

INNOVATORS AND INNOVATIONS

WHAT CHANGES CAN WE ANTICIPATE IN THE FUTURE ABOUT HOW WE WILL LIVE?

SOME PEOPLE HAVE THE ABILITY TO TAKE A DIFFERENT LOOK AT IMPORTANT PROBLEMS AND TO BREAK BEYOND CONVENTIONAL WISDOM TO INTRODUCE NEW THINKING AND PRODUCTS THAT ULTIMATELY WILL AFFECT HOW WE WILL LIVE. MEET THREE VERY DIFFERENT KINDS OF TRAILBLAZERS AND EXPLORE THEIR IDEAS.

HARVEY'S PLUMBING & HEATING

PIONEERING 3D IMAGING FOR VIRTUAL DESIGN & CONSTRUCTION



Since the millennium, homes have become far more complex in construction techniques, design, and energy performance. Mechanical systems in a new home are a major component of the build with expenses reaching upwards of 20 percent of the entire cost for the home. Harvey's Plumbing and Heating in Bozeman is utilizing 3D imaging with virtual design and construction to help lower build costs and to better protect their clients' investments.

Bob Harvey, owner of Harvey's Plumbing and Heating, utilizes the absolute latest in technology to further his business. Harvey's is introducing their virtual design processes to partners in mechanical design and construction by showing how they maximize project efficiencies and aid homeowners in the understanding of their systems.

For almost three decades, the story of Harvey's family business has mirrored the advances in the building world. "My dad started the business and he was the whole operation. He did everything and worked 16-hour days," Bob Harvey recalls. "After graduating from Montana State University in Construction Engineering Technology and working for a few years, I joined my father's firm in 1990." Harvey's has since evolved from a one-man operation to a full mechanical contracting firm with over 40 employees in six divisions: plumbing, HVAC, fabrication, hydronics, mechanical design, and service. As building trends move towards bigger spaces with smart-home systems, Harvey's has expanded to meet their customers' needs while using the latest technologies.

Brian Nickel, Harvey's Design Division Manager, speaking about why their design processes are important to Harvey's and its partner homebuilders, explains, "Technology and virtual design enhances communication with building partners and technicians, and it creates documentation for homeowners to manage their homes in the future."

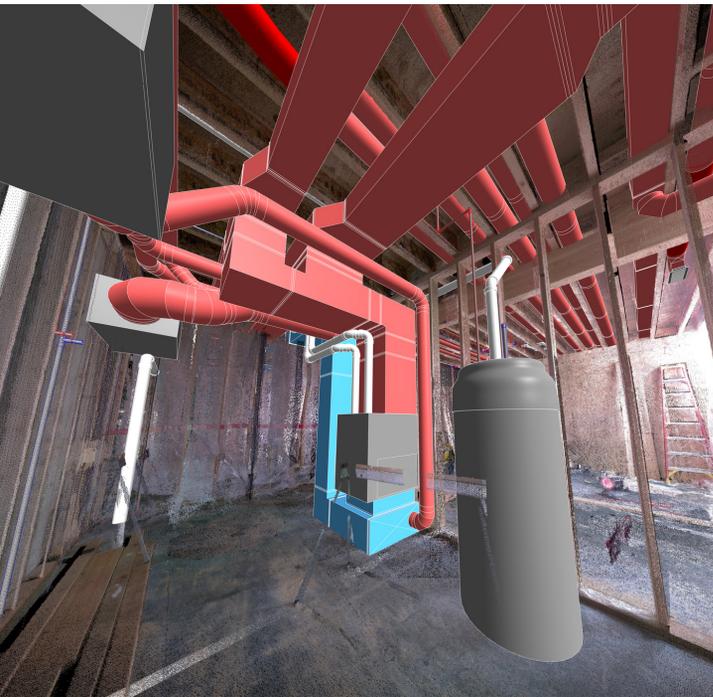


"TECHNOLOGY AND VIRTUAL DESIGN ENHANCES COMMUNICATION WITH BUILDING PARTNERS AND TECHNICIANS, AND IT CREATES DOCUMENTATION FOR HOMEOWNERS TO MANAGE THEIR HOMES IN THE FUTURE."

-Bob Harvey, Owner, Harvey's Plumbing & Heating



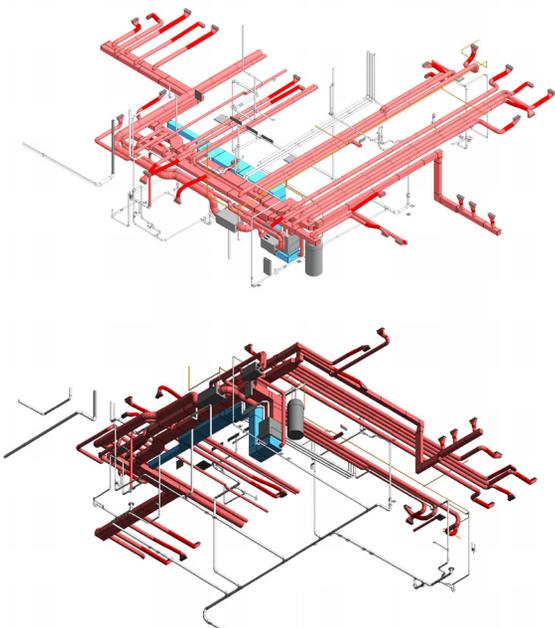
Harvey's has developed an integrated project delivery process using the Leica BLK 360 laser scanner. The design team works closely with architects, engineers, and contractors to select the most efficient mechanical system for the project. Next, they scan the existing conditions of the job site and create a three-dimensional digital model of the space that is accurate within an eighth of an inch. The small, lightweight laser scanner takes only minutes to gather data, which is managed by ReCap Pro software. Using this software, designers can easily manipulate the data to create digital drawings of the mechanical systems, allowing for precise imaging of as-built conditions. Also, the Leica laser scans are compatible with other commonly used software programs, making it easy to share data with architects and general contractors. "This added project coordination is eliminating prefabrication discordancy, which normally would lead to delays and cost overruns. We have everything in place to prefabricate off-site, which reduces waste and lowers the carbon footprint of the project," says Harvey.



Having a true image of the space is valuable not just for new construction and installation, but for retrofits and remodels as well. The laser scans provide the ability to confirm that system components will properly fit in a desired area, check for any unanticipated objects behind walls, and offer advanced project coordination to reduce costly delays. The homeowner also receives the digital information, as Bob Harvey notes. "Instead of receiving a cumbersome 1,000-page binder, we present a fully digital document. By including the scan point data, the homeowner knows where every component of the system is located for service or repair and the part number."

Utilizing the Leica BLK 360 scanner for mechanical system design is a new approach to the technology, even in the eyes of the manufacturer. Leica has invited Brian Nickel to present Harvey's process and its benefits at this year's Hexagon Live event. Brian notes, "No one in the nation is using the technology this way," but he is confident that this method will positively affect how things are done throughout the industry.

Harvey's believes that by introducing this new use of technology in the trades, they will also introduce the trades to the next generation. Brian Nickel teaches a drafting portfolio class at Gallatin College and serves on the college advisory board where his experience has reaffirmed this belief. "We all recognize that young people are no longer interested in going into the trades and the trades are dying off," Harvey observes. "We believe that 3D design will interest a new labor source of people who are accustomed to using technology and who will be more comfortable learning and understanding systems through virtual design."



It's interesting to consider all the changes since Bob Harvey joined his hard-working father in business almost 30 years ago. Even more interesting to consider is how different the building process will be in the future with laser scanning for virtual design and construction. Harvey's remains at the forefront of these exciting changes. ■