction
  - Current and Planned Approach to Consultation
  - ORBA/MTO Engagement and Consultation Model
  - Steps Taken on Quality of Asphalt & Early Results
  - Specifications & Compliance to Drive Strong Performance

- Development of Short & Long Term Plans
  - Bituminous program is moving ahead based on discussion and plans
History of LTPPBind

1998
- Grade selection guidelines for MTO developed using LTPPBind

2005
- LTPPBind 3.1
- Weather station data from 1963 - 1996

2017
- LTPPBind Online
- NASA satellite data from 1979 - present
<table>
<thead>
<tr>
<th>LTPPBind 3.1</th>
<th>LTPPBind Online</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outdated weather data</td>
<td>Weather data doesn’t go as far back, but updated every 2 weeks</td>
</tr>
<tr>
<td>Reliability only 50% or 98%</td>
<td>Reliability only 50% or 98%</td>
</tr>
<tr>
<td>Few weather stations in some areas</td>
<td>Temperatures averaged over a large grid (50 km by 60 km)</td>
</tr>
</tbody>
</table>
Comparison

**# of Stations**

- **LTTPBind 3.1 (1963 - 1996)**
- **Enviro Can (1963 - 2016)**
- **LTPPBind Online (MERRA v2)**

<table>
<thead>
<tr>
<th>Grade</th>
<th>LTTPBind 3.1</th>
<th>Enviro Can</th>
<th>LTPPBind Online</th>
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<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

Materials Engineering and Research Office
Temperature Grade Selection: Recommendation

- Create “BindON” from Environment Canada data
  - Use of different reliabilities
  - Use data from 1963 onwards
  - Update yearly
Low Permeability Surfaces

Benefits of low permeable surface mixes

- Associated with longer pavement life
- Reduction of surface water getting into pavement structure
- Improved resistance to moisture induced damage (stripping) of HMA mix
Low Permeability Surfaces: Steel Drum Compactor

Conventional Steel Drum Compactor

- Check cracking
- Higher surface permeability
Low Permeability Surfaces: TRAK Compactor

- Crack free, tight, and low permeability surface
- Ideal for bridge deck compaction
- No additional rollers required

Self propelled, static roller that uniformly distributes pressure with a special rubber belt over a large contact area
Low Permeability Surfaces: Incentive Specification

Field and laboratory testing required

Expect 2019 to offer incentives for low permeability on some jobs

Say tuned - possible Pave-In in Eastern Region this summer
MTO Future Goals: Asphalt Cement Quantity

Several methods are being considered including:

- Regression Method: Increase AC quantity by filling 0.5% of the mix air voids with asphalt cement (initially only on non-freeway projects)
- MTO investigating mix performance tests for phased implementation on roadway samples for acceptance
- Lower number of gyrations for some mix designs
- Improve measures used to ensure a fine graded mix when specified (more AC, better compaction, tighter less permeable surfaces)
MTO Future Goals: Asphalt Cement Quantity

Several methods are being considered including:

- Potentially use film thickness as part of acceptance
- Increase VMA and consider it as a separate pay attribute
- Investigate adopting a 0.2% limit on amount AC content can be reduced
- Consider not counting all recycled binder as effective
- Explore bonuses and reduced tolerances for acceptance criteria
MTO Future Goals: Asphalt Cement Quality

- Looking at other tests that may in the future, replace the current testing parameters
- DENT on 40 hours PAV residue
- Cross-Over Temperature ($T_{\delta45}$) using DSR phase angle on 20 hours and 40 hours PAV residue
- Low Temperature Critical Spread ($\Delta T_C$) using BBR on 20 hour and 40 hour PAV residue
MTO Future Goals: Asphalt Cement Quality

Continue to modernize specifications for quality:

- Change Mass Loss requirements for softer grades of asphalt
- Multiple Stress Creep and Recovery (MSCR) in place of bumping high temperature
- A phased approach to allow RAP in surface mix with asphalt cement properties accepted based on recovered grading and possibly mix performance testing
Other Future Plans

- Further explore the use of high stiffness mixes
- More use of SMA mixes with consideration for use as binder courses
- Explore opportunities to increase use of Warm Mix Asphalt
- Explore bonuses and reduced tolerances for mix and compaction criteria
In Conclusion

MTO is actively considering new ways to collaborate.

MTO is committed to the use of materials & methods that promote sustainable and durable pavements.

Ontario will continue to look at ways to improve durability by increasing AC content and requesting quality asphalt cement.
Questions

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