**Abstract**

Visibility in smoke has since the 1970s gained some attention, mostly after Tadahisa Jin ran the experiments which helped him develop todays widely used visibility equation. By showing that visibility can be assumed to be inversely proportional to the extinction coefficient by a visibility constant (equal to 8 for light emitting sign and 3 for light reflecting), Jin opened up new doors for researchers who were testing out his theory by going around experimenting in different ways and also by showing that there is way for more research to be done. The visibility constant also allowed for easier modeling of visibility which is used in egress models. However, in recent years, his suggested values for the visibility constant have been thought to be lower, as claimed by the SFPE in their more recent Handbooks. Nonetheless, many factors come into play when studying the visibility of exit signs in smoke such as brightness, light color, signage type (reflecting/ emitting), smoke type (white/ black), and others. In this thesis, a literature review as well as an overview of the current standards of exit signs is presented in the first half. In addition, a small scale experiment was run for the purpose of this thesis. It included 20 participants going through 16 different scenarios where the previously mentioned factors are studied, and their effects on visibility are looked into. The results under black smoke conditions have exhibited an unexpected behavior, not following what the currently used equation dictates, nonetheless a clear performance superiority of red signs has been seen which agrees with the previous literature. It is speculated that this unexpected behavior suggests that for higher values of the extinction coefficient, Jin’s equation does not stand. On the other hand, the results under white smoke conditions were more consistent, and showing that indeed as recently thought, the visibility constant is higher than what Jin had suggested. Finally, also in line with previous research, light emitting signs were shown to have a better performance than light reflecting ones.