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www.eco-dc.co.uk

The Crophorne Autonomous House

AECB 2010 Annual Conference

Structure of the design and building team

- Neill stopped at building Regs, detail design left to me.
- Lebrun's and the credit crunch.
- Myself and Graham
- Management and sub contractors
- Client and team

Basement

Huge amount of spoil

Use of fly ash in all
cement elements



Decision for whole
basement due to tanking
and MVHR runs.

RIW Bentonite clay

Discussion over insulation in basement walls



**Recycled infill
materials**

MVHR ground pipe air intake

Levelling

Contact with earth

Soak away



**Surface water and
land drain
Pipe work**

Clay vs. PVC

Cost balance



**Grey water issue with
Building Control and
move to an
independent
regulatory body for
Building Control**

Environment agency



Cast in situ floors

Air-tightness

Lead in time

Screed

Build time

penetrations



**Stairwell possible with
cast in Situ but pre cast
stair**



Better adhesion to blockwork

Parging exterior necessary

**Presented problems with I
-beams and tolerances**

Walls

Thermal mass/thin jointing
for air-tightness

Problem with normal
building tolerances



Awkward detail with
plinth and window/door
details

I beams

I beams vs. cork EPS

Cheaper with standard beams

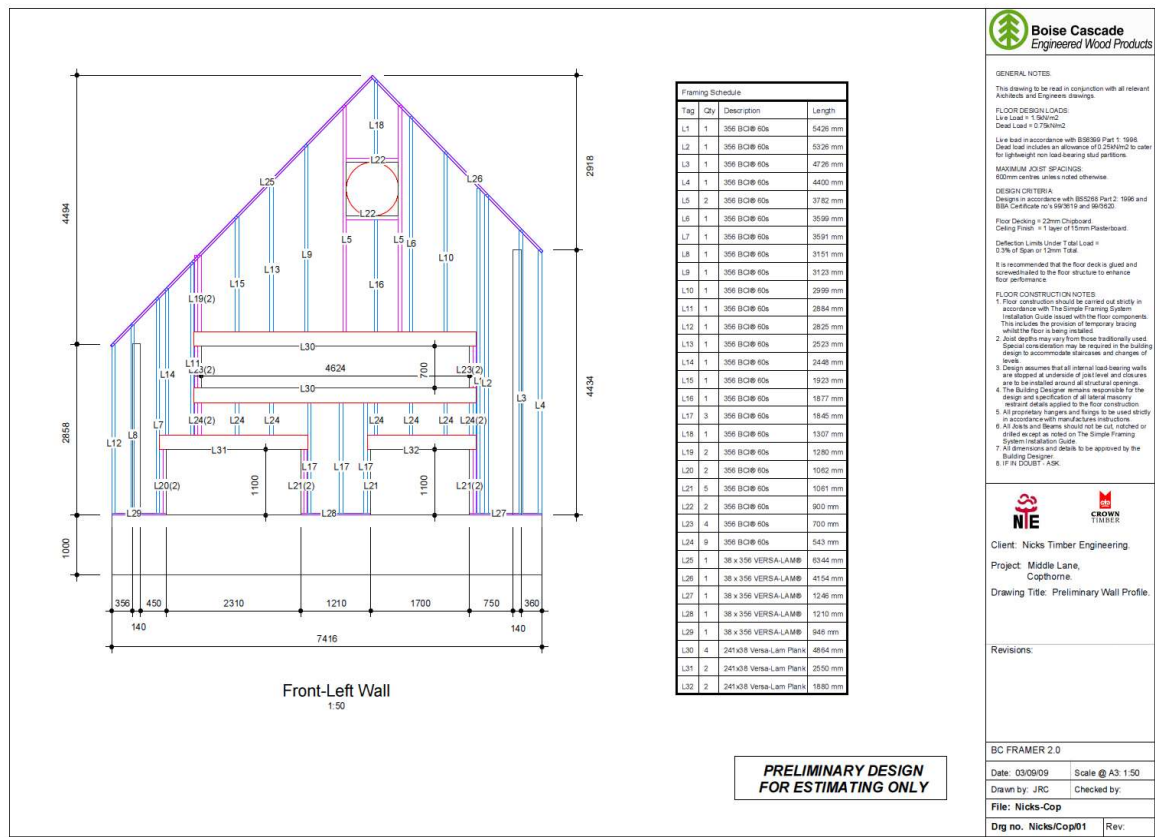
Chance to use thermal packer

Random window positions added complexity

Reduced timber and cold bridging wherever possible

Difficulty with layers, inaccuracy, cost.

Why not other method?



GENERAL NOTES
This drawing to be read in conjunction with all relevant Architects and Engineers Drawings.
FLOOR DESIGN LOADS:
Live Load = 1.5kN/m²
Dead Load = 0.75kN/m²
Live Load in accordance with BS5588 Part 1: 1988. Dead Load includes an allowance of 2.25kN/m² to cater for lightweight non load bearing slab partitions.
MAXIMUM JOIST SPACING:
600mm centres, unless noted otherwise.
DESIGN CRITERIA:
Design in accordance with BS5268 Part 2: 1996 and BBA Certificate no 699819 and 960320.
Floor Decking = 22mm Chipboard.
Ceiling Truss = 1 layer of 50mm Plasterboard.
Deflection Limits: Under Total Load = 0.2% of Span or 13mm Total.
It is recommended that the floor joists be glued and screw-fixed to the floor structure to enhance floor performance.
FLOOR CONSTRUCTION NOTES:
1. Floor construction should be carried out strictly in accordance with The Simple Framing System Installation Guide issued with the floor components. This includes the provision of temporary bracing.
2. Live load on floor joists must be:
a. All joists and beams must be set, notched or fitted as cast as noted on The Simple Framing System Installation Guide.
3. Design assumes that all internal load-bearing walls are supported at underside of joist level and columns are to be installed around all structural openings.
4. The Building Designer remains responsible for the design and specification of all lateral masonry wall and steel supports to the floor construction.
5. All proprietary fasteners and fittings to be used strictly in accordance with manufacturer's instructions.
6. All dimensions and details to be approved by the Building Designer.
7. All dimensions and details to be approved by the Building Designer.
8. IF IN DOUBT - ASK.



Client: Nicks Timber Engineering
Project: Middle Lane, Cophonte.
Drawing Title: Preliminary Wall Profile.
Revisions:

PRELIMINARY DESIGN FOR ESTIMATING ONLY

Roof

Problem supporting 100mm insulation layer with 120mm Rafters therefore introduced insulated timber packer.



Insulation procurement price and waste saving by combining frametherm and drytherm

Air-tightness and Gluelam beam

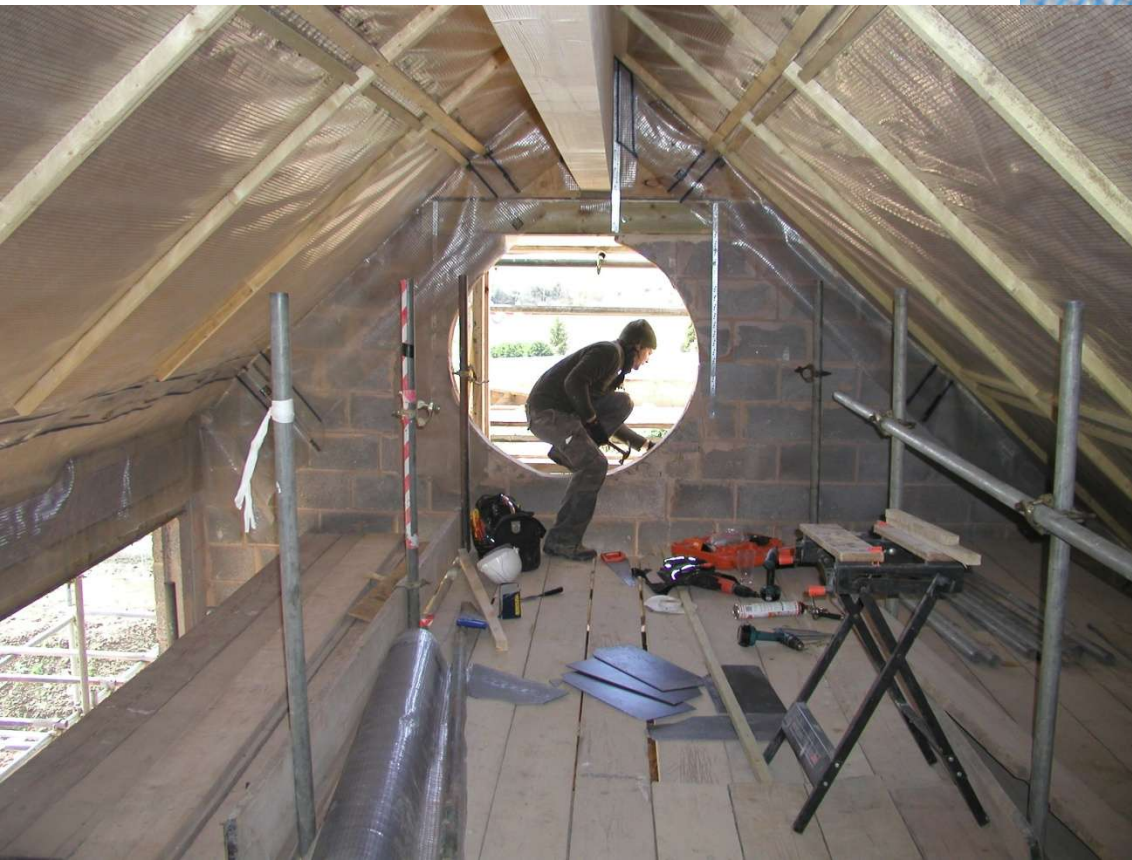


Studwork end caps to gable



Air-tightness and roof

Personal mistrust of osb being sufficient.



Membrane to
fleece/tape failure

Windows/doors

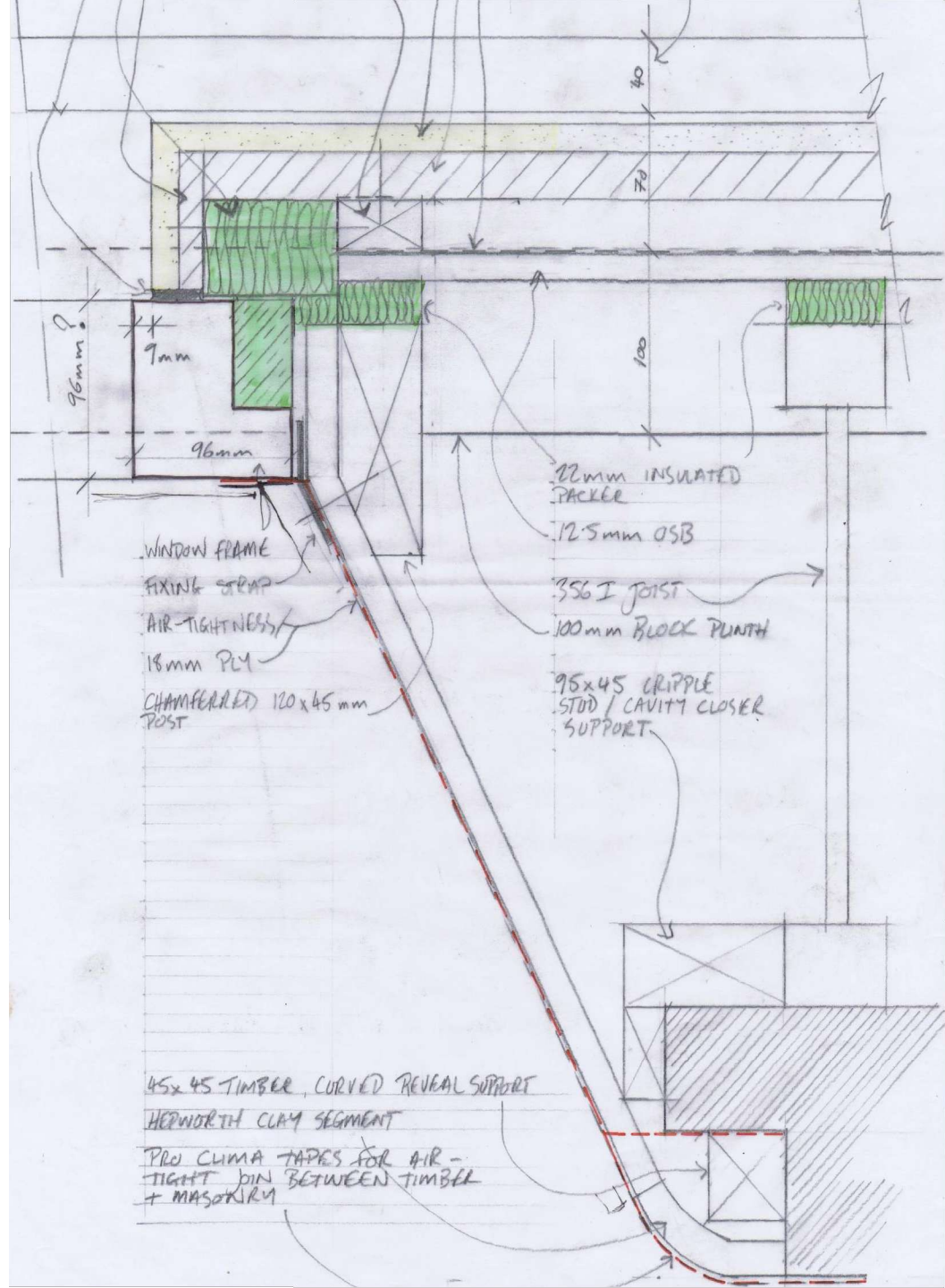
Internorm vs. Optiwin



Installation

Bridging cavity combined with jamb detail to take window boxing.

Air-tightness and curved splayed reveals



Dormer window

OSB and ply linings with 300mm
PU insulation board

No cold bridging



**Copper cladding of
Dormer with guttering to
be first line of defence
For rainwater harvesting
system**



The round window!!!



Lime render and internal plaster

Reveals needing bonding or tile adhesive

Difficulty with concrete ceilings

Lots of moaning but looks good



Internal views

Recycled storage heater bricks

Plastered view of kitchen and mezzanine

Lounge/dining showing tiled flooring



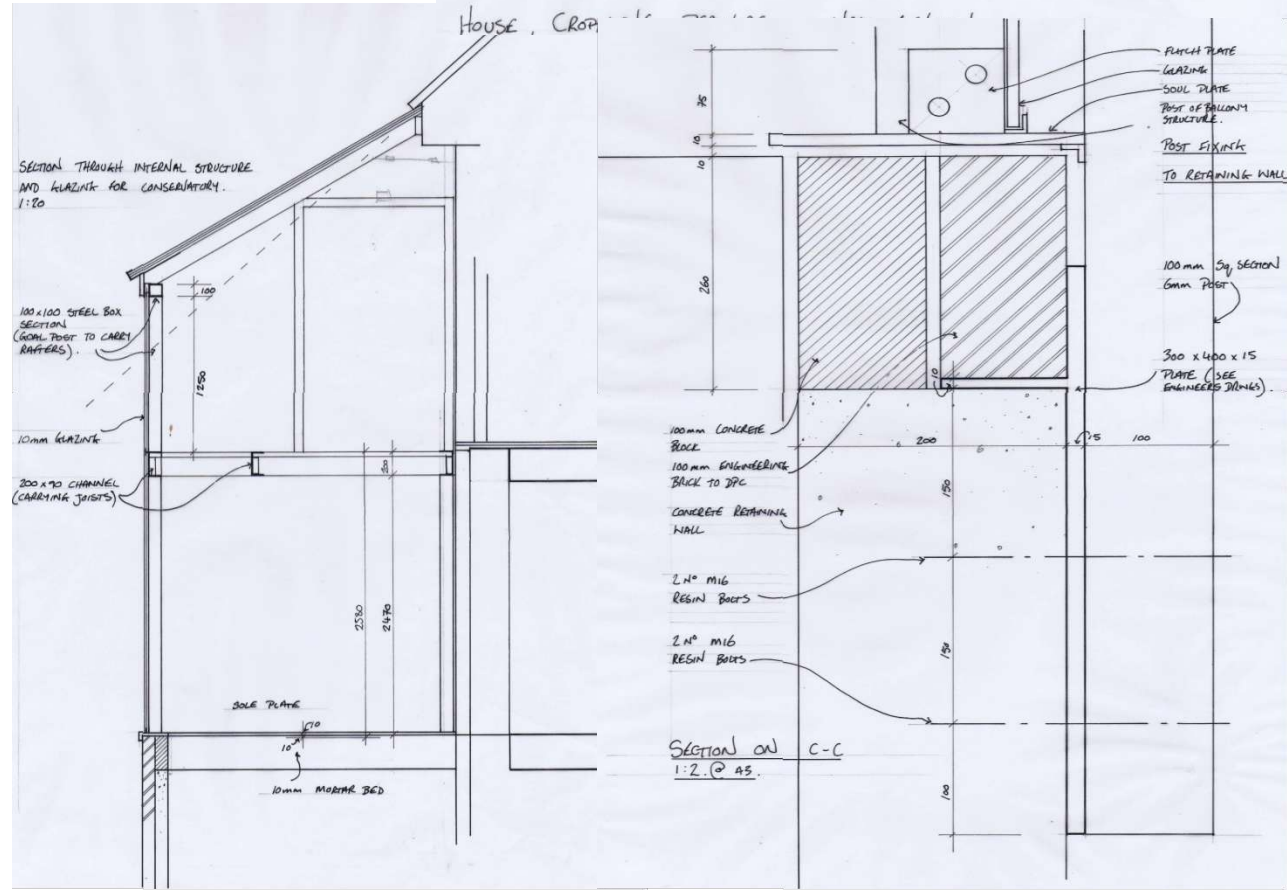
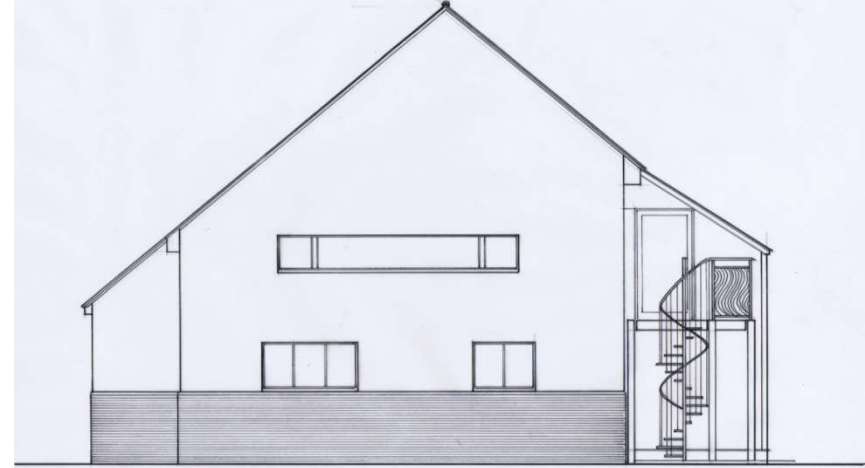
Conservatory re-design

Shading

Cost

Ventilation

Change to spiral
Staircase



Services

MVHR

LED lighting



**Low smoke zero
halogen fields**

No PVC rule

Rainwater harvesting system



Composting chamber and chutes

What would we do differently?

- **Walls**
- **Round window**
- **Full plans and detailed costs at start**