

Tablet PC Annotation System (TPAS™) used for Documentation of Wind Turbine Blades and Towers

Vertical Access (VA) is prepared to apply our staff expertise in documentation and non-destructive investigation to the inspection and evaluation of wind turbine towers and blades. One aspect of VA's inspection services is our unique computer-based system of documentation, called TPAS.™ VA's Tablet PC Annotation System (TPAS™) allows on-site annotation directly in AutoCAD using tablet computers and digital still and video cameras. With this system, existing conditions data are noted graphically in AutoCAD, facilitating interpretation and diagnosis of fault patterns and failure mechanisms. In addition, numerical data pertaining to the faults identified, such as crack length and area of erosion are also recorded, in attribute tag format.

TPAS™ combines the utility of the AutoCAD program commonly used by designers, operations and maintenance managers and facilities directors with customized AutoLISP programming to streamline

quantity measurements and photographic documentation. Among the features employed using TPAS™ that are native to AutoCAD are block libraries, blocks with attribute tags, AutoCAD design center, selective display of layers within viewports and attribute extraction to spreadsheet or database programs. To improve TPAS™ functionality, VA has integrated several customized tools into AutoCAD using AutoLISP programming. Custom programming developed by VA provides enhanced automation to the process of recording

conditions by calculating the lengths and areas of conditions drawn and inserted into the AutoCAD drawing and by linking digital photographs, video and AutoCAD data blocks to automate the process of photo capture and cataloging.

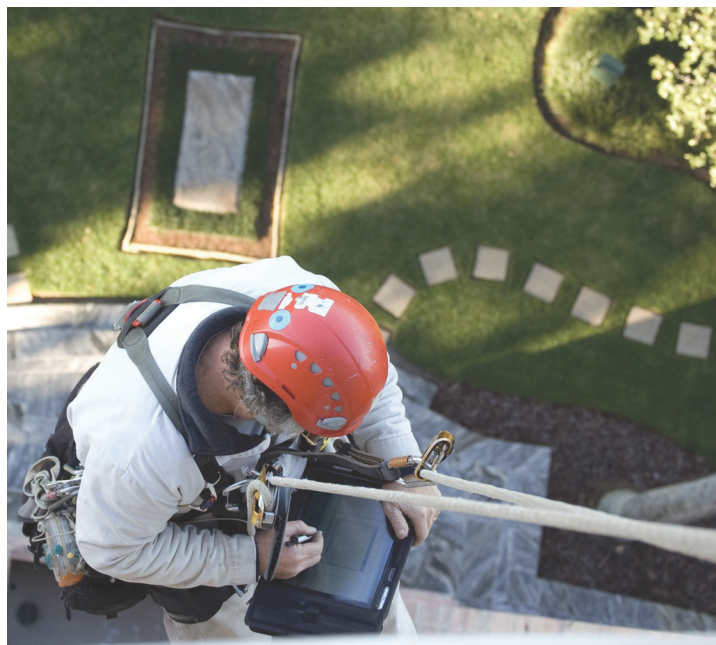
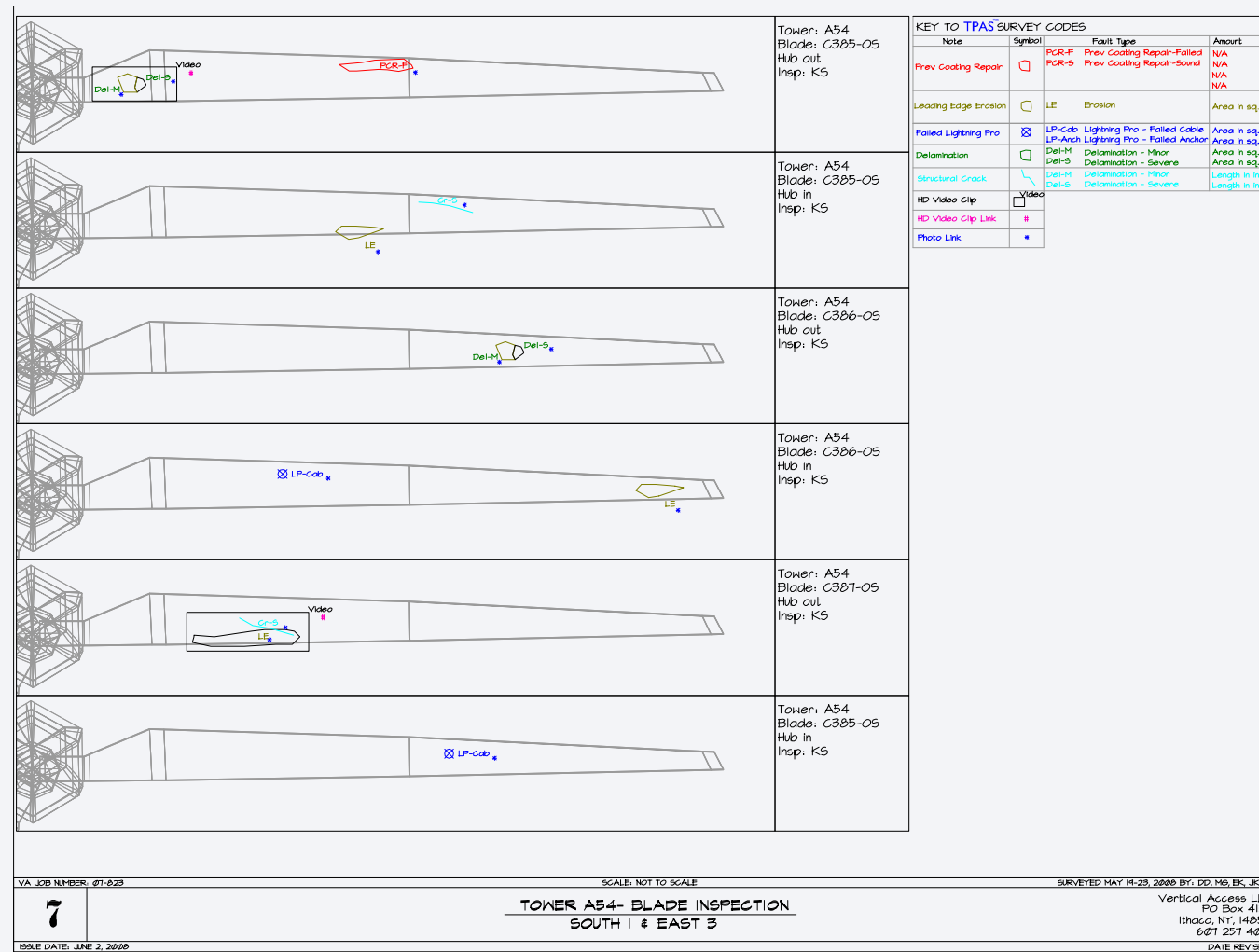
VA has successfully applied TPAS™ to the documentation of buildings and structures ranging from Independence Hall in Philadelphia to the Canadian Pacific Railway Bridge over the Niagara

River. Over the course of these projects and many others, VA has refined TPAS™ codes and programming and continues to evaluate its equipment, in a constantly evolving process that will continue in an effort to provide the best project deliverables possible.

More information on the TPAS™ system is found on our website at www.vertical-access.com/tpas.html and in published articles including:

→ James V. Banta, Kent Diebolt and Michael Gilbert, "The Development and Use of a Tablet PC Annotation System for Conditions Surveys," *APT Bulletin* 37 (2-3, 2006): 39-45.

→ Kent Diebolt, James V. Banta and Charles Corbin, "Direct Digital Input of Façade Survey Data Using Handheld Computing Devices" *Building Façade Maintenance, Repair and Inspection* ASTM STP 1444, J. L. Erdly and T. A. Schwartz, Eds., ASTM International, West Conshohocken, PA, 2004.



Mike Gilbert employs TPAS™



TPAS™ hardware: Tablet and digital camera