Structural Strengthening

Construction

Market	Health / Leisure / Education / Culture
Market segment	Education Culture
Sub-segment	Schools
Project	College of Physicians & Surgeons, Vancouver, BC
Products	SikaWrap Hex 103C and Sikadur Hex 300
Existing situation	Changes in building utilization: 4th floor of building converted to library
Challenge	Find the most cost efficient, unobtrusive and quickest method of strengthening the concrete slab in order for it to meet the weight requirements for the new library shelving
Solution	SikaWrap Hex 103C carbon fiber fabric and Sikadur Hex 300 impregnating epoxy resin forming a carbon fiber reinforced polymer (CFRP) system to strengthen structural elements.

Increased load requirements solved
New library shelves hold up!

The fourth floor of the College of Physicians and Surgeons building was being converted into a library. The concrete floor did not have the strength requirements to facilitate the new reference book racking. The challenge was to find the most cost efficient, unobtrusive and quickest method of strengthening the concrete slab in order to triple the weight requirement for the new shelving from 50 to 150 lbs/ft^2.

Once the engineering work was completed, the structural strengthening of the floor was addressed. An 18 oz unidirectional carbon fiber fabric wrap was specified to cover the entire floor area where the racking would be installed, and provide a 4 inch overlap at the fabric interface. The concrete was sealed and saturated with Sikadur Hex 300 epoxy to promote adhesion. SikaWrap Hex 103C fabric was then applied directly onto the resin saturated concrete surface, covering the entire specified area. The floor was then carpeted for aesthetic reasons.

Sika's carbon fiber reinforced polymer system consisting of SikaWrap Hex 103C and Sikadur Hex 300 allowed for a quick and easy installation. The Sika Solution provided the tension and compression resistance and strength required to meet the new weight requirements for the new library.

SikaWrap Hex 103C

High-strength, high-modulus, unidirectional carbon fiber fabric for structural strengthening

Used for shear, confinement or flexural strengthening.

- Flexible, can be wrapped around complex shapes.
- High modulus of elasticity.
- Resistance in tension, compression and to fatigue.
- Lightweight, non-corrosive & low aesthetic impact.

Sikadur Hex 300

High-modulus, high-strength, impregnating resin for the SikaWrap System

Used as a seal coat and impregnating resin for horizontal and vertical applications.

- Provides excellent adhesion to concrete, masonry, metals, wood and most structural materials.
- Long pot life and open time.
- Moisture tolerant before, during and after cure.
- Demonstrates high creep resistance under permanent load.
- High abrasion and shock resistance.
- Solvent-free, VOC compliant.

Other related products

Sika CarboDur

Used as external reinforcement of existing structures and for structures requiring additional loading capacity

Heavy duty, CFRP strengthening system

Pultruded carbon fiber reinforced plastic laminate (CFRP) designed for strengthening concrete, timber and masonry structures.

- Very high strength.
- Provides outstanding fatigue resistance.
- Minimal preparation of laminates, very easy to install, especially overhead.
- Lightweight, non-corrosive and available in unlimited lengths.

Sikadur 30

Structural bonding of composite laminates to concrete

High-modulus, high-strength, structural epoxy paste adhesive for use with Sika CarboDur reinforcement system

Adhesive for bonding external reinforcement to concrete, masonry, steels, wood, stone, etc.

- Structural bonding of steel plates to concrete.
- Provides long pot life and open time.
- Moisture tolerant before, during and after cure.
- Paste consistency ideal for vertical and overhead applications.
- High temperature abrasion and shock resistances.
- High creep resistance under permanent loads.

New

CFRP Structural Strengthening Systems

Sika CarboShear L

High-performance CFRP shear strengthening system for reinforced concrete structures.

The system comprises of Sika CarboShear L shaped CFRP plates and Sikadur 30 structural epoxy paste adhesive.

- Lightweight
- Excellent corrosion resistance
- High-strength
- Well defined anchoring
- High fatigue resistance

SikaWrap Hex 106G

Bi-directional glass fiber fabric for structural strengthening

Sika Wrap Hex 106G is a bi-directional E-glass fiber fabric. Material is field laminated using Sikadur Hex 330 or Sikadur Hex 300/306 epoxy to form a glass fiber reinforced poymer used to strengthen structural elements.

- Used for shear, confinement or flexural strengthening
- Flexible, can be wrapped around complex shapes
- Lightweight
- Non-corrosive
- Acid resistant

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