

## Urban Search, Rescue and Rapid Field Assessment of Damaged and Collapsed Building Structures

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**Abstract :** Urban Search and Rescue (USAR) is a functional capability that has been developed to allow the United Kingdom Fire and Rescue Service to deal with 'major incidents' primarily involving structural collapse. The nature of the work undertaken by USAR means that staying out of a damaged or collapsed building structure is not usually an option for search and rescue personnel. As a result, there is always a risk that they could become victims. For this paper, a systematic and investigative review using desk research was undertaken to explore the role which structural engineering can play in assisting search and rescue personnel to conduct structural assessments when in the field. The focus is on how search and rescue personnel can assess damaged and collapsed building structures, not just in terms of the structural damage that may be countered, but also in relation to structural stability. Natural disasters, accidental emergencies, acts of terrorism and other extreme events can vary significantly in nature and ferocity, and can cause a wide variety of damage to building structures. It is not possible or, even realistic, to provide search and rescue personnel with definitive guidelines and procedures to assess damaged and collapsed building structures as there are too many variables to consider. However, understanding what implications damage may have upon the structural stability of a building structure will enable search and rescue personnel to judge better and quantify the risk from a life-safety standpoint. It is intended that this will allow search and rescue personnel to make informed decisions and ensure every effort is made to mitigate risk so that they do not become victims.

**Keywords :** damaged and collapsed building structures, life safety, quantifying risk, search and rescue personnel, structural assessments in the field

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