Webinar 'designing for a historic building'.

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Calverley Old Hall is a Grade I Listed manor house in West Yorkshire. It dates from the 12th century and has undergone many changes. In 1981, the Landmark Trust acquired the property which had been divided into 9 tenancies. Work was carried out in the 1980s and 1990s with the demolition of the 18th and 19th century cottages and outhouses to the southeast of the Chapel and the northwest of the Lodging Block and a small part of the property was converted into holiday accommodation. Some parts of the building, namely the Solar and Great Hall, have been in a state of dereliction since then. At the time of the competition, it was listed within Category D of Historic England's Risk Register.

The competition brief gave an outline history and the client's requirements for an 8-10 person holiday let with some form of community space. The building was to be repaired to the 'highest conservation standards.' The client was open about the design approach in that it could be 'contemporary' or 'historicist' but wished to avoid explicit restoration.

I'm reminded of the Japanese philosophy of Wabi Sabi, translated as 'the art of imperfection' which seeks to give old objects a new lease of life and beauty by making changes to their composition which are obvious. A good example of this is the technique used for repairing ceramics called Kintsugi, the direct translation is 'golden repair.' This has been used for centuries. In a similar way, we have tried to weave new elements into the building that will improve accessibility and support an economically sustainable future. However, a lot of our repair work will hopefully go unnoticed except for an awareness that the building is well maintained, easy to use and pleasing to the eye.

In this presentation, we'll try to show you the process we followed highlighting general principles for sustainability and conservation and identifying what we've come to regard as a golden thread used to link the spaces together with insertions that are clearly identifiable. This has to be open to change as new discoveries are made.

It's essential to work very closely with other consultants and your client and then on site with your contractor and their subcontractors. The tender documents are always only part of the story because the building will reveal new challenges during the process of stripping out and repairing. When the contractor has taken possession of the site, changes need to be dealt with very quickly and efficiently in order to keep within the budget. We've been very fortunate at Calverley to have been given time to carry out a lot of opening up works ahead of the main contract.

The Site

The first impression of Calverley Old Hall is that it is buffeted on all sides by residential properties. In the locality, there is a consistency of ashlar masonry and stone slate roofs but the properties that back onto the Old Hall from the Southwest and Northwest are 20th century, rendered masonry with concrete tiles. From the outside, Calverley could be mistaken for being a range of cottages with multiple front doors but there are intriguing references to much earlier details in the first floor south facing window of the Solar, fragments of tracery, the gable end wall of the Chapel. The gable end of the Great Hall is characteristic of many industrial mill buildings. It is a building that has lost its historic context.

A major consideration at Calverley has been to make the site accessible and sustainable. We've worked closely with our services consultant, archaeologist and client to find ways of reducing the

building's carbon footprint. This has meant improving the air tightness and breathability of the external envelope, insulating where we can and incorporating a ground source heat pump to provide hot water and heating. This comprises 6x 150m boreholes linked to a new plant room to the north of the site. Photovoltaic panels have been installed on a south facing roof pitch and where possible, we've exploited natural light and ventilation. A real effort has been made to re-use materials from the site and to source new ones from the locality.

There are two parking areas. One is accessed from the main road from which a pathway leads to the southern doorway of what was once the Cross Passage. The second area is to the north of the site and the accessible parking bay provides access to the northern door. The paths follow the site's contours to avoid ramps and handrails which would have made the approach feel institutional. The path will be lit with ground level solar lights. The landscaping will remain very natural but there will be new hedging to provide screening.

Interiors

At the time of the competition, the Lodging Block's ground floor room with its heavily beamed ceiling, large stone fireplace and flagstone floor was one of the most complete interiors at and was being let as a holiday apartment. The first impression of the remainder was of a series of cellular spaces most of which had been decorated with a wide range of wallpapers, over-boarded floors and floors inserted to make practical use of very large volumes. The Spere truss was partially visible within the first floor bedrooms but the most exciting view was to be found by crawling through a small loft hatch. The Great Hall and Solar had both been derelict since the 1980s and were the reason for the manor being on Historic England's Buildings at Risk Register. These had been stripped out in the 1980s and were the easiest to interpret.

A key to finding new uses for existing spaces is to understand how the spaces once connected. Determining the circulation route is an important aspect of this and Calverley had many different phases which made this analysis challenging. There is a hierarchy of significance in any building. At Calverley, our client wanted to focus on the manor house prior to the departure of the Calverley family in the mid-17th century. which marked a milestone in how the building was used. Once the family had moved away it was subdivided and made more practical for multiple occupancy.

Research is key to our work on historic buildings. The story is often evident in the fabric but where this has been covered up, we can look for clues from buildings of a similar age and typology. The Spere Truss was a very important element with a carved face towards the Great Hall and a plain one facing the Solar. This immediately gives an orientation to the building- a high and a low end. We searched for evidence of a cross passage and the location of the kitchen, buttery and pantry but at Calverley the story is very complex, and it was only much later when we were working closely with an archaeologist that we began to accept that sometimes the answer remains unclear and that's fine, it's just part of the narrative. What is important to us as we start to think about a building's next chapter is to ensure activities are given the best spaces for today's occupants whilst being respectful of the past. To touch the ground lightly. Our interventions would be lightweight and reversible where possible. They should be legible so as not to interfere with the interpretation of the original dwelling.

The route that linked the spaces was expressed in a series of 3-D views for the competition because Calverley is a sum of its parts.

Sometimes the date selected relates not only to the building but the wider context so for instance at Stowe, the National Trust conserved the parklands to a date in the late 18th century. It was important that the New Inn related to this. The date that is selected needs to consider the extent of fabric belonging to later periods.

At the David Parr House in Cambridge, the house had been decorated by David Parr in the 19th century but had been lived in by two generations of his descendants, the last inhabitant being his granddaughter who resided there until she was in her 90s. It was decided that to strip the interiors back to the last of David's decorative schemes was unachievable since at least two rooms had changed in their use (with the insertion of a first floor level bathroom) and 2 bedrooms had been wallpapered. These changes were an important part of social history in themselves and the decision was made to keep them.

The Competition Scheme was our starting point for testing a number of theories. One of these was to establish finished floor levels that would link the spaces with as few changes of level as possible. Another was to identify any features that might inform the location or design of linking elements such as the lift and staircase. Lastly, we needed to identify the condition of the fabric to make sure we could quantify the level of repairs in terms of time and costs.

A Condition Survey is always a good starting point for really getting to understand the building because it forces you to focus on the materials. You can see what has weathered well, what should be altered for the long term good of the building. What is in very poor condition and beyond repair. This can provide opportunities for altering the design or in-filling the voids. The opening up work was carried out in consultation with the conservation officer and our archaeologist.

It became clear that repairing the roof was critical for the conservation of the interiors and we were very fortunate to be able to carry out the re-roofing work ahead of the main contract with a grant from Historic England.

The Roof

Calverley had been partly re-roofed in the 1980s, but the Solar and Parlour Block roofs were in a poor state of repair. There is a valley gutter that runs between the Solar and Parlour Block which is long and difficult to access. We made this wider in our re-roofing design and installed trace heating to deal with snow. The south facing pitch of the Solar is completely concealed from view at ground level. We recognised an opportunity to install PV panels here. There was an opportunity to install breathable insulation and provide a degree of air tightness to the roofs.

The roofline has no original chimneystacks at Calverley which is partly why the building looks like a series of cottages. However, buried within a void there is the octagonal base of one of the original stacks. Our philosophy at Calverley was to keep the memory of the later phases in the external appearance of the building. The fenestration, the chimneystacks, the multiple front doors. At Calverley one of the stacks had been rendered and we discovered it was in very poor condition. This was rebuilt in stone using materials reclaimed from two porches that had been taken down. The Construction phase of the re-roofing work at Calverley was very interesting. The Solar roof members could be properly surveyed once the scaffold was up. They mainly comprised re-used wall studs from

an 18th century timber-framed building. They were carefully repaired infilling the mortices to stiffen them and where necessary installing companion rafters alongside.

The original cut off rafters which were much larger sections at a steeper pitch were found at the northwest and southwest corners. There were also an abundance of apotropaic objects that had been buried around the large fireplace. These were carefully removed form site and catalogued by the archaeologists.

At Stiffkey Old Hall, Norfolk our approach was different. We had a private client who wished to return the Old Hall (dating to the 1570s) to a single residence. It had been subdivided into a number of flats and very little original fabric had survived within the building. We had evidence of the original octagonal brick stacks on the west elevation. During the construction phase, we inspected the stacks and found that they needed to be taken down to tile level and rebuilt. The decision was taken to seek approval for reinstating them in hand made brickwork to the original form.

The Interiors

The Cross Passage

Accessibility was a key consideration, and we were fortunate at Calverley that we didn't have any 'original' ground floors that were deemed too precious to be lifted. The design needed to find a floor level that best suited each space whilst connecting to the adjacent spaces. Once we'd agreed on a strategy, we needed to test it with a number of trial holes to check the depth of the footings to walls. We didn't want to impose a level that would require underpinning unless it was absolutely necessary. It appears that there always had been a change of level within the Great Hall at the location of 17th century masonry dividing wall. This was a deciding factor for the location of a platform lift that could take guests from the entry level within the Cross Passage down 500mm to the Great Hall or up to the first floor. The lift was located on the north side of the building next to the external wall so that we limited underpinning to one wall that could also provide a route from the new plant room. The new limecrete floor slab helped distribute services and provided an opportunity for underfloor heating which could be linked to a renewable heat source.

We found a hydraulic lift that didn't require a deep pit. We wanted it to be 'ceiling- less' so that you could stand inside and be aware of the larger volume.

The aesthetics of the staircase in the Cross Passage

This was a design feature, we felt it needed to be of our time with an economy of materials but with references to the past. We wanted it to be free standing so that the cross passage was kept clear. The design of this area changed significantly when we found a fireplace in the 17th century cross wall. Our design was based on very primitive staircases which were a series of logs stacked upon each other and the development of the cantilever stair which relied on interlocking elements to provide stability. The cross laminated sections are expressed at the free ends of the staircase so that there is a truthfulness to materials. Cross laminated sections are a more sustainable way of using wood relying on small section sizes.

At Heckington Windmill, accessibility had always been an issue, the Grade I listed windmill had small doors and windows and the mill has a series of raised platforms with ladder type access. We were very fortunate to find that the outbuilding which had been used for storage had an infilled opening

to the mill on one side. This was a wonderful opportunity to make the ground floor accessible for wheelchair users for the first time.

At Calverley the new lift and staircase provide access to a first floor sitting room located in the Solar and beyond that there is access to the Chapel, Painted Chamber and Lodging Block.

The Great Hall

The challenge posed by the Great Hall was to integrate services and provide an acceptable level of comfort without compromising the historic features. The introduction of panelling was a way of providing a services route that didn't affect the stone. We imagined it being like a beautiful cabinet so the shutters are in line with the panelling and a continuation of the walls rather than stepping in and out with the later door and window openings that belong to a different era.

We were able to add breathable insulation to the walls. Wufi modelling was undertaken to ensure we didn't adversely affect the fabric by changing its dewpoint. We had found historic panelling stacked in the Solar, our panelling is oak -faced plywood in the Great Hall with oak muntins and rails. The flagstone floor was numbered and photographed and then carefully lifted. An insulated limecrete floor was laid with underfloor heating and the paving was re-laid. Where partition walls had been removed we infilled the voids in the paving by inserting smaller slabs of stone so that there is a memory of the former layout.

The Solar

The Solar First Floor Construction

We spent a lot of time on this element and worked closely with the Morton Partnership to create a floor that would be as slender as possible and float off the walls. It needed to be a structure that could accommodate services. The historic walls were to remain unplastered so electric cabling and plumbing, ductwork from bathroom extracts all needed to be distributed through the ground and first floors. We felt it needed to be designed so that you could still appreciate the sawn-off floor joists of an earlier phase. Spans are reduced by the insertion of some very slim steel posts that were concealed within our studwork walls. There is a perimeter steel channel that allows the wooden joisted floor to be isolated from the historic walls except in a few areas where steelwork connects into the masonry. Deciding on the exact location of the connecting points involved discussions with the archaeologist. The Solar has predominantly unplastered walls and the ancient masonry is by nature rugged. We chose a ceiling material that could be perfectly flat and smooth to contrast the existing surfaces. The wall panelling is birch-faced plywood with softwood rails and muntins.

The bathrooms are very neutral but the small, highly reflective tiles catch the light and offset the chalky nature of limewashed walls. Bob Costello Associates helped create a mechanical extract system that linked the two ground floor bathrooms to a single unit. This minimised ductwork within the floor zone and the waste air from both areas could be extracted via a slot in the replacement doorframe of one of the disused external doors.

The First Floor Sitting Room

A lot of time was spent discussing how best to conserve the visible face of the principal structure. The wall plate and one of the posts directly below the leaking valley gutter were very badly decayed. The photographs show how the post was stiffened from the rear and voids between the timber

frame and the masonry were galleted with small sections of stone within ashlar masonry and small pieces of tile within red brickwork.

The Painted Chamber

The painted scheme had been protected by a wall lining of lath and plaster on sw studs, the wall finishes and small tiled fireplace are thought to have been installed in the 1930s. The room may well have been panelled before that but we have no conclusive evidence of this. Cuts in the skirting

suggested that there had been a larger fireplace and we carried out some opening up works during the early design stages to determine the size of this. The floor had been over-boarded and was completely flat. The lath and plaster ceiling was deformed because there had been problems with the roof structure resulting in movement to the external wall and cracks at the junction with the ceiling. This meant that the re-roofing work became a priority and fortunately, by the time we were in a position to remove areas of the lath and plaster we had a weathertight external envelope, the roof had been insulated and re-slated, the external walls had been repointed, the chimney stack had been capped and Lincoln University's conservation dept. had set up a system of remote monitoring so that electric heaters could be used to regulate the humidity.

The painted scheme has been dated to the mid 16th century. It is evident on three internal walls. The external wall had been rebuilt below the wallplate.

The southwest facing, single glazed window was boarded up and UV levels were monitored. The condition survey had highlighted the need to reinstate stone mullions to support the existing stone lintels. These were currently resting on a load bearing wooden window frame that was now in very poor condition.

When the wall linings were removed, the painted scheme was protected by polycarbonate sheets which were vented at the top and bottom. As designers it's very important to know when specialists need to be consulted. We consulted Tobit Curteis and Associates at a very early stage and our services consultants, Bob Costello and Associates helped us to implement an environmental strategy that would provide as stable an environment as possible.

Assessing the Options

At Stiffkey Old Hall, our client didn't want to leave the painted surfaces exposed. The 18th /early 19th century stencilled patterns were badly damaged and were remnants from a variety of decorative schemes giving them historical interest but making them quite challenging to live with. Here we opted for a breathable cover which would protect the painted plasterwork for posterity whilst providing a blank canvas for a new decorative scheme. Linen was stretched over battens fixed to the ceiling and floor and hand painted with a scheme of the client's choosing. This approach had been successfully used at Shakespeare's birthplace.

At the David Parr House in Cambridge, one wall had been very badly damaged with damp and had been over painted with a green gloss paint. In this instance, the damaged plaster was too badly affected by salts to be conserved so after we'd solved issues with the below ground drainage and repointed the external wall, we removed the damaged plasterwork, replastered in lime and the decorative scheme was reinstated in acrylic paints to give them the best chance of surviving.

At Calverley, the scheme is in a repairable state on three elevations. The external wall has been rebuilt at some point and there was no evidence of the original plaster and painted scheme on the

masonry below the original wall plate. Elsewhere, the substrate is capable of consolidation and the painted surfaces are stable when exposed to natural light. They will be gently cleaned by specialist conservators. The damaged areas of the timber framing will be carefully infilled with a breathable fibrous board in lieu of the slate. The surfaces have been replastered in lime so that they are sacrificial to the much denser historic fabric. The external wall has been insulated and plastered. Vertical oak louvres have been proposed to provide screening from direct sunlight. We've proposed that UV light and heat gain is controlled by solar glazing to slim line double glazed panels. A transfer

fan will draw air in from the adjacent Solar through slots formed in the new doorcase and extract it at ceiling level to achieve the optimum level of air changes per hour.