

Case Study: **EXTREN®**, **EXTREN DWB®**, **SAFPLANK®**, **DURAGRID®**

Composites Bridge the Gap Between Opportunity and Education

The John D. Tickle Engineering Building is a cascading montage of brick and glass nestled next to Neyland Stadium, across from the boat house at the University of Tennessee, Knoxville. The lead architect, Duane Grieve, principal at Grieve Associates Architects, made sure that not a single bad view existed within the building's conference room, atrium, faculty offices, bay testing areas, labs or hallways. The building's namesake rests in a display at the building's entrance made from an EXTREN DWB® (double web beam). This display represents only a small sliver of Strongwell's product offerings.

The school is connected to the campus with one of the modern marvels of civil engineering – a suspension bridge spanning over 120 feet. These types of bridges are traditionally manufactured with steel, concrete or reinforced concrete with extensive welding. This particular bridge contains FRP (Fiber Reinforced Polymer) composites utilizing EXTREN 36" DWB®, EXTREN® wide flange beams, angles, square tubes, SAFPLANK® decking, and DURAGRID® T-1700 grating, all manufactured and pre-fabricated by Strongwell. The installation was done by Quality Machine and Welding Co. Inc., a structural steel fabricator and erector. This bridge will provide multiple years of maintenance-free service as future civil, environmental, and industrial and systems engineering students cross into the threshold of the John D. Tickle Building at the University of Tennessee.

The namesake shared between Strongwell and the building represents the values of generosity,



innovation and investment in the future. Mr. Tickle's decision to give began two years after he graduated in 1965. At that time, he gave \$100. Today, John continues to give to athletics, academia and other philanthropic causes. He states that, "I'm a proud Tennessean, and I want our state to not be ranked at the bottom of the totem pole in areas like economic well-being, education and so forth. We can do that through education. We need great students and to attract good students, we need wonderful talented, dedicated professors. And to attract them, you need great facilities."

The five-story, 110,000 square-foot building will be the second engineering building to go up on campus in as many years as enrollment for STEM (Science, Technology, Engineering and Mathematics) disciplines has skyrocketed amongst undergraduates and graduates alike. The building will be filled to capacity upon its first day of enrollment as eager students await the intensive environment of engineering.

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Newsletter from
Strongwell Corporation
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Case Study: DURAGRID®

The Blue Harbor Resort Goes with the Flow by Using DURAGRID®

The Blue Harbor Resort in Sheboygan, Wisconsin was outfitted with Strongwell's pultruded fiberglass grating and stair treads.

The four-story indoor waterpark features over 43,000 square feet of platforms and stair towers which are constantly exposed to chlorinated water and constant foot traffic. The use of a safe, corrosion resistant, low maintenance material is a must. Strongwell's products met the waterpark's needs perfectly.

In addition to the corrosion resistance of Strongwell's DURAGRID® pultruded fiberglass grating and stair treads, Strongwell fiberglass was selected by the resort because the stairs needed to span 60" without an intermediate stringer. This and the recommended FRP façade over wood allowed the resort to present a clean finished look without having to replace the main stringers.

DURAGRID® T-1800 1" was installed to serve as platform flooring and 5' wide DURAGRID® T-1700 2" stair treads were used on staircases throughout the park. EXTREN® 625 series plate and channels were

used to provide the façade.

In addition to corrosion resistance, Strongwell's materials also provided much needed skid resistance. The grating and stair treads feature a fine grit surface that provides a safe, skid-resistant walking surface, even in midst of the wettest conditions. As added benefits, the open construction of the grating and stair treads eliminates standing water and allows more natural lighting through.

"We went from drab and dirty, to a clean, finished, easy to maintain surface that is safe and aesthetically pleasing. Instead of pressure washing 75 stairs weekly, we hose them down once a month, saving labor and chemicals." - Steve Grossenbach, Director of Engineering at Blue Harbor Resort & Spa. ●



Case Study: HS Armor®

HS Armor Panels Give SWAT Added Tactical Advantage

The Bristol, Virginia Police Department (BVPD) SWAT Team is part of a joint regional task force which may be called on at any time to respond to highly volatile situations and clandestine operations. Officers use various protective gear and are highly trained in ways to protect themselves, but in extreme cases, an additional measure of protection may mean the difference between life and death. One simple action this SWAT Team took was to outfit the interior of its unmarked transport vehicle with Strongwell's ½" HS Armor panels.

The BVPD's unmarked Dodge Sprinter cargo-style van has one purpose: transport up to twelve SWAT Officers, one Medical Officer, and all their gear to a response site safely and oftentimes, covertly. While the department owns a highly-armored BearCat SWAT vehicle, it is not suited for undercover operations. One major concern of using a cargo-style vehicle for

personnel transport is its weight limit of 3,500 total lbs. Additionally, since the vehicle is designed for light to medium use, its walls are made from traditional automotive steel panels not designed for ballistic resistance.

In the course of a single day and using only basic carpenter's tools, the police department retrofitted the ½" HS Armor panels along the side walls of the van's interior. This installation added UL Level III and NIJ Level III-A protection to its passengers, while adding less than 800 lbs. of weight to the chassis. In addition to the automotive steel and occupants' body armor, installing Strongwell's HS Armor panels provided another barrier of lightweight protection for SWAT officers without sacrificing the look or function of this important tactical vehicle. ●



Case Study: EXTREN® & DURADEK® I-6000

Fiberglass Sets the Stage for Sea Lions

Harrington Industrial Plastics recently outfitted a sea lion attraction at the Aqua Theater in the Wildlife Conservation Society's New York Aquarium with EXTREN® fiberglass structural shapes and DURADEK® I-6000. The above pool theater was previously shared amongst dolphins and pinnipeds, but recently the structure was completely redesigned to exclusively showcase sea lions. The previous stage consisted of a wooden walkway which separated two pools. After Super Storm Sandy hit, the aquarium worked with design engineering firm Dunne & Markis Consulting to design a new setup utilizing Strongwell's fiberglass.

Dunne & Markis Consulting, with the assistance of Harrington Industrial Plastics, chose fiberglass over traditional materials due to varying corrosion issues resulting from the location of the job site. The aquarium is situated near the ocean and its structures are constantly subjected to seawater and brackish water. This naturally corrosive environment quickly corrodes steel, aluminum and even stainless steel. The other option is wood, which becomes brittle and weak after exposure to sun and salt water. Fiberglass is highly resistant to these corrosive elements.

In addition to the stage structure, EXTREN® structural shapes were fabricated to create sea lion stands. These stands are subjected daily to saltwater and the weight of sea lions, which can weigh up to 500 lbs. each.

Aquarium representatives said the fiberglass structure, stage and seal stands look and function above expectation and should provide multiple years of safe and durable performance. Representatives also commented on the tremendous support they received from Harrington Industrial Plastics to make this project a complete success. ●



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WINTER 2013

PROFILE

Strongwell News & Applications



Stephen Browning
Structural Engineer - Bristol

Stephen Browning, Professional Engineer registered in three states (VA, TN, and NC), has joined Strongwell as a Structural Engineer. Stephen has a B.S. in Civil Engineering Technology from Bluefield State College, a B.S. in Civil & Environmental Engineering from Tennessee Tech University and a Masters in Civil Engineering with emphasis in structural engineering from Virginia Tech. His past work history includes Truss Joist MacMillian, A&S Building Systems and Lamar Dunn and Associates. Stephen's last work experience was with The Browning Group, a consulting business he started in 2004.



Josh McCroskey
Manager, Process Engineering - Bristol

Josh McCroskey has been promoted to Manager, Process Engineering. Josh will report to the Director of Virginia Manufacturing Operations and will be responsible for managing all process engineering personnel and functions. Josh began his career with Strongwell in 2006 as Process Engineer. Josh graduated from Virginia Highlands Community College with an Associate's Degree in General Engineering Technology in 2003. He went on to receive a Bachelor of Science degree in Mechanical Engineering from Virginia Commonwealth University in 2006.



Tim Selfe
Manager, Environmental Health & Safety - Bristol

Tim Selfe has been promoted to Manager, Environmental Health & Safety. Tim will be responsible for managing all environmental health and safety functions as well as directing Bristol and Highlands strategic operational projects. Tim began his career with Strongwell in 2007 as Senior Process Engineer. Tim graduated from East Tennessee State University with a Bachelor of Science Degree in Manufacturing Engineering Technology.



Jessica Daggs
Account Manager - Bristol

Jessica Daggs has accepted a full-time position of Account Manager in the Customer Service Department. Jessica has a B.S. from Milligan College in Computer Information Systems. She was awarded the Betty Goah Scholarship for high academics in high school. Jessica began her employment with Strongwell in July, 2012 as a contract employee in the Customer Service and Information Technology departments.



Mark Haynes
Customer Logistics Manager

Mark Haynes has been promoted to Customer Logistics Manager. Mark will be responsible for managing the daily operations in Customer Service and Shipping. Other responsibilities will include finished goods inventory control and fabrication nesting. Mark began his career with Strongwell in 1995 and has held several different positions within the company. Mark is currently enrolled in King University completing a bachelor's degree.



Austin Anderson
Process Engineer - Bristol

Austin Anderson has accepted a full-time Process Engineer position in Bristol. He will report to the Manager, Process Engineering - Bristol. Austin is an active member of the American Society of Mechanical Engineers (ASME). He has previous manufacturing experience in the paper industry and holds a Bachelor of Science in Mechanical Engineering from Tennessee Technological University.