

### Products

- Roundtower Hydraulic Lime
- Launch of new NBT Systems

### Features

- Lazur Finish Silicate Masonry Paint
- Scagliola – A Marble Revival

### Your Letters

- Rendering with Lime

### Training

- Recently held courses
- Future training dates

## ROUNDTOWER – A CASE FOR NATURAL HYDRAULIC LIME

Natural Hydraulic Lime (NHL) is a highly versatile building material. It can be used in an abundance of applications, from rendering offshore Lighthouses through to fine smooth internal finishes

At present there are three classifications, **NHL2, NHL3.5 and NHL5**. This grading signifies the compressive strength (Mpa) of the lime at 28 days under controlled conditions. There is a Natural Hydraulic Lime available for almost every application within new and old structures.

In Ireland, Lime has been the primary binder in most mortars from the early roundtower constructions of the 1000's through to the late 1800's. We truly have a rich history of lime use. The recent revival of Lime (the 'Lime Renaissance') is testament to the versatility of this most sympathetic of building materials.

Lochplace Building Conservation conducts hundreds of **Mortar Analyses** every year. We do not take lightly the responsibility of interpreting Ireland's historic mortars and offering practical solutions for the repair and upkeep of our built heritage.

Our investigations often unveil weird and wonderful inclusions in Irish mortars. Furthermore, understanding the production methodology of lime mortar is a minefield of variables, probabilities and assertions. We often have to ask what type of limestone was used to make the lime? What about burning temperatures, kiln types, fuel types, pozzolanic additions? We even have to ask ourselves, how did lime technology develop over the ages? What was passed on from by word of mouth generation to generation?

However, there are some things we can be absolutely certain of:

- Innovation with Lime technology is not exclusive to the 20<sup>th</sup> and 21<sup>st</sup> centuries. Skills and methods were passed from Craftsman to apprentice, skills were lost and new ones found.
- No single type of lime was used universally in Ireland. Varying degrees of hydraulicity can be found in our vast assortment of historic mortars.



- Performance of historic mortars is as complex as it is in geographic areas where hydraulic and non-hydraulic (fat lime) mortars were both historically available.

The debate continues! We would be delighted to exchange ideas, thoughts and research with any of our friends and customers who use lime and feel, as we do, the responsibility of conserving our built heritage in the most appropriate way possible.

Lochplace supply all types of lime including Lime Putty and Roundtower Natural Hydraulic Limes. For further information on these or any of our traditional building materials please call or visit our website: **00353 (0)21 477 6677 or www.lochplace.com**

## So what are some of the advantages of using hydraulic lime in historic buildings or new construction?

**Movement** - All historic buildings and new constructions move. Hydraulic lime mortars and renders gain initial strength quickly but then set gradually allowing for a speedy construction which has great flexural capabilities to allow for any settlement.

**Breathability** - All historic buildings need to breathe. Moisture will always take the path of least resistance through a wall. The porous nature of lime allows moisture to travel through the wall and evaporate from the face of the pointing mortar. Cement is very dense and can cause moisture to be retained within the substrate, which often damages the brick and stone facing.

**Protection** - Lime renders and plasters offer excellent protection internally and externally without compromising the breathability of the wall. Smooth topcoats can be easily achieved and finished

with a range of natural, porous paints which offer a healthy environment and harmonious aesthetic.

**No blending** - No need for pozzolans, cement, plasticizers, water retainers, waterproofers etc.

**Good workability** - Free-lime content gives excellent workability

**Self-healing properties** - Free-lime content also gives the mortar self-healing properties.

**Reworking** - Our hydraulic limes can be re-worked within 24 hours.

**Economy** - Low bulk density means good economy as sold by weight but used by volume.

**Elasticity** - No expansion joints, minimal shrinkage and cracking.

**Permeability** - Condensation dispersion, reduces rot and promotes a healthy home.

**A better environment** - The life cycle of lime shows that it is a lower impact material than cement.

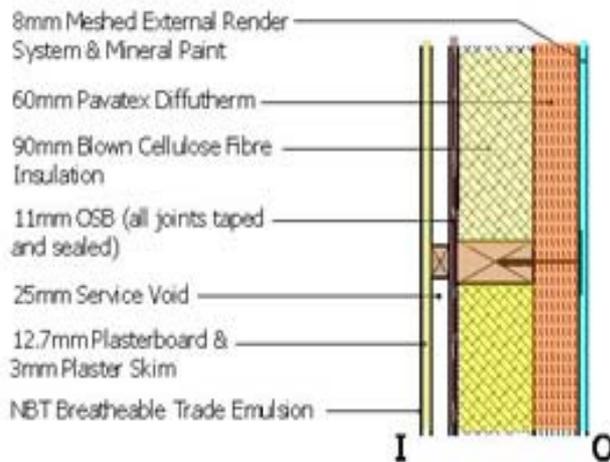
# YOU CAN'T BEAT THE SYSTEM!

## NBT launches seven ways to revolutionise building

Natural Building Technologies, which specialise in ecologically sound building products, have just launched seven building systems for both new build and renovations, which not only reduce substantially building costs but also improve the building's "health", improve the internal atmosphere and air-quality and are environmentally green.

The systems are fully costed and include complete structural, thermal and acoustic calculations, plus detailed architectural drawings and specifications together with comprehensive variation details. They also incorporate site conditions and speed of build.

The systems cover most of the main areas of building construction - from internal and external walls, through to roofs, floors and ceilings. They embrace everything from the basic structure through to the final rendering - so all that is left to do is to choose the colour and style for the decorations.



As an example NBT system 1, (illustrated left), is an externally rendered timber frame wall. It gives a finished U value of 0.35 and, at £85 per square metre. This gives a cost saving of around £10 per square metre over conventional systems. In addition, it is more robust, does not need to rely on membranes for moisture control. Although it is a simple lightweight structure it has the thermal and acoustic performance of a rendered and heavy masonry wall!

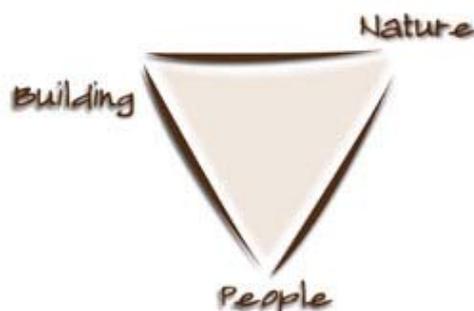
Added to that, it has very low embodied energy, is non-toxic, non-irritant, zero emission and is approved to the Building Regulations, Din 43022, BR da3 and endorsed by Birmingham City Council Planning and Building Control. It is supported by the Carbon Trust.

The high performances of the systems have been achieved by combining scientific architectural design practices with high-performance materials. Much of the construction process can rely on relatively un-skilled labour.

All of the new systems are based on proven building systems and techniques. They are robust, easy to construct and are available today. They give real and measurable cost benefits and their performance helps to enhance the health of people, buildings and the natural environment.

<b>Budget Cost</b>	<b>£ 90 /m2</b>
<b>Cost Saving *</b>	<b>£ 20 /m2</b>
<b>U-value</b>	<b>0.26 W/m2K</b>
<b>Admittance</b>	<b>1.55 W/m2K</b>
<b>Floor Area Gain</b>	<b>2 - 4 m2</b>
<b>Decrement Delay</b>	<b>8.4 Hours</b>
<b>Improvement*</b>	<b>5 Hours</b>
<b>Sound Absorption</b>	<b>&gt; 52dB</b>
<b>Approvals</b>	<b>GIBT Z-33.43- 204</b>

\* Conventional timber frame with render finish & equivalent U-value costs £110/m2 with 3 hours decrement delay.



### ***In summary NBT Systems are:***

- Highly cost effective and independently tested
- High performance with added value
- Designed with robust detailing
- A one stop shop - all main components from one supplier
- Designed for today's site conditions and skills
- Quick and easy to build
- Backed by technical, design and site support where necessary
- Proven to deliver substantial comfort and health benefits
- Good for the natural environment

## Your Letters

*In future editions of this newsletter we would like to offer our readers the opportunity to ask questions, make points and share experiences.*

*These could be philosophical or practical. We are very interested to hear your thoughts.*

Write to: The Newsletter, Lochplace Building Conservation, The Forge, Innishannon.

Email to: [mail@lochplace.com](mailto:mail@lochplace.com)

*Thanks to JT from Co. Wicklow for this interesting email...*

Having just read your Newsletter (Spring 2003), a question sprang to mind regarding lime. Clearly this building material has many benefits over Ordinary Portland Cement as a render to historic structures or new build. However, what potential problems should I look out for to ensure success?

Generally, most defects in new render are caused by one of the following: unstable background, poor selection of materials, poor preparation of materials, incorrect application techniques or lack of aftercare.

To ensure a strong bond the background must be clean, firm and provide a good mechanical key for the render. Take time to lightly dampen down the background just before application. This will help to control the level of suction and prevent loss of moisture from the render. The control of moisture is crucial to avoid shrinkage in the render. An addition of horsehair to the mixture may give further resistance.

It is also important to select the correct materials. A well graded washed sharp sand will provide the most durable finish, where as mono-granular or unwashed sands will result in poor structural strength or the introduction of damaging contaminants.

When choosing lime putty it should not be too wet as this will introduce more water than is required to the mix and may result in shrinkage cracks. Neither should the putty be 'immature'. Ensure that the putty has slaked for 3 months or more to avoid this problem. Regardless of what type of lime is being used, establish that it has been stored appropriately before use. Lime putty will remain in good condition in an airtight environment covered by a layer of water and safe from damaging frost penetration. Hydraulic lime should also be protected from the weather, particularly dampness, as this will provide enough moisture to start the hydraulic set. Carefully check for holes or tears in the protective bag which might allow for the absorption of moisture from the air.

Careful mixing will further reduce the potential for failures in a lime render. Be sure to measure materials by volume and keep stringently to the correct ratio of lime to sand. When mixing a lime putty render be sure to thoroughly coat the sand particles with lime binder. This is best achieved by forcing the two materials together. A roller pan mixer is ideal. Hydraulic lime may be better suited for a normal cement mixer.

Regardless of which type of lime is used, the addition of water should be slowly and carefully made. A good mix will require just enough water to bind the sand and lime together and will stick to the trowel. Too much water and the mix becomes sloppy. When drying shrinkage may occur.

Ideally a lime render should be applied in 3 coats. The first two no more than 10mm in thickness whilst the finishing coat 5mm. Before applying a new coat dampen down the previous coat to control suction and counter any shrinkage. Compacting and compression are important when floating the second and finishing coats in order to achieve a strength and durability. A very light application may result in a friable surface which is liable to craze easily or crumble with little resistance to abrasion.

It is also important that any new lime work should be shaded from direct sun and sheltered from continuous rain and wind. These conditions will not allow the render to dry adequately and may cause damage. Optimum drying occurs in climates that are warm and moist, and where carbonation takes place slowly. Mixes which have not gained strength through curing are also at risk from frost damage. Ideally lime work should take place in temperatures above 5 degrees centigrade. Again all precautions should be taken to guard against severe weather conditions.

***(These very brief notes are intended as a helpful reminder to good working practice. For more comprehensive information please contact Lochplace).***

## Training

**Recently held courses** – On the 9<sup>th</sup> of May Lochplace held its second Lime Day of 2003. This event was enthusiastically attended by professionals from many areas of the industry: architects, surveyors, building contractors and conservationists.

A change from previous formats, this Lime Day was held at our newly built office, warehouse and training facility in Innishannon, Co. Cork. 'The Forge' provides a perfect working and learning environment which is safe, weatherproof and easily accessible.

**Future training dates** – The next Lochplace Lime Day will be held on **11<sup>th</sup> July** in Innishannon. This is an excellent training opportunity for professionals already involved with lime works, or those wishing to find out more about lime, to gain practical experience from one of Ireland's most respected conservation companies.

We still have a few places left so if you wish to attend please call as soon as possible.

We particularly recommend this course for anybody involved with historic buildings.

The cost for the whole day is **150 Euro**. This includes all equipment, materials, lunch and refreshments. **There is no VAT to pay!**

***Lochplace can offer bespoke training events, from small group practical sessions to large corporate programmes. Please contact us for further details.***

Our website has lots more  
useful information:

**[www.lochplace.com](http://www.lochplace.com)**

**LOCHPLACE**  
BUILDING CONSERVATION

The Forge, Innishannon, Co. Cork, Ireland  
Tel: 021 477 6677 Fax: 021 477 6063  
email: [mail@lochplace.com](mailto:mail@lochplace.com)

The photograph on the right was taken a short time ago after completion of this new hotel complex in Ballincolig, Co. Cork. The beautiful soft painted finish that compliments the stone and glass was achieved using a Lazur Finish Silicate Masonry Paint.

Silicate Masonry Paint was chosen in this instance for many reasons. It has excellent covering properties and is virtually non-drip. It is breathable and can assist in the regulating the humidity of the internal environment and also in the drying of external walls. It is weather resistant and washable and dries to form a soft matt finish, comparable to lime wash, but will not dust or yellow with time.

This paint is almost unique in that it can be used on all mineral based surfaces, e.g. stone, masonry, cement, pebble dash and plaster. It is durable enough to be used both internally and externally and is especially suitable for renovation work to historic buildings and for covering old, sound silicate-based paints.

## Scagliola – A Marble Revival



The word "Scagliola" derives from the Italian scaglia, which means "scales or chips of marble." This is however, a little misleading for scagliola is not a genuine marble at all. It is, in fact, a special plaster, which, when coloured and polished, is indistinguishable from the original.

Like real marble, Scagliola's complex twists and veins go deep into the stone. Scagliola, therefore, provides a durable surface which is far more permanent and realistic in appearance than other faux surfaces, such as painted wood. However, Scagliola is by no means a modern technique for the ancient Egyptians, Greeks and Romans all experimented with its application. Italian monks greatly developed scagliola techniques in the 17th century. Consequently, in the following two centuries, craftsmen

The chemical process, which allows this paint to bind so well with a mineral surface, is known as Petrification. Here, the Silicate Masonry Paint actually fuses with the mineral surface. In this way, moisture cannot penetrate between the two surfaces causing the paint to bubble and delaminate, a common problem.

To achieve the finish illustrated in the photograph, the rendered walls were first painted with an application of colourless Silicate Primer. Then, always maintaining a wet working edge, two coats of Yellow Ochre Silicate Masonry Paint were applied with a brush although a roller or spray gun may also be used. Finally, a thin Lazur colour-wash was applied by mixing together Silicate Primer and Yellow Ochre pigment. In this way a deep, vibrant colour was achieved. However, this process can be varied to give a range of interesting shades and tones

Silicate Primer is currently available in 5 and 10 litre tubs, whilst the Silicate Paint is available in 10 litre quantities.

poured from Italy to England and Ireland to create Scagliola finishes in many fine architectural contexts.

Today, the use of artificial marble has been revived. This new interest is the result of four factors: a new appreciation of marble-like finishes, a dissatisfaction with the limitations that real marble places on design, the unavailability of traditional colours and types of marble, and the rising costs of quarrying.

Scagliola is inherently beautiful and can duplicate the appearance of any marble. It can also be moulded into any shape or form. For example, decorative three-dimensional motifs, which are impossible to produce in marble, can be easily fabricated. Scagliola is also far less expensive than its marble original, a particularly attractive option for interior design and decoration.



## Lazur Finish Silicate Masonry Paint



For prices and information on the extensive variety of alternative colours that may be achieved by using natural powder pigments, contact Lochplace.

In recent conservation and restoration work at St. Finbar's Cathedral in Cork city, Lochplace demonstrated how Scagliola may be effectively employed. Following careful investigation and analysis, it soon became apparent that small areas of the damaged Cathedral marble would need to be replaced. Here, Scagliola was used to reinstate the missing sections from records which were held in the Cathedral archive. Today the repairs are indistinguishable from the original Victorian marble panels

The recipe used to create this unique material is based on Plaster of Paris with animal glue added to retard the set. This produces a thick paste which is then coloured with dry pigments. Layers of different coloured plaster can then be pressed and rolled to create the 'veins of the marble'. Once the plaster is set, the long process of polishing the surface with pumice stones and filling any voids with plaster slurry is carried out. Finally the surface is rubbed with oil to produce a high sheen.

More recently, Scagliola has been used to provide a unique finish to a new, modern interior. Here the ancient technique has been employed to provide a colourful and durable desk surface in the reception area of new offices in Innishannon, Co. Cork. The multitude of red veins are reminiscent of the original Cork Marble which was fashionable over one hundred and fifty years ago in Cork city.