















The Physiologically Equivalent Temperature (PET) was calculated using RayMan version 1.2 inside and outside the cool spot for a typical day in August, shown in **Figure 6(c)**. The results show that during the hottest time of the day, the felt temperature (PET) in the cool spot is 10<sup>0</sup>C lesser than the outside temperature.

**Figure 6(b)** shows a map of a pedestrian route in Sharjah connecting a residential/commercial area to an intercity bus stand. This stretch of 1.6 km, with the introduction of cool spots at a minimum distance of 60m (to prevent the interference of the wind flow pattern between two cool spots) and maximum distance of 300m ensures a pedestrian experience with reduced thermal stress.

## CONCLUSION

Designing for pedestrian comfort requires understanding the climate and the comfort limits. Initial stages of this research (not mentioned in this paper) looked at design strategies to reduce air temperature. This was overruled as fieldwork in Sharjah revealed that air movement had more influence on comfort than a few degrees decrease in temperature.

Through literature review and fieldwork it was understood that, during the hot period in Sharjah temperatures of 40<sup>0</sup>C – 42<sup>0</sup>C were considered acceptable, provided the pedestrian is in complete shade and there is a minimum wind speed of 2m/s and maximum 4m/s. Although the fieldwork conducted in this study used only one subject, it can be extended to larger group to arrive at a more comprehensive results. Such a study could be conducted using a similar methodology as outlined in this work.

This paper also proposes a design solution - Cool Spots - to achieve pedestrian comfort in Sharjah. The design of the cool spots is based on the three factors – provide shade, enhance wind movement and reduce mean radiant temperatures close to air temperature. The concept of a cool spot as an urban furniture is specific to Sharjah/UAE as it is a response to both the cultural as well as the climatic expectations of the pedestrians there. It was observed that people felt comfortable underneath a tree canopy, especially under the dense and wide one of a banyan tree. Given the desert climate in Sharjah, trees like the banyan are not a common sight. Cool spots are intended to serve the function of such a canopy, but unlike trees that reduce the wind speed underneath them, cool spots enhance it. The felt temperature (PET) within the cool spot was analysed (using RayMan 1.2) to be 10<sup>0</sup>C lesser than the outside temperature at peak conditions (noon) during one of the hottest month (August) in Sharjah.

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