April 3, 2013

Re: **Minnesota Statewide Airport Pavement Management System – AirView**

Dan,

Thanks for your patience during the process of migrating the pavement management data from the Minnesota MicroPAVER database into the AirView viewing tool. The main reason for developing AirView (and its precursor, OverView) was to make the airport pavement management data more easily accessible to the various stakeholders of Minnesota airports. We hope that you will find this initial implementation of the Minnesota AirView a helpful start to displaying more pavement data and other assets in an easy-to-navigate format with GIS capabilities.

This document is meant to serve as a quick tutorial on the format and content of the Minnesota AirView system. I am also glad to provide support via phone, e-mail, or WebEx as others are provided access to AirView.

1. For starters, AirView performs best using Google Chrome as the web browser and is the recommended viewing platform. It is available for free from the Google website.
2. The web address for the AirView system is http://airview_mn.i2bglobal.com The current user name is ARA, and the password is #4pavements.
3. Once logged on, the homepage looks like the following. The map on this screen is for display purposes only and is not interactive.
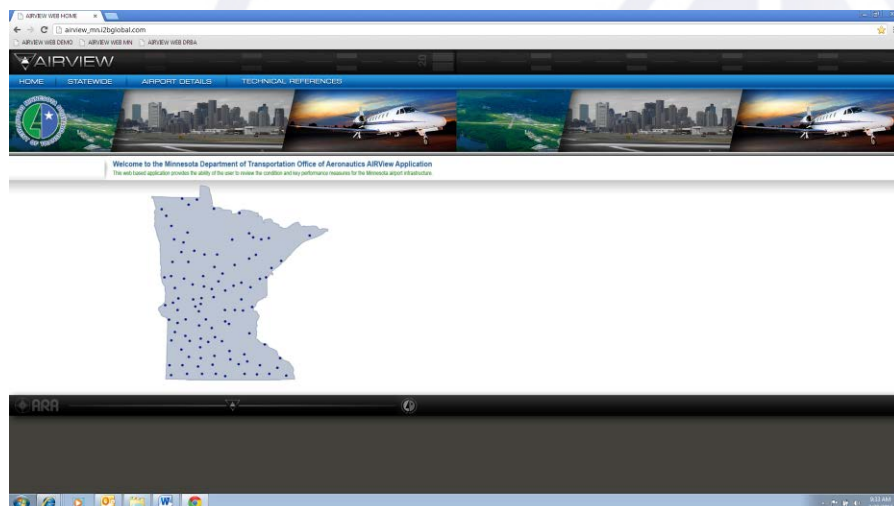
Homepage view.

4. Across the main banner you will see the four areas of AirView:
   - Home.
   - Statewide.
   - Airport Details.
   - Technical References.
5. The **Statewide** view displays data for the 103 airports aggregated together. Three tabs called "Inventory," "Condition," and "Classification" appear. The various pie charts, bar charts, line graphs, and bubble charts will display additional information as you mouse over the data element. Note that the bubble charts on the Condition tab are very congested when displaying statewide data, so realistically, the main benefit of this chart format is at the individual airport level (more on these bubble charts later). The map on the left of the Statewide view is mainly for display purposes and does not change/update the data being displayed.
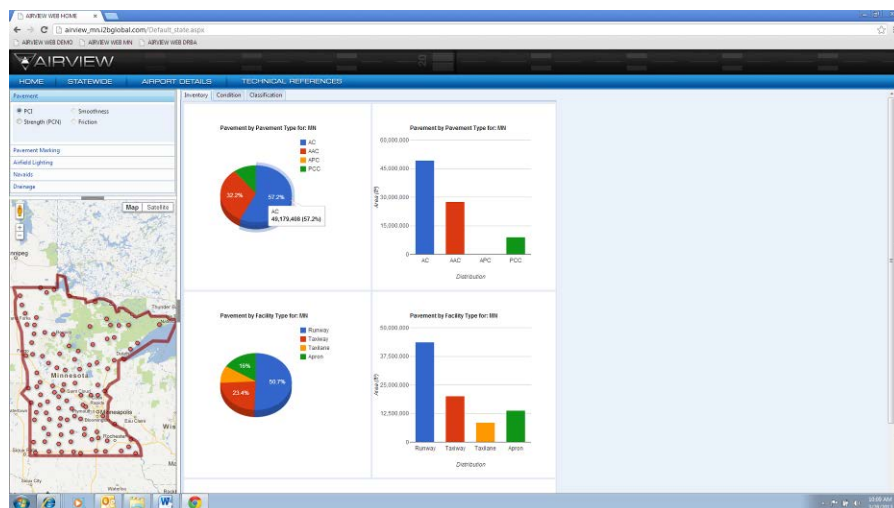
Statewide view with Inventory tab selected.

Above the map are the various asset types that can be displayed using AirView, inlcuding Pavement, Pavement Marketing, Airfield Lighting, Navaids, and Drainage. Currently, only pavement data are being displayed for the Minnesota AirView. These fields are all customizable to fit what MnDOT wishes to display for future updates to the system.

6. Select the **Airport Details** view to look up information for a specific airport. The contents of this view are the PCI map over Google Earth imagery for the selcted airport, the state map with the selected airport's location symbol highlighted in red, and the listing of the 103 airports by common name. The user can navigate to an airport by selecting from the list of airport names, or by clicking in the airport's location symbol. Note that as you mouse over the airport location symbols, the airport name will appear to help identify that location. Also, the airport location symbols are sized in proportion to the area of pavement at the airport, such that larger airports have larger symbols.
7. You can zoom in on the PCI map by using your mouse (if equipped with a scroll wheel)

or by adjusting the Google Earth zoom adjust feature located in the upper left of the map window. You can also click and drag the map to reposition the view. The PCI map legend is located in the upper right corner and displays in a translucent fashion, but it becomes brighter as you mouse over the legend. The PCI scale presented in AirView has five ranges (colors), which differs from the PCI scale of seven ranges used in the airport reports for Minnesota. This is a Google Chrome limitation which restricts the number of ranges to five. The verbal descriptions for each range on the Minnesota AirView PCI scale were changed to better align with recent changes in the ASTM PCI methodology. The following table compares how the PCI ranges are presented in the Minnesota reports and AirView formats.

MN Airport Report PCI scale	MN AirView PCI scale
85-100 Excellent	85-100 Excellent
70-85 Very Good	70-85 Satisfactory
55-70 Good	55-70 Fair
40-55 Fair	40-55 Poor
25-40 Poor	0-40 Very Poor
10-25 Very Poor	
0-10 Failed	

The following figure shows the PCI map for Bemidji Airport.
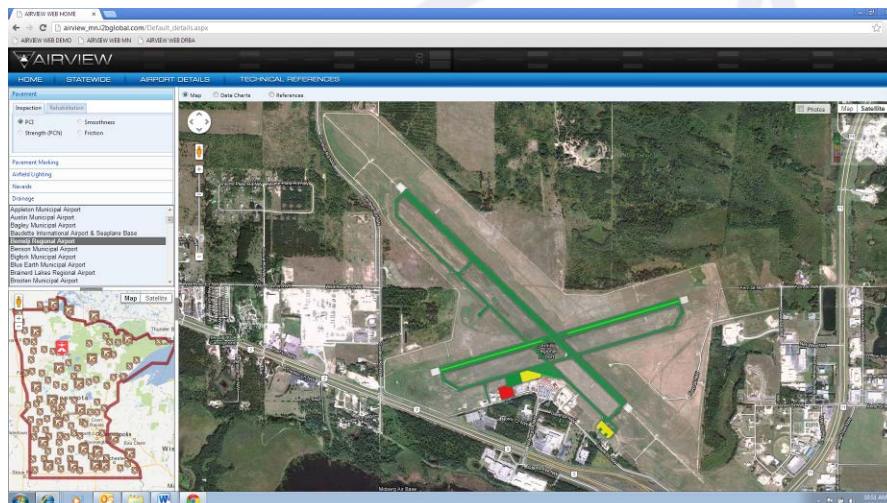
Airport Details view for Bemidji Airport.

The condition data represented in Minnesota AirView are based on the most recent PCI inspection for that airport. Airports last inspected in 2010 will display PCI results from 2010, and airports last inspected in 2011 or 2012 will display results from those years.

Also located in the upper right corner of the map window is an option box for displaying photos that were taken at the airport during the pavement inspection. The pictures are

geo-referenced and display at the location the inspector was standing when the photos were taken. Note that only the airports inspected in 2012 have photos to display in AirView, since previous inspections did not utilize cameras with geo-reference capabilities. If geo-reference photos are available for an airport, they are represented by red dots at the location of the photo. Click on the red dot and the image will appear, as depicted in the next figure.
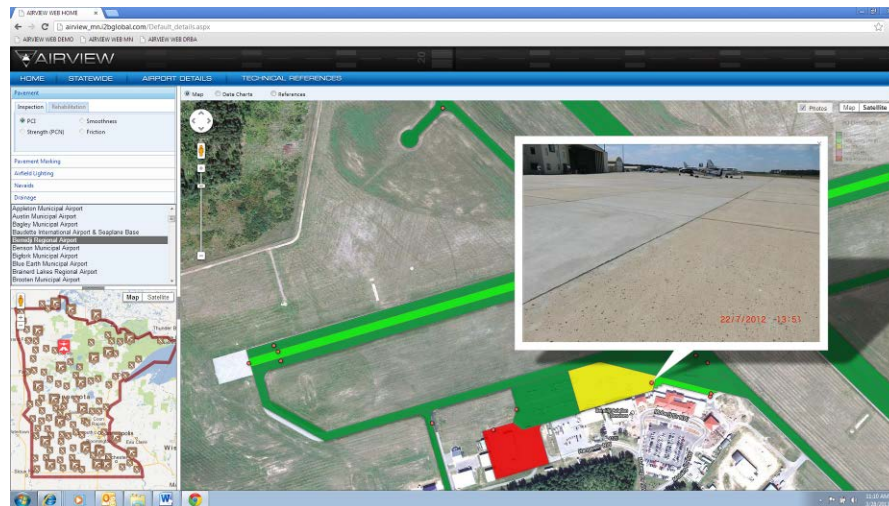
Airport Details view for Bemidji Airport with photo selected.

8. If you left click a section with the mouse, the information box pops up to display data for that section, as shown below.
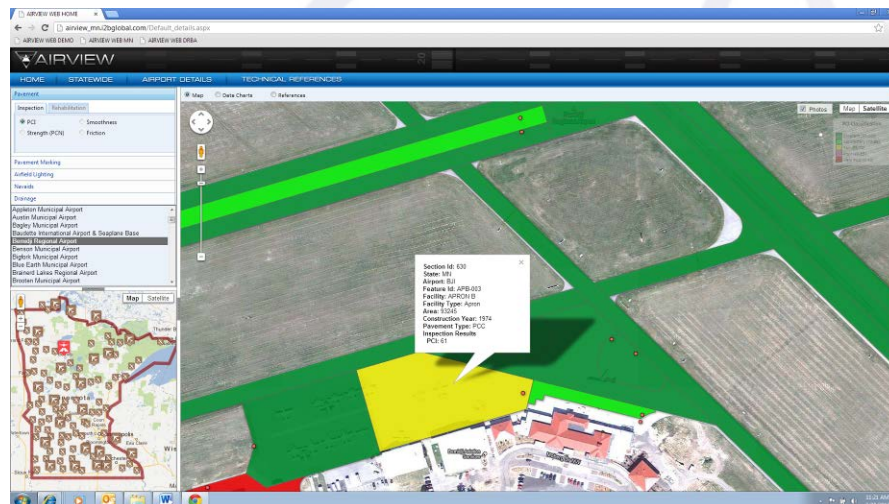
Airport Details view for Bemidji Airport with info box displayed.

9. In the upper left corner of the PCI map view, the user can select one of three locations: "Map," "Data Charts," and "References." Selecting Data Charts will show a set of graphics similar to the ones located in Statewide view, but with data only for the

selected airport.

10. Once in Data Charts, select the Condition tab, then the subsequent Charts tab, and scroll until you see the bubble charts. The main concept of the bubble charts is to identify portions of the airport's pavement network whose combination of condition/size may dictate the timing of future repairs. Often, a larger section in poor condition will trigger repairs before a smaller section of similar condition. The size of the bubble on these charts is in proportion to the area of the pavement branch, section, pavement use, or surface type. The bubble charts also make it easy to identify outlier points, such as sections that have a low PCI at a relatively early age.

11. The Table Data tab provides access to the inventory and condition data for each pavement section at the selected airport. This is the location in AirView to check what year the PCI is based on by looking at the "Inspection Year." Click on any of the column headers to sort the table by that data field. The following figure shows the Table Data sorted by PCI (low to high values) for St. Cloud Regional Airport. Note vertical and horizontal sliders bars become available when the table size becomes larger than the window size.


Table Data sorted by PCI for St. Cloud Regional Airport.

12. The Reference view under Airport Details is currently empty for each airport. As the Final Reports and Plan Set tabs imply, this is a location where airport-specific documents can reside, such as pavement reports, geotech studies, construction plans, and the like. Document files, or links to these files, can be incorporated with future updates to AirView.

13. On the main header, select **Technical References**, then select "FAA Advisory Circulars," which will provide a list of links to various pavement-related Advisory Circulars. The user can select one of the links to access the FAA website, which will open as another tab in Google Chrome. Similarly, the "Technical Resources" tab provides links to various

APPLIED RESEARCH ASSOCIATES, INC.

research-oriented documents. To return to the AirView site, simply click on the AirView tab again. The "Specifications" drop-down lists does not currently have any links in Minnesota AirView but can easily accommodate items if MnDOT desires to associate other reference material. The following figures show the list of links to various FAA Advisory Circulars and Technical Resources.
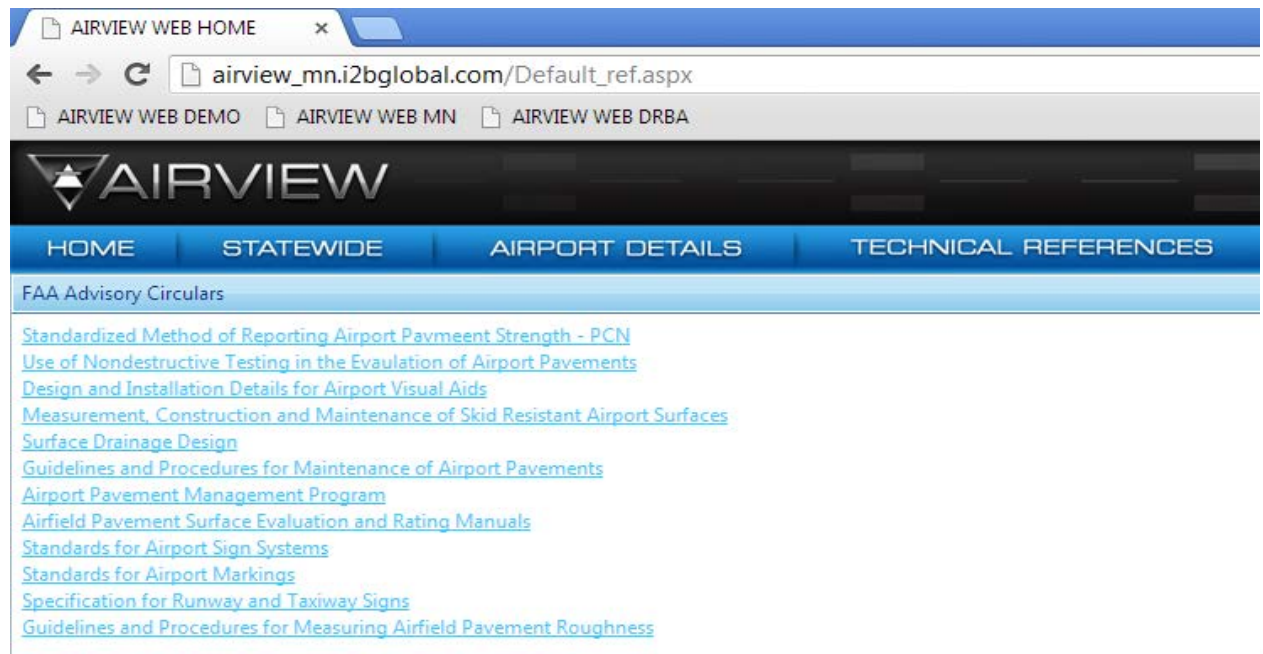
View of FAA Advisory Circulars linked through AirView.
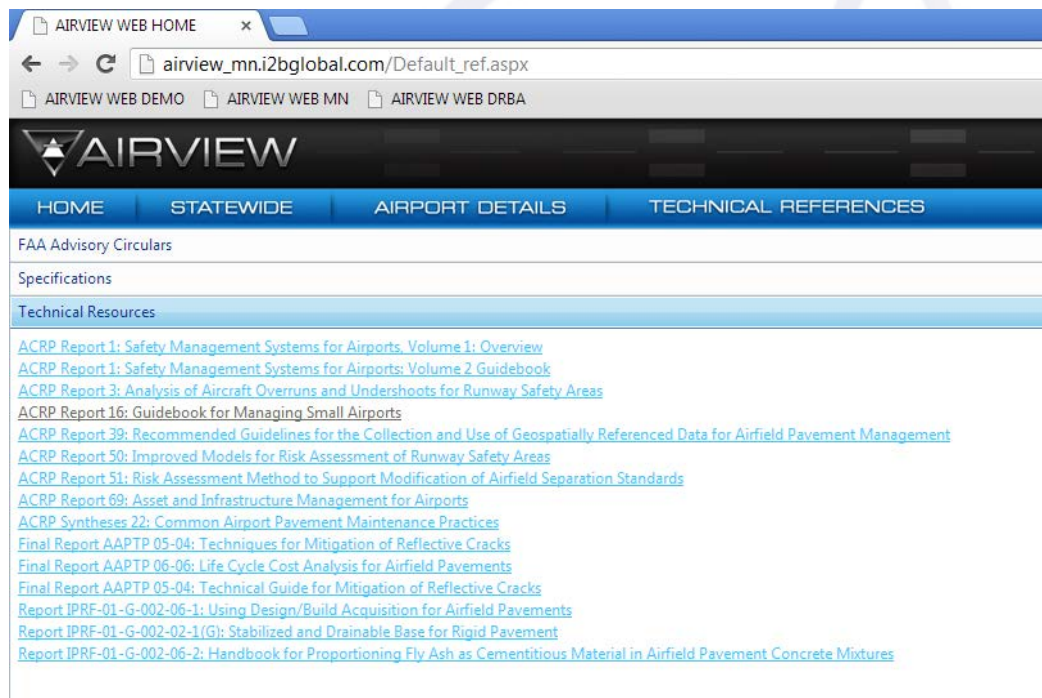
View of technical resources linked through AirView.