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Get Out and Play at Turtle Cove



By Mary E. Kremposky
Associate Editor

Turtle Cove Family Aquatic Center in Lower Huron Metropark near Belleville is the ultimate “play station” for kids. With over 13 acres of spray jets, water slides, and a lazy river, the recently opened center turns a summer day into the sun-filled nirvana of nearly every child’s dreams. Over 200,000 visitors have flocked to this new water wonderland since its grand opening in late May 2008. The project team - Wilkie & Zanley, Architects, Wyandotte; Water Technology, Inc., Beaver Dam, WI; and Braun Construction Group, Inc., Farmington Hills - have inspired children from throughout the region to put down the videogame controller, don a bathing suit, and get wet in the Great Outdoors at the Huron-Clinton Metropolitan Authority’s largest aquatic center in its green network of Metroparks dotting Southeast Michigan.

A living border of forests, fields and wetlands surrounds this 13-acre aquatic playground. Wilkie & Zanley’s design is in harmony with this natural setting. Totalling 10,000 square feet of space, the administration/concession building, the bathhouse, and the mechanical building are each capped by a barrel-vaulted, standing seam metal roof, whose teal color blends with the sky and water and whose structure evokes the dome of a turtle’s shell, a common inhabitant of this lovely oasis in western Wayne County. Patterns of bright terra cotta glazed brick mark the overall tan and dark brown split-face façade of each building. “We tried to capture the essence of the native turtle’s form and color scheme,” said David M. Zanley, LEED AP, principal of Wilkie & Zanley.

Named after and inspired by Michigan’s native turtles, the facility was certainly not built at a turtle’s slow pace. Braun Construction Group delivered the \$9.4 million dollar project on budget and a full six months ahead of schedule. “The project was originally scheduled to be completed in May 2008, and we completed it Nov. 1, 2007,” said Dick Conway, Braun project manager. Said Mike Arens, HCMA project engineer, “We had a great concept, a great design team, a great construction team, and it all snapped together to become a very successful project in terms of budget and schedule. It has been very well received by the public, and it has been great project to operate for the Metroparks.”

THE NEW OLD SWIMMING HOLE

Spending a hot day at the old swimming hole is a venerable ritual of summer. For over 50 years, hordes of bathers have beat the heat at the Lower Huron Metropark’s

original outdoor pool. “We wanted to replace this obsolete, antiquated facility and bring something new and fresh to the public,” said Arens.

The new facility appeals to both tots and taxpayers. “We began to accumulate funds toward the development in 2001, knowing the facility would be well used and well received by an existing client base,” said Arens. “We did not issue bonds to build this facility, meaning we did not go into debt to build it. We funded it entirely out of money accumulated within our general fund.”

Conceptual planning consumed nine months with Water Technologies coming on board first, helping to target the facility’s ideal bather load. With a maximum capacity of 1,400 bathers, the new center now more than triples the old pool’s 400-bather limit. Wilkie & Zanley joined the project in 2005, working closely with Water Technology and park staff, both of Lower Huron and of HCMA’s main Brighton office to formulate building and site design.

The vision for this contemporary swimming hole was a facility with an exciting mix of water features in three different pools: a zero-depth splash pad, an endless lazy river, and a leisure pool. “We also wanted a facility oriented toward young children and families and a complex of buildings composed of high-quality, durable

materials,” said Arens.

Equally important, HCMA wanted an aquatic center in harmony with the park’s natural environment. A naming contest among Metropark staff steered the design in the desired direction. “We had a little contest internally and Turtle Cove was being floated around as a name,” recalled Arens. “A few weeks later, I received a fax from John Wilkie (principal of Wilkie & Zanley) with a picture of a turtle. He wrote, ‘This is our color palette.’”

Wilkie & Zanley subtly translated the natural markings of Michigan’s native turtles into bright terra cotta glazed brick. Along with curved metal roofs evoking a turtle’s shell, the floor plan of the bathhouse forms the abstract shape of a turtle. “The idea behind the large curved roofs is also to give the facility some presence from the roadway,” added Zanley.

Offsetting these prominent curvatures, a toothed or serrated line of masonry ripples across portions of the buildings and frames the bottom window edge. As a concept, the bold serrations can be viewed as another abstraction of reptilian patterns. As a practicality, a serrated wall section is used to camouflage mechanical equipment installed along part of the front building elevation. Because an outdoor aquatic center is predominately an exterior

A kids’ sprayscape with a 300-gallon dumping bucket breaks the summer heat.



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PHOTO COURTESY OF WILKIE & ZANLEY

Terra cotta glazed brick against a tan and dark brown façade captures the essence of a turtle's natural markings.

experience, each exterior building face had to be appealing from every angle and elevation. Because of this complete exposure, even the mechanical building, set deep within the aquatic center, has the same decorative glazed brick patterns and curved roofline. "There is no back side to any of these buildings," said Arens.

HCMA, Wilkie & Zanley and Water Technology worked closely throughout planning and design, linking color schemes and finishes between the buildings and the aquatic park, planning the placement of courtyards, and scrutinizing every detail to deliver construction documents that could be constructed without any substantial changes. Such thorough preparation and planning minimized unforeseen conditions and helped Braun deliver the project six months ahead of schedule and on budget. "A clear goal on our client's part is critical to the schedule," said Conway. "The permitting process was even taken care of before our arrival. That alone was an outstanding asset in getting started."

Conway also praises the Van Buren Township's willingness and ability to conduct inspections swiftly as another boon to the schedule. The project team had to work closely with a number of regulatory agencies, including the Detroit Water and Sewerage Department (a DWSD main is located nearby and actually serves the site), the Michigan Department of Environmental Quality, and the Wayne County Department of Public Health, Environmental Health Section.

GOING WITH THE FLOW

Braun Construction began work in August 2006, first tackling site drainage and stormwater concerns. Although HCMA selected the largest piece of open, high ground within the park, Braun still had to contend with a relatively high ground water table. The first order of business was building a stormwater detention pond at the low point of the site. The pond aided in dewatering during construction and now keeps groundwater at a controlled level within the facility. In line with HCMA's mission, the detention pond has a natural

appearance. With its fringe of irises or blue flags and its flotillas of ducks and geese, a person would be hard pressed to tell the difference between this detention basin and a natural pond. "We provided naturalized contours and native plant materials," said Arens. "We also incorporated best management practices for sustainability wherever possible. Stormwater and groundwater collected in the pond is used for turf irrigation throughout the site."

Step two was installing the underground storm sewer system and site drainage catch basins and under drains to complete

A concession, administrative offices, a ticket booth, and employee area were all programmed into a modest-sized, high-quality building.



PHOTO COURTESY OF WILKIE & ZANLEY

dewatering during construction and to keep groundwater permanently at bay. "We were able to build practically all of the underground infrastructure above the groundwater table by virtue of effectively controlling the groundwater level," said Arens.

Braun Construction essentially worked their way up hill, completing the detention pond and then beginning work on the adjacent parking lot. "We had the asphalt paving base course in before the building foundations were complete," said Conway. "We did this so that we could work through the winter and store equipment without having to deal with mud."

The building foundations are trench footings with the exception of the mechanical building. This pivotal building hosts three surge tanks, essentially 8-foot-deep concrete vaults, each separately servicing the three different aquatic play zones. The underground tanks – one directly below a section of the mechanical building and two buried directly in front – are integral with the footings in some cases, said Zanley.

Conway explains the foundation system of the mechanical building and the surge tanks: "The mechanical building has a huge mass spread footing for the basement with poured walls until grade level. At grade, we installed trench footings up high for the surge tanks whose walls are each poured monolithically. The trench footings set on stoops, if you will, and look like an offshoot of the poured wall. With this system, one half of the building doesn't settle differentially from the other half of the building."

TRIASSIC PARK

While the Earth has been producing turtles since the Triassic period about 245 to 208 million years ago, Braun's learning curve for constructing this masonry and metal reptilian simulation was basically a single winter spanning much of 2007. Under the turtle model, few portions of the building have a single straight line. "With a sloped roof in a masonry application, the cuts and the angles of the block were a little 'interesting,'" said Conway. "The radius windows at the ends of the bathhouse are also not something you see everyday on the jobsite." Added Zanley, "The two main buildings are not even set at a conventional 90-degrees, but are slightly cocked to create the entry courtyard. The roofs also have innumerable cuts, angles and jogs. The eaves are rarely, if ever, just a straight line."

Piecing together these three "turtles" of masonry, glazed brick and glass was

completed in early spring 2007. Wilkie & Zanley carefully plotted the interior flow of spaces within the bathhouse's assortment of men, women and family lockers, showers, restroom facilities, and changing stations. The compact, well-planned administration building was designed to accommodate a ticketing area, food concession and offices, as well as restrooms and drinking fountains to service passing hikers and bicyclers without providing access to the aquatic center. As the third structure, the mechanical building now houses filtration units, including both chlorination and ultraviolet disinfection units.

AN UNDERGROUND JOBSITE

In April 2007, Braun Construction launched construction of the water park, tackling installation of about 6 miles or 30,000 lineal feet of underground pipe and placement of a concrete deck with slopes in multiple directions. For Braun Construction, the complexity of installation turns the terms leisure pool and lazy river into an oxymoron. First, all the piping had to be placed at varying and carefully calculated elevations to promote optimal drainage. "All the underground piping has to slope, one way or the other, to a low point to drain and winterize the facility," said Conway. If improperly placed, a pipe might collect standing water and potentially freeze in winter.

Braun Construction also had to navigate the pipe through a mind-boggling obstacle course, including running pipe around and under the storm sewer system and negotiating a maze of foundations beneath the large umbrellas and several of the sizeable water features. Preplanning the placement of pipe and tight coordination with all the trades were crucial tasks well executed by Braun Construction. "Braun's coordination of the trades at this critical time was excellent," said Arens. "It was very tricky and challenging, but placement of this underground spaghetti with all its different layers, elevations and sloping went together seamlessly."

THE POOL PARTY

Another challenging phase was constructing the different pools and the concrete deck. "We used thousands of survey points to establish the radiuses, corners, contours and depth markers in the pools," said Conway. "The lazy river had about eight radius points on one curve alone." Fortunately, several extremely skilled concrete contractors were part of this pool party. "We had some of the best concrete



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With roofs simulating a turtle's domed shell, over 6 miles of underground pipe and a concrete deck sloping in multiple directions, the project team has produced one of the best aquatic centers under the sun in the HCMA system.



Construction of all three buildings involved installing masonry in a sloped roof application, plus building roofs with irregular eaves.



PHOTO COURTESY OF WILKIE & ZANLEY

contractors I have ever worked with," declared Conway. "Moretti Foundation Co., Inc., Woodhaven, did a phenomenal job with the concrete foundations." Moretti placed the foundations and poured pool walls. Pallisco Concrete Co., Inc., Chesterfield, poured the pool bottoms, carefully managing the varied depths within each pool.

Merlo Construction Company, Inc., Northville, installed the concrete pool deck and slab on grade for the entire facility, coordinating all the piping and trench drain layouts and the blue serpentine patterns of colored concrete. Pouring the concrete deck took a firm with Merlo's expertise, given the deck's multi-directional curves, again all calculated for optimal drainage. This almost three-dimensional deck funnels water to a series of trench drains, camouflaged by decorative brick pavers.

The project also entailed a great deal of water stopping, a means to keep water in the pool and groundwater out at the pipe penetrations, expansion joints and hundreds of other interfaces and connections. "It is a neoprene or butyl arrangement that is



PHOTO COURTESY OF WILKIE & ZANLEY

The serrated window edges of the bathhouse added another level of complexity to the work.

formed into the concrete and it collars right around the pipe like a gasket," said Conway. "As part of water stopping for the mechanical building, the pools, and the surge tanks, we had to identify the penetrations before we poured the walls, meaning all of the layout and coordination had to be done before foundations were finished. This and the entire project required a great deal of upfront thinking that paid off in the end."

The pay-off is over three months of fun in the sun for bathers, sun-worshippers, and tiny tots who can either bliss out or happily frolic in this well-designed and well-built aquatic center. Thanks to the hard work and diligent planning of the entire project team, hot fun in the summertime has come to Lower Huron Metropark. ♡

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Thanks to HCMA for allowing us to be part of the Turtle Cove project.

We also wish to express our gratitude to the excellent partners we worked with on Turtle Cove: Wilkie & Zanley Architects, Hubbell, Roth & Clark Inc., and Water Technologies Inc.

TURTLE COVE CONSULTANTS AND SUBCONTRACTORS

CONSULTANTS

- Aquatic Design and Engineer: Water Technology, Inc., Beaver Dam, WI
- Electrical Engineer: Bada Engineering, Southfield
- Mechanical Engineer: Plummer Associates, Inc., Troy

- Structural Engineer: Charles Albertson, Riverview
- Mechanical/Plumbing Engineer: PAI, Inc., Rochester
- Civil Engineer: Hubbell, Roth & Clark, Inc., Bloomfield Hills
- Geotechnical Engineer: CTI & Associates, Brighton

SUBCONTRACTORS

- Temporary Facilities – Soil & Materials Engineers, Inc., Plymouth;
- Thompson Pump Midwest, Troy
- Earthwork – Sunset Excavating, Livonia
- Landscaping – DuBay's Landscaping Services, Roseville
- Asphalt Paving – Nagle Paving Company, Novi
- Site Improvements – Future Fence Company, Warren
- Concrete Slab – Merlo Construction Company, Inc., Northville
- Concrete Foundations – Moretti Foundation Co., Inc., Woodhaven
- Masonry – D'Aloisio Masonry and Construction, Farmington Hills
- Structural Steel – Service Iron Works, South Lyon
- Rough Carpentry – Patrie Construction Co., Sterling Heights
- Preformed Roofing – Commercial Roofing & Sheet Metal (CEI), Howell
- Joint Sealers – Western Waterproofing, Livonia
- Metal Doors & Frames – Detroit Door & Hardware, Madison Heights
- Glass & Glazing – Modern Mirror & Glass Company, Roseville
- Tile – B & B Tile & Marble, Fair Haven
- Toilet Compartments – Shelving, Inc., Auburn Hills
- Louvers – Construction Specialists, Cranford, NJ
- Toilets – International Building Products, Livonia
- Specialties – Perey Turn Stiles, Bridgeport, CT
- Flagpole – American Flag Pole, Inc., Orange, TX
- Food Service Equipment – Stafford-Smith, Inc., Ferndale
- Pools – Camp Services, Inc., Fenton
- Specialties – Anchor Industries, Inc., Evansville, IN
- Plumbing – Bruce Bennett Mechanical, Inc., Huron Township
- HVAC – O'Hara Corporation, Mt. Clemens
- Electrical – McSweeney Electrical, Wixom
- Water Main and Utility Upgrades -- C & G Myers Construction, LLC, Milford (under contract to the Huron-Clinton Metropolitan Authority)

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