Save Our Special Ceiling Project

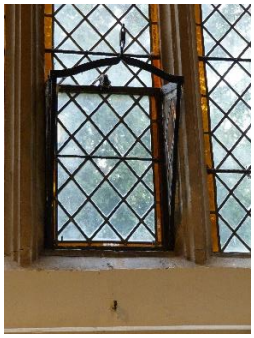
at St Michael's Church, Brent Knoll

Some illustrations of our project from July 2019 to Sept 2020

During early 2019 we worked with our architect to develop a Schedule of Work built around the needs of our Quinquennial Report of 2015. The main work was to re-lead the N aisle roof which was leaking. The Schedule included subsidiary work on repointing and conserving masonry and repair of iron work on our windows:

N aisle roof

Masonry problems



Window iron work

In the early summer we went through the process of tendering and an initial grant application to Viridor Credits. We accepted the tender from West Country Tiling Co (WCT) of Frome, Somerset. An Appeal was launched to Save Our Special Ceiling. This is a carved wooden ceiling dating from the late 15th C, which has 96 different panels, 24 angels and 6 magnificent roof bosses. The Appeal was built around sponsoring the parts of the ceiling and a series of fundraising events.

Panels of the ceiling

A ceiling boss

A carved angel

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Events on August 5th 2019

At midday one of our churchwardens reported a flood that was due to a massive leak. The lead on the N aisle roof had been stolen the night before…!!


Pictures of roof after lead theft

Water damage to the church (stained wall)

Immediate action was taken to put an emergency cover over the bare roof and a mopping up operation began…and we contacted our insurers. The temporary roof held up well over the year before building work began in July 2020. It was possible to hold services and fundraising events during this period right up until the March Covid-19 lockdown.

Fitting a Roof Alarm

The next immediate step was to set up a roof alarm. We were in the early stages of planning the setup of a system when the theft took place. It was possible to install the system by Protec Ltd of Wells within a month. The main installation covers the north aisle and nave roofs but the south side of the church is also covered. The wiring for the south facing roofs is discreet and in keeping with the Grade 1 listed status of the church.

Review of grant applications

Following the lead theft we decided to change our approach to grant applications and apply for a National Lottery Heritage Fund grant, which involved enhancing community involvement aspects of our project. Our application was split into the building component (Save Our Special Ceiling) and community involvement (Promoting Education About Church Heritage – PEACH)

Our appeal and completing the funding framework – June 2019 to May 2020

During the latter part of 2019 our appeal was successfully completed (see separate report). Our application to NLHF was submitted in January and we received an acceptance in March. At that stage we had already received match funding from a local charity, the Nuttall Trust, and the Somerset Churches Trust. We then applied to Garfield Weston and Wolfson ChurchCare who both supported the project.

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Preparing for the roof work on June 29th 2020

Our architect had advised that a day should be set aside for WCT to do some exploratory work on the roof to establish the condition of the underlying timber work. Lifting roof boards at selected sites on the roof revealed the surprising finding that steel girders were present. Work had been done on the roof in 1978 and it was thought that the roof structure was strengthened then. The general conclusion was that the timber work was sound and that the work could progress without significant changes in plans. But it was noted that the lead guttering was resting on concrete…

Rolling back the covers for inspection

Lead gutter on a concrete base

Discovery of the steel girder

Putting up our banner

As we prepared for the actual roof work to start our thoughts turned to the banner we had planned to put up in front of the church. We did a mock up design in MS Publisher and a printing firm in Cheddar adapted our design, modifying it slightly. We had to seek permission from the Diocese to erect a temporary wooden structure in the churchyard to support the banner. The erection was done by a local volunteer with building skills. Precision measurement to ensure a level structure was accompanied by brute force!

Inserting the supports

Our local volunteer

Final result

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Start of the roof work and a change of plan…

When roof work began on 20th July the foreman of building work reported a potential issue with lead replacement covering the guttering draining the roof. In essence the original plan to re-lead the roof could potentially cause problems years ahead because the lengths of lead required to replace the established guttering were too long. Over long lengths of lead can split as a result of expansion and contraction with temperature variations. Owing to the concrete base the gutter could not be lowered, so, instead, it would have to be raised, which would then create problems with the inclination of the main roof. As it was constructed the angle of the roof was at 10 degrees, which is the minimum angle permitted under Lead Sheet Association guidance for overlapping rolls of lead. The proposed solution was to introduce a step into the roof which would avoid the need to overlap rolls of lead. The downside of this solution was that it would mean a considerable amount of preparatory timberwork before the lead was to be laid.
The Parish accepted the solution and work began in earnest later that week…


Scaffolding is erected


Stripping the remaining lead…


…is hard work!


Timbers are lifted…


and underlying wood is treated


and a new platform for the lead is set up

Producing the lead – the casting process

WCT use their own recycled lead which is produced on site at their works in Frome. In a normal production process lead from the roof is returned to the works and recycled to be returned for laying on the roof. If you wish to see the process in action, please highlight the following link, press Ctrl + click and you will see a 3 minute video that shows how scrap lead is turned into rolls of lead sheeting.

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https://www.bing.com/videos/search?q=lead+manufacturing+at+kronos+lead&docid=608007656623899489&mid=13606989B6E5192AAF3D13606989B6E5192AAF3D&view=detail&FORM=VIRE

Getting the lead on to the roof

Lead is heavy but much of the work getting it up to the roof has to be done by hand.


Lead rolls arrive on site in 100kg rolls


..are offloaded


..and wheeled to the scaffolding

Once it is at the base of the scaffold it is hauled up by a winch, and then manhandled.

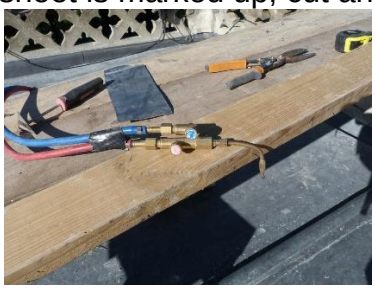

Winching 100kg of lead appears to be quite easy…


But manhandling it is not!

Shaping the lead

Lead is malleable. It can be cut and moulded to construct items for particular parts of the roofing process. Lead sheet is marked up, cut and then welded.


Marking up the lead sheet


Tools for cutting and welding


A finished product – a gutter sump

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Laying the lead

Following the foundation work the next stages involved the guttering, laying the lead on the roof itself and providing ventilation for the roof space:

Gutters require that water should flow and that there are collection points for the water to run out clear of the building. Under the revised roofing plan the gutter had to be raised and stepped to ensure that it was possible for the water to drain through spouts that throw water clear of the walls.

Overlength gutter being removed

Gutter sump in position

Water spout

Sump/spout welds being cleaned

Water spout in position

Finished gutter

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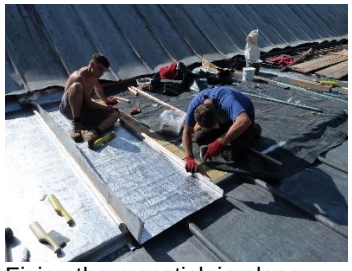
General covering of the roof is achieved by installing bays in sections. The lead is first painted with a chalk emulsion to protect the lead that is then laid on a vapour barrier of builder's paper. The lead is then fashioned into a "bay box" that is laid in position. Finally the box is hammered into shape with an overlap to the roll that covers a wooden stick (the mopstick). This method of laying lead is known as "closed roll".


Lead roll with painted underside


Constructed "bay box"


Putting a bay box in place


Placing the mopstick


Fixing the mopstick in place


Hammering the lead into position


Rolling the lead over the mopstick


Hammering the lead down


Final results can be seen at back of picture

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Ventilation of the roof space

The final stage in the re-leading process is to install vents to allow ventilation of the underlying roof space


Old vent


New vent


The finished roof

Masonry work

Lime mortar has to be used for repairs to Grade 1 listed buildings. This type of mortar does not contain cement, which modern mortar mixes do. Unlike cement-based mortars, lime mortar takes weeks to set and months to finally "cure". There are two ways in which it was used in our project:

- The lead flashing that is chased along the north aisle parapet
- To repair significant cracks in the masonry of the parapet and turret.


Lime mortar mix


Mortar trowel


Raking out old mortar


Repointing with lime mortar


The end result on the turret


Chasing in the lead flashing

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Some of the problems encountered during our roof work

Lead work has to be done in dry conditions. Sudden showers can cause difficulties because covers have to be taken off to allow work to be done. It was not always possible to reapply these properly to keep the roof watertight. We experienced some inevitable leaks during the work, particularly after one day of torrential rain during a weekend in August. Fortunately, most of the work was done during a dry period in the summer.

Also, spare a thought for those who worked on the roof. Even in a British summer the weather varies considerably. Not only is it difficult to work in wet conditions when lead is being laid, but temperature varies significantly…

Height of summer

Temperature - just right

Winter is on the way…

Our real heroes who actually did the work were Michael and James!