

Jonathan Lewis  
Crush Limited  
Heolgerrig  
Merthyr Tydfil  
CF48 1RN

21/01/10

### Geological Survey Of Bryn Quarry

Dear Jonathan

I am writing to inform you of my findings regarding the general geology and nature of the stone at Bryn Quarry South Wales. As you will be aware, I first surveyed Bryn Quarry in 1994 as a consultant geologist and explosives engineer in order to pioneer the primary cut and carry out blasting operations that ensued. Having considered my research of the time and in consultation with recent investigative data, I find the following:

#### Location of Bryn Quarry

Bryn Quarry is located between the villages of Nelson and Gelligaer within the boundaries of Gelliargwellt Farm, and is approximately 13 miles north of junction 32 of the M4 motorway and 2 miles north east of the village of Nelson. The actual quarry borders a recycling centre operated by Bryn Quarry Ltd. and is operated separately under license by Crush Ltd.

The strata being worked are from the Pennant Measures of Upper Carboniferous age. The rocks vary from being massive to flaggy or cross bedded and commonly exhibit pebble beds containing iron-stone clasts, mudstones and coarse carbonized plant remains. Individual sandstone units of up to 60m are common, but locally exhibit thin impersistent partings and thin beds of clay siltstone associated with coal seams.

#### Bryn Geology

The material being quarried is from the Grovesend Beds of the upper Pennant measures of the upper carboniferous age which in this locality are sub horizontal forming part of a broader scale synclinal feature.

The material quarried is a very consistent sequence of massive, ill sorted, medium grained sandstones with only brown weathering discolouration along the numerous joint planes.

Bedding and joint pattern means that the rock tends to be slabby in nature, with blocks of 0.3m x 2.0 m x 2.0 being common during extraction. The sandstones are remarkably consistent, except for pockets of discoloured mudstone of up to 0.3 meters thick approximately 8.0 meters below surface level but is easily identified.

There is a bed of fireclay at about 14.0 meters ,approximately 2.0 in thickness below the main sandstone bed. There are small elements of ironstone encountered in the shape of round boulders, i.e. ball of mine.

The superfcials are thin, approximately 0.5 meters thick and is considered to be topsoil. Ground water tends to be contained within the fireclay bed.

### Quality of rock

The sandstone is classified as a high specification aggregate (HSA) due to the fact that it has a high resistance to polishing (polished stone value) and achieves consistently between 68 and 72 PSV during frequent sampling.

The deposit at Bryn is of a high grade and I believe merits the classification of a High Specification Aggregate source.

Crush ltd. have been given BSI certificate of registration ISO 9001 : 2008 for the quality of the product and management of the quarry.

A walk over survey indicated that there is no evidence of instability within the working quarry face.

### Conclusion

Due to the quality of the rock and the strategic location of the quarry operation, I believe that Bryn Quarry is an optimum site of operation for rock extraction in South East Wales.

Yours Sincerely

Edward Rees

Independent Geological Consultant BSc (Hons).