



# STRUCTURETONE

Organization *Insights*

Govan Brown | LF Driscoll | Pavarini Construction | Pavarini McGovern



# THE HEALTHCARE ISSUE

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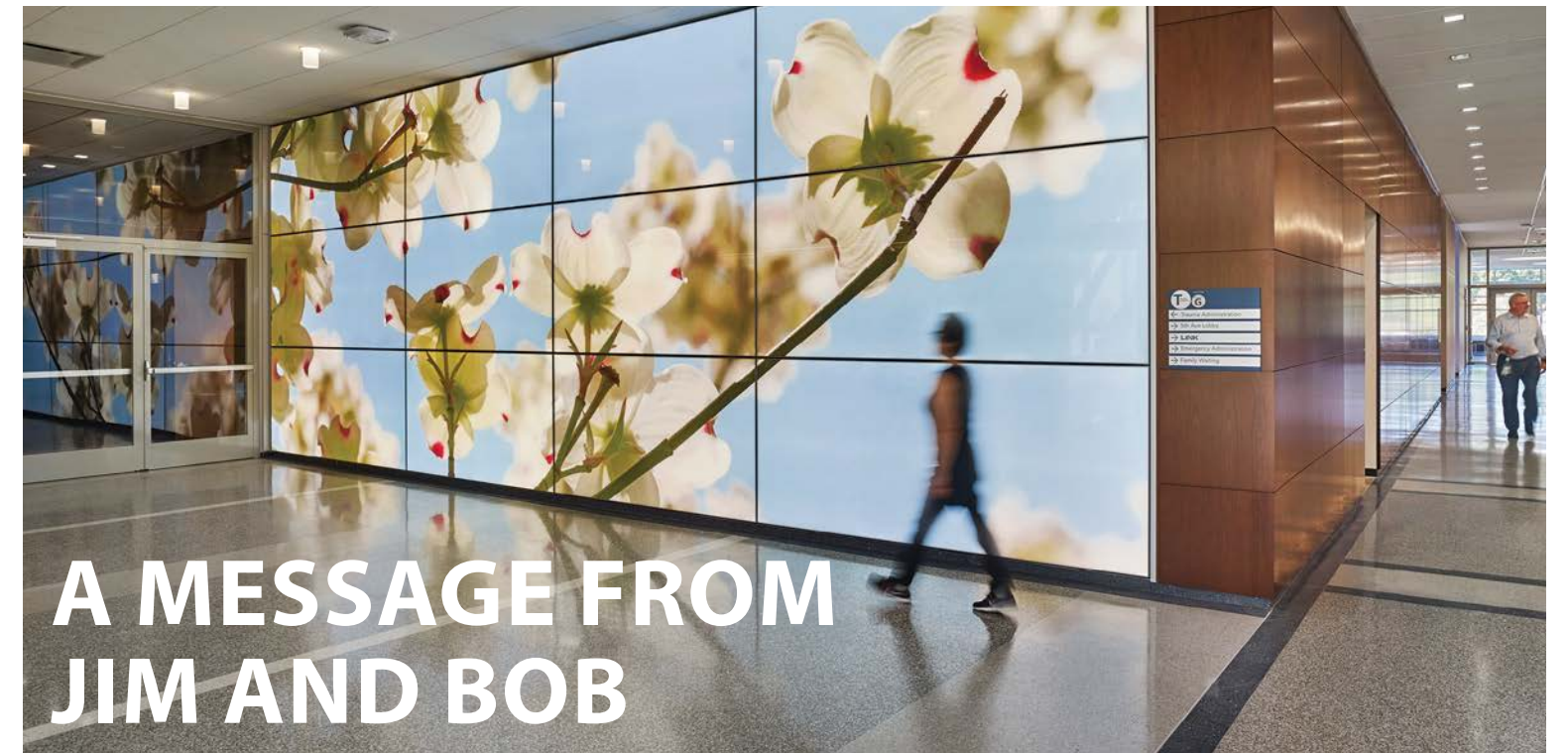
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## SPECIAL FEATURES



When it comes to the healthcare industry, the more things change, the more they stay the same. Here's what we mean by that. With all the amazing advances in technology, new processes, changing politics and other factors, the mission of our healthcare clients remains the same: to provide the best possible care to people who need it.

We've dedicated the pages of this Fall 2017 issue of *STO Insights* to celebrating the clients and projects that are upholding that lofty goal. From working toward cures for debilitating diseases to building premier surgical centers, our clients—large and small—make a real difference in improving people's health.

For decades, our healthcare construction experts at LF Driscoll have experienced this difference first-hand at world-class healthcare projects across the Mid-Atlantic. They will be the first to tell you that the atmosphere and sense of purpose in building a healthcare-related facility is, well, different. We knew we wanted to share that special expertise and understanding with clients outside of the Mid-Atlantic region as well. So, last year, we expanded our LF Driscoll Healthcare division to serve healthcare clients across the nation. Expanding this specialty offers our clients the best of both worlds: LF Driscoll's decades of experience in building complex health systems and the Structure Tone organization's breadth of local relationships and purchasing power.

As we've said in this space before, we're extremely proud of the work our clients do and our role in making that work possible. In healthcare, the stakes are even higher as that work ultimately saves lives. We recognize that the healthcare landscape is constantly evolving. But our commitment to helping our clients navigate—and leverage—that change will remain as steady as ever.

### WELCOME, GOVAN BROWN!



This September Canadian firm Govan Brown joined the Structure Tone family of companies—and we couldn't be more excited! Founded in 1994 in Toronto, the firm is one of Canada's leading providers of interiors and renovation services for the corporate, retail and hospitality markets.

Some of the company's most notable work includes Nordstrom in Ottawa and Toronto, MEG Energy's Calgary offices, Loyalty One's offices in Toronto, Electronic Arts' Burnaby campus, CIBC branches and offices across the country, Simons stores in Vancouver, Edmonton, Calgary and Toronto, and the implementation of Rogers Communications' "sharespace" offices across Canada.

Stay tuned for more on Govan Brown's expertise in our Winter 2018 issue of *Insights*.



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Top image: "Haldin Mason Photography"

# A GROWING NETWORK OF CARE

As one of the largest healthcare networks in the state, New Jersey's Atlantic Health System is constantly working to upgrade its facilities to provide the absolute best care to its communities. One such project is not only one of AHS's most significant, but also one of New Jersey's first to combine emergency and inpatient services in one specialized care center.



The new Children's Center combines pediatric emergency and inpatient services



## Project Details

**Size:**  
10,000sf (Children's Center and new Cardiovascular Services space)

**Client:**  
Atlantic Health System

**Architect:**  
Francis Cauffman

**MEP Engineer:**  
Vanderweil Engineers

**Structural Engineer:**  
O'Donnell & Naccarato

**Owner's Rep:**  
Eckroth Planning Group

**Services:**  
Preconstruction, Construction Management

**Sector:**  
Healthcare

**Completion:**  
October 2017

With the help of Structure Tone's New Jersey team, AHS is building a new pediatric emergency and inpatient center at Chilton Medical Center in Pompton Plains, complete with private inpatient rooms, sleeping accommodations for parents and a family lounge and a kids playground.

The new Children's Center is an expansion of the existing emergency department and former cardiovascular services space. So, first, the project team had to prepare new space for the cardio unit to relocate. "The project was really organized into two main phases: relocating cardio services and building the Children's Center," says Joe MacInnes, Structure Tone project manager.

*"Planning was really the name of the game. We spent almost six months working with the hospital and the design team before construction even began."*

Gutting and renovating such an important space meant working around a number of challenges:

1. An active emergency room. Treatment couldn't stop while the new center was under construction, so the team had to carefully work around the active space. From floor-to-ceiling construction barriers to negative air pressure systems to keep construction dust from entering the hospital, the team took extra steps—and went through rigorous infection control inspections—to

ensure patients and staff remained unaffected by the work.

2. The MEP systems. Because the new center was an expansion to the existing hospital, the MEP systems were already in place. The planned phases of construction, however, did not necessarily match up with the most linear path to make those MEP connections. "We were basically working backwards," says MacInnes. "The new MEP systems we needed were always in a space we had not yet demoed, so it took a lot of upfront planning to make sure we were identifying the best route for the MEP tie-ins and that anything we planned for this phase wouldn't become a problem in future phases."
3. Interior daylight. The center's inpatient rooms are located in the middle of the building. But healthcare occupancy codes require access to daylight in inpatient rooms. To solve the conflict, the project team adjusted the design to lift the roof enclosure at an angle to allow skylights in each room. These skylights, however, interrupted the carefully planned MEP corridors. "Again, it was all about planning. We had to check and double check that the new MEP infrastructure would not conflict with the future phase steel structure," MacInnes says.
4. More projects. In addition to the ongoing work on the Children's Center, AHS called on the Structure Tone team to take on a number of other projects throughout their facilities, including everything from lobby and treatment room renovations to

telecommunications upgrades. The team responded accordingly, shifting resources and even adding more staff to take on the work.

*"We moved superintendents over from other jobs and have now hired new superintendents solely focused on healthcare projects. It's been exciting to see our own team grow so we can continue to deliver exactly what the hospital needs,"* says MacInnes. ◀



All photos these pages: Christopher Delaney, Photographer

Above ▲  
The facility includes a dedicated entrance and reception area



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Custom artwork centered on Intarcia's "key" symbol helps create an art gallery atmosphere

# UNLOCKING LIFE'S POSSIBILITIES: Intarcia Therapeutics

*"Everything you do as a company—everything you say, how you express yourself—counts. Everything."*

So says Kurt Graves, chairman, president and CEO of Boston-based biopharmaceutical start-up Intarcia Therapeutics, which has been growing swiftly in the last few years as the company works to develop its ground-breaking Medici drug delivery system and medicines for major chronic diseases like diabetes, obesity, auto-immune conditions and HIV prevention.

When the time came for the growing firm to relocate its headquarters from California to Boston, they wanted their new space to make a bold statement about their work, their culture and their future. "We wanted this to be a place that would attract, motivate and inspire our people, and where we could feel great about bringing any customer or partner we work with," says Graves.

## Making a statement

Together with architect ACTWO, Structure Tone's Boston team got to work realizing that vision through several key features:

**Flexible spaces.** Intarcia's former space did not easily accommodate company-wide meetings and celebrations. The new workplace is organized into an open-plan work area equipped with a unique office front system made of removable glass panels. This system allows employees to close off areas for private meetings without sacrificing the natural light and open views of the office and of Boston Harbor. The large reception area also provides room for everyone to come together.

**Technology.** The technology throughout the office is not only a tool to communicate internally, but also a means for connecting to their California and North Carolina offices. Employees anywhere can watch all-staff presentations via the shared "prysm wall" screen in the lobby and, in Boston, on other screens throughout the office. Technology is also central to what Intarcia calls their "value net" area. Symbolizing, as Graves puts it, the "mental framework for strategic planning," the diamond-shaped space features four screens to represent the company's four dimensions of influence: customers, competitors, suppliers and complementers to their business. "It's an important strategic planning tool for us but also a reminder that we should always be thinking outside of our business," he says.

**Functional experience areas.** The new office also includes a customer experience suite where Intarcia can display and demonstrate their product for employees, customers, investors and advisors. Doubling as a film studio, the space is also functional, allowing Intarcia to make their own training videos at a moment's notice.

**An art gallery atmosphere.** Intarcia commissioned custom artwork for the space that reflects the important work they do. These pieces, centered on the symbol of a key to represent the company's work to "unlock" innovation and life's possibilities, are designed in coves and specially lit as if in an art gallery. These coves are also used to link work zones, promote circulation and inspire employees. "We wanted to have the space feel like art was happening everywhere," says Vincenzo Giambertone, director of design at ACTWO. "Everyone gets to enjoy it no matter where they are or where they work."



### Project Details

<b>Size:</b> 44,000sf	<b>Property Manager:</b> CBRE
<b>Client:</b> Intarcia Therapeutics	<b>Owner's Rep:</b> Colliers International
<b>Architect:</b> ACTWO	<b>Services:</b> Preconstruction, Construction Management
<b>Engineer:</b> RDK Engineers	<b>Sector:</b> Life Sciences
<b>Building Manager:</b> Fallon Company	<b>Completion:</b> November 2016
<b>A/V Consultant:</b> ACT Associates	



## A growing vision

After beginning work on their signature space on the thirteenth floor of their new building, Intarcia realized they would need more space to accommodate their growth goals, so they also leased the only remaining available floor in the building, the second floor. With much of the work (and budget) already underway on the thirteenth floor, the design and construction team had to get creative.

*"One of the most important elements was to maintain the level of fit and finish on the second floor so that it matches the thirteenth floor. We were able to work collaboratively with the design team and Intarcia to ensure that no sacrifices were made on the second floor but we still maintained their tight budget."* says Ryan Megenedy, project executive at Structure Tone.

For example, the team replaced traditional glass in certain areas with the corrugated plastic greenhouses are made of, saving money and lead times. The team also installed tectum panels in such a way that they are not only acoustical buffers but also an interesting design feature.

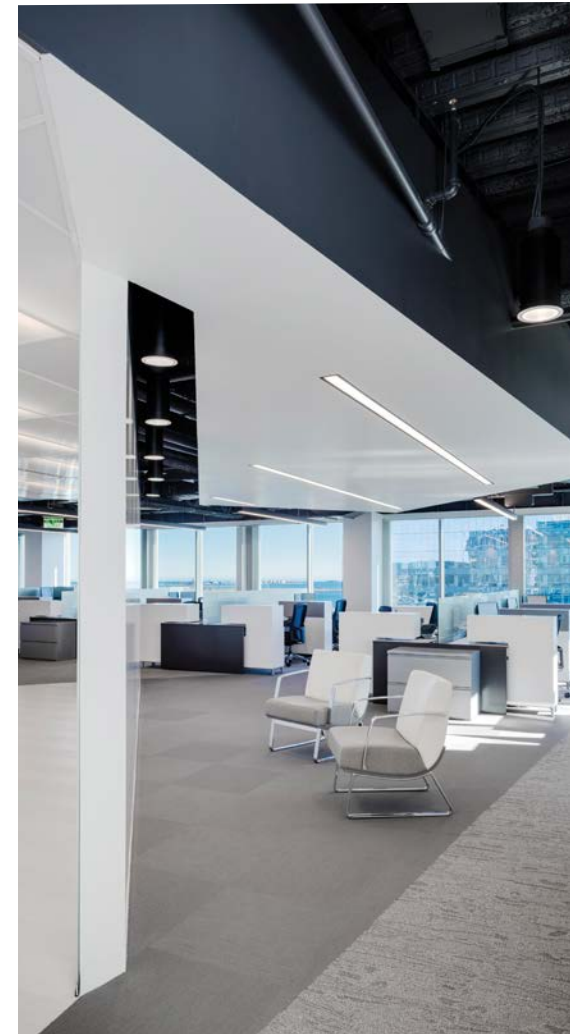
Intarcia also decided partway through the project to expand their original plan of using moveable

glass office fronts beyond the executive offices to the large boardroom area. To support the considerable weight the glass panels add when stacked, the project team worked together to reinforce the building's structural steel in those areas, working quickly and effectively to fit in that added step without losing any time on the schedule.

"We had to make sure we were supporting the steel above the floor and supporting the steel below the floor, all while working around occupied tenant spaces," Megenedy says. "That meant working off hours, regular hours—the job was running three shifts a day just to get the work done."

Since moving into their new space, the Intarcia team says it's already making a difference to their business. "The impact of the headquarters space on our ability to both retain the key talent that we have and attract new talent into the company—because we're literally going to triple the size of the company this year and next—was a very important aspect of why we designed this place," says Graves.

*"I couldn't be happier with the end product and the result it's having on our people."* ◀



Above ▲ The bright, open workspace gives everyone a clear view of Boston Harbor

All photos these pages: Greg Pennu



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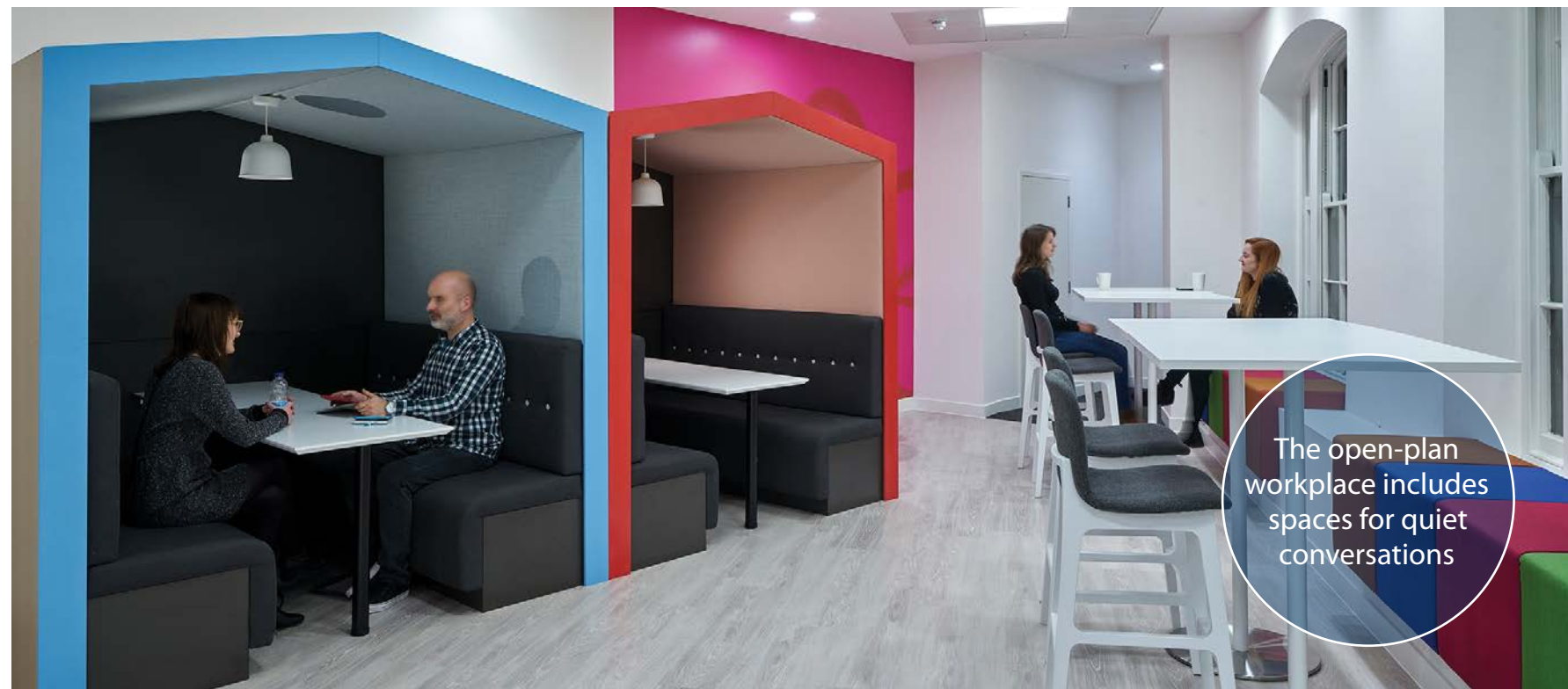
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# TRANSFORMING THE LANDSCAPE of Dementia

For nearly 40 years, the Alzheimer's Society has been working to provide care, support and research for people with dementia and those who care for them. In 2016, the organization launched a bold new strategy that not only set out their goals for the next five years, but also retooled their brand to help everyone more clearly understand their mission to transform the landscape of dementia forever.



As luck would have it, this rebranding coincided with the expiration of their office lease, which housed them in two separate, old-fashioned, traditional office spaces. The timing was perfect to find a new space that better represented their organization and brought them together under one roof.

"One of their new values is 'we are united,'" says Gary Ball, Structure Tone project manager. "Bringing everyone together was an important representation of that."

In addition to offering a more contemporary workplace for its staff, the Society wanted its headquarters to showcase the very strategies they promote for creating dementia-friendly communities. When it comes to a physical space, visual cues are key.

"When I first saw the design, I thought, 'Wow, that's a lot going on,'" says Ball. "It was very busy, with lots of colors, graphics on the wall and signage. But when you see how it all works, it really makes sense."

The Structure Tone team worked closely with architect HLW and the Society to employ those dementia-friendly features, including:

**Colour.** Bright, space-defining colours can help people with dementia remember and navigate through a space. The Society's offices use 24 different colours on one floor alone, helping identify different areas of the office.

**Signage.** Signage is not only frequent throughout the office, it's also bold. Signs are large and often installed on a backing that gives them a more tactile, three-dimensional pop from the wall.

**Artwork.** Much like the colour technique, artwork and special graphics on the walls help mark different areas of the space and serve as wayfinding tools.

Another factor in the new space was its acoustics. As a largely open-plan office with hard floor finishes, noise could have posed some problems. The

project team installed some fabric-covered cone-shaped structures along portions of the walls, combining the acoustic solution they needed with the visual and tactile cues that support their wayfinding strategies.

"You don't realize what an impact the surroundings of a building can have on people with dementia," Ball says.

*"It was truly interesting to learn more about the needs of people with dementia and how much design can help." ◀*

## Project Details

**Size:** 22,600sf  
**Client:** Alzheimer's Society  
**Architect:** HLW International  
**Engineer:** Elementa  
**Owner's Rep:** Cluttons LLP  
**Services:** Construction Management  
**Sector:** Nonprofit  
**Completion:** September 2016

A variety of colours and textures is central to dementia-friendly design



All photos these pages: Gareth Gardner 2016

# IPD in Action:

## Building the Pavilion at Penn Medicine

This spring, Penn Medicine announced what it calls the “largest capital project in Penn’s history,” and Philadelphia’s “most sophisticated and ambitious healthcare building project.”



The new Penn Medicine Pavilion will ultimately house 500 patient rooms and 47 operating rooms across its 17 floors and 1.5 million square feet. And while the \$1.5-billion effort is already poised to take healthcare construction to new lengths, it’s also blazing new territory as one of the largest projects on the East Coast to design and build through an integrated project delivery (IPD) approach.

LF Driscoll is part of the PennFIRST IPD team building the project, which also includes Penn Medicine as owner, Foster+Partners and HDR as architectural designers, BR+A as engineering designer and Balfour Beatty as construction management partner, as well as a number of key trade contractor partners.

So what does it mean to design and build a project of this scale via IPD? “Integrated” is truly the name of the game, say those involved. Here’s how it works.

### The business element

The contract itself is set up to not only encourage but demand a collaborative environment. Rather than each project team member signing a contract with the owner, the entire team is contracted together in a multiparty agreement where the success of each party relies on that of the others. “We’re all partners in this together,” says Ed Hanzel, project executive with LF Driscoll. “The contract describes what the process is and how we work through that from a business perspective.”

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This structure also allows the team to add key trade contractors and consultants through the same contract structure. In other words, these key contractors become invested, both literally and figuratively, in the project along with the main players, giving them the incentive to help find innovative, efficient or creative ways to reach the project’s goals.

### The behavioral element

The attitude required to make it in an IPD environment is certainly one of the differentiators from more traditional construction approaches. “Everyone involved has to be fully committed, and you have to believe in the process,” Hanzel says. “If you don’t trust the other team members, it won’t work.”

As part of the PennFIRST team, the members developed guiding principles and signed a “covenant” that defines the team’s values, principles and collaborative processes and holds all project team members to them. Through that promise, the team has committed to truly working collaboratively—from participating in team-building exercises, to taking personality compatibility tests, to following a well-developed process for team decision-making.

At the center of this team dynamic is perhaps its most critical feature: the colocation space, also known as “the colo.” The colo is essentially an office for the IPD team, similar in design and

function to any of today’s collaboration-focused workplaces. For the Penn Medicine Pavilion, Penn Medicine helped facilitate renting 24,000sf of office space near the construction site to use for the colo, which is filled half with open-concept individual work stations and half with working areas ranging from large, open meeting rooms with moveable partitions to smaller conference rooms, huddle rooms, a “visualization, conceptualization and modeling” room and areas for small mock-ups.

The advantage, says Hanzel and LF Driscoll project director, Matt Guinan, is that the entire project team is together, in the same space, making a truly integrated process possible. “We’re able to employ Lean project delivery tools to integrate planning, design, costs, scheduling logistics, construction planning—you name it—all together in real time,” says Guinan. “Different aspects of the project inform each other, which allows us to figure out the best way to do things.”

Take the concrete foundations, for example. As Hanzel explains, “We brought the concrete contractor into the colo to work with the engineers to design and detail the rebar in a way that would make fabrication and the assembly process much easier.”

The team can also introduce construction safety earlier and more effectively through this integrated approach. “We host ‘Design for Safety’ work-

All photos these pages: © 2016 Dan Schwab

shops in the colo where our contractors come in to explain what design changes could make their jobs safer and make the building safer for the operations and maintenance staff in the future,” says Guinan. “That’s something we can’t do in a traditional approach.”

### The process element

Another benefit to the IPD approach is the cost control built into the process. At the beginning of the project, the team collectively develops a “project target cost” based on the owner’s budget and program. This target guides all the decisions made for the design and construction going forward. Also called “target value design,” this process allows the designers, construction managers and users to work together throughout to make changes and informed decisions that will keep the project from creeping beyond the target cost.

In a conventional approach, the owner tells the designer what they want, the designer designs toward that end, and the construction manager costs it. If the project costs are over budget the team goes back to the drawing board to value engineer the design to bring it into budget sometimes at the expense of building elements that are important to the owner. The project target cost theory proposes that by working together throughout the design, the team will develop a plan that fits the budget from the start—and throughout construction.

“We’ve spent years wishing we could be involved in projects sooner so we could implement things that would make our side of the job easier and build a better end product for our clients,” says Hanzel. “In IPD, instead of taking a value engineering approach where we have to unravel something

Below ▼

In “the colo,” members of the project team work side by side



By working together from the start, an IPD project team can streamline the design and construction process

already completed, we can do that as we go. And we like that we can get our subs involved at that stage as well, so our expert contractors can work directly with designers. It’s good for everyone.”

One perceived downside to IPD, however, is the pace of decision making. With so many parties involved in every decision, the risk of creating a very slow-going process seems high. But, says Guinan, that delay is already built into the process.

*“The theory is to ‘go slow to go fast.’ In other words, you’ll spend more time up front but you will plan the work better, which means it will move along more smoothly toward the end,”* says Guinan.

### The next frontier

Construction is well under way at the Penn Medicine Pavilion site and is, in fact, starting to overlap with design—as planned. The design was divided into packages to ensure the team can continue to make smart, informed design decisions as the project moves forward. As the below-ground and mill order/structural steel packages wrap up, the team will next deliver the core and shell package and multiple fit-out packages. And all the while, the PennFIRST team will be at the ready to adjust to changing needs.

“Since we’re able to make design decisions as we go, we can push out some decisions knowing that medical technologies may evolve just while we’re in construction,” says Hanzel. “But we’ve been able to set our general parameters and use our project target cost process to adjust to whatever our client needs.” ◀

### Project Details

**Size:**  
1.5Msf/17 floors

**Client:**  
Penn Medicine

**Completion:**  
2021

**PennFIRST Partners:**  
Penn Medicine  
Foster+Partners  
HDR  
BR+A  
LF Driscoll  
Balfour Beatty



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## Project Details

**Size:**  
150,000sf

**Client:**  
Shire

**Architect:**  
Heckendorn Shiles Architects

**Engineer:**  
Kupper Engineering

**Services:**  
Construction Management

**Owner's Rep:**  
Watchdog Real Estate Project Managers

**Sector:**  
Life Sciences

**Completion:**  
May 2016

A former atrium was transformed into Shire's new cafeteria



# Bigger and Better for Shire

Since its founding in 1986, biotechnology firm Shire has grown to become a global leader in treatments for rare diseases. Now at almost 24,000 employees, this kind of growth inevitably brings changes in real estate needs. Such was the story for the company's suburban Philadelphia corporate services hub, where a recent acquisition meant it was time for a larger space.



Above ▲  
Shire's new PA office brings corporate services employees together in one location

As Shire's current lease was set to expire, the timing was right not only to expand but also to upgrade to a more inspiring, more collaborative workplace that employees would be proud to call home. The centerpiece of that vision was a new cafeteria, complete with a full-service kitchen, pizza oven and coffee bar. After realizing their original construction management firm could not meet their tight time frame, Shire presented their challenge to Structure Tone.

*"The space they wanted for their cafeteria was the building's former atrium and mezzanine area. As a totally open space, the existing infrastructure wasn't conducive to a full-service kitchen and servery, so we knew we had a challenge ahead of us. We were really making something out of nothing,"* says Matthew McHale, Structure Tone project manager.

Working with the architects, the team got to work, demolishing the steel mezzanine and cutting through the concrete slab to install all the necessary MEP infrastructure below ground. The team also had to make room for kitchen-specific systems such as grease interceptors, exhaust hood ventilation and the like.

Partway through that work, another complication came to light—the working area needed about 50% more workstations. "After the project began, Shire had a need to increase the seat count to accommodate more staff," McHale says. "Basically, everything had to change. We worked with the architects on a new layout and how to now accommodate support infrastructure like data lines and MEP systems without adding big, obtrusive columns."

As McHale puts it, collaboration was key as the design and construction team came together to make the new vision work. They added another shift to expedite the MEP work, new carpet and new paint, ultimately adding only a few weeks to the original schedule.

"We all worked as a team to provide what our client wanted," says McHale. "And they love the results." ◀

# INFECTION CONTROL IN HEALTHCARE CONSTRUCTION:

## What You Should Know

By Charles Steiner and Ray McDonald



Above ▲  
Charles Steiner



Above ▲  
Ray McDonald

For obvious reasons, infection control isn't just a "best practice" in healthcare construction. It's a responsibility, a moral duty and even a legal obligation. Over 100,000 people die each year from hospital-acquired infections (HAIs), and 5% to 7% can be directly attributed to construction. Many projects take place in the middle of an active hospital, where people with vulnerable immune systems simply can't risk being exposed to construction-generated dust, debris or other potentially dangerous impurities.

FGI guidelines require a number of baseline infection control parameters, from isolating construction with sealed perimeters to monitoring air pressure. But in over 36 years of building healthcare facilities, we have developed a number of tips for healthcare project teams to consider to ensure their infection control precautions go well beyond baseline expectations.

1. Know your client's policies and procedures. Every hospital or healthcare facility has its own safety and infection control policies and practices. The best way to ensure the construction team's plan aligns with those policies is to convene a task force to develop the Infection Control Risk Assessment (ICRA). This multidisciplinary ICRA team should include representatives from the construction manager, the design team and the hospital's infection control, project management, physical plant and safety departments. This combined knowledge about infection control,

the environment of care, constructability and site challenges is essential for a successful process and positive end result.

2. Establish a "culture of caring." One of the key mantras we remind our team members is that this is a hospital, not a construction site. We like to use what we call our "Operation 360" approach—we work inside a metaphorical box, and we must know who and what is on all six sides. Patients, visitors and staff come first, before whatever the day's construction needs might be. Find out and understand the susceptibilities of the patients in the area of construction. Could noise affect their comfort or recovery? Would vibrations impact their treatment? Are they sensitive to certain materials or smells? In most cases, scheduling work around the most vulnerable time periods will reduce or eliminate these potential risks. Communication is also key—speaking to hospital user groups and nurse

All photos these pages: Michael Verzella, Courtesy of Structure Tone



managers lets both you and them understand each other's needs and schedules, and you can plan together accordingly so that patients continue to receive the best care.

3. Train your own infection control specialists. The construction crew is on the front lines and should be educated and empowered to lead infection control maintenance

throughout construction. Crew members should each have assigned infection control responsibilities and be trained on and measured by them, from maintaining the ante rooms to routinely inspecting HEPA machines and changing their filters. Daily check-off maintenance sheets can help track and enforce ICRA program compliance. Follow-up,

from regular inspections and documentation to disciplinary plans for violations, will keep the entire team united and ensure nothing slips through the cracks and puts patients' lives in jeopardy.

4. Practice zero tolerance. This is just simply a good practice for everyone. Taking shortcuts could risk patients' lives and cost you your job. What's more, insurance companies are starting to refuse payment to hospitals where patients obtain an HAI. If the hospital can, they will pass along that cost to the construction team. Again, it's key to remember that this is not a construction site—it is a hospital. The slightest safety or contamination breach can have serious, life-threatening consequences to an immunosuppressed patient. All those working on the project must have that "Operation 360" attitude of full awareness of what's around them to keep the entire hospital community safe.

Remember, one day the person on the other side of that ICRA barrier just may be you or someone you love. We must take our responsibility as construction managers just as personally. ▲



Above ▲  
Taking an "Operation 360" approach means understanding the impacts of construction across the entire site





## Project Details

### Size:

476,000sf

### Client:

Reading Health System

### Architect:

Ballinger

### Engineer:

Ballinger

### Services:

Preconstruction,  
Construction Management

### Sector:

Healthcare

### Completion:

October 2016

“The new facility represents more than just bricks and mortar and a shiny glass and steel building”

# MOVING MEDICINE *Forward*

Reading Health System's main hospital campus is in the heart of the city, an urban hub of nearly 88,000 people and the county seat for the more rural surrounding towns and villages of Berks County.

As the city's population has grown—and made Reading Hospital the busiest emergency department and trauma center in the state—Reading Health understood their facilities would need to keep pace. So in 2003, they launched a plan to develop a surgical center and inpatient tower that would bring the hospital's surgical capabilities into one central hub and better position the hospital to be the regional leader in state-of-the-art medical technologies and procedures.

## Solving the space crunch

Over the next 10-plus years, plans for the 476,000sf Reading HealthPlex for Advanced Surgical & Patient Care took shape, offering seven levels of surgical suites and private patient rooms. When it came time for construction, the first challenge facing the project team was to determine how to build such an impressive facility on such a dense site.

“This area of West Reading is actually quite urban,” says Jeff Hutwelker, LF Driscoll Healthcare project executive. “It was an extremely tight site with buildings surrounding it on a few sides and active streets on the others.”

With little room for trailers, the team first had to establish a base camp. With the help of Reading Health System, the project team leased a former naval armory about four blocks from the site. The abandoned building's parking lot was perfect for storing materials and for setting up a trailer complex, which could serve as the team office and the subcontractor field offices.

To keep the construction site itself from becoming too cramped, LF Driscoll Healthcare contracted with the subcontractors for “just-in-time” delivery, where building materials are transported to the site only when they're ready to be installed. “Ideally, contractors like to be able to deliver all of their materials at once and use them when the time comes,” says Hutwelker. “But everyone understood the circumstances of this project and that a just-in-time approach would be the most practical solution to our space crunch.”

Complicating matters further, the site was also the channel for just about all of the utilities serving the existing hospital. Time was included in the schedule for relocating all of those utilities, including carefully coordinating with the hospital to shut down service in phases and provide back-up utility service so the hospital could continue operating as usual.

## Blasting off

The need to keep things running smoothly at the hospital was, of course, a constant focus for the project team. Another of the site's challenges was the abundance of rock—70,000 cubic yards—that had to be removed. Removing it meant blasting. To keep it tolerable, the team worked with the hospital to schedule two blasting periods per day, often using electronic detonators to set off blast shots in a sequence to minimize vibrations.

As the building took shape, making the breakthrough connections from the new hospital to the existing one required some similar creativity. “In one area, we were installing the connection directly above an operating MRI room,” Hutwelker says. “We had to tunnel under the space, with the necessary shoring, to make sure they could continue using the MRI equipment while we moved construction forward.” The team also worked two shifts, focusing on the most disruptive work during the evening.

## A greener future

As part of their commitment to superior care and to the health of the surrounding community, Reading Health System worked with Ballinger to include an extensive green roof across more than 72% of the building's footprint. The 88,000sf roof is, in fact, the largest in Pennsylvania and the third largest at any US hospital. Such substantial coverage required the construction team, again, to go above and beyond to ensure the roof structure could sustain its many layers.

Installing the roofing membrane in particular required careful attention to details. “The membrane is very delicate, so we used an electric vector mapping system to drive electric currents through the membrane to detect any leaks,” says Hutwelker. “We found a few, which we were able to repair before the many layers of insulation, topsoil, irrigation and plantings went in. We went to great lengths to make sure the membrane was completely clear before the roof was completed.”

## Looking ahead

Now that the new HealthPlex is up and running, Reading Health System expects the facility to help raise its status from an adult level 2 trauma center to an adult level 1, thanks to the added capabilities and improvements.

“The new facility represents more than just bricks and mortar and a shiny glass and steel building,” says Brent Wagner, MD, Reading Health System chairman of the board. “It reflects the commitment of the organization to not be second best—to be absolutely the best the community deserves.” ◀

Below ▼

The largest of its kind in Pennsylvania, the hospital's expansive green roof provides healing space for patients and reduces stormwater runoff





# LF DRISCOLL Healthcare Center of Excellence

Over 80% of the workforce at LF Driscoll has experience building healthcare facilities. And that expertise is in high demand—not only by their clients. Within the Structure Tone organization, LFD’s healthcare experts were increasingly being asked to share their knowhow with other markets and areas of the country.



That’s when the lightbulb went on. “We wanted to do more to share what we’ve learned in our decades of healthcare experience,” says Bob Miller, LF Driscoll Healthcare executive vice president. “We already host our own in-house 30-hour OSHA training so we thought, ‘What if we could do something like that for healthcare?’ And that’s when the LF Driscoll Healthcare Center of Excellence started to take shape.”

## Healthcare A to Z

The LF Driscoll Healthcare Center of Excellence is an intensive training program that covers the specific topics, tools and best practices that design and construction teams face when building healthcare facilities. Like the OSHA program, this 30-hour training is taught in-person over the course of four sessions, covering such topics as:

- ◆ Understanding the healthcare environment
- ◆ Infection Control Risk Assessment and implementation
- ◆ Life safety plans
- ◆ Interim life safety measures
- ◆ QA/QC and fire-rated assemblies
- ◆ Ventilation and air management
- ◆ Electrical systems
- ◆ Commissioning
- ◆ Department of Health inspections
- ◆ Project management and financial analysis
- ◆ Facilities guidelines
- ◆ Joint commission elements and protocols
- ◆ Utility shutdowns and hot work procedures

Each participant receives a reference manual that describes the topics and skills presented in the training, and they visit an active healthcare construction site. “They have to gown up, put on the booties—take all the precautions they would if they were working on the site,” says Miller. “It brings all that training to life.”

## Destination certification

One of the chief goals of the program is to prepare participants to become Certified Healthcare Constructors (CHCs). “I strongly feel that one day hospitals are going to want their construction teams to be CHC certified,” says Miller. “This program will help us be ready when that time comes.”

The LF Driscoll Healthcare Center of Excellence curriculum closely follows the topics covered in the CHC exam, from knowing the specifics of healthcare standards, MEP systems and safety precautions to understanding the business of healthcare and the impacts of construction projects.

“This course is absolutely what prepared me for the CHC exam,” says Todd Prol, a project executive with Pavarini McGovern who passed the CHC exam last year. “Some project managers I’ve spoken with who work in healthcare every day had told me how hard the exam is. This training was certainly an effective tool to prepare me for it.”

## Expertise for all

The program isn’t only targeted to healthcare construction project managers and executives. In fact, representatives from all facets of healthcare development are taking the training.

“At Pavarini McGovern, we’ve sent project executives, project managers, estimators, safety staff—a really broad range of staff,” says Prol.

*“Really, anyone who has their hands in healthcare projects, from estimating, to operations, to safety staff, should take this training,”* says Prol.

The program is also attracting the attention of healthcare construction professionals outside of the Structure Tone organization. After testing out the first few training sessions with in-house staff, COE organizers invited a handful of partners and clients to pilot the training as well. The feedback has been overwhelmingly positive.

“This training serves as a vehicle for continued improvements, which meets our corporate goals of excellence,” says Grace Lin, a senior project manager at CBRE who specializes in healthcare. “I especially like how it establishes a context for problem-solving in project delivery, focusing on patient-centered, sustainable and operational efficiencies.”

## Center of Excellence 2.0

Participation in the LF Driscoll Healthcare Center of Excellence training is growing, but the company knows there’s still progress to make. “We’re looking at ways to make the training more accessible and at inviting more clients and partners to take part in the program,” says Miller. “And we are working to get it accepted by a professional development certification program as well so it will count toward people’s CEUs.”

In the meantime, the program remains focused on ensuring participants take—and pass—the CHC exam.

“If you can put together a project org chart where everyone is CHC certified, it places your team at a different level,” says Prol. “It says something about the commitment of the individuals and of the company to truly offer the most knowledgeable experts in healthcare construction.”

**Interested in learning more about the LF Driscoll Healthcare Center of Excellence?**

Contact Christopher Shaw, 212.251.9271 or [christopher.shaw@lfdiscoll.com](mailto:christopher.shaw@lfdiscoll.com).

## SAFETY RISK ASSESSMENT (SRA) COMPONENTS

All new construction and renovation projects must conform to safety standards.

 <b>INFECTION CONTROL RISK ASSESSMENT (ICRA)</b>	 <b>PATIENT HANDLING &amp; MOVEMENT (PHARMA)</b>	 <b>FALL PREVENTION</b>	 <b>MEDICATION SAFETY</b>
 <b>BEHAVIORAL + MENTAL HEALTH RISK</b>	 <b>PATIENT IMMOBILITY</b>	 <b>SECURITY RISK</b>	





# GIVING BACK: Life-Changing Surgery for Kids with Cerebral Palsy

Ella is 4 years old and loves swimming and gymnastics. Alex is 6 and competes in karate. Sophie is 7 and takes ballet and makes her own YouTube videos. While each of these kids has his or her own unique personality, charms and hobbies, they do have one thing in common: they all have cerebral palsy. To help treat their condition, each of them has also undergone a life-changing surgery called "selective dorsal rhizotomy," or SDR.



"We did a lot of research into what our options were for Ella," says Simon, the Dublin, Ireland-based father of 4-year-old Ella. "We came across SDR and contacted two Irish families whose children had the procedure. We met their kids, saw videos of their condition before surgery and saw them running around before our eyes. We very quickly made up our minds to do it."

The only procedure of its kind, SDR essentially involves cutting some of the damaged sensory nerve fibers that are causing muscle spasticity, significantly reducing and often even eliminating it. The challenge for many families, however, is the surgery is available in only a few cities in the world, and the regarded expert in SDR, Dr. TS Park, is at Children's Hospital in St. Louis, Missouri. For these Dublin-area families, the cost of travel to and from the US, accommodations while there and the surgery itself is staggering—not to mention the two years of intensive physiotherapy and strength and conditioning that follow.

That's where Structure Tone's golf classic comes in. This annual event brings together Dublin's construction community to play golf and raise money for a selected child each year. Each year 32 teams compete, with more clients, consultants and employees supporting the post-golf evening event, including a live auction hosted by Structure Tone's Richard Hemming. To date, the golf classic has raised over €200,000, all of which has gone directly to each child's family to help fund their SDR quest.

*"While there are many worthwhile institutions and organisations that help children with conditions like cerebral palsy, we really wanted to do something that we knew directly supports a child who urgently requires funding and is without any state or government support," says James Reidy, managing director of Structure Tone's Dublin office.*

The influx of support from the event has certainly made a difference to the families who have participated so far. "We needed €150,000," says Simon, whose daughter, Ella, was the focus of the 2016 golf classic. "The fact that Structure Tone hosts an event that eats into that significantly and lends support to families like ours is amazing."

The event itself puts the entire focus on the child. The family comes for the day, tells their story, talks with participants and put their own stamp on the day's décor and festivities.

"Oh, it was totally Ella's day. Everything was about her, including all the pink," says Simon. "Lots of the people who were there still follow Ella's progress on our Facebook page. It has been an incredible story."

This year's classic supported 18-year-old Courtney, whose palsy did not start to manifest seriously until she was 17. The spasticity in her legs had gotten to the point where it was impossible for her to stand or walk independently. Without fundraising help, she says, her future "would have been a life in a wheelchair."

Similarly, after having her surgery last year, this fall Ella took seven independent steps for the first time—an enormous milestone in her progress.

"I cannot overstate how huge Structure Tone's golf event is in the amount of funds it raises toward the process. For someone like Courtney who's had all of this happen within the year, without this event she wouldn't be going to America for the surgery," Simon says. "It takes so much pressure off of it. And all Structure Tone asks us to do is show up and enjoy ourselves."

For more information on the golf classic, contact James Reidy at [james.reidy@structuretone.ie](mailto:james.reidy@structuretone.ie).

Many thanks to all the Irish subcontractors, clients and consultants who continue to support this event every year, and to Structure Tone's amazing Dublin team who organises and plans it so successfully. ◀



All photos these pages: Mark Reddy



# RESTING EASY IN DALLAS

## Children's Health Sleep Disorders Center

It was a classic case of good news/bad news when Children's Health determined to open a new pediatric sleep disorders center near their Dallas campus. The good news was an unused existing building was available right on the edge of campus. The bad news? The building sits along active railroad tracks.



The new facility brings sleep disorder research to the Children's Health Dallas campus

All images these pages: Kevin Bowers



Controlling the building's acoustics was essential to its sleep research



**Above ▲**  
The space had been vacant for nearly two years before its reinvention

Needless to say, building a sleep center along train tracks is a daunting challenge. But working with Children's Health and Array Architects, Structure Tone Southwest's Dallas team was able to make it work.

How? First, the STSW team had built a number of performing arts centers, so acoustic control was already an area of expertise—and one they knew they needed to identify early. To get started, the team led a design charrette to determine how to mask the rumbling trains outside while staying within budget.

*"It all comes down to acoustical isolation. That means making sure you isolate all materials so nothing vibrates from outside materials into the rooms."* says Chris Lang, Structure Tone Southwest project manager.

That isolation included adding springs, rubber neoprene pads or uninterrupted space between materials to ensure nothing on the roof or in the walls translated noise or vibrations through the ductwork, light fixtures or other elements. "We essentially built a box within a box," Lang says.

Once the team had their acoustical approach down, the project posed another challenge. Thanks to years of abandonment and neglect, the building's MEP system was failing, especially the plumbing. The team didn't have the time or budget to tear up the entire foundation and replace the whole system. Instead, they guided small camera lines into the pipes to detect any corroded areas so they could simply make spot repairs under those precise spots.

The building also lacked a permitted fire sprinkler system—a building code requirement added by the City of Dallas after construction had begun. The construction team managed fire rating changes, installing new water service to the building and other requirements mandated by strict healthcare construction guidelines.

Despite these challenges, the Children's Health sleep disorders team was able to move into their new space last spring, and everyone is thrilled with the results.

"The feedback has been positive," says Lang. "We definitely hit some road blocks as we worked toward the finish line, but when you work with a great client like Children's Health, it makes the whole experience better." ◀

### Project Details

<b>Size:</b> 11,000sf	<b>Owner's Rep:</b> CBRE
<b>Client:</b> Children's Health	<b>Services:</b> Preconstruction, Construction Management
<b>Architect:</b> Array Architects	<b>Sector:</b> Healthcare
<b>MEP Engineer:</b> B&H Engineers, Inc.	<b>Completion:</b> May 2017
<b>Acoustician:</b> Idibri	

# QUALITY CARE, TECHNOLOGY AND EMPATHY:

## Q&A with Judith Kratka of Abington – Jefferson Health

Much has changed in the healthcare landscape over the course of 30 years. And Judith Kratka has seen it all. Kratka is the corporate director of facilities planning and sustainability at Abington Health, which combined with Jefferson in May 2015 to become Abington – Jefferson Health. Abington – Jefferson Health encompasses its flagship hospital, Abington Hospital in Abington, PA and Abington – Lansdale Hospital in Hatfield Township, PA, as well as six outpatient campuses, three urgent care centers, physician offices and outpatient facilities providing expert medical care in Bucks, Montgomery and Philadelphia counties.



Above ▲  
Judith Kratka

As she approaches retirement, Kratka reflects on where healthcare design and construction is going, and what will always remain the same.

### What is the day-to-day like for someone in your role?

I am essentially responsible for everything related to design, construction and sustainability. So anything dealing with new buildings, renovations and the millions of little things that come with that, like furniture selection, consulting with users on space issues, managing our space inventory, etc. It runs the gamut from really large new construction projects to the most mundane and simple upgrades. With that kind of breadth—and since I have been here for 29 years, most of the time as a department of one—you get pulled into many other things and try to help where you can.

### What are the biggest challenges in planning and building healthcare facilities?

Resources. And not just staffing, but also capital resources. There is never enough capital to stay on top of everything that needs to be done or should be done. Prioritizing the resources is a serious challenge. When you have fifty projects in front of you and all of them are worthy, it's difficult to figure out what's "most worthy."

Changes to our country's reimbursement system also makes that difficult. With Obamacare, then Trumpcare, then who knows, it can be very unsta-

ble. Revenue and reimbursement do impact design. It's hard to plan in a vacuum.

Technology is also an ongoing challenge. It's changing so quickly. The idea that someday you could simply say out loud, "Change the temperature to 72," and the building automation system will hear you and do it—that's amazing. Jefferson's president and CEO, Stephen K. Klasko, MD, MBA, is an extremely innovative guy and has partnered with IBM and their Watson system to envision future needs of healthcare staff and patients. It will be exciting but definitely challenging to continue to accommodate those needs going forward. Technology impacts design and construction the most because it creates so many opportunities but changes so rapidly.

### Abington recently combined with Jefferson. From a real estate and facilities perspective, what are the challenges and opportunities of bringing together two large systems?

We combined around two years ago and during this transition period, we have stayed mainly decentralized in our operations. However, this year we began a systemwide capital budget process in which we decided on system-wide priorities. The Asplundh Cancer Pavilion, under construction right now, is a top priority in the system. We're moving toward a more shared approach to everything and into "corporatizing" the facilities group into one that uses similar systems. It will be a huge



The new Asplundh Cancer Pavilion is scheduled to open in 2018

undertaking to integrate everything, but it's a great step to bringing us all together.

### What is your favorite thing about working in healthcare?

I am really motivated by the "doing good" thing. The not-for-profit world is what I care about. My greatest joy has been to try to oversee the design and construction efforts that do better things for our patients and our staff. That's my joy, and that's the only thing that's ever driven me. Knowing that you can make a difference from time to time with your efforts is very, very satisfying. I also love, love, love my colleagues. You make a lot of friends when you work on projects so I love that too.

### What does a healthcare facility of the future look like to you?

Hospitals are going to be really high-tech places with as much automation as possible. Labs are already highly automated, and I see the whole Siri and Alexa smart-building type of thing becoming huge. Technology has also helped organize and document processes, which I think will continue to get better.

The ongoing integration of health systems will also continue and affect the way we design and build. It does complicate what we do, mostly because merging cultures and systems is challenging and takes time. Especially when the systems blend urban and suburban cultures—it's just different. Early in my career, I worked in an academic

medical center in Manhattan. At the time, having five private rooms was a lot. When I came here, most of the campus was private. Staff expectations were different, patient expectations were different. But in the end, we all just want good,

competent care with kind people being empathetic to us. I perceive that to be my job through facilities, and that won't change even if the hospital or system names do. ◀



During Kratka's career, Abington Hospital has added four new buildings



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# CHARTING NEW TERRITORY

## in Child Healthcare

Cutting-edge healthcare takes a cutting-edge facility. The new Medical Behavioral Unit at The Children's Hospital of Philadelphia (CHOP) is just that kind of place—the first in the country to specialize in patients with primarily acute medical issues who also have behavioral health needs.

*"This kind of project has never been built before. It was a completely custom job, down to the doors and screws."* says LF Driscoll project manager Vincent Collura.

Led by LF Driscoll, the project involved renovating 11,000sf of an existing building into this special combination of features and processes, including 10 patient rooms, administrative support space and common areas, all without the benefit of lessons learned from similar facilities.

Because most of these kids suffer from underlying behavioral conditions, personal safety throughout the space is a critical feature. The entire unit is designed from an anti-ligature perspective, meaning nothing can be used or modified for self-harm purposes. Everything from the light fixtures down to the headwall screws was considered for its possible impact on the patients. The showers and bathrooms have tamper-proof toilets, shower heads and faucets, and all of the door and cabinet hardware use continuous hinges and tamper-proof screws. Even the clinical sinks use sensor fixtures and face patient areas so nurses and doctors never have their backs to their patients.

Similarly, all of the glass is shatterproof, from the exterior windows to the bathroom mirrors and protective glass in front of the television screens. The windows are rated to resist over 2000 ft-lbs of pressure, making them a special order with a 16-week lead time and very precise pocket dimensions with no room for error. The furniture in each room was also custom-made to be bolted down or very heavy so it could not be used as a projectile.

Another challenge was to keep as much of the building's infrastructure network as possible out of the patient rooms. That meant all of the MEP equipment and piping was limited to the one core

hallway that circled the entire unit. To make matters more complicated, the unit was split down the middle by a skylight and isolated from the electrical closets and risers by an active corridor and elevator lobby. "We could only proceed so far with our work and then needed to wait until a window of opportunity opened up for us to shut down the corridor and work around the clock to make the connections," says Collura. "We worked three shifts, 24 hours per day, at three different times throughout the project in order to make all the connections and minimize impacts to the hospital."

Finally, all of this state-of-the-art, never-been-done-before work had to be completed in just five months—including working over the holidays. "We really had to work as a team and make decisions quickly," Collura says. "It came down to keeping the vision in mind at all times, understanding how the different components would come together and what the final product would be at the end."

They did it, and Collura says the challenging process was worth every minute.

*"When you're working in a hospital, you're doing something special. You're creating a space that is going to help kids get better and creating a positive impact on the future. Knowing I'm contributing to something truly meaningful—that's what drives me."* ◀



Above ▲

The entire unit is designed from an anti-ligature perspective, from the light fixtures to the headwall screws



All photos these pages: © Jeff Elter/courtesy of LF Driscoll

Above ▲

The nature theme helps provide a calming atmosphere

### Project Details

- Size:**  
11,000sf
- Client:**  
Children's Hospital of Philadelphia
- Architect:**  
Zimmer Gunsul Frasca Architects LLP
- Engineer:**  
Wick Fisher White
- Services:**  
Construction Management
- Sector:**  
Healthcare
- Completion:**  
January 2017



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This summer Touro College welcomed its second class of dental students

# BUILDING THE FUTURE OF DENTISTRY

Building medical facilities of any kind can involve a host of special circumstances, from intense infection control practices to incorporating leading-edge equipment and systems. But when that medical facility is also a teaching institution, the equipment, technology and user population adds a whole new level of challenges.

Pavarini Northeast Construction's project manager, Michael Donnelly, and superintendent, Christopher Dold, faced those challenges head on with the Touro College team, led by Jerome D'Imperio and Sarah Cottet. Together they built its brand new college of dental medicine, which opened last summer as the first new dental school in New York in over 50 years.

"As a new institution, everything is state-of-the-art. Touro aimed to create one of the premier dental schools in the country, and their facilities reflect that."

### Piecing together the puzzle

Dold and his team helped Touro renovate over 80,000sf on two floors of an existing building, creating a 112-seat simulation lab, an 8-clinic, 81-chair clinical practice facility and a testing and exam area. Naturally, each of these areas require specific equipment which, in turn, comes with an abundance of supporting infrastructure and coordination.

The new equipment required piping for CPVC vacuum, cold and tempered water lines, cast iron waste and vents and brazed copper for compressed air, nitrogen, oxygen and nitrous oxide lines. Fitting all of those necessary services into the same corridors to reach the patient chairs was, says Dold, probably the team's biggest challenge. "There is just so much to work around, from all of the chair services to the already existing duct work and MEP systems. Although the drawings helped, we really didn't know for sure how we would fit it all in until we opened up the ceilings."

The services were all run through the floor up to each chair through core holes drilled into the ceiling of the floor below. Each chair unit involved 10 or 11 core holes, which had to be laid out meticulously to correspond with the exact location of the dental furniture and equipment.

If that wasn't challenging enough, the team also had to contend with working through the ceiling of an active office space. "The first and second floors of the building are mostly office space, which was occupied throughout construction," says Dold. "We broke the drilling into four phases

to relocate staff in each area, and we had to work quickly and delicately around their work stations."

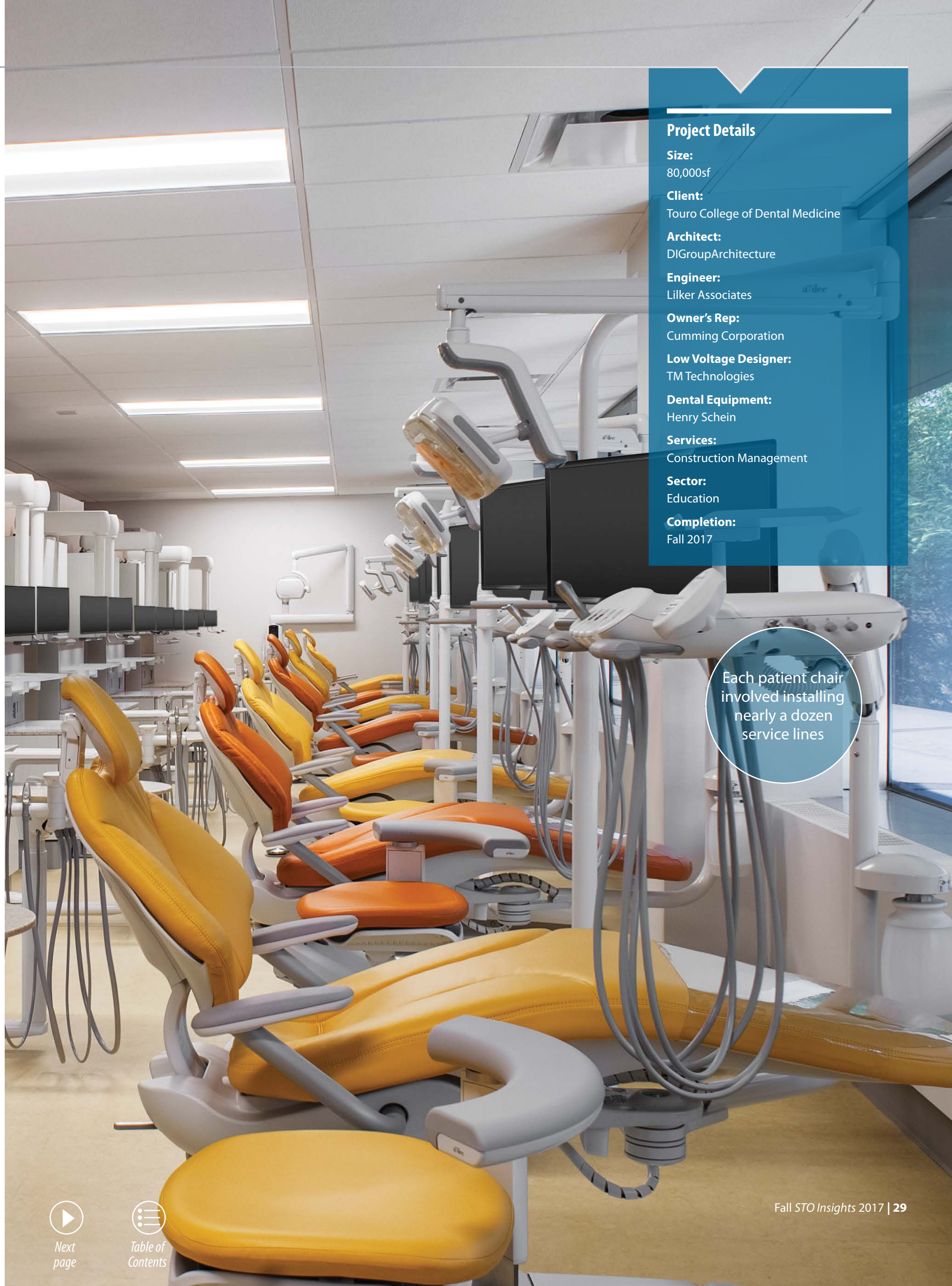
### Looking to the future

After welcoming its inaugural class last year, the college has set off on its path of educating and inspiring our country's next generation of dental health professionals. Students began training in the simulation lab last year, and the college's clinical training facilities are nearly complete.

The process has been a challenge but, says Dold, it's one that the entire project team enjoyed tackling together.

*"A lot of our partners, our plumbers and electricians especially, do the same kind of work day in and day out. This project was a little different and we all had to work together to make sure the many pieces of the puzzle fit together."*

All photos these pages: Keith Williams, Photographer



### Project Details

**Size:**  
80,000sf

**Client:**  
Touro College of Dental Medicine

**Architect:**  
DIGroupArchitecture

**Engineer:**  
Lilker Associates

**Owner's Rep:**  
Cumming Corporation

**Low Voltage Designer:**  
TM Technologies

**Dental Equipment:**  
Henry Schein

**Services:**  
Construction Management

**Sector:**  
Education

**Completion:**  
Fall 2017

Each patient chair involved installing nearly a dozen service lines

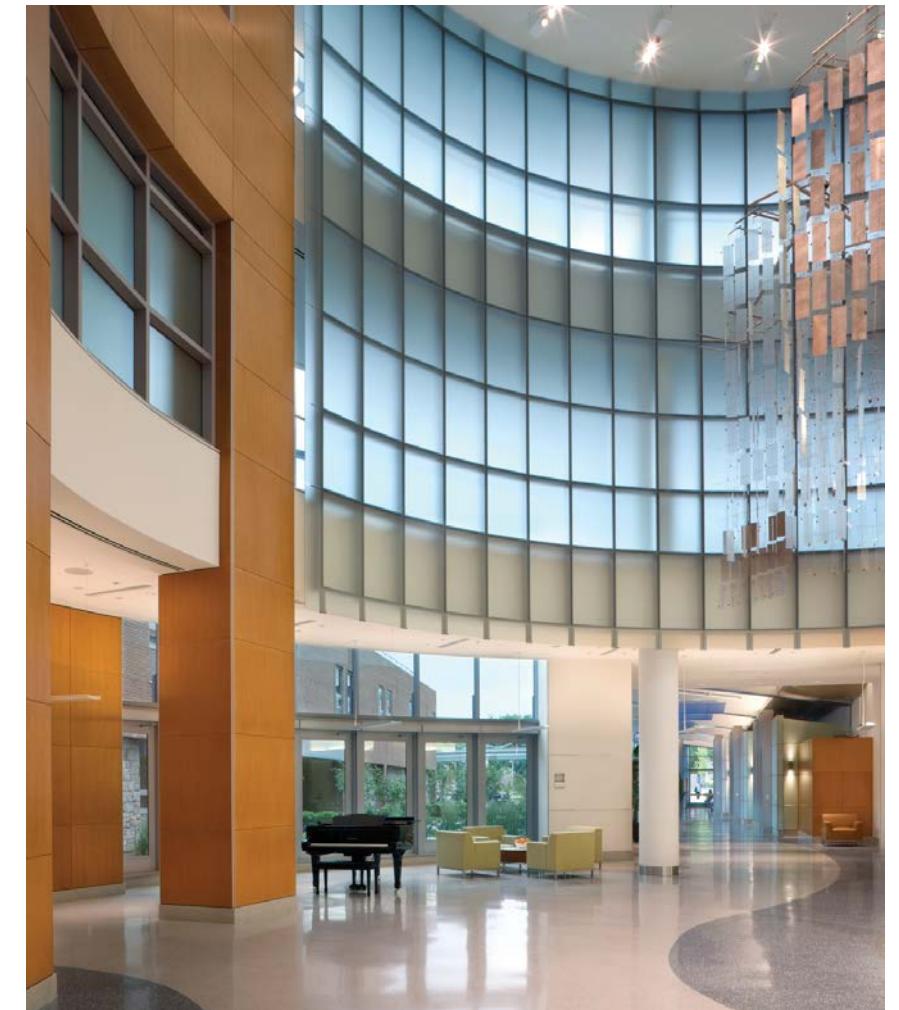
Take a look at some of the notable—and inspiring—healthcare projects we have completed.  
#STOamazingspaces



Left: ©Andrea Brizz; Right: ©John Beer, Building Images Photography



Left: ©John Beer, Building Images Photography; Right: ©Aker Imaging



Above ▲ University of Hawaii Cancer Center, Honolulu, HI

Above ▲ Montefiore CHAM, Bronx, NY

Above ▲ Robert Wood Johnson, Somerville, NJ

Above ▲ Hackensack Meridian Health Jersey Shore University Medical Center East Campus Expansion, Neptune NJ



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