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Southwick Priory: Mortar Analysis

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Introduction;

Analysis of mortars, concretes and plasters does not give absolute dating evidence. No period, apart possibly from the Roman military material, used a characteristic recipe. The aggregate/lime ratios employed for various building tasks in the past were much the same as those used today. At best analysis can only give relative dating evidence, ie which walls were likely to be contemporary. Even here interpretation usually depends on the use of sand, gravels, etc having quite distinct characteristics.

Analysis:

10 samples (AM 841190-9) were analysed. All were in good condition showing little or no sign of leaching. None appeared to contain any unusual aggregate, it being made up mainly of gravel and sand. Most samples contained small flecks (less than 2mm) of carbonated lime / limestone but in no case did this exceed 5% of the observable aggregate. Odd fragments of charcoal and brick were noted. However, sample SP5 contained a large quantity of black material made up of approximately equal sized fragments (ca 2 x 1 mm) which looked like charcoal. Such a consistent size pattern suggests a deliberate addition, as opposed to an accidental inclusion, possibly for decorative purposes.

Approximately, 100g samples of dried material were acurately weighed out and treated with dilute hydrochloric acid to remove the acid soluble material, mainly calcuim carbonate. The residue was filtered off, thoroughly washed and dried. The aggregate was then subjected to mechanical sieving to obtain the particle size distribution. The weight data were converted into a percentage system for ease of inter-sample comparison. Wherever possible analysis were carried out in duplicate and the mean used for camparison. After separation the nature of the aggregate was investigated.

Results:

The aggregate distribution curves suggested the following groups:-

GROUP I	1,8.	Agg. Iron stained flint, sand.
II	2,7,9.	Agg. Iron stained sub-angular flint mainly and sand.
III	3,4,10.	Agg. Sand conglomerates, some iron stone, sand.
IV	5.	Agg. Mainly charcoal some coal? sand.
V	6.	Agg. Sand and large fragment of brick probably accidental.

The aggregate used in samples of Groups I and II were very similar in geological nature.Both showed severe iron staining and were probably from closely allied outcrops. However the size distribution of the two Groups is quite distinct.
Groups III showed mainly sand aggregate - the coarser sieves containing conglomerates of sand and occassionally clay and few brick / burnt clay fragments. The former suggests poor aggregate preparation - possibly the sand was used unsieved. The burnt clay was probably kiln lining from the lime kiln and thus an accidental inclusion.
The high concentration of charcoal in Group IV would at first seem to suggest the use of a running kiln for lime preparation, however its consistent size could indicate delibrate addition for decorative purposes. Does the archaeology support this idea?
The brick fragments in Group VI were probably accidential as all were 'surface fragments' ie they were not strictly a component of the mixture. Their general angular, irregular size argues against a decorative nature (Cf Group IV)