

## Safely removing a competent rock discovery within a site section intended for carriageway development to connect Caernarfon and Bontnewydd in North Wales.

**Project:** Caernarfon and Bontnewydd bypass

**Client:** Balfour Beatty / Jones Bros JV

**Location:** North Wales



To formulate the most effective plan prior to commencing the drilling and blasting campaign, EPC-UK Civils worked closely with our in-house engineering department and established suitable parameters to ensure the blasting works performed would meet compliance limits imposed by the local authorities. Presentations were delivered to the owners of the solar farm to demonstrate how the EPC-UK team would control blast vibration and manage the prediction and monitoring processes. The team worked closely with the owners of the farm throughout the project to provide consistent reassurance and ensure blasting operations did not affect its activity.

During blasting operations, a full traffic management process was put in place with the help of Traffic Wales, to enable the safe execution of the blasts, whilst minimising disturbance to road users.

By working closely with Traffic Wales and the owners of the solar farm from the very start of the project, EPC-UK was able to effectively engage with surrounding communities, reassuring them of the safety of the blasting process and mitigating any negative PR. This also helped ensure there were no lost time incidents on the projects.

### The project

With the aim of easing congestion on the A487, especially through the popular town of Caernarfon, this £135m project involved the construction of a 9.8km bypass connecting Caernarfon and Bontnewydd.

Following investigation works, competent rock was discovered within a section of the site from the Plas Menai roundabout heading south. The rock required removal by means of drilling and blasting to create a cut that would achieve the desired level and enable successful carriageway construction.

### Situational challenges

The area intended for drilling and blasting was located within close proximity to the existing road infrastructure, together with several residential properties. The area designated for blasting was also within the vicinity of an existing solar farm.

### Key Facts

#### Vibration objectives & constraints:

- PPV @ Occupied Structures: 95% of Blasts <6mm/s
- PPV@ Unoccupied Structures: 15 mm/s (BS7385 Part 2)

#### Blasting / environmental performance:

- 208,582m<sup>3</sup> of rock removed
- Time slot For Blasting: 20 minutes road closure
- 40 Blasts
- 39.1 tonnes packaged explosive
- 16,210m drilled
- 100% of blast <6mm/s (72% <3mm/s)

#### Technology:

- 80% of face surveys carried out by our blast engineers using the latest in drone/photogrammetry technology
- All blasts designed using Expertir, our in-house blast design software.

## Tailored blasting procedure

Working under the UK Quarry Regulations, our team has successfully applied full blast specifications to the project, including drilling plans, drilling logs, hole surveys, face surveys and photographs, hole loading diagrams, initiation and danger zone plans.

Also, early on in the project we were able to change the parameters of the blast due to changes in the geology. This in turn led to a cost saving which was passed directly on to our client.



## Values that define the way we work



Within all operations, EPC-UK performs using methods that support our company's established SPIRIT ethos, demonstrating **safety, passion, integrity, respect, innovation, and teamwork.**

The Caernarfon Bypass civils project highlights a key example of where EPC-UK's SPIRIT values truly came to the fore.

Throughout the programme of work, we performed with **integrity**, demonstrating our commitment to doing business the right way first time with an ethical approach to adhering to our own moral standards. Working with the public, our partners, businesses and authorities, we continually corroborated our principals through **teamwork** and operational transparencies, ensuring compliance and **safety** at every stage.



## Safety & social responsibility

Operations conducted within the final months of the project were carried out under Covid-19 restrictions, which led EPC-UK to work closely with the project management team and ensure the safety of all personnel associated with EPC-UK, Balfour Beatty and Jones Bros.

The nature of the geology also enabled us to mobilise our remote-control drilling rig, the Epiroc ROC D7, which helped to reduce operator risk.

Regular noise monitoring of drilling operations was carried out by EPC-UK to assess the impact on project personnel and local communities.

## Civils solutions

Leading our Civils Solutions team is EPC-UK Civils Manager Mark Jones. With 33 years of experience within the quarrying, offshore and civil engineering industry, Mark is well placed to drive our capable civils team, having managed numerous drilling and blasting and civil engineering projects within the UK, as well as several offshore developments across the globe.

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