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FALL/WINTER 2016

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THE MAGAZINE FOR DECISION-MAKERS

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Front cover: Jerry Greg, Hilbers Inc.
Back cover: Chad Jackson Photography

Innovative school a vibrant place to learn

California charter school checks off wish list

The Twin Rivers Charter School campus in Yuba City, California, covers just about every item on a new school wish list. Colorful and inviting? Check. Bright and sunny? Check. Easy to maintain? Check. Energy-efficient and environmentally sustainable? Check and check.

Founded in 2004, Twin Rivers Charter School originally occupied a former private school building. Thanks to its family atmosphere and focus on small class sizes, enrollment soared. By 2014, the school was bursting at the seams with 470 students from transitional kindergarten (TK) through eighth grade and 200 more on a waiting list.

That's when school founders Axel and Inge Karlshoej set out to expand the facility at a new site about three miles away. Funding for the project came from the Erik Karlshoej Educational Foundation, which the couple established in memory of their late son specifically to support Twin Rivers Charter School.

The Karlshoejs turned to Hilbers Inc., a Butler Builder® in Yuba City, with a goal of constructing an innovative educational center. Hilbers Inc. used Butler® building systems as a foundation for a creative, yet economical and environmentally friendly school that totals nearly 50,000 square feet.

The new six-acre Twin Rivers Charter School campus incorporates two separate structures. A 21,411-square-foot facility opened in fall 2015 for middle-schoolers in grades six, seven and eight. The building also houses a gymnasium for physical education classes and competitive sports. The following year, a 28,465-square-foot classroom building welcomed youngsters in transitional kindergarten (TK) through grade five.

Meeting a tight deadline

Dirt started moving on the new Twin Rivers site in December 2014, with a goal of opening the middle-school classrooms the following August. Butler systems helped Hilbers Inc. speed construction in order to meet the first-day-of-school deadline.

"It would not have been possible to adhere to such a tight schedule with conventional construction methods," said Nick Hilbers, pre-engineered division

(Above) This Yuba City, California, charter school demonstrates that bright design and energy efficiency are not mutually exclusive.

PHOTOGRAPHY BY JERRY GREG, HILBERS INC. AND DAVE ADAMS PHOTOGRAPHY

Inge and Axel Karlshoej (back) worked with Butler Builder Nick Hilbers (front) to bring their vision for their new building to life.

manager at Hilbers Inc. "With Butler systems we were able to move quickly and efficiently through the design and construction process."

For the site plan and building design, Hilbers Inc. teamed up with architectural firm Swift Lee Office in Pasadena. Nathan Swift, AIA, and his wife and partner, Gloria Lee, worked previously with Hilbers Inc. on a charter school project in San Jose, California. Swift and Lee had designed several other charter schools in the state. The architects drew on those experiences to map out an extraordinary design with energy-saving and sustainable features for Twin Rivers Charter School.

"From the beginning, the Karlshoejs challenged us to design a school that would break preconceived notions," Lee said. "They really stood behind the project concepts and pushed us to create interesting facades and interior spaces while using unexpected colors and materials."

These Butler systems provided the flexibility to bring the architects' vision to life:

- **Widespan™ structural system.** With clearspan modular framing, the Widespan system allows for column-free construction — essential to achieve large open spaces in the school's hallways, media center, lunch area and gymnasium. The Widespan system is strong enough to withstand potential earthquakes and ensure a safe refuge for children in case of emergency. And the entire building resists mold, termites and rot — common concerns with wooden structures in the West Coast climate.
- **MR-24® roof system.** The rugged and weathertight MR-24 system pairs with 13 inches of insulation to achieve an R-30 energy rating. Butler's exclusive Galvalume® aluminum zinc coating lengthens the life span of the roof panel.

Unique architectural features

The strength and versatility of the Butler Widespan system accommodate architectural features unique to Twin Rivers Charter School.

- Behind the gymnasium's stage, a giant hydraulic door opens to the exterior — converting the school's performance space to an outdoor venue with amphitheater-style seating.
- The Butler system spans allowed for a sheltered lunch area by pushing an exterior wall in 24 feet to the next bay.
- Lightweight, perforated aluminum panels attached to the buildings' exteriors create colorful accents in yellow, blue and orange.

The school's giant hydraulic door adds more functionality to the gymnasium.

AWARD-WINNING CONCEPT

The new Twin Rivers Charter School design is based on an award-winning Net Zero Energy School Building Prototype that SwiftLee Office designed for the Los Angeles Unified School District (LAUSD) in 2010. The two-story 30,000-square-foot prototype design used the Widespan™ structural system from Butler Manufacturing™ and incorporated innovative features to achieve the ultimate in energy efficiency. The design challenges traditional school models with spaces that are economical, high-performing and flexible enough to accommodate diverse learning styles.

The prototype project won several prestigious design awards: Citation of Excellence from the National School Boards Association; Next LA Award from the AIA Los Angeles Chapter; and Holcim Awards Silver for North America.

Natural light solution

A healthy and sun-filled environment was another goal for Twin Rivers Charter School. The SunLite Strip® daylighting system from Butler brings cost-effective and energy-saving natural light into the school at all times of day. The SunLite Strip system's prismatic, acrylic-domed technology also diffuses the bright California sunlight to prevent glare and hotspots.

"Each classroom has at least two 24-inch SunLite Strip units, with a total of 53 units across both buildings," said Hilbers. "The system integrates seamlessly into the MR-24 roof system, so it is maintenance-free and leak-free."

The Karlshoejs are fans of the SunLite Strip system as well.

"The lighting is fantastic and really good for your eyes," said Inge Karlshoej. "We don't even need to turn on classroom lights during the day because there is so much natural light."

Impressive interior features

While her husband focused his attention on exterior construction details, Inge made most

"We don't even need to turn on classroom lights during the day because there is so much natural light (from the SunLite Strip daylighting system)."

INGE KARLSHOEJ
TWIN RIVERS CHARTER SCHOOL

Each Twin Rivers Charter School classroom features the SunLite Strip® daylighting system.

LIGHTING FOR LEARNING

Research shows that natural light — like that from the SunLite Strip® daylighting system from Butler® — contributes to more effective learning. The Healthy Schools Network, Inc. reports these results from studies across the country:[1]

- **California:** Students in classrooms with the most daylighting progressed 20 percent faster on math tests and 26 percent faster on reading tests, compared with those in classrooms with the least amount of daylighting.
- **North Carolina:** With natural light exposure, students were more attentive and displayed less hyperactivity. Attendance rates improved, too.
- **Washington:** Test scores were 9 to 15 percent higher for students exposed to daylighting than for those in classrooms with less natural light exposure.

[1]Daylighting. Healthy Schools Network website. http://www.healthyschools.org/downloads/Daylighting.pdf. Accessed June 2016.

"With Butler systems we were able to move quickly and efficiently through the design and construction process."

NICK HILBERS, HILBERS INC.

The Twin Rivers Charter School features an innovative design that was built for learning.

TWIN RIVERS CHARTER SCHOOL

Butler Builder®: Hilbers Inc.
Architect: Swift Lee Office
Size: 49,876 square feet (two buildings)
Butler® Systems: Widespan™ structural system, MR-24® roof system, SunLite Strip® daylighting system

of the decisions on interior finishes. Butler systems afforded flexibility to incorporate these and other features:

- Bright yellow acoustical baffles hanging from the gymnasium ceiling to muffle noise
- Colored acoustical wall panels for sound control in classrooms
- An overhead lighting fixture that combines economical LED lights in a pattern that creates the effect of a stylish, sculptural chandelier.

The overall result is a building that is interesting and eye-catching, yet functional and sustainable.

"The design team came up with buildings that we're extremely proud of," said Axel Karlshoej. "In addition to more classroom space, we now have a gymnasium, media center and outdoor play areas for a beautiful learning environment." ▲

Beautiful brewery models design flexibility

Architect achieves Prohibition-era appeal and modern energy efficiency with Barley John's newest home

On the corner of Wisconsin Drive and Madison Avenue in New Richmond, Wisconsin, sits a brand new 13,000-square-foot taproom and production facility for one of the Midwest's most adventurous microbrews.

Founders John Moore and Laura Subak have passion for their craft and an undeniable laid-back charm that is brought to life throughout the building from small decorative elements to the primary building objectives.

This building was a long time coming for the married couple, who started homebrewing in the '90s and opened their first brewpub in 2000. Barley John's Brew Pub in Minneapolis was the primary home for the microbrewers until they set their sights on expanding distribution.

But expansion would not come easily. Minnesota's strict three-tier approach to beer distribution presented a significant hurdle. The law separates the roles of alcohol manufacturers, distributors and retailers. And while legislation enacted in 2011 allowing Minnesota breweries to open taprooms added some flexibility, wholesale distribution for Barley John's was still out of the question.

Moving east

Moore and Subak first tried working with Minnesota policymakers to change the law. When their efforts yielded little progress, the Barley John's cofounders knew it was time to explore options outside of their home state.

"A friend who owns a distillery just down the block encouraged us to talk to the city of New Richmond and look at Wisconsin for the next possible phase of the growth of the business," Moore said.

(Above) This brewery and taproom is helping a microbrewer grow, one beer at a time.

PHOTOGRAPHY BY CHAD JACKSON PHOTOGRAPHY

"I was really happy how the different materials went together with the Butler system, and I think we brought the whole project to the next level up in architectural quality."

BRANDON SIGRIST, ARTANGENT LTD.

Their neighbors to the east proved to be very accommodating. Once the site was selected, Moore and Subak enlisted architect and friend Brandon Sigrist with Artangent Ltd. to develop the building design. The architect called on Derrick Building Solutions, a long-standing Butler Builder,® for the general contracting and construction.

Nailing the look

The nuances of the Barley John's brand are brought to life with thoughtful visuals across its products and original brewery. The new production facility and taproom would need to live up to these design ideals in order to create the exact customer experience Moore and Subak sought.

The design team and owners explored various throwback décor concepts until they landed on a Prohibition-era toolshed aesthetic. This concept pays homage to the heyday of American microbrewing while also fitting the location.

"During Prohibition, beer was made on the fly in people's barns or sheds and then smuggled into the city, so that's where we came to the idea that the new building should look agricultural," Sigrist said.

Surprising flexibility

Derrick Building Solutions Project Manager Chad Derrick and Sigrist evaluated numerous structural approaches to find the best option that would bring Moore's and Subak's vision to life responsibly and within budget.

A Butler® building system solution won out because of the flexibility it offers. This project marked Sigrist's first time working with a systems solution. He did have some preconceptions at the beginning, but the Butler system did not disappoint.

"Butler had more to offer in terms of detailing and building envelope options," said Sigrist.

In fact, working with the Widespan™ structural system from Butler afforded the project numerous advantages and opportunities to push its flexibility:

- **Multi-level roof decks.** Integrating various roof heights was a core component of achieving the overall Prohibition-era design. It also would lead to significant energy savings throughout the lifetime of the building because the owner would have a much smaller volume of air to heat than if the entire building's roof was level.
- **Integration with manufacturing equipment.** By working with the team from Butler Manufacturing,™ Sigrist and Derrick were able to identify a design that allowed the owners to run glycol lines from the building's ceiling. These lines can be extremely heavy, weighing up to 50 pounds per foot.

The manufacturing floor was designed with flexibility in mind, and can handle even larger fermentation tanks as the brewery grows.

Some of the brewing equipment was integrated with the structural supports to keep the floor clean and easy to navigate.

"We love the final building. It fits all the requirements we had and is efficient in its space and use of energy."

JOHN MOORE
BARLEY JOHN'S

- **Column-free expanses.** Barley John's was able to achieve large clearspans so forklifts could travel through the production facility with ease. The open areas also gave Moore and Subak added flexibility when selecting processing equipment. Amping up brewing capabilities with larger fermentation equipment will not be a problem, thanks to the wide-open production space.
- **Structure within a structure.** One of Subak's primary requests for the new production facility was that it feature a studio apartment/office space. Sigrist and Derrick made it a reality by framing out a separate wooden structure that sits inside the Butler building. The naked eye would not be able to discern that there are any structural differences between the two spaces.
- **Expandable wall.** In its first year, the new production facility is set to brew 7,000 barrels of beer, which is scheduled to quickly grow to 10,000 barrels or more in the years to come. As distribution continues to grow, Moore and Subak can easily expand their new facility by essentially "unzipping" one of the walls and adding on.

"Barley John's is a great example that any type of project is possible when customers work with Derrick Building Solutions and Butler Manufacturing," said Derrick.

Impressive efficiency

Beyond the aesthetic and structural advantages, the bedrock of the building design was energy efficiency. A main contributor to the building's strong thermal performance is the Butler Thermawall™ wall system. Featuring three inches of insulation inside each panel, the system delivers an impressive R-value.

ENERGY EFFICIENCY AND SYSTEMS CONSTRUCTION

Contrary to conventional thinking, systems construction can prove an ideal building approach when high thermal performance is required. From a code perspective, a building must meet the same standard no matter if it's made of steel or concrete, and systems construction offers numerous advantages. For example, insulated metal panels, like the Butler Thermawall™ wall system used on the Barley John's facility, are proven to achieve R-values ranging from R-15.1 to R-29.4. They also offer installation benefits: Their 42-inch panel widths and ability to be installed from the building's exterior can create time and cost savings. Additionally, the panels deliver an attractive interior surface.

Butler Builder Chad Derrick of Derrick Building Solutions and Barley John's brewmaster Bob McKenzie.

"I like the Butler Thermawall wall system from a technical and structural perspective," Sigrist said. "The panel design and the way it handles thermal bridging makes it superior to other insulation options."

For Sigrist, a major concern was how much R-value the roof system can deliver because the roof is a primary contributor to heat loss in a steel structure. But, those concerns were put to rest with the MR-24® roof system.

"The MR-24 had good details in regard to thermal bridging, so I think the roof is going to perform closely to its prescriptive R-value," Sigrist said.

Raise a glass

Construction went smoothly thanks to the careful consideration Derrick, Sigrist and Butler Manufacturing gave the design phase. The new building opened in October 2015, much to the delight of Moore and Subak.

"We love the final building. It fits all the requirements we had and is efficient in its space and use of energy," Moore said.

Sigrist also was pleased with the final result.

"I was really happy how the different materials went together with the Butler system, and I think we brought the whole project to the next level up in architectural quality," he said.

For Derrick, the most rewarding aspect was delivering a facility that met the needs of his customers' business.

"We take pride in building a unique brewery for Barley John's that helps them expand their business," Derrick said. "Playing a role in helping a company grow is quite rewarding." ▲

BARLEY JOHN'S TAPROOM AND PRODUCTION FACILITY

Butler Builder®: Derrick Building Solutions, LLC
Architect: Artangent Ltd.
Size: 13,112 square feet
Butler® Systems: Widespan™ structural system, MR-24® roof system, Butler Thermawall™ flat wall system, Butlerib® II wall system

New fire station is pride of historic downtown

'Timeless' building meets multiple needs

Imagine a community that is fast-growing, yet has a rich history and a commitment to historic preservation. Put it in the potential path of a hurricane. Add in humid, subtropical weather and corrosive sea air.

Now, design and build a new fire station for this community that makes a statement, serves firefighters' needs and keeps taxpayer concerns in mind.

The Bluffton Township Fire District met these challenges and more with its new Fire Station No. 30 in downtown Bluffton, South Carolina. Working with Butler Builder® Fraser Construction Company, LLC, the fire district constructed a new station that delights firefighters and townspeople alike.

"We wanted a building that was timeless — that could stand for 50 years and still fit with the historic look of our downtown area. Thanks to Fraser Construction and Butler Manufacturing, we definitely achieved that goal," said John Thompson, fire chief with the Bluffton Township Fire District. "We've received a lot of positive comments from the community."

Replacing a disco-era structure

New Fire Station No. 30 replaces a building dating back to the 1970s that volunteers donated to Bluffton to establish the fire protection service. Even with numerous expansions over the years, the station had begun to show its age. When an engineering study determined that the building could no longer withstand hurricane-force winds, it was time for the Bluffton Township Fire District to explore new options.

(Above) The new Bluffton Township Fire Station pays homage to the town's rich history while adding modern conveniences.

PHOTOGRAPHY BY KAUFMAN PHOTOGRAPHY

"We wanted a building that was timeless — that could stand for 50 years and still fit with the historic look of our community."

CHIEF JOHN THOMPSON, BLUFFTON TOWNSHIP FIRE DISTRICT

One of the district's goals was to use as many local vendors as possible to keep tax dollars in the community. Fraser Construction fit the bill, having operated in South Carolina's low country area since 1977.

"This was the first design-build project for the Bluffton Township Fire District, and we really liked the process. From day one, Fraser Construction brought together the architects, the landscape designers and all the other people critical to the project," Thompson said. "We're happy they brought the Butler system into the design."

The Bluffton Township Fire District had a long list of requirements for the new station — functionality, durability, expandability and economy.

"By using Butler systems we were able to meet or exceed all the project's design needs," said Jay Fraser, owner of Fraser Construction.

Functionality first

Job one at Fire Station No. 30 is to fight fires. To achieve its primary function, the station needed large drive-through spaces to store a 38-foot firetruck, ambulance and utility vehicle, plus comfortable spaces for firefighters to eat, exercise and rest when not responding to emergencies.

The Widespan™ structural system provided large column-free spans for two equipment bays totaling 3,430 square feet. For the living areas, Butler delivered hybrid building solutions that offered flexibility and speed of construction for customized configurations without interior columns. Living areas include a commercial kitchen, group dining area, fitness room, captain's office and individual sleeping quarters for the six emergency responders who are on duty at any one time.

Butler® systems allowed for an efficient building layout to streamline emergency response.

"When firefighters get the call, they need to get to the vehicle floor in a hurry. With this building, they can basically be anywhere in the station and have direct access to the firetruck and ambulance," Thompson said.

The new facility gives emergency personnel easy access to the firetruck and ambulance from anywhere in the station.

Withstanding the elements

The coastal Carolina environment was another challenge to overcome. Although Bluffton is 15 miles from the Atlantic Ocean, sea breezes bring in salty air, fueling rust and corrosion. And hurricanes are a potential threat every year. As a hub for natural disaster response, the station needs to withstand winds up to 140 miles per hour.

Durable Butler systems are up to the test of Bluffton weather. The 24-gauge VSR II™ architectural roof system, with its standing-seam design, is weathertight and allows up to 2 inches of thermal movement to reduce wear and tear. Concealed moveable clips firmly anchor the roof panels.

Likewise, the affordable Butlerib® II wall system features exceptional durability with 26-gauge panels. Deep 1-1/2-inch corrugation provides extra strength.

Preparing for growth

The Bluffton Township Fire District protects 50,000 people who live in unincorporated areas of Beaufort County, along with 13,600 Bluffton residents. Bluffton is exploding as a community, with more than 800 percent population growth from 2000 to 2010. Therefore, the design for Fire Station No. 30 needed to allow for future expansion.

"Most of the building is covered with finishing brick and stucco, but at the end of the emergency equipment storage area we left the exterior wall unfinished," Fraser said. "With the Butler system, we can easily add a third apparatus bay. The ground is already leveled and ready to go."

The Bluffton Township Fire Station is designed to stand up against the harsh seaside climate.

Another way the Bluffton Township Fire District planned for growth is by calling for Fire Station No. 30 to be a "prototype" building. The new station is the eighth for the community, with long-term plans calling for a total of 14 to 15 stations. Bluffton's vision was for the station to be a model that could be replicated at other locations.

With input from firefighters and officers of the fire department, Fraser Construction and Court Atkins Group created a prototype station layout that meets the district's needs, regardless of location.

"We spent a lot of time analyzing other stations and what was working well and not working well. Our goal was to craft a prototype that

"The R-values of the system, roof, insulation and liner panels all meet international energy codes."

JAY FRASER
FRASER CONSTRUCTION

ACHIEVING A LOW COUNTRY LOOK

Old Town Bluffton, where Fire Station No. 30 is located, features eclectic shops, restaurants, art galleries and historic sites that are popular with tourists and locals alike. Local architectural review boards fiercely protect the unique atmosphere of this National Register Historic District. The flexibility of Butler® systems allowed the Bluffton Township Fire District to build an economical structure, yet embellish the exterior to stay true to the low country style of architecture preferred in Old Town Bluffton.

To help meet architectural requirements for the station's facade, Butlerib® II wall systems are covered with a mix of materials, including stucco, Old Savannah gray brick and cinder blocks infused with "oyster shell tabby" — a locally produced concrete made from oyster shells, lime, sand and water. On exposed exterior walls, the standing rib design of the Butlerib II system emulates a traditional "board and batten" design. The steeply pitched VSR II™ roof, stone arches and storm shutters complete the classic low country look.

would solve any deficiencies and create spaces that the firefighters could be proud of," said James Atkins, partner at Court Atkins Group. "We also wanted the station to be durable and low maintenance, so the firefighting team can focus on life safety instead of spending time and energy on maintenance."

Flexible Butler systems fit the prototype approach perfectly. In addition to providing durability, Butler systems will allow designers to tailor new stations' exteriors to match the varying architectural guidelines of different service areas — ranging from a retirement community to an equestrian-centric neighborhood to a development with homes valued at $1 million and up.

Economical to build and own

With taxpayer dollars in mind, the Bluffton Township Fire District also considered total cost of ownership — not just construction costs, but operational expenses as well.

In far southeastern South Carolina, average high temperatures reach into the 80s from March through November, so air conditioning runs nearly year-round. Adequate insulation is critical to control electricity costs.

Again, Butler came through.

"The R-values of the Butler system roof, insulation and liner panels all meet international energy codes," Fraser said.

The VSR II roof system incorporates 6 inches of faced fiberglass blanket insulation to reach its R-19 rating. With 3 inches of insulation, the Butlerib II walls rate R-10.

The new building's bigger kitchen is a definite crowd-pleaser.

More than walls and a roof

For the emergency responders who work there, the new Bluffton Fire District Station No. 30 represents more than walls and a roof — it's a source of pride as well.

"The building really helps maintain department morale and keeps people motivated, especially for our younger firemen," Thompson said. "They appreciate having a nice place to work and even bring their buddies in to show off the station. Sometimes the response from their friends is, 'Wow, you guys really get to live like this?'" ▲

BLUFFTON TOWNSHIP FIRE DISTRICT

Butler Builder®: Fraser Construction Company LLC
Architect: Court Atkins Group
Size: 6,716 square feet
Butler® Systems: Widespan™ structural system, VSR II™ roof system, Butlerib® II wall system

"We wanted to make sure the station was durable and low maintenance, so the firefighting team can focus on life safety."

JAMES ATKINS, COURT ATKINS GROUP

Training complex facilitates hands-on education

New LEED-certified building meets economy goals

"Tell me and I forget.
Teach me and I may remember.
Involve me and I learn."

BENJAMIN FRANKLIN

This famous quote perfectly describes the Western Pennsylvania Operating Engineers (WPOE) Joint Apprenticeship and Training Program. Combining classroom instruction, hands-on training and on-the-job experience, the program teaches valuable skills to heavy equipment operators and mechanics.

After more than 40 years at its New Alexandria, Pennsylvania, location, the nonprofit WPOE Joint Apprenticeship and Training Program outgrew its existing facilities a few years ago. A new 32,800-square-foot Butler® building now provides ample, and cost-effective, space to meet growing demand for training.

Situated on 228 acres about 30 miles east of Pittsburgh, the training site has plenty of land for students to practice operating heavy equipment — ranging from skid steers and forklifts to bulldozers and cranes. But, the repair shop and classrooms were pinched for space.

"About 75 percent of our training is for apprentices who are new to the industry, and 25 percent provides continuing

(Above) This new training center houses the Western Pennsylvania Operating Engineers Apprenticeship and Training Program..

PHOTOGRAPHY BY CHAD JACKSON PHOTOGRAPHY

A HELPING HAND

It's not often that the users of a new building have the opportunity to participate in its construction. But, the Western Pennsylvania Operating Engineers training facility is filled with students and instructors who are adept at operating heavy equipment. With 75 pieces of equipment available on site, it was only natural for the operators and machines to be pressed into service to help prepare the location.

Among the tasks for the apprentice operating engineers were excavating and backfilling to replace unstable soil at the building site. They also assisted with grading, material handling and trenching for footers and utility installations.

"It was a great experience for our apprentices to be involved in actual building construction," said Steve Columbus, administrative manager for the WPOE Joint Apprenticeship and Training Program. "By providing some of the workforce, we saved costs, too."

education for journeyman operators. With demand for journeymen training increasing every year, we needed more capacity," explained Steve Columbus, administrative manager for the WPOE Joint Apprenticeship and Training Program.

Mascaro Construction Company, a Butler Builder® in nearby Pittsburgh, was an ideal choice to partner with WPOE on the project. The company had previously renovated an existing building to serve as headquarters for the International Union of Operating Engineers (IUOE) Local 66, whose 7,000 members benefit from the training center in New Alexandria.

"The goal was to build a first-class training facility with the flexibility to accommodate classroom and hands-on training space," said Ed Swiatek, project manager at Mascaro Construction. Another goal for the WPOE was to achieve Leadership in Energy and Environmental Design (LEED) certification. And like most design-build projects, budget was a factor, too.

Heavy operating engineer apprentices learn the ins and outs of their equipment in this maintenance training shop.

The maintenance shop not only features four drive-thru bays, it also has a 10-ton overhead crane.

"The goal was to build a first-class training facility with the flexibility to accommodate classroom and hands-on training space."

ED SWIATEK, MASCARO CONSTRUCTION.

WESTERN PENNSYLVANIA OPERATING ENGINEERS JOINT APPRENTICESHIP AND TRAINING PROGRAM

Butler Builder®: Mascaro Construction Company, L.P.
Architect: Perfido Weiskopf Wagstaff + Goettel, AIA
Size: 32,800 square feet
Butler® Systems: Widespan™ structural system, MR-24® roof system, Shadowall™ wall system, SunLite Strip® daylighting system

Butler systems helped achieve all these objectives with an economical design that is also highly energy efficient.

The completed LEED-certified facility includes an 80-foot-wide, 16,800-square-foot maintenance training shop with four drive-through bays instead of only one, like in the previous building. The shop also incorporates eight welding booths, an equipment welding bay and a machining area. A mezzanine above the shop floor provides space for storage, and heating and ventilation equipment.

The Widespan™ structural system from Butler made possible the 80-foot clearspan area and 33-foot ceiling height needed to bring massive equipment into the shop for maintenance and training. The shop houses a vehicle lift and a 10-ton overhead crane that moves the full length of the building on rails to help students perform equipment repairs.

"Hands down, Widespan was the most efficient and cost-effective way to accomplish a column-free area large enough to accommodate the size of the equipment," said Anthony Pitassi, AIA, LEED AP, with architectural firm Perfido Weiskopf Wagstaff + Goettel in Pittsburgh.

A separate classroom and administrative wing attached to the shop totals 12,900 square feet, replacing several outdated modular classrooms. Engineering support from Butler Manufacturing™ helped the construction team design retractable walls, so spaces can be configured for different class sizes. Flexibility is a must with anywhere from 25 to 150 students in the training facility at any one time.

The classroom's angle design helps mitigate dust stirred up when the trainees move dirt on-site.

Angling for solutions

Together, the shop and classroom wings form an angled design that makes efficient use of the site's natural topography, as well as the area's prevailing winds.

"The shop was previously oriented in exactly the wrong direction related to the prevailing wind patterns. With dirt constantly being moved outside the facility during equipment operator training, dust control was a big problem," Pitassi explained. "By orienting the shop perpendicular to the prevailing winds, we were able to control the dust problem."

Bringing two parts of a building together on an angle was a challenge, especially with different roof lines, but it was one that the Butler systems were up to.

Although the maintenance area used the Widespan structural system, the classroom wing incorporated conventional framing with steel members. But, the two areas of the building blend seamlessly since the Shadowall™ wall system from Butler covers the exterior. The exterior walls' Cool Marsh Green color fits the rural western Pennsylvania surroundings.

Reflective roofing

Both building wings are covered with the MR-24® roof system from Butler. The standing seam roof provides durable, efficient and low-maintenance protection from the elements. Added insulation creates an R-30 energy value, which is beneficial during both hot summers and cold winters.

The MR-24 roof system color — Cool Solar White — contributed to the building's LEED certification by helping to lower roof temperatures. The coating color brought the solar reflective index needed to get LEED credit for mitigating heat islands on the roof.

Natural light solution

The original design for the training facility called for a continuous ridge skylight and clerestory to bring natural light and

LEARNING ABOUT LEED

Efforts to gain LEED certification for the new building turned into a learning opportunity for students at the Western Pennsylvania Operating Engineers (WPOE) Joint Apprenticeship and Training Program.

To save energy costs, the facility incorporates geothermal heating through a system of earth tubes buried underground. Five 24-inch diameter tubes pull 55-degree air into the building year-round, saving on heating costs in the winter and air-conditioning costs in the summer.

The operating engineers created a learning experience by using their own apprentices to install the earth tubes, and they videotaped the installation for future use in their training curriculum.

The SunLite Strip® daylighting system helps flood the maintenance shop with natural light.

"The SunLite Strip daylighting system is a great solution to provide economical daylighting. Many people comment on how bright the shop is."

STEVE COLUMBUS, WESTERN PENNSYLVANIA OPERATING ENGINEERS

ventilation into the maintenance areas. Unfortunately, clerestory costs didn't fit the construction budget.

The SunLite Strip® daylighting system proved to be a cost-effective and energy-saving alternative. The SunLite Strip system relies on prismatic acrylic-domed technology to bring in three times the amount of light earlier and later in the day compared with translucent panels. By integrating with the MR-24 roof system, the SunLite Strip daylighting system is weathertight to avoid leakage issues that are common with conventional skylights. Best of all, by reducing lighting costs, the system contributed to the project's LEED certification.

"The SunLite Strip system is a great solution to provide economical daylighting. Many people comment on how bright the shop is," Columbus said.

On budget, on schedule

The WPOE Joint Apprenticeship and Training Program is an example of a successful team effort between Butler Manufacturing,™ the construction company, the architect and the customer.

"We delivered great value as far as safety, quality, owner satisfaction and scheduling. We were able to build the project safely, within the budget and on time, so the operating engineers were able to move in to their training facility on schedule," Swiatek said. ▲

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BEAUTIFUL BREWERY

MODELS DESIGN FLEXIBILITY

The customer experience was an important consideration when designing Barley John's new building.

READ MORE ABOUT BARLEY JOHN'S TAPROOM AND PRODUCTION FACILITY ON PAGE 7.