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Feature writer, Steve Traiman, highlights the innovative twin-arena TD Banknorth Sports Center at Quinnipiac University in Connecticut, USA.

TWIN CENTRE

The US\$52 million TD Banknorth Sports Center at Quinnipiac University in Hamden, CT, USA opened during the week of January 27, 2007, with sports and other university events - the complex offers both a dedicated hockey and basketball arena, side-by-side.

"We're really tickled pink with the building," said Val Belmonte, Vice President of Athletic Marketing and External Relations at the university for the last fourteen months, and with a background that includes being Executive Director of US Figure Skating, ten years with USA Hockey, and Athletic Director at Union College, Schenectady, NY.

Belmonte went on to say: "It's been on the drawing board for over ten years and was built with all private funding from our alumni, generous donors, and naming opportunities. It was a great job by Don Weinbach, Vice President for Development and Alumni Relations, and Pat Healy, Sr. Vice President for Finance and Administration and their committee.

"As the keystone for the new 240-acre York Hill campus, with several other projects in the forefront, the centre had an opening week that went extremely well, with men's and women's basketball, and hockey games.



and the great work that Centerbrook [Architects] and Dimeo [Construction] did on aesthetics, details and functionality.

"From an operational standpoint, the venue is very easy to maintain and from a performance standpoint, it is student and athlete friendly, as well as fan friendly. It truly represents a cultural change in the school, touching on our mission standpoint of 'national prominence and excellence.' It's not only a great competitive venue but also a gathering place for students, fans, alumni and the community."

Dedicated Venues

Jack McDonald, Athletic Director at the university for the last twelve years added: "From my experience at Denver University and Boston College, and with the growth of women's athletics, it seemed very difficult to play four sports on one surface, including practice and pregame shootarounds, plus prime time desire. We looked at Holy Cross, Army, Air Force and Colgate, all with dual facilities, but none with similar capacity venues for both sports.

"So we decided to make the dream a reality, with two equal venues for men and women — with hockey

in the Eastern Collegiate Athletic Conference (ECAC), and basketball in the Northeast Conference (NEC). We made it happen with a lot of support from donors and TD Banknorth.

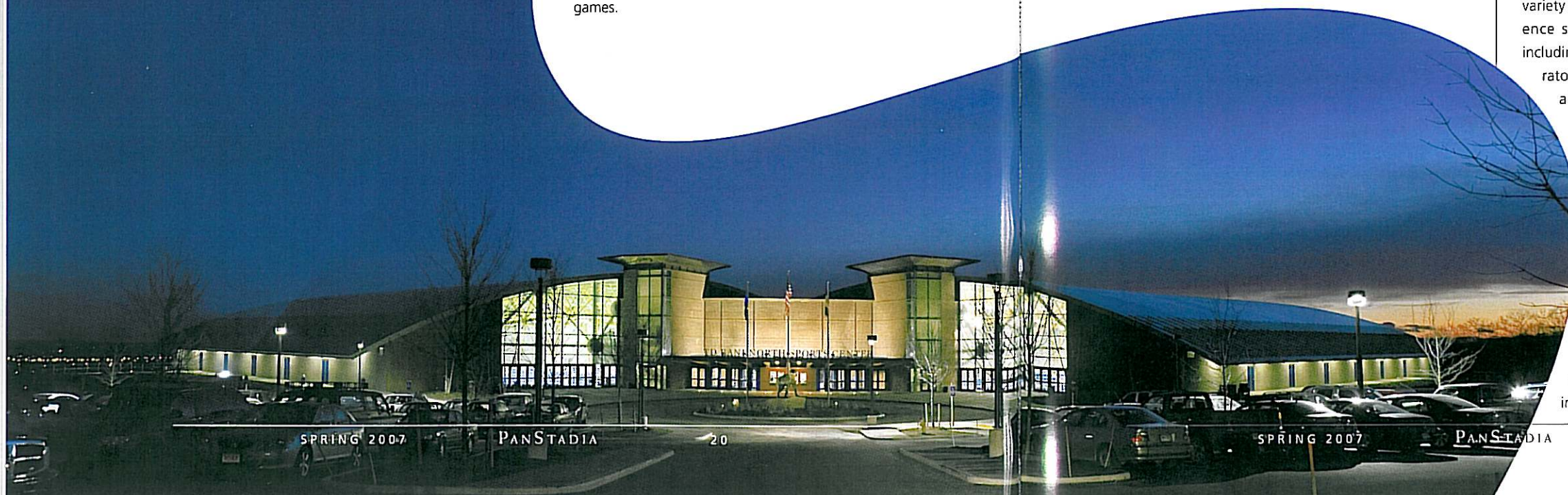
"From a recruiting standpoint, the new facility will definitely elevate our pool of scholarship candidates, and it will also attract kids who are looking for a campus with great school spirit. With three or four games a week to provide excitement, it will elevate the whole quality of student life here and make the overall environment even better for everyone."

Centerbrook Campus Experience

The TD Banknorth Sports Center is the newest of more than forty projects that the 32-year-old Centerbrook architectural and planning firm has completed at Quinnipiac, starting with a master plan in the late 1970s. Located in a renovated factory on the Falls River in the village of Centerbrook, CT, the firm has five partners, one principal and a staff of 90.

Architectural writers have noted that the firm's work is innovative, while varying from vernacular to modern according to the situation of its projects. Centerbrook has received recognition for a wide variety of its work, including its institutional experience spanning academic to civic buildings, and including art centres, museums, event centres, laboratories, offices and religious buildings. The firm also designs private residences, and has pioneered interactive techniques for bringing clients and users into the design process, enriching its architecture by their involvement.

"Planning began with Quinnipiac on the new centre in 2001," recalls Partner in Charge at Centerbrook, Jefferson Riley, "...and went through a number of conceptual design phases. It was similar twin arenas from the start, and the university stayed with its goal, even when budgets got tighter and there were thoughts about having just one main venue."



TWIN CENTRE

One of the biggest challenges related to the new York Hill Campus site, with Project Manager Jon Lavy observing: "It was a quite rocky mountaintop, with irregular ground, and we were undeniably on a steep slope. So we angled the building in such a way that the seating conforms to the slope on the uphill side.

"It worked nicely for us as the angle neatly framed a spectacular view out to New Haven, probably the best view of Long Island Sound anywhere along the Connecticut coast. The city is flanked by west rock and east rock geological formations and we look right into the valley between."

Team Effort

Riley added: "It was our first job with Dimeo Construction Company which worked out very well. They were excellent partners and all of the contractors were subs [subcontractors] to them. Both the hockey rink and



basketball floor subs also worked well together on a tight schedule. Shovels hit the ground in June 2005 after site clearance and there were no delays to the on-time finish this past January.

"It was a real team effort with Jon Lavy and Jay Klebeck on our end; Joseph Rubertone, Quinnipiac Associate Vice President for Facilities Administration, and Eric Kruse of Pegasus Group for the University; and Doug Peckham and Chris Doepper for Dimeo. This key group worked great as a team to get decisions made and everything smoothed out."

Design Highlights

The architectural and design highlights noted by Lavy and Riley were as follows: "The roofs of the two arenas curve in section and resemble the wings of an airplane, giving the sensation of a building in flight. The mass of this large complex is thus reduced, allowing a human scale to prevail at grade. The curved roofs also lower the ceiling inside — lending an intimacy to the interiors of the arenas, which serves to energise the spectator experience. The outdoor entry court, formed by the two wings, is home to a 10ft-high sentinel, a bronze sculpture of the University's Bobcat. Here, large glass walls at the gable ends of the arenas face the courtyard and afford a preview of the excitement inside to those arriving for a game.

"The lobby is entered beneath a broad, sheltering overhang, and its low ceiling compresses the space, at once pressing it out toward the view of New Haven and contrasting it, dramatically, with the voluminous arenas to either side. The Bobcat Den has a seating area for students and general admission fans.

"The ceiling of the hockey arena presented a complex problem, as we needed both acoustic and aesthetic features, and a system of fastening the installation above, through the steel roof. Z-shaped Epicore metal decking was used, which allows fasteners to be concealed with acoustic blankets. Although more expensive, Epicore solved two or three problems at once for both arenas. Fabcon precast tilt-up structural panels were used as an economical solution, although this resulted in some joining and detail problems due to the complexity of the building. It was the most complex project the company had done to date with their panels, but this

Project Fact File — TD Banknorth Sports Center

Location: Quinnipiac University, Hamden, CT, USA

Construction Cost: US\$52 million

Land Cost: N/A

Completion Date: January 2007

Land: York Hill Campus = 240 acres

Total floor space: 180,350sqft

Height: 61ft floor to top of roof

Roof width: 164ft

Seat-tread depth: Lower bowl: 33 inches deep, 21 inches down; Mezzanine level: 33 inches deep, 27 inches down

Concourse Widths: 11ft 4.5 inches, lower level; varies from 6ft, upper level

Basketball Arena seating: 3,570

Hockey Arena seating: 3,286

Premium Seat Offerings: Basketball & Hockey Arena, each with one President Suite and 120 VIP seats

Special amenity areas: University Club, 2,687sqft, seating 135 and a University Club Terrace

OTHER BUILDING FEATURES

Five Ticket/Box Office windows

Five Concession stands

Two Merchandise shops

Offices for men's and women's basketball, men's and women's ice hockey

Public restrooms: five women's and three men's

Six scoreboards: Each arena with Daktronics main centre-hung scoreboard and two auxiliary scoreboards

One Fan-services location on the lower concourse

One First-Aid station on the lower concourse

One ATM Machine

Two Truck docks

One Trash/Rubbish dock

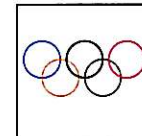
One passenger elevator

One freight/food service elevator

Locker Rooms: 4 home team & 6 visitor

702-capacity car park

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allowed us to close the building fairly rapidly once the structure was up and keep on the tight schedule."

That's Entertainment

Riley further commented: "The curved roofs of the arenas are supported by custom-made, tubular, three-dimensional trusses by Mandate Steel from New Brunswick, Canada. These give shape to the spaces inside and provide armatures for lighting, sound equipment, scoreboards and banners. Painted 'Quinnipiac Gold', the trusses add detail, scale and visual interest to an otherwise large, unadorned open space.

"Lighting designer Cline Bettridge Bernstein, with Steve Bernstein and Marty Salzberg, did the planning and it's really spectacular. All arena lights have a long recharge time of 15 to 20 minutes and are equipped with 'barn doors' so either venue can 'dim down' when necessary. Computerised pre-sets make the whole experience very theatrical, with pre-game [when the teams come out on the ice/floor]; the National Anthem; and then game-time, plus a Zamboni-time setting and post-game. Also, because the upper-level University Club is visible from both arenas, it has its own pre-sets synchronised with the arena lights so it's really a spectacular show."

Lavy added: "Richard Close and Corey Salvatore of AcenTech designed and installed the sound system, which can handle any concert activity planned for the future. It's very intelligible, which meant that as Project Manager I was able to secure code modification approval from the State to use it for egress announcements in case of emergency.

"The mezzanine level — centrally located above the lobby at the junction of the two wings — accommodates the University Club, with a welcoming lounge and 240 VIP balcony seats overlooking both arenas (120 seats each). A spacious terrace at one end of the Club provides another spectacular view of New Haven.

"At the lower level, beneath the twin arena seating, top-line varsity men's and women's locker rooms are

provided for both hockey and basketball. Additionally, visiting teams utilise six other locker rooms. In the central core, a large exercise room with state-of-the-art equipment arcs from east to west with views to the south. Other support facilities are housed here, including uniform laundry rooms, training rooms, team rooms, referee rooms and coaches' locker rooms. The total space is about 19,760sqft."

Dimeo on Board

The TD Banknorth Sports Center was the first project that Dimeo Construction Company has undertaken for Quinnipiac University, noted Senior Project Manager Doug Peckham. Started in 1935, the family-owned company is now headed by third generation Bradford S. Dimeo as President. This is the firm's first major sports venue project in the twenty-first century, however it was involved with the Providence (RI) Civic Center in 1966, now the Dunkin' Donuts Center, and in the early 1990s with the Brandeis University Sports & Convocation Center, used by the NBA Boston Celtics for practice.

In addition to the team noted by Centerbrook's Riley, Peckham added Richard Chamberlain of Sebesta Blomberg as commissioning agent, and Dimeo's Mike Camp as General Superintendent, and Jeff Sturtevant as Assistant General Superintendent.

As for the construction, there were many challenges that faced the team in erecting the building superstructure and envelope. Although the arenas are symmetrical, the hockey arena is one bay (about 30ft) longer than the basketball arena. These challenges included:

SITE LOGISTICS: The mountaintop site rises nearly 450ft from the road elevation at the base and the 3/4-mile-long access road up the mountain was being constructed concurrently with the building. Laydown and staging areas were limited around the building due to the heavy underground sitework activities; stockpiles of salvaged gravel to be re-used within the building as backfill; and high sloping terrain.

CONCRETE & STEEL ERECTION: Nearly all of the cast-in-place concrete foundation walls and steel erection

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TD Banknorth Sports Center — Project Team

Owner: Quinnipiac University
Operator: Quinnipiac University
General Contractor: Dimeo Construction Company

Architect & Interiors:
Centerbrook architects and planners

Structural Engineer: Gilsanz Murray Steficek

Structural Steel Erector/Fabricator: Mandate Erectors & Welding, Ltd.

Mechanical, Electrical, Plumbing: R.G. Vanderweil Engineers, Inc.

Mechanical & Plumbing Contractor: P&D Mechanical & Tech-Air, Inc.

Electrical Contractor: Genovese & Massaro, Inc.

Geotechnical: Gible Norden Champion Brown

Concrete Contractor: O&G Industries, Inc.

Acoustic/sound & Broadcast/video: AcenTech Inc.

Lighting Consultant: Cline Bettridge Bernstein Lighting Design, Inc.

Civil: Nathan L. Jacobson & Associates, Inc.

Landscape Architect: Richter & Cegan, Inc.

Ice Rink Consultant: Henry J. Coupe Associates, Inc.

Hockey Ice Contractor: Ice Builders

Basketball Floor: Aacer Flooring, LLC

Food Facilities Planner: Crabtree McGrath Associates, Inc.

Food Service: The Warehouse Store Fixture Co

Concessionaire: Chartwells

Fire Protection/Code/Life Safety: Tucker Mechanical

Vertical Circulation: Otis Elevators

Specification Consultant: Robert Schwartz & Associates

Roofing Consultant: Hoffmann Architects

Code Consultant: Philip R. Sherman, P.E.

Cost Consultant: Faithful + Gould

Inspector: Independent Materials Testing Laboratories, Inc.

was performed from within the building footprint. The concrete girders involved critical formwork layout, while being performed simultaneously with the structural steel erection for the arena roof. Two cranes were utilised throughout the arena steel erection: a 110tonne crawler crane positioned within the arena, and a 70tonne hydraulic crane floated from within and around the arena perimeters. Arena roof trusses required the dedicated support of both cranes. The trusses became the support structure for all the electrical, lighting, audio/visual and data cable tray supports; fire protection system piping; 64-inch-diameter HVAC spiral duct; and plumbing vent piping. The construction, design and selective subcontractor teams worked very closely to make sure all systems' piping and supports were neatly tucked-up and symmetrical within the roof truss space, in lieu of hanging beneath the bottom chords. This achieved a clean appearance within the roof space and made the roof truss the focal point of the interior space, accentuated with Quinnipiac Gold. The only elements that hang beneath the bottom truss chord are the large arena lights. These are attached to a V-support plate (six lines in hockey and four in basketball), which traverse perpendicular to each bottom truss chord but are at the same height as the round structural member.

THE PUMP HOUSE: As the University's new York Hill Campus with the centre as its keystone is prime real estate, the Pump House — the nerve-centre to deliver domestic and fire protection water to the building — had to be re-designed to include an infrastructure to handle future expansion.



WEATHER PROTECTION VERSUS

CONSTRUCTION SEQUENCE: To offset any weather situation and stay 'on course' the construction team worked with the design team to utilise certain temporary measures, and techniques for a revised building 'plan' of placing concrete foundations... erect structural steel... backfill perimeter foundation walls... install roof metal decking... install exterior precast facade walls... pour concrete slabs on deck... install precast bleacher bowl seating to achieve the most efficient sequence. This allowed the building envelope to be developed earlier, which meant earlier commencement on interior activities.

Chartwells' Experience Counts

Chartwells, a division of The Compass Group, has provided all of Quinnipiac's food services since 1986. The company's Regional manager, Nelson Defigueiredo, commented: "We've seen about a 400 percent increase in growth over the twenty-one years I've been with the company and at the university. With almost 3,000 resident students, we're serving about 22,000 meals a week.

"We were involved upfront with Centerbrook, as well as Crabtree McGrath, who came in as a consultant on the facilities. We had some rather aggressive goals, mainly to offer a menu that could be serviced as quickly as possible in the long wait between periods. The flexible main concession area is in the concourse serving both arenas, and is designed with up to eight POS for a full house in either arena. Four satellite quick-service concession areas are completely portable to move from one arena to the other, and are also designed for fast food.

"A full-service, state-of-the-art restaurant-style kitchen provides high level food and beverages to all

areas of the building. The 135-capacity University Club offers upscale, marquee-style buffet service and is also designed for non-sports, sit-down catering events. A high-end menu includes such items as cedar plank salmon, Black Angus beef and Chilean sea bass, as examples, and we are also doing some signature panini sandwiches with unique Bobcat names.

"The outdoor deck opening from the Club's south side adds another great vantage point. You can see all the way to Long Island Sound with a very clubby feel just outside the seating area and buffet to snack under the stars, with stand-up counter seating available for wait service. We operate with a permanent staff of about twenty-five that can ramp up or down based on game attendance, drawing from a pool of about 130 across the campus."

Opportunities Abound

As Quinnipiac's Val Belmonte sums up: "There's a great opportunity for the campus and community to bring in different types of institutions from a competitive standpoint. We are currently [as of mid-February 2007] in a playoff position in the men's hockey and will be hosting one of the ECAC playoff games in the first or second round in March. Both the men's and women's basketball teams are in the playoffs hunt and could host games here also in March.

"We've decided to open the building and learn how it functions through basketball and hockey activity. We're ideally situated about fifteen miles south of Hartford and seven miles north of New Haven, so there are many entertainment and community event opportunities for the future." ★

TWIN CENTRE

