



TECHNICAL SALES INTERNATIONAL

the next generation of software



WALSH MECHANICAL CONTRACTORS TAKES THE 'LEED'

USING MANUFACTURING BIM TOOLS FROM TSI

Photo courtesy of Lend Lease

COMPANY BACKGROUND

Walsh Mechanical Contractors is a full service, commercial mechanical contractor serving Eastern New England, most visibly in and around the Boston area. Based in Abington, Massachusetts, Walsh Mechanical Contractors has nearly a century of experience serving a variety of project types and sizes. Their industry knowledge and range of client services have established them as one of the area's most respected specialty contractors.

Walsh Mechanical's ability to innovate while creating successful solutions stems from their superb planning and state-of-the-art equipment and systems throughout their operations. Using the manufacturing BIM software from Technical Sales International, Inc. (TSI), Walsh Mechanical's Estimating and CAD departments are able to work closely with Fabrication and Project Management from a single, centralized database which ensures

projects are completed properly and promptly from the initial bid proposal to the turnover of the building to the owner. The result of that software interoperability is quality system design, fabrication, and installation.

As an innovative leader in its industry, Walsh Mechanical Contractors is recognized for its design-assist capabilities, cutting-edge BIM software, machine shop technology, transportation operations and efficiently coordinated field work. Its specialty is the ability to manufacture and install all types of quality ductwork, including the most environmentally responsible system of air distribution, spiral ductwork. Because spiral duct, including flat oval, exhibits a very high level of airtightness, Walsh Mechanical can guarantee a line of spiral duct that meets or exceeds the highest air leakage standard recognized by SMACNA.



TECHNICAL SALES INTERNATIONAL
the next generation of software

8310-1 N CAPITAL OF TX HWY • SUITE 200 • AUSTIN, TX 78731 • PHONE 1.866.493.6337 • FAX 1.512.532.7400

WWW.TSI-SOFTWARE.COM



Underwriters Laboratories

Additionally, Walsh Mechanical was the first to receive the Underwriters

Laboratories (UL) third-party certification for the listing and labeling of sheet metal air duct under the UL's Sheet Metal Air Ducts category. This certification assures the fabrication of superior duct systems; it provides a higher degree of confidence to the engineering/architectural community, via an independent third-party, that duct is constructed to the industry standard; it provides a continuing education process for participating firms; ensures that an efficient, low leakage air distribution system is constructed; and provides a means for identifying sheet metal duct that is compliant with code.

THE CHALLENGE

In 2010, Walsh Mechanical was hired as the mechanical contractor for the Shire Human Genetic Therapies (HGT) building expansion in Lexington, MA. The Lexington Technology Park Building 200 (B200) project was designed with office and laboratory elements to meet the needs of a research and development building.



Shire HGT's Lexington Technology Park Bldg 200

(Photo courtesy of Lend Lease)

The building is a three-story, 190,000 gross square foot (GSF) facility housing clinical and commercial

manufacturing, warehousing, central utilities and administrative offices. The building is organized into two wings: a north wing that includes the office functions (approx. 60,000 GSF) and a south wing that includes the laboratory functions (approx. 111,200 GSF) with a lower level accommodating building support space.

The project goal was to achieve a "Leadership in Energy and Environmental Design" ("LEED") Silver Rating and the building was designed to extend and complement the existing site buildings both functionally, including energy savings, and aesthetically by enhancing the occupants' work place environment with indoor air quality (IAQ) and noise reduction.

THE PROCESS

To reduce waste in the design and construction process and eliminate unnecessary effort, the entire project team—from architect to fabrication—utilized virtual construction coordination using a sophisticated set of BIM tools and an integrated project delivery (IPD) methodology. A fully coordinated virtual model was developed in October 2010—releasing fabrication-grade drawings and accurate quantity take-offs for pre-fabrication and bulk procurement. The model represented a shared effort between the owner, architects, engineers, trade partners and construction teams. Walsh Mechanical contributed to the Integrated Design Assist concept with six full time CAD personnel contributing over 4,000 CAD man-hours.

Walsh Mechanical provided the full mechanical services with their in-house piping and sheet metal capabilities. Their model-based prototyping process, enabled by **manufacturing BIM software from Technical Sales International**, streamlines and improves the quality of their internal shop drawings and fabrication production.





TSI's **Managed Content** libraries allow Walsh Mechanical to draw to fabrication-level detail from the start of the design phase and then, using the same manufacturing BIM software, send the ductwork layouts of a model directly to the shop machines for flawless fabrication of



the spiral duct components. Additionally, their online field coordination capabilities—being able to respond to and implement job-site changes quickly and accurately—was a huge success made possible by TSI's integration of 3-D modeling software with on-site Trimble units.

“Using manufacturing BIM software from TSI allowed us to almost totally eliminate waste on all systems using the spiral duct,” said Tom Downey, BIM Manager at Walsh Mechanical. *“This is because having an accurate model allows us to fabricate all spiral duct to the exact lengths required, rather than standard lengths to be measured and cut in the field.”*

LEED RATING CONTRIBUTORS

Because the entire mechanical system was evaluated on **energy savings, air quality and noise emissions**, all of which contributes to the LEED rating, spiral ductwork was chosen for its inherent qualities: airtightness, energy savings, comfort, sound attenuation, lower space

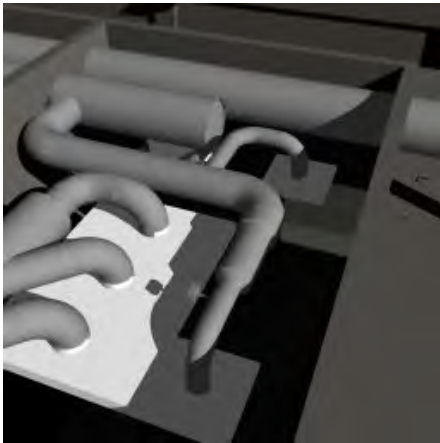
requirements, quicker installation, delivery and storage, and certifiable guaranteed performance.

As a SPIDA member, Walsh Mechanical led the design assist team in implementing spiral duct design into the project in order to take advantage of the benefits. Once the building envelope was optimized, the infrastructure was integrated to fulfill the space's programmatic requirements. These included active chilled beams, heat shift chillers, high efficiency chillers and cooling towers, daylight harvesting, as well as low pressure air handling and distribution design.



Mechanical components can be prefabricated and shipped to the job on flat bed tractor trailers and installed with cranes, thereby reducing field time and exposure to hazardous work conditions around open shafts.





TSI's manufacturing BIM software contributes to on-time delivery of pre-fabricated ductwork.

For instance, chilled beams were used for delivering conditioned air to the lab and office buildings. Walsh Mechanical installed 869 chilled beams with over 13,000 linear feet of spiral duct—all fabricated in their Abington, MA facility—and consistently passed SMACNA Leakage Class 3 requirements.

“We had used the TSI JOB-Site Solutions software and Trimble hardware for our hanger layout on building B400 with such great success that the construction manager suggested that other subs invest in the product to help ensure exact placement of each trade’s work due to the tight conditions,” said Bill Kimball, Project Manager at Walsh Mechanical.

With Walsh Mechanical’s experience and commitment to innovation, the mechanical work in over 190,000 square feet of usable space with 80,000 square feet of lab space was completed in just 12 months. Walsh’s design assist role and 3-D virtual modeling with TSI’s manufacturing BIM software contributed to enhanced planning that allowed for these “on time” deliveries of prefabricated spiral duct, pipe and equipment.

Walsh Mechanical fabricated the spiral duct in their facility, pre-built it into manageable sections, and then containerized these sections in rolling containers for “clean” shipment to the site. Sheet metal duct and piping risers were also fabricated in shop, and shipped to the job on flat bed tractor trailers and installed with cranes, thereby reducing field time and exposure to hazardous work conditions around open shafts.

Notably, fabricated materials were only allowed on sight three days prior to installation, alleviating job site congestion and enhancing job safety. At the height of construction, Walsh Mechanical had 61 men on site and 14 men in their fabrication facilities dedicated to the project and contributed over 60,000 man hours without a single injury.

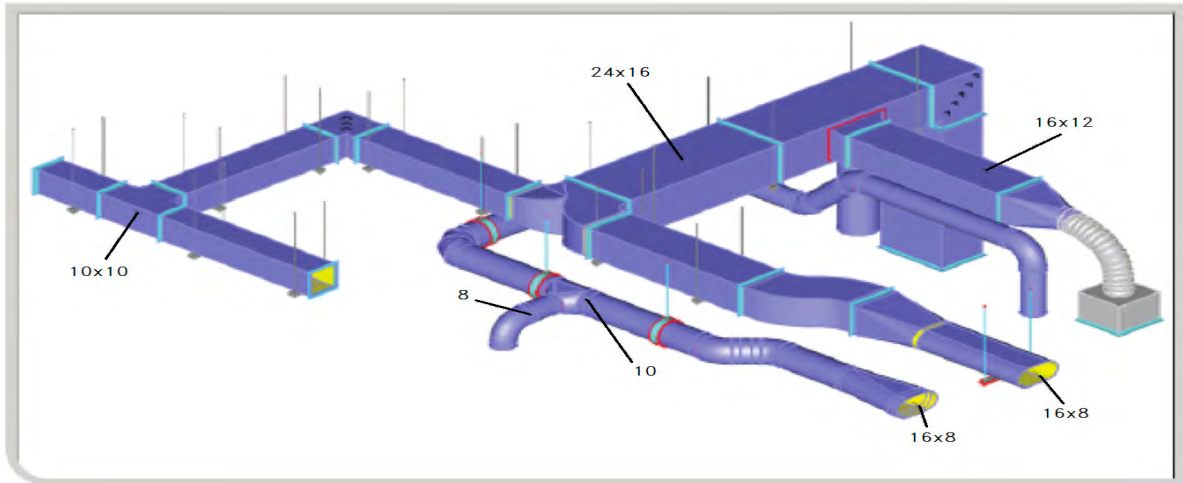
EFFICIENCY AND ACCURACY

Further enabling compliance with job-site restrictions, Walsh Mechanical used TSI’s Job-Site Solutions software and two Trimble Total Station units to install thousands of duct and piping hangers prior to any duct or pipe landing on site. Because of Walsh Mechanical’s demonstrated efficiency and accuracy on the job site, the other project contractors were asked to use the Trimble units as well.



Using Job-Site Solutions, one person can accurately lay out hundreds of points in a single day.

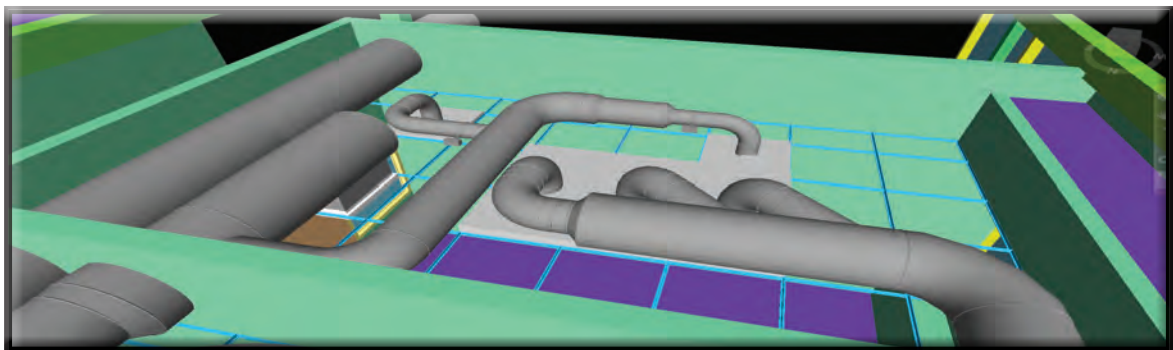
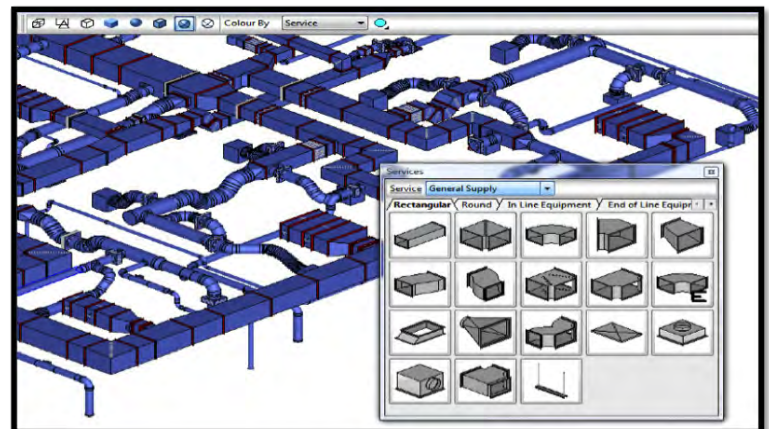




TSI's Managed Content allows you to draw to fabrication-level detail from the start of the design phase.

Although spiral duct comes in standardized sizes (as do the necessary components such as hangers), Walsh Mechanical was able to cut to specificity with its manufacturing BIM software from TSI.

“Having access to the Lindab fitting library through the TSI Managed Content system allowed us to cut and spool sections of pre-fab spiral duct and fittings with complete confidence that the information contained in the model was 100% accurate,” said Tom Downey, BIM Manager, Walsh Mechanical Contractors.



Using TSI's Managed Content, Walsh Mechanical is assured that all parts are BIM-rich with comprehensive attribute sets for accurate and efficient fabrication and installation.



SUSTAINABLE CONTENT

Each individual line item in TSI’s Managed Content database has an extensive set of attributes already attached to it meaning that intelligent data about the designs could be forwarded to anyone in the project.

- Material with weight
- Material cost
- Labor units
- Labor cost
- Manufacturers’ PDF specification sheets
- Dimensional data for prefabrication

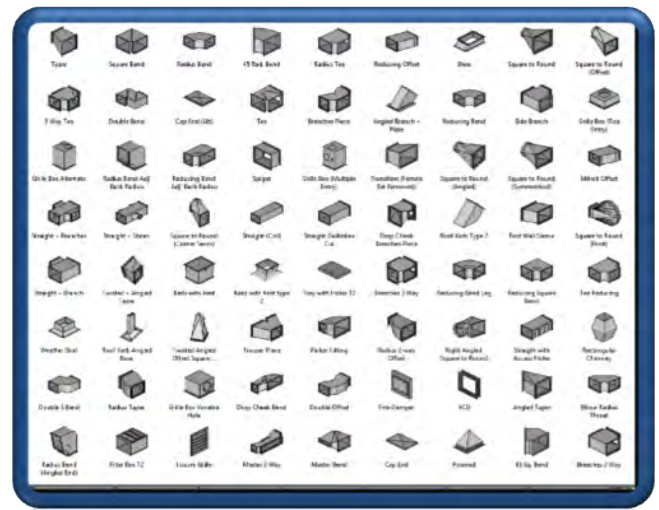
Using TSI Managed Content in Building-Data.net provides Walsh Mechanical with sustainable content to support estimates, procurement, submittal documents, CAD/CAM fabrication, modular pre-fabrication, field layout documentation, staging and as-built documentation. Furthermore, hyperlinked PDF spec sheets are supported for all TSI FAB, CAD and Estimating products, and can be used within AutoCAD and Navisworks.

A WINNING COMBINATION

With Walsh Mechanical’s foresight into the benefits of using spiral duct, the project achieved energy savings from meeting the highest, Class 3 leakage standards, produced improved Indoor Air Quality with more even airflow and comfortable climate control with increased fresh air intake (made possible by the airtight ducts), and the entire HVAC system generates less noise because of the equalized pressure in spiral ductwork.

Walsh Mechanical Contractors’ experience, innovation and sophisticated facilities, the features and benefits of spiral ductwork, and design-to-fabrication BIM software and Job-Site Solutions provided by Technical Sales International, all successfully contributed to the project’s anticipated Silver LEED Rating.

Kimball concluded, *“The combination of our BIM software capabilities from TSI—including the use of the Trimble Total Station with Job-Site Solutions—plus in-house production of our own spiral pipe made for a winning combination. Our investment in this cutting edge technology has allowed us to become one of the most competitive mechanical contractors in our area.”*



TSI’s Managed Content is the world leader in industry standard fitting libraries.



Integrating Project Delivery Since 1918



TECHNICAL SALES INTERNATIONAL

the next generation of software

Building-DATA.Net

MEP CONTENT MANAGEMENT

A Technical Sales International Company

ABOUT BUILDING-DATA.NET

Building-Data.net provides support services for companies implementing BIM software. Our staff is dedicated to the accumulation and organization of information relative to manufactured components. We provide BIM content to mechanical, electrical, and plumbing contractors. The content is designed to support the tasks of installation, manufacturing, estimating and fabrication for customers of Technical Sales International. We look forward to making your BIM experience less complicated.



ABOUT TECHNICAL SALES INTERNATIONAL

Estimate, draw, fabricate and install – TSI provides the manufacturing BIM tools you need to quickly design fully-constructable 3D models with “real-world” intelligent components. The single, integrated system yields speed and accuracy in the construction process, reduces labor costs, increases efficiency and productivity, and improves quality in the shop and on the job site.

Serving clients in the U.S., Europe, Middle East, Africa and Australia, TSI has been named a Top 5000 fastest growing private company for four consecutive years by Inc. magazine. Visit www.tsi-software.com for more information.

UNPARALLELED MANAGED CONTENT DATABASE

TSI Managed Content at www.Building-Data.net is a comprehensive database of real-world pipe fittings and valves and HVAC standard fittings and accessories that no other software can match.

With over 200,000 line items on the dedicated website, component items are always accurate, updated and extensible, so users can be sure they have the right manufacturer-specific information available when designing a building services model.



With the fabrication-level detail of TSI's Managed Content libraries, users can manufacture HVAC components and output pipe components as spool sheets.

Each manufacturer component is meticulously modeled in 3-D for dimensions and likeness, and all of the required information—labor costing, parts costing, submittal, and specification documents—is built into the job, ready for extraction.



TECHNICAL SALES INTERNATIONAL
the next generation of software

8310-1 N CAPITAL OF TX HWY • SUITE 200 • AUSTIN, TX 78731 • PHONE 1.866.493.6337 • FAX 1.512.532.7400

WWW.TSI-SOFTWARE.COM



TECHNICAL SALES INTERNATIONAL
the next generation of software

WITHOUT INTELLIGENCE, IT'S JUST A DRAWING.



Enrich your model with the world's leading Manufacturing BIM Software Tools from TSI. Estimate, draw, fabricate and install – TSI provides the tools you need to quickly design fully-constructable 3D models with "real-world" intelligent MEP components and ductwork. TSI's unique and fully-integrated single-database system yields speed and accuracy in the construction process for reduced labor costs, increased efficiency and productivity, and improved quality – in the shop and on the job site.



TECHNICAL SALES INTERNATIONAL
the next generation of software

8310-1 N CAPITAL OF TX HWY • SUITE 200 • AUSTIN, TX 78731 • PHONE 1.866.493.6337 • FAX 1.512.532.7400

WWW.TSI-SOFTWARE.COM