

TPAS hardware: tablet and camera



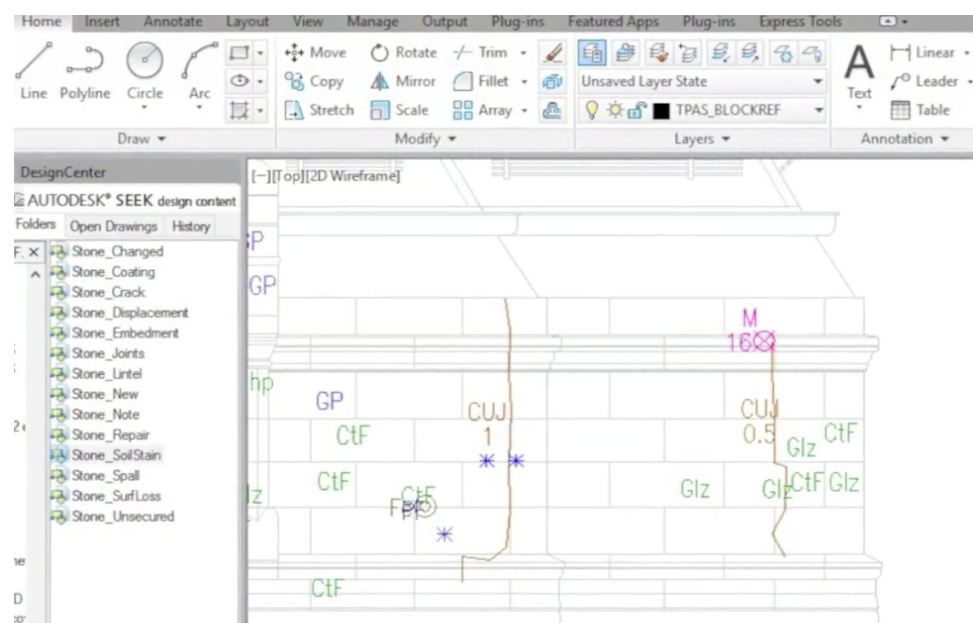
TPAS in the field

Successful repair or rehabilitation projects depend on the efficient collection of data during the discovery phase. Because final decisions are made based on the evaluation of existing conditions and quantities, the documentation of these conditions must be reliable and in a format that is usable by the entire project team. TPAS®, the Tablet PC Annotation System, was developed by Vertical Access for direct-to-digital documentation of existing conditions, streamlining the collection of accurate survey data and providing enhanced analysis of survey results.

TPAS uses customized AutoLISP programming to integrate quantity measurements and photographic or video documentation within an AutoCAD drawing. TPAS users input both graphical and numerical data directly into AutoCAD, on site, using tablet computers, digital cameras and other diagnostic tools. Customizable block libraries of material conditions ensure consistency among surveyors and compatibility with project nomenclature.

Digital photographs are automatically renamed and hyperlinked directly to corresponding annotations on the AutoCAD drawing. The direct-to-digital format eliminates transcription errors and reduces office time spent producing deliverable documents.

TPAS automatically calculates areas and lengths of conditions that are drawn with lines or boxes. Other numerical data, such as crack width or depth of surface loss, are also recorded. This data is easily exported to Excel and other database applications, streamlining the production of cost estimates and bid documents.



Annotated AutoCAD drawing

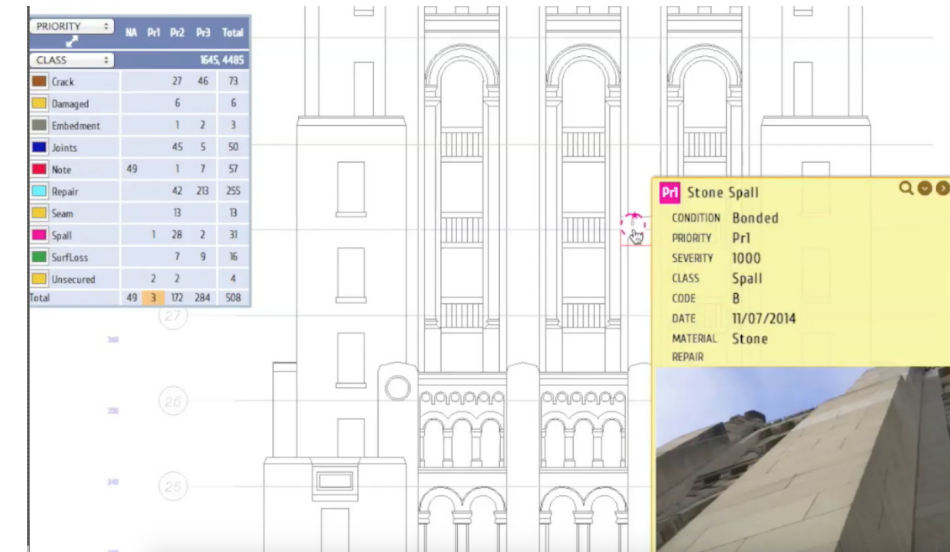
TPAS employs several features that are native to AutoCAD, including block libraries, attribute tags, design center, layer management, and attribute extraction to spreadsheet or database programs. To improve TPAS functionality, VA has integrated several customized tools, providing enhanced automation by calculating the lengths and areas of conditions, hyperlinking digital photographs to text annotations, and automating the process of photo capture and cataloging.

### TPAS deliverables include:

- AutoCAD drawing (DWG) file with hyperlinks to condition photographs, videos, and NDT data.
- Annotated drawing (PDF) file with hyperlinks to condition photographs.
- Layer management in DWG and PDF for analysis of faults and patterns.
- Full size JPG files of all survey photographs.
- Microsoft Excel (XLS) of extracted survey quantities.

TPAS drawings, data, photographs, and video can be also be uploaded to a cloud-based Web Portal for interactive, collaborative analysis of survey results in visual and numerical formats. The Portal can be accessed from any web-connected device, without the need for specialized software, facilitating data-sharing among multiple project team members.

VA has completed dozens of large-scale survey projects using TPAS, including the Conrad B. Duberstein U.S. Bankruptcy Courthouse in Brooklyn, NY and the tower of Independence Hall in Philadelphia. Over the course of these projects and many others, VA has refined the TPAS software and hardware in a constantly evolving process that is part of our commitment to provide the best project deliverables possible.



### Web portal

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

- Kelly Streeter, P.E., "Technology Meets History", Applicator, Late Summer 2013
- Kelly Streeter, P.E., "Information Technology for Building Documentation," APT Bulletin 41 (4, 2010): 33-38.
- 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.

