PROFILE
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Case Study: EXTREN® & FIBREBOLT®

Composite Wall Support System Creates Thermal Break Advantages

From highs in the summer pushing 90° F to winter lows in the range of -40° F, the Alaskan climate, with its dynamic annual temperature swings, creates a unique challenge for engineers and architects.

One concern with permanent building design and construction in challenging climate conditions is thermal conductivity through metal-to-metal fastenings and components of exterior walls. When too much thermal transference occurs, interior condensation often results, which can lead to mold growth. Steel offers reasonable thermal performance compared to other materials such as copper (10 times the thermal conductivity of steel) and aluminum (6 times steel). However, fiber reinforced polymer (more commonly known as FRP, 0.01 times steel) can yield significant energy savings and help avoid other problematic conditions related to condensation when utilized as a thermal break. FRP maintains both the temperature and the energy efficiency within a building.

Alaska's Bassett Army Community Hospital was completed by the architectural joint venture HKS, Inc./Wingler & Sharp. The project's chief structural engineer, Larry A. Johnson, P.E., designed a structural solution that minimized thermal conductivity through the exterior components of the exterior walls. The solution resided in an FRP design using composite structural members which bolted to the spandrel beams of the project's structural steel framing system. The FRP design was made of EXTREN® 12" x ½" FRP wide flanges, EXTREN® 8" x 2-3⁄16" x ⅜" FRP channels, FIBREBOLT® ¾" FRP threaded rods and hex nuts to support the exterior masonry façade/cladding. This system was designed to bridge the gap as a thermal break between the warm and cold sides of the exterior wall.

In situations and climates where drastic temperature variations occur, the materials chosen are critical to efficient building and structural designs. EXTREN® FRP Structural Shapes were chosen as the best material for this job due to EXTREN®'s advantages in its thermal properties in conjunction with its density, tensile/flexural strength and modulus of elasticity. ●

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Case Study: EXTREN®

Composites Aid in Fencing and Handrail Refurbishment

Carlisle Bridge in Lancaster, United Kingdom has been in service since 1847 and currently carries the West Coast Main Line over three 120-foot spans. Within its years of service, the metal fencing and handrails have received countless refurbishments and complete overhauls which were deemed too costly and time intensive for Network Rail and its consumers.

Network Rail, the authority responsible for the United Kingdom's railway network, needed a product which was aesthetic, high strength, corrosion resistant, lightweight, and maintenance free. To ensure these benefits, Network Rail specified pultruded FRP (Fiber Reinforced Polymer) as the material has proven itself in many past civil engineering applications when corrosion issues were present. Pipex px® presented a structure with parapet fencing and handrails constructed of EXTREN® Series 525 to address the previous corrosion and aesthetic woes associated with metal fencing and handrail. The height of fencing on this project ranges from 3.5 feet to 8 feet which runs on both sides along the length of the bridge. EXTREN® I-beams, square tubes, round tubes, and flat plates were used in the pedestrian stairwells. In total, almost 1,850 linear feet of combined FRP material was fabricated offsite and then installed by Story Contracting. Both the installers and end users were delighted with the outcome of the completed fencing and railing refurbishment project.

As it stands with its current design, the fencing and handrail at Carlisle Bridge should be able to endure more than 60 years of continuous service. ●

Case Study: DURAGRID®

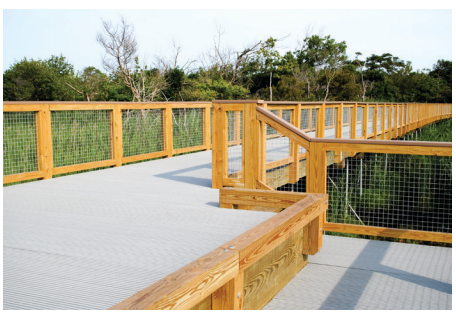
FRP Walkway Connects People with Nature

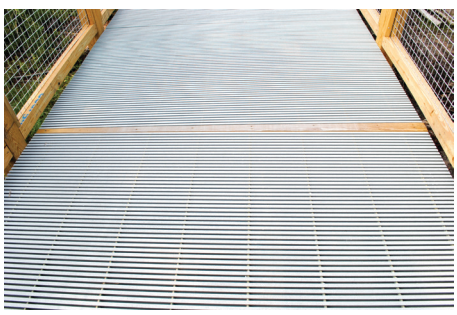
Cape Henlopen State Park near Lewes, Delaware, recently underwent a revitalization project ensuring that avid nature lovers can fully appreciate a 15-mile regional trail system connecting Lewes and Rehoboth beaches. Prior to this revitalization, the Gordons Pond Trail was unprotected, unmarked and primitive, making it difficult to navigate. This revitalization effort finally gives officials, conservationists, naturalists and recreational tourists the chance to explore and appreciate the beauty of the area.

This high profile project utilized almost half a mile (made up of close to 5,000 panels of Strongwell's pultruded fiberglass grating) as part of the Gordon Pond Trail. The elevated trail path design allowed designers to incorporate two observation lookouts overlooking the pond, tidal marsh and dunes. Due to the site's proximity to the ocean, corrosion and light penetration were factors in deciding which building materials to specify.

The contractor, Conventional Builders, Inc., along with the State of Delaware, decided a durable and maintenance-free grating was the ideal choice. Approximately 19,900 square feet of Strongwell's lightweight but extremely strong DURAGRID® I-4000 1" thick pultruded grating was installed. Some of the grating had to be transported nearly half a mile without the aid of any heavy equipment to ensure that rare plants, animals and archaeological sites were undisturbed during construction.

The revitalization effort has clearly paid off. Cape Henlopen's new trail at the park has received close to five hundred positive peer reviews on Trip Advisor and is a recent recipient of Trip Advisor's Certificate of Excellence. ●





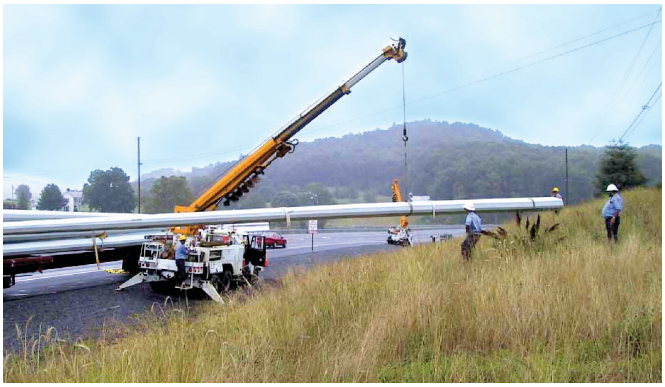
Composite Power Pole Benefits Outweigh those of Wood and Concrete

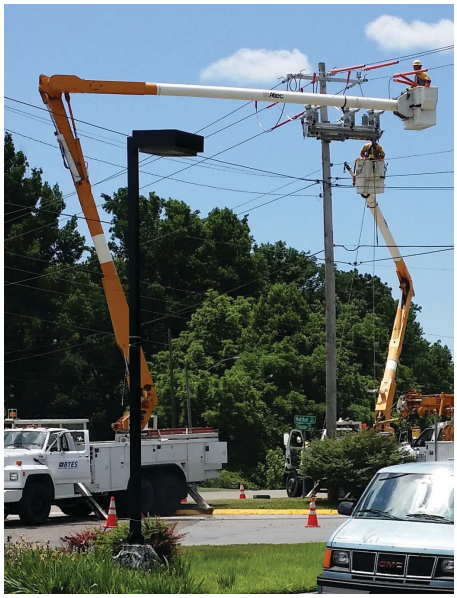
Recently, Bristol Tennessee Essential Services (BTES) had a high profile transmission line installation in Northeast Tennessee. The municipally-owned electric utility, which also provides Internet, telephone and cable television services over a fiber optic system, needed a durable, quick and easy installation. Due to previous installations over 15 years ago in other BTES locations, Strongwell's SE28 power poles were again chosen to carry the transmission line with 69 kV sub transmission with a 13.2 kV under build. The power poles ranged in lengths of 55 to 80 ft. and were installed within two cities and one county.

Although very strong, Strongwell's SE28 power poles are extremely light weight compared to traditional wood, steel or concrete poles. Up to 16 of the SE28 poles can be loaded onto delivery trucks at one time. BTES crew members enjoy how easy the SE28 poles are to install, despite the rocky soil and high water tables. Unlike concrete poles which require the use of a crane, the FRP poles can be lifted with a line truck.

BTES continues to save time in handling and installation by choosing Strongwell's SE28 pole.

As an added bonus, each pole is capable of performing double duty since the poles are capable of supporting transmission lines as well as lighting. This eliminates any need for future lighting pole installations. To date BTES has utilized over 330 poles within its 280 square mile service area that services over 33,000 electric customers. ●





Spotlight on Strongwell Talent

Angie Thomas

Accounts Payable Administrator - VA Operations

Angie Thomas has joined Strongwell in the position of Accounts Payable Administrator – Virginia Operations. In her new role Angie will report to the Corporate Secretary and Treasurer. Angie graduated from the Hillsborough Community College in Tampa, Florida with an Associate's Degree in Accounting.

Diana Moreno Valdes

Human Resource Manager - Mexico

Diana Moreno Valdes has joined Strongwell as the Human Resource Manager for STRONGWELL S. de R.L. de C.V. Diana will report to the Plant Manager and will coordinate all the HR functions for the Mexico facility. A native of Mexico City, Mexico; Diana received her Bachelors of Management from Escuela Bancaria Y Comercial in Mexico City, her Diploma in Human Capital Management from Universidad Regiomontana in Monterrey, and is currently finishing her Master's in Business Administration. She also studied English and French at ILSC in Vancouver B.C., Canada. Diana was previously employed as the Human Resource Manager at Yushin Mexico in Nuevo Leon.

Ben Dobson

Desktop Support Engineer - Bristol

Ben Dobson has joined the Strongwell IT Department as Desktop Support Engineer. Ben has been working as a contract employee through TEK Systems for the past six months. Ben holds a Personal Computer Specialist degree from Northeast State Community College and an MBA from King University.

Daniel Estrada

Maintenance Engineer - Mexico

Daniel Estrada has joined Strongwell as the Maintenance Engineer for STRONGWELL S. de R.L. de C.V. Daniel will report to the Plant Manager and will coordinate and oversee all facility and equipment maintenance functions of the Mexico facility. A native of Matehuala, San Luis Potosi, Mexico, Daniel received his Mechanical Engineering degree from Universidad Autonoma De Nuevo Leon. Daniel has held several positions in the steel industry; most recently as Manager for Ferza Oil Services Company in McAllen, Texas.

Dennis Martin

Director, Virginia Manufacturing Operations

Dennis Martin has joined Strongwell as Director, Virginia Manufacturing Operations. Dennis will report to the President and CEO and will be responsible for leadership of all manufacturing and shipping operations in Bristol and Highlands. He will also have responsibility for the material control, process engineering, tooling/die, and maintenance functions for both facilities.

Dennis comes to Strongwell with over 35 years of experience in manufacturing management. He has a broad range of experience in Safety, Business Planning, Supply Chain Management, Maintenance, Lean Manufacturing and all facets of Operations Management.

Dennis holds an MBA from the University of Tennessee and a BA in Business Administration from Baldwin Wallace College.

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What's in this Issue:

Literature Updates:

FRP Specs: Structural Shapes / Plate & Fabrications

COMPOSOLITE® Secondary Containment System Flyer

Company Portfolio

Corporate Profile

Design Manual Section 3 (Metric)

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