CASE STUDY

SATELLITE CONTROL ROOM & MEZZANINE FLOOR DESIGN

CLIENT: DRAGON LNG LTD

LOCATION: UK

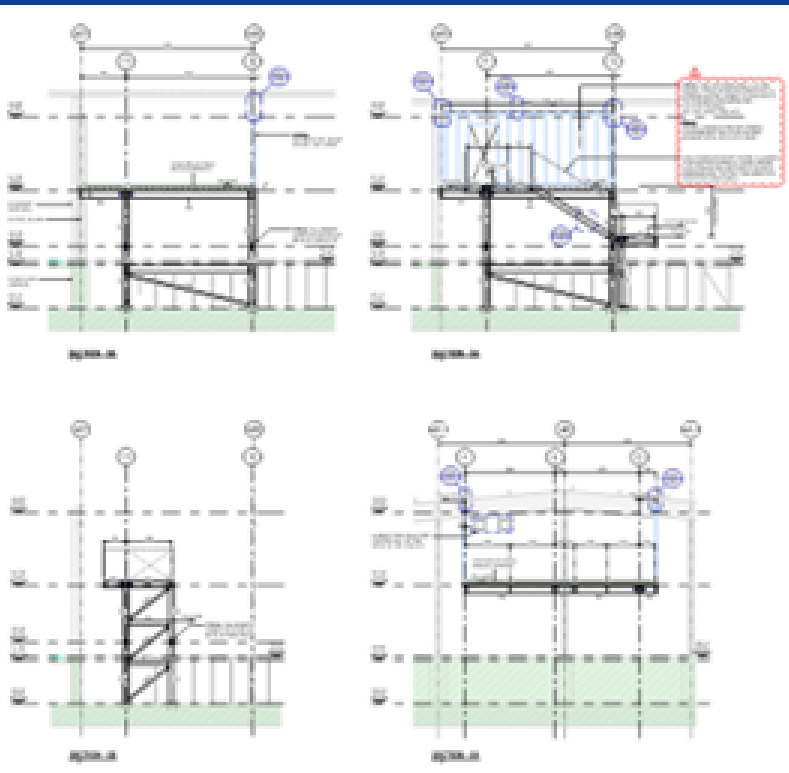
Highlights:

- **Multi-disciplinary**
- **Delivered in a live, high-risk operational environment**
- **Strong focus on buildability, safety, and risk mitigation**

PROJECT OVERVIEW

Arthian's Structural Engineering Team was appointed to deliver the design of a new Satellite Control Room (SCR) and UPS battery mezzanine within an existing blast resistant building located in a liquefied natural gas regasification facility.

The project required the creation of new operational space within a highly constrained environment—without interrupting critical infrastructure. Our role was to develop a safe, efficient, and fully buildable solution aligned with demanding programme and operational requirements.



info@arthian.com

www.arthian.com

+44 (0) 3301 200 151

Arthian

THE CHALLENGE

Delivering new structural interventions within a live, highly constrained operational environment introduced a number of critical risks:

- Continuous operation of safety-critical infrastructure had to be maintained at all times.
- Existing switchgear and cabling within a raised floor zone could not be disturbed
- Key structural elements, including adjacent blockwork wall which required retention
- Restricted access and limited working space impacted constructability and sequencing
- A tight design and construction programme increased the risk of delay or cost escalation
- Any late design changes posed a direct risk to programme certainty and operational continuity

The client required a design partner who could manage risk proactively, coordinate closely with other disciplines and deliver a solution that could be constructed right first time.

THE SOLUTION

We developed a bespoke lightweight steel structural solution, carefully tailored to the constraints of the existing building and its ongoing operation.

Satellite Control Room

- Design of a two-story lightweight steel frame structure constructed within the existing UPS battery room
- Primary structure formed from hot-rolled steel, with floors and walls using cold-formed steel framing systems (SFS) to minimise weight and maximise speed of construction
- Structure supported on the existing slab, avoiding intrusive foundation works
- Stability achieved through a combination of diaphragm action, trimming steels at roof level and SFS wall panels providing racking resistance.

THE SOLUTION, CONTINUED

UPS Battery Mezzanine

- Design of a high-level steel mezzanine within the LV Switch Room to accommodate relocated battery equipment
- Hot-rolled steel framing with a reinforced composite concrete deck and SFS wall construction
- Use of existing raft slab, avoiding intrusive foundation works
- Bracing integrated within the raised floor zone to maintain operational space.

Throughout the design, we worked closely with the wider project team to ensure:

- Early identification and mitigation of interface and buildability risks
- Clear, coordinated load paths to existing structures
- A solution that could be safely installed in a live environment with minimal disruption

RESULTS

- Client brief fully achieved, with approvals secured through RIBA Stages.
- A buildable, low-risk structural solution compatible with ongoing operation of critical assets
- Efficient use of existing structure avoided costly strengthening works and reduced programme risk
- Lightweight framing enabled faster installation and safer construction sequencing

The project demonstrates our ability to deliver complex structural engineering solutions within live, safety-critical environments, balancing technical excellence with commercial awareness and practical buildability.

info@arthian.com
www.arthian.com
+44 (0) 3301 200 151

Arthian