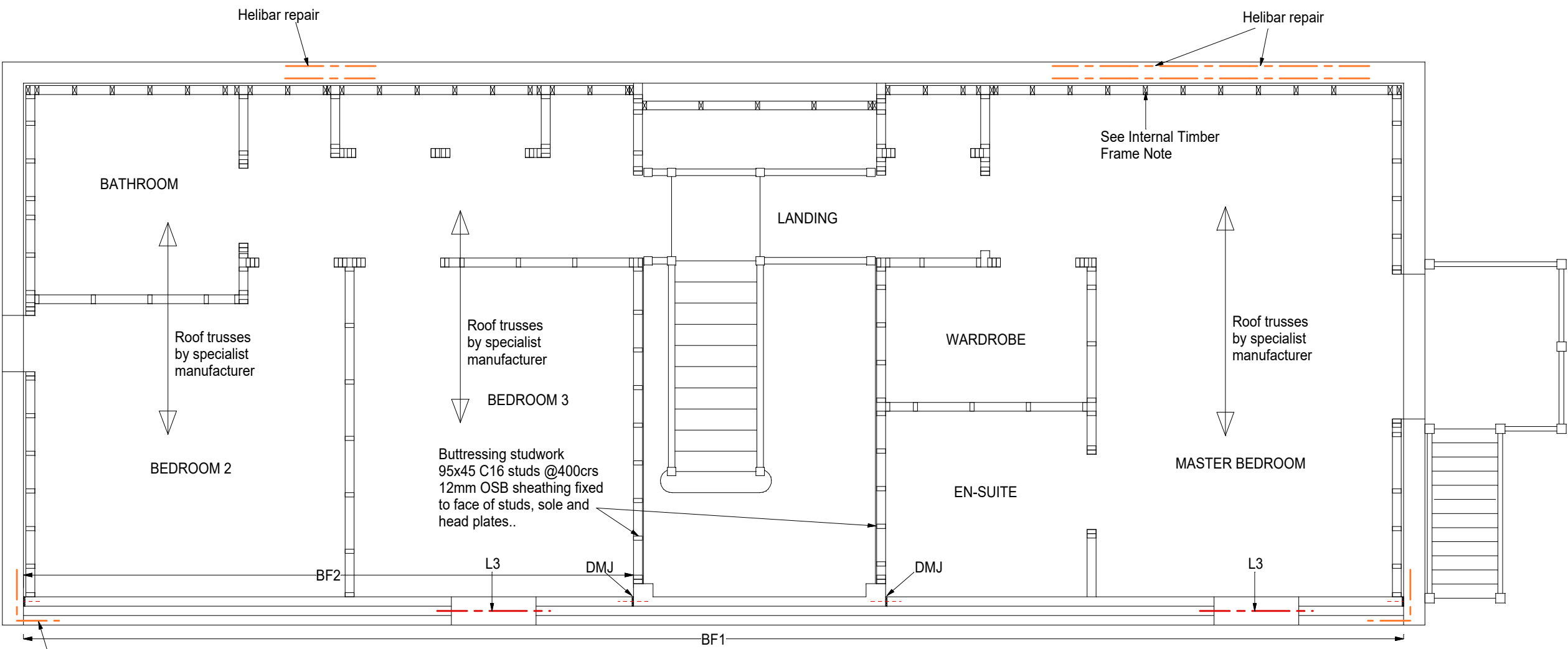
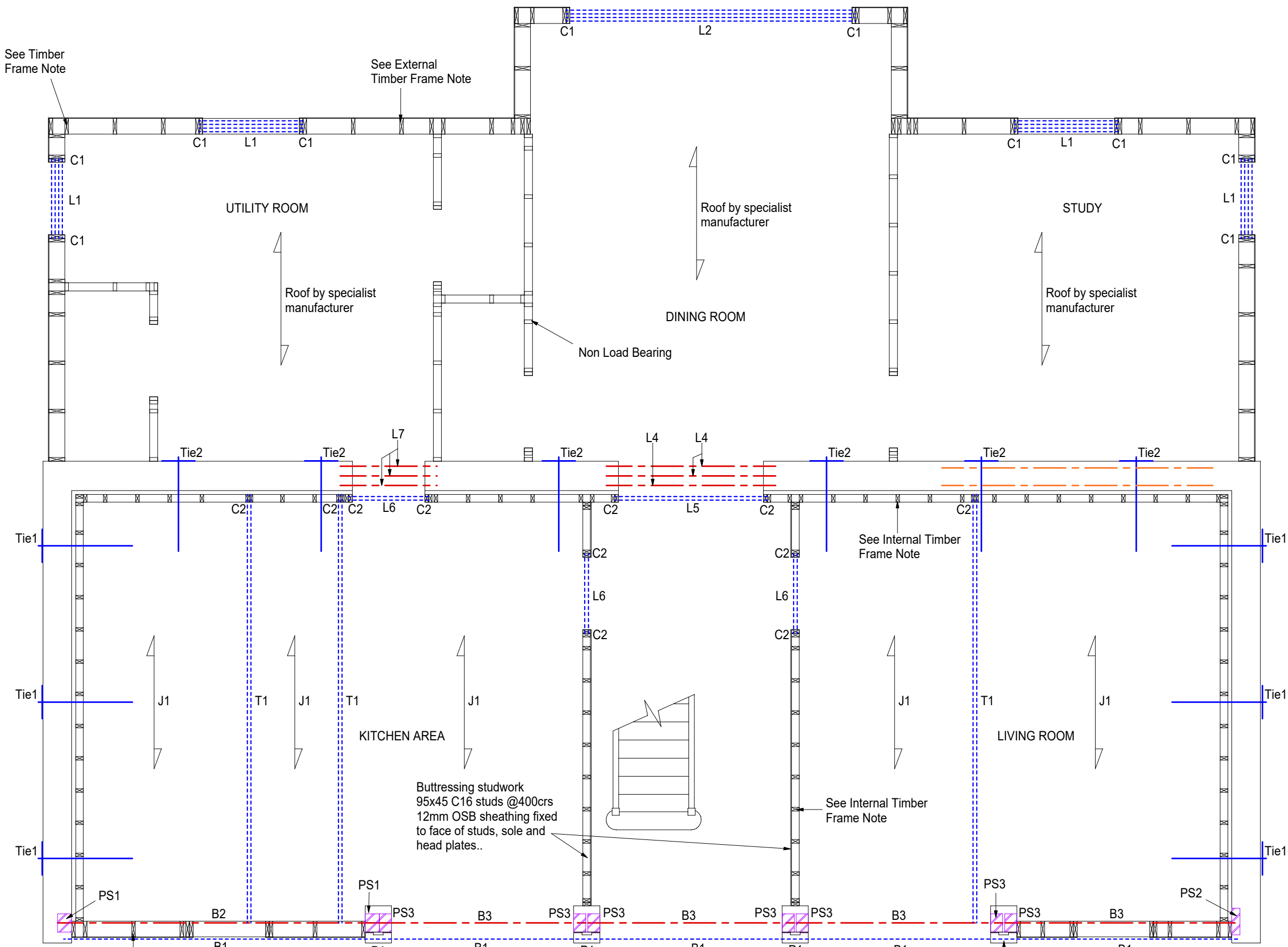
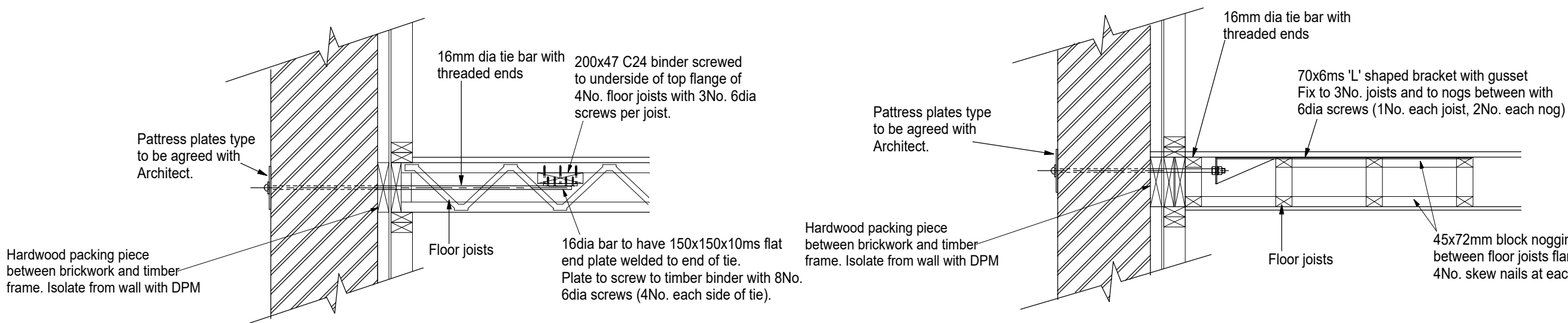




First Floor Plan (1:50)



Ground Floor Plan (1:50)



Restraint Strap Detail 2 (1:20)

Restraint Strap Detail 1 (1:20)

STRUCTURAL MEMBER SUMMARY

Joists & Trimmers
J1 - Easi-Joists by specialist manufacturer
T1 - Partition Trimmer by specialist manufacturer

Beams
B1 - Outer Leaf Beam 300x100 Oak
B2 - Inner Leaf Beam 203x133x25 UB
B3 - Inner Leaf Beam 152x89x16 UB

Lintels
L1 - 4No. 95x45 C24
L2 - 4No. 195x45 C24
L3 - Keystone SIK-90
L4 - Naylor R6
L5 - 2No. 145x45 C16
L6 - 2No. 95x45 C24
L7 - Naylor S4

Padstones
2No. Couse Engineering brick
PS1 - 225x175mm, 175mm beam end bearing
PS2 - 330x100mm, 100mm beam end bearing
PS3 - 225x150mm, 150mm beam end bearing

External Timber frame:
195x45 C16 studs @800crs.
Sole and head plates 2No. 195x45 C16
Nogs at 1.2m vertical centres
9mm OSB (or ply) sheathing board fixed to studs, plates and nogs with 3.1dia ringshank nails @200crs along length.
Trimmer Studs supporting lintels
C1 - 195x45 C16 with full length 195x45 C16 adjacent.

Internal Timber frame:
95x45 C16 studs @400crs.
Sole and head plates 2No. 95x45 C16
Nogs at 1.2m vertical centres
9mm OSB (or ply) sheathing board fixed to studs, plates and nogs with 3.1dia ringshank nails @200crs along length.
Trimmer Studs supporting lintels
C2 - 95x45 C16 with full length 95x45 C16 adjacent.
12mm OSB sheathing where noted.

Lintels to bear on trimmer studs with adjacent full length King stud to fix to outside of trimmer stud with 6dia screws @300crs.

Sole plates to strap to inner leaf with 30x2.5gms straps @1.8m crs and either side of openings.
Wall plates to fix to top of timber frame with 6dia screws @250crs.

Sole plates to fix to plinth with M12 resin anchors @1.2m crs and either side of openings.

Timber frame to fix to existing masonry with 10dia frame fixings @300crs

FOUNDATIONS

See Drawing D1

ROOF

Roof structure and wind bracing by specialist roof truss manufacturer.
Trusses to be supported on top of new 145x72 C24 wall plates fixed to top of existing masonry walls with M12 resin anchors @800crs and either side of openings (minimum 225mm embedment into brickwork).

STRAPPING/BRACING

Provide 30x5gms gable 'L' straps at 1.6m crs along top of gable and at ceiling level. Strap across minimum 3No rafters/joists with nogs between. Fix straps to brickwork with M12 resin anchor.

Wall plates to strap to inner leaf with 30x2.5gms straps @1.8m crs and either side of openings.

Where joists run parallel to cavity walls provide 30x5gms horizontal restraint straps @2m crs across 3No. joists with nogs between. Straps to fix to wall with M12 resin anchor.

30x5gms restraint straps to be provided between new block skin and perpendicular floor joists @2m crs along length of ne cavity wall.

Wind bracing to be provided to top of roof structure. Provide 20x1gms straps to form 'X' from ridge to eaves on each side and at both ends of the roof structure.

MASONRY

Debonded Movement Joints
Expansion Joints (debonded ties) to be provided in blockwork wall panels at 6m crs (max) Positions of joints to Architect's specification (suggested positions marked DMJ indicated on plan).

Helibar ties to be provided between new and existing masonry walls
High Load Thermal Break DPCat joint. to Architect's Details
Reveals of new openings in existing masonry to be made good with like for like brickwork.

MASONRY REINFORCEMENT

Brickforce Masonry Reinforcement installed to manufacturer's specification.
Class ii) mortar: 1 cement, 1/2 lime, 4 sand
SBF laps to be minimum 350mm long.
Stagger lap positions for adjacent courses

BF1 - 2No. course SBF50W60 bedjoint reinforcement above oak beam and additional 2No. course SBF50W60 above and below 1st floor openings and vert @450crs between.
BF2 - 2No. course SBF50W60 above and below 1st floor openings.

Reinforcement to be continuous over full length of panels.
Lap lengths to manufacturer's specification.

Pattness Ties

Tie1 - See Restraint Strap Detail 1 walls to floor structure
Tie2 - See Restraint Strap Detail 2 walls to floor structure

Helibar repair:
Cracks to be stitched with pairs of 'Helifix' helical bars (where indicated) cut into inside face of wall at 450mm vert crs. Bars to have 50mm cover to surface and grouted with Helifix Helibond. Bend bars to 90 degrees to allow tying into flank walls minimum 500mm past crack in flank wall.

Helibar to be cut into bedjoint 80mm from inside and outside face. Fill joint with grout pushing bars into centre of grout and leaving 25mm for matching lime mortar pointing externally.

Ensure holes are suitably cleaned out and wetted or primed prior to installing 'Helibond' grout to prevent premature drying of grout.

All 'Helifix' helical bars and 'Helibond' grout to be installed to manufacturer's guidelines.

When cutting out bedjoints near to openings allow for temporary wedging of joints with hardwood wedges and for propping of lintels with Acrow props.

STEELWORK NOTES

All steelwork is to be grade S275JR/J0 and is to receive the following protective treatment:

Galvanized (Fabricated Lintels):
Blast clean SA2.5 to BS EN ISO 8501-1:2001
Hot dip galvanise to BS EN ISO 1461 (85 microns) to be applied prior to painting.
Hollow Sections with end plates to have holes drilled into end plates to allow free draining during galvanizing process. Similar drain holes to be provided in corners of web stiffeners.
Under coat and coloured top coat (if required) to architect's specification

All bolts to be Gr. 8.8
Welds to be 6mm FW unless specified
Top plates to be 'V'd out and welded with FW if drawn flush

Bolt holes in steel members to be set out in accordance with BCSA publication No. 5/79 'Metric Practice for Structural Steelworks', 3rd Edn. 1979 u.n.o.

CE Marking:

Consequence Class - CC2 Service Category - SC1
Production Category - PC1 Execution Class - EXC2

TIMBER NOTES

2-ply timber members to screw together with pairs of 6dia screws @300crs
Multi-ply timber members to bolt together with M12 bolts @600crs

All bolts to be min grade 8.8, provide 50mm square washers to timber faces and round washers to suit on steel unless noted otherwise.

Oak/Douglas Fir members to be of selected quality, knot and defect free. Green Oak may be used, but note that significant shrinkage movement may occur as the timber dries out. Allowance to be made for packing after shrinkage has occurred.

All fixings to green oak timber to be stainless steel

CONSTRUCTION (Design & Management) REGULATIONS 2015:

Refer to full CDM notes in calculations/report package for 'Principal Designer' and 'Client' responsibilities. This 4D Structural 'Designer' information should be included with the calculations/report package as part of the Health and Safety file for the job.

POTENTIAL HAZARDS IDENTIFIED DURING STRUCTURAL DESIGN AND REQUIREMENTS FOR TEMPORARY WORKS

Removal of roof and floor structures
Ensure lateral stability of walls with provision for use of temporary shoring. Shoring to be installed prior to work commencing and retained until restructuring works are complete.
Temporary support structure (scaffold or similar) to be agreed for supporting of gable walls while roof structure is removed. Alternatively gable panels to be taken down to eaves level and rebuilt when new roof is installed.

Provide temporary bracing to walls whilst underpinning is being installed and maintained until new roof and floor structures are installed and walls are suitably tied to new structure and cracks are repaired.
(Shoring/Bracing by scaffolding company or contractor - to be approved).
See Drawing D1 for further CDM guidance on installation of Foundations.

Propping/Needling for all new openings in walls less than 3m wide to be specified by contractor unless stated otherwise (to be approved by 4D Structural Ltd)

Site Welding - Care to be taken to minimize risk of fire from welding adjacent to combustible materials.

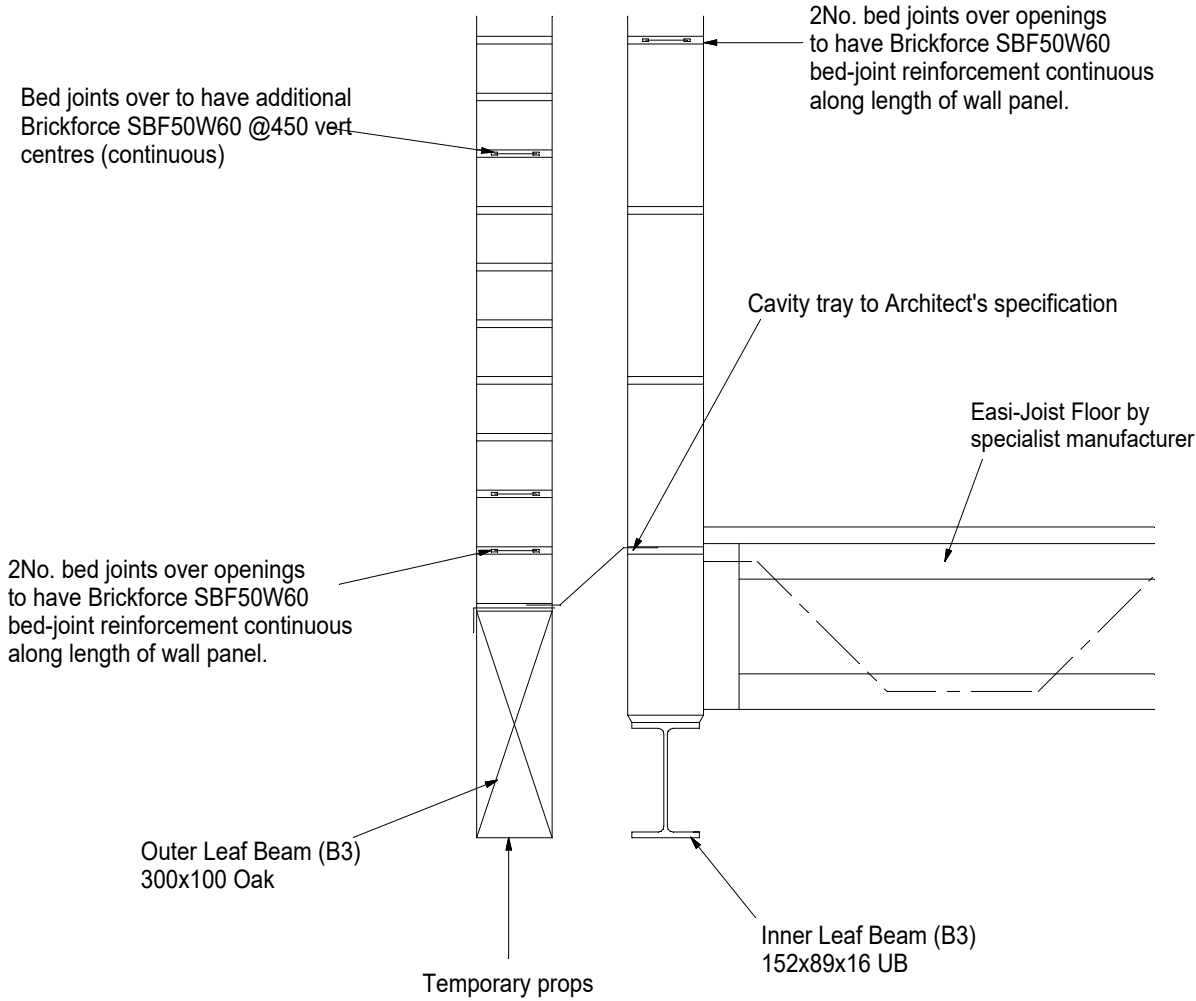
Installing new steelwork: Unit weights to be calculated and lifting & assembly operations planned accordingly.

Working At Height:
Construction Phase H & S Plan to include details of safe access, temporary working platforms and safe operational procedures (including any specific personal safety equipment for these aspects of work).

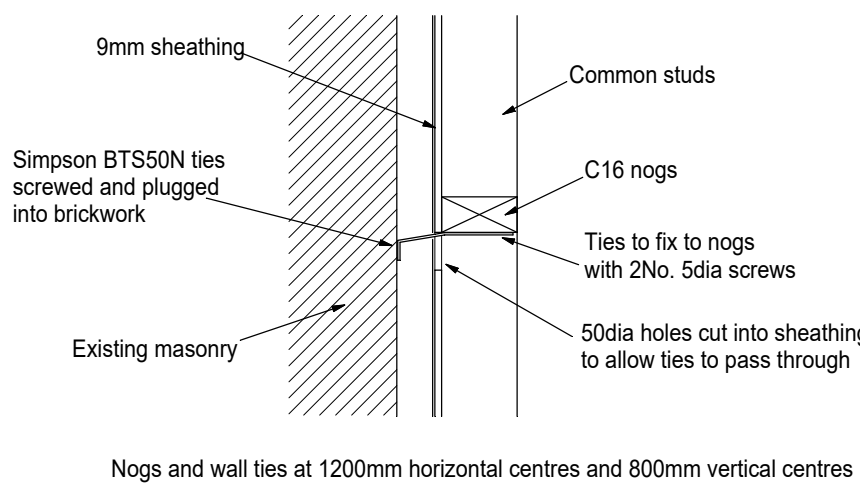
Please contact 4D Structural Limited should assistance be required with design of temporary works elements.

NOTE - DISCREPANCIES BETWEEN THIS DRAWING, AND SITE CONDITIONS ARE TO BE REPORTED TO 4D STRUCTURAL LTD IMMEDIATELY.
THE CONTRACTOR SHALL AWAIT INSTRUCTION FROM US PRIOR TO PROCEEDING WITH ANY FURTHER WORKS ON SITE.

DO NOT SCALE FROM THIS DRAWING - IF IN DOUBT PLEASE ASK
All setting out dimensions relating to any existing structures are to be verified by the contractor on site prior to ordering any materials.
Dimensions are given where critical for beam splice positions.



BF1 Reinforcement Detail (1:10)



Typical Wall Tie Detail (1:10)

Revision History		
0	30/07/18	1st Issue
Job No.: 4D.18.152		Client: Mr & Mrs Fear
Title: Hollytree Farm, Sutton St Edmund		
DRWG No.: D2		Scale: 1:50 1:20 & 1:10 @ A1
www.4dstructural.co.uk email: info@4dstructural.co.uk		Tel: 01485 500620
5 Old Church Road - Snettisham - King's Lynn - Norfolk - PE31 7LX		
 4D STRUCTURAL engineered design solutions		