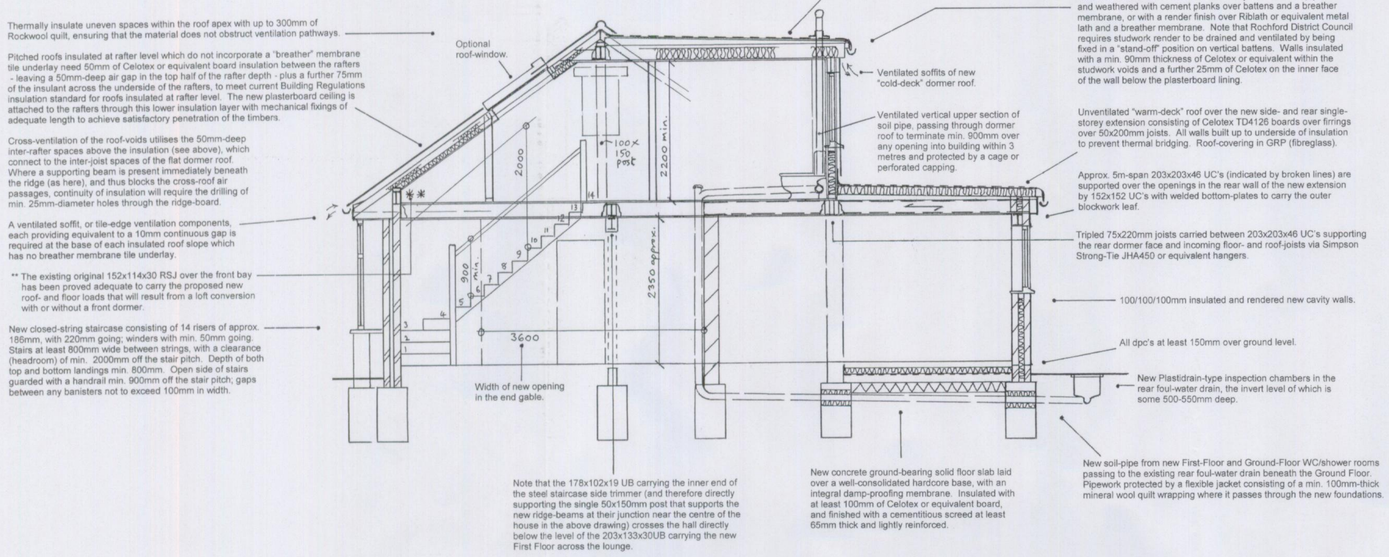
EXISTING CROSS-SECTION (1:50)

Drawing shows one option for supporting the new rear dormer roof and the front roof-slope by two tandem 203x133-section Universal Beams at dormer roof-joist height directly under the ridge-board. The steels carry the rear joists and front stub joists via hangers, and are themselves supported at their junction by a 100x150mm timber post off a steel within the new first floor, as shown in the Existing First Floor Plan below at left.

The Existing Ground Floor Plan below shows the possibility of an alternative arrangement whereby two 100x100mm timber posts are installed at first-floor level to carry the same ridge-support steels via a lintel, to provide greater flexibility for two back-to-back front- and rear bedrooms and dormers at the north end of the dwelling.

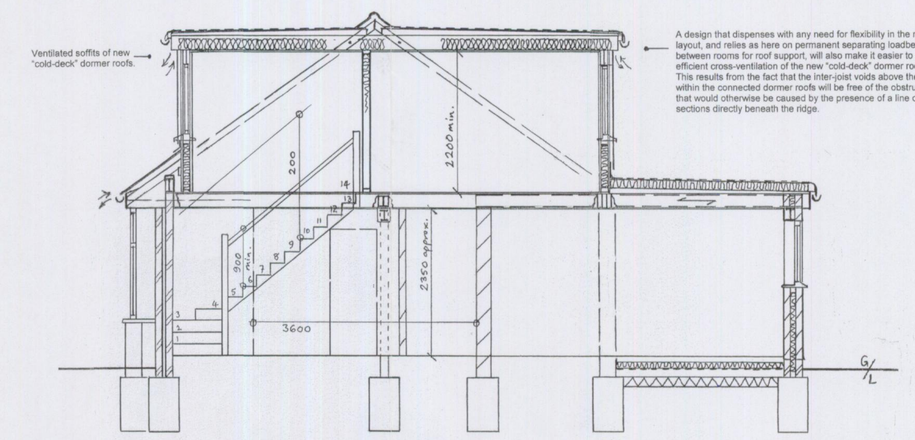
Note, however, that where two back-to-back bedrooms are the clients' sole requirement and no likelihood exists of any subsequent change in their accommodation needs, a third option - not shown here - would be to support the new roof configuration (including a front dormer) by means of a continuous loadbearing studwork wall built off the new floor over or up to 0.5m forward of the 203x133x30 UB which carries the floor-joists over the original lounge area. The structural calculations show that both the steel in question (Item 5 in the calculations schedule) and the new floor-joists (Item 36) are adequate to carry the loads concerned.



PROPOSED CROSS-SECTION

A: DORMER CONSTRUCTION USING HIGH-LEVEL RIDGE-SUPPORT BEAMS FOR DESIGN FLEXIBILITY.
As shown in the structural calculations for Items 2 and 19 - the two high-level steel beam sections below the main ridge - these members are designed to be adequate to carry the inner ends of the joists forming both the rear- and front dormer roofs, thus making it possible to change the First-Floor layout as required over time with non-loadbearing internal partitions alone, and with no need to make structural alterations for this purpose.

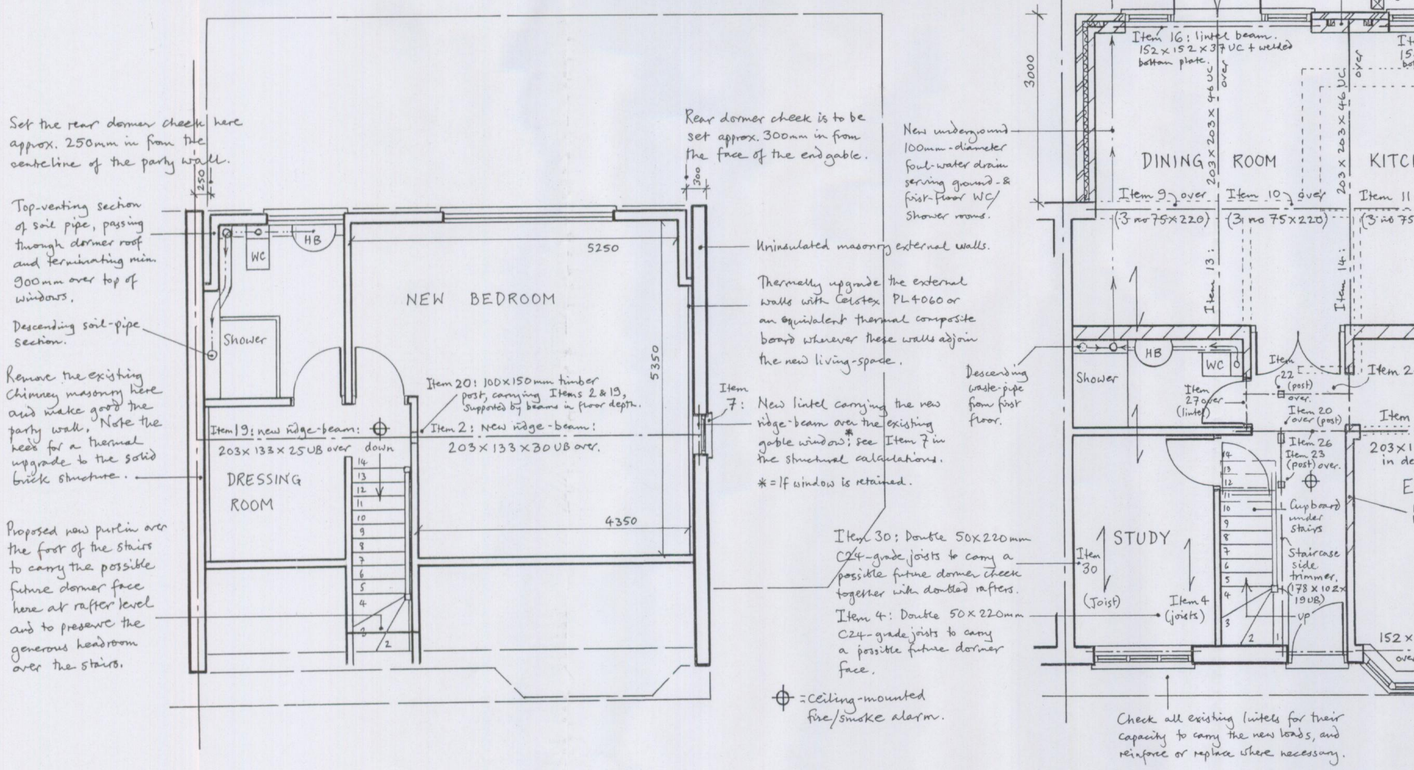
If the existing roof structure has been configured with such built-in flexibility as shown in the Section on the left, altering it to incorporate a new front dormer will be a comparatively simple matter of unbolting the front infill timbers (together with the stub roof-joists attached to them) from the outer web of each beam section, substituting new infill timbers to which hangers have been pre-fixed with both face- and top-nailing, and inserting and securing the inner ends of the new front dormer's roof-joists into these hangers to span the distance between the roof apex and the dormer face, which is to sit over the new First-Floor joists.



B: SIMPLIFYING THE MEANS OF SUPPORTING THE NEW DORMER ROOFS.
However, if the clients should have decided that the flexibility described above is not required in the First-Floor layout, they are likely to have required a simpler support arrangement for the main roof apex and the inner ends of the rear dormer roof-joists that will avoid the need for high-level steel beams.

Such an arrangement is shown below in the form of a loadbearing timber studwork wall separating the new Bedrooms 1 and 2 and built off the new First Floor which, in combination with the 203x133x30 UB positioned within the depth of the new floor across the lounge, has been designed with the capacity to support all the new floor- and roof loads above it. The roof-joists of the rear dormer will also have been taken forward to be bolted to the front rafters as shown, where they will stiffen the roof apex and will in due course be lapped by, and bolted to, the front dormer's incoming roof- joists. Note that Item 36 in the accompanying structural calculations proves the adequacy of the new floor-joists (consisting of doubled 50x200mm C24-grade timbers at 400mm centres) comfortably to carry a roof-supporting studwork wall as much as 0.5m forward of the floor-supporting beam Item 6, thus allowing the new rear Bedroom 1 at the north end of the dwelling to be considerably deeper than its neighbour Bedroom 2. The fact that all First-Floor joists are of moderate or short span and thus have a high loading capacity indicates that the clients will have a considerable degree of choice as to where the new roof-supporting studwork wall sections will be built.

EXISTING FLOOR PLANS (1:50)



EXISTING FIRST FLOOR

EXISTING GROUND FLOOR

Check all existing lintels for their capacity to carry the new loads, and reinforce or replace where necessary.

This original beam is considered adequate to support the proposed new first-floor-, roof and dormer loads.

PLANNING & BUILDING REGULATIONS APPLICATION — Sheet 2 of 2

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SITE LOCATION:
18, WOODVILLE CLOSE, ROCHFORD, ESSEX, SS4 1SN.

PROPOSALS:
CONSTRUCT A NEW FLAT-ROOFED FRONT DORMER AND A GABLED FRONT ENTRANCE PORCH.

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SHEET 2 OF 2: EXISTING FLOOR PLANS; EXISTING AND PROPOSED CROSS-SECTIONS.