



Welcome

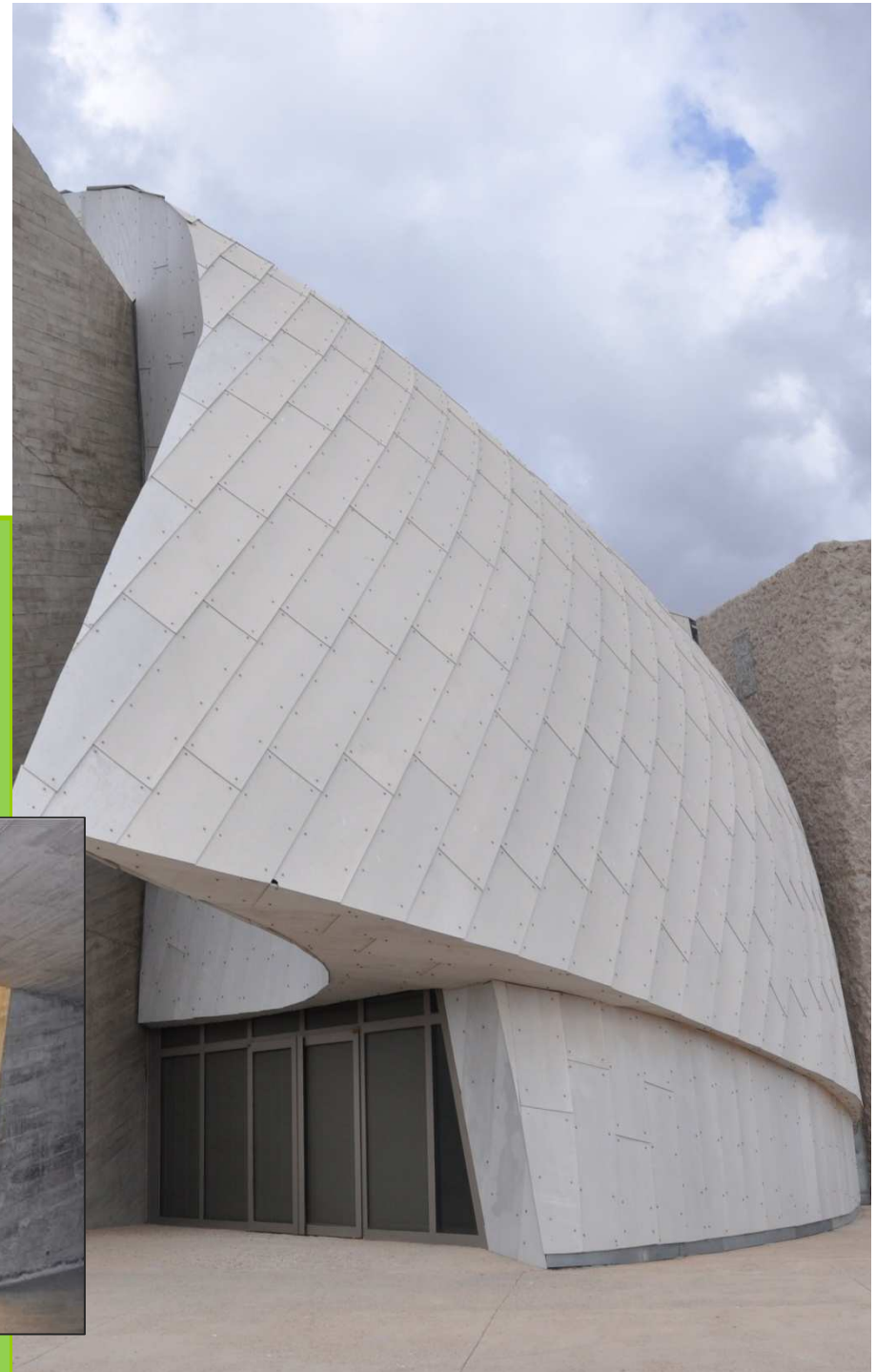
*providing advice, education &
information vital for a professional
concrete result ..*

Knowledge, ..
.. Expertise,



Sustainable Perfection

www.cnci.org.za



Design Standards for Concrete: Aggregate Specifications

B D Perrie
C&CI

RPF
May 2011

Scope

- Introduction
- Specifying concrete
- Standards changes
- Current situation
- Implications
- Conclusions

- Sustainability is critical
- Means designing and constructing structures to last longer
- More energy efficient designs
- Less use of materials
- Recycling

Concrete must be more durable

Specifying Concrete

Traditional Approach

- Specify certain properties and actions
 - Aggregates
 - Concrete
 - Construction process
 - Quality control (strength)
- Prescriptive approach with some performance requirements

Traditional Approach

- Changes recently to add properties to control “covercrete”
- Specify those actual properties which prevent deterioration
- Move towards preventing
 - Ingress of chlorides
 - Ingress of CO₂
 - Effectiveness of curing

Traditional Approach

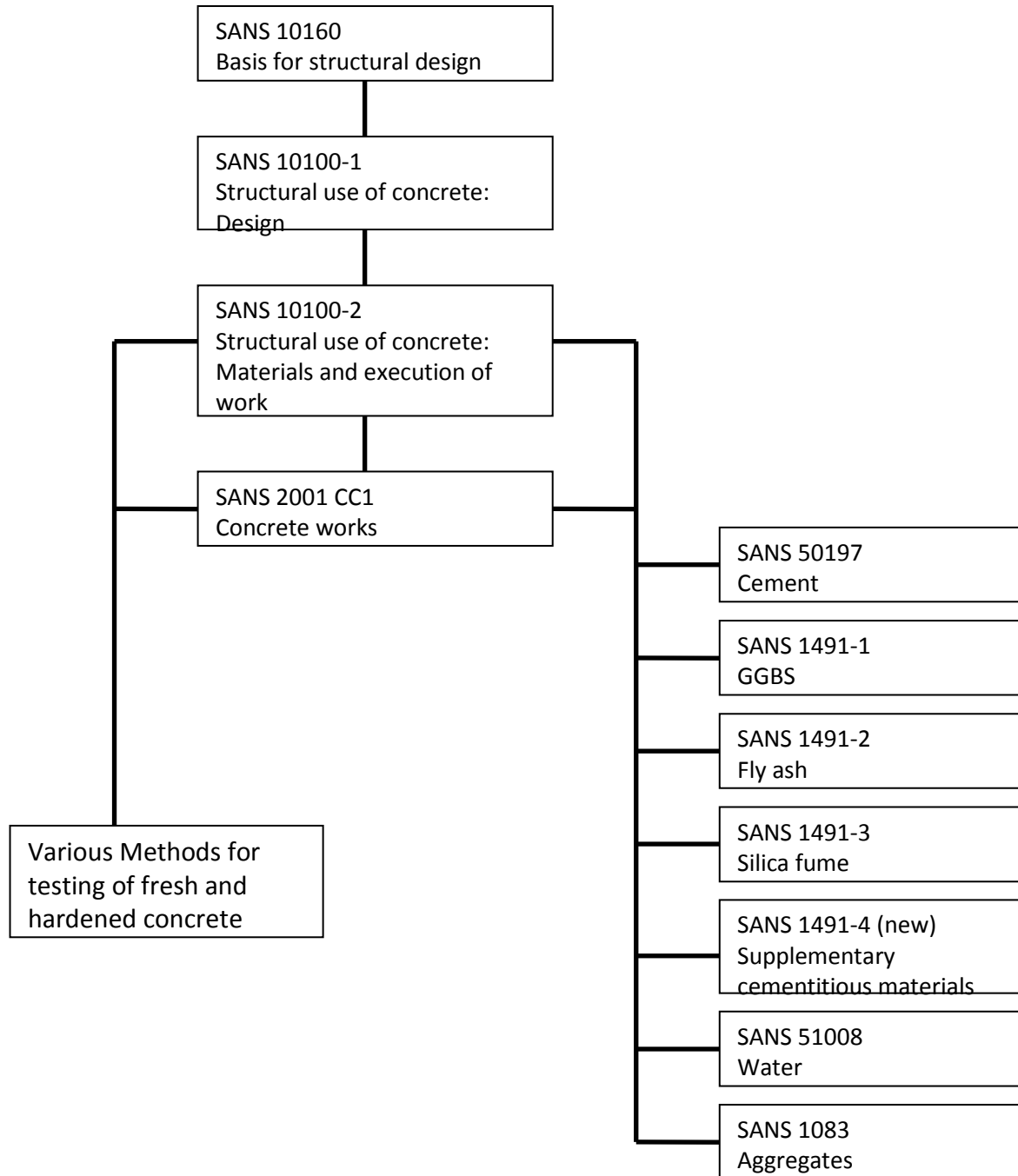
- Design structurally and then
- Determine how to make the structure durable

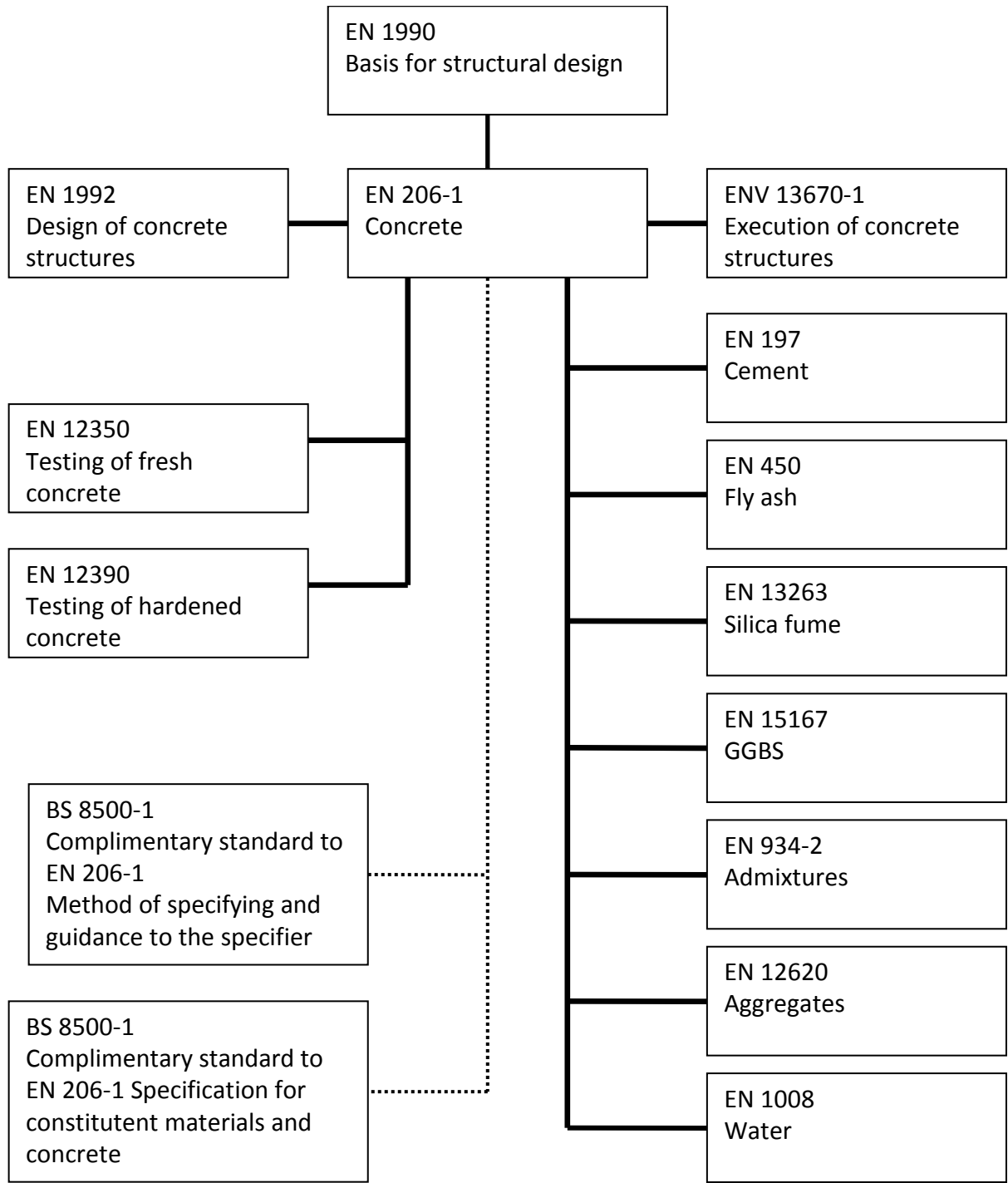
New Philosophy

- Determine environment and required longevity
- Determine required durability
- Choose an approach to achieve durability, and then
- Determine structural design

More performance related approach

Changes to SA Structural Design and Specifications





Implications

Materials

- New standards for flyash, GGBS, silica fume.
- New standard for supplementary cementitious materials
- New standards for admixtures

Test methods

- All concrete aggregate test methods being revised
- All concrete test methods, fresh, hardened and in structures being revised.
- All will be part of the SANS 3001 series (D Wright).

Codes

- SANS 10100-1 replaced with EN 1992
- SANS 10100-2 replaced with EN 206 and EN 13670
- SANS 10100-2 will become a guide to implementation of EN 206 and 13670

Aggregates

- **The grading envelopes and the nominal sizes remain unchanged.** This is done by including the new sieve sizes with pro-rata adjustments to the envelopes.

Sieve Size

| | | |
|-----------|------------|----------|
| 75 | 19 | 5 |
| 53 | 14 | 4.75 |
| 50 | 13.2 | 2.36 |
| 37.5 | 10 | 2 |
| 28 | 9.5 | 1.18 |
| 26.5 | 7.1 | 1 |
| 20 | 6.7 | |

Conclusions

Conclusions

Changes coming in:

- Standards
- Material specifications
- Test methods

Be Aware



Thank you

... for listening!

Knowledge, ..
.. Expertise,



Sustainable Perfection

www.cnci.org.za

