ACRP Report 159: Pavement Maintenance Guidelines for General Aviation Airport Management

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Principal Investigator

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- 30+ Years of Airport Pavement Inspection
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Research Scientist

- Research Scientist, Infrastructure Investment Analysis Program, Texas A&M Transportation Institute
- 23 Years Airport System Planning & Research Experience
- Chair, TRB Committee on Aviation System Planning
ACRP Report 159
Oversight Panel

Joanna K. Ambroz, Port of Portland, Portland, OR (Chair)
Jo A. Lary, Pavement Consultants Inc., Seattle, WA
Thomas F. Mahoney, Massachusetts DOT, East Boston, MA
Joshua Mann, Kenton County Airport Board, Cincinnati/Northern Kentucky International Airport
Angel E. Ramos, Lambert–St. Louis International Airport, St. Louis, MO
Laith Tashman, Wellesley, MA
Gregory D. Cline, FAA Liaison
Stephen F. Maher, TRB Liaison
Marci A. Greenberger, Senior Program Officer
ACRP Report 159: *Pavement Maintenance Guidelines for General Aviation Airport Management*

- Surveyed knowledgeable personnel
- Developed decision trees
- Presents airport distress mechanisms and preservation strategies
- Provides support documents and treatment justification
- Primarily for airports with little or no engineering staff
- Published May 2016
For additional information:

ACRP Report 159
Pavement Maintenance Guidelines for General Aviation Airport Management

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http://www.trb.org/Main/Blurbs/175058.aspx
Who did we talk to?

Table 11. Distribution of Responses.

<table>
<thead>
<tr>
<th>Responses</th>
<th>Representing Airports</th>
</tr>
</thead>
<tbody>
<tr>
<td>State Aviation/Aeronautics</td>
<td>National Airport 11</td>
</tr>
<tr>
<td>National Airport</td>
<td>Regional Airport 26</td>
</tr>
<tr>
<td>Regional Airport</td>
<td>Local Airport 28</td>
</tr>
<tr>
<td>Local Airport</td>
<td>Basic Airport 24</td>
</tr>
<tr>
<td>Basic Airport</td>
<td>Total 89</td>
</tr>
<tr>
<td>Total</td>
<td></td>
</tr>
</tbody>
</table>

By FAA Region
- Alaskan 0
- Western Pacific 9
- Central 8
- Eastern 8
- Great Lakes 14
- New England 12
- NW Mountain 13
- Southern 17
- Southwest 8
- Total 89
Straight to the Tool

http://acrp-pavement-tool.tti.tamu.edu
Choose **Get Started** or **Your Facility** from the Navigation menu at top to begin.
Input Airport Parameters

Enter an optional, identifying word or phrase to designate the feature being evaluated.
Enter your state. This is a required field.
Note that for some states, adding a county will be required to determine your facility’s climate zone.
Pick your facility’s FAA Airport Classification.

Note that your entries up to this point will be retained on your computer or tablet for subsequent evaluations with the tool.

Note that the FAA Airport Classification input has supplemental details that will pop up to assist the user.
Choose the type of pavement used in the feature being evaluated.
Pick your facility’s FAA Airport Classification.

Note that your entries up to this point will be retained on your computer or tablet for subsequent evaluations with the tool.

Note that the FAA Airport Classification input has supplemental details that will pop up to assist the user.
Choose the type of pavement used in the feature being evaluated.
Click Add/Identify a Distress to begin describing the distress(es) observed in the current feature. Observe that a list of distresses possible for the chosen pavement type will appear.
Hover your cursor over each distress and click the Circle-i icon to view an information box describing it.
Select an appropriate choice under **Select an Amount & Severity**.

When you choose a distress, a second group of choices will appear, as well as photos of the distress.

Click a photo for a larger view to help you determine which distress your features is experiencing.
Select an appropriate choice under **Select an Amount & Severity**.

When you select your distress, a second group of choices will appear, as well as photos of the distress.

Click a photo for a larger view to help you determine which distress your features is experiencing.
If the current feature is experiencing more than one distress, again click **Add/Identify a Distress** and follow the preceding steps to identify as many distresses as applicable.
2.1 Identify a Distress
- Cracking
  - Longitudinal
  - Transverse
  - Alligator
  - Block
  - Edge
  - Reflection
- Surface Distress
- Weathering
- Raveling
- Patching
- Roughness

2.2 Select an Amount & Severity
- Few longitudinal cracks, Low
- A few longitudinal cracks, Medium
- Many longitudinal cracks, Low
- Many longitudinal cracks, Medium
- Many longitudinal cracks, High
When you do so, a summary table appears listing a recommended and acceptable treatment.

In the treatment cells, click the graph icon to view a PCI curve, indicating the estimated increased performance that the treatment can do to extend the life of the pavement being evaluated.
If the current feature is experiencing just one distress, you can skip to the Ballpark Estimator.
### Initial Analysis

**Block cracking Medium severity**

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Cost Basis</th>
<th>Relative Benefit</th>
<th>Benefit/Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Recommended</strong></td>
<td>Asphalt Overlay/Mill+overlay</td>
<td>$7.5 / sq yd</td>
<td>419</td>
</tr>
<tr>
<td><strong>Acceptable</strong></td>
<td>Crack Seal/fill</td>
<td>$0.75 / linear ft</td>
<td>68</td>
</tr>
</tbody>
</table>

**Starting to Weather (losing fines)**

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Cost Basis</th>
<th>Relative Benefit</th>
<th>Benefit/Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Recommended</strong></td>
<td>Slurry/Micro</td>
<td>$2 / sq yd</td>
<td>146</td>
</tr>
<tr>
<td><strong>Acceptable</strong></td>
<td>Rejuvenator</td>
<td>$0.37 / sq yd</td>
<td>146</td>
</tr>
</tbody>
</table>

- Use the Ballpark Benefit/Cost Estimator for all treatments?

### Final Analysis

*For all treatments except sealing and patching, it is recommended that a professional engineering firm with airport experience be engaged.*

**Block cracking Medium severity**

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## Initial Analysis

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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asphalt Overlay/Mill+overlay</td>
<td>$ 7.5 / sq yd</td>
<td>419</td>
<td>0.10</td>
</tr>
<tr>
<td><strong>Acceptable</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crack Seal/fill</td>
<td>$ 0.75 / linear ft</td>
<td>68</td>
<td>0.07</td>
</tr>
</tbody>
</table>

☐ Use the Ballpark Benefit/Cost Estimator for all treatments?
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</tr>
</tbody>
</table>

☐ Use the Ballpark Benefit/Cost Estimator for all treatments?

☐ Use the Ballpark Benefit/Cost Estimator for all treatments?

Please enter the length and width, in feet, of feature

<table>
<thead>
<tr>
<th>Length</th>
<th>Width</th>
</tr>
</thead>
<tbody>
<tr>
<td>5000</td>
<td>75</td>
</tr>
</tbody>
</table>

**Ballpark Estimator for Block cracking Medium severity (375,000 sq ft)**

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Cost Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Recommended</strong></td>
<td>$312,525</td>
</tr>
<tr>
<td><strong>Acceptable</strong></td>
<td>$70,350</td>
</tr>
</tbody>
</table>
Final Analysis

For all treatments except sealing and patching, it is recommended that a professional engineering firm with airport experience be engaged.

Block cracking Medium severity

<table>
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Print Report
Summary

• Uses climate, surface type, and FAA designation along with distress type, severity, and extent to determine recommended and acceptable treatment types
• Can add additional distress combinations
• Hierarchical tool decides which is most extensive Recommended and Acceptable treatments
• Can use “Ballpark Cost Estimator” to determine approximate treatment cost
  – User modifiable
• View results shows your entries and results
• Tons and tons of supporting documents in report
Other Documentation

• **Final Report**
  • Detailed discussion of research that was done:
    • Questionnaire
    • Decision trees, etc

• **How To/Users Guide***
  • Step by step instructions

• **Field Guide***
  • Non-computer version of the tool

• **Guidebook***
  • Smaller version of Final Report

* - Under Appendix tab of the Tool
Questions?