MRPA

MICHIGAN ROAD PRESERVATION ASSOCIATION

QA/QC and Inspections
Ensuring Every Job is a Quality Job

Joe Brandenburg – Arboris EverGreen Solutions

Outline

- Quality Assurance vs. Quality Control
- Key Differences
- Inspections
- Compliance from Start to Finish
- Proactive Strategies
- Benefits - Preservation
- Conclusion

Quality Assurance

- All about preventing mistakes upfront & ensure things go right from the start
  - Calibrations
  - Training staff on best practices
  - Checklists
  - Prep work
- Quality Assurance is PROACTIVE

Quality Control

- Is about catching issues after the fact
  - Testing
  - Inspections, work flaws
  - Auditing to find or spot defects
  - Provide feedback to improve future projects
- Quality Control is REACTIVE

Key Differences Between QA & QC

Aspect	Quality Assurance	Quality Control
Focus	Process	Product
Goal	Prevent defects	Identify defects
Timing	Before & during	After production

Benefits of Both

- Together, Quality Assurance and Quality Control help ensure products are both high-quality and consistently delivered

Inspection Guidelines

- Purpose of inspections
  - Systematic / methodical approach
  - Repeatable results
  - Aligned with quality standards
- Types: Incoming, In-process, and Final
- Documentation and reporting standards

Chip Seal Construction Inspection Checklist

Your Agency Chip Seal Construction Inspection Checklist

This checklist is intended to guide inspectors with a convenient list of chip seal best practices and guidelines to achieve quality projects. It does not replace project proposals, contracts or specifications.

Date:	_____	Binder Load Tickets:	_____
Project Name:	_____	Aggregate Load Tickets:	_____
Prime Contractor:	_____	Inspector Name:	_____
Street:	_____	Street:	_____
Beginning Station:	_____	Beginning Station:	_____
Ending Station:	_____	Ending Station:	_____

Materials

Coarse Aggregate

First Course Aggregate _____ Aggregate Source _____

Top Course (If Double) _____ Top Course Aggregate Source _____

- ☐ Moisture content of aggregate < 4%
- ☐ Aggregate stockpile free of standing water, large stones or other debris, and no soil beneath is being scooped into trucks
- ☐ Course aggregate is pre-tested MDOT certified material or tested every 600 to 1000 tons
- ☐ Aggregate meets requirements

Emulsion

Emulsion Type _____ Emulsion Supplier _____

Storage Conditions _____ Application Temperature _____

Pavement Preparation

- ☐ Special markings have been removed
- ☐ The surface has been swept clean and is dry and free from debris
- ☐ Temporary pavement markers have been placed on lane lines
- ☐ Utility castings have been protected and marked

Weather

- ☐ Pavement and ambient temperature at time of placement at least 55°F _____ °F
- ☐ Pavement temperature is below 130°F at the time of placement _____ °F
- ☐ Air temps will be above 40°F within 24 hours of placement
- ☐ Weather is clear with no fog or rain during placement

Equipment

- ☐ All equipment used on the jobsite is in good working order

Pressure Distributor

- ☐ Equipped with computerized application rate and speed control
- ☐ Equipped with radar ground-sensing device
- ☐ Uniform triple-lap application fan spray
- ☐ All nozzles are free of clogs
- ☐ Calibration of the distributor has been checked

Chip Spreader

- ☐ Equipped with computerized speed control
- ☐ All gate controls and settings have been checked
- ☐ The chip spreader is following closely to the distributor
- ☐ Calibration across entire chip spreader has been checked

Compacting Equipment

- ☐ An adequate number of rollers with pneumatic tires that have a smooth tire surface (See Guidelines)
- ☐ Rollers weigh at least 8 tons
- ☐ Rollers travel no greater than 5 mph
- ☐ No more than 2 minutes between chip spreading and initial rolling
- ☐ Entire surface is rolled twice

Brooms

- ☐ Bristles are proper length
- ☐ Broom can be adjusted to avoid excessive pressure
- ☐ Brooming should be done until loose stones have been cleared from roadway

Application Rates

- ☐ Application rate of aggregate (W_{Agg}) is within +/- 2 pound of the JMF application rate. The following formula can be used in determining the application rate.

Coarse Aggregate (QC Sampling and Testing MDOT 505.03.G.2)

1. Weigh 1 yd² tarp or geotextile material: W_{Tare} = _____lbs
2. Place the tarp or geotextile on the roadway
3. Have the chip spreader apply the aggregate over the tarp or geotextile
4. Weigh the tarp or geotextile material with the aggregate W_{Gross} = _____lbs
5. Subtract the two numbers to obtain the application rate of aggregate: $W_{Agg} = W_{Gross} - W_{Tare}$ = _____lbs/yd²

- ☐ Application rate of emulsion is within +/- .02 gallon per square yard of the JMF target rate. The following formula can be used to determine application rates.

Emulsion (QC Sampling and Testing MDOT 505.03.G.2)

1. Measure tank before spraying
2. Spray 1000' minimum length rate check
3. Measure Tank after spraying
4. Measure square yards of area distributor shot
5. Take gallons used divided by square yard

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Ensuring Compliance from Start to Finish

- Clear quality standards and specifications
- Training and competency checks
- Continuous monitoring and audits
- Corrective and preventive actions
- If QA is thoroughly completed up front, there is less QC needed on the back end!

Proactive Strategies for Higher Quality

- Risk- based planning
- Early involvement of QA/QC teams
- Use of checklists and digital tools
- Feedback loops for continuous improvement

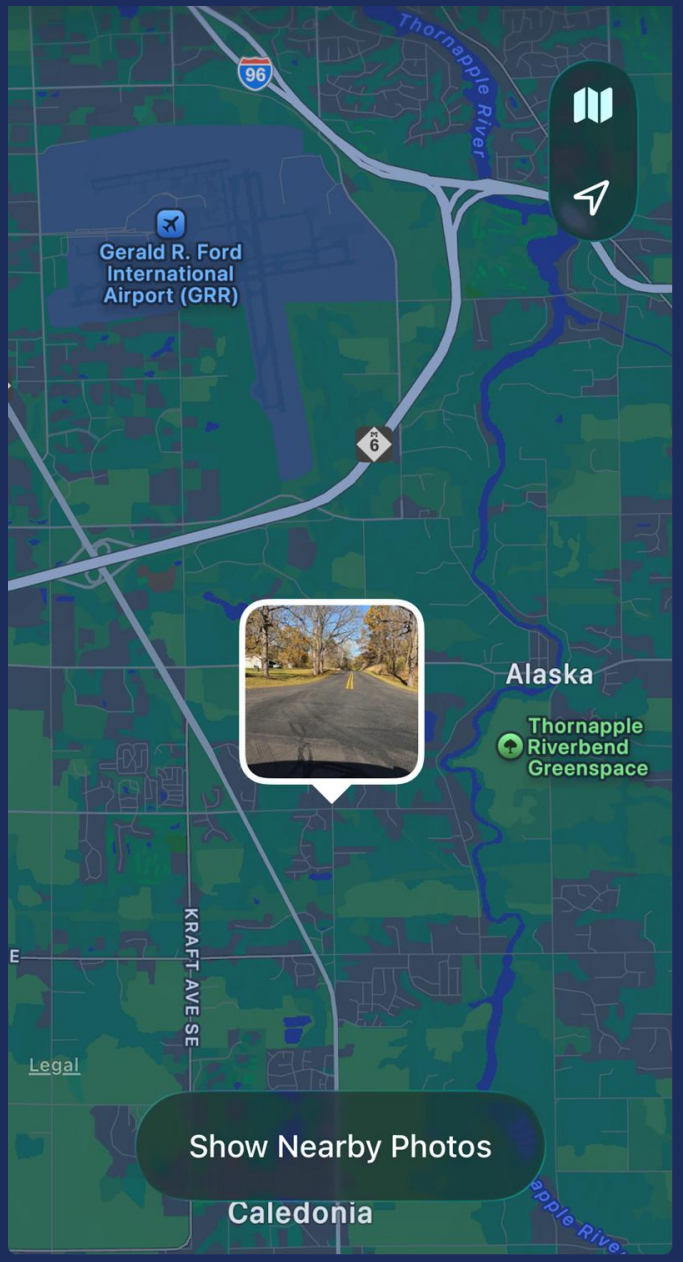
Benefits of Strong QA/QC

- Reduced rework and costs
- Improved customer satisfaction & trust
- Employee engagement and accountability
- Enhanced safety and reliability

Preservation

- Comes from the Latin word *praeservare*
- Which means to “KEEP” or “MAINTAIN”
- The act of keeping something in its original state or in good condition

Doing the Right Thing!



Preservation

- Comes from the Latin word *praeservare*
- Which means to “KEEP” or “MAINTAIN”
- The act of keeping something in its original state or in good condition
- Kent County Road Commission is SPOT ON!

Why Does it Matter?
Money or People?

PEOPLE

Conclusion

- QA and QC work together – symbiotic
- Inspections ensure compliance and quality
- Proactive strategies lead to better outcomes

Thank You!

Joe Brandenburg

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