

## **Introduction to externally rendered cladding systems**

*This Technical Note is one of two describing the procurement design and assessment of externally rendered cladding systems. They are:*

*TN 59 Introduction to externally rendered cladding systems  
TN 60 Performance of externally rendered cladding systems*

*This Technical Note should also be read in conjunction with:*

*TN17 Weathertightness and drainage  
TN33 Breather membranes and vapour control layers in walls  
TN47 Overall building envelope U-values*

### **Introduction**

External renders are used in many forms of wall construction and in some forms have been used successfully for many years.

However, the performance of external renders is highly dependent on site workmanship and the robustness of interface details. There is also some concern that renders may be used that are inappropriate for the particular substrate they are being applied to.

The use of externally rendered lightweight construction in North America has led to large numbers of building envelope failures. There are over 65,000 properties needing major remedial work in British Columbia alone. These failures are well documented. The Barrett Committee of enquiry into building envelope failures in British Columbia found that failures occurred for a number of reasons including:

- a) Use of face-sealed systems that rely on single water seals in the outer surface of joints and on the performance of the render.

- b) Use of inappropriate design features for a wet climate. These included balconies, external walkways and reduced overhangs all of which provide greater opportunity for water penetration.
- c) An increase in the number and complexity of joints in the building envelope.
- d) Weaknesses in architectural and shop drawings.
- e) Failure to understand and inspect construction at site.
- f) Use of wall construction that was suitable for a drier mid-continent environment in a wetter sea-board environment.

Three clear conclusions were drawn from the experience in Vancouver:

- a) Although many failures were associated with small builders there were also numerous failures of medium-rise buildings. It was clear that design had to be driven by engineering principles and not architecture alone.