CHAPTER 4 - MICROCLIMATE AND OUTDOOR COMFORT

304.02 HEAT REJECTION EQUIPMENT INSTALLATION

Silver Sa'fa

INTENT

To reduce urban heat island effect contributed by air conditioning system.

REQUIREMENT

For all new buildings, individual heat rejection equipment having a power rating greater than 4.0 kW and which exhausts externally, must be installed not less than 3m above the ground level of the building.

SIGNIFICANCE

Intense urbanisation has led more than 50% of world's population to live in cities. Urbanisation alters the local intra-urban climate by reduction in rainfall and increase in night time temperatures. It also influences absorption and reflection of solar radiation, ability to store heat, absorption and emittance of long wave radiation, winds and evapo-transpiration. Human activities such as cooling of buildings, vehicular traffic and industrial production also affect the built environment.

Urban Heat Island (UHI) effect is the temperature difference between urban and undeveloped areas. Research carried out by Liu et al in 2011, have found that for a typical office building cluster, the largest heat island intensity contributed by air conditioning systems can reach 0.7 °C at midday and contribute to a daily average rise of 0.53 °C. Increase in local temperature at street level linearly depends on the sensible heat released through air conditioning equipment.

This regulation proposes to improve the thermal environment by appropriately managing the exhaust heat from heat rejection system. This ensures that street level heat and UHI effect are reduced. The reduction in ambient temperature around the buildings by elevating the heat rejection equipment also increases pedestrian comfort.

APPLICABILITY

This regulation is applicable to all building types. Refer to Table 101.07(1) in Section One - Administration for detailed applicability levels.