



High definition scanning: A high tech tool for the real estate industry

November 26, 2007 - Spotlights

High Definition Scanning (HDS), a new technology which uses a laser scanner to reproduce exactly what it sees in three dimensions, offers building owners and real estate professionals a host of benefits. The result of an HDS survey appears to be a digital photograph but is actually a reproduction of hundreds of thousands of data points packed closely together.

The new technology offers significant possibilities for the real estate market as well as structural engineers, architects, facade restoration firms and others who produce as-built drawings. Using HDS, a freestanding office building can be scanned, and the image will capture every feature of the facade as well as the adjacent landscape and street areas. Spaces within a building can be scanned as well, providing three-dimensional views that can be manipulated and rotated a full 360 degrees. HDS 3-D files can then be imported into any computer-aided design or 3-D modeling program.

There are numerous applications. Entire streetscapes can be reproduced. All of the buildings, sidewalks, curbs, trees, street furniture, lane striping can be captured. Elevations and cross-sections of the area can be viewed or imported into CAD software to produce topographic maps. Window elevations and decorative details are all captured and viewable.

HDS is an important new tool for building renovation, restoration, and historic preservation, since many older buildings have inadequate as-built drawings. With this technology complete as-built drawings can be re-created cost effectively. HDS also will allow building inspectors to perform visual inspections in a fraction of the time it would ordinarily take, and with greater detail. Another advantage is that HDS can accurately determine dimensions from the interior to the exterior of a building, which greatly facilitates the installation of wiring, fireproofing and HVAC equipment.

Scanning the interior of a building and incorporating those images with the exterior, allows an owner, tenant, or broker to virtually walk through the front door and proceed floor by floor, getting a guided tour of the entire building in precise detail. The scanned reproduction is dimensionally perfect, giving exact room dimensions as well as the locations of all features within a fraction of an inch. Furthermore, when an interior is scanned, all of the other items in a room are defined, including switch plates, outlets, furniture and lighting.

HDS can also be used to scan mechanical rooms to precisely locate and position piping, plumbing and heating units so mechanical engineers can custom design equipment that fits into existing spaces. Ceilings can be scanned to locate sprinkler systems and conduits, enabling new equipment to be positioned or manufactured to fit.

Two recent applications of HDS technology by Stantec demonstrate its appeal. HDS was used to create as-built drawings for Vanderbilt Hall, a 12,000 s/f, multi-use space adjoining Grand Central Terminal's main concourse. Built in 1913 and designated as a National Historic Landmark in 1976, Vanderbilt Hall, with its five monumental chandeliers, marble floors and decorative coffered ceilings,

is in the midst of a comprehensive preservation and restoration effort to restore the space to its former grandeur.

Stantec managed and participated in a design plan by producing HDS documents of existing conditions in a fraction of the time and with much greater detail and accuracy. HDS was used because the architect wanted a complete visual image of the Caen stone walls, marble wainscot and detailing and the pink marble floor. The dimensions and detailers were gathered remotely so spatial relationships of finishes could be ascertained for an accurate restoration.

While original drawings exist for Vanderbilt Hall, they are probably incomplete. As a result, HDS was chosen because it is not only more precise when it came to measuring existing conditions, but the technology created a complete design from which 3-D point files were used to produce a 3-D image or model.

Stantec has also been engaged to provide scans of the first, second and third floors at City Hall in New York, as part of a project to retrofit the City Council chamber, Mayor's office and other spaces with a new heating and cooling system. HDS technology was able to deliver scans of spatial relationships between floors vertically, and rooms horizontally, in areas where access is limited and security is high. The results will enable HVAC engineers to determine exactly how much space is available and where ducts, conduit, vents, piping, and HVAC equipment can be installed.

Because City Hall was completed in 1812, had its exterior named a landmark in 1966 and the entire building designated a landmark in 1976, the retrofit must be done in a way that is respectful of its historic context. This means enclosures must resemble the existing building or be concealed under wood joists in the floors. In other words, HDS is helping to identify spaces in City Hall where HVAC equipment, vents, ducts, conduit, plumbing and piping can be located.

HDS is cutting edge technology. It is already changing the way real estate professionals, owners, developers, architects, engineers and other building specialists do their work better.

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