Strongwell News & Applications

Case Study: COMPOSOLITE®

FRP Debuts in First Composites Arch Bridge System Overseas

According to the Federal Highway Administration (FHWA), as of December 2013, there are over 29,000 structurally deficient and functionally obsolete bridges within the National Highway System and over 140,000 outside of the system.

Factors leading to a bridge's deficiency are usually directly attributed to corrosion. Advanced Infrastructure Technologies (AIT) offers a 100-year lifespan system which utilizes FRP composite tubes to act as external reinforcements and a permanent formwork for cast-in-place structures to replace steel rebar, eliminating all exposure to rust and corrosion – an \$8.3 billion direct cost problem for our nation's infrastructure, according to a 2002 FHWA study. This hybrid composite concrete bridge technology has offered a step-in solution to reduce up-front costs in material, fabrication time, transportation, construction time and maintenance issues from traditional bridges.

In 2013, an AIT Bridge-in-a-Backpack System incorporated Strongwell's COMPOSOLITE[®] building panel system. AIT's system can be designed for bridges which are single or multiple spans. The Sumani Trace Bridge in Trinidad was the first internationally constructed composite arch bridge. Designed by AIT and installed by Lincoln and Associates in Trinidad, the arch bridge spans over 26', is over 24' wide, and has a 5' rise. Strongwell's COMPOSOLITE[®] Building Panel System acted as a corrosion resistant soil retention headwall system. The easy-to-fit system allowed the installers to slide the panels together to create headwalls in less than one working day. All of the bridge components fit into a standard ISO container with space to spare.

Utilizing this quick-install system with materials which provide excellent high strength to low weight ratios translated into lower installed costs through the reduction of personnel, equipment, traffic congestion, and construction schedules.

The AIT Composite Arch Bridge system is an excellent example of how composites can be used to replace steel in vehicular superstructures in corrosive fresh and saltwater environments without compromising aesthetic appeal or increasing maintenance requirements.



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Corporate Offices and Bristol Manufacturing Location 400 Commonwealth Ave., P.O. Box 580 Bristol, VA 24203-0580 USA (276) 645-8000, FAX (276) 645-8132

Chatfield Location 1610 Highway 52 South Chatfield, MN 55923-9799 USA (507) 867-3479, FAX (507) 867-4031

> Highlands Location 26770 Newbanks Road Abingdon, VA 24210 USA

www.strongwell.com



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Case Study: DURATREAD™

DURATREAD™ Offers Fast Track Solution for Rail Operators

Located in Baltimore, Maryland, the eighth busiest rail station in the United States needed a quick, drop-in solution for its stair renovation project. Strongwell's DURATREADTM FRP stair tread covers offer a minimalistic yet durable design with rapid and simple installation to minimize disruption to facilities.

This particular train station provides regional service in the northeast corridor to three major rail services, transporting almost 90,000 monthly passengers through 10 different train lines with a forecast of increased ridership. Originally built in 1911 and rebuilt in 1984, the main stairs at this station have been a victim to age, heavy constant exposure to pedestrian traffic, shovels and salt compounds. These factors all contributed to and accelerated the wear of the 70+ concrete steps.

Throughout the years, the steps have been repointed multiple times until it was recently deemed no longer feasible to do so. Instead of completely replacing the stairs, DURATREADTM stair tread covers were offered as a more effective approach, allowing the train station to keep the existing stairs, reduce downtime and save time and money in the process of the upgrade.

DURATREADTM ¹/₄" thick stair tread covers were installed over the worn concrete steps with a perfect fit. Featuring extremely durable and skid resistant aluminum oxide grit, the stair tread covers will ensure a much longer life for the stairs against pedestrian traffic, shovels and snow melt chemicals.

Harrington Industrial Plastics, a distributor of Strongwell products, reported the operators of the train station were pleased with DURATREAD[™] and that specification assistance regarding the refurbishment of other steps has been requested. The project has also drawn the attention of multiple rail operators to incorporate more FRP products within their facilities. ●



Case Study: UTILICOVER®

Fiberglass Offers a Drop-In Solution for Concrete Covers

Due to the tropical savanna climate, a major global satellite service corporation needed a more durable replacement for its worn-out concrete trench covers at its communication facility in Hawaii. The material of choice for this installation was Strongwell's UTILICOVER[®] panel system, replacing traditional concrete covers spanning over a 285' long utility tunnel. This particular utility tunnel is vital to operations because it connects two communications buildings on the property. As a global deliverer of information and entertainment worldwide, Intelsat required the installation be quick and efficient to ensure ongoing operational status. Strongwell's UTILICOVER® offered a strong and durable, yet lightweight solution. For comparison, each UTILICOVER® panel typically weighs as little as 25% of its concrete counterpart, greatly simplifying installation and reducing the possibility of injury.

panels can be individually cut to accommodate inconsistences in tunnel width. With this particular installation, Strongwell's fabricators and designers were able to produce panels which accommodated the multiple bends within the walking path. Trench spans, which typically measure 24" wide, can withstand a 500 lb. point load at mid-panel with as little as ¹/₈" deflection with UTILICOVER[®].

The new covers for the 285' long utility tunnel were instantly popular. When delivered, the panels had been pre-fabricated for a custom fit and immediate installation. The use of UTILICOVER[®] also allowed quick access to the tunnel upon job completion without the wait of concrete curing or the use of heavy equipment or non-essential personnel to finish the job.



Unlike concrete, UTILICOVER®

Case Study: EXTREN®

FRP Bike Path helps Cyclists and Pedestrians Gain Trail Access

The San Francisco-Oakland Bay Bridge in California recently opened a new east span biking path utilizing Strongwell EXTREN® plating for its walking/biking surface. The new Bay Bridge Trail has potential to become a major commuter route between Oakland and San Francisco in the near future.

The bridge runs between Oakland and Yerba Buena Island, offering fantastic views of the bay. Currently the 15-½ foot path has a two percent grade with built-in belvederes for pedestrians, westbound cyclists and eastbound cyclists. The three smooth lanes extend three-fourths of the 2.2 mile length of the bridge before dead-ending just prior to Yerba Buena Island. The continuance of the bike path into Yerba Buena Island will be completed within the next several months.

Strongwell's EXTREN[®] ½" x 4' x 15' plate was chosen by the bridge engineering group along with CalTrans Engineers. MCM Construction, an award winning California bridge contractor, installed the material over wooden decking and noted excellent results. Medium grit epoxy non-slip surfacing was applied to

provide multiple years of service, even with daily use. Corrosion should also never be an issue, ensuring dependable and safe access for the bicycling advocates in San Francisco and the Greater Bay area. The lightweight, nonconductive panel design will also allow maintenance workers greater flexibility for repair access when deemed necessary.

Due to the complexity and short-lead deadlines on this public project, Squires Lumber supplied the product and San Diego Plastics offered technical support and expedited delivery throughout the phases of installation.



The Premiere of Fiberglass Grating Manual Standards

The American Composites Manufacturers Association (ACMA), an American National Standards (ANS) developer, recently released a new fiberglass Grating Manual Standard to educate engineers, designers, and end users about the properties, performance and uses of fiber reinforced polymer (FRP) grating throughout diverse industries. FRP composite grating is manufactured through a matrix system of combining fiberglass and resin. Its applications can range from industrial flooring to aesthetic building coverings, to ship applications, making it a preferred material over steel in corrosive environments. A copy of this standard can be purchased by contacting cct@acmanet.org.

Gregory Bond, P.E., Structural Engineer at Strongwell's Chatfield location, serves as one of the members of ACMA's Fiberglass Grating Manufacturers Council (FGMC) members. Below are



excerpts from an interview conducted by the ACMA to learn more about the new standard.

What is the most significant aspect of the Fiberglass Grating Manual Standard and how will this help open and expand markets?

Bond: The manual informs engineers and users of the capabilities of FRP grating. FRP grating can carry loads similar to steel grating and has the ability to function much better in corrosive environments when compared to steel grating. The benefits to the public



that will result from this standard include: 1) an ANSI standard to which engineers and designers can confidently specify fiberglass grating, and 2) faster adoption of fiberglass grating into the model building codes as a traditional building material.

Why is the standard needed?

Bond: The standard is needed to communicate to engineers, contractors, and owners that FRP grating is a viable alternative to steel grating and is actually the better choice in many applications. The availability and ease of installation should alleviate concerns about using a "premium" product.

As a leading grating manufacturer, how does this standard help your company?

Bond: The standard increases the awareness of FRP grating and its suitability in a wide range of markets beyond wastewater treatment plants, water parks and chemical plants. The availability and ease of installation detailed in the standard should improve the reception by design engineers, contractors, code officials and owners.



Literature Updates:

Updated Strongwell Literature

LITERATURE		UPDATE
	Strongwell Product Availability List	Updated Information
	Fiberglass Decking Systems Brochure	Updated Information
	SE28 Power Pole Flyer	Updated Information
	Design Manual	Updated Information

FALL 2014



Tyler Phelps

Tyler Phelps recently joined Strongwell in the position of Process Engineer for Chatfield.

Tyler started with Strongwell in January 2014 as an Engineering Intern while completing his education.

He is a recent graduate of Winona State University and holds a Bachelor of Science in Composite Materials Engineering.



Will Trivett

Will Trivett was recently promoted to Senior Tool Designer, reporting to the Manager of Process Engineering. As Senior

- Rristol

Tool Designer, Will will continue to support production operations with tooling and component design.

Will has been with Strongwell since 1978 and was previously serving in the capacity of Lead Tool Designer.



Jane Taylor Senior Research and Development Engineer - Bristol

Jane Taylor has been promoted to the position of Senior Research and Development Engineer. Jane will continue to

report to the Manager, Research and Development in this new role.

Jane began her career with Strongwell in 1987 as a Chemical Specialist. Jane has also held other positions within the Quality and Lab (Research and Development) departments.

Melissa Harrison

Melissa has accepted

the position of Chief

Estimator, reporting to

the Bristol Industrial

Products Manager. Her

responsibilities will include reviewing

incoming requests for fabrication-related

quotes, assigning work to estimators,

maintaining the quote system, working

Melissa has been with Strongwell since

1991 and holds extensive experience in

Fabrication Sales and Estimation.

with Chatfield estimating.

Don White Manager, Design and Drafting - Bristol

Don White accepted the position of Manager, Design and Drafting, reporting to the Bristol Industrial Products

Manager. Don will manage the newlyreorganized Design and Drafting department, responsible for structural fabrication drafting and detailing as well

Don began with Strongwell in 1978 as a Pultrusion Operator. Most recently, Don

Jeff Roberts

Jeff will transition into the role of Fabrication Sales Estimator where additional resources are required to support Strongwell's

growing project business. In this role, Jeff will also assist in drawings reviews for incoming jobs.

Jeff started his career with Strongwell in 2008 as an Account Specialist and has served in various roles since that time.

Jeff holds a Business degree from King University.





Robert Holzer was recently promoted to the role of Manager, Machine Shop, reporting to the Director, Virginia Manufacturing

Operations. His responsibilities will include oversight of daily machine shop and machine build functions and activities. This new position will foster increased flexibility in utilizing resources and cross training of multiple functions.

Robert started with Strongwell in 1992 as a Tooling Designer.

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Editor: Barry Myers Reporting/Production: Kelly Barnette & Te-kai Shu



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as tooling design.

served as Manager of Dies and Tooling.