

# BREVET DE TECHNICIEN SUPERIEUR

Groupement 15

session 2001

## ANGLAIS

Durée : 2 h

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**- SUJET -**

*L'usage d'un dictionnaire bilingue est autorisé.*

**Spécialités :**

Agencement de l'environnement architectural  
Aménagement - finition  
Bâtiment  
Charpente - couverture  
Constructions métalliques  
Enveloppe du bâtiment  
Etudes et économie de la construction  
Géomètre topographe  
Systèmes constructifs bois et habitat  
Travaux publics

## TURF AT THE TOP

Roof gardens are sprouting on top of offices, museums and houses. It's not only large projects by prestigious architects that have roof gardens. Architype, an architect specialising in eco-roofs, has used them on private houses, a Wildlife Trust centre and London's Homiman museum.

Architype's Jonathan Hines agrees that image is the key factor in the increasing popularity of green roofs. "Interest in grass roofs is growing. But the danger is that people are designing so-called green buildings and just putting a grass roof on top to complete the image".

Hines argues that there are sound technical reasons to use an eco-roof. "A grass roof protects the roof membrane on flat roofs from extremes of temperature and also blocks ultra-violet light, which helps the membrane last longer," he says.

Suppliers of green roofs claim that roof membrane temperatures can be reduced by up to 40°C on a hot day. "In summer, flat-roof membranes reach temperatures of 80°C and can fall to -20°C in winter," says Graham Spall, technical manager of eco-roof supplier Erisco Bauder. A green, flat roof reduces these extremes, claims Spall. "It will reach a maximum temperature of 35°C in summer and a minimum of only -5°C in winter".

Reduced running costs can also be achieved with eco-roofs. "We've used eco-roofs to cool buildings in summer," says Hines. Not only do the soil and grass provide a thermal mass that absorbs heat, they also allow water to evaporate. Hines explains that, when the sun heats the soil, water evaporates, taking the heat with it. "It's as if the building is sweating," he says.

There are also ethical reasons to have an eco-roof, says Hines. In a city, a grass roof provides an important habitat for wildlife and also cleans the air, he says. "Eco-roofs help clean the atmosphere because grass absorbs carbon dioxide. "

Proponents claim that eco-roofs are useful tools in gaining planning permission. Hines agrees that eco-roofs can impress planners. In Brighton, Architype helped design a housing scheme for Digger's Self-Build. "Planning officers liked the fact that the flats next door looked down on to grass roofs," he says.

Roof gardens that can be accessed are also gaining favour with clients building in city centres. To have an accessible roof garden adds value to a building in the city, he says.

Eco-roofs also provide indirect benefits for building occupiers, says Spall. "Green roofs provide water storage during periods of high rainfall. This helps prevent water surges from overwhelming local drainage systems," he says. "About 50 % of the soil volume of a green roof can store water within a free draining system. Thus, with a substrate 100 mm thick, it is possible to retain up to 50 litres of water per square metre," says Spall.

The roofs are also easy to look after, claims Hines ; "Maintenance is not a problem we go up once a year and we clear out the drains, that's all." he says.

Adapted from Building Magazine, 18 October 1996.

## TRAVAIL DEMANDÉ

### I - COMPRÉHENSION DU TEXTE : (10 pts)

Faire en français un compte rendu du texte (200 mots environ).

### II - EXPRESSION ÉCRITE EN LANGUE ANGLAISE : (10 pts)

(Longueur globale minimum : 250 mots).

1°/ Répondre à la question suivante :

How far do you agree with Mr Hines's scheme ? Can you think of any drawbacks ?

**puis**

2°/ Répondre à l'une des deux questions ci-dessous :

a) In your opinion, is it possible to build an "ecological" house at a reasonable price ?

Give examples of devices or products available and justify your choice.

b) Can you think of other present-day tendencies ? What is the present-day tendency to improve living conditions in cities ?