



ALBION STONE

portland stone - naturally

GROVE WHITBED

Petrography

Macro Examination: This appeared to be a fine-grained sedimentary limestone. Light creamy-white coloured matrix containing an abundance (>10%) of highly elongate light-grey (brownish-grey when weathered) coloured fossiliferous material. This material was orientated primarily in one direction which probably represented bedding. These fossiliferous clasts were observed up to 3mm in length. Voidage appeared modest and the fluorescent resin take up appeared high. This sample appeared to be a fairly uniform fine-grained material in which no bedding or linear features other than the fossiliferous material was apparent.

Microscopical Examination: This limestone exhibited a moderately well compacted structure, which had moderate to poorly sorted appearance. No microcracking, linear or bedding related features other than the preferential orientation of the fossiliferous clastic material were observed. The clast to matrix ratio was approximately 90:10. Clast to matrix bond appeared good, with no separation cracks detected.

Clasts: These consisted of materials having a great range of sizes (3000µms down to <10µms). The larger fossiliferous material (>1mm) was elongate and was comprised primarily of Brachiopoda and Mollusc valves. Internally some of these clasts had open porosity now partially filled with secondary sparitic calcite. There was also evidence of conversion or replacement of the internal areas of some shells by large quartz crystals.

The finer (>1mm) material was also composed largely of fossiliferous materials including Brachiopoda and mollusc valves, along with bryozoa stems, algal material and colonial corals. However, the majority of this finer material was composed of micritised Ooliths, some of which were seeded with quartz sand grains and fossil debris. Other less abundant clastic constituents included lithoclasts (Oosparite/Oomicrite). The edges of the larger clasts and all of the finer material were composed of micrite size carbonate material. Worm action was observed on a pre-existing fossil shell fragment.

The clastic material was dominated by fossiliferous material with an almost equal amount of oolitic material also present. The fossiliferous clasts were more prominent in the coarse sized material.

Matrix: Though relatively rare, the matrix appeared to consist primarily of micrite-sized material. Some secondary sparite crystallisation had developed in some of the voidage and this partially filled inter and intra-clastic voidage. Matrix material was felt to represent only a small component of the rock.

Voidage: This was felt to be in the range medium to high and was present largely at the finer <200µms size within individual voids. Occasional larger voids up to 4mm in length were found associated with a localised abundance of larger fossiliferous clasts and a lack of matrix material. The voidage was mainly inter-particle, but some partially filled intra-particle voidage and shelter voidage was detected. A visual estimation of the voidage, which was slightly patchy in appearance, ranged from 15 to 25%.

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