

THE INSTITUTE OF WOOD PRESERVING AND DAMP-PROOFING

**Certificated Surveyor in Structural Waterproofing Examination (CSSW)
19th June 2007**

NOTES FOR CANDIDATES:

1. Read the instructions and questions carefully
 2. Answers should be illustrated with sketches where appropriate
 3. Any abbreviations must be given in full when first used
 4. The duration of this written paper is 2½ hours
 5. **All 8** questions should be answered
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PART 1:

1. You have been asked to prepare a specification for the waterproofing of a basement in a private home. During the course of the survey, you established the following:
 - i. The basement already exists and consists of a 100mm concrete slab with only nominal mesh reinforcing. The walls are of 225mm brick.
 - ii. The basement is to be used as a games room for the children, as well as a utility area for domestic use.
 - iii. The house is in an area where the subsoil is known to be mainly clay. During periods of heavy rainfall, some flooding of the basement occurs.

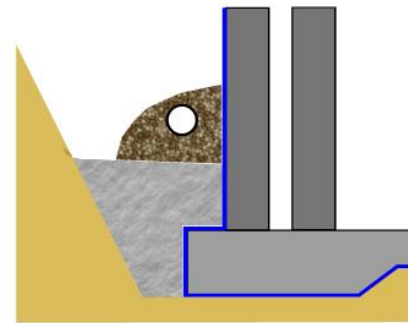
If you had a choice between cementitious waterproofing and a cavity drain system, which would you choose? Explain why you would prefer not to use the other system.

If you were only allowed to use a cementitious system, what precautions would you take to ensure the structure was capable of accepting stresses caused by a head of water?

[20 marks]

2. You have been asked to visit a new office block where the earthworks contractor has waterproofed the basement. We know the waterproofing has failed because, every time it rains for more than a few hours, seepage occurs at the wall/floor junction of the walls along one wing of the building. At your site meeting with the main contractor, you were provided with a full set of drawings and details of the way the property was constructed. During your meeting with the contractor, as well as your examination of these drawings and details and your visual inspection of the basement, you made the following observations:

i. The basement walls are constructed from two skins of concrete block, sandwiching a layer of reinforced concrete. These walls were built off a reinforced concrete raft.



ii. The basement was built approximately 2m into the earth.

iii. The waterproofing consisted of a layer of bonded sheet membrane underneath the floor slab and taken up the outside of the walls, with protection board against the membrane on the walls.

iv. The soil was chalk, and permeability tests showed it to be highly permeable.

v. A land drain was installed on top of lean mix concrete, at a height of 0.5 to 0.75m above internal floor level.

vi. The lean mix concrete shown on the drawing sloped towards the building, although no fall was specified.

Did the original design comply with BS 8102? If not, why not and, at design stage, how could the design have been modified so that it would have complied?
[20 marks]

PART 2:

- 3 Describe the preparation you would need on a brick wall that is to receive a cementitious system, when the bricks are:

- i. Sound but painted.
- ii. Soft with weak mortar joints.
- iii. Engineering brick.
- iv. Contaminated with diesel oil.

[15 marks]

- 4 Table 1 of BS 8102 defines four levels of dryness. What are the essential differences between these four grades?

If an existing basement is performing adequately to a Grade 2 environment, and the client wants to upgrade it to Grade 4, what steps would be necessary?

[15 marks]

5. Following the application of a cementitious system surface condensation may occur:
- i. Define 'Relative humidity' and 'Dew point'
 - ii. What part do 'relative humidity' and 'dew point' play in the formation of surface condensation.
 - iii. What instruments/methods would you use to determine that surface condensation was the cause of dampness following the installation of a cementitious system, and not a water-proofing failure.

[15 marks]

PART 3:

6. What are the legal implications of your survey report for which-
- (a) You receive payment,
 - (b) It is a 'free' survey?
- [5 marks]**
7. The Surveyor needs to carry out a site risk assessment prior to any intended work – list 8 potential risks and what actions to be taken to reduce that risk
- [5 marks]**
8. Briefly list the stages in preparation and application of a cementitious waterproofing system and identify the hazards associated with each stage.
- [5 marks]**