Stalco Construction completes $12.6 million renovation and expansion; project team included Cameron Eng. and Notaro Grupp

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Stalco Construction, Inc. completed the $12.6 million renovation and expansion of the Manorhaven Pool Complex. The project was one of the most logistically challenging recent construction undertakings in the Tri-state area, due to the short, nine-month schedule and the prolonged, severe weather conditions last winter. The renovation began in September of 2010 and was completed in June.

Stalco Construction served the client, the town of North Hempstead, as general contractor. Cameron Engineering & Associates served as construction manager, engineer, and landscape architect. The bathhouse, pump house, and maintenance garage architect was Notaro Grupp & Associates.

The project encompassed a new, 23,500 s/f, 594,652-gallon main pool and a 2,500 s/f, 16,930-gallon children's wading pool, renovations to the existing bathhouse, a new 2,000 s/f pump house, 800 s/f maintenance equipment garage, water features and sprinklers, two slides, and landscaped and deck areas.

The new, family-friendly aquatic and recreation facility replaced the town's deteriorated, old pool complex, originally constructed 50 years ago.

"We are excited to complete construction of the pool complex on time and on budget," said Stalco principal Kevin Harney. "Achieving this milestone within an extremely challenging timeline is a testimony to the incredible skill, creativity, and dedication of the entire design and construction team."

"This $12.6-million project provides exceptional recreational facilities for the local residents, from the 25,500 s/f pools and children's play areas to the 12,200 s/f main bathhouse with event and food service venues," said Stalco president, Alan Nahmias.

According to Cameron Engineering partner Kevin McAndrew, RLA, LEED, "The multi-purpose aquatic complex features a competition/lap swim area, general swim sections, zero entry beginners/splash zone, and slide plunge/training section within the elaborately shaped main pool as well as a separate wading/splash pool with spray features for small children."

McAndrew outlined the design of the swimming facilities: "The main pool features a gently sloped, ADA-compliant,100-foot-wide 'beach' zero entry ramp for easy access by users of varied physical abilities, including those in wheelchairs. The landscaping and outdoor structures include a large island with a waterfall, terraces and decks with shade structures, a dining area, and vegetation landscaping sections. Poured concrete areas feature colored patterns."

The completely renovated bathhouse houses a concession stand, offices, childcare facilities, multi-purpose/event room, locker rooms, and bathrooms. Interior finishes include CMU (Concrete Masonry Unit) walls; drywall and metal stud divider walls; and paracrete, carpet, porcelain tile, and

linoleum flooring. Exterior walls combine cultured stone, cementitious board, and thermal insulation with Z-bars. The roof feature louvers and trusses for reverse gables.

"The interior layout of the new bathhouse reflects the Town of North Hempstead's desire for efficiency, functionality, and user comfort," said Notaro Grupp's Laura Coletti. "The interiors feature expanded bathrooms, stacked lockers for space efficiency, and staff offices incorporated within the main building."

Stalco Vice President Robert V. Isbit explained the project's challenges: "The complex had to be completed by the beginning of the 2011 season, and the construction could not begin prior to the end of the 2010 season."

Stalco and Cameron accelerated the schedule through innovative engineering design, reuse of existing structural elements, and implementing technological solutions that allowed the team to continue construction of pools and concrete pouring during the unusually cold and snowy winter of 2010/2011.

"The traditional construction practice prevents excavation and pouring of concrete in cold weather conditions," added Isbit. "Stalco, however, continued the site work throughout the cold months by erecting tents and employing industrial heaters."

Engineering and construction

Cameron Engineering developed the main pool's structural design in a manner that accelerated construction and minimized the cost. The original pool structure incorporated 30-ton concrete-filled steel piles spanned by concrete grade beams. Although the new pool's location and shape is different from the original pool, the engineers significantly reduced both the cost and construction time by re-utilizing a high number of the pre-existing structural elements. These include 243 steel piles and 22 concrete caps. 96 of the pre-existing piles were cut in order to accommodate the new structural design. The unused old piles remain under ground, while laborers removed the majority of pre-existing grade beams that interfered with the new main pool's structure.

New structural elements within the main pool area include 68 30-ton timber piles and 40 concrete grade beams that also serve as pile caps. Engineers also incorporated many of the pre-existing piles and grade beams into other structures, including slides, garage, pump house, and lampposts. This provided additional cost and time savings.

Prior to placing concrete, pool subcontractor Norberto Construction installed wall forms comprised of 2"x3" and 1"x4" lumber planks and Steel-Tex wire mesh, and installed No. 5 re-bar (5/8" diameter) cages within the forms. The pool floors feature 8"x8" rebar mats placed against the excavation bottom and grade beams.

During construction of the concrete shells of both pools Stalco and Norberto employed the shotcrete process, in which the dry concrete mix, called gunite, is conveyed through a hose and pneumatically projected at high velocity onto a surface, with water added at the nozzle. In this method, concrete undergoes placement and compaction at the same time due to the force with which it is projected from the nozzle. It can be impacted onto any type or shape of surface, including vertical or overhead areas, which makes it particularly feasible for construction of pools.

"The dry mix of cement, stone aggregate, and sand arrived at the site from a concrete plant in pre-designed proportions. The engineering specifications called for 4,000psi compressive strength concrete," explained Anthony Norberto, Vice President of Norberto Construction. "We utilized a mobile batch truck to deliver and pump the dry mix, and distributed it through a rotary gun. Prior to the application, the water was heated in a diesel fuel boiler installed on the truck."

"Throughout the cold months, the team utilized two large tents, with dimensions of 50 x 100 feet and 40 x 70 feet, and three-phase electric space heaters to maintain the temperature above 40 degrees Fahrenheit required for the gunite spraying procedure," said Stalco Superintendent Michael Bjertnes. "Each newly constructed area remained covered with thermal blankets for seven days, utilizing concrete's own heat emission during hardening to maintain the temperature above 40 degrees. Stalco continuously monitored the temperature with a combination of recording devices and laser and infrared thermometers."

Many elements required manual shaping with trowels following the gunite spraying. These included the steps, final shape of the curved walls, and gutter troughs within walls. The interiors of the pools were finished with hand applied and polished marble dust and white cement mix, which serves as the final layer of waterproofing and provides a visually attractive and smooth surface. Custom manufactured, white pre-cast coping stones with water access slots crown the pools' walls and cover the gutter troughs.

"The team employed additional measures to streamline and accelerate the construction process," added Cameron Project Manager Joyce He. "For example, we erected two on-site storage silos for dry mortar and masonry grout mixes used for construction of new interior walls in the bathhouse. The mixes were delivered in advance from a concrete plant. This logistical solution eliminated the need for on-site mixing, provided consistent and correct proportion of dry ingredients, and reduced masonry construction time."

The pools feature the following systems:

A 19-feet-high water slide, manufactured by White Water, with two flumes, which are fed by one 11 HP Griswold pump each at 1,050 GPM (Gallons Per Minute);

Three palm tree sprinkler features in the main pool, manufactured by Vortex, fed by one Hayward 2 HP North Star pump (90 GPM);

Four stacked 48-inch Neptun-Benson Horizontal Fiberglass High Rate Filters with 2095 GPM system flowrate for the main pool;

One Neptun-Benson Horizontal Fiberglass High Rate Filter with 222 GPM flowrate for the wading pool;

200-pound storage capacity Pulsar 4 Pool and Spa Chlorination System with a booster pump and a well agitator;

AK 110 automated, programmable chemical controller by Acu-Trol, with AcuCom software for continuous monitoring of pH, ORP, disinfectant levels, temperature, and flow rate;

Haywood NorthStar High Performance spray apparatus pump for the wading pool spray features;

Slotted coping stones above the pool gutters, custom manufactured to match the pools' curvature by Federal Stone Industries.

Headquartered in Islandia, NY, with a regional office in New York City, Stalco Construction, Inc. is a full-service general contracting and construction management firm active in the Greater New York area, including Long Island and New York City. Established in 1992, the firm builds commercial and institutional facilities for office, retail, educational, healthcare, governmental, cultural, and religious clients. Stalco's personnel include professional engineers, architects, project managers, superintendents, and support staff. The value of the firm's on-going ground-up, interior, and capital improvement projects exceeds $80 million.

Stalco's current and recent work includes the $7.3-million Battery Park City Community Center and the $10-million restoration of the landmark Pier A in Manhattan; the $1.4-million Home Fair store at

the Atlas Park Mall in Glendale, NY; Ultra Diamonds stores in Riverhead, NY; the $11.3-million renovation of the landmarked Erasmus Hall High School in Brooklyn, NY, one of the largest and oldest high schools in the country; the on-call CM contract for the 778,000-square foot CA, Inc. Global Headquarters in Islandia, NY; the $1.2-million Dental Hygiene Laboratory and Knapp Hall at SUNY College in Farmingdale, NY; the $30-million expansion and renovation program for Three Village Central School District in Suffolk County; the $8.3-million, 200,000-square foot, four-building Oyster Bay High School and James Vernon School campus in Oyster Bay, NY; The Hicksville Fire Department Fire Station 2; and the $2.7-million Holy Sepulchre Cemetery Administrative Building in Coram, NY.

Founded in 1985, Cameron Engineering is a full-service, multi-disciplined consulting engineering and planning firm serving municipal and private clients. Cameron is a member of the US Green Building Council (USGBC).

Cameron has a professional staff of approximately 70 employees, including 23 Professional Engineers licensed in New York State and multiple other states, two Registered Landscape Architects, three Members of the American Institute of Certified Planners, and numerous employees with graduate degrees in the fields of engineering and/or science.

26 of the firm's professionals in various disciplines have achieved the United States Green Building Council LEED accreditation. This high number of LEED AP personnel reflects the firm's dedication to designing high-performance buildings, energy efficient engineering, sustainable site planning, and providing occupants with comfortable and healthy environment.