Quality of Asphalt Partnering Sessions

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Overview- Quality of Asphalt Study

- **ORBA/OAPC** embarked on the largest study of its kind in the 92 year history of the Association after the release of the Auditor Generals Report in the fall of 2016
- **KPMG** was retained as the independent lead on the project
- Texas A&M (TTI- Texas Transportation Institute) was retained as the independent technical investigator to report their findings
- **Global Public Affairs** was retained to perform Stakeholder interviews and commentary
- **ORBA/OAPC** Steering Committee formed with Senior Industry leaders
Study Objectives

The objectives of the Quality of Asphalt Review were to:

- Ensure ORBA and OAPC understand and internalize members’ and owners’ concerns about asphalt quality issues, such as premature cracking;

- Perform technical investigation on roads that exhibited premature cracking with a comprehensive report on findings and recommendations;

- Improve the industry’s relations with and outcomes for road owners; and

- Work towards continuous improvement in industry performance as it relates to asphalt quality.
Technical Findings

TTI’s technical analysis revealed three primary causes of premature cracking under the six MTO contracts referenced in the Office of the Auditor General of Ontario:

- Dense aggregate gradations that did not provide sufficient room for the asphalt binder in the mixture, leading to mixes that were more susceptible to early cracking,
- The lack of bonding between layers of hot mix asphalt (HMA), which were related to the quality of specifications and oversight of tack coat application;
- Cracks that reflected from lower pavement layers through asphalt overlays.
Asphalt Quality

• It should be noted that TTI researchers were not able to investigate the quality of asphalt binder beyond the two sections from which samples could be retrieved (Highway 10 and Highway 12 sections referred to in the AG Report;
• It is generally understood that deterioration of binder quality plays a role in premature cracking of asphalt pavements along with other considerations such as traffic, mixture design, and pavement design.
• The road sections examined by TTI showed a good binder quality on Highway 10 and marginal quality binder on Highway 12, so the impacts of poor binder quality based on a narrow sample were inconclusive.
Non Technical Findings

• KPMG’s primary research revealed that current owners and industry participants believe there are several asphalt quality issues that are non-technical in nature;  
• These topics will require long-term partnering and stronger discussion between industry and owners to address effectively.  
• These issues include Quality Assurance (QA) at municipal owners, the current ORBA-MTO relationship, the need for knowledge sharing, and several commercial practices.
Global Public Affairs Findings

- GPA industry and owner surveys of over more than 100 respondents revealed that:
  - Only 13% of survey respondents experienced no failure in the first five years following pavement. However, 85% of respondents were satisfied with the paving work delivered by contractors.
  - 60% felt paving work was consistently of good quality.
  - 11% found the work done to be of poor or varied quality.
  - 70% of contractors felt the current approach to delivering paving was fair.
  - However, only 44% felt it delivered value to taxpayers; and only 36% felt it delivered quality.
Continuous Improvement Framework

1. **Focus on Tack Coat**
   - Reinforce specifications
   - Treat as separate contractual item
   - Further research characteristics of tack coat alternatives for Ontario traffic conditions

2. **Increase Asphalt Content in the Mix Design**
   - Reinforce specifications
   - Regress mixture design asphalt content to 3% Air Voids level
   - Avoid dense aggregate gradations that don’t provide sufficient room for asphalt binder

3. **Avoid overuse of REOB, PPA and Shingles in HMA**
   - Strengthen specifications around the use of PPA
   - Develop tests to control overuse of Shingles
   - Utilize chemical tests (such as XRF) to identify REOB

4. **Improve QA practices at a Municipal Level**
   - Increase number of inspectors and testing frequency
   - Identify and quantify presence of REOB in AC to prevent overuse
   - Work with CCIL to produce QA processes that help quantify the amount of RAP in HMA
   - Increase inspections of AC refineries and terminals

5. **Gain consistency in asphalt specifications, and ensure contract enforcement**
   - Apply MTO specifications across the province without (or with minimal) variation
   - MTO/ORBA joint research efforts
   - Enhance role of Independent Engineers
   - Avoid changing specifications when industry have concerns
   - Implement designer inspections of underlying pavement prior to overlay

   - Municipal Owners to enforce removals when required per contract (lower tolerance for poor quality)
   - Implement third party contract audits to ensure contract compliance by owner and contractor
   - Review contract wording around warranties, removing any design liabilities on BB contracts

7. **Implement mandatory asphalt Inspector Training programs for owners across the province**
   - MTO/ORBA/OGRA should work together to identify pavement technician training courses (similar to APAO’s) that would lead to an accredited certification requirement prior to a supervisor, inspector, or consultant being appointed to supervise, perform testing, or provide oversight reports on a pavement project.

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**Technical Recommendations**

**Non-Technical Recommendations**
Nest Steps

- Final report was released end of August
- Meeting held with MTO and facilitated workshop being developed between ORBA/OAPC and MTO for early December.
- Similar process to be developed in near future with OGRA representing 444 Municipalities
- All with the intent to improve relationships and work closer together with stakeholders to improve the quality of asphalt pavements for the taxpayers of Ontario.
MTO Workshop - Overall Objectives

A. Provide high quality asphalt across Ontario;
B. Develop approach for consultation and engagement that provides transparency and builds a template constructive long-term relationship between ORBA and MTO to deliver the best outcomes for Ontario.

“…ongoing dialogue and consultation with stakeholders, including the contractors who work on our projects and their industry organizations, helps inform the Ministry’s decisions about policies and programs and is critical to the successful implementation of our infrastructure programs” MTO

“We want to raise the standards for our industry to provide the best quality asphalt roads in North America” ORBA
## Discussion Areas

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<tr>
<th>Market Fundamentals</th>
<th>Core: Asphalt Delivery</th>
<th>Processes</th>
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<td>1. <strong>Long-term planning (industry and MTO):</strong> benchmarking and targets; effective consultation; shared goals</td>
<td>4. <strong>Asphalt production:</strong> streamline specifications; inspections of asphalt refineries and suppliers; use of recycled materials; training of inspectors; transparency of content; quality assurance process and test</td>
<td>7. <strong>Specification development:</strong> process, purpose and timelines; steering committee; use of recycled materials; fragmented market across owners</td>
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<td>2. <strong>Market performance:</strong> ORBA-MTO relationship; lessons learned by project; asset management and data availability; clamping down on poor performers; role of MTO</td>
<td>5. <strong>Asphalt application:</strong> inspection; certification; effective test</td>
<td>8. <strong>Procurement:</strong> what model best meets needs; prequalification; evaluation (eg life-cycle costs, disruption)</td>
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<td>3. <strong>Research:</strong> addressing systemic challenges (eg testing, regular failures, traffic disruption); involvement of industry; application of research; funding</td>
<td>6. <strong>Asphalt performance:</strong> testing and inspection (lack of expertise, training or certification); warranty; mitigating factors; data collection</td>
<td>9. <strong>Commercial terms:</strong> warranty; enforcement (penalties, restrictions); bonus structure; dispute resolution</td>
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Overall Output

The session will be designed to address the two objectives identified earlier:

A. Transparency of process
B. Effective process for industry input
C. Appropriate penalties and incentives
D. Effective performance metrics
E. Adequate enforcement
F. Managed conflicts of interest
G. Deal with difficult issues between industry and MTO
A. Do you agree that the following are important elements of a successful asphalt program: (strongly disagree/disagree/agree/strongly agree)

- Fair, open, and transparent process
- Best value for taxpayers
- High quality roads
- Durability of road surfaces (15 years)
- Competitive, sustainable market
- Sound relationship between MTO and contractors
- Safety for road users
- Minimized disruption during delivery
- Environmental performance
- Consistency across contracts
- Appropriate penalties and incentives
- Other
Industry Priorities – Top 5

- TTI Findings & Recommendations – HMA Quality
- Building Trust – Strengthening Relationships
- Proper Use of Incentives & Disincentives
- Proper Pavement Design & Maintenance
- Development & Implementation of Specifications (Process)