

Poster Proposal for 2012 3D Digital Documentation Summit, Presidio, San Francisco, California

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Mortaring the Gaps: The Need to Supplement Laser Scan Data in HABS Documentation Projects

The Heritage Documentation Programs proposes to present five posters that speak to the oral presentation. The posters will describe the steps from data acquisition at the site to the various post-processing methods employed to generate models in CAD. Our data collection efforts are guided by our need to unearth not only dimensional data, but also interpretive data that reflect history, significance, and patterns of use and construction. In examining various projects from each of our three programs, (the Historic American Buildings Survey, the Historic American Engineering Record, and the Historic American Landscapes Survey), we intend to show several different approaches to incorporating laser scan data into the creation of an archival record that meets the Secretary of the Interior's Standards. These workflows vary based on the type and scale of historic resource being documented. In these processes it is often necessary to supplement point clouds with other data--some collected by hand, some derived from other resources and independent research. The post-processing of point clouds presents its own challenges. Software used may excel at certain tasks, while falling short at others. Sometimes this can be remedied by hardware upgrades, but often times the sheer size of the datasets (point clouds) is just too burdensome for the software itself. Educated choices must be made in both the collection and processing of laser scan data when producing documentation to the Secretary's standards.

The HABS poster will discuss the use of laser scanning in relation to the documentation of historic buildings. When HABS uses laser scanning in its projects, it is in conjunction with more traditional methods of collecting data. We use the ScanStation 2 frequently in our field work, and our familiarity with the machine and its strengths and limitations as a piece of long-range surveying equipment allows us to quickly assess whether a hand-measurement of some kind is preferable to laser scanning. This is generally for one or more of the following reasons: because traditional techniques produce a higher quality and clarity of information, because they allow the data to be collected more quickly and efficiently, because the resulting data requires less processing or manipulation in the office, or because of issues of limited access.

For example, scanning often presents difficulties in determining the profiles of molding and door and window jambs due to poor edge definition. The use of a molding comb [fig. 1, fig. 2] is a fast and inexpensive way of capturing this information, while giving the user the opportunity to interpret the original condition of the detail through layers of paint. Digital photography is often used in areas of sculptural relief, where a laser scanner may fail to provide a high enough resolution to ascertain minute changes in elevation [fig. 3, fig. 4]. The result is highly legible and easy to decipher in CAD. Laser

scanning building interiors divided into many rooms is at this time still impractical and time consuming; measuring rooms by hand remains the most efficient way to gather the needed dimensions. Some spaces are too confined to position or operate the laser scanner from; in these instances, there is little choice but to document these areas by hand.

High definition laser scanning has proven useful, and the technology is now an important tool in HABS' toolbox. It is not yet, however, the *only* tool. It remains critical to have skilled individuals on the ground that can make decisions regarding the optimal methods for recording a given structure efficiently, accurately, and intelligently--decisions that have a calculable impact on the strength of the interpretive documentation that results.



Figure 1

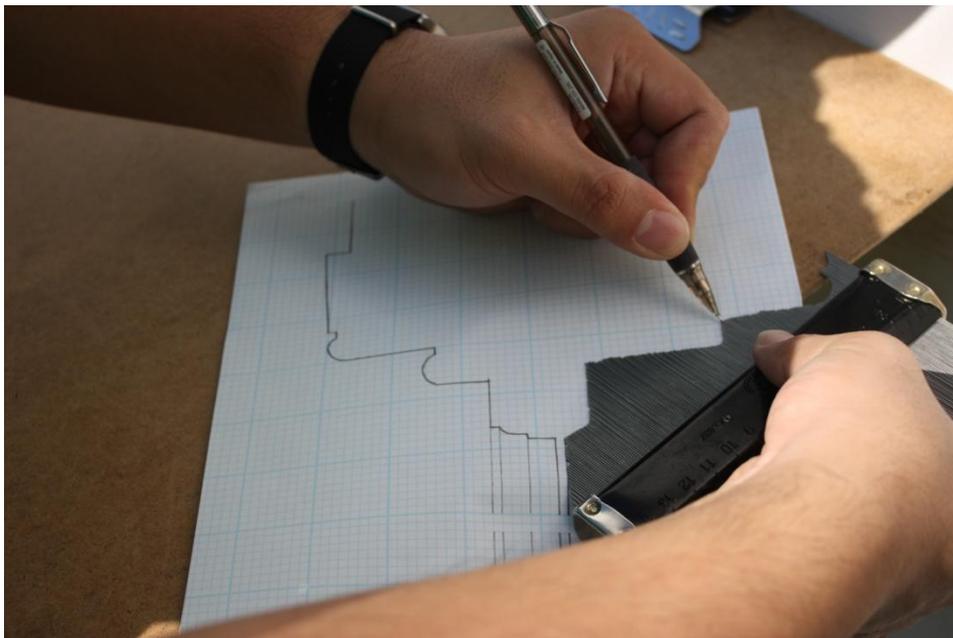


Figure 2

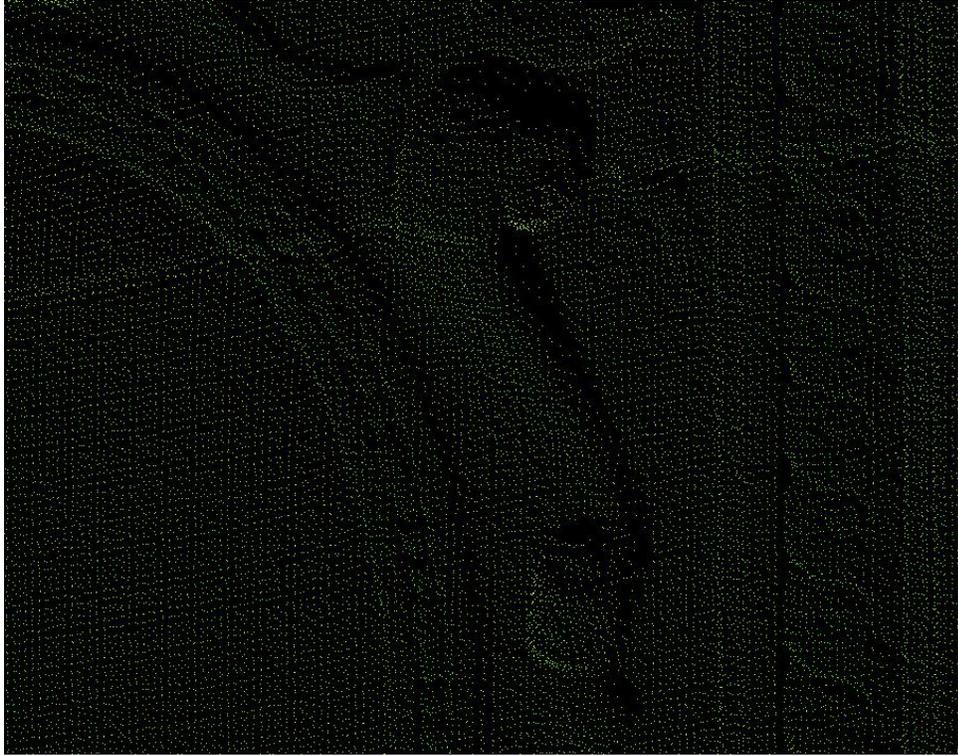


Figure 3



Figure 4