15th *fib* PhD Symposium 2024
Budapest

fib-course on „UHPC materials and structures”

Introduction to UHPC

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Budapest Univiveristy of
Technology and Economics (BME)

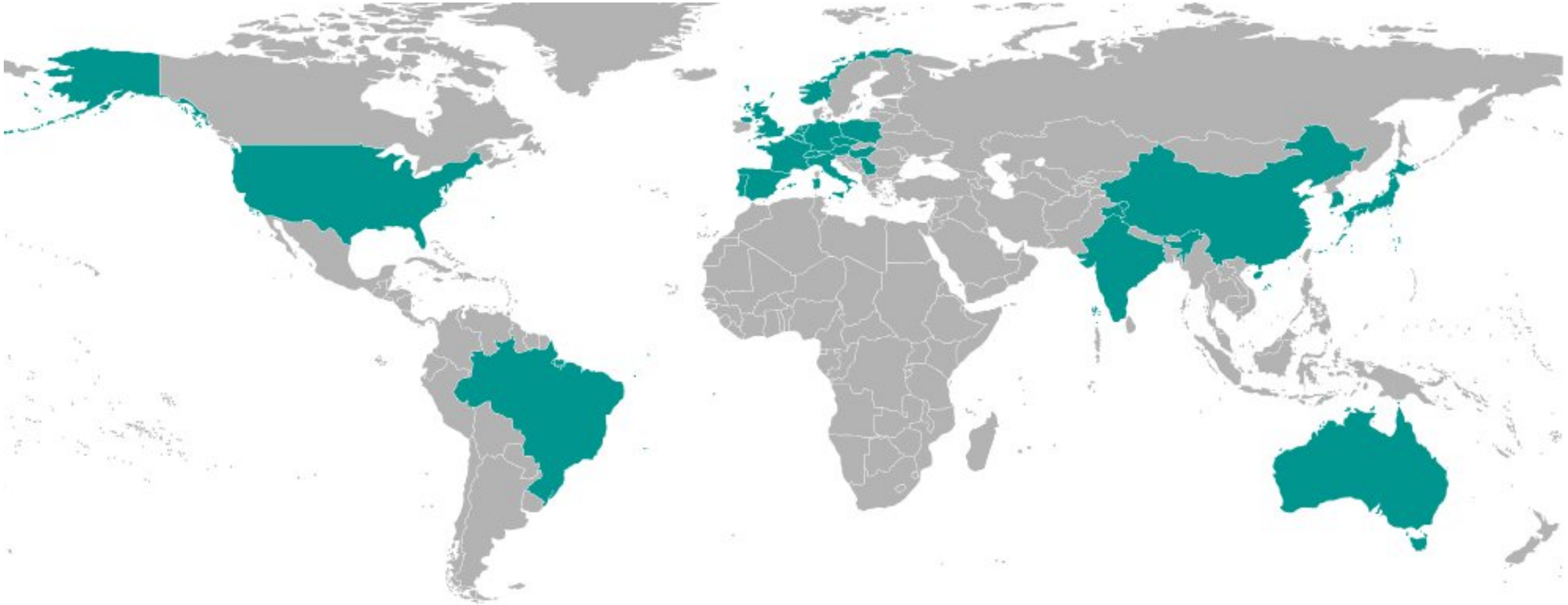
UHPC *fib*-course the day before Opening PhD Symp 2024

15th fib PhD Symposium 2024 Budapest - Overview

BME, 1111 Budapest, Műegyetem rkp. 3.

	Tuesday 27 August	Wednesday 28 August	Thursday 29 August	Friday 30 August
09:00		Opening ceremony	Technical Sessions	Technical Sessions
09:30				
10:00				
10:30		Coffee/tea break (30 min)		
11:00		Technical Sessions	Technical Sessions	Technical Sessions
11:30				
12:00				
12:30		Lunch (60 min)		
13:00				
13:30				
14:00	*fib*-course UHPC materials and structures	Technical Sessions	Technical Sessions	Technical Sessions
14:30				
15:00				
15:30		Coffee/tea break (30 min)		
16:00				
16:30		Technical Sessions	Technical Sessions	Closing Ceremony Prizes and next PhD Symposia
17:00				
17:30				
18:00				
18:30				
19:00	Welcome drink	Free evening	Symposium Banquet with Cruise on the Danube	

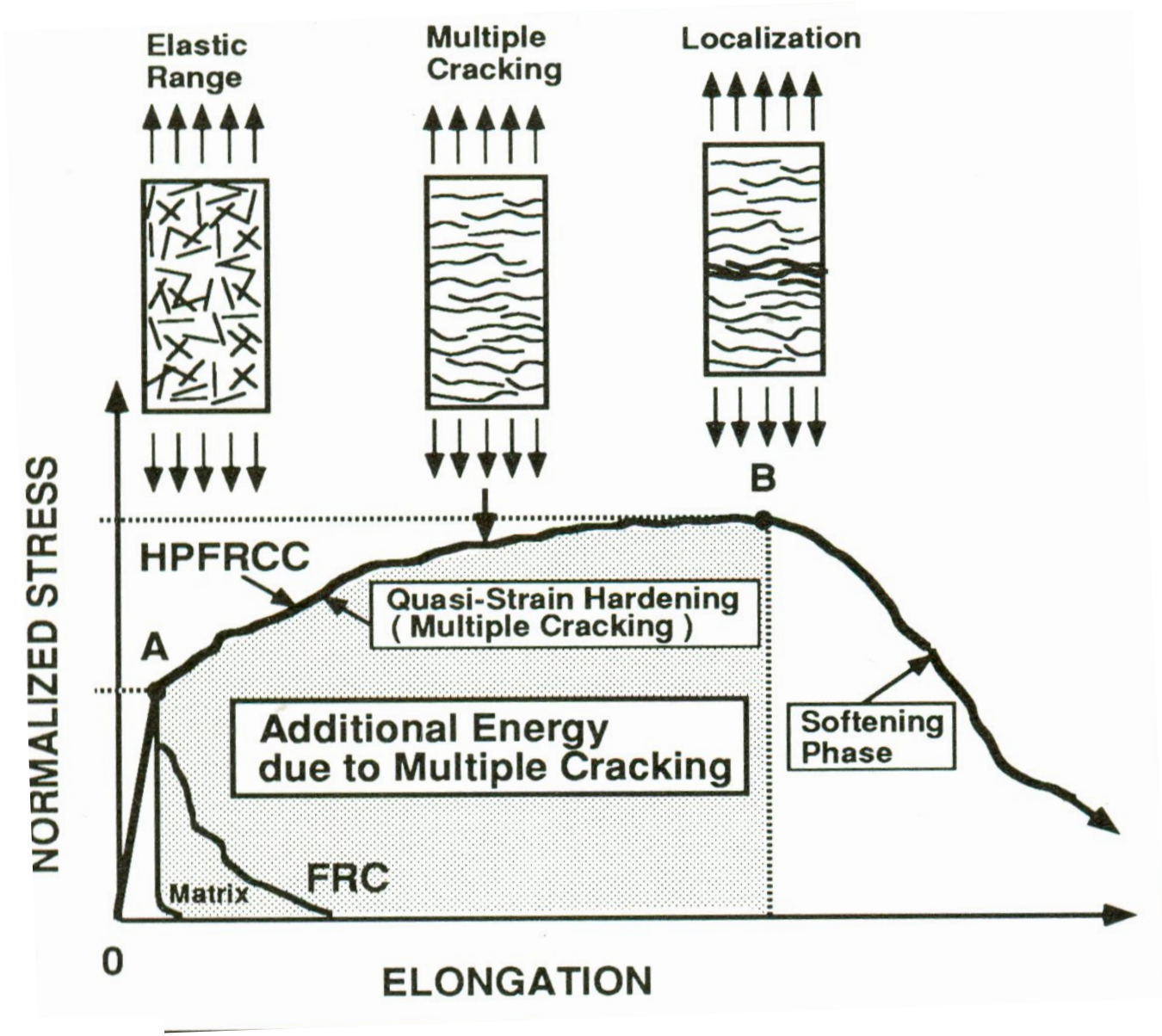
Strong interest from allover the world: 109 participants



13:00-14:00	Registration	
14:00-14:20	Prof. György L. Balázs (Budapest)	Introduction to UHPC Discussion
14:20-14:40	Dr. David Fernandez-Ordonez (Lausanne)	Introduction to fib Discussion
14:40-15:40	Prof. Stephen Foster (Sydney)	Exploring the Future of Ultra-High Performance Concrete (UHPC) Bridge Construction: Advancements, Challenges, and Its Role in Critical Infrastructure Development Discussion
15:40-16:00	Coffee break	
16:00-17:00	Prof. Marco di Prisco (Milano)	UHPFRC for sustainability: a high-performance material for new and existing structures Discussion
17:00-18:00	Dr. Akio Kasuga (Tokyo)	A challenging concrete structure for the low carbon society Discussion

19:00 – 21:00 Welcome cocktail of PhD Symposium 2024 at BME

Naaman, 1996


Elastic Range
Multiple Cracking
Localization
B
HPFRCC
Quasi-Strain Hardening (Multiple Cracking)
A
Additional Energy due to Multiple Cracking
Softening Phase
Matrix
FRC
NORMALIZED STRESS
0
ELONGATION

FLEXURAL TESTS WITH HIGH DOSAGE OF FIBRES

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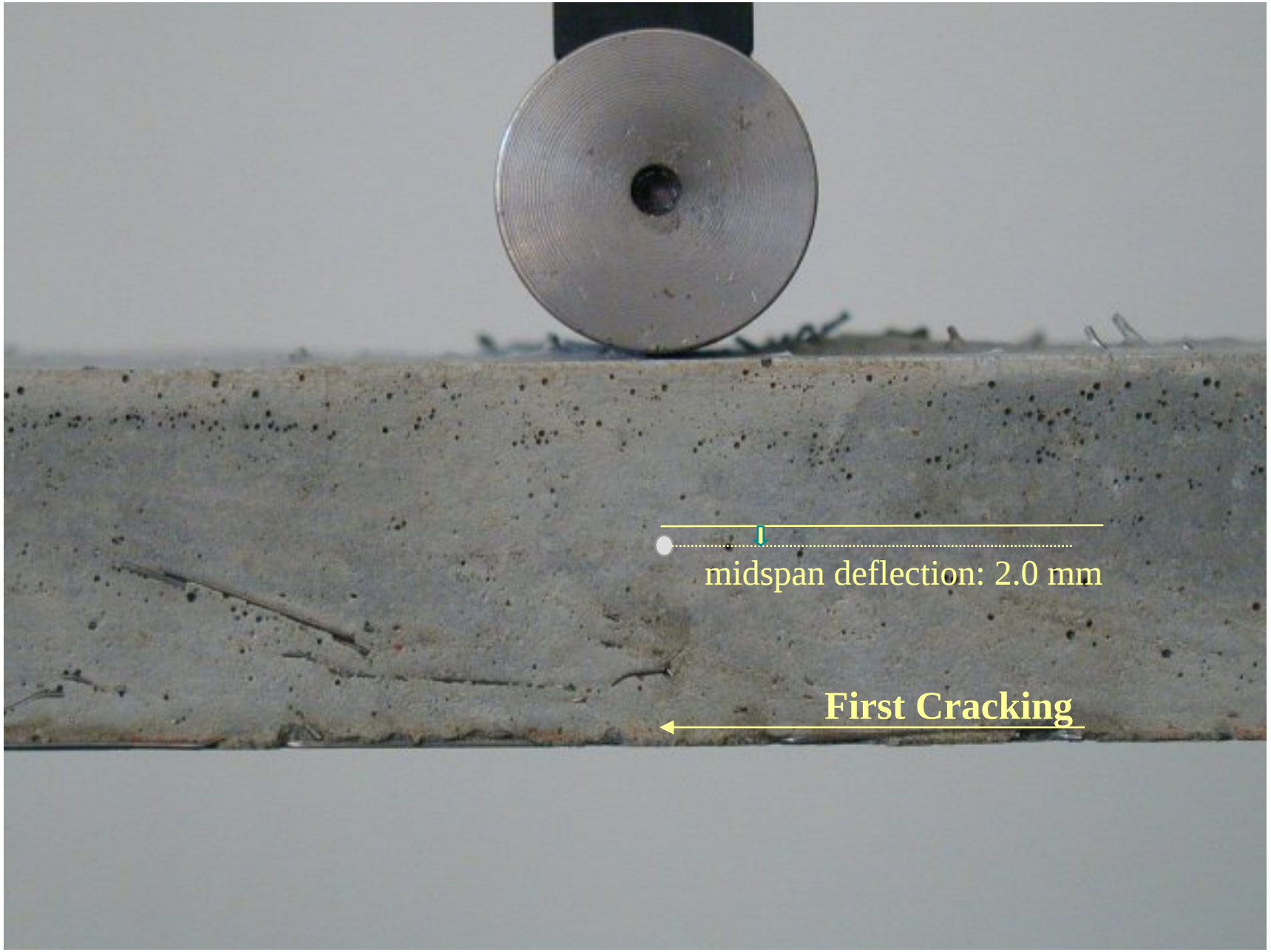

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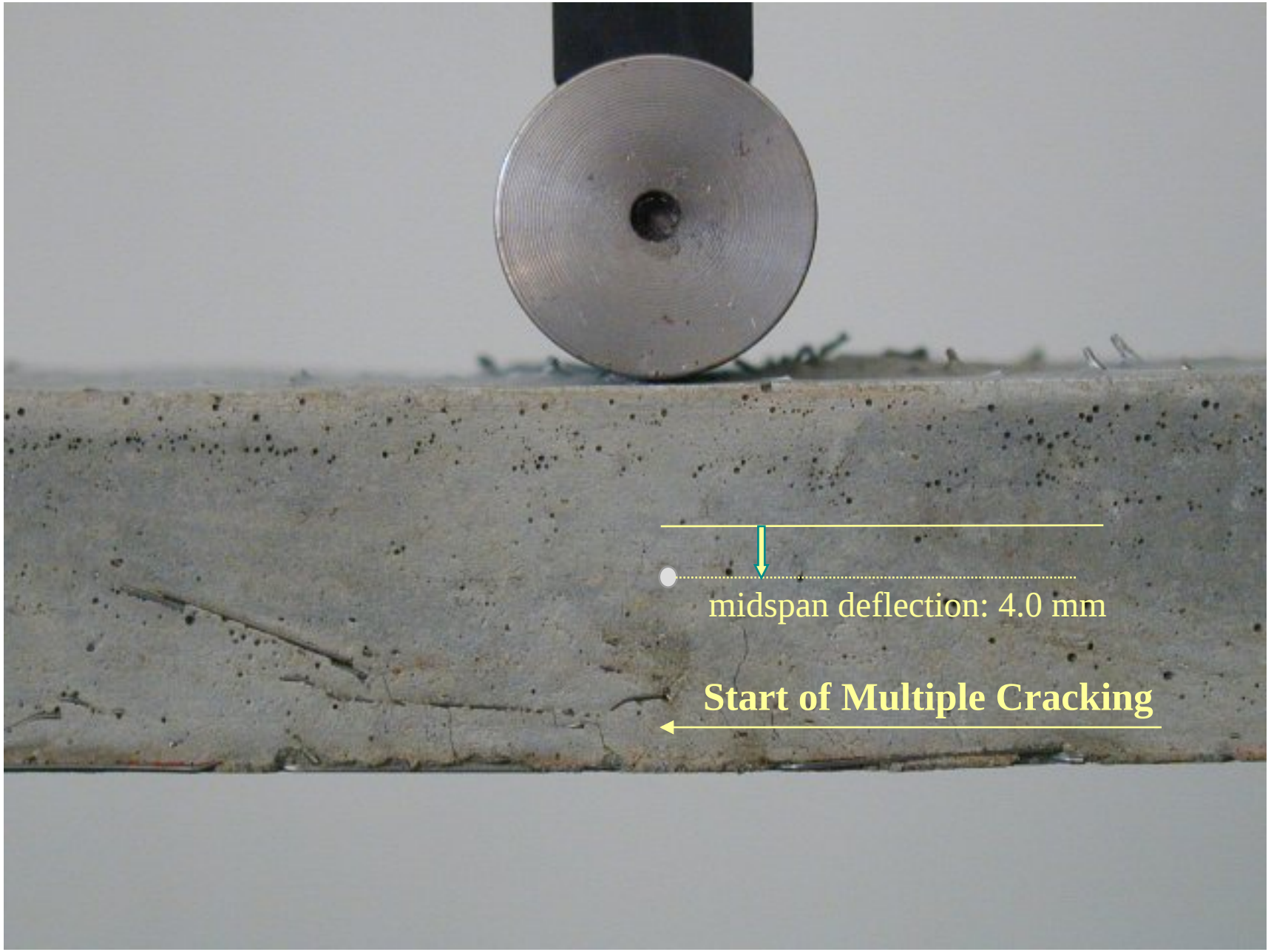

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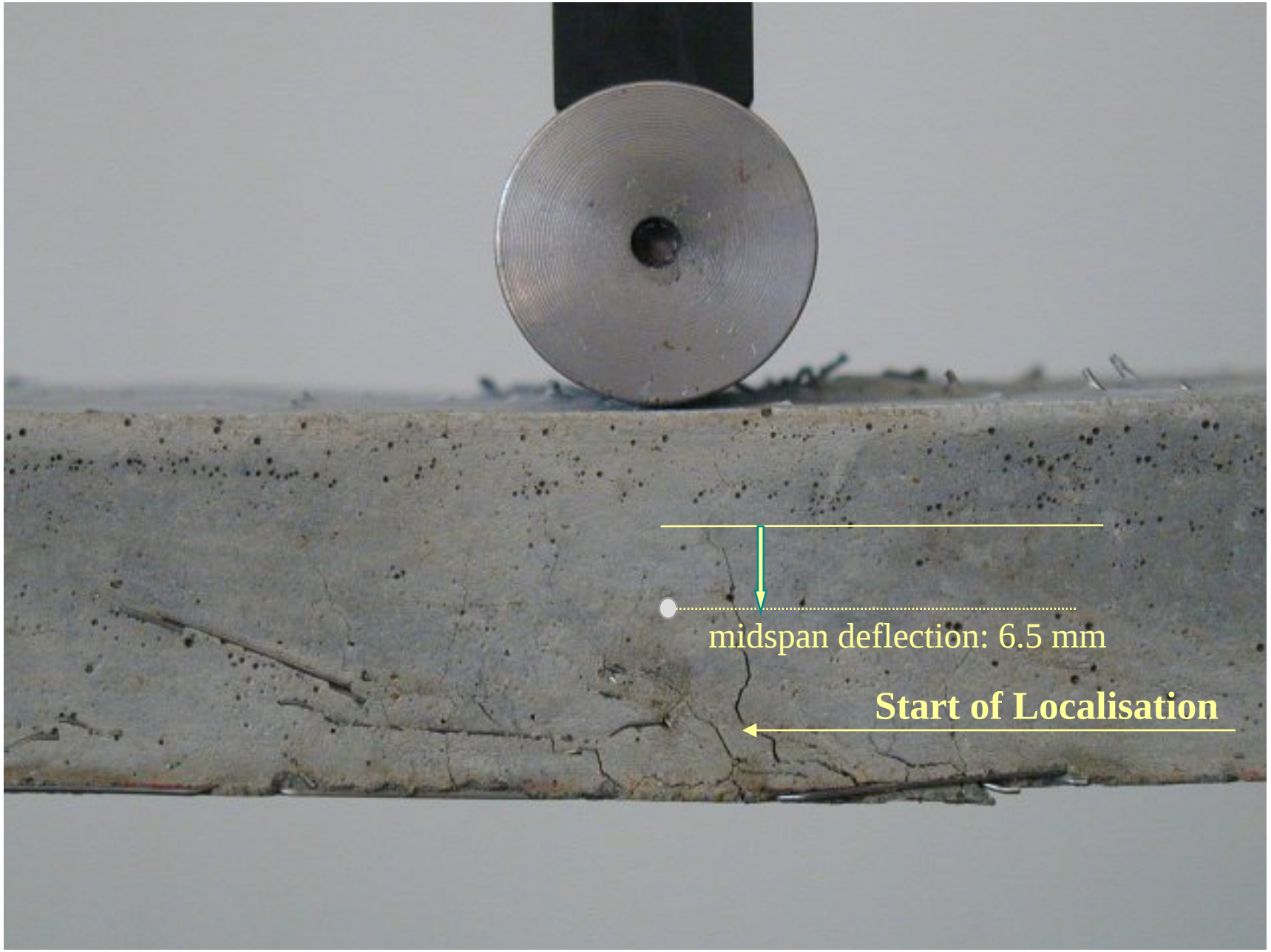

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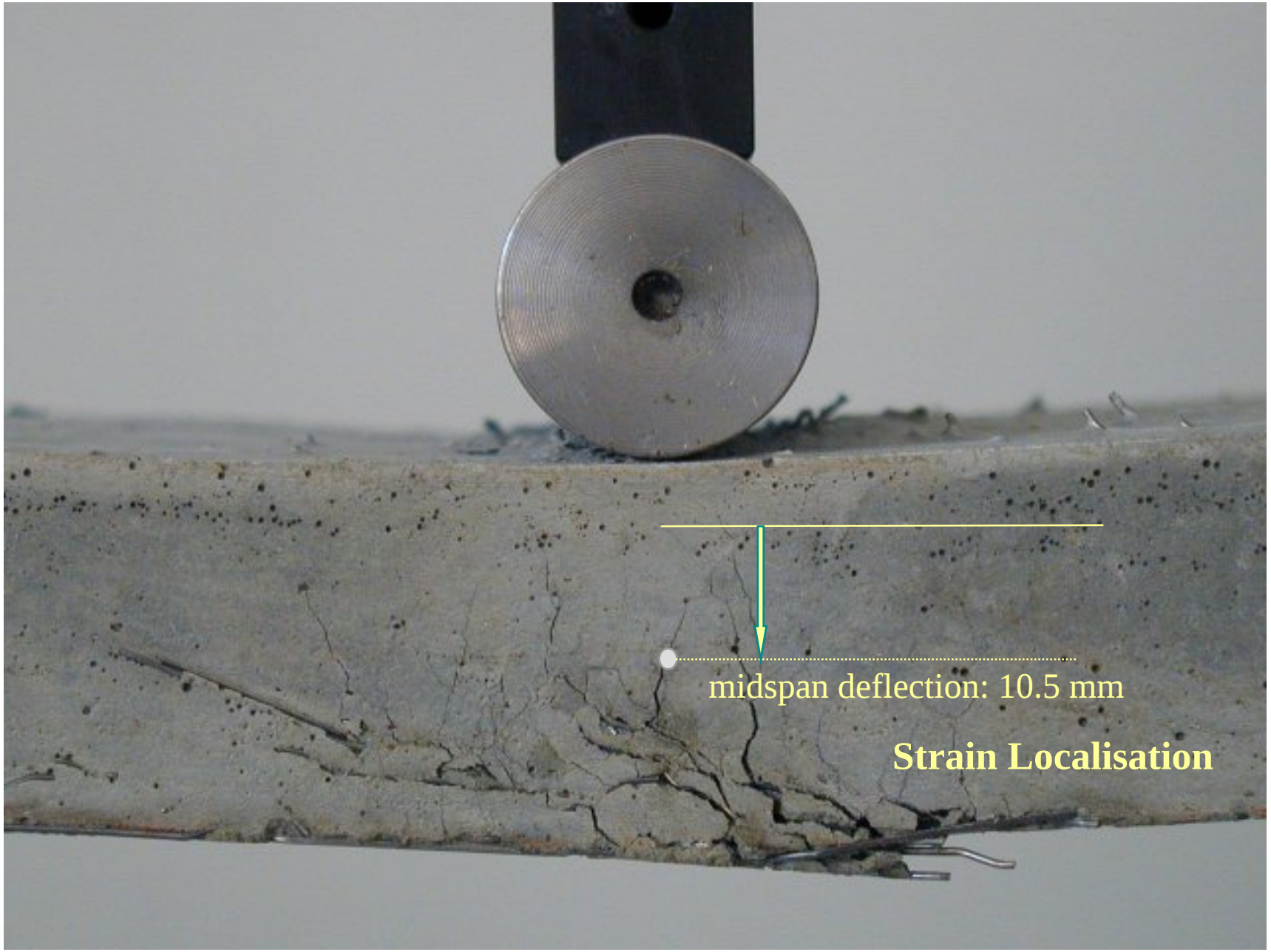

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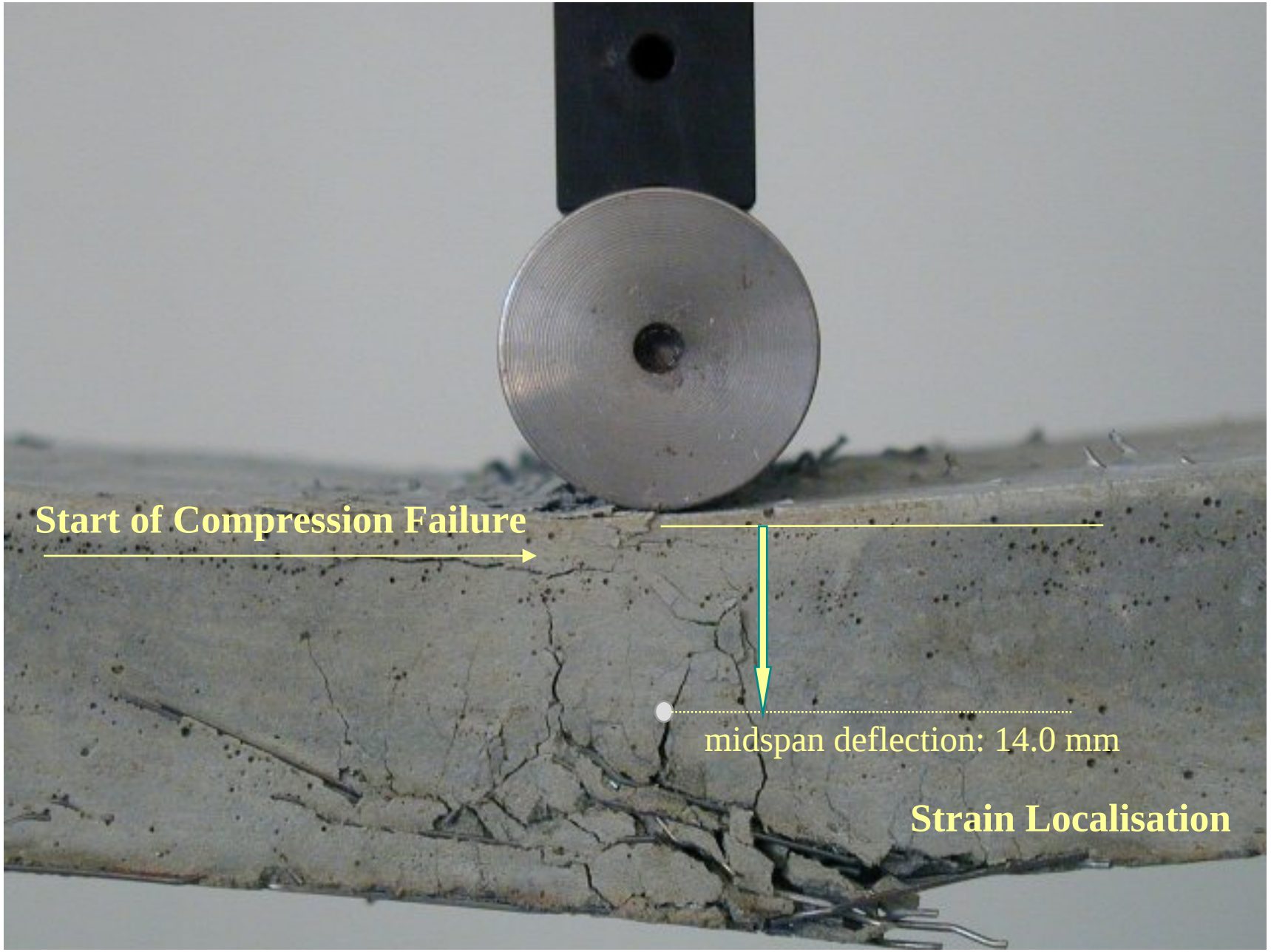

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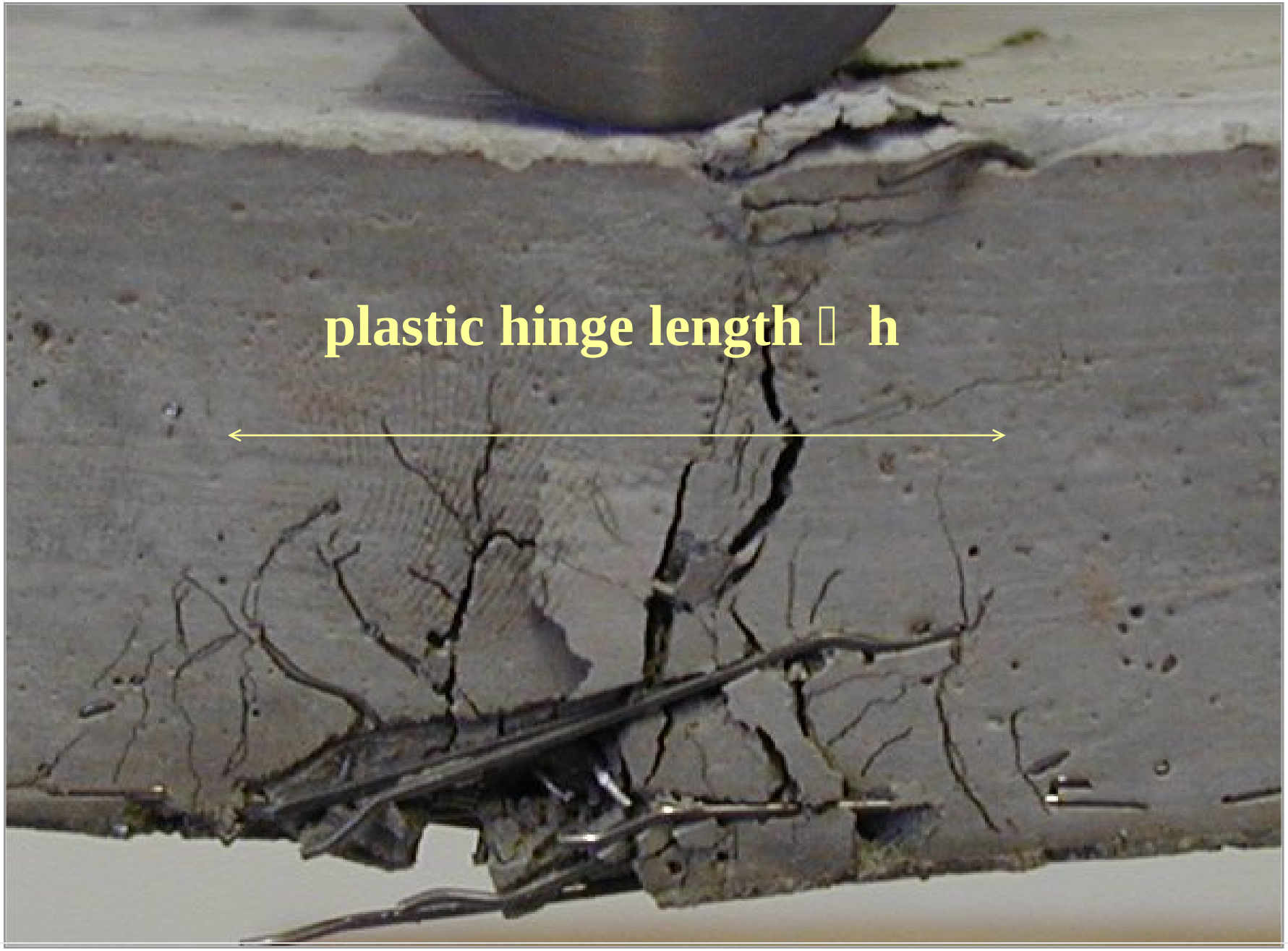
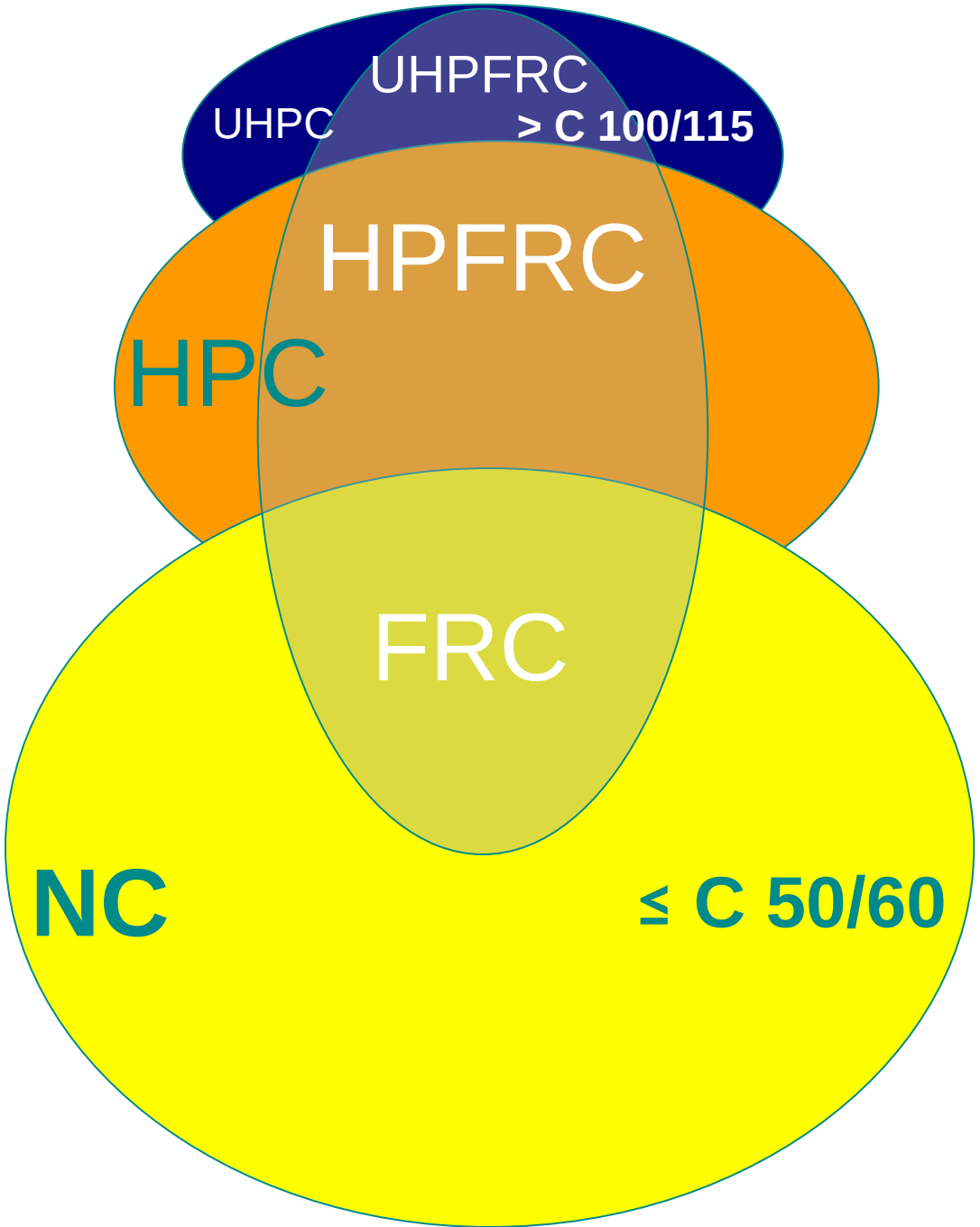


2000-ies



1920-ies

DEFINITION OF HPC

Concretes with considerably improved properties (performances) compared to those of conventional concretes:

- high strength, high early strength
- high deformation capacity in compression and in tension
- high workability – easy applicability
- high durability – long service life
- high fire resistance
- high chloride ion migration resistivity
- high freeze-thaw resistance
- high sulphate resistance, high acidic resistance
- low risk for cracking
- low shrinkage
- low abrasion
- low CO_2 footprint ...

UHPC STAIRS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destination
SHERBROOKE.com


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Seonyugyo

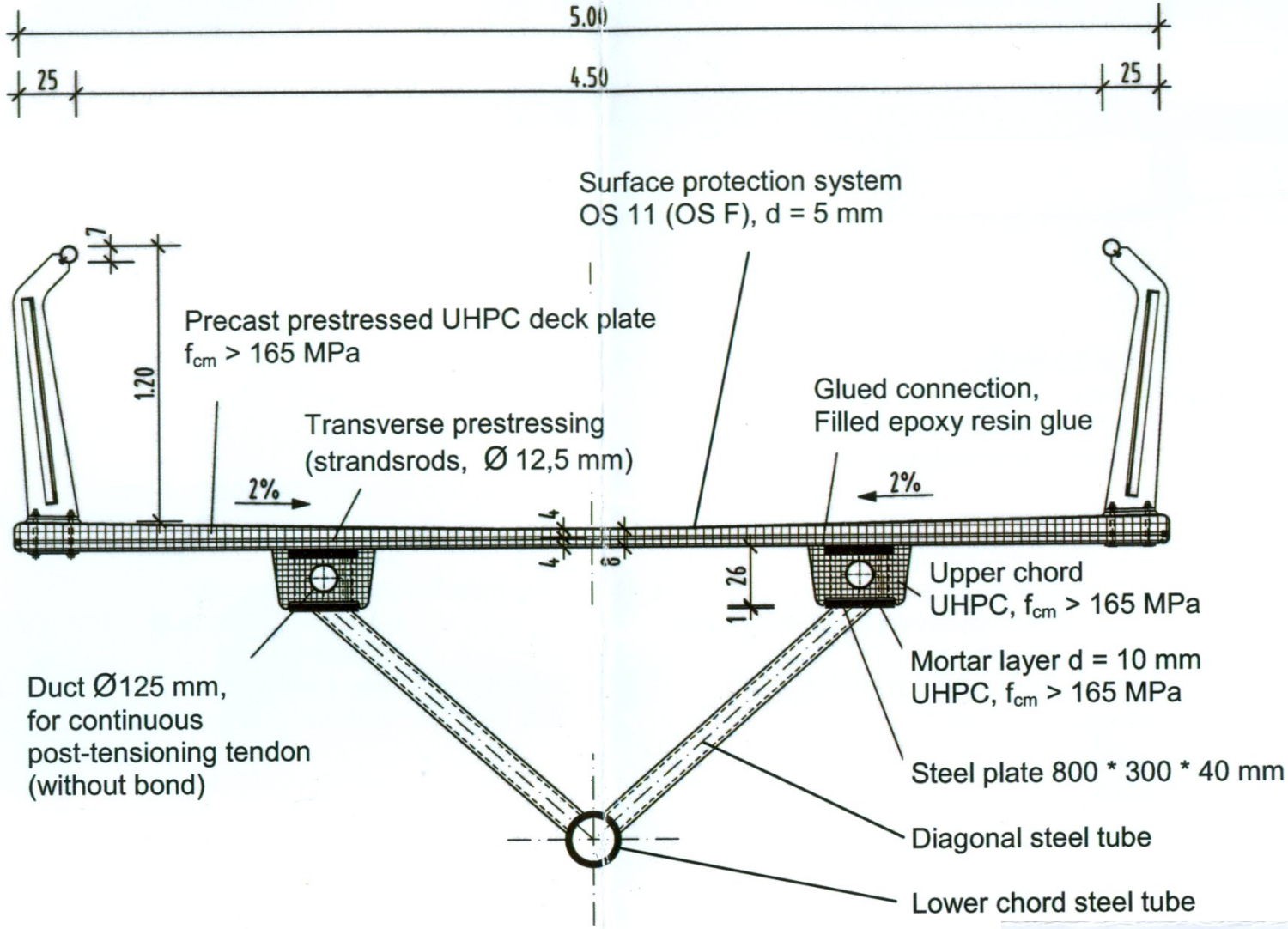
·Location: Linking Yangpyeong-dong (Yeongdeungpo-gu, Seoul) to Seonyudo

·Scale: Breadth 3 ~ 14 meters, Length 469 meters

·Construction Period: September, 2000 ~ April, 2002

Seonyugyo Pedestrian Bridge has been constructed to celebrate the New Millennium as a collaborative commemoration project between Seoul City and the French 2000 Commission. The rainbow shaped Seonyugyo Bridge spanning the Han River has a light and slender appearance as a result of applying a new advanced material of super-high intensive concrete (Ductal). The floor and guardrail of the bridge presents a natural and soft impression due to the use of environmentally appealing wood, creating a pleasant contrast with the bright hue of the bridge structure.
At the four quarters of a wide open observatory space where Seonyugyo Bridge and Seonyudo Park meet, one can thoroughly appreciate not only the beauty of the Han River but also Seoul's beautiful mountain features including Mt. Bukhan, the Seoul World Cup Stadium, the world's tallest fountain reaching a height of 202 meters, and other impressive surrounding scenery.

UHPC BRIDGE DECK



INGENIEURBÜRO FÜR BAUWESEN
FEHLING + JUNGMANN GMBH
CONSULTING ENGINEERS VBI
KASSEL - FULDA - HEIDELBERG
www.fehling - jungmann.de

UHPC – MuCEM Marseille –BEAUTY and ELEGANCE

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This is how concrete looks like at 1000 °C

TAILOR MADE CONCRETE

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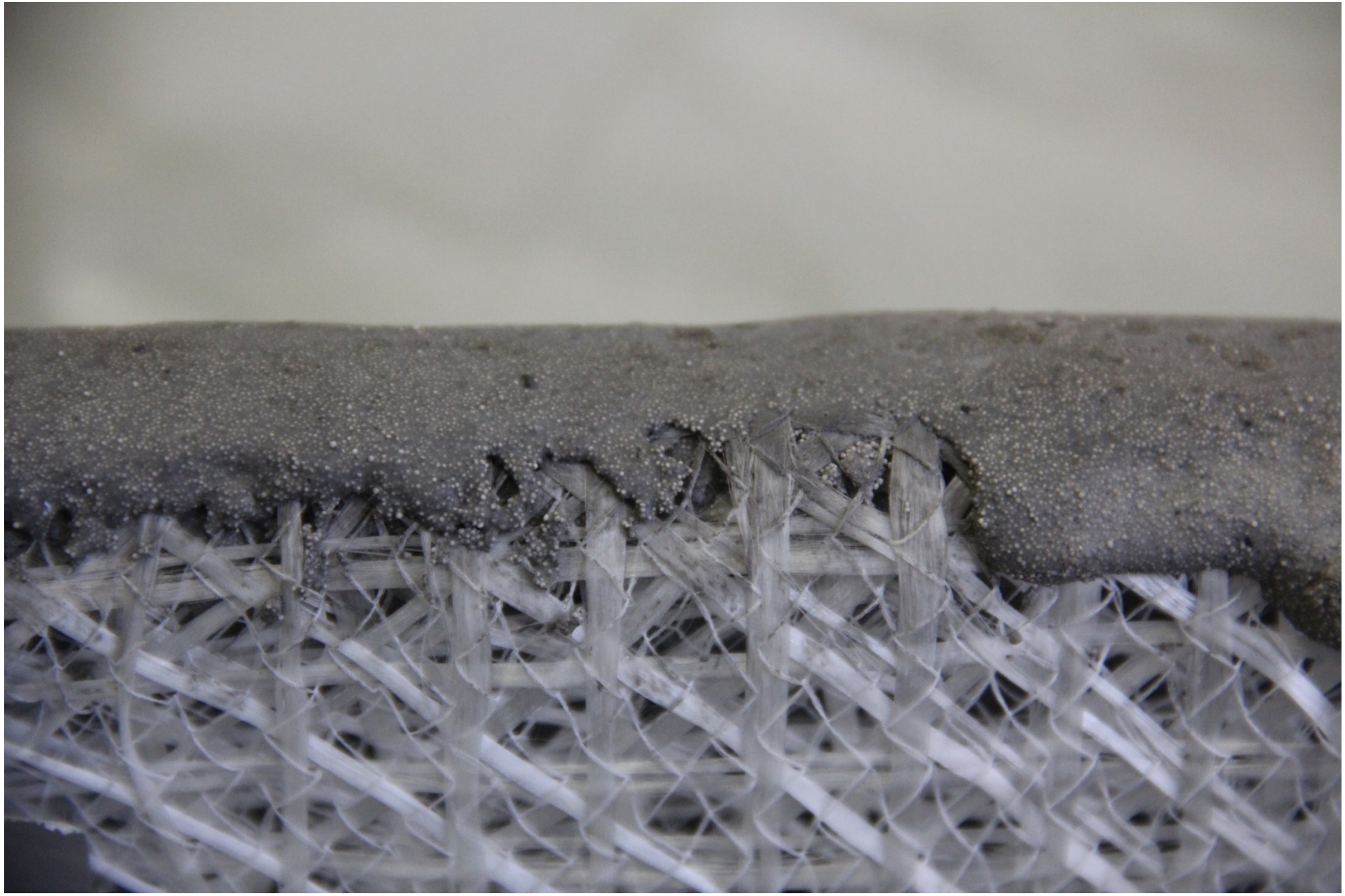

HIGH DOSAGE OF FIBRES

V_f = 10-14%

Low viscosoty mortar

d_{max}: 0.125-0.7 mm

SIFCON – with 3 dimensional steel fibr

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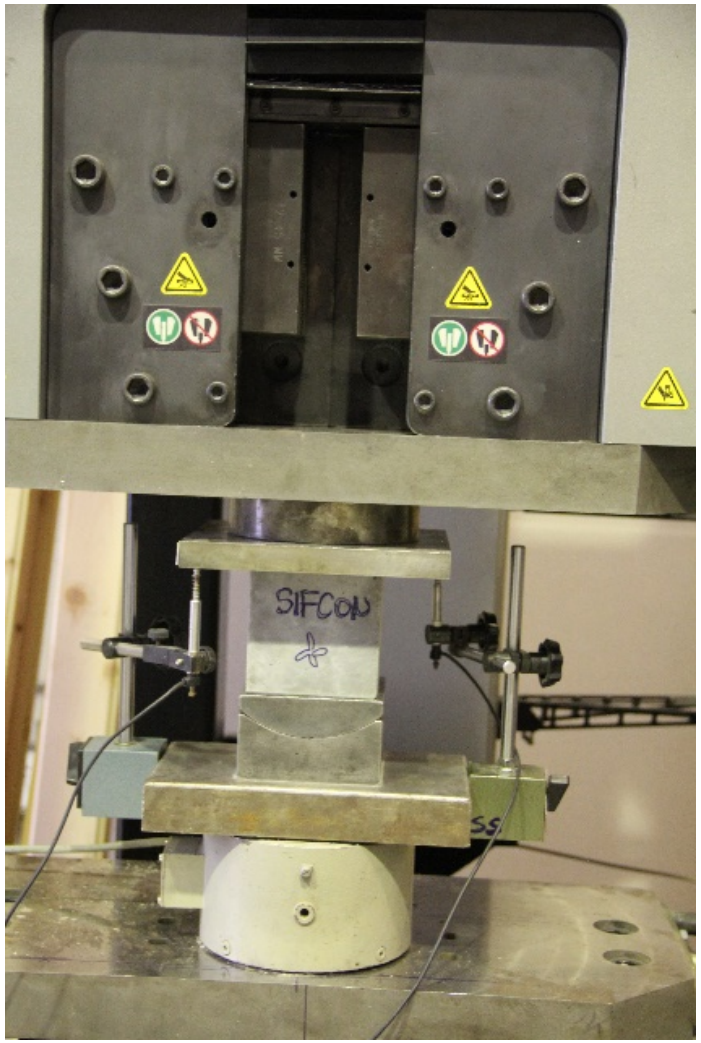
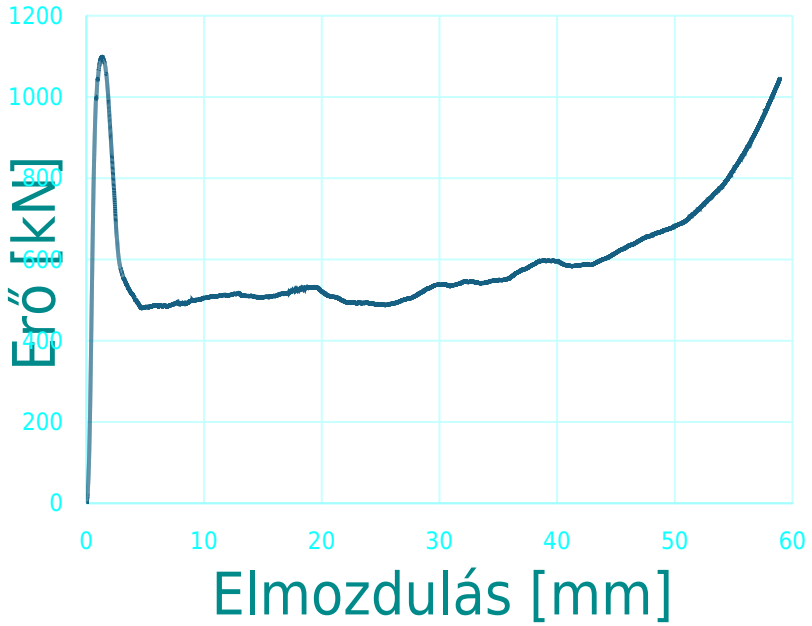


SIFCON – with 3 dimensional steel fibres

Deformation capacity > 50%



CONCLUSIONS

- UHPC concrete and strucutres

Improvementsr

- concrete types with extrardinary characteristics
- strength, high early strength
- deformation capacity (tension, compression)
- durability, service life, sustainability
- confinement
- fatique strength
- reasonable applications

Thank you for your kind attention!