

## CASE STUDY

### Project: Maths & New Library Building at Queens

# EDUCATION

Scope: Electrical

Value: £4.6 million

Client: Queens University Belfast

Consultant: Buro Happold (Scotland)

Main Contractor: O'Hare & McGovern

Duration: 30 months

Completion: April 2009



#### Brief

This project consists of two separate multi storey buildings, the Maths building and a four storey Library building.

This project was the largest and most complex new build development undertaken by Queens University with an overall value of £50 million. The project is also one of the most advanced projects regarding its use of Eco friendly building services systems. Within the main library building there are various exhibition areas, meeting rooms, education rooms and highly secure display rooms for Northern Ireland's most valuable books. The main focal point in the building is a specially constructed tower containing a dedicated room which will display the works and history of the famous Belfast author CS Lewis.

The development took place over 3 phases. Phase 1 was a 4 storey maths building. Phase 2 involved the construction of plant room areas, administrator offices and site diversion. Phase 3 involved the construction of the 4 storey Library Building, the total floor area of this building is 20,000sq.meters.



#### Solution

The Library areas are unusual in that all the M&E services are concealed with the fabric of the building without using a suspended ceiling. The lighting in these areas were suspended from a white concrete slab and electrically supplied from the floor above.

One of the more complex areas of work within this project was the relocating of the University's site wide IT system from a nearby existing building into a new machine room within the new library. This involved the high voltage system, generator, gas suppression system and UPS systems to be operational and the allocated downtime for this changeover could be no longer than six hours in total. This relocation required extensive planning as it held all the computer information for both QUB and the University of Ulster.

Regular meetings were held and this provided an indication on timescales that were needed to co-ordinate and commission the electrical systems in conjunction with all other participants in the construction process. This information was then detailed on a commissioning plan along with all the conditions that would be required from a build perspective in order to commission and effectively deliver the project. In addition to this we then provided a Commissioning Manager who implemented the procedures in relation to programme.

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#### Result

The final completion date on this project could not be extended because the client had agreed to move out of the existing Library Building in May 2009.

As a result of monthly programme review meetings it became clear that with 8 months to completion that the overall works were 2 months behind due to unforeseen ground conditions and delays in the structure due to bad weather conditions. We took a proactive approach to this delay, and identified a number of areas such as IT hub rooms, service risers and floor service voids and advised the main contractor to complete these areas which were limiting the electrical progress on site. Once these areas were complete we were able to increase our site operatives from 30 to 60 men. These men were able to work efficiently and the work was completed in good time and the 8 week commissioning period was protected.

The procurement schedule was continually revised to take account of both design and programme changes. The contract was completed within the client's budget this was achieved by submitting monthly valuations based on the tender Bill of Quantities with a percentage complete against each bill page.

The clients QS prepared a BOQ for major design changes and Blackbourne Integrated M&E applied the tender rates were possible and requested specialist sub contractor quotations for works not covered by the BOQ. Minor variations were listed and priced by Blackbourne, all the approved variations were listed and included within the monthly valuation, giving an up to date contract value.

This resulted in the whole project being completed within budget.

#### Scope of Work

##### General Services

- HV Switchboard
- 11kV-400V transformer
- Main switch board
- Sub mains cabling
- Distribution boards
- Lighting
- Lighting controls
- General power
- Under floor busbars

##### Communication

- IT & data wiring
- Telephone wiring
- Deaf loop
- Disabled toilets
- Disable refuge call
- UPS for IT cabinets
- Battery clock system

##### Fire & Security

- Fire alarm
- Deaf alerter
- CCTV system
- Intruder system
- Door access system
- Door driver

##### External Services

- External lighting
- CCTV system
- Lightning protection



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