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Damage Assessment by the First Arriving USAR Team in Haiti in Response to the January 2010 Earthquake

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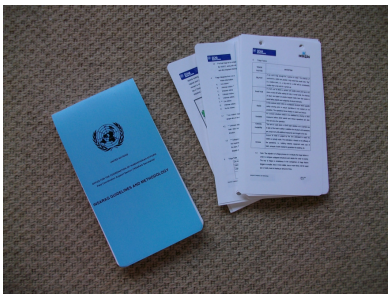
Introduction

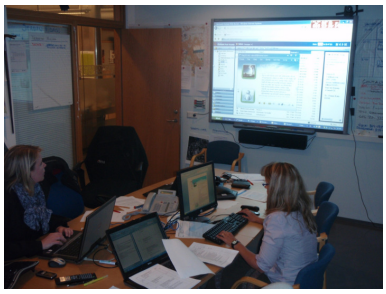
Damage assessment during search and rescue in collapsed buildings is a critical part of a USAR (urban search and rescue) operation. Four key lessons are drawn from an after-action analysis of the damage-assessment efforts during life-saving operations in Haiti performed by the ICESAR team; the first arriving USAR team in Haiti in response to the January 2010 earthquake.



First
The structural evaluation format presented in the INSARAG (International Search and Rescue Advisory Group) Guidelines is a useful checklist for the urban search and rescue engineer.

Second
The working relationship between engineers and rescue workers needs to develop and reach a level of mutual respect and understanding of roles and ability in order to create a working relationship.

Third
Engineers must receive training prior to deployment in order to function properly in a dreadful and dangerous environment, make fast and often life threatening decisions



Fourth
Staff located thousands of miles away can provide support to field teams by collecting building and situation information, e.g. from the internet, analyze and sent it to the field.

Main findings

- Survivors and by-standers provide key information about the interior of structures that can be used to infer size and location of voids, and the load-bearing structure.
- Damage assessment can be divided into three tasks; getting an overview of the damage for further decision making (reconnaissance), assessing structural voids and stability for collapsed structure prioritization and dispatching teams to work-sites or work-areas, and structural evaluation for entry and search-and-rescue operations. The INSARAG guidelines provide useful information, though the application will always be adjusted to the inner routines and knowledge of a USAR team. The 10 step structural evaluation is a useful tool, both to use a template to train new engineers and also to use in the field. (more discussion of what the content of the table and how it was applied in the field)
- Home base support teams are useful.
- Appropriate equipment and a systematic to approach a building collapse rescue operation are key to a successful rescue for deeply entombed victims.
- Home base support teams can be applied to a greater extent that have been in the past. They can collect, compile, analyze and distribute data that is virtually impossible to do in the field or is only done with extreme effort and is likely to be a waste of the resource.
- Engineers have been an active part of the urban search and rescue community and participated in the development of technical aspects of USAR since the 1985 Mexico City Earthquake (Thorvald 1995, Thorvaldsdottir 2005) when organized USAR first started to be recognized. Engineers still play an important part of this difficult life-saving operations and further research into structural collapse of current building stock and consequent void spaces and stability is necessary

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