

Slide one

My name is Chris Southgate and I'm sorry not to be here today, as a result of the Coronavirus. I am vulnerable being diabetic so I'm hoping that you will gain benefit of my short talk through these written notes for every **slide**.

I commenced a conservation engineering practice in February 1990 and we have just celebrated 30 years in business. I have a small staff combining archaeology and engineering and was influenced to commence business in 1990 by merging engineering skills with my passion for old objects.

On leaving Cambridge I applied for one engineering job and one job in the antiques business. There was one applicant for the engineering post and 250 for the job in the antiques business – a furniture buyer for Mallets in Bond Street! The antiques job went to the son of the director of Sotheby's and I ended up (happily) in engineering.

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This slide shows Dunboy Castle, one of the largest jobs I've taken on board. This contrasts with the examples I am showing you today which are all small farm buildings but equally interesting projects.

I acknowledge Anna Meenan in her administration of the Glas scheme. The attention to conservation principles results in some of the best conservation projects that we have carried out.

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This shows the causes of deterioration buildings and in the background is a photograph of Dunboy Castle with a large Scots pine tree growing out of the stonework. As an engineer specialising in conservation I've chosen projects which show extreme examples of conservation and repair of buildings.

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The great Hall prior to restoration.

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The great Hall after restoration.

Slide six – Marybrook house, Kanturk Co Cork

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This is a small domain in north Cork dating from 16th century. The main house contains a tower house converted into a Georgian mansion circa 1730.

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Slide nine,

I've chosen this example since it is unusually early, dating from the 17th century and is constructed in an unusual clay lime hybrid mortar which survived remarkably well.

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Showing the cracking in the stonework

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Cracks have to be deep pointed in lime mortar by pushing lime as far as possible into the masonry after which holes are drilled and liquid lime grout (such as Coulinex) is pumped into the void behind. The purpose of grouting is to fill voids in the masonry which in this case are significant since there has been deterioration to the lime/mud bedding mortars. The process involved pumping the grout with a small bilge pump obtained from a local marine supplier. This was connected to a garden hose with a small length of copper pipe at the end, which fitted accurately into holes drilled in the masonry. Grout was observed travelling from one hole to the next.

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The next operation was to carry out the jacking of the walls and this was done using timber props at an angle of 35° or less. Small holes were dug in the ground and the prop placed from ground level to a wedge which was driven by a sledgehammer against the Scaffolding plank as shown in the photograph.

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This shows the arrangement of the propping.

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The idea to jack the walls back into position came from Edward Byrne of the Traditional Lime Company. Edward was a marine engineer and he mentioned to me that this was no different from the way a boat was propped in drydock!

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This is a further view of the jacking procedure. This is essentially reversing the damage carried out by roof rafters lacking a tie. The timber jacking positions are spaced in a similar manner to the trusses of a roof.

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Another view of the jacking procedure which is achieved by knocking the hardwood wedges with a sledgehammer at each propping position in consecutive order.

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Once the wall is found to be vertical, any cracks that develop are pointed with lime mortar and wall is grouted. After a few days during which lime mortars carbonate and set, the roof structure and wall plate is fixed to the top of the wall, but before this happens the props are removed to ensure the wall is now standing plumb without any help from the roof.

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The grouting procedure

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In this case roof structure was partly replaced on a like-for-like basis using approximately 30% original material

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Ditto

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View of the new roof which is stained to match existing timbers and the natural slated roof was provided with lime torching under the slates.

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This room was lime washed with a clay lime/hybrid lime wash.

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The completed building retained about 80% of the original clay lime hybrid pointing. The walls were entirely plumb and the building survives as a remarkable example of a 17th-century farm building.

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This photograph shows also a 19th-century farm building to the right which is in good condition. Joinery was repaired and painted in a traditional iron oxide oil-based paint.

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Simple example of a farm building with poor corrugated iron roof prior to conservation

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Conservation involve the replacement of the corrugated iron roof sheeting repair of the roof structure particularly where purlins had rotted at the Gables due to penetration through the original cement coping.

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New collar ties were re-nailed and in the distance this photograph shows one collar tie which has been replaced. This fault often results in major damage to masonry but in this case the masonry walls were robust enough to withstand pressure from the roof.

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A similar jacking procedure to that used in Marybrook was used on this building which was a 19th-century farm building constructed in random rubble with lime pointing.

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Masonry was chased to provide a weak point so that the wall would rotate at the base.

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Horizontal and vertical members attach the wall prior to installing raking props

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The slide shows raking timber strut which was used to check the truss into its original position. Photograph is taken after the walls been jacked the position and the trusses now sitting on the wall.

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Completed roof structure showing repaired truss and the new truss which was missing and was reinstated on a like-for-like basis.

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This photo shows the completed project which was considered highly satisfactory by the Heritage Council. The client was unsure that the proposals were feasible and was absolutely delighted with the end result. The building contractor had been involved in the Marybrook project and was reasonably confident, but some of the operatives were doubtful.

This is the end of my talk I'm sorry not to be here, but I hope I've demonstrated that repair rather than replacement of these traditional farm buildings is not only economic but also preserves the character of the buildings for future generations to enjoy.

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The end