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Building/Bedding with Natural Hydraulic Lime

Very high strength is not normally required of building mortars. An unnecessarily strong mortar will concentrate the effects of any differential movement between the mortar and the masonry. Cracks may appear which could reduce the durability of the overall wall structure and increase the risk of penetration by rain.

A weaker mortar will accommodate some differential movement between the mortar and the brickwork and if cracking does appear, it will generally be distributed as hairline cracks in joints, thus preserving the integrity of the stone, bricks or blocks themselves.

In general, the mortar should be weaker than the masonry units. The use of Natural Hydraulic Lime mortar imparts the special properties of low shrinkage combined with elasticity and allows cracks to heal autogenously by continuing carbonation.

It should be possible to build at approximately the same rate as normally expected for two storey buildings with Portland Cement mortars, but bear in mind the initial set is relatively slow and the mortar will continue to gain strength for many weeks. Good quality masonry workmanship should allow lifts of 8-10 courses of rubble stone masonry per day. Aspect, weather conditions, protection and other factors will influence the speed of set. Sufficient time (24hrs – 4 days) should be allowed between lifts.

In building with Natural Hydraulic Lime and Masonry units (block, brick or stone) following points need highlighting:

- The mortar should be well mixed (see 'Sand Selection and Mortar Mixing' method statement).

- Mortar must not be allowed to dry out too quickly. This is especially important with porous masonry, which will require wetting before construction.

- Mortar should be used within two hours and left to set. It may be advantageous to brush the surface (where visible) to expose the grit.

- Do not use if temperature is too low. i.e. 5^{o}C or below.

- Be prepared to protect from frost, excessive sunlight and drying winds.

- With regards Frost protection, driving rain poses less of a risk than rain entering from the top of the wall. The worst combination of ambient conditions for frost attack is heavy rain directly hitting an un–protected wall followed by clear skies and frost. Saturated walls with just partially hardened Natural Hydraulic Lime will suffer frost damage much more easily than walls protected from the rain. Hessian and plastic sheeting, overlapping on the top c.300mm, will reduce the risk of damage. (See 'Aftercare of Hydraulic Lime mortars').

- Lime mortars are designed to aid evaporation. A great deal of the moisture within the masonry units will evaporate out through the masonry joints. This evaporation process causes a drop in the temperature of the wall while drying out. Again, protection is imperative.

- Aggregate mixed with the lime should be clean and free from silt and clay which will increase the water demand of the mortar, reduce strength, both compressive and flexural, reduce permeability and increase the risk of cracking in the hardened mortar. (Please refer to 'Sand Selection and Mortar Mixing' method statement).

- Generally, all Natural Hydraulic Limes NHL2, NHL3.5 (and NHL5 in circumstances where the masonry will be exposed to extreme climatic conditions, with hard (eg. Granite) masonry units) can be used. For random rubble stone wall construction, Roundtower Natural Hydraulic Limes are mixed at 2.5 or 2 parts selected aggregate to 1 part lime. Analysis of existing mortars is important prior to deciding on lime selection where conservation of existing materials is preferred.