NEN 2767 Condition assessment

infrastructure and real estate

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Condition assessment

- Today focus changes from building new assets to maintaining, improving or replacing existing ones
- Asset management ISO 55001 is used as a method for a cost-effective exploitation and management of assets
- To know which assets you have, what they consist of and what state they are in is essential!

Condition assessment

- Current inspection strategies include many different inspection methods, which undoubtedly will lead to different outcomes in maintenance and financial planning

- An uniform and consistent method for assessment of condition of objects is therefore required

- This lead to the development of a condition assessment standard NEN2767

Standardization

- NEN 2767 consists of 2 parts:
  - Part 1: describes the methodology of condition assessment
  - Part 2: contains a dataset (to set up a breakdown structure) and a defect list

- NPR 4768 (based on NEN2767) is a practical guide which contains defect images and descriptions

- Using NEN 2767/ NPR 4768, the condition assessment of the various disciplines will result in single unambiguous inspection data

- NEN 2767/NPR 4768 is commonly used in the Netherlands, where its usefulness and advantages have been proven

A (brief) history of condition assessment standardization

- ’50 – ’60; American army develops first model
- ‘70; the UK develops the first condition monitoring method for houses
- late ’80; the Dutch ministry of VROM uses for the first time a condition assessment
- ’85: the Rijksgebouwendienst develops a standardised condition assessment for all types of building
- early ‘90: Netherland has its first concept for condition assessment
- ‘94: budget for government buildings was granted based on condition assessment method.
- ‘96: further development based on European research ‘*Condition Assessment end Maintenance Strategies’*.
- ‘06: first publication of NEN2767
- ’08: initiative to implement infrastructure as an separate part of NEN2767
- ’16: separate development real estate (building) and infrastructure
- ‘17: integration of condition assessment for real estate and infrastructure, new release of NEN 2767 - part 1
- ‘18/’19: further integration of NEN 2767 - part 2

An overview of users NEN 2767

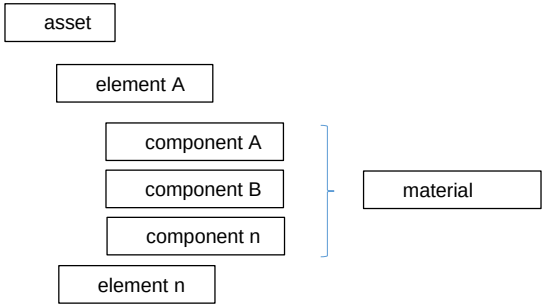
- Governments
  - Rijkswaterstaat
  - Rijksgebouwendienst
  - Dutch water authorities
  - Provinces
  - Municipalities
- Housing corporations
- Engineering and consultancy agencies
- Industry
- Inspection companies
- Software suppliers

Condition assessment according NEN 2767

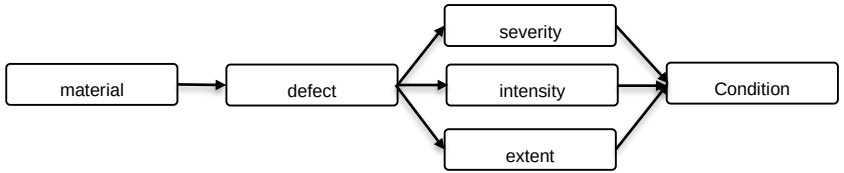
GP (general practitioner)

Methodology (in short)

- Standardised breakdown structure



- Process



- Outcome

Condition score	description
1. Excellent	Occasional minor deficiencies
2. Good	Occasional sign of early aging
3. Reasonable	Local aging, without jeopardizing performance or function
4. Mediocre	Performance or function occasionally in jeopardy
5. Poor	Aging is irreversible
6. Very poor	Technically ready for demolition

Future developments

- NEN 2767
  - further integration of NEN 2767 part 2 for infrastructure and real estate
  - update of NPR4768 defect images and descriptions
  - a European ‘Technical Specification’ for condition assessment

- NEN 2660
  - revision of NEN 2660, it offers a comprehensive breakdown structure which is needed for asset management purposes
  - standardised breakdown structure now part of NEN 2767 will be incorporated into NEN2660

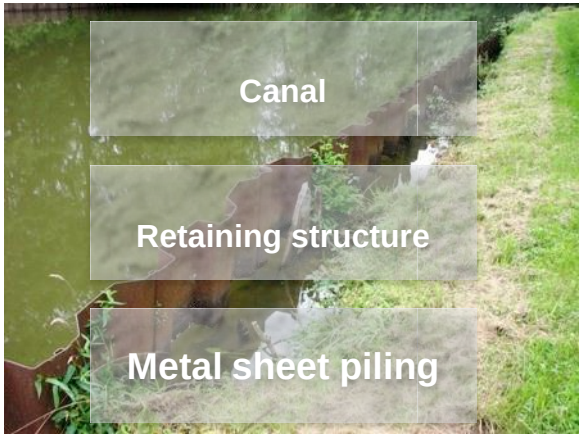
Future developments

- From NTA 8026 to NEN 8026 standard
  - describes a process how to translate the condition assessment scores obtained with NEN 2767 into effective maintenance plans based on a companies real estate policy.
  - this is to be seen as a further elaboration of appendix D of NEN 2767 (informative) which gives a guide how rank the condition scores in relationship with risks and prioritization of maintenance.

Thank you for your attention

- Questions?

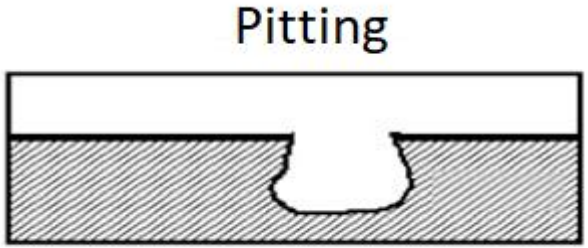
Example



Severity:
Corrosion (uniform);
Pitting corrosion; **=Material intrinsically, serious defect**
Crevice corrosion
Reinforcement corrosion

Intensity **HIGH (final stage)**

Extent: **50 of in total 200 meter = 25 %**



Condition score (according table 5)

Intensity \ extent	Frequently 10-30%
1 low (initial stage)	2
2 middle (advanced stage)	3
3 high (end stage)	4