

# Manor Lodge School

## Designing for Nature and Nurture

### Abstract

As one of my first projects as lead engineer, Manor Lodge combined technical precision with personal growth. The project reinforced that good design depends not only on detailed specification, but also on collaboration and communication. Done properly, this creates a structure that is both functional and inspiring.

At the picturesque school, the task was to replace a tired conservatory with a new, extended space for learning, play, and connection with nature. The challenges included working in difficult ground conditions, within an occupied school, whilst still keeping sustainability at the forefront.

The finished structure told its own story. Early carbon studies allowed us to use softwood flitch beams, and we worked to re-use existing foundations to minimise our environmental impact. This project highlighted the challenges of working with existing buildings (even with record drawings), the need for teamwork and creative problem solving, and how every meeting can be improved with a bacon butty.



Figure 1 - Manor Lodge School (photograph by Andy Stagg)

## Introduction

Set in the idyllic Hertfordshire countryside, a ten-minute taxi ride west of Potters Bar train station, Manor Lodge School is an independent primary school which promotes a system of outdoor learning, encouraging children to spend time in nature. The early years extension was phase two of a five-phase masterplan set out by IID architects. The initial meeting in January 2023 set out the project aims - the existing, tired conservatory was to be knocked down and replaced with a new learning space that encouraged exploration, play, and a seamless connection between indoors and outdoors. This was fitting for a school so deeply committed to nature-led education.



Figure 2 - Existing Conservatory

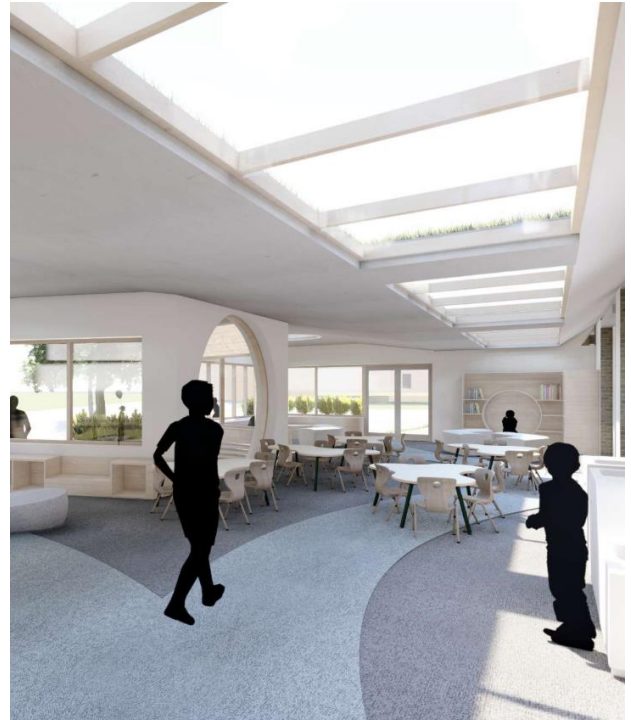


Figure 3 - Initial Visuals (IID Architects)

The broader programme of works included interventions to the Grade II listed main building, such as introducing new large openings to improve circulation, new floor infills, and extensive changes to the underground drainage network. Gaining listed building consent required producing sketches that set out the full sequence of works, ensuring that both heritage officers and contractors understood how the building fabric would be protected. Alongside these headline items, the project expanded organically as other remedial tasks arose. I was asked to look at issues from waterproofing to roof repairs and even became involved in the unusual discovery of a long-forgotten well while detailing remedial works to Shenley Cottage, part of the school's estate.

## A Personal Approach

From the outset, I was eager to use timber wherever possible. This not only aligns with my own passion for the material but also offered clear benefits in terms of sustainability. Initial sketches I produced included a small note at the base with three options for each primary beam: steel, timber, and flitch, each noting the structural depth and associated embodied carbon. These studies were invaluable, allowing the design team and client to make informed decisions at an early stage, embedding low-carbon thinking into the project rather than treating it as an afterthought. I worked with the architect to ensure that exposed

softwood beams were celebrated as part of the building's character, providing visual richness as well as structural performance.

### Technical Challenges

The site, picturesque as it was, brought technical complexities. The ground was clay, and this was complicated further by the nearby retained mature trees. Foundation design therefore needed to comply with NHBC guidance, balancing stability and potential movement issues with the careful protection of roots. These issues increased the required depth of the foundations, which are already the most carbon intensive area of most buildings. To counter this, we looked to re-use the existing deep foundations and floor slab from the demolished conservatory.

The geometry of the overhanging roof was another challenge. Its generous cantilever created a distinctive architectural expression, but also demanded careful structural resolution. A key design feature involved cutting out part of the roof to accommodate a new tree, and the architectural intent was for this canopy to be as thin as possible, which meant that the structure would need to change from timber to steel. Rather than seeing this as a constraint, we treated it as an opportunity to demonstrate how structure could respond directly to the landscape.

### Communication and Collaboration

Meetings were held at the school, and the long early morning journey was softened by the provision of a warm breakfast, over which we discussed the design. With the client in attendance, technical content needed to be distilled into clear, accessible language. While the engineering calculations could easily overwhelm, what mattered most to the client was cost, buildability, and aesthetics. By presenting sketches and simple comparisons, I helped steer discussions productively.

Having a positive system of communication with the client also meant that they were keen to come directly to us for additional projects around the school. I inspected and detailed underpinning works to a subsiding cottage (including the discovery of a long lost well), provided remedial details following water ingress, and many other minor structural interventions.

This project was also a reminder that record drawings cannot always be relied upon. During construction, we uncovered discrepancies between archival drawings and actual site conditions. In one instance, I sketched an alternative detail on site, which the contractor photographed. Within three days, that sketch had been formally instructed and built. It demonstrated that agility and clear communication can prevent small problems from escalating.

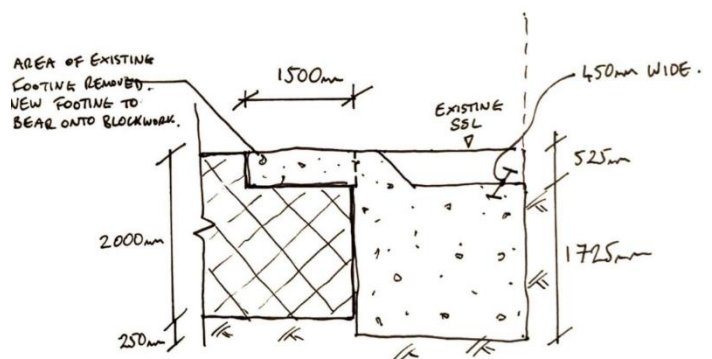


Figure 4 - Sketch of updated Foundations

## Lessons Learned

Perhaps the most important lesson was the need for comprehensive specification. Exposed timber connections, while beautiful, are both expensive and time-consuming, and natural materials such as timber are much more sensitive to exposure.

I spent a lot of time in the early stages sketching the different connections, with the aim that this would help the tenderer price and programme accurately, however I learned a lot of valuable lessons from this project. While the visuals were clear, further specification should have been given on the visible connections. Additionally, the timber needed to be protected from the elements to avoid water damage which wasn't specified in the tender package. Without this information, it would be impossible to achieve full cost certainty at tender, and desired visual finish would not be guaranteed.

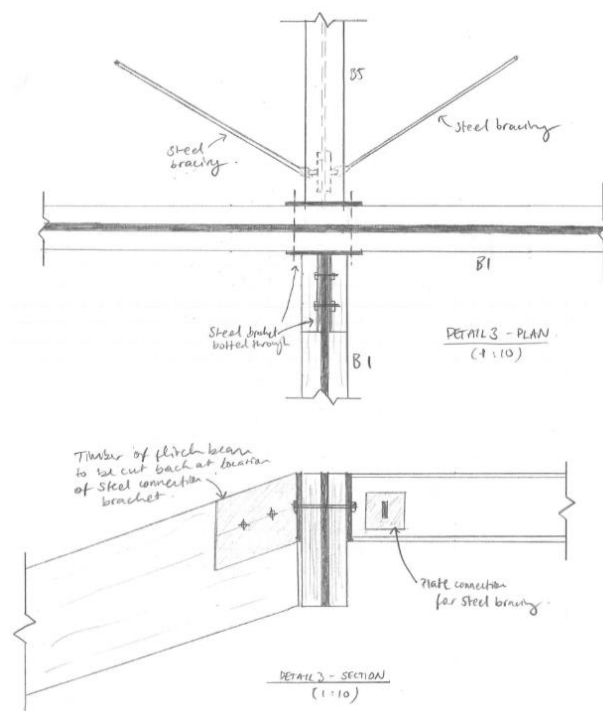


Figure 5 - Initial Connection Sketch



Figure 6 - Site Progress Photo

Another lesson was the value of collaboration. Every challenge, from ground conditions to geometry, was resolved not by individuals working in isolation but by open discussion across disciplines. The contractor, architect, and client all had insights that shaped the outcome. As an engineer early in my career, I came to appreciate that successful design is as much about listening as it is about calculating.

## Applying the Lessons

The greatest test of any learning is whether it changes future behaviour. Immediately after Manor Lodge, I had the opportunity to work on another project with the same contractor and architect. This continuity provided a perfect chance to apply lessons directly.

This time, I took extra care to detail the design intent and required protections in the tender package, ensuring they could be fully costed from the outset. I also made sure that every specialist element was clearly included, leaving no ambiguity about scope or responsibility. The result spoke for itself: the project was delivered on time and within budget, to the

delight of the client. Beyond the numbers, it was deeply satisfying to see how reflective practice could translate into tangible improvements.



Figure 7 – Phillies Café (photograph by Andy Staggs)

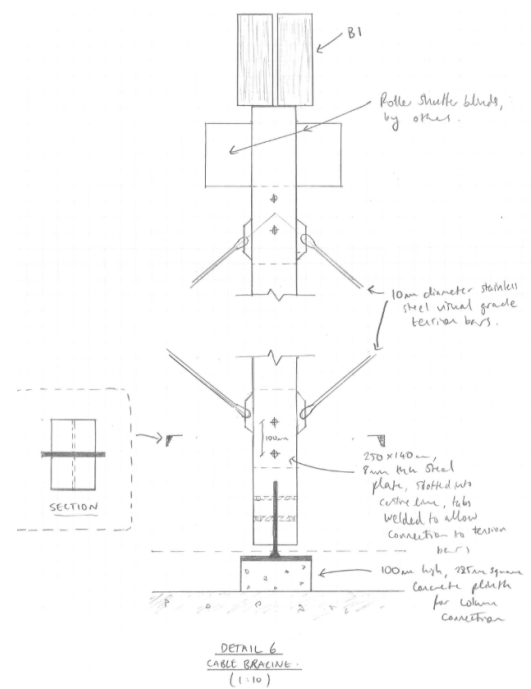


Figure 8 – Timber Connection Design Intent

## Reflection

Manor Lodge is a school entrenched in nature, therefore it was important that this project communicated ideas of sustainability and craftsmanship to the students. From the reused foundations to the celebrated timber beams, we showed how engineering decisions ripple outwards, shaping not just a building but also the experience of its community.



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