

Conclusion in SC3 discussion (Prepared by Tetsu Kanda)

1. Design Assumption (TG-D)

1-1) State of the Art Relevant to Design Assumption (TG-D)

- Load Resistance Factor Design (LRFD)
Not achieved yet.
- Time dependency of material parameters
Not achieved yet.
- Service Limit State and Ultimate Limit State design
Scheme is proposed.
- Moving from strength-based to strain-based design
Checks on max strain and crack width is necessary.
Partially achieved.
- Classification of different versions of HPFRCC
Not achieved yet.

1-2) Activity Plan Relevant to Design Assumption (TG-D)

- Discussion is generally to be continued along the direction of HPFRCC design and construction guideline published by Japan Society of Civil Engineers.
- 3D numerical analysis is being developed and resulting findings are to be involved in expecting RILEM report.

2. Seismic Design (TG-E)

2-1) State of the Art Relevant to Seismic Design and Shear (TG-E)

- Shear resistance mechanism of the structural member
Not clarified.
- Influence of HPFRCC properties on member shear resistance
Partially clarified for limited HPFRCC type.
- Shear sliding resistance vs. tensile strain/crack opening
Not clarified.

2-2) Activity Plan Relevant to Seismic Design and Shear (TG-E)

- Shear design is going to be investigated in detail using collaboration work between US, Europe, and Japan.
- Seismic design should be investigated and involved.

3. Special Consideration (TG-F)

3-1) Necessary Technical Items in Special Consideration (TG-F)

- Anti-impact design
Neglected
- Anti-fire design
Partially established for limited HPFRCC type
- Anti-fatigue design
Partially established for limited HPFRCC type
- Recycling consideration
Neglected (possible to involve)
- Selective/Strategic Use of HPFRCC
Neglected

3-2) Activity Plan Relevant to Special Consideration (TG-F)

- Anti-impact design is tried to involved
- A view of environmental consideration including recycled constitutive material
- Deterioration due to fire damage may be considered depending on classification of fire risk
- Fatigue design should be further investigated along the line of the JSCE guideline

4. Processing (TG-C)

4-1) State of the Art Relevant to Processing (TG-C)

- Testing method and evaluation guideline for segregation, fiber dispersion, viscosity
Not established.
- Specification for compaction, pumping, construction joint, finishing
Not established.
- Quality inspection specification
Partially established.

4-2) Activity Plan Relevant to Processing(TG-C)

- Encouraging to publish production and construction manual for individual HPFRCC type
- Specification for compaction, pumping, construction joint, finishing should be investigated and involved in recommendation

5. Other Activity Plan

- In recommendation, chapter devoted for repair design is going to be added.

6. Proposal

- Final report consists of three chapters

 - Case book (completed in 1 year)

 - Investigation results of 3 subcommittees (completed in 2.5 years)

 - Example of general recommendation (completed in 2.5 years)

- Next meeting of SC3 will be held in Japan with site tour in HPFRCC application