



Roof Design Information Request

CLIENT GUIDE



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Preface

The intention for this document is to act as a guide to clients who require a quotation or design to be completed for their project. Recommendations contained within are general to most Trussed roof jobs and are intended to promote awareness as to why the information is required as early as possible within the quotation / design process & the reason for it.

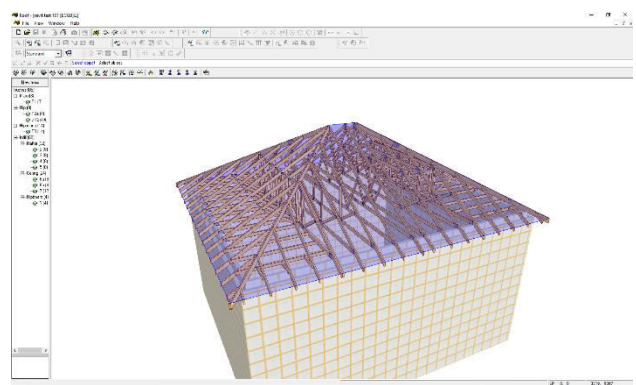
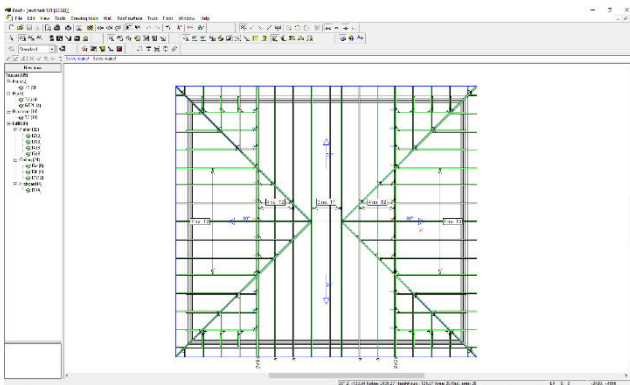
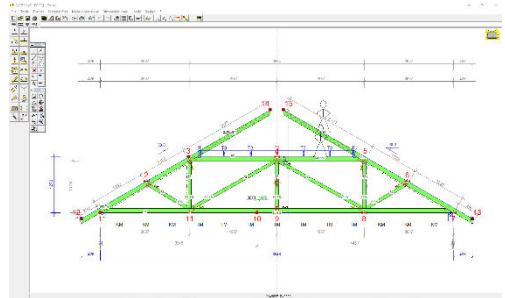
Additional specific information may also be required throughout the quotation / design process depending on the type of project being designed.

1. Exchange of Information

Design Process

Quotes & Designs are created in GNRoof which is an advanced engineering software that is bespoke to the truss industry. The prime advantage of this software is that it enables designers to simultaneously:

- Create drawing layouts & truss sections
- Create 3D information
- Engineer all roof components
- Design Connections
- Produce calculations
- Generate quotation values.



The GNRoof software is designed specifically to minimise the time taken to produce designs & quotes to meet client deadlines. Any revision of the initial information given, potentially means that areas of the roof will have to be re-calculated & re-engineered. It is critical that the design process is as quick and smooth as possible to allow maximum time for manufacture.

Manufacturing Process

It is still a common misunderstanding within the construction industry that trusses required for a building are simply selected from a rack of standard types.

Almost every building has bespoke trusses designed and manufactured to suit its individual requirements.

Any revision of information made during the manufacturing process, not only means trusses may have to be re-designed, it could also mean that trusses and their components will have to be re-manufactured, causing not only a delay to that particular job, but also to other jobs in the production line.



2. Considerations

Specifications

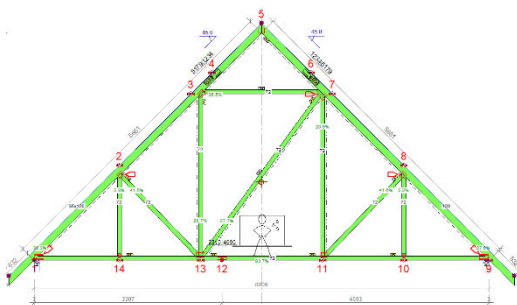
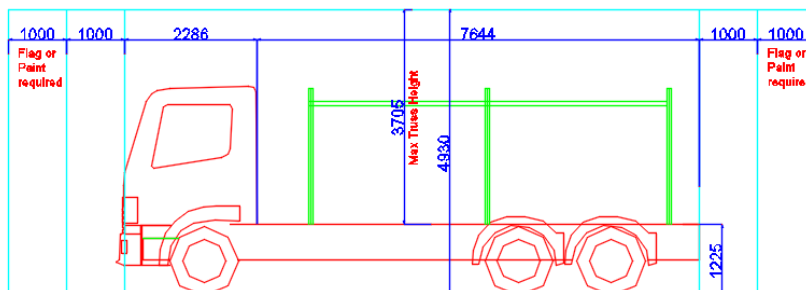
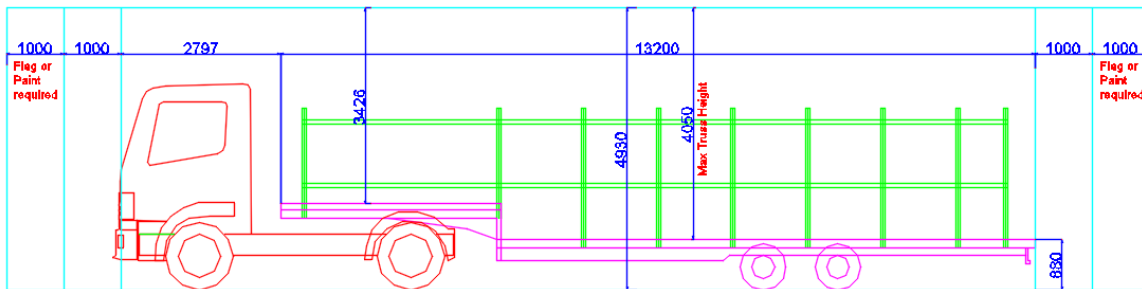
Inclusion of client specification documents are important to enable the designer to obtain critical information that could have a significant influence of the design and price of a structure, for example:

- Treatment requirement
- Timber & Metalwork specifications
- Truss / Joist Centres

Site Constraints

It is important for a designer to be aware of any delivery constraints. Typically, if a large truss has to be delivered on a rigid vehicle then the truss will have to be specially modified, this could have an implication on the job cost and the erection procedure.

Examples of Articulated & Rigid Lorries



Top hat trusses often have to be used when delivery restrictions mean the top section of the truss must be joined on site.

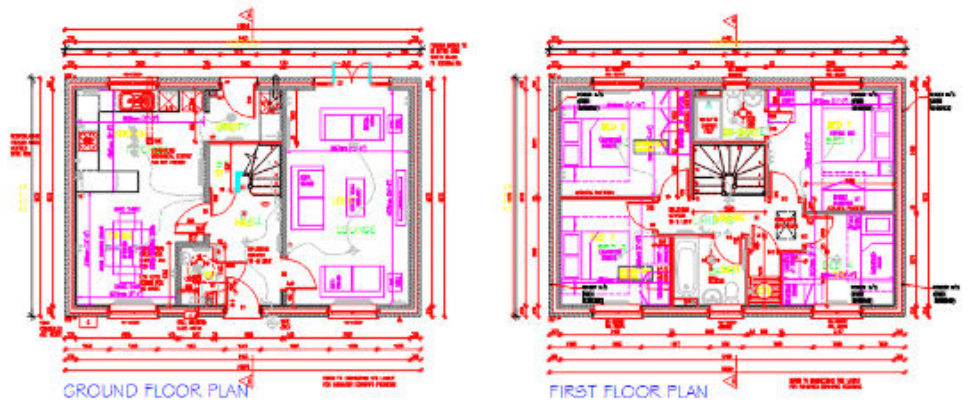
3. Recommended Drawings

These are an example of what a roof designer would typically require as a minimum.

Floor Plans

Floor plans need to show dimensions to all walls and features that could affect the roof design.

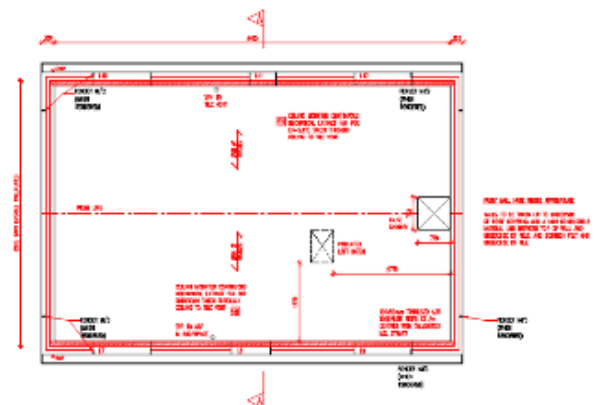
See Section 4 for more details.



Roof Plan

Roof plans are used for guidance by the designer. They should show roof pitches, any span direction requirements, walls that are intended to be built up into the roof space.

They should also show other features that impact on the roof, such as hatches, chimneys, water tanks, skylights, SVP's & attic spaces.

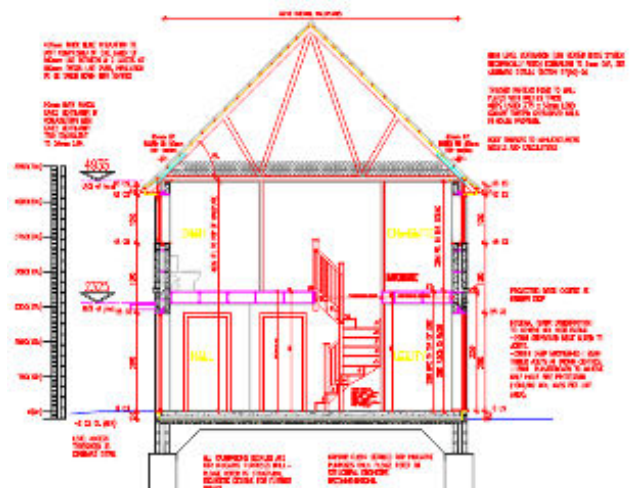


Sections

Sections are critical for the roof designer to get an understanding of the roof requirements. They should show floor, ceiling & ridge heights.

In addition, they should show the supporting wall & eaves levels.

Sections also give an indication of the loading on a roof by showing roof coverings & insulation depth.

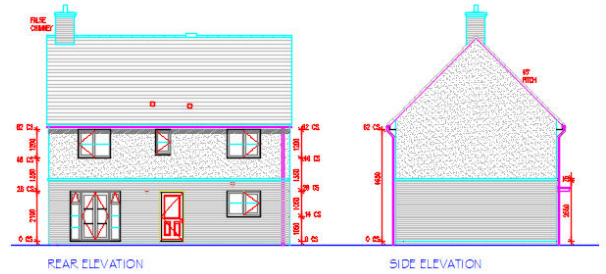


Elevations

Elevations are used primarily as cross check on all the other information supplied.

They will confirm roof pitch, eaves heights, roof features such as chimneys.

On housing sites with multiple standard house types, street elevations are also often required in order to check how adjacent houses interact.

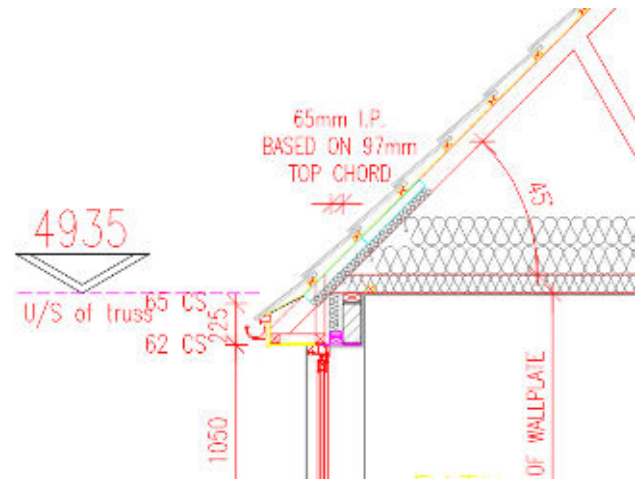


Eaves Details

Eaves information is crucial for the designer to be able to set out the roof correctly.

They should not only show the roof pitch, but also the eaves level. Any inaccuracies in the eaves details could have huge consequences on the construction, like soffit levels covering window heads & ridge levels being too high.

See section 5 for a further breakdown of information required.



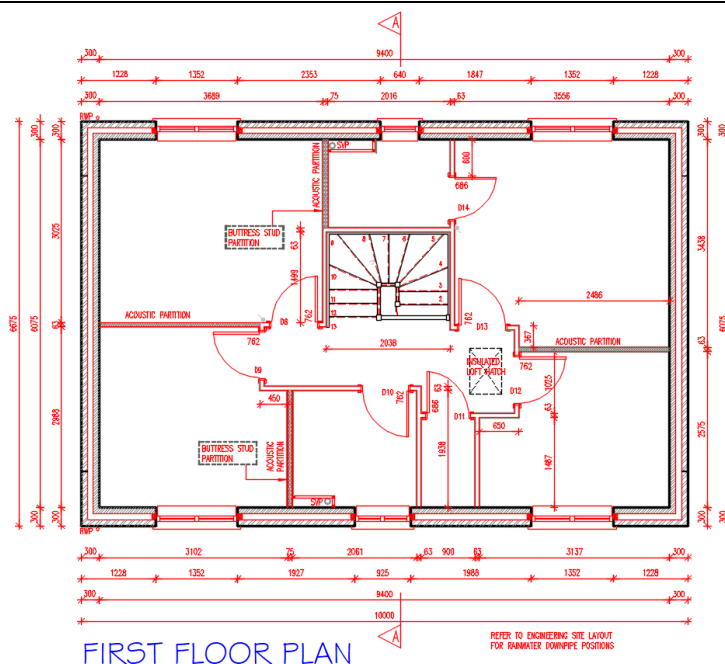
4. Walls & Supporting Structures

Dimensioned Floor Plans

Trusses are designed to suit exact setting out.

As such, floor plans must be provided with all dimensions for both external and internal walls.

Any discrepancies during construction may mean that the trusses will not fit and may require re-designing.



Wall Construction


It is important for a designer to have confirmation that walls used within the design for supporting the trusses are load bearing.

The loading capacity of the wall is also sometimes required for the specification of masonry hangers.

It is important to remember that any connection of the roof structure to the building must be reviewed and confirmed by the building designer.


SUBSTRUCTURE BLOCKWORK LEGEND (2010 REGS)

External Walls


 100mm BLOCKWORK - 7.3N/mm² AIRCRETE (600-800kg/m³, 0.15W/mk).

 100mm BLOCKWORK - 3.6N/mm² AIRCRETE (600-800kg/m³, 0.15W/mk).

Internal Walls

 3.5N/mm² AGGREGATE (1350-1600kg/m³) FOR INTERNAL LOAD BEARING WALLS (7.0N/mm² TO APARTMENTS), 3.6N/mm² AIRCRETE (600-800kg/m³) OR 100mm DENSE BLOCK - 7N/mm² (1900kg/m³) CAN BE USED IN LIEU OF AGGREGATE, DEPENDANT ON STRUCTURAL CALCULATIONS

Party Walls

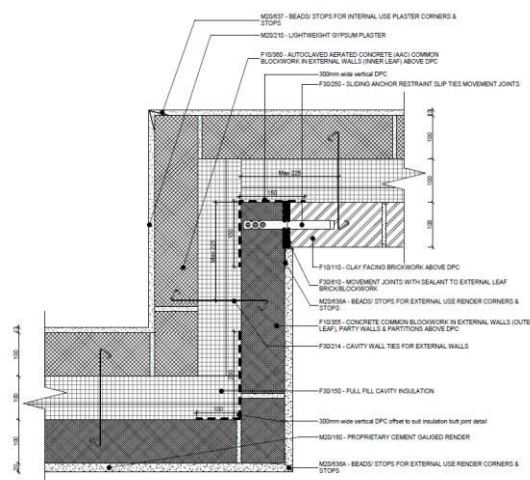
 100mm BLOCKWORK - 3.5N/mm² AGGREGATE (1350-1600kg/m³, 0.47W/mk) FOR E-WM-11 OR E-WM-20, ALTERNATIVELY - 3.6N/mm² AIRCRETE (600-800kg/m³, 0.15W/mk) FOR E-WM-6, DEPENDANT ON SITE SPECIFICATION

Wall Setting out

The wall arrangement can also have an impact on the setting out span of a truss.

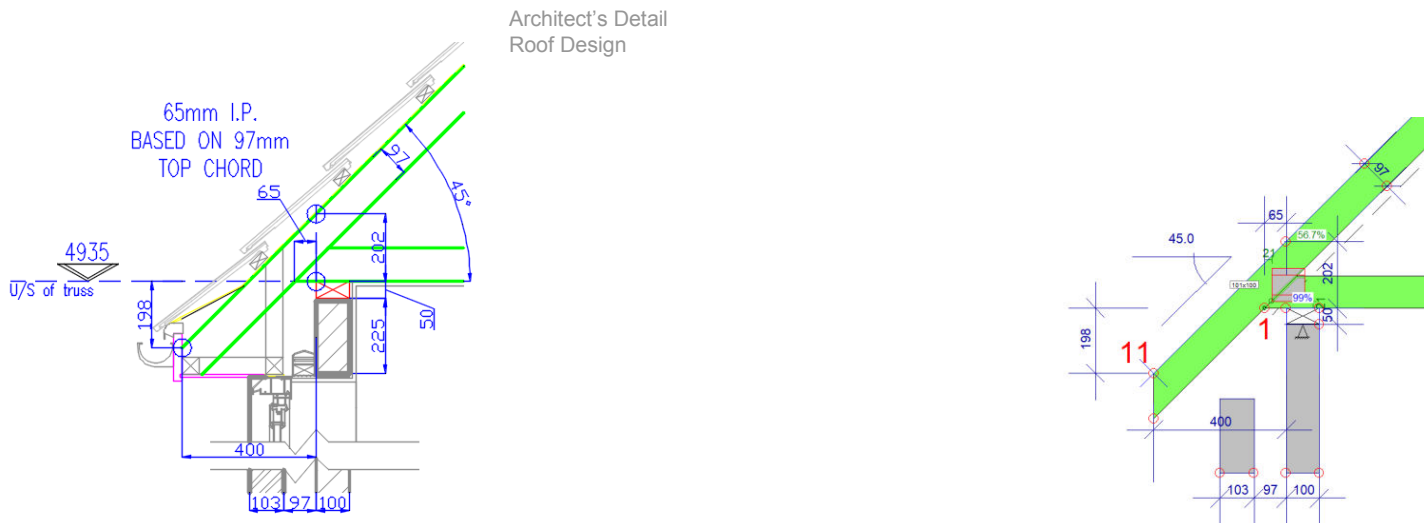
Designers need to know what the wall arrangement is, particularly if there are multiple wall types on the building.

Variations to the cavity width and thickness of cladding to the external face need to be taken into consideration when the roof truss setting out is being determined.



5. Roof Geometry & Setting Out.

Eaves Detailing

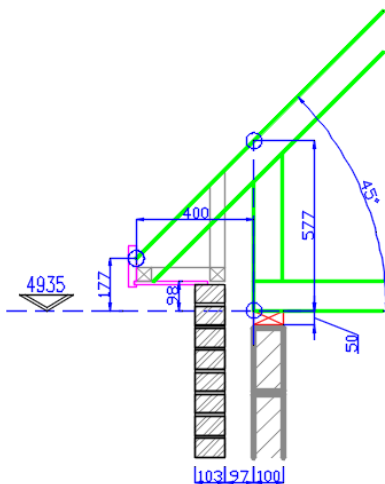


Eaves details are the most important source of information for the roof designer. Eaves details should contain the following:

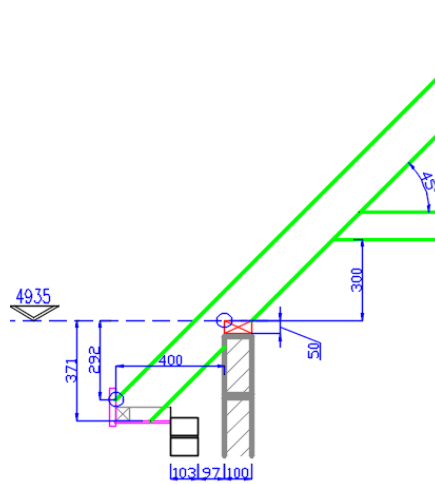
- **Wall plate size & positioning**
- **Wall plate level / height**
- **Cavity wall make up & if there is any external cladding**
- **Roof pitch**
- **Soffit width**
- **Soffit height**
- **Indication of structural ceiling level (underside of truss)**
- **Either:**
 - **Vertical dimension from end of overhang to wall plate level**
 - or**
 - **Vertical dimension from top outside corner of wall plate to top of rafter.**
- **If there is a required rafter size, this should be shown and noted too.**

If there are varying pitches and / or eaves setting out then a detail should be provided for each iteration. For example:

Stubbed Truss



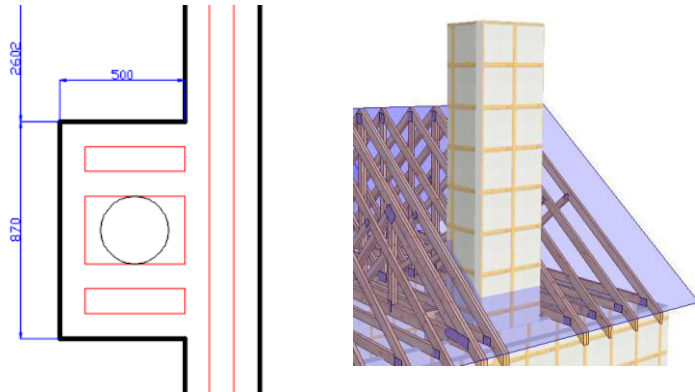
Raised Tie Truss



6. Roof Features & Penetrations.

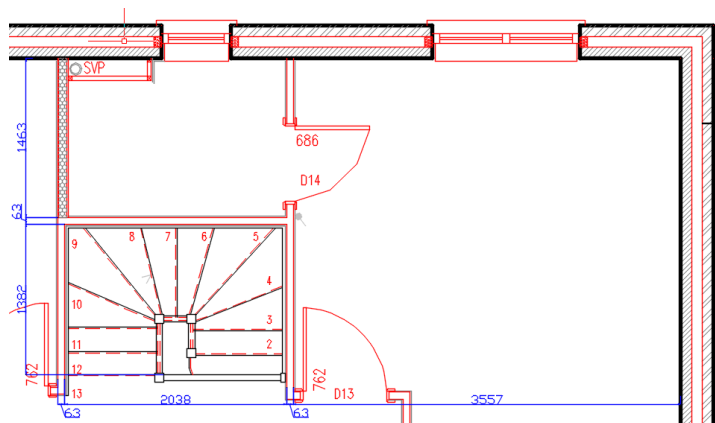
Chimney

- Size of chimney in roof
- Position of chimney in roof



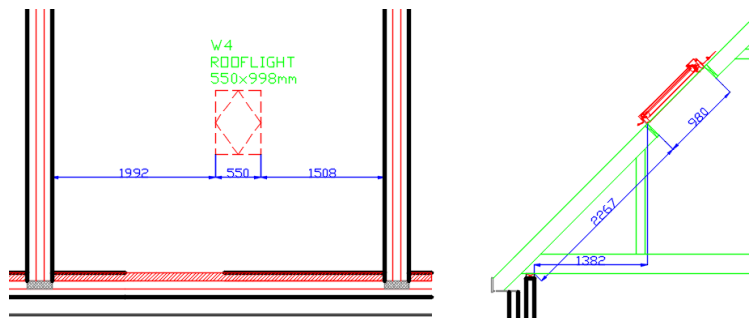
Stairwell

- Stairwell position
- Stairwell opening size
- Location indicated of stair
- Support position on floor.



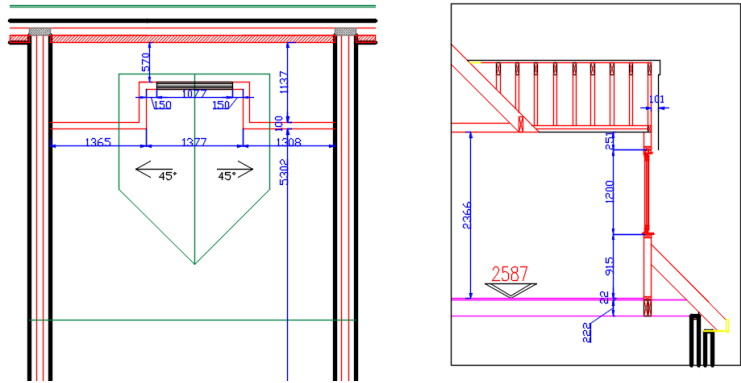
Skylight

- Size of roof light
- Position of opening on plan
- Position up the slope.



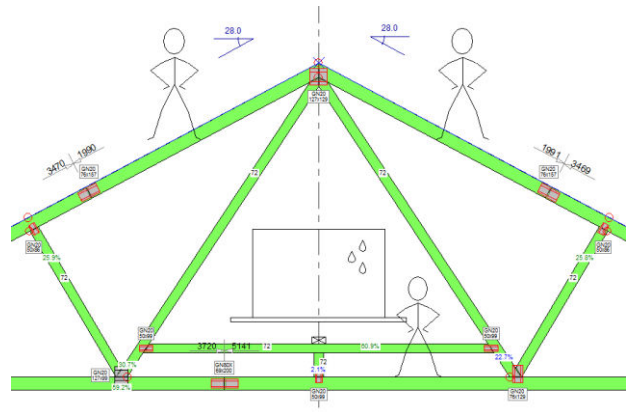
Dormer & Attic Space

- Position of Attic walls on plan.
- Position of dormer walls on plan.
- Position of window on plan.
- Dormer shape & pitch
- Height of attic ceiling
- Height of dormer ceiling
- Height of dormer window
- Floor Level / Height



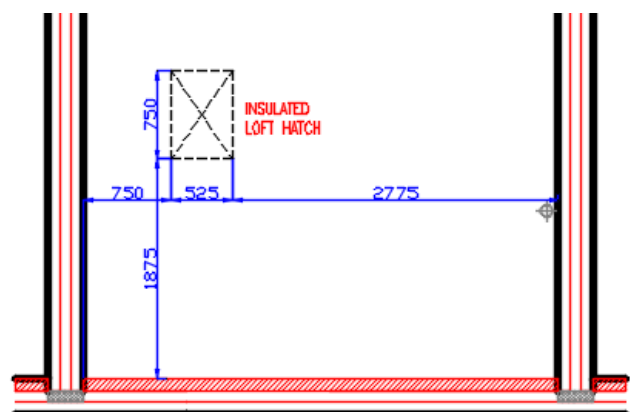
Tanks

- Position of water tank
- Size / Weight of tank
- Is an additional platform required?

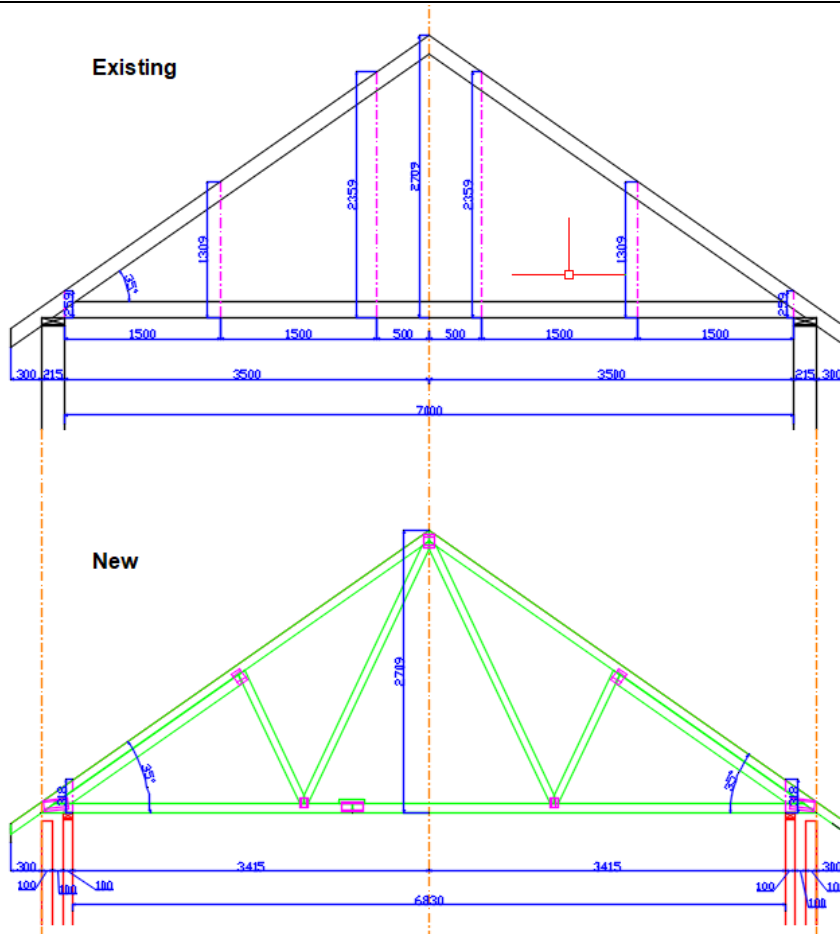


Hatches

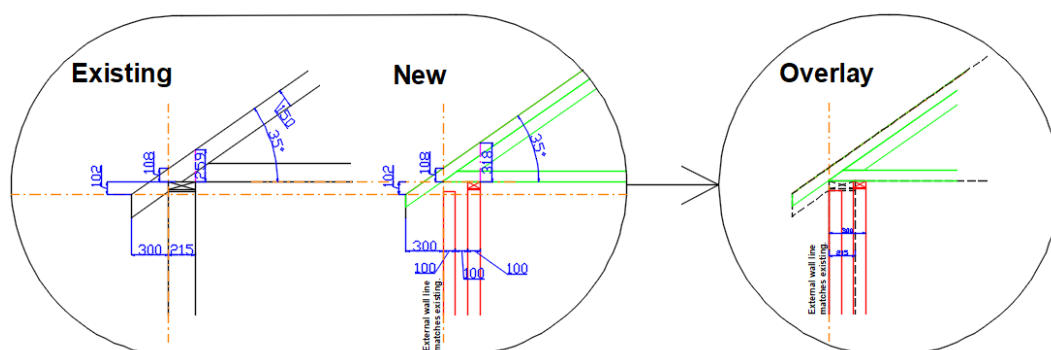
- Size of hatch
- Position on plan of hatch.



7. Lining up with an existing roof.



- It is important to provide as many dimensions of the existing roof as possible.
- On an existing duo pitch roof, both pitches / eaves should be measured as the two sides can differ.
- Use a plumb line when measuring vertical heights.
- Overall ridge height is often difficult to measure, it is beneficial to get check heights by dividing the span into segments and measuring vertically at each segment point (1500mm shown in example above)
- Wall thicknesses from the existing to the new build will often be different, the designer will need to know how they relate to each other.
- The designer will need to know if there are any level differences between the existing structural ceiling and the new structural ceiling.
- Are there any differences in wallplate level between new and existing?
- As many eaves dimensions as possible, include overhang width, timber sizes in existing roof & overbearing heights. (see below)



8. Loading requirements

Coverings & build up

- What is the roof covering type?
- If it is to be tiled, what head lap do the tiles have?
- What Insulation type & depth is being used?
- What is the ceiling covering type & thickness?

Attic / floor

- What is the buildings intended use? Domestic, Office, Storage etc.
- What is the floor covering?
- Are there any services / insulation within the floor zone?

Span directions

- Does the building designer have any stipulations as to where trusses can span to?
- Are there any load bearing walls that must be used?
- Are there any walls that should not be utilized to support the roof?

Building use loads

- Will there be any disability hoists with tracks fixed to the trusses?
- Will there be any sliding partitions on tracks fixed to the trusses?
- Will a fall / arrest anchor point be fixed to the roof?
- Any areas of special load that need to be applied?

Features

- Are there any false chimneys?
- Are there any false dormers?
- Are there any water tanks?
- Will any mechanical units and or ducting be supported on the roof? i.e air conditioning units.

Restraint

- Do any of the walls require restraining?
- Do any wind posts need restraining?
- Are wind girders required?
- Are there any other restraint details that need to be adhered to?

9. Building Designer Responsibility

Building restraint & bracing

The roof designer takes responsibility for the bracing of the roof structure, however, the bracing of the building and therefore the connection of the roof bracing to the structure is the responsibility of the building designer.

Loadings

It is the building designer's responsibility to inform the roof designer of all the loads being applied to the roof structure. The building designer should review the design to ensure the truss designer has accounted for all necessary loadings.

Connection of timber structure to building

Specifications of connections of the roof structure to the building are the responsibility of the building designer, these must be reviewed during approval to ensure they meet requirements. Building designers should particularly ensure that actions of wind onto a building / roof have been taken into consideration.



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