



# UHPC or UHPFRC

Ultra High-Performance  
Fiber-Reinforced Concrete

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## UHPC HISTORY

- 1994: Development of Bouygues, Lafarge, and Rhodia, France
- 1997: Sherbrooke, Canada Footbridge
- 2001: Bourg lès Valence, France Highway Bridges
- 2002: Seoul, Korea Footbridge of Peace



## UHPC

- Compressive strengths  $\geq 30,000$  psi
- High ductility
- Very low permeability
- Lighter, thinner, and more durable structural sections
- High shear capacity in bending



## UHPC

- Two of the primary sources for these enhancements:
  - Finely graded and tightly packed nature of concrete constituent materials (no coarse aggregate)
  - Steel or synthetic fibers



## UHPC




## UHPC

- Bus shelter in Tucson, AZ




## UHPC

- Light rail transit station, Calgary, Canada
- Canopies 20 mm (0.8 in) thick



## UHPC

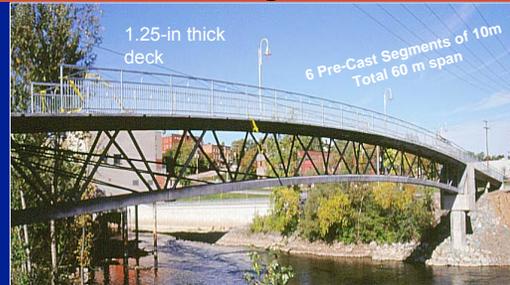
- 6x10 ft panel, 1-inch thick carries 2,000 lb car.



## UHPC AT TFHRC



## Sherbrooke Bridge, Canada, 1997



## Footbridge of Peace Seoul, Korea, 2002



## Bourg lès Valence Bridges, France



Opened in 2001,  
UHPC Beams



## UHPC, Wapello County, Iowa

- Three 110-ft beams, 27'-2" ft wide deck
- Beams cast in Canada in 2005
- Opened to traffic in 2006



## UHPC Beams

- Route 624 over Cat Point Creek, Richmond County, Virginia
- 10 spans: 81 ft 6 in each
- Five 45-in bulb-T beams per span
- One span with UHPFRC



## UHPC

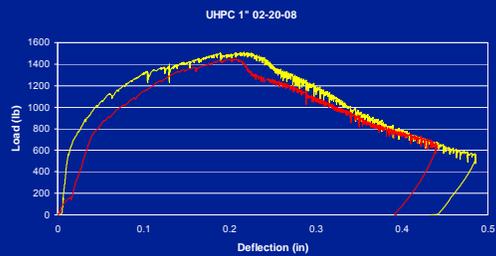


## UHPC Compressive Strength

Test	psi (average of 3)
1	30,456
2	30,747
3	30,492
4	27,275



## Flexural Strength Test



## UHPC



**UHPC**



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## UHPC



Thank You