PEDESTRIAN BRIDGE DECKS:

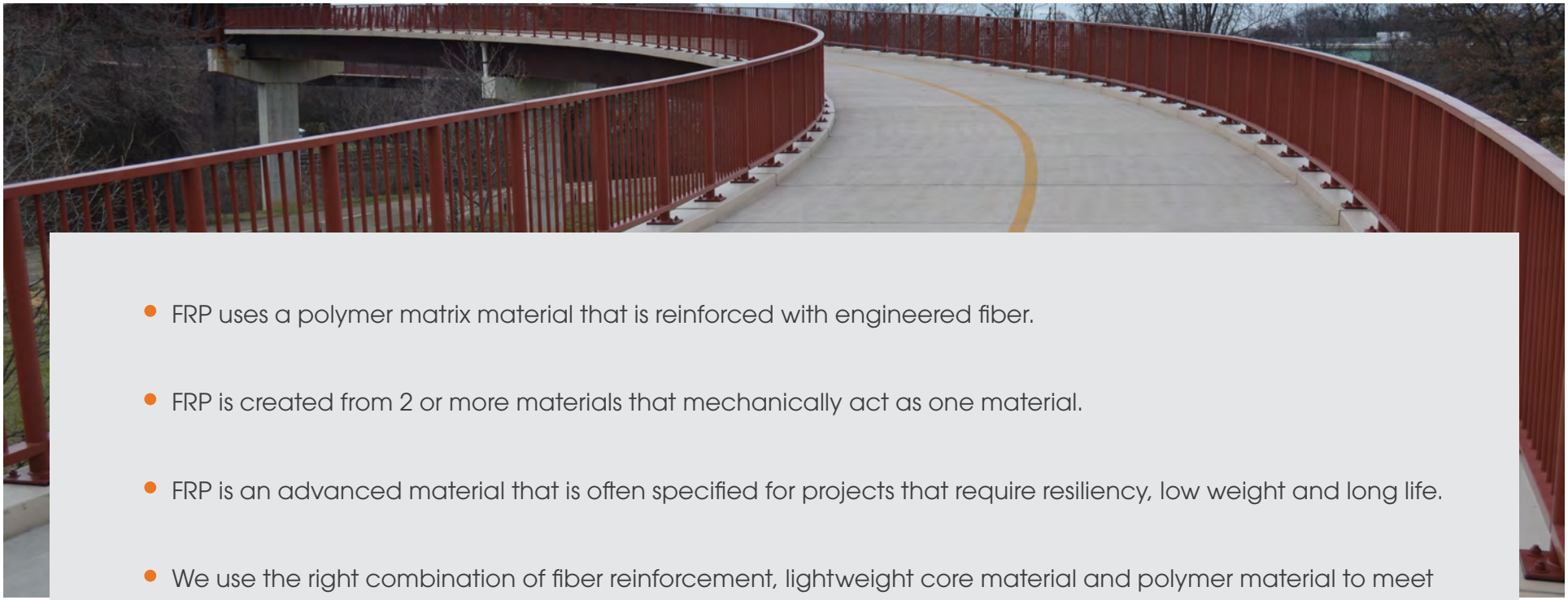
Fiber Reinforced Polymer (FRP) vs. Concrete

CREATIVE COMPOSITES GROUP

History of Materials

- Throughout history, bridges have been made of wood, concrete and steel.
- Historically, large public bridges have decks that are made out of concrete.
- However, FRP is a proven option for bridges and offers many benefits.

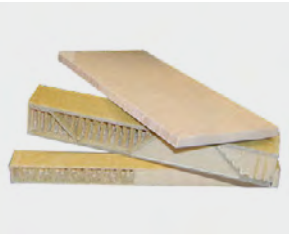
What is FRP Composite?



- FRP uses a polymer matrix material that is reinforced with engineered fiber.
- FRP is created from 2 or more materials that mechanically act as one material.
- FRP is an advanced material that is often specified for projects that require resiliency, low weight and long life.
- We use the right combination of fiber reinforcement, lightweight core material and polymer material to meet your infrastructure requirements.

Fiberglass Fabric

+



Core Material

+

Resin

Weight

FRP

- Thickness: 3″ to 5″
- 5 to 12 psf

CONCRETE

- Thickness: 4″ to 6″
- 50 to 75 psf

Why FRP? Weight Savings

- Lighter weight = smaller size and lower costs for the substructure (concrete, ground connections)
- Lighter weight = smaller size and cost of the superstructure (arch and steel beams)
- Lighter weight = safer installation
- Lighter weight = lower installation cost

Weight Savings - Transportation

Lightweight FRP panels make transportation more sustainable

Small loads with fewer precast concrete panels mean higher transportation costs

Case Study – Wolf Trap National Park

FRP Deck Enables Accelerated Construction of Truss Bridges

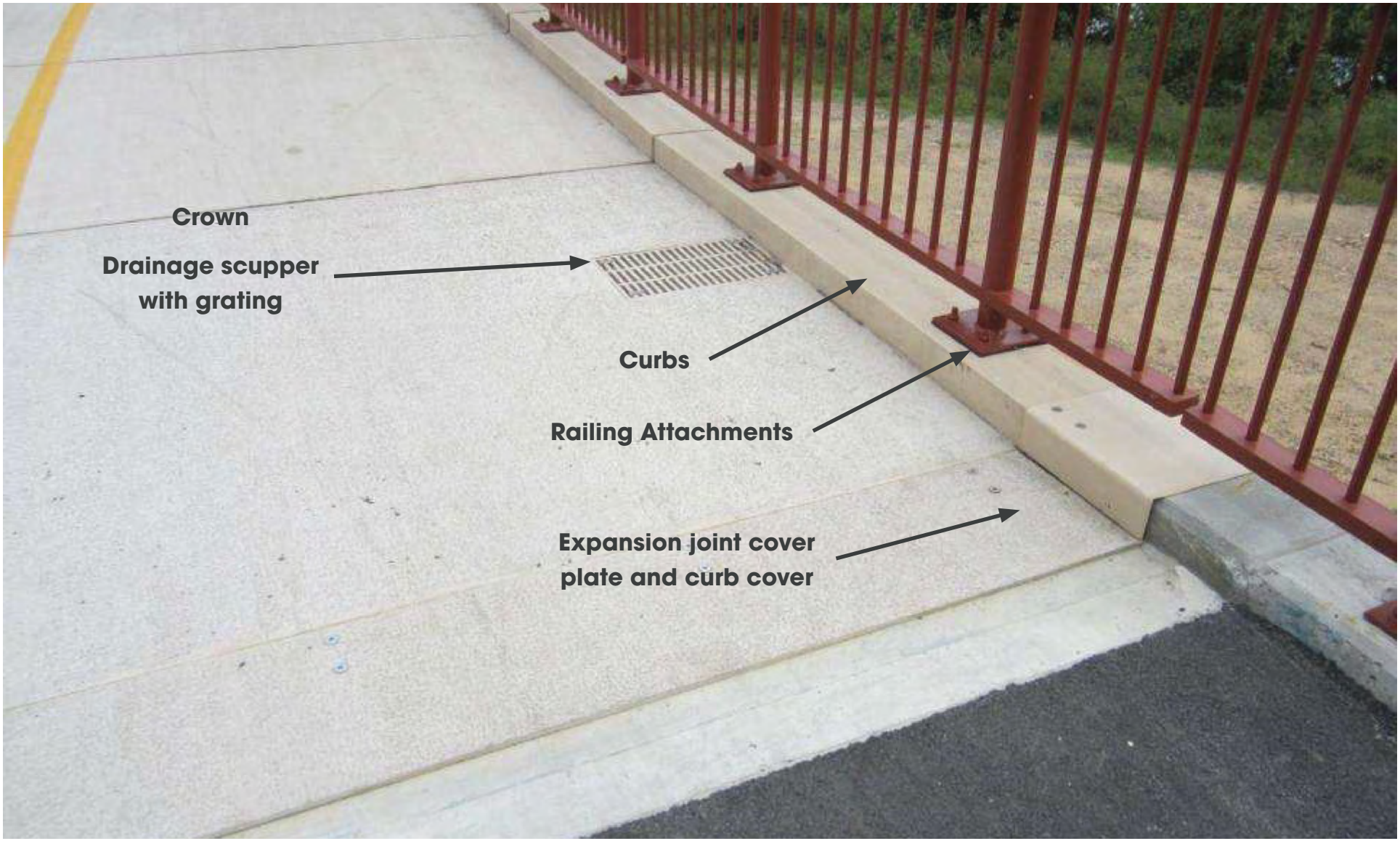
- Truss is fully assembled near highway
  - Steel, FRP deck, fencing
  - No deck installation over the road

Precast concrete would have added 74,000 lb

- Spans lifted into place with only 15 minutes of road closure
- Largest lift was 132,000 lb

Design Flexibility:

Functional Features in Prefabricated Product



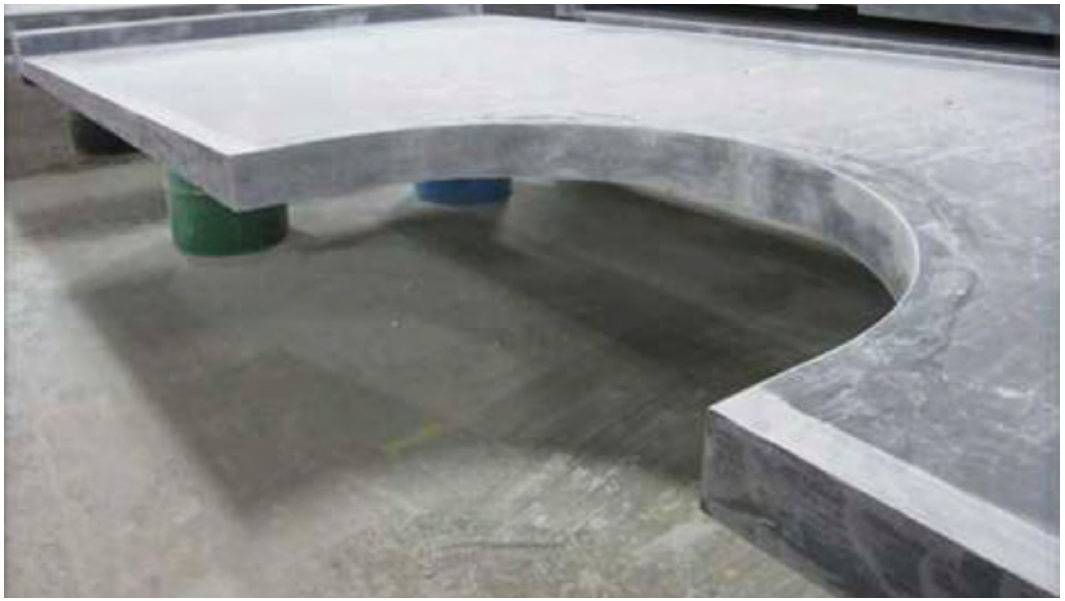
FRP Deck Features

Scupper – Bottom View

Scupper – Top View

Conduit Attachment

Any Shape or Size



Wear Surface

FRP

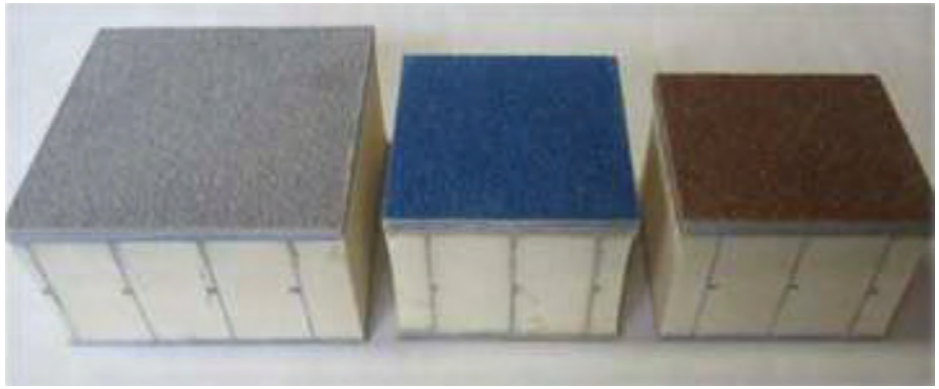
- Polymer concrete
- Quartz aggregate: aggregate size gives similar friction and feel as broom finish

CONCRETE

- Broom finish
- Regular upkeep

Aesthetics

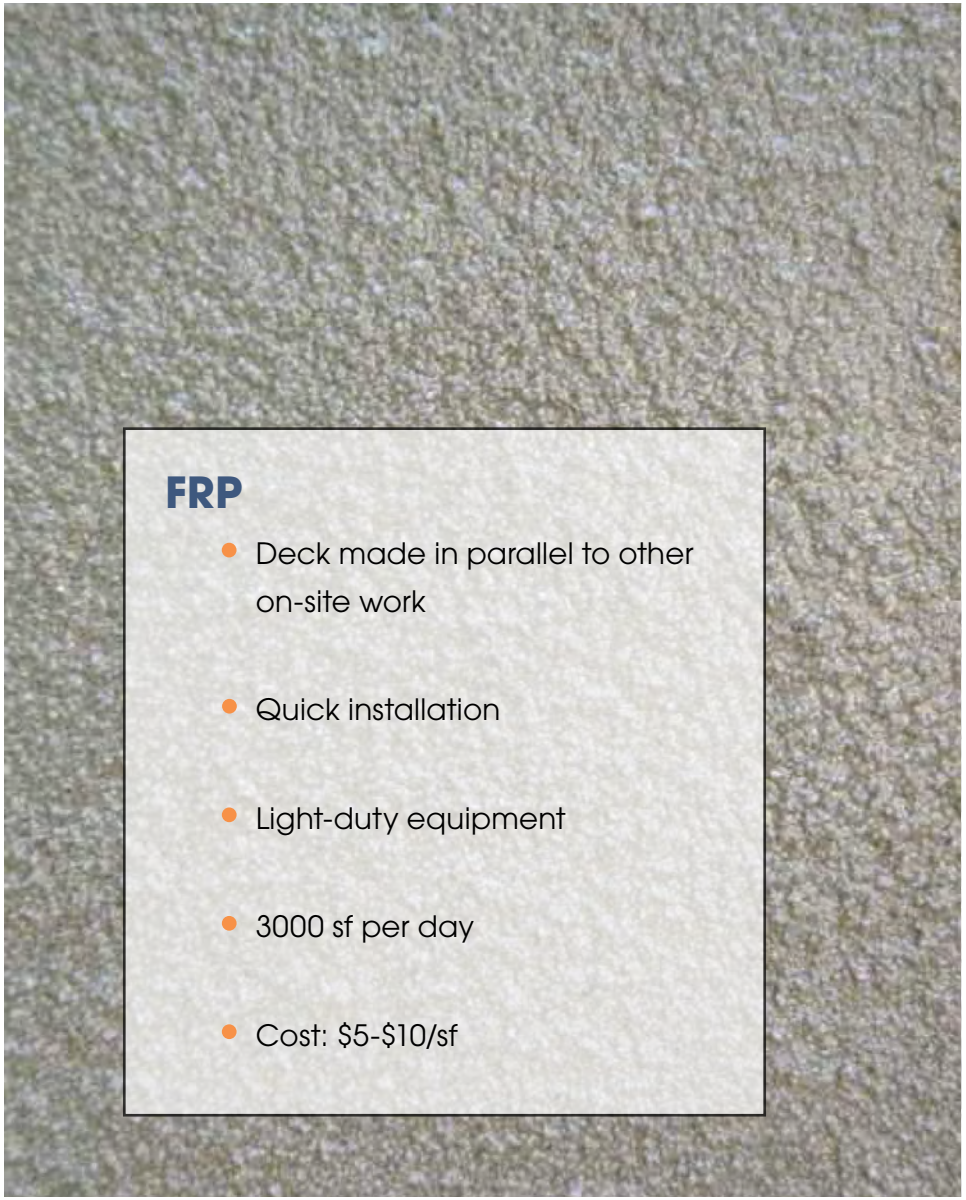
- FRP comes in a wide range of color options to blend with surroundings or match architectural specifications
- Concrete has limited color options



Joints

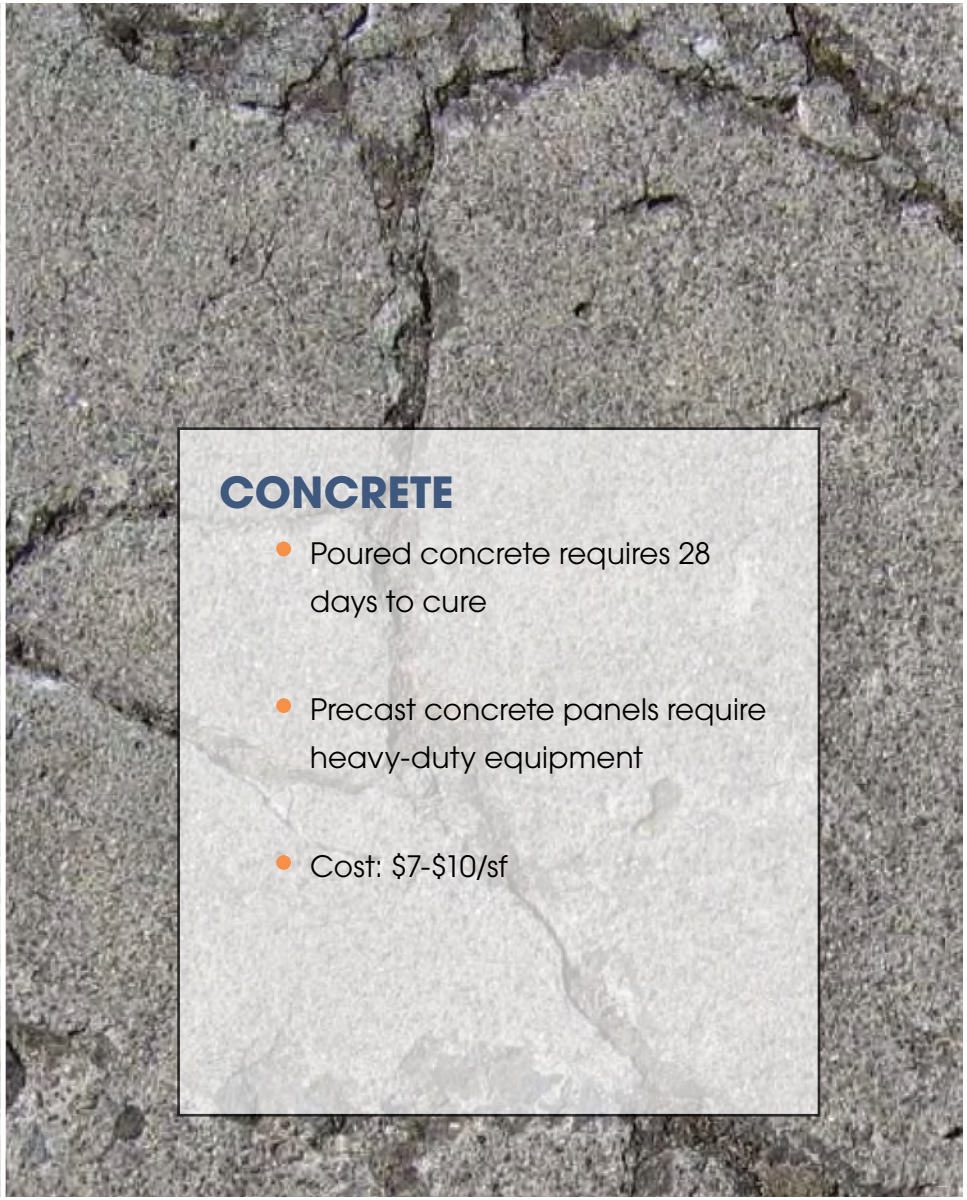
- Both FRP and concrete utilize standard industry joint fillers and sealers
- Preformed silicone lasts more than 15 years in pedestrian bridge decks

Installation



FRP

- Deck made in parallel to other on-site work
- Quick installation
- Light-duty equipment
- 3000 sf per day
- Cost: $5-$10/sf



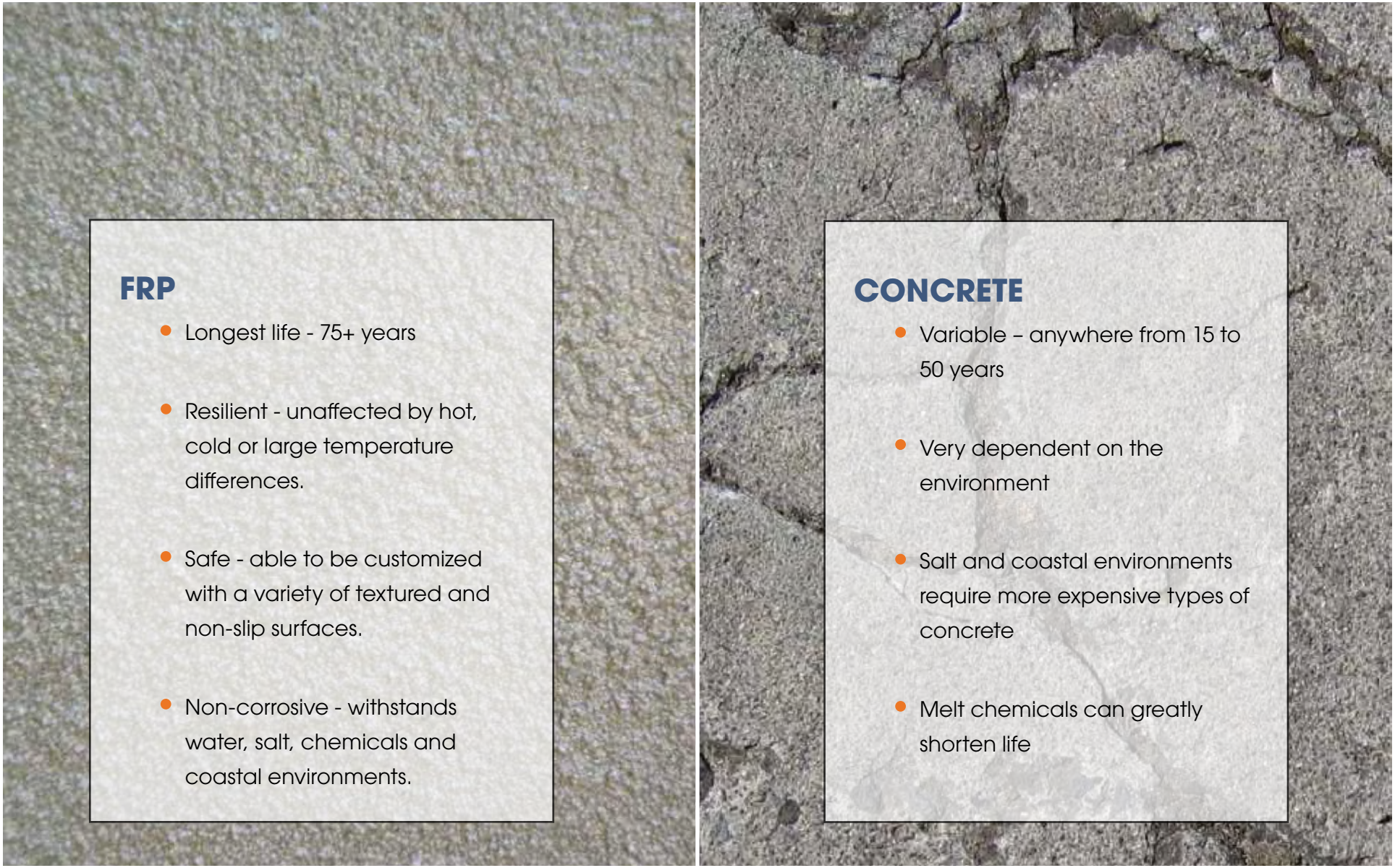
CONCRETE

- Poured concrete requires 28 days to cure
- Precast concrete panels require heavy-duty equipment
- Cost: $7-$10/sf

Installation

- Easily set panels
- Bolted clips underneath

Lifetime



FRP

- Longest life - 75+ years
- Resilient - unaffected by hot, cold or large temperature differences.
- Safe - able to be customized with a variety of textured and non-slip surfaces.
- Non-corrosive - withstands water, salt, chemicals and coastal environments.

CONCRETE

- Variable – anywhere from 15 to 50 years
- Very dependent on the environment
- Salt and coastal environments require more expensive types of concrete
- Melt chemicals can greatly shorten life

Maintenance

FRP

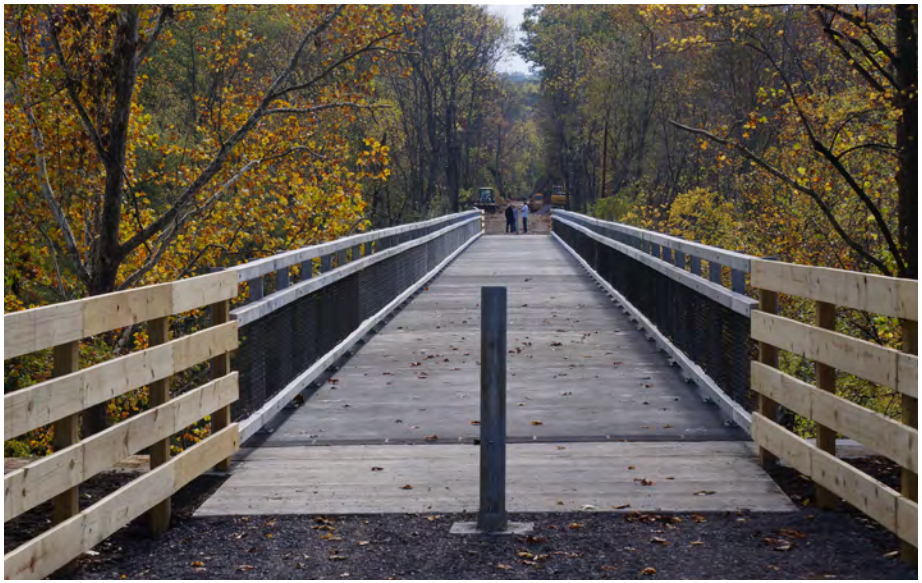
- Structural FRP Deck:
  - No maintenance required
- Non-slip overlay:
  - Original epoxy grit shows some wear in urban areas
  - High-traffic polymer concrete has 15+ years without repair
  - Can patch if there is an extreme damage event

CONCRETE

- Patch repair for spalling
- Crack sealant

Pedestrian Bridge Decks – Examples

Pedestrian Bridge Decks – Examples



Pedestrian Bridge Decks – Examples

Choose Creative Composites Group for Comprehensive Project Support

Your Single Source for Innovative Engineered Bridge Decking and Cantilever Sidewalks Using Fiber Reinforced Polymer Composites

Advance your products and projects beyond the limitations of traditional concrete, steel and wood by leveraging the combined strength of Creative Composites Group. We are a leader in technical innovation that is backed by the industry's most comprehensive FRP manufacturing group for infrastructure.

Creative Composites Group can help you engineer and manufacture cantilever projects to meet the needs of future generations.

We offer comprehensive engineering, design and consultation for cantilevers. Our manufacturing capabilities include the broadest range of engineered FRP solutions to build your infrastructure projects. That's possible only with our proven engineering processes, end-to-end collaboration, service and field support resources. Since FRP composites last longer than conventional materials, they often have a lower lifetime cost when you consider longer service life and low to no maintenance costs.

Discover Your Custom Engineered FRP Cantilever Provider

Creative Composites Group is committed to becoming a trusted business partner who is keenly interested in your project's success. Creative Composites Group works alongside your team, from owners to design engineers and contractors, to help you develop a customized FRP solution that meets the most demanding structural requirements and environmental conditions.

Contact us for your next engineered FRP cantilever project. We'd be thrilled to discuss it with you.

CreativeCompositesGroup.com

Contact Us | Resource Library | Our Blog | Request Quote