ABSTRACT

The objective of this dissertation is to promote better understanding for the use of sealant in the building envelope as well as dwelling into the possible effects of weatherproofing sealants on building aesthetic. There are few new buildings that do not, in some part, depend on sealant joints to prevent the ingress of air or water. On larger projects, the sealant joints may extend to tens of kilometers, yet the cost of sealant joints is still low in comparison to the total project costs. For this reason, insufficient attention is often given to the design and construction of the joints and preventable premature failure too often occurs. The cost of premature failure can be several times greater than the initial cost of the joints.

This dissertation first deals with the selection of proper materials for use as sealants. In choosing a sealant, properties must be matched to expected conditions of a particular installation. Chapter three of this dissertation provides a review of the common types of substrates and accessory materials used in the external facade of buildings and sealant joints respectively. Chapter four focuses on the joint design as well as providing a guide for joint spacing of sealants and to examine the effects of weathering on sealants. Lastly, the approach in alleviating the effects of weatherproofing sealants on building aesthetic is by on-site observation and diagnosis of four case studies.

Recommendations are made on joint designs that would reduce staining problems, which in turn would affect the building aesthetic.

Keywords: Sealants, staining, joint design, accessory materials, aesthetics, substrates.