

Airport Runway Pavement Marking Staining Study

The Problem

- ✓ Iron that is present in the pavement aggregate stains the airfield markings, especially the white markings.
- ✓ The staining affects compliance with the color standards maintained by all governing agencies.
- ✓ Staining occurs within 6 months to a year of the application of paint.
- ✓ The staining occurs at roughly 50% of the NH airports. Staining is not unique to NH; ME to FL, OH and WA states also report staining.



Claremont Paint Chip



Concord Core



Mt Washington Markings



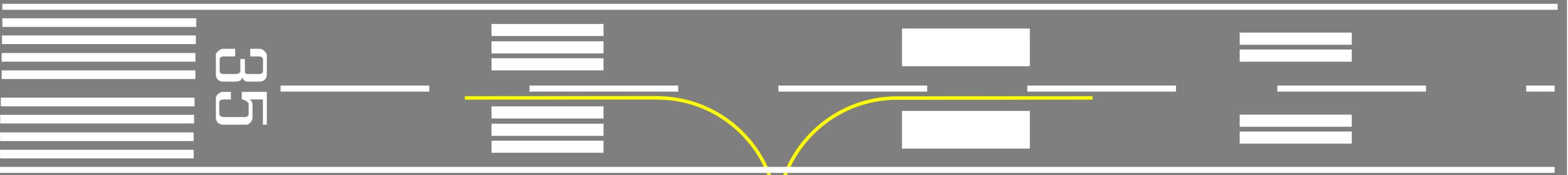
Claremont Core

The Objectives

- ✓ Positively identify the cause of rust-like discoloration of pavement paint markings at NH airports.
- ✓ Investigate alternatives to extend the service life of new or existing markings subject to rust-like discoloration.
- ✓ Provide recommendations for a follow-on project to field test the recommended alternatives.

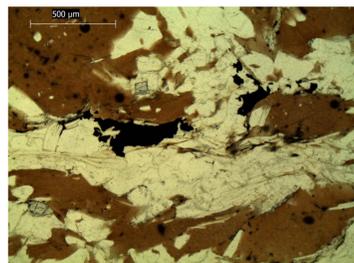
Findings

- ✓ Scanning Electron Microscope identified iron on the stained paint locations. Petrographic analysis associates the staining with opaque iron oxide, iron sulfide and iron oxyhydroxide minerals. Accelerated oxidization tests promoted rust staining.
- ✓ Proven industry methods to mitigate the staining include pressure washing and modifying the Federal Specification TT-P-1952E paint specification by including a rust inhibitor.
- ✓ 20-year life cycle cost analysis indicates that modification of the TT-P-1952E paint for paint types I, II and III is more cost effective than using the standard paint.
- ✓ Matching bead type with paint type is required for proper marking visibility.

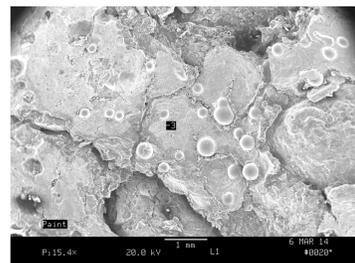


Project Benefits

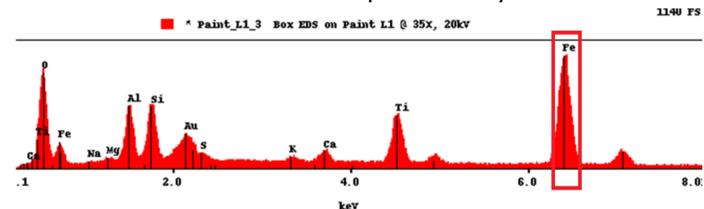
- ✓ According to industry experts, rust discoloration can be removed by pressure washing.
- ✓ The life cycle of paint can be extended to 6-plus years by using a modified TT-P-1952E paint per the paint manufacturers.
- ✓ Recommended methods for follow-on studies include the use of a modified TT-P-1952E paint, the use of solvent based paints, asphalt sealers, grooving of markings and clear coating of paints. Conduct accelerated oxidization testing to prove viability of recommendations before field studies.



Keene Petrographic Slide



Laconia Paint Chip SEM Analysis



Laconia Elemental Spectrum for Paint Chip Above



Grooved (Black Arrow) & Not Grooved Pavement



Mt. Washington Regional Airport Rust Stained Threshold Markings



Mt. Washington Regional Airport Data Collection Staff



Concord Municipal Airport Runway 12-30 Rust Spot

For More Information

Visit www.nh.gov/dot/research

Contact NHDOT Research Section
(603)-271-3151

