

Abstract

The problem of reflection light from fenestration onto the road becomes the problem that considerably affects the view and visibility of travelers on the road and becomes one factor that would lead to accident and traffic jam. The cause of the problem of reflection light comes from the architect's design.

This research aims to find "Guidelines for Designing Buildings to Prevent Solar Reflection onto Streets: Orientation and Envelope Material Selection". It is to study office building's fenestration that affects reflection light from fenestration onto the road with the main objectives to find ways of designing concerning the orientation of buildings in order to determine the direction of fenestration, the type of reflective glazing material, and the ratio of opaque wall and glass on the fenestration so as to reduce reflection light from fenestration. In this research, the Satorn North Road is area of case study.

The assessment of travelers' questionnaire on Satorn North Road, reveals that reflection light on the road comes from fenestration of Harintorn from the western side at most; secondly, it is the fenestration of Sangtong Tani on western side, and of Satorn Tani also on western side, respectively. Therefore, these three buildings were chosen as case study to determine direction of fenestration, the reflective glaze material, and the ratio of opaque wall and reflective glass envelope on fenestration for the building that is located on Satorn North Road.

According to the analysis of orientation of three buildings by using physical model and Heliodon technique, it is found that if one does not want fenestration of western side to affect reflection light from fenestration, the fenestration on western side of building that would be re-constructed on Satorn North has to be orientated with the fenestration on the western side on 68 degree to Satorn North Road

In the case studies of buildings with reflective glaze material that does not lead to reflection light from fenestration, it is found that Empire tower, Bangkok City Tower, and Q House Building all have chosen glazing with reflection value of not more than 30

percent under the Ministerial Regulation. It can reduce reflection light that disturbs travelers' eyes on Saturn North Road and Saturn South Road.

The study of characteristics of design regarding the ratio of opaque wall and glass envelope on fenestration reveals that the fenestration of Saturn Tani Building leads to minimum reflection light on the road area because the design of fenestration of Saturn Tani Building has ratio of opaque wall to glass fenestration for 50 percent; this reduces, but not completely eliminate, the light reflection from that fenestration. Therefore, if the fenestration on western side will be designed with the material property that does not affect reflection light on the road, it is necessary to avoid using reflective glazing material that has high value of reflection, and mixed design of opaque wall and glass envelope.