1- and 5 years surveys

Wet rooms

Revision of SBi 'fugtanvisning'

Erik Brandt

1 and 5 years surveys - background

- Some 40 years ago there were increasing problems due to problems with building defects in social housing in Denmark
- An investigation shoved that the major part of building defects could be discovered already at an early stage after erection of the building
- Based on this investigation a Building Defects Fund was founded in 1986.

The purpose of the work of the Building Defect Fund

- The purpose of the funds is to arrange and pay for *1 and 5 years surveys of public supported housing* and other types of building – including refurbishment.

- To cover expenses for refurbishment of building failures.

- To contribute to distribution of experiences about the building proces and building technology gained through the surveys.

- The surveys are performed by an independent consultant pointed out and paid by the funds

1 and 5 years surveys

- At the 1 year survey the condition of the building is monitored together with any possible (risk of) failures.
- A 5 year survey is normally a survey of visible properties for building elements (A-survey) combined with a survey of drawings and documentation material (B-survey).
- At the 5 year survey it is controlled if significant failures found at the 1 year survey have been repaired or any new issues have shown up
- If documentation is lacking or there is a suspicion of serious problems a more thorough investigation may be performed (C-survey). During this, destructive investigations may be performed e.g. opening of constructions like wall or roof assemblies

Report and further steps

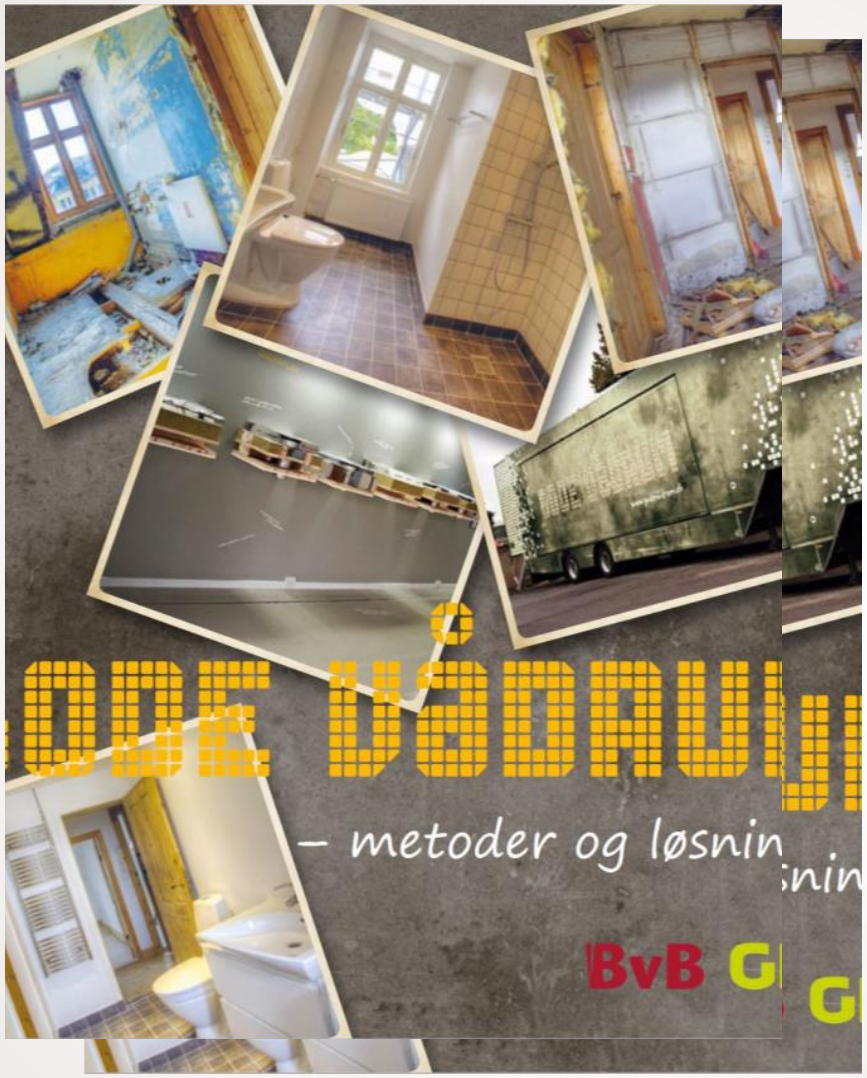
- The results of a survey is reported with information about the findings including any failures that may be covered by the funds.

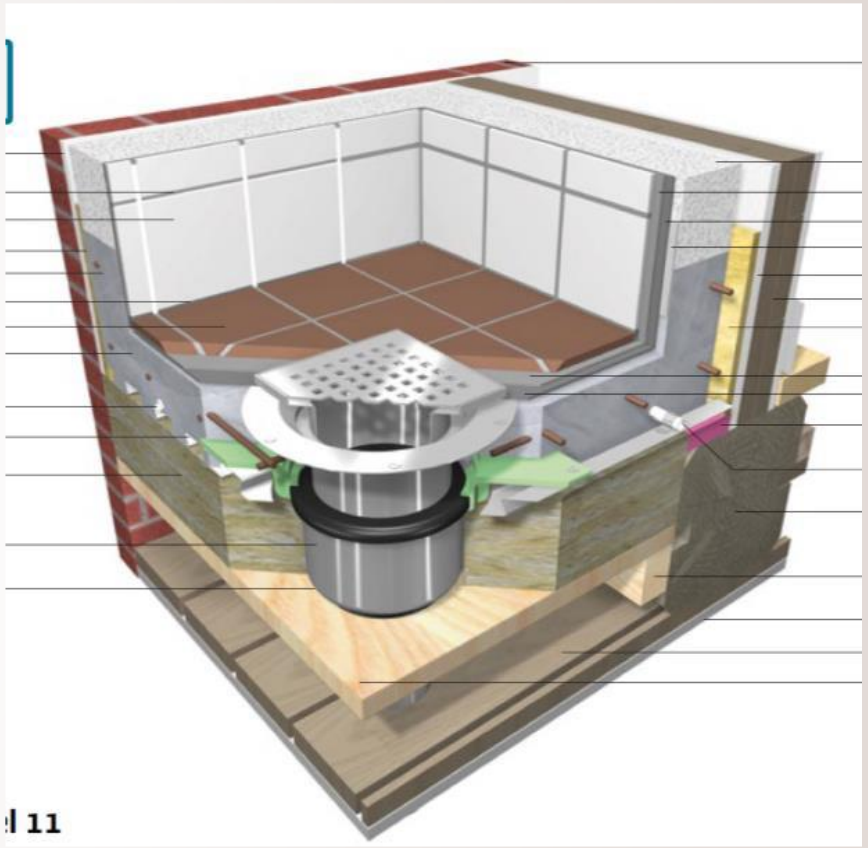
- It is the building owners responsibility to take action against any responsible part and make them repair the failures (or risk of failures) pointed out in the report

Overall use of results

- Many failures or risk of failures are found at an early stage thereby making repair/refurbishment cheaper.
- The experiences gained are used as input to dissemination of knowledge through different channels e.g. SBi-directions and Building Defects sheets (Byg Erfa).
- Some solutions have been abandoned when they have shown unsatisfactory performance e.g. MgO boards and painting of shower areas.
- In other cases BSF and BvB have contributed to quite new solutions e.g. bathrooms with double watertigtnes or to assurance of quality for new types of materials e.g. damp permeable roof underlays.


BYGGESKADE
FONDENS
GUIDE
TIL
KVALITET
VED NYT
BOLIGBYGGERI
2019

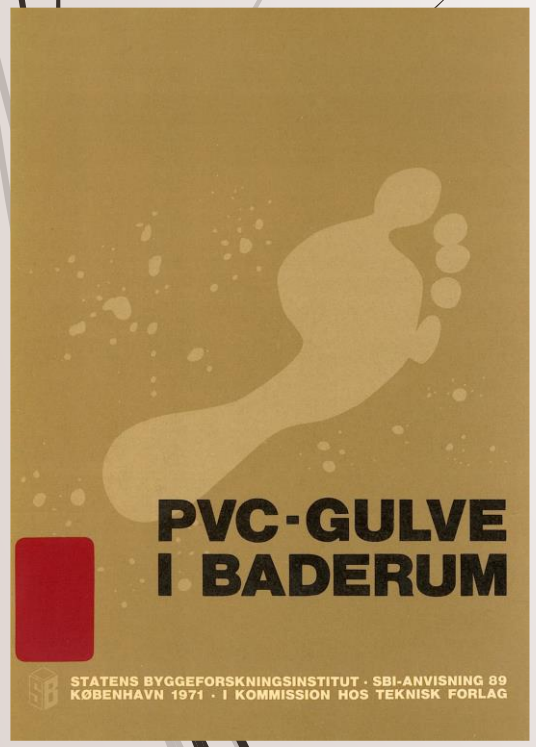

– metoder og løsnin
BvB

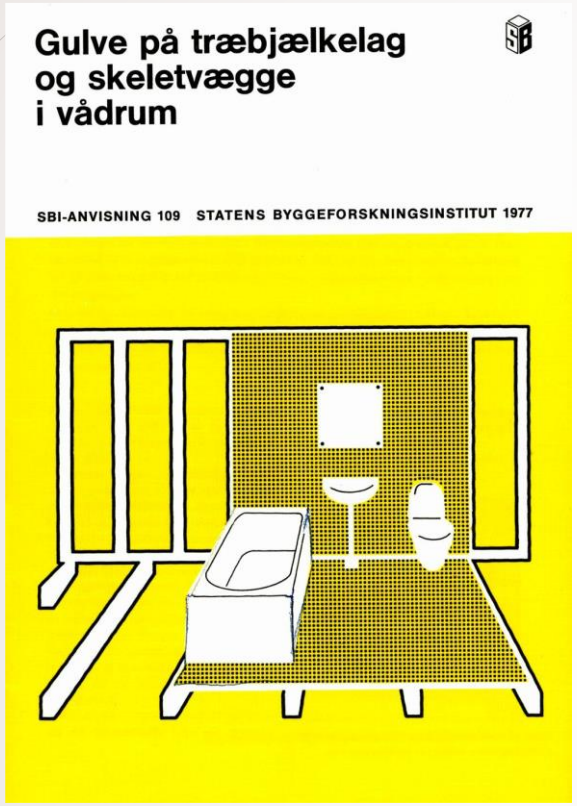

11


Wet rooms

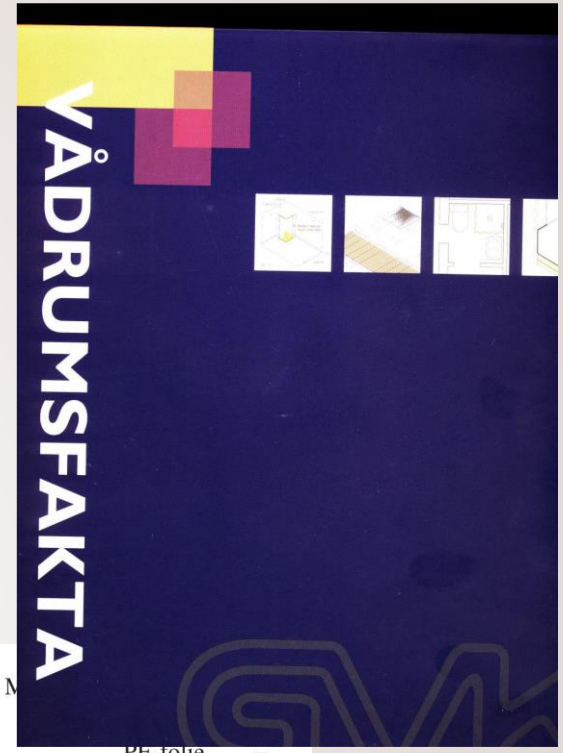
Nordic cooperation

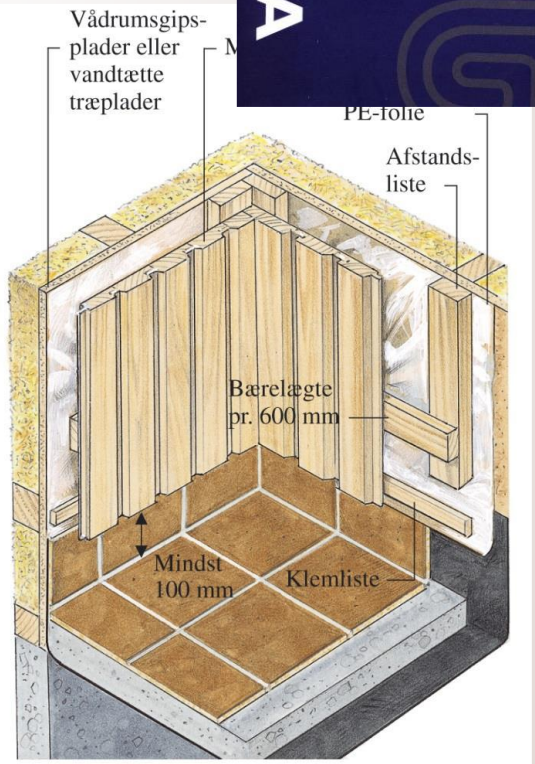
- In 1971 PVC in bathrooms was introduced in Denmark when a SBI-direction was issued – based om experiences from the other Nordic countries
- SBi has participated actively in nordic cooperation about test methods for bathroom floors and walls (together with KTH, SP, NBI and VTT).
- The cooperation was continued with european work with elaboration of a European Guideline (ETAG 022) with associated annexes/test methods primarely based on earlier Nordtest methods.
- The current guidelines are somewhat similar in Denmark, Norway and Sweden

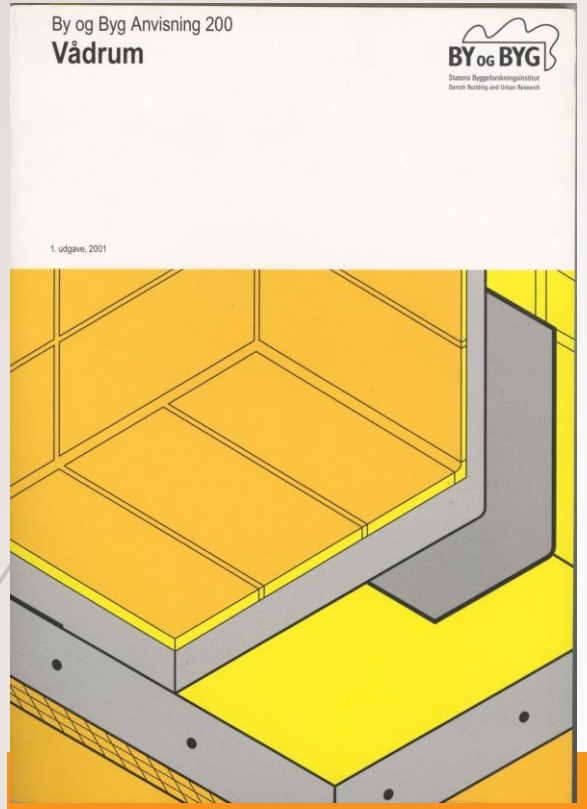

PVC-GULVE
I BADERUM
STATENS BYGGEFORSKNINGSINSTITUT · SBI-ANVISNING 89
KØBENHAVN 1971 · I KOMMISSION HOS TEKNISK FORLAG


Gulve på træbjælkelag
og skeletvægge
i vådrum
SBI-ANVISNING 109 STATENS BYGGEFORSKNINGSINSTITUT 1977


Gulve og vægge i vådrum
– i nye boliger og ved renovering
SBI-ANVISNING 169 · STATENS BYGGEFORSKNINGSINSTITUT 1991


VÅDRUMSFAKTA


Vådrumsgips-
plader eller
vandtætte
træplader
PE-folie
Afstands-
liste
Bærelægte
pr. 600 mm
Mindst
100 mm
Klemliste



Anvisning 200

- Issued 2001
- 80 pages
- 6 chapters
- 4 annexes
- 31 figures
- 7 tabels

Anvisning 252

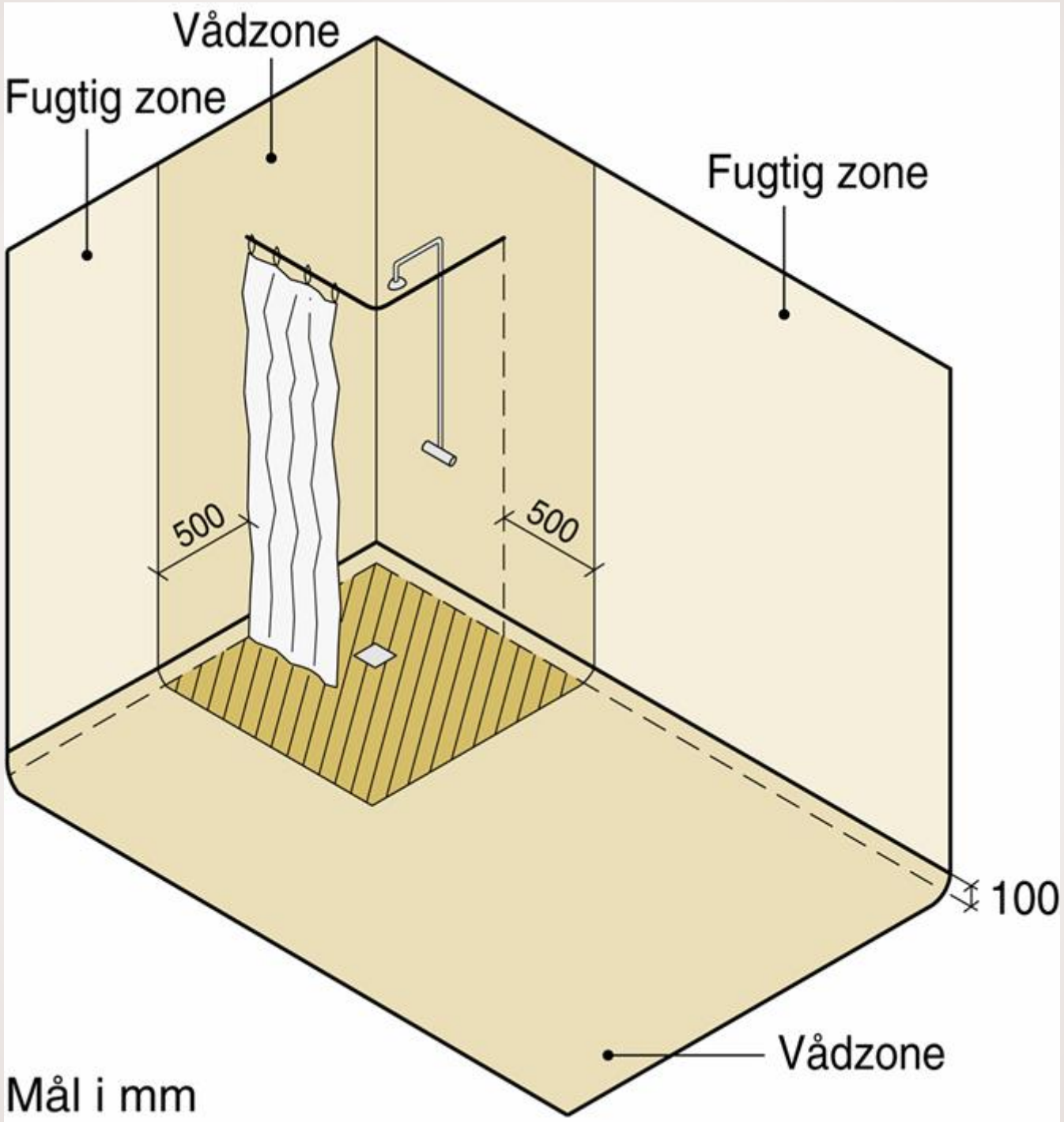
- Issued 2015
- 160 pages
- 8 chapters
- 8 annexes
- 112 figures
- 10 tabels

Exposure classess

- Class L (Low) few baths daily of shorter duration, good ventilation/air exchange – typically found in one family houses, summer hoses etc.

- Class M (Medium) more baths every day also of longer duration and maybe with less effective ventilation – typically found in low-dense building, blocks of flats etc.

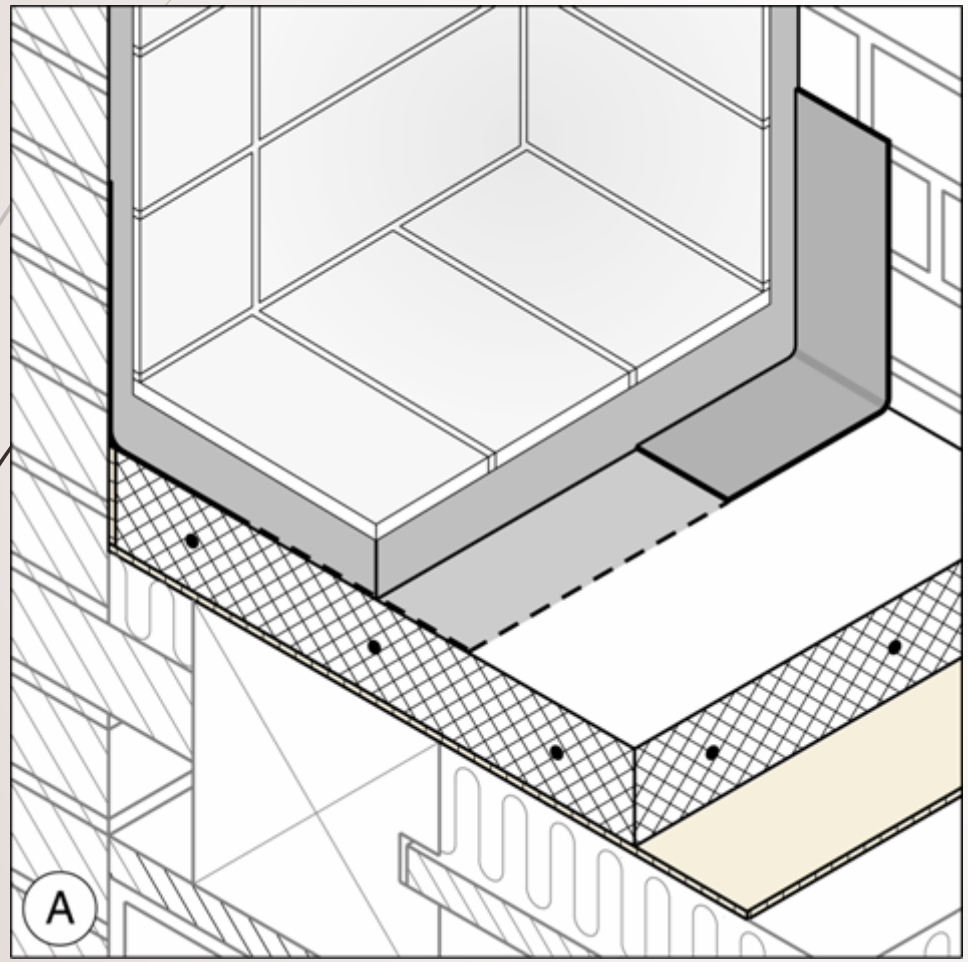
- Class H (High) Larger or more frequent exposure to water than in ordinary dwellings – typically found in common bathrooms, large kitchen, production rooms in the food industry etc.

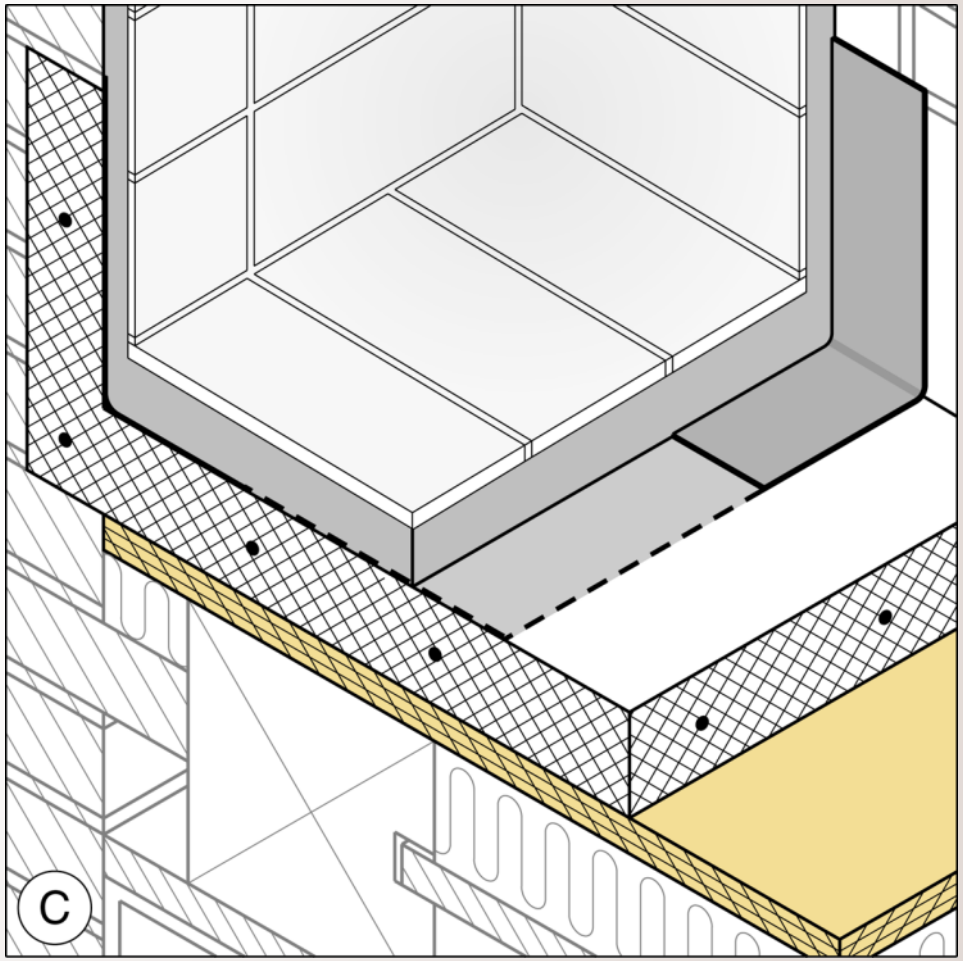

Vådzone
Fugtig zone
Fugtig zone
500
500
100
Vådzone
Mål i mm

Planning and design

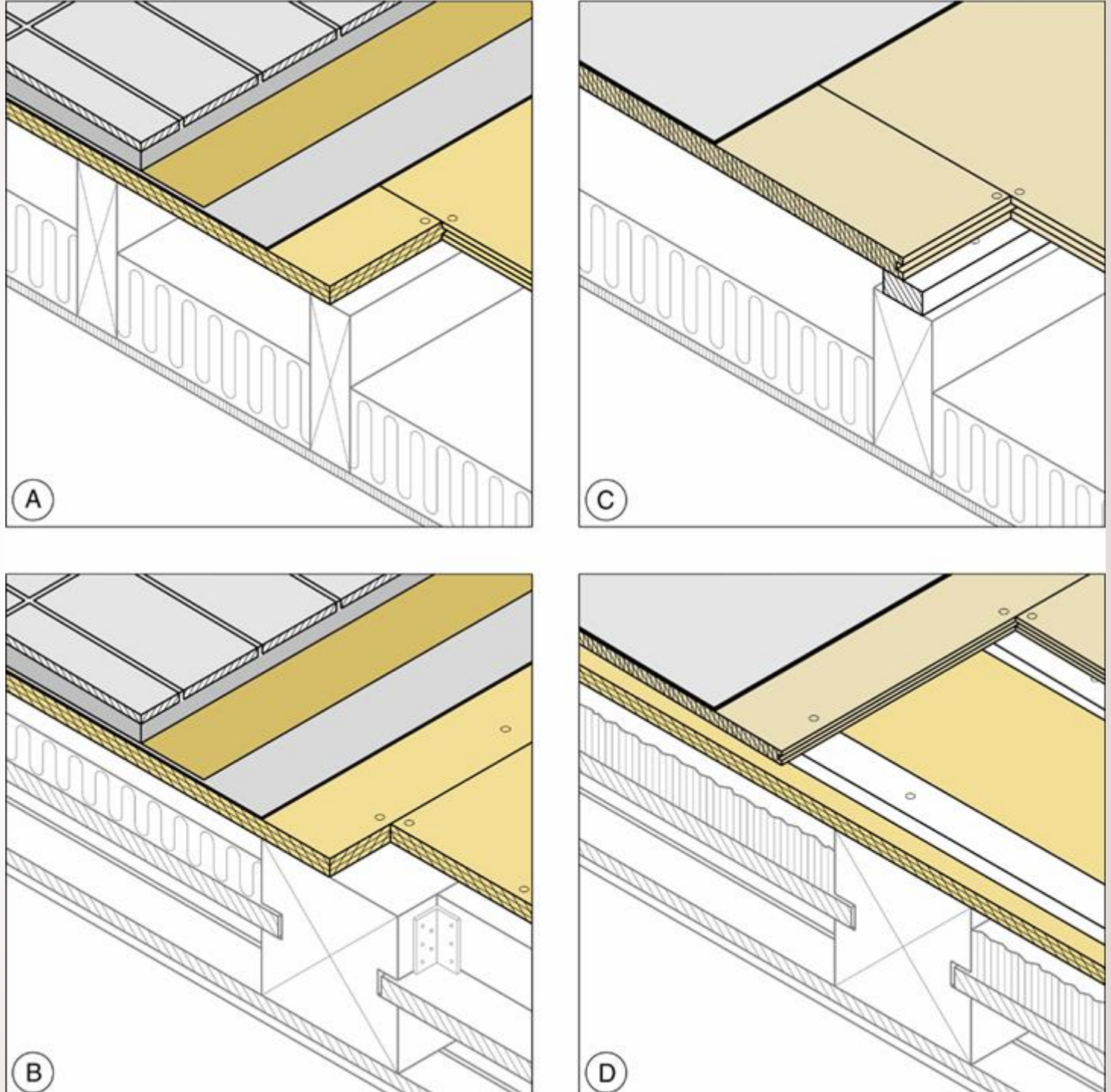
- Exposure class
- Layout – preferably large rooms
- Materials and construction must be chosen according to the actual exposure class
  - Thorough description and drawings
  - Specific reference to directions with necessary adjustments
  - The wet room must be made as designed
- Other demands e.g. short construction time, light construction.

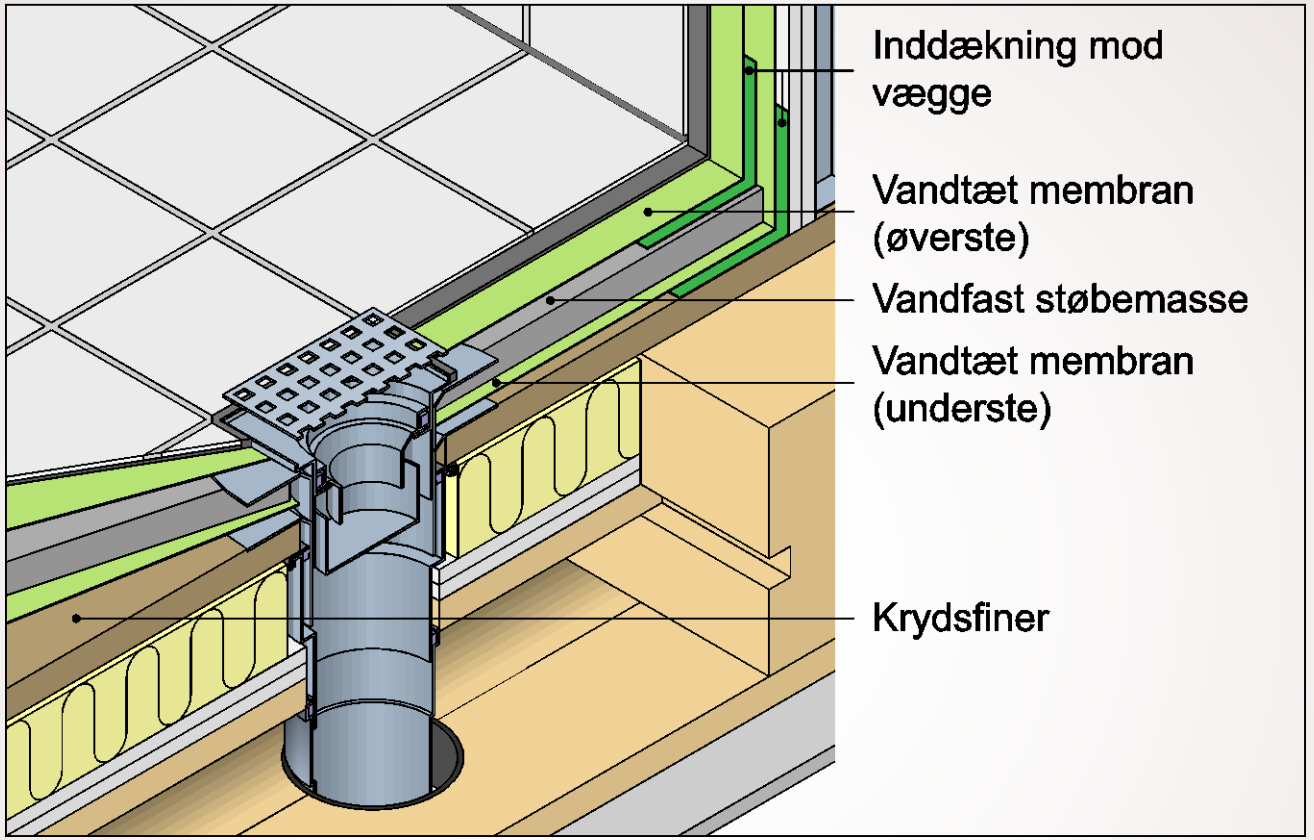
Concrete on old wooden beam layer





Bathroom on new floor deck





Figur 52. Eksempel på let dobbeltgulv. Opbygningen består her af et gulv udført med krydsfiner lagt oven på eksisterende træbjælkelag. Det nederste vandtætte lag er en 1,0 mm tyk membran, der hører til et MK-godkendt flisesystem. Membranen er udført med manchetter omkring eventuelle rørgennemføringer og med tilslutning til gulvafløbet. Det vandtætte lag inklusive manchetter er ført mindst 50 mm op over den færdige gulvoverflade. Over det nederste vandtætte lag er der lagt et glidelag bestående af to lag geotekstil (ikke vist), hvorpå der er støbt et ca. 30 mm tykt lag af en vandfast støbemasse med let tilslag. Konstruktionen er afsluttet med et godkendt flisesystem med samme membran, som er anvendt til det nederste vandtætte lag.

Gulv L M H

Watertight covering kits

- Light weight constructions for use on organic substrate, stud walls etc. are vulnerable against water and therefore it is essential that they are protected with a watertight surface.

- Watertight covering kits must fulfill the requirements for obtaining a MK-approval or an ETA

- In one family houses with inorganic substrates – i.e. masonry, concrete and light weight concrete - there are no legal requirements about use of a watertightening system.

Wet zone

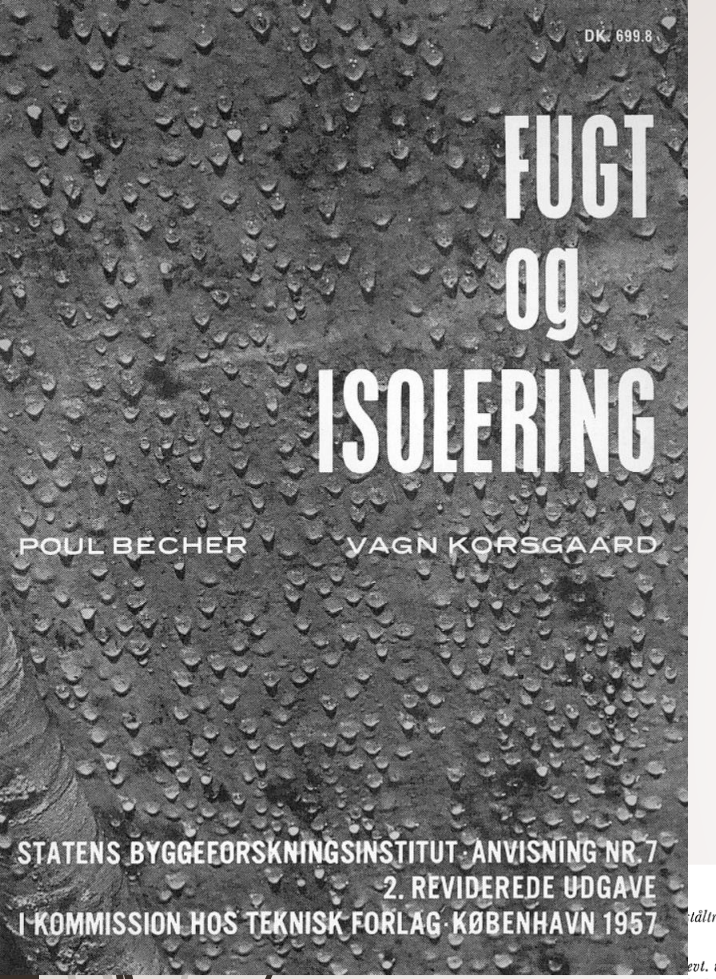
- The system **must be MK or ETA approved** to the actual substrate (boards or plywood)
- Membrane with a minimum thickness of 1 mm is required
- Watertight covering kits with a membrane may be used in the wet as well as the moist zone

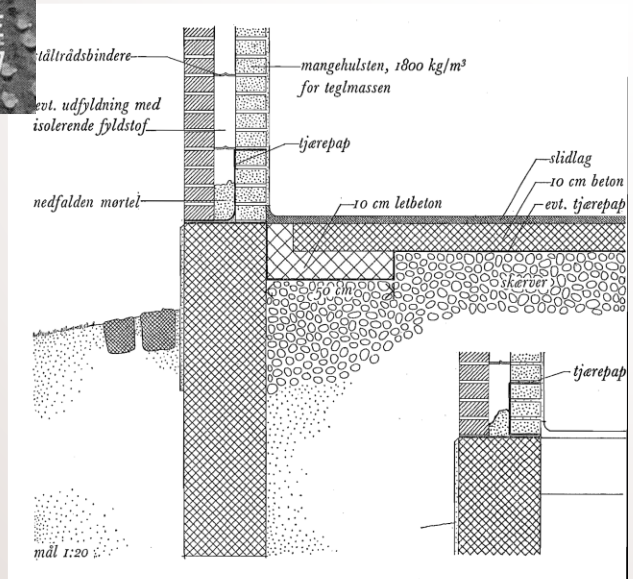
Moist zone

- MK-approval is not required – but may be obtained
- Membrane is not required – but recommended

Revision of SBI-direction 224
Moisture in buildings

- 3 or 4 publications instead of 1
- Brush up of existing information with new knowledge
- More information especially as regards refurbishment (a large task as we have many existing/old buildings)
- New subjects not covered in previous directions



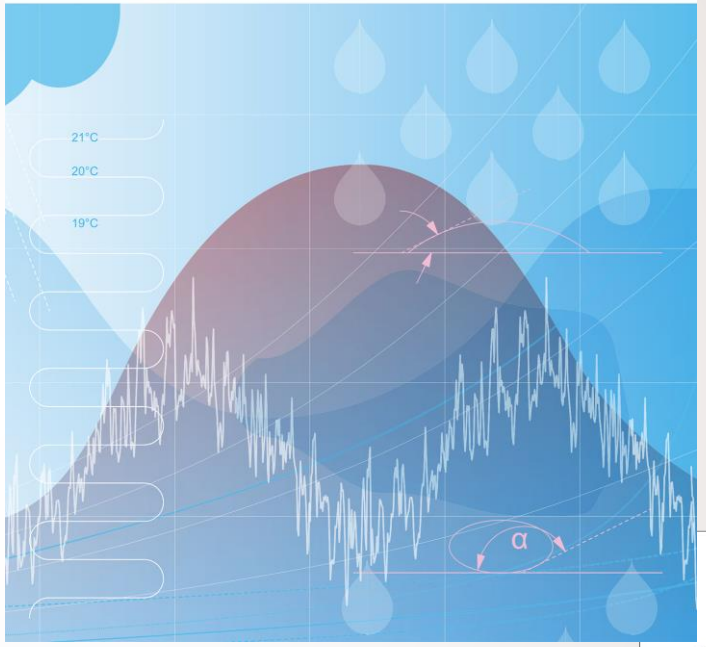


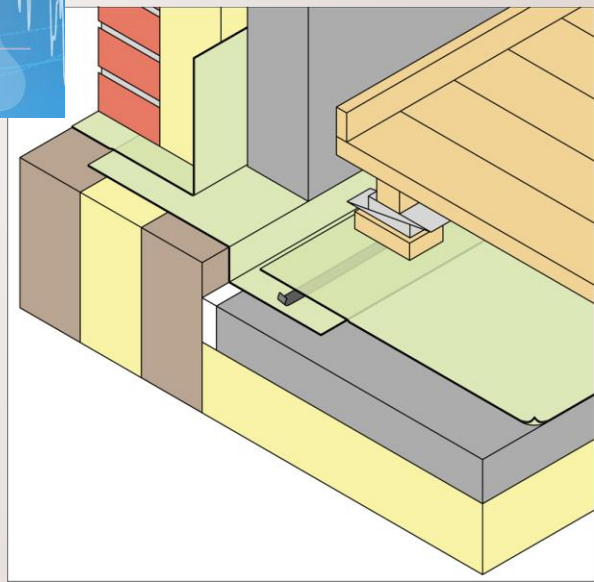
SBi-anvisning 224

Fugt i bygninger

Statens Byggeforskningsinstitut
AALBORG UNIVERSITET

2. udgave, 2013





New part of direction

- The proposal phase
- The design phase
- The tender phase
- The execution phase

- Moisture risc classes
- Climate adaptation
- (Total) coverage of building sites during construction
- Moisture experts (necessary competences)
- Moisture strategy (examples for each phase)


Thank you for your attention