DEPARTMENT OF
PLANNING AND INFRASTRUCTURE

BUILDING ADVISORY SERVICES BRANCH

BUILDING NOTE

Contact Officer: Peter Zagorski Edition Number: 63 Date: 28/11/2007

INSTALLATION OF SOLAR HOT WATER HEATERS ON MULTINAIL TRUSS SYSTEMS

(Addendum to Building Note 56)

The purpose of this building note is to clarify the requirements in relation to the installation of Solar Hot Water Heaters addressed in Building Note 56. In particular the requirements of the Multinail Truss Systems Appendix A " Solar Hot Water or Air Conditioning Units Supported on Multinail Roof Trusses." (copy attached).

This Appendix has been interpreted in two differing ways:

1. That standard Multinail Truss Systems have been designed to support a maximum of 360 litre solar hot water heater or an equivalent A/C unit to a maximum mass of 500 Kg.

   Accordingly, if you are installing a 360 litre solar hot water heater or an equivalent A/C unit to a maximum mass of 500 Kg there is no requirement to strengthen the truss chords; or

2. That standard Multinail Truss Systems have to be modified in accordance with the requirements of Appendix A to support a solar hot water heater to a maximum of 360 litre or an equivalent A/C unit to a maximum mass of 500 Kg.

As a result of this confusion clarification has been sought from the manufacturers representative of the Multinail Truss Systems.

Correct Interpretation

Advice is that solar hot water heaters up to a maximum of 360 litres or an equivalent A/C unit to a maximum mass of 500 Kg:

- must be supported such that the weight is evenly distributed over the truss chords and **must be modified** in accordance with Appendix A to support the units; and

- any solar hot water heaters exceeding 360 litres or an equivalent A/C unit in excess of 500 Kg are not covered by Appendix A and the trusses will need to be designed for the additional loads.

For truss systems other than the Multinail Truss Systems you will need to consult with the manufacturer for their requirements.

FABIO FINOCCHIARO
Director, Building Control
28 November 2007.

MULTINAIL TRUSS SYSTEMS PTY. LTD.

APPENDIX A

SOLAR HOT WATER OR AIR CONDITIONING SYSTEMS SUPPORTED ON MULTINAIL ROOF TRUSSES

All Multinail standard trusses detailed on sheets referring to this Appendix, have been designed to include the added loads resulting from a solar hot water (SHW) or air conditioning (A/C) unit being supported on the top chord.

This Appendix details the method of support and fixing of such units, the limitations involved and design loads assumed for the truss design.

The trusses have been designed to support a maximum of 360 litre solar hot water system,or an equivalent A/C unit to a maximum mass of 500 Kg. Units over these limits are not covered by standard truss details. If such large units are required, the roof truss details and specifications of the required units should be supplied to design engineers or to a registered consulting engineer in order that truss details can be checked or a new truss designed for the increased loads.

The units must be supported such that the weight is distributed evenly over the truss chords. The truss chords must be modified to support this additional load.

TRUSS TYPE SPACINGS: These details apply to all standard trusses itemised in the MULTINAIL TECHNICAL MANUAL at spacings of 600; 900 and 1200 crs.

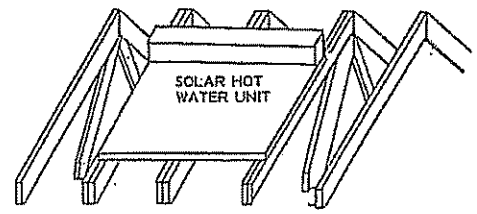
For trusses at:
- 600 mm centres - 4 trusses require additional top chords
- 900 mm centres - 3 trusses require additional top chords
- 1200 mm centres - 2 trusses require additional top chords

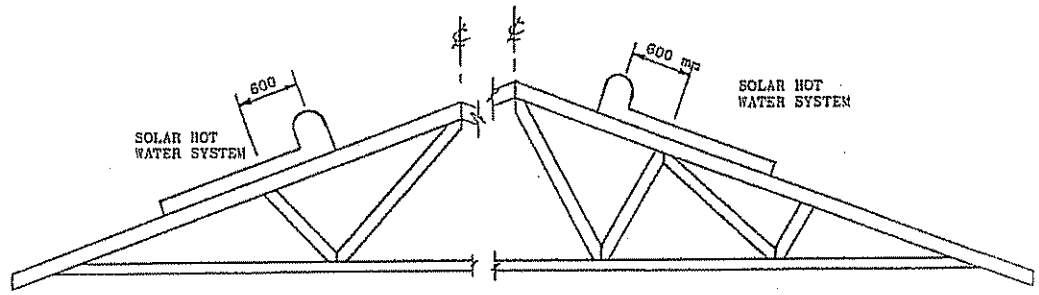
Truss types for which these details DO NOT APPLY are -
- Kingpost Trusses
- Half Kingpost Trusses

MODIFICATION: All truss top chords must be ' doubled' i.e. an additional top chord of identical stress grade and size must be nailed to the side of the truss chord from the Apex to the Heel. Intermediate battens must be used in area of solar hot water unit where battens exceed 600 mm spacing.

NAILING: For 35 mm thick truss timbers nails to be 3.15 x 70 mm staggered at 300 mm centres from one side only.

FOR GABLE ROOFS: The units are to be fixed in the positions as indicated below:





POSITION OF SOLAR HOT WATER SYSTEM ON TYPE A TRUSS

POSITION OF SOLAR HOT WATER SYSTEM ON TYPE B TRUSS

NOTE: SOLAR HOT WATER SYSTEM CONSIDERED IN ALL DESIGNS IS A "SOLARHART" OR SIMILAR WITH TOTAL WATER HOLDING CAPACITY OF 360 LITRES.

WIND DESIGN CRITERIA:			
Basic Velocity: A11			
Wind Category: A11	Timber Group: A11	Roofing Mat: A11	Checked By: [illegible]
Cyclone Factor:	Moisture Cond: A11	Ceiling Mat: A11	Date: 29/08/84
Design Velocity:	Max. Undersize:	Truss Spacing: A11	Design No: SHWS-1
Dynamic Pressure:	T.C. Restraint Crs:	B.C. Restraint Crs:	Page No: SHWS/1

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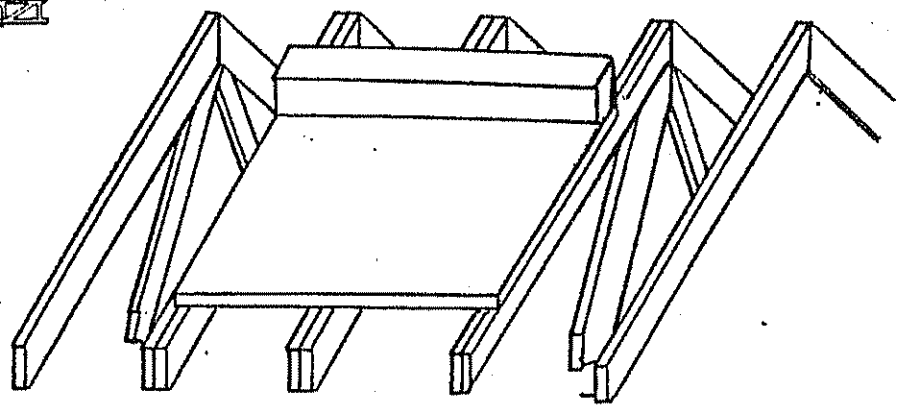
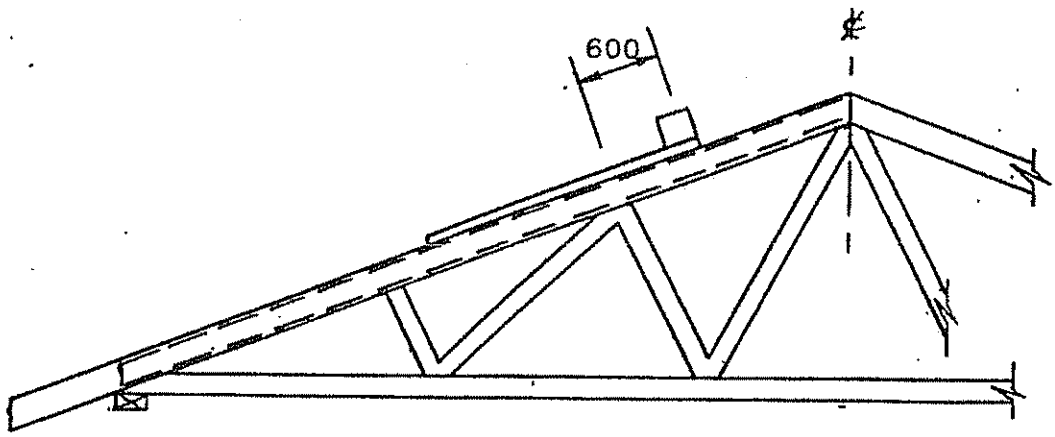
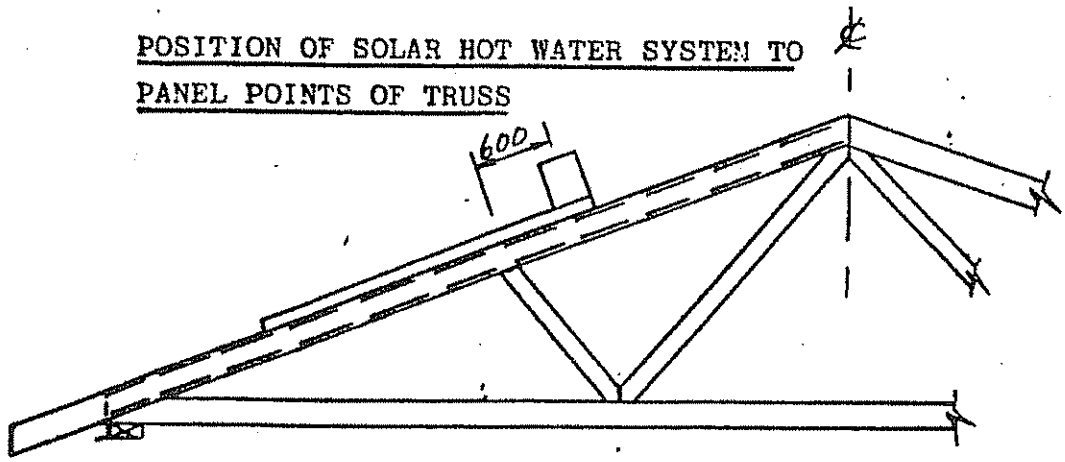


SOLAR HOT WATER SYSTEM WITH TANK SUPPORTED ON TRUSS TOP CHORDS



POSITION OF SOLAR HOT WATER SYSTEM TO PANEL POINTS OF TRUSS



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HIP ROOFS (1)

The best position for a solar hot water unit to be positioned on a hip end is for the tank to be equi-positioned between the truncated girder and the first truncated std.

For this position the Truncated Girder and the Truncated std. have to be modified but the Jack Trusses do not.

TRUNCATED GIRDER MODIFICATION:

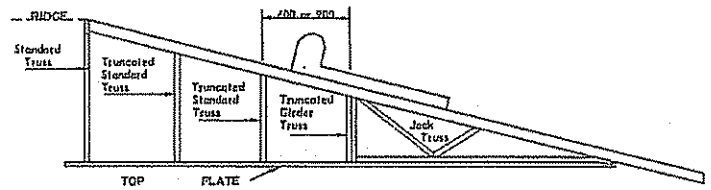
Fix an additional sloping top chord and horizontal top chord to the existing truncated design.

TRUNCATED STANDARD MODIFICATION:

Fix an additional sloping top chord and horizontal top chord to the existing truncated design.

NAILING:

Nail additional members to existing trusses with 3.15 x 70 mm nails staggered at 300 mm centres



HIP ROOFS (2)

If the solar hot water unit is positioned solely on the Jack Trusses then the Truncated Girder and the Jack Trusses will need modification.

TRUNCATED GIRDER MODIFICATION:

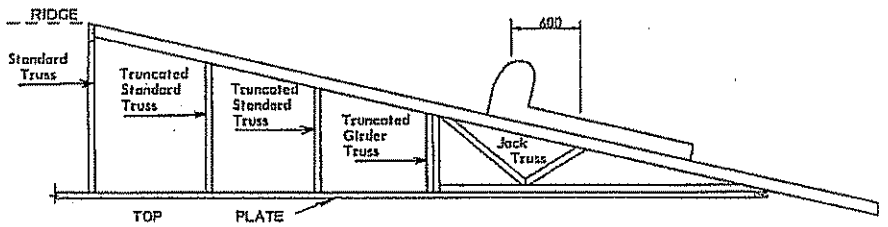
Fix an additional sloping top chord and horizontal top chord to the existing truncated design.

JACK TRUSS MODIFICATION:

The top chords of each Jack Truss supporting the solar unit to be doubled between the Heel and their bearing point on the Truncated Girder.

NAILING:

Nail additional members to existing trusses with 3.15 x 70 mm nails staggered at 300 mm centres.



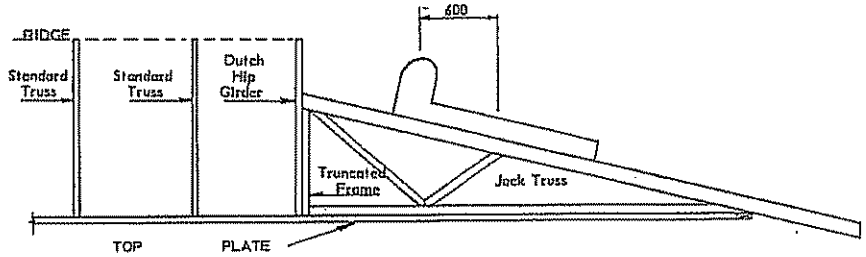
DUTCH HIP:

In this situation the solar hot water unit is positioned fully on the Jack Trusses and as such both the Dutch Hip Girder and the Jack Trusses will require additional members.

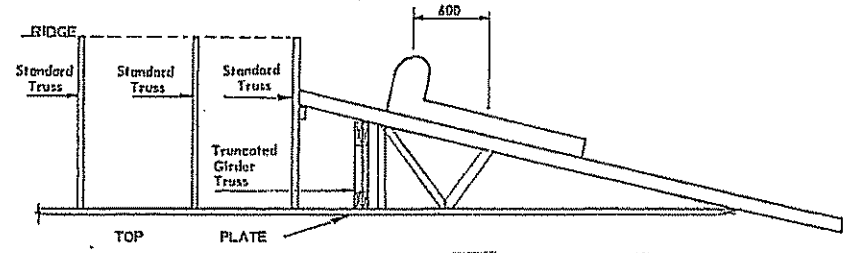
DUTCH HIP GIRDER MODIFICATION:

If the Dutch Hip Girder is a single or double A-type there are two methods of tackling the strengthening alterations:

ALTERNATIVE 1: Manufacture a 'truncated frame' (See below) with a STC; H.T.; b.c. and two vertical webs which in turn is bolted to the Dutch Hip Girder and replaces the Whaling Plate.



ALTERNATIVE 2: Where a Truncated Girder is placed at the station before a Dutch Hip station, in this case Hip Roof (1) or Hip Roof (2) will apply.



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