

Best Practice – Paperless Office – Electronic Imaging and Retrieval

Today, many individuals and companies recognize the need to protect our environment by using our natural resources smartly and to recycle whenever possible. However, have you ever considered going paperless?

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In today's age of e-mail and digital drawing files, one would think that we could exist without paper, but a look around many building department offices finds that we routinely rely on multiple copiers and printers in our daily operations. And we expect that our clients do the same by requesting and receiving multiple copies of drawings and specifications for concurrent review, re-review, approval and archiving.

The United States Department of Housing and Urban Development (HUD) regulates the design and construction of all manufactured homes built for installation anywhere in the United States. Manufactured homes are by far, the largest non-subsidized form of affordable housing in the nation. In 2007, manufacturers built nearly 100,000 manufactured homes that accounted for approximately 10% of all new home starts. In previous years, manufactured homes accounted for nearly 30% of all new home starts nationwide. More than 8 million manufactured homes have been built since 1976 when HUD took over regulation of the design and construction of all manufactured homes nationwide.

Under contract with HUD, IBTS assists HUD in monitoring the manufactured housing industry. In part, it does this by evaluating the performance of design approval and inspection agencies, or "building departments" of the manufactured housing industry, responsible for overseeing the design and production of every one of these homes. Under this contract, IBTS also maintains copies of every design for every home ever built under the HUD program since 1976. As you can imagine, this can amount to a lot of paper.

Until the mid nineties, IBTS did as many building departments do – they requested, cataloged, reviewed, and maintained a lot of paper. However, since then, IBTS has worked with the manufactured housing industry, recognizing that much of the industry was preparing and submitting designs, calculations, and test reports in electronic format. IBTS capitalized on this and developed a system to receive electronic documents that could be submitted in one of many different formats.

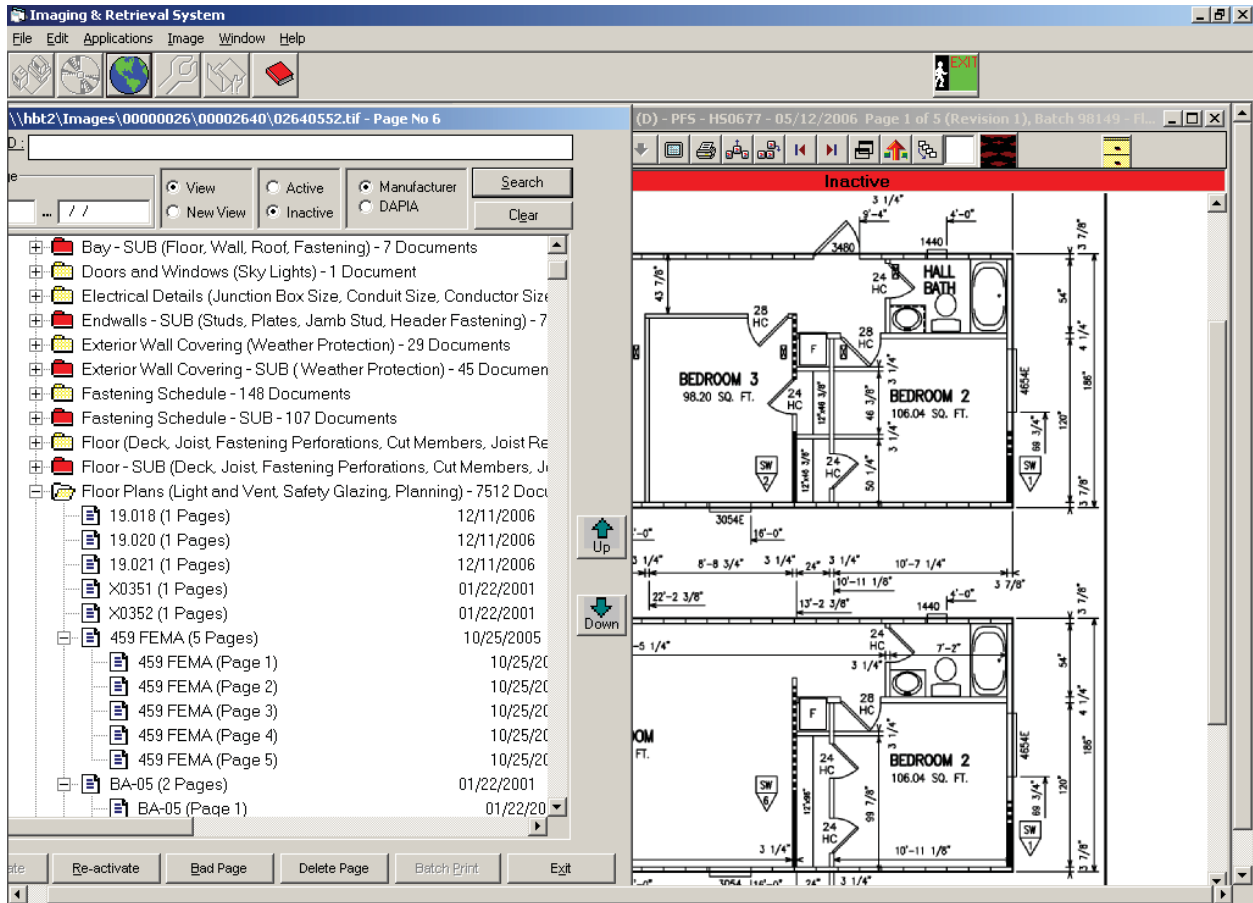
Challenges

To be successful in replacing the time-proven paper library, the electronic imaging and retrieval system had to:

- Index and store plans for more than 10% of all new single-family homes built every year.
- Accommodate receipt of drawings in many different formats from many different agencies and remote locations.
- Automate much of the indexing associated with maintaining electronic files.
- Maintain manufacturers' unique document naming and numbering conventions.
- Bring consistency between different manufacturers' naming and numbering conventions.
- Be accessible to multiple users in real time from desktop computers.
- Be able to archive or store drawings that are not currently in use but may be necessary for future needs.

IBTS Solutions

To electronically maintain and be able to readily retrieve designs for 10% of all single-family homes, IBTS had to create a system that was robust and capable of growing with increased demand and updated technology. It did this by designing the system to accept drawings in nearly any format a builder and/or AHJ used to prepare and approve the designs. It then created an indexing system that maintained the unique document naming and numbering conventions of each builder while also indexing each drawing to a uniform set of criteria that defines what information is presented on each drawing (i.e., structural designs, floor plans, section details, utility system designs).



Benefits

The electronic imaging and retrieval system continues to benefit IBTS and its clients by providing a system that:

- Has grown to warehouse more than 200,000 individual design documents submitted each year and maintain more than 4 million drawings since its inception in 1996.
- Has evolved to take advantage of changes in computer technology.
- Saves time and materials cost by not requiring packaging and postage from industry and eliminating physical space and labor required for storage of paper drawings.
- Provides for efficient design review and simultaneous access to the same designs by multiple reviewers (i.e. mechanical review can be done at the same as plumbing review).
- Allows immediate and searchable access to all drawings, calculations and support information from any computer anywhere in the world, of course with proper permissions. This allows IBTS's clients, engineers and field inspectors simultaneous access to the drawings, all without having to look for or touch a piece of paper.

The bottom line is that using existing and developing technologies, IBTS has become more efficient in its ability to maintain and use huge amounts of design information, while at the same time saving money and natural resources. Recognizing that every design that comes to a building department in paper format is generally copied and maintained by the designer, engineer, owner, etc. and that changes require additional copies, IBTS estimates that since its inception, its electronic imaging and retrieval system has saved our environment as follows.

- Total Energy 2 billion BTUs
- Greenhouse Gases 285,000 pounds of CO₂ equiv.
- Wastewater 954,000 gallons
- Solid Waste 114,000 pounds
- Paper not used 100,000 pounds

These conservative estimates do not include the savings to our environment associated with the transportation of hard-copy drawings to numerous locations via, plane, train, truck, or automobile.

Environmental impact estimates were made using the Environmental Defense Paper Calculator. For more information visit <http://www.papercalculator.org>.