CASE STUDY – RSME (Royal School of Military Engineering)
The full refurbishment of the Royal Engineers Museum in Chatham, Kent

Challenge
As one of the UK’s most prestigious museums, the Royal Engineers Museum holds 500,000 treasured items including planes, tanks and torpedoes. Situated in the century-old Grade II listed Ravelin building, the museum required major restoration, including removing a 196 m² glass barrelled roof to prevent sunlight damaging the artefacts.

Solution
VINCI Facilities’ construction arm, ‘Building Solutions’, was selected to conduct the works, thanks to its long standing relationship with RSME, its decades of experience in the defence sector, and a competitive tender that provided significant added value via additional health and safety measures. The following was vital to the project’s success:

Challenging the brief: The replacement of the glass barrelled roof formed a key element of the works and required the creation of one of Europe’s largest temporary roofs. However, Building Solutions challenged the client’s design of this temporary structure, citing that it would cause unnecessary risk by placing excessive loads on the structure as well as providing inadequate watertightness capabilities.

The revised design solution successfully reduced the load on the building by 15% due to incorporating two spine beams measuring 45m x 1.5m and additional back-propping to the first floor. In addition, a sliding UBIX system enabled open access to 50% of the glass structure at a time, while also guaranteeing zero water ingress when closed.

Further designs were challenged within the interior of the building, as the original design specified an internal crash deck to be suspended from the existing steel truss roof structure in order to avoid disturbance to the artefacts beneath. Recognising the potential instability that this approach could cause to the roof, Building Solutions removed any such risk by designing an alternative floor-mounted birdcage scaffold solution, and working in conjunction with a specialist firm to provide protection to the artefacts, which remained in situ throughout.

The innovative solutions provided by Building Solutions enabled the new metal insulated roof to be delivered safely and on time, including the installation of 18 UV-blocking skylights, designed to provide natural daylight without damaging the artefacts.

Supply chain management: Building Solutions managed 15 subcontractors, with each requiring Ministry of Defence security clearance. Thanks to the efficient management of logistics and sequencing, the team was able to deliver the project (including significant additional works) in accordance with agreed completion dates.

Community support: Building Solutions supported students from local colleges and the Chartered Institute of Building by providing numerous guided tours of the operations.

Impact
Health, safety and environment: The project was delivered with zero accidents or environmental incidents.

Investment in supply chain: Over £1.65m was invested in local firms.

Customer satisfaction: Thanks to the project's success, the client has since appointed Building Solutions to conduct £900k of additional works across its various sites.

Chris Moore, Project Manager at RSME Ravelin commented: "I would like to place on record how pleased we are with the creation of the temporary roof, as it was a very complex structure. Lifting the large spine beams into position was a difficult operation but was carried out with extreme levels of care and attention. The temporary roof was a critical element of the project and I’d like to commend you on how well managed the process was, with no accidents or near misses recorded, and just as importantly, no damage caused to the listed building."

Contract information
- Client: RSME
- Value: £2.2m
- Time frame: 9 months, June-2016 – March-2017
- Contract: JCT IFC 2011
- Scope of works:
  » Internal refurbishment
  » Roof replacement
  » Fall arrest systems
  » M&E works including replacement of air con system, air handling units, wet heating, boilers, and building management system
  » Rewiring power and lighting circuits
  » Installation of bomb blast protection to windows

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Email: buildingsolutions@vincifacilities.com
Tel: 01923 478400 | www.vincifacilities.com