BLASTING

Reference: CS-31

GWP has experienced geotechnical and blasting engineers with extensive expertise in the characterisation of rockmasses, blast design, vibration and air-overpressure monitoring, Environmental Impact Assessments and in drilling and blasting optimisation. Expertise in these specialist areas compliments other skill areas of quarry design and geotechnics.

Rockmass characterisation and diggibility studies to determine if blasting is required, the determination of the most suitable blasting technique(s) and preparation of blast designs. Also the assessment of natural block size distribution for armour stone production.

Fragmentation studies before blasting commences at a site to determine the likely rockpile grading, and studies to improve actual blast fragmentation by determining the likely effect on fragmentation of changes to blast design parameters.

Face profiling using the 3G blast metrix system to optimise face burdens and the preparation of **blast designs** for quarry production, buffer and pre-split blasts. Also, the design or audit of designs for specialist applications like underwater blasting.

Audit of drilling and blasting practices and available blasting data to determine aspects of the site practices that if modified may deliver improved productivity and/or safer working methods. Blasting reviews include an assessment of the geotechnical situation and state of the quarry development to ensure that faces are not at risk of geotechnical failure and that access to blasting areas is always possible.

Blast and vibration Environmental Impact Assessments (EIA) for submission as part of an Environmental Statement. Assessments account for the local geological and site setting and any potential impacts of blasting and vibration on the surrounding area are considered. Existing blast and vibration data or new text blast data is used to predict vibration levels from the proposed site at locations, identified in the assessment as being sensitive. Mitigation measures as required are then recommended.

GWP has an associated company Blast Log Limited, formed in 2007 by GWP and the University of Leeds. Blast Log specialises in the monitoring, analysis, prediction and reduction of vibration and air-overpressure levels generated by quarry blasts, through techniques such as timing optimisation of electronic detonators. The company also offers many other related services including the build and installation of bespoke monitoring equipment and noise monitoring. Visit the Blast Log website for more information on www.blastlog.co.uk.

Selective experience

Blast design and rockmass assessment

GWP designed and monitored four trial blasts (pre-split, armourstone and bulk blasts) to assess the fragmentation grading (and potential for armourstone production) and to analyse vibration characteristics of the rockmass at a dormant quarry in Cornwall identified as a re-development site.

Drilling and blasting audits and optimisation

GWP has audited drill and blast operations at 25 quarries in the UK, Spain, Belgium, Norway and Sweden, with the task of improving productivity, reducing costs where possible but without compromising quality and safety and encouraging the transfer of best practice techniques between countries. Blasting operations varied between sedimentary deposits to igneous bodies at various production scales with improved productivity being achieved through changes to explosive loading, drill hole diameters, blast design parameters such as the burden and spacing ratio, stemming depth and in changes to the blast face orientation.

Expert support on a blasting damage claim

Expert support relating to a Northern Irish home owners claim that cracking at his home was caused by bulk blasting at a local quarry. Inputs included a site visit, analysis of the local geological site setting and deep mining history and a detailed review of blast design and vibration results from the site in question.

Blasting and vibration Environmental Impact Assessments

GWP has carried out multiple blasting and vibration impact assessments for prospective coal and hard rock sites in the UK. Vibration monitoring results and predictions are used to assess any potential impact on surrounding areas and the site setting including the influence of old mine workings are considered. Where impacts are identified mitigating measures are recommended and are often related to blast design or drill and blast practices.

Underwater blast design

Detailed blast design and specification of explosives and loading techniques for a project to deepen a sea channel to enable access for tankers to a Liquified Natural Gas Terminal, in Mexico.

Vibration and airoverpressure monitoring

GWP is very experienced in the monitoring of ground vibration and air overpressure at quarries and opencast coal sites and for explosive and long term mechanical demolition projects.

Key contacts

For details and to discuss your requirements, please contact one of the following:

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