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Post-Tensioning Institute (PTI) Announces 2008 Award Winners

PHOENIX, ARIZ. – (May 12, 2008) – The Post-Tensioning Institute (PTI) – a non-profit organization for the advancement of post-tensioned, pre-stressed concrete design and construction – has announced the recipients of their 2008 awards competition.

PTI's annual awards program, announced May 5 at their Conference and Exhibition in St. Louis, Mo., honors superior post-tensioning projects in the construction industry. The judges evaluate the submittals based on creativity, innovation, ingenuity, cost effectiveness, functionality, constructability and aesthetics.

“This year’s award competition was a tremendous success. The number and variety of high quality entries made the jury’s task of selecting the winners very difficult, and exemplifies the versatility and efficiency of post-tensioning,” said Ted Neff, Executive Director of PTI.

The Project of the Year, Award of Excellence for 2008 is the New Guthrie Theater Center in Minneapolis, Minn. Submitted by post-tensioning supplier AMSYSCO, Inc., the project was entered in the mixed-use building category and includes three theaters and a 1,000-space parking garage. The post-tensioned concrete framing system provided the most effective solution for the main theater and parking structure. The main theater’s framing system consists of an 8-inch-thick sloping slab supported by a radial/circular network of beams and cantilevered girders on five tiers. This unusual design required a high degree of technical expertise in post-tensioning to accommodate the heavy live loads and large, column-free areas. For the traditional six-level parking structure, an encapsulated post-tensioning system provides maximum corrosion protection and longevity. Other project team members include Jean Nouvel

and Architectural Alliance (architects), Erickson Roed & Associates (engineer) and McGough Construction Company (contractor).

In the Buildings category, two awards were presented. In the Commercial Building category, Suncoast Post Tension Ltd. was selected for 1101 New York Avenue in Washington, D.C. The 12-story, 393,000-square-foot structure boasts a unique feature: There are no perimeter columns on three of its sides. Instead, the building was designed with 12-inch-deep, 6,000-psi post-tensioned concrete slabs with 12-inch-deep drops. By eliminating the columns, the building's designers were able to create a 20-foot cantilevered perimeter floor without any deflection or vibration problems. This, in turn, enabled the exterior walls to have a sleek glass façade. Other project team members include Tadjer-Cohen-Edelson Associates, Inc. (engineer), Centex Construction Company, Inc. (general contractor) and Miller & Long Concrete Construction Company (concrete contractor).

In the Residential Buildings category, engineering firm Cary Kopczynski & Company was selected for the Cosmopolitan in Seattle, Wash. With stunning views of Elliot Bay, the Olympic Mountains and downtown Seattle, the Cosmopolitan tower boasts a wide-open design thanks to post-tensioning. A concrete shear wall core, wrapped by a 6-foot-wide thickened drop-head slab on three sides, allows 8-inch-thick post-tensioned slabs to span almost 40 feet from the core to the building's perimeter, eliminating interior columns. High-strength concrete eliminated the need for ductile frames while also minimizing wall size and maximizing views. Mechanical ductwork, water supply lines and most building utilities were run through the post-tensioned slabs, allowing for open ceilings in the residential units. Other project team members include Morteson (contractor) and Central Steel (post-tensioning supplier).

In the Bridges category, an Award of Excellence was presented to stay cable supplier VSL for the North Arm Bridge Fraser River Crossing in Vancouver, B.C. As the first extra-dosed bridge in North America, the North Arm Bridge is poised to serve the influx of visitors as the city hosts the 2010 Winter Olympics. The $1-million bridge is precast segmental box girder construction, with two back spans of 456 feet and a main span of 590 feet to allow for marine traffic to pass under it without obstruction. Another first for North America is the use of gensui dampers, which will absorb transverse vibration in the stay cables to protect them from damage. In total, the bridge contains 24 pairs of stay cable anchorages and more than 260,000 feet of stay cable strand. Other project team members include Buckland & Taylor (engineer) and RSL Joint Venture (contractor).

Also in the Bridges category, two awards of merit were presented. Post-tensioning supplier DSI and engineering firm International Bridge Technologies, Inc. were selected for the Otay River Bridge in San Diego/Chula Vista, Calif. and engineering firm HNTB Corporation was selected for the Wichita Riverfront Pedestrian Bridge in Wichita, Kan.

A precast, concrete segmental bridge design for the Otay River Bridge in southern San Diego County allowed construction to progress within budget and time constraints, yet without disrupting the environmentally sensitive area. The 3,320-foot-long bridge consists of dual, precast segmental box girder structures. The cast-in-place pier caps were post-tensioned transversely. To address seismic issues, post-tensioning steel was added across otherwise unreinforced joints. A gantry truss lifted each of the precast concrete segments in place, and 1.5- and 1.8-inch-diameter threadbars temporarily post-tensioned each segment before final longitudinal post-tensioning with 12 by 0.6-inch and 10 by 0.6-inch post-tensioning tendons. Other project team members include Otay River Constructions, a joint venture of Washington Group International and Fluor, JV as the contractor, as well as Pomeroy Corporation.

The Wichita Riverfront Pedestrian Bridge is a result of a riverfront development project in Wichita, Kan. The project included plans for two cable-stay bridges to increase the area's cycle network and pedestrian footpath access. The 322-foot bridge over the Arkansas River and the 242-foot bridge over the Little Arkansas River feature cable-stayed superstructures with match-cast segmental concrete box girders and a reinforced concrete river pier shape to blend with the aesthetic superstructure features. The superstructure is post-tensioned to the anchor abutments. Concrete segments were transported to the site, erected on false work over the river, post-tensioned and then lifted off false work as tensioning of stay cables progressed. Other project team members include contractor Dondlinger & Sons, Inc., VSL (post-tensioning supplier) and Law/Kingdon (landscape architect).

In the Industrial/Special Applications category, post-tensioning supplier VSL received an Award of Excellence for the Holcim Plant in St. Genevieve County, Mo. Consisting of two 151-foot-diameter, 207-foot-tall clinker silos and two cement "four-pack" silos (in which each individual silo is 79 feet in diameter and 275 feet tall), the cement plant for Holcim Inc. will be the largest of its kind in the world when completed later this year. A post-tensioned design helped considerably in reducing the amount of mild reinforcement used, and in turn aided in the labor-intensive slip-form construction process. Because the post-tensioning strands were installed,

stressed and grouted after the slip-form process, they remained off the critical path of the slip. Post-tensioning also helped control cracks and improve shear capacity within the concrete silos, since the active reinforcement provides residual compression during all loading conditions. Other project team members include Consultec Ltd. (engineer) and MC Industrial (contractor).

Also in the Industrial/Special Applications category, Dywidag Systems International, USA received an Award of Merit for the Gilboa Dam Interim Stability Improvements project in Gilboa, N.Y. When the Gilboa Dam, one of several that supplies water to New York City, was discovered to be out-of-date with current safety standards, immediate action was required to stabilize the dam. Following debris- and water-control measures, double-corrosion-protected, multi-strand post-tensioning anchors were installed. Forty-seven anchors were installed vertically across the length and height of the dam, and 32 additional anchors (with inclines ranging from 45 to 48 degrees) were placed in the individual layers of the dam wall on the downstream side. A specially designed 1,686-ton jack was used to prestress the anchors, resulting in a fast-track solution to a short-notice problem. Other project team members include Gannett Fleming/Hazen & Sawyer (engineers) and Nicholson Construction Company (contractor).

In the Repair/Rehabilitation and Strengthening category, an Award of Excellence – Bridges was presented to engineering firm Modjeski and Master, Inc. for the rehabilitation of the New Jersey Abutment of Bayonne Bridge, which connects New Jersey and Port Richmond on Staten Island, New York. The bridge showed signs of deterioration in the form of random cracking of the exposed concrete surfaces. Core samples, visual inspection and petrographic analysis revealed widespread Alkali-Silica Reaction (ASR) as the cause of cracking. The recommended rehabilitation scheme consisted of encasing the existing abutment in new concrete and tri-axially post-tensioning the abutment. The tri-axial post-tensioning pressure on the existing concrete was designed to counteract the internal pressure caused by the expansion of the ASR gel, thus eliminating the prospect of future microcracking of the concrete. To provide the required horizontal compressive stresses, post-tensioning tendons were installed in holes drilled through the abutment concrete. Similarly, rock anchors installed in holes drilled through the abutment to the underlying bedrock were used to achieve the required vertical compressive stress. The project was completed in 2007 at a total budget of approximately $30 million. Other project team members include contractor Spearin, Preston and Burrows, as well as post-tensioning supplier VSL.

Also in the Repair/Rehabilitation and Strengthening category, an Award of Excellence – Buildings was presented to engineer Forell/Elsesser Engineers, Inc. for the Utah State Capitol/Base Isolation and Restoration project in Salt Lake City, Utah. In an effort to preserve their historic capitol, and to protect this massive, yet ornate building in an earthquake, the structural engineering team strengthened the building using 256 state-of-the-art seismic isolators under the building. The plan involved permanently re-supporting the capitol's rotunda with a unique circumferential post-tensioned concrete load transfer scheme. Because of the high strength and stiffness afforded by bonded post-tensioning, the design team produced an innovative, safe and economical load transfer system that protects the historic fabric of the rotunda of the newly renovated Utah capitol. Other project team members include engineering firm Reaveley Engineers, contractor Jacobsen/Hunt Joint Venture, and post-tensioning suppliers VSL and DSI.

The final winner in the Repair/Rehabilitation and Strengthening category, an Award of Merit – Buildings was presented to engineering firm Tipping Mar & Associates for the 2850 Telegraph Avenue project in Berkeley, Calif. The seismic rehabilitation of the six-story medical office building presented numerous architectural and economic demands. As such, the design team developed a cost-effective plan incorporating a system of hybrid post-tensioned concrete walls that provide superior seismic performance and that functionally integrate within the building to maximize the value and flexibility of the space. The solution, consisting of four symmetrically arranged 2-foot, 6-inch-thick by 20-foot-long walls, blends the inherent advantages of reinforced concrete wall construction with the strength and elasticity provided by the vertically arranged post-tensioning tendons to resist seismic forces. The innovative solution reduced the intrusion of structural elements in the building's usable space while utilizing traditional methods of cost-effective concrete construction. Other project team members include contractor West Builders and post-tensioning supplier DYWIDAG-Systems International, USA.

In the Slab-on-Ground category, an Award of Excellence was presented to post-tensioning supplier Suncoast Post-Tension, Ltd. for the Barrick Bald Mountain Tire Shop in White Pine County, Nev. The Barrick Corporation Bald Mountain Mine has produced gold since the 1860s. To facilitate tire changing operations, the owners recently constructed a tire shop and changing pad, totaling 28,800 square feet of slab-on-ground foundation. Post-tension systems were used to achieve flexibility and strength of the foundation. The slabs had to be built on a rigid pavement surface with the capacity to withstand the pressure of large haul trucks and heavy equipment. Completed in October 2007, the tire shop and changing pad will allow the Barrick

Corporation to service an area that produced 300,000 ounces of gold in 2006. Other project team members include engineer Mendenhall Smith and contractor Canyon Construction Company.

Also, an Award of Merit was presented in the Slab-on-Ground category to post-tensioning supplier GSI Post-Tension (a DSI Company) for the Collin County Hangar Owners Association, Collin County Regional Airport in McKinney, Texas. Built on expansive soil, the Airport required the construction 103,489 square feet of individual slab-on-ground foundations to make way for 24 executive aircraft hangars. Monostrand, unbonded post-tension systems were used to ensure long-term durability, limit concrete use and lower the cost of the project. Additionally, a two-stage stressing operation prevented shrinkage cracks of the foundation's high gloss epoxy paint finish and eliminated the need for crack control joints. The McKinney Independent School District benefits the most from the airport, generating $2 million of certified tax revenue in 2006. Other project team members include engineer Graham-Martin Inc. and contractor SDP Development. IAM Construction Corporation also participated in the project.

In the Parking Structure category, engineering firm Walter P. Moore received an Award of Excellence for the Tampa International Airport (TPA) Economy Garage in Tampa, Fla. In order to increase parking capacity, the TPA constructed a six-level garage to add 5,600 parking spaces. The 5,000-psi cast-in-place concrete, post-tensioned beam and slab structure has five elevated levels and is supported by an ordinary moment frame consisting typically of 28-inch by 28-inch columns, 16-inch-wide by 33-inch-deep post-tensioned beams, and 7-inch-thick post-tensioned slabs. Post-tensioning allowed the structure to have a well-lit and open environment that increases the safety and usability of the garage. Without post-tensioning, additional columns would have been required to support the structure, resulting in interrupted drive aisles, fewer usable parking spaces and interrupted visibility. Other project team members include architect Gresham Smith and Partners and contractor Clark Construction Company.

PTI also presented an Award of Excellence to Tylor Paul Middlestadt in the Student Project category for a study entitled "Post-Tensioned Concrete Advantage." The project involved an experimental study designed to simulate a critical construction challenge in which the concrete in a post-tensioned slab did not achieve its design strength. The goal of the test was to prove that post-tensioning a concrete slab would mitigate the effects of under-strength, partially cured concrete to the extent that the structure could withstand American Concrete Institute (ACI) specified load test for existing structures. Middlestadt conducted the tests while he was a

student at Cal Poly San Luis Obispo. Other contributors to the project include C. Nicholas Watry, James Mwangi, Conco Construction, Hanson's Aggregate, Ray Ward, Cal Poly ARCE Department, fellow students, Hayward Lumber and Jake Feldman.

About the Post-Tensioning Institute (PTI)

Established in 1976, PTI focuses on research projects directed toward development of specifications and design recommendations, publication of technical literature on applications of post-tensioning, and an annual program of technical seminars to disseminate information on post-tensioning design and construction technology. PTI provides research, technical development, marketing and promotional activities for companies engaged in post-tensioned construction. Its publications are a major communication system for disseminating information on post-tensioning design and construction technology.

The Post-Tensioning Institute represents a community of businesses and professionals dedicated to expanding quality post-tensioning applications through research, code development and marketing. PTI is a non-profit organization for the advancement of post-tensioned, pre-stressed concrete design and construction.

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