



Saint Francis Hospital and Medical Center  
John T. O'Connell Tower

## Table of Contents

1. Application Form
2. Judging Criteria Narrative
3. Summary and Photographs
4. Additional Information



## APPLICATION – 2012 Build CT Awards

Project Name Saint Francis Hospital and Medical Center - John T. O'Connell Tower  
 Address 114 Woodland Street  
 City Hartford State CT Zip 06105  
 Date of Completion March 2011

Project Type (check one):  X CM/GC New Large Construction (>\$20 m.)  
 CM/GC New Small Construction (<\$20 m.)  
 CM/GC New Mid-Size Construction (\$5 m. to \$20 m.)  
 CM/GC Large Renovation (>\$20 m.)  
 CM/GC Mid-Size Renovation (\$5 m. to \$20 m.)  
 CM/GC Small Renovation (<\$5 m.)  
 Specialty Contracting: Electrical  
 Specialty Contracting: Mechanical  
 Specialty Contracting: Concrete (Co-sponsored by CRMCA and CCPC)  
 Specialty Contracting: Interiors (Drywall, ceilings, flooring, wall coverings)  
 Specialty Contracting: Exteriors (Exterior walls, roofing, building envelopes)  
 Specialty Contracting: Sitework/Landscape  
 Other Specialty Construction (Other construction not included in above categories)



**Applicant**

Firm name Turner Construction Company  
 Contact name Rusty Hirst  
 Phone 203.783.8810 Email rhirst@tcco.com

Please List Project Participants (owner, designer, subcontractors, major suppliers etc.) Use additional pages if needed

**Owner**

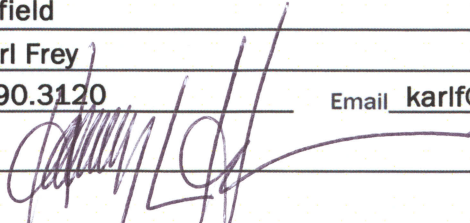
Firm name Saint Francis Hospital and Medical Center  
 Address 114 Woodland Street  
 City Hartford State CT Zip 06105  
 Contact name Mr. Robert Falaguerra  
 Phone 860.714.5400 Email rfalague@stfranciscare.org

**Designer/Architect**

Firm name TRO|Jung Brannen  
 Address 22 Boston Wharf Road  
 City Boston State MA Zip 02210  
 Contact name Mr. Dana Cooper  
 Phone 617.502.3400 Email dcooper@trojungbrannen.com

**Other**

Firm name BVH Integrated Services  
 Address 50 Griffin Road South  
 City Bloomfield State CT Zip 06002  
 Contact name Mr. Karl Frey  
 Phone 860.290.3120 Email karlf@bvhis.com

Signature of Contractor 

## Narrative

**A. State-of-the-Art Advancement.** The John T. O’Connell Tower Project located at St. Francis Hospital in Hartford, CT consists of a new 10 story tower of approximately 320,000 GSF. The new Tower is connected to the existing hospital on several floors and now provides a new Central Sterile facility and additional shipping / receiving space on the first level. The second level houses a new emergency department that contains 64 private exam/ treatment rooms, 4 trauma bays, 2 dedicated X-ray rooms, a new dedicated CT scan room, new front entrance & main lobby, and 13 covered ambulance bays. There is also a helicopter landing area on the roof of the new building that services Lifestar. The third level holds 18 new Operating Rooms; all of which are new OR’s equipped with the latest in Operating Room Integration Systems Technology. Two of these OR’s are equipped for robotic procedures. One of the new operating rooms is a State-of-the-art “Hybrid OR” which contains X-ray equipment and a control room for live x-rays during procedures. The fourth level serves as the new Connecticut Joint Replacement Institute which has a separate lobby, office space, 22 preparation and recovery areas, and six operating rooms which are also equipped with the latest in Operating Room Integration System technology. This space also encompasses the latest in “bed-less” technology, with fixed operating room table pedestals for the ultimate in table & patient flexibility for Orthopedic Procedures. Level 5 contains the central mechanical space for 11 new air handlers and other mechanical equipment. Level 7 will contain 36 private patient care rooms. Levels 9 and 10 will have an orthopedic recovery gym in addition to 33 private patient care rooms on each floor.

**B. Excellence in Project Management.** At the onset, it was understood by the entire project team that we were faced with a highly sophisticated & complex project. The Turner team put in place several policies & procedures for success.

The Team’s 3-D coordination process not only enabled designers and the Turner to fit equipment within the space provided, but also allowed virtual walk-throughs by the facility’s engineering departments for approval of equipment access for future maintenance requirements. This process also allows for mechanical trades to prefabricate major components, increasing quality as well as decreasing the required on-site labor & jobsite congestion.

The project team defined specific mock-up procedures and goals not only for quality of construction but also quality of design & user functionality of the repetitive spaces. By involving the end-users early in the mock-up process, the project team was able to adjust as required and include the latest

hospital initiatives of LEAN procedures, new patient monitoring systems, and bariatric patient lift systems in the final product, which is a difficult task during a three year construction process, as these procedures are constantly being refined with new technology.

The JTO Tower also had a phased turnover and occupancy plan which required the project team to keep all the inspection agencies coordinated with each other and the hospitals operations. In addition to the Hartford Building Department & Fire Marshall’s Office approvals, Turner successfully coordinated the inspections & approvals (including assembly of all documentation) for the State of Connecticut Department of Health and the State of Connecticut Department of Transportation and the FAA for the rooftop heliport.

**C. Project Team Effectiveness.** Throughout the preconstruction and construction phase of the project, Saint Francis Hospital, TRO|Jung Brannen and Turner all worked closely & efficiently with each other. We were all able to stay committed to the process of working together and finding the best value for the Hospital, even during the process of expanding the project from an 8 story tower to a 10 story tower, redesigning operating room spaces to house “State-of-the Art” Hybrid Operating Rooms which included X-ray equipment and control rooms, and waiting until the last possible minute for the final Operating Room Technology Integration System to ensure that the hospital was receiving the most accurate and up to date OR technology for their patients & surgical staff.

As the Project Team entered the winter of 2008-09, we were well into the shoring and underpinning portion of the foundation construction. Due to the close proximity of the existing hospital structures, there was a combination of foundation and earth support systems that included underpinning pits, jacked-piles, soldier piles & lagging, and rakers all in one area. After a close scheduling and coordination meeting w/ the design and construction teams, the Team agreed to change the foundation system in this area from a pilecap & gradebeam system to a mat foundation system. This not only saved over 3 weeks off of the foundation schedule, it also saved the 3 weeks of additional costs for winter weather protection & heating.

**D. Innovation in Construction Techniques, Materials or Design.** The building foundation consists of a lower foundation of grade beams and pile caps over 222 driven piles, 40 drilled piles (average pile length of 140 feet), and an upper foundation of grade beams and spread footings on a mat of “Low Density Concrete Fill”. The LDCF mat consisted of an un-reinforced layer of a “super light cement product” where the final density of the material ranged from 15 to 22 pounds per cubic foot and a compressive strength of 80 PSI. The LDCF needed to be installed in a “checkerboard” and “lift” pattern as well as trenched out for under slab mechanicals. This process need to be coordinated well in advance. The challenge was to maintain the project schedule while being restrained to this new

materials’ cure time and placement constraints. The project team worked together to achieve this task on time.

**E. Excellence in Client Services.** Quality was another primary focus for the project team. “Doing it right the first time” served as the mantra and the procedure began with mock-ups. The Project Team implemented “paper mock-ups” to create & answer any question with the trades & users prior to even building the “in-place” mock-ups or “fast track rooms”. While steel and concrete installation was ongoing elsewhere on the project, the Team framed the mock-up rooms & then “papered the walls” with full size architectural elevations. Cardboard was used to mock-up items such as casework and equipment, among other materials. This enabled all the contractors, design team, and especially the end users, to locate, confirm, and approve the size and location of millwork, outlets and lighting. The goal of the Project Team was to avoid changing or adding anything installed, even in the mock-up rooms, as there are many variables such as users, new equipment, new processes or operating procedures, which is a typical challenge during hospital construction.

**F. Commitment to the Community.** Saint Francis Hospital requested that Turner demonstrate a high level of community involvement. The approach taken on the project resulted in some accolades, including a 2010 community service award from the CCIA for the company’s involvement in the community and its commitment to hiring women- and minority-owned businesses. Turner surpassed the Owner’s expectations by exceeding the minority, female, and local residence goals; awarding 14% of the work to MBE and WBE contractors; involving local groups (MCC and CCMBC) early; sponsoring ACE and Hartford University groups and providing construction management training for the Minority Chamber of Commerce.

**G. Meeting Challenges of a Difficult Job.** Healthcare construction not only requires a close coordination for placement of numerous mechanical & electrical systems, but also the numerous additional hospital specific systems not only within the buildings structure, but also amongst each other. In order to meet the schedule & productivity demands of this project, 3D MEP Coordination was utilized and ultimately led to the successful installation of equipment, medical gas systems, HVAC piping, duct, conduits, 6” pneumatic tube system, and low voltage wiring in a complex spatially restricted medical facility. **Zero dollars were spent on the relocation of MEP systems due to coordination related issues.** Throughout the course of the project, the model was used to streamline cost and schedule. The approved structural steel model was imported from the fabricator and resulted in early detection and resolution of any and all design conflicts. MEP hanger inserts were installed prior to slab on deck pours to allow for efficient installation of hangers and of prefabricated MEP systems. Also, support steel was modeled and fabricated for the light and medical gas booms in 57 Exam Rooms, 4 Trauma Rooms, and 23 Operating Rooms (including 2 Hybrid OR’s).

Owner-provided equipment (e.g., modular headwalls) was modeled by the mechanical contractor prior to release for fabrication and allowed coordination of connections and framing components with surrounding MEP and architectural / structural components ensuring a conflict-free installation.

Custom AHU’s, medical gas, electrical switchgear, and HVAC equipment skids were also modeled for prefabrication of piping connections and proper layout of the MER’s. TRO|Jung Brannen provided an architectural model and subsequent key bulletin updates that included owner furniture / equipment, allowing access to above ceiling devices to be reviewed with the final layout of the space in mind. Less manpower, less on-site stored material, accelerated schedule, streamlined costs, more efficient MEP systems, and overall client satisfaction were all real time benefits from the use of 3D technology on the project.

Also at the onset of the purchasing process, Safety initiatives were also embraced by the project staff and subcontractors, including “Nothing Hits the Ground”, “Just in Time Deliveries” and extensive use of mobile storage racks. These practices were included in a Liberty Mutual published “Loss Control – A Results Story” and contributed to minimizing the loss rate on this project and the project being awarded Liberty Mutual’s Silver Safety Award.

**H. Sensitivity to the Environment and the Surroundings.** The JTO Tower is constructed immediately adjacent to the existing hospital as discussed in previous sections. It ties into the existing hospital several times on several different levels. Each tie-in location was closely coordinated with the existing structure, as well as the exiting occupants and departments in these areas. These adjacent areas varied from storerooms, corridors, operating and recovery rooms, and patient & infant nursery areas. All aspects of the tie-in work needed to be reviewed and approved by several St. Francis Hospital Facility Departments as well as the local municipality departments. These departments included Hospital Engineering, Infection Control, Life Safety, the Building Department and the Fire Marshall’s office. All of the work adhered to the local municipal requirements for separation of construction from occupied areas, but also conformed to hospital regulations for life safety & infection control.

In addition to the building tie-ins, the foundation work itself needed to be scheduled & monitored with the ongoing hospital operations. The project team was able to complete the driving of over two hundred structural piles immediately adjacent to the hospitals existing operating and recovery rooms, with minimal disruption to construction & hospital operations. The Team maintained flexibility in the flow & direction of the foundation construction as well as giving each adjacent department head (Operating & Recovery Rooms) access to a “Bat Phone”. This enabled immediate contact with the Project Team Leaders should potential noise or vibration from the construction operations affect a sensitive procedure or patient.

In the end, the project team was able to meet the expectations of Saint Francis Hospital and Medical Center with the quality of work, on-time completion, facilitation of smooth departmental moves, and staying within the project budget. An unexpected result of the project plan was the awarding the St. Francis Project Team, Turner Construction Companies 2010 Eagle Award for Outstanding Achievement in Safety, Creating & Sharing Best Practices, and Operational Excellence.



## Summary

**A. State-of-the-Art Advancement.** The JTO Tower Project consisted of a new 10 story tower connected to an existing hospital on several floors and provides a new Central Sterile facility. It also contains an ED that contains 64 private exam/treatment rooms, 4 trauma bays, 2 dedicated X-ray rooms, a new dedicated CT scan room, new front entrance & main lobby, and 13 covered ambulance bays and a helicopter landing area.

**B. Excellence in Project Management.** Turner’s 3-D coordination process enabled designers and CM team not only to fit equipment within the space provided, but also allowing virtual walk-throughs. The team defined specific Mock-up procedures and goals not only for quality of construction but also quality of design & user functionality of the repetitive spaces.

**C. Project Team Effectiveness.** The Team worked closely to expand the project the tower, redesign OR spaces and ensure that the hospital received the best OR technology for their patients & surgical staff. The team agreed together to convert the foundation system from pilecap & gradebeam to a mat foundation system, which shaved 6 weeks off the total schedule.

**D. Innovation in Construction Techniques, Materials or Design.** The LDCF needed to be installed in a “checker board” and “lift” pattern as well as trenched out for under slab mechanicals. This process challenged the project team in order to maintain the projects schedule and be restrained to this new materials cure time and placement constraints.

**E. Excellence in Client Services.** The SFH team implemented “paper mock-ups” prior to “in-place” mock-ups or “fast track rooms”. The team “papered the walls” and used cardboard to mock-up items which enabled the entire team to locate, confirm, and approve the size and location of millwork, outlets, lighting, etc.

**F. Commitment to the Community.** The project team received a CCIA community service award for exceeding the minority, female, and local residence goals, awarding 14% of the work to MBE and WBE contractors, involving local groups early, sponsoring ACE and Hartford University groups, and providing construction manager training for the MCC.

**G. Meeting Challenges of a difficult Job.** 3D MEP Coordination was utilized and led to the successful installation of equipment, medical gas systems, HVAC piping, duct, conduits, 6” pneumatic tube system, and low voltage wiring in a complex spatially restricted medical facility. Zero dollars were spent on the relocation of MEP systems due to coordination related issues. A 3D model was used to streamline cost and schedule. The structural steel model resulted in early detection and resolution of design conflicts. MEP hanger inserts allowed for efficient installation of hangers and prefabricated MEP systems. Also, support steel was modeled and fabricated for the light and medical gas booms in 57 Exam Rooms, 4 Trauma Rooms, and 23 Operating Rooms. Owner-provided equipment was modeled prior to release for fabrication and allowed coordination of connections and framing components with surrounding MEP and architectural/structural components ensuring a conflict-free installation. Finally, safety initiatives were embraced by the Project Team including “Nothing Hits the Ground”, “Just in Time Deliveries” and extensive use of mobile storage racks. These practices contributed to minimizing the loss rate on this project and the project being awarded Liberty Mutual’s Silver Safety Award.

**H. Sensitivity to the Environment and the Surroundings.** The Tower ties into the existing hospital several times on several different levels. Each tie-in location was closely coordinated with the existing structure as well as the exiting occupants and departments in these areas. In addition, the foundation work needed to be scheduled & monitored with the ongoing hospital operations. The Team maintained flexibility in the flow & direction of the foundation construction as well as giving each adjacent department head (Operating & Recovery Rooms) access to a “Bat Phone”. The enabled immediate contact with the Project Team Leaders should potential noise or vibration from the construction operations affect a sensitive procedure or patient.

In the end, the project team was able to meet the expectations of Saint Francis Hospital and Medical Center with the quality of work, on-time completion, facilitation of smooth departmental moves, and staying within the project budget. An unexpected result of the project plan was the awarding the St. Francis Project Team, Turner Construction Companies 2010 Eagle Award for Outstanding Achievement in Safety, Creating & Sharing Best Practices, and Operational Excellence.



JOHN E. O'CONNELL TOWER













LO PRESS STEAM

CHILLED WATER

ARI-111  
Serial # 111  
11/11/11



Mr. Thomas Dutchyshyn  
Sr. Project Manager  
Turner Construction Company  
440 Wheelers Farms Road  
Milford, CT 06461

Dear Dutch,

I would like to take this opportunity to express our sincere appreciation for the level of effort put forth in the coordination and installation of the mechanical, electrical, fire protection, plumbing, and medical gas systems in the John T. O'Connell Tower at Saint Francis Hospital & Medical Center. The utilization of BIM on this project along with the collaborative coordination approach led by Turner Construction Company has resulted in a facility in which our Engineering Department can effectively maintain.

During the coordination process, the design team and our in-house Engineering staff were afforded the opportunity to participate in global layout discussions with TCCo and the MEP subcontractors ensuring our preferences were taken into account. Then, once the coordination was completed in a given area, access to each valve, junction box, VAV, etc. was reviewed in the 3D model by my team w/ your MEP BIM Coordinator, James Labrie. This process not only allowed us to gain a level of comfort with accessibility to our systems, but also oriented us as to the layout of the new facility.

I commend your organization for taking the lead in the use of BIM in the industry, and more importantly, on our project here at St. Francis Hospital. Your team has established a process that has provided a hospital that we, the client, are truly satisfied with.

Sincerely,



Robert R. Ferris  
Manager Engineering Services  
Department of Engineering  
Saint Francis Hospital & Medical Center  
114 Woodland St  
Hartford, Ct 06105



MEMORANDUM

<b>To</b>	James Labrie	<b>Date</b>	March 24, 2011
<b>From</b>	David Wolkowicz	<b>Job No.</b>	6435
<b>Subject</b>	TCCo Coordination Process	<b>Project Name</b>	St. Francis Hospital – JTO Tower
<b>CC</b>	file	<b>File Code</b>	CA File

James,

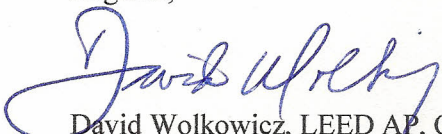
I wanted to take a moment as the project is coming to a successful completion to thank you and the Turner Engineering staff for all of your efforts in making the John T. O’Connell Tower Project the successful endeavor that it was for all concerned – St. Francis Hospital, Turner Construction, TRO JJB, and most importantly the people of Hartford, who will experience and utilize this fine new facility.

The success of the project, in my opinion, is due in large part to the implementation of the Navisworks 3D Modeling software, and TCCo’s demand for a concerted and conscientious coordination effort from the subcontractors, spearheaded by the TCCo Engineering staff. Accomplishing this, TCCo has turned an extremely difficult and complex building project with all of the attendant issues into a series of ‘challenges with solutions’, all while being brought in on time and under budget and delivering a product with superior quality and craftsmanship seldom seen in today’s hectic and compressed building environment.

It has been my experience through healthcare projects over a 22 year career that coordination is a facet of the project process that is paid lip service as a tool to impress Owners and Architects during the CM selection process, then more often than not neglected or given a half-hearted effort as budgetary constraints become realities. This was never the case with ‘Team Turner’ at the JTO Tower Project – schedules were created, meetings held with mandatory attendance, conflicts identified, tracked and resolved to the satisfaction of all involved (including the Engineer of Record) before they were accepted. At the end of the process, the Owner was delivered a facility where no stone was left unturned and As-Built documentation that was understood to be truly ‘as-built’.

Moving forward, it would be a pleasure to encounter the TCCo Coordination and Construction process on future projects as it has proven to be a key component in successful project delivery for all concerned.

Regards,



David Wolkowicz, LEED AP, CCCA  
Engineering Construction Administration  
TRO JJB



**Turner**