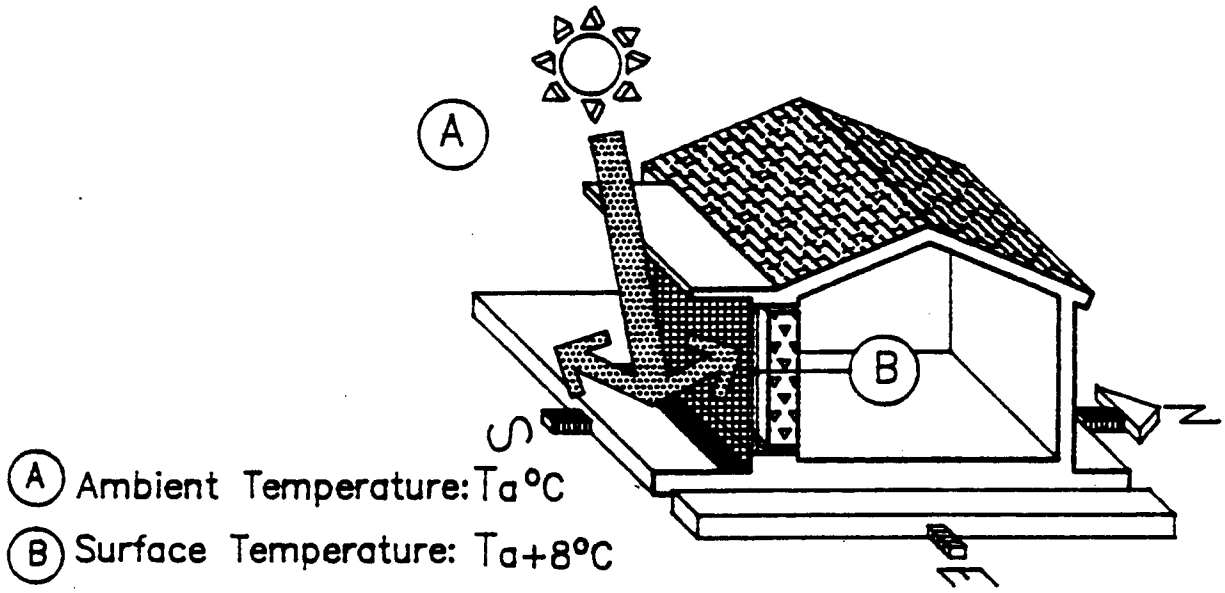

FIG. 3.B.2: Insulation & Shading of Thermal Storage Walls

of the external surface temperature of the glazed dark wall can cause serious overheating of the interior.

A study of a UCLA student in Israel (Moses, 1983) has demonstrated that the external surface temperature of a collecting storage wall, made of concrete with a dark color (absorption about .85), when the wall and a strip in front of it were completely shaded from direct radiation by a deep overhang, is elevated above the ambient air by up to 8°C. This elevation is caused entirely by the diffused and mainly the reflected solar radiation. It demonstrates that in regions with sunny hot summers it is essential to insure complete shading of the wall, also from radiation reflected from the ground. This can be accomplished only by vertical shading, either by rollable shades or by shading panels which are installed in summer and removed in winter.

f) Design Modifications for Improved Maintenance

When an accessible space, about 2' wide, is left between the glazing and the wall it is possible to clean the glazing from the inside, to repair it and also to open part of it in summer for ventilation. Such a space also enable provision of operable night insulation and summer shading protected from the winds.

This wider "air space" can facilitate greatly the application of thermal storage walls to highrise buildings, where maintenance would be very complex in the case of a wall with the conventional inaccessible air space. The author suggests that the thermal performance of such sunspaces will be studied.

3.2.2 Collecting/Storage Water Walls

As an alternative to masonry collecting storage walls, water in various containers, behind the solar glazing, can be utilized for collecting and storing solar energy. The main advantage of water as a heat storage material, compared with masonry materials, is its much higher specific heat. Compared with a value of c=1.16 (wh/kgC) for water, the corresponding value of