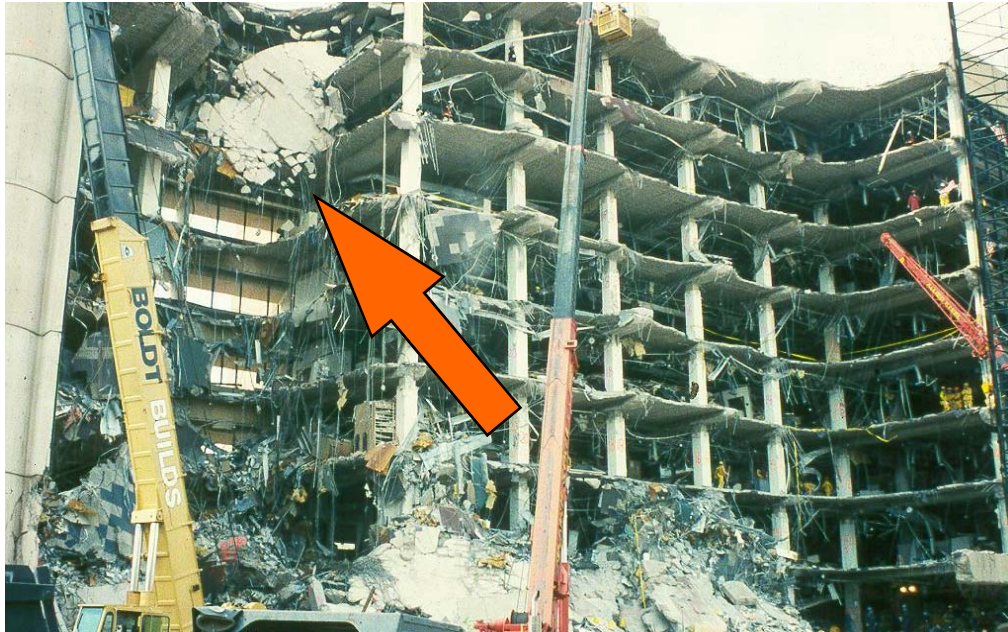


USAR & Engineering



In brief...

USAR Engineers play a critical role in assisting structural collapse rescue operations.

From the Level 1 USAR Engineer trained to provide outer cordon advice to first response teams, to the Level 2 Engineer working with USAR Task Forces—both these professional engineers provide advice on hazards, building information and structural triage.

In addition to awareness training in USAR, professional engineers can undertake further IPENZ endorsed courses to open up formal opportunities in being operationally involved in disaster rescue.

Left: 16 tonne Mother Slab - originally part of roof was hanging by a few rebar after initial collapse (Oklahoma Bombing, April 1995) where 168 people were killed.

A variety of emergencies or disasters in New Zealand may give rise to structural collapses requiring urban search and rescue (USAR) response. Such events include earthquakes, land slips and subsidence, hurricanes, typhoons, storms and tornadoes, floods, technological accidents and hazardous material releases, terrorist activities and construction accidents.

USAR is a multi-agency resource which combines the capabilities of New Zealand's emergency services and specialist technical task-forces with local community volunteer rescue teams. USAR is led and organised in NZ by the national USAR Steering Committee. This multi-agency committee includes representation from MCDEM, NZFS, Police, Ambulance Association and Local Government.

Engineers are a recognised specific specialist skill grouping in USAR, along with Paramedics and Search Dogs. The overall capability objective is to have suitably trained engineers to deal with building collapse incidents, and to have them available to advise the emergency services and rescue teams who are conducting the rescue activities. In New Zealand there are two levels of USAR engineering competency:

Level 1

Focus: Operating in the outer perimeter of a structural collapse site. This includes the following tasks:

- Assist in the identification, monitoring and reduction of hazards (overall site)
- Assist in gathering relevant information about the building/facility; the incident; the people affected
- Assist in structural triage
 - Advise on safe routes for approaching the building
 - Prioritise which structures should be searched first in a multiple collapse
- Determine safe staging areas

Level 2

Focus: Operating within a structural collapse site with the national USAR Task Forces, with additional tasks including:

- Consider the likely void spaces where victims could be within the collapse.
- Assist in developing the site search and rescue plan
 - Advise on building stability for planning and executing Search and Rescue
- Provide detailed/ specific structural engineering advice
 - Confirm Task Force decisions on shoring, cribbing, breaching and heavy lifting, when needed
 - Specific design of shoring elements as requested

USAR Engineer Training

In USAR Fact Sheet #3 (Training System) we explored the national training system.

Building on the USAR Awareness Level (CAT-1A) of training, USAR Engineers undertake further training to develop specific technical skills in structural collapse rescue engineering.

There are two components of training engineers in USAR:

- (i) *familiarity with how emergency services operate, and*
- (ii) *specialist engineering skills for collapse situations.*

The training specifically assists participants to go beyond their normal office-based experiences and gain an understanding of the engineering tasks outlined on page 1.

Level 1

It is intended to develop a significant number of Level 1 USAR-trained engineers in each region, particularly those with metropolitan centres. The Level 1 USAR Engineer course is open to professional engineers across all disciplines and levels of experience from graduate level and above, with the involvement of structural, civil and geotechnical engineers being seen as highly desirable. This course is being progressively delivered in main centres and other locations.

Level 2

The more advanced Level 2 USAR Engineer course is aimed at experienced structural engineers capable of working with Task Force Technicians in confined spaces. A Level 2 USAR engineer who participates in Task Force activities needs to have achieved Chartered Professional Engineer status, and should have a reasonable level of fitness due to the demanding nature and duration of the work. The engineer will need to be adaptable and able to fit in to the structured nature of the Task Force operation. A good understanding of practical construction methods and some experience in construction and demolition related work would also be expected.

Task Force Engineers also require training in first aid, incident management and USAR awareness (CAT1A). Both of the Level 1 and 2 USAR Engineer courses are endorsed by IPENZ, and each have 12 hours CPD credit attached.

Professional Engineers are being actively encouraged to get involved in USAR, as they have critical skills that rescue personnel need. However in order to be effective in a response situation, specific training is required including knowledge of Civil Defence Emergency Management structures.

In our next **Fact Sheet #14 Health & Safety** we give an overview of health and safety aspects relating to USAR in New Zealand.

For more information on USAR engineering matters, contact
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Above: USAR Engineering Instructor Des Bull (NZ-TF2) gathers information as part of a structural assessment during a structural collapse exercise. USAR Engineers are identified by their blue helmets.

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