In-Pavement Light Fixture Issues Forum

Holiday Inn
550 C St. SW, Washington, DC
Capitol Ballroom
4/07/2016
1:00pm to 3:00pm

Agenda

1. Discussion relating to recent In-Pavement Light Fixture Failures attributed to light fixture securing fasteners.
    - Factors that contributed to failures (e.g. overloading, fatigue, corrosion).
    - Light fixture assemblies that have failed identifying light fixtures, bases, spacers, bolts, and two part lock washers.
    - Loading Transmitted Through Runway Pavement into Light Fixtures.
    - Corrective actions taken as a result of failures.
2. Current FAA Criteria for Design of In-Pavement Light Fixtures (FAA EB-83).
    - Light Fixtures Secured with a Quantity of Six (6) 3/8-inch diameter bolts (18-8 Stainless Steel (Lubricated) or SAE J429 Grade 2 (Ceramic-Metallic/Fluorocarbon Polymer Coating)), Two Part Clamping Lock Washers, and 3 Spacers (Maximum).
    - Combined Bolt Clamping Force necessary to oppose 3,000 pound shear force generated by Aircraft Tire.
    - 18-8 Stainless Steel Bolts to be installed with Anti-Seize Lubricant.
3. Current FAA Requirements for Maintenance of In-Pavement Light Fixtures (FAA AC 150/5340-26C)
    - Bolt Torqueing to be Accomplished with a Calibrated Torque Wrench (Impact Type Wrenches are Prohibited)
    - The torque of bolts attaching light fixtures to bases should be checked bi-monthly.

4. Discussion relating to testing currently being conducted by industry to address this issue.

    - Instrumented light fixtures allowing measurement of loading in airport runway environments.

    - Evaluation of light fixture assemblies utilizing higher strength fasteners and/or larger diameter fasteners with increased clamping loads.

5. FAA Planned Testing

    - Determine Strength Limitations of Light Fixture Assemblies for Generating Bolt Clamping Forces.

    - Conduct Shear Force, Compressive Load, and Vibration Testing of Various Light Fixture Assemblies..

    - Field Testing of Instrumented In-Pavement Light Fixtures in the National Airport Pavement Test Facility (NAPTF) and on ACY Runway.

6. Possible Enhancements/Modifications of Existing Light Fixtures

    - Use of Higher Strength Fasteners (e.g. SAE J429 Grade 5 (coated), ASTM F593P Grade 410 (Black Oxide Coated)

    - Use of larger diameter bolts (e.g. 7/16 inch diameter)

    - Use of Threaded Inserts

7. Enhancements to In-Pavement Light Fixtures Requiring Significant Modifications to Existing Arrangements

    - Increased Strength of Light Fixture Housings and/or Bases.

    - Use of Through Bolted Connections (i.e. Bolts, Nuts, and Washers) to Secure Light Fixtures to Bases.

    - Increase Overall Diameters of Light Fixtures.