OPUS

Preparing for battle

NZDF Battle Training Facility

Client: Ebert Construction
Location: Auckland, New Zealand
Completion Date: 2015/2016

A group of Opus experts illustrated our Defence capability in our design of the bespoke Battle Training Facility for the New Zealand Defence Force. This world class facility enables training in all weather conditions, live firing, use of helicopters, and scenario training in specific environments such as in aircrafts, ship bridges, and public transport.

As the primary design consultant for this project, we provided professional services for the base build of the new facility including architectural design, structural, mechanical, electrical, environmental and civil engineering, project management, and site construction supervision in conjunction with our partners Cubic Range Design Solutions.

The complex and unusual challenges this project offered allowed our teams to demonstrate not only our technical expertise across the design and procurement phases but also our ability to develop innovative and bespoke solutions. A number of unusual engineering challenges arose regarding the sheer weight of the structure and the size of the roof. Our mechanical engineers were challenged with a high capacity ventilation system, and fire engineering and fire protection systems engineering also presented significant challenges which had to be addressed in order to achieve building code compliance. With parts of the foundation of the building anchored both in sloping bedrock and soft soils, our structural solution used advanced seismic modelling to prove the performance of the foundation during a design level earthquake.

Our architectural and engineering design placed importance on the safety of people in live fire areas through the careful detailing of service penetrations, panel jointing and building materials to maintain the ballistic integrity of these areas. We incorporated specific training provisions into the structural and architectural design whilst maintaining strict compliance to fire design and general building codes. We made sure the configuration and layout of the building maximizes internal and external training space to allow every portion of the building to be used for training scenarios and exercises. The fit for purpose ventilation systems were designed to remove and capture contaminants from the air following the use of fire arms and explosives. Our design also included audio visual, lighting systems and controls to allow for specific training simulations and scenarios.

During design and construction, we worked closely with contractors to incorporate specific techniques into the structural design. Given the nature and purpose of the building, selected materials needed to be robust and resistant to damage. Both structural and partition walls were constructed from reinforced concrete and roof surfaces were coated with a hard-wearing tarmac layer to allow for roof top training exercises.

Services provided: Architecture / Structural engineering / Mechanical engineering / Electrical engineering / Environmental engineering / Civil engineering / Project Management / Site construction supervision

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