SP 38 (1987): Handbook of Typified Designs for Structures with Steel Roof Trusses (With and Without Cranes) (Based on IS Codes) [CED 12: Functional Requirements in Buildings]

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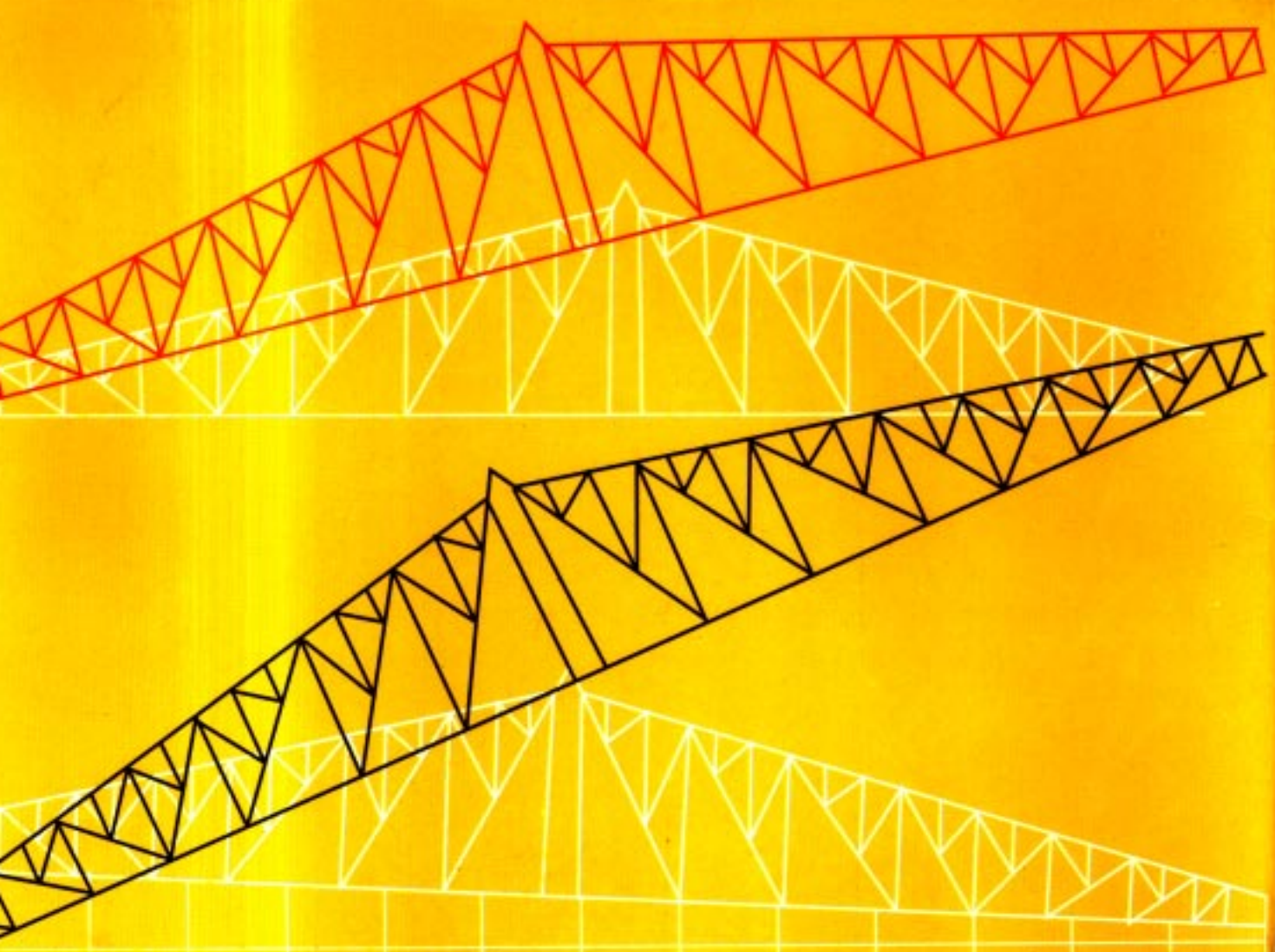

HANDBOOK OF TYPIFIED DESIGNS FOR STRUCTURES WITH STEEL ROOF TRUSSES

(WITH AND WITHOUT CRANES)

(BASED ON IS CODES)

BUREAU OF INDIAN STANDARDS

HANDBOOK
OF
TYPIFIED DESIGNS FOR STRUCTURES WITH STEEL ROOF TRUSSES
(WITH AND WITHOUT CRANES)
(BASED ON IS CODES)

BUREAU OF INDIAN STANDARDS
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0. FOREWORD

The Department of Science and Technology set up an Expert Group on Housing and Construction Technology in 1972. This Group carried out in depth studies in various areas of civil engineering and construction practices followed in the country. During the preparation of the Fifth Five-Year Plan in 1975, the Group was assigned the task of producing a Science and Technology Plan for research, development and extension work in the sector of housing and construction technology. As a result of this and on the recommendation of the Department of Science and Technology, the Planning Commission approved the following two projects which were assigned to the Bureau of Indian Standards (BIS):

a) *Project B-7* — Development Programme on Code Implementation for Building and Civil Engineering Construction; and

b) *Project B-8* — Typification of Industrial Structures.

BIS has set up a special committee (SCIP) consisting of experts to advise and monitor the execution of these projects. A Working Group for Project B-8 overseas the work of the project.

In a developing country like India, the capital outlay under each Five-Year Plan towards setting up of industries and consequently construction of industrial buildings is very high. It is, therefore, necessary that the various parameters of industrial buildings be standardized on broad norms so that it will be feasible to easily adopt prefabricated members, particularly where repetitive structures could be used.

The standardization of parameters for industries by itself will be, no doubt, a difficult task as it will not be possible to specify the requirements of each industry. The layout including height will vary from industry to industry, for it depends on the process of manufacture and end products. However, a little more detailed analysis of the requirements indicates that the problem may not be as difficult as it appears. Although it would not be possible to specify any constraint on the parameters, a broad norm can be given within which most industries could be accommodated.

The object of the project B-8 is to typify at national level the common forms of industrial structures used in light engineering industries, warehouses, workshops and storage sheds, and to obtain economical designs under these conditions. Even if an industrial complex is classified as heavy industry, it need not necessarily mean that all the industrial structures coming within the complex should be heavy industrial structures and that many structures could be from the typified design.

The main objective of typification of industrial structures is to reduce the variety to the minimum and provide standard prefabricated designs so that the structures could be easily mass produced and made available to the user almost off the shelf. In doing so, there will be tremendous saving in time in putting up an industry into production and hence increased production. This would indirectly increase the overall economy of the country. This would also help in the orderly use of source materials like steel and cement. This would be of immense use to structural engineers as well, since it would relieve them, to a large extent, from the routine and repetitive calculations. Thus the engineers time could be used to look at more innovative and economical alternatives.

The project on typification of industrial structures involved the following three main tasks prior to preparation of typified designs:

a) Task I — Survey and classification of industrial structures into different types;

b) Task II — Identification of industrial structures repeated a large number of times in the country, which are amenable to typification from the classified list prepared during Task I; and

c) Task III -- Specifying the elements of the industrial structures to be typified taking into consideration a number of parameters, such as structures with cranes and without cranes, span, length, height, support conditions, slope of roof, wind and earthquake forces, spacing, field and shop connections, material (steel, reinforced concrete), etc.

The data regarding physical parameters like span, spacing, roof slope, column heights, crane loading, etc, of existing structures has been obtained from several public sector enterprises through Bureau of Public Enterprises (BPE). Some information from private industries has also been collected by BIS.

The typified design for the following types of industrial structures in steel and reinforced concrete is envisaged to be brought out based on appropriate Indian Standards:

a) *Steel Structures*

1) Structures with steel roof trusses (with and without cranes)

2) Structures with steel kneebraced trusses (without cranes)

3) Structures with steel portal frames (without cranes) (SP : 40)*

4) Structures with steel portal frames (with cranes)

5) Structures with steel lattice frames (without cranes)

b) *Reinforced Concrete Structures*

1) Structures with RCC roof trusses (with and without cranes)

2) Structures with RCC portal frames (without cranes)

3) Structures with RCC portal frames (with cranes)

In each case of structures with cranes, the maximum capacity of crane considered is limited to 20 tonnes, normal range in light industries.

This Handbook deals with typification of structures with steel roof trusses (with and without cranes) having A-type as well as lean-to roof type trusses supported on columns. In structures with cranes, crane columns are build-up cantilever columns to resist wind and transverse crane loads. The roof trusses which are the same for buidlings with and without cranes have been designed both as angle trusses and tubular trusses.

Some of the points to be noted regarding analysis and design of these structures are as follows:

a) Typified design have been given for the following parameters:

Span lengths (metres): A-type	= 9, 12, 18, 24 and 30
lean-to roof	= 9, 12 and 15
Spacing of trusses (metres)	= 4.5 and 6.0
Roof slopes	= 1 in 3, 1 in 4 and 1 in 5

Span	*Column Height* (m)	
(m)	A-Type Truss	Lean-to Roof Truss
9.0	4.5, 6.0	4.5, 6.0
12.0	4.5, 6.0, 9.0	4.5, 6.0, 9.0
15.0	—	4.5, 6.0, 9.0
18.0	6.0, 9.0, 12.0	—
24.0	9.0, 12.0	—
30.0	9.0, 12.0	—

Crane column height (metres)	= 4.5 and 6.0
Crane capacities (tonnes)	= 5, 7.5, 10 and 20
Minimum clear head room (metres)	= 3.0
Minimum side clearance (metres)	= 0.5
Wind zones (*see* IS : 875-1964)	= I, II and III
Earthquake zones (*see* IS : 1983-1984)	= I, II, III, IV and V

*Printed.

In general use of 1 in 3 slope is recommended as this may not pose any fabrication problem. Flatter slopes may be adopted after taking due precautions for fabrication of trusses. In case of flatter slopes, the end laps between adjacent sheets shall be correspondingly increased over that of 1 in 3 slope and/or the joints suitably sealed in accordance with the manufacturer's recommendations.

b) The analysis has been made using a computer programme based on the stiffness method of analysis. The member properties required in the stiffness analysis have been assumed on the basis of a preliminary design.

c) Trusses have been designed both as angle trusses and tubular trusses. The structure with steel roof trusses have been designed following the provisions of IS : 800-1962 for hot-rolled sections and IS : 806-1968 for tubular sections. There will be some variation in the permissible stress in case IS : 800-1984 is used for design of hot-rolled sections. However, it is felt that the design results presented in the Handbook will not be much different from those obtained by using IS : 800-1984.

d) The internal pressure/section specified in IS : 875-1964 for buildings with normal permeability (± 0.2) has been considered in design.

e) The joint details have been included to illustrate the method of detailing and they should not be considered as the only available method for detailing.

f) The typified design results are given for purlins, girts, trusses and columns. Design of other elements such as column cap plates, base plates and fasteners are also covered. Typified design of gantry girders for various crane loads and spacing of columns is also given in the Handbook. Bracing and foundation designs have not been typified because of varying design parameters. However, a typical example of bracing design and footing design is included.

g) A detailed design example in the design office format is given in the Handbook illustrating the use of analysis and design information presented.

h) On the basis of typified designs for different spans, spacings, roof slopes, etc, some conclusions regarding the more economical designs is covered in the Handbook.

j) The Handbook is not to be used for design of structures intended for process/heavy industries. The Handbook may be used only for design of industrial sheds meant for storage purposes or light industrial structres. Use of cranes will be limited to light duty according to the classification No. 1 of IS : 807-1976.

k) Minimum section specified for internal web members in trusses with angle sections is equal angle ISA $40 \times 40 \times 6$. However, for larger A-type trusses with spans of 24 and 30 m, this minimum angle may be replaced by angle ISA $50 \times 50 \times 6$, wherever there is any chance of distortion or deformation taking place during transportion or erection of truss.

m) The Handbook is intended to be used by qualified engineers only.

The Handbook is based on the work done by Structural Engineering Laboratory, Department of Civil Engineering, Indian Institute of Technology (IIT), Madras. The draft was circulated for review to the University of Roorkee, Roorkee; National Projects Construction Corporation Limited, New Delhi; Engineer-in-Chief's Branch, Army Headquarters, New Delhi; Gammon India Limited, Bombay; Association of Consulting Engineers (India), New Delhi; Tata Consulting Engineers, Bombay; Metallurgical and Engineering Consultants (India) Limited; National Industrial Development Corporation, New Delhi; Research Designs and Standards Organization, Lucknow; S. R. Joshi and Company Limited, Bombay; Food Corporation of India, New Delhi; Engineers India Limited, New Delhi; National Hydro-Electric Power Corporation Limited, New Delhi; National Thermal Power Corporation, New Delhi; Western Railways, Bombay; Braithwaite and Company Limited, Calcutta; Tata Iron and Steel Company Limited, Jamshedpur; B. G. Shrike and Company, Pune; City and Industrial Development Corporation of Maharashtra Limited, Bombay; Stup Consultants Limited, Bombay; Bharat Heavy Electricals Limited, Ranipet; Housing and Urban Development Corporation Limited, New Delhi; Hindustan Steel Works Construction Limited,

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CONTENTS

1. GENERAL

1.1 Introduction — Steel trusses, supported on columns, are one of the structural systems commonly used in industrial buildings. The lateral load resistance (due to wind, earthquake, etc) of such systems may be derived either from the cantilever action of the supporting columns fixed at base or by the combination of horizontal wind girders at the truss tie level and vertically braced end bays. The steel trusses have been designed as simply supported on columns and subjected to loads (dead, live, crane, wind and earthquake loads) applied through the purlins, girts and gantry girders. The columns have been designed as cantilevers tied together resisting wind load and other loads acting perpendicular to the ridge, in addition to axial load.

The analysis and design results are given for purlins, steel roof trusses made of angles or tubes, columns and base plates. The typified designs have been presented for the following different parameters:

Span length of A-type trusses (metres) = 9, 12, 18, 24 and 30

Span length of lean-to roof trusses (metres) = 9, 12 and 15

Spacing between trusses (metres) = 4.5 and 6.0

Roof slope = 1 in 3, 1 in 4 and 1 in 5

Span (m)	*Column Heights* (m)	
	A-Type	Lean-to Roof
9.0	4.5, 6.0	4.5, 6.0
12.0	4.5, 6.0, 9.0	4.5, 6.0, 9.0
15.0	—	4.5, 6.0, 9.0
18.0	6.9, 9.0, 12.0	—
24.0	9.0, 12.0	—
30.0	9.0, 12.0	—

Crane column height (metres) = 4,5 and 6.0

Crane capacities (tonnes) = 5, 7.5, 10 and 20

Minimum clear head room (metres) = 3.0

Minimum side clearance (metres) = 0.5

Wind zones = I, II and III

Earthquake zones = I, II, III, IV and V

Permeability = Normal

The typified designs have been done considering economy associated with minimum weight and mass production of repetitive fabrication. The analysis and designs have been done on the basis of relevant Indian Standards. In general, use of 1 in 3 slope is recommended as this may not pose any fabrication problem. Flatter slopes may be adopted after taking due precautions for fabrication of trusses. In case of flatter slopes, the end laps between adjacent sheets shall be correspondingly increased over that of 1 in 3 slope and/or the joints suitaibly sealed in accordance with the manufacturer's recommendations.

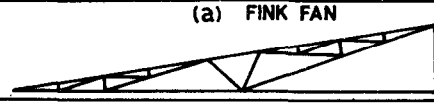
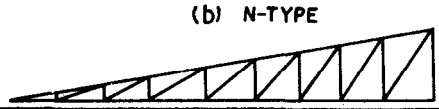
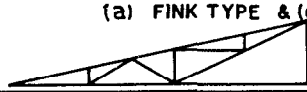
The hot-rolled steel members and fasteners conforming to IS : 226-1975, IS : 2062-1984 and steel tubes conforming to grade Yst 25 of IS : 1161-1979 have been used in the elements of the structure.

1.2 Truss Configuration — Before the choice of a final configuration of truss for the typified design, several commonly used truss configurations have been studied. From among these, three configurations shown in Fig. 1 selected for an in-depth weight comparison. These are: (a) fink or fink fan, (b) N-truss, and (c) a configuration incorporating the advantages of the first two alternatives. These three configurations were analyzed and designed for two A-type truss spans (12 and 24 m) spaced at 4.5 metres spacing and 200 kg/m^2 basic wind pressure. For 12 m span length configuration, *a* and *c* were essentially the same and hence configuration *a* was not analyzed. The weights of trusses are also given in Fig. 1.

It was found that the configuration *c* shown in Fig. 1 had the minimum weight among the three configurations and at the same time may be easier to fabricate. Consequently, all A-type trusses and lean-to roof trusses have been designed using configuration (c) (*see* Fig. 1).

1.2.1 *A-type Truss Configuration* — Figure 2A shows the configuration of the typified trusses for different span lengths alongwith tie runner positions. These configurations have been arrived at, after a detailed study of various possible configurations as explained in 1.2. The distance between nodes in the rafters is restricted to be less than or equal to 1.4 m such that the purlins may be located directly at the nodes and thus avoid panel bending of rafters which has led to lower truss weight.

SPACING = 4500 SLOPE: 1 IN 3 WIND ZONE: III

SPAN	CONFIGURATION	TOTAL WEIGHT IN Kg.	WEIGHT (Kg/m^2)
24.00 M	(a) FINK FAN 	880.0	8.2
	(b) N-TYPE 	980.1	9.1
	(c) COMPOUND OF (a) & (b) 	850.0	7.8
12.00M	(b) N-TYPE 	245.4	4.5
	(a) FINK TYPE & (c)COMPOUND 	233.0	4.3

NOTE — All weight excluding wt of fixtures, purlin etc.

FIG. 1 WEIGHT COMPARISON OF ROOF TRUSS CONFIGURATIONS

The joint numbers are shown in the right half of the trusses and the member numbers within circles in the left half of the trusses in Fig. 2A. The joint and member numbers in the other halves are symmetrical. Analysis and design details are presented with respect to the joint and member numbers.

1.2.2 *Lean-to Roof Truss Configuration* — Figure 2B shows the configuration of the typified lean-to roof trusses for different span lengths alongwith tie runner positions. These configurations have been arrived at after a detailed study of various possible configurations.

The distance between nodes in the rafters are restricted to be less than or equal to 1.4 m so that the purlins may be located directly at the nodes and thus avoid panel bending of rafters.

The member numbers are shown within circles adjacent to members and joint numbers adjacent to nodes in Fig. 2B. These joint and member numbers are used to present all the analysis and design details.

1.3 Terminology

Bay — The space between successive bents is called a bay.

Bracing — The single or double diagonal members which form trusses with columns or beams (trusses) to provide stability and resist horizontal load.

Columns — These are members, generally vertical, which primarily resist axial load. They are more often subjected to thrust and moment. Usually rolled single sections are used but laced and battened columns are also used where two or more rolled sections are connected together by lacing or batten plates.

Column Height — It is the height of column from the top of column pedestal (or bottom of column base plate) to the bottom of truss shoe angle in the structures without cranes and up to bottom of gantry girder in case of columns with cranes.

Crane Girders — These resist vertical and horizontal loads from cranes. They usually consist of a I-beam with a channel, flanges down, welded to the top flange.

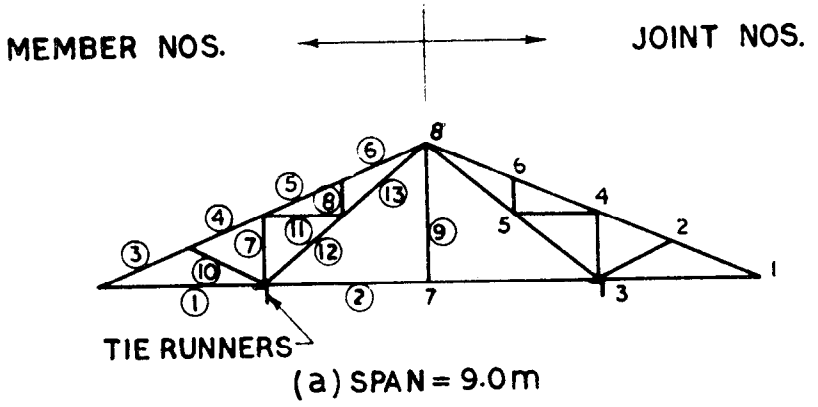
Girts — Beam members carrying side sheeting and supported by columns.

Purlins — Beam members carrying roof sheeting and supported by trusses.

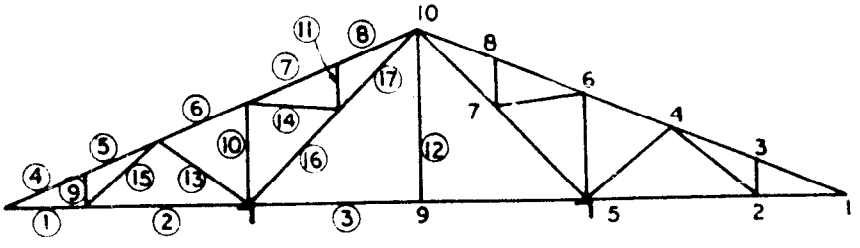
Roof Slope — It is the slope of the roof material with respect to the span length. It is obtained by dividing height of truss by half the span of truss for A-type truss and height of truss divided by span for lean-to roof truss.

Spacing Between Trusses — The centre line distance of two trusses in longitudinal direction.

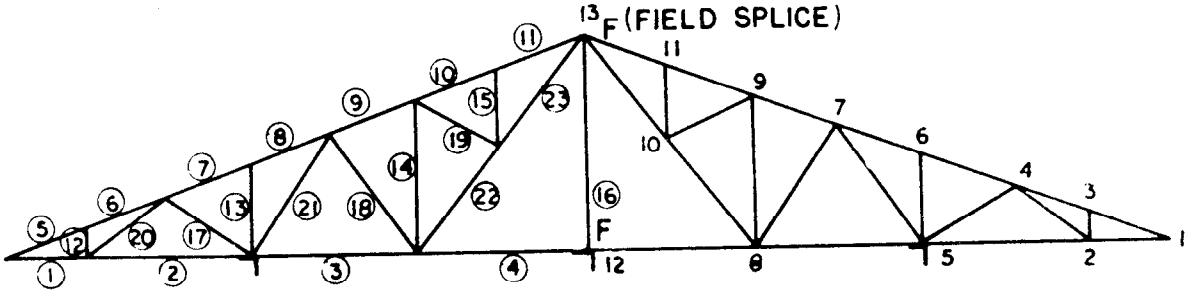
Span — The centre line distance of roof columns in transverse direction.



(a) SPAN = 9.0 m

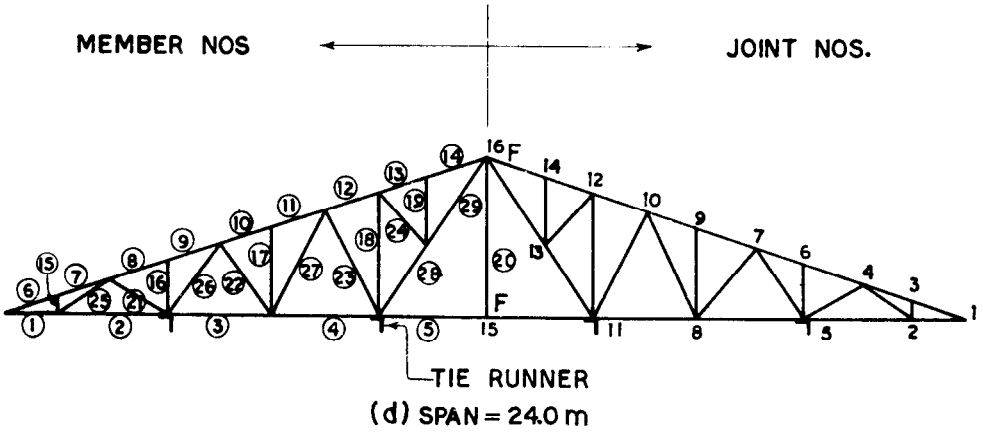


(b) SPAN = 12.0 m

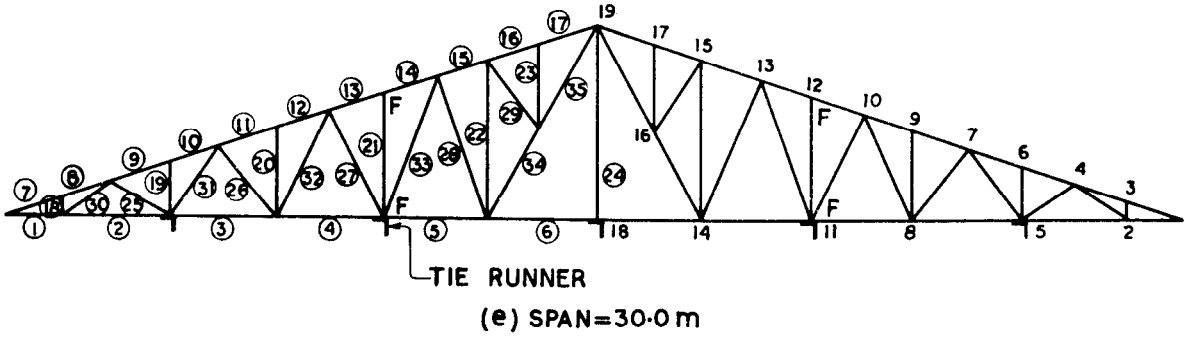


(c) SPAN = 18.0 m

2A Configurations of A-type steel roof trusses—*Contd.*

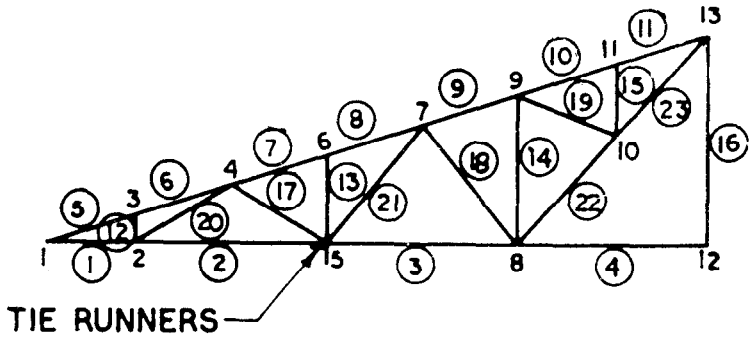


(d) SPAN = 24.0 m

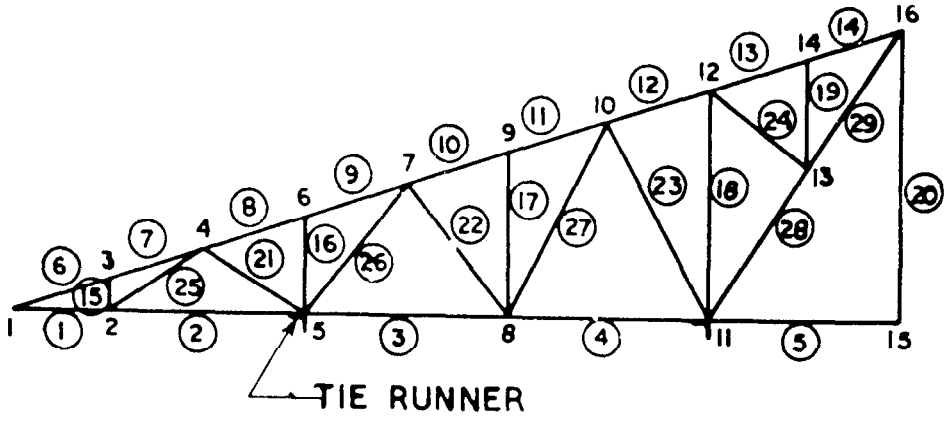


(e) SPAN=30·0 m

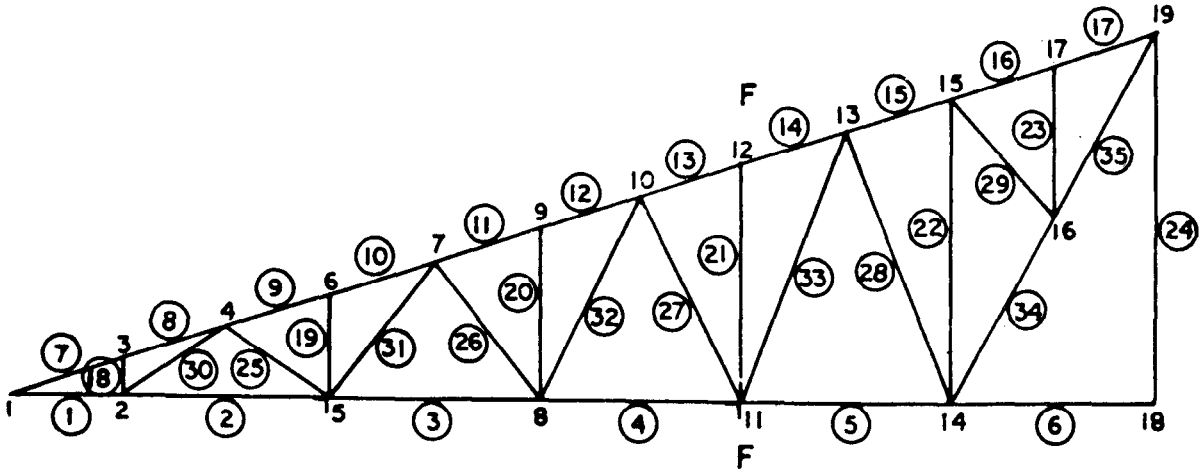
2A Configurations of A-type steel roof trusses



(a) SPAN: 9.0 m



(b) SPAN: 12.0 m



(c) SPAN: 15.0 m

2B Configuration of *lean-to* steel roof trusses.

NOTE — Number within the circle indicate the member and number without the circle indicate the joint location. '*FF*' indicate the field splice location

FIG. 2 TRUSS CONFIGURATIONS

Trusses — These are framed assemblies generally carrying loads in the plane of the frame. The individual members are primarily in tension or compression which may be accompanied with some bending moment.

2. ANALYSIS

2.1 Introduction — The steel trusses have been analyzed as simply supported on columns. The rafter and tie members of the trusses have been adequately braced laterally thus preventing out-of-plane buckling. The trusses have been analyzed assuming the connections between the members to be rigid and capable of transferring moment and shear in addition to axial force. The support at one end is assumed to be hinged and the other end on rollers for the purpose of analysis. This is achieved in the actual structure by the flexibility of columns.

The analysis has been made using a computer programme based on the stiffness method of analysis. Due to the large number of trusses to be analyzed, pre- and post-processing subroutines have been appended to the analysis programme which automatically generate the necessary input data and print the output results in the required tabular format, after calculating the governing design forces from among various load combinations. The resulting analysis programme requires the span, length, spacing, roof slope and wind zone as the input data for the analysis and after the stiffness analysis and post processing of analysis results, it prints the member forces and the truss support reactions. The member properties required in the stiffness analysis have been assumed on the basis of a preliminary design.

The trusses have been analyzed for dead load, live load and wind load according to IS : 875-1964. The total dead load varies from 36 kg/m^2 to 45 kg/m^2. The basic wind pressure for the three wind zones have been considered as specified in IS : 875-1964. The internal pressure/suction as applicable for buildings with normal permeability has been considered. The wind direction parallel to the ridge govern the member forces in all trusses. However, the horizontal forces from trusses on to columns have been obtained from wind direction perpendicular to the ridge.

The forces and moments in the truss members due to the combination of dead load and live load are compared with that due to dead load and wind load in order to determine the governing design forces. The member design forces for all the trusses to be typified and their support reactions have been given in this Handbook.

A few typical short and long span structures with roof trusses were analysed for earthquake forces according to IS : 1893-1975 and the member forces even due to the severest earthquake was always found to be less than that due to the minimum basic wind pressure of 100 kg/m^2. Hence the earthquake loads does not govern the design of structures with steel roof trusses.

2.2 A-Type Roof Truss Analysis Results — The analysis results for all the A-type trusses are given in Tables 1 to 90. The heading of each table gives the design parameters of the truss. The maximum compressive force, the mement due to the corresponding load case and maximum tensile force and the moment due to the corresponding load case for each member are tabulated. The forces tabulated are the values after 25 percent reduction in the analysis result, if wind load has contributed to the force in the member. (This reduction accounts for the $33\frac{1}{3}$ percent increase in the allowable stress in such loading cases). The reactions at truss supports are given at the end of tables, following the member forces.

2.3 Lean-To Roof Truss Analysis Results — The analysis results for all the lean-to roof trusses are given in Tables 91 to 144 along the same lines as in the case of A-type trusses as discussed in **2.2.**

3. DESIGN

3.1 General — The structural design of hot rolled steel sections is based on IS : 800-1962. There will be some variation in permissible stresses in case IS : 800-1984 is followed. It is however felt that the design results presented in this handbook will not be much different from those obtained using IS : 800-1984. Tubular sections have been designed based on IS : 806-1968. The following clauses present the design results of purlins, girts, trusses, columns and base plates.

3.2 Purlin and Girt Design — The maximum spacing between purlins has been taken to be equal to 1.4 m and between girts to be equal to 1.7 m as per manufacturer's specifications. The design has been done using A.C. sheeting for cladding. C.G.I. sheet cladding may also be used with the same purlin and girt size and spacing. The purlins and girts have been designed to span the spacing between the trusses or columns (4.5 or 6.0 m) and transfer the loads (dead, live, wind and earthquake loads) from the sheeting to the supporting frame taking into consideration biaxial bending. The purlins and girts have been designed for the normal wind pressure on claddings as per IS : 875-1964 for the case of buildings with normal permeability. However sheeting and sheeting fasteners have to be designed for increased wind pressure due to local effects as per IS : 875-1964. The design has been presented for tubular purlins and girts without any sag rod, and for channel purlins and girts without sag rod and alternatively with one sag rod at mid span. The diagonal sag rods are assumed to be provided at the top most panel and also at every 8th panel for purlins and 7th panel for girts.

(a) *Purlin Sizes (All the 3 wind zones)*

Span (m)	Maximum Spacing (m)	Purlin Size	
		Without sag rod	With sag rod
Channels:			
4.5	1.4	ISMC 125 × 12.7	ISMC 100 × 9.2 ISRO 10 mm dia sag rod
6.0	1.4	ISMC 150 × 16.4	ISMC 125 × 12.7 ISRO 12 mm dia sag rod

Tubes:

Span (m)	Spacing (m)	Purlin Size (without sag rod)
4.5	1.4	125 L
6.0	1.4	150 L

(b) *Girt Sizes: (All the 3 wind zones)*

hannels:

Span (m)	Maximum Spacing (m)	Girt Size	
		Without sag rod	With sag rod
4.5	1.7	ISMC 125 × 12.7	ISMC 100 × 9.2 ISRO 10 mm dia sag rod
6.0	1.7	ISMC 150 × 16.4	ISMC 125 × 12.7 ISRO 12 mm dia sag rod

Tubes:

Span (m)	Maximum Spacing (m)	Girt Size (without sag rod) For Wind pressure		
		100 kg/m^2	150 kg/m^2	200 kg/m^2
4.5	1.7	80 L	90 L	100 L
6.0	1.7	100 L	100 M	125 M

The standard connection details of purlins and girts to the framing is shown in Fig. 3. The sag rod and diagonal sag rod details used in channel purlins and girts and given in Fig. 4.

NOTE - Instead of simply supported purlin and girt design given in this typified design, balanced cantilever design approach may also be used to get relatively smaller sections. Instead of hot rolled steel channel and steel tubular sections used for purlins and girts various appropriate cold-formed steel sections may also be used, if desired with appropriate sizing.

3.3 Truss Design - The A-type trusses have been designed for the forces given in Tables 1 to 90 and lean-to roof trusses for the forces given in Tables 91 to 144 using angle and tube sections. The members of steel roof trusses have been designed for the simultaneous action of axial forces and bending moments, obtained from the analysis programme, following the governing provisions of IS : 800-1962. The trusses have been designed both as angle trusses and tubular trusses. A computer programme which could directly process all the analysis programme results and design the truss members using angle and tubular sections was developed for the purpose. All the shop connections have been assumed to be welded and the field connections to be bolted or welded, for the design.

The effective length of compression members has been assumed to be 0.85 times the actual length of the members centre to centre of nodes. The maximum slenderness ratio of compression members has been restricted to be less than 180 and tension members to be less than 250. For angles in tension, the net effective area as per IS : 800-1962 has been considered in design. The compression members have been designed against buckling in and out of the truss. In order to reduce the inventory of too many different sections, only thirteen different angle sections and

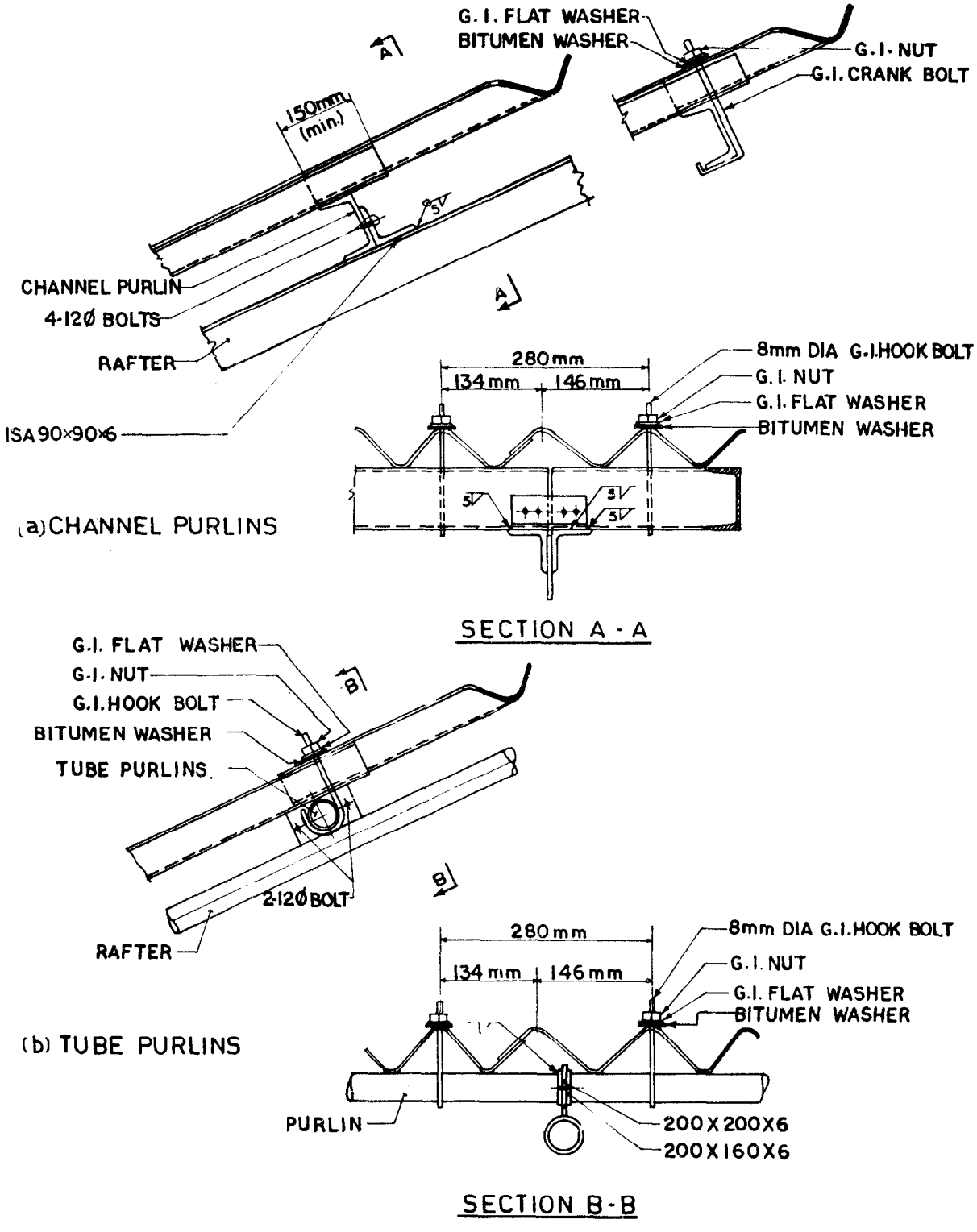


FIG. 3 PURLIN RAFTER AND SHEETING CONNECTIONS

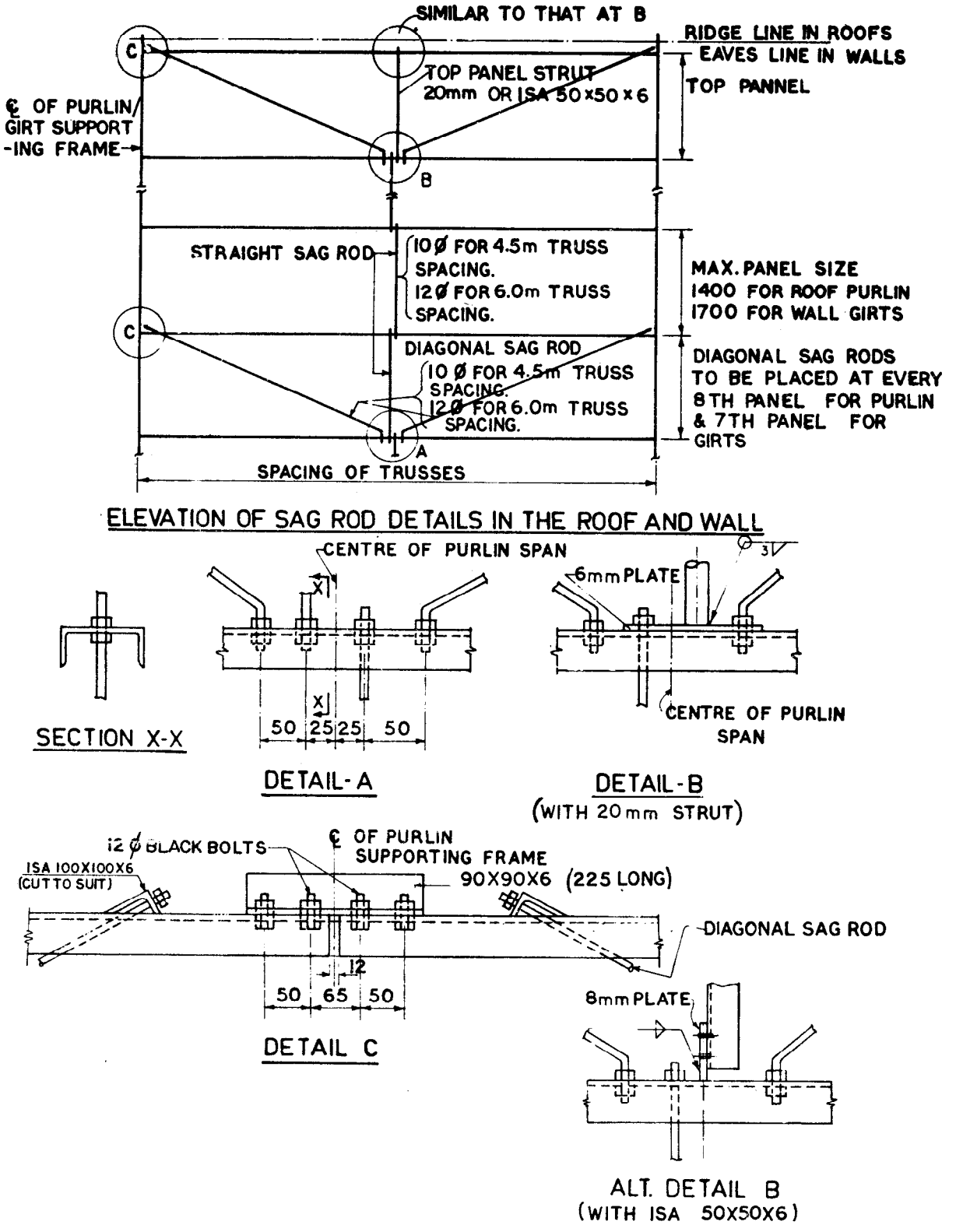


FIG. 4 SAGROD DETAILS

fourteen different tubular sections have been used in the final design. These sections have been choosen on the basis of most frequent occurrence in the least weight design. In case any section specified in Handbook is not available in market, the same can be substituted with next heavier section available.

Minimum section specified for internal web members in trusses with angle sections is equal angle ISA 40 × 40 × 6. However for larger A-type trusses with spans of 24 m and 30 m, this minimum angle may be replaced by angle ISA 50 × 50 × 6, wherever there is any chance of distortion or deformation taking place during transportation or erection of truss.

The rafter members, tie members and the longest leading diagonal member of all trusses and the end vertical at the support of lean-to roof trusses are kept double angles back to back. All the other members are single angles. The rafter and tie members, in the final design have been chosen to be the same section over their entire length for shorter spans (9 and 12 m span A-type and lean-to roof trusses) and at the most two different sections for longer spans (18, 24 and 30 m span A-type trusses and 15 m span lean-to roof trusses).

The tie members of the trusses have been designed for compression due to wind uplift considering the tie members to be laterally braced against buckling at tie runner locations as shown in Fig. 1 and 2. The tie members have also been checked for lateral buckling while lifting the trusses for erection.

The steel A-type truss design results are presented in Tables 145 to 159 for angle trusses and Tables 160 to 174 for tubular trusses. The steel lean-to roof truss design results are presented in Tables 175 to 183 for angle trusses and in Tables 184 to 192 for tubular trusses. Each table covers all the trusses having the same span and roof slope but two different spacings between trusses (4.5 and 6.0 m) and three different wind zones.

A reference to Table 1 of IS : 1161-1979 indicates that for some of diameters (for example 50 and 150 mm dia) tubes of more than one weight are available. In such cases tubes of minimum weights have only been used for the purpose of this Handbook.

Altogether, ninety different designs for A-type trusses and fifty four different designs for lean-to roof trusses have been given for trusses made up of angles or tubes the number of different typified trusses may be further reduced for the purpose of mass production by choosing the most critical design for all the wind zones and spacings, if so desired. This however may mean an increase in the weight of trusses by as much as about 40 percent. The total weight of each truss, excluding the weight of gussets and other accessories, is also presented in Tables 145 to 192. The weight of each truss per square metre of the plan area covered, is given in at the bottom of each table. The gusset design for a few typical angle trusses indicates that the weight of gusset would be in the range of 20-30 percent of weight of the truss, the larger percentage being applicable for smaller spans.

The tie runners have been designed as tension members giving lateral restraint to the bottom chord under wind uplift. Since the forces in these members are very nominal, their sizes as given below are determined by the maximum allowable slenderness ratio of 350. The eaves beams have been designed to have a slenderness ratio not to exceed 250. These also should be checked for compression due to bracing forces.

Spacing of truss (m)	*Size of eaves beams*	*Size of tie runners*	
		Angle	Tube
4.5	ISMB 200	1-ISA 6565 × 6	32 L
6.0	ISMB 250	1-ISA 9090 × 6	50 L

3.4 Cantilever Column Design

3.4.1 The columns of the steel roof trusses have been designed as cantilever columns. the cantilever columns in structures without cranes have been designed to support the loads coming from the trusses in addition to the dead load and wind forces from side claddings. 25 percent reduction of wind load allowed in IS : 875-1964 for building heights less than 30 metres has been considered for column design. The columns have been designed as beam columns, having their major axis perpendicular to the spanning direction of the trusses. The effective length of the cantilever columns for axial load is taken to be 1.5 times the actual length for buckling about the major axis and 0.75 times the actual length for buckling about the minor axis. The effective length for lateral buckling in flexure of the cantilever columns is taken to be equal to 0.75 times the actual length. In the multibay structures, the columns have been checked considering the wind drag on the interior roof as per IS : 875-1964. The columns are assumed to be fixed at base and tied together by trusses at the top, thus forcing the cantilever deflection of all the columns joined together by trusses in a line to be equal.

3.4.2 The design results are presented in Tables 193 to 202 for the A-type roof truss columns and in Tables 203 to 208 for the lean-to roof truss columns. Each table gives the details for a column, supporting the truss having a given span length and spacing between trusses. The details given are reactions at the bottom of the column, and the minimum section required from each of the four different types of rolled I-sections namely ISLB, ISMB, ISWB and ISHB. All the

column sections listed in SP : 6(1)-1964 have been considered in the design. If any particular section is not available, the next bigger section may be used in fabrication. Since the columns are acting more as flexural members than as compression members, the slenderness ratio limit has been taken as 250 rather than 180 in the design of columns. The horizontal deflection of the columns (sway) at the top has been restricted to be less than height/325. The bending moments in interior columns of multi-bay structures is less than that of the corresponding single-bay column and hence the column sizes given in Tables 193 to 208 may be used also for interior columns of multiple bay structure.

3.4.3 Forces for the design of foundations of these columns may be taken from Tables 193 to 208. The details of columns supporting crane is given in next section.

3.5 Design for Crane Loads — Structures supporting cranes are discussed in this section. The roof truss are the same as discussed in Section 3.3. The columns are designed for the light duty cranes conforming to Classification No. 1 of IS : 807-1976 and having 5, 7.5, 10 and 20 tonnes capacity.

3.5.1 *Crane Load Details* — Wheel loads on gantry girders mainly depend on the crane weight, crab weight, the capacity of crane, the wheel base, the minimum hook clearance, etc. These load details generally depend on the crane dimensions manufactured by different manufacturers/ organizations. Based on a survey of many sources the wheel loads on the gantry girders (excluding impact) used in this Handbook for medium duty E.O.T. cranes are shown in Table 209.

3.5.2 *Analysis and Design of Gantry Girders* — The maximum vertical and horizontal moments are calculated by proper arrangement of wheel loads on the gantry span length. Twenty five percent impact factor has been considered in calculating the vertical wheel load values. A horizontal surge load of 10 percent of crane capacity including weight of crab is considered to be acting at the top level of crane rail and transverse to it. This is equally shared by two crane girders. Horizontal surge load, as calculated above, shall be equally distributed on wheel loads on one side of the crane at a time.

Combination of channel and rolled I-sections has been considered in the design. The top and bottom stresses of the combined section have been limited to the permissible stresses as specified by IS : 800-1962. The deflection check has been carried out to limit the maximum total vertical deflection to be less than span/750. Although the shear stress in web is within permissible limits, even then one stiffener has been provided at support. Minimum side clearance from face of roof leg to the centre line of rail has been kept as 500 mm and minimum top clearance of 3.0 m has been provided in accordance with IS : 8640-1977. The design sections are given only for the commonly, available ISMC and ISMB sections. Tables 210 and 211 give the analysis and design results for different spans of gantry girders.

3.5.3 *Analysis and Design of Stepped Columns* — In case of structures with cranes, the cantilever columns have been designed to resist crane loads in addition to dead, live and wind loads. The columns have been designed to restrict the maximum transverse deflection of the columns to be less than 'height/325' at the top. At the crane level the lateral deflection due to combined transverse crane surge and service load (wind pressure 25 kg/m^2) is restricted to be less than 'height/1 000'.

The stepped column mainly consists of two portions as shown in Fig. 5. The upper part above the crane cap with a length of L_1 is termed as roof supporting column R_1, while the lower part below the crane cap consists of two rolled sections (I or channel section) spaced along the span direction and laced together. The column below the gantry girder known as crane column 'C' has length L_2 and the other column supporting wall cladding known as lower roof column R_2 also has length L_2.

The crane columns R_1, R_2 and C have been designed for the critical forces from the following combinations:

a) Dead load + imposed loads

b) Dead load + imposed loads + wind loads

c) Dead load + wind loads

The dead load consists of roof load including weight of trusses and bracings, wall claddings and girts, and columns. The imposed load includes roof live load and crane loads including lateral loads and vertical impact. Wind load includes maximum external wind pressure on wall and roof in addition to internal pressure/suction due to normal permeability with the wind blowing perpendicular to the ridge.

In the design of stepped column the effective length factors have been considered as follows:

Column	*Strong axis (xx) coefficient*	*Weak axis (yy) coefficient*
(1)	(2)	(3)
Roof column R_1	1.5	1.0
Roof column R_2	0.85	1.0
Crane column C	0.85	1.0
Combined column	1.5	0.85

The slope of truss system has not been considered as a variable because there is no significant variation in the design forces of columns due to variation in roof slope. All the analysis and design results for columns have been carried out for only signle bay system.

In the design of columns, the 25 percent reduction of wind load as allowed in IS : 875-1964 for building height less than 30 metres, has been considered. The typified design results are presented in Tables 212 and 213.

3.5.4 *Foundation Forces* — Foundation forces due to dead load, live load, crane load and wind load have been presented separately to facilitate the use of working stress or limit state design as desired by the engineer. For the base moments due to wind load, critical values from among those corresponding to different roof slopes (1 in 3, 1 in 4, 1 in 5) have been presented. The foundation forces are presented in Tables 214 to 218.

3.6 Minimum Thickness of Metal — Minimum thickness of structural steel sections has been provided as 6.0 mm assuming they are fully accessible for cleaning and. repainting. Where structural steel sections are not fully accessible for cleaning and repainting, thickness may be increased in accordance with IS : 800-1984.

Minimum thickness of steel tubes has been provided as 2.6 mm thick assuming construction is not exposed to weather and tubes are applied with one coat of zinc primer conforming to IS : 104-1979 followed by a coat of paint conforming to IS : 2074-1979 and two coats of paint conforming to IS : 123-1962. In case the construction is exposed to weather or where regular maintenance is not possible, minimum thickness of tubes may be increased in accordance with IS : 806-1968.

4. FABRICATION DETAILS

4.0 Typical details of connections in steel truss structures are discussed in this clause. The details given here are by no means all encompassing or the only possibility. The most commonly followed procedure has been recommended here. The standard welding symbols used in the details in this Handbook are as per IS : 813-1961 and the salient features are shown in Fig. 6.

4.1 Purlin Rafter Connection Details — The sheetings and the fasteners connecting sheetings to supporting members should be capable of resisting local high pressure recommended by IS : 875-1964. The connection detail between truss rafter and channel/tube purlin is shown in Fig. 3. The purlins are to be located at or as close as possible to the nodes of the roof trusses. The channel purlins continuous at the truss shall be connected with 2-12 mm diameter bolts to cleat angles and the channel purlins discontinuous at the truss shall be connected to cleat angle with 2-12 mm diameter bolts at each end.

The straight sag rod and diagonal sag rod details are shown in Fig. 4 for the roof purlins and wall girts respectively. In wide roofs having large number of purlins and in high wall claddings having large number of girts, the diagonal sag rods should be provided at every 8th Panel for purlin and 7th Panel for girt. The top most panel close to the ridge in the roof, and the top most panel close to the eaves in the wall should have diagonal sag rods and in addition should support, by a strut, the top purlin or girt as shown in Fig. 4.

4.2 Angle Truss Connection Details — The typical details of connections between angle truss members are shown in Fig. 7 to 25. The members at a joint should be connected such that their C.G. lines intersect at a point as shown, without any eccentricity. All the shop connections are welded and field connections may be bolted or welded. The 9 and 12 m span trusses are to be completely fabricated as one unit in the shop. The 18 and 24 m span trusses are to be fabricated in two units and assembled in field to form the desired truss whereas the 30 m span trusses are to be fabricated in shop and transported in three units and are to be assembled in field to form the 30 m span.

The type of detail from Fig. 7 to 25 to be used in any connection of an angle truss is indicated in Table 219 for A-type trusses and in Table 220 for lean-to roof trusses. The gusset plate thickness has been calculated on the basis of fastener bearing requirement and the gusset thickness required is presented in Table 221. The actual size and length of weld and size and number of bolts to be used in the connections are given in Table 222 on the basis of angle joined.

The connection between the gusset and the continuous rafter/tie members need not be on the basis of the fastener requirement of Table 222, but as in the foot-note of Table 222. The tack welding detail of the back to back angles is shown in Fig. 25 and the end welding requirements is given in Table 222.

4.3 Tube Truss Connection Details — Typical details of connections between tubular members of the truss are shown in Fig. 26 to 41. All shop and field connections are welded. The 9 and 12 m trusses are to be fabricated in shop as whole unit and transported to site. The 18 and 24 m trusses are fabricated in shop as two units and 30 m trusses as 3 units for ease of transportation and finally joined together at site by welding.

The type of detail from Fig. 26 to 41 to be used in any connection of tubular trusses is indicated in Table 223 for A-type trusses and in Table 224 for lean-to roof trusses. All the shop connections

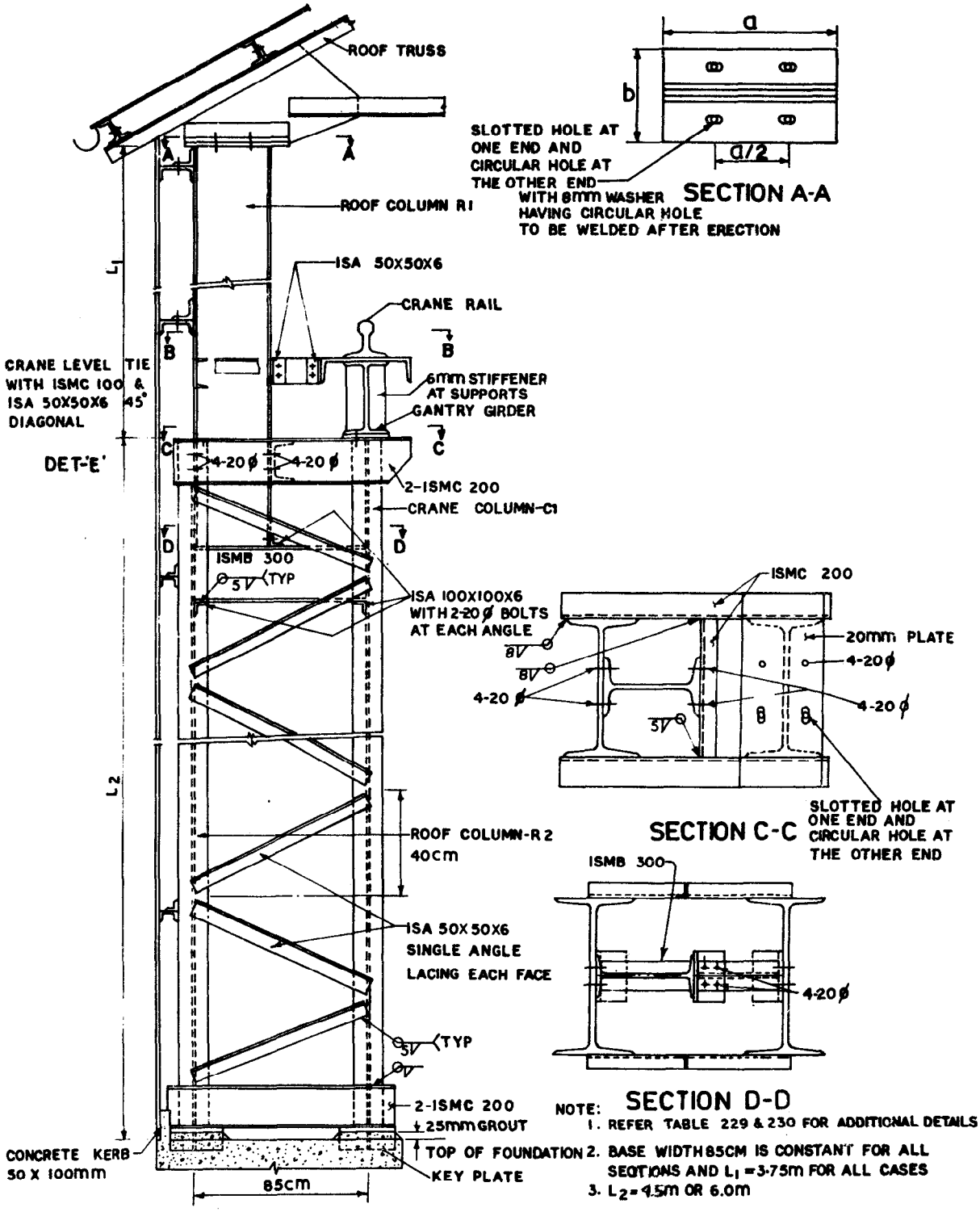


FIG. 5 STEPPED COLUMN (*Contd*)

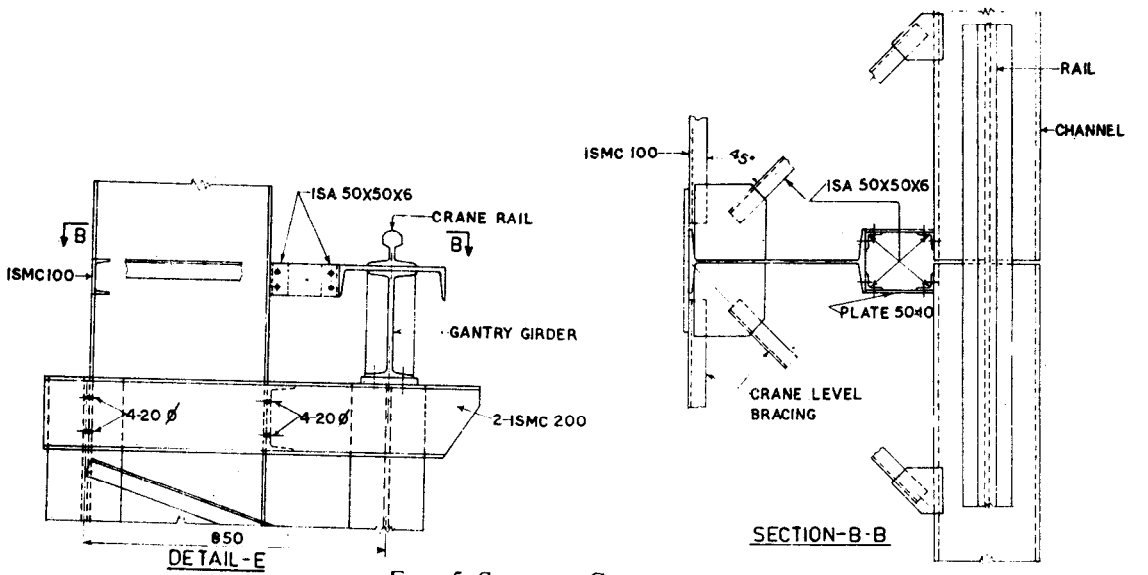
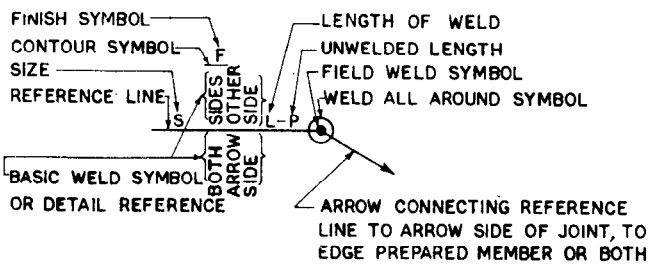


FIG. 5 STEPPED COLUMN



STANDARD LOCATION OF ELEMENTS OF A WELDING SYMBOL

FORM OF WELD	SECTIONAL REPRESENTATION	APPROPRIATE SYMBOL
FILLET		
SQUARE BUTT		
SINGLE V BUTT		
DOUBLE V BUTT		
SINGLE U BUTT		
DOUBLE U BUTT		
SINGLE BEVEL BUTT		
DOUBLE BEVEL BUTT		

FIG. 6 STANDARD WELDING SYMBOLS

NOTES FOR FIGURES 7 TO 24

1. PROVIDE A MINIMUM OF 15" BETWEEN TRUSS MEMBER AND GUSSET EDGE IN ALL CONNECTIONS.
2. FOR FASTENER DETAILS, REFER TABLE 222.
3. FOR SIZE OF MEMBERS, REFER TABES 145 TO 159 FOR 'A' TYPE TRUSSES AND TABLES 175 TO 183 FOR LEAN-TO ROOF TRUSSES.
4. FOR GUSSET PLATE THICKNESS REFER TABLE 221.

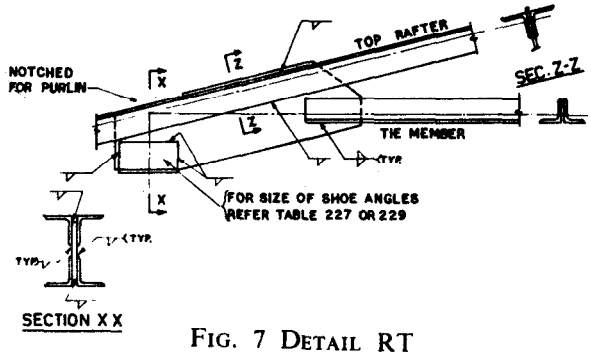


FIG. 7 DETAIL RT

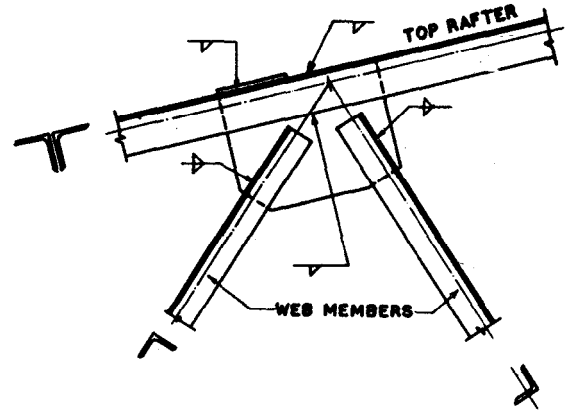


FIG. 11 DETAIL R4

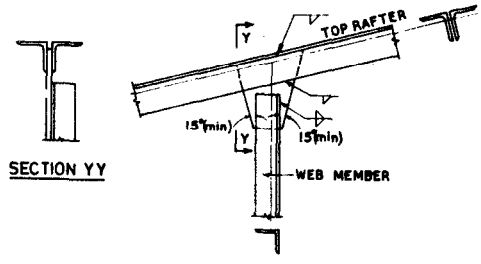


FIG. 8 DETAIL R1

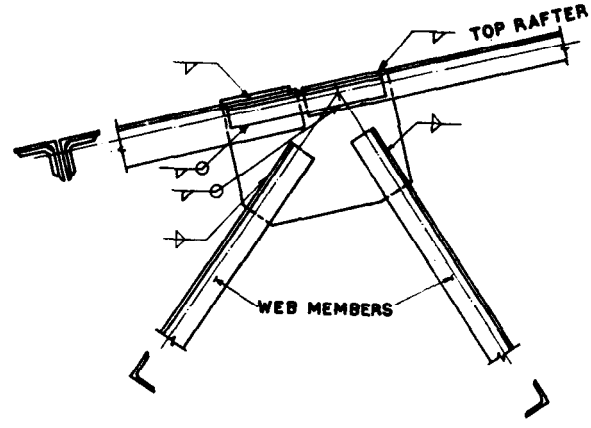


FIG. 12 DETAIL R4s

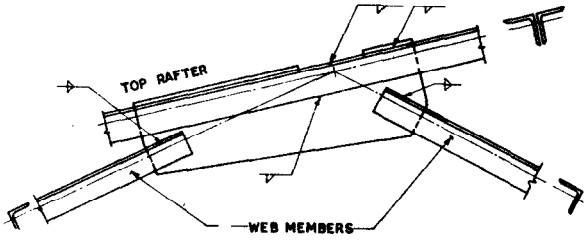


FIG. 9 DETAIL R2

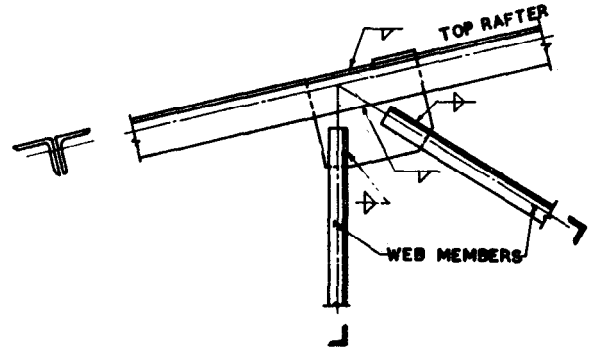


FIG. 13 DETAIL R5

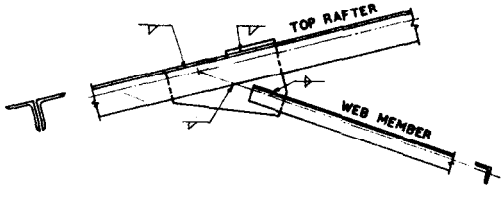


FIG. 10 DETAIL R3

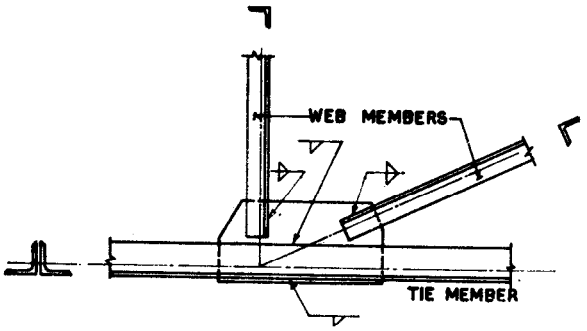


FIG. 14 DETAIL T1

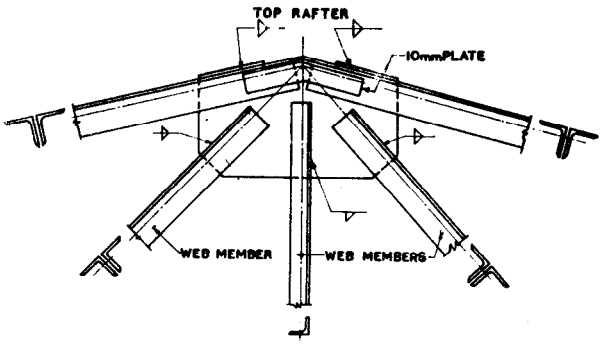


FIG. 17 DETAIL R6

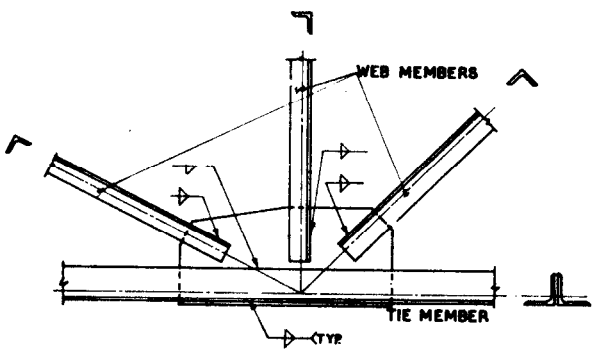


FIG. 15 DETAIL T2

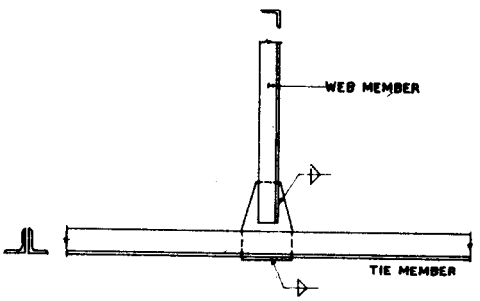


FIG. 18 DETAIL T3

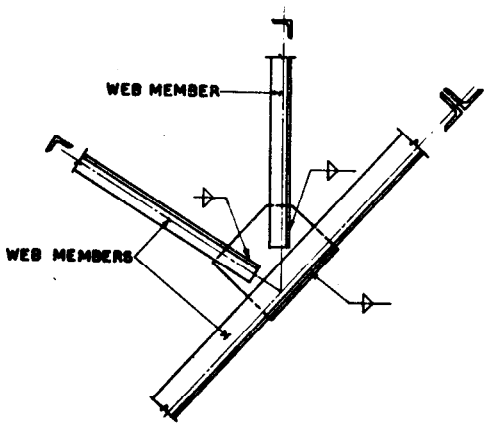


FIG. 16 DETAIL W1

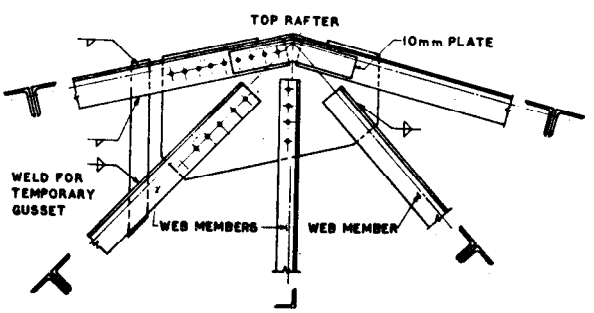


FIG. 19 DETAIL R6f AT FIELD SPLICE (18, 24m Spans only)

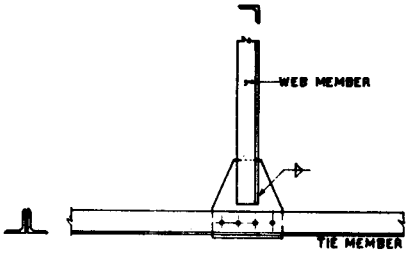


FIG. 20 DETAIL T3f AT FIELD SPLICE
(18, 24m Spans only)

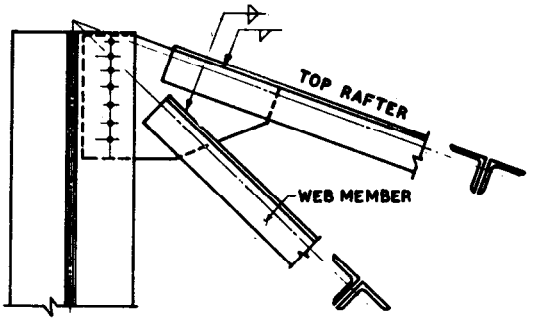


FIG. 23 DETAIL R7 AT LEAN-TO ROOF END

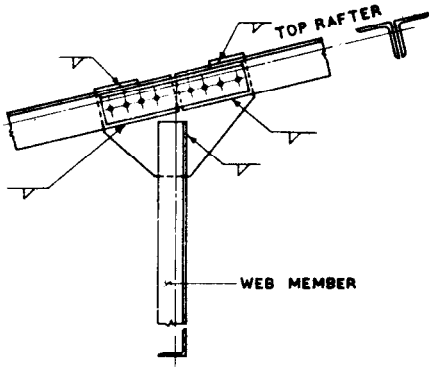


FIG. 21 DETAIL R1f AT FIELD SPLICE
(For 30m Span only)

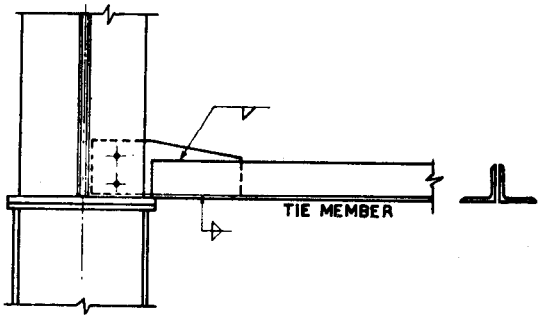


FIG. 24 DETAIL T4 AT LEAN-TO ROOF END

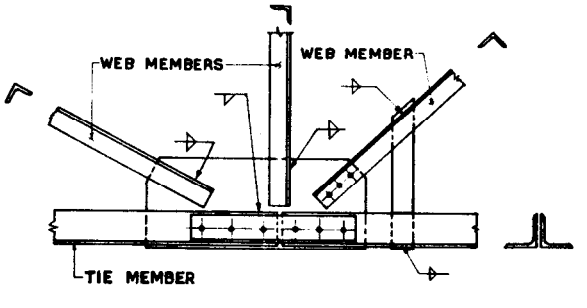
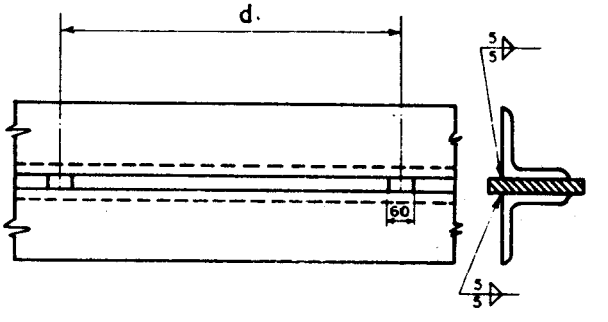


FIG. 22 DETAIL T2f AT FIELD SPLICE
(30m span only)



NOTE :
1. Refer Table 222 for spacing *d* of tack welds
2. Use 60 mm wide spacer plates of adequate length corresponding to angle size.
3. The thickness of the spacer plate is equal to the thickness of gusset.

FIG. 25 TACK WELD DETAIL.

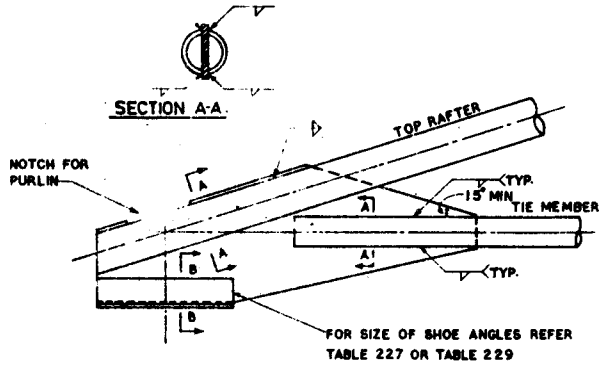


FIG. 26 DETAIL RT

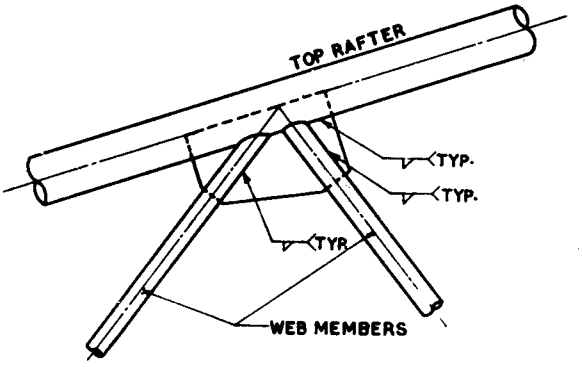


FIG. 30 DETAIL R4

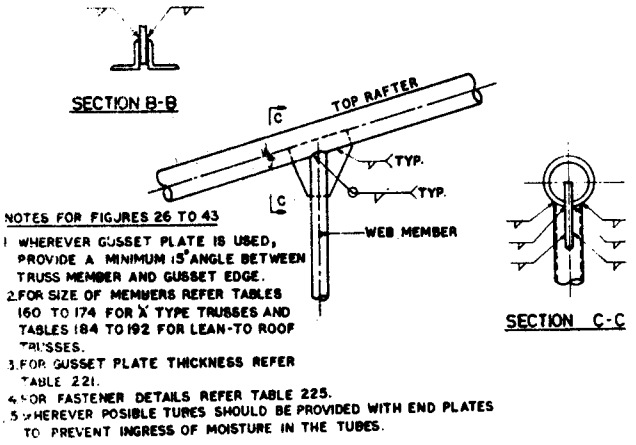


FIG. 27 DETAIL R1

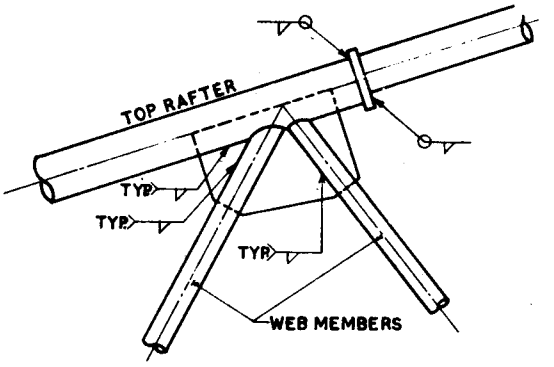


FIG. 31 DETAIL R4s

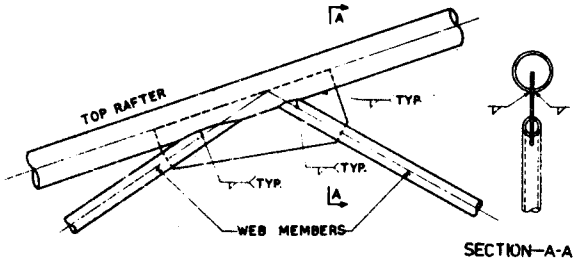


FIG. 28 DETAIL R2

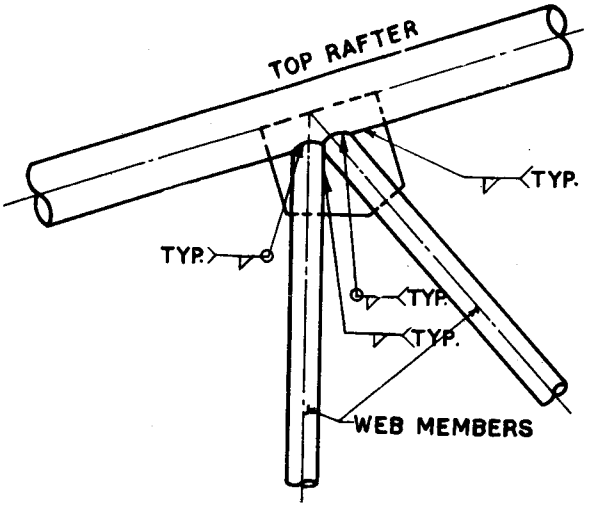


FIG. 32 DETAIL R5

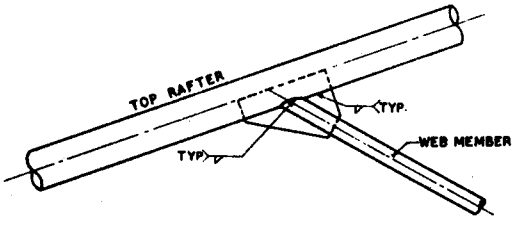


FIG. 29 DETAIL R3

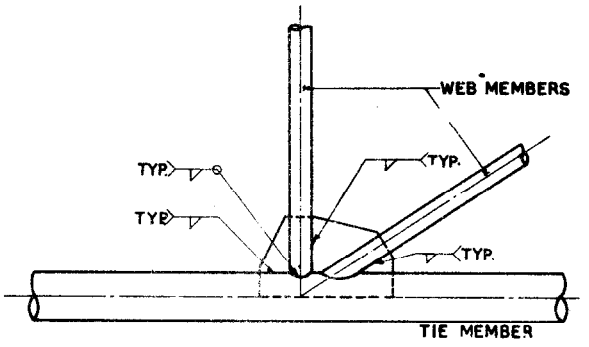


FIG. 33 DETAIL T1

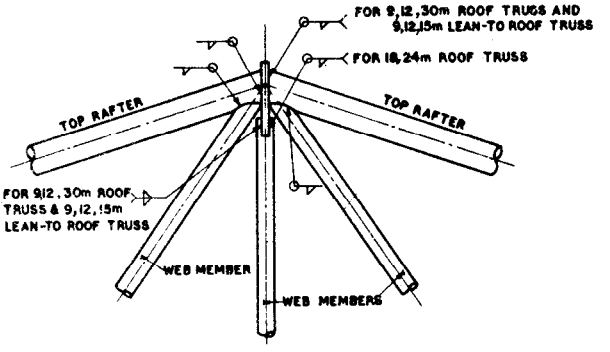


FIG. 36 DETAIL R6

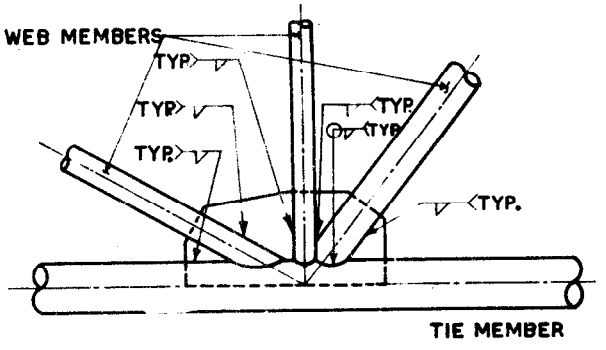


FIG. 34 DETAIL T2

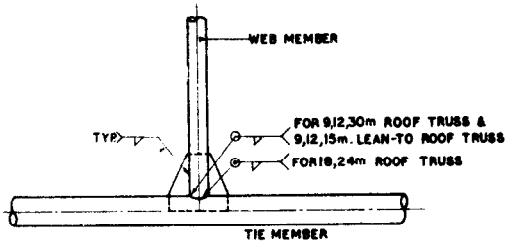


FIG. 37 DETAIL T3 FOR A-TYPE TUBE TRUSS

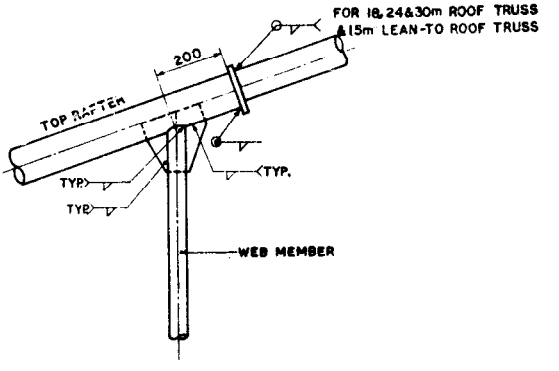


FIG. 38 DETAIL R1F AT FIELD SLICE

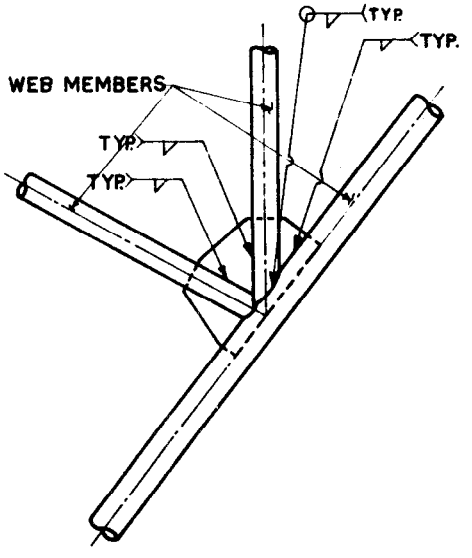


FIG. 35 DETAIL W1

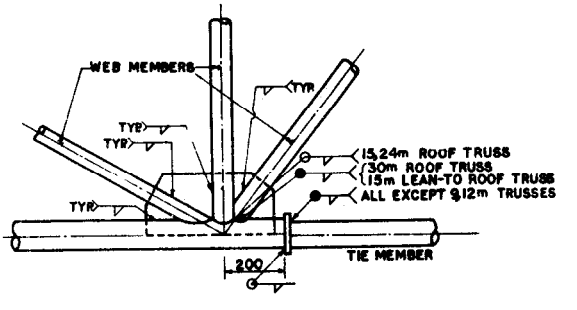


FIG. 39 DETAIL T2f AT FIELD SLICE

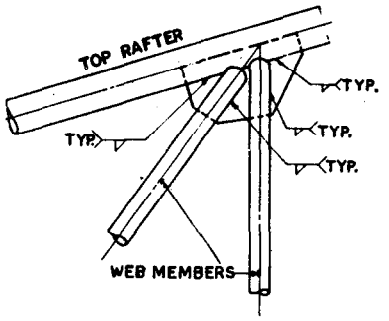


FIG. 40 DETAIL R7 FOR LEAN-TO ROOF TRUSS

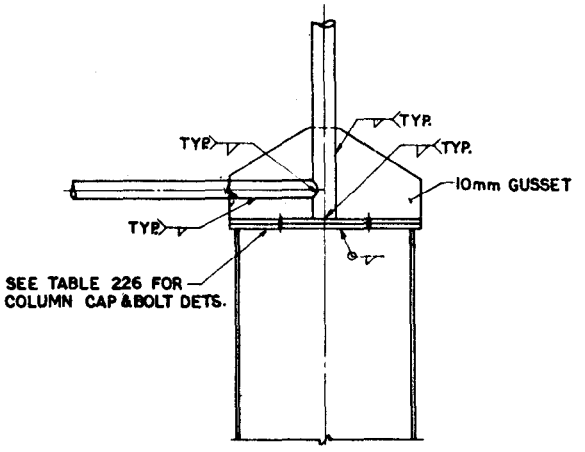


FIG. 41 DETAIL T4 FOR LEAN TO ROOF TRUSS

between tubular members except at the rafter tie junction and at junctions with overlapping members are direct connection with weld around the perimeter of the joining tube

The field connections, tie rafter junction joints and joints having overlapping members are made using gusset plates. The size and length of weld required in both types of connections is given in Table 225.

4.4 Columns Details — Typical column cap details for exterior columns is given in Fig. 42 and for interior columns in Fig. 43. The column base details are given in Fig. 44 based on foundation made of M 15 concrete. The size of column cap, column base and size and member of bolts are given in Tables 226 to 228. For structures with cranes the typical connection details of column cap, column base plate, gantry girder seating details and crane rail connection details, etc, are given in Fig. 5, 45 and 46. The size of column cap, column base and size as well as number of bolts are given in Tables 229 and 230. Proper embedment of anchor bolts into the foundation should be ensured while designing foundations. The size and thickness of base plates can be reduced further by using higher strength concrete in foundation and/or stiffened base plates.

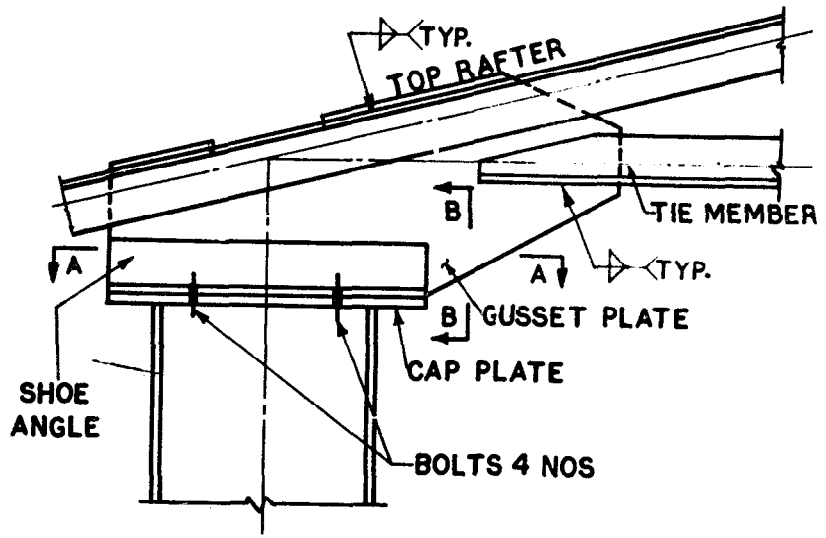
4.5 Expansion Joint Details — Expansion joints are not usually necessary when the building dimensions are less than 180 m. When the buildings are longer, the expansion joint is provided by constructing two different super structural support system on both sides of the joint with the gap being properly bridged by cladding and roof sheeting. The wind bracings are discontinuous across expansion joints and hence the bracing systems should be structurally independent in each segment of the structure separated by expansion joints.

4.6 Truss Camber — The truss deflections are well below span length/325. If however initial camber is desired for tie members, appropriate camber may be provided.

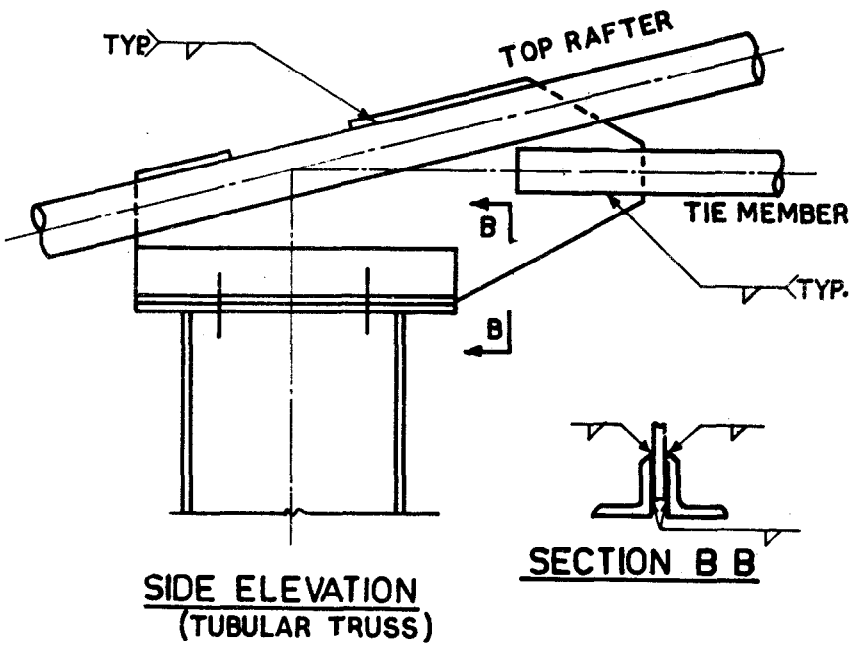
4.7 Miscellaneous Details — Various bracing arrangements are shown schematically in Fig. 47. Even though bracing may appear to be a secondary matter, it is highly important and deserves careful attention. Probably more failures, or at least unsatisfactory performances, have resulted from inadequate bracing than from deficiencies in main framing. It is apparent from Fig. 47 that the bracing in even simple structures is highly indeterminate. There can be several alternatives by which loads may be carried to the ground, and in a number of bays redundant diagonals may be used. These may be so slender, however, that they are incapable of carrying appreciable compression, which reduces the system to one in which only the tension diagonals are effective. The bracing is necessary to ensure integral behaviour of the structure and to avoid differential displacement of frames which may cause undesirable cracking of claddings. A typical example of the design of bracings using angle iron sections is shown in **5.8**. Similar procedure is to be followed for tubular sections also. Typification for bracing has not been attempted since lot of variations are possible due to different design parameters like length of building, span, spacing, height, wind zones, etc.

The bracing in the roof along the length of the building in the truss panel adjacent to the eaves is provided to minimize the differential movement between frames arising from wind and crane surge forces perpendicular to the ridge. This bracing is designed normally based on minimum slenderness ratio when the columns are designed as cantilever columns to transfer the wind loads perpendicular to ridge.

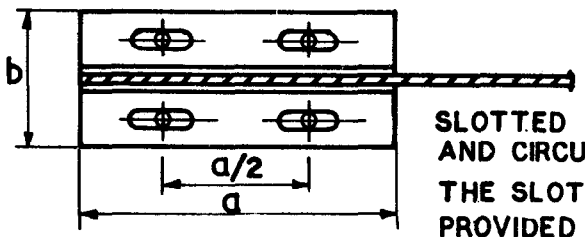
The bracing in the roof across the building at the two end bays and necessary number of interior bays is provided to take care of wind load on the gable ends and wind drag on roof due to wind blowing parallel to the ridge. These bracings shall be provided in sufficient number of bays, such that the spacing between them do not exceed 90 m. The above mentioned bracing can either be provided at rafter level or at the tie level of the trusses as desired. In the latter case vertical



SIDE ELEVATION
(ANGLE TRUSS)



SIDE ELEVATION
(TUBULAR TRUSS)



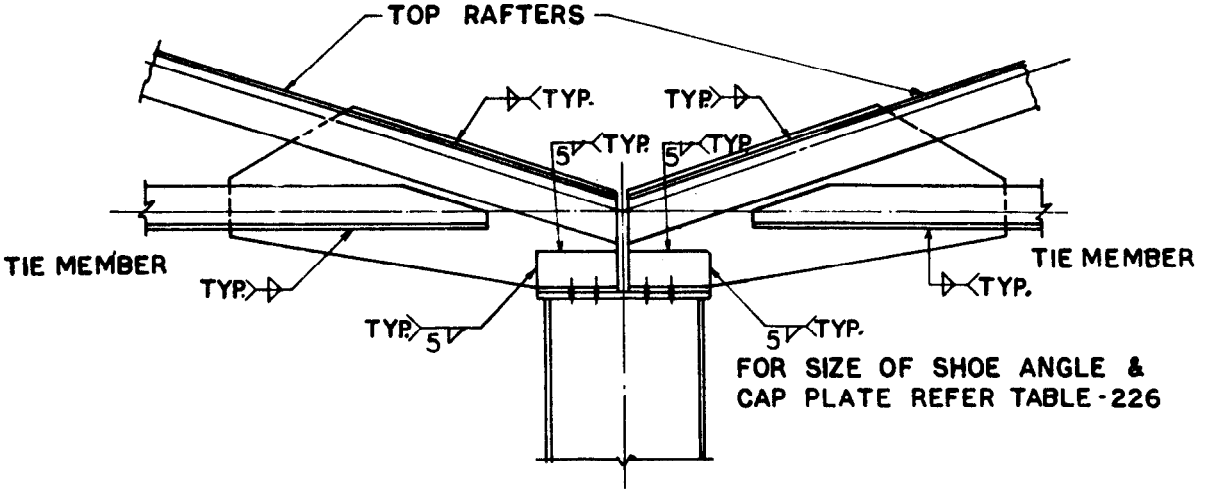
SECTION A A

SLOTTED HOLES AT ONE END OF TRUSS AND CIRCULAR HOLES AT OTHER END.

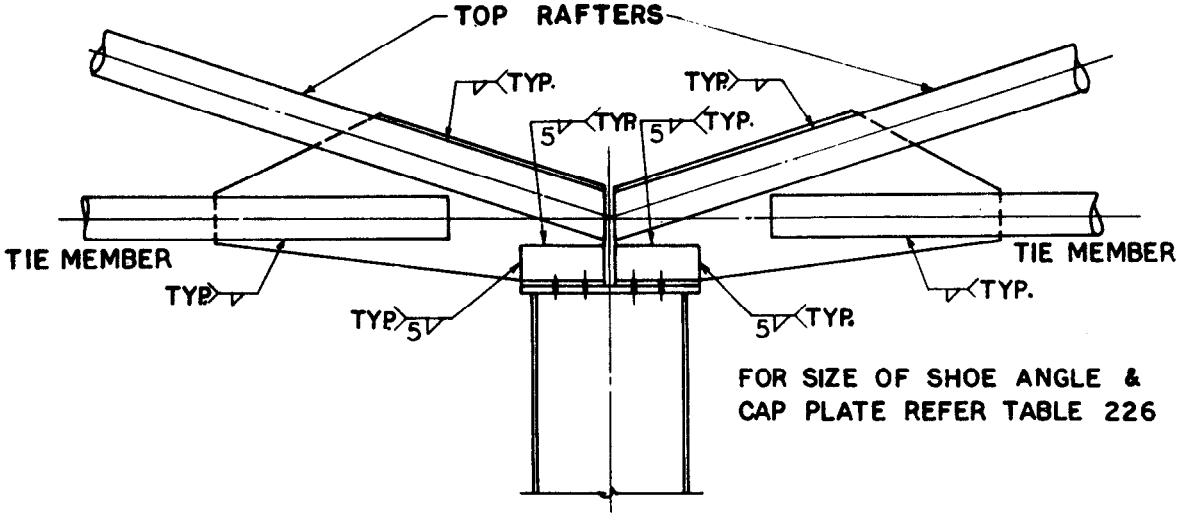
THE SLOTTED HOLES TO BE PROVIDED WITH 6mm THICK CIRCULAR HOLE WASHER TO BE WELDED AFTER ERECTION.

NOTE: REFER TABLES 227 & 229 FOR SIZES OF SHOE ANGLE, COLUMN CAP PLATE AND BOLTS

FIG. 42 EXTERIOR COLUMN CAP DETAIL

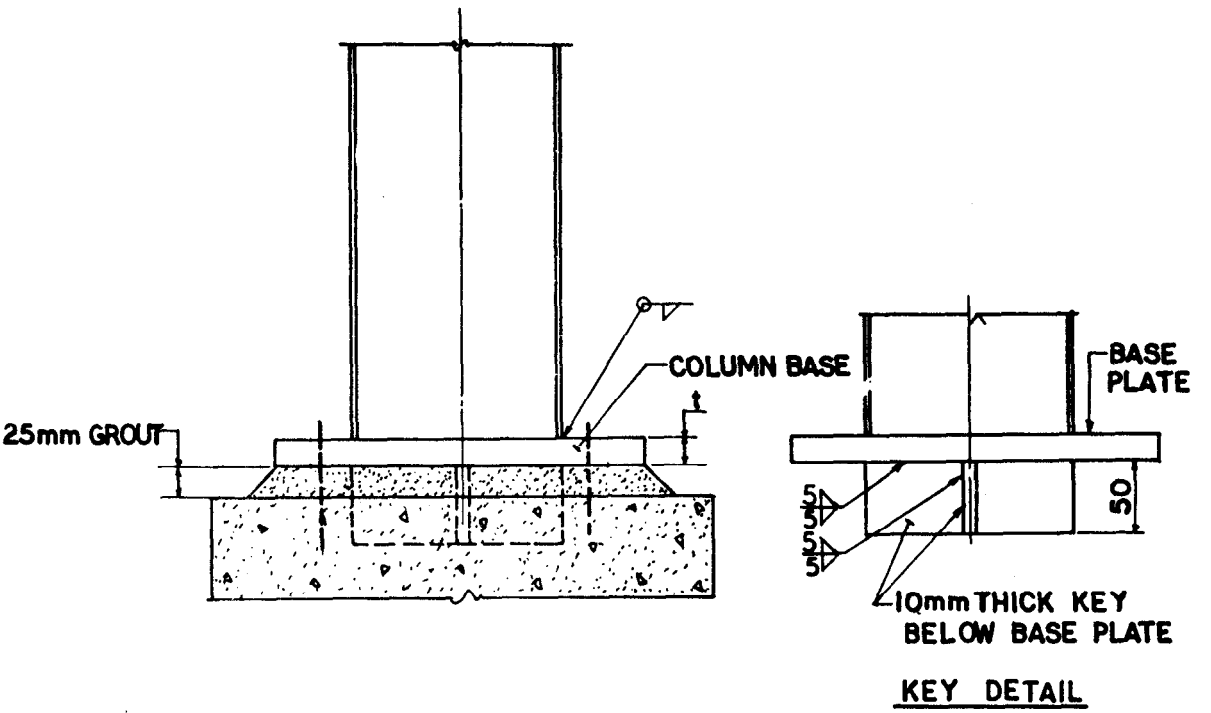


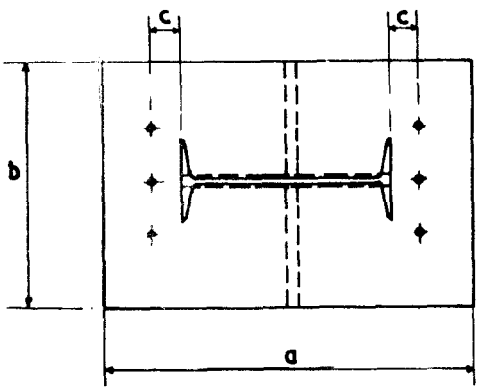
A. Angle Trusses



B. Tubular Trusses

FIG. 43 INTERIOR COLUMN CAP DETAILS





NOTE:
1. SEE TABLE 228 FOR COLUMN BASE & BOLT SIZES.

FIG. 44 COLUMN BASE DETAILS

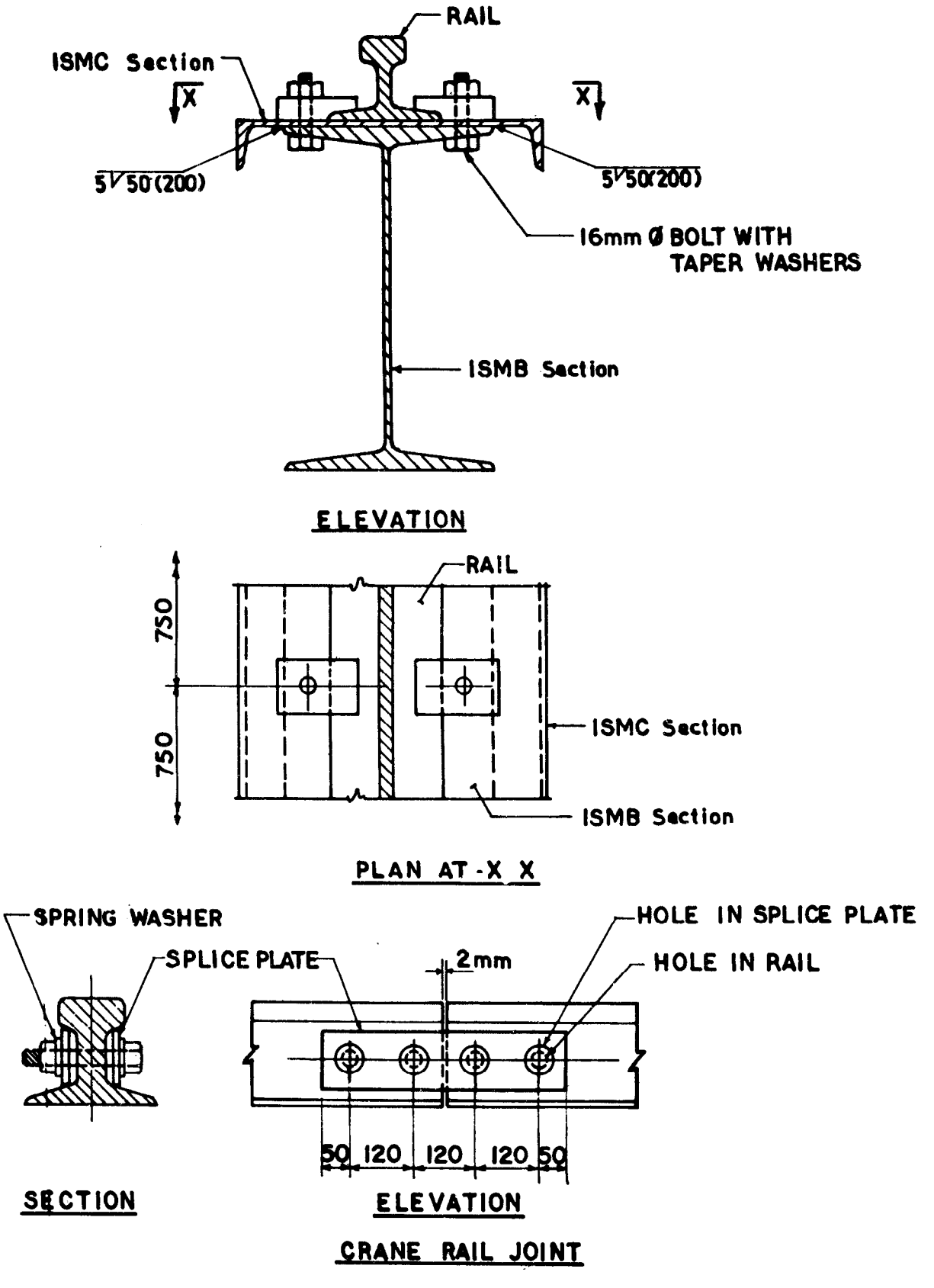


FIG. 45 CRANE RAIL DETAILS

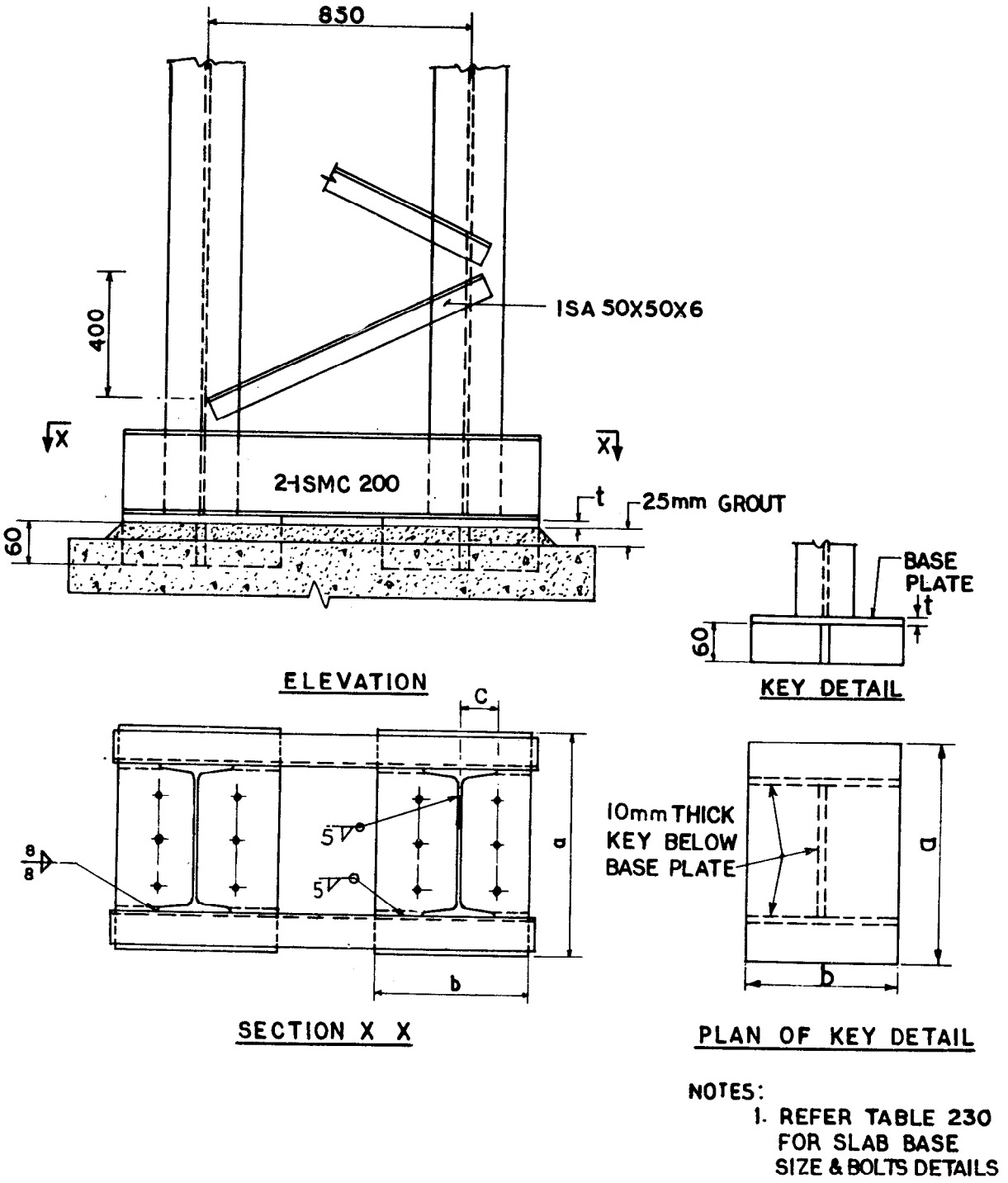


FIG. 46 BASE PLATE DETAILS

bracing should be provided between the rafter level and tie level in these bays to transfer roof drag force to tie level bracing. In addition to tie level bracing designed to transfer lateral loads, bracing across the buildings in the end bays is frequently provided at the rafter level also to ensure the stability of the structure during erection.

The vertical bracing in the longitudinal walls is shown in Fig. 47 in a central bay. This is being suggested to avoid temperature stresses, that may occur. However in this bracing system having vertical bracing in the central bay, temporary bracing may be necessary at the end bay also during erection for purpose of stability.

Vertical bracing is usually provided at gable ends to give stiffness to the building in the transverse direction. This bracing is nominally designed based on minimum slenderness ratio. The bracing in the longitudinal direction at the roof level in conjunction with end gable bracings should be capable to resist the load perpendicular to the ridge. Gable end columns can be designed as supported at top and bottom.

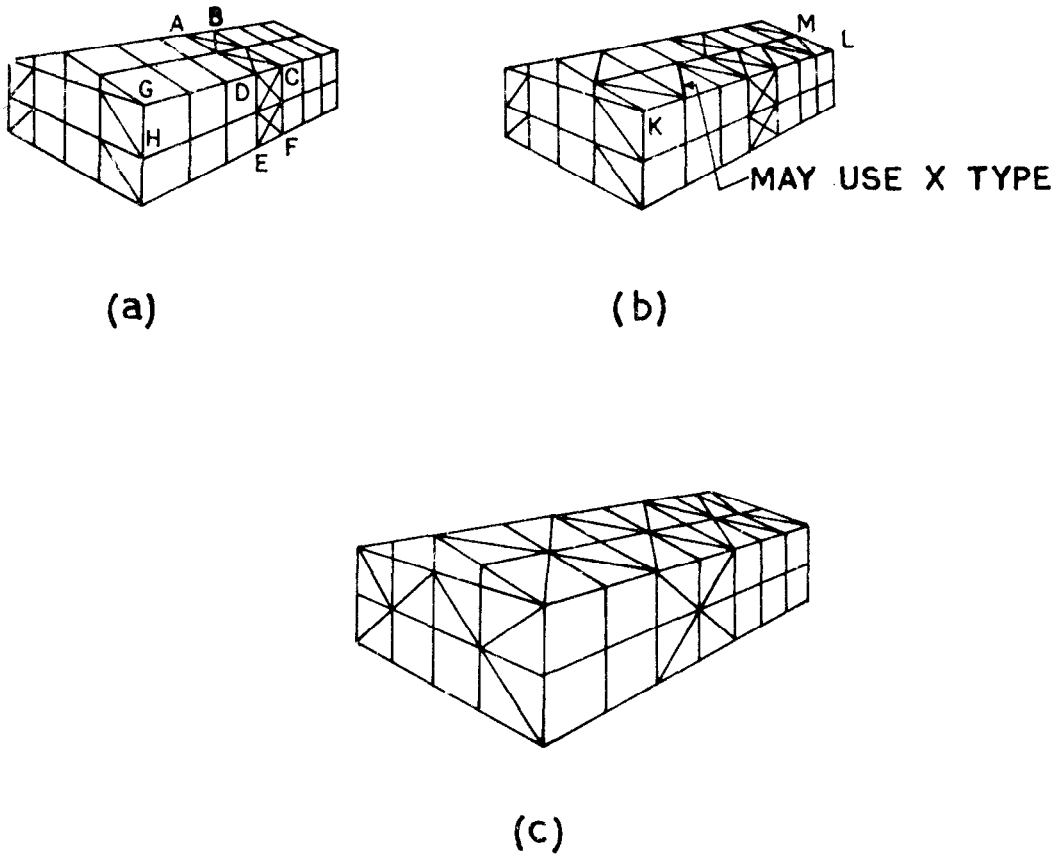
Typified designs of foundation is not included in this Handbook, have to be erected taking into varies from site to site would influence the design of foundation.

The foundations supporting the columns may be designed as spread footing, pile foundation or caisson foundation depending upon the soil condition at site. Since the columns are assumed to be fixed at base, the foundations should be capable of resisting the moment from the column without undergoing objectionable rotation. An example of spread foundation design is given in 5.7.

The general details of supporting A.C. gutters are presented in Fig. 48.

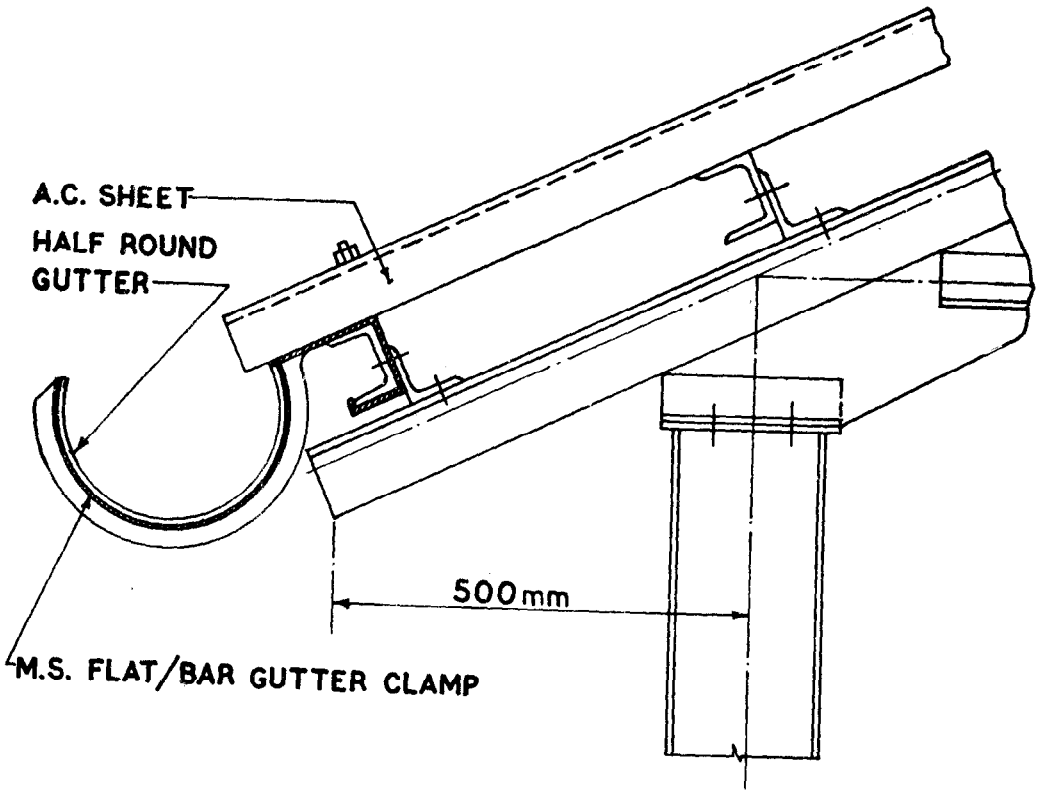
in this Handbook since the soil conditions which

4.8 Erection Procedure — The structures with steel roof trusses, the design of which is presented in this handbook since the soil conditions which consideration the stability and strength of the structure during the erection process. Temporary bracings and other precautions should be taken during erection, if necessary. Recommendations



NOTE — Tie level bracing may be used in addition to rafter level bracing.

FIG. 47 BRACINGS ARRANGEMENTS



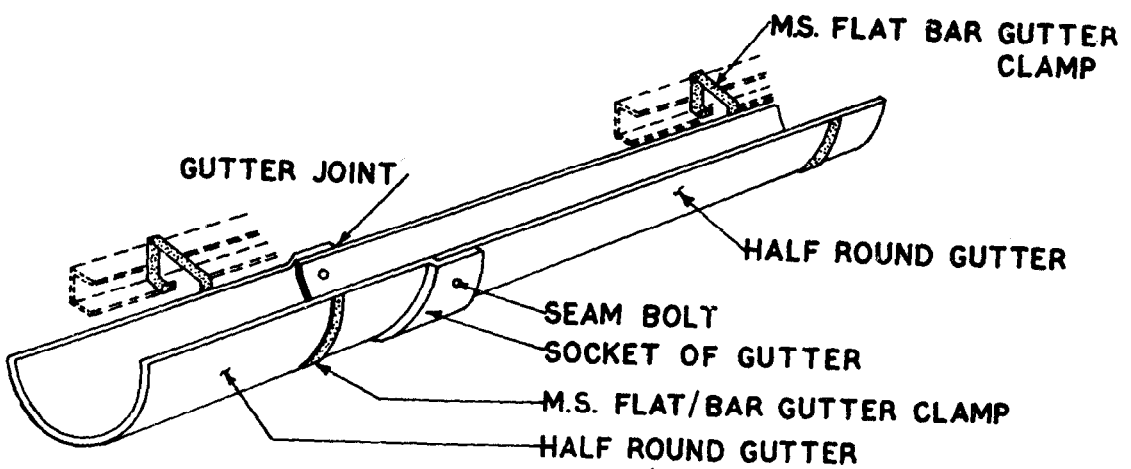


FIG. 48 GUTTER DETAILS

of IS : 800-1984 regarding fabrication and erection shall be followed.

The following points should be taken care of during erection:

Stability — A roof truss when first placed in position on its end supports may be unstable. Lifting attachments should not be released until the truss has been positively attached to provide restraint against overturning. It should be noted that normal purlin connections provide only a limited resistance to lateral movement. No reliance should be placed on connections made to other parts of the structure unless the connection can develop its full load carrying capacity, for example connections made to brickwork or concrete should be secure and resistance to displacement or withdrawal from new brickwork or concrete should be developed to an adequate extent.

The erection procedure should aim at the fixing of the first two trusses complete with cross bracing and interconnections so as to provide a rigid and stable basic assembly. No subsequent erection work should take place until this initial stage has been completed.

Freedom of movement — The lifting path should be clear of obstruction if necessary, tail or guide ropes should be used to ensure that the truss does not encounter obstructions in course of hoisting.

Arrangements for lifting — The attachments made to the truss for lifting should impose only those forces which have been allowed for in design. Lifting can cause load-reversal and overloading in certain members and properly designed lifting attachments for example strong backs may be necessary to ensure that overloading does not occur and buckling is avoided (*see* Fig. 49).

Bearings — When a truss is placed on earings which are designed to provide freedom of movement, temporary restraints should be provided. Any temporary fastening of the bearings or of the truss should be removed as soon as its permanent stability has been ensured.

Care shold be taken that any thrust imposed on the bearings by a truss when it is being landed in position does not create a displacement sufficiently great as to cause hazard. Any displacement caused during the erection of a truss should be rectified before the lifting equipment is released.

For laying of asbestos cement sheets, recommendations of IS : 3007 (Part I)-1964 'Code of practice for laying of asbestos cement sheets: Part 1 Corrugates sheets' shall be followed.

5. DESIGN EXAMPLE

Plan area = 12.0 m × 42.0 m
Roof truss span = 12.0 m
Height of column = 9.0 m
Type of roofing = A.C. Sheeting
Location of shed = Delhi
Type of truss = A-type

Truss Configuration and Choice of Loading

The configuration for roof truss span 12 m is given in Fig. 2A.

Basic wind pressure = 150 kg/m^2
Spacing of trusses = 6.0 m
Roof slope = 1 in 3

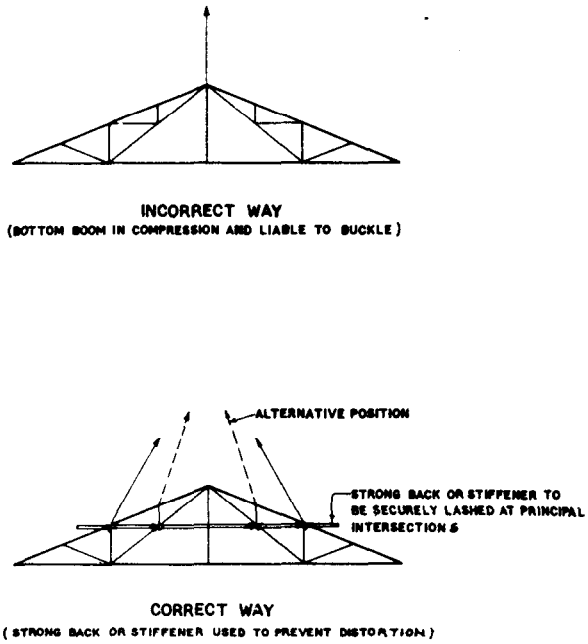


FIG. 49 LIFTING OF TRUSSES

The roof slope of 1 in 3 and spacing of 6.0 m give the minimum weight of truss as observed from Tables 148 to 150. Other roof slopes and spacings can be choosen, if so desired.

Therefore basic parameters for the analysis are:

Span = 12.0 m
Spacing = 6.0
Roof slope = 1 in 3
Basic wind pressure = 150 kg/m^2
Weight of roofing materials (including extra weight due to overlaps and fasteners) = 17 kg/m^2
Governing wind pressure for design with normal permeability = $(0.6 + 0.2) \times 150$ = 120 kg/m^2
Miscellaneous loads = 3.5 kg/m^2

Live load = $75 - 2 \times (18.435° - 10°)$, = 58.13 kg/m²

TRUSS ANALYSIS

Loads

a) Dead loads :

Length along the sloping roof = $\sqrt{2^2 + 6^2} = 6.32$ m

Self weight of truss at 6 kg/m² = $6 \times 12 \times 6 = 432$ kg

Weight of roofing material = $17 \times 6.32 \times 2 \times 6$ = 1 290 kg

No. of purlins = 12

Purlins at 12.7 kg/m (Assume ISMC 125) = $12 \times 12.7 \times 6$ = 914 kg

Miscellaneous load = $3.5 \times 12 \times 6$ = 252 kg

Total = 2 888 kg

No. of panels = 10

Load acting on one intermediate panel point = $\frac{2\,888}{10}$ = 288.8 kg

Dead load is taken as = 290 kg/node

Dead load acting on shoe = 145 kg

b) Live load:

Total live load (Table II, IS : 875-1964) = $58.13 \times \frac{2}{3} \times 12 \times 6 = 2\,790$ kg

Load acting on one intermediate panel point = 279 kg

Live load taken as = 280 kg/node

Live load acting on shoe = 140 kg

c) Wind load: = $120 \times 6 \times 6.32 \times 2$

Total wind load = 9100 kg

Load acting on one intermediate panel point = 910 kg

Load acting on shoe = 455 kg

A. *Analysis of Truss for Vertical Loads*

The analysis is done for half of truss since it is symmetric.

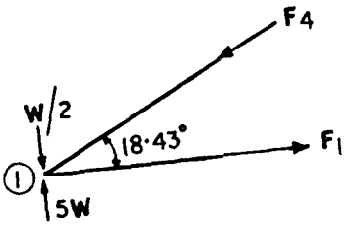
The joints are assumed pin jointed to facilitate manual calculations.

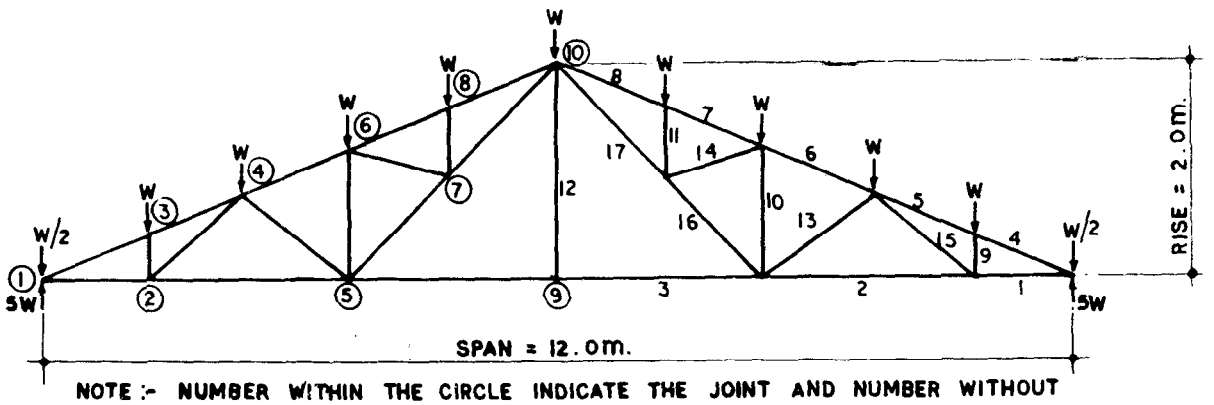
Joint 1

$F_4 \sin 18.43$ = 4.5 W

Therefore F_4 = 14.23 W (compression)

F_1 = $F_4 \cos 18.43°$ = 13.50 W (Tension)



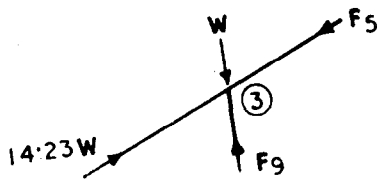


NOTE :- NUMBER WITHIN THE CIRCLE INDICATE THE JOINT AND NUMBER WITHOUT THE CIRCLE INDICATE THE MEMBER

Joint 3

F_5 = F_4 = 14.23 W (compression)

F_9 = W (compression)

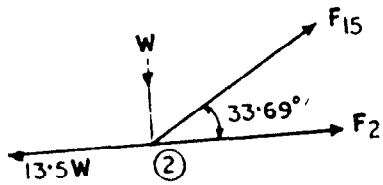


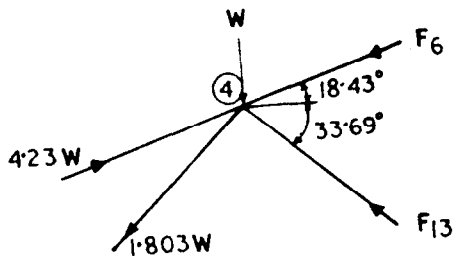
Joint 2

F_{15} sin 33.69° = W

Therefore F_{15} = 1.803 W (Tension)

F_2 = 13.5 W − 1.8 W cos 33.69°
= 12 W (Tension)





Joint 4

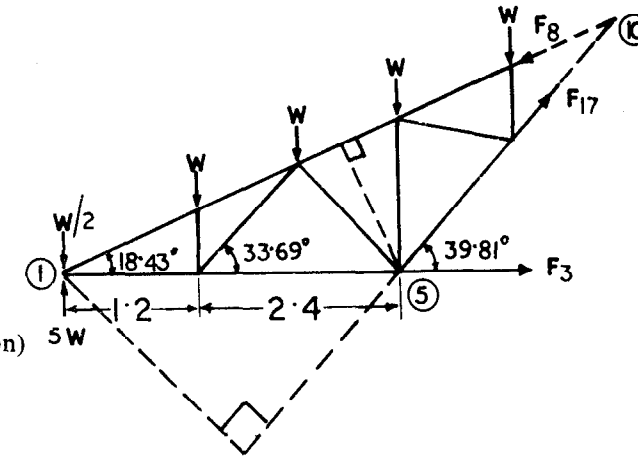
F_6 cos 18.43 + F_{13} cos 33.69° = − 1.803 W × cos 33.69° + 14.23 W cos 18.43°
= 12 W ...(i)

F_6 sin 18.43° − F_{13} sin 33.69° = 14.23 W sin 18.43 − 1.803 W × sin 33.69° − W
= 2.498 6 W ...(ii)

Solving (i) and (ii)

F_6 = 11.071 W (compression)

F_{13} = 1.803 W (compression)



Consider a part of truss as in the above figure.

Taking moment about Joint 10,

4.5 W × 6 − 4.8 W − 3.6 W − 2.4 W − 1.2 W = F_3 × 2

Therefore F_3 = 7.5 W (Tension)

Taking moment about Joint 1,

F_{17} × 3.6 sin 39.81 = 12 W

Therefore F_{17} = 5.206 W (Tension)

Taking moment about Joint 5,

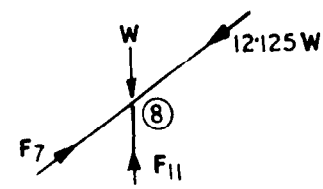
(4.5 × 3.6 − 2.4 − 1.2 + 1.2) × W = F_8 × 3.6 sin 18.43

Therefore F_8 = 12.125 W (compression)

Joint 8

F_7 = 12.125 W (compression)

F_{11} = W (compression)

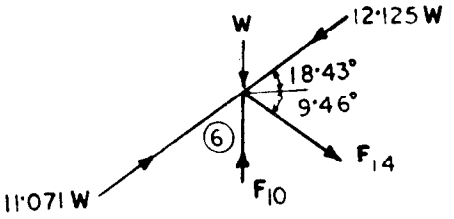


Joint 6

F_{14} cos 9.46° = 12.125 W cos 18.43 − 11.071 W cos 18.43

F_{14} = 1.013 W (Tension)

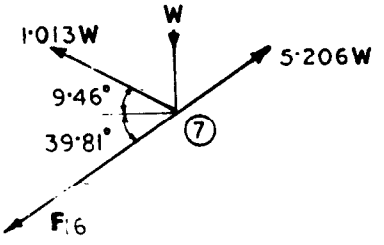
F_{10} = 1.0 W + 12.125 W sin 18.43° − 11.071 W sin 18.43 + 1.013 W sin 9.46 = 1.5 W (compression)



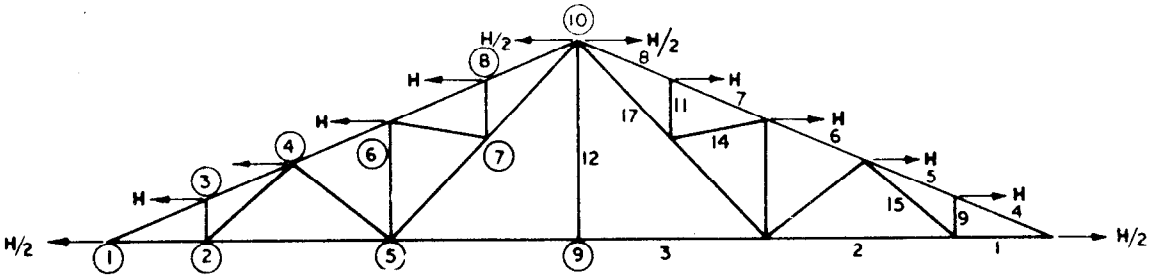
Joint 7

F_{16} cos 39.81 = − 1.013 W cos 9.46° + 5.206 W cos 39.81°

Therefore F_{16} = 3.905 W (Tension)



B. ANALYSIS OF TRUSS FOR HORIZONTAL LOAD



SPAN = 12.0m

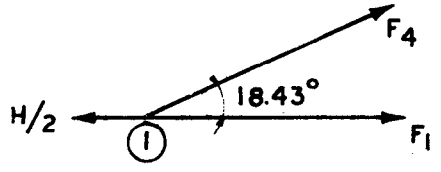
NOTE - NUMBER WITHIN THE CIRCLE INDICATE THE JOINT AND NUMBER WITHOUT THE CIRCLE INDICATE THE MEMBER.

The analysis is done for half the truss only since it is symmetric.

Joint 1

F_1 = 1/2 H (Tension)

F_4 = 0



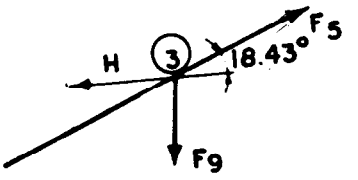
Joint 3

F_5 cos 18.43° = 1.0 H

Therefore F_5 = 1.054 H (Tension)

F_9 = 1.054 H sin 18.43

= 0.333 H (Tension)



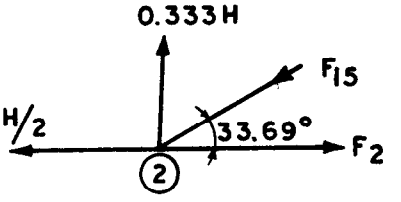
Joint 2

F_{15} sin 33.69° = 0.333 H

F_{15} = 0.6 H (compression)

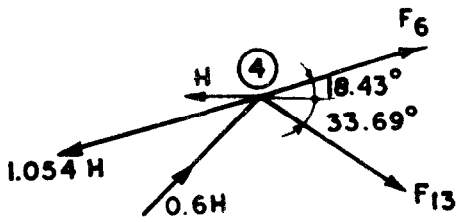
F_2 = 0.5 H + 0.6 H × cos 33.69

= H (Tension)



Joint 4

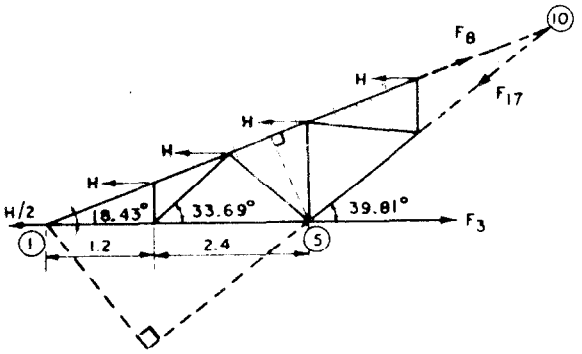
$F_6 \cos 18.43° + F_{13} \cos 33.69° = 1.054\ H \cos 18.43° + H - 0.6\ H \cos 33.69 = 1.50\ H$ ..(i)



$F_6 \sin 18.43° - F_{13} \sin 33.69° = 1.054\ H \times \sin 18.43° - 0.6\ H \sin 33.69° = 0.0$ ...(ii)

Solving (i) and (ii) F_6 = 1.054 H (Tension)

F_{13} = 0.6 H (Tension)



Let us consider a part of the truss as in figure.

Taking moment about Joint 10,

$H\ (2 \times 1/2 + 0.4 + 0.8 + 1.2 + 1.6) = F_3 \times 2$

Therefore F_3 = 2.5 H (Tension)

Taking moment about Joint 5,

$H\ (0.4 + 0.8 + 1.2 + 1.6) = F_8 \sin 18.43 \times 3.6$

Therefore F_8 = 3.52 H (Tension)

Taking moment about Joint 1,

$H\ (0.4 + 0.8 + 1.2 + 1.6) = F_{17} \times 3.6 \sin 39.81°$

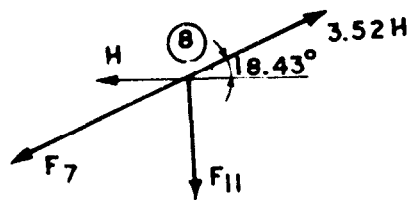
Therefore F_{17} = 1.735 H (compression)

Joint 8

$F_7 \cos 18.43° = 3.52\ H \cos 18.43° - H$

F_7 = 2.466 H (Tension)

F_{11} = (3.52 − 2.466) $H \times \sin 18.43$
= 0.333 H (Tension)

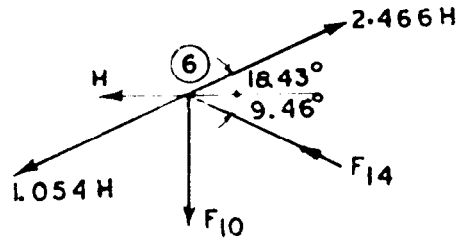


Joint 6

$F_{14} \cos 9.46$ = 2.466 $H \cos 18.43° - H$ − 1.054 $H \cos 18.43°$

F_{14} = 0.344 H (compression)

F_{16} = (2.466 − 1.054) $H \sin 18.43° + 0.344\ H \sin 9.46°$
= 0.503 H (Tension)



Joint 5

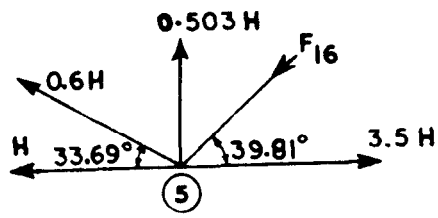
$F_{16} \sin 39.81$ = 0.6 $H \sin 33.69° + 0.503\ H$

F_{16} = 1.305 H (compression)

For Dead load + Live load combination

W = 290 + 280 = 570 kg

H = 0



For Dead load + Wind load combination

W = 0.75 × (290 − 910 cos 18.43°)
= (−) 430 kg

H = 0.75 × 910 sin 18.43°
= 216 kg

The force in the members of truss are calculated using appropriate values of W and H given above and are tabulated in following Table.

DESIGN FORCES

Member Number	Coefficient for		Force in the Member for	
			DL + LL	DL + WL
	H	W	W = 570 kg H = 0 kg	W = (−) 430 kg H = 216 kg
1	+0.5	+13.50	+7 695	−5 697
2	+1.0	+12.0	+6 840	−4 944
3	+2.5	+ 7.5	+4 275	−2 685
4	+0.0	−14.23	−8 111	+6 119
5	+1.054	−14.23	−8 111	+6 347
6	+1.054	−11.071	−6 311	+4 989
7	+2.466	−12.125	−6 912	+5 747
8	+3.52	−12.125	−6 912	+5 974
9	+0.333	− 1.0	− 570	+ 502
10	+0.503	− 1.5	− 855	+ 754
11	+0.333	− 1.0	− 570	+ 502
12	0.0	0.0	0	0
13	+0.6	− 1.803	−1 028	+ 905
14	−0.344	+ 1.013	+ 578	− 510
15	−0.6	+ 1.803	+1 026	− 904
16	−1.305	+ 3.905	+2 226	−1 961
17	−1.735	+ 5.206	+2 968	−2 614

+ Tension − Compression

Comupter analysis results for all the members of the truss are given in Table 29. The computer results presented in this table have both axial forces and bending moment whereas the manual analysis presented above gives only the axial forces. It can be seen that the axial forces given in the table above from manual calculations compare well with computer analysis results presented in Table 29.

5.1 Purlin Design — Purlin is designed with one sag rod at mid-span.

Maximum spacing of purlin = 1.4 m

Weight of sheeting = 1.4 × 17 = 23.80 kg/m

Self weight of purlin (say) = 18.00 kg/m

Total dead load (*DL*) = 41.8 kg/m

Total live load (*LL*) = 58.13 × 1.4 = 81.38 kg/m

DL + *LL* = 123.18 kg/m

Wind load uplift force = 0.8 × 150 × 1.4 = 168 kg/m

Net uplift force = 168 − 41.8 × cos 18.435° = 128.3 kg/m

Considering the unsymmetrical bending of the channel section

$$M_{xx} = \frac{123.18 \times \cos 18.435^\circ \times 6 \times 6}{8} = 525.9 \text{ kgm}$$

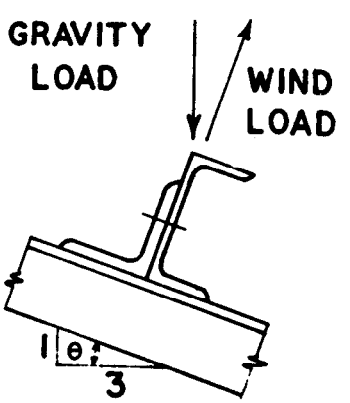
Considering the sag rod at mid span

$$M_{yy} = \frac{123.18 \times \sin 18.435^\circ \times 3 \times 3}{8} = 43.8 \text{ kgm}$$

Checking the section ISMC 125

$$f_{bc} = \frac{52\,590}{56.6} + \frac{4\,380}{13.1}$$

$$= 1\,124.0 < 1\,650 \text{ kg/cm}^2$$



Under uplift condition

$$M_{xx} = \frac{128.3 \times 36}{8} = 577.4 \text{ kgm}$$

$$M_{yy} = \frac{41.8 \times \sin 18.435 \times 9}{8} = 14.9 \text{ kgm}$$

$$F_{bc} = \frac{57\,740}{66.6} + \frac{1\,490}{13.1}$$

$$= 981 < 1.33 \times 1\,650 \text{ kg/cm}^2$$

Therefore O.K.

Size of sag rod

Assume the size = ISRO 12 mm dia

Number of purlins = 6

Total load on sag rod

$$= \frac{5 \times 123.18 \times \sin 18.435^\circ \times 6 \times 6}{8} = 876 \text{ kg}$$

Required net area of sag rod

$$= \frac{876}{1\,500} = 0.58 \text{ cm}^2$$

Use ISRO 12 ϕ rod.

Diagonal sag rod

Diagonal sag rods are used at least every 8th panel of purlin from bottom and at the top most panel of purlins.

Maximum force in the sag rod

$$= \frac{5}{8} \times 123.18 \times \sin 18.435^\circ \times 6 \times 8$$

$$= 1\,169 \text{ kg}$$

Maximum force in diagonal sag rod

$$= \frac{1\,169\sqrt{1.4^2 + 3^2}}{2 \times 1.4} = 1\,382 \text{ kg}$$

Required net area of diagonal sag rods

$$= \frac{1\,382}{1\,500} = 0.92 \text{ cm}^2$$

Use ISRO 12 ϕ rod

Tube Purlin (IS : 806-1968) Y_{st} 25 grade

Minimum outside dia of pipe

$$= \frac{L}{40} = \frac{6\,000}{40}$$

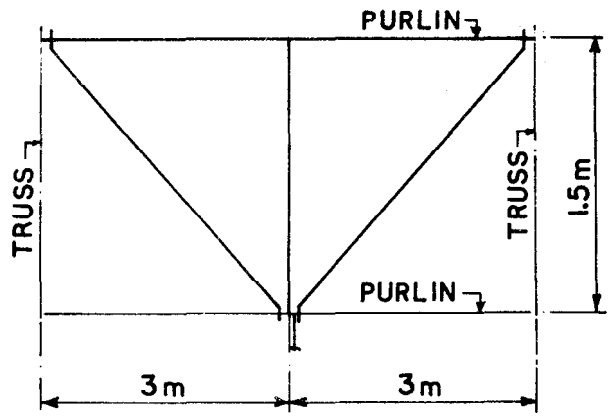
$$= 150 \text{ mm}$$

Section modulus required

$$= \frac{123.18 \times 6 \times 600}{13\,230}$$

$$= 33.5 \text{ cm}^3$$

Use 150 Light tubes for purlins.



Girt Design

Span of girt:

For vertical bending = 3.0 m

For horizontal bending = 6.0 m

Maximum spacing of girt = 1.7 m

Channel girt with sag rod at the centre

Vertical bending

A.C. sheet weight = 17×1.7 = 28.9 kg/m

Girt self weight (say) = 15.0 kg/m

Total *DL* = 43.9 kg/m

Vertical B.M. = M_{yy}

$$= \frac{43.9 \times 3^2}{8} = 49.4 \text{ kgm}$$

Horizontal bending

Wind load = $0.7 \times 0.75 \times 150 \times 1.7$ = 133.9 kg/m

Horizontal B.M.

$$= \frac{133.9 \times 6^2}{8} = 602.6 \text{ kgm}$$

Try ISMC 125 at 12.7 kg/m

$$f_{bc} = \frac{49.4}{13.1} + \frac{602.6}{66.6} \times 100$$

$$= 1\,282 \text{ kg/cm}^2 < 1\,650 \text{ kg/cm}^2$$

(No increase in permissible stress is taken since wind load causes the predominant stress)

Tension in central straight sag rod/purlin

$$= \frac{5}{8} \times 43.9 \times 6$$

$$= 164.6 \text{ kg.}$$

Maximum number of panels supported $= \frac{9.0}{1.7}$
$= 6$ (say)

Maximum tension in straight sag rod $= 6 \times 164.6$
$= 988$ kg

Required net area of sag rod $= \frac{988}{1\,500}$
$= 0.66$ cm^2

Use ISRO 12 ϕ rod

No. of girts supported by diagonal sag rod (including eaves girt) $= 7$

Actual spacing of girts $= 9.0/6 = 1.5$ m

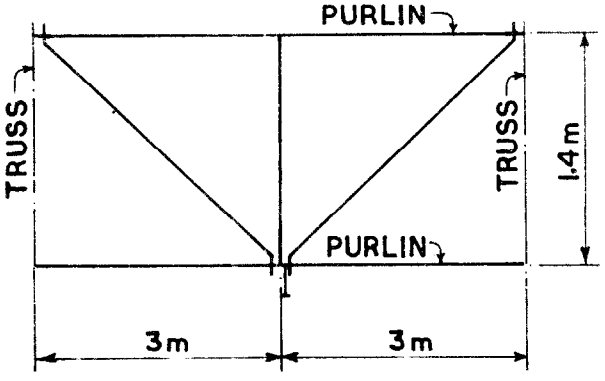
Tension in diagonal sag rod

$$= \frac{(988 + 165)}{2 \times 1.5}\sqrt{3^2 + 1.5^2}$$

$= 1\,289$ kg

Net area of rod required $= \frac{1\,289}{1\,500}$
$= 0.86$ cm^2

Use ISRO 12 ϕ rod.



Tubular Girt

Vertical B.M. $= \frac{43.9 \times 6^2}{8}$
$= 198$ kgm

Horizontal B.M. $= \frac{133.9 \times 6^2}{8}$
$= 602.6$ kgm

Resultant B.M. $= \sqrt{198^2 + (602.6)^2}$
$= 634$ kgm

Trying 100 M tube,

$$f_b = \frac{634 \times 100}{41}$$

$= 1\,546$ kg/cm$^2 < 1\,655$ kg/cm^2

Therefore O.K.

Use 100 M tube.

NOTE — Restriction of slenderness ratio applicable for tubular purlins need not be applied for girts.

5.2 Truss Member Design — Sample design of Truss Members (Angle Trusses)

Tie Member Design

Considering the forces of member 1 in Table 29.

Maximum compressive force $= 5\,567.1$ kg

Corresponding moment $= 3\,322.1$ kgcm

Maximum tensile force $= 7\,457.0$ kg

Corresponding moment $= 4\,378.2$ kgcm

$l_{xx} = 120 \times 0.85 = 102$ cm

$l_{yy} = 360 \times 0.85 = 306$ cm

(Tie number placed at 3.6 m spacing)

Try 2-ISA 6 060 × 6 with 10 mm gusset.

$$(l/r)_{xx} = \frac{0.85 \times 120.0}{1.82} = 56.0$$

$$(l/r)_{yy} = \frac{0.85 \times 360}{2.85} = 107.4$$

Therefore allowable stress for axial compression $= 775.6$ kg/cm^2

For combined bending and axial compression

$$\frac{5\,567.1}{775.6 \times 13.68} + \frac{3\,322.1}{1\,650 \times 10.4}$$

$= 0.72 < 1.0$

Therefore O.K.

For combined bending and axial tension

$$\frac{7\,457.0}{1\,500 \times 13.68} + \frac{4\,378.2}{1\,650 \times 10.4}$$

$= 0.62 < 1.0$

Therefore O.K.

Hence use 2-ISA 6 060 × 6

Rafter member design procedure will be similar to method followed for Tie member, hence not repeated.

Web Member Design

Considering the member forces of member 13 in Table 29.

Actual length of member = 144.22 cm

Compression force = 1 006.8 kg

Corresponding moment = 571.8 kgcm

Tensile force = 897.4 kg

Corresponding moment = 497.0 kgcm

Try 1-ISA 4 040 × 6

$$l/r_{vv} = \frac{0.85 \times 144.22}{0.77} = 159.2$$

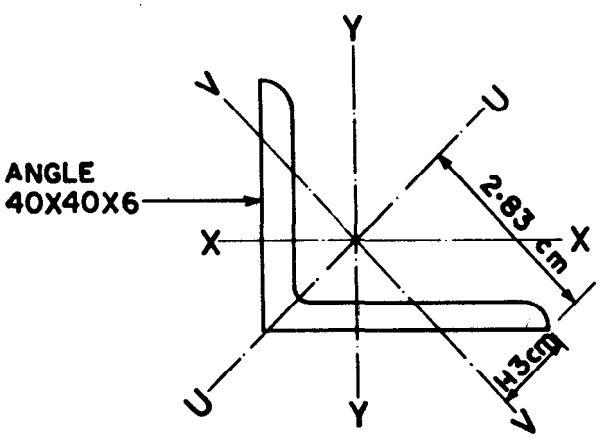
Allowable stress in axial compression = 427 kg/cm^2

Therefore for combined bending and axial compression

$$\frac{1\,006.8}{427 \times 4.47} + \frac{0.707 \times 571.8 \times 2.83}{1\,650 \times 10.0} + \frac{0.707 \times 571.8 \times 1.13}{1\,650 \times 2.6}$$

$$= 0.703 < 1.0$$

Therefore O.K.



Under tension forces

Area of outstanding leg = b = (4.0 − 0.3) 0.6 = 2.22 cm^2

Area of connected leg = a = 4.47 − 2.22 = 2.25 cm^2

$$K = \frac{1}{1 + 0.35\frac{b}{a}} = 0.7\,433$$

Effective area in tension = a + bk = 3.9 cm^2

For combined bending and axial tension

$$\frac{897.4}{1\,500 \times 3.9} + \frac{0.707 \times 497 \times 2.83}{1\,650 \times 10} + \frac{0.707 \times 497 \times 1.13}{1\,650 \times 2.6}$$

$$= 0.306 < 1.0$$

Therefore O.K.

Hence use 1-ISA 4040 × 6

Sample Design of Truss Members (Tube Trusses)

Tie Member Design

Considering the same member forces used in the sample design of angle sections (Member 1. Table 29)

Maximum compressive force = 5 567.1 kg

Corresponding moment = 3 322.1 kgcm

Maximum tensile force = 7 457.0 kg

Corresponding moment = 4 378.2 kgcm

$l_{xx} = 120 \times 0.85$ = 102 cm

$l_{yy} = 360 \times 0.85$ = 306 cm

try 80 L Tube section (Y_{st} 25 grade)

$$(l/r)_{xx} = \frac{102}{3.03} = 33.66$$

$$(l/r)_{yy} = \frac{306}{3.03} = 100.99$$

F_a = Permissible stress in compression =

$$910 - \left[\frac{910 - 813}{10}\right] = 900 \text{ kg/m}^2$$

For combined bending and axial compression,

$$\frac{f_a}{F_a} + \frac{f_b}{F_b} < 1$$

$F_a = 5\,567.1/8.74$ = 636.96 kg/cm^2

$f_b = 3\,322.1/18.1$ = 183.54 kg/cm^2

$F_b = 1\,655$ kg/cm^2

$$\text{Therefore} = \frac{636.96}{900} + \frac{183.54}{1\,655}$$

$$= 0.818 < 1$$

For combined bending and axial tension,

$$\frac{7\,457}{8.74 \times 1\,500} + \frac{4\,378.2}{18.1 \times 1\,655}$$

$= 0.715 < 1$ Therefore O.K.

Use 80 L Tube section.

Web Member Design

Considering the forces of member 13 in Table 29

Actual length of the member = 144.22 cm

Compression force = 1 006.8

Corresponding moment = 571.8 kgcm

Tension force = 897.4 kg

Corresponding moment = 497.0 kgcm

Try 25L, $A = 2.58$ cm^2, $r = 1.10$ cm

$l/r_{min} = 0.85 \times 144.22/1.10 = 111.4$

Permissible stress in axial compression

$$= 813 - \left[\frac{813 - 721}{10}\right](1.4)$$

$$= 800 \text{ kg/cm}^2$$

For combined bending and axial compression,

$$\frac{1\,006.8}{800 \times 2.58} + \frac{571.8}{1\,655 \times 1.86}$$

$= 0.674 < 1$ Therefore O.K.

For combined bending and axial compression

$$\frac{897.4}{2.58 \times 1\,500} + \frac{497.0}{1\,655 \times 1.86}$$

$= 0.39 < 1$ Therefore O.K.

Hence use 25L Tube section.

The design of all the members following the above example was done using a computer programme and the suitable angle and tube sections are as follows:

Members	*Length (m)*	*Member Number*	*Angle*	*Sections Tube*
Tie	12.0	1, 2, 3	2-6 060 × 6	80L
Rafter	6.32	4, 5, 6, 7, 8	2-5 050 × 6	65L
Web	0.40	9	1-4 040 × 6	20M
Web	1.20	10	1-4 040 × 6	20M
Web	0.60	11	1-4 040 × 6	20M
Web	2.00	12	1-4 040 × 6	20M
Web	1.44	13	1-4 040 × 6	25L
Web	1.22	14	1-4 040 × 6	20M
Web	1.44	15	1-4 040 × 6	25L
Web	3.12	16, 17	2-4 040 × 6	50L

5.3 Design of Columns

In this example the column is designed as a cantilever fixed at base and resisting moment due to wind in addition to axial force,

i) *Calculation of loads*

a) Compressive force in column

Force in column due to *DL* of truss + *LL* = 5 × 570	= 2 850 kg
Weight of asbestos side walls = 9 × 6 × 17	= 918 kg
Weight of girts at 13 kg/m = 13.0 × 7 × 6	= 546 kg
Self weight of column at 87 kg/m = 9 × 87	= 783 kg
Total compressive force	= 5 097 kg

b) Tensile force in column

To calculate the tensile force maximum uplift pressure case is taken.

Vertical uplift force

$$= 0.8 \times 0.75 \times 150 \times 6 \times \frac{12}{2}$$

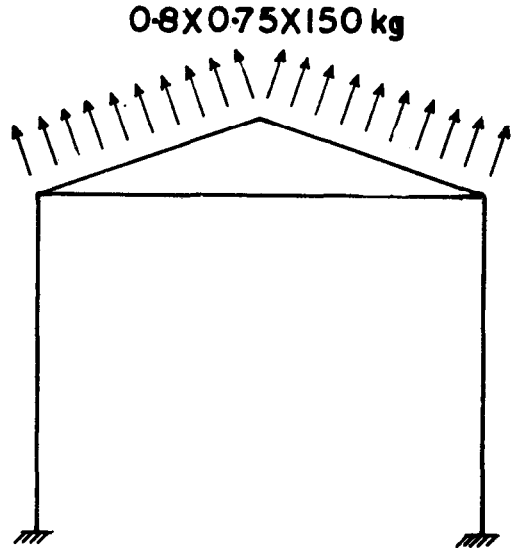
$= 3\,240$ kg

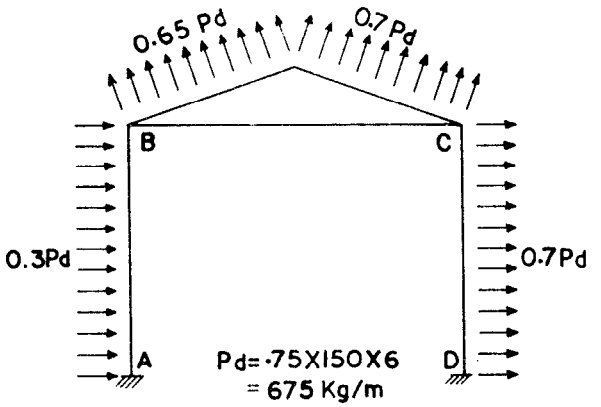
Reaction due to *DL* of Truss

+ Self weight of columns = 5 × 290 + 9 × 100 = 2 350 kg

Net upward thrust = 3 240 − 2 350 = 890 kg

Since uplift force on column for wind perpendicular to ridge would be smaller than the above, the above values has been used conservatively.





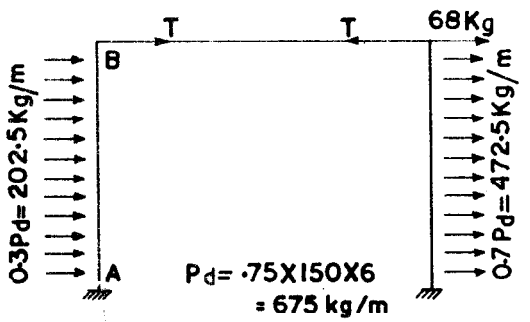
c) Moment at base

Consider wind acting perpendicular to ridge with internal pressure.

Net horizontal force at tie level due to wind on roof

$= (0.7 - 0.65) \sin 18.43° \times 6.32 \times 6 \times 0.75 \times 150$
$= 68$ kg

To determine the force in the Tie, consider the frame given below.



Deflection of column AB

$$= \frac{T \times 9^3}{3EI} + \frac{202.5 \times 9^4}{8EI}$$

Deflection of column CD

$$= \frac{472.5 \times 9^4}{8EI} + \frac{68 \times 9^3}{3EI} - \frac{T \times 9^3}{3EI}$$

Equating deflections of AB and CD

$$\frac{T \times 9^3}{3EI} + \frac{202.5 \times 9^4}{8EI} = \frac{472.5 \times 9^4}{8EI} + \frac{68 \times 9^3}{3EI} - \frac{T \times 9^3}{3EI}$$

Therefore $T = 490$ kg

Moment at base of AB $= 202.5 \times 9 \times \frac{9}{2} + 490 \times 9$
$= 12\,611.25$ kgm

Moment at base of CD $= 472.5 \times 9 \times \frac{9}{2} + 68 \times 9 - 490 \times 9$
$= 15\,338.25$ kgm

Considering the increase in allowable stress for wind load combination forces, the reduced forces are:

Tensile force $= 0.75 \times 890$
$= 668$ kg

Moment $= 0.75 \times 15\,338.25$
$= 11\,504$ kgm

It is found that the values of base moment, compressive force, tensile force, etc, compare well with values from Table 196.

ii) *Design of section*

For the above column the forces from Table 196 are:

Compressive force $= 4\,643.0$ kg

Tensile force $= 785.0$ kg

Base moment $= 1\,151\,000$ kgcm

Try ISMB 500/86.9

$$(l/r_{xx}) = \frac{1.5 \times 900}{20.21} = 66.80$$

$$(l/r_{yy}) = \frac{0.75 \times 900}{3.52} = 191.8$$

Allowable axial force $= 300 - (300 - 270) \times \frac{1.8}{10}$
$= 294.6$ kg/cm^2

Allowable compressive load $= 294.6 \times 110.74$
$= 32\,624$ kg
$= 32.6$ t > 4.64 t

Therefore O.K.

Considering the effective length for lateral buckling $= 0.75 \times 900$
$= 675$ cm

Torsional constant $= K$ $= 82.50$ cm^4

Effective depth $= h = 50 - 1.72 = 48.28$ cm

$$(l/r_{yy}) = \frac{675}{3.52} = 191.76$$

Critical buckling stress = C_s

$$= \frac{1.2 \times 10.1 \times 10^6 \times 1\,369.8 \times 48.28}{1\,808.7 \times 675^2} \times \left[\sqrt{1 + \frac{0.162 \times 82.5 \times 675^2}{1\,369.8 \times 48.28^2}}\right]$$

$$= 1\,658.4 \text{ kg/cm}^2$$

Allowable bending stress = 780.94 kg/cm^2

Check for simultaneous action of bending and axial tension and moment:

$$\frac{785.0}{110.74 \times 1\,500} + \frac{1\,151\,000}{1\,650 \times 1\,808.7}$$

$= 0.39 < 1.0$ Therefore O.K.

Check for compressive stress due to bending,

$$\frac{1\,151\,000}{780.94 \times 1\,808.7}$$

$= 0.82 < 1.0$ Therefore O.K.

Check for deflection

Deflection at top =

$$\frac{472.5 \times 9^4 \times 100^3}{8 \times 2.047 \times 10^6 \times 45\,218.3} + \frac{(68 - 490) \times 9^3 \times 100^3}{3 \times 2.047 \times 10^6 \times 45\,218.3}$$

$= 3.0 \text{ cm} \approx \ell/325 = 2.8$ cm

5.4 Truss Shoe Angle Design

From analysis Table 29

WL reaction = −4 320 kg

DL reaction = +1 438.2 kg

Therefore wind load tension per bolt = f_t

$$= \frac{4\,320 - 1\,438.2}{4} = 721 \text{ kg}$$

Wind load shear per bolt = f_s $= \frac{490}{4}$

[*see* 5.3(c)] $= 122.5$

Try 4-20 black bolts

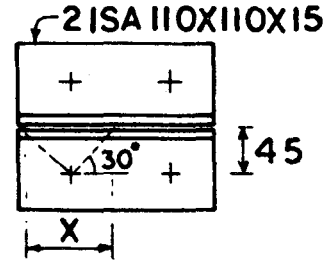
$$F_s = \frac{\pi}{4} d^2 \times 865 = 2\,717 \text{ kg};$$

$$F_t = \frac{\pi}{4} d^2 \times 945 \times 0.75 = 2\,227 \text{ kg}$$

$$\left(\frac{f_s}{F_s}\right)^2 + \left(\frac{f_t}{F_t}\right)^2 = \left(\frac{122.5}{2\,717}\right)^2 + \left(\frac{721}{2\,227}\right)^2$$

$= 0.11 < 1.0$

(No increase in permissible stress is taken as wind load is predominant)



From Table 196, column section = ISMB 500/86.9

Try 2-ISA 110 110 × 15

$x = 2 \tan 60° \times 4.5 + 2 = 17.58$ cm $t = 1.5$ cm

Moment in angle = $721 \times 4.5 = 3\,244.5$ kgcm

$$\text{Bending stress} = \frac{3\,244.5 \times 6}{17.58 \times 1.5 \times 1.5}$$

$= 492 < 1\,650$ kg/cm^2

Therefore safe

Cap Plate Design

Moment = 721×6.5 = 4 686.5 kgcm

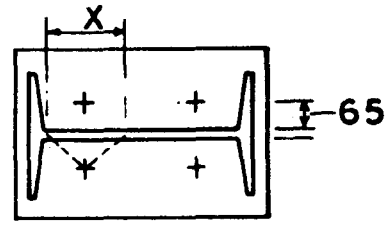
$x = 2 \tan 60° \times 6.5 + 2 = 24.52$ cm

Size of plate = $520 \times 270 \times 14$ from Table 226

$$\text{Bending stress} = \frac{4\,686.5 \times 6}{24.52 \times 1.4 \times 1.4}$$

$= 585 < 1\,650$ kg/cm^2

Therefore safe



5.5 Column Base Plate Design

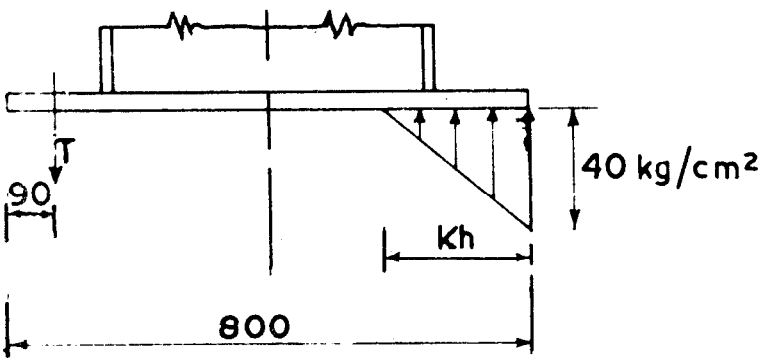
Try − 800 × 500 × 36 as given in Table 228.

Uplift force = 785 kg

Base shear = 2 873 kg

Base moment = 1 151 000 kgcm

Assuming the allowable bearing pressure on footing = 40 kg/cm^2



Taking the moments about the anchor bolts

$$\frac{1}{2} \times 40 \times K \times 71^2 \times 50 \ \frac{1}{2}\left(1 - \frac{K}{3}\right) + 785 \times 31$$

$$= 1\ 151\ 000 \text{ kg.cm}$$

$$K^2 - 3K + 0.67 = 0$$

$K - 0.245$, Therefore, $Kh = 17.395$ cm

(where $h = 71$ cm)

Therefore $T = \frac{1}{2} \times 40 \times 50 \times 17.395 + 785$

$= 18\ 170$ kg

Limiting stress in steel bolts to 945 kg/cm^2

(No increase in permissible stress is taken since wind load is the predominant load)

$A_{st} = 18\ 170/945 = 19.23$ cm^2

Provide 3 nos. of 39 mm diameter bolts on each side

Thickness of slab base

$$= \sqrt{\frac{18\ 170 \times 9 \times 6}{50 \times 1\ 890}} = 3.22 \text{ cm} < 3.6 \text{ cm}$$

Therefore provided base plate is adequate.

Bearing stress as the base key

$$= \frac{2\ 873}{50 \times 5} = 11.5 \text{ kg/cm}^2 < 0.25\ f_{ck}$$

Bending in plate $= 11.5 \times \frac{5^2}{2} = 144$ kgcm

Bending stress in 10 mm plate $= 144 \times 6/1$

$= 864 < 1\ 890$ kg/cm^2

Therefore O.K.

Use 5 mm fillet weld to connect the key.

Due to standardization sizes of column cap plate, shoe angle and base plate are conservative in this example. If one desires less conservative elements, they can be designed by following the procedure illustrated.

A more economical design of base plate can be achieved by using higher strength concrete in foundation and/or stiffened base plate.

5.6 Connection Details

Table 219 and 220 give the type of detail to be used at different nodes and these details are shown in Fig. 7 to 43.

The joint details for the example problem are as follows:

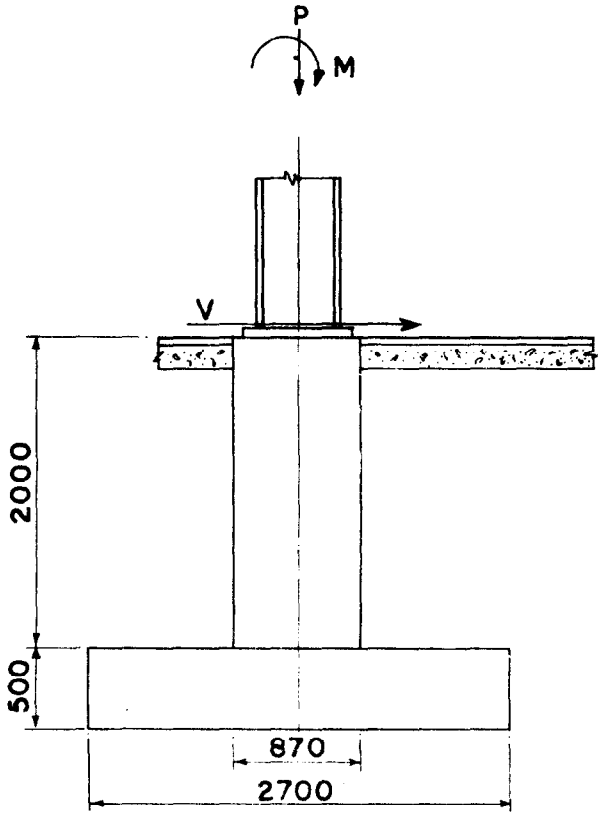
Node Number (Fig. 2A)	*Angle Truss Detail* (Fig. 7 to 25)	*Tube Truss Detail* (Fig. 26 to 43)
1	RT	RT
2	T1	T1
3	R1	R1
4	R2	R2
5	T2	T2
6	R5	R5
7	W1	W1
8	R1	R1
9	T3	T3
10	R6	R6

Gusset thickness from Table 221 = 10 mm

Fastener details are presented in Tables 222 and 225 for angles and Tubular Trusses, respectively.

The complete truss with member and connection detail is shown in the drawing enclosed.

5.7 Design of Foundation — Typified designs of foundation is not included in this report since the soil condition which varies from site to site would influence the design of foundation. A typical example of isolated footing design for assumed field condition is illustrated in this section. IS : 456-1978 limit state design procedure is used in this example.



Assumptions:

F_{ck} = 15.0 MPa

Allowable bearing pressure on soil = 15 000 kg/m^2

Required depth of footing below ground level = 2.5 m

Unit weight of soil back fill = 1 500 kg/m^3

Forces in foundation before reduction due to wind (as per Table 196)

$P = 1.33 \times 4\,043 = 6\,191$ kg

$T = 1.33 \times 785 = 1\,047$ kg

$V = 1.33 \times 2\,873 = 3\,831$ kg

$M = 1.33 \times 11\,510 = 15\,346$ kgm

Development Length of Anchor Bolts

From the design of base plate (*see* **5.5**)

Total tension in 3 bolts (due to wind, after reduction 25 percent) = 18 170 kg

Therefore actual tension in one bolt (without reduction) $= \frac{18\,170 \times 1.33}{3}$

$= 8\,073$ kg

Net area of 39 mm ϕ bolt (Net area taken as 0.75 times gross area) = 8.96 cm^2

Stress in steel in limit state of collapse $= \frac{8\,073 \times 1.5}{8.96}$

$= 1\,351.5$ kg/cm^2

Development length required $= \frac{1\,351.5 \times 39}{10 \times 1.0 \times 4}$

$= 1\,318$ mm

$= 131.8$ cm

Use 135 cm embedment in concrete.

Design of Pedestal

Self weight of pedestal $= 0.87 \times 0.57 \times 2 \times 2\,500$

$= 2\,480$ kg

So net downward load $= 2\,480 - 1\,047$

$= 1\,433$ kg

Moment due to shear force at base of pedestal $= 2 \times 3\,831$

$= 7\,662$ kgm

Total moment at base of pedestal $= 7\,662 + 15\,346$

$= 23\,008$ kgm

Therefore design compression $= 1.5 \times 1\,433$

$= 2\,150$ kg

Design moment $= 1.5 \times 23\,008$

$= 34\,512$ kgm

$F_{ck} = 15$ N/mm^2

$$\frac{M_u}{f_{ck} b D^2} = \frac{34\,512 \times 10 \times 1\,000}{15 \times 570 \times 870^2} = 0.053$$

$$\frac{P_u}{f_{ck} b D} = \frac{2\,150 \times 10}{15 \times 870 \times 570} = 0.003$$

(From chart 31 of SP : 16)

For *Fe* 415 and $\frac{d'}{D} = 0.05$

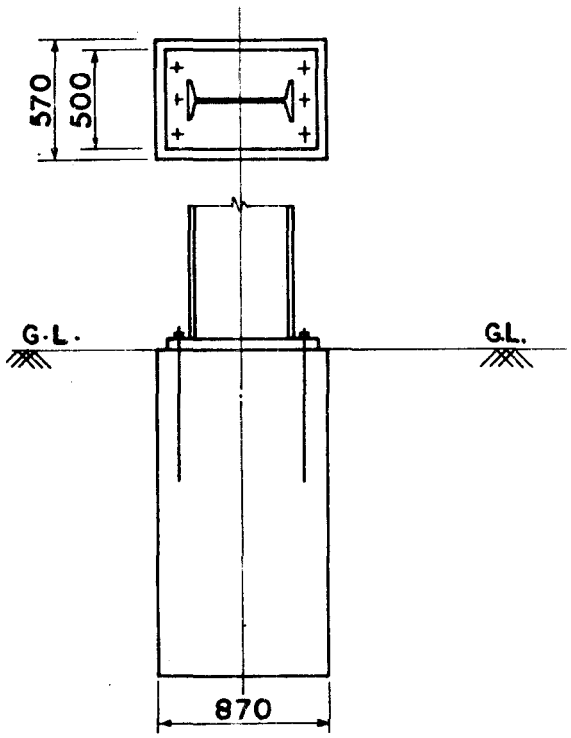
$$\frac{p}{f_{ck}} = 0.03$$

$p = 0.03 \times 15 = 0.45$

Provide minimum reinforcement = 0.8 percent

Therefore area of longitudinal steel =

$$\frac{0.8}{100} \times 570 \times 870 = 3\,967 \text{ mm}^2$$



Provide 8 bars of 25 mm ϕ, 3 on each face. (Reinforcement has been distributed on all the faces since nominal steel required to resist the actual bending moment.)

Lateral ties:

Diameter = greatest of i) 5 mm
ii) 1/4 diameter of main bar
= 1/4 × 25
= 6.25 mm

Therefore provide 8 mm lateral ties.

Spacing of ties = least of the following:

i) least lateral dimension = 570 mm

ii) 16 times diameter of main bar = 16 × 25 = 400 mm

iii) 48 times diameter of ties = 48 × 8 = 384 mm

Therefore provide 8 mm lateral ties at 38 cm c/c.

Design of Footing

Direct load from pedestal, W_1 = 1 433 kg

Moment = 23 008 kgm

Safe bearing capacity of soil = 15 t/m^2 = 15 000 kg/m^2

Unit weight of soil = 1 500 kg/m^3

Try a footing 2.7 m × 2.4 m × 0.5 m

Weight of soil above footing, W_3

$= (2.7 \times 2.4 - 0.57 \times 0.87) \times 2 \times 1\,500$
$= 17\,952$ kg

Weight of footing $W_2 = 2.7 \times 2.4 \times 0.5 \times 2\,500$
$= 8\,100$ kg

Load from pedestal, $W_1 = 1\,433$ kg

Total vertical load $= W_1 + W_2 + W_3$
$= 27\,485$ kg

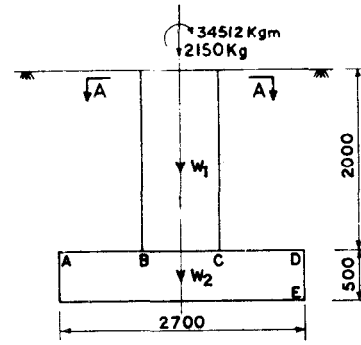
Overturning moment $= 15\,346 + 3\,831 \times 2.5$
$= 24\,924$ kgcm

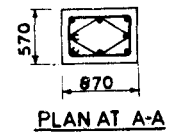
Eccentricity of resultant vertical force

$$= \frac{24\,924}{27\,485}$$

$$= 0.91$$

$$> \frac{b}{6} = \frac{2.7}{6} \text{ cm}$$





Therefore base pressure distribution is triangular with part of the footing lifting up:

Width of footing in contact with soil

$$= \left(\frac{2.7}{2} - 0.91\right) \times 3 = 1.32 \text{ m}$$

Maximum pressure $= \dfrac{27\,485 \times 2}{1.32 \times 2.4}$

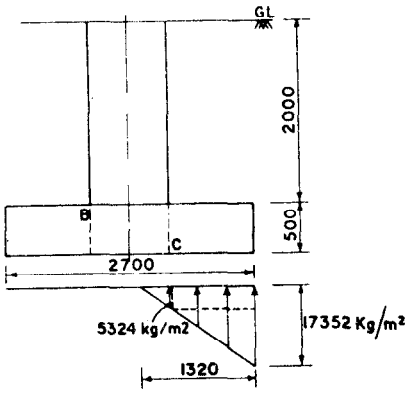
$= 17\,352$ kg/m^2

$< 1.25 \times 15\,000$ kg/m^2

Pressure at C $= \frac{17\,352}{1.32}(1.32 - 0.915)$

$= 5\,324$ kg/m^2

B.M. at B due to back fill and concrete $= 1\,500 \times 2 + 2\,500 \times 0.5$
$= 4\,250$ kg/m^2



Maximum factored B.M. at Section C (W_t of soils above foundation neglected)

$$= \left[5\,324 \times \frac{0.91^2}{2} + (17\,352 - 5\,324) \times \frac{0.91}{2} \times 2 \times \frac{0.91}{3}\right] \times 1.5$$

$= 8\,286$ kg m/m width

$= 81.25$ kN.m/m width

Maximum factored B.M. at Section B

$$= 1.5 \times \frac{4\,250 \times 0.91^2}{2} = 2\,640 \text{ kg m/m}$$

$= 25.9$ kN.m/m

Effective depth $= 50 - 5 = 45$ cm

(Refer Chart 5 of SP : 16)

Minimum tension reinforcement of 0.12 percent is sufficient.

$$\text{Area of steel} = 0.12 \times \frac{100}{100} \times 45$$

$= 5.4$ cm^2/m width

Use 12 # Fe415 bars at 200 mm c/c top and bottom both ways.

Shear in the footing would be small and hence not critical requiring shear reinforcement.

For economy reasons, the depth of footing may be reduced to 200 mm at the free edge (*see* Footing Details)

5.8 Bracing Design — The columns have been designed as tied cantilevers to resist the wind force normal to the ridge. Consequently the tie level bracing in the longitudinal direction is designed nominally to minimise the differential deflection of various frames. Some designers do not provide tie level bracing when the columns are designed as cantilevers. This may be provided to achieve better rigidity if so required. The bracing across the building at the two end bays is deigned to transfer wind load on the building due to wind parallel to the ridge.

The general layout of bracings is shown in the figure.

Design of tie level bracings

Cross Bracings in bays (1) — (2) and (4) — (5).

Total length of bracing members $= \sqrt{6^2 + 3.6^2}$
$= 7.0$ m

Since these are tension members

$(l/r)_{max}$ $= 350$

r_{min} required $= \frac{350}{350} = 1.0$

r_{xx} required $= \frac{700}{350} = 2.0$

Use ISA 6 565 × 6

Tie runners

Tie runners are designed nominally on the basis of l/r ratio.

Length of tie runners $= 6.0$ m

Maximum l/r $= 350$

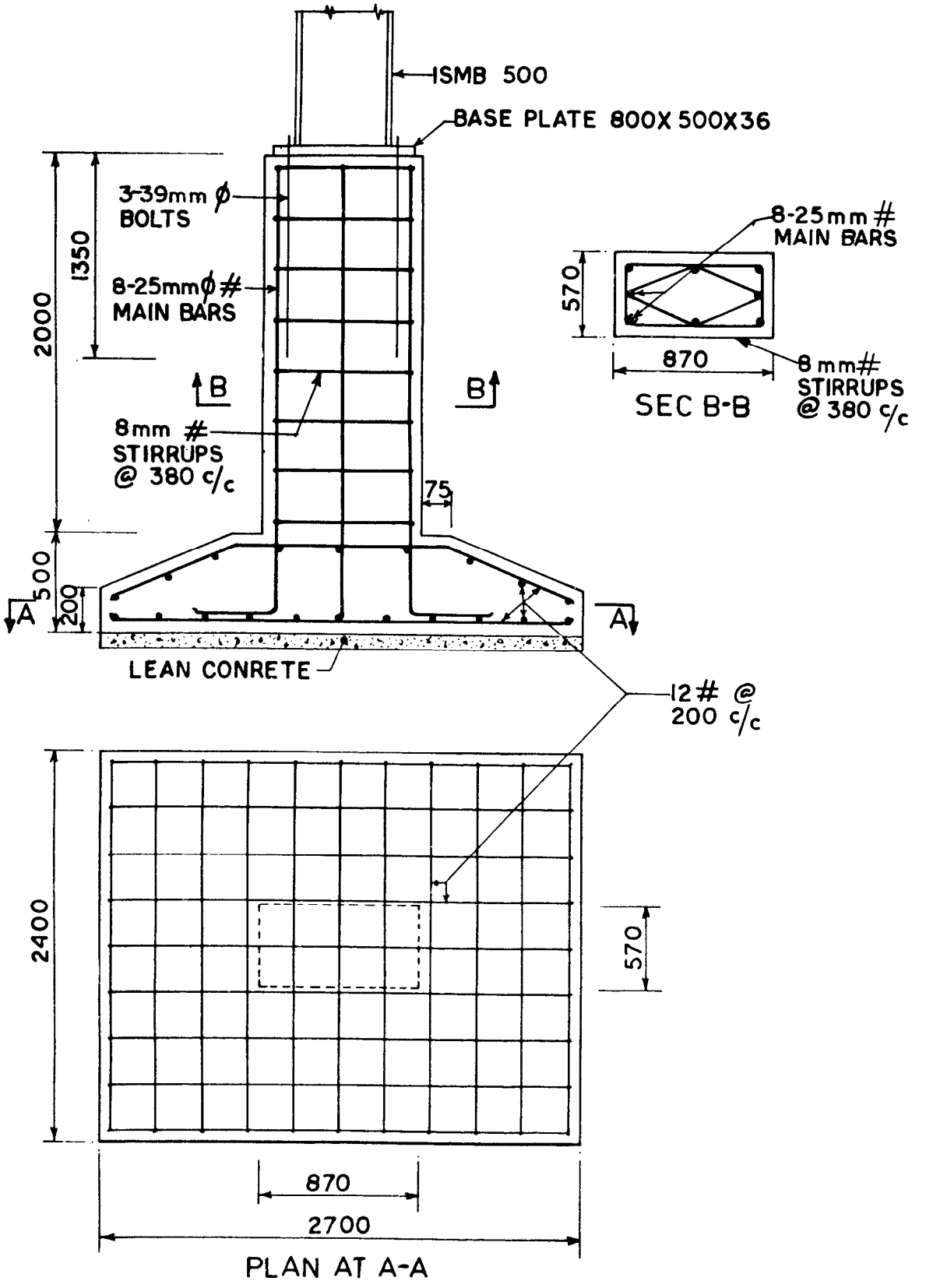
r_{min} $= \frac{600}{350} = 1.71$ cm

Try ISA 9090 × 6

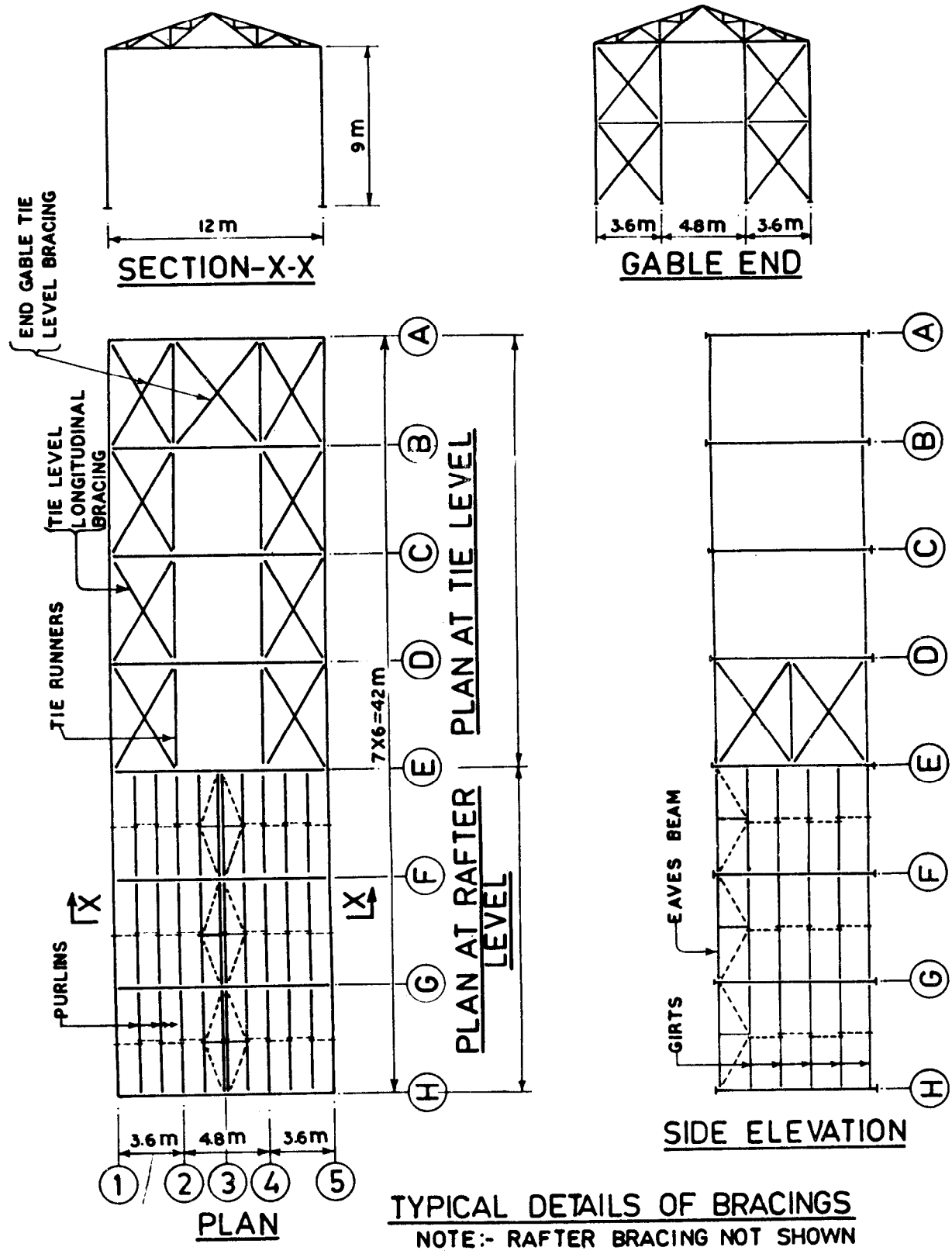
r_{min} $= 1.75$ cm

Therefore O.K.

Use ISA 9 090 × 6



FOOTING DETAILS



TYPICAL DETAILS OF BRACINGS

NOTE:- RAFTER BRACING NOT SHOWN

The tie runner size (if they are part of tie level bracing system) may have to be modified on the basis of bracing design.

Design of bracings for wind perpendicular to Gable End

Wind columns

Height = 9 m.

Wind force per column $= 0.7 \times 150 \times \left(\frac{3.6 \times 4.8}{2}\right)$

$= 441$ kg/m

$M_{max} = \frac{441 \times 9^2}{8} = 4\,465$ kg m

Try ISMB 450

$\frac{l}{r_{yy}} = \frac{900}{3.01} = 299$ Therefore O.K.

$f_{bc} = 4\,465 \times 100 / 1\,350.7$
$= 330.6$ kg/cm^2

Critical Stress $= C_s = \frac{1.2 \times 10.1 \times 10^6 \times I_y h}{Z_x l^2} \times \sqrt{1 + 0.162 \times \frac{Kl^2}{I_y h^2}}$

where

I_y = Modified moment of inertia,

h = Distance between c.g of compression flange and c.g of tension flange,

K = Torsional constant as per Appendix E of IS : 800-1962,

l = Effective length of compression flange, and

Z_x = Section modulas about x-x axis.

$C_s = \frac{1.2 \times 10.1 \times 10^6 \times 834 \times (45 - 1.74)}{1\,350.7 \times 900^2} \sqrt{1 + 0{\cdot}162 \times \frac{64.14 \times 900^2}{834 \times (45 - 1.74)^2}}$

$= 1011$

Allowable bending compression =
$547 \times 1.33 > 330.6$ kg/cm^2

Therefore O.K.

Wind Parallel to Ridge

Wind drag on roof $= \frac{\sqrt{6^2 + 2^2}}{6} \times 42 \times 0.025 \times 150$

$= 166$ kg/m across the width.

Assuming the roof drag force to be equally shared by the two end bay bracings.

Drag force at lines (2), (4)

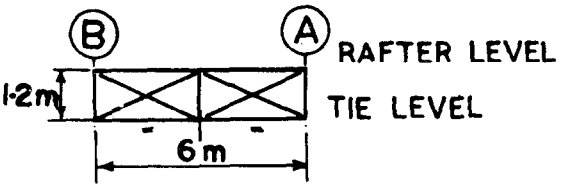
$= \frac{3.6 + 4.8}{2} \times 166 = 697$ kg

Vertical cross bracings are provided between the rafter and tie in the end bays to transfer these forces to tie level along the grid lines (2) and (4) in the end bay.

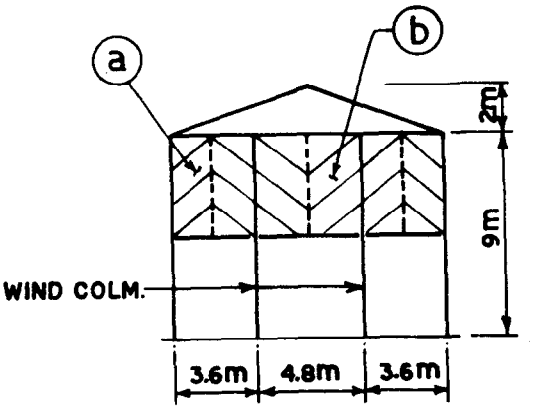
Length of cross bracings $= \sqrt{3^2 + 1.2^2} = 3.23$ m

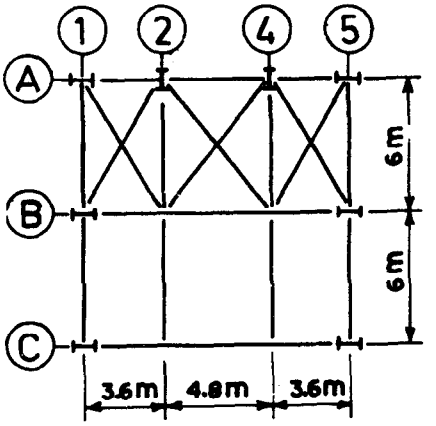
r_{xx} Min required $= \frac{3.23 \times 100}{350} = 0.923$

Use ISA 6565 × 6



Tie level gable end bracings





Windward side bracings:

Wind force at Nodes (2), (4):

Drag on roof = 697 kg

Force on gable ends (areas '*b*')

$$= \left(\frac{3.6+4.8}{2}\right) \times (4.5+1.2) \times 0.7 \times 150$$

$$= 2\,514 \text{ kg}$$

Total: = 3 211 kg

Wind force at Nodes (1), (5)

Drag on roof $= \left(\frac{3.6}{2} + 0.5\right) \times 166$ = 382 kg

(assume projection of roof = 0.5 m)

Force on gable ends (areas '*a*') =

$$\left(\frac{4.5+4.5+0.6}{2}\right) \times 1.8 \times 0.7 \times 150$$

$$= 907 \text{ kg}$$

Total: = 1289 kg

Max, tension in bracings $= \frac{3\,211 \times \sqrt{6^2+3.6^2}}{6}$

$= 3\,746$ kg

Net effective area required = 3 746/1 500

$= 2.5$ cm^2

l_{max} of bracings $= \sqrt{4.8^2+6^2}$

$= 7.68$ m

r_{xx} required $= \frac{768}{350}$

$= 2.19$ cm

Use ISA 7070 × 6 with r_{xx} = 2.14 and

Gross area provided = 8.06 cm^2

(The next higher section namely ISA 75 × 75 × 6 will be too conservative)

Rafter bracing is generally provided in the end pair of trusses for erection purposes. Extreme two set of purlins can be connected with ISA 8080 × 6.

Length of bracing $= \sqrt{6^2 + (1.265 \times 4 + 1.15)^2}$

$= 8.63$ m

r_{xx} required $= \frac{863}{350} = 2.46$

Therefore use ISA 8080 × 6.

Vertical bracings in the bays (D) — (E)

Eaves beam

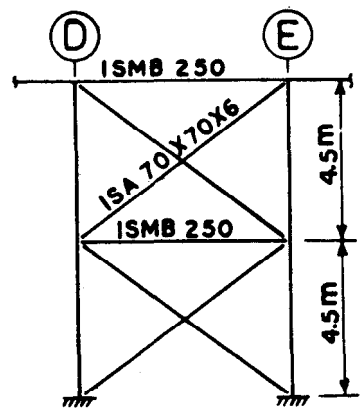
Force from tie level bracings = 1 289 + 3 211

= 4 500 kg

Wind drag from side walls = 0.025 × 150 × 4.5 × 7 × 6

= 709 kg

Total compression on eaves beam = 5 209 kg



r min required $= \frac{600}{250} = 2.4$ cm

Try ISMB 250; $r_{min} = 2.65$,

$$\frac{l}{r} = \frac{600}{2.65} = 226$$

Actual compressive stress $= \frac{5\,209}{47.55}$

$= 110$ kg/cm^2

Allowable compression stress = 207 × 1.33

= 275 kg/cm^2

Use ISMB 250

Bracings:

Maximum tension in bracings

$$= \frac{5\,209 \times \sqrt{600^2+450^2}}{600}$$

$= 6\,511$ kg

Length of bracings $= \sqrt{600^2+450^2}$

$= 750$ cm

r_{xx} required $= \frac{750}{350} = 2.14$ cm

Try ISA 7070 × 6

Gross area = 8.06 cm^2

Area of outstanding leg = b = (7.0 × 0.3) 0.6

= 4.02 cm^2

Area of connected leg = a = 8.06 − 4.02

= 4.04 cm^2

Effective area in tension $= 4.04 + \frac{4.02}{\left(1 + 0.35 \times \frac{4.02}{4.04}\right)} = 7.0 \text{ cm}^2$

$$\text{Tensile stress} = \frac{6\,511}{7.0}$$

$$= 930 < 1\,500 \text{ kg/cm}^2$$

Use ISA 7070 × 6

Additional axial force on columns

$$= 6\,511 \times \frac{450}{\sqrt{600^2 + 450^2}} = 3\,907 \text{ kg}$$

Since the columns do not experience bending due to wind parallel to ridge, the braced bay columns as already designed should be adequate.

The foundations of the braced bay column should be checked for adequate factor of safety against the additional axial force due to bracing forces.

Gable End Bracing

Since all the columns are designed as cantilevers to resist the wind load on the respective bays due to wind blowing perpendicular to the ridge, the gable end bracings are only nominally designed for overall stiffness of the structure.

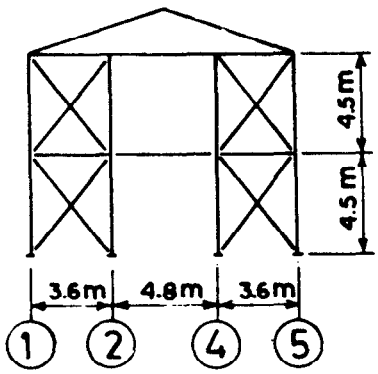
Length of bracings $= \sqrt{450^2 + 360^2}$

$= 576$ cm

r_{xx}, min required $= \frac{576}{350} = 1.65$ cm

Use ISA 5555 × 6.

Use ISMB 250 horizontal struts.



5.9 Design Example for Crane Loads

Data

Capacity of crane (P) = 10 t

Column height = 9.75 m

Spacing of columns (ℓ) = 6.0 m

Other roof truss details are same as given in the design example in **50**.

5.9.1 *Gantry Girder Design* — Table 209 gives the crane load data for design.

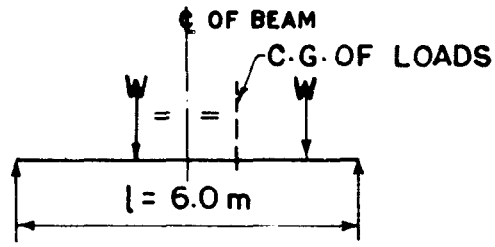
Wheel load without impact = 10.5 t

Crab weight (Q) = 4 t

Wheel base (a) = 3 m

Maximum wheel load with impact (W) = 10.5 × 1.25 = 13.125 t

(*see* **3.4.3** of IS : 875-1964)



Maximum vertical bending moment

$$= 2w \frac{\left(\frac{L}{2} - \frac{a}{4}\right)^2}{L}$$

$$= \frac{2 \times 13.125 \left(\frac{6}{2} - \frac{3}{4}\right)^2}{6}$$

$$= 22.16 \text{ tm}$$

Check: Maximum vertical B.M due to single wheel load

$$= \frac{13.125 \times 6}{4}$$

$$= 19.69 \text{ tm} < 22.16 \text{ tm}$$

Transverse wheel load per wheel

$$= \frac{1}{2}\left[\frac{10}{100}(P + Q)\right]$$

$$= \frac{1}{2}\left[\frac{10}{100}\left(\frac{10+4}{2}\right)\right] = 0.35 \text{ t}$$

Max horizontal bending moment $= \frac{0.35}{13.125} \times 22.16$

$= 0.59$ tm

Max shear due to wheel load = 13.125 × 1.5 = 19.7 t

Assuming self weight of girder = 0.25 tm

Max shear due to self weight = 0.75 t and self weight B.M

$$= \frac{WL^2}{8} 1.13 \text{ tm}$$

Therefore the design forces for Gantry girder are:

Vertical bending moment = 22.16 + 1.13
= 23.29 tm

Horizontal bending moment = 0.59 tm

Vertical shear = 19.7 + 0.75
= 20.45 t

Horizontal shear = 0.35 × 1.5
= 0.53 t

Table 211 also gives the same design forces.

Try section ISMB 500/86.9 and top channel ISMC 250/30.4.

The individual section properties can be obtained from SP : 6(1)-1964.

Combined section properties are:

$Y_t = 50 + 0.71 - 31.06 = 19.65$ cm;

$$Y_b = \frac{110.74 \times 25 + 38.67 (50 + 0.71 - 2.3)}{110.74 + 38.67}$$

$= 31.06$ cm

$I_x = 45\,218.3 + 110.74 (31.06 - 25)^2 + 219.1 + 38.67 (19.65 - 2.3)^2$
$= 61\,144.7$ cm^4;

$I_y = 3\,816.8 + 1\,369.8 = 5\,186.6$ cm^4

I_y of compression flange

$$= 3\,816.8 + \frac{1\,369.8}{2} = 4\,501.7 \text{ cm}^4$$

$$r_y = \frac{5\,186.6}{110.74 + 38.67} = 5.89 \text{ cm}$$

$$(l/r_y) = \frac{600}{5.89} = 101{\cdot}9$$

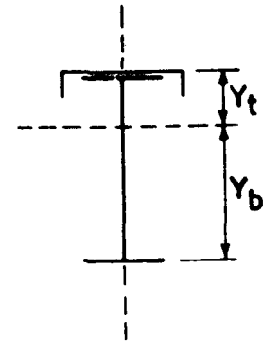
$C_s = 4\,359$ kg/cm^2

$F_b = 1\,547$ kg/cm^2

Z_x (top) $= \frac{I_x}{Y_t} = 3\,111.7$ cm^3;

Z_x (bottom) $= \frac{I_x}{Y_b} = 1\,968.6$ cm^3,

Z_y (top) $= 360$ cm^3



Actual tensile bending stress $= \frac{23.29 \times 10^5}{1\,968.6}$

$= 1\,183$ kg/cm$^2 < 1\,650$ kg/cm^2

Actual compressive bending stress $= \frac{23.29 \times 10^5}{3\,111.7}$

$= 748$ kg/cm$^2 < 1\,547$ kg/cm^2

Bending stress due to lateral load $= \frac{0.59 \times 10^5}{360.1}$

$= 164$ kg/cm^2

Therefore combined bending stress $= 748 + 164$

$= 912$ kg/cm$^2 < 1.1 \times 1\,547$ kg/cm^2

Therefore section is O.K. for stresses.

Bearing stress at the function of gantry web and flange $= \frac{20\,450}{t_w (b + 2 \times \sqrt{3h_2})}$

where

t_w = thickness of web,

b = width of load contact or bearing plate

h_2 = distance between edge of flange and root of flange as given in SP : 6(1)-1964

$$= \frac{20\,450}{1.02 (7.5 + 2 \times \sqrt{3 \times 3.0})}$$

$= 970$ kg/cm$^2 < 1\,890$ kg/cm^2

Therefore O.K.

Check for Web Buckling

Compression at N.A. over support $= \frac{R}{B \times t_w}$

where

R = vertical shear at support,

t_w = web thickness, and

B = the length of stiff portion of bearing + half depth of beam + thickness of flange plate (if any)

$= \frac{20\,450}{(7.5 + 25.0)\,1.02}$

$= 616.9$ kg/cm^2

Effective slenderness ratio of web $= \frac{d}{t_w}\sqrt{3}$

where

d = clear depth between the top roots $= 50 - 2 \times 3.8 = 42.4$ cm

t_w = web thickness = 1.02 cm

Therefore slenderness ratio $= \frac{42.4 \times \sqrt{3}}{1.02} = 72$

Allowable compression = 1 061 kg/cm^2

> 616.9 kg/cm^2

Therefore no bearing stiffener is required.

However nominal 6 mm plate is provided as stiffener at each support.

Bear in web $= \frac{20\,450}{1.02 \times 50}$

$= 401$ kg/cm$^2 < 945$ kg/cm^2

Therefore O.K.

Check for deflection : Keeping two wheels equidistant from centre of span

$$\delta_{max} = \frac{PL^3}{6EI} \times \left[\frac{3C}{4L} - \left(\frac{C}{L}\right)^3\right]$$

where

P = value of one load without impact = 10.5 t,

C = distance of one load from adjacent reaction, $= \frac{6-3}{2} = 1.5$ m,

E = modulas of elasticity, and

I = moment of inertia.

In this example:

$$\delta_{max} = \frac{10.5 \times 600^3 \times 10^3}{6 \times 2.047 \times 10^6 \times 61\,144.7} \times \left[\frac{3 \times 150}{4 \times 600} - \left(\frac{150}{600}\right)^3\right] = 0.52 \text{ cm}$$

Total Gantry weight = 118 + 50 = 168 kg/m

(assuming crane rail weight = 50 kg/m)

Deflection due to self weight $= \frac{5}{384} \times \frac{1.68 \times 600^4}{2.047 \times 10^6 \times 61\,144.7}$

$= 0.002\,3$ cm

Total deflection = 0.52 + 0.002 3 = 0.522 cm

Limiting deflection $= \frac{L}{750} = \frac{600}{750} = 0.8$ cm

Therefore O.K.

5.9.2 *Stepped Column Design*

i) *Design of Roof Leg Above Crane Cap*

Axial compression:

Length of roof leg = 3.75 m

Reaction from truss = 5 × 570	= 2 850 kg
Gussets + Tie runners weight	= 500 kg
Load from girts = 3 × 6 × 18	= 324 kg
Load from side asbestos sheets	= 3.75 × 6 × 17 = 382.5 kg
Self weight of column at 50 kg/m	= 3.75 × 50 = 187.5 kg
Total DL and LL	= 4 244 kg

Moment at crane cap:

Wind load moment =

$0.75 \times 0.7 \times (150 \times 7.0) \times \frac{3.75^2}{2}$ = 3 323 kgm

Surge moment = 0.53 × 0.75 × 1 000 = 398 kgm

(assuming surge force acting 75 cm away from base of roof leg)

Total moment at base of roof leg = 3 721 kgm

Considering the increase in allowable stress for wind load combination, the reduced forces are:

Axial force = 0.75 × 4 244 = 3 183 kg

Moment = $0.75 \times 3\,721$ = 2 791 kgm

The forces and bending moment calculated above compare well with the values given in the Table 213. In Table 213 the axial force given corresponds to 30 m span truss.

Try ISMB 300/44.2

Length = 3.75 m

Effective length xx = 1.5×3.75 = 5.625 m

Effective length yy = 1.0×3.75 = 3.75 m

$(l/r_{xx}) = \dfrac{562.5}{12.37}$ = 45.5

$(l/r_{yy}) = \dfrac{375}{2.84}$ = 132.04

Allowable axial compressive stress

$= 597 - (597 - 531)\dfrac{2.04}{10} = 583.54$ kg/cm^2

Therefore allowable axial load = 583.54×56.26 = 32 830 kg = 32.8 t > 3.18 t O.K.

Effective depth, ($h = 30 - 1.24$) = 28.76 cm

Torsional constant, K = 24.33 cm^4

Effective length, ($l = 375 - 1.0$) = 375 cm

I_y = 453.9 cm^4

Z_x = 573.6 cm^3

$$C_s = 1.2 \times 10.1 \times 10^6 \times \frac{453.9 \times 28.76}{573.6 \times 375^2} \times \sqrt{1 + \frac{0.162 \times 24.33 \times 375^2}{453.9 \times 28.76^2}}$$

= 3 086 kg/cm^2

$l/r_{yy} = \dfrac{375}{2.84} = 132.04$

Allowable compressive stress in bending = 1 276 kg/cm^2

Check for bending and axial compression:

$$\frac{3\,183}{56.26 \times 583.54} + \frac{2\,791 \times 100}{573.6 \times 1\,276} = 0.48 < 1.0$$

Therefore O.K.

Design of Crane Leg Below Crane Cap

Try two ISMC 250/30.4 back to back with a spacing of 85 cm.

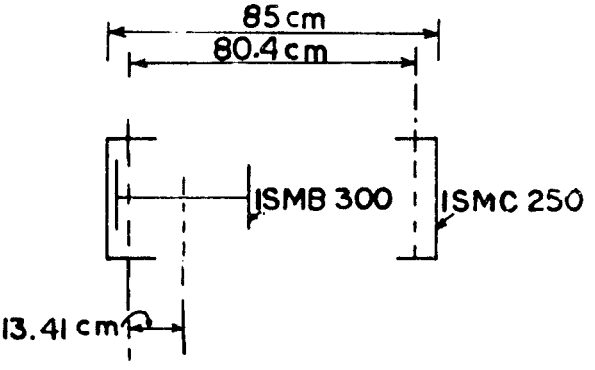
Load from top roof column $= \dfrac{4\,244}{80.4} \times 13.41$

= 708 kg

Load from crane = 20 450 kg

Self weight of column at 50 kg/m = 6×50 = 300 kg

Total DL + LL = 21 458 kg



Moment due to wind load

$= 0.7 \times 0.75 \times (150 \times 6.0) \times \dfrac{9.75^2}{2}$

= 22 459 kgm

Surge moment = $0.53 \times 6.75 \times 1\,000$ = 3 578 kgm

Total moment = 26 037 kgm

Axial force due to total moment

$= \dfrac{26\,037 \times 100}{80.4} = 32\,384$ kg

Therefore total axial force = 32 384 + 21 458 = 53 842 kg ≈ 53.84 t

Design:

Length = 6.0 m

Effective length xx = 0.85×600 = 510 cm

Effective length yy = spacing of lacing = 80 cm

$l/r_{xx} = \dfrac{510}{9.94}$ = 51.3

Allowable compressive stress =

$1\,172 - (1\,172 - 1\,130)\dfrac{1.3}{10}$ = 1 166 kg/cm^2

Therefore capacity of leg = $1.33 \times 1\,166 \times \dfrac{38.67}{1\,000}$ = 59.9 t < 53.84

Therefore O.K.

l/r_{yy} Maximum = $0.7 \times 51.3 = 35.9$

Maximum lacing spacing = $35.9 \times 2.38 = 85.4$ cm

Design of Roof Leg Below Crane Cap

Roof columns force = 4 244 − 708 = 3 536 kg
Load from girts = 5 × 6 × 18 = 540 kg
Load from side asbestos sheets
= 6 × 6 × 17.5 = 630 kg
Self weight at 50 kg/m = 50 × 6 = 300 kg

Total = 5 006 kg

Axial force from moment = 32 384 kg

Therefore total axial force
= 5 006 + 32 384 = 37 390 kg

Capacity of leg = 59.9 t > 37.39 t

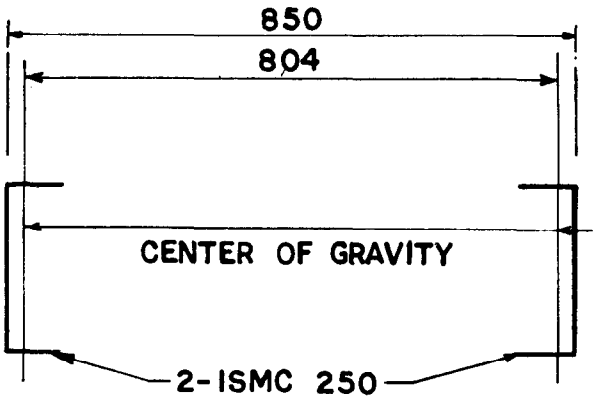
Therefore ISMC 250 for roof column is O.K.

Check for deflection

Moment of inertia of roof leg above crane cap = 8 603.6 cm^4

Moment of inertia of each ISMC 250 = 219.1 cm^4

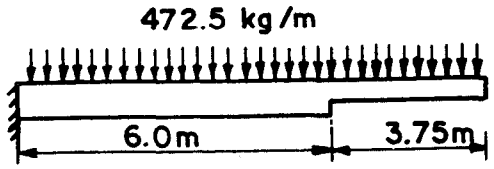
Combined M.I. = 2 × 219.1 + 38.67 × 40.2^2 × 2 = 125 423 cm^4



The deflections are calculated using conjugate beam method.

Determination of the deflection at top of column due to full wind load on wall claddings:

Wind load = 0.7 × 0.75 × 150 × 6 = 472.5 kg/m



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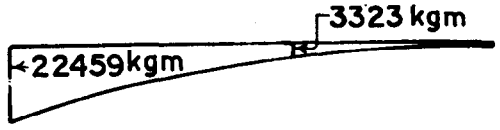
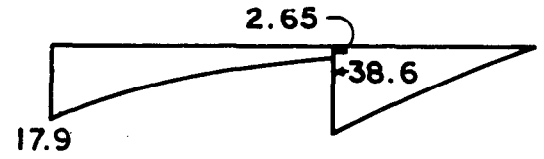
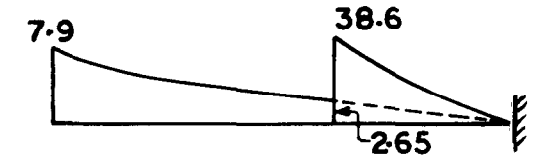


B. M. DIAGRAM



M/I DIAGRAM



CONJUGATE COLUMN

Therefore δ_{top} = Bending moment at X of conjugate column

$$= \left[\frac{1}{3} \times 38.6 \times 375 \times 0.75 \times 375 + \frac{17.9}{3} \times 975 \times .75 \times 975 - \frac{2.65}{3} \times 375 \times 0.75 \times 375\right] \frac{1}{2.047 \times 10^6}$$

$$= 2.7 \text{ cm} < \frac{l}{325} = 3.0 \text{ cm}$$

Therefore O.K.

Determination of deflection at crane level for a basic service wind pressure of 25 kg/cm^2 and crane surge load:

Deflection at crane level = Bending moment at Y of conjugate column.

$$\text{Shaded area} = \frac{1}{3} \times 2.98 \times 975 - \frac{1}{3} \times 0.44 \times 375 + \frac{6.44}{3} \times 375 - \frac{4.12}{3} \times 300$$

$$= 968.5 - 55 + 805 - 412$$

$$= 1\,306.5$$

Moment of shaded area about 0
= 968.5 × .75 × 975 − 55 × .75 × 375 + 805 × .75 × 375 − 412 × .75 × 300 = 826 453

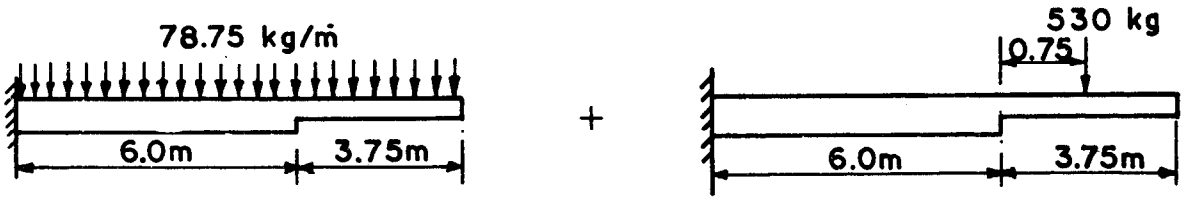
Distance of CG of shaded area from Y

$$= \frac{826\,453}{1\,306.5} - 300 = 332.6 \text{ cm}$$

Deflection at Y crane level due to UDL

$$= (1\,306.5 \times 332.6) \frac{1}{2.047 \times 10^6}$$

$$= 0.21 \text{ cm}$$



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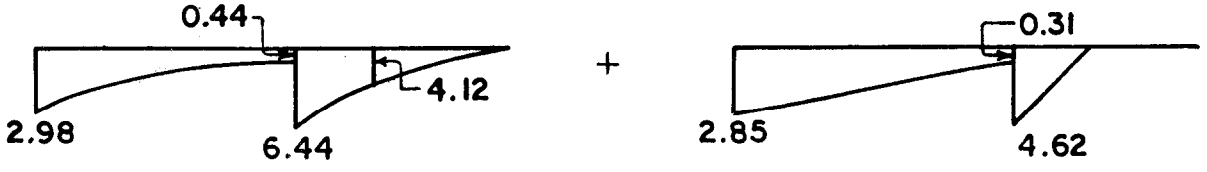
B. M. DIAGRAM



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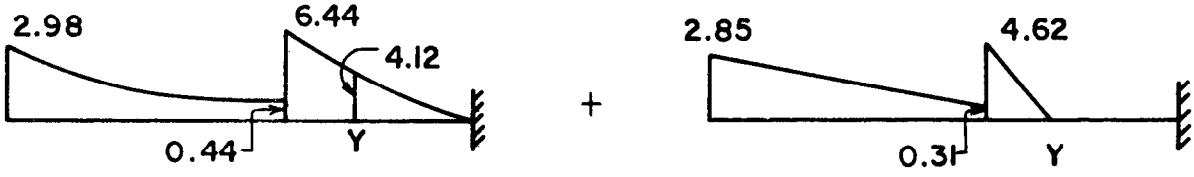


CONJUGATE COLUMN

Deflection at crane level due to point load =

$$= \left(0.31 \times 600 \times 375 + 2.54 \times \frac{600}{2} \times 475 + 4.62 \times \frac{75}{2} \times 50\right) \frac{1}{2.047 \times 10^6}$$

$$= 0.21 \text{ cm}$$

Total deflection at crane level = 0.21 + 0.21

$$= 0.42 \text{ cm}$$

$$< l/1\,000 = 0.6 \text{ cm}$$

Therefore O.K.

Lacings

Axial force on the combined leg = 5 006 + 21 458 = 26 464 kg

(Axial force due to wind will be negligible)

Maximum shear in the column = $0.7 \times 0.75 \times 150 \times 6 \times 9.75$ = 4 607 kg

Keep spacing of lacing = 80 cm

$$\tan \theta = \frac{40}{80.4} = 0.497\,51$$

$$\therefore \theta = 26.451°$$

Maximum lacing force

$$= \frac{(.025 \times 26\,464 + 4\,607)}{2} \times \frac{1}{\cos \theta} = 2\,942 \text{ kg}$$

$$\text{Effective length} = 0.7 \times \frac{80.4}{\cos \theta} = 62.8 \text{ cm}$$

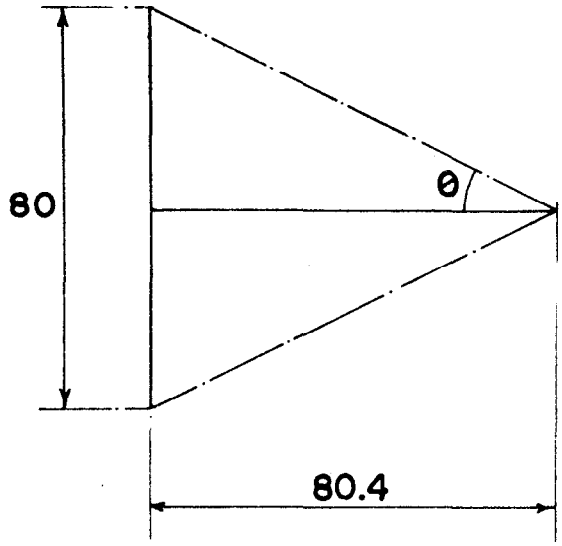
Try ISA 5050 × 6

$$l/r = \frac{62.8}{0.96} = 65.4$$

$$F_c = 1\,130 - (1\,130 - 1\,075)\frac{5.4}{10} = 1\,100 \text{ kg/cm}^2$$

Allowable load $= 1\,100 \times 5.68 \times 1.33$
$= 8\,310 \text{ kg} > 2\,942 \text{ kg}$

Therefore O.K.

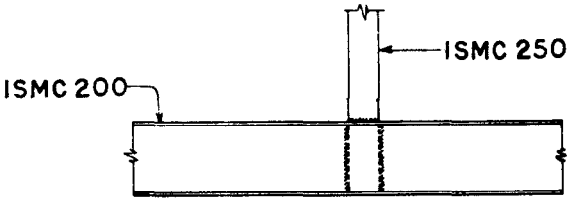


End ties

$$\text{Bending in end ties} = \frac{26\,464 \times 0.025 + 4\,607}{2} \times \frac{80}{2} = 105\,372 \text{ kg. cm}$$

$$Z_{reqd} = \frac{105\,372}{1\,650} = 63.9 \text{ cm}^3$$

Use ISMC 200



NOTE :-LOCATION OF WELD SHOWN HATCHED

Force in end tie weld (for 1 mm size weld) $= \dfrac{105\,372 \times 10}{(8 \times 10^2 + 2 \times 20^3/12)}$
$= 494 \text{ kg}$

Assuming shear stress in fillet weld = 1 025 kg/cm^2

Strength of 1 mm weld $= \frac{1}{10} 0.7 \times 1\,025$
$= 71 \text{ kg}$

Therefore size of weld $= \frac{494}{71} = 6.96$ mm

Use 8 mm weld all around

The column base design for crane column is similar to axially loaded column base design and hence not repeated here.

Bracing at crane level

Crane level tie beam is required to transfer the crane surge to vertical bracings and restrain laterally top of crane leg.

Unsupported length $= 6.0$ m

r_{min} $= 600/180 = 3.33$

Try 2 ISMC 100 at 85 mm apart laced together by ISA 5050 × 6

r_{min} $= 4.0$

Therefore O.K.

The vertical bracings below tie beam should be designed as earlier considering crane surge in the longitudinal direction also.

5.10 Drawings — It must be realised that for design of structure to be valid, the assumptions made in design office should be realised in the field. This is all the more important in ensuring that the connections envisaged are actually fabricated. Therefore, extreme care is necessary while preparing the drawings which is the only source of communication between the designer and the executive staff. A set of 5 drawings have been prepared for the design example given earlier and is appended at the end of handbook. It may be understood that the details given in these fabrication drawings are only typical details and several alternatives may be feasible depending upon the common practice followed in different consulting engineering organizations.

6. SUMMARY AND CONCLUSIONS

6.1 The analysis and design results of typified structures with steel roof trusses (with and without cranes) have been presented for trusses having five different A-type truss spans and three different lean-to roof truss spans, two different spacings, three different slopes, two/three different column heights, four different crane capacities, three different wind pressures and five different earthquake zones. It has been found that forces in members, even due to the lowest wind pressure of 100 kg/m^2, is more than that due to the most severe earthquake zone forces.

Typical connection details for purlins, trusses and columns have been presented. Finally an example illustrating the use of the handbook has been presented.

Comparison of steel weight in the roofing is given in Tables 231 to 242 for A-type and lean-to roof truss systems. The weights given in these tables include weight of all the members such as purlins, sag rods, truss weight, gussets (on the basis of approximate percentage of the truss weight), and tie runners but excludes the weight of columns, bracing, etc. From these tables the following conclusions may be drawn:

1) The ratio of weight per square metre of 6.0 m spacing to 4.5 m spacing of trusses is generally in the range of 1.04 to 1.2 for angle trusses and 1.13 to 1.32 for tubular trusses. The smaller values for the above ratio are for steeper slopes of roof.

2) Generally tubular structural system consume less weight per unit area compared to angle truss systems. The ratio of unit weight of tube to angle system is in the range of 0.61 to 0.81, the ratio being generally larger for flatter slopes and 6.0 m spacing of trusses.

3) Spans in the range of 12 to 18 m in the A-type truss system and 9 m in lean-to roof truss system generally require less material per unit area compared to other spans.

4) Purlins weight constitute between 39 and 81 percent of the total weight of the tubular truss systems and between 29 and 66 percent of the angle truss system.

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2. IS : 2062-1984 Specification for weldable structural steel (*third revision*)
3. IS : 1161-1979 Specification for steel tubes for structural purposes (*third revision*)
4. IS : 875-1964 Code of practice for structural safety of buildings: Loading standards (*revised*)
5. IS : 1893-1975 Criteria for earthquake resistant design of structures
6. IS : 800-1962 Code of practice for use of structural steel in general building construction
7. IS : 806-1968 Code of practice for use of steel tubes in general building construction
8. SP : 6(1)-1964 IS Handbook for structural engineers
9. IS : 807-1976 Code of practice for design, manufacture, erection and testing (structural portion) of cranes and hoists (*first revision*)
10. IS : 8640-1977 Recommendations for dimensional parameters for industrial buildings
11. IS : 3007 (Part I)-1964 Code of practice for laying of asbestos cement sheets: Part I Corrugated sheets
12. Arya (AS) and Ajmani (JL), Design of steel structures (Table 13-8), Third Edition, Nam Chand and Bros, 1977.
13. IS : 813-1961 Scheme of symbols for welding (amended).
14. IS : 800-1984 Code of practice for general construction in steel (*second revision*)

TABLE 1 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	900.00 cm		Spacing	450.00 cm		Slope	1 in 3
Wind force	100 kg/m²		Panels	4		Purlins at	118.59 cm
MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	225.00	(2)	1636.1	449.9	(1)	3925.8	997.7
2	225.00	(2)	806.4	729.1	(1)	2338.9	1445.4
3	118.59	(1)	4147.7	2636.7	(2)	1782.0	1124.6
4	118.59	(1)	3620.7	1947.5	(2)	1608.6	842.7
5	118.59	(1)	4040.3	2428.8	(2)	1934.3	1208.0
6	118.59	(1)	3966.4	3971.0	(2)	2001.3	2070.0
7	75.00	(1)	567.7	120.6	(2)	291.9	80.3
8	37.50	(1)	273.9	1236.7	(2)	142.0	669.0
9	150.00	(2)	5.1	0.0	(1)	9.8	0.0
10	118.59	(1)	512.0	689.3	(2)	273.6	281.9
11	112.50	(2)	201.6	305.1	(1)	384.1	639.7
12	135.21	(2)	682.2	368.9	(1)	1318.7	739.7
13	135.21	(2)	907.8	873.3	(1)	1752.0	1703.0

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	742.8	0.0	742.8
Live load reaction	0.0	788.4	0.0	788.4
Wind load reaction (without 25 percent reduction)	17.9	− 1620.0	17.9	− 1620.0

TABLE 2 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	900.00 cm		Spacing	450.00 cm		Slope	1 in 3
Wind force	150 kg/m²		Panels	4		Purlins at	118.59 cm
MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	225.00	(2)	3168.4	856.3	(1)	3925.8	997.7
2	225.00	(2)	1635.0	1356.6	(1)	2338.9	1445.4
3	118.59	(1)	4147.7	2636.7	(2)	3427.6	2166.6
4	118.59	(1)	3620.7	1947.5	(2)	3071.6	1618.4
5	118.59	(1)	4040.3	2428.8	(2)	3636.5	2253.8
6	118.59	(1)	3966.4	3971.0	(2)	3723.5	3827.4
7	75.00	(1)	567.7	120.6	(2)	541.1	142.4
8	37.50	(1)	273.9	1236.7	(2)	262.9	1228.5
9	150.00	(2)	9.4	0.0	(1)	9.8	0.0
10	118.59	(1)	512.0	689.3	(2)	503.6	548.2
11	112.50	(2)	372.2	574.1	(1)	384.1	639.7
12	135.21	(2)	1263.3	688.0	(1)	1318.7	739.7
13	135.21	(2)	1680.4	1619.7	(1)	1752.0	1703.0

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	742.8	0.0	742.8
Live load reaction	0.0	788.4	0.0	788.4
Wind load reaction (without 25 percent reduction)	26.9	− 2430.0	26.9	− 2430.0

TABLE 3 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	900.00 cm		Spacing	450.00 cm		Slope	1 in 3
Wind force	200 kg/m²		Panels	4		Purlins at	118.59 cm
Member	Length cm		Compression kg	Moment kg.cm		Tension kg	Moment kg.cm
1	225.00	(2)	4700.6	1262.7	(1)	3925.8	997.7
2	225.00	(2)	2463.7	1984.1	(1)	2338.9	1445.4
3	118.59	(1)	4147.7	2636.7	(2)	5073.1	3208.5
4	118.59	(1)	3620.7	1947.5	(2)	4534.5	3294.0
5	118.59	(1)	4040.3	2428.8	(2)	5338.6	3299.6
6	118.59	(1)	3966.4	3971.0	(2)	5445.7	5584.7
7	75.00	(1)	567.7	120.6	(2)	790.4	204.4
8	37.50	(1)	273.9	1236.7	(2)	383.7	1788.0
9	150.00	(2)	13.8	0.0	(1)	9.8	0.0
10	118.59	(1)	512.0	689.3	(2)	733.5	814.5
11	112.50	(2)	542.9	843.0	(1)	384.1	639.7
12	135.21	(2)	1844.3	1007.0	(1)	1318.7	739.7
13	135.21	(2)	2453.0	2366.2	(1)	1752.0	1703.0

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	742.8	0.0	742.8
Live load reaction	0.0	788.4	0.0	788.4
Wind load reaction (without 25 percent reduction)	35.8	− 3240.0	35.8	− 3240.0

TABLE 4 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	900.00 cm		Spacing	450.00 cm		Slope	1 in 4
Wind force	100 kg/m²		Panels	4		Purlins at	115.96 cm
Member	Length cm		Compression kg	Moment kg.cm		Tension kg	Moment kg.cm
1	225.00	(2)	2212.9	720.2	(1)	5458.3	1717.6
2	225.00	(2)	1229.6	1032.2	(1)	3357.3	2294.7
3	115.96	(1)	5670.9	4928.0	(2)	2325.8	2013.8
4	115.96	(1)	5037.1	3576.2	(2)	2104.6	1471.6
5	115.96	(1)	5467.9	3954.0	(2)	2381.9	1756.5
6	115.96	(1)	5339.9	6218.1	(2)	2399.5	2859.1
7	56.25	(1)	607.9	148.0	(2)	275.5	88.4
8	28.12	(1)	233.2	2012.4	(2)	106.5	951.5
9	112.50	(2)	7.0	0.0	(1)	15.2	0.0
10	115.96	(1)	613.0	1351.7	(2)	290.8	542.1
11	112.50	(2)	184.8	501.5	(1)	397.5	1152.2
12	125.78	(2)	781.4	571.0	(1)	1713.5	1283.9
13	125.78	(2)	953.9	1318.2	(1)	2088.9	2900.8

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	726.4	0.0	726.4
Live load reaction	0.0	907.8	0.0	907.8
Wind load reaction (without 25 percent reduction)	20.0	− 1620.0	20.0	− 1620.0

TABLE 5 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	900.00 cm		Spacing	450.00 cm		Slope	1 in 4
Wind force	150 kg/m²		Panels	4		Purlins at	115.96 cm
MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	225.00	(2)	4234.2	1366.7	(1)	5488.3	1717.6
2	225.00	(2)	2404.0	1930.7	(1)	3357.3	2294.7
3	115.96	(1)	5670.9	4928.0	(2)	4433.9	3842.0
4	115.96	(1)	5037.1	3576.2	(2)	3996.5	2803.6
5	115.96	(1)	5467.9	3954.0	(2)	4484.3	3293.8
6	115.96	(1)	5339.9	6218.1	(2)	4489.3	5325.2
7	56.25	(1)	607.9	148.0	(2)	514.6	157.3
8	28.12	(1)	233.2	2012.4	(2)	198.6	1762.6
9	112.50	(2)	13.0	0.0	(1)	15.2	0.0
10	115.96	(1)	613.0	1351.7	(2)	538.4	1038.5
11	112.50	(2)	343.4	944.4	(1)	397.5	1152.2
12	125.78	(2)	1457.6	1070.6	(1)	1713.5	1283.9
13	125.78	(2)	1779.0	2460.9	(1)	2088.9	2900.8

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	726.4	0.0	726.4
Live load reaction	0.0	907.8	0.0	907.8
Wind load reaction (without 25 percent reduction)	29.9	− 2430.0	29.9	− 2430.0

TABLE 6 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	900.00 cm		Spacing	450.00 cm		Slope	1 in 4
Wind force	200 kg/m²		Panels	4		Purlins at	115.96 cm
MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	225.00	(2)	6255.4	2013.1	(1)	5488.3	1717.6
2	225.00	(2)	3578.4	2829.3	(1)	3357.3	2294.7
3	115.96	(1)	5670.9	4928.0	(2)	6542.0	5670.3
4	115.96	(1)	5037.1	3576.2	(2)	5888.4	4135.5
5	115.96	(1)	5467.9	3954.0	(2)	6586.6	4831.1
6	115.96	(1)	5339.9	6218.1	(2)	6579.1	7791.2
7	56.25	(1)	607.9	148.0	(2)	753.7	226.1
8	28.12	(1)	233.2	2012.4	(2)	290.8	2573.8
9	112.50	(2)	19.0	0.0	(1)	15.2	0.0
10	115.96	(1)	613.0	1351.7	(2)	786.0	1534.8
11	112.50	(2)	502.1	1387.2	(1)	397.5	1152.2
12	125.78	(2)	2134.0	1570.1	(1)	1713.5	1283.9
13	125.78	(2)	2604.1	3603.5	(1)	2088.9	2900.8

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	726.4	0.0	726.4
Live load reaction	0.0	907.8	0.0	907.8
Wind load reaction (without 25 percent reduction)	39.9	− 3240.0	39.9	− 3240.0

TABLE 7 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	900.00 cm		Spacing	450.00 cm		Slope	1 in 5
Wind force	100 kg/m²		Panels	4		Purlins at	114.73 cm
MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	225.00	(2)	2746.2	1063.3	(1)	6984.1	2642.5
2	225.00	(2)	1636.3	1399.6	(1)	4408.8	3316.4
3	114.73	(1)	7140.0	7776.5	(2)	2838.5	3084.4
4	114.73	(1)	6476.9	5581.7	(2)	2605.5	2222.6
5	114.73	(1)	6814.3	5678.8	(2)	2814.1	2372.0
6	114.73	(1)	6608.8	8765.7	(2)	2785.4	3758.8
7	45.00	(1)	635.3	286.3	(2)	268.7	115.2
8	22.50	(1)	173.5	2966.8	(2)	73.9	1298.9
9	90.00	(2)	9.2	0.0	(1)	21.5	0.0
10	114.73	(1)	637.1	2194.7	(2)	284.6	861.8
11	112.50	(2)	133.1	721.9	(1)	303.2	1749.2
12	121.17	(2)	893.3	800.4	(1)	2099.3	1914.9
13	121.17	(2)	975.6	1819.5	(1)	2290.2	4281.2

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	718.7	0.0	718.7
Live load reaction	0.0	981.9	0.0	981.9
Wind load reaction (without 25 percent reduction)	32.5	− 1620.0	32.5	− 1620.0

TABLE 8 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	900.00 cm		Spacing	450.00 cm		Slope	1 in 5
Wind force	150 kg/m²		Panels	4		Purlins at	114.73 cm
MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	225.00	(2)	5226.1	2013.7	(1)	6984.1	2642.5
2	225.00	(2)	3153.2	2624.9	(1)	4408.8	3316.4
3	114.73	(1)	7140.0	7776.5	(2)	5389.3	5859.0
4	114.73	(1)	6476.9	5581.7	(2)	4934.7	4218.4
5	114.73	(1)	6814.3	5678.8	(2)	5301.0	4458.0
6	114.73	(1)	6608.8	8765.7	(2)	5225.5	7027.4
7	45.00	(1)	635.3	286.3	(2)	503.8	218.2
8	22.50	(1)	173.5	2966.8	(2)	138.3	2418.5
9	90.00	(2)	17.2	0.0	(1)	21.5	0.0
10	114.73	(1)	637.1	2194.7	(2)	527.9	1640.5
11	112.50	(2)	247.7	1360.1	(1)	303.2	1749.2
12	121.17	(2)	1672.6	1504.1	(1)	2099.3	1914.9
13	121.17	(2)	1826.3	3407.7	(1)	2290.2	4281.2

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	718.7	0.0	718.7
Live load reaction	0.0	981.9	0.0	981.9
Wind load reaction (without 25 percent reduction)	48.8	− 2430.0	48.8	− 2430.0

TABLE 9 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	900.00 cm		Spacing	450.00 cm		Slope	1 in 5
Wind force	200 kg/m²		Panels	4		Purlins at	114.73 cm
MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	225.00	(2)	7706.0	2964.1	(1)	6984.1	2642.5
2	225.00	(2)	4670.0	3850.3	(1)	4408.8	3316.4
3	114.73	(1)	7140.0	7776.5	(2)	7940.1	8633.6
4	114.73	(1)	6476.9	5581.7	(2)	7263.9	6214.3
5	114.73	(1)	6814.3	5678.8	(2)	7787.9	6543.9
6	114.73	(1)	6608.8	8765.7	(2)	7665.5	10296.0
7	45.00	(1)	635.3	286.3	(2)	738.8	321 2
8	22.50	(1)	173.5	2966.8	(2)	202.8	3538.1
9	90.00	(2)	25.2	0.0	(1)	21.5	0.0
10	114.73	(1)	637.1	2194.7	(2)	771.1	2419.2
11	112.50	(2)	362.3	1998.2	(1)	303.2	1749.2
12	121.17	(2)	2452.0	2207.7	(1)	2099.3	1914.9
13	121.17	(2)	2677.0	4995.9	(1)	2290.2	4281.2

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	718.7	0.0	718.7
Live load reaction	0.0	981.9	0.0	981.9
Wind load reaction (without 25 percent reduction)	65.0	− 3240.0	65.0	− 3240.0

TABLE 10 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	900.00 cm		Spacing	600.00 cm		Slope	1 in 3
Wind force	100 kg/m²		Panels	4		Purlins at	118.59 cm
MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	225.00	(2)	2066.6	570.6	(1)	5387.6	1369.3
2	225.00	(2)	1006.7	929.9	(1)	3209.8	1983.7
3	118.59	(1)	5692.2	3618.5	(2)	2254.6	1422.3
4	118.59	(1)	4969.0	2672.6	(2)	2038.8	1066.6
5	118.59	(1)	5544.8	3333.2	(2)	2460.8	1539.5
6	118.59	(1)	5443.4	5449.7	(2)	2552.3	2643.7
7	75.00	(1)	779.2	165.5	(2)	372.6	103.5
8	37.50	(1)	375.9	1697.1	(2)	181.4	855.9
9	150.00	(2)	6.5	0.0	(1)	13.5	0.0
10	118.59	(1)	702.7	945.9	(2)	349.8	355.6
11	112.50	(2)	257.5	388.1	(1)	527.1	877.9
12	135.21	(2)	871.0	470.3	(1)	1809.8	1015.2
13	135.21	(2)	1159.1	1114.5	(1)	2404.4	2337.1

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	1050.2	0.0	1050.2
Live load reaction	0.0	1051.2	0.0	1051.2
Wind load reaction (without 25 percent reduction)	23.9	− 2160.0	23.9	− 2160.0

TABLE 11 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	900.00 cm		Spacing	600.00 cm		Slope	1 in 3
Wind force	150 kg/m²		Panels	4		Purlins at	118.59 cm
MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	225.00	(2)	4109.5	1112.5	(1)	5387.6	1369.3
2	225.00	(2)	2111.6	1766.5	(1)	3209.8	1983.7
3	118.59	(1)	5692.2	3618.5	(2)	4448.7	2811.6
4	118.59	(1)	4969.0	2672.6	(2)	3989.4	2100.8
5	118.59	(1)	5544.8	3333.2	(2)	4730.3	2933.9
6	118.59	(1)	5443.4	5449.7	(2)	4848.6	4986.9
7	75.00	(1)	779.2	165.5	(2)	704.9	186.3
8	37.50	(1)	375.9	1697.1	(2)	342.5	1601.8
9	150.00	(2)	12.3	0.0	(1)	13.5	0.0
10	118.59	(1)	702.7	945.9	(2)	656.4	710.7
11	112.50	(2)	485.1	746.7	(1)	527.1	877.9
12	135.21	(2)	1645.7	895.6	(1)	1809.8	1015.2
13	135.21	(2)	2189.2	2109.8	(1)	2404.4	2337.1

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	1050.2	0.0	1050.2
Live load reaction	0.0	1051.2	0.0	1051.2
Wind load reaction (without 25 percent reduction)	35.8	− 3240.0	35.8	− 3240.0

TABLE 12 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	900.00 cm		Spacing	600.00 cm		Slope	1 in 3
Wind force	200 kg/m²		Panels	4		Purlins at	118.59 cm
MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	225.00	(2)	6152.5	1654.4	(1)	5387.6	1369.3
2	225.00	(2)	3216.5	2603.2	(1)	3209.8	1983.7
3	118.59	(1)	5692.2	3618.5	(2)	6642.8	4200.9
4	118.59	(1)	4969.0	2672.6	(2)	5940.0	3135.0
5	118.59	(1)	5544.8	3333.2	(2)	6999.9	4328.4
6	118.59	(1)	5443.4	5449.7	(2)	7144.8	7330.1
7	75.00	(1)	779.2	165.5	(2)	1037.2	269.0
8	37.50	(1)	375.9	1697.1	(2)	503.6	2347.8
9	150.00	(2)	18.1	0.0	(1)	13.5	0.0
10	118.59	(1)	702.7	945.9	(2)	963.1	1065.8
11	112.50	(2)	712.6	1105.3	(1)	527.1	877.9
12	135.21	(2)	2420.4	1321.0	(1)	1809.8	1015.2
13	135.21	(2)	3219.4	3105.1	(1)	2404.4	2337.1

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	1050.2	0.0	1050.2
Live load reaction	0.0	1051.2	0.0	1051.2
Wind load reaction (without 25 percent reduction)	47.7	− 4320.0	47.7	− 4320.0

TABLE 13 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	900.00 cm	Spacing	600.00 cm	Slope	1 in 4
Wind force	100 kg/m²	Panels	4	Purlins at	115.96 cm

Member	Length cm		Compression kg	Moment kg.cm		Tension kg	Moment kg.cm
1	225.00	(2)	2803.3	914.3	(1)	7514.0	2351.5
2	225.00	(2)	1549.4	1314.7	(1)	4596.5	3141.6
3	115.96	(1)	7764.0	6746.9	(2)	2948.9	2552.8
4	115.96	(1)	6896.3	4896.2	(2)	2671.0	1866.3
5	115.96	(1)	7486.1	5413.4	(2)	3029.2	2235.9
6	115.96	(1)	7310.8	8513.2	(2)	3056.1	3645.4
7	56.25	(1)	832.3	202.6	(2)	351.0	113.9
8	28.12	(1)	319.3	2755.2	(2)	135.8	1214.7
9	112.50	(2)	8.9	0.0	(1)	20.8	0.0
10	115.96	(1)	839.2	1850.6	(2)	371.3	686.5
11	112.50	(2)	235.7	637.8	(1)	544.2	1577.5
12	125.78	(2)	995.9	727.0	(1)	2345.9	1757.8
13	125 78	(2)	1215.8	1679.8	(1)	2859.9	3971.4

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	1027.0	0.0	1027.0
Live load reaction	0.0	1210.5	0.0	1210.5
Wind load reaction (without 25 percent reduction)	26.6	− 2160.0	26.6	− 2160.0

TABLE 14 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	900.00 cm	Spacing	600.00 cm	Slope	1 in 4
Wind force	150 kg/m²	Panels	4	Purlins at	115.96 cm

Member	Length cm		Compression kg	Moment kg.cm		Tension kg	Moment kg.cm
1	225.00	(2)	5498.3	1776.1	(1)	7514.0	2351.5
2	225.00	(2)	3115.2	2512.7	(1)	4596.5	3141.6
3	115.96	(1)	7764.0	6746.9	(2)	5759.7	4990.5
4	115.96	(1)	6896.3	4896.2	(2)	5193.5	3642.2
5	115.96	(1)	7486.1	5413.4	(2)	5832.3	4285.7
6	115.96	(1)	7310.8	8513.2	(2)	5842.5	6933.4
7	56.25	(1)	832.3	202.6	(2)	669.8	205.7
8	28.12	(1)	319.3	2755.2	(2)	258.6	2296.2
9	112.50	(2)	16.9	0.0	(1)	20.8	0.0
10	115.96	(1)	839.2	1850.6	(2)	701.4	1348.4
11	112.50	(2)	447.3	1228.3	(1)	544.2	1577.5
12	125.78	(2)	1897.6	1393.0	(1)	2345.9	1757.8
13	125.78	(2)	2315.9	3203.3	(1)	2859.9	3971.4

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	1027.0	0.0	1027.0
Live load reaction	0.0	1210.5	0.0	1210.5
Wind load reaction (without 25 percent reduction)	39.9	− 3240.0	39.9	− 3240.0

TABLE 15 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	900.00 cm	Spacing	600.00 cm	Slope	1 in 4
Wind force	200 kg/m²	Panels	4	Purlins at	115.96 cm

Member	Length cm		Compression kg	Moment kg.cm		Tension kg	Moment kg.cm
1	225.00	(2)	8193.3	2638.0	(1)	7514.0	2351.5
2	225.00	(2)	4681.1	3710.8	(1)	4596.5	3141.6
3	115.96	(1)	7764.0	6746.9	(2)	8570.6	7428.2
4	115.96	(1)	6896.3	4896.2	(2)	7716.1	5418.1
5	115.96	(1)	7486.1	5413.4	(2)	8635.5	6335.4
6	115.96	(1)	7310.8	8513.2	(2)	8628.9	10221.5
7	56.25	(1)	832.3	202.6	(2)	988.6	297.5
8	28.12	(1)	319.3	2755.2	(2)	381.4	3377.8
9	112.50	(2)	24.9	0.0	(1)	20.8	0.0
10	115.96	(1)	839.2	1850.6	(2)	1031.5	2010.2
11	112.50	(2)	658.8	1818.7	(1)	544.2	1577.5
12	125.78	(2)	2799.3	2059.0	(1)	2345.9	1757.8
13	125.78	(2)	3416.1	4726.8	(1)	2859.9	3971.4

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	1027.0	0.0	1027.0
Live load reaction	0.0	1210.5	0.0	1210.5
Wind load reaction (without 25 percent reduction)	53.2	− 4320.0	53.2	− 4320.0

TABLE 16 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	900.00 cm	Spacing	600.00 cm	Slope	1 in 5
Wind force	100 kg/m²	Panels	4	Purlins at	114.73 cm

Member	Length cm		Compression kg	Moment kg.cm		Tension kg	Moment kg.cm
1	225.00	(2)	3483.5	1350.3	(1)	9549.6	3613.2
2	225.00	(2)	2069.3	1781.5	(1)	6028.3	4534.6
3	114.73	(1)	9762.7	10633.0	(2)	3602.6	3914.2
4	114.73	(1)	8856.1	7632.1	(2)	3308.8	2821.1
5	114.73	(1)	9317.4	7764.8	(2)	3578.3	3017.8
6	114.73	(1)	9036.4	11985.7	(2)	3545.3	4788.2
7	45.00	(1)	868.6	391.5	(2)	342.1	146.3
8	22.50	(1)	237.3	4056.7	(2)	94.1	1656.1
9	90.00	(2)	11.7	0.0	(1)	29.4	0.0
10	114.73	(1)	871.1	3001.0	(2)	363.2	1093.1
11	112.50	(2)	169.7	917.9	(1)	414.5	2391.7
12	121.17	(2)	1137.5	1018.4	(1)	2870.4	2618.3
13	121.17	(2)	1242.4	2316.8	(1)	3131.5	5853.8

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	1016.0	0.0	1016.0
Live load reaction	0.0	1309.1	0.0	1309.1
Wind load reaction (without 25 percent reduction)	43.4	− 2160.0	43.4	− 2160.0

TABLE 17 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	900.00 cm		Spacing	600.00 cm		Slope	1 in 5
Wind force	150 kg/m²		Panels	4		Purlins at	114.73 cm
MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	225.00	(2)	6790.0	2617.6	(1)	9549.6	3613.2
2	225.00	(2)	4091.8	3415.3	(1)	6028.3	4534.6
3	114.73	(1)	9762.7	10633.0	(2)	7003.7	7613.6
4	114.73	(1)	8856.1	7682.1	(2)	6414.4	5482.2
5	114.73	(1)	9317.4	7764.8	(2)	6894.2	5799.1
6	114.73	(1)	9036.4	11985.7	(2)	6798.7	9146.3
7	45.00	(1)	868.6	391.5	(2)	655.5	283.6
8	22.50	(1)	237.3	4056.7	(2)	180.0	3148.9
9	90.00	(2)	22.4	0.0	(1)	29.4	0.0
10	114.73	(1)	871.1	3001.0	(2)	687.6	2131.4
11	112.50	(2)	322.5	1768.8	(1)	414.5	2391.7
12	121.17	(2)	2176.6	1956.6	(1)	2870.4	2618.3
13	121.17	(2)	2376.7	4434.4	(1)	3131.5	5853.8

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	1016.0	0.0	1016.0
Live load reaction	0.0	1309.1	0.0	1309.1
Wind load reaction (without 25 percent reduction)	65.0	− 3240.0	65.0	− 3240.0

TABLE 18 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	900.00 cm		Spacing	600.00 cm		Slope	1 in 5
Wind force	200 kg/m²		Panels	4		Purlins at	114.73 cm
MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	225.00	(2)	10096.6	3884.8	(1)	9549.6	3613.2
2	225.00	(2)	6114.2	5049.2	(1)	6028.3	4534.6
3	114.73	(1)	9762.7	10633.0	(2)	10404.7	11313.1
4	114.73	(1)	8856.1	7632.1	(2)	9520.0	8143.4
5	114.73	(1)	9317.4	7764.8	(2)	10210.1	8580.4
6	114.73	(1)	9036.4	11985.7	(2)	10052.2	13504.4
7	45.00	(1)	868.6	391.5	(2)	968.9	420.9
8	22.50	(1)	237.3	4056.7	(2)	265.9	4641.8
9	90.00	(2)	33.1	0.0	(1)	29.4	0.0
10	114.73	(1)	871.1	3001.0	(2)	1011.9	3169.7
11	112.50	(2)	475.3	2619.7	(1)	414.5	2391.7
12	121.17	(2)	3215.8	2894.8	(1)	2870.4	2618.3
13	121.17	(2)	3511.0	6552.0	(1)	3131.5	5853.8

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	1016.0	0.0	1016.0
Live load reaction	0.0	1309.1	0.0	1309.1
Wind load reaction (without 25 percent reduction)	86.7	− 4320.0	86.7	− 4320.0

TABLE 19 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	1200.00 cm		Spacing	450.00 cm		Slope	1 in 3
Wind force	100 kg/m²		Panels	5		Purlins at	126.49 cm
MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	120.00	(2)	2193.1	1314.4	(1)	5435.8	3191.5
2	240.00	(2)	1942.4	711.6	(1)	4958.2	1675.2
3	240.00	(2)	1026.1	486.8	(1)	3129.1	968.0
4	126.49	(1)	5737.4	2947.8	(2)	2371.8	1230.1
5	126.49	(1)	5752.9	2468.9	(2)	2488.9	1090.3
6	126.49	(1)	4579.4	202.1	(2)	2006.9	57.0
7	126.49	(1)	4928.5	1879.7	(2)	2295.7	917.2
8	126.49	(1)	4887.3	3149.9	(2)	2388.2	1607.7
9	40.00	(1)	378.3	650.2	(2)	190.4	220.0
10	120.00	(1)	599.0	195.5	(2)	299.2	100.5
11	60.00	(1)	340.9	891.3	(2)	170.3	463.4
12	200.00	(2)	3.3	0.0	(1)	6.3	0.0
13	144.22	(1)	733.9	416.8	(2)	369.0	203.3
14	121.66	(2)	166.4	163.5	(1)	331.5	352.5
15	144.22	(2)	313.8	382.8	(1)	611.5	866.1
16	156.20	(2)	787.8	295.1	(1)	1575.5	610.3
17	156.20	(2)	996.9	605.7	(1)	1993.8	1216.3

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applid to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	1018.9	0.0	1018.9
Live load reaction	0.0	1051.2	0.0	1051.2
Wind load reaction (without 25 percent reduction)	23.9	− 2160.0	23.9	− 2160.0

TABLE 20 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	1200.00 cm		Spacing	450.00 cm		Slope	1 in 3
Wind force	150 kg m^2		Panels	5		Purlins at	126.49 cm
MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	120.00	(2)	4293.0	2560.7	(1)	5435.8	3191.5
2	240.00	(2)	3828.7	1376.5	(1)	4958.2	1675.2
3	240.00	(2)	2116.7	908.9	(1)	3129.1	968.0
4	126.49	(1)	5737.4	2947.8	(2)	4616.7	2389.3
5	126.49	(1)	5752.9	2468.9	(2)	4795.2	2091.2
6	126.49	(1)	4579.4	202.1	(2)	3855.5	122.8
7	126.49	(1)	4928.5	1879.7	(2)	4353.2	1722.8
8	126.49	(1)	4887.3	3149.9	(2)	4484.4	2993.0
9	40.00	(1)	378.3	650.2	(2)	355.5	450.1
10	120.00	(1)	599.0	195.5	(2)	559.3	186.9
11	60.00	(1)	340.9	891.3	(2)	318.4	859.6
12	200.00	(2)	6.1	0.0	(1)	6.3	0.0
13	144.22	(1)	733.9	416.8	(2)	689.0	381.8
14	121.66	(2)	310.8	310.4	(1)	331.5	352.5
15	144.22	(2)	583.6	734.1	(1)	611.5	866.1
16	156.20	(2)	1472.4	555.3	(1)	1575.5	610.3
17	156.20	(2)	1863.3	1133.0	(1)	1993.8	1216.3

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	1018.9	0.0	1018.9
Live load reaction	0.0	1051.2	0.0	1051.2
Wind load reaction (without 25 percent reduction)	35.8	− 3240.0	35.8	− 3240.0

TABLE 21 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	1200.00 cm	Spacing	450.00 cm	Slope	1 in 3
Wind force	200 kg/m²	Panels	5	Purlins at	126.49 cm

Member	Length cm		Compression kg	Moment kg.cm		Tension kg	Moment kg.cm
1	120.00	(2)	6392.9	3806.9	(1)	5435.8	3191.5
2	240.00	(2)	5715.0	2041.5	(1)	4958.2	1675.2
3	240.00	(2)	3207.3	1331.0	(1)	3129.1	968.0
4	126.49	(1)	5737.4	2947.8	(2)	6861.6	3548.5
5	126.49	(1)	5752.9	2468.9	(2)	7101.5	3092.0
6	126.49	(1)	4579.4	202.1	(2)	5704.2	188.7
7	126.49	(1)	4928.5	1879.7	(2)	6410.7	2528.3
8	126.49	(1)	4887.3	3149.9	(2)	6580.6	4378.2
9	40.00	(1)	378.3	650.2	(2)	520.6	680.1
10	120.00	(1)	599.0	195.5	(2)	819.4	273.3
11	60.00	(1)	340.9	891.3	(2)	466.5	1255.8
12	200.00	(2)	8.9	0.0	(1)	6.3	0.0
13	144.22	(1)	733.9	416.8	(2)	1008.9	560.4
14	121.66	(2)	455.1	457.2	(1)	331.5	352.5
15	144.22	(2)	853.4	1085.3	(1)	611.5	866.1
16	156.20	(2)	2157.1	815.4	(1)	1575.5	610.3
17	156.20	(2)	2729.8	1660.4	(1)	1993.8	1216.3

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	1018.9	0.0	1018.9
Live load reaction	0.0	1051.2	0.0	1051.2
Wind load reaction (without 25 percent reduction)	47.7	− 4320.0	47.7	− 4320.0

TABLE 22 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	1200.00 cm		Spacing	450.00 cm		Slope	1 in 4
Wind force	100 kg/m²		Panels	5		Purlins at	123.69 cm
MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	120.00	(2)	2953.1	2295.8	(1)	7569.4	5822.2
2	240.00	(2)	2700.9	1138.8	(1)	7032.6	2837.7
3	240.00	(2)	1565.6	676.6	(1)	4463.6	1527.0
4	123.69	(1)	7813.0	5432.4	(2)	3090.0	2152.5
5	123.69	(1)	7890.3	4095.6	(2)	3200.2	1680.5
6	123.69	(1)	6363.8	562.6	(2)	2600.0	198.9
7	123.69	(1)	6777.1	3057.9	(2)	2866.3	1324.9
8	123.69	(1)	6709.6	4838.4	(2)	2919.0	2171.3
9	30.00	(1)	387.6	1456.1	(2)	171.8	527.9
10	90.00	(1)	629.9	292.5	(2)	277.4	133.7
11	45.00	(1)	324.2	1444.8	(2)	142.8	659.1
12	150.00	(2)	4.3	0.0	(1)	9.4	0.0
13	134.16	(1)	955.3	628.4	(2)	423.9	275.4
14	120.93	(2)	176.2	301.7	(1)	397.8	712.9
15	134.16	(2)	321.3	629.1	(1)	709.1	1528.4
16	141.51	(2)	885.9	458.2	(1)	2009.0	1063.3
17	141.51	(2)	1081.0	945.8	(1)	2451.9	2145.9

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	996.3	0.0	996.3
Live load reaction	0.0	1210.5	0.0	1210.5
Wind load reaction (without 25 percent reduction)	26.6	− 2160.0	26.6	− 2160.0

TABLE 23 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	1200.00 cm		Spacing	450.00 cm		Slope	1 in 4
Wind force	150 kg/m²		Panels	5		Purlins at	123.69 cm
MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	120.00	(2)	5711.2	4429.4	(1)	7569.4	5822.2
2	240.00	(2)	5242.0	2188.6	(1)	7032.6	2837.7
3	240.00	(2)	3104.1	1273.5	(1)	4463.6	1527.0
4	123.69	(1)	7813.0	5432.4	(2)	5957.7	4148.5
5	123.69	(1)	7890.3	4095.6	(2)	6136.2	3214.1
6	123.69	(1)	6363.8	562.6	(2)	4977.5	393.5
7	123.69	(1)	6777.1	3057.9	(2)	5446.9	2505.1
8	123.69	(1)	6709.6	4838.4	(2)	5514.5	4076.1
9	30.00	(1)	387.6	1456.1	(2)	323.3	1038.4
10	90.00	(1)	629.9	292.5	(2)	522.7	250.0
11	45.00	(1)	324.2	1444.8	(2)	269.1	1233.3
12	150.00	(2)	8.0	0.0	(1)	9.4	0.0
13	134.16	(1)	955.3	628.4	(2)	797.6	519.5
14	120.93	(2)	331.7	573.3	(1)	397.8	712.9
15	134.16	(2)	602.0	1202.4	(1)	709.1	1528.4
16	141.51	(2)	1669.0	867.3	(1)	2009.0	1063.3
17	141.51	(2)	2036.6	1782.1	(1)	2451.9	2145.9

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	996.3	0.0	996.3
Live load reaction	0.0	1210.5	0.0	1210.5
Wind load reaction (without 25 percent reduction)	39.9	− 3240.0	39.9	− 3240.0

TABLE 24 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	1200.00 cm		Spacing	450.00 cm		Slope	1 in 4
Wind force	200 kg/m²		Panels	5		Purlins at	123.69 cm
MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	120.00	(2)	8469.3	6563.0	(1)	7569.4	5822.2
2	240.00	(2)	7783.1	3238.5	(1)	7032.6	2837.7
3	240.00	(2)	4642.7	1870.3	(1)	4463.6	1527.0
4	123.69	(1)	7813.0	5432.4	(2)	8825.5	6144.5
5	123.69	(1)	7890.3	4095.6	(2)	9072.2	4747.8
6	123.69	(1)	6363.8	562.6	(2)	7354.9	588.2
7	123.69	(1)	6777.1	3057.9	(2)	8027.5	3685.3
8	123.69	(1)	6709.6	4838.4	(2)	8110.0	5980.9
9	30.00	(1)	387.6	1456.1	(2)	474.8	1548.8
10	90.00	(1)	629.9	292.5	(2)	768.1	366.4
11	45.00	(1)	324.2	1444.8	(2)	395.4	1807.4
12	150.00	(2)	11.8	0.0	(1)	9.4	0.0
13	134.16	(1)	955.3	628.4	(2)	1171.3	763.6
14	120.93	(2)	487.2	844.9	(1)	397.8	712.9
15	134.16	(2)	882.7	1775.7	(1)	709.1	1528.4
16	141.51	(2)	2452.1	1276.4	(1)	2009.0	1063.3
17	141.51	(2)	2992.3	2618.3	(1)	2451.9	2145.9

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	996.3	0.0	996.3
Live load reaction	0.0	1210.5	0.0	1210.5
Wind load reaction (without 25 percent reduction)	53.2	− 4320.0	53.2	− 4320.0

TABLE 25 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	1200.00 cm		Spacing	450.00 cm		Slope	1 in 5
Wind force	100 kg m^2		Panels	5		Purlins at	122.38 cm
MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	120.00	(2)	3646.5	3511.7	(1)	9585.6	9171.6
2	240.00	(2)	3434.3	1657.4	(1)	9115.9	4278.7
3	240.00	(2)	2077.7	925.5	(1)	5827.7	2239.9
4	122.38	(1)	9789.2	8623.1	(2)	3757.1	3309.4
5	122.38	(1)	9984.8	6045.2	(2)	3893.6	2376.5
6	122.38	(1)	8182.0	1067.7	(2)	3205.8	386.9
7	122.38	(1)	8600.8	4512.2	(2)	3445.0	1833.1
8	122.38	(1)	8494.3	6922.6	(2)	3465.8	2889.9
9	24.00	(1)	385.4	2577.8	(2)	159.2	935.2
10	72.00	(1)	644.1	420.9	(2)	264.7	179.5
11	36.00	(1)	287.0	2169.2	(2)	117.9	918.0
12	120.00	(2)	5.7	0.0	(1)	13.4	0.0
13	129.24	(1)	1171.4	870.7	(2)	485.4	358.6
14	120.60	(2)	167.2	468.4	(1)	403.7	1168.7
15	129.24	(2)	314.7	919.1	(1)	742.5	2331.3
16	134.16	(2)	1006.9	663.9	(1)	2446.4	1640.1
17	134.16	(2)	1170.4	1363.9	(1)	2844.6	3311.3

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	rizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	985.7	0.0	985.7
Live load reaction	0.0	1309.1	0.0	1309.1
Wind load reaction (without 25 percent reduction)	43.4	− 2160.0	43.4	− 2160.0

TABLE 26 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	1200.00 cm	Spacing	450.00 cm	Slope	1 in 5
Wind force	150 kg/m²	Panels	5	Purlins at	122.38 cm

Member	Length cm		Compression kg	Moment kg.cm		Tension kg	Moment kg.cm
1	120.00	(2)	7013.8	6744.9	(1)	9585.6	9171.6
2	240.00	(2)	6619.8	3175.4	(1)	9115.9	4278.7
3	240.00	(2)	4055.3	1749.1	(1)	5827.7	2239.9
4	122.38	(1)	9789.2	8623.1	(2)	7212.4	6353.1
5	122.38	(1)	9984.8	6045.2	(2)	7448.7	4538.5
6	122.38	(1)	8182.0	1067.7	(2)	6126.6	752.4
7	122.38	(1)	8600.8	4512.2	(2)	6552.8	3876.4
8	122.38	(1)	8494.3	6922.6	(2)	6566.9	5450.0
9	24.00	(1)	385.4	2577.8	(2)	300.9	1815.4
10	72.00	(1)	644.1	420.9	(2)	500.8	337.1
11	36.00	(1)	287.0	2169.2	(2)	223.1	1726.4
12	120.00	(2)	10.7	0.0	(1)	13.4	0.0
13	129.24	(1)	1171.4	870.7	(2)	916.9	678.2
14	120.60	(2)	315.8	890.8	(1)	403.7	1168.7
15	129.24	(2)	591.7	1754.1	(1)	742.5	2331.3
16	134.16	(2)	1904.4	1260.1	(1)	2446.4	1640.1
17	134.16	(2)	2213.9	2579.3	(1)	2844.6	3311.3

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	985.7	0.0	985.7
Live load reaction	0.0	1309.1	0.0	1309.1
Wind load reaction (without 25 percent reduction)	65.0	− 3240.0	65.0	− 3240.0

TABLE 27 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	1200.00 cm		Spacing	450.00 cm		Slope	1 in 5
Wind force	200 kg/m^2		Panels	5		Purlins at	122.38 cm
MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	120.00	(2)	10381.0	9978.1	(1)	9585.6	9171.6
2	240.00	(2)	9805.4	4693.3	(1)	9115.9	4278.7
3	240.00	(2)	6032.9	2572.6	(1)	5827.7	2239.9
4	122.38	(1)	9789.2	8623.1	(2)	10667.7	9396.8
5	122.38	(1)	9984.8	6045.2	(2)	11003.8	6700.5
6	122.38	(1)	8182.0	1067.7	(2)	9047.4	1117.8
7	122.38	(1)	8600.8	4512.2	(2)	9660.7	5119.8
8	122.38	(1)	8494.3	6922.6	(2)	9668.0	8010.0
9	24.00	(1)	385.4	2577.8	(2)	442.6	2696.3
10	72.00	(1)	644.1	420.9	(2)	736.9	494.7
11	36.00	(1)	287.0	2169.2	(2)	328.3	2534.7
12	120.00	(2)	15.6	0.0	(1)	13.4	0.0
13	129.24	(1)	1171.4	870.7	(2)	1348.3	997.8
14	120.60	(2)	464.4	1313.3	(1)	403.7	1168.7
15	129.24	(2)	868.7	2589.2	(1)	742.5	2331.3
16	134.16	(2)	2801.9	1856.2	(1)	2446.4	1640.1
17	134.16	(2)	3257.3	3794.6	(1)	2844.6	3311.3

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	985.7	0.0	985.7
Live load reaction	0.0	1309.1	0.0	1309.1
Wind load reaction (without 25 percent reduction)	86.7	− 4320.0	86.7	− 4320.0

TABLE 28 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	1200.00 cm		Spacing	600.00 cm		Slope	1 in 3
Wind force	100 kg/m²		Panels	5		Purlins at	126.49 cm
MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	120.00	(2)	2767.2	1660.4	(1)	7457.0	4378.2
2	240.00	(2)	2446.7	900.4	(1)	6801.8	2298.1
3	240.00	(2)	1277.8	621.1	(1)	4292.6	1327.9
4	126.49	(1)	7870.7	4043.9	(2)	2996.8	1555.1
5	126.49	(1)	7892.0	3386.9	(2)	3152.5	1382.5
6	126.49	(1)	6282.2	277.3	(2)	2543.6	70.2
7	126.49	(1)	6761.1	2578.6	(2)	2918.6	1168.7
8	126.49	(1)	6704.5	4321.2	(2)	3043.2	2052.7
9	40.00	(1)	519.0	892.0	(2)	243.0	274.6
10	120.00	(1)	821.7	268.2	(2)	381.6	128.4
11	60.00	(1)	467.6	1222.8	(2)	217.3	592.1
12	200.00	(2)	4.2	0.0	(1)	8.6	0.0
13	144.22	(1)	1006.8	571.8	(2)	470.8	259.0
14	121.66	(2)	212.3	207.9	(1)	454.8	483.6
15	144.22	(2)	400.8	485.4	(1)	838.9	1188.2
16	156.20	(2)	1004.9	375.8	(1)	2161.3	837.2
17	156.20	(2)	1271.6	772.5	(1)	2735.1	1668.6

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	1438.2	0.0	1438.2
Live load reaction	0.0	1401.6	0.0	1401.6
Wind load reaction (without 25 percent reduction)	31.8	− 2880.0	31.8	− 2880.0

TABLE 29 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	1200.00 cm		Spacing	600.00 cm		Slope	1 in 3
Wind force	150 kg/m²		Panels	5		Purlins at	126.49 cm
MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	120.00	(2)	5567.1	3322.1	(1)	7457.0	4378.2
2	240.00	(2)	4961.8	1787.0	(1)	6801.8	2298.1
3	240.00	(2)	2731.9	1183.9	(1)	4292.6	1327.9
4	126.49	(1)	7870.7	4043.9	(2)	5990.0	3100.6
5	126.49	(1)	7892.0	3386.9	(2)	6227.5	2716.9
6	126.49	(1)	6282.2	277.3	(2)	5008.5	158.0
7	126.49	(1)	6781.1	2578.6	(2)	5662.0	2242.7
8	126.49	(1)	6704.5	4321.2	(2)	5838.1	3899.7
9	40.00	(1)	519.0	892.0	(2)	463.1	581.3
10	120.00	(1)	821.7	268.2	(2)	728.5	243.6
11	60.00	(1)	467.6	1222.8	(2)	414.7	1120.4
12	200.00	(2)	7.9	0.0	(1)	8.6	0.0
13	144.22	(1)	1006.8	571.8	(2)	897.4	497.0
14	121.66	(2)	404.8	403.6	(1)	454.8	483.6
15	144.22	(2)	760.5	953.7	(1)	838.9	1188.2
16	156.20	(2)	1917.8	722.7	(1)	2161.3	837.2
17	156.20	(2)	2426.9	1475.6	(1)	2735.1	1668.6

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	1438.2	0.0	1438.2
Live load reaction	0.0	1401.6	0.0	1401.6
Wind load reaction (without 25 percent reduction)	47.7	− 4320.0	47.7	− 4320.0

TABLE 30 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	1200.00 cm	Spacing	600.00 cm	Slope	1 in 3
Wind force	200 kg/m²	Panels	5	Purlins at	126.49 cm

Member	Length cm		Compression kg	Moment kg.cm		Tension kg	Moment kg.cm
1	120.00	(2)	8366.9	4983.8	(1)	7457.0	4378.2
2	240.00	(2)	7476.9	2673.7	(1)	6801.8	2298.1
3	240.00	(2)	4186.1	1746.7	(1)	4292.6	1327.9
4	126.49	(1)	7870.7	4043.9	(2)	8983.1	4646.2
5	126.49	(1)	7892.0	3386.9	(2)	9302.5	4051.4
6	126.49	(1)	6282.2	277.3	(2)	7473.4	245.7
7	126.49	(1)	6761.1	2578.6	(2)	8405.3	3316.8
8	126.49	(1)	6704.5	4321.2	(2)	8633.0	5746.7
9	40.00	(1)	519.0	892.0	(2)	683.1	888.0
10	120.00	(1)	821.7	268.2	(2)	1075.3	358.7
11	60.00	(1)	467.6	1222.8	(2)	612.2	1648.7
12	200.00	(2)	11.6	0.0	(1)	8.6	0.0
13	144.22	(1)	1006.8	571.8	(2)	1324.0	735.1
14	121.66	(2)	597.3	599.4	(1)	454.8	483.6
15	144.22	(2)	1120.2	1422.1	(1)	838.9	1188.2
16	156.20	(2)	2830.6	1069.6	(1)	2161.3	837.2
17	156.20	(2)	3582.1	2178.7	(1)	2735.1	1668.6

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	1438.2	0.0	1438.2
Live load reaction	0.0	1401.6	0.0	1401.6
Wind load reaction (without 25 percent reduction)	63.6	− 5760.0	63.6	− 5760.0

TABLE 31 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	1200.00 cm	Spacing	600.00 cm	Slope	1 in 4
Wind force	100 kg/m²	Panels	5	Purlins at	123.69 cm

MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	120.00	(2)	3737.0	2906.8	(1)	10359.8	7968.5
2	240.00	(2)	3414.9	1443.2	(1)	9625.1	3883.8
3	240.00	(2)	1969.3	861.7	(1)	6109.1	2089.9
4	123.69	(1)	10693.2	7435.1	(2)	3913.0	2726.1
5	123.69	(1)	10799.0	5605.4	(2)	4058.0	2132.2
6	123.69	(1)	8709.8	769.9	(2)	3298.1	250.3
7	123.69	(1)	9275.5	4185.2	(2)	3642.3	1685.6
8	123.69	(1)	9183.1	6622.1	(2)	3714.3	2766.9
9	30.00	(1)	530.5	1992.9	(2)	218.8	665.3
10	90.00	(1)	862.1	400.3	(2)	353.2	170.5
11	45.00	(1)	443.7	1977.4	(2)	181.9	840.5
12	150.00	(2)	5.5	0.0	(1)	12.9	0.0
13	134.16	(1)	1307.5	860.1	(2)	539.9	350.6
14	120.93	(2)	224.5	383.5	(1)	544.5	975.7
15	134.16	(2)	409.6	798.3	(1)	970.5	2091.9
16	141.51	(2)	1128.0	582.7	(1)	2749.7	1455.3
17	141.51	(2)	1376.4	1204.3	(1)	3355.8	2937.0

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	1406.4	0.0	1406.4
Live load reaction	0.0	1613.9	0.0	1613.9
Wind load reaction (without 25 percent reduction)	35.5	− 2880.0	35.5	− 2880.0

TABLE 32 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	1200.00 cm	Spacing	600.00 cm	Slope	1 in 4
Wind force	150 kg/m²	Panels	5	Purlins at	123.69 cm

MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	120.00	(2)	7414.4	5751.7	(1)	10359.8	7968.5
2	240.00	(2)	6803.1	2843.0	(1)	9625.1	3883.8
3	240.00	(2)	4020.6	1657.5	(1)	6109.1	2089.9
4	123.69	(1)	10693.2	7435.1	(2)	7736.7	5387.4
5	123.69	(1)	10799.0	5605.4	(2)	7972.6	4177.0
6	123.69	(1)	8709.8	769.9	(2)	6468.1	509.8
7	123.69	(1)	9275.5	4185.2	(2)	7083.1	3259.2
8	123.69	(1)	9183.1	6622.1	(2)	7175.0	5306.7
9	30.00	(1)	530.5	1992.9	(2)	420.8	1345.9
10	90.00	(1)	862.1	400.3	(2)	680.3	325.6
11	45.00	(1)	443.7	1977.4	(2)	350.3	1606.1
12	150.00	(2)	10.5	0.0	(1)	12.9	0.0
13	134.16	(1)	1307.5	860.1	(2)	1038.2	676.0
14	120.93	(2)	431.8	745.5	(1)	544.5	975.7
15	134.16	(2)	783.9	1562.7	(1)	970.5	2091.9
16	141.51	(2)	2172.1	1128.2	(1)	2749.7	1455.3
17	141.51	(2)	2650.6	2319.3	(1)	3355.8	2937.0

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	1406.4	0.0	1406.4
Live load reaction	0.0	1613.9	0.0	1613.9
Wind load reaction (without 25 percent reduction)	53.2	− 4320.0	53.2	− 4320.0

TABLE 33 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	1200.00 cm		Spacing	600.00 cm		Slope	1 in 4
Wind force	200 kg/m²		Panels	5		Purlins at	123.69 cm
MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	120.00	(2)	11091.9	8596.5	(1)	10359.8	7968.5
2	240.00	(2)	10191.2	4242.8	(1)	9625.1	3883.8
3	240.00	(2)	6072.0	2453.3	(1)	6109.1	2089.9
4	123.69	(1)	10693.2	7435.1	(2)	11560.5	8048.7
5	123.69	(1)	10799.0	5605.4	(2)	11887.3	6221.9
6	123.69	(1)	8709.8	769.9	(2)	9638.0	769.4
7	123.69	(1)	9275.5	4185.2	(2)	10523.9	4832.8
8	123.69	(1)	9183.1	6622.1	(2)	10635.6	7846.4
9	30.00	(1)	530.5	1992.9	(2)	622.9	2026.5
10	90.00	(1)	862.1	400.3	(2)	1007.4	480.7
11	45.00	(1)	443.7	1977.4	(2)	518.7	2371.6
12	150.00	(2)	15.5	0.0	(1)	12.9	0.0
13	134.16	(1)	1307.5	860.1	(2)	1536.4	1001.5
14	120.93	(2)	639.1	1107.6	(1)	544.5	975.7
15	134.16	(2)	1158.2	2327.2	(1)	970.5	2091.9
16	141.51	(2)	3216.3	1673.7	(1)	2749.7	1455.3
17	141.51	(2)	3924.7	3434.3	(1)	3355.8	2937.0

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	1406.4	0.0	1406.4
Live load reaction	0.0	1613.9	0.0	1613.9
Wind load reaction (without 25 percent reduction)	71.0	− 5760.0	71.0	− 5760.0

TABLE 34 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	1200.00 cm	Spacing	600.00 cm	Slope	1 in 5
Wind force	100 kg/m²	Panels	5	Purlins at	122.38 cm

MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	120.00	(2)	4620.5	4451.2	(1)	13102.8	12536.9
2	240.00	(2)	4349.4	2102.1	(1)	12460.7	5848.6
3	240.00	(2)	2623.5	1177.6	(1)	7966.1	3061.8
4	122.38	(1)	13381.1	11787.1	(2)	4762.8	4195.3
5	122.38	(1)	13648.4	8263.4	(2)	4939.9	3016.4
6	122.38	(1)	11184.2	1459.4	(2)	4068.2	489.0
7	122.38	(1)	11756.6	6167.9	(2)	4376.6	2330.4
8	122.38	(1)	11611.1	9462.7	(2)	4407.0	3678.8
9	24.00	(1)	526.8	3523.7	(2)	202.6	1182.4
10	72.00	(1)	880.5	575.3	(2)	336.7	228.8
11	36.00	(1)	392.3	2965.2	(2)	150.0	1169.3
12	120.00	(2)	7.2	0.0	(1)	18.3	0.0
13	129.24	(1)	1601.2	1190.2	(2)	617.7	456.3
14	120.60	(2)	212.7	595.1	(1)	551.8	1597.5
15	129.24	(2)	400.9	1166.7	(1)	1014.9	3186.7
16	134.16	(2)	1280.9	843.9	(1)	3344.1	2242.0
17	134.16	(2)	1488.9	1735.1	(1)	3888.4	4526.2

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	1391.4	0.0	1391.4
Live load reaction	0.0	1745.5	0.0	1745.5
Wind load reaction (without 25 percent reduction)	57.8	− 2880.0	57.8	− 2880.0

TABLE 35 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	1200.00 cm		Spacing	600.00 cm		Slope	1 in 5
Wind force	150 kg/m²		Panels	5		Purlins at	122.38 cm
MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	120.00	(2)	9110.2	8762.1	(1)	13102.8	12536.9
2	240.00	(2)	8596.8	4126.0	(1)	12460.7	5848.6
3	240.00	(2)	5260.2	2275.6	(1)	7966.1	3061.8
4	122.38	(1)	13381.1	11787.1	(2)	9369.9	8253.6
5	122.38	(1)	13648.4	8263.4	(2)	9680.1	5899.0
6	122.38	(1)	11184.2	1459.4	(2)	7962.6	976.3
7	122.38	(1)	11756.6	6167.9	(2)	8520.4	4521.6
8	122.38	(1)	11611.1	9462.7	(2)	8541.9	7092.2
9	24.00	(1)	526.8	3523.7	(2)	391.5	2356.0
10	72.00	(1)	880.5	575.3	(2)	651.5	438.9
11	36.00	(1)	392.3	2965.2	(2)	290.3	2247.1
12	120.00	(2)	13.9	0.0	(1)	18.3	0.0
13	129.24	(1)	1601.2	1190.2	(2)	1193.0	882.4
14	120.60	(2)	410.9	1158.3	(1)	551.8	1597.5
15	129.24	(2)	770.2	2280.1	(1)	1014.9	3186.7
16	134.16	(2)	2477.6	1638.8	(1)	3344.1	2242.0
17	134.16	(2)	2880.1	3355.6	(1)	3888.4	4526.2

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	1391.4	0.0	1391.4
Live load reaction	0.0	1745.5	0.0	1745.5
Wind load reaction (without 25 percent reduction)	86.7	− 4320.0	86.7	− 4320.0

TABLE 36 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	1200.00 cm	Spacing	600.00 cm	Slope	1 in 5
Wind force	200 kg m^{-2}	Panels	5	Purlins at	122.38 cm

Member	Length cm		Compression kg	Moment kg.cm		Tension kg	Moment kg.cm
1	120.00	(2)	13599.9	13073.0	(1)	13102.8	12536.9
2	240.00	(2)	12844.1	6149.9	(1)	12460.7	5848.6
3	240.00	(2)	7897.0	3373.7	(1)	7966.1	3061.8
4	122.38	(1)	13381.1	11787.1	(2)	13977.0	12311.8
5	122.38	(1)	13648.4	8263.4	(2)	14420.2	8781.7
6	122.38	(1)	11184.2	1459.4	(2)	11857.0	1463.5
7	122.38	(1)	11756.6	6167.9	(2)	12664.3	6712.7
8	122.38	(1)	11611.1	9462.7	(2)	12676.7	10505.6
9	24.00	(1)	526.8	3523.7	(2)	580.4	3530.1
10	72.00	(1)	880.5	575.3	(2)	966.3	649.0
11	36.00	(1)	392.3	2965.2	(2)	430.5	3325.0
12	120.00	(2)	20.5	0.0	(1)	18.3	0.0
13	129.24	(1)	1601.2	1190.2	(2)	1768.2	1308.5
14	120.60	(2)	609.1	1721.6	(1)	551.8	1597.5
15	129.24	(2)	1139.5	3393.5	(1)	1014.9	3186.7
16	134.16	(2)	3674.2	2433.7	(1)	3344.1	2242.0
17	134.16	(2)	4271.4	4976.0	(1)	3888.4	4526.2

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	1391.4	0.0	1391.4
Live load reaction	0.0	1745.5	0.0	1745.5
Wind load reaction (without 25 percent reduction)	115.6	− 5760.0	115.6	− 5760.0

TABLE 37 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	1800.00 cm	Spacing	450.00 cm	Slope	1 in 3
Wind force	100 kg/m²	Panels	7	Purlins at	135.53 cm

MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	128.57	(2)	3283.1	1267.3	(1)	8740.3	3310.9
2	257.14	(2)	3018.4	710.9	(1)	8196.7	1781.2
3	257.14	(2)	2381.9	197.1	(1)	6835.4	475.9
4	257.14	(2)	1431.6	431.2	(1)	4800.4	920.9
5	135.53	(1)	9220.2	3020.1	(2)	3524.5	1167.0
6	135.53	(1)	9228.2	2644.9	(2)	3646.4	1083.1
7	135.53	(1)	7922.4	603.3	(2)	3150.5	270.3
8	135.53	(1)	7912.3	961.6	(2)	3267.7	431.8
9	135.53	(1)	6484.2	123.5	(2)	2722.7	23.4
10	135.53	(1)	6735.1	1512.7	(2)	2961.7	700.6
11	135.53	(1)	6708.8	2874.1	(2)	3071.1	1372.7
12	42.86	(1)	417.8	529.2	(2)	196.4	148.6
13	128.57	(1)	439.9	358.3	(2)	205.2	161.5
14	214.29	(1)	664.8	171.9	(2)	309.9	83.1
15	107.14	(1)	399.9	721.3	(2)	186.5	345.1
16	300.00	(2)	3.0	0.0	(1)	6.3	0.0
17	154.52	(1)	817.9	370.1	(2)	383.1	156.7
18	214.29	(1)	1136.7	255.9	(2)	531.3	123.4
19	143.75	(2)	122.3	99.1	(1)	262.2	202.7
20	154.52	(2)	326.4	407.7	(1)	682.6	1000.5
21	214.29	(2)	523.8	74.1	(1)	1121.8	191.0
22	197.56	(2)	965.8	236.7	(1)	2069.4	510.0
23	197.56	(2)	1134.7	398.3	(1)	2431.4	849.8

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	1613.7	0.0	1613.7
Live load reaction	0.0	1576.9	0.0	1576.9
Wind load reaction (without 25 percent reduction)	35.8	− 3240.0	35.8	− 3240.0

TABLE 38 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	1800.00 cm	Spacing	450.00 cm	Slope	1 in 3
Wind force	150 kg/m²	Panels	7	Purlins at	135.53 cm

Member	Length cm		Compression kg	Moment kg.cm		Tension kg	Moment kg.cm
1	128.57	(2)	6582.4	2528.8	(1)	8740.3	3310.9
2	257.14	(2)	6082.2	1404.3	(1)	8196.7	1781.2
3	257.14	(2)	4869.3	385.8	(1)	6835.4	475.9
4	257.14	(2)	3057.9	821.4	(1)	4800.4	920.9
5	135.53	(1)	9220.2	3020.1	(2)	7035.5	2323.3
6	135.53	(1)	9228.2	2644.9	(2)	7219.9	2126.2
7	135.53	(1)	7922.4	603.3	(2)	6228.3	519.9
8	135.53	(1)	7912.3	961.6	(2)	6402.3	830.1
9	135.53	(1)	6484.2	123.5	(2)	5313.9	58.5
10	135.53	(1)	6735.1	1512.7	(2)	5719.9	1337.8
11	135.53	(1)	6708.8	2874.1	(2)	5879.0	2604.2
12	42.86	(1)	417.8	529.2	(2)	373.8	323.3
13	128.57	(1)	439.9	358.3	(2)	391.2	310.2
14	214.29	(1)	664.8	171.9	(2)	590.9	157.2
15	107.14	(1)	399.9	721.3	(2)	355.5	654.5
16	300.00	(2)	5.7	0.0	(1)	6.3	0.0
17	154.52	(1)	817.9	370.1	(2)	729.8	305.2
18	214.29	(1)	1136.7	255.9	(2)	1012.5	233.6
19	143.75	(2)	233.3	187.2	(1)	262.2	202.7
20	154.52	(2)	619.1	801.3	(1)	682.6	1000.5
21	214.29	(2)	998.5	147.4	(1)	1121.8	191.0
22	197.56	(2)	1841.2	451.8	(1)	2069.4	510.0
23	197.56	(2)	2163.1	758.7	(1)	2431.4	849.8

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	1613.7	0.0	1613.7
Live load reaction	0.0	1576.9	0.0	1576.9
Wind load reaction (without 25 percent reduction)	53.7	− 4860.0	53.7	− 4860.0

TABLE 39 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	1800.00 cm	Spacing	450.00 cm	Slope	1 in 3
Wind force	200 kg/m²	Panels	7	Purlins at	135.53 cm

Member	Length cm		Compression kg	Moment kg.cm		Tension kg	Moment kg.cm
1	128.57	(2)	9881.7	3790.4	(1)	8740.3	3310.9
2	257.14	(2)	9146.0	2097.6	(1)	8196.7	1781.2
3	257.14	(2)	7356.7	574.6	(1)	6835.4	475.9
4	257.14	(2)	4684.2	1211.7	(1)	4800.4	920.9
5	135.53	(1)	9220.2	3020.1	(2)	10546.5	3479.6
6	135.53	(1)	9228.2	2644.9	(2)	10793.4	3169.4
7	135.53	(1)	7922.4	603.3	(2)	9306.2	769.5
8	135.53	(1)	7912.3	961.6	(2)	9536.9	1228.5
9	135.53	(1)	6484.2	123.5	(2)	7905.1	93.6
10	135.53	(1)	6735.1	1512.7	(2)	8478.2	1975.0
11	135.53	(1)	6708.8	2874.1	(2)	8687.0	3835.7
12	42.86	(1)	417.8	529.2	(2)	551.2	497.9
13	128.57	(1)	439.9	358.3	(2)	577.2	458.9
14	214.29	(1)	664.8	171.9	(2)	871.9	231.4
15	107.14	(1)	399.9	721.3	(2)	524.6	963.8
16	300.00	(2)	8.4	0.0	(1)	6.3	0.0
17	154.52	(1)	817.9	370.1	(2)	1076.4	453.7
18	214.29	(1)	1136.7	255.9	(2)	1493.7	343.8
19	143.75	(2)	344.2	275.2	(1)	262.2	202.7
20	154.52	(2)	911.7	1194.9	(1)	682.6	1000.5
21	214.29	(2)	1473.2	220.7	(1)	1121.8	191.0
22	197.56	(2)	2716.6	666.9	(1)	2069.4	510.0
23	197.56	(2)	3191.6	1119.0	(1)	2431.4	849.8

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	1613.7	0.0	1613.7
Live load reaction	0.0	1576.9	0.0	1576.9
Wind load reaction (without 25 percent reduction)	71.6	− 6480.0	71.6	− 6480.0

TABLE 40 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	1800.00 cm	Spacing	450.00 cm	Slope	1 in 4
Wind force	100 kg/m²	Panels	7	Purlins at	132.53 cm

Member	Length cm		Compression kg	Moment kg.cm		Tension kg	Moment kg.cm
1	128.57	(2)	4453.5	2219.5	(1)	12243.6	6045.1
2	257.14	(2)	4178.6	1125.3	(1)	11611.2	2995.3
3	257.14	(2)	3385.9	281.6	(1)	9690.5	743.6
4	257.14	(2)	2200.6	530.9	(1)	6814.3	1282.7
5	132.53	(1)	12630.7	5576.9	(2)	4639.0	2053.5
6	132.53	(1)	12692.5	4353.7	(2)	4747.6	1659.5
7	132.53	(1)	10983.0	794.1	(2)	4123.3	318.0
8	132.53	(1)	10967.7	1334.0	(2)	4206.5	536.1
9	132.53	(1)	8991.8	405.9	(2)	3481.5	131.9
10	132.53	(1)	9316.8	2153.5	(2)	3704.6	880.7
11	132.53	(1)	9280.0	3847.1	(2)	3778.6	1618.4
12	32.14	(1)	428.0	1281.4	(2)	177.3	420.0
13	96.43	(1)	467.1	555.6	(2)	192.1	222.3
14	160.71	(1)	703.8	222.5	(2)	289.4	95.2
15	80.36	(1)	406.1	1078.8	(2)	167.1	455.2
16	225.00	(2)	3.5	0.0	(1)	8.2	0.0
17	143.75	(1)	1067.9	558.0	(2)	441.6	217.4
18	181.83	(1)	1363.6	340.8	(2)	562.5	145.6
19	137.31	(2)	137.1	119.2	(1)	333.1	302.9
20	143.75	(2)	337.8	674.2	(1)	799.6	1768.3
21	181.83	(2)	554.5	107.8	(1)	1345.9	301.0
22	170.84	(2)	1041.7	309.4	(1)	2529.2	755.7
23	170.84	(2)	1210.5	600.6	(1)	2939.8	1451.2

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	1578.0	0.0	1578.0
Live load reaction	0.0	1815.7	0.0	1815.7
Wind load reaction (without 25 percent reduction)	39.9	− 3240.0	39.9	− 3240.0

TABLE 41 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	1800.00 cm	Spacing	450.00 cm	Slope	1 in 4
Wind force	150 kg/m²	Panels	7	Purlins at	132.53 cm

Member	Length cm		Compression kg	Moment kg.cm		Tension kg	Moment kg.cm
1	128.57	(2)	8815.1	4383.3	(1)	12243.6	6045.1
2	257.14	(2)	8292.5	2210.3	(1)	11611.2	2995.3
3	257.14	(2)	6768.6	552.0	(1)	9690.5	743.6
4	257.14	(2)	4489.1	1020.1	(1)	6814.3	1282.7
5	132.53	(1)	12630.7	5576.9	(2)	9160.9	4052.7
6	132.53	(1)	12692.5	4353.7	(2)	9334.6	3248.4
7	132.53	(1)	10983.0	794.1	(2)	8100.0	615.5
8	132.53	(1)	10967.7	1334.0	(2)	8222.1	1036.7
9	132.53	(1)	8991.8	405.9	(2)	6790.1	268.6
10	132.53	(1)	9316.8	2153.5	(2)	7181.5	1696.5
11	132.53	(1)	9280.0	3847.1	(2)	7286.0	3098.4
12	32.14	(1)	428.0	1281.4	(2)	340.6	853.4
13	96.43	(1)	467.1	555.6	(2)	369.6	430.3
14	160.71	(1)	703.8	222.5	(2)	556.9	181.6
15	80.36	(1)	406.1	1078.8	(2)	321.4	871.0
16	225.00	(2)	6.7	0.0	(1)	8.2	0.0
17	143.75	(1)	1067.9	558.0	(2)	848.7	423.3
18	181.83	(1)	1363.6	340.8	(2)	1081.5	277.8
19	137.31	(2)	263.8	231.6	(1)	333.1	302.9
20	143.75	(2)	646.1	1319.6	(1)	799.6	1768.3
21	181.83	(2)	1066.5	214.2	(1)	1345.9	301.0
22	170.84	(2)	2003.6	595.8	(1)	2529.2	755.7
23	170.84	(2)	2328.3	1153.9	(1)	2939.8	1451.2

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	1578.0	0.0	1578.0
Live load reaction	0.0	1815.7	0.0	1815.7
Wind load reaction (without 25 percent reduction)	59.9	− 4860.0	59.9	− 4860.0

TABLE 42 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	1800.00 cm	Spacing	450.00 cm	Slope	1 in 4
Wind force	200 kg/m²	Panels	7	Purlins at	132.53 cm

Member	Length cm		Compression kg	Moment kg.cm		Tension kg	Moment kg.cm
1	128.57	(2)	13176.8	6547.1	(1)	12243.6	6045.1
2	257.14	(2)	12406.4	3295.2	(1)	11611.2	2995.3
3	257.14	(2)	10151.3	822.5	(1)	9690.5	743.6
4	257.14	(2)	6777.6	1509.2	(1)	6814.3	1282.7
5	132.53	(1)	12630.7	5576.9	(2)	13682.9	6051.9
6	132.53	(1)	12692.5	4353.7	(2)	13921.6	4837.3
7	132.53	(1)	10983.0	794.1	(2)	12076.8	913.0
8	132.53	(1)	10967.7	1334.0	(2)	12237.8	1537.4
9	132.53	(1)	8991.8	405.9	(2)	10098.7	405.3
10	132.53	(1)	9316.8	2153.5	(2)	10658.4	2512.3
11	132.53	(1)	9280.0	3847.1	(2)	10793.4	4578.4
12	32.14	(1)	428.0	1281.4	(2)	503.8	1286.9
13	96.43	(1)	467.1	555.6	(2)	547.1	638.3
14	160.71	(1)	703.8	222.5	(2)	824.3	268.0
15	80.36	(1)	406.1	1078.8	(2)	475.7	1286.7
16	225.00	(2)	9.8	0.0	(1)	8.2	0.0
17	143.75	(1)	1067.9	558.0	(2)	1255.7	629.3
18	181.83	(1)	1363.6	340.8	(2)	1600.5	410.0
19	137.31	(2)	390.4	344.0	(1)	333.1	302.9
20	143.75	(2)	954.4	1965.0	(1)	799.6	1768.3
21	181.83	(2)	1578.4	320.6	(1)	1345.9	301.0
22	170.84	(2)	2965.4	882.3	(1)	2529.2	755.7
23	170.84	(2)	3446.2	1707.2	(1)	2939.8	1451.2

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	1578.0	0.0	1578.0
Live load reaction	0.0	1815.7	0.0	1815.7
Wind load reaction (without 25 percent reduction)	79.9	− 6480.0	79.9	− 6480.0

TABLE 43 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	1800.00 cm	Spacing	450.00 cm	Slope	1 in 5
Wind force	100 kg/m²	Panels	7	Purlins at	131.12 cm

MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	128.57	(2)	5554.2	3417.6	(1)	15646.8	9574.8
2	257.14	(2)	5307.5	1635.4	(1)	15051.4	4514.4
3	257.14	(2)	4353.3	402.6	(1)	12575.5	1110.7
4	257.14	(2)	2922.7	678.3	(1)	8858.0	1755.1
5	131.12	(1)	15969.9	8914.8	(2)	5704.4	3185.8
6	131.12	(1)	16139.6	6418.4	(2)	5831.6	2347.5
7	131.12	(1)	14101.6	1044.1	(2)	5107.6	393.8
8	131.12	(1)	14076.6	1831.5	(2)	5168.9	693.1
9	131.12	(1)	11549.1	747.7	(2)	4266.7	251.8
10	131.12	(1)	11928.3	2990.1	(2)	4483.2	1143.0
11	131.12	(1)	11874.6	5126.8	(2)	4533.0	2007.1
12	25.71	(1)	425.9	2496.4	(2)	164.5	838.3
13	77.14	(1)	483.6	870.2	(2)	185.6	328.3
14	128.57	(1)	725.3	287.2	(2)	278.5	114.6
15	64.29	(1)	394.9	1554.7	(2)	151.7	610.8
16	180.00	(2)	4.3	0.0	(1)	10.8	0.0
17	138.48	(1)	1316.5	774.4	(2)	508.6	287.6
18	164.65	(1)	1597.0	450.5	(2)	615.3	179.1
19	134.23	(2)	147.9	221.0	(1)	384.7	589.3
20	138.48	(2)	336.4	991.6	(1)	851.0	2708.4
21	164.65	(2)	605.8	154.4	(1)	1574.8	445.5
22	156.94	(2)	1154.6	415.6	(1)	3002.2	1087.0
23	156.94	(2)	1321.6	865.7	(1)	3437.6	2241.2

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	1561.2	0.0	1561.2
Live load reaction	0.0	1963.7	0.0	1963.7
Wind load reaction (without 25 percent reduction)	65.0	− 3240.0	65.0	− 3240.0

TABLE 44 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	1800.00 cm		Spacing	450.00 cm		Slope	1 in-5
Wind force	150 kg/m²		Panels	7		Purlins at	131.12 cm
MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	128.57	(2)	10930.1	6716.8	(1)	15646.8	9574.8
2	257.14	(2)	10461.2	3202.9	(1)	15051.4	4514.4
3	257.14	(2)	8618.6	788.4	(1)	12575.5	1110.7
4	257.14	(2)	5855.3	1309.0	(1)	8858.0	1755.1
5	131.12	(1)	15969.9	8914.8	(2)	11209.0	6259.4
6	131.12	(1)	16139.6	6418.4	(2)	11428.0	4587.3
7	131.12	(1)	14101.6	1044.1	(2)	10003.6	764.0
8	131.12	(1)	14076.6	1831.5	(2)	10091.3	1343.8
9	131.12	(1)	11549.1	747.7	(2)	8318.3	501.9
10	131.12	(1)	11928.3	2990.1	(2)	8706.0	2211.1
11	131.12	(1)	11874.6	5126.8	(2)	8771.7	3862.1
12	25.71	(1)	425.9	2496.4	(2)	317.6	1672.1
13	77.14	(1)	483.6	870.2	(2)	358.8	636.9
14	128.57	(1)	725.3	287.2	(2)	538.3	219.6
15	64.29	(1)	394.9	1554.7	(2)	293.1	1174.4
16	180.00	(2)	8.2	0.0	(1)	10.8	0.0
17	138.48	(1)	1316.5	774.4	(2)	981.5	560.0
18	164.65	(1)	1597.0	450.5	(2)	1188.1	343.5
19	134.23	(2)	285.7	429.4	(1)	384.7	589.3
20	138.48	(2)	645.9	1937.3	(1)	851.0	2708.4
21	164.65	(2)	1170.2	305.6	(1)	1574.8	445.5
22	156.94	(2)	2230.5	804.0	(1)	3002.2	1087.0
23	156.94	(2)	2553.4	1670.7	(1)	3437.6	2241.2

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	1561.2	0.0	1561.2
Live load reaction	0.0	1963.7	0.0	1963.7
Wind load reaction (without 25 percent reduction)	97.6	− 4860.0	97.6	− 4860.0

TABLE 45 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	1800.00 cm		Spacing	450.00 cm		Slope	1 in 5
Wind force	200 kg/m²		Panels	7		Purlins at	131.12 cm
MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	128.57	(2)	16306.0	10015.9	(1)	15646.8	9574.8
2	257.14	(2)	15614.9	4770.4	(1)	15051.4	4514.4
3	257.14	(2)	12883.9	1174.1	(1)	12575.5	1110.7
4	257.14	(2)	8787.9	1939.7	(1)	8858.0	1755.1
5	131.12	(1)	15969.9	8914.8	(2)	16713.7	9332.9
6	131.12	(1)	16139.6	6418.4	(2)	17024.4	6827.1
7	131.12	(1)	14101.6	1044.1	(2)	14899.5	1134.3
8	131.12	(1)	14076.6	1831.5	(2)	15013.7	1994.5
9	131.12	(1)	11549.1	747.7	(2)	12369.8	752.1
10	131.12	(1)	11928.3	2990.1	(2)	12928.8	3279.2
11	131.12	(1)	11874.6	5126.8	(2)	13010.5	5717.2
12	25.71	(1)	425.9	2496.4	(2)	470.6	2505.8
13	77.14	(1)	483.6	870.2	(2)	531.9	945.6
14	128.57	(1)	725.3	287.2	(2)	798.0	324.6
15	64.29	(1)	394.9	1554.7	(2)	434.5	1738.0
16	180.00	(2)	12.1	0.0	(1)	10.8	0.0
17	138.48	(1)	1316.5	774.4	(2)	1454.5	832.4
18	164.65	(1)	1597.0	450.5	(2)	1761.0	507.9
19	134.23	(2)	423.6	637.8	(1)	384.7	589.3
20	138.48	(2)	955.5	2882.9	(1)	851.0	2708.4
21	164.65	(2)	1734.7	456.8	(1)	1574.8	445.5
22	156.94	(2)	3306.5	1192.3	(1)	3002.2	1087.0
23	156.94	(2)	3785.2	2475.8	(1)	3437.6	2241.2

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	1561.2	0.0	1561.2
Live load reaction	0.0	1963.7	0.0	1963.7
Wind load reaction (without 25 percent reduction)	130.1	− 6480.0	130.1	− 6480.0

TABLE 46 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	1800.00 cm	Spacing	600.00 cm	Slope	1 in 3
Wind force	100 kg/m²	Panels	7	Purlins at	135.53 cm

Member	Length cm		Compression kg	Moment kg.cm		Tension kg	Moment kg.cm
1	128.57	(2)	4131.9	1596.6	(1)	11981.2	4538.5
2	257.14	(2)	3794.2	897.9	(1)	11236.0	2441.7
3	257.14	(2)	2983.8	249.4	(1)	9370.0	652.3
4	257.14	(2)	1773.9	549.0	(1)	6580.4	1262.4
5	135.53	(1)	12639.0	4139.9	(2)	4440.2	1471.2
6	135.53	(1)	12650.0	3625.6	(2)	4602.6	1369.8
7	135.53	(1)	10860.0	827.0	(2)	3978.0	343.5
8	135.53	(1)	10846.1	1318.2	(2)	4134.7	548.8
9	135.53	(1)	8888.5	169.3	(2)	3448.1	28.9
10	135.53	(1)	9232.5	2073.6	(2)	3759.6	891.6
11	135.53	(1)	9196.3	3939.8	(2)	3906.3	1749.5
12	42.86	(1)	572.7	725.4	(2)	250.1	183.3
13	128.57	(1)	603.1	491.2	(2)	261.2	205.3
14	214.29	(1)	911.3	235.6	(2)	394.5	106.0
15	107.14	(1)	548.2	988.7	(2)	237.4	439.9
16	300.00	(2)	3.8	0.0	(1)	8.6	0.0
17	154.52	(1)	1121.1	507.3	(2)	487.8	198.5
18	214.29	(1)	1558.2	350.7	(2)	676.4	157.3
19	143.75	(2)	155.8	126.5	(1)	359.5	277.9
20	154.52	(2)	416.0	515.5	(1)	935.7	1371.5
21	214.29	(2)	666.9	93.5	(1)	1537.7	261.8
22	197.56	(2)	1229.6	301.3	(1)	2836.7	699.1
23	197.56	(2)	1444.6	507.2	(1)	3333.0	1164.9

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	2271.1	0.0	2271.1
Live load reaction	0.0	2102.5	0.0	2102.5
Wind load reaction (without 25 percent reduction)	47.7	− 4320.0	47.7	− 4320.0

TABLE 47 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	1800.00 cm	Spacing	600.00 cm	Slope	1 in 3
Wind force	150 kg/m²	Panels	7	Purlins at	135.53 cm

Member	Length cm		Compression kg	Moment kg.cm		Tension kg	Moment kg.cm
1	128.57	(2)	8531.0	3278.8	(1)	11981.2	4538.5
2	257.14	(2)	7879.3	1822.3	(1)	11236.0	2441.7
3	257.14	(2)	6300.4	501.1	(1)	9370.0	652.3
4	257.14	(2)	3942.3	1069.3	(1)	6580.4	1262.4
5	135.53	(1)	12639.0	4139.9	(2)	9121.6	3012.9
6	135.53	(1)	12650.0	3625.6	(2)	9367.2	2760.7
7	135.53	(1)	10860.0	827.0	(2)	8081.9	676.3
8	135.53	(1)	10846.1	1318.2	(2)	8314.1	1079.8
9	135.53	(1)	8888.5	169.3	(2)	6903.0	74.5
10	135.53	(1)	9232.5	2073.6	(2)	7437.3	1741.2
11	135.53	(1)	9196.3	3939.8	(2)	7650.2	3391.5
12	42.86	(1)	572.7	725.4	(2)	486.7	416.2
13	128.57	(1)	603.1	491.2	(2)	509.2	403.6
14	214.29	(1)	911.3	235.6	(2)	769.2	204.8
15	107.14	(1)	548.2	988.7	(2)	462.8	852.4
16	300.00	(2)	7.4	0.0	(1)	8.6	0.0
17	154.52	(1)	1121.1	507.3	(2)	950.0	396.5
18	214.29	(1)	1558.2	350.7	(2)	1318.1	304.2
19	143.75	(2)	303.6	243.8	(1)	359.5	277.9
20	154.52	(2)	806.2	1040.3	(1)	935.7	1371.5
21	214.29	(2)	1299.8	191.2	(1)	1537.7	261.8
22	197.56	(2)	2396.8	588.1	(1)	2836.7	699.1
23	197.56	(2)	2815.9	987.7	(1)	3333.0	1164.9

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	2271.1	0.0	2271.1
Live load reaction	0.0	2102.5	0.0	2102.5
Wind load reaction (without 25 percent reduction)	71.6	− 6480.0	71.6	− 6480.0

TABLE 48 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	1800.00 cm	Spacing	600.00 cm	Slope	1 in 3
Wind force	200 kg/m²	Panels	7	Purlins at	135.53 cm

Member	Length cm		Compression kg	Moment kg.cm		Tension kg	Moment kg.cm
1	128.57	(2)	12930.0	4960.9	(1)	11981.2	4538.5
2	257.14	(2)	11964.3	2746.7	(1)	11236.0	2441.7
3	257.14	(2)	9616.9	752.8	(1)	9370.0	652.3
4	257.14	(2)	6110.7	1589.7	(1)	6580.4	1262.4
5	135.53	(1)	12639.0	4139.9	(2)	13802.9	4554.7
6	135.53	(1)	12650.0	3625.6	(2)	14131.9	4151.5
7	135.53	(1)	10860.0	827.0	(2)	12185.7	1009.1
8	135.53	(1)	10846.1	1318.2	(2)	12493.5	1610.9
9	135.53	(1)	8888.5	169.3	(2)	10357.9	121.4
10	135.53	(1)	9232.5	2073.6	(2)	11115.0	2590.8
11	135.53	(1)	9196.3	3939.8	(2)	11394.2	5033.4
12	42.86	(1)	572.7	725.4	(2)	723.3	649.0
13	128.57	(1)	603.1	491.2	(2)	757.2	601.8
14	214.29	(1)	911.3	235.6	(2)	1143.9	303.7
15	107.14	(1)	548.2	988.7	(2)	688.3	1264.8
16	300.00	(2)	11.0	0.0	(1)	8.6	0.0
17	154.52	(1)	1121.1	507.3	(2)	1412.2	594.5
18	214.29	(1)	1558.2	350.7	(2)	1959.7	451.2
19	143.75	(2)	451.5	361.2	(1)	359.5	277.9
20	154.52	(2)	1196.5	1565.1	(1)	935.7	1371.5
21	214.29	(2)	1932.7	288.9	(1)	1537.7	261.8
22	197.56	(2)	3564.1	874.9	(1)	2836.7	699.1
23	197.56	(2)	4187.2	1468.1	(1)	3333.0	1164.9

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	2271.1	0.0	2271.1
Live load reaction	0.0	2102.5	0.0	2102.5
Wind load reaction (without 25 percent reduction)	95.5	− 8640.0	95.5	− 8640.0

TABLE 49 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	1800.00 cm	Spacing	600.00 cm	Slope	1 in 4
Wind force	100 kg/m²	Panels	7	Purlins at	132.53 cm

Member	Length cm		Compression kg	Moment kg.cm		Tension kg	Moment kg.cm
1	128.57	(2)	5621.7	2803.2	(1)	16746.5	8268.3
2	257.14	(2)	5271.5	1423.1	(1)	15881.5	4096.9
3	257.14	(2)	4264.2	356.2	(1)	13254.4	1017.0
4	257.14	(2)	2758.1	674.8	(1)	9320.4	1754.5
5	132.53	(1)	17275.9	7627.9	(2)	5859.1	2594.0
6	132.53	(1)	17360.5	5954.9	(2)	6002.3	2100.2
7	132.53	(1)	15022.3	1086.2	(2)	5214.0	403.5
8	132.53	(1)	15001.4	1824.6	(2)	5325.3	680.3
9	132.53	(1)	12298.8	555.2	(2)	4409.7	165.4
10	132.53	(1)	12743.3	2945.5	(2)	4698.8	1118.6
11	132.53	(1)	12692.9	5262.0	(2)	4798.4	2058.5
12	32.14	(1)	585.4	1752.7	(2)	225.3	526.9
13	96.43	(1)	628.9	760.0	(2)	244.1	282.0
14	160.71	(1)	962.6	304.4	(2)	367.7	121.2
15	80.36	(1)	555.5	1475.5	(2)	212.3	579.1
16	225.00	(2)	4.4	0.0	(1)	11.2	0.0
17	143.75	(1)	1460.7	763.2	(2)	561.3	275.4
18	181.83	(1)	1865.1	466.2	(2)	714.8	185.3
19	137.31	(2)	174.2	151.1	(1)	455.6	414.3
20	143.75	(2)	429.7	853.2	(1)	1093.7	2418.7
21	181.83	(2)	704.6	136.0	(1)	1840.9	411.6
22	170.84	(2)	1323.6	393.0	(1)	3459.4	1033.7
23	170.84	(2)	1538.0	763.3	(1)	4021.0	1984.9

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	2220.9	0.0	2220.9
Live load reaction	0.0	2420.9	0.0	2420.9
Wind load reaction (without 25 percent reduction)	53.2	− 4320.0	53.2	− 4320.0

TABLE 50 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	1800.00 cm	Spacing	600.00 cm	Slope	1 in 4
Wind force	150 kg/m²	Panels	7	Purlins at	132.53 cm

Member	Length cm		Compression kg	Moment kg.cm		Tension kg	Moment kg.cm
1	128.57	(2)	11437.2	5688.2	(1)	16746.5	8268.3
2	257.14	(2)	10756.7	2869.7	(1)	15881.5	4096.9
3	257.14	(2)	8774.5	716.8	(1)	13254.4	1017.0
4	257.14	(2)	5809.4	1327.0	(1)	9320.4	1754.5
5	132.53	(1)	17275.9	7627.9	(2)	11888.3	5259.6
6	132.53	(1)	17360.5	5954.9	(2)	12118.2	4218.7
7	132.53	(1)	15022.3	1086.2	(2)	10516.3	800.1
8	132.53	(1)	15001.4	1824.6	(2)	10679.5	1347.9
9	132.53	(1)	12298.8	555.2	(2)	8821.1	347.7
10	132.53	(1)	12743.3	2945.5	(2)	9334.6	2206.4
11	132.53	(1)	12692.9	5262.0	(2)	9474.9	4031.9
12	32.14	(1)	585.4	1752.7	(2)	443.0	1104.8
13	96.43	(1)	628.9	760.0	(2)	480.7	559.4
14	160.71	(1)	962.6	304.4	(2)	724.3	236.4
15	80.36	(1)	555.5	1475.5	(2)	418.0	1133.4
16	225.00	(2)	8.7	0.0	(1)	11.2	0.0
17	143.75	(1)	1460.7	763.2	(2)	1104.0	550.0
18	181.83	(1)	1865.1	466.2	(2)	1406.8	361.6
19	137.31	(2)	343.1	301.0	(1)	455.6	414.3
20	143.75	(2)	840.8	1713.8	(1)	1093.7	2418.7
21	181.83	(2)	1387.2	277.8	(1)	1840.9	411.6
22	170.84	(2)	2606.1	774.9	(1)	3459.4	1033.7
23	170.84	(2)	3028.5	1501.1	(1)	4021.0	1984.9

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	2220.9	0.0	2220.9
Live load reaction	0.0	2420.9	0.0	2420.9
Wind load reaction (without 25 percent reduction)	79.9	− 6480.0	79.9	− 6480.0

TABLE 51 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	1800.00 cm	Spacing	600.00 cm	Slope	1 in 4
Wind force	200 kg/m²	Panels	7	Purlins at	132.53 cm

Member	Length cm		Compression kg	Moment kg.cm		Tension kg	Moment kg.cm
1	128.57	(2)	17252.7	8573.3	(1)	16746.5	8268.3
2	257.14	(2)	16241.9	4316.3	(1)	15881.5	4096.9
3	257.14	(2)	13284.7	1077.4	(1)	13254.4	1017.0
4	257.14	(2)	8860.8	1979.1	(1)	9320.4	1754.5
5	132.53	(1)	17275.9	7627.9	(2)	17917.5	7925.2
6	132.53	(1)	17360.5	5954.9	(2)	18234.2	6337.3
7	132.53	(1)	15022.3	1086.2	(2)	15818.6	1196.8
8	132.53	(1)	15001.4	1824.6	(2)	16033.7	2015.4
9	132.53	(1)	12298.8	555.2	(2)	13232.6	530.0
10	132.53	(1)	12743.3	2945.5	(2)	13970.5	3294.1
11	132.53	(1)	12692.9	5262.0	(2)	14151.5	6005.2
12	32.14	(1)	585.4	1752.7	(2)	660.7	1682.7
13	96.43	(1)	638.9	760.0	(2)	717.4	836.7
14	160.71	(1)	962.6	304.4	(2)	1080.9	351.6
15	80.36	(1)	555.5	1475.5	(2)	623.8	1687.7
16	225.00	(2)	12.9	0.0	(1)	11.2	0.0
17	143.75	(1)	1460.7	763.2	(2)	1646.7	824.7
18	181.83	(1)	1865.1	466.2	(2)	2098.8	537.9
19	137.31	(2)	512.0	450.8	(1)	455.6	414.3
20	143.75	(2)	1251.9	2574.4	(1)	1093.7	2418.7
21	181.83	(2)	2069.8	419.7	(1)	1840.9	411.6
22	170.84	(2)	3888.6	1156.8	(1)	3459.4	1033.7
23	170.84	(2)	4519.0	2238.8	(1)	4021.0	1984.9

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	2220.9	0.0	2220.9
Live load reaction	0.0	2420.9	0.0	2420.9
Wind load reaction (without 25 percent reduction)	106.5	− 8640.0	106.5	− 8640.0

TABLE 52 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	1800.00 cm	Spacing	600.00 cm	Slope	1 in 5
Wind force	100 kg/m²	Panels	7	Purlins at	131.12 cm

Member	Length cm		Compression kg	Moment kg.cm		Tension kg	Moment kg.cm
1	128.57	(2)	7020.7	4321.3	(1)	21375.7	13080.6
2	257.14	(2)	6706.4	2069.4	(1)	20562.3	6167.3
3	257.14	(2)	5495.0	509.4	(1)	17179.9	1517.4
4	257.14	(2)	3679.0	861.3	(1)	12101.3	2397.7
5	131.12	(1)	21817.1	12178.9	(2)	7212.9	4028.4
6	131.12	(1)	22048.9	8768.4	(2)	7378.3	2972.1
7	131.12	(1)	19264.8	1426.4	(2)	6463.2	499.3
8	131.12	(1)	19230.6	2502.1	(2)	6545.4	879.0
9	131.12	(1)	15777.7	1021.4	(2)	5404.8	317.4
10	131.12	(1)	16295.7	4084.9	(2)	5684.1	1450.4
11	131.12	(1)	16222.4	7003.9	(2)	5751.8	2549.9
12	25.71	(1)	581.9	3410.4	(2)	208.9	1056.3
13	77.14	(1)	660.7	1188.8	(2)	235.6	416.3
14	128.57	(1)	990.9	392.4	(2)	353.7	145.7
15	64.29	(1)	539.5	2124.0	(2)	192.5	776.1
16	180.00	(2)	5.4	0.0	(1)	14.7	0.0
17	138.48	(1)	1798.5	1058.0	(2)	645.7	364.4
18	164.65	(1)	2181.7	615.5	(2)	781.0	227.8
19	134.23	(2)	187.7	280.2	(1)	525.5	805.1
20	138.48	(2)	427.6	1255.5	(1)	1162.5	3700.0
21	164.65	(2)	769.0	194.9	(1)	2151.4	608.6
22	156.94	(2)	1465.6	527.4	(1)	4101.5	1484.9
23	156.94	(2)	1677.6	1099.1	(1)	4696.3	3061.8

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	2197.3	0.0	2197.3
Live load reaction	0.0	2618.3	0.0	2618.3
Wind load reaction (without 25 percent reduction)	86.7	− 4320.0	86.7	− 4320.0

TABLE 53 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	1800.00 cm	Spacing	600.00 cm	Slope	1 in 5
Wind force	150 kg/m²	Panels	7	Purlins at	131.12 cm

Member	Length cm		Compression kg	Moment kg.cm		Tension kg	Moment kg.cm
1	128.57	(2)	14188.5	8720.1	(1)	21375.7	13080.6
2	257.14	(2)	13577.9	4159.4	(1)	20562.3	6167.3
3	257.14	(2)	11182.0	1023.8	(1)	17179.9	1517.4
4	257.14	(2)	7589.1	1702.2	(1)	12101.3	2397.7
5	131.12	(1)	21817.1	12178.9	(2)	14552.4	8126.5
6	131.12	(1)	22048.9	8768.4	(2)	14840.2	5958.5
7	131.12	(1)	19264.8	1426.4	(2)	12991.1	993.0
8	131.12	(1)	19230.6	2502.1	(2)	13108.7	1746.6
9	131.12	(1)	15777.7	1021.4	(2)	10806.9	650.9
10	131.12	(1)	16295.7	4084.9	(2)	11314.5	2874.5
11	131.12	(1)	16222.4	7003.9	(2)	11403.4	5023.3
12	25.71	(1)	581.9	3410.4	(2)	412.9	2168.0
13	77.14	(1)	660.7	1188.8	(2)	466.5	827.8
14	128.57	(1)	990.9	392.4	(2)	699.9	285.7
15	64.29	(1)	539.5	2124.0	(2)	381.1	1527.6
16	180.00	(2)	10.6	0.0	(1)	14.7	0.0
17	138.48	(1)	1798.5	1058.0	(2)	1276.3	727.6
18	164.65	(1)	2181.7	615.5	(2)	1544.9	447.0
19	134.23	(2)	371.5	558.0	(1)	525.5	805.1
20	138.48	(2)	840.3	2516.4	(1)	1162.5	3700.0
21	164.65	(2)	1521.6	396.5	(1)	2151.4	608.6
22	156.94	(2)	2900.2	1045.2	(1)	4101.5	1484.9
23	156.94	(2)	3320.0	2172.5	(1)	4696.3	3061.8

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	2197.3	0.0	2197.3
Live load reaction	0.0	2618.3	0.0	2618.3
Wind load reaction (without 25 percent reduction)	130.1	− 6480.0	130.1	−6480.0

TABLE 54 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	1800.00 cm	Spacing	600.00 cm	Slope	1 in 5
Wind force	200 kg/m²	Panels	7	Purlins at	131.12 cm

MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	128.57	(2)	21356.4	13118.9	(1)	21375.7	13080.6
2	257.14	(2)	20449.5	6249.4	(1)	20562.3	6167.3
3	257.14	(2)	16869.1	1538.2	(1)	17179.9	1517.4
4	257.14	(2)	11499.2	2543.1	(1)	12101.3	2397.7
5	131.12	(1)	21817.1	12178.9	(2)	21891.9	12224.5
6	131.12	(1)	22048.9	8768.4	(2)	22302.1	8944.8
7	131.12	(1)	19264.8	1426.4	(2)	19519.0	1486.8
8	131.12	(1)	19230.6	2502.1	(2)	19671.9	2614.3
9	131.12	(1)	15777.7	1021.4	(2)	16209.0	984.3
10	131.12	(1)	16295.7	4084.9	(2)	16944.9	4298.7
11	131.12	(1)	16222.4	7003.9	(2)	17055.1	7496.7
12	25.71	(1)	581.9	3410.4	(2)	617.0	3279.7
13	77.14	(1)	660.7	1188.8	(2)	697.3	1239.4
14	128.57	(1)	990.9	392.4	(2)	1046.2	425.7
15	64.29	(1)	539.5	2124.0	(2)	569.6	2279.1
16	180.00	(2)	15.9	0.0	(1)	14.7	0.0
17	1[illegible].48	(1)	1798.5	1058.0	(2)	1906.9	1090.9
18	164.65	(1)	2181.7	615.5	(2)	2308.7	666.1
19	134.23	(2)	555.3	835.8	(1)	525.5	805.1
20	138.48	(2)	1253.0	3777.2	(1)	1162.5	3700.0
21	164.65	(2)	2274.2	598.1	(1)	2151.4	608.6
22	156.94	(2)	4334.7	1563.0	(1)	4101.5	1484.9
23	156.94	(2)	4962.3	3245.9	(1)	4696.3	3061.8

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	2197.3	0.0	2197.3
Live load reaction	0.0	2618.3	0.0	2618.3
Wind load reaction (without 25 percent reduction)	173.4	− 8640.0	173.4	− 8640.0

TABLE 55 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	2400.00 cm	Spacing	450.00 cm	Slope	1 in 3
Wind force	100 kg/m²	Panels	9	Purlins at	126.49 cm

Member	Length cm		Compression kg	Moment kg.cm		Tension kg	Moment kg.cm
1	133.33	(2)	4257.5	1407.9	(1)	12229.4	4067.7
2	266.67	(2)	3991.1	901.1	(1)	11649.0	2437.4
3	266.67	(2)	3357.7	287.1	(1)	10195.9	734.7
4	266.67	(2)	2723.5	198.7	(1)	8739.3	509.2
5	266.67	(2)	1777.6	387.1	(1)	6565.9	882.4
6	140.55	(1)	12905.2	5073.6	(2)	4550.2	5867.8
7	140.55	(1)	12905.3	6256.6	(2)	4659.7	5191.4
8	140.55	(1)	11550.6	6329.0	(2)	4173.4	7564.6
9	140.55	(1)	11550.6	7881.8	(2)	4287.4	8530.1
10	140.55	(1)	10046.2	7433.1	(2)	3746.1	8997.6
11	140.55	(1)	10055.8	7173.9	(2)	3864.0	8690.3
12	140.55	(1)	8543.6	7006.3	(2)	3319.8	6911.2
13	140.55	(1)	8752.4	6101.9	(2)	3524.3	4971.5
14	140.55	(1)	8746.7	4185.0	(2)	3635.5	4272.7
15	44.44	(1)	430.9	497.2	(2)	189.4	287.1
16	133.33	(1)	467.9	852.0	(2)	203.5	361.8
17	222.22	(1)	472.9	222.1	(2)	205.3	93.3
18	311.11	(1)	704.1	113.4	(2)	305.9	49.8
19	155.56	(1)	426.1	255.2	(2)	185.2	117.2
20	400.00	(2)	2.8	0.0	(1)	6.2	0.0
21	160.25	(1)	869.7	627.6	(2)	379.9	251.5
22	222.22	(1)	1216.8	299.9	(2)	530.1	128.3
23	298.14	(1)	1629.8	199.4	(2)	709.7	90.2
24	173.56	(2)	99.5	270.8	(1)	229.0	613.0
25	160.25	(2)	315.8	412.3	(1)	702.4	1133.1
26	222.22	(2)	518.3	104.0	(1)	1190.6	280.8
27	298.14	(2)	703.3	29.7	(1)	1616.4	66.9
28	240.37	(2)	1129.3	277.2	(1)	2595.8	636.9
29	240.37	(2)	1274.1	293.8	(1)	2928.9	650.2

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	2265.5	0.0	2265.5
Live load reaction	0.0	2102.5	0.0	2102.5
Wind load reaction (without 25 percent reduction)	47.7	− 4320.0	47.7	− 4320.0

TABLE 56 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	2400.00 cm	Spacing	450.00 cm	Slope	1 in 3
Wind force	150 kg/m²	Panels	9	Purlins at	126.49 cm

Member	Length cm		Compression kg	Moment kg.cm		Tension kg	Moment kg.cm
1	133.33	(2)	8764.8	2903.1	(1)	12229.4	4067.7
2	266.67	(2)	8252.3	1825.8	(1)	11649.0	2437.4
3	266.67	(2)	7019.6	573.6	(1)	10195.9	734.7
4	266.67	(2)	5785.1	397.0	(1)	8739.3	509.2
5	266.67	(2)	3943.5	752.2	(1)	6565.9	882.4
6	140.55	(1)	12905.2	5073.6	(2)	9335.3	7815.0
7	140.55	(1)	12905.3	6256.6	(2)	9499.6	6958.2
8	140.55	(1)	11550.6	6329.0	(2)	8506.6	10129.6
9	140.55	(1)	11550.6	7881.8	(2)	8677.6	11422.5
10	140.55	(1)	10046.2	7433.1	(2)	7573.2	12050.7
11	140.55	(1)	10055.8	7173.9	(2)	7751.8	11640.2
12	140.55	(1)	8543.6	7006.3	(2)	6641.4	9255.6
13	140.55	(1)	8752.4	6101.9	(2)	6988.7	6660.5
14	140.55	(1)	8746.7	4185.0	(2)	7154.4	5724.2
15	44.44	(1)	430.9	497.2	(2)	367.9	509.2
16	133.33	(1)	467.9	852.0	(2)	396.3	708.4
17	222.22	(1)	472.9	222.1	(2)	399.9	183.1
18	311.11	(1)	704.1	113.4	(2)	595.9	96.8
19	155.56	(1)	426.1	255.2	(2)	360.6	225.4
20	400.00	(2)	5.4	0.0	(1)	6.2	0.0
21	160.25	(1)	869.7	627.6	(2)	739.0	496.1
22	222.22	(1)	1216.8	299.9	(2)	1031.8	250.8
23	298.14	(1)	1629.8	199.4	(2)	1381.6	174.1
24	173.56	(2)	193.8	525.5	(1)	229.0	613.0
25	160.25	(2)	610.3	838.8	(1)	702.4	1133.1
26	222.22	(2)	1009.1	210.6	(1)	1190.6	280.8
27	298.14	(2)	1369.4	57.6	(1)	1616.4	66.9
28	240.37	(2)	2198.9	539.7	(1)	2595.8	636.9
29	240.37	(2)	2480.8	567.2	(1)	2928.9	650.2

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	2265.5	0.0	2265.5
Live load reaction	0.0	2102.5	0.0	2102.5
Wind load reaction (without 25 percent reduction)	71.6	− 6480.0	71.6	− 6480.0

TABLE 57 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	2400.00 cm	Spacing	450.00 cm	Slope	1 in 3
Wind force	200 kg/m²	Panels	9	Purlins at	140.55 cm

Member	Length cm		Compression kg	Moment kg.cm		Tension kg	Moment kg.cm
1	133.33	(2)	13272.1	4398.2	(1)	12229.4	4067.7
2	266.67	(2)	12513.5	2750.4	(1)	11649.0	2437.4
3	266.67	(2)	10681.5	860.0	(1)	10195.9	734.7
4	266.67	(2)	8846.6	595.4	(1)	8739.3	509.2
5	266.67	(2)	6109.3	1117.4	(1)	6565.9	882.4
6	140.55	(1)	12905.2	5073.6	(2)	14120.4	9762.1
7	140.55	(1)	12905.3	6256.6	(2)	14339.5	8725.0
8	140.55	(1)	11550.6	6329.0	(2)	12839.9	12694.5
9	140.55	(1)	11550.6	7881.8	(2)	13067.8	14315.0
10	140.55	(1)	10046.2	7433.1	(2)	11400.2	15103.8
11	140.55	(1)	10055.8	7173.9	(2)	11639.7	14590.0
12	140.55	(1)	8543.6	7006.3	(2)	9962.9	11600.0
13	140.55	(1)	8752.4	6101.9	(2)	10453.2	8349.5
14	140.55	(1)	8746.7	4185.0	(2)	10673.4	7175.7
15	44.44	(1)	430.9	497.2	(2)	546.4	731.3
16	133.33	(1)	467.9	852.0	(2)	589.1	1055.0
17	222.22	(1)	472.9	222.1	(2)	594.6	272.9
18	311.11	(1)	704.1	113.4	(2)	885.8	143.7
19	155.56	(1)	426.1	255.2	(2)	536.1	333.6
20	400.00	(2)	7.9	0.0	(1)	6.2	0.0
21	160.25	(1)	869.7	627.6	(2)	1098.1	742.8
22	222.22	(1)	1216.8	299.9	(2)	1533.5	373.2
23	298.14	(1)	1629.8	199.4	(2)	2053.4	258.0
24	173.56	(2)	288.1	780.1	(1)	229.0	613.0
25	160.25	(2)	904.8	1265.4	(1)	702.4	1133.1
26	222.22	(2)	1499.8	317.2	(1)	1190.6	280.8
27	298.14	(2)	2035.4	85.4	(1)	1616.4	66.9
28	240.37	(2)	3268.4	802.2	(1)	2595.8	636.9
29	240.37	(2)	3687.4	840.5	(1)	2928.9	650.2

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	2265.5	0.0	2265.5
Live load reaction	0.0	2102.5	0.0	2102.5
Wind load reaction (without 25 percent reduction)	95.5	− 8640.0	95.5	− 8640.0

TABLE 58 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	2400.00 cm	Spacing	450.00 cm	Slope	1 in 4
Wind force	100 kg/m²	Panels	9	Purlins at	137.44 cm

Member	Length cm		Compression kg	Moment kg.cm		Tension kg	Moment kg.cm
1	133.33	(2)	5759.6	2749.0	(1)	17049.3	8076.9
2	266.67	(2)	5511.7	1344.2	(1)	16451.1	3875.2
3	266.67	(2)	4728.8	360.8	(1)	14416.9	1022.8
4	266.67	(2)	3938.5	278.9	(1)	12360.5	782.3
5	266.67	(2)	2759.7	469.9	(1)	9291.9	1212.5
6	137.44	(1)	17587.2	7438.0	(2)	5987.7	2537.7
7	137.44	(1)	17679.9	5602.7	(2)	6108.6	1968.4
8	137.44	(1)	15913.7	1075.6	(2)	5510.7	393.1
9	137.44	(1)	15895.9	1716.4	(2)	5596.7	632.2
10	137.44	(1)	13799.0	687.4	(2)	4883.5	266.2
11	137.44	(1)	13791.5	1110.9	(2)	4973.3	426.4
12	137.44	(1)	11680.0	351.2	(2)	4254.9	102.6
13	137.44	(1)	11935.6	2182.0	(2)	4445.6	836.6
14	137.44	(1)	11908.2	3842.6	(2)	4527.7	1513.2
15	33.33	(1)	447.5	1912.8	(2)	173.3	600.6
16	100.00	(1)	493.8	662.5	(2)	189.4	245.6
17	166.67	(1)	501.9	423.5	(2)	192.2	160.2
18	233.33	(1)	751.1	222.3	(2)	288.0	87.6
19	116.67	(1)	442.1	868.3	(2)	169.5	341.7
20	300.00	(2)	3.1	0.0	(1)	7.7	0.0
21	149.07	(1)	1130.6	754.5	(2)	436.1	270.4
22	188.56	(1)	1455.7	299.6	(2)	559.8	114.0
23	240.37	(1)	1850.2	346.6	(2)	711.2	137.9
24	157.23	(2)	110.2	84.2	(1)	287.4	209.8
25	149.07	(2)	318.8	804.2	(1)	801.2	2288.9
26	188.56	(2)	547.2	115.4	(1)	1424.2	350.8
27	240.37	(2)	706.6	97.1	(1)	1840.0	280.5
28	200.69	(2)	1175.7	280.5	(1)	3061.8	730.5
29	200.69	(2)	1318.4	454.5	(1)	3434.1	1173.6

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	2215.3	0.0	2215.3
Live load reaction	0.0	2420.9	0.0	2420.9
Wind load reaction (without 25 percent reduction)	53.2	− 4320.0	53.2	− 4320.0

TABLE 59 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	2400.00 cm	Spacing	450.00 cm	Slope	1 in 4
Wind force	150 kg/m²	Panels	9	Purlins at	137.44 cm

MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	133.33	(2)	11694.4	5570.7	(1)	17049.3	8076.9
2	266.67	(2)	11215.3	2710.6	(1)	16451.1	3875.2
3	266.67	(2)	9676.5	724.5	(1)	14416.9	1022.8
4	266.67	(2)	8122.6	558.5	(1)	12360.5	782.3
5	266.67	(2)	5804.5	922.1	(1)	9291.9	1212.5
6	137.44	(1)	17587.2	7438.0	(2)	12133.0	5139.4
7	137.44	(1)	17679.9	5602.7	(2)	12330.8	3956.5
8	137.44	(1)	15913.7	1075.6	(2)	11117.5	782.4
9	137.44	(1)	15895.9	1716.4	(2)	11243.4	1255.9
10	137.44	(1)	13799.0	687.4	(2)	9797.9	522.5
11	137.44	(1)	13791.5	1110.9	(2)	9931.2	838.6
12	137.44	(1)	11680.0	351.2	(2)	8475.3	216.9
13	137.44	(1)	11935.6	2182.0	(2)	8807.1	1645.8
14	137.44	(1)	11908.2	3842.6	(2)	8925.3	2958.4
15	33.33	(1)	447.5	1912.8	(2)	340.1	1243.6
16	100.00	(1)	493.8	662.5	(2)	372.6	487.1
17	166.67	(1)	501.9	423.5	(2)	378.3	316.1
18	233.33	(1)	751.1	222.3	(2)	566.6	171.2
19	116.67	(1)	442.1	868.3	(2)	333.5	668.2
20	300.00	(2)	6.0	0.0	(1)	7.7	0.0
21	149.07	(1)	1130.6	754.5	(2)	856.8	540.8
22	188.56	(1)	1455.7	299.6	(2)	1100.6	224.6
23	240.37	(1)	1850.2	346.6	(2)	1398.3	269.0
24	157.23	(2)	216.8	163.8	(1)	287.4	209.8
25	149.07	(2)	621.8	1616.5	(1)	801.2	2288.9
26	188.56	(2)	1076.0	236.0	(1)	1424.2	350.8
27	240.37	(2)	1389.6	195.9	(1)	1840.0	280.5
28	200.69	(2)	2312.3	551.6	(1)	3061.8	730.5
29	200.69	(2)	2593.0	892.1	(1)	3434.1	1173.6

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	2215.3	0.0	2215.3
Live load reaction	0.0	2420.9	0.0	2420.9
Wind load reaction (without 25 percent reduction)	79.9	− 6480.0	79.9	− 6480.0

TABLE 60 STEEL ROOF TRUSS (ANALYSIS RESULTS

Span	2400.00 cm	Spacing	450.00 cm	Slope	1 in 4
Wind force	200 kg/m²	Panels	9	Purlins at	137.44 cm

MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	133.33	(2)	17629.2	8392.5	(1)	17049.3	8076.9
2	266.67	(2)	16919.0	4077.1	(1)	16451.1	3875.2
3	266.67	(2)	14624.2	1088.2	(1)	14416.9	1022.8
4	266.67	(2)	12306.7	838.2	(1)	12360.5	782.3
5	266.67	(2)	8849.2	1374.3	(1)	9291.9	1212.5
6	137.44	(1)	17587.2	7438.0	(2)	18278.2	7741.0
7	137.44	(1)	17679.9	5602.7	(2)	18553.1	5944.6
8	137.44	(1)	15913.7	1075.6	(2)	16724.4	1171.7
9	137.44	(1)	15895.9	1716.4	(2)	16890.1	1879.6
10	137.44	(1)	13799.0	687.4	(2)	14712.3	778.7
11	137.44	(1)	13791.5	1110.9	(2)	14889.1	1250.8
12	137.44	(1)	11680.0	351.2	(2)	12695.6	331.1
13	137.44	(1)	11935.6	2182.0	(2)	13168.6	2455.1
14	137.44	(1)	11908.2	3842.6	(2)	13322.9	4403.5
15	33.33	(1)	447.5	1912.8	(2)	507.0	1886.7
16	100.00	(1)	493.8	662.5	(2)	555.8	728.7
17	166.67	(1)	501.9	423.5	(2)	564.4	472.1
18	233.33	(1)	751.1	222.3	(2)	845.2	254.9
19	116.67	(1)	442.1	868.3	(2)	497.4	994.6
20	300.00	(2)	8.9	0.0	(1)	7.7	0.0
21	149.07	(1)	1130.6	754.5	(2)	1277.5	811.1
22	188.56	(1)	1455.7	299.6	(2)	1641.4	335.3
23	240.37	(1)	1850.2	346.6	(2)	2085.4	400.0
24	157.23	(2)	323.4	243.5	(1)	287.4	209.8
25	149.07	(2)	924.7	2428.7	(1)	801.2	2288.9
26	188.56	(2)	1604.8	356.6	(1)	1424.2	350.8
27	240.37	(2)	2072.6	294.7	(1)	1840.0	280.5
28	200.69	(2)	3448.8	822.7	(1)	3061.8	730.5
29	200.69	(2)	3867.5	1329.7	(1)	3434.1	1173.6

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	2215.3	0.0	2215.3
Live load reaction	0.0	2420.9	0.0	2420.9
Wind load reaction (without 25 percent reduction)	106.5	− 8640.0	106.5	− 8640.0

TABLE 61 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	2400.00 cm	Spacing	450.00 cm	Slope	1 in 5
Wind force	100 kg/m²	Panels	9	Purlins at	135.97 cm

MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	133.33	(2)	7194.0	4246.0	(1)	21787.3	12802.6
2	266.67	(2)	6998.0	1964.3	(1)	21303.4	5851.3
3	266.67	(2)	6058.2	520.4	(1)	18689.1	1539.8
4	266.67	(2)	5102.4	361.0	(1)	16026.5	1064.3
5	266.67	(2)	3677.8	574.6	(1)	12056.0	1588.5
6	135.97	(1)	22235.9	11914.5	(2)	7378.8	3955.4
7	135.97	(1)	22477.8	8284.6	(2)	7528.5	2804.5
8	135.97	(1)	20408.6	1464.1	(2)	6845.6	507.0
9	135.97	(1)	20379.6	2397.2	(2)	6908.8	835.8
10	135.97	(1)	17701.2	836.4	(2)	6020.7	302.6
11	135.97	(1)	17691.6	1390.1	(2)	6090.6	499.2
12	135.97	(1)	14985.4	667.2	(2)	5193.0	206.7
13	135.97	(1)	15292.2	2876.5	(2)	5376.2	1029.7
14	135.97	(1)	15256.9	4783.4	(2)	5436.7	1754.5
15	26.67	(1)	442.1	3629.9	(2)	159.7	1150.8
16	80.00	(1)	509.8	1039.8	(2)	182.6	364.3
17	133.33	(1)	522.3	553.7	(2)	186.8	196.6
18	186.67	(1)	775.9	259.7	(2)	277.8	95.8
19	93.33	(1)	439.6	1193.2	(2)	157.4	437.9
20	240.00	(2)	3.5	0.0	(1)	9.6	0.0
21	143.60	(1)	1388.8	1061.3	(2)	500.6	364.1
22	170.75	(1)	1704.2	401.5	(2)	612.2	143.6
23	208.27	(1)	2074.9	431.2	(2)	745.0	160.3
24	149.07	(2)	118.9	139.5	(1)	332.1	398.9
25	143.60	(2)	304.4	1188.5	(1)	815.0	3507.8
26	170.75	(2)	596.2	170.9	(1)	1661.6	532.5
27	208.27	(2)	741.0	123.3	(1)	2066.1	376.7
28	179.38	(2)	1269.8	357.4	(1)	3540.7	997.6
29	179.38	(2)	1413.5	648.2	(1)	3942.3	1794.1

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	2191.8	0.0	2191.8
Live load reaction	0.0	2618.3	0.0	2618.3
Wind load reaction (without 25 percent reduction)	86.7	− 4320.0	86.7	− 4320.0

TABLE 62 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	2400.00 cm	Spacing	450.00 cm	Slope	1 in 5
Wind force	150 kg/m²	Panels	9	Purlins at	135.97 cm

Member	Length cm		Compression kg	Moment kg.cm		Tension kg	Moment kg.cm
1	133.33	(2)	14513.8	8556.6	(1)	21787.3	12802.6
2	266.67	(2)	14137.2	3946.3	(1)	21303.4	5851.3
3	266.67	(2)	12280.7	1043.8	(1)	18689.1	1539.8
4	266.67	(2)	10392.1	723.3	(1)	16026.5	1064.3
5	266.67	(2)	7576.8	1133.4	(1)	12056.0	1588.5
6	135.97	(1)	22235.9	11914.5	(2)	14867.7	7968.9
7	135.97	(1)	22477.8	8284.6	(2)	15133.6	5622.4
8	135.97	(1)	20408.6	1464.1	(2)	13755.7	1010.7
9	135.97	(1)	20379.6	2397.2	(2)	13845.5	1663.4
10	135.97	(1)	17701.2	836.4	(2)	12055.7	596.8
11	135.97	(1)	17691.6	1390.1	(2)	12158.9	986.3
12	135.97	(1)	14985.4	667.2	(2)	10350.1	424.0
13	135.97	(1)	15292.2	2876.5	(2)	10677.4	2036.0
14	135.97	(1)	15256.9	4783.4	(2)	10762.1	3449.1
15	26.67	(1)	442.1	3629.9	(2)	315.0	2346.5
16	80.00	(1)	509.8	1039.8	(2)	361.0	724.1
17	133.33	(1)	522.3	553.3	(2)	369.4	389.5
18	186.67	(1)	775.9	259.7	(2)	549.4	188.0
19	93.33	(1)	439.6	1193.2	(2)	311.2	860.8
20	240.00	(2)	6.9	0.0	(1)	9.6	0.0
21	143.60	(1)	1388.8	1061.3	(2)	988.2	727.5
22	170.75	(1)	1704.2	401.5	(2)	1209.5	283.9
23	208.27	(1)	2074.9	431.2	(2)	1472.0	314.1
24	149.07	(2)	235.1	277.4	(1)	332.1	398.9
25	143.60	(2)	595.9	2382.1	(1)	815.0	3507.8
26	170.75	(2)	1178.2	347.3	(1)	1661.6	532.5
27	208.27	(2)	1464.5	249.3	(1)	2066.1	376.7
28	179.38	(2)	2509.8	706.6	(1)	3540.7	997.6
29	179.38	(2)	2793.9	1278.8	(1)	3942.3	1794.1

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	2191.8	0.0	2191.8
Live load reaction	0.0	2618.3	0.0	2618.3
Wind load reaction (without 25 percent reduction)	130.1	− 6480.0	130.1	− 6480.0

TABLE 63 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	2400.00 cm	Spacing	450.00 cm	Slope	1 in 5
Wind force	200 kg/m²	Panels	9	Purlins at	135.97 cm

MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	133.33	(2)	21833.6	12867.2	(1)	21787.3	12802.6
2	266.67	(2)	21276.4	5928.3	(1)	21303.4	5851.3
3	266.67	(2)	18503.3	1567.1	(1)	18689.1	1539.8
4	266.67	(2)	15681.9	1085.6	(1)	16026.5	1064.3
5	266.67	(2)	11475.7	1692.1	(1)	12056.0	1588.5
6	135.97	(1)	22235.9	11914.5	(2)	22356.7	11982.5
7	135.97	(1)	22477.8	8284.6	(2)	22738.7	8440.3
8	135.97	(1)	20408.6	1464.1	(2)	20665.8	1514.3
9	135.97	(1)	20379.6	2397.2	(2)	20782.2	2490.9
10	135.97	(1)	17701.2	836.4	(2)	18090.8	891.0
11	135.97	(1)	17691.6	1390.1	(2)	18227.2	1473.4
12	135.97	(1)	14985.4	667.2	(2)	15507.2	641.4
13	135.97	(1)	15292.2	2876.5	(2)	15978.5	3042.3
14	135.97	(1)	15256.9	4783.4	(2)	16087.4	5143.7
15	26.67	(1)	442.1	3629.9	(2)	470.4	3542.2
16	80.00	(1)	509.8	1039.8	(2)	539.4	1083.9
17	133.33	(1)	522.3	553.7	(2)	552.1	582.4
18	186.67	(1)	775.9	259.7	(2)	820.9	280.3
19	93.33	(1)	439.6	1193.2	(2)	465.0	1283.6
20	240.00	(2)	10.3	0.0	(1)	9.6	0.0
21	143.60	(1)	1388.8	1061.3	(2)	1475.8	1090.9
22	170.75	(1)	1704.2	401.5	(2)	1806.9	424.3
23	208.27	(1)	2074.9	431.2	(2)	2199.1	467.9
24	149.07	(2)	351.3	415.3	(1)	332.1	398.9
25	143.60	(2)	887.4	3575.8	(1)	815.0	3507.8
26	170.75	(2)	1760.2	523.8	(1)	1661.6	532.5
27	208.27	(2)	2188.1	375.3	(1)	2066.1	376.7
28	179.38	(2)	3749.7	1055.8	(1)	3540.7	997.6
29	179.38	(2)	4174.2	1909.5	(1)	3942.3	1794.1

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	2191.8	0.0	2191.8
Live load reaction	0.0	2618.3	0.0	2618.3
Wind load reaction (without 25 percent reduction)	173.4	− 8640.0	173.4	− 8640.0

TABLE 64 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	2400.00 cm	Spacing	600.00 cm	Slope	1 in 3
Wind force	100 kg/m²	Panels	9	Purlins at	140.55 cm

Member	Length cm		Compression kg	Moment kg.cm		Tension kg	Moment kg.cm
1	133.33	(2)	5342.0	1765.9	(1)	16752.1	5572.1
2	266.67	(2)	5002.6	1134.8	(1)	15957.1	3338.8
3	266.67	(2)	4197.9	362.7	(1)	13966.6	1006.4
4	266.67	(2)	3392.2	251.0	(1)	11971.3	697.5
5	266.67	(2)	2190.5	491.9	(1)	8994.1	1208.7
6	140.55	(1)	17677.8	6949.9	(2)	5713.8	7962.6
7	140.55	(1)	17678.0	8570.4	(2)	5859.8	7038.5
8	140.55	(1)	15822.3	8669.6	(2)	5248.4	10257.5
9	140.55	(1)	15822.3	10796.7	(2)	5400.4	11566.6
10	140.55	(1)	13761.5	10182.1	(2)	4719.9	12200.3
11	140.55	(1)	13774.6	9826.9	(2)	4876.8	11783.4
12	140.55	(1)	11703.2	9597.4	(2)	4192.6	9371.3
13	140.55	(1)	11989.2	8358.5	(2)	4459.5	6740.7
14	140.55	(1)	11981.5	5732.8	(2)	4608.0	5793.3
15	44.44	(1)	590.3	681.1	(2)	240.7	371.8
16	133.33	(1)	641.0	1167.1	(2)	258.6	459.0
17	222.22	(1)	647.8	304.3	(2)	260.8	118.3
18	311.11	(1)	964.5	155.4	(2)	388.7	63.3
19	155.56	(1)	583.7	349.6	(2)	235.2	149.2
20	400.00	(2)	3.5	0.0	(1)	8.4	0.0
21	160.25	(1)	1191.4	859.7	(2)	482.7	319.9
22	222.22	(1)	1666.9	410.9	(2)	673.5	162.8
23	298.14	(1)	2232.6	273.1	(2)	901.7	114.8
24	173.56	(2)	126.4	344.3	(1)	313.7	839.7
25	160.25	(2)	401.8	518.7	(1)	962.2	1552.2
26	222.22	(2)	658.6	131.0	(1)	1630.9	384.7
27	298.14	(2)	893.5	37.8	(1)	2214.2	91.7
28	240.37	(2)	1434.7	352.2	(1)	3555.8	872.4
29	240.37	(2)	1618.6	373.9	(1)	4012.1	890.7

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	3180.0	0.0	3180.0
Live load reaction	0.0	2803.3	0.0	2803.3
Wind load reaction (without 25 percent reduction)	63.6	− 5760.0	63.6	− 5760.0

TABLE 65 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	2400.00 cm		Spacing	600.00 cm		Slope	1 in 3
Wind force	150 kg/m²		Panels	9		Purlins at	140.55 cm
MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	133.33	(2)	11351.7	3759.5	(1)	16752.1	5572.1
2	266.67	(2)	10684.3	2367.7	(1)	15957.1	3338.8
3	266.67	(2)	9080.4	744.6	(1)	13966.6	1006.4
4	266.67	(2)	7474.2	515.5	(1)	11971.3	697.5
5	266.67	(2)	5078.3	978.8	(1)	8994.1	1208.7
6	140.55	(1)	17677.8	6949.9	(2)	12093.9	10558.8
7	140.55	(1)	17678.0	8570.4	(2)	12313.0	9394.2
8	140.55	(1)	15822.3	8669.6	(2)	11026.1	13677.4
9	140.55	(1)	15822.3	10796.7	(2)	11254.0	15423.2
10	140.55	(1)	13761.5	10182.1	(2)	9822.6	16271.0
11	140.55	(1)	13774.6	9826.9	(2)	10060.6	15716.5
12	140.55	(1)	11703.2	9597.4	(2)	8621.3	12497.2
13	140.55	(1)	11989.2	8358.5	(2)	9078.8	8992.8
14	140.55	(1)	11981.5	5732.8	(2)	9299.9	7728.7
15	44.44	(1)	590.3	681.1	(2)	478.7	667.9
16	133.33	(1)	641.0	1167.1	(2)	515.6	921.2
17	222.22	(1)	647.8	304.3	(2)	520.3	238.1
18	311.11	(1)	964.5	155.4	(2)	775.2	125.9
19	155.56	(1)	583.7	349.6	(2)	469.2	293.5
20	400.00	(2)	7.0	0.0	(1)	8.4	0.0
21	160.25	(1)	1191.4	859.7	(2)	961.5	644.3
22	222.22	(1)	1666.9	410.9	(2)	1342.4	326.1
23	298.14	(1)	2232.6	273.1	(2)	1797.5	226.7
24	173.56	(2)	252.1	683.8	(1)	313.7	839.7
25	160.25	(2)	794.5	1087.4	(1)	962.2	1552.2
26	222.22	(2)	1312.9	273.1	(1)	1630.9	384.7
27	298.14	(2)	1781.6	74.9	(1)	2214.2	91.7
28	240.37	(2)	2860.8	702.2	(1)	3555.8	872.4
29	240.37	(2)	3227.5	738.4	(1)	4012.1	890.7

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	3180.0	0.0	3180.0
Live load reaction	0.0	2803.3	0.0	2803.3
Wind load reaction (without 25 percent reduction)	95.5	− 8640.0	95.5	− 8640.0

TABLE 66 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	2400.00 cm	Spacing	600.00 cm	Slope	1 in 3
Wind force	200 kg/m²	Panels	9	Purlins at	140.55 cm

Member	Length cm		Compression kg	Moment kg.cm		Tension kg	Moment kg.cm
1	133.33	(2)	17361.5	5753.0	(1)	16752.1	5572.1
2	266.67	(2)	16365.9	3600.5	(1)	15957.1	3338.8
3	266.67	(2)	13962.9	1126.6	(1)	13966.6	1006.4
4	266.67	(2)	11556.3	779.9	(1)	11971.3	697.5
5	266.67	(2)	7966.1	1465.7	(1)	8994.1	1208.7
6	140.55	(1)	17677.8	6949.9	(2)	18474.0	13155.0
7	140.55	(1)	17678.0	8570.4	(2)	18766.1	11749.9
8	140.55	(1)	15822.3	8669.6	(2)	16803.8	17097.3
9	140.55	(1)	15822.3	10796.7	(2)	17107.7	19279.7
10	140.55	(1)	13761.5	10182.1	(2)	14925.3	20341.8
11	140.55	(1)	13774.6	9826.9	(2)	15244.3	19649.7
12	140.55	(1)	11703.2	9597.4	(2)	13050.1	15623.1
13	140.55	(1)	11989.2	8358.5	(2)	13698.0	11244.8
14	140.55	(1)	11981.5	5732.8	(2)	13991.8	9664.0
15	44.44	(1)	590.3	681.1	(2)	716.8	964.0
16	133.33	(1)	641.0	1167.1	(2)	772.7	1383.3
17	222.22	(1)	647.8	304.3	(2)	779.8	357.8
18	311.11	(1)	964.5	155.4	(2)	1161.8	188.6
19	155.56	(1)	583.7	349.6	(2)	703.1	437.8
20	400.00	(2)	10.4	0.0	(1)	8.4	0.0
21	160.25	(1)	1191.4	859.7	(2)	1440.3	973.3
22	222.22	(1)	1666.9	410.9	(2)	2011.4	489.4
23	298.14	(1)	2232.6	273.1	(2)	2693.3	338.6
24	173.56	(2)	377.8	1023.4	(1)	313.7	839.7
25	160.25	(2)	1187.2	1656.1	(1)	962.2	1552.2
26	222.22	(2)	1967.2	415.3	(1)	1630.9	384.7
27	298.14	(2)	2669.6	112.1	(1)	2214.2	91.7
28	240.37	(2)	4286.8	1052.2	(1)	3555.8	872.4
29	240.37	(2)	4836.4	1102.9	(1)	4012.1	890.7

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	3180.0	0.0	3180.0
Live load reaction	0.0	2803.3	0.0	2803.3
Wind load reaction (without 25 percent reduction)	127.3	− 11520.0	127.3	− 11520.0

TABLE 67 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	2400.00 cm	Spacing	600.00 cm	Slope	1 in 4
Wind force	100 kg/m²	Panels	9	Purlins at	137.44 cm

MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	133.33	(2)	7249.6	3461.7	(1)	23305.6	11040.7
2	266.67	(2)	6934.1	1694.5	(1)	22487.9	5297.3
3	266.67	(2)	5941.6	455.3	(1)	19707.2	1398.1
4	266.67	(2)	4939.7	352.2	(1)	16896.2	1069.3
5	266.67	(2)	3445.3	596.0	(1)	12701.5	1657.4
6	137.44	(1)	24040.8	10167.3	(2)	7540.2	3196.1
7	137.44	(1)	24167.5	7658.6	(2)	7699.0	2483.2
8	137.44	(1)	21753.3	1470.3	(2)	6946.4	497.0
9	137.44	(1)	21728.9	2346.2	(2)	7061.5	799.7
10	137.44	(1)	18862.6	939.6	(2)	6163.5	337.6
11	137.44	(1)	18852.3	1518.6	(2)	6283.3	540.5
12	137.44	(1)	15966.0	480.1	(2)	5378.7	128.0
13	137.44	(1)	16315.3	2982.7	(2)	5626.6	1060.4
14	137.44	(1)	16278.0	5252.6	(2)	5736.7	1920.7
15	33.33	(1)	611.7	2614.7	(2)	219.8	752.6
16	100.00	(1)	675.0	905.6	(2)	240.1	310.8
17	166.67	(1)	686.1	579.0	(2)	243.7	202.9
18	233.33	(1)	1026.8	303.9	(2)	365.1	111.2
19	116.67	(1)	604.3	1186.9	(2)	214.9	433.8
20	300.00	(2)	3.9	0.0	(1)	10.6	0.0
21	149.07	(1)	1545.5	1031.3	(2)	553.0	341.5
22	188.56	(1)	1989.9	409.5	(2)	709.8	144.4
23	240.37	(1)	2529.1	473.8	(2)	901.6	175.1
24	157.23	(2)	139.7	106.9	(1)	392.9	286.8
25	149.07	(2)	404.9	1014.6	(1)	1095.1	3128.8
26	188.56	(2)	693.7	145.1	(1)	1946.8	479.6
27	240.37	(2)	895.8	122.4	(1)	2515.1	383.4
28	200.69	(2)	1490.5	355.5	(1)	4185.4	998.4
29	200.69	(2)	1671.3	576.5	(1)	4694.2	1604.3

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	3109.6	0.0	3109.6
Live load reaction	0.0	3227.9	0.0	3227.9
Wind load reaction (without 25 percent reduction)	71.0	− 5760.0	71.0	− 5760.0

TABLE 68 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	2400.00 cm	Spacing	600.00 cm	Slope	1 in 4
Wind force	150 kg/m²	Panels	9	Purlins at	137.44 cm

Member	Length cm		Compression kg	Moment kg.cm		Tension kg	Moment kg.cm
1	133.33	(2)	15162.7	7224.0	(1)	23305.6	11040.7
2	266.67	(2)	14539.0	3516.5	(1)	22487.9	5297.3
3	266.67	(2)	12538.5	940.2	(1)	19707.2	1398.1
4	266.67	(2)	10518.5	725.0	(1)	16896.2	1069.3
5	266.67	(2)	7505.0	1198.9	(1)	12701.5	1657.4
6	137.44	(1)	24040.8	10167.3	(2)	15733.9	6665.0
7	137.44	(1)	24167.5	7658.6	(2)	15995.4	5134.0
8	137.44	(1)	21753.3	1470.3	(2)	14422.2	1016.1
9	137.44	(1)	21728.9	2346.2	(2)	14590.4	1631.3
10	137.44	(1)	18862.6	939.6	(2)	12716.0	679.3
11	137.44	(1)	18852.3	1518.6	(2)	12893.9	1090.1
12	137.44	(1)	15966.0	480.1	(2)	11005.9	280.3
13	137.44	(1)	16315.3	2982.7	(2)	11441.9	2139.4
14	137.44	(1)	16278.0	5252.6	(2)	11600.2	3847.6
15	33.33	(1)	611.7	2614.7	(2)	442.2	1609.9
16	100.00	(1)	675.0	905.6	(2)	484.4	632.8
17	166.67	(1)	686.1	579.0	(2)	491.8	410.9
18	233.33	(1)	1026.8	303.9	(2)	736.6	222.7
19	116.67	(1)	604.3	1186.9	(2)	433.5	869.0
20	300.00	(2)	7.8	0.0	(1)	10.6	0.0
21	149.07	(1)	1545.5	1031.3	(2)	1113.9	702.0
22	188.56	(1)	1989.9	409.5	(2)	1430.8	292.0
23	240.37	(1)	2529.1	473.8	(2)	1817.8	349.9
24	157.23	(2)	281.8	213.2	(1)	392.9	286.8
25	149.07	(2)	808.8	2097.6	(1)	1095.1	3128.8
26	188.56	(2)	1398.8	305.9	(1)	1946.8	479.6
27	240.37	(2)	1806.4	254.1	(1)	2515.1	383.4
28	200.69	(2)	3005.8	717.0	(1)	4185.4	998.4
29	200.69	(2)	3370.7	1159.9	(1)	4694.2	1604.3

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	3109.6	0.0	3109.6
Live load reaction	0.0	3227.9	0.0	3227.9
Wind load reaction (without 25 percent reduction)	106.5	− 8640.0	106.5	− 8640.0

TABLE 69 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	2400.00 cm	Spacing	600.00 cm	Slope	1 in 4
Wind force	200 kg/m²	Panels	9	Purlins at	137.44 cm

Member	Length cm		Compression kg	Moment kg.cm		Tension kg	Moment kg.cm
1	133.33	(2)	23075.7	10986.3	(1)	23305.6	11040.7
2	266.67	(2)	22143.8	5338.4	(1)	22487.9	5297.3
3	266.67	(2)	19135.4	1425.1	(1)	19707.2	1398.1
4	266.67	(2)	16097.3	1097.8	(1)	16896.2	1069.3
5	266.67	(2)	11564.7	1801.8	(1)	12701.5	1657.4
6	137.44	(1)	24040.8	10167.3	(2)	23927.5	10133.8
7	137.44	(1)	24167.5	7658.6	(2)	24291.7	7784.8
8	137.44	(1)	21753.3	1470.3	(2)	21898.0	1535.1
9	137.44	(1)	21728.9	2346.2	(2)	22119.3	2462.9
10	137.44	(1)	18862.6	939.6	(2)	19268.4	1021.0
11	137.44	(1)	18852.3	1518.6	(2)	19504.4	1639.8
12	137.44	(1)	15966.0	480.1	(2)	16633.0	432.6
13	137.44	(1)	16315.3	2982.7	(2)	17257.2	3218.5
14	137.44	(1)	16278.0	5252.6	(2)	17463.7	5774.5
15	33.33	(1)	611.7	2614.7	(2)	664.7	2467.3
16	100.00	(1)	675.0	905.6	(2)	728.7	954.8
17	166.67	(1)	686.1	579.0	(2)	739.9	618.8
18	233.33	(1)	1026.8	303.9	(2)	1108.1	334.2
19	116.67	(1)	604.3	1186.9	(2)	652.1	1304.3
20	300.00	(2)	11.7	0.0	(1)	10.6	0.0
21	149.07	(1)	1545.5	1031.3	(2)	1674.8	1062.5
22	188.56	(1)	1989.9	409.5	(2)	2151.8	439.5
23	240.37	(1)	2529.1	473.8	(2)	2733.9	524.6
24	157.23	(2)	424.0	319.4	(1)	392.9	286.8
25	149.07	(2)	1212.8	3180.6	(1)	1095.1	3128.8
26	188.56	(2)	2103.8	466.6	(1)	1946.8	479.6
27	240.37	(2)	2717.1	385.8	(1)	2515.1	383.4
28	200.69	(2)	4521.2	1078.5	(1)	4185.4	998.4
29	200.69	(2)	5070.1	1743.3	(1)	4694.2	1604.3

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	3109.6	0.0	3109.6
Live load reaction	0.0	3227.9	0.0	3227.9
Wind load reaction (without 25 percent reduction)	142.0	− 11520.0	142.0	− 11520.0

TABLE 70 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	2400.00 cm	Spacing	600.00 cm	Slope	1 in 5
Wind force	100 kg/m²	Panels	9	Purlins at	135.97 cm

Member	Length cm		Compression kg	Moment kg.cm		Tension kg	Moment kg.cm
1	133.33	(2)	9068.1	5353.5	(1)	29748.1	17480.6
2	266.67	(2)	8818.5	2478.4	(1)	29087.4	7989.3
3	266.67	(2)	7628.2	656.9	(1)	25517.9	2102.5
4	266.67	(2)	6417.9	455.7	(1)	21882.4	1453.1
5	266.67	(2)	4613.9	728.0	(1)	16461.1	2168.9
6	135.97	(1)	30360.6	16268.0	(2)	9303.8	4987.4
7	135.97	(1)	30691.0	11311.7	(2)	9497.5	3540.2
8	135.97	(1)	27865.6	1999.0	(2)	8636.8	640.8
9	135.97	(1)	27826.0	3273.2	(2)	8721.7	1056.8
10	135.97	(1)	24169.1	1142.1	(2)	7602.0	383.3
11	135.97	(1)	24155.9	1898.0	(2)	7695.4	632.1
12	135.97	(1)	20460.9	911.0	(2)	6563.7	259.5
13	135.97	(1)	20879.8	3927.5	(2)	6800.6	1303.7
14	135.97	(1)	20831.6	6531.2	(2)	6882.1	2224.3
15	26.67	(1)	603.6	4956.3	(2)	202.2	1447.2
16	80.00	(1)	696.1	1419.7	(2)	231.2	460.7
17	133.33	(1)	713.1	756.0	(2)	236.5	248.8
18	186.67	(1)	1059.4	354.5	(2)	351.8	121.5
19	93.33	(1)	600.2	1629.1	(2)	199.3	555.2
20	240.00	(2)	4.5	0.0	(1)	13.1	0.0
21	143.60	(1)	1896.2	1449.1	(2)	634.1	459.9
22	170.75	(1)	2326.9	548.1	(2)	775.3	181.8
23	208.27	(1)	2833.1	588.7	(2)	943.4	203.3
24	149.07	(2)	150.6	176.4	(1)	453.4	544.7
25	143.60	(2)	386.3	1500.3	(1)	1112.8	4789.5
26	170.75	(2)	755.0	215.0	(1)	2268.8	727.1
27	208.27	(2)	938.3	155.3	(1)	2821.0	514.4
28	179.38	(2)	1608.0	452.6	(1)	4834.5	1362.1
29	179.38	(2)	1789.9	821.1	(1)	5382.7	2449.7

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	3076.5	0.0	3076.5
Live load reaction	0.0	3491.1	0.0	3491.1
Wind load reaction (without 25 percent reduction)	115.6	− 5760.0	115.6	− 5760.0

TABLE 71 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	2400.00 cm	Spacing	600.00 cm	Slope	1 in 5
Wind force	150 kg/m²	Panels	9	Purlins at	135.97 cm

Member	Length cm		Compression kg	Moment kg.cm		Tension kg	Moment kg.cm
1	133.33	(2)	18827.9	11101.0	(1)	29748.1	17480.6
2	266.67	(2)	18337.5	5121.1	(1)	29087.4	7989.3
3	266.67	(2)	15925.0	1354.7	(1)	25517.9	2102.5
4	266.67	(2)	13470.9	938.8	(1)	21882.4	1453.1
5	266.67	(2)	9812.5	1473.0	(1)	16461.1	2168.9
6	135.97	(1)	30360.6	16268.0	(2)	19289.1	10338.8
7	135.97	(1)	30691.0	11311.7	(2)	19637.7	7297.4
8	135.97	(1)	27865.6	1999.0	(2)	17850.3	1312.4
9	135.97	(1)	27826.0	3273.2	(2)	17970.7	2160.2
10	135.97	(1)	24169.1	1142.1	(2)	15648.7	775.6
11	135.97	(1)	24155.9	1898.0	(2)	15786.5	1281.6
12	135.97	(1)	20460.9	911.0	(2)	13439.9	549.4
13	135.97	(1)	20879.8	3927.5	(2)	13868.8	2645.5
14	135.97	(1)	20831.6	6531.2	(2)	13982.6	4483.8
15	26.67	(1)	603.6	4956.3	(2)	409.4	3041.4
16	80.00	(1)	696.1	1419.7	(2)	469.1	940.5
17	133.33	(1)	713.1	756.0	(2)	480.0	506.1
18	186.67	(1)	1059.4	354.5	(2)	713.8	244.5
19	93.33	(1)	600.2	1629.1	(2)	404.3	1119.0
20	240.00	(2)	9.0	0.0	(1)	13.1	0.0
21	143.60	(1)	1896.2	1449.1	(2)	1284.2	944.4
22	170.75	(1)	2326.9	548.1	(2)	1571.8	368.9
23	208.27	(1)	2833.1	588.7	(2)	1912.8	408.4
24	149.07	(2)	305.5	360.2	(1)	453.4	544.7
25	143.60	(2)	775.0	3091.9	(1)	1112.8	4789.5
26	170.75	(2)	1531.0	450.3	(1)	2268.8	727.1
27	208.27	(2)	1903.1	323.3	(1)	2821.0	514.4
28	179.38	(2)	3261.3	918.1	(1)	4834.5	1362.1
29	179.38	(2)	3630.4	1662.0	(1)	5382.7	2449.7

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	3076.5	0.0	3076.5
Live load reaction	0.0	3491.1	0.0	3491.1
Wind load reaction (without 25 percent reduction)	173.4	− 8640.0	173.4	− 8640.0

TABLE 72 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	2400.00 cm	Spacing	600.00 cm	Slope	1 in 5
Wind force	200 kg/m²	Panels	9	Purlins at	135.97 cm

Member	Length cm		Compression kg	Moment kg.cm		Tension kg	Moment kg.cm
1	133.33	(2)	28587.7	16848.5	(1)	29748.1	17480.6
2	266.67	(2)	27856.4	7763.7	(1)	29087.4	7989.3
3	266.67	(2)	24221.7	2052.4	(1)	25517.9	2102.5
4	266.67	(2)	20523.8	1421.9	(1)	21882.4	1453.1
5	266.67	(2)	15011.1	2218.0	(1)	16461.1	2168.9
6	135.97	(1)	30360.6	16268.0	(2)	29274.3	15690.2
7	135.97	(1)	30691.0	11311.7	(2)	29777.8	11054.6
8	135.97	(1)	27865.6	1999.0	(2)	27063.8	1983.9
9	135.97	(1)	27826.0	3273.2	(2)	27219.6	3263.6
10	135.97	(1)	24169.1	1142.1	(2)	23695.4	1167.9
11	135.97	(1)	24155.9	1898.0	(2)	23877.6	1931.1
12	135.97	(1)	20460.9	911.0	(2)	20316.0	839.2
13	135.97	(1)	20879.8	3927.5	(2)	20937.0	3987.3
14	135.97	(1)	20831.6	6531.2	(2)	21083.1	6743.3
15	26.67	(1)	603.6	4956.3	(2)	616.6	4635.6
16	80.00	(1)	696.1	1419.7	(2)	706.9	1420.3
17	133.33	(1)	713.1	756.0	(2)	723.6	763.3
18	186.67	(1)	1059.4	354.5	(2)	1075.8	367.5
19	93.33	(1)	600.2	1629.1	(2)	609.4	1682.8
20	240.00	(2)	13.6	0.0	(1)	13.1	0.0
21	143.60	(1)	1896.2	1449.1	(2)	1934.3	1429.0
22	170.75	(1)	2326.9	548.1	(2)	2368.2	556.1
23	208.27	(1)	2833.1	588.7	(2)	2882.2	613.5
24	149.07	(2)	460.4	544.1	(1)	453.4	544.7
25	143.60	(2)	1163.6	4683.4	(1)	1112.8	4789.5
26	170.75	(2)	2307.0	685.5	(1)	2268.8	727.1
27	208.27	(2)	2867.8	491.3	(1)	2821.0	514.4
28	179.38	(2)	4914.5	1383.7	(1)	4834.5	1362.1
29	179.38	(2)	5470.9	2502.9	(1)	5382.7	2449.7

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	3076.5	0.0	3076.5
Live load reaction	0.0	3491.1	0.0	3491.1
Wind load reaction (without 25 percent reduction)	231.3	− 11520.0	231.3	− 11520.0

TABLE 73 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	3000.00 cm	Spacing	450.00 cm	Slope	1 in 3
Wind force	100 kg/m²	Panels	11	Purlins at	143.74 cm

Member	Length cm		Compression kg	Moment kg.cm		Tension kg	Moment kg.cm
1	136.36	(2)	5076.1	2100.6	(1)	15808.5	6550.0
2	272.73	(2)	4838.3	1057.5	(1)	15270.8	3114.8
3	272.73	(2)	4221.6	433.3	(1)	13752.4	1209.6
4	272.73	(2)	3602.8	300.0	(1)	12225.7	819.7
5	272.73	(2)	2983.7	269.5	(1)	10697.7	718.2
6	272.73	(2)	2059.7	459.6	(1)	8416.5	1119.3
7	143.74	(1)	16679.9	3317.6	(2)	5415.6	4401.3
8	143.74	(1)	16673.2	6364.8	(2)	5525.6	3865.2
9	143.74	(1)	15330.0	6424.4	(2)	5084.3	7255.7
10	143.74	(1)	15318.5	8410.8	(2)	5198.5	8361.5
11	143.74	(1)	13748.9	8031.5	(2)	4680.5	9623.1
12	143.74	(1)	13753.1	8588.5	(2)	4800.6	9781.5
13	143.74	(1)	12167.1	8172.1	(2)	4276.7	9363.1
14	143.74	(1)	12174.0	7332.5	(2)	4397.9	8800.2
15	143.74	(1)	10585.3	6955.4	(2)	3873.0	6554.2
16	143.74	(1)	10752.9	6102.2	(2)	4059.3	4269.0
17	143.74	(1)	10742.4	4525.6	(2)	4173.4	4504.6
18	45.45	(1)	433.0	564.7	(2)	178.1	318.6
19	136.36	(1)	488.2	1791.4	(2)	197.7	704.3
20	227.27	(1)	496.5	798.5	(2)	200.6	312.6
21	318.18	(1)	493.9	320.0	(2)	199.5	127.2
22	409.09	(1)	729.5	131.1	(2)	294.9	54.4
23	204.55	(1)	441.8	420.9	(2)	178.6	180.1
24	500.00	(2)	3.2	0.0	(1)	7.5	0.0
25	163.89	(1)	902.2	1198.5	(2)	367.4	430.0
26	227.27	(1)	1269.5	648.0	(2)	515.0	253.2
27	304.92	(1)	1711.6	458.4	(2)	693.9	184.5
28	388.36	(1)	2176.9	261.7	(2)	882.3	111.9
29	209.54	(2)	84.7	408.6	(1)	209.8	992.4
30	163.89	(2)	281.4	963.9	(1)	657.5	2870.6
31	227.27	(2)	500.6	284.6	(1)	1234.1	810.8
32	304.92	(2)	684.1	88.8	(1)	1688.8	227.0
33	388.36	(2)	875.3	14.7	(1)	2161.1	51.9
34	284.77	(2)	1276.4	493.4	(1)	3152.1	1215.5
35	284.77	(2)	1404.8	494.8	(1)	3469.7	1164.1

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	2974.1	0.0	2974.1
Live load reaction	0.0	2628.1	0.0	2628.1
Wind load reaction (without 25 percent reduction)	59.7	− 5400.0	59.7	− 5400.0

TABLE 74 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	3000.00 cm		Spacing	450.00 cm		Slope	1 in 3
Wind force	150 kg/m²		Panels	11		Purlins at	143.74 cm
MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	136.36	(2)	10761.3	4454.8	(1)	15808.5	6550.0
2	272.73	(2)	10297.6	2206.4	(1)	15270.8	3114.8
3	272.73	(2)	9070.3	890.7	(1)	13752.4	1209.6
4	272.73	(2)	7838.2	613.2	(1)	12225.7	819.7
5	272.73	(2)	6605.3	547.3	(1)	10697.7	718.2
6	272.73	(2)	4765.1	912.3	(1)	8416.5	1119.3
7	143.74	(1)	16679.9	3317.6	(2)	11444.0	5941.4
8	143.74	(1)	16673.2	6364.8	(2)	11607.8	5174.0
9	143.74	(1)	15330.0	6424.4	(2)	10678.4	9674.2
10	143.74	(1)	15318.5	8410.8	(2)	10847.4	11149.6
11	143.74	(1)	13748.9	8031.5	(2)	9757.9	12835.8
12	143.74	(1)	13753.1	8585.5	(2)	9938.9	13047.5
13	143.74	(1)	12167.1	8172.1	(2)	8837.3	12489.3
14	143.74	(1)	12174.0	7332.5	(2)	9020.5	11740.5
15	143.74	(1)	10585.3	6955.4	(2)	7916.9	8741.3
16	143.74	(1)	10752.9	6102.2	(2)	8229.7	5696.4
17	143.74	(1)	10742.4	4525.6	(2)	8398.7	6011.4
18	45.45	(1)	433.0	564.7	(2)	353.3	551.5
19	136.36	(1)	488.2	1791.4	(2)	393.7	1413.0
20	227.27	(1)	496.5	798.5	(2)	399.8	627.9
21	318.18	(1)	493.9	320.0	(2)	397.5	254.5
22	409.09	(1)	729.5	131.1	(2)	587.5	107.7
23	204.55	(1)	441.8	420.9	(2)	355.8	353.9
24	500.00	(2)	6.2	0.0	(1)	7.5	0.0
25	163.89	(1)	902.2	1198.5	(2)	730.8	883.6
26	227.27	(1)	1269.5	648.0	(2)	1025.3	508.8
27	304.92	(1)	1711.6	458.4	(2)	1381.6	368.0
28	388.36	(1)	2176.9	261.7	(2)	1756.8	220.0
29	209.54	(2)	168.8	810.5	(1)	209.8	992.4
30	163.89	(2)	553.0	2017.3	(1)	657.5	2870.6
31	227.27	(2)	996.5	588.3	(1)	1234.1	810.8
32	304.92	(2)	1362.3	178.4	(1)	1688.8	227.0
33	388.36	(2)	1743.1	28.0	(1)	2161.1	51.9
34	284.77	(2)	2542.2	982.0	(1)	3152.1	1215.5
35	284.77	(2)	2798.0	978.9	(1)	3469.7	1164.1

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	2974.1	0.0	2974.1
Live load reaction	0.0	2628.1	0.0	2628.1
Wind load reaction (without 25 percent reduction)	89.5	− 8100.0	89.5	− 8100.0

TABLE 75 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	3000.00 cm		Spacing	450.00 cm		Slope	1 in 3
Wind force	200 kg/m²		Panels	11		Purlins at	143.74 cm
MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	136.36	(2)	16446.5	6809.1	(1)	15808.5	6550.0
2	272.73	(2)	15756.9	3355.3	(1)	15270.8	3114.8
3	272.73	(2)	13919.0	1348.1	(1)	13752.4	1209.6
4	272.73	(2)	12073.5	926.4	(1)	12225.7	819.7
5	272.73	(2)	10226.9	825.0	(1)	10697.7	718.2
6	272.73	(2)	7470.5	1364.9	(1)	8416.5	1119.3
7	143.74	(1)	16679.9	3317.6	(2)	17472.4	7481.6
8	143.74	(1)	16673.2	6364.8	(2)	17690.0	7743.4
9	143.74	(1)	15330.0	6424.4	(2)	16272.5	12092.7
10	143.74	(1)	15318.5	8410.8	(2)	16496.2	13937.7
11	143.74	(1)	13748.9	8031.5	(2)	14835.3	16048.4
12	143.74	(1)	13753.1	8588.5	(2)	15077.2	16313.5
13	143.74	(1)	12167.1	8172.1	(2)	13397.9	15615.5
14	143.74	(1)	12174.0	7332.5	(2)	13643.1	14680.9
15	143.74	(1)	10585.3	6955.4	(2)	11963.8	10928.3
16	143.74	(1)	10752.9	6102.2	(2)	12400.0	7369.4
17	143.74	(1)	10742.4	4525.6	(2)	12624.0	7518.2
18	45.45	(1)	433.0	564.7	(2)	528.5	784.3
19	136.36	(1)	488.2	1791.4	(2)	589.8	2121.8
20	227.27	(1)	496.5	798.5	(2)	598.9	943.2
21	318.18	(1)	493.9	320.0	(2)	595.6	381.9
22	409.09	(1)	729.5	131.1	(2)	880.2	161.0
23	204.55	(1)	441.8	420.9	(2)	533.1	527.7
24	500.00	(2)	9.3	0.0	(1)	7.5	0.0
25	163.89	(1)	902.2	1198.5	(2)	1094.1	1337.2
26	227.27	(1)	1269.5	648.0	(2)	1535.5	764.4
27	304.92	(1)	1711.6	458.4	(2)	2069.3	551.5
28	388.36	(1)	2176.9	261.7	(2)	2631.3	328.1
29	209.54	(2)	252.9	1212.4	(1)	209.8	992.4
30	163.89	(2)	824.6	3070.7	(1)	657.5	2870.6
31	227.27	(2)	1492.5	892.0	(1)	1234.1	810.8
32	304.92	(2)	2040.6	268.0	(1)	1688.8	227.0
33	388.36	(2)	2611.0	41.3	(1)	2161.1	51.9
34	284.77	(2)	3807.9	1470.7	(1)	3152.1	1215.5
35	284.77	(2)	4191.1	1453.0	(1)	3469.7	1164.1

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	2974.1	0.0	2974.1
Live load reaction	0.0	2628.1	0.0	2628.1
Wind load reaction (without 25 percent reduction)	119.3	− 10800.0	119.3	− 10800.0

TABLE 76 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	3000.00 cm		Spacing	450.00 cm		Slope	1 in 4
Wind force	100 kg/m²		Panels	11		Purlins at	140.56 cm
MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	136.36	(2)	7502.5	4122.0	(1)	23962.7	13138.5
2	272.73	(2)	7312.8	1777.7	(1)	23510.5	5538.6
3	272.73	(2)	6553.2	636.6	(1)	21393.0	1944.8
4	272.73	(2)	5783.6	404.9	(1)	19242.2	1226.0
5	272.73	(2)	5012.3	316.5	(1)	17085.6	948.9
6	272.73	(2)	3862.1	513.6	(1)	13868.5	1422.9
7	140.56	(1)	24722.9	7298.8	(2)	7784.1	2111.1
8	140.56	(1)	24811.3	6262.1	(2)	7892.2	3538.0
9	140.56	(1)	23180.8	6927.5	(2)	7376.2	7522.8
10	140.56	(1)	23150.3	8566.8	(2)	7452.5	8637.2
11	140.56	(1)	20989.6	8821.0	(2)	6765.9	9609.1
12	140.56	(1)	20988.2	8997.2	(2)	6852.3	9804.0
13	140.56	(1)	18791.1	8507.4	(2)	6153.6	9269.8
14	140.56	(1)	18796.4	7952.8	(2)	6242.3	8678.4
15	140.56	(1)	16592.5	7110.1	(2)	5541.3	6517.8
16	140.56	(1)	16802.1	6596.9	(2)	5703.0	4087.3
17	140.56	(1)	16787.8	5207.9	(2)	5784.7	4955.6
18	34.09	(1)	424.4	1895.7	(2)	154.0	509.5
19	102.27	(1)	513.4	2434.7	(2)	183.3	852.3
20	170.45	(1)	528.0	1065.4	(2)	188.2	371.8
21	238.64	(1)	527.1	379.3	(2)	187.8	133.5
22	306.82	(1)	768.3	295.4	(2)	274.1	105.8
23	153.41	(1)	455.1	580.4	(2)	162.5	218.6
24	375.00	(2)	3.2	0.0	(1)	8.5	0.0
25	152.46	(1)	1161.9	1989.2	(2)	418.2	658.2
26	192.85	(1)	1516.0	970.4	(2)	543.0	337.6
27	245.83	(1)	1946.2	626.3	(2)	696.5	223.3
28	304.92	(1)	2411.5	302.0	(2)	862.7	115.0
29	181.20	(2)	86.7	368.3	(1)	243.0	1011.0
30	152.46	(2)	246.3	1834.8	(1)	638.4	5704.2
31	192.85	(2)	523.7	415.0	(1)	1463.0	1302.6
32	245.83	(2)	686.3	197.2	(1)	1919.7	565.8
33	304.92	(2)	857.1	80.9	(1)	2398.0	219.6
34	231.84	(2)	1293.8	593.9	(1)	3619.9	1667.4
35	231.84	(2)	1417.9	727.2	(1)	3967.7	2026.6

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	2908.3	0.0	2908.3
Live load reaction	0.0	3026.2	0.0	3026.2
Wind load reaction (without 25 percent reduction)	66.6	− 5400.0	66.6	− 5400.0

TABLE 77 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	3000.00 cm		Spacing	450.00 cm		Slope	1 in 4
Wind force	150 kg/m²		Panels	11		Purlins at	140.56 cm
MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	136.36	(2)	15657.5	8597.6	(1)	23962.7	13138.5
2	272.73	(2)	15290.0	3684.5	(1)	23510.5	5538.6
3	272.73	(2)	13761.4	1312.3	(1)	21393.0	1944.8
4	272.73	(2)	12211.7	832.7	(1)	19242.2	1226.0
5	272.73	(2)	10658.5	649.2	(1)	17085.6	948.9
6	272.73	(2)	8341.8	1031.9	(1)	13868.5	1422.9
7	140.56	(1)	24722.9	7298.8	(2)	16219.7	4508.1
8	140.56	(1)	24811.3	6262.1	(2)	16398.0	4712.9
9	140.56	(1)	23180.8	6927.5	(2)	15324.4	10011.1
10	140.56	(1)	23150.3	8566.8	(2)	15433.3	11494.8
11	140.56	(1)	20989.6	8821.0	(2)	14006.3	12792.6
12	140.56	(1)	20988.2	8997.2	(2)	14135.6	13052.5
13	140.56	(1)	18791.1	8507.4	(2)	12683.7	12341.3
14	140.56	(1)	18796.4	7952.8	(2)	12817.8	11556.1
15	140.56	(1)	16592.5	7110.1	(2)	11361.3	8675.9
16	140.56	(1)	16802.1	6596.9	(2)	11642.4	5443.7
17	140.56	(1)	16787.8	5207.9	(2)	11762.2	6600.0
18	34.09	(1)	424.4	1895.7	(2)	309.0	1112.6
19	102.27	(1)	513.4	2434.7	(2)	369.4	1725.9
20	170.45	(1)	528.0	1065.4	(2)	379.3	753.4
21	238.64	(1)	527.1	379.3	(2)	378.6	269.9
22	306.82	(1)	768.3	295.4	(2)	552.3	213.1
23	153.41	(1)	455.1	580.4	(2)	327.3	434.5
24	375.00	(2)	6.3	0.0	(1)	8.5	0.0
25	152.46	(1)	1161.9	1989.2	(2)	840.9	1352.9
26	192.85	(1)	1516.0	970.4	(2)	1093.2	684.7
27	245.83	(1)	1946.2	626.3	(2)	1402.4	450.0
28	304.92	(1)	2411.5	302.0	(2)	1737.3	228.0
29	181.20	(2)	174.7	738.3	(1)	243.0	1011.0
30	152.46	(2)	486.8	3800.6	(1)	638.4	5704.2
31	192.85	(2)	1054.3	862.0	(1)	1463.0	1302.6
32	245.83	(2)	1382.2	399.8	(1)	1919.7	565.8
33	304.92	(2)	1726.4	161.8	(1)	2398.0	219.6
34	231.84	(2)	2605.9	1197.3	(1)	3619.9	1667.4
35	231.84	(2)	2856.1	1463.3	(1)	3967.7	2026.6

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	2908.3	0.0	2908.3
Live load reaction	0.0	3026.2	0.0	3026.2
Wind load reaction (without 25 percent reduction)	99.8	− 8100.0	99.8	− 8100.0

TABLE 78 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	3000.00 cm		Spacing	450.00 cm		Slope	1 in 4
Wind force	200 kg/m²		Panels	11		Purlins at	140.56 cm
MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	136.36	(2)	23812.6	13073.2	(1)	23962.7	13138.5
2	272.73	(2)	23267.1	5591.2	(1)	23510.5	5538.6
3	272.73	(2)	20969.6	1988.1	(1)	21393.0	1944.8
4	272.73	(2)	18639.8	1260.5	(1)	19242.2	1226.0
5	272.73	(2)	16304.6	981.8	(1)	17085.6	948.9
6	272.73	(2)	12821.6	1550.2	(1)	13868.5	1422.9
7	140.56	(1)	24722.9	7298.8	(2)	24655.3	6905.0
8	140.56	(1)	24811.3	6262.1	(2)	24903.8	6876.8
9	140.56	(1)	23180.8	6927.5	(2)	23272.6	12499.4
10	140.56	(1)	23150.3	8566.8	(2)	23414.1	14352.4
11	140.56	(1)	20989.6	8821.0	(2)	21246.7	15976.1
12	140.56	(1)	20988.2	8997.2	(2)	21418.9	16301.0
13	140.56	(1)	18791.1	8507.4	(2)	19213.9	15412.7
14	140.56	(1)	18796.4	7952.8	(2)	19393.3	14433.7
15	140.56	(1)	16592.5	7110.1	(2)	17181.3	10834.1
16	140.56	(1)	16802.1	6596.9	(2)	17581.8	7135.0
17	140.56	(1)	16787.8	5207.9	(2)	17739.8	8244.3
18	34.09	(1)	424.4	1895.7	(2)	464.0	1715.7
19	102.27	(1)	513.4	2434.7	(2)	555.4	2599.6
20	170.45	(1)	528.0	1065.4	(2)	570.5	1135.1
21	238.64	(1)	527.1	379.3	(2)	569.3	406.4
22	306.82	(1)	768.3	295.4	(2)	830.6	320.3
23	153.41	(1)	455.1	580.4	(2)	492.2	650.5
24	375.00	(2)	9.5	0.0	(1)	8.5	0.0
25	152.46	(1)	1161.9	1989.2	(2)	1263.5	2047.6
26	192.85	(1)	1516.0	970.4	(2)	1643.3	1031.8
27	245.83	(1)	1946.2	626.3	(2)	2108.3	676.8
28	304.92	(1)	2411.5	302.0	(2)	2611.8	341.0
29	181.20	(2)	262.8	1108.8	(1)	243.0	1011.0
30	152.46	(2)	727.3	5766.3	(1)	638.4	5704.2
31	192.85	(2)	1585.0	1308.9	(1)	1463.0	1302.6
32	245.83	(2)	2078.1	602.3	(1)	1919.7	565.8
33	304.92	(2)	2595.7	242.6	(1)	2398.0	219.6
34	1.84	(2)	3918.1	1800.7	(1)	3619.9	1667.4
35	231.84	(2)	4294.3	2199.4	(1)	3967.7	2026.6

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	2908.3	0.0	2908.3
Live load reaction	0.0	3026.2	0.0	3026.2
Wind load reaction (without 25 percent reduction)	133.1	− 10800.0	133.1	− 10800.0

TABLE 79 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	3000.00 cm		Spacing	450.00 cm		Slope	1 in 5
Wind force	100 kg/m²		Panels	11		Purlins at	139.06 cm
MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	136.36	(2)	8580.5	5968.4	(1)	28011.2	19413.4
2	272.73	(2)	8488.1	2334.3	(1)	27828.6	7515.3
3	272.73	(2)	7583.7	748.1	(1)	25129.8	2395.0
4	272.73	(2)	6656.0	501.4	(1)	22353.9	1587.8
5	272.73	(2)	5723.9	417.8	(1)	19563.6	1309.0
6	272.73	(2)	4335.0	607.5	(1)	15404.8	1794.3
7	139.06	(1)	28589.7	17194.6	(2)	8795.2	5283.4
8	139.06	(1)	28904.1	11048.3	(2)	8961.6	3460.5
9	139.06	(1)	27027.5	1944.8	(2)	8389.1	586.3
10	139.06	(1)	26986.0	3354.2	(2)	8450.6	1078.2
11	139.06	(1)	24212.8	1260.7	(2)	7598.4	362.0
12	139.06	(1)	24197.1	2043.2	(2)	7668.2	673.9
13	139.06	(1)	21373.1	784.5	(2)	6800.0	249.0
14	139.06	(1)	21362.7	1594.9	(2)	6871.6	537.0
15	139.06	(1)	18529.1	841.0	(2)	6000.4	244.8
16	139.06	(1)	18767.5	2750.4	(2)	6154.7	916.6
17	139.06	(1)	18732.3	4935.1	(2)	6217.7	1695.8
18	27.27	(1)	432.5	6146.4	(2)	146.1	1822.9
19	81.82	(1)	531.6	1513.2	(2)	177.2	492.0
20	136.36	(1)	543.7	1025.7	(2)	181.0	336.4
21	190.91	(1)	545.2	871.4	(2)	181.4	288.0
22	245.45	(1)	802.5	208.4	(2)	267.3	72.4
23	122.73	(1)	463.7	1621.3	(2)	154.4	556.6
24	300.00	(2)	3.6	0.0	(1)	10.2	0.0
25	146.87	(1)	1424.3	2455.0	(2)	479.1	778.1
26	174.63	(1)	1773.8	1033.5	(2)	593.6	339.5
27	213.01	(1)	2176.6	701.4	(2)	727.6	236.5
28	257.29	(1)	2622.2	567.5	(2)	876.2	199.0
29	166.45	(2)	93.8	272.8	(1)	281.9	830.3
30	146.87	(2)	214.0	2698.2	(1)	586.8	8609.1
31	174.63	(2)	572.5	570.6	(1)	1713.2	1775.2
32	213.01	(2)	717.6	253.7	(1)	2149.6	788.8
33	257.29	(2)	872.4	221.0	(1)	2613.3	726.5
34	202.72	(2)	1366.6	626.5	(1)	4094.0	1875.2
35	202.72	(2)	1487.6	1061.0	(1)	4457.8	3145.6

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	2877.4	0.0	2877.4
Live load reaction	0.0	3272.9	0.0	3272.9
Wind load reaction (without 25 percent reduction)	108.4	− 5400.0	108.4	− 5400.0

TABLE 80 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	3000.00 cm		Spacing	450.00 cm		Slope	1 in 5
Wind force	150 kg/m²		Panels	11		Purlins at	139.06 cm
MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	136.36	(2)	17785.0	12358.5	(1)	28011.2	19413.4
2	272.73	(2)	17614.5	4820.0	(1)	27828.6	7515.3
3	272.73	(2)	15784.4	1542.3	(1)	25129.8	2395.0
4	272.73	(2)	13905.8	1030.7	(1)	22353.9	1587.8
5	272.73	(2)	12018.1	856.3	(1)	19563.6	1309.0
6	272.73	(2)	9205.2	1226.1	(1)	15404.8	1794.3
7	139.06	(1)	28589.7	17194.6	(2)	18208.7	10941.8
8	139.06	(1)	28904.1	11048.3	(2)	18513.3	7129.1
9	139.06	(1)	27027.5	1944.8	(2)	17325.4	1202.4
10	139.06	(1)	26986.0	3354.2	(2)	17410.4	2205.8
11	139.06	(1)	24212.8	1260.7	(2)	15645.6	764.1
12	139.06	(1)	24197.1	2043.2	(2)	15747.6	1369.3
13	139.06	(1)	21373.1	784.5	(2)	13949.8	500.5
14	139.06	(1)	21362.7	1594.9	(2)	14055.3	1085.3
15	139.06	(1)	18529.1	841.0	(2)	12251.4	514.7
16	139.06	(1)	18767.5	2750.4	(2)	12524.7	1857.5
17	139.06	(1)	18732.3	4935.1	(2)	12613.0	3409.6
18	27.27	(1)	432.5	6146.4	(2)	295.0	3812.7
19	81.82	(1)	531.6	1513.2	(2)	359.0	1003.4
20	136.36	(1)	543.7	1025.7	(2)	366.8	684.5
21	190.91	(1)	545.2	871.4	(2)	367.7	584.8
22	245.45	(1)	802.5	208.4	(2)	541.8	145.1
23	122.73	(1)	463.7	1621.3	(2)	313.0	1119.3
24	300.00	(2)	7.1	0.0	(1)	10.2	0.0
25	146.87	(1)	1424.3	2455.0	(2)	968.6	1597.9
26	174.63	(1)	1773.8	1033.5	(2)	1201.5	690.6
27	213.01	(1)	2176.6	701.4	(2)	1473.2	477.8
28	257.29	(1)	2622.2	567.5	(2)	1774.4	398.1
29	166.45	(2)	190.1	554.9	(1)	281.9	830.3
30	146.87	(2)	423.9	5557.7	(1)	586.8	8609.1
31	174.63	(2)	1159.3	1167.3	(1)	1713.2	1775.2
32	213.01	(2)	1453.6	515.5	(1)	2149.6	788.8
33	257.29	(2)	1767.1	458.9	(1)	2613.3	726.5
34	202.72	(2)	2768.2	1268.8	(1)	4094.0	1875.2
35	202.72	(2)	3013.5	2148.4	(1)	4457.8	3145.6

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	2877.4	0.0	2877.4
Live load reaction	0.0	3272.9	0.0	3272.9
Wind load reaction (without 25 percent reduction)	162.6	− 8100.0	162.6	− 8100.0

TABLE 81 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	3000.00 cm	Spacing	450.00 cm	Slope	1 in 5
Wind force	200 kg/m²	Panels	11	Purlins at	139.06 cm

MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	136.36	(2)	26989.6	18748.6	(1)	28011.2	19413.4
2	272.73	(2)	26740.9	7305.6	(1)	27828.6	7515.3
3	272.73	(2)	23985.2	2336.6	(1)	25129.8	2395.0
4	272.73	(2)	21155.6	1559.9	(1)	22353.9	1587.8
5	272.73	(2)	18312.4	1294.9	(1)	19563.6	1309.0
6	272.73	(2)	14075.4	1844.7	(1)	15404.8	1794.3
7	139.06	(1)	28589.7	17194.6	(2)	27622.2	16600.1
8	139.06	(1)	28904.1	11048.3	(2)	28065.1	10797.7
9	139.06	(1)	27027.5	1944.8	(2)	26261.8	1821.7
10	139.06	(1)	26986.0	3354.2	(2)	26370.2	3333.4
11	139.06	(1)	24212.8	1260.7	(2)	23692.8	1166.3
12	139.06	(1)	24197.1	2043.2	(2)	23826.9	2064.7
13	139.06	(1)	21373.1	784.5	(2)	21099.6	751.9
14	139.06	(1)	21362.7	1594.9	(2)	21239.0	1633.6
15	139.06	(1)	18529.1	841.0	(2)	18502.3	784.6
16	139.06	(1)	18767.5	2750.4	(2)	18894.7	2798.4
17	139.06	(1)	18732.3	4935.1	(2)	19008.3	5123.3
18	27.27	(1)	432.5	6146.4	(2)	443.9	5802.4
19	81.82	(1)	531.6	1513.2	(2)	540.9	1514.9
20	136.36	(1)	543.7	1025.7	(2)	552.7	1032.7
21	190.91	(1)	545.2	871.4	(2)	554.1	881.7
22	245.45	(1)	802.5	208.4	(2)	816.2	217.8
23	122.73	(1)	463.7	1621.3	(2)	471.6	1682.1
24	300.00	(2)	10.7	0.0	(1)	10.2	0.0
25	146.87	(1)	1424.3	2455.0	(2)	1458.1	2417.6
26	174.63	(1)	1773.8	1033.4	(2)	1809.5	1041.7
27	213.01	(1)	2176.6	701.4	(2)	2218.9	719.1
28	257.29	(1)	2622.2	567.5	(2)	2672.5	597.2
29	166.45	(2)	286.5	837.0	(1)	281.9	830.3
30	146.87	(2)	633.9	8417.3	(1)	586.8	8609.1
31	174.63	(2)	1746.1	1764.1	(1)	1713.2	1775.2
32	213.01	(2)	2189.5	777.4	(1)	2149.6	788.8
33	257.29	(2)	2661.8	696.8	(1)	2613.3	726.5
34	202.72	(2)	4169.8	1911.0	(1)	4094.0	1875.2
35	202.72	(2)	4539.4	3225.9	(1)	4457.8	3145.6

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	2877.4	0.0	2877.4
Live load reaction	0.0	3272.9	0.0	3272.9
Wind load reaction (without 25 percent reduction)	216.8	− 10800.0	216.8	− 10800.0

TABLE 82 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	3000.00 cm		Spacing	600.00 cm		Slope	1 in 3
Wind force	100 kg/m²		Panels	11		Purlins at	143.74 cm
MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	136.36	(2)	6346.5	2626.1	(1)	21640.2	8966.3
2	272.73	(2)	6343.8	1327.0	(1)	20904.2	4263.8
3	272.73	(2)	5262.1	545.4	(1)	18825.6	1655.9
4	272.73	(2)	4477.7	378.1	(1)	16735.7	1122.0
5	272.73	(2)	3693.0	340.2	(1)	14644.1	983.1
6	272.73	(2)	2521.7	583.0	(1)	11521.4	1532.2
7	143.74	(1)	22833.0	4541.5	(2)	6775.9	5956.8
8	143.74	(1)	22823.9	8712.8	(2)	6922.8	5238.9
9	143.74	(1)	20985.2	8794.3	(2)	6370.2	9836.2
10	143.74	(1)	20969.5	11513.5	(2)	6522.8	11335.2
11	143.74	(1)	18820.8	10994.3	(2)	5873.9	13045.1
12	143.74	(1)	18826.5	11756.7	(2)	6034.0	13259.7
13	143.74	(1)	16655.5	11186.8	(2)	5377.8	12692.6
14	143.74	(1)	16665.0	10037.4	(2)	5539.2	11929.2
15	143.74	(1)	14490.2	9521.2	(2)	4881.7	8885.0
16	143.74	(1)	14719.7	8353.3	(2)	5125.6	5786.7
17	143.74	(1)	14705.3	6195.1	(2)	5278.0	6106.1
18	45.45	(1)	592.7	773.0	(2)	225.9	415.0
19	136.36	(1)	668.2	2452.3	(2)	250.6	891.2
20	227.27	(1)	679.7	1093.1	(2)	254.2	395.5
21	318.18	(1)	676.1	438.0	(2)	252.8	161.1
22	409.09	(1)	998.6	179.5	(2)	373.7	69.0
23	204.55	(1)	604.8	576.2	(2)	226.3	228.9
24	500.00	(2)	4.0	0.0	(1)	10.3	0.0
25	163.89	(1)	1235.1	1640.6	(2)	465.8	541.4
26	227.27	(1)	1737.8	887.0	(2)	652.9	320.3
27	304.92	(1)	2343.1	627.5	(2)	879.5	233.8
28	388.36	(1)	2979.9	358.2	(2)	1118.3	142.3
29	209.54	(2)	107.3	518.4	(1)	287.2	1358.5
30	163.89	(2)	357.7	1208.6	(1)	900.0	3929.5
31	227.27	(2)	634.5	357.8	(1)	1689.4	1110.0
32	304.92	(2)	867.1	112.4	(1)	2311.8	310.8
33	388.36	(2)	1109.4	18.8	(1)	2958.4	71.0
34	284.77	(2)	1617.8	625.4	(1)	4314.9	1663.9
35	284.77	(2)	1780.5	628.6	(1)	4749.7	1593.5

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	4164.7	0.0	4164.7
Live load reaction	0.0	3504.1	0.0	3504.1
Wind load reaction (without 25 percent reduction)	79.6	− 7200.0	79.6	− 7200.0

TABLE 83 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	3000.00 cm	Spacing	600.00 cm	Slope	1 in 3
Wind force	150 kg/m²	Panels	11	Purlins at	143.74 cm

Member	Length cm		Compression kg	Moment kg.cm		Tension kg	Moment kg.cm
1	136.36	(2)	13926.8	5765.1	(1)	21640.2	8966.3
2	272.73	(2)	13322.9	2858.8	(1)	20904.2	4263.8
3	272.73	(2)	11726.9	1155.3	(1)	18825.6	1655.9
4	272.73	(2)	10124.8	795.7	(1)	16735.7	1122.0
5	272.73	(2)	8521.7	710.6	(1)	14644.1	983.1
6	272.73	(2)	6128.9	1186.5	(1)	11521.4	1532.2
7	143.74	(1)	22833.0	4541.5	(2)	14813.8	8010.4
8	143.74	(1)	22823.9	8712.8	(2)	15032.4	6967.5
9	143.74	(1)	20985.2	8794.3	(2)	13829.0	13060.9
10	143.74	(1)	20969.5	11513.5	(2)	14054.6	15052.7
11	143.74	(1)	18820.8	10994.3	(2)	12643.8	17328.6
12	143.74	(1)	18826.5	11756.7	(2)	12885.1	17614.4
13	143.74	(1)	16655.5	11186.8	(2)	11458.6	16860.8
14	143.74	(1)	16665.0	10037.4	(2)	11702.7	15849.6
15	143.74	(1)	14490.2	9521.2	(2)	10273.6	11801.1
16	143.74	(1)	14719.7	8353.3	(2)	10686.1	7689.9
17	143.74	(1)	14705.3	6195.1	(2)	10911.8	8115.1
18	45.45	(1)	592.7	773.0	(2)	459.5	725.4
19	136.36	(1)	668.2	2452.3	(2)	512.0	1836.2
20	227.27	(1)	679.7	1093.1	(2)	519.8	815.9
21	318.18	(1)	676.1	438.0	(2)	516.9	330.9
22	409.09	(1)	998.6	179.5	(2)	763.9	140.1
23	204.55	(1)	604.8	576.2	(2)	462.7	460.6
24	500.00	(2)	8.1	0.0	(1)	10.3	0.0
25	163.89	(1)	1235.1	1640.6	(2)	950.3	1146.1
26	227.27	(1)	1737.8	887.0	(2)	1333.2	661.1
27	304.92	(1)	2343.1	627.5	(2)	1796.5	478.4
28	388.36	(1)	2979.9	358.2	(2)	2284.3	286.4
29	209.54	(2)	219.5	1054.2	(1)	287.2	1358.5
30	163.89	(2)	719.8	2613.2	(1)	900.0	3929.5
31	227.27	(2)	1295.8	762.8	(1)	1689.4	1110.0
32	304.92	(2)	1771.4	231.9	(1)	2311.8	310.8
33	388.36	(2)	2266.5	36.6	(1)	2958.4	71.0
34	284.77	(2)	3305.5	1276.9	(1)	4314.9	1663.9
35	284.77	(2)	3638.1	1267.5	(1)	4749.7	1593.5

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	4164.7	0.0	4164.7
Live load reaction	0.0	3504.1	0.0	3504.1
Wind load reaction (without 25 percent reduction)	119.3	− 10800.0	119.3	− 10800.0

TABLE 84 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	3000.00 cm	Spacing	600.00 cm	Slope	1 in 3
Wind force	200 kg/m²	Panels	11	Purlins at	143.74 cm

MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	136.36	(2)	21507.1	8904.1	(1)	21640.2	8966.3
2	272.73	(2)	20601.9	4390.6	(1)	20904.2	4263.8
3	272.73	(2)	18191.8	1765.3	(1)	18825.6	1655.9
4	272.73	(2)	15771.9	1213.3	(1)	16735.7	1122.0
5	272.73	(2)	13350.5	1080.9	(1)	14644.1	983.1
6	272.73	(2)	9736.2	1790.0	(1)	11521.4	1532.2
7	143.74	(1)	22833.0	4541.5	(2)	22851.7	10063.9
8	143.74	(1)	22823.9	8712.8	(2)	23141.9	10154.8
9	143.74	(1)	20985.2	8794.3	(2)	21287.8	16285.6
10	143.74	(1)	20969.5	11513.5	(2)	21586.4	18770.1
11	143.74	(1)	18820.8	10994.3	(2)	19413.6	21612.1
12	143.74	(1)	18826.5	11756.7	(2)	19736.1	21969.0
13	143.74	(1)	16655.5	11186.8	(2)	17539.4	21029.1
14	143.74	(1)	16665.0	10037.4	(2)	17866.1	19770.1
15	143.74	(1)	14490.2	9521.2	(2)	15665.4	14717.1
16	143.74	(1)	14719.7	8353.3	(2)	16246.6	9663.1
17	143.74	(1)	14705.3	6195.1	(2)	16545.5	10124.2
18	45.45	(1)	592.7	773.0	(2)	693.2	1035.9
19	136.36	(1)	668.2	2452.3	(2)	773.3	2781.3
20	227.27	(1)	679.7	1093.1	(2)	785.3	1236.2
21	318.18	(1)	676.1	438.0	(2)	781.0	500.6
22	409.09	(1)	998.6	179.5	(2)	1154.1	211.2
23	204.55	(1)	604.8	576.2	(2)	699.0	692.4
24	500.00	(2)	12.2	0.0	(1)	10.3	0.0
25	163.89	(1)	1235.1	1640.6	(2)	1434.7	1750.9
26	227.27	(1)	1737.8	887.0	(2)	2013.5	1001.9
27	304.92	(1)	2343.1	627.5	(2)	2713.4	723.1
28	388.36	(1)	2979.9	358.2	(2)	3450.3	430.4
29	209.54	(2)	331.6	1590.1	(1)	287.2	1358.5
30	163.89	(2)	1081.9	4017.8	(1)	900.0	3929.5
31	227.27	(2)	1957.1	1167.7	(1)	1689.4	1110.0
32	304.92	(2)	2675.7	351.3	(1)	2311.8	310.8
33	388.36	(2)	3423.7	54.3	(1)	2958.4	71.0
34	284.77	(2)	4993.1	1928.5	(1)	4314.9	1663.9
35	284.77	(2)	5495.6	1906.3	(1)	4749.7	1593.5

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	4164.7	0.0	4164.7
Live load reaction	0.0	3504.1	0.0	3504.1
Wind load reaction (without 25 percent reduction)	159.1	− 14400.0	159.1	− 14400.0

TABLE 85 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	3000.00 cm	Spacing	600.00 cm	Slope	1 in 4
Wind force	100 kg/m²	Panels	11	Purlins at	140.56 cm

Member	Length cm		Compression kg	Moment kg.cm		Tension kg	Moment kg.cm
1	136.36	(2)	9413.3	5172.6	(1)	32736.9	17949.3
2	272.73	(2)	9171.6	2234.0	(1)	32119.2	7566.6
3	272.73	(2)	8210.9	800.9	(1)	29226.3	2656.9
4	272.73	(2)	7237.7	509.7	(1)	26287.9	1674.9
5	272.73	(2)	6262.5	398.7	(1)	23341.7	1296.4
6	272.73	(2)	4808.0	649.8	(1)	18946.7	1943.9
7	140.56	(1)	33775.4	9971.4	(2)	9770.1	2635.2
8	140.56	(1)	33896.2	8555.0	(2)	9912.0	4796.9
9	140.56	(1)	31668.7	9464.1	(2)	9264.2	10201.0
10	140.56	(1)	31627.1	11703.7	(2)	9366.7	11712.0
11	140.56	(1)	28675.2	12050.9	(2)	8504.4	13029.3
12	140.56	(1)	28673.2	12291.6	(2)	8619.7	13293.5
13	140.56	(1)	25671.6	11622.4	(2)	7742.1	12569.2
14	140.56	(1)	25678.9	10864.8	(2)	7860.3	11767.0
15	140.56	(1)	22668.1	9713.5	(2)	6979.9	8837.8
16	140.56	(1)	22954.4	9012.4	(2)	7190.4	5541.7
17	140.56	(1)	22934.8	7114.8	(2)	7299.6	6719.2
18	34.09	(1)	579.8	2589.8	(2)	194.9	632.6
19	102.27	(1)	701.4	3326.2	(2)	231.8	1076.5
20	170.45	(1)	721.3	1455.5	(2)	237.9	469.5
21	238.64	(1)	720.1	518.1	(2)	237.4	168.6
22	306.82	(1)	1049.7	403.6	(2)	346.5	133.9
23	153.41	(1)	621.8	792.9	(2)	205.4	277.1
24	375.00	(2)	4.0	0.0	(1)	11.7	0.0
25	152.46	(1)	1587.3	2717.5	(2)	529.1	828.7
26	192.85	(1)	2071.1	1325.7	(2)	686.7	426.2
27	245.83	(1)	2658.9	855.6	(2)	880.7	282.3
28	304.92	(1)	3294.5	412.6	(2)	1090.9	145.9
29	181.20	(2)	109.6	466.2	(1)	332.0	1381.2
30	152.46	(2)	312.7	2306.0	(1)	872.1	7792.9
31	192.85	(2)	662.2	521.3	(1)	1998.6	1779.6
32	245.83	(2)	867.8	249.0	(1)	2622.6	773.0
33	304.92	(2)	1083.8	102.5	(1)	3276.0	300.1
34	231.84	(2)	1635.9	750.8	(1)	4945.3	2277.9
35	231.84	(2)	1792.9	919.8	(1)	5420.6	2768.6

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	4072.6	0.0	4072.6
Live load reaction	0.0	4034.9	0.0	4034.9
Wind load reaction (without 25 percent reduction)	38.7	− 7200.0	38.7	− 7200.0

TABLE 86 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	3000.00 cm		Spacing	600.00 cm		Slope	1 in 4
Wind force	150 kg/m²		Panels	11		Purlins at	140.56 cm
MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	136.36	(2)	20286.7	11140.0	(1)	32736.9	17949.3
2	272.73	(2)	19807.8	4776.3	(1)	32119.2	7566.6
3	272.73	(2)	17821.8	1701.9	(1)	29226.3	2656.9
4	272.73	(2)	15808.5	1080.1	(1)	26287.9	1674.9
5	272.73	(2)	13790.6	842.2	(1)	23341.7	1296.4
6	272.73	(2)	10781.0	1340.8	(1)	18946.7	1943.9
7	140.56	(1)	33775.4	9971.4	(2)	21017.6	5831.1
8	140.56	(1)	33896.2	8555.0	(2)	21253.1	6363.4
9	140.56	(1)	31668.7	9464.1	(2)	19861.8	13518.7
10	140.56	(1)	31627.1	11703.7	(2)	20007.8	15522.2
11	140.56	(1)	28675.2	12050.9	(2)	18158.3	17274.0
12	140.56	(1)	28673.2	12291.6	(2)	18330.7	17624.8
13	140.56	(1)	25671.6	11622.4	(2)	16449.0	16664.5
14	140.56	(1)	25678.9	10864.8	(2)	16627.6	15603.9
15	140.56	(1)	22668.1	9713.5	(2)	14739.9	11715.4
16	140.56	(1)	22954.4	9012.4	(2)	15109.5	7350.4
17	140.56	(1)	22934.8	7114.8	(2)	15269.6	8911.6
18	34.09	(1)	579.8	2589.8	(2)	401.6	1436.8
19	102.27	(1)	701.4	3326.2	(2)	479.9	2241.3
20	170.45	(1)	721.3	1455.5	(2)	492.8	978.4
21	238.64	(1)	720.1	518.1	(2)	491.8	350.6
22	306.82	(1)	1049.7	403.6	(2)	717.5	276.8
23	153.41	(1)	621.8	792.9	(2)	425.2	565.1
24	375.00	(2)	8.2	0.0	(1)	11.7	0.0
25	152.46	(1)	1587.3	2717.5	(2)	1092.6	1754.9
26	192.85	(1)	2071.1	1325.7	(2)	1420.2	889.1
27	245.83	(1)	2658.9	855.6	(2)	1821.9	584.6
28	304.92	(1)	3294.5	412.6	(2)	2257.0	296.6
29	181.20	(2)	227.0	959.6	(1)	332.0	1381.2
30	152.46	(2)	633.3	4927.0	(1)	872.1	7792.9
31	192.85	(2)	1369.8	1117.2	(1)	1998.6	1779.6
32	245.83	(2)	1795.7	519.1	(1)	2622.6	773.0
33	304.92	(2)	2242.8	210.3	(1)	3276.0	300.1
34	231.84	(2)	3385.4	1555.3	(1)	4945.3	2277.9
35	231.84	(2)	3710.4	1901.2	(1)	5420.6	2768.6

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	4072.6	0.0	4072.6
Live load reaction	0.0	4034.9	0.0	4034.9
Wind load reaction (without 25 percent reduction)	133.1	− 10800.0	133.1	− 10800.0

TABLE 87 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	3000.00 cm		Spacing	600.00 cm		Slope	1 in 4
Wind force	200 kg/m²		Panels	11		Purlins at	140.56 cm
MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	136.36	(2)	31160.1	17107.5	(1)	32736.9	17949.3
2	272.73	(2)	30444.0	7318.6	(1)	32119.2	7566.6
3	272.73	(2)	27432.7	2602.9	(1)	29226.3	2656.9
4	272.73	(2)	24379.3	1650.5	(1)	26287.9	1674.9
5	272.73	(2)	21318.8	1285.8	(1)	23341.7	1296.4
6	272.73	(2)	16754.0	2031.9	(1)	18946.7	1943.9
7	140.56	(1)	33775.4	9971.4	(2)	32265.0	9027.0
8	140.56	(1)	33896.2	8555.0	(2)	32594.2	9014.9
9	140.56	(1)	31668.7	9464.1	(2)	30459.5	16836.4
10	140.56	(1)	31627.1	11703.7	(2)	30648.8	19332.3
11	140.56	(1)	28675.2	12050.9	(2)	27812.1	21518.6
12	140.56	(1)	28673.2	12291.6	(2)	28041.8	21956.2
13	140.56	(1)	25671.6	11622.4	(2)	25155.9	20759.8
14	140.56	(1)	25678.9	10864.8	(2)	25395.0	19440.8
15	140.56	(1)	22668.1	9713.5	(2)	22499.9	14593.0
16	140.56	(1)	22954.4	9012.4	(2)	23028.7	9350.9
17	140.56	(1)	22934.8	7114.8	(2)	23239.7	11104.1
18	34.09	(1)	579.8	2589.8	(2)	608.3	2240.9
19	102.27	(1)	701.4	3326.2	(2)	727.9	3406.1
20	170.45	(1)	721.3	1455.5	(2)	747.6	1487.3
21	238.64	(1)	720.1	518.1	(2)	746.1	532.5
22	306.82	(1)	1049.7	403.6	(2)	1088.5	419.8
23	153.41	(1)	621.8	792.9	(2)	645.1	853.0
24	375.00	(2)	12.4	0.0	(1)	11.7	0.0
25	152.46	(1)	1587.3	2717.5	(2)	1656.1	2681.1
26	192.85	(1)	2071.1	1325.7	(2)	2153.7	1351.9
27	245.83	(1)	2658.9	855.6	(2)	2763.2	886.9
28	304.92	(1)	3294.5	412.6	(2)	3423.0	447.3
29	181.20	(2)	344.4	1452.8	(1)	332.0	1381.2
30	152.46	(2)	954.0	7548.0	(1)	872.1	7792.9
31	192.85	(2)	2077.4	1718.1	(1)	1998.6	1779.6
32	245.83	(2)	2723.6	789.2	(1)	2622.6	773.0
33	304.92	(2)	3401.9	318.1	(1)	3276.0	300.1
34	231.84	(2)	5135.0	2359.8	(1)	4945.3	2277.9
35	231.84	(2)	5628.0	2882.6	(1)	5420.6	2768.6

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	4072.6	0.0	4072.6
Live load reaction	0.0	4034.9	0.0	4034.9
Wind load reaction (without 25 percent reduction)	177.5	− 14400.0	177.5	− 14400.0

TABLE 88 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	3000.00 cm	Spacing	600.00 cm	Slope	1 in 5
Wind force	100 kg/m²	Panels	11	Purlins at	139.06 cm

Member	Length cm		Compression kg	Moment kg.cm		Tension kg	Moment kg.cm
1	136.36	(2)	10782.2	7501.5	(1)	38226.1	26493.0
2	272.73	(2)	10663.4	2985.8	(1)	37976.9	10255.9
3	272.73	(2)	9521.0	941.2	(1)	34294.0	3268.4
4	272.73	(2)	8349.2	631.2	(1)	30505.7	2166.8
5	272.73	(2)	7172.0	526.3	(1)	26697.9	1786.3
6	272.73	(2)	5418.0	767.9	(1)	21022.5	2448.7
7	139.06	(1)	39015.6	23465.0	(2)	11055.0	6640.4
8	139.06	(1)	39444.6	15077.3	(2)	11269.4	4354.3
9	139.06	(1)	36883.6	2654.0	(2)	10550.2	738.4
10	139.06	(1)	36827.0	4577.4	(2)	10633.2	1358.8
11	139.06	(1)	33042.5	1720.5	(2)	9562.1	453.0
12	139.06	(1)	33021.2	2788.3	(2)	9655.6	850.5
13	139.06	(1)	29167.3	1070.6	(2)	8564.4	315.0
14	139.06	(1)	29153.1	2176.6	(2)	8660.0	678.5
15	139.06	(1)	25286.2	1147.7	(2)	7565.0	306.6
16	139.06	(1)	25611.5	3753.4	(2)	7765.2	1157.5
17	139.06	(1)	25563.5	6734.8	(2)	7850.0	2145.1
18	27.27	(1)	590.2	8387.8	(2)	184.6	2286.0
19	81.82	(1)	725.5	2065.1	(2)	223.7	620.4
20	136.36	(1)	742.0	1399.7	(2)	228.5	424.4
21	190.91	(1)	744.0	1189.2	(2)	229.0	363.5
22	245.45	(1)	1095.1	284.4	(2)	337.6	91.6
23	122.73	(1)	632.9	2212.6	(2)	195.0	704.0
24	300.00	(2)	4.5	0.0	(1)	14.0	0.0
25	146.87	(1)	1943.8	3350.3	(2)	605.4	979.8
26	174.63	(1)	2420.7	1410.4	(2)	749.7	428.4
27	213.01	(1)	2970.3	957.2	(2)	919.0	298.8
28	257.29	(1)	3578.4	774.5	(2)	1106.7	252.0
29	166.45	(2)	118.4	344.2	(1)	384.7	1133.1
30	146.87	(2)	271.5	3395.8	(1)	800.8	11748.6
31	174.63	(2)	723.0	719.1	(1)	2338.0	2422.6
32	213.01	(2)	906.3	320.2	(1)	2933.5	1076.4
33	257.29	(2)	1101.8	277.5	(1)	3566.4	991.4
34	202.72	(2)	1725.9	791.3	(1)	5587.0	2559.1
35	202.72	(2)	1878.7	1340.8	(1)	6083.4	4292.8

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	4029.2	0.0	4029.2
Live load reaction	0.0	4368.8	0.0	4368.8
Wind load reaction (without 25 percent reduction)	144.5	− 7200.0	144.5	− 7200.0

TABLE 89 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	3000.00 cm		Spacing	600.00 cm		Slope	1 in 5
Wind force	150 kg/m²		Panels	11		Purlins at	139.06 cm
MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	136.36	(2)	23055.0	16021.7	(1)	38226.1	26493.0
2	272.73	(2)	22831.9	6250.0	(1)	37976.9	10255.9
3	272.73	(2)	20455.3	2000.2	(1)	34294.0	3268.4
4	272.73	(2)	18015.6	1336.9	(1)	30505.7	2166.8
5	272.73	(2)	15564.3	1111.0	(1)	26697.9	1786.3
6	272.73	(2)	11911.5	1592.6	(1)	21022.5	2448.7
7	139.06	(1)	39015.6	23465.0	(2)	23606.3	14184.9
8	139.06	(1)	39444.6	15077.3	(2)	24005.1	9245.8
9	139.06	(1)	36883.6	2654.0	(2)	22465.3	1559.9
10	139.06	(1)	36827.0	4577.4	(2)	22579.5	2862.2
11	139.06	(1)	33042.5	1720.5	(2)	20291.7	989.2
12	139.06	(1)	33021.2	2788.3	(2)	20428.0	1777.7
13	139.06	(1)	29167.3	1070.6	(2)	18097.4	650.3
14	139.06	(1)	29153.1	2176.6	(2)	18238.2	1409.6
15	139.06	(1)	25286.2	1147.7	(2)	15899.6	666.5
16	139.06	(1)	25611.5	3753.4	(2)	16258.5	2412.0
17	139.06	(1)	25563.5	6734.8	(2)	16377.1	4430.1
18	27.27	(1)	590.2	8387.8	(2)	383.1	4939.1
19	81.82	(1)	725.5	2065.1	(2)	466.2	1302.3
20	136.36	(1)	742.0	1399.7	(2)	476.3	888.6
21	190.91	(1)	744.0	1189.2	(2)	477.5	759.3
22	245.45	(1)	1095.1	284.4	(2)	703.5	188.6
23	122.73	(1)	632.9	2212.6	(2)	406.4	1454.3
24	300.00	(2)	9.3	0.0	(1)	14.0	0.0
25	146.87	(1)	1943.8	3350.3	(2)	1258.0	2072.8
26	174.63	(1)	2420.7	1410.4	(2)	1560.4	896.5
27	213.01	(1)	2970.3	957.2	(2)	1913.2	620.5
28	257.29	(1)	3578.4	774.5	(2)	2304.2	517.5
29	166.45	(2)	246.9	720.3	(1)	384.7	1133.1
30	146.87	(2)	551.4	7208.0	(1)	800.8	11748.6
31	174.63	(2)	1505.5	1514.7	(1)	2338.0	2422.6
32	213.01	(2)	1887.5	669.3	(1)	2933.5	1076.4
33	257.29	(2)	2294.7	594.8	(1)	3566.4	991.4
34	202.72	(2)	3594.7	1647.6	(1)	5587.0	2559.1
35	202.72	(2)	3913.2	2784.0	(1)	6083.4	4292.8

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Rection	
	Horizantal	Vertical	Horizantal	Vertical
Dead load reaction	0.0	4029.2	0.0	4029.2
Live load reaction	0.0	4368.8	0.0	4368.8
Wind load reaction (without 25 percent reduction)	216.8	− 10800.0	216.8	− 10800.0

TABLE 90 STEEL ROOF TRUSS (ANALYSIS RESULTS)

Span	3000.00 cm		Spacing	600.00 cm		Slope	1 in 5
Wind force	200 kg/m²		Panels	11		Purlins at	139.06 cm
MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	136.36	(2)	35327.8	24541.9	(1)	38226.1	26493.0
2	272.73	(2)	35000.5	9564.2	(1)	37976.9	10255.9
3	272.73	(2)	31389.5	3059.1	(1)	34294.0	3268.4
4	272.73	(2)	27682.0	2042.6	(1)	30505.7	2166.8
5	272.73	(2)	23956.7	1695.7	(1)	26697.9	1786.3
6	272.73	(2)	18405.1	2417.4	(1)	21022.5	2448.7
7	139.06	(1)	39015.6	23465.0	(2)	36157.6	21729.3
8	139.06	(1)	39444.6	15077.3	(2)	36740.8	14137.2
9	139.06	(1)	36883.6	2654.0	(2)	34380.4	2383.2
10	139.06	(1)	36827.0	4577.4	(2)	34525.9	4365.7
11	139.06	(1)	33042.5	1720.5	(2)	31021.3	1525.4
12	139.06	(1)	33021.2	2788.3	(2)	31200.5	2704.9
13	139.06	(1)	29167.3	1070.6	(2)	27630.4	985.5
14	139.06	(1)	29153.1	2176.6	(2)	27816.5	2140.6
15	139.06	(1)	25286.2	1147.7	(2)	24234.3	1026.4
16	139.06	(1)	25611.5	3753.4	(2)	24751.8	3666.5
17	139.06	(1)	25563.5	6734.8	(2)	24904.2	6715.1
18	27.27	(1)	590.2	8387.8	(2)	581.7	7592.1
19	81.82	(1)	725.5	2065.1	(2)	708.7	1984.3
20	136.36	(1)	742.0	1399.7	(2)	724.1	1352.8
21	190.91	(1)	744.0	1189.2	(2)	726.0	1155.1
22	245.45	(1)	1095.1	284.4	(2)	1069.4	285.5
23	122.73	(1)	632.9	2212.6	(2)	617.8	2204.6
24	300.00	(2)	14.0	0.0	(1)	14.0	0.0
25	146.87	(1)	1943.8	3350.3	(2)	1910.6	3165.8
26	174.63	(1)	2420.7	1410.4	(2)	2371.0	1364.7
27	213.01	(1)	2970.3	957.2	(2)	2907.4	942.3
28	257.29	(1)	3578.4	774.5	(2)	3501.7	782.9
29	166.45	(2)	375.3	1096.4	(1)	384.7	1133.1
30	146.87	(2)	831.4	11020.7	(1)	800.8	11748.6
31	174.63	(2)	2287.9	2310.4	(1)	2338.0	2422.6
32	213.01	(2)	2868.8	1018.4	(1)	2933.5	1076.4
33	257.29	(2)	3487.7	912.0	(1)	3566.4	991.4
34	202.72	(2)	5463.5	2503.9	(1)	5587.0	2559.1
35	202.72	(2)	5947.7	4227.2	(1)	6083.4	4292.8

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	4029.2	0.0	4029.2
Live load reaction	0.0	4368.8	0.0	4368.8
Wind load reaction (without 25 percent reduction)	289.1	− 14400.0	289.1	− 14400.0

TABLE 91 STEEL LEAN-TO ROOF TRUSS (ANALYSIS RESULTS)

Span	900.00 cm		Spacing	450.00 cm		Slope	1 in 3
Wind force	100 kg/m²		Panels	7		Purlins at	135.53 cm
MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	128.57	(2)	1205.7	502.6	(1)	3869.2	1508.8
2	257.14	(2)	889.6	366.7	(1)	3279.9	941.6
3	257.14	(2)	210.1	107.4	(1)	1969.4	254.7
4	257.14	(2)	808.2	363.6	(1)	3.3	709.6
5	135.53	(1)	4081.9	1416.8	(2)	1333.1	490.5
6	135.53	(1)	4074.0	1462.7	(2)	1447.2	605.5
7	135.53	(1)	2765.3	359.0	(2)	883.3	174.5
8	135.53	(1)	2757.1	641.4	(2)	1001.1	315.0
9	135.53	(1)	1382.6	100.5	(2)	411.1	86.9
10	135.53	(1)	1646.9	677.3	(2)	669.9	340.7
11	135.53	(1)	1637.2	1021.0	(2)	786.8	523.4
12	42.86	(1)	413.2	45.9	(2)	215.3	115.0
13	128.57	(1)	424.5	282.4	(2)	219.6	140.5
14	214.29	(1)	647.5	203.6	(2)	334.9	107.4
15	107.14	(1)	418.7	343.8	(2)	216.9	182.7
16	300.00	(1)	1526.8	542.3	(2)	790.5	289.9
17	154.52	(1)	789.2	190.4	(2)	409.9	82.6
18	214.29	(1)	1094.9	189.6	(2)	567.5	101.0
19	143.75	(2)	145.0	124.8	(1)	279.7	232.7
20	154.52	(2)	375.5	216.1	(1)	710.2	532.1
21	214.29	(2)	559.5	33.1	(1)	1080.4	93.0
22	197.56	(2)	1037.3	170.2	(1)	2003.4	333.4
23	197.56	(2)	1237.0	151.3	(1)	2388.9	296.9

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	742.8	0.0	742.8
Live load reaction	0.0	788.4	0.0	788.4
Wind load reaction (without 25 percent reduction)	675.0	− 1620.0	675.0	− 1620.0

TABLE 92 STEEL LEAN-TO ROOF TRUSS (ANALYSIS RESULTS)

Span	900.00 cm		Spacing	450.00 cm		Slope	1 in 3
Wind force	150 kg/m²		Panels	7		Purlins at	135.53 cm
MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	128.57	(2)	2512.4	1028.4	(1)	3869.2	1508.8
2	257.14	(2)	1931.0	721.4	(1)	3279.9	941.6
3	257.14	(2)	673.4	207.5	(1)	1969.4	254.7
4	257.14	(2)	1211.8	674.5	(1)	3.3	709.6
5	135.53	(1)	4081.9	1416.8	(2)	2742.2	993.5
6	135.53	(1)	4074.0	1462.7	(2)	2911.9	1174.3
7	135.53	(1)	2765.3	359.0	(2)	1828.0	327.1
8	135.53	(1)	2757.1	641.4	(2)	2003.1	589.2
9	135.53	(1)	1382.6	100.5	(2)	868.1	148.6
10	135.53	(1)	1646.9	677.3	(2)	1304.5	634.2
11	135.53	(1)	1637.2	1021.0	(2)	1478.1	970.8
12	42.86	(1)	413.2	45.9	(2)	398.1	180.8
13	128.57	(1)	424.5	282.4	(2)	406.6	262.1
14	214.29	(1)	647.5	203.6	(2)	620.1	198.1
15	107.14	(1)	418.7	343.8	(2)	401.4	336.6
16	300.00	(1)	1526.8	542.3	(2)	1463.6	533.4
17	154.52	(1)	789.2	190.4	(2)	758.4	158.6
18	214.29	(1)	1094.9	189.6	(2)	1050.4	185.9
19	143.75	(2)	268.3	229.6	(1)	279.7	232.7
20	154.52	(2)	692.4	421.0	(1)	710.2	532.1
21	214.29	(2)	1035.7	66.6	(1)	1080.4	93.0
22	197.56	(2)	1920.4	315.9	(1)	2003.4	333.4
23	197.56	(2)	2290.0	280.9	(1)	2388.9	296.9

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	742.8	0.0	742.8
Live load reaction	0.0	788.4	0.0	788.4
Wind load reaction (without 25 percent reduction)	1012.5	− 2430.0	1012.5	− 2430.0

TABLE 93 STEEL LEAN-TO ROOF TRUSS (ANALYSIS RESULTS)

Span	900.00 cm	Spacing	450.00 cm	Slope	1 in 3
Wind force	200 kg/m²	Panels	7	Purlins at	135.53 cm

Member	Length cm		Compression kg	Moment kg.cm		Tension kg	Moment kg.cm
1	128.57	(2)	3819.1	1554.1	(1)	3869.2	1508.8
2	257.14	(2)	2972.4	1076.0	(1)	3279.9	941.6
3	257.14	(2)	1136.7	307.5	(1)	1969.4	254.7
4	257.14	(2)	1615.3	985.4	(1)	3.3	709.6
5	135.53	(1)	4081.9	1416.8	(2)	4151.3	1496.5
6	135.53	(1)	4074.0	1462.7	(2)	4376.6	1743.2
7	135.53	(1)	2765.3	359.0	(2)	2772.7	479.7
8	135.53	(1)	2757.1	641.4	(2)	3005.2	863.4
9	135.53	(1)	1382.6	100.5	(2)	1325.2	210.3
10	135.53	(1)	1646.9	677.3	(2)	1939.1	927.8
11	135.53	(1)	1637.2	1021.0	(2)	2169.3	1418.3
12	42.86	(1)	413.2	45.9	(2)	580.9	246.7
13	128.57	(1)	424.5	282.4	(2)	593.6	383.7
14	214.29	(1)	647.5	203.6	(2)	905.3	288.9
15	107.14	(1)	418.7	343.8	(2)	586.0	490.5
16	300.00	(1)	1526.8	542.3	(2)	2136.6	777.0
17	154.52	(1)	789.2	190.4	(2)	1106.8	234.6
18	214.29	(1)	1094.9	189.6	(2)	1533.3	270.9
19	143.75	(2)	391.7	334.3	(1)	279.7	232.7
20	154.52	(2)	1009.3	625.8	(1)	710.2	532.1
21	214.29	(2)	1512.0	100.1	(1)	1080.4	93.0
22	197.56	(2)	2803.5	461.7	(1)	2003.4	333.4
23	197.56	(2)	3343.1	410.6	(1)	2388.9	296.9

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	742.8	0.0	742.8
Live load reaction	0.0	788.4	0.0	788.4
Wind load reaction (without 25 percent reduction)	1350.0	− 3240.0	1350.0	− 3240.0

TABLE 94 STEEL LEAN-TO ROOF TRUSS (ANALYSIS RESULTS)

Span	900.00 cm		Spacing	450.00 cm		Slope	1 in 4
Wind force	100 kg/m²		Panels	7		Purlins at	132.53 cm
MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	128.57	(2)	1891.2	984.4	(1)	5437.6	2750.5
2	257.14	(2)	1522.8	607.7	(1)	4662.2	1569.6
3	257.14	(2)	672.0	135.9	(1)	2801.2	350.8
4	257.14	(2)	604.4	411.4	(1)	6.5	905.6
5	132.53	(1)	5609.7	2568.5	(2)	1995.9	928.3
6	132.53	(1)	5614.2	2365.3	(2)	2081.0	945.5
7	132.53	(1)	3847.4	381.0	(2)	1354.4	164.7
8	132.53	(1)	3835.3	807.0	(2)	1438.4	354.9
9	132.53	(1)	1923.5	3.4	(2)	654.7	35.0
10	132.53	(1)	2284.5	883.5	(2)	909.0	392.7
11	132.53	(1)	2270.2	1400.7	(2)	991.8	635.1
12	32.14	(1)	430.7	238.9	(2)	197.6	17.2
13	96.43	(1)	452.8	436.0	(2)	206.4	192.6
14	160.71	(1)	690.9	297.3	(2)	315.1	138.4
15	80.36	(1)	441.1	517.2	(2)	201.4	242.4
16	225.00	(1)	1628.3	846.1	(2)	743.4	398.0
17	143.75	(1)	1039.0	264.4	(2)	476.0	108.3
18	181.83	(1)	1320.4	228.5	(2)	603.5	108.5
19	137.31	(2)	171.3	109.2	(1)	374.8	230.9
20	143.75	(2)	412.6	375.7	(1)	885.5	942.0
21	181.83	(2)	594.8	41.7	(1)	1302.9	126.8
22	170.84	(2)	1124.3	189.0	(1)	2462.8	420.5
23	170.84	(2)	1335.9	240.0	(1)	2926.2	529.8

2 In bracket indicates force due to wind load combination

1 In bracket indicates force from combination other than wind load

25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	726.4	0.0	726.4
Live load reaction	0.0	907.8	0.0	907.8
Wind load reaction (without 25 percent reduction)	506.3	− 1620.0	506.3	− 1620.0

TABLE 95 STEEL LEAN-TO ROOF TRUSS (ANALYSIS RESULTS)

Span	900.00 cm		Spacing	450.00 cm		Slope	1 in 4
Wind force	150 kg/m²		Panels	7		Purlins at	132.53 cm
MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	128.57	(2)	3743.2	1935.1	(1)	5437.6	2750.5
2	257.14	(2)	3061.3	1173.2	(1)	4662.2	1569.6
3	257.14	(2)	1474.9	262.3	(1)	2801.2	350.8
4	257.14	(2)	905.5	768.0	(1)	6.5	905.6
5	132.53	(1)	5609.7	2568.5	(2)	3928.8	1820.6
6	132.53	(1)	5614.2	2365.3	(2)	4057.4	1812.5
7	132.53	(1)	3847.4	381.0	(2)	2672.9	310.6
8	132.53	(1)	3835.3	807.0	(2)	2796.8	666.8
9	132.53	(1)	1923.5	3.4	(2)	1302.6	52.2
10	132.53	(1)	2284.5	883.5	(2)	1744.3	736.3
11	132.53	(1)	2270.2	1400.7	(2)	1866.1	1186.1
12	32.14	(1)	430.7	238.9	(2)	368.1	41.5
13	96.43	(1)	452.8	436.0	(2)	385.0	361.5
14	160.71	(1)	690.9	297.3	(2)	587.7	257.1
15	80.36	(1)	441.1	517.2	(2)	375.7	449.8
16	225.00	(1)	1628.3	846.1	(2)	1386.5	738.0
17	143.75	(1)	1039.0	264.4	(2)	887.1	206.5
18	181.83	(1)	1320.4	228.5	(2)	1125.3	200.8
19	137.31	(2)	319.5	202.2	(1)	374.8	230.9
20	143.75	(2)	766.5	720.5	(1)	885.5	942.0
21	181.83	(2)	1109.4	83.8	(1)	1302.9	126.8
22	170.84	(2)	2096.9	353.5	(1)	2462.8	420.5
23	170.84	(2)	2491.6	448.2	(1)	2926.2	529.8

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	726.4	0.0	726.4
Live load reaction	0.0	907.8	0.0	907.8
Wind load reaction (without 25 percent reduction)	759.4	− 2430.0	759.4	− 2430.0

TABLE 96 STEEL LEAN-TO ROOF TRUSS (ANALYSIS RESULTS)

Span	900.00 cm		Spacing	450.00 cm		Slope	1 in 4
Wind force	200 kg/m²		Panels	7		Purlins at	132.53 cm
MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	128.57	(2)	5595.1	2885.8	(1)	5437.6	2750.5
2	257.14	(2)	4599.9	1738.6	(1)	4662.2	1569.6
3	257.14	(2)	2277.7	388.7	(1)	2801.2	350.8
4	257.14	(2)	1206.6	1124.7	(1)	6.5	905.6
5	132.53	(1)	5609.7	2568.5	(2)	5861.8	2712.9
6	132.53	(1)	5614.2	2365.3	(2)	6033.7	2679.5
7	132.53	(1)	3847.4	381.0	(2)	3991.4	456.5
8	132.53	(1)	3835.3	807.0	(2)	4155.2	978.8
9	132.53	(1)	1923.5	3.4	(2)	1950.5	69.4
10	132.53	(1)	2284.5	883.5	(2)	2579.5	1079.9
11	132.53	(1)	2270.2	1400.7	(2)	2740.4	1737.2
12	32.14	(1)	430.7	238.9	(2)	538.7	81.8
13	96.43	(1)	452.8	436.0	(2)	563.7	530.5
14	160.71	(1)	690.9	297.3	(2)	860.4	375.8
15	80.36	(1)	441.1	517.2	(2)	549.9	657.3
16	225.00	(1)	1628.3	846.1	(2)	2029.6	1078.0
17	143.75	(1)	1039.0	264.4	(2)	1298.3	304.7
18	181.83	(1)	1320.4	228.5	(2)	1647.1	293.2
19	137.31	(2)	467.6	295.3	(1)	374.8	230.9
20	143.75	(2)	1120.4	1065.4	(1)	885.5	942.0
21	181.83	(2)	1623.9	125.8	(1)	1302.9	126.8
22	170.84	(2)	3069.6	518.1	(1)	2462.8	420.5
23	170.84	(2)	3647.4	656.5	(1)	2926.2	529.8

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	726.4	0.0	726.4
Live load reaction	0.0	907.8	0.0	907.8
Wind load reaction (without 25 percent reduction)	1012.5	− 3240.0	1012.5	− 3240.0

TABLE 97 STEEL LEAN-TO ROOF TRUSS (ANALYSIS RESULTS)

Span	900.00 cm		Spacing	450.00 cm		Slope	1 in 5
Wind force	100 kg/m²		Panels	7		Purlins at	131.12 cm

MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	128.57	(2)	2499.8	1586.8	(1)	6960.5	4349.1
2	257.14	(2)	2096.3	903.4	(1)	6054.9	2358.7
3	257.14	(2)	1066.4	183.0	(1)	3641.7	486.6
4	257.14	(2)	480.7	501.9	(1)	12.0	1180.0
5	131.12	(1)	7104.4	4070.3	(2)	2586.9	1490.1
6	131.12	(1)	7138.4	3464.8	(2)	2663.3	1354.3
7	131.12	(1)	4950.6	416.0	(2)	1791.3	169.2
8	131.12	(1)	4931.0	1039.2	(2)	1853.8	431.2
9	131.12	(1)	2475.1	114.2	(2)	877.7	32.8
10	131.12	(1)	2927.5	1157.8	(2)	1141.4	482.2
11	131.12	(1)	2905.2	1913.8	(2)	1202.5	811.9
12	25.71	(1)	435.8	605.6	(2)	186.4	135.8
13	77.14	(1)	470.0	675.8	(2)	199.8	281.6
14	128.57	(1)	717.8	433.8	(2)	305.5	188.0
15	64.29	(1)	450.5	756.1	(2)	192.0	329.7
16	180.00	(1)	1692.5	1281.9	(2)	721.2	560.1
17	138.48	(1)	1292.2	343.0	(2)	552.7	135.8
18	164.65	(1)	1553.0	279.3	(2)	662.5	123.9
19	134.23	(2)	199.0	105.4	(1)	466.3	239.0
20	138.48	(2)	446.8	566.2	(1)	1027.4	1447.2
21	164.65	(2)	652.1	56.5	(1)	1530.7	169.4
22	156.94	(2)	1251.4	224.8	(1)	2937.3	535.7
23	156.94	(2)	1479.7	356.7	(1)	3473.0	840.7

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	718.7	0.0	718.7
Live load reaction	0.0	981.9	0.0	981.9
Wind load reaction (without 25 percent reduction)	405.0	− 1761.7	405.0	− 1761.7

TABLE 98 STEEL LEAN-TO ROOF TRUSS (ANALYSIS RESULTS)

Span	900.00 cm		Spacing	450.00 cm		Slope	1 in 5
Wind force	150 kg/m²		Panels	7		Purlins at	131.12 cm
MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	128.57	(2)	4852.8	3069.4	(1)	6960.5	4349.1
2	257.14	(2)	4104.0	1728.9	(1)	6054.9	2358.7
3	257.14	(2)	2176.8	351.7	(1)	3641.7	486.6
4	257.14	(2)	719.2	939.8	(1)	12.0	1180.0
5	131.12	(1)	7104.4	4070.3	(2)	5006.3	2880.2
6	131.12	(1)	7138.4	3464.8	(2)	5126.3	2580.5
7	131.12	(1)	4950.6	416.0	(2)	3471.5	319.8
8	131.12	(1)	4931.0	1039.2	(2)	3562.1	811.5
9	131.12	(1)	2475.1	114.2	(2)	1708.8	64.2
10	131.12	(1)	2927.5	1157.8	(2)	2176.1	906.9
11	131.12	(1)	2905.2	1913.8	(2)	2264.2	1521.2
12	25.71	(1)	435.8	605.6	(2)	348.6	299.7
13	77.14	(1)	470.0	675.8	(2)	374.2	529.5
14	128.57	(1)	717.8	433.8	(2)	572.0	350.8
15	64.29	(1)	450.5	756.1	(2)	359.4	614.4
16	180.00	(1)	1692.5	1281.9	(2)	1350.0	1043.4
17	138.48	(1)	1292.2	343.0	(2)	1033.8	258.1
18	164.65	(1)	1553.0	279.3	(2)	1239.9	230.1
19	134.23	(2)	372.3	196.0	(1)	466.3	239.0
20	138.48	(2)	832.9	1078.6	(1)	1027.4	1447.2
21	164.65	(2)	1220.7	109.6	(1)	1530.7	169.4
22	156.94	(2)	2342.6	422.0	(1)	2937.3	535.7
23	156.94	(2)	2769.9	668.3	(1)	3473.0	840.7

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	718.7	0.0	718.7
Live load reaction	0.0	981.9	0.0	981.9
Wind load reaction (without 25 percent reduction)	607.5	− 2642.6	607.5	− 2642.6

TABLE 99 STEEL LEAN-TO ROOF TRUSS (ANALYSIS RESULTS)

Span	900.00 cm	Spacing	450.00 cm	Slope	1 in 5
Wind force	200 kg/m²	Panels	7	Purlins at	131.12 cm

Member	Length cm		Compression kg	Moment kg.cm		Tension kg	Moment kg.cm
1	128.57	(2)	7205.8	4552.0	(1)	6960.5	4349.1
2	257.14	(2)	6111.8	2554.4	(1)	6054.9	2358.7
3	257.14	(2)	3287.1	520.3	(1)	3641.7	486.6
4	257.14	(2)	957.7	1377.8	(1)	12.0	1180.0
5	131.12	(1)	7104.4	4070.3	(2)	7425.7	4270.3
6	131.12	(1)	7138.4	3464.8	(2)	7589.3	3806.8
7	131.12	(1)	4950.6	416.0	(2)	5151.7	470.3
8	131.12	(1)	4931.0	1039.2	(2)	5270.5	1191.7
9	131.12	(1)	2475.1	114.2	(2)	2540.0	95.7
10	131.12	(1)	2927.5	1157.8	(2)	3210.7	1331.5
11	131.12	(1)	2905.2	1913.8	(2)	3325.8	2230.5
12	25.71	(1)	435.8	605.6	(2)	510.9	463.5
13	77.14	(1)	470.0	675.8	(2)	548.6	777.3
14	128.57	(1)	717.8	433.8	(2)	838.4	513.5
15	64.29	(1)	450.5	756.1	(2)	526.8	899.0
16	180.00	(1)	1692.5	1281.9	(2)	1978.8	1526.6
17	138.48	(1)	1292.2	343.0	(2)	1514.9	380.4
18	164.65	(1)	1553.0	279.3	(2)	1817.3	336.4
19	134.23	(2)	545.7	286.5	(1)	466.3	239.0
20	138.48	(2)	1219.1	1591.1	(1)	1027.4	1447.2
21	164.65	(2)	1789.3	164.1	(1)	1530.7	169.4
22	156.94	(2)	3433.8	619.3	(1)	2937.3	535.7
23	156.94	(2)	4060.2	979.8	(1)	3473.0	840.7

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	718.7	0.0	718.7
Live load reaction	0.0	981.9	0.0	981.9
Wind load reaction (without 25 percent reduction)	810.0	− 3523.5	810.0	− 3523.5

TABLE 100 STEEL LEAN-TO ROOF TRUSS (ANALYSIS RESULTS)

Span	900.00 cm		Spacing	600.00 cm		Slope	1 in 3
Wind force	100 kg/m²		Panels	7		Purlins at	135.53 cm
MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	128.57	(2)	1494.3	626.0	(1)	5310.0	2070.6
2	257.14	(2)	1090.1	461.4	(1)	4501.2	1292.2
3	257.14	(2)	222.5	135.8	(1)	2702.7	349.6
4	257.14	(2)	1077.8	464.1	(1)	4.5	973.8
5	135.53	(1)	5601.9	1944.3	(2)	1657.9	612.6
6	135.53	(1)	5591.0	2007.3	(2)	1810.3	764.5
7	135.53	(1)	3795.0	492.7	(2)	1096.8	222.2
8	135.53	(1)	3783.8	880.2	(2)	1254.0	401.3
9	135.53	(1)	1897.4	137.9	(2)	507.6	112.9
10	135.53	(1)	2260.2	929.5	(2)	845.0	434.4
11	135.53	(1)	2246.8	1401.2	(2)	1001.2	668.0
12	42.86	(1)	567.0	63.0	(2)	274.9	152.0
13	128.57	(1)	582.6	387.5	(2)	280.3	179.0
14	214.29	(1)	888.6	279.4	(2)	427.6	137.2
15	107.14	(1)	574.6	471.8	(2)	276.9	233.6
16	300.00	(1)	2095.3	744.2	(2)	1009.4	370.6
17	154.52	(1)	1083.0	261.3	(2)	523.4	104.6
18	214.29	(1)	1502.6	260.1	(2)	724.6	129.1
19	143.75	(2)	185.1	159.6	(1)	383.8	319.4
20	154.52	(2)	479.8	272.6	(1)	974.7	730.3
21	214.29	(2)	714.3	41.5	(1)	1482.7	127.6
22	197.56	(2)	1324.4	217.2	(1)	2749.4	457.5
23	197.56	(2)	1579.4	193.0	(1)	3278.5	407.4

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	1050.2	0.0	1050.2
Live load reaction	0.0	1051.2	0.0	1051.2
Wind load reaction (without 25 percent reduction)	900.0	− 2160.0	900.0	− 2160.0

TABLE 101 STEEL LEAN-TO ROOF TRUSS (ANALYSIS RESULTS)

Span	900.00 cm	Spacing	600.00 cm	Slope	1 in 3
Wind force	150 kg/m²	Panels	7	Purlins at	135.53 cm

Member	Length cm		Compression kg	Moment kg.cm		Tension kg	Moment kg.cm
1	128.57	(2)	3236.6	1327.0	(1)	5310.0	2070.6
2	257.14	(2)	2478.6	934.3	(1)	4501.2	1292.2
3	257.14	(2)	840.2	269.2	(1)	2702.7	349.6
4	257.14	(2)	1615.8	878.6	(1)	4.5	973.8
5	135.53	(1)	5601.9	1944.3	(2)	3536.7	1283.2
6	135.53	(1)	5591.0	2007.3	(2)	3763.2	1523.0
7	135.53	(1)	3795.0	492.7	(2)	2356.4	425.7
8	135.53	(1)	3783.8	880.2	(2)	2590.1	766.8
9	135.53	(1)	1897.4	137.9	(2)	1117.0	195.2
10	135.53	(1)	2260.2	929.5	(2)	1691.1	825.8
11	135.53	(1)	2246.8	1401.2	(2)	1922.8	1264.6
12	42.86	(1)	567.0	63.0	(2)	518.6	239.7
13	128.57	(1)	582.6	387.5	(2)	529.7	341.2
14	214.29	(1)	888.6	279.4	(2)	807.9	258.2
15	107.14	(1)	574.6	471.8	(2)	523.0	438.8
16	300.00	(1)	2095.3	744.2	(2)	1906.7	695.4
17	154.52	(1)	1083.0	261.3	(2)	988.0	205.9
18	214.29	(1)	1502.6	260.1	(2)	1368.5	242.4
19	143.75	(2)	349.6	299.3	(1)	383.8	319.4
20	154.52	(2)	902.4	545.7	(1)	974.7	730.3
21	214.29	(2)	1349.4	86.1	(1)	1482.7	127.6
22	197.56	(2)	2501.8	411.5	(1)	2749.4	457.5
23	197.56	(2)	2983.5	365.9	(1)	3278.5	407.4

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	1050.2	0.0	1050.2
Live load reaction	0.0	1051.2	0.0	1051.2
Wind load reaction (without 25 percent reduction)	1350.0	− 3240.0	1350.0	− 3240.0

TABLE 102 STEEL LEAN-TO ROOF TRUSS (ANALYSIS RESULTS)

Span	900.00 cm	Spacing	600.00 cm	Slope	1 in 3
Wind force	200 kg/m²	Panels	7	Purlins at	135.53 cm

MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	128.57	(2)	4978.9	2028.0	(1)	5310.0	2070.6
2	257.14	(2)	3867.2	1407.2	(1)	4501.2	1292.2
3	257.14	(2)	1458.0	402.6	(1)	2702.7	349.6
4	257.14	(2)	2153.8	1293.1	(1)	4.5	973.8
5	135.53	(1)	5601.9	1944.3	(2)	5415.6	1953.9
6	135.53	(1)	5591.0	2007.3	(2)	5716.2	2281.4
7	135.53	(1)	3795.0	492.7	(2)	3616.0	629.1
8	135.53	(1)	3783.8	880.2	(2)	3926.3	1132.4
9	135.53	(1)	1897.4	137.9	(2)	1726.4	277.5
10	135.53	(1)	2260.2	929.5	(2)	2537.2	1217.2
11	135.53	(1)	2246.8	1401.2	(2)	2844.5	1861.2
12	42.86	(1)	567.0	63.0	(2)	762.4	327.5
13	128.57	(1)	582.6	387.5	(2)	779.0	503.3
14	214.29	(1)	888.6	279.4	(2)	1188.2	379.2
15	107.14	(1)	574.6	471.8	(2)	769.1	643.9
16	300.00	(1)	2095.3	744.2	(2)	2804.1	1020.1
17	154.52	(1)	1083.0	261.3	(2)	1452.7	307.2
18	214.29	(1)	1502.6	260.1	(2)	2012.4	355.7
19	143.75	(2)	514.1	438.9	(1)	383.8	319.4
20	154.52	(2)	1324.9	818.9	(1)	974.7	730.3
21	214.29	(2)	1984.4	130.7	(1)	1482.7	127.6
22	197.56	(2)	3679.3	605.8	(1)	2749.4	457.5
23	197.56	(2)	4387.6	538.7	(1)	3278.5	407.4

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	1050.2	0.0	1050.2
Live load reaction	0.0	1051.2	0.0	1051.2
Wind load reaction (without 25 percent reduction)	1800.0	− 4320.0	1800.0	− 4320.0

TABLE 103 STEEL LEAN-TO ROOF TRUSS (ANALYSIS RESULTS)

Span	900.00 cm		Spacing	600.00 cm		Slope	1 in 4
Wind force	100 kg/m²		Panels	7		Purlins at	132.53 cm
MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	128.57	(2)	2375.8	1238.8	(1)	7444.6	3765.7
2	257.14	(2)	1905.4	768.2	(1)	6382.9	2148.9
3	257.14	(2)	820.8	171.8	(1)	3835.1	480.3
4	257.14	(2)	806.1	524.2	(1)	9.0	1239.9
5	132.53	(1)	7680.2	3516.5	(2)	2510.7	1168.9
6	132.53	(1)	7686.4	3238.3	(2)	2624.1	1197.2
7	132.53	(1)	5267.5	521.7	(2)	1702.7	209.4
8	132.53	(1)	5250.9	1104.8	(2)	1814.9	451.5
9	132.53	(1)	2633.5	4.7	(2)	821.3	46.7
10	132.53	(1)	3127.6	1209.6	(2)	1150.7	499.9
11	132.53	(1)	3108.1	1917.7	(2)	1261.5	809.3
12	32.14	(1)	589.7	327.1	(2)	251.9	28.4
13	96.43	(1)	619.9	596.9	(2)	263.0	245.1
14	160.71	(1)	945.9	407.1	(2)	401.5	176.5
15	80.36	(1)	603.9	708.1	(2)	256.8	309.3
16	225.00	(1)	2229.3	1158.4	(2)	947.5	507.9
17	143.75	(1)	1422.4	362.0	(2)	606.8	137.3
18	181.83	(1)	1807.7	312.9	(2)	769.2	138.5
19	137.31	(2)	218.4	139.4	(1)	513.1	316.1
20	143.75	(2)	526.4	475.6	(1)	1212.3	1289.7
21	181.83	(2)	758.1	52.3	(1)	1783.8	173.6
22	170.84	(2)	1433.0	240.7	(1)	3371.8	575.7
23	170.84	(2)	1702.8	305.7	(1)	4006.3	725.4

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	1027.0	0.0	1027.0
Live load reaction	0.0	1210.5	0.0	1210.5
Wind load reaction (without 25 percent reduction)	675.0	− 2160.0	675.0	− 2160.0

TABLE 104 STEEL LEAN-TO ROOF TRUSS (ANALYSIS RESULTS)

Span	900.00 cm	Spacing	600.00 cm	Slope	1 in 4
Wind force	150 kg/m²	Panels	7	Purlins at	132.53 cm

MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	128.57	(2)	4845.0	2506.4	(1)	7444.6	3765.7
2	257.14	(2)	3956.7	1522.1	(1)	6382.9	2148.9
3	257.14	(2)	1891.3	340.4	(1)	3835.1	480.3
4	257.14	(2)	1207.5	999.8	(1)	9.0	1239.9
5	132.53	(1)	7680.2	3516.5	(2)	5088.0	2358.5
6	132.53	(1)	7686.4	3238.3	(2)	5259.2	2353.2
7	132.53	(1)	5267.5	521.7	(2)	3460.7	403.9
8	132.53	(1)	5250.9	1104.8	(2)	3626.2	867.5
9	132.53	(1)	2633.5	4.7	(2)	1685.2	69.7
10	132.53	(1)	3127.6	1209.6	(2)	2264.4	958.1
11	132.53	(1)	3108.1	1917.7	(2)	2427.2	1544.0
12	32.14	(1)	589.7	327.1	(2)	479.3	48.9
13	96.43	(1)	619.9	596.9	(2)	501.2	470.3
14	160.71	(1)	945.9	407.1	(2)	765.1	334.8
15	80.36	(1)	603.9	708.1	(2)	489.1	585.9
16	225.00	(1)	2229.3	1158.4	(2)	1805.0	961.3
17	143.75	(1)	1422.4	362.0	(2)	1155.0	268.2
18	181.83	(1)	1807.7	312.9	(2)	1465.0	261.6
19	137.31	(2)	415.9	263.5	(1)	513.1	316.1
20	143.75	(2)	998.3	935.4	(1)	1212.3	1289.7
21	181.83	(2)	1444.2	108.3	(1)	1783.8	173.6
22	170.84	(2)	2729.8	460.1	(1)	3371.8	575.7
23	170.84	(2)	3243.7	583.5	(1)	4006.3	725.4

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	1027.0	0.0	1027.0
Live load reaction	0.0	1210.5	0.0	1210.5
Wind load reaction (without 25 percent reduction)	1012.5	− 3240.0	1012.5	− 3240.0

TABLE 105 STEEL LEAN-TO ROOF TRUSS (ANALYSIS RESULTS)

Span	900.00 cm		Spacing	600.00 cm		Slope	1 in 4
Wind force	200 kg/m²		Panels	7		Purlins at	132.53 cm
MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	128.57	(2)	7314.3	3774.0	(1)	7444.6	3765.7
2	257.14	(2)	6008.1	2276.1	(1)	6382.9	2148.9
3	257.14	(2)	2961.9	508.9	(1)	3835.1	480.3
4	257.14	(2)	1609.0	1475.3	(1)	9.0	1239.9
5	132.53	(1)	7680.2	3516.5	(2)	7665.2	3548.2
6	132.53	(1)	7686.4	3238.3	(2)	7894.3	3509.2
7	132.53	(1)	5267.5	521.7	(2)	5218.6	598.4
8	132.53	(1)	5250.9	1104.8	(2)	5437.5	1283.4
9	132.53	(1)	2633.5	4.7	(2)	2549.1	92.6
10	132.53	(1)	3127.6	1209.7	(2)	3378.1	1416.2
11	132.53	(1)	3108.1	1917.7	(2)	3592.9	2278.7
12	32.14	(1)	589.7	327.1	(2)	706.7	102.7
13	96.43	(1)	619.9	596.9	(2)	739.4	695.6
14	160.71	(1)	945.9	407.1	(2)	1128.7	493.2
15	80.36	(1)	603.9	708.1	(2)	721.4	862.5
16	225.00	(1)	2229.3	1158.4	(2)	2662.4	1414.7
17	143.75	(1)	1422.4	362.0	(2)	1703.2	399.1
18	181.83	(1)	1807.7	312.9	(2)	2160.8	384.7
19	137.31	(2)	613.4	387.5	(1)	513.1	316.1
20	143.75	(2)	1470.1	1395.2	(1)	1212.3	1289.7
21	181.83	(2)	2130.3	164.3	(1)	1783.8	173.6
22	170.84	(2)	4026.7	679.5	(1)	3371.8	575.7
23	170.84	(2)	4784.6	861.2	(1)	4006.3	725.4

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	1027.0	0.0	1027.0
Live load reaction	0.0	1210.5	0.0	1210.5
Wind load reaction (without 25 percent reduction)	1350.0	− 4320.0	1350.0	− 4320.0

TABLE 106 STEEL LEAN-TO ROOF TRUSS (ANALYSIS RESULTS)

Span	900.00 cm	Spacing	600.00 cm	Slope	1 in 5
Wind force	100 kg/m²	Panels	7	Purlins at	131.12 cm

Member	Length cm		Compression kg	Moment kg.cm		Tension kg	Moment kg.cm
1	128.57	(2)	3155.6	2004.8	(1)	9517.4	5946.7
2	257.14	(2)	2640.7	1144.4	(1)	8279.1	3225.1
3	257.14	(2)	1329.0	231.6	(1)	4979.4	665.4
4	257.14	(2)	641.3	639.1	(1)	16.4	1613.0
5	131.12	(1)	9714.2	5565.5	(2)	3268.1	1883.0
6	131.12	(1)	9760.6	4737.5	(2)	3369.1	1717.4
7	131.12	(1)	6769.2	568.8	(2)	2262.1	215.0
8	131.12	(1)	6742.4	1420.9	(2)	2346.0	548.4
9	131.12	(1)	3384.4	156.1	(2)	1107.2	41.3
10	131.12	(1)	4002.9	1583.1	(2)	1447.2	613.5
11	131.12	(1)	3972.4	2616.9	(2)	1529.3	1033.8
12	25.71	(1)	595.9	828.0	(2)	237.4	165.6
13	77.14	(1)	642.6	924.0	(2)	254.4	358.2
14	128.57	(1)	981.5	593.1	(2)	389.0	239.6
15	64.29	(1)	616.1	1033.8	(2)	244.5	420.3
16	180.00	(1)	2314.2	1752.8	(2)	918.4	714.2
17	138.48	(1)	1766.9	468.9	(2)	703.9	172.4
18	164.65	(1)	2123.4	381.9	(2)	843.7	158.1
19	134.23	(2)	253.4	134.4	(1)	637.6	326.8
20	138.48	(2)	569.5	718.0	(1)	1404.7	1978.8
21	164.65	(2)	830.4	72.0	(1)	2093.0	231.6
22	156.94	(2)	1593.6	286.0	(1)	4016.3	732.5
23	156.94	(2)	1884.4	454.1	(1)	4748.8	1149.5

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	1016.0	0.0	1016.0
Live load reaction	0.0	1309.1	0.0	1309.1
Wind load reaction (without 25 percent reduction)	540.0	− 2349.0	540.0	− 2349.0

TABLE 107 STEEL LEAN-TO ROOF TRUSS (ANALYSIS RESULTS)

Span	900.00 cm		Spacing	600.00 cm		Slope	1 in 5
Wind force	150 kg/m²		Panels	7		Purlins at	131.12 cm

Member	Length cm		Compression kg	Moment kg.cm		Tension kg	Moment kg.cm
1	128.57	(2)	6292.9	3981.6	(1)	9517.4	5946.7
2	257.14	(2)	5317.6	2245.1	(1)	8279.1	3225.1
3	257.14	(2)	2809.5	456.5	(1)	4979.4	665.4
4	257.14	(2)	959.2	1223.0	(1)	16.4	1613.5
5	131.12	(1)	9714.2	5565.5	(2)	6493.9	3736.4
6	131.12	(1)	9760.6	4737.5	(2)	6653.0	3352.3
7	131.12	(1)	6769.2	568.8	(2)	4502.4	415.8
8	131.12	(1)	6742.4	1420.9	(2)	4623.8	1055.4
9	131.12	(1)	3384.4	156.1	(2)	2215.3	83.2
10	131.12	(1)	4002.9	1583.1	(2)	2826.8	1179.6
11	131.12	(1)	3972.4	2616.9	(2)	2944.8	1979.5
12	25.71	(1)	595.9	828.0	(2)	453.7	384.1
13	77.14	(1)	642.6	924.0	(2)	487.0	688.7
14	128.57	(1)	981.5	593.1	(2)	744.3	456.7
15	64.29	(1)	616.1	1033.8	(2)	467.7	799.9
16	180.00	(1)	2314.2	1752.8	(2)	1756.8	1358.4
17	138.48	(1)	1766.9	468.9	(2)	1345.4	335.4
18	164.65	(1)	2123.4	381.9	(2)	1613.6	299.7
19	134.23	(2)	484.6	255.2	(1)	637.6	326.8
20	138.48	(2)	1084.4	1401.3	(1)	1404.7	1978.8
21	164.65	(2)	1588.6	141.9	(1)	2093.0	231.6
22	156.94	(2)	3048.5	549.1	(1)	4016.3	732.5
23	156.94	(2)	3604.7	869.6	(1)	4748.8	1149.5

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	1016.0	0.0	1016.0
Live load reaction	0.0	1309.1	0.0	1309.1
Wind load reaction (without 25 percent reduction)	810.0	− 3523.5	810.0	− 3523.5

TABLE 108 STEEL LEAN-TO ROOF TRUSS (ANALYSIS RESULTS)

Span	900.00 cm	Spacing	600.00 cm	Slope	1 in 5
Wind force	200 kg/m²	Panels	7	Purlins at	131.12 cm

MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	128.57	(2)	9430.2	5958.4	(1)	9517.4	5946.7
2	257.14	(2)	7994.6	3345.7	(1)	8279.1	3225.1
3	257.14	(2)	4290.0	681.3	(1)	4979.4	665.4
4	257.14	(2)	1277.2	1807.0	(1)	16.4	1613.0
5	131.12	(1)	9714.2	5565.5	(2)	9719.7	5589.9
6	131.12	(1)	9760.6	4737.5	(2)	9937.0	4987.3
7	131.12	(1)	6769.2	568.8	(2)	6742.7	616.5
8	131.12	(1)	6742.4	1420.9	(2)	6901.6	1562.5
9	131.12	(1)	3384.4	156.1	(2)	3323.5	125.2
10	131.12	(1)	4002.9	1583.1	(2)	4206.3	1745.8
11	131.12	(1)	3972.4	2616.9	(2)	4360.4	2925.2
12	25.71	(1)	595.9	828.0	(2)	670.0	602.6
13	77.14	(1)	642.6	924.0	(2)	719.5	1019.2
14	128.57	(1)	981.5	593.1	(2)	1099.6	673.7
15	64.29	(1)	616.1	1033.8	(2)	691.0	1179.4
16	180.00	(1)	2314.2	1752.8	(2)	2595.2	2002.7
17	138.48	(1)	1766.9	468.9	(2)	1986.9	498.5
18	164.65	(1)	2123.4	381.9	(2)	2383.4	441.4
19	134.23	(2)	715.8	376.0	(1)	637.6	326.8
20	138.48	(2)	1599.3	2084.5	(1)	1404.7	1978.8
21	164.65	(2)	2346.7	214.5	(1)	2093.0	231.6
22	156.94	(2)	4503.5	812.1	(1)	4016.3	732.5
23	156.94	(2)	5325.0	1285.0	(1)	4748.8	1149.5

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	1016.0	0.0	1016.0
Live load reaction	0.0	1309.1	0.0	1309.1
Wind load reaction (without 25 percent reduction)	1080.0	− 4698.0	1080.0	− 4698.0

TABLE 109 STEEL LEAN-TO ROOF TRUSS (ANALYSIS RESULTS)

Span	1200.00 cm		Spacing	450.00 cm		Slope	1 in 3
Wind force	100 kg/m²		Panels	9		Purlins at	140.55 cm
MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	133.33	(2)	1674.4	476.7	(1)	5474.1	1676.9
2	266.67	(2)	1342.7	494.2	(1)	4838.9	1306.6
3	266.67	(2)	649.8	188.5	(1)	3456.2	442.2
4	266.67	(2)	41.7	118.4	(1)	2074.7	280.7
5	266.67	(2)	1078.6	370.0	(1)	2.8	744.4
6	140.55	(1)	5779.4	3057.6	(2)	1825.8	3500.0
7	140.55	(1)	5760.0	5979.0	(2)	1925.5	4665.0
8	140.55	(1)	4406.2	6300.4	(2)	1351.4	6996.6
9	140.55	(1)	4408.6	7554.8	(2)	1466.5	7998.9
10	140.55	(1)	2978.0	7176.2	(2)	864.2	8508.3
11	140.55	(1)	2987.4	6809.5	(2)	982.6	8201.9
12	140.55	(1)	1552.6	6863.2	(2)	378.5	6568.7
13	140.55	(1)	1769.5	5574.7	(2)	600.8	4784.7
14	140.55	(1)	1781.3	2705.4	(2)	720.6	3018.4
15	44.44	(1)	423.9	909.7	(2)	214.0	566.6
16	133.33	(1)	447.3	719.4	(2)	223.7	350.9
17	222.22	(1)	448.6	181.9	(2)	223.9	89.8
18	311.11	(1)	679.3	121.7	(2)	339.6	61.8
19	155.56	(1)	446.7	147.2	(2)	223.5	70.9
20	400.00	(1)	2065.5	621.5	(2)	1033.5	319.2
21	160.25	(1)	829.4	513.9	(2)	416.4	262.2
22	222.22	(1)	1154.7	212.1	(2)	578.3	111.7
23	298.14	(1)	1548.8	154.7	(2)	775.4	79.8
24	173.56	(2)	122.4	314.3	(1)	244.4	620.5
25	160.25	(2)	378.0	192.9	(1)	735.3	513.6
26	222.22	(2)	567.7	67.9	(1)	1134.0	172.3
27	298.14	(2)	767.4	40.0	(1)	1533.9	61.5
28	240.37	(2)	1240.5	235.1	(1)	2479.4	468.0
29	240.37	(2)	1416.6	153.3	(1)	2831.2	310.4

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	1018.9	0.0	1018.9
Live load reaction	0.0	1051.2	0.0	1051.2
Wind load reaction (without 25 percent reduction)	900.0	− 2160.0	900.0	− 2160.0

TABLE 110 STEEL LEAN-TO ROOF TRUSS (ANALYSIS RESULTS)

Span	1200.00 cm		Spacing	450.00 cm		Slope	1 in 3
Wind force	150 kg/m²		Panels	9		Purlins at	140.55 cm
MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	133.33	(2)	3522.0	1024.6	(1)	5474.1	1676.9
2	266.67	(2)	2907.1	982.5	(1)	4838.9	1306.6
3	266.67	(2)	1612.6	364.4	(1)	3456.2	442.2
4	266.67	(2)	320.4	229.4	(1)	2074.7	280.7
5	266.67	(1)	1617.3	692.4	(1)	2.8	744.4
6	140.55	(1)	5779.4	3057.6	(2)	3805.3	4685.7
7	140.55	(1)	5760.0	5979.0	(2)	3951.4	6293.2
8	140.55	(1)	4406.2	6300.4	(2)	2840.3	9448.0
9	140.55	(1)	4408.6	7554.8	(2)	3013.4	10801.6
10	140.55	(1)	2978.0	7176.2	(2)	1845.9	11491.7
11	140.55	(1)	2987.4	6809.5	(2)	2025.3	11078.7
12	140.55	(1)	1552.6	6863.2	(2)	854.3	8871.3
13	140.55	(1)	1769.5	5574.7	(2)	1227.8	6464.3
14	140.55	(1)	1781.3	2705.4	(2)	1409.7	4077.3
15	44.44	(1)	423.9	909.7	(2)	399.2	1017.8
16	133.33	(1)	447.3	719.4	(2)	418.1	659.1
17	222.22	(1)	448.6	181.9	(2)	418.7	168.2
18	311.11	(1)	679.3	121.7	(2)	634.7	115.1
19	155.56	(1)	446.7	147.2	(2)	417.8	133.5
20	400.00	(1)	2065.5	621.5	(2)	1931.5	593.5
21	160.25	(1)	829.4	513.9	(2)	777.7	488.2
22	222.22	(1)	1154.7	212.1	(2)	1080.6	205.7
23	298.14	(1)	1548.8	154.7	(2)	1449.0	148.3
24	173.56	(2)	228.6	586.0	(1)	244.4	620.5
25	160.25	(2)	702.8	368.8	(1)	735.3	513.6
26	222.22	(2)	1060.8	133.7	(1)	1134.0	172.3
27	298.14	(2)	1434.1	71.4	(1)	1533.9	61.5
28	240.37	(2)	2318.4	439.1	(1)	2479.4	468.0
29	240.37	(2)	2647.5	287.3	(1)	2831.2	310.4

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	1018.9	0.0	1018.9
Live load reaction	0.0	1051.2	0.0	1051.2
Wind load reaction (without 25 percent reduction)	1350.0	− 3240.0	1350.0	− 3240.0

TABLE 111 STEEL LEAN-TO ROOF TRUSS (ANALYSIS RESULTS)

Span	1200.00 cm	Spacing	450.00 cm	Slope	1 in 3
Wind force	200 kg/m²	Panels	9	Purlins at	140.55 cm

Member	Length cm		Compression kg	Moment kg.cm		Tension kg	Moment kg.cm
1	133.33	(2)	5369.5	1572.5	(1)	5474.1	1676.9
2	266.67	(2)	4471.6	1470.8	(1)	4838.9	1306.6
3	266.67	(2)	2575.4	540.3	(1)	3456.2	442.2
4	266.67	(2)	682.4	340.4	(1)	2074.7	280.7
5	266.67	(2)	2156.1	1014.8	(1)	2.8	744.4
6	140.55	(1)	5779.4	3057.6	(2)	5784.9	5871.3
7	140.55	(1)	5760.0	5979.0	(2)	5977.3	8241.5
8	140.55	(1)	4406.2	6300.4	(2)	4329.2	11899.4
9	140.55	(1)	4408.6	7554.8	(2)	4560.3	13604.4
10	140.55	(1)	2978.0	7176.2	(2)	2827.6	14475.0
11	140.55	(1)	2987.4	6809.5	(2)	3068.0	13955.6
12	140.55	(1)	1552.6	6863.2	(2)	1330.1	11173.9
13	140.55	(1)	1769.5	5574.7	(2)	1854.8	8144.0
14	140.55	(1)	1781.3	2705.4	(2)	2098.7	5136.1
15	44.44	(1)	423.9	909.7	(2)	584.4	1469.0
16	133.33	(1)	447.3	719.4	(2)	612.5	967.3
17	222.22	(1)	448.6	181.9	(2)	613.5	246.7
18	311.11	(1)	679.3	121.7	(2)	929.9	168.5
19	155.56	(1)	446.7	147.2	(2)	612.0	196.1
20	400.00	(1)	2065.5	621.5	(2)	2829.4	867.7
21	160.25	(1)	829.4	513.9	(2)	1139.0	714.2
22	222.22	(1)	1154.7	212.1	(2)	1582.8	299.6
23	298.14	(1)	1548.8	154.7	(2)	2122.5	216.7
24	173.56	(2)	334.9	857.7	(1)	244.4	620.5
25	160.25	(2)	1027.5	544.7	(1)	735.3	513.6
26	222.22	(2)	1553.9	199.5	(1)	1134.0	172.3
27	298.14	(2)	2100.9	102.7	(1)	1533.9	61.5
28	240.37	(2)	3396.3	643.0	(1)	2479.4	468.0
29	240.37	(2)	3878.3	421.2	(1)	2831.2	310.4

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	1018.9	0.0	1018.9
Live load reaction	0.0	1051.2	0.0	1051.2
Wind load reaction (without 25 percent reduction)	1800.0	− 4320.0	1800.0	− 4320.0

TABLE 112 STEEL LEAN-TO ROOF TRUSS (ANALYSIS RESULTS)

Span	1200.00 cm		Spacing	450.00 cm		Slope	1 in 4
Wind force	100 kg/m²		Panels	9		Purlins at	137.44 cm
MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	133.33	(2)	2579.2	1270.9	(1)	7633.3	3681.0
2	266.67	(2)	2217.2	725.4	(1)	6854.3	1970.8
3	266.67	(2)	1354.6	193.2	(1)	4903.0	510.7
4	266.67	(2)	489.1	158.9	(1)	2942.8	407.3
5	266.67	(2)	808.0	389.7	(1)	4.3	885.2
6	137.44	(1)	7874.3	3422.3	(2)	2707.1	1190.9
7	137.44	(1)	7893.8	2940.4	(2)	2800.9	1113.9
8	137.44	(1)	6060.6	504.2	(2)	2072.4	202.4
9	137.44	(1)	6047.5	977.4	(2)	2159.5	404.3
10	137.44	(1)	4041.6	386.8	(2)	1366.5	172.8
11	137.44	(1)	4035.0	728.0	(2)	1456.2	321.0
12	137.44	(1)	2021.3	35.8	(2)	660.2	48.8
13	137.44	(1)	2295.0	888.0	(2)	873.8	384.9
14	137.44	(1)	2285.6	1278.6	(2)	962.3	561.3
15	33.33	(1)	449.5	528.0	(2)	199.8	98.8
16	100.00	(1)	475.0	493.4	(2)	209.4	208.9
17	166.67	(1)	478.0	341.1	(2)	210.4	148.1
18	233.33	(1)	726.7	272.4	(2)	320.4	121.6
19	116.67	(1)	467.3	390.6	(2)	206.3	176.4
20	300.00	(1)	2201.3	712.6	(2)	971.5	325.2
21	149.07	(1)	1089.1	361.6	(2)	482.5	140.1
22	188.56	(1)	1388.6	158.5	(2)	613.5	69.0
23	240.37	(1)	1767.2	253.7	(2)	780.4	115.7
24	157.23	(2)	137.8	115.7	(1)	312.0	254.5
25	149.07	(2)	412.1	446.8	(1)	908.6	1182.2
26	188.56	(2)	602.9	51.7	(1)	1365.8	161.1
27	240.37	(2)	774.1	54.5	(1)	1754.4	147.7
28	200.69	(2)	1296.2	192.9	(1)	2937.1	440.1
29	200.69	(2)	1473.3	162.9	(1)	3338.4	371.6

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	996.3	0.0	996.3
Live load reaction	0.0	1210.5	0.0	1210.5
Wind load reaction (without 25 percent reduction)	675.0	− 2160.0	675.0	− 2160.0

TABLE 113 STEEL LEAN-TO ROOF TRUSS (ANALYSIS RESULTS)

Span	1200.00 cm		Spacing	450.00 cm		Slope	1 in 4
Wind force	150 kg/m²		Panels	9		Purlins at	137.44 cm
MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	133.33	(2)	5161.2	2529.6	(1)	7633.3	3681.0
2	266.67	(2)	4486.4	1421.7	(1)	6854.3	1970.8
3	266.67	(2)	2862.0	376.3	(1)	4903.0	510.7
4	266.67	(2)	1231.9	307.3	(1)	2942.8	407.3
5	266.67	(1)	1211.3	734.3	(2)	4.3	885.2
6	137.44	(1)	7874.3	3422.3	(2)	5393.8	2365.8
7	137.44	(1)	7893.8	2940.4	(2)	5537.9	2168.6
8	137.44	(1)	6060.6	504.2	(2)	4134.7	389.0
9	137.44	(1)	6047.5	977.4	(2)	4263.1	771.9
10	137.44	(1)	4041.6	386.8	(2)	2734.0	324.8
11	137.44	(1)	4035.0	728.0	(2)	2867.5	604.7
12	137.44	(1)	2021.3	35.8	(2)	1332.6	79.2
13	137.44	(1)	2295.0	888.0	(2)	1699.3	727.7
14	137.44	(1)	2285.6	1278.6	(2)	1830.5	1058.4
15	33.33	(1)	449.5	528.0	(2)	375.8	237.6
16	100.00	(1)	475.0	493.4	(2)	394.5	396.9
17	166.67	(1)	478.0	341.1	(2)	396.6	279.9
18	233.33	(1)	726.7	272.4	(2)	603.6	228.5
19	116.67	(1)	467.3	390.6	(2)	388.5	330.7
20	300.00	(1)	2201.3	712.6	(2)	1830.0	608.4
21	149.07	(1)	1089.1	361.6	(2)	908.1	271.4
22	188.56	(1)	1388.6	158.5	(2)	1155.4	130.3
23	240.37	(1)	1767.2	253.7	(2)	1469.9	216.5
24	157.23	(2)	259.5	216.7	(1)	312.0	254.5
25	149.07	(2)	771.9	870.3	(1)	908.6	1182.2
26	188.56	(2)	1135.6	104.9	(1)	1365.8	161.1
27	240.37	(2)	1458.2	106.8	(1)	1754.4	147.7
28	200.69	(2)	2441.5	363.8	(1)	2937.1	440.1
29	200.69	(2)	2775.2	307.3	(1)	3338.4	371.6

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	996.3	0.0	996.3
Live load reaction	0.0	1210.5	0.0	1210.5
Wind load reaction (without 25 percent reduction)	1012.5	− 3240.0	1012.5	− 3240.0

TABLE 114 STEEL LEAN-TO ROOF TRUSS (ANALYSIS RESULTS)

Span	1200.00 cm	Spacing	450.00 cm	Slope	1 in 4
Wind force	200 kg/m²	Panels	9	Purlins at	137.44 cm

Member	Length cm		Compression kg	Moment kg.cm		Tension kg	Moment kg.cm
1	133.33	(2)	7743.2	3788.3	(1)	7633.3	3681.0
2	266.67	(2)	6755.5	2118.1	(1)	6854.3	1970.8
3	266.67	(2)	4369.4	559.4	(1)	4903.0	510.7
4	266.67	(2)	1974.6	455.7	(1)	2942.8	407.3
5	266.67	(2)	1614.6	1079.1	(1)	4.3	885.2
6	137.44	(1)	7874.3	3422.3	(2)	8080.6	3540.7
7	137.44	(1)	7893.8	2940.4	(2)	8274.9	3223.4
8	137.44	(1)	6060.6	504.2	(2)	6197.0	575.6
9	137.44	(1)	6047.5	977.4	(2)	6266.7	1139.6
10	137.44	(1)	4041.6	386.8	(2)	4101.6	476.7
11	137.44	(1)	4035.0	728.0	(2)	4278.8	888.4
12	137.44	(1)	2021.3	35.8	(2)	2004.9	109.7
13	137.44	(1)	2295.0	888.0	(2)	2524.7	1070.5
14	137.44	(1)	2285.6	1278.6	(2)	2698.6	1555.5
15	33.33	(1)	449.5	528.0	(2)	551.8	376.4
16	100.00	(1)	475.0	493.4	(2)	579.7	584.8
17	166.67	(1)	478.0	341.1	(2)	582.7	411.7
18	233.33	(1)	726.7	272.4	(2)	886.8	335.4
19	116.67	(1)	467.3	390.6	(2)	570.7	485.0
20	300.00	(1)	2201.3	712.6	(2)	2688.4	891.6
21	149.07	(1)	1089.1	361.6	(2)	1333.8	402.7
22	188.56	(1)	1388.6	158.5	(2)	1697.3	191.7
23	240.37	(1)	1767.2	253.7	(2)	2159.3	317.3
24	157.23	(2)	381.3	317.6	(1)	312.0	254.5
25	149.07	(2)	1131.8	1293.8	(1)	908.6	1182.2
26	188.56	(2)	1668.3	158.0	(1)	1365.8	161.1
27	240.37	(2)	2142.2	159.1	(1)	1754.4	147.7
28	200.69	(2)	3586.9	534.8	(1)	2937.1	440.1
29	200.69	(2)	4077.0	451.7	(1)	3338.4	371.6

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	996.3	0.0	996.3
Live load reaction	0.0	1210.5	0.0	1210.5
Wind load reaction (without 25 percent reduction)	1350.0	− 4320.0	1350.0	− 4320.0

TABLE 115 STEEL LEAN-TO ROOF TRUSS (ANALYSIS RESULTS)

Span	1200.00 cm		Spacing	450.00 cm		Slope	1 in 5
Wind force	100 kg/m²		Panels	9		Purlins at	135.97 cm

Member	Length cm		Compression kg	Moment kg.cm		Tension kg	Moment kg.cm
1	133.33	(2)	3404.8	2056.0	(1)	9776.3	5833.5
2	266.67	(2)	3020.3	1089.4	(1)	8897.2	2971.9
3	266.67	(2)	1977.5	268.4	(1)	6370.7	729.4
4	266.67	(2)	928.0	182.9	(1)	3824.3	493.2
5	266.67	(2)	644.9	437.1	(1)	7.3	1061.0
6	135.97	(1)	9977.8	5451.6	(2)	3511.8	1926.6
7	135.97	(1)	10046.4	4328.2	(2)	3602.9	1615.4
8	135.97	(1)	7792.2	600.3	(2)	2733.7	229.1
9	135.97	(1)	7770.9	1291.0	(2)	2798.5	507.6
10	135.97	(1)	5197.1	372.8	(2)	1811.0	156.0
11	135.97	(1)	5188.7	818.4	(2)	1880.9	337.7
12	135.97	(1)	2599.3	90.3	(2)	887.4	29.1
13	135.97	(1)	2945.9	1061.4	(2)	1103.6	429.9
14	135.97	(1)	2933.0	1608.8	(2)	1171.6	660.4
15	26.67	(1)	453.5	1123.3	(2)	187.9	311.3
16	80.00	(1)	492.5	766.6	(2)	202.6	307.0
17	133.33	(1)	498.3	445.6	(2)	204.7	181.6
18	186.67	(1)	755.5	359.6	(2)	310.9	149.9
19	93.33	(1)	481.2	547.5	(2)	198.3	230.5
20	240.00	(1)	2288.1	993.6	(2)	942.6	422.1
21	143.60	(1)	1352.1	484.6	(2)	559.4	182.9
22	170.75	(1)	1631.7	178.9	(2)	673.0	73.4
23	208.37	(1)	1989.2	286.2	(2)	820.1	122.5
24	149.07	(2)	156.9	109.4	(1)	380.5	257.8
25	143.60	(2)	440.1	678.9	(1)	1039.0	1817.7
26	170.75	(2)	660.2	73.9	(1)	1602.4	228.3
27	208.27	(2)	813.7	56.7	(1)	1975.7	166.4
28	179.38	(2)	1404.8	210.5	(1)	3410.2	515.1
29	179.38	(2)	1593.4	238.7	(1)	3867.8	581.1

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	985.7	0.0	985.7
Live load reaction	0.0	1309.1	0.0	1309.1
Wind load reaction (without 25 percent reduction)	540.0	2349.0	540.0	2349.0

TABLE 116 STEEL LEAN-TO ROOF TRUSS (ANALYSIS RESULTS)

Span	1200.00 cm	Spacing	450.00 cm	Slope	1 in 5
Wind force	150 kg/m²	Panels	9	Purlins at	135.97 cm

Member	Length cm		Compression kg	Moment kg.cm		Tension kg	Moment kg.cm
1	133.33	(2)	6682.0	4023.6	(1)	9776.3	5833.5
2	266.67	(2)	5963.6	2112.8	(1)	8897.2	2971.9
3	266.67	(2)	2992.4	520.1	(1)	6370.7	729.4
4	266.67	(2)	2008.0	353.8	(1)	3824.3	493.2
5	266.67	(2)	966.2	826.6	(1)	7.3	1061.0
6	135.97	(1)	9977.8	5451.6	(2)	6874.8	3768.1
7	135.97	(1)	10046.4	4328.2	(2)	7022.5	3120.2
8	135.97	(1)	7792.2	600.3	(2)	5355.7	440.3
9	135.97	(1)	7770.9	1291.0	(2)	5449.5	969.4
10	135.97	(1)	5197.1	372.8	(2)	3553.6	294.1
11	135.97	(1)	5188.7	818.4	(2)	3657.1	638.3
12	135.97	(1)	2599.3	90.3	(2)	1749.8	58.2
13	135.97	(1)	2945.9	1061.4	(2)	2129.9	815.9
14	135.97	(1)	2933.0	1608.8	(2)	2229.9	1249.8
15	26.67	(1)	453.5	1123.3	(2)	354.9	647.8
16	80.00	(1)	492.5	766.6	(2)	383.2	584.0
17	133.33	(1)	498.3	445.6	(2)	387.3	344.2
18	186.67	(1)	755.5	359.6	(2)	588.0	282.8
19	93.33	(1)	481.2	547.5	(2)	374.9	433.9
20	240.00	(1)	2288.1	993.6	(2)	1782.5	793.2
21	143.60	(1)	1352.1	484.6	(2)	1056.9	352.4
22	170.75	(1)	1631.7	178.9	(2)	1272.4	138.9
23	208.27	(1)	1989.2	286.2	(2)	1550.5	229.9
24	149.07	(2)	296.6	205.7	(1)	380.5	257.8
25	143.60	(2)	827.5	1311.1	(1)	1039.0	1817.7
26	170.75	(2)	1248.4	147.6	(1)	1602.4	228.3
27	208.27	(2)	1538.8	111.9	(1)	1975.7	166.4
28	179.38	(2)	2656.5	398.8	(1)	3410.2	515.1
29	179.38	(2)	3013.1	451.6	(1)	3867.8	581.1

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	985.7	0.0	985.7
Live load reaction	0.0	1309.1	0.0	1309.1
Wind load reaction (without 25 percent reduction)	810.0	3523.5	810.0	3523.5

TABLE 117 STEEL LEAN-TO ROOF TRUSS (ANALYSIS RESULTS)

Span	1200.00 cm		Spacing	450.00 cm		Slope	1 in 5
Wind force	200 kg/m²		Panels	9		Purlins at	135.97 cm
MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	133.33	(2)	9959.2	5991.2	(1)	9776.3	5833.5
2	266.67	(2)	8906.9	3136.2	(1)	8897.2	2971.9
3	266.67	(2)	6007.4	771.7	(1)	6370.7	729.4
4	266.67	(2)	3088.0	524.7	(1)	3824.3	493.2
5	266.67	(2)	1287.4	1216.1	(1)	7.3	1061.0
6	135.97	(1)	9977.8	5451.6	(2)	10237.9	5609.5
7	135.97	(1)	10046.4	4328.2	(2)	10442.2	4625.1
8	135.97	(1)	7792.2	600.3	(2)	7977.7	651.5
9	135.97	(1)	7770.9	1291.0	(2)	8100.4	1431.1
10	135.97	(1)	5197.1	372.8	(2)	5296.2	432.1
11	135.97	(1)	5188.7	818.4	(2)	5433.3	939.0
12	135.97	(1)	2599.3	90.3	(2)	2612.2	87.3
13	135.97	(1)	2945.9	1061.4	(2)	3156.3	1201.8
14	135.97	(1)	2933.0	1608.8	(2)	3288.2	1839.2
15	26.67	(1)	453.5	1123.3	(2)	521.9	984.4
16	80.00	(1)	492.5	766.6	(2)	563.9	861.0
17	133.33	(1)	498.3	445.6	(2)	570.0	506.9
18	186.67	(1)	755.5	359.6	(2)	865.1	415.7
19	93.33	(1)	481.2	547.5	(2)	551.5	637.4
20	240.00	(1)	2288.1	993.6	(2)	2622.4	1164.4
21	143.60	(1)	1352.1	484.6	(2)	1554.4	522.0
22	170.75	(1)	1631.7	178.9	(2)	1871.7	204.4
23	208.27	(1)	1989.2	286.2	(2)	2280.9	337.2
24	149.07	(2)	436.3	301.9	(1)	380.5	257.8
25	143.60	(2)	1214.9	1943.3	(1)	1039.0	1817.7
26	170.75	(2)	1836.6	221.3	(1)	1602.4	228.3
27	208.27	(2)	2263.9	167.0	(1)	1975.7	166.4
28	179.38	(2)	3908.2	587.0	(1)	3410.2	515.1
29	179.38	(2)	4432.8	664.5	(1)	3867.8	581.1

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	985.7	0.0	985.7
Live load reaction	0.0	1309.1	0.0	1309.1
Wind load reaction (without 25 percent reduction)	1080.0	− 4698.0	1080,0	− 4698.0

TABLE 118 STEEL LEAN-TO ROOF TRUSS (ANALYSIS RESULTS)

Span	1200.00 cm	Spacing	600.00 cm	Slope	1 in 3
Wind force	100 kg/m²	Panels	9	Purlins at	140.55 cm

Member	Length cm		Compression kg	Moment kg.cm		Tension kg	Moment kg.cm
1	133.33	(2)	2074.5	587.2	(1)	7509.5	2300.4
2	266.67	(2)	1650.5	621.2	(1)	6638.1	1792.5
3	266.67	(2)	766.6	238.6	(1)	4741.3	606.7
4	266.67	(2)	115.5	149.7	(1)	2846.1	385.1
5	266.67	(2)	1438.2	471.8	(1)	3.8	1021.2
6	140.55	(1)	7928.3	4194.5	(2)	2267.5	4754.9
7	140.55	(1)	7901.8	8202.2	(2)	2401.1	6330.2
8	140.55	(1)	6044.5	8643.1	(2)	1674.6	9492.5
9	140.55	(1)	6047.8	10363.9	(2)	1828.0	10852.3
10	140.55	(1)	4085.3	9844.5	(2)	1066.2	11543.2
11	140.55	(1)	4098.2	9341.4	(2)	1223.9	11127.3
12	140.55	(1)	2129.9	9415.2	(2)	459.8	8911.9
13	140.55	(1)	2427.4	7647.5	(2)	750.0	6491.0
14	140.55	(1)	2443.7	3711.3	(2)	909.3	4095.0
15	44.44	(1)	581.5	1248.0	(2)	273.0	729.2
16	133.33	(1)	613.6	986.8	(2)	285.4	447.1
17	222.22	(1)	615.4	249.6	(2)	285.6	114.4
18	311.11	(1)	931.9	167.0	(2)	433.1	78.9
19	155.56	(1)	612.7	202.0	(2)	285.2	90.3
20	400.00	(1)	2833.5	852.5	(2)	1318.4	407.6
21	160.25	(1)	1137.8	705.0	(2)	531.2	334.8
22	222.22	(1)	1584.0	291.0	(2)	737.7	143.0
23	298.14	(1)	2124.7	212.2	(2)	989.1	102.0
24	173.56	(2)	156.1	401.2	(1)	335.3	851.3
25	160.25	(2)	482.8	244.8	(1)	1008.8	704.6
26	222.22	(2)	724.1	85.6	(1)	1555.7	236.3
27	298.14	(2)	978.9	51.6	(1)	2104.2	84.3
28	240.37	(2)	1582.4	300.0	(1)	3401.3	642.0
29	240.37	(2)	1807.1	195.5	(1)	3883.9	425.8

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	1438.2	0.0	1438.2
Live load reaction	0.0	1401.6	0.0	1401.6
Wind load reaction (without 25 percent reduction)	1200.0	− 2880.0	1200.0	− 2880.0

TABLE 119 STEEL LEAN-TO ROOF TRUSS (ANALYSIS RESULTS)

Span	1200.00 cm		Spacing	600.00 cm		Slope	1 in 3
Wind force	150 kg/m²		Panels	9		Purlins at	140.55 cm
MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	133.33	(2)	4537.9	1317.7	(1)	7509.5	2300.4
2	266.67	(2)	3736.5	1272.3	(1)	6638.1	1792.5
3	266.67	(2)	2050.4	473.1	(1)	4741.3	606.7
4	266.67	(2)	367.3	297.8	(1)	2846.1	385.1
5	266.67	(2)	2156.5	901.7	(1)	3.8	1021.2
6	140.55	(1)	7928.3	4194.5	(2)	4906.9	6335.8
7	140.55	(1)	7901.8	8202.2	(2)	5102.3	8501.1
8	140.55	(1)	6044.5	8643.1	(2)	3659.8	12761.1
9	140.55	(1)	6047.8	10363.9	(2)	3890.6	14589.4
10	140.55	(1)	4085.3	9844.5	(2)	2375.2	15521.0
11	140.55	(1)	4098.2	9341.4	(2)	2614.1	14963.1
12	140.55	(1)	2129.9	9415.2	(2)	1094.2	11982.0
13	140.55	(1)	2427.4	7647.5	(2)	1586.0	8730.6
14	140.55	(1)	2443.7	3711.3	(2)	1828.1	5506.8
15	44.44	(1)	581.5	1248.0	(2)	520.0	1330.8
16	133.33	(1)	613.6	986.8	(2)	544.6	858.0
17	222.22	(1)	615.4	249.6	(2)	545.3	219.0
18	311.11	(1)	931.9	167.0	(2)	826.7	150.0
19	155.56	(1)	612.7	202.0	(2)	544.1	173.8
20	400.00	(1)	2833.5	852.5	(2)	2515.7	773.3
21	160.25	(1)	1137.8	705.0	(2)	1013.0	636.1
22	222.22	(1)	1584.0	291.0	(2)	1407.4	268.3
23	298.14	(1)	2124.7	212.2	(2)	1887.2	193.2
24	173.56	(2)	297.8	763.5	(1)	335.3	851.3
25	160.25	(2)	915.8	479.4	(1)	1008.8	704.6
26	222.22	(2)	1381.6	173.3	(1)	1555.7	236.3
27	298.14	(2)	1867.9	93.4	(1)	2104.2	84.3
28	240.37	(2)	3019.6	571.9	(1)	3401.3	642.0
29	240.37	(2)	3448.2	374.1	(1)	3883.9	425.8

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	1438.2	0.0	1438.2
Live load reaction	0.0	1401.6	0.0	1401.6
Wind load reaction (without 25 percent reduction)	1800.0	− 4320.0	1800.0	− 4320.0

TABLE 120 STEEL LEAN-TO ROOF TRUSS (ANALYSIS RESULTS)

Span	1200.00 cm		Spacing	600.00 cm		Slope	1 in 3
Wind force	200 kg/m²		Panels	9		Purlins at	140.55 cm
MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	133.33	(2)	7001.3	2048.2	(1)	7509.5	2300.4
2	266.67	(2)	5822.4	1923.3	(1)	6638.1	1792.5
3	266.67	(2)	3334.1	707.6	(1)	4741.3	606.7
4	266.67	(2)	850.0	445.8	(1)	2846.1	385.1
5	266.67	(2)	2874.9	1331.6	(1)	3.8	1021.2
6	140.55	(1)	7928.3	4194.5	(2)	7546.4	7916.7
7	140.55	(1)	7901.8	8202.2	(2)	7803.4	10816.1
8	140.55	(1)	6044.5	8643.1	(2)	5645.1	16029.6
9	140.55	(1)	6047.8	10363.9	(2)	5953.2	18326.4
10	140.55	(1)	4085.3	9844.5	(2)	3684.2	19498.8
11	140.55	(1)	4098.2	9341.4	(2)	4004.4	18798.9
12	140.55	(1)	2129.9	9415.2	(2)	1728.7	15052.1
13	140.55	(1)	2427.4	7647.5	(2)	2422.0	10970.2
14	140.55	(1)	2443.7	3711.3	(2)	2746.9	6918.6
15	44.44	(1)	581.5	1248.0	(2)	767.0	1932.4
16	133.33	(1)	613.6	986.8	(2)	803.7	1269.0
17	222.22	(1)	615.4	249.6	(2)	805.0	323.6
18	311.11	(1)	931.9	167.0	(2)	1220.2	221.2
19	155.56	(1)	612.7	202.0	(2)	803.1	257.3
20	400.00	(1)	2833.5	852.5	(2)	3713.0	1139.0
21	160.25	(1)	1137.8	705.0	(2)	1494.7	937.4
22	222.22	(1)	1584.0	291.0	(2)	2077.1	393.6
23	298.14	(1)	2124.7	212.2	(2)	2785.3	284.5
24	173.56	(2)	439.5	1125.7	(1)	335.3	851.3
25	160.25	(2)	1348.8	713.9	(1)	1008.8	704.6
26	222.22	(2)	2039.2	261.0	(1)	1555.7	236.3
27	298.14	(2)	2757.0	135.2	(1)	2104.2	84.3
28	240.37	(2)	4456.8	843.8	(1)	3401.3	642.0
29	240.37	(2)	5089.4	552.7	(1)	3883.9	425.8

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	1438.2	0.0	1438.2
Live load reaction	0.0	1401.6	0.0	1401.6
Wind load reaction (without 25 percent reduction)	2400.0	− 5760.0	2400.0	− 5760.0

TABLE 121 STEEL LEAN-TO ROOF TRUSS (ANALYSIS RESULTS)

Span	1200.00 cm	Spacing	600.00 cm	Slope	1 in 4
Wind force	100 kg/m²	Panels	9	Purlins at	137.44 cm

Member	Length cm		Compression kg	Moment kg.cm		Tension kg	Moment kg.cm
1	133.33	(2)	3236.8	1597.1	(1)	10447.3	5038.0
2	266.67	(2)	2774.8	915.0	(1)	9381.1	2697.4
3	266.67	(2)	1676.2	244.1	(1)	6710.5	699.0
4	266.67	(2)	574.2	201.0	(1)	4027.6	557.5
5	266.67	(2)	1077.5	496.1	(1)	5.9	1211.5
6	137.44	(1)	10777.2	4683.9	(2)	3400.9	1497.3
7	137.44	(1)	10803.8	4024.3	(2)	3525.5	1407.3
8	137.44	(1)	8294.8	690.0	(2)	2602.7	256.6
9	137.44	(1)	8276.8	1337.7	(2)	2719.1	513.2
10	137.44	(1)	5531.5	529.4	(2)	1715.0	220.2
11	137.44	(1)	5522.4	996.3	(2)	1834.8	408.7
12	137.44	(1)	2766.4	49.0	(2)	826.8	64.1
13	137.44	(1)	3141.1	1215.3	(2)	1104.3	489.7
14	137.44	(1)	3128.1	1749.9	(2)	1222.6	714.5
15	33.33	(1)	615.2	722.6	(2)	254.5	117.8
16	100.00	(1)	650.1	675.3	(2)	266.6	265.4
17	166.67	(1)	654.3	466.9	(2)	267.9	188.5
18	233.33	(1)	994.6	372.8	(2)	407.9	154.9
19	116.67	(1)	639.5	534.6	(2)	262.6	224.8
20	300.00	(1)	3012.8	975.3	(2)	1237.1	414.7
21	149.07	(1)	1490.6	494.9	(2)	614.5	177.2
22	188.56	(1)	1900.5	216.9	(2)	781.3	87.8
23	240.37	(1)	2418.7	347.2	(2)	993.8	147.5
24	157.23	(2)	175.5	147.5	(1)	427.1	348.3
25	149.07	(2)	525.3	564.4	(1)	1243.5	1618.0
26	188.56	(2)	767.7	64.7	(1)	1869.3	220.4
27	240.37	(2)	985.7	68.8	(1)	2401.1	202.1
28	200.69	(2)	1650.4	245.5	(1)	4019.9	602.4
29	200.69	(2)	1876.0	207.4	(1)	4569.0	508.6

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	1406.4	0.0	1406.4
Live load reaction	0.0	1613.9	0.0	1613.9
Wind load reaction (without 25 percent reduction)	900.0	− 2880.0	900.0	− 2880.0

TABLE 122 STEEL LEAN-TO ROOF TRUSS (ANALYSIS RESULTS)

Span	1200.00 cm	Spacing	600.00 cm	Slope	1 in 4
Wind force	150 kg/m²	Panels	9	Purlins at	137.44 cm

Member	Length cm		Compression kg	Moment kg.cm		Tension kg	Moment kg.cm
1	133.33	(2)	6679.4	3275.3	(1)	10447.3	5038.0
2	266.67	(2)	5800.3	1843.4	(1)	9381.1	2697.4
3	266.67	(2)	3686.1	488.2	(1)	6710.5	699.0
4	266.67	(2)	1564.6	398.9	(1)	4027.6	557.5
5	266.67	(2)	1615.2	955.8	(1)	5.9	1211.5
6	137.44	(1)	10777.2	4683.9	(2)	6983.2	3063.8
7	137.44	(1)	10803.8	4024.3	(2)	7174.8	2813.6
8	137.44	(1)	8294.8	690.0	(2)	5352.4	505.3
9	137.44	(1)	8276.8	1337.7	(2)	5523.9	1003.4
10	137.44	(1)	5531.5	529.4	(2)	3538.3	422.8
11	137.44	(1)	5522.4	996.3	(2)	3716.5	787.0
12	137.44	(1)	2766.4	49.0	(2)	1723.2	104.7
13	137.44	(1)	3141.1	1215.3	(2)	2204.9	946.7
14	137.44	(1)	3128.1	1749.9	(2)	2380.1	1377.3
15	33.33	(1)	615.2	722.6	(2)	489.1	302.8
16	100.00	(1)	650.1	675.3	(2)	513.5	516.1
17	166.67	(1)	654.3	466.9	(2)	516.1	364.2
18	233.33	(1)	994.6	372.8	(2)	785.5	297.4
19	116.67	(1)	639.5	534.6	(2)	505.6	430.6
20	300.00	(1)	3012.8	975.3	(2)	2381.7	792.3
21	149.07	(1)	1490.6	494.9	(2)	1182.0	352.3
22	188.56	(1)	1900.5	216.9	(2)	1503.8	169.6
23	240.37	(1)	2418.7	347.2	(2)	1913.0	281.9
24	157.23	(2)	337.8	282.1	(1)	427.1	348.3
25	149.07	(2)	1005.1	1129.1	(1)	1243.5	1618.0
26	188.56	(2)	1478.0	135.6	(1)	1869.3	220.4
27	240.37	(2)	1897.8	138.5	(1)	2401.1	202.1
28	200.69	(2)	3177.6	473.4	(1)	4019.9	602.4
29	200.69	(2)	3611.8	399.9	(1)	4569.0	508.6

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	1406.4	0.0	1406.4
Live load reaction	0.0	1613.9	0.0	1613.9
Wind load reaction (without 25 percent reduction)	1350.0	− 4320.0	1350.0	− 4320.0

TABLE 123 STEEL LEAN-TO ROOF TRUSS (ANALYSIS RESULTS)

Span	1200.00 cm		Spacing	600.00 cm		Slope	1 in 4
Wind force	200 kg/m²		Panels	9		Purlins at	137.44 cm
MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	133.33	(2)	10122.1	4953.6	(1)	10447.3	5038.0
2	266.67	(2)	8825.8	2771.9	(1)	9381.1	2697.4
3	266.67	(2)	5696.0	732.3	(1)	6710.5	699.0
4	266.67	(2)	2554.9	596.8	(1)	4027.6	557.5
5	266.67	(2)	2152.9	1415.4	(1)	5.9	1211.5
6	137.44	(1)	10777.2	4683.9	(2)	10565.5	4630.3
7	137.44	(1)	10803.8	4024.3	(2)	10824.1	4220.0
8	137.44	(1)	8294.8	690.0	(2)	8102.1	754.1
9	137.44	(1)	8276.8	1337.7	(2)	8328.8	1493.5
10	137.44	(1)	5531.5	529.4	(2)	5361.7	625.3
11	137.44	(1)	5522.4	996.3	(2)	5598.2	1165.3
12	137.44	(1)	2766.4	49.0	(2)	2619.7	145.3
13	137.44	(1)	3141.1	1215.3	(2)	3305.5	1403.8
14	137.44	(1)	3128.1	1749.9	(2)	3537.6	2040.1
15	33.33	(1)	615.2	722.6	(2)	723.8	487.9
16	100.00	(1)	650.1	675.3	(2)	760.3	766.7
17	166.67	(1)	654.3	466.9	(2)	764.3	540.0
18	233.33	(1)	994.6	372.8	(2)	1163.2	440.0
19	116.67	(1)	639.5	534.6	(2)	748.6	636.3
20	300.00	(1)	3012.8	975.3	(2)	3526.3	1170.0
21	149.07	(1)	1490.6	494.9	(2)	1749.5	527.3
22	188.56	(1)	1900.5	216.9	(2)	2226.3	251.4
23	240.37	(1)	2418.7	347.2	(2)	2832.2	416.3
24	157.23	(2)	500.1	416.7	(1)	427.1	348.3
25	149.07	(2)	1484.9	1693.8	(1)	1243.5	1618.0
26	188.56	(2)	2188.3	206.4	(1)	1869.3	220.4
27	240.37	(2)	2809.9	208.2	(1)	2401.1	202.1
28	200.69	(2)	4704.7	701.4	(1)	4019.9	602.4
29	200.69	(2)	5347.6	592.4	(1)	4569.0	508.6

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	1406.4	0.0	1406.4
Live load reaction	0.0	1613.9	0.0	1613.9
Wind load reaction (without 25 percent reduction)	1800.0	− 5760.0	1800.0	− 5760.0

TABLE 124 STEEL LEAN-TO ROOF TRUSS (ANALYSIS RESULTS)

Span	1200.00 cm	Spacing	600.00 cm	Slope	1 in 5
Wind force	100 kg/m²	Panels	9	Purlins at	135.97 cm

Member	Length cm		Compression kg	Moment kg.cm		Tension kg	Moment kg.cm
1	133.33	(2)	4293.5	2594.3	(1)	13363.5	7973.9
2	266.67	(2)	3802.9	1377.6	(1)	12161.8	4062.3
3	266.67	(2)	2476.2	339.5	(1)	8708.3	997.0
4	266.67	(2)	1141.0	231.5	(1)	5227.6	674.2
5	266.67	(2)	860.0	556.1	(1)	10.0	1450.3
6	135.97	(1)	13638.9	7451.9	(2)	4430.9	2431.5
7	135.97	(1)	13732.7	5916.4	(2)	4550.7	2044.8
8	135.97	(1)	10651.4	820.6	(2)	3448.6	290.3
9	135.97	(1)	10622.3	1764.6	(2)	3535.5	644.3
10	135.97	(1)	7104.0	509.5	(2)	2283.7	198.6
11	135.97	(1)	7092.6	1118.7	(2)	2377.1	429.6
12	135.97	(1)	3553.1	123.4	(2)	1117.7	36.5
13	135.97	(1)	4026.8	1450.8	(2)	1397.3	546.5
14	135.97	(1)	4009.2	2199.2	(2)	1488.3	840.1
15	26.67	(1)	619.9	1535.5	(2)	239.1	386.7
16	80.00	(1)	673.3	1047.8	(2)	257.7	390.1
17	133.33	(1)	681.2	609.2	(2)	260.4	231.0
18	186.67	(1)	1032.7	491.6	(2)	395.5	190.9
19	93.33	(1)	657.7	748.4	(2)	252.2	293.5
20	240.00	(1)	3127.6	1358.2	(2)	1199.2	537.8
21	143.60	(1)	1848.3	662.4	(2)	711.8	231.7
22	170.75	(1)	2230.4	244.5	(2)	856.3	93.3
23	208.27	(1)	2719.0	391.2	(2)	1043.3	156.1
24	149.07	(2)	199.6	139.4	(1)	520.1	352.4
25	143.60	(2)	560.6	859.4	(1)	1420.2	2484.7
26	170.75	(2)	839.9	92.8	(1)	2190.3	312.1
27	208.27	(2)	1035.2	71.4	(1)	2700.7	227.5
28	179.38	(2)	1787.2	267.7	(1)	4661.5	704.2
29	179.38	(2)	2027.0	303.6	(1)	5287.0	794.4

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	1391.4	0.0	1391.4
Live load reaction	0.0	1745.5	0.0	1745.5
Wind load reaction (without 25 percent reduction)	720.0	− 3132.0	720.0	− 3132.0

TABLE 125 STEEL LEAN-TO ROOF TRUSS (ANALYSIS RESULTS)

Span	1200.00 cm		Spacing	600.00 cm		Slope	1 in 5
Wind force	150 kg/m²		Panels	9		Purlins at	135.97 cm

MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	133.33	(2)	8663.0	5217.8	(1)	13363.5	7973.9
2	266.67	(2)	7727.3	2742.1	(1)	12161.8	4062.3
3	266.67	(2)	5162.7	675.0	(1)	8708.3	997.0
4	266.67	(2)	2581.0	459.3	(1)	5227.6	674.2
5	266.67	(2)	1288.4	1075.4	(1)	10.0	1450.3
6	135.97	(1)	13638.9	7451.9	(2)	8915.0	4886.8
7	135.97	(1)	13732.7	5916.4	(2)	9110.2	4051.3
8	135.97	(1)	10651.4	820.6	(2)	6944.7	571.9
9	135.97	(1)	10622.3	1764.6	(2)	7070.2	1260.0
10	135.97	(1)	7104.0	509.5	(2)	4607.1	382.7
11	135.97	(1)	7092.6	1118.7	(2)	4745.4	830.5
12	135.97	(1)	3553.1	123.4	(2)	2267.5	75.3
13	135.97	(1)	4026.8	1450.8	(2)	2765.7	1061.1
14	135.97	(1)	4009.2	2199.2	(2)	2899.3	1625.9
15	26.67	(1)	619.9	1535.5	(2)	461.8	835.5
16	80.00	(1)	673.3	1047.8	(2)	498.6	759.4
17	133.33	(1)	681.2	609.2	(2)	503.9	447.8
18	186.67	(1)	1032.7	491.6	(2)	765.0	368.1
19	93.33	(1)	657.7	748.4	(2)	487.7	564.8
20	240.00	(1)	3127.6	1358.2	(2)	2319.0	1032.6
21	143.60	(1)	1848.3	662.4	(2)	1375.1	457.7
22	170.75	(1)	2230.4	244.5	(2)	1655.4	180.7
23	208.27	(1)	2719.0	391.2	(2)	2017.2	299.3
24	149.07	(2)	385.8	267.7	(1)	520.1	352.4
25	143.60	(2)	1077.1	1702.4	(1)	1420.2	2484.7
26	170.75	(2)	1624.2	191.1	(1)	2190.3	312.1
27	208.27	(2)	2002.0	144.9	(1)	2700.7	227.5
28	179.38	(2)	3456.1	518.7	(1)	4661.5	704.2
29	179.38	(2)	3920.0	587.5	(1)	5287.0	794.4

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	1391.4	0.0	1391.4
Live load reaction	0.0	1745.5	0.0	1745.5
Wind load reaction (without 25 percent reduction)	1080.0	− 4698.0	1080.0	− 4698.0

TABLE 126 STEEL LEAN-TO ROOF TRUSS (ANALYSIS RESULTS)

Span	1200.00 cm		Spacing	600.00 cm		Slope	1 in 5
Wind force	200 kg/m²		Panels	9		Purlins at	135.97 cm
MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	133.33	(2)	13032.6	7841.3	(1)	13363.5	7973.9
2	266.67	(2)	11651.7	4106.7	(1)	12161.8	4062.3
3	266.67	(2)	7849.3	1010.6	(1)	8708.3	997.0
4	266.67	(2)	4021.0	687.2	(1)	5227.6	674.2
5	266.67	(2)	1716.8	1594.7	(1)	10.0	1450.3
6	135.97	(1)	13638.9	7451.9	(2)	13399.1	7342.0
7	135.97	(1)	13732.7	5916.4	(2)	13669.8	6057.8
8	135.97	(1)	10651.4	820.6	(2)	10440.7	853.6
9	135.97	(1)	10622.3	1764.6	(2)	10604.8	1875.6
10	135.97	(1)	7104.0	509.5	(2)	6930.6	566.8
11	135.97	(1)	7092.6	1118.7	(2)	7113.7	1231.3
12	135.97	(1)	3553.1	123.4	(2)	3417.4	114.1
13	135.97	(1)	4026.8	1450.8	(2)	4134.1	1575.6
14	135.97	(1)	4009.2	2199.2	(2)	4310.3	2411.7
15	26.67	(1)	619.9	1535.5	(2)	684.5	1284.3
16	80.00	(1)	673.3	1047.8	(2)	739.4	1128.7
17	133.33	(1)	681.2	609.2	(2)	747.4	664.6
18	186.67	(1)	1032.7	491.6	(2)	1134.5	545.2
19	93.33	(1)	657.7	748.4	(2)	723.2	836.1
20	240.00	(1)	3127.6	1358.2	(2)	3438.9	1527.4
21	143.60	(1)	1848.3	662.4	(2)	2038.4	683.7
22	170.75	(1)	2230.4	244.5	(2)	2454.5	268.0
23	208.27	(1)	2719.0	391.2	(2)	2991.1	442.4
24	149.07	(2)	572.1	396.1	(1)	520.1	352.4
25	143.60	(2)	1593.7	2545.3	(1)	1420.2	2484.7
26	170.75	(2)	2408.4	289.4	(1)	2190.3	312.1
27	208.27	(2)	2968.8	218.5	(1)	2700.7	227.5
28	179.38	(2)	5125.1	769.7	(1)	4661.5	704.2
29	179.38	(2)	5812.9	871.4	(1)	5287.0	794.4

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	1391.4	0.0	1391.4
Live load reaction	0.0	1745.5	0.0	1745.5
Wind load reaction (without 25 percent reduction)	1440.0	− 6264.0	1440.0	− 6264.0

TABLE 127 STEEL LEAN-TO ROOF TRUSS (ANALYSIS RESULTS)

Span	1500.00 cm	Spacing	450.00 cm	Slope	1 in 3
Wind force	100 kg/m²	Panels	11	Purlins at	143.74 cm

Member	Length cm		Compression kg	Moment kg.cm		Tension kg	Moment kg.cm
1	136.36	(2)	2089.6	795.4	(1)	7069.2	2788.9
2	272.73	(2)	1766.8	583.8	(1)	6442.8	1630.2
3	272.73	(2)	1073.9	289.4	(1)	5012.6	716.0
4	272.73	(2)	381.5	208.2	(1)	3581.1	497.1
5	272.73	(2)	310.6	192.0	(1)	2149.7	440.0
6	272.73	(2)	1348.3	509.2	(1)	3.4	1052.1
7	143.74	(1)	7460.9	3453.8	(2)	2265.4	3834.4
8	143.74	(1)	7430.7	5986.1	(2)	2363.6	3978.5
9	143.74	(1)	6068.3	6396.6	(2)	1807.8	6517.3
10	143.74	(1)	6061.1	7962.9	(2)	1923.1	7722.2
11	143.74	(1)	4583.1	7428.7	(2)	1326.5	8956.6
12	143.74	(1)	4588.2	8106.7	(2)	1447.4	9153.3
13	143.74	(1)	3100.5	7860.8	(2)	846.7	8777.8
14	143.74	(1)	3107.4	6688.4	(2)	968.5	8231.2
15	143.74	(1)	1618.4	6774.4	(2)	367.4	6115.5
16	143.74	(1)	1791.1	5557.2	(2)	569.4	4087.2
17	143.74	(1)	1798.1	2457.0	(2)	691.3	3024.9
18	45.45	(1)	427.6	1143.9	(2)	209.4	722.0
19	136.36	(1)	461.9	1484.9	(2)	223.3	696.4
20	227.27	(1)	466.6	623.4	(2)	225.1	290.5
21	318.18	(1)	462.8	264.1	(2)	223.1	125.4
22	409.09	(1)	696.5	187.1	(2)	336.3	91.7
23	204.55	(1)	454.2	180.9	(2)	219.6	81.9
24	500.00	(1)	2616.5	946.4	(2)	1264.8	472.3
25	163.89	(1)	852.2	821.4	(2)	413.9	424.6
26	227.27	(1)	1191.2	544.1	(2)	576.6	285.3
27	304.92	(1)	1604.5	314.6	(2)	776.2	151.0
28	388.36	(1)	2043.0	214.4	(2)	988.0	108.4
29	209.54	(2)	107.5	515.3	(1)	222.3	1052.3
30	163.89	(2)	363.1	437.0	(1)	719.9	1315.5
31	227.27	(2)	564.0	217.1	(1)	1165.3	539.8
32	304.92	(2)	766.4	45.5	(1)	1585.5	100.7
33	388.36	(2)	979.2	54.0	(1)	2026.0	78.4
34	284.77	(2)	1435.9	435.9	(1)	2970.8	904.0
35	284.77	(2)	1594.5	184.9	(1)	3298.7	393.1

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	1309.2	0.0	1309.2
Live load reaction	0.0	1314.0	0.0	1314.0
Wind load reaction (without 25 percent reduction)	1125.0	− 2700.0	1125.0	− 2700.0

TABLE 128 STEEL LEAN-TO ROOF TRUSS (ANALYSIS RESULTS)

Span	1500.00 cm	Spacing	450.00 cm	Slope	1 in 3
Wind force	150 kg/m²	Panels	11	Purlins at	143.74 cm

Member	Length cm		Compression kg	Moment kg.cm		Tension kg	Moment kg.cm
1	136.36	(2)	4457.4	1715.1	(1)	7069.2	2788.9
2	272.73	(2)	3856.0	1180.8	(1)	6442.8	1630.2
3	272.73	(2)	2548.9	568.1	(1)	5012.6	716.0
4	272.73	(2)	1242.4	405.4	(1)	3581.1	497.1
5	272.73	(2)	63.6	370.3	(1)	2149.7	440.0
6	272.73	(2)	2021.8	960.7	(1)	3.4	1052.1
7	143.74	(1)	7460.9	3453.8	(2)	4794.4	5105.2
8	143.74	(1)	7430.7	5986.1	(2)	4936.0	5500.3
9	143.74	(1)	6068.3	6396.6	(2)	3847.3	8779.4
10	143.74	(1)	6061.1	7962.9	(2)	4019.0	10403.7
11	143.74	(1)	4583.1	7428.7	(2)	2847.4	12070.4
12	143.74	(1)	4588.2	8106.7	(2)	3029.8	12335.9
13	143.74	(1)	3100.5	7860.8	(2)	1850.4	11829.8
14	143.74	(1)	3107.4	6688.4	(2)	2034.3	11095.0
15	143.74	(1)	1618.4	6774.4	(2)	854.0	8240.5
16	143.74	(1)	1791.1	5557.2	(2)	1189.3	5510.3
17	143.74	(1)	1798.1	2457.0	(2)	1373.5	4077.5
18	45.45	(1)	427.6	1143.9	(2)	394.1	1297.1
19	136.36	(1)	461.9	1484.9	(2)	421.3	1322.4
20	227.27	(1)	466.6	623.4	(2)	424.9	552.4
21	318.18	(1)	462.8	264.1	(2)	421.3	237.6
22	409.09	(1)	696.5	187.1	(2)	634.8	172.6
23	204.55	(1)	454.2	180.9	(2)	414.3	156.7
24	500.00	(1)	2616.5	946.4	(2)	2386.9	885.6
25	163.89	(1)	852.2	821.4	(2)	780.4	790.7
26	227.27	(1)	1191.2	544.1	(2)	1087.9	529.8
27	304.92	(1)	1604.5	314.6	(2)	1464.5	285.4
28	388.36	(1)	2043.0	214.4	(2)	1864.4	202.7
29	209.54	(2)	202.8	969.9	(1)	222.3	1052.3
30	163.89	(2)	679.4	901.7	(1)	719.9	1315.5
31	227.27	(2)	1064.0	426.6	(1)	1165.3	539.8
32	304.92	(2)	1446.3	87.2	(1)	1585.5	100.7
33	388.36	(2)	1848.0	95.7	(1)	2026.0	78.4
34	284.77	(2)	2709.9	823.0	(1)	2970.8	904.0
35	284.77	(2)	3009.1	350.9	(1)	3298.7	393.1

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	1309.2	0.0	1309.2
Live load reaction	0.0	1314.0	0.0	1314.0
Wind load reaction (without 25 percent reduction)	1687.5	− 4050.0	1687.5	− 4050.0

TABLE 129 STEEL LEAN-TO ROOF TRUSS (ANALYSIS RESULTS)

Span	1500.00 cm	Spacing	450.00 cm	Slope	1 in 3
Wind force	200 kg/m²	Panels	11	Purlins at	143.74 cm

MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	136.36	(2)	6825.2	2634.7	(1)	7069.2	2788.9
2	272.73	(2)	5945.2	1777.8	(1)	6442.8	1630.2
3	272.73	(2)	4024.0	846.7	(1)	5012.6	716.0
4	272.73	(2)	2103.4	602.5	(1)	3581.1	497.1
5	272.73	(2)	183.4	548.6	(1)	2149.7	440.0
6	272.73	(2)	2695.3	1412.2	(1)	3.4	1052.1
7	143.74	(1)	7460.9	3453.8	(2)	7323.4	6376.1
8	143.74	(1)	7430.7	5986.1	(2)	7508.5	8080.7
9	143.74	(1)	6068.3	6396.6	(2)	5886.9	11041.6
10	143.74	(1)	6061.1	7962.9	(2)	6114.9	13085.2
11	143.74	(1)	4583.1	7428.7	(2)	4368.4	15184.2
12	143.74	(1)	4588.2	8106.7	(2)	4612.2	15518.5
13	143.74	(1)	3100.5	7860.8	(2)	2854.0	14881.8
14	143.74	(1)	3107.4	6688.4	(2)	3100.1	13958.8
15	143.74	(1)	1618.4	6774.4	(2)	1340.6	10365.6
16	143.74	(1)	1791.1	5557.2	(2)	1809.2	7445.5
17	143.74	(1)	1798.1	2457.0	(2)	2055.7	5130.2
18	45.45	(1)	427.6	1143.9	(2)	578.8	1872.2
19	136.36	(1)	461.9	1484.9	(2)	619.4	1948.5
20	227.27	(1)	466.6	623.4	(2)	624.8	814.3
21	318.18	(1)	462.8	264.1	(2)	619.5	349.7
22	409.09	(1)	696.5	187.1	(2)	933.2	253.5
23	204.55	(1)	454.2	180.9	(2)	609.1	231.6
24	500.00	(1)	2616.5	946.4	(2)	3509.0	1298.9
25	163.89	(1)	852.2	821.4	(2)	1146.8	1156.7
26	227.27	(1)	1191.2	544.1	(2)	1599.2	774.3
27	304.92	(1)	1604.5	314.6	(2)	2152.9	419.8
28	388.36	(1)	2043.0	214.4	(2)	2740.8	297.1
29	209.54	(2)	298.1	1424.5	(1)	222.3	1052.3
30	163.89	(2)	995.6	1366.4	(1)	719.9	1315.5
31	227.27	(2)	1564.1	636.2	(1)	1165.3	539.8
32	304.92	(2)	2126.2	128.8	(1)	1585.5	100.7
33	388.36	(2)	2716.7	137.3	(1)	2026.0	78.4
34	284.77	(2)	3983.9	1210.1	(1)	2970.8	904.0
35	284.77	(2)	4423.7	516.9	(1)	3298.7	393.1

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	1309.2	0.0	1309.2
Live load reaction	0.0	1314.0	0.0	1314.0
Wind load reaction (without 25 percent reduction)	2250.0	− 5400.0	2250.0	− 5400.0

TABLE 130 STEEL LEAN-TO ROOF TRUSS (ANALYSIS RESULTS)

Span	1500.00 cm		Spacing	450.00 cm		Slope	1 in 4
Wind force	100 kg/m²		Panels	11		Purlins at	140.56 cm
MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	136.36	(2)	3161.0	1686.6	(1)	9908.9	5303.9
2	272.73	(2)	2802.8	918.9	(1)	9134.8	2629.5
3	272.73	(2)	1938.4	359.8	(1)	7114.0	981.2
4	272.73	(2)	1071.7	225.8	(1)	5083.3	607.9
5	272.73	(2)	204.9	169.1	(1)	3051.6	448.7
6	272.73	(2)	1094.3	499.1	(1)	5.7	1171.2
7	140.56	(1)	10224.9	4136.2	(2)	3305.6	5062.8
8	140.56	(1)	10207.0	6239.1	(2)	3374.4	3786.7
9	140.56	(1)	8405.5	6813.0	(2)	2673.0	6350.4
10	140.56	(1)	8383.9	8388.7	(2)	2751.1	7634.6
11	140.56	(1)	6330.1	7979.4	(2)	1961.0	8670.9
12	140.56	(1)	6330.9	8483.1	(2)	2048.2	8929.1
13	140.56	(1)	4256.6	8266.0	(2)	1250.4	8483.7
14	140.56	(1)	4262.5	7119.2	(2)	1339.7	7919.4
15	140.56	(1)	2184.4	7190.8	(2)	540.4	5911.2
16	140.56	(1)	2413.9	5966.8	(2)	725.3	3902.1
17	140.56	(1)	2420.2	2656.9	(2)	814.8	2952.9
18	34.09	(1)	439.1	578.2	(2)	189.6	468.6
19	102.27	(1)	490.4	1960.4	(2)	209.0	817.9
20	170.45	(1)	499.2	799.5	(2)	212.3	331.8
21	238.64	(1)	496.4	303.2	(2)	211.1	127.4
22	306.82	(1)	740.4	212.9	(2)	315.3	93.1
23	153.41	(1)	481.8	191.1	(2)	205.6	76.4
24	375.00	(1)	3251.1	1211.3	(2)	1386.6	533.7
25	152.46	(1)	1116.2	893.1	(2)	478.9	371.5
26	192.85	(1)	1432.9	537.2	(2)	612.1	264.1
27	245.83	(1)	1835.3	345.7	(2)	783.4	146.9
28	304.92	(1)	2277.6	194.5	(2)	971.9	88.8
29	181.20	(2)	116.5	497.2	(1)	272.9	1149.5
30	152.46	(2)	383.3	861.6	(1)	856.2	2499.9
31	192.85	(2)	596.6	262.3	(1)	1397.3	733.9
32	245.83	(2)	773.8	96.3	(1)	1814.5	237.8
33	304.92	(2)	964.1	89.2	(1)	2261.0	161.1
34	231.84	(2)	1464.4	438.4	(1)	3433.9	1038.2
35	231.84	(2)	1624.7	143.9	(1)	3809.5	350.4

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	1280.2	0.0	1280.2
Live load reaction	0.0	1513.1	0.0	1513.1
Wind load reaction (without 25 percent reduction)	843.8	− 2700.0	843.8	− 2700.0

TABLE 131 STEEL LEAN-TO ROOF TRUSS (ANALYSIS RESULTS)

Span	1500.00 cm		Spacing	450.00 cm		Slope	1 in 4
Wind force	150 kg/m²		Panels	11		Purlins at	140.56 cm
MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	136.36	(2)	6444.5	3441.4	(1)	9908.9	5303.9
2	272.73	(2)	5774.2	1830.3	(1)	9134.8	2629.5
3	272.73	(2)	4130.3	708.3	(1)	7114.0	981.2
4	272.73	(2)	2481.2	443.2	(1)	5083.3	607.9
5	272.73	(2)	831.9	330.8	(1)	3051.6	448.7
6	272.73	(2)	1640.5	949.9	(1)	5.7	1171.2
7	140.56	(1)	10224.9	4136.2	(2)	6715.7	6883.3
8	140.56	(1)	10207.0	6239.1	(2)	6815.8	5136.8
9	140.56	(1)	8405.5	6813.0	(2)	5454.2	8538.7
10	140.56	(1)	8383.9	8388.7	(2)	5567.5	10266.5
11	140.56	(1)	6330.1	7979.4	(2)	4029.4	11664.1
12	140.56	(1)	6330.9	8483.1	(2)	4160.4	12011.9
13	140.56	(1)	4256.6	8266.0	(2)	2607.1	11412.7
14	140.56	(1)	4262.5	7119.2	(2)	2742.1	10655.6
15	140.56	(1)	2184.4	7190.8	(2)	1186.0	7950.6
16	140.56	(1)	2413.9	5966.8	(2)	1502.8	5251.4
17	140.56	(1)	2420.2	2656.9	(2)	1638.2	3972.7
18	34.09	(1)	439.1	578.2	(2)	359.8	802.2
19	102.27	(1)	490.4	1960.4	(2)	397.7	1563.9
20	170.45	(1)	499.2	799.5	(2)	404.3	635.1
21	238.64	(1)	496.4	303.2	(2)	401.9	243.2
22	306.82	(1)	740.4	212.9	(2)	600.3	176.2
23	153.41	(1)	481.8	191.1	(2)	391.2	147.4
24	375.00	(1)	3251.1	1211.3	(2)	2638.7	1008.8
25	152.46	(1)	1116.2	893.1	(2)	910.2	686.4
26	192.85	(1)	1432.9	537.2	(2)	1164.5	488.4
27	245.83	(1)	1835.3	345.7	(2)	1490.5	279.8
28	304.92	(1)	2277.6	194.5	(2)	1849.3	166.7
29	181.20	(2)	221.7	943.4	(1)	272.9	1149.5
30	152.46	(2)	722.0	1722.0	(1)	856.2	2499.9
31	192.85	(2)	1135.0	519.6	(1)	1397.3	733.9
32	245.83	(2)	1472.6	185.4	(1)	1814.5	237.8
33	304.92	(2)	1834.7	161.5	(1)	2261.0	161.1
34	231.84	(2)	2786.8	836.1	(1)	3433.9	1038.2
35	231.84	(2)	3091.8	276.1	(1)	3809.5	350.4

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	1280.2	0.0	1280.2
Live load reaction	0.0	1513.1	0.0	1513.1
Wind load reaction (without 25 percent reduction)	1265.6	− 4050.0	1265.6	− 4050.0

TABLE 132 STEEL LEAN-TO ROOF TRUSS (ANALYSIS RESULTS)

Span	1500.00 cm	Spacing	450.00 cm	Slope	1 in 4
Wind force	200 kg/m²	Panels	11	Purlins at	140.56 cm

Member	Length cm		Compression kg	Moment kg.cm		Tension kg	Moment kg.cm
1	136.36	(2)	9728.0	5196.3	(1)	9908.9	5303.9
2	272.73	(2)	8745.7	2741.8	(1)	9134.8	2629.5
3	272.73	(2)	6322.2	1056.8	(1)	7114.0	981.2
4	272.73	(2)	3890.8	660.6	(1)	5083.3	607.9
5	272.73	(2)	1458.8	492.4	(1)	3051.6	448.7
6	272.73	(2)	2186.7	1400.7	(1)	5.7	1171.2
7	140.56	(1)	10224.9	4136.2	(2)	10125.9	8703.7
8	140.56	(1)	10207.0	6239.1	(2)	10257.3	7564.0
9	140.56	(1)	8405.5	6813.0	(2)	8235.4	10727.0
10	140.56	(1)	8383.9	8388.7	(2)	8384.0	12898.3
11	140.56	(1)	6330.1	7979.4	(2)	6097.9	14657.3
12	140.56	(1)	6330.9	8483.1	(2)	6272.6	15094.7
13	140.56	(1)	4256.6	8266.0	(2)	3963.9	14341.7
14	140.56	(1)	4262.5	7119.2	(2)	4144.6	13391.8
15	140.56	(1)	2184.4	7190.8	(2)	1831.6	9990.1
16	140.56	(1)	2413.9	5966.8	(2)	2280.3	7131.2
17	140.56	(1)	2420.2	2656.9	(2)	2461.6	4992.5
18	34.09	(1)	439.1	578.2	(2)	530.1	1135.9
19	102.27	(1)	490.4	1960.4	(2)	586.5	2309.8
20	170.45	(1)	499.2	799.5	(2)	596.3	938.5
21	238.64	(1)	496.4	303.2	(2)	592.7	359.0
22	306.82	(1)	740.4	212.9	(2)	885.2	259.4
23	153.41	(1)	481.8	191.1	(2)	576.8	218.4
24	375.00	(1)	3251.1	1211.3	(2)	3890.8	1483.8
25	152.46	(1)	1116.2	893.1	(2)	1341.4	1001.2
26	192.85	(1)	1432.9	537.2	(2)	1716.8	712.8
27	245.83	(1)	1835.3	345.7	(2)	2197.6	412.7
28	304.92	(1)	2277.6	194.5	(2)	2726.7	244.5
29	181.20	(2)	326.9	1389.6	(1)	272.9	1149.5
30	152.46	(2)	1060.8	2582.5	(1)	856.2	2499.9
31	192.85	(2)	1673.4	776.9	(1)	1397.3	733.9
32	245.83	(2)	2171.3	274.4	(1)	1814.5	237.8
33	304.92	(2)	2705.4	233.7	(1)	2261.0	161.1
34	231.84	(2)	4109.2	1233.8	(1)	3433.9	1038.2
35	231.84	(2)	4559.0	408.3	(1)	3809.5	350.4

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	1280.2	0.0	1280.2
Live load reaction	0.0	1513.1	0.0	1513.1
Wind load reaction (without 25 percent reduction)	1687.5	− 5400.0	1687.5	− 5400.0

TABLE 133 STEEL LEAN-TO ROOF TRUSS (ANALYSIS RESULTS)

Span	1500.00 cm	Spacing	450.00 cm	Slope	1 in 5
Wind force	100 kg/m²	Panels	11	Purlins at	139.06 cm

MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	136.36	(2)	4238.5	2990.6	(1)	12588.0	8803.2
2	272.73	(2)	3904.1	1300.3	(1)	11826.9	3706.1
3	272.73	(2)	2865.8	395.9	(1)	9227.4	1124.1
4	272.73	(2)	1817.2	279.5	(1)	6596.0	774.5
5	272.73	(2)	766.8	245.1	(1)	3958.8	663.3
6	272.73	(2)	806.7	523.5	(1)	8.1	1304.5
7	139.06	(1)	12848.1	7767.0	(2)	4363.7	2634.0
8	139.06	(1)	12940.8	5572.1	(2)	4461.9	1989.7
9	139.06	(1)	10746.6	703.9	(2)	3642.4	251.8
10	139.06	(1)	10717.7	1731.8	(2)	3706.3	647.7
11	139.06	(1)	8068.0	383.7	(2)	2725.1	146.7
12	139.06	(1)	8056.0	1112.2	(2)	2795.3	434.4
13	139.06	(1)	5380.7	286.9	(2)	1804.9	121.6
14	139.06	(1)	5371.9	960.9	(2)	1876.4	387.0
15	139.06	(1)	2691.3	146.6	(2)	884.0	47.7
16	139.06	(1)	2966.3	964.5	(2)	1068.6	377.5
17	139.06	(1)	2953.3	1704.9	(2)	1138.4	679.4
18	27.27	(1)	454.9	2194.9	(2)	182.8	644.3
19	81.82	(1)	509.2	1078.0	(2)	202.4	416.4
20	136.36	(1)	515.3	738.1	(2)	204.6	287.8
21	190.91	(1)	514.6	674.0	(2)	204.3	265.4
22	245.45	(1)	777.2	446.2	(2)	309.0	179.9
23	122.73	(1)	497.1	740.3	(2)	197.9	302.0
24	300.00	(1)	2894.5	1384.7	(2)	1152.6	573.9
25	146.87	(1)	1386.2	1048.3	(2)	555.5	375.7
26	174.63	(1)	1683.8	417.8	(2)	671.7	160.7
27	213.01	(1)	2059.2	316.6	(2)	820.7	128.4
28	257.29	(1)	2484.8	381.1	(2)	990.0	160.3
29	166.45	(2)	130.9	168.7	(1)	328.6	409.8
30	146.87	(2)	395.1	1542.0	(1)	946.8	4316.5
31	174.63	(2)	655.9	286.0	(1)	1646.3	774.0
32	213.01	(2)	811.7	102.8	(1)	2039.0	333.0
33	257.29	(2)	983.8	111.4	(1)	2471.3	334.2
34	202.72	(2)	1551.7	378.5	(1)	3897.1	955.8
35	202.72	(2)	1714.1	367.6	(1)	4305.2	923.8

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	1266.6	0.0	1266.6
Live load reaction	0.0	1636.4	0.0	1636.4
Wind load reaction (without 25 percent reduction)	675.0	− 2936.2	675.0	− 2936.2

TABLE 134 STEEL LEAN-TO ROOF TRUSS (ANALYSIS RESULTS)

Span	1500.00 cm	Spacing	450.00 cm	Slope	1 in 5
Wind force	150 kg/m²	Panels	11	Purlins at	139.06 cm

Member	Length cm		Compression kg	Moment kg.cm		Tension kg	Moment kg.cm
1	136.36	(2)	8417.4	5926.2	(1)	12588.0	8803.2
2	272.73	(2)	7791.2	2556.8	(1)	11826.9	3706.1
3	272.73	(2)	5808.5	777.7	(1)	9227.4	1124.1
4	272.73	(2)	3805.1	546.0	(1)	6596.0	774.5
5	272.73	(2)	1797.9	476.2	(1)	3958.8	663.3
6	272.73	(2)	1208.7	998.8	(1)	8.1	1304.5
7	139.06	(1)	12848.1	7767.0	(2)	8647.6	5221.7
8	139.06	(1)	12940.8	5572.1	(2)	8810.1	3896.2
9	139.06	(1)	10746.6	703.9	(2)	7221.9	492.8
10	139.06	(1)	10717.7	1731.8	(2)	7312.9	1254.8
11	139.06	(1)	8068.0	383.7	(2)	5407.6	281.2
12	139.06	(1)	8056.0	1112.2	(2)	5511.0	833.6
13	139.06	(1)	5380.7	286.9	(2)	3587.7	229.4
14	139.06	(1)	5371.9	960.9	(2)	3693.5	737.8
15	139.06	(1)	2691.3	146.6	(2)	1766.4	95.6
16	139.06	(1)	2966.3	964.5	(2)	2088.2	724.0
17	139.06	(1)	2953.3	1704.9	(2)	2190.8	1298.1
18	27.27	(1)	454.9	2194.9	(2)	348.6	1325.5
19	81.82	(1)	509.2	1078.0	(2)	386.9	800.9
20	136.36	(1)	515.3	738.1	(2)	391.2	552.4
21	190.91	(1)	514.6	674.0	(2)	390.6	508.4
22	245.45	(1)	777.2	446.2	(2)	590.7	342.8
23	122.73	(1)	497.1	740.3	(2)	378.2	574.1
24	300.00	(1)	2894.5	1384.7	(2)	2202.4	1087.4
25	146.87	(1)	1386.2	1048.3	(2)	1060.0	735.1
26	174.63	(1)	1683.8	417.8	(2)	1283.0	309.4
27	213.01	(1)	2059.2	316.6	(2)	1567.9	244.4
28	257.29	(1)	2484.8	381.1	(2)	1891.6	302.9
29	166.45	(2)	250.1	320.1	(1)	328.6	409.8
30	146.87	(2)	747.5	3019.2	(1)	946.8	4316.5
31	174.63	(2)	1253.3	555.6	(1)	1646.3	774.0
32	213.01	(2)	1551.2	206.9	(1)	2039.0	333.0
33	257.29	(2)	1880.0	221.8	(1)	2471.3	334.2
34	202.72	(2)	2965.1	724.1	(1)	3897.1	955.8
35	202.72	(2)	3275.6	702.6	(1)	4305.2	923.8

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	1266.6	0.0	1266.6
Live load reaction	0.0	1636.4	0.0	1636.4
Wind load reaction (without 25 percent reduction)	1012.5	− 4404.4	1012.5	− 4404.4

TABLE 135 STEEL LEAN-TO ROOF TRUSS (ANALYSIS RESULTS)

Span	1500.00 cm		Spacing	450.00 cm		Slope	1 in 5
Wind force	200 kg/m²		Panels	11		Purlins at	139.06 cm
MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	136.36	(2)	12596.2	8861.8	(1)	12588.0	8803.2
2	272.73	(2)	11678.2	3813.4	(1)	11826.9	3706.1
3	272.73	(2)	8751.1	1159.6	(1)	9227.4	1124.1
4	272.73	(2)	5792.9	812.5	(1)	6596.0	774.5
5	272.73	(2)	2829.1	707.3	(1)	3958.8	663.3
6	272.73	(2)	1610.7	1474.0	(1)	8.1	1304.5
7	139.06	(1)	12848.1	7767.0	(2)	12931.6	7809.5
8	139.06	(1)	12940.8	5572.1	(2)	13158.3	5802.8
9	139.06	(1)	10746.6	703.9	(2)	10801.4	733.8
10	139.06	(1)	10717.7	1731.8	(2)	10919.6	1862.0
11	139.06	(1)	8068.0	383.7	(2)	8090.2	415.8
12	139.06	(1)	8056.0	1112.2	(2)	8226.7	1232.8
13	139.06	(1)	5380.7	286.9	(2)	5370.5	337.1
14	139.06	(1)	5371.9	960.9	(2)	5510.6	1088.5
15	139.06	(1)	2691.3	146.6	(2)	2648.7	143.4
16	139.06	(1)	2966.3	964.5	(2)	3107.8	1070.5
17	139.06	(1)	2953.3	1704.9	(2)	3243.1	1916.8
18	27.27	(1)	454.9	2194.9	(2)	514.4	2006.7
19	81.82	(1)	509.2	1078.0	(2)	571.4	1185.5
20	136.36	(1)	515.3	738.1	(2)	577.8	817.1
21	190.91	(1)	514.6	674.0	(2)	576.9	751.4
22	245.45	(1)	777.2	446.2	(2)	872.4	505.8
23	122.73	(1)	497.1	740.3	(2)	558.5	846.2
24	300.00	(1)	2894.5	1384.7	(2)	3252.3	1600.9
25	146.87	(1)	1386.2	1048.3	(2)	1564.6	1094.4
26	174.63	(1)	1683.8	417.8	(2)	1894.4	458.2
27	213.01	(1)	2059.2	316.6	(2)	2315.2	360.4
28	257.29	(1)	2484.8	381.1	(2)	2793.1	445.4
29	166.45	(2)	369.3	471.5	(1)	328.6	409.8
30	146.87	(2)	1100.0	4496.4	(1)	946.8	4316.5
31	174.63	(2)	1850.6	825.2	(1)	1646.3	774.0
32	213.01	(2)	2290.6	312.1	(1)	2039.0	333.0
33	257.29	(2)	2776.3	332.2	(1)	2471.3	334.2
34	202.72	(2)	4378.6	1069.7	(1)	3897.1	955.8
35	202.72	(2)	4837.0	1037.6	(1)	4305.2	923.8

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	1266.6	0.0	1266.6
Live load reaction	0.0	1636.4	0.0	1636.4
Wind load reaction (without 25 percent reduction)	1350.0	− 5872.5	1350.0	− 5872.5

TABLE 136 STEEL LEAN-TO ROOF TRUSS (ANALYSIS RESULTS)

Span	1500.00 cm		Spacing	450.00 cm		Slope	1 in 3
Wind force	100 kg/m²		Panels	11		Purlins at	143.74 cm
MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	136.36	(2)	2584.8	981.1	(1)	9694.0	3824.5
2	272.73	(2)	2172.3	732.0	(1)	8835.1	2235.5
3	272.73	(2)	1289.1	365.4	(1)	6873.9	981.9
4	272.73	(2)	406.6	263.5	(1)	4910.8	681.7
5	272.73	(2)	475.4	243.4	(1)	2947.9	603.4
6	272.73	(2)	1797.8	649.0	(1)	4.7	1442.7
7	143.74	(1)	10231.1	4736.2	(2)	2808.0	5210.9
8	143.74	(1)	10189.7	8208.8	(2)	2939.8	5398.2
9	143.74	(1)	8321.4	8771.7	(2)	2237.5	8841.3
10	143.74	(1)	8311.6	10919.6	(2)	2391.5	10475.7
11	143.74	(1)	6284.9	10187.0	(2)	1638.1	12149.8
12	143.74	(1)	6291.9	11116.8	(2)	1799.2	12416.6
13	143.74	(1)	4251.7	10779.5	(2)	1040.7	11907.2
14	143.74	(1)	4261.2	9171.9	(2)	1202.8	11165.4
15	143.74	(1)	2219.3	9289.8	(2)	443.8	8295.9
16	143.74	(1)	2456.2	7620.6	(2)	708.2	5544.1
17	143.74	(1)	2465.7	3369.3	(2)	870.5	4103.2
18	45.45	(1)	586.3	1568.7	(2)	267.0	930.1
19	136.36	(1)	633.4	2036.2	(2)	284.5	886.2
20	227.27	(1)	639.9	854.8	(2)	286.8	369.6
21	318.18	(1)	634.7	362.1	(2)	284.3	159.7
22	409.09	(1)	955.1	256.6	(2)	428.5	117.0
23	204.55	(1)	622.8	248.1	(2)	279.8	104.1
24	500.00	(1)	3588.0	1297.8	(2)	1611.9	602.8
25	163.89	(1)	1168.7	1126.3	(2)	527.6	542.8
26	227.27	(1)	1633.5	746.1	(2)	734.9	364.9
27	304.92	(1)	2200.2	431.3	(2)	989.2	192.4
28	288.36	(1)	2801.5	294.0	(2)	1259.2	138.4
29	209.54	(2)	136.9	657.1	(1)	304.8	1443.0
30	163.89	(2)	463.6	545.2	(1)	987.3	1804.0
31	227.27	(2)	718.8	274.0	(1)	1598.0	740.2
32	304.92	(2)	976.7	57.9	(1)	2174.1	138.0
33	388.36	(2)	1247.9	69.8	(1)	2778.3	107.6
34	284.77	(2)	1830.0	555.5	(1)	4073.8	1239.6
35	284.77	(2)	2032.0	235.3	(1)	4523.5	539.1

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	1845.2	0.0	1845.2
Live load reaction	0.0	1752.1	0.0	1752.1
Wind load reaction (without 25 percent reduction)	1500.0	−3600.0	1500.0	−3600.0

TABLE 137 STEEL LEAN-TO ROOF TRUSS (ANALYSIS RESULTS)

Span	1500.00 cm	Spacing	600.00 cm	Slope	1 in 3
Wind force	150 kg/m²	Panels	11	Purlins at	143.74 cm

Member	Length cm		Compression kg	Moment kg.cm		Tension kg	Moment kg.cm
1	136.36	(2)	5741.8	2207.4	(1)	9694.0	3824.5
2	272.73	(2)	4957.8	1528.0	(1)	8835.1	2235.5
3	272.73	(2)	3255.8	737.0	(1)	6873.9	981.9
4	272.73	(2)	1554.6	526.3	(1)	4910.8	681.7
5	272.73	(2)	146.1	481.2	(1)	2947.9	603.4
6	272.73	(2)	2695.8	1250.9	(1)	4.7	1442.7
7	143.74	(1)	10231.1	4736.2	(2)	6180.1	6905.3
8	143.74	(1)	10189.7	8208.8	(2)	6369.8	7230.6
9	143.74	(1)	8321.4	8771.7	(2)	4957.0	11857.5
10	143.74	(1)	8311.6	10919.6	(2)	5186.1	14051.1
11	143.74	(1)	6284.9	10187.0	(2)	3666.1	16301.6
12	143.74	(1)	6291.9	11116.8	(2)	3909.1	16660.0
13	143.74	(1)	4251.7	10779.5	(2)	2378.9	15976.5
14	143.74	(1)	4261.2	9171.9	(2)	2623.9	14983.8
15	143.74	(1)	2219.3	9289.8	(2)	1092.5	11129.3
16	143.74	(1)	2456.2	7620.6	(2)	1534.7	7441.5
17	143.74	(1)	2465.7	3369.3	(2)	1780.1	5506.7
18	45.45	(1)	586.3	1568.7	(2)	513.3	1696.9
19	136.36	(1)	633.4	2036.2	(2)	548.6	1721.0
20	227.27	(1)	639.9	854.8	(2)	553.3	718.8
21	318.18	(1)	634.7	362.1	(2)	548.6	309.2
22	409.09	(1)	955.1	256.6	(2)	826.5	224.8
23	204.55	(1)	622.8	248.1	(2)	539.5	203.8
24	500.00	(1)	3588.0	1297.8	(2)	3108.0	1153.9
25	163.89	(1)	1168.7	1126.3	(2)	1016.2	1030.9
26	227.27	(1)	1633.5	746.1	(2)	1416.6	690.9
27	304.92	(1)	2200.2	431.3	(2)	1907.0	371.6
28	388.36	(1)	2801.5	294.0	(2)	2427.7	264.2
29	209.54	(2)	264.1	1263.2	(1)	304.8	1443.0
30	163.89	(2)	885.3	1164.8	(1)	987.3	1804.0
31	227.27	(2)	1385.5	553.5	(1)	1598.0	740.2
32	304.92	(2)	1883.3	113.3	(1)	2174.1	138.0
33	388.36	(2)	2406.3	125.3	(1)	2778.3	107.6
34	284.77	(2)	3528.6	1071.6	(1)	4073.8	1239.6
35	284.77	(2)	3918.2	456.6	(1)	4523.5	539.4

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	1845.2	0.0	1845.2
Live load reaction	0.0	1752.1	0.0	1752.1
Wind load reaction (without 25 percent reduction)	2250.0	− 5400.0	2250.0	− 5400.0

TABLE 138 STEEL LEAN-TO ROOF TRUSS (ANALYSIS RESULTS)

Span	1500.00 cm		Spacing	600.00 cm		Slope	1 in 3
Wind force	200 kg/m²		Panels	11		Purlins at	143.74 cm
MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	136.36	(2)	8898.9	3433.6	(1)	9694.0	3824.5
2	272.73	(2)	7743.4	2324.0	(1)	8835.1	2235.5
3	272.73	(2)	5222.5	1108.6	(1)	6873.9	981.9
4	272.73	(2)	2702.5	789.2	(1)	4910.8	681.7
5	272.73	(2)	183.3	718.9	(1)	2947.9	603.4
6	272.73	(2)	3593.8	1852.9	(1)	4.7	1442.7
7	143.74	(1)	10231.1	4736.2	(2)	9552.1	8599.8
8	143.74	(1)	10189.7	8208.8	(2)	9799.7	10603.7
9	143.74	(1)	8321.4	8771.7	(2)	7676.4	14873.8
10	143.74	(1)	8311.6	10919.6	(2)	7980.6	17626.5
11	143.74	(1)	6284.9	10187.0	(2)	5694.0	20453.3
12	143.74	(1)	6291.9	11116.8	(2)	6018.9	20903.5
13	143.74	(1)	4251.7	10779.5	(2)	3717.0	20045.8
14	143.74	(1)	4261.2	9171.9	(2)	4045.0	18802.2
15	143.74	(1)	2219.3	9289.8	(2)	1741.3	13962.8
16	143.74	(1)	2456.2	7620.6	(2)	2360.3	9769.0
17	143.74	(1)	2465.7	3369.3	(2)	2689.7	6910.2
18	45.45	(1)	586.3	1568.7	(2)	759.6	2463.7
19	136.36	(1)	633.4	2036.2	(2)	812.7	2555.7
20	227.27	(1)	639.9	854.8	(2)	819.7	1068.0
21	318.18	(1)	634.7	362.1	(2)	812.8	458.8
22	409.09	(1)	955.1	256.6	(2)	1224.5	332.7
23	204.55	(1)	622.8	248.1	(2)	799.2	303.6
24	500.00	(1)	3588.0	1297.8	(2)	4604.2	1704.9
25	163.89	(1)	1168.7	1126.3	(2)	1504.8	1518.9
26	227.27	(1)	1633.5	746.1	(2)	2098.3	1016.9
27	304.92	(1)	2200.2	431.3	(2)	2824.8	550.8
28	388.36	(1)	2801.5	294.0	(2)	3596.2	390.0
29	209.54	(2)	391.2	1869.4	(1)	304.8	1443.0
30	163.89	(2)	1307.0	1784.4	(1)	987.3	1804.0
31	227.27	(2)	2052.3	832.9	(1)	1598.0	740.2
32	304.92	(2)	2789.8	168.8	(1)	2174.1	138.0
33	388.36	(2)	3564.6	180.9	(1)	2778.3	107.6
34	284.77	(2)	5227.2	1587.8	(1)	4073.8	1239.6
35	284.77	(2)	5804.3	678.0	(1)	4523.5	539.1

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	1845.2	0.0	1845.2
Live load reaction	0.0	1752.1	0.0	1752.1
Wind load reaction (without 25 percent reduction)	3000.0	− 7200.0	3000.0	− 7200.0

TABLE 139 STEEL LEAN-TO ROOF TRUSS (ANALYSIS RESULTS)

Span	1500.00 cm	Spacing	600.00 cm	Slope	1 in 4
Wind force	100 kg/m²	Panels	11	Purlins at	140.56 cm

Member	Length cm		Compression kg	Moment kg.cm		Tension kg	Moment kg.cm
1	136.36	(2)	3955.5	2110.1	(1)	13557.4	7256.8
2	272.73	(2)	3498.2	1156.5	(1)	12498.3	3597.7
3	272.73	(2)	2398.5	454.0	(1)	9733.4	1342.5
4	272.73	(2)	1296.0	285.2	(1)	6955.0	831.8
5	272.73	(2)	193.4	213.7	(1)	4175.2	613.9
6	272.73	(2)	1459.3	634.8	(1)	7.8	1602.5
7	140.56	(1)	13989.8	5659.2	(2)	4140.0	6858.5
8	140.56	(1)	13965.3	8536.4	(2)	4232.2	5137.7
9	140.56	(1)	11500.5	9321.6	(2)	3344.2	8617.4
10	140.56	(1)	11470.9	11477.5	(2)	3448.8	10359.9
11	140.56	(1)	8660.9	10917.5	(2)	2449.1	11765.5
12	140.56	(1)	8661.9	11606.6	(2)	2565.4	12115.7
13	140.56	(1)	5824.0	11309.5	(2)	1555.8	11511.4
14	140.56	(1)	5831.9	9740.5	(2)	1674.8	10745.5
15	140.56	(1)	2988.7	9838.5	(2)	663.4	8021.0
16	140.56	(1)	3302.8	8163.9	(2)	903.9	5294.3
17	140.56	(1)	3311.3	3635.1	(2)	1023.1	4006.7
18	34.09	(1)	600.8	791.1	(2)	241.3	609.6
19	102.27	(1)	671.0	2682.3	(2)	265.8	1039.3
20	170.45	(1)	683.0	1093.8	(2)	270.0	421.5
21	238.64	(1)	679.1	414.9	(2)	268.4	161.9
22	306.82	(1)	1013.0	291.4	(2)	401.1	118.5
23	153.41	(1)	659.2	261.5	(2)	261.5	96.8
24	375.00	(1)	4448.2	1657.4	(2)	1763.8	680.0
25	152.46	(1)	1527.1	1222.0	(2)	609.3	475.7
26	192.85	(1)	1960.5	735.0	(2)	778.7	338.0
27	245.83	(1)	2511.0	472.9	(2)	996.5	186.9
28	304.92	(1)	3116.2	266.1	(2)	1236.3	113.3
29	181.20	(2)	148.2	632.9	(1)	373.4	1572.8
30	152.46	(2)	488.6	1083.4	(1)	1171.5	3420.4
31	192.85	(2)	758.9	330.6	(1)	1911.8	1004.1
32	245.83	(2)	984.3	122.2	(1)	2482.6	325.4
33	304.92	(2)	1226.3	114.7	(1)	3093.5	220.5
34	231.84	(2)	1862.8	557.4	(1)	4698.2	1420.4
35	231.84	(2)	2066.7	182.8	(1)	5212.2	479.4

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	1804.4	0.0	1804.4
Live load reaction	0.0	2017.4	0.0	2017.4
Wind load reaction (without 25 percent reduction)	1125.0	− 3600.0	1125.0	−3600.0

TABLE 140 STEEL LEAN-TO ROOF TRUSS (ANALYSIS RESULTS)

Span	1500.00 cm	Spacing	600.00 cm	Slope	1 in 4
Wind force	150 kg/m²	Panels	11	Purlins at	140.56 cm

Member	Length cm		Compression kg	Moment kg.cm		Tension kg	Moment kg.cm
1	136.36	(2)	8333.5	4449.9	(1)	13557.4	7256.8
2	272.73	(2)	7460.1	2371.5	(1)	12498.3	3597.7
3	272.73	(2)	5321.0	918.7	(1)	9733.4	1342.5
4	272.73	(2)	3175.4	575.1	(1)	6955.0	831.8
5	272.73	(2)	1029.3	429.3	(1)	4175.2	613.9
6	272.73	(2)	2187.5	1235.9	(1)	7.8	1602.5
7	140.56	(1)	13989.8	5659.2	(2)	8686.9	9285.9
8	140.56	(1)	13965.3	8536.4	(2)	8820.8	6884.3
9	140.56	(1)	11500.5	9321.6	(2)	7052.5	11535.1
10	140.56	(1)	11470.9	11477.5	(2)	7204.1	13869.0
11	140.56	(1)	8660.9	10917.5	(2)	5207.0	15756.4
12	140.56	(1)	8661.9	11606.6	(2)	5381.6	16226.1
13	140.56	(1)	5824.0	11309.5	(2)	3364.9	15416.7
14	140.56	(1)	5831.9	9740.5	(2)	3544.7	14393.7
15	140.56	(1)	2988.7	9838.5	(2)	1524.2	10740.3
16	140.56	(1)	3302.8	8163.9	(2)	1940.6	7093.5
17	140.56	(1)	3311.3	3635.1	(2)	2121.0	5366.4
18	34.09	(1)	600.8	791.1	(2)	468.3	1054.5
19	102.27	(1)	671.0	2682.3	(2)	517.5	2033.9
20	170.45	(1)	683.0	1093.8	(2)	526.0	825.9
21	238.64	(1)	679.1	414.9	(2)	522.9	316.3
22	306.82	(1)	1013.0	291.4	(2)	781.0	229.4
23	153.41	(1)	659.2	261.5	(2)	509.0	191.5
24	375.00	(1)	4448.2	1657.4	(2)	3433.2	1313.4
25	152.46	(1)	1527.1	1222.0	(2)	1184.3	875.5
26	192.85	(1)	1960.5	735.0	(2)	1515.2	637.2
27	245.83	(1)	2511.0	472.9	(2)	1939.3	364.0
28	304.92	(1)	3116.2	266.1	(2)	2406.2	217.1
29	181.20	(2)	288.4	1227.8	(1)	373.4	1572.8
30	152.46	(2)	940.3	2230.6	(1)	1171.5	3420.4
31	192.85	(2)	1476.8	673.6	(1)	1911.8	1004.1
32	245.83	(2)	1916.0	240.9	(1)	2482.6	325.4
33	304.92	(2)	2387.2	211.1	(1)	3093.5	220.5
34	231.84	(2)	3625.9	1087.7	(1)	4698.2	1420.4
35	231.84	(2)	4022.8	359.0	(1)	5212.2	479.4

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	1804.4	0.0	1804.4
Live load reaction	0.0	2017.4	0.0	2017.4
Wind load reaction (without 25 percent reduction)	1687.5	− 5400.0	1687.5	− 5400.0

TABLE 141 STEEL LEAN-TO ROOF TRUSS (ANALYSIS RESULTS)

Span	1500.00 cm	Spacing	600.00 cm	Slope	1 in 4
Wind force	200 kg/m²	Panels	11	Purlins at	140.56 cm

Member	Length cm		Compression kg	Moment kg.cm		Tension kg	Moment kg.cm
1	136.36	(2)	12711.5	6789.7	(1)	13557.4	7256.8
2	272.73	(2)	11422.0	3586.9	(1)	12498.3	3597.7
3	272.73	(2)	8243.5	1383.4	(1)	9733.4	1342.5
4	272.73	(2)	5054.7	864.9	(1)	6955.0	831.8
5	272.73	(2)	1865.3	644.9	(1)	4175.2	613.9
6	272.73	(2)	2915.8	1837.0	(1)	7.8	1602.5
7	140.56	(1)	13989.8	5659.2	(2)	13233.8	11713.2
8	140.56	(1)	13965.3	8536.4	(2)	13409.4	9922.1
9	140.56	(1)	11500.5	9321.6	(2)	10760.7	14452.8
10	140.56	(1)	11470.9	11477.5	(2)	10959.4	17378.1
11	140.56	(1)	8660.9	10917.5	(2)	7965.0	19747.3
12	140.56	(1)	8661.9	11606.6	(2)	8197.9	20336.5
13	140.56	(1)	5824.0	11309.5	(2)	5173.9	19322.0
14	140.56	(1)	5831.9	9740.5	(2)	5414.6	18041.9
15	140.56	(1)	2988.7	9838.5	(2)	2385.0	13459.6
16	140.56	(1)	3302.8	8163.9	(2)	2977.3	9352.2
17	140.56	(1)	3311.3	3635.1	(2)	3218.8	6726.2
18	34.09	(1)	600.8	791.1	(2)	695.3	1499.4
19	102.27	(1)	671.0	2682.3	(2)	769.2	3028.4
20	170.45	(1)	683.0	1093.8	(2)	781.9	1230.4
21	238.64	(1)	679.1	414.9	(2)	777.4	470.7
22	306.82	(1)	1013.0	291.4	(2)	1160.9	340.2
23	153.41	(1)	659.2	261.5	(2)	756.4	286.2
24	375.00	(1)	4448.2	1657.4	(2)	5102.7	1946.8
25	152.46	(1)	1527.1	1222.0	(2)	1759.4	1315.3
26	192.85	(1)	1960.5	735.0	(2)	2251.6	936.4
27	245.83	(1)	2511.0	472.9	(2)	2882.2	541.2
28	304.92	(1)	3116.2	266.1	(2)	3576.1	320.9
29	181.20	(2)	428.7	1822.7	(1)	373.4	1572.8
30	152.46	(2)	1392.0	3377.9	(1)	1171.5	3420.4
31	192.85	(2)	2194.7	1016.7	(1)	1911.8	1004.1
32	245.83	(2)	2847.6	359.6	(1)	2482.6	325.4
33	304.92	(2)	3548.0	307.4	(1)	3093.5	220.5
34	231.84	(2)	5389.1	1617.9	(1)	4698.2	1420.4
35	231.84	(2)	5979.0	535.3	(1)	5212.2	479.4

2 In bracket indicates force due to wind load combination
! In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	1804.4	0.0	1804.4
Live load reaction	0.0	2017.4	0.0	2017.4
Wind load reaction (without 25 percent reduction)	2250.0	− 7200.0	2250.0	− 7200.0

TABLE 142 STEEL LEAN-TO ROOF TRUSS (ANALYSIS RESULTS)

Span	1500.00 cm	Spacing	600.00 cm	Slope	1 in 5
Wind force	100 kg/m²	Panels	11	Purlins at	139.06 cm

Member	Length cm		Compression kg	Moment kg.cm		Tension kg	Moment kg.cm
1	136.36	(2)	5338.0	3768.3	(1)	17201.9	12029.8
2	272.73	(2)	4911.0	1641.5	(1)	16161.8	5064.5
3	272.73	(2)	3591.4	499.9	(1)	12609.6	1536.1
4	272.73	(2)	2258.8	353.4	(1)	9013.6	1058.3
5	272.73	(2)	923.9	310.3	(1)	5409.9	906.5
6	272.73	(2)	1075.7	665.6	(1)	11.0	1782.7
7	139.06	(1)	17557.3	10613.8	(2)	5498.4	3318.6
8	139.06	(1)	17683.9	7614.5	(2)	5627.0	2514.2
9	139.06	(1)	14685.6	961.9	(2)	4589.0	318.1
10	139.06	(1)	14646.1	2366.5	(2)	4674.8	820.4
11	139.06	(1)	11025.2	524.3	(2)	3432.6	186.2
12	139.06	(1)	11008.7	1519.8	(2)	3526.5	551.6
13	139.06	(1)	7352.9	392.1	(2)	2272.6	155.0
14	139.06	(1)	7340.9	1313.1	(2)	2368.1	492.1
15	139.06	(1)	3677.8	200.3	(2)	1111.7	60.0
16	139.06	(1)	4053.5	1318.1	(2)	1350.9	479.3
17	139.06	(1)	4035.7	2329.7	(2)	1444.3	863.5
18	27.27	(1)	621.7	2999.4	(2)	232.4	804.4
19	81.82	(1)	695.8	1473.1	(2)	257.2	528.3
20	136.36	(1)	704.2	1008.6	(2)	259.9	365.3
21	190.91	(1)	703.2	921.1	(2)	259.5	337.1
22	245.45	(1)	1062.1	609.7	(2)	392.7	228.7
23	122.73	(1)	679.3	1011.7	(2)	251.5	384.2
24	300.00	(1)	3955.4	1892.3	(2)	1464.7	730.7
25	146.87	(1)	1894.3	1432.6	(2)	706.1	474.8
26	174.63	(1)	2301.0	570.9	(2)	853.7	203.9
27	213.01	(1)	2813.9	432.7	(2)	1043.0	163.3
28	257.29	(1)	3395.6	520.8	(2)	1258.2	204.4
29	166.45	(2)	166.3	214.7	(1)	449.0	560.0
30	146.87	(2)	503.2	1948.5	(1)	1293.9	5898.6
31	174.63	(2)	833.6	362.0	(1)	2249.7	1057.7
32	213.01	(2)	1031.5	130.4	(1)	2786.4	455.0
33	257.29	(2)	1250.2	140.2	(1)	3377.1	456.7
34	202.72	(2)	1971.8	480.9	(1)	5325.6	1306.1
35	202.72	(2)	2178.3	467.2	(1)	5883.3	1262.4

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	1785.2	0.0	1785.2
Live load reaction	0.0	2181.9	0.0	2181.9
Wind load reaction (without 25 percent reduction)	900.0	3915.0	900.0	3915.0

TABLE 143 STEEL LEAN-TO ROOF TRUSS (ANALYSIS RESULTS)

Span	1500.00 cm	Spacing	600.00 cm	Slope	1 in 5
Wind force	150 kg/m²	Panels	11	Purlins at	139.06 cm

MEMBER	LENGTH cm		COMPRESSION kg	MOMENT kg.cm		TENSION kg	MOMENT kg.cm
1	136.36	(2)	10909.8	7682.4	(1)	17201.9	12029.8
2	272.73	(2)	10093.8	3316.9	(1)	16161.8	5064.5
3	272.73	(2)	7514.9	1009.0	(1)	12609.6	1536.1
4	272.73	(2)	4909.2	708.7	(1)	9013.6	1058.3
5	272.73	(2)	2298.7	618.4	(1)	5409.9	906.5
6	272.73	(2)	1611.7	1299.2	(1)	11.0	1782.7
7	139.06	(1)	17557.3	10613.8	(2)	11210.3	6769.0
8	139.06	(1)	17683.9	7614.5	(2)	11424.6	5056.3
9	139.06	(1)	14685.6	961.9	(2)	9361.7	639.5
10	139.06	(1)	14646.1	2366.5	(2)	9483.7	1630.0
11	139.06	(1)	11025.2	524.3	(2)	7009.3	365.6
12	139.06	(1)	11008.7	1519.8	(2)	7147.5	1083.8
13	139.06	(1)	7352.9	392.1	(2)	4649.6	298.7
14	139.06	(1)	7340.9	1313.1	(2)	4790.9	959.8
15	139.06	(1)	3677.8	200.3	(2)	2288.2	123.8
16	139.06	(1)	4053.5	1318.1	(2)	2710.4	941.3
17	139.06	(1)	4035.7	2329.7	(2)	2847.5	1688.4
18	27.27	(1)	621.7	2999.4	(2)	453.5	1712.7
19	81.82	(1)	695.8	1473.1	(2)	503.2	1041.1
20	136.36	(1)	704.2	1008.6	(2)	508.8	718.2
21	190.91	(1)	703.2	921.1	(2)	508.0	661.1
22	245.45	(1)	1062.1	609.7	(2)	768.3	446.0
23	122.73	(1)	679.3	1011.7	(2)	491.9	747.0
24	300.00	(1)	3955.4	1892.3	(2)	2864.5	1415.4
25	146.87	(1)	1894.3	1432.6	(2)	1378.9	954.0
26	174.63	(1)	2301.0	570.9	(2)	1668.8	402.2
27	213.01	(1)	2813.9	432.7	(2)	2039.3	318.0
28	257.29	(1)	3395.6	520.8	(2)	2460.2	394.3
29	166.45	(2)	325.2	416.6	(1)	449.0	560.0
30	146.87	(2)	973.1	3918.1	(1)	1293.9	5898.6
31	174.63	(2)	1630.0	721.5	(1)	2249.7	1057.7
32	213.01	(2)	2017.5	267.5	(1)	2786.4	455.0
33	257.29	(2)	2445.2	287.4	(1)	3377.1	456.7
34	202.72	(2)	3856.4	941.7	(1)	5325.6	1306.1
35	202.72	(2)	4260.3	913.8	(1)	5883.3	1262.4

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	1785.2	0.0	1785.2
Live load reaction	0.0	2181.9	0.0	2181.9
Wind load reaction (without 25 percent reduction)	1350.0	5872.5	1350.0	5872.5

TABLE 144 STEEL LEAN-TO ROOF TRUSS (ANALYSIS RESULTS)

Span	1500.00 cm	Spacing	600.00 cm	Slope	1 in 5
Wind force	200 kg/m²	Panels	11	Purlins at	139.06 cm

Member	Length cm		Compression kg	Moment kg.cm		Tension kg	Moment kg.cm
1	136.36	(2)	16481.6	11596.5	(1)	17201.9	12029.8
2	272.73	(2)	15276.5	4992.2	(1)	16161.8	5064.5
3	272.73	(2)	11438.4	1518.1	(1)	12609.6	1536.1
4	272.73	(2)	7559.6	1064.0	(1)	9013.6	1058.3
5	272.73	(2)	3673.5	926.5	(1)	5409.9	906.5
6	272.73	(2)	2147.8	1932.8	(1)	11.0	1782.7
7	139.06	(1)	17557.3	10613.8	(2)	16922.2	10219.3
8	139.06	(1)	17683.9	7614.5	(2)	17222.3	7598.3
9	139.06	(1)	14685.6	961.9	(2)	14134.3	960.9
10	139.06	(1)	14646.1	2366.5	(2)	14292.7	2439.5
11	139.06	(1)	11025.2	524.3	(2)	10586.1	545.0
12	139.06	(1)	11008.7	1519.8	(2)	10768.4	1616.1
13	139.06	(1)	7352.9	392.1	(2)	7026.7	442.4
14	139.06	(1)	7340.9	1313.1	(2)	7213.7	1427.5
15	139.06	(1)	3677.8	200.3	(2)	3464.6	187.6
16	139.06	(1)	4053.5	1318.1	(2)	4069.9	1403.4
17	139.06	(1)	4035.7	2329.7	(2)	4250.6	2513.2
18	27.27	(1)	621.7	2999.4	(2)	674.6	2621.0
19	81.82	(1)	695.8	1473.1	(2)	749.3	1553.8
20	136.36	(1)	704.2	1008.6	(2)	757.6	1071.0
21	190.91	(1)	703.2	921.1	(2)	756.4	985.1
22	245.45	(1)	1062.1	609.7	(2)	1143.8	663.2
23	122.73	(1)	679.3	1011.7	(2)	732.3	1109.9
24	300.00	(1)	3955.4	1892.3	(2)	4264.3	2100.0
25	146.87	(1)	1894.3	1432.6	(2)	2051.6	1433.1
26	174.63	(1)	2301.0	570.9	(2)	2483.9	600.5
27	213.01	(1)	2813.9	432.7	(2)	3035.7	472.7
28	257.29	(1)	3395.6	520.8	(2)	3662.3	584.4
29	166.45	(2)	484.2	618.4	(1)	449.0	560.0
30	146.87	(2)	1443.0	5887.8	(1)	1293.9	5898.6
31	174.63	(2)	2426.5	1081.0	(1)	2249.7	1057.7
32	213.01	(2)	3003.4	407.9	(1)	2786.4	455.0
33	257.29	(2)	3640.2	434.6	(1)	3377.1	456.7
34	202.72	(2)	5741.0	1402.5	(1)	5325.6	1306.1
35	202.72	(2)	6342.2	1360.4	(1)	5883.3	1262.4

2 In bracket indicates force due to wind load combination
1 In bracket indicates force from combination other than wind load
25 Percent reduction is applied to force from wind load combination

	Left Reaction		Right Reaction	
	Horizontal	Vertical	Horizontal	Vertical
Dead load reaction	0.0	1785.2	0.0	1785.2
Live load reaction	0.0	2181.9	0.0	2181.9
Wind load reaction (without 25 percent reduction)	1800.0	7830.0	1800.0	7830.0

TABLE 145 STEEL A-TYPE ROOF TRUSSES (ISA SECTIONS)

Span = 9.0 m | Slope = 1 in 3 | Purlins Spacing = 1.19 m

Wind Pressure =			100 kg/m²		150 kg/m²		200 kg/m²	
			Spacing (m)		Spacing (m)		Spacing (m)	
Members	Nos.	Length (m)	4.5	6.0	4.5	6.0	4.5	6.0
TIE	1	2.25	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-5050 × 6	2-5050 × 6	2-6060 × 6
TIE	2	2.25	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-5050 × 6	2-5050 × 6	2-6060 × 6
RAFTER	3	1.19	2-4040 × 6	2-5050 × 6	2-4040 × 6	2-5050 × 6	2-5050 × 6	2-6060 × 6
RAFTER	4	1.19	2-4040 × 6	2-5050 × 6	2-4040 × 6	2-5050 × 6	2-5050 × 6	2-6060 × 6
RAFTER	5	1.19	2-4040 × 6	2-5050 × 6	2-4040 × 6	2-5050 × 6	2-5050 × 6	2-6060 × 6
RAFTER	6	1.19	2-4040 × 6	2-5050 × 6	2-4040 × 6	2-5050 × 6	2-5050 × 6	2-6060 × 6
WEB	7	0.75	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	8	0.38	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	9	1.50	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	10	1.19	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	11	1.13	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	12	1.35	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	13	1.35	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
Sum of Angles Weight (kg)			196.84	215.88	196.84	233.88	233.88	267.22
Unit Weight (kg/m²)			4.86	4.00	4.86	4.33	5.77	4.95

TABLE 146 STEEL A-TYPE ROOF TRUSSES (ISA SECTIONS)

Span = 9.0 m | Slope = 1 in 4 | Purlins Spacing = 1.16 m

Wind Pressure =			100 kg/m²		150 kg/m²		200 kg/m²	
			Spacing (m)		Spacing (m)		Spacing (m)	
Members	Nos.	Length (m)	4.5	6.0	4.5	6.0	4.5	6.0
TIE	1	2.25	2-4040 × 6	2-4040 × 6	2-5050 × 6	2-5050 × 6	2-5050 × 6	2-6060 × 6
TIE	2	2.25	2-4040 × 6	2-4040 × 6	2-5050 × 6	2-5050 × 6	2-5050 × 6	2-6060 × 6
RAFTER	3	1.16	2-5050 × 6	2-6060 × 6	2-5050 × 6	2-6060 × 6	2-6060 × 6	2-7070 × 6
RAFTER	4	1.16	2-5050 × 6	2-6060 × 6	2-5050 × 6	2-6060 × 6	2-6060 × 6	2-7070 × 6
RAFTER	5	1.16	2-5050 × 6	2-6060 × 6	2-5050 × 6	2-6060 × 6	2-6060 × 6	2-7070 × 6
RAFTER	6	1.16	2-5050 × 6	2-6060 × 6	2-5050 × 6	2-6060 × 6	2-6060 × 6	2-7070 × 6
WEB	7	0.56	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	8	0.38	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	9	1.13	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	10	1.16	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	11	1.12	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	12	1.26	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-5050 × 6
WEB	13	1.26	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-5050 × 6
Sum of Angles Weight (kg)			207.60	224.30	225.6	242.3	242.3	285.28
Unit Weight (kg/m²)			5.13	4.15	5.57	4.49	5.98	5.28

TABLE 147 STEEL A-TYPE ROOF TRUSSES (ISA SECTIONS)

Span = 9.0 m | Slope = 1 in 5 | Purlins Spacing = 1.15 m

Wind Pressure =			100 kg/m²		150 kg/m²		200 kg/m²	
			Spacing (m)		Spacing (m)		Spacing (m)	
Members	Nos.	Length (m)	4.5	6.0	4.5	6.0	4.5	6.0
TIE	1	2.25	2-4040 × 6	2-5050 × 6	2-5050 × 6	2-6060 × 6	2-6060 × 6	2-7070 × 6
TIE	2	2.25	2-4040 × 6	2-5050 × 6	2-5050 × 6	2-6060 × 6	2-6060 × 6	2-7070 × 6
RAFTER	3	1.15	2-6060 × 6	2-7070 × 6	2-6060 × 6	2-7070 × 6	2-6060 × 6	2-7070 × 6
RAFTER	4	1.15	2-6060 × 6	2-7070 × 6	2-6060 × 6	2-7070 × 6	2-6060 × 6	2-7070 × 6
RAFTER	5	1.15	2-6060 × 6	2-7070 × 6	2-6060 × 6	2-7070 × 6	2-6060 × 6	2-7070 × 6
RAFTER	6	1.15	2-6060 × 6	2-7070 × 6	2-6060 × 6	2-7070 × 6	2-6060 × 6	2-7070 × 6
WEB	7	0.45	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	8	0.28	1-4040 × 6	1-5050 × 6	1-4040 × 6	1-5050 × 6	1-4040 × 6	1-5050 × 6
WEB	9	0.90	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	10	1.15	1-4040 × 6	1-5050 × 6	1-4040 × 6	1-5050 × 6	1-4040 × 6	1-5050 × 6
WEB	11	1.13	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	12	1.21	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-5050 × 6	2-5050 × 6
WEB	13	1.21	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-5050 × 6	2-5050 × 6
Sum of Angles Weight (kg)			220.11	257.53	238.11	273.63	263.99	299.51
Unit Weight (kg/m²)			5.43	4.77	5.88	5.07	6.52	5.55

TABLE 148 STEEL A-TYPE ROOF TRUSSES (ISA SECTIONS)

Span = 12.0 m | Slope = 1 in 3 | Purlins Spacing = 1.27 m

Wind Pressure =			100 kg/m²		150 kg/m²		200 kg/m²	
			Spacing (m)		Spacing (m)		Spacing (m)	
Members	Nos.	Length (m)	4.5	6.0	4.5	6.0	4.5	6.0
TIE	1	1.20	2-4040 × 6	2-5050 × 6	2-5050 × 6	2-6060 × 6	2-6060 × 6	2-7070 × 6
TIE	2	2.40	2-4040 × 6	2-5050 × 6	2-5050 × 6	2-6060 × 6	2-6060 × 6	2-7070 × 6
TIE	3	2.40	2-4040 × 6	2-5050 × 6	2-5050 × 6	2-6060 × 6	2-6060 × 6	2-7070 × 6
RAFTER	4	1.27	2-5050 × 6	2-5050 × 6	2-5050 × 6	2-5050 × 6	2-5050 × 6	2-5050 × 6
RAFTER	5	1.27	2-5050 × 6	2-5050 × 6	2-5050 × 6	2-5050 × 6	2-5050 × 6	2-5050 × 6
RAFTER	6	1.27	2-5050 × 6	2-5050 × 6	2-5050 × 6	2-5050 × 6	2-5050 × 6	2-5050 × 6
RAFTER	7	1.27	2-5050 × 6	2-5050 × 6	2-5050 × 6	2-5050 × 6	2-5050 × 6	2-5050 × 6
RAFTER	8	1.27	2-5050 × 6	2-5050 × 6	2-5050 × 6	2-5050 × 6	2-5050 × 6	2-5050 × 6
WEB	9	0.40	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	10	1.20	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	11	0.60	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	12	2.00	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	13	1.44	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	14	1.22	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	15	1.44	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	16	1.56	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-4040 × 6
WEB	17	1.56	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-4040 × 6
Sum of Angles Weight (kg)			293.08	317.08	317.08	338.68	338.68	360.28
Unit Weight (kg/m²)			5.43	4.40	5.87	4.70	6.27	5.00

TABLE 149 STEEL A-TYPE ROOF TRUSSES (ISA SECTIONS)

Span = 12.0 m | Slope = 1 in 4 | Purlins Spacing = 1.15 m

Wind Pressure =			100 kg/m²		150 kg/m²		200 kg/m²	
			Spacing (m)		Spacing (m)		Spacing (m)	
Members	Nos.	Length (m)	4.5	6.0	4.5	6.0	4.5	6.0
TIE	1	1.20	2-5050 × 6	2-6060 × 6	2-6060 × 6	2-7070 × 6	2-7070 × 6	2-8080 × 6
TIE	2	2.40	2-5050 × 6	2-6060 × 6	2-6060 × 6	2-7070 × 6	2-7070 × 6	2-8080 × 6
TIE	3	2.40	2-5050 × 6	2-6060 × 6	2-6060 × 6	2-7070 × 6	2-7070 × 6	2-8080 × 6
RAFTER	4	1.24	2-6060 × 6	2-7070 × 6	2-6060 × 6	2-7070 × 6	2-6060 × 6	2-7070 × 6
RAFTER	5	1.24	2-6060 × 6	2-7070 × 6	2-6060 × 6	2-7070 × 6	2-6060 × 6	2-7070 × 6
RAFTER	6	1.24	2-6060 × 6	2-7070 × 6	2-6060 × 6	2-7070 × 6	2-6060 × 6	2-7070 × 6
RAFTER	7	1.24	2-6060 × 6	2-7070 × 6	2-6060 × 6	2-7070 × 6	2-6060 × 6	2-7070 × 6
RAFTER	8	1.24	2-6060 × 6	2-7070 × 6	2-6060 × 6	2-7070 × 6	2-6060 × 6	2-7070 × 6
WEB	9	0.30	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	10	0.90	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	11	0.45	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	12	1.50	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	13	1.34	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	14	1.21	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	15	1.34	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	16	1.42	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-4040 × 6
WEB	17	1.42	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-4040 × 6
Sum of Angles Weight (kg)			325.71	369.63	347.31	369.63	368.91	429.25
Unit Weight (kg/m²)			6.03	5.13	6.43	5.13	6.83	5.96

TABLE 150 STEEL A-TYPE ROOF TRUSSES (ISA SECTIONS)

Span = 12.0 m | Slope = 1 in 5 | Purlins Spacing = 1.22 m

Wind Pressure =			100 kg/m²		150 kg/m²		200 kg/m²	
			Spacing (m)		Spacing (m)		Spacing (m)	
Members	Nos.	Length (m)	4.5	6.0	4.5	6.0	4.5	6.0
TIE	1	1.20	2-6060 × 6	2-8080 × 6	2-7070 × 6	2-8080 × 6	2-8080 × 6	2-9090 × 6
TIE	2	2.40	2-6060 × 6	2-8080 × 6	2-7070 × 6	2-8080 × 6	2-8080 × 6	2-9090 × 6
TIE	3	2.40	2-6060 × 6	2-8080 × 6	2-7070 × 6	2-8080 × 6	2-8080 × 6	2-9090 × 6
RAFTER	4	1.22	2-7070 × 6	2-8080 × 6	2-7070 × 6	2-8080 × 6	2-7070 × 6	2-8080 × 6
RAFTER	5	1.22	2-7070 × 6	2-8080 × 6	2-7070 × 6	2-8080 × 6	2-7070 × 6	2-8080 × 6
RAFTER	6	1.22	2-7070 × 6	2-8080 × 6	2-7070 × 6	2-8080 × 6	2-7070 × 6	2-8080 × 6
RAFTER	7	1.22	2-7070 × 6	2-8080 × 6	2-7070 × 6	2-8080 × 6	2-7070 × 6	2-8080 × 6
RAFTER	8	1.22	2-7070 × 6	2-8080 × 6	2-7070 × 6	2-8080 × 6	2-7070 × 6	2-8080 × 6
WEB	9	0.24	1-4040 × 6	1-5050 × 6	1-4040 × 6	1-5050 × 6	1-4040 × 6	1-5050 × 6
WEB	10	0.72	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	11	0.36	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	12	1.20	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	13	1.30	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	14	1.20	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	15	1.30	1-4040 × 6	1-5050 × 6	1-4040 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6
WEB	16	1.34	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-5050 × 6
WEB	17	1.34	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-5050 × 6
Sum of Angles Weight (kg)			361.09	433.96	382.69	433.96	409.08	466.28
Unit Weight (kg/m²)			6.69	6.03	7.08	6.03	7.57	6.48

TABLE 151 STEEL A-TYPE ROOF TRUSSES (ISA SECTIONS)

Span = 18.0 m Slope = 1 in 3 Purlins Spacing = 1.36 m

Wind Pressure =			100 kg/m²		150 kg/m²		200 kg/m²	
			Spacing (m)		Spacing (m)		Spacing (m)	
Members	Nos.	Length (m)	4.5	6.0	4.5	6.0	4.5	6.0
TIE	1	1.29	2-5050 × 6	2-6060 × 6	2-6060 × 6	2-7070 × 6	2-7070 × 6	2-8080 × 6
TIE	2	2.57	2-5050 × 6	2-6060 × 6	2-6060 × 6	2-7070 × 6	2-7070 × 6	2-8080 × 6
TIE	3	2.57	2-5050 × 6	2-6060 × 6	2-6060 × 6	2-7070 × 6	2-7070 × 6	2-8080 × 6
TIE	4	2.57	2-4040 × 6	2-6060 × 6	2-6060 × 6	2-7070 × 6	2-7070 × 6	2-8080 × 6
RAFTER	5	1.36	2-6060 × 6	2-7070 × 6	2-6060 × 6	2-7070 × 6	2-6060 × 6	2-7070 × 6
RAFTER	6	1.36	2-6060 × 6	2-7070 × 6	2-6060 × 6	2-7070 × 6	2-6060 × 6	2-7070 × 6
RAFTER	7	1.36	2-5050 × 6	2-6060 × 6	2-5050 × 6	2-6060 × 6	2-5050 × 6	2-6060 × 6
RAFTER	8	1.36	2-5050 × 6	2-6060 × 6	2-5050 × 6	2-6060 × 6	2-5050 × 6	2-6060 × 6
RAFTER	9	1.36	2-5050 × 6	2-6060 × 6	2-5050 × 6	2-6060 × 6	2-5050 × 6	2-6060 × 6
RAFTER	10	1.36	2-5050 × 6	2-6060 × 6	2-5050 × 6	2-6060 × 6	2-5050 × 6	2-6060 × 6
RAFTER	11	1.36	2-5050 × 6	2-6060 × 6	2-5050 × 6	2-6060 × 6	2-5050 × 6	2-6060 × 6
WEB	12	0.43	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	13	1.29	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	14	2.14	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6
WEB	15	1.07	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	16	3.00	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6
WEB	17	1.55	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	18	2.14	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6
WEB	19	1.44	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	20	1.55	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-5050 × 6
WEB	21	2.14	1-4040 × 6	1-4040 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-6060 × 6
WEB	22	1.98	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-5050 × 6	2-5050 × 6
WEB	23	1.98	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-5050 × 6	2-5050 × 6
Sum of Angles Weight (kg)			517.03	584.73	563.98	630.65	612.02	689.45
Unit Weight (kg/m²)			6.38	5.41	6.96	5.84	7.56	6.38

TABLE 152 STEEL A-TYPE ROOF TRUSSES (ISA SECTIONS)

Span = 18.0 m Slope = 1 in 4 Purlins Spacing = 1.33 m

Wind Pressure =			100 kg/m²		150 kg/m²		200 kg/m²	
			Spacing (m)		Spacing (m)		Spacing (m)	
Members	Nos.	Length (m)	4.5	6.0	4.5	6.0	4.5	6.0
TIE	1	1.29	2-6060 × 6	2-8080 × 6	2-7070 × 6	2-8080 × 6	2-8080 × 6	2-100100 × 6
TIE	2	2.57	2-6060 × 6	2-8080 × 6	2-7070 × 6	2-8080 × 6	2-8080 × 6	2-100100 × 6
TIE	3	2.57	2-6060 × 6	2-8080 × 6	2-7070 × 6	2-8080 × 6	2-8080 × 6	2-100100 × 6
TIE	4	2.57	2-5050 × 6	2-6060 × 6	2-7070 × 6	2-8080 × 6	2-8080 × 6	2-9090 × 6
RAFTER	5	1.33	2-7070 × 6	2-9090 × 6	2-7070 × 6	2-9090 × 6	2-7070 × 6	2-9090 × 6
RAFTER	6	1.33	2-7070 × 6	2-9090 × 6	2-7070 × 6	2-9090 × 6	2-7070 × 6	2-9090 × 6
RAFTER	7	1.33	2-6060 × 6	2-7070 × 6	2-6060 × 6	2-7070 × 6	2-6060 × 6	2-7070 × 6
RAFTER	8	1.33	2-6060 × 6	2-7070 × 6	2-6060 × 6	2-7070 × 6	2-6060 × 6	2-7070 × 6
RAFTER	9	1.33	2-6060 × 6	2-7070 × 6	2-6060 × 6	2-7070 × 6	2-6060 × 6	2-7070 × 6
RAFTER	10	1.33	2-6060 × 6	2-7070 × 6	2-6060 × 6	2-7070 × 6	2-6060 × 6	2-7070 × 6
RAFTER	11	1.33	2-6060 × 6	2-7070 × 6	2-6060 × 6	2-7070 × 6	2-6060 × 6	2-7070 × 6
WEB	12	0.32	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	13	0.96	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	14	1.61	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	15	0.80	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	16	2.25	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	17	1.44	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	18	1.82	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6
WEB	19	1.37	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	20	1.44	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-5050 × 6	1-5050 × 6
WEB	21	1.82	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6
WEB	22	1.71	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-5050 × 6
WEB	23	1.71	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-4040 × 6
Sum of Angles Weight (kg)			536.28	638.55	577.93	666.72	626.04	737.43
Unit Weight (kg/m²)			6.62	5.91	7.13	6.13	7.73	6.83

TABLE 153 STEEL A-TYPE ROOF TRUSSES (ISA SECTIONS)

Span = 18.0 m | Slope = 1 in 5 | Purlins Spacing = 1.31 m

Wind Pressure =			100 kg/m²		150 kg/m²		200 kg/m²	
			Spacing (m)		Spacing (m)		Spacing (m)	
Members	Nos.	Length (m)	4.5	6.0	4.5	6.0	4.5	6.0
TIE	1	1.29	2-8080 × 6	2-9090 × 6	2-8080 × 6	2-9090 × 6	2-100100 × 6	2-100100 × 8
TIE	2	2.57	2-8080 × 6	2-9090 × 6	2-8080 × 6	2-9090 × 6	2-100100 × 6	2-100100 × 8
TIE	3	2.57	2-8080 × 6	2-9090 × 6	2-8080 × 6	2-9090 × 6	2-100100 × 6	2-100100 × 8
TIE	4	2.57	2-6060 × 6	2-7070 × 6	2-8080 × 6	2-9090 × 6	2-9090 × 6	2-9090 × 6
RAFTER	5	1.31	2-8080 × 6	2-9090 × 6	2-8080 × 6	2-9090 × 6	2-8080 × 6	2-9090 × 6
RAFTER	6	1.31	2-8080 × 6	2-9090 × 6	2-8080 × 6	2-9090 × 6	2-8080 × 6	2-9090 × 6
RAFTER	7	1.31	2-7070 × 6	2-9090 × 6	2-7070 × 6	2-9090 × 6	2-7070 × 6	2-9090 × 6
RAFTER	8	1.31	2-7070 × 6	2-9090 × 6	2-7070 × 6	2-9090 × 6	2-7070 × 6	2-9090 × 6
RAFTER	9	1.31	2-7070 × 6	2-8080 × 6	2-7070 × 6	2-8080 × 6	2-7070 × 6	2-8080 × 6
RAFTER	10	1.31	2-7070 × 6	2-8080 × 6	2-7070 × 6	2-8080 × 6	2-7070 × 6	2-8080 × 6
RAFTER	11	1.31	2-7070 × 6	2-8080 × 6	2-7070 × 6	2-8080 × 6	2-7070 × 6	2-8080 × 6
WEB	12	0.26	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	13	0.77	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	14	1.29	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	15	0.64	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	16	1.80	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	17	1.39	1-4040 × 6	1-5050 × 6	1-4040 × 6	1-5050 × 6	1-4040 × 6	1-5050 × 6
WEB	18	1.65	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6
WEB	19	1.34	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	20	1.39	1-4040 × 6	1-4040 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6
WEB	21	1.65	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6
WEB	22	1.57	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-5050 × 6	2-5050 × 6
WEB	23	1.57	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-5050 × 6	2-5050 × 6
Sum of Angles Weight (kg)			611.05	748.57	630.58	771.40	707.34	911.00
Unit Weight (kg/m²)			7.54	6.93	7.76	7.14	8.73	8.43

TABLE 154 STEEL A-TYPE ROOF TRUSSES (ISA SECTIONS)

Span = 24.0 m | Slope = 1 in 3 | Purlins Spacing = 1.41 m

Wind Pressure =			100 kg/m²		150 kg/m²		200 kg/m²	
			Spacing (m)		Spacing (m)		Spacing (m)	
Members	Nos.	Length (m)	4.5	6.0	4.5	6.0	4.5	6.0
TIE	1	1.33	2-6060 × 6	2-7070 × 6	2-7070 × 6	2-8080 × 6	2-8080 × 6	2-100100 × 6
TIE	2	2.67	2-6060 × 6	2-7070 × 6	2-7070 × 6	2-8080 × 6	2-8080 × 6	2-100100 × 6
TIE	3	2.67	2-6060 × 6	2-7070 × 6	2-7070 × 6	2-8080 × 6	2-8080 × 6	2-100100 × 6
TIE	4	2.67	2-6060 × 6	2-7070 × 6	2-7070 × 6	2-8080 × 6	2-8080 × 6	2-100100 × 6
TIE	5	2.67	2-5050 × 6	2-5050 × 6	2-6060 × 6	2-7070 × 6	2-7070 × 6	2-8080 × 6
RAFTER	6	1.41	2-7070 × 6	2-9090 × 6	2-7070 × 6	2-9090 × 6	2-8080 × 6	2-100100 × 6
RAFTER	7	1.41	2-7070 × 6	2-9090 × 6	2-7070 × 6	2-9090 × 6	2-8080 × 6	2-100100 × 6
RAFTER	8	1.41	2-7070 × 6	2-9090 × 6	2-7070 × 6	2-9090 × 6	2-8080 × 6	2-100100 × 6
RAFTER	9	1.41	2-7070 × 6	2-9090 × 6	2-7070 × 6	2-9090 × 6	2-8080 × 6	2-100100 × 6
RAFTER	10	1.41	2-7070 × 6	2-8080 × 6	2-7070 × 6	2-8080 × 6	2-8080 × 6	2-9090 × 6
RAFTER	11	1.41	2-7070 × 6	2-8080 × 6	2-7070 × 6	2-8080 × 6	2-8080 × 6	2-9090 × 6
RAFTER	12	1.41	2-6060 × 6	2-8080 × 6	2-6060 × 6	2-8080 × 6	2-7070 × 6	2-9090 × 6
RAFTER	13	1.41	2-6060 × 6	2-8080 × 6	2-6060 × 6	2-8080 × 6	2-7070 × 6	2-9090 × 6
RAFTER	14	1.41	2-6060 × 6	2-8080 × 6	2-6060 × 6	2-8080 × 6	2-7070 × 6	2-9090 × 6
WEB	15	0.44	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	16	1.33	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	17	2.22	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6
WEB	18	3.11	1-8080 × 6	1-8080 × 6	1-8080 × 6	1-8080 × 6	1-8080 × 6	1-8080 × 6
WEB	19	1.56	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	20	4.00	1-7070 × 6	1-7070 × 6	1-7070 × 6	1-7070 × 6	1-7070 × 6	1-7070 × 6
WEB	21	1.60	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	22	2.22	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6
WEB	23	2.98	1-8080 × 6	1-8080 × 6	1-8080 × 6	1-8080 × 6	1-8080 × 6	1-8080 × 6
WEB	24	1.74	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	25	1.60	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-5050 × 6
WEB	26	2.22	1-4040 × 6	1-4040 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-6060 × 6
WEB	27	2.98	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-7070 × 6	1-7070 × 6	1-8080 × 6
WEB	28	2.40	2-4040 × 6	2-4040 × 6	2-5050 × 6	2-5050 × 6	2-5050 × 6	2-6060 × 6
WEB	29	2.40	2-4040 × 6	2-4040 × 6	2-5050 × 6	2-5050 × 6	2-5050 × 6	2-6060 × 6
Sum of Angles Weight (kg)			889.24	1009.16	956.12	1095.70	1057.52	1254.75
Unit Weight (kg/m²)			8.23	7.01	8.85	7.60	9.79	8.71

TABLE 155 STEEL A-TYPE ROOF TRUSSES (ISA SECTIONS)

Span = 24.0 m | Slope = 1 in 4 | Purlins Spacing = 1.37 m

Wind Pressure =			100 kg/m²		150 kg/m²		200 kg/m²	
			Spacing (m)		Spacing (m)		Spacing (m)	
Members	Nos.	Length (m)	4.5	6.0	4.5	6.0	4.5	6.0
TIE	1	1.33	2-8080 × 6	2-100100 × 6	2-8080 × 6	2-100100 × 6	2-100100 × 6	2-100100 × 8
TIE	2	2.67	2-8080 × 6	2-100100 × 6	2-8080 × 6	2-100100 × 6	2-100100 × 6	2-100100 × 8
TIE	3	2.67	2-8080 × 6	2-100100 × 6	2-8080 × 6	2-100100 × 6	2-100100 × 6	2-100100 × 8
TIE	4	2.67	2-8080 × 6	2-100100 × 6	2-8080 × 6	2-100100 × 6	2-100100 × 6	2-100100 × 8
TIE	5	2.67	2-5050 × 6	2-7070 × 6	2-7070 × 6	2-8080 × 6	2-8080 × 6	2-9090 × 6
RAFTER	6	1.37	2-9090 × 6	2-9090 × 8	2-9090 × 6	2-9090 × 8	2-9090 × 6	2-100100 × 8
RAFTER	7	1.37	2-9090 × 6	2-9090 × 8	2-9090 × 6	2-9090 × 8	2-9090 × 6	2-100100 × 8
RAFTER	8	1.37	2-9090 × 6	2-9090 × 8	2-9090 × 6	2-9090 × 8	2-9090 × 6	2-100100 × 8
RAFTER	9	1.37	2-9090 × 6	2-9090 × 8	2-9090 × 6	2-9090 × 8	2-9090 × 6	2-100100 × 8
RAFTER	10	1.37	2-7070 × 6	2-8080 × 6	2-7070 × 6	2-8080 × 6	2-7070 × 6	2-9090 × 6
RAFTER	11	1.37	2-7070 × 6	2-8080 × 6	2-7070 × 6	2-8080 × 6	2-7070 × 6	2-9090 × 6
RAFTER	12	1.37	2-7070 × 6	2-8080 × 6	2-7070 × 6	2-8080 × 6	2-7070 × 6	2-9090 × 6
RAFTER	13	1.37	2-7070 × 6	2-8080 × 6	2-7070 × 6	2-8080 × 6	2-7070 × 6	2-9090 × 6
RAFTER	14	1.37	2-7070 × 6	2-8080 × 6	2-7070 × 6	2-8080 × 6	2-7070 × 6	2-9090 × 6
WEB	15	0.33	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	16	1.0	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	17	1.67	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6
WEB	18	2.33	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6
WEB	19	1.17	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	20	3.0	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6
WEB	21	1.5	1-4040 × 6	1-5050 × 6	1-4040 × 6	1-5050 × 6	1-4040 × 6	1-5050 × 6
WEB	22	1.89	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6
WEB	23	2.4	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6
WEB	24	1.57	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	25	1.49	1-4040 × 6	1-5050 × 6	1-4040 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6
WEB	26	1.89	1-4040 × 6	1-4040 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-6060 × 6
WEB	27	2.4	1-5050 × 6	1-5050 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-7070 × 6
WEB	28	2.0	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-5050 × 6	2-5050 × 6	2-6060 × 6
WEB	29	2.0	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-5050 × 6	2-5050 × 6	2-6060 × 6
Sum of Angles Weight (kg)			912.73	1097.63	940.05	1129.92	1040.65	1325.58
Unit Weight (kg/m²)			8.45	7.62	8.70	7.85	9.64	9.21

TABLE 156 STEEL A-TYPE ROOF TRUSSES (ISA SECTIONS)

Span = 24.0 m Slope = 1 in 5 Purlins Spacing = 1.36 m

Wind Pressure =			100 kg/m²		150 kg/m²		200 kg/m²	
			Spacing (m)		Spacing (m)		Spacing (m)	
Members	Nos.	Length (m)	4.5	6.0	4.5	6.0	4.5	6.0
TIE	1	1.32	2-8080 × 8	2-8080 × 10	2-8080 × 8	2-8080 × 10	2-9090 × 8	2-100100 × 10
TIE	2	2.67	2-8080 × 8	2-8080 × 10	2-8080 × 8	2-8080 × 10	2-9090 × 8	2-100100 × 10
TIE	3	2.67	2-8080 × 8	2-8080 × 10	2-8080 × 8	2-8080 × 10	2-9090 × 8	2-100100 × 10
TIE	4	2.67	2-8080 × 8	2-8080 × 10	2-8080 × 8	2-8080 × 10	2-9090 × 8	2-100100 × 10
TIE	5	2.67	2-7070 × 6	2-9090 × 6	2-7070 × 6	2-9090 × 6	2-9090 × 6	2-100100 × 6
RAFTER	6	1.36	2-9090 × 8	2-100100 × 10	2-9090 × 8	2-100100 × 10	2-9090 × 8	2-100100 × 10
RAFTER	7	1.36	2-9090 × 8	2-100100 × 10	2-9090 × 8	2-100100 × 10	2-9090 × 8	2-100100 × 10
RAFTER	8	1.36	2-9090 × 8	2-100100 × 10	2-9090 × 8	2-100100 × 10	2-9090 × 8	2-100100 × 10
RAFTER	9	1.36	2-9090 × 8	2-100100 × 10	2-9090 × 8	2-100100 × 10	2-9090 × 8	2-100100 × 10
RAFTER	10	1.36	2-8080 × 6	2-8080 × 8	2-8080 × 6	2-8080 × 8	2-8080 × 6	2-8080 × 8
RAFTER	11	1.36	2-8080 × 6	2-8080 × 8	2-8080 × 6	2-8080 × 8	2-8080 × 6	2-8080 × 8
RAFTER	12	1.36	2-8080 × 6	2-8080 × 8	2-8080 × 6	2-8080 × 8	2-8080 × 6	2-8080 × 8
RAFTER	13	1.36	2-8080 × 6	2-8080 × 6	2-8080 × 6	2-8080 × 8	2-8080 × 6	2-8080 × 8
RAFTER	14	1.36	2-8080 × 6	2-8080 × 8	2-8080 × 6	2-8080 × 8	2-8080 × 6	2-8080 × 8
WEB	15	0.27	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6
WEB	16	0.80	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	17	1.33	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	18	1.87	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6
WEB	19	0.93	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	20	2.40	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6
WEB	21	1.44	1-4040 × 6	1-5050 × 6	1-4040 × 6	1-5050 × 6	1-4040 × 6	1-5050 × 6
WEB	22	1.71	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6
WEB	23	2.08	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6
WEB	24	1.49	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	25	1.44	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-6060 × 6
WEB	26	1.71	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6
WEB	27	2.08	1-4040 × 6	1-5050 × 6	1-5050 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6
WEB	28	1.79	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-5050 × 6	2-5050 × 6	2-5050 × 6
WEB	29	1.79	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-5050 × 6	2-5050 × 6	2-5050 × 6
Sum of Angles Weight (kg)			1058.96	1320.26	1063.12	1343.75	1149.73	1410.83
Unit Weight (kg/m²)			9.81	9.17	9.84	9.32	10.64	9.79

TABLE 157 STEEL A-TYPE ROOF TRUSSES (ISA SECTIONS)

Span = 30.0 m Slope = 1 in 3 Purlins Spacing = 1.44 m

Wind Pressure =			100 kg/m²		150 kg/m²		200 kg/m²	
			Spacing (m)		Spacing (m)		Spacing (m)	
Members	Nos.	Length (m)	4.5	6.0	4.5	6.0	4.5	6.0
TIE	1	1.36	2-7070 × 6	2-9090 × 6	2-8080 × 6	2-9090 × 6	2-9090 × 6	2-100100 × 8
TIE	2	2.73	2-7070 × 6	2-9090 × 6	2-8080 × 6	2-9090 × 6	2-9090 × 6	2-100100 × 8
TIE	3	2.73	2-7070 × 6	2-9090 × 6	2-8080 × 6	2-9090 × 6	2-9090 × 6	2-100100 × 8
TIE	4	2.73	2-7070 × 6	2-9090 × 6	2-8080 × 6	2-9090 × 6	2-9090 × 6	2-100100 × 8
TIE	5	2.73	2-5050 × 6	2-7070 × 6	2-7070 × 6	2-8080 × 6	2-8080 × 6	2-9090 × 6
TIE	6	2.73	2-5050 × 6	2-7070 × 6	2-7070 × 6	2-8080 × 6	2-8080 × 6	2-9090 × 6
RAFTER	7	1.44	2-8080 × 6	2-100100 × 6	2-8080 × 6	2-100100 × 6	2-9090 × 6	2-9090 × 8
RAFTER	8	1.44	2-8080 × 6	2-100100 × 6	2-8080 × 6	2-100100 × 6	2-9090 × 6	2-9090 × 8
RAFTER	9	1.44	2-8080 × 6	2-100100 × 6	2-8080 × 6	2-100100 × 6	2-9090 × 6	2-9090 × 8
RAFTER	10	1.44	2-8080 × 6	2-100100 × 6	2-8080 × 6	2-100100 × 6	2-9090 × 6	2-9090 × 8
RAFTER	11	1.44	2-8080 × 6	2-100100 × 6	2-8080 × 6	2-100100 × 6	2-9090 × 6	2-9090 × 8
RAFTER	12	1.44	2-8080 × 6	2-100100 × 6	2-8080 × 6	2-100100 × 6	2-9090 × 6	2-9090 × 8
RAFTER	13	1.44	2-8080 × 6	2-100100 × 6	2-8080 × 6	2-100100 × 6	2-9090 × 6	2-9090 × 8
RAFTER	14	1.44	2-7070 × 6	2-9090 × 6	2-7070 × 6	2-9090 × 6	2-8080 × 6	2-100100 × 6
RAFTER	15	1.44	2-7070 × 6	2-9090 × 6	2-7070 × 6	2-9090 × 6	2-8080 × 6	2-100100 × 6
RAFTER	16	1.44	2-7070 × 6	2-9090 × 6	2-7070 × 6	2-9090 × 6	2-8080 × 6	2-100100 × 6
RAFTER	17	1.44	2-7070 × 6	2-9090 × 6	2-7070 × 6	2-9090 × 6	2-8080 × 6	2-100100 × 6
WEB	18	0.45	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	19	1.36	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	20	2.27	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6
WEB	21	3.18	1-8080 × 6	1-8080 × 6	1-8080 × 6	1-8080 × 6	1-8080 × 6	1-8080 × 6
WEB	22	4.09	1-100100 × 6	1-100100 × 6	1-100100 × 6	1-100100 × 6	1-100100 × 6	1-100100 × 6
WEB	23	2.04	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6
WEB	24	5.00	1-9090 × 6	1-9090 × 6	1-9090 × 6	1-9090 × 6	1-9090 × 6	1-9090 × 6
WEB	25	1.64	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6
WEB	26	2.27	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6
WEB	27	3.05	1-8080 × 6	1-8080 × 6	1-8080 × 6	1-8080 × 6	1-8080 × 6	1-8080 × 6
WEB	28	3.88	1-100100 × 6	1-100100 × 6	1-100100 × 6	1-100100 × 6	1-100100 × 6	1-100100 × 6
WEB	29	2.09	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	30	1.64	1-4040 × 6	1-5050 × 6	1-4040 × 6	1-5050 × 6	1-5050 × 6	1-6060 × 6
WEB	31	2.27	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-6060 × 6	1-6060 × 6
WEB	32	3.05	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-7070 × 6	1-7070 × 6	1-8080 × 6
WEB	33	3.88	1-7070 × 6	1-7070 × 6	1-8080 × 6	1-9090 × 6	1-9090 × 6	1-100100 × 6
WEB	34	2.85	2-4040 × 6	2-5050 × 6	2-6060 × 6	2-6060 × 6	2-6060 × 6	2-7070 × 6
WEB	35	2.85	2-4040 × 6	2-5050 × 6	2-6060 × 6	2-6060 × 6	2-6060 × 6	2-7070 × 6
Sum of Angles Weight (kg)			1363.70	1622.05	1492.29	1662.81	1649.5	1982.14
Unit Weight (kg/m²)			10.10	9.01	11.05	9.24	12.22	11.01

TABLE 158 STEEL A-TYPE ROOF TRUSSES (ISA SECTIONS)

Span = 30.0 m | Slope = 1 in 4 | Purlins Spacing = 1.41 m

Wind Pressure =			100 kg/m²		150 kg/m²		200 kg/m²	
			Spacing (m)		Spacing (m)		Spacing (m)	
Members	Nos.	Length (m)	4.5	6.0	4.5	6.0	4.5	6.0
TIE	1	1.36	2-100100 × 6	2-100100 × 8	2-8080 × 8	2-100100 × 8	2-100100 × 8	2-130130 × 8
TIE	2	2.73	2-100100 × 6	2-100100 × 8	2-8080 × 8	2-100100 × 8	2-100100 × 8	2-130130 × 8
TIE	3	2.73	2-100100 × 6	2-100100 × 8	2-8080 × 8	2-100100 × 8	2-100100 × 8	2-130130 × 8
TIE	4	2.73	2-100100 × 6	2-100100 × 8	2-8080 × 8	2-100100 × 8	2-100100 × 8	2-130130 × 8
TIE	5	2.73	2-7070 × 6	2-100100 × 6	2-8080 × 6	2-100100 × 6	2-100100 × 6	2-100100 × 8
TIE	6	2.73	2-7070 × 6	2-100100 × 6	2-8080 × 6	2-100100 × 6	2-100100 × 6	2-100100 × 8
RAFTER	7	1.41	2-9090 × 8	2-100100 × 10	2-9090 × 8	2-100100 × 10	2-9090 × 8	2-100100 × 10
RAFTER	8	1.41	2-9090 × 8	2-100100 × 10	2-9090 × 8	2-100100 × 10	2-9090 × 8	2-100100 × 10
RAFTER	9	1.41	2-9090 × 8	2-100100 × 10	2-9090 × 8	2-100100 × 10	2-9090 × 8	2-100100 × 10
RAFTER	10	1.41	2-9090 × 8	2-100100 × 10	2-9090 × 8	2-100100 × 10	2-9090 × 8	2-100100 × 10
RAFTER	11	1.41	2-9090 × 8	2-100100 × 10	2-9090 × 8	2-100100 × 10	2-9090 × 8	2-100100 × 10
RAFTER	12	1.41	2-9090 × 8	2-100100 × 10	2-9090 × 8	2-100100 × 10	2-9090 × 8	2-100100 × 10
RAFTER	13	1.41	2-9090 × 6	2-9090 × 8	2-9090 × 6	2-9090 × 8	2-9090 × 6	2-9090 × 8
RAFTER	14	1.41	2-9090 × 6	2-9090 × 8	2-9090 × 6	2-9090 × 8	2-9090 × 6	2-9090 × 8
RAFTER	15	1.41	2-9090 × 6	2-9090 × 8	2-9090 × 6	2-9090 × 8	2-9090 × 6	2-9090 × 8
RAFTER	16	1.41	2-9090 × 6	2-9090 × 8	2-9090 × 6	2-9090 × 8	2-9090 × 6	2-9090 × 8
RAFTER	17	1.41	2-9090 × 6	2-9090 × 8	2-9090 × 6	2-9090 × 8	2-9090 × 6	2-9090 × 8
WEB	18	0.34	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	19	1.02	1-4040 × 6	1-5050 × 6	1-4040 × 6	1-5050 × 6	1-4040 × 6	1-5050 × 6
WEB	20	1.70	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6
WEB	21	2.39	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6
WEB	22	2.07	1-8080 × 6	1-8080 × 6	1-8080 × 6	1-8080 × 6	1-8080 × 6	1-8080 × 6
WEB	23	1.53	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	24	3.75	1-7070 × 6	1-7070 × 6	1-7070 × 6	1-7070 × 6	1-7070 × 6	1-7070 × 6
WEB	25	1.52	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6
WEB	26	1.93	1-5050 × 6	1-6060 × 6	1-5050 × 6	1-6060 × 6	1-5050 × 6	1-6060 × 6
WEB	27	2.46	1-7070 × 6	1-7070 × 6	1-7070 × 6	1-7070 × 6	1-7070 × 6	1-7070 × 6
WEB	28	3.05	1-8080 × 6	1-8080 × 6	1-8080 × 6	1-8080 × 6	1-8080 × 6	1-8080 × 6
WEB	29	1.81	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	30	1.52	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-7070 × 6
WEB	31	1.93	1-4040 × 6	1-4040 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-6060 × 6
WEB	32	2.46	1-5050 × 6	1-5050 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-7070 × 6
WEB	33	3.05	1-6060 × 6	1-6060 × 6	1-7070 × 6	1-7070 × 6	1-8080 × 6	1-8080 × 6
WEB	34	2.32	2-4040 × 6	2-4040 × 6	2-5050 × 6	2-5050 × 6	2-6060 × 6	2-6060 × 6
WEB	35	2.32	2-4040 × 6	2-4040 × 6	2-5050 × 6	2-5050 × 6	2-6060 × 6	2-6060 × 6
Sum of Angles Weight (kg)			1484.81	1884.96	1554.27	1917.30	1718.32	2163.89
Unit Weight (kg/m²)			11.00	10.47	11.51	10.65	12.73	12.02

TABLE 159 STEEL A-TYPE ROOF TRUSSES (ISA SECTIONS)

Span = 30.0 m | Slope = 1 in 5 | Purlins Spacing = 1.39 m

Wind Pressure =			100 kg/m²		150 kg/m²		200 kg/m²	
			Spacing (m)		Spacing (m)		Spacing (m)	
Members	Nos.	Length (m)	4.5	6.0	4.5	6.0	4.5	6.0
TIE	1	1.36	2-100100 × 8	2-100100 × 10	2-100100 × 8	2-100100 × 10	2-100100 × 10	2-130130 × 8
TIE	2	2.73	2-100100 × 8	2-100100 × 10	2-100100 × 8	2-100100 × 10	2-100100 × 10	2-130130 × 8
TIE	3	2.73	2-100100 × 8	2-100100 × 10	2-100100 × 8	2-100100 × 10	2-100100 × 10	2-130130 × 8
TIE	4	2.73	2-100100 × 8	2-100100 × 10	2-100100 × 8	2-100100 × 10	2-100100 × 10	2-130130 × 8
TIE	5	2.73	2-9090 × 6	2-9090 × 8	2-9090 × 6	2-9090 × 8	2-9090 × 8	2-100100 × 10
TIE	6	2.73	2-9090 × 6	2-9090 × 8	2-9090 × 6	2-9090 × 8	2-9090 × 8	2-100100 × 10
RAFTER	7	1.39	2-100100 × 10	2-130130 × 8	2-100100 × 10	2-130130 × 8	2-100100 × 10	2-130130 × 8
RAFTER	8	1.39	2-100100 × 10	2-130130 × 8	2-100100 × 10	2-130130 × 8	2-100100 × 10	2-130130 × 8
RAFTER	9	1.39	2-100100 × 10	2-130130 × 8	2-100100 × 10	2-130130 × 8	2-100100 × 10	2-130130 × 8
RAFTER	10	1.39	2-100100 × 10	2-130130 × 8	2-100100 × 10	2-130130 × 8	2-100100 × 10	2-130130 × 8
RAFTER	11	1.39	2-100100 × 10	2-130130 × 8	2-100100 × 10	2-130130 × 8	2-100100 × 10	2-130130 × 8
RAFTER	12	1.39	2-100100 × 10	2-130130 × 8	2-100100 × 10	2-130130 × 8	2-100100 × 10	2-130130 × 8
RAFTER	13	1.39	2-9090 × 6	2-9090 × 8	2-9090 × 6	2-9090 × 8	2-9090 × 6	2-100100 × 8
RAFTER	14	1.39	2-9090 × 6	2-9090 × 8	2-9090 × 6	2-9090 × 8	2-9090 × 6	2-100100 × 8
RAFTER	15	1.39	2-9090 × 6	2-9090 × 8	2-9090 × 6	2-9090 × 8	2-9090 × 6	2-100100 × 8
RAFTER	16	1.39	2-9090 × 6	2-9090 × 8	2-9090 × 6	2-9090 × 8	2-9090 × 6	2-100100 × 8
RAFTER	17	1.39	2-9090 × 6	2-9090 × 8	2-9090 × 6	2-9090 × 8	2-9090 × 6	2-100100 × 8
WEB	18	0.27	1-6060 × 6	1-7070 × 6	1-6060 × 6	1-7070 × 6	1-6060 × 6	1-7070 × 6
WEB	19	0.82	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	20	1.36	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	21	1.91	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6
WEB	22	2.45	1-7070 × 6	1-7070 × 6	1-7070 × 6	1-7070 × 6	1-7070 × 6	1-7070 × 6
WEB	23	1.23	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	24	3.00	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6
WEB	25	1.47	1-5050 × 6	1-6060 × 6	1-5050 × 6	1-6060 × 6	1-5050 × 6	1-6060 × 6
WEB	26	1.75	1-5050 × 6	1-6060 × 6	1-5050 × 6	1-6060 × 6	1-5050 × 6	1-6060 × 6
WEB	27	2.13	1-6060 × 6	1-7070 × 6	1-6060 × 6	1-7070 × 6	1-6060 × 6	1-7070 × 6
WEB	28	2.57	1-7070 × 6	1-8080 × 6	1-7070 × 6	1-8080 × 6	1-7070 × 6	1-8080 × 6
WEB	29	1.66	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	30	1.47	1-7070 × 6	1-8080 × 6	1-7070 × 6	1-8080 × 6	1-7070 × 6	1-8080 × 6
WEB	31	1.75	1-4040 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-6060 × 6
WEB	32	2.13	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-6060 × 6	1-6060 × 6	1-7070 × 6
WEB	33	2.57	1-5050 × 6	1-5050 × 6	1-6060 × 6	1-7070 × 6	1-7070 × 6	1-8080 × 6
WEB	34	2.03	2-4040 × 6	2-5050 × 6	2-5050 × 6	2-5050 × 6	2-6060 × 6	2-6060 × 6
WEB	35	2.03	2-4040 × 6	2-5050 × 6	2-5050 × 6	2-5050 × 6	2-6060 × 6	2-6060 × 6
Sum of Angles Weight (kg)			1720.39	2018.95	1745.79	2032.04	1909.95	2215.43
Unit Weight (kg/m²)			12.74	11.22	12.93	11.28	14.14	12.31

TABLE 160 STEEL A-TYPE ROOF TRUSSES (TUBE SECTIONS)

Span = 9 m | Slope = 1 in 3 | Purlins Spacing = 1.19 m

Wind Pressure =			100 kg/m²		150 kg/m²		200 kg/m²	
			Spacing (m)		Spacing (m)		Spacing (m)	
Members	Nos.	Length (m)	4.5	6.0	4.5	6.0	4.5	6.0
TIE	1	2.25	50L	50L	65L	65L	65L	80L
TIE	2	2.25	50L	50L	65L	65L	65L	80L
RAFTER	3	1.19	50L	65L	50L	65L	65L	65L
RAFTER	4	1.19	50L	65L	50L	65L	65L	65L
RAFTER	5	1.19	50L	65L	50L	65L	65L	65L
RAFTER	6	1.19	50L	65L	50L	65L	65L	65L
WEB	7	0.75	20M	20M	20M	20M	20M	20M
WEB	8	0.38	20M	25L	20M	25L	25L	25L
WEB	9	1.50	20M	20M	20M	20M	20M	20M
WEB	10	1.19	20M	25L	20M	25L	20M	25L
WEB	11	1.13	20M	20M	20M	20M	20M	25L
WEB	12	1.35	32L	32L	40L	50L	50L	65L
WEB	13	1.35	32L	32L	40L	50L	50L	65L
Sum of Tubes Weight (kg)			104.04	121.67	122.90	145.23	144.13	164.63
Unit Weight (kg/m²)			2.57	2.25	3.03	2.69	3.56	3.05

TABLE 161 STEEL A-TYPE ROOF TRUSSES (TUBE SECTIONS)

Span = 9.0 m | Slope = 1 in 4 | Purlins Spacing = 1.16 m

Wind Pressure =			100 kg/m²		150 kg/m²		200 kg/m²	
			Spacing (m)		Spacing (m)		Spacing (m)	
Members	Nos	Length (m)	4.5	6.0	4.5	6.0	4.5	6.0
TIE	1	2.25	65L	65L	65L	80L	80L	90L
TIE	2	2.25	65L	65L	65L	80L	80L	90L
RAFTER	3	1.16	65L	80L	65L	80L	65L	80L
RAFTER	4	1.16	65L	80L	65L	80L	65L	80L
RAFTER	5	1.16	65L	80L	65L	80L	65L	80L
RAFTER	6	1.16	65L	80L	65L	80L	65L	80L
WEB	7	0.56	20M	20M	20M	20M	20M	20M
WEB	8	0.28	25L	25L	25L	25L	25L	32L
WEB	9	1.13	20M	20M	20M	20M	20M	20M
WEB	10	1.16	25L	25L	25L	25L	25L	25L
WEB	11	1.13	20M	25L	20M	25L	25L	25L
WEB	12	1.26	32L	40L	50L	50L	50L	65L
WEB	13	1.26	32L	40L	50L	50L	50L	65L
Sum of Tubes Weight (kg)			132.92	146.74	140.62	160.31	150.84	186 83
Unit Weight (kg/m²)			3.28	2.72	3.47	2.97	3.72	3.46

TABLE 162 STEEL A-TYPE ROOF TRUSSES (TUBE SECTIONS)

Span = 9.0 m | Slope = 1 in 5 | Purlins Spacing = 1.15 m

Wind Pressure =			100 kg/m²		150 kg/m²		200 kg/m²	
			Spacing (m)		Spacing (m)		Spacing (m)	
Members	Nos.	Length (m)	4.5	6.0	4.5	6.0	4.5	6.0
TIE	1	2.25	65L	80L	80L	90L	90L	90L
TIE	2	2.25	65L	80L	80L	90L	90L	90L
RAFTER	3	1.15	80L	90L	80L	90L	80L	90L
RAFTER	4	1.15	80L	90L	80L	90L	80L	90L
RAFTER	5	1.15	80L	90L	80L	90L	80L	90L
RAFTER	6	1.15	80L	90L	80L	90L	80L	90L
WEB	7	0.45	20M	20M	20M	20M	20M	20M
WEB	8	0.23	32L	32L	32L	32L	32L	32L
WEB	9	0.90	20M	20M	20M	20M	20M	20M
WEB	10	1.15	25L	32L	25L	32L	25L	32L
WEB	11	1.13	25L	25L	25L	25L	25L	32L
WEB	12	1.21	40L	50L	50L	50L	50L	65L
WEB	13	1.21	40L	50L	50L	50L	50L	65L
Sum of Tubes Weight (kg)			144.85	177.58	158.24	195.22	175.88	204.76
Unit Weight (kg/m²)			3.58	3.29	3.91	3.62	4.34	3.79

TABLE 163 STEEL A-TYPE ROOF TRUSSES (TUBE SECTIONS)

Span = 12 m | Slope = 1 in 3 | Purlins Spacing = 1.27 m

Wind Pressure =			100 kg/m²		150 kg/m²		200 kg/m²	
			Spacing (m)		Spacing (m)		Spacing (m)	
Members	Nos.	Length (m)	4.5	6.0	4.5	6.0	4.5	6.0
TIE	1	1.20	65L	65L	80L	80L	90L	90L
TIE	2	2.40	65L	65L	80L	80L	90L	90L
TIE	3	2.40	65L	65L	80L	80L	90L	90L
RAFTER	4	1.27	65L	65L	65L	65L	65L	80L
RAFTER	5	1.27	65L	65L	65L	65L	65L	80L
RAFTER	6	1.27	65L	65L	65L	65L	65L	80L
RAFTER	7	1.27	65L	65L	65L	65L	65L	80L
RAFTER	8	1.27	65L	65L	65L	65L	65L	80L
WEB	9	0.40	20M	20M	20M	20M	20M	20M
WEB	10	1.20	20M	20M	20M	20M	20M	20M
WEB	11	0.60	20M	20M	20M	20M	20M	20M
WEB	12	2.00	20M	20M	20M	20M	20M	20M
WEB	13	1.44	20M	25L	20M	25	20M	25L
WEB	14	1.22	20M	20M	20M	20M	20M	20M
WEB	15	1.44	20M	25L	25L	25L	25L	25L
WEB	16	1.56	40L	40L	50L	50L	50L	65L
WEB	17	1.56	40L	40L	50L	50L	50L	65L
Sum of Tubes Weight (kg)			187.72	190.39	206.71	208.04	230.23	255.12
Unit Weight (kg/m²)			3.48	2.64	3.83	2.89	4.26	3.54

TABLE 164 STEEL A-TYPE ROOF TRUSSES (TUBE SECTIONS)

Span = 12 m | Slope = 1 in 4 | Purlins Spacing = 1.24 m

Wind Pressure =			100 kg/m²		150 kg/m²		200 kg/m²	
			Spacing (m)		Spacing (m)		Spacing (m)	
Members	Nos.	Length (m)	4.5	6.0	4.5	6.0	4.5	6.0
TIE	1	1.20	65L	90L	90L	90L	100L	100M
TIE	2	2.40	65L	90L	90L	90L	100L	100M
TIE	3	2.40	65L	90L	90L	90L	100L	100M
RAFTER	4	1.24	80L	90L	80L	90L	80L	90L
RAFTER	5	1.24	80L	90L	80L	90L	80L	90L
RAFTER	6	1.24	80L	90L	80L	90L	80L	90L
RAFTER	7	1.24	80L	90L	80L	90L	80L	90L
RAFTER	8	1.24	80L	90L	80L	90L	80L	90L
WEB	9	0.30	25L	25L	25L	25L	25L	25L
WEB	10	0.90	20M	20M	20M	20M	20M	20M
WEB	11	0.45	20M	25L	20M	25L	25L	25L
WEB	12	1.50	20M	20M	20M	20M	20M	20L
WEB	13	1.34	25L	25L	25L	25L	25L	25L
WEB	14	1.21	20M	20M	20M	20M	20M	25M
WEB	15	1.34	25L	25L	25L	25L	25L	32L
WEB	16	1.42	32L	40L	50L	50L	50L	65L
WEB	17	1.42	32L	40L	50L	50L	50L	65L
Sum of Tubes Weight (kg)			192.59	256.81	237.04	261.76	251.25	313.41
Unit Weight (kg m⁻¹)			3.57	3.57	4.59	3.64	4.65	4.35

TABLE 165 STEEL A-TYPE ROOF TRUSSES (TUBE SECTIONS)

Span = 12 m | Slope = 1 in 5 | Purlins Spacing = 1.22 m

Wind Pressure =			100 kg/m²		150 kg/m²		200 kg/m²	
			Spacing (m)		Spacing (m)		Spacing (m)	
Members	Nos.	Length (m)	4.5	6.0	4.5	6.0	4.5	6.0
TIE	1	1.20	90L	100L	90L	100L	100L	125M
TIE	2	2.40	90L	100L	90L	100L	100L	125M
TIE	3	2.40	90L	100L	90L	100L	100L	125M
RAFTER	4	1.22	90L	100L	90L	100L	90L	100L
RAFTER	5	1.22	90L	100L	90L	100L	90L	100L
RAFTER	6	1.22	90L	100L	90L	100L	90L	100L
RAFTER	7	1.22	90L	100L	90L	100L	90L	100L
RAFTER	8	1.22	90L	100L	90L	100L	90L	100L
WEB	9	0.24	25L	32L	25L	32L	25L	32L
WEB	10	0.72	20M	20M	20M	20M	20M	20M
WEB	11	0.36	25L	32L	25L	32L	25L	32L
WEB	12	1.20	20M	20M	20M	20M	20M	20M
WEB	13	1.29	25L	32L	25L	32L	25L	32L
WEB	14	1.21	20M	25L	20M	25L	25L	25L
WEB	15	1.29	25L	32L	25L	32L	32L	32L
WEB	16	1.34	40L	50L	50L	50L	65L	65L
WEB	17	1.34	40L	50L	50L	50L	65L	65L
Sum of Tubes Weight (kg)			251.94	289.17	256.60	289.17	282.10	373.04
Unit Weight (kg/m²)			4.67	4.02	4.75	4.02	5.22	4.18

TABLE 166 STEEL A-TYPE ROOF TRUSSES (TUBE SECTIONS)

Span = 18 m Slope = 1 in 3 Purlins Spacing = 1.36 m

Wind Pressure =			100 kg/m²		150 kg/m²		200 kg/m²	
			Spacing (m)		Spacing (m)		Spacing (m)	
Members	Nos.	Length (m)	4.5	6.0	4.5	6.0	4.5	6.0
TIE	1	1.29	80L	90L	90L	100L	100L	100M
TIE	2	2.57	80L	90L	90L	100L	100L	100M
TIE	3	2.57	80L	90L	90L	100L	100L	100M
TIE	4	2.57	80L	90L	90L	100L	100L	100M
RAFTER	5	1.36	80L	90L	80L	90L	80L	90L
RAFTER	6	1.36	80L	90L	80L	90L	80L	90L
RAFTER	7	1.36	65L	80L	65L	80L	65L	90L
RAFTER	8	1.36	65L	80L	65L	80L	65L	90L
RAFTER	9	1.36	65L	80L	65L	80L	65L	90L
RAFTER	10	1.36	65L	80L	65L	80L	65L	90L
RAFTER	11	1.36	65L	80L	65L	80L	65L	90L
WEB	12	0.43	20M	20M	20M	20M	20M	20M
WEB	13	1.29	20M	20M	20M	20M	20M	20M
WEB	14	2.14	25L	25L	25L	25L	25L	25L
WEB	15	1.07	20M	20M	20M	20M	20M	20M
WEB	16	3.06	25L	25L	25L	25L	25L	25L
WEB	17	1.55	25L	25L	25L	25L	25L	25L
WEB	18	2.14	32L	32L	32L	32L	32L	32L
WEB	19	1.44	20M	20M	20M	20M	20M	20M
WEB	20	1.55	20M	25L	25L	25L	25L	32L
WEB	21	2.14	25L	25L	25L	32L	32L	32L
WEB	22	1.98	50L	50L	65L	65L	65L	65L
WEB	23	1.98	50L	50L	65L	65L	65L	65L
Sum of Tubes Weight (kg)			332.48	393.72	382.65	430.32	406.42	497.08
Unit Weight (kg/m²)			4.10	3.65	4.72	3.98	5.02	4.60

TABLE 167 STEEL A-TYPE ROOF TRUSSES (TUBE SECTIONS)

Span = 18 m Slope = 1 in 4 Purlins Spacing = 1.33 m

Wind Pressure =			100 kg/m²		150 kg/m²		200 kg/m²	
Members	Nos.	Length (m)	Spacing (m) 4.5	6.0	Spacing (m) 4.5	6.0	Spacing (m) 4.5	6.0
TIE	1	1.29	90L	100M	100L	100M	125M	125M
TIE	2	2.57	90L	100M	100L	100M	125M	125M
TIE	3	2.57	90L	100M	100L	100M	125M	125M
TIE	4	2.57	90L	90M	100L	100M	125M	125M
RAFTER	5	1.33	90L	100M	90L	100M	90L	100M
RAFTER	6	1.33	90L	100M	90L	100M	90L	100M
RAFTER	7	1.33	80L	100L	80L	100L	80L	100L
RAFTER	8	1.33	80L	100L	80L	100L	80L	100L
RAFTER	9	1.33	80L	100L	80L	100L	80L	100L
RAFTER	10	1.33	80L	100L	80L	100L	80L	100L
RAFTER	11	1.33	80L	100L	80L	100L	80L	100L
WEB	12	0.32	20M	25L	20M	25L	20M	25L
WEB	13	0.96	20M	20M	20L	20M	20M	20M
WEB	14	1.61	20M	25L	20M	25L	20M	25L
WEB	15	0.80	20M	25L	20M	25L	20M	25L
WEB	16	2.25	20M	20M	20M	20M	20M	20M
WEB	17	1.44	25L	25L	25L	25L	25L	25L
WEB	18	1.82	32L	32L	32L	32L	32L	32L
WEB	19	1.37	20M	20M	20M	20M	20M	20M
WEB	20	1.44	25L	32L	25L	32L	25L	32L
WEB	21	1.82	20M	25L	25L	32L	32L	32L
WEB	22	1.71	40L	50L	50L	65L	65L	65L
WEB	23	1.71	40L	50L	50L	65L	65L	65L
Sum of Tubes Weight (kg)			365.83	478.61	394.16	509.17	520.00	582.97
Unit Weight (kg/m²)			4.52	4.43	4.87	4.71	6.42	5.40

TABLE 168 STEEL A-TYPE ROOF TRUSSES (TUBE SECTIONS)

Span = 18 m | Slope = 1 in 5 | Purlins Spacing = 1.31 m

Wind Pressure =			100 kg/m²		150 kg/m²		200 kg/m²	
			Spacing (m)		Spacing (m)		Spacing (m)	
Members	Nos.	Length (m)	4.5	6.0	4.5	6.0	4.5	6.0
TIE	1	1.29	100L	125M	100M	125M	125M	125M
TIE	2	2.57	100L	125M	100M	125M	125M	125M
TIE	3	2.57	100L	125M	100M	125M	125M	125M
TIE	4	2.57	100L	125M	100M	125M	125M	125M
RAFTER	5	1.31	100M	125M	100M	125M	100M	125M
RAFTER	6	1.31	100M	125M	100M	125M	100M	125M
RAFTER	7	1.31	90M	100M	90M	100M	90M	100M
RAFTER	8	1.31	90M	100M	90M	100M	90M	100M
RAFTER	9	1.31	90M	100M	90M	100M	90M	100M
RAFTER	10	1.31	90M	100M	90M	100M	90M	100M
RAFTER	11	1.31	90M	100M	90M	100M	90M	100M
WEB	12	0.26	25L	32L	25L	32L	25L	32L
WEB	13	0.77	20M	25L	20M	25L	20M	25L
WEB	14	1.29	20M	25L	20M	25L	20M	25L
WEB	15	0.64	25L	25L	25L	25L	25L	25L
WEB	16	1.80	20M	20M	20M	20M	20M	20M
WEB	17	1.39	25L	32L	25L	32L	25L	32L
WEB	18	1.65	32L	32L	32L	32L	32L	32L
WEB	19	1.34	20M	20M	20M	20M	20M	20M
WEB	20	1.39	32L	32L	32L	32L	32L	32L
WEB	21	1.65	20M	25L	25L	32L	32L	32L
WEB	22	1.57	40L	50L	50L	65L	65L	65L
WEB	23	1.57	40L	50L	50L	65L	65L	65L
Sum of Tubes Weight (kg)			422.96	610.31	480.46	622.86	566.82	622.86
Unit Weight (kg/m²)			5.22	5.65	5.93	5.77	7.00	5.77

TABLE 169 STEEL A-TYPE ROOF TRUSSES (TUBE SECTIONS)

Span = 24 m | Slope = 1 in 3 | Purlins Spacing = 1.41 m

Wind Pressure =			100 kg/m²		150 kg/m²		200 kg/m²	
			Spacing (m)		Spacing (m)		Spacing (m)	
Members	Nos.	Length (m)	4.5	6.0	4.5	6.0	4.5	6.0
TIE	1	1.33	90L	100L	100L	100H	125M	125M
TIE	2	2.67	90L	100L	100L	100H	125M	125M
TIE	3	2.67	90L	100L	100L	100H	125M	125M
TIE	4	2.67	90L	100L	100L	100H	125M	125M
TIE	5	2.67	90L	80L	100L	100H	125M	125M
RAFTER	6	1.41	90L	100M	90L	100M	100L	100H
RAFTER	7	1.41	90L	100M	90L	100M	100L	100H
RAFTER	8	1.41	90L	100M	90L	100M	100L	100H
RAFTER	9	1.41	90L	100M	90L	100M	100L	100H
RAFTER	10	1.41	90L	100M	90L	100M	100L	100H
RAFTER	11	1.41	90L	100M	90L	100M	100L	100M
RAFTER	12	1.41	90L	100M	90L	100M	100L	100M
RAFTER	13	1.41	90L	100M	90L	100M	100L	100M
RAFTER	14	1.41	90L	100M	90L	100M	100L	100M
WEB	15	0.44	20M	20M	20M	20M	20M	20M
WEB	16	1.33	20M	20M	20L	20M	20M	25L
WEB	17	2.22	25L	25L	25L	25L	25L	25L
WEB	18	3.11	40L	40L	40L	40L	40L	40L
WEB	19	1.56	20M	20M	20M	20M	20M	20M
WEB	20	4.00	32L	32L	32L	32L	32L	32L
WEB	21	1.60	25L	25L	25L	25L	25L	25L
WEB	22	2.22	32L	32L	32L	32L	32L	32L
WEB	23	2.98	40L	50L	40L	50L	40L	50L
WEB	24	1.74	20M	20M	20M	20M	20M	25L
WEB	25	1.60	20M	25L	5L	25L	25L	32L
WEB	26	2.22	25L	25L	32L	32L	32L	40L
WEB	27	2.98	32L	32L	40L	40L	50L	50L
WEB	28	2.40	50L	65L	65L	65L	80L	80L
WEB	29	2.40	50L	65L	65L	65L	80L	80L
Sum of Tubes Weight (kg)			598.59	732.44	650.46	847.71	844.27	944.94
Unit Weight (kg/m²)			5.54	5.04	6.02	5.89	7.82	6.56

TABLE 170 STEEL A-TYPE ROOF TRUSSES (TUBE SECTIONS)

Span = 24 m | Slope = 1 in 4 | Purlins Spacing = 1.37 m

Wind Pressure =			100 kg/m²		150 kg/m²		200 kg/m²	
			Spacing (m)		Spacing (m)		Spacing (m)	
Members	Nos.	Length (m)	4.5	6.0	4.5	6.0	4.5	6.0
TIE	1	1.33	100M	125M	125M	125M	125M	150M
TIE	2	2.67	100M	125M	125M	125M	125M	150M
TIE	3	2.67	100M	125M	125M	125M	125M	150M
TIE	4	2.67	100M	125M	125M	125M	125M	150M
TIE	5	2.67	100M	125M	125M	125M	125M	150M
RAFTER	6	1.37	100M	125M	100M	125M	100M	125M
RAFTER	7	1.37	100M	125M	100M	125M	100M	125M
RAFTER	8	1.37	100M	125M	100M	125M	100M	125M
RAFTER	9	1.37	100M	125M	100M	125M	100M	125M
RAFTER	10	1.37	100M	125M	100M	125M	100M	125M
RAFTER	11	1.37	90M	100M	90L	100M	90L	100M
RAFTER	12	1.37	90M	100M	90L	100M	90L	100M
RAFTER	13	1.37	90M	100M	90L	100M	90L	100M
RAFTER	14	1.37	90M	100M	90L	100M	90L	100M
WEB	15	0.33	25L	32L	25L	32L	25L	32L
WEB	16	1.00	20M	20M	20M	20M	20M	20M
WEB	17	1.67	20M	25L	20M	25L	20M	25L
WEB	18	2.33	32L	32L	32L	32L	32L	32L
WEB	19	1.17	20M	25L	20M	25L	20M	25L
WEB	20	3.00	25L	25L	25L	25L	25L	25L
WEB	21	1.49	25L	32L	25L	32L	25L	32L
WEB	22	1.89	32L	32L	32L	32L	32L	32L
WEB	23	2.40	40L	40L	40L	40L	40L	40L
WEB	24	1.57	20M	20M	20M	20M	20M	20M
WEB	25	1.49	25L	32L	25L	32L	25L	32L
WEB	26	1.89	20M	25L	25L	32L	32L	32L
WEB	27	2.40	25L	32L	32L	40L	40L	50L
WEB	28	2.01	50L	50L	65L	65L	65L	80L
WEB	29	2.01	50L	50L	65L	65L	65L	80L
Sum of Tubes Weight (kg)			686.77	878.04	794.74	897.03	798.52	981.46
Unit Weight (kg/m²)			6.36	6.10	7.36	6.23	7.39	6.82

TABLE 171 STEEL A-TYPE ROOF TRUSSES (TUBE SECTIONS)

Span = 24 m | Slope = 1 in 5 | Purlins Spacing = 1.36 m

Wind Pressure =			100 kg/m²		150 kg/m²		200 kg/m²	
			Spacing (m)		Spacing (m)		Spacing (m)	
Members	Nos.	Length (m)	4.5	6.0	4.5	6.0	4.5	6.0
TIE	1	1.33	125M	150M	125M	150M	150M	150H
TIE	2	2.67	125M	150M	125M	150M	150M	150H
TIE	3	2.67	125M	150M	125M	150M	150M	150H
TIE	4	2.67	125M	150M	125M	150M	150M	150H
TIE	5	2.67	90M	100M	125M	150M	150M	150H
RAFTER	6	1.36	125M	150M	125M	150M	125M	150M
RAFTER	7	1.36	125M	150M	125M	150M	125M	150M
RAFTER	8	1.36	125M	150M	125M	150M	125M	150M
RAFTER	9	1.36	125M	150M	125M	150M	125M	150M
RAFTER	10	1.36	125M	150M	125M	150M	125M	150M
RAFTER	11	1.36	100M	125M	100M	125M	100M	125M
RAFTER	12	1.36	100M	125M	100M	125M	100M	125M
RAFTER	13	1.36	100M	125M	100M	125M	100M	125M
RAFTER	14	1.36	100M	125M	100M	125M	100M	125M
WEB	15	0.27	32L	32L	32L	32L	32L	32L
WEB	16	0.80	20M	25L	20M	25L	20M	25L
WEB	17	1.33	20M	25L	20M	25L	20M	25L
WEB	18	1.87	25L	25L	25L	25L	25L	25L
WEB	19	0.93	20M	25L	20M	25L	20M	25L
WEB	20	2.40	20M	20M	20M	20M	20M	20M
WEB	21	1.44	32L	32L	32L	32L	32L	32L
WEB	22	1.71	32L	32L	32L	32L	32L	32L
WEB	23	2.08	32L	40L	32L	40L	32L	40L
WEB	24	1.49	20M	20M	20M	20M	20M	20M
WEB	25	1.43	32L	40L	32L	40L	32L	40L
WEB	26	1.71	20M	25L	25L	32L	32L	32L
WEB	27	2.08	25L	25L	32L	32L	40L	40L
WEB	28	1.79	50L	50L	65L	65L	65L	80L
WEB	29	1.79	50L	50L	65L	65L	65L	80L
Sum of Tubes Weight (kg)			812.16	975.17	862.72	1029.58	939.47	1087.67
Unit Weight (kg/m²)			5.52	6.77	7.99	7.15	8.70	7.55

TABLE 172 STEEL A-TYPE ROOF TRUSSES (TUBE SECTIONS)

Span = 30 m | Slope = 1 in 3 | Purlins Spacing = 1.44 m

Wind Pressure →			100 kg/m²		150 kg/m²		200 kg/m²	
			Spacing (m)		Spacing (m)		Spacing (m)	
Members	Nos.	Length (m)	4.5	6.0	4.5	6.0	4.5	6.0
TIE	1	1.36	100L	125M	125M	125M	125M	150M
TIE	2	2.73	100L	125M	125M	125M	125M	150M
TIE	3	2.73	100L	125M	125M	125M	125M	150M
TIE	4	2.73	100L	125M	125M	125M	125M	150M
TIE	5	2.73	80L	90L	125M	125M	125M	150M
TIE	6	2.73	80L	90L	125M	125M	125M	150M
RAFTER	7	1.44	100M	125M	100M	125M	100M	125M
RAFTER	8	1.44	100M	125M	100M	125M	100M	125M
RAFTER	9	1.44	100M	125M	100M	125M	100M	125M
RAFTER	10	1.44	100M	125M	100M	125M	100M	125M
RAFTER	11	1.44	100M	125M	100M	125M	100M	125M
RAFTER	12	1.44	100M	125M	100M	125M	100M	125M
RAFTER	13	1.44	100M	125M	100M	125M	100M	125M
RAFTER	14	1.44	90L	100M	90L	100L	100M	125M
RAFTER	15	1.44	90L	100M	90L	100L	100M	125M
RAFTER	16	1.44	90L	100M	90L	100L	100M	125M
RAFTER	17	1.44	90L	100M	90L	100L	100M	125M
WEB	18	0.46	20M	20M	20M	20M	20M	20M
WEB	19	1.37	25L	32L	25L	32L	25L	32L
WEB	20	2.27	25L	32L	25L	32L	25L	32L
WEB	21	3.18	40L	40L	40L	40L	40L	40L
WEB	22	4.09	50L	50L	50L	50L	50L	50L
WEB	23	2.05	25L	25L	25L	25L	25L	25L
WEB	24	5.00	50L	50L	50L	50L	50L	50L
WEB	25	1.64	25L	32L	25L	32L	25L	32L
WEB	26	2.27	32L	40L	32L	40L	32L	40L
WEB	27	3.05	40L	50L	40L	50L	40L	50L
WEB	28	3.88	50L	65L	50L	65L	50L	65L
WEB	29	2.10	20M	20M	20M	25L	25L	25L
WEB	30	1.64	32L	32L	32L	32L	32L	40L
WEB	31	2.27	25L	25L	32L	32L	32L	40L
WEB	32	3.05	32L	32L	40L	40L	50L	50L
WEB	33	3.88	50L	50L	50L	65L	65L	65L
WEB	34	2.85	65L	65L	80L	80L	90L	90L
WEB	35	2.85	65L	65L	80L	80L	90L	90L
Sum of Tubes Weight (kg)			920.61	1208.96	1159.84	1322.92	1221.99	1493.02
Unit Weight (kg/m²)			6.92	6.72	8.59	7.35	9.05	8.29

TABLE 173 STEEL A-TYPE ROOF TRUSSES (TUBE SECTIONS)

Span = 30 m | Slope = 1 in 4 | Purlins Spacing = 1.41 m

Wind Pressure =			100 kg/m²		150 kg/m²		200 kg/m²	
			Spacing (m)		Spacing (m)		Spacing (m)	
Members	Nos.	Length (m)	4.5	6.0	4.5	6.0	4.5	6.0
TIE	1	1.36	125M	150M	125M	150M	150M	175M
TIE	2	2.72	125M	150M	125M	150M	150M	175M
TIE	3	2.72	125M	150M	125M	150M	150M	175M
TIE	4	2.72	125M	150M	125M	150M	150M	175M
TIE	5	2.72	100L	100H	125M	150M	150M	150M
TIE	6	2.72	100L	100H	125M	150M	150M	150M
RAFTER	7	1.41	125M	150H	125M	150H	125M	175M
RAFTER	8	1.41	125M	150H	125M	150H	125M	175M
RAFTER	9	1.41	125M	150H	125M	150H	125M	175M
RAFTER	10	1.41	125M	150H	125M	150H	125M	175M
RAFTER	11	1.41	125M	150H	125M	150H	125M	150M
RAFTER	12	1.41	125M	150H	125M	150H	125M	150M
RAFTER	13	1.41	125M	150H	125M	150H	125M	150M
RAFTER	14	1.41	125M	150M	125M	150M	125M	150M
RAFTER	15	1.41	125M	150M	125M	150M	125M	150M
RAFTER	16	1.41	125M	150M	125M	150M	125M	150M
RAFTER	17	1.41	125M	150M	125M	150M	125M	150M
WEB	18	0.34	25L	25L	25L	25L	25L	32L
WEB	19	1.02	25L	32L	25L	32L	25L	32L
WEB	20	1.71	25L	25L	25L	25L	25L	32L
WEB	21	2.39	32L	32L	32L	32L	32L	32L
WEB	22	3.07	40L	40L	40L	40L	40L	40L
WEB	23	1.53	20M	25L	20M	25L	20M	25L
WEB	24	3.75	32L	32L	32L	32L	32L	32L
WEB	25	1.53	32L	32L	32L	32L	32L	40L
WEB	26	1.93	32L	40L	32L	40L	32L	40L
WEB	27	2.46	40L	50L	40L	50L	40L	50L
WEB	28	3.05	50L	50L	50L	50L	50L	65L
WEB	29	1.81	20M	20M	20M	20M	25L	25L
WEB	30	1.53	40L	50L	40L	50L	40L	50L
WEB	31	1.93	25L	32L	32L	32L	32L	40L
WEB	32	2.46	25L	32L	32L	40L	40L	50L
WEB	33	3.05	32L	32L	40L	50L	50L	65L
WEB	34	2.32	50L	65L	65L	80L	80L	80L
WEB	35	2.32	50L	65L	65L	80L	80L	80L
Sum of Tubes Weight (kg)			1122.68	1394.55	1220.60	1469.35	1326.32	1634.04
Unit Weight (kg/m²)			8.32	7.75	9.04	8.16	9.82	9.08

TABLE 174 STEEL A-TYPE ROOF TRUSSES (TUBE SECTIONS)

Span = 30 m | Slope = 1 in 5 | Purlins Spacing = 1.39 m

Wind Pressure =			100 kg/m²		150 kg/m²		200 kg/m²	
			Spacing (m)		Spacing (m)		Spacing (m)	
Members	Nos.	Length (m)	4.5	6.0	4.5	6.0	4.5	6.0
TIE	1	1.36	150M	175M	150M	175M	150H	175M
TIE	2	2.73	150M	175M	150M	175M	150H	175M
TIE	3	2.73	150M	175M	150M	175M	150H	175M
TIE	4	2.73	150M	175M	150M	175M	150H	175M
TIE	5	2.73	100M	150M	150M	150M	150H	150M
TIE	6	2.73	100M	150M	150M	150M	150H	150M
RAFTER	7	1.39	150M	175M	150M	175M	150M	175M
RAFTER	8	1.39	150M	175M	150M	175M	150M	175M
RAFTER	9	1.39	150M	175M	150M	175M	150M	175M
RAFTER	10	1.39	150M	175M	150M	175M	150M	175M
RAFTER	11	1.39	150M	175M	150M	175M	150M	175M
RAFTER	12	1.39	150M	175M	150M	175M	150M	175M
RAFTER	13	1.39	150M	150M	150M	150M	150M	150M
RAFTER	14	1.39	100H	150M	100H	150M	100H	150M
RAFTER	15	1.39	100H	150M	100H	150M	100H	150M
RAFTER	16	1.39	100H	150M	100H	150M	100H	150M
RAFTER	17	1.39	100H	150M	100H	150M	100H	150M
WEB	18	0.27	40L	50L	40L	50L	40L	50L
WEB	19	0.82	25L	25L	25L	32L	25L	32L
WEB	20	1.31	25L	32L	25L	32L	25L	32L
WEB	21	1.91	25L	32L	25L	32L	25L	32L
WEB	22	2.46	32L	40L	32L	40L	32L	40L
WEB	23	1.23	25L	32L	25L	32L	25L	32L
WEB	24	3.00	25L	32L	25L	32L	25L	32L
WEB	25	1.47	32L	40L	32L	40L	32L	40L
WEB	26	1.75	32L	40L	32L	40L	32L	40L
WEB	27	2.13	40L	50L	40L	50L	40L	50L
WEB	28	2.57	50L	65L	50L	65L	50L	65L
WEB	29	1.67	20M	20M	20M	25L	20M	25L
WEB	30	1.47	50L	65L	50L	65L	50L	65L
WEB	31	1.75	32L	40L	32L	40L	32L	40L
WEB	32	2.13	25L	32L	32L	40L	40L	50L
WEB	33	2.57	32L	40L	40L	50L	50L	65L
WEB	34	2.03	50L	65L	65L	65L	80L	65L
WEB	35	2.03	50L	65L	65L	65L	80L	65L
Sum of Tubes Weight (kg)			1206.96	1601.72	1304.65	1611.48	1353.22	1623.92
Unit Weight (kg/m²)			8.94	8.90	9.66	8.95	10.02	9.02

TABLE 175 STEEL LEAN-TO ROOF TRUSSES (ISA SECTIONS)

Span = 9 m | Slope = 1 in 3 | Purlins Spacing = 1.36 m

Wind Pressure =			100 kg/m²		150 kg/m²		200 kg/m²	
			Spacing (m)		Spacing (m)		Spacing (m)	
Members	Nos.	Length (m)	4.5	6.0	4.5	6.0	4.5	6.0
TIE	1	1.29	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-5050 × 6	2-5050 × 6	2-5050 × 6
TIE	2	2.57	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-5050 × 6	2-5050 × 6	2-5050 × 6
TIE	3	2.57	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-5050 × 6	2-5050 × 6	2-5050 × 6
TIE	4	2.57	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-5050 × 6	2-5050 × 6	2-5050 × 6
RAFTER	5	1.36	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-4040 × 6
RAFTER	6	1.36	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-4040 × 6
RAFTER	7	1.36	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-4040 × 6
RAFTER	8	1.36	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-4040 × 6
RAFTER	9	1.36	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-4040 × 6
RAFTER	10	1.36	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-4040 × 6
RAFTER	11	1.36	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-4040 × 6
WEB	12	0.43	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	13	1.29	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	14	2.14	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6
WEB	15	1.07	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	16	3.00	2-5050 × 6	2-5050 × 6	2-5050 × 6	2-5050 × 6	2-5050 × 6	2-5050 × 6
WEB	17	1.55	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	18	2.14	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6
WEB	19	1.44	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	20	1.55	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	21	2.14	1-4040 × 6	1-4040 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-6060 × 6
WEB	22	1.98	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-5050 × 6	2-5050 × 6
WEB	23	1.98	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-5050 × 6	2-5050 × 6
Sum of Tubes Weight (kg)			240.62	240.62	242.76	260.76	268.68	270.61
Unit Weight (kg/m²)			5.94	4.46	6.00	4.83	6.63	5.01

TABLE 176 STEEL LEAN-TO ROOF TRUSSES (ISA SECTIONS)

Span = 9 m | Slope = 1 in 4 | Purlins Spacing = 1.36 m

Wind Pressure =			100 kg/m²		150 kg/m²		200 kg/m²	
			Spacing (m)		Spacing (m)		Spacing (m)	
Members	Nos.	Length (m)	4.5	6.0	4.5	6.0	4.5	6.0
TIE	1	1.29	2-4040 × 6	2-5050 × 6	2-5050 × 6	2-5050 × 6	2-6060 × 6	2-6060 × 6
TIE	2	2.57	2-4040 × 6	2-5050 × 6	2-5050 × 6	2-5050 × 6	2-6060 × 6	2-6060 × 6
TIE	3	2.57	2-4040 × 6	2-5050 × 6	2-5050 × 6	2-5050 × 6	2-6060 × 6	2-6060 × 6
TIE	4	2.57	2-4040 × 6	2-5050 × 6	2-5050 × 6	2-5050 × 6	2-6060 × 6	2-6060 × 6
RAFTER	5	1.33	2-5050 × 6	2-5050 × 6	2-5050 × 6	2-5050 × 6	2-5050 × 6	2-5050 × 6
RAFTER	6	1.33	2-5050 × 6	2-5050 × 6	2-5050 × 6	2-5050 × 6	2-5050 × 6	2-5050 × 6
RAFTER	7	1.33	2-5050 × 6	2-5050 × 6	2-5050 × 6	2-5050 × 6	2-5050 × 6	2-5050 × 6
RAFTER	8	1.33	2-5050 × 6	2-5050 × 6	2-5050 × 6	2-5050 × 6	2-5050 × 6	2-5050 × 6
RAFTER	9	1.33	2-5050 × 6	2-5050 × 6	2-5050 × 6	2-5050 × 6	2-5050 × 6	2-5050 × 6
RAFTER	10	1.33	2-5050 × 6	2-5050 × 6	2-5050 × 6	2-5050 × 6	2-5050 × 6	2-5050 × 6
RAFTER	11	1.33	2-5050 × 6	2-5050 × 6	2-5050 × 6	2-5050 × 6	2-5050 × 6	2-5050 × 6
WEB	12	0.32	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	13	0.96	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	14	1.61	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	15	0.80	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	16	2.25	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-4040 × 6
WEB	17	1.44	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	18	1.82	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6
WEB	19	1.37	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	20	1.44	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-5050 × 6
WEB	21	1.82	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6
WEB	22	1.71	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-5050 × 6
WEB	23	1.71	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-5050 × 6
Sum of Tubes Weight (kg)			228.83	246.83	246.83	248.65	264.85	273.13
Unit Weight (kg/m²)			5.65	4.57	6.09	4.60	6.54	5.06

TABLE 177 STEEL LEAN-TO ROOF TRUSSES (ISA SECTIONS)

Span = 9 m | Slope = 1 in 5 | Purlins Spacing = 1.31 m

Wind Pressure =			100 kg/m²		150 kg/m²		200 kg/m²	
			Spacing (m)		Spacing (m)		Spacing (m)	
Members	Nos.	Length (m)	4.5	6.0	4.5	6.0	4.5	6.0
TIE	1	1.29	2-5050 × 6	2-6060 × 6	2-5050 × 6	2-6060 × 6	2-7070 × 6	2-7070 × 6
TIE	2	2.57	2-5050 × 6	2-6060 × 6	2-5050 × 6	2-6060 × 6	2-7070 × 6	2-7070 × 6
TIE	3	2.57	2-5050 × 6	2-6060 × 6	2-5050 × 6	2-6060 × 6	2-7070 × 6	2-7070 × 6
TIE	4	2.57	2-5050 × 6	2-6060 × 6	2-5050 × 6	2-6060 × 6	2-7070 × 6	2-7070 × 6
RAFTER	5	1.31	2-5050 × 6	2-6060 × 6	2-5050 × 6	2-6060 × 6	2-5050 × 6	2-6060 × 6
RAFTER	6	1.31	2-5050 × 6	2-6060 × 6	2-5050 × 6	2-6060 × 6	2-5050 × 6	2-6060 × 6
RAFTER	7	1.31	2-5050 × 6	2-6060 × 6	2-5050 × 6	2-6060 × 6	2-5050 × 6	2-6060 × 6
RAFTER	8	1.31	2-5050 × 6	2-6060 × 6	2-5050 × 6	2-6060 × 6	2-5050 × 6	2-6060 × 6
RAFTER	9	1.31	2-5050 × 6	2-6060 × 6	2-5050 × 6	2-6060 × 6	2-5050 × 6	2-6060 × 6
RAFTER	10	1.31	2-5050 × 6	2-6060 × 6	2-5050 × 6	2-6060 × 6	2-5050 × 6	2-6060 × 6
RAFTER	11	1.31	2-5050 × 6	2-6060 × 6	2-5050 × 6	2-6060 × 6	2-5050 × 6	2-6060 × 6
WEB	12	0.26	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	13	0.77	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	14	1.29	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	15	0.64	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	16	1.80	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-4040 × 6
WEB	17	1.38	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	18	1.65	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6
WEB	19	1.34	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	20	1.38	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-5050 × 6	1-5050 × 6
WEB	21	1.65	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6
WEB	22	1.57	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-5050 × 6
WEB	23	1.57	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-5050 × 6
Sum of Tubes Weight (kg)			236.02	268.73	236.02	270.38	271.45	294.24
Unit Weight (kg/m²)			5.83	4.98	5.83	5.01	6.70	5.45

TABLE 178 STEEL LEAN-TO ROOF TRUSSES (ISA SECTIONS)

Span = 12 m Slope = 1 in 3 Purlins Spacing = 1.41 m

Wind Pressure = 100 kg/m² 150 kg/m² 200 kg/m²

Members	Nos.	Length (m)	Spacing (m) 4.5	Spacing (m) 6.0	Spacing (m) 4.5	Spacing (m) 6.0	Spacing (m) 4.5	Spacing (m) 6.0
TIE	1	1.33	2-4040 × 6	2-4040 × 6	2-5050 × 6	2-5050 × 6	2-6060 × 6	2-6060 × 6
TIE	2	2.67	2-4040 × 6	2-4040 × 6	2-5050 × 6	2-5050 × 6	2-6060 × 6	2-6060 × 6
TIE	3	2.67	2-4040 × 6	2-4040 × 6	2-5050 × 6	2-5050 × 6	2-6060 × 6	2-6060 × 6
TIE	4	2.67	2-4040 × 6	2-4040 × 6	2-5050 × 6	2-5050 × 6	2-6060 × 6	2-6060 × 6
TIE	5	2.67	2-4040 × 6	2-4040 × 6	2-5050 × 6	2-5050 × 6	2-6060 × 6	2-6060 × 6
RAFTER	6	1.41	2-6060 × 6	2-6060 × 6	2-6060 × 6	2-6060 × 6	2-7070 × 6	2-7070 × 6
RAFTER	7	1.41	2-6060 × 6	2-6060 × 6	2-6060 × 6	2-6060 × 6	2-7070 × 6	2-7070 × 6
RAFTER	8	1.41	2-6060 × 6	2-6060 × 6	2-6060 × 6	2-6060 × 6	2-7070 × 6	2-7070 × 6
RAFTER	9	1.41	2-6060 × 6	2-6060 × 6	2-6060 × 6	2-6060 × 6	2-7070 × 6	2-7070 × 6
RAFTER	10	1.41	2-6060 × 6	2-6060 × 6	2-6060 × 6	2-6060 × 6	2-7070 × 6	2-7070 × 6
RAFTER	11	1.41	2-6060 × 6	2-6060 × 6	2-6060 × 6	2-6060 × 6	2-7070 × 6	2-7070 × 6
RAFTER	12	1.41	2-6060 × 6	2-6060 × 6	2-6060 × 6	2-6060 × 6	2-7070 × 6	2-7070 × 6
RAFTER	13	1.41	2-6060 × 6	2-6060 × 6	2-6060 × 6	2-6060 × 6	2-7070 × 6	2-7070 × 6
RAFTER	14	1.41	2-6060 × 6	2-6060 × 6	2-6060 × 6	2-6060 × 6	2-7070 × 6	2-7070 × 6
WEB	15	0.44	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	16	1.33	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	17	2.22	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6
WEB18	3.11	1-8080 × 6	1-8080 × 6	1-8080 × 6	1-8080 × 6	1-8080 × 6	1-8080 × 6	
WEB	19	1.56	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	20	4.00	2-7070 × 6	2-7070 × 6	2-7070 × 6	2-7070 × 6	2-7070 × 6	2-7070 × 6
WEB	21	1.60	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	22	2.22	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6
WEB	23	2.98	1-8080 × 6	1-8080 × 6	1-8080 × 6	1-8080 × 6	1-8080 × 6	1-8080 × 6
WEB	24	1.74	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	25	1.60	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	26	2.22	1-4040 × 6	1-4040 × 6	1-5050 × 6	1-5050 × 6	1-6060 × 6	1-6060 × 6
WEB	27	2.98	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-7070 × 6	1-7070 × 6	1-8080 × 6
WEB	28	2.40	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-5050 × 6	2-5050 × 6	2-6060 × 6
WEB	29	2.40	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-5050 × 6	2-5050 × 6	2-6060 × 6
Sum of Tubes Weight (kg)			426.36	426.36	462.20	464.88	511.32	524.56
Unit Weight (kg/m²)			7.90	5.92	8.56	6.46	9.47	7.29

TABLE 179 STEEL LEAN-TO ROOF TRUSSES (ISA SECTIONS)

Span = 12 m | Slope = 1 in 4 | Purlins Spacing = 1.37 m

Wind Pressure =			100 kg/m²		150 kg/m²		200 kg/m²	
			Spacing (m)		Spacing (m)		Spacing (m)	
Members	Nos.	Length (m)	4.5	6.0	4.5	6.0	4.5	6.0
TIE	1	1.33	2-5050 × 6	2-6060 × 6	2-6060 × 6	2-6060 × 6	2-7070 × 6	2-8080 × 6
TIE	2	2.67	2-5050 × 6	2-6060 × 6	2-6060 × 6	2-6060 × 6	2-7070 × 6	2-8080 × 6
TIE	3	2.67	2-5050 × 6	2-6060 × 6	2-6060 × 6	2-6060 × 6	2-7070 × 6	2-8080 × 6
TIE	4	2.67	2-5050 × 6	2-6060 × 6	2-6060 × 6	2-6060 × 6	2-7070 × 6	2-8080 × 6
TIE	5	2.67	2-5050 × 6	2-6060 × 6	2-6060 × 6	2-6060 × 6	2-7070 × 6	2-8080 × 6
RAFTER	6	1.37	2-5050 × 6	2-6060 × 6	2-5050 × 6	2-6060 × 6	2-5050 × 6	2-6060 × 6
RAFTER	7	1.37	2-5050 × 6	2-6060 × 6	2-5050 × 6	2-6060 × 6	2-5050 × 6	2-6060 × 6
RAFTER	8	1.37	2-5050 × 6	2-6060 × 6	2-5050 × 6	2-6060 × 6	2-5050 × 6	2-6060 × 6
RAFTER	9	1.37	2-5050 × 6	2-6060 × 6	2-5050 × 6	2-6060 × 6	2-5050 × 6	2-6060 × 6
RAFTER	10	1.37	2-5050 × 6	2-6060 × 6	2-5050 × 6	2-6060 × 6	2-5050 × 6	2-6060 × 6
RAFTER	11	1.37	2-5050 × 6	2-6060 × 6	2-5050 × 6	2-6060 × 6	2-5050 × 6	2-6060 × 6
RAFTER	12	1.37	2-5050 × 6	2-6060 × 6	2-5050 × 6	2-6060 × 6	2-5050 × 6	2-6060 × 6
RAFTER	13	1.37	2-5050 × 6	2-6060 × 6	2-5050 × 6	2-6060 × 6	2-5050 × 6	2-6060 × 6
RAFTER	14	1.37	2-5050 × 6	2-6060 × 6	2-5050 × 6	2-6060 × 6	2-5050 × 6	2-6060 × 6
WEB	15	0.33	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	16	1.00	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	17	1.67	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6
WEB	18	2.33	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6
WEB	19	1.17	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	20	3.00	2-5050 × 6	2-5050 × 6	2-5050 × 6	2-5050 × 6	2-5050 × 6	2-5050 × 6
WEB	21	1.49	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	22	1.89	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6
WEB	23	2.40	1-6060 × 6	1-7070 × 6	1-6060 × 6	1-7070 × 6	1-6060 × 6	1-7070 × 6
WEB	24	1.57	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	25	1.49	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-5050 × 6
WEB	26	1.89	1-4040 × 6	1-4040 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-6060 × 6
WEB	27	2.40	1-5050 × 6	1-5050 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-7070 × 6
WEB	28	2.00	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-5050 × 6	2-5050 × 6	2-5050 × 6
WEB	29	2.00	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-5050 × 6	2-5050 × 6	2-5050 × 6
Sum of Tubes Weight (kg)			357.71	403.68	383.36	415.73	412.98	466.70
Unit Weight (kg/m²)			6.62	5.61	7.10	5.77	7.65	6.48

TABLE 180 STEEL LEAN-TO ROOF TRUSSES (ISA SECTIONS)

Span = 12 m | Slope = 1 in 5 | Purlins Spacing = 1.36 m

Wind Pressure =			100 kg/m²		150 kg/m²		200 kg/m²	
			Spacing (m)		Spacing (m)		Spacing (m)	
Members	Nos.	Length (m)	4.5	6.0	4.5	6.0	4.5	6.0
TIE	1	1.33	2-6060 × 6	2-7070 × 6	2-6060 × 6	2-7070 × 6	2-8080 × 6	2-9090 × 6
TIE	2	2.67	2-6060 × 6	2-7070 × 6	2-6060 × 6	2-7070 × 6	2-8080 × 6	2-9090 × 6
TIE	3	2.67	2-6060 × 6	2-7070 × 6	2-6060 × 6	2-7070 × 6	2-8080 × 6	2-9090 × 6
TIE	4	2.67	2-6060 × 6	2-7070 × 6	2-6060 × 6	2-7070 × 6	2-8080 × 6	2-9090 × 6
TIE	5	2.67	2-6060 × 6	2-7070 × 6	2-6060 × 6	2-7070 × 6	2-8080 × 6	2-9090 × 6
RAFTER	6	1.36	2-6060 × 6	2-8080 × 6	2-6060 × 6	2-8080 × 6	2-6060 × 6	2-8080 × 6
RAFTER	7	1.36	2-6060 × 6	2-8080 × 6	2-6060 × 6	2-8080 × 6	2-6060 × 6	2-8080 × 6
RAFTER	8	1.36	2-6060 × 6	2-8080 × 6	2-6060 × 6	2-8080 × 6	2-6060 × 6	2-8080 × 6
RAFTER	9	1.36	2-6060 × 6	2-8080 × 6	2-6060 × 6	2-8080 × 6	2-6060 × 6	2-8080 × 6
RAFTER	10	1.36	2-6060 × 6	2-8080 × 6	2-6060 × 6	2-8080 × 6	2-6060 × 6	2-8080 × 6
RAFTER	11	1.36	2-6060 × 6	2-8080 × 6	2-6060 × 6	2-8080 × 6	2-6060 × 6	2-8080 × 6
RAFTER	12	1.36	2-6060 × 6	2-8080 × 6	2-6060 × 6	2-8080 × 6	2-6060 × 6	2-8080 × 6
RAFTER	13	1.36	2-6060 × 6	2-8080 × 6	2-6060 × 6	2-8080 × 6	2-6060 × 6	2-8080 × 6
RAFTER	14	1.36	2-6060 × 6	2-8080 × 6	2-6060 × 6	2-8080 × 6	2-6060 × 6	2-8080 × 6
WEB	15	0.27	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	16	0.80	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	17	1.33	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	18	1.87	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6
WEB	19	0.93	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	20	2.40	2-4040 × 6	2-5050 × 6	2-4040 × 6	2-5050 × 6	2-4040 × 6	2-5050 × 6
WEB	21	1.44	1-4040 × 6	1-5050 × 6	1-4040 × 6	1-5050 × 6	1-4040 × 6	1-5050 × 6
WEB	22	1.71	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6
WEB	23	2.08	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6
WEB	24	1.49	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	25	1.44	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6
WEB	26	1.71	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6
WEB	27	2.08	1-4040 × 6	1-5050 × 6	1-5050 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6
WEB	28	1.79	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-5050 × 6	2-5050 × 6	2-5050 × 6
WEB	29	1.79	2-4040 × 6	2-4040 × 6	2-4040 × 6	2-5050 × 6	2-5050 × 6	2-5050 × 6
Sum of Tubes Weight (kg)			371.32	447.77	373.40	458.51	431.20	505.57
Unit Weight (kg/m²)			6.88	6.22	6.91	6.37	7.98	7.02

TABLE 181 STEEL LEAN-TO ROOF TRUSSES (ISA SECTIONS)

Span = 15 m | Slope = 1 in 3 | Purlins Spacing = 1.44 m

Wind Pressure =			100 kg/m²		150 kg/m²		200 kg/m²	
			Spacing (m)		Spacing (m)		Spacing (m)	
Members	Nos.	Length (m)	4.5	6.0	4.5	6.0	4.5	6.0
TIE	1	1.36	2-4040 × 6	2-5050 × 6	2-5050 × 6	2-6060 × 6	2-6060 × 6	2-7070 × 6
TIE	2	2.73	2-4040 × 6	2-5050 × 6	2-5050 × 6	2-6060 × 6	2-6060 × 6	2-7070 × 6
TIE	3	2.73	2-4040 × 6	2-5050 × 6	2-5050 × 6	2-6060 × 6	2-6060 × 6	2-7070 × 6
TIE	4	2.73	2-4040 × 6	2-5050 × 6	2-5050 × 6	2-6060 × 6	2-6060 × 6	2-7070 × 6
TIE	5	2.73	2-4040 × 6	2-5050 × 6	2-5050 × 6	2-6060 × 6	2-6060 × 6	2-7070 × 6
TIE	6	2.73	2-4040 × 6	2-5050 × 6	2-5050 × 6	2-6060 × 6	2-6060 × 6	2-7070 × 6
RAFTER	7	1.44	2-6060 × 6	2-7070 × 6	2-6060 × 6	2-7070 × 6	2-7070 × 6	2-8080 × 6
RAFTER	8	1.44	2-6060 × 6	2-7070 × 6	2-6060 × 6	2-7070 × 6	2-7070 × 6	2-8080 × 6
RAFTER	9	1.44	2-6060 × 6	2-7070 × 6	2-6060 × 6	2-7070 × 6	2-7070 × 6	2-8080 × 6
RAFTER	10	1.44	2-6060 × 6	2-7070 × 6	2-6060 × 6	2-7070 × 6	2-7070 × 6	2-8080 × 6
RAFTER	11	1.44	2-6060 × 6	2-7070 × 6	2-6060 × 6	2-7070 × 6	2-7070 × 6	2-8080 × 6
RAFTER	12	1.44	2-6060 × 6	2-7070 × 6	2-6060 × 6	2-7070 × 6	2-7070 × 6	2-8080 × 6
RAFTER	13	1.44	2-6060 × 6	2-7070 × 6	2-6060 × 6	2-7070 × 6	2-7070 × 6	2-8080 × 6
RAFTER	14	1.44	2-5050 × 6	2-7070 × 6	2-6060 × 6	2-7070 × 6	2-7070 × 6	2-8080 × 6
RAFTER	15	1.44	2-5050 × 6	2-7070 × 6	2-6060 × 6	2-7070 × 6	2-7070 × 6	2-8080 × 6
RAFTER	16	1.44	2-5050 × 6	2-7070 × 6	2-6060 × 6	2-7070 × 6	2-7070 × 6	2-8080 × 6
RAFTER	17	1.44	2-5050 × 6	2-7070 × 6	2-6060 × 6	2-7070 × 6	2-7070 × 6	2-8080 × 6
WEB	18	0.45	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	19	1.36	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	20	2.27	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6
WEB	21	3.18	1-8080 × 6	1-8080 × 6	1-8080 × 6	1-8080 × 6	1-8080 × 6	1-8080 × 6
WEB	22	4.09	1-100100 × 6	1-100100 × 6	1-100100 × 6	1-100100 × 6	1-100100 × 6	1-100100 × 6
WEB	23	2.05	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6
WEB	24	5.00	2-8080 × 6	2-8080 × 6	2-8080 × 6	2-8080 × 6	2-8080 × 6	2-8080 × 6
WEB	25	1.64	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6
WEB	26	2.27	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6
WEB	27	3.05	1-8080 × 6	1-8080 × 6	1-8080 × 6	1-8080 × 6	1-8080 × 6	1-8080 × 6
WEB	28	3.88	1-100100 × 6	1-100100 × 6	1-100100 × 6	1-100100 × 6	1-100100 × 6	1-100100 × 6
WEB	29	2.10	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	30	1.64	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	31	2.27	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6
WEB	32	3.05	1-6060 × 6	1-6060 × 6	1-7070 × 6	1-7070 × 6	1-7070 × 6	1-8080 × 6
WEB	33	3.88	1-7070 × 6	1-7070 × 6	1-8080 × 6	1-9090 × 6	1-9090 × 6	1-100100 × 6
WEB	34	2.85	2-5050 × 6	2-6060 × 6	2-6060 × 6	2-6060 × 6	2-6060 × 6	2-7070 × 6
WEB	35	2.85	2-5050 × 6	2-5050 × 6	2-6060 × 6	2-6060 × 6	2-6060 × 6	2-7070 × 6
Sum of Angles Weight (kg)			622.40	670.01	668.75	718.50	722.18	787.087
Unit Weight (kg/m²)			9.22	7.44	9.91	7.98	10.78	8.75

TABLE 182 STEEL LEAN-TO ROOF TRUSSES (ISA SECTIONS)

Span = 15 m | Slope = 1 in 4 | Purlins Spacing = 1.41 m

Wind Pressure =			100 kg/m²		150 kg/m²		200 kg/m²	
			Spacing (m)		Spacing (m)		Spacing (m)	
Members	Nos.	Length (m)	4.5	6.0	4.5	6.0	4.5	6.0
TIE	1	1.36	2-6060 × 6	2-7070 × 6	2-6060 × 6	2-7070 × 6	2-8080 × 6	2-9090 × 6
TIE	2	2.73	2-6060 × 6	2-7070 × 6	2-6060 × 6	2-7070 × 6	2-8080 × 6	2-9090 × 6
TIE	3	2.73	2-6060 × 6	2-7070 × 6	2-6060 × 6	2-7070 × 6	2-8080 × 6	2-9090 × 6
TIE	4	2.73	2-6060 × 6	2-7070 × 6	2-6060 × 6	2-7070 × 6	2-8080 × 6	2-9090 × 6
TIE	5	2.73	2-4040 × 6	2-4040 × 6	2-5050 × 6	2-5050 × 6	2-5050 × 6	2-6060 × 6
TIE	6	2.73	2-4040 × 6	2-4040 × 6	2-5050 × 6	2-5050 × 6	2-5050 × 6	2-6060 × 6
RAFTER	7	1.41	2-7070 × 6	2-8080 × 6	2-7070 × 6	2-8080 × 6	2-7070 × 6	2-8080 × 6
RAFTER	8	1.41	2-7070 × 6	2-8080 × 6	2-7070 × 6	2-8080 × 6	2-7070 × 6	2-8080 × 6
RAFTER	9	1.41	2-7070 × 6	2-8080 × 6	2-7070 × 6	2-8080 × 6	2-7070 × 6	2-8080 × 6
RAFTER	10	1.41	2-7070 × 6	2-8080 × 6	2-7070 × 6	2-8080 × 6	2-7070 × 6	2-8080 × 6
RAFTER	11	1.41	2-7070 × 6	2-8080 × 6	2-7070 × 6	2-8080 × 6	2-7070 × 6	2-8080 × 6
RAFTER	12	1.41	2-7070 × 6	2-8080 × 6	2-7070 × 6	2-8080 × 6	2-7070 × 6	2-8080 × 6
RAFTER	13	1.41	2-7070 × 6	2-8080 × 6	2-7070 × 6	2-8080 × 6	2-7070 × 6	2-8080 × 6
RAFTER	14	1.41	2-5050 × 6	2-6060 × 6	2-6060 × 6	2-7070 × 6	2-6060 × 6	2-7070 × 6
RAFTER	15	1.41	2-5050 × 6	2-6060 × 6	2-6060 × 6	2-7070 × 6	2-6060 × 6	2-7070 × 6
RAFTER	16	1.41	2-5050 × 6	2-6060 × 6	2-6060 × 6	2-7070 × 6	2-6060 × 6	2-7070 × 6
RAFTER	17	1.41	2-5050 × 6	2-6060 × 6	2-6060 × 6	2-7070 × 6	2-6060 × 6	2-7070 × 6
WEB	18	0.34	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	19	1.02	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	20	1.70	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6
WEB	21	2.39	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6
WEB	22	3.07	1-8080 × 6	1-8080 × 6	1-8080 × 6	1-8080 × 6	1-8080 × 6	1-8080 × 6
WEB	23	1.53	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	24	3.75	2-6060 × 6	2-7070 × 6	2-6060 × 6	2-7070 × 6	2-6060 × 6	2-7070 × 6
WEB	25	1.52	1-4040 × 6	1-5050 × 6	1-4040 × 6	1-5050 × 6	1-4040 × 6	1-5050 × 6
WEB	26	1.93	1-5050 × 6	1-6060 × 6	1-5050 × 6	1-6060 × 6	1-5050 × 6	1-6060 × 6
WEB	27	2.46	1-7070 × 6	1-7070 × 6	1-7070 × 6	1-7070 × 6	1-7070 × 6	1-7070 × 6
WEB	28	3.05	1-8080 × 6	1-8080 × 6	1-8080 × 6	1-8080 × 6	1-8080 × 6	1-8080 × 6
WEB	29	1.81	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	30	1.52	1-4040 × 6	1-5050 × 6	1-4040 × 6	1-5050 × 6	1-4040 × 6	1-5050 × 6
WEB	31	1.93	1-4040 × 6	1-4040 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-6060 × 6
WEB	32	2.46	1-5050 × 6	1-5050 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-7070 × 6
WEB	33	3.05	1-6060 × 6	1-6060 × 6	1-7070 × 6	1-8080 × 6	1-8080 × 6	1-8080 × 6
WEB	34	2.32	2-4040 × 6	2-4040 × 6	2-5050 × 6	2-5050 × 6	2-6060 × 6	2-6060 × 6
WEB	35	2.32	2-4040 × 6	2-4040 × 6	2-5050 × 6	2-5050 × 6	2-6060 × 6	2-6060 × 6
Sum of Angles Weight (kg)			540.26	598.87	596.58	658.24	626.70	697.57
Unit Weight (kg/m²)			8.00	6.65	8.84	7.31	9.28	7.75

TABLE 183 STEEL LEAN-TO ROOF TRUSSES (ISA SECTIONS)

Span = 15 m | Slope = 1 in 5 | Purlins Spacing = 1.39 m

Wind Pressure =			100 kg/m²		150 kg/m²		200 kg/m²	
			Spacing (m)		Spacing (m)		Spacing (m)	
Members	Nos.	Length (m)	4.5	6.0	4.5	6.0	4.5	6.0
TIE	1	1.36	2-7070 × 6	2-8080 × 6	2-7070 × 6	2-8080 × 6	2-9090 × 6	2-100100 × 6
TIE	2	2.73	2-7070 × 6	2-8080 × 6	2-7070 × 6	2-8080 × 6	2-9090 × 6	2-100100 × 6
TIE	3	2.73	2-7070 × 6	2-8080 × 6	2-7070 × 6	2-8080 × 6	2-9090 × 6	2-100100 × 6
TIE	4	2.73	2-7070 × 6	2-8080 × 6	2-7070 × 6	2-8080 × 6	2-9090 × 6	2-100100 × 6
TIE	5	2.73	2-4040 × 6	2-4040 × 6	2-5050 × 6	2-5050 × 6	2-5050 × 6	2-6060 × 6
TIE	6	2.73	2-4040 × 6	2-4040 × 6	2-5050 × 6	2-5050 × 6	2-5050 × 6	2-6060 × 6
RAFTER	7	1.39	2-8080 × 6	2-9090 × 6	2-8080 × 6	2-9090 × 6	2-8080 × 6	2-9090 × 6
RAFTER	8	1.39	2-8080 × 6	2-9090 × 6	2-8080 × 6	2-9090 × 6	2-8080 × 6	2-9090 × 6
RAFTER	9	1.39	2-8080 × 6	2-9090 × 6	2-8080 × 6	2-9090 × 6	2-8080 × 6	2-9090 × 6
RAFTER	10	1.39	2-8080 × 6	2-9090 × 6	2-8080 × 6	2-9090 × 6	2-8080 × 6	2-9090 × 6
RAFTER	11	1.39	2-8080 × 6	2-9090 × 6	2-8080 × 6	2-9090 × 6	2-8080 × 6	2-9090 × 6
RAFTER	12	1.39	2-8080 × 6	2-9090 × 6	2-8080 × 6	2-9090 × 6	2-8080 × 6	2-9090 × 6
RAFTER	13	1.39	2-8080 × 6	2-9090 × 6	2-8080 × 6	2-9090 × 6	2-8080 × 6	2-9090 × 6
RAFTER	14	1.39	2-4040 × 6	2-5050 × 6	2-4040 × 6	2-5050 × 6	2-4040 × 6	2-5050 × 6
RAFTER	15	1.39	2-4040 × 6	2-5050 × 6	2-4040 × 6	2-5050 × 6	2-4040 × 6	2-5050 × 6
RAFTER	16	1.39	2-4040 × 6	2-5050 × 6	2-4040 × 6	2-5050 × 6	2-4040 × 6	2-5050 × 6
RAFTER	17	1.39	2-4040 × 6	2-5050 × 6	2-4040 × 6	2-5050 × 6	2-4040 × 6	2-5050 × 6
WEB	18	0.27	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	19	0.82	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	20	1.36	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	21	1.91	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6
WEB	22	2.45	1-7070 × 6	1-7070 × 6	1-7070 × 6	1-7070 × 6	1-7070 × 6	1-7070 × 6
WEB	23	1.23	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	24	3.00	2-5050 × 6	2-6060 × 6	2-5050 × 6	2-6060 × 6	2-5050 × 6	2-6060 × 6
WEB	25	1.47	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6
WEB	26	1.75	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6
WEB	27	2.13	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6
WEB	28	2.57	1-7070 × 6	1-8080 × 6	1-7070 × 6	1-8080 × 6	1-7070 × 6	1-8080 × 6
WEB	29	1.66	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6	1-4040 × 6
WEB	30	1.47	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6	1-6060 × 6
WEB	31	1.75	1-4040 × 6	1-4040 × 6	1-5050 × 6	1-5050 × 6	1-5050 × 6	1-6060 × 6
WEB	32	2.13	1-4040 × 6	1-5050 × 6	1-5050 × 6	1-6060 × 6	1-6060 × 6	1-7070 × 6
WEB	33	2.57	1-5050 × 6	1-6060 × 6	1-6060 × 6	1-7070 × 6	1-7070 × 6	1-8080 × 6
WEB	34	2.03	2-4040 × 6	2-4040 × 6	2-5050 × 6	2-5050 × 6	2-5050 × 6	2-6060 × 6
WEB	35	2.03	2-4040 × 6	2-4040 × 6	2-5050 × 6	2-5050 × 6	2-5050 × 6	2-6060 × 6
Sum of Angles Weight (kg)			511.61	573.08	536.84	598.67	578.67	657.57
Unit Weight (kg/m²)			7.58	6.37	7.95	6.65	8.57	7.30

TABLE 184 STEEL LEAN-TO ROOF TRUSSES (TUBE SECTIONS)

Span = 9 m | Slope = 1 in 3 | Purlins Spacing = 1.36 m

Wind Pressure =			100 kg/m²		150 kg/m²		200 kg/m²	
			Spacing (m)		Spacing (m)		Spacing (m)	
Members	Nos.	Length (m)	4.5	6.0	4.5	6.0	4.5	6.0
TIE	1	1.29	50L	65L	65L	65L	80L	80L
TIE	2	2.57	50L	65L	65L	65L	80L	80L
TIE	3	2.57	50L	65L	65L	65L	80L	80L
TIE	4	2.57	50L	65L	65L	65L	80L	80L
RAFTER	5	1.36	50L	65L	50L	65L	50L	65L
RAFTER	6	1.36	50L	65L	50L	65L	50L	65L
RAFTER	7	1.36	50L	65L	50L	65L	50L	65L
RAFTER	8	1.36	50L	65L	50L	65L	50L	65L
RAFTER	9	1.36	50L	65L	50L	65L	50L	65L
RAFTER	10	1.36	50L	65L	50L	65L	50L	65L
RAFTER	11	1.36	50L	65L	50L	65L	50L	65L
WEB	12	0.43	20M	20M	20M	20M	20M	20M
WEB	13	1.29	20M	20M	20M	20M	20M	20M
WEB	14	2.14	25L	25L	25L	25L	25L	25L
WEB	15	1.07	20M	20M	20M	20M	20M	20M
WEB	16	3.00	40L	50L	40L	50L	40L	50M
WEB	17	1.55	20M	25L	20M	25L	20M	25L
WEB	18	2.14	32L	32L	32L	32L	32L	32L
WEB	19	1.44	20M	20M	20L	20M	20M	20M
WEB	20	1.55	20M	20M	25L	25L	25L	25L
WEB	21	2.14	25L	25L	25L	32L	32L	32L
WEB	22	1.98	50L	50L	65L	65L	65L	65L
WEB	23	1.98	50L	50L	65L	65L	65L	65L
Sum of Angles Weight (kg)			128.78	163.58	152.01	172.25	161.92	181.43
Unit Weight (kg/m²)			3.18	3.03	3.75	3.19	4.00	3.36

TABLE 185 STEEL LEAN-TO ROOF TRUSSES (TUBE SECTIONS)

Span = 9 m | Slope = 1 in 4 | Purlins Spacing = 1.33 m

Wind Pressure =			100 kg/m²		150 kg/m²		200 kg/m²	
			Spacing (m)		Spacing (m)		Spacing (m)	
Members	Nos.	Length (m)	4.5	6.0	4.5	6.0	4.5	6.0
TIE	1	1.29	65L	65L	80L	80L	90L	90L
TIE	2	2.57	65L	65L	80L	80L	90L	90L
TIE	3	2.57	65L	65L	80L	80L	90L	90L
TIE	4	2.57	65L	65L	80L	80L	90L	90L
RAFTER	5	1.33	65L	65L	65L	65L	65L	65L
RAFTER	6	1.33	65L	65L	65L	65L	65L	65L
RAFTER	7	1.33	65L	65L	65L	65L	65L	65L
RAFTER	8	1.33	65L	65L	65L	65L	65L	65L
RAFTER	9	1.33	65L	65L	65L	65L	65L	65L
RAFTER	10	1.33	65L	65L	65L	65L	65L	65L
RAFTER	11	1.33	65L	65L	65L	65L	65L	65L
WEB	12	0.32	20M	20M	20M	20M	20M	20M
WEB	13	0.96	20M	20M	20M	20M	20M	20M
WEB	14	1.61	20M	25L	20M	25L	20M	25L
WEB	15	0.80	20M	20M	20M	20M	20M	20M
WEB	16	2.25	32L	40L	32L	40L	32L	40L
WEB	17	1.44	25L	25L	25L	25L	25L	25L
WEB	18	1.82	25L	32L	25L	32L	25L	32L
WEB	19	1.37	20M	20M	20M	20M	20L	20M
WEB	20	1.44	20M	25L	25L	25L	25L	32L
WEB	21	1.82	20M	25L	25L	32L	32L	32L
WEB	22	1.71	40L	50L	50L	65L	65L	65L
WEB	23	1.71	40L	50L	50L	65L	65L	65L
Sum of Tubes Weight (kg)			143.78	151.52	157.44	167.55	181.92	186.01
Unit Weight (kg/m²)			3.55	2.81	3.89	3.10	4.49	3.44

TABLE 186 STEEL LEAN-TO ROOF TRUSSES (TUBE SECTIONS)

Span = 9 m | Slope = 1 in 5 | Purlins Spacing = 1.31 m

Wind Pressure =			100 kg/m²		150 kg/m²		200 kg/m²	
			Spacing (m)		Spacing (m)		Spacing (m)	
Members	Nos.	Length (m)	4.5	6.0	4.5	6.0	4.5	6.0
TIE	1	1.29	65L	80L	80L	90L	90L	100L
TIE	2	2.57	65L	80L	80L	90L	90L	100L
TIE	3	2.57	65L	80L	80L	90L	90L	100L
TIE	4	2.57	65L	80L	80L	90L	90L	100L
RAFTER	5	1.31	65L	90L	65L	90L	65L	90L
RAFTER	6	1.31	65L	90L	65L	90L	65L	90L
RAFTER	7	1.31	65L	90L	65L	90L	65L	90L
RAFTER	8	1.31	65L	90L	65L	90L	65L	90L
RAFTER	9	1.31	65L	90L	65L	90L	65L	90L
RAFTER	10	1.31	65L	90L	65L	90L	65L	90L
RAFTER	11	1.31	65L	90L	65L	90L	65L	90L
WEB	12	0.26	20M	20M	20M	20M	20M	20M
WEB	13	0.77	20M	20M	20M	20M	20M	20M
WEB	14	1.29	20M	25L	20M	25L	20M	25L
WEB	15	0.64	20M	20M	20M	20M	20M	20M
WEB	16	1.80	32L	40L	32L	40L	32L	40L
WEB	17	1.38	25L	25L	25L	25L	25L	25L
WEB	18	1.65	25L	32L	25L	32L	25L	32L
WEB	19	1.34	20M	20M	20M	20M	20M	20M
WEB	20	1.38	25L	25L	25L	25L	32L	32L
WEB	21	1.65	20M	25L	25L	25L	32L	32L
WEB	22	1.57	40L	50L	50L	65L	65L	65L
WEB	23	1.57	40L	50L	50L	65L	65L	65L
Sum of Tubes Weight (kg)			144.67	186.06	159.85	213.98	189.65	216.16
Unit Weight (kg/m²)			3.57	3.44	3.95	3.96	4.68	4.19

TABLE 187 STEEL LEAN-TO ROOF TRUSSES (TUBE SECTIONS)

Span = 12 m Slope = 1 in 3 Purlins Spacing = 1.27 m

Wind Pressure =			100 kg/m²		150 kg/m²		200 kg/m²	
			Spacing (m)		Spacing (m)		Spacing (m)	
Members	Nos.	Length (m)	4.5	6.0	4.5	6.0	4.5	6.0
TIE	1	1.33	65L	65L	80L	80L	90L	90L
TIE	2	2.67	65L	65L	80L	80L	90L	90L
TIE	3	2.67	65L	65L	80L	80L	90L	90L
TIE	4	2.67	65L	65L	80L	80L	90L	90L
TIE	5	2.67	65L	65L	80L	80L	90L	90L
RAFTER	6	1.41	65L	80L	65L	80L	80L	90L
RAFTER	7	1.41	65L	80L	65L	80L	80L	90L
RAFTER	8	1.41	65L	80L	65L	80L	80L	90L
RAFTER	9	1.41	65L	80L	65L	80L	80L	90L
RAFTER	10	1.41	65L	80L	65L	80L	80L	90L
RAFTER	11	1.41	65L	80L	65L	80L	80L	90L
RAFTER	12	1.41	65L	80L	65L	80L	80L	90L
RAFTER	13	1.41	65L	80L	65L	80L	80L	90L
RAFTER	14	1.41	65L	80L	65L	80L	80L	90L
WEB	15	0.44	20M	20M	20M	20M	25L	25L
WEB	16	1.33	20M	25L	20M	25L	20M	25L
WEB	17	2.22	25L	25L	25L	25L	25L	25L
WEB	18	3.11	40L	40L	40L	40L	40L	40L
WEB	19	1.56	20M	20M	20M	20M	20M	20M
WEB	20	4.00	65L	65L	65L	65L	65L	65L
WEB	21	1.60	25L	25L	25L	25L	25L	25L
WEB	22	2.22	32L	32L	32L	32L	32L	32L
WEB	23	2.98	40L	50L	40L	50L	40L	50L
WEB	24	1.74	20M	20M	20M	20M	20M	20M
WEB	25	1.60	20M	25L	25L	25L	25L	25L
WEB	26	2.22	25L	25L	32L	32L	32L	40L
WEB	27	2.98	32L	32L	40L	40L	50L	50L
WEB	28	2.40	50L	65L	65L	80L	80L	80L
WEB	29	2.40	50L	65L	65L	80L	80L	80L
Sum of Tubes Weight (kg)			243.83	268.87	268.20	289.25	312.38	341.92
Unit Weight (kg/m²)			4.52	3.73	4.97	4.02	5.78	4.75

TABLE 188 STEEL LEAN-TO ROOF TRUSSES (TUBE SECTIONS)

Span = 12 m | Slope = 1 in 4 | Purlins Spacing = 1.37 m

Wind Pressure =			100 kg/m²		150 kg/m²		200 kg/m²	
			Spacing (m)		Spacing (m)		Spacing (m)	
Members	Nos.	Length (m)	4.5	6.0	4.5	6.0	4.5	6.0
TIE	1	1.33	65L	80L	90L	90L	90L	100L
TIE	2	2.67	65L	80L	90L	90L	90L	100L
TIE	3	2.67	65L	80L	90L	90L	90L	100L
TIE	4	2.67	65L	80L	90L	90L	90L	100L
TIE	5	2.67	65L	80L	90L	90L	90L	100L
RAFTER	6	1.37	65L	90L	65L	90L	65L	90L
RAFTER	7	1.37	65L	90L	65L	90L	65L	90L
RAFTER	8	1.37	65L	90L	65L	90L	65L	90L
RAFTER	9	1.37	65L	90L	65L	90L	65L	90L
RAFTER	10	1.37	65L	90L	65L	90L	65L	90L
RAFTER	11	1.37	65L	90L	65L	90L	65L	90L
RAFTER	12	1.37	65L	90L	65L	90L	65L	90L
RAFTER	13	1.37	65L	90L	65L	90L	65L	90L
RAFTER	14	1.37	65L	90L	65L	90L	65L	90L
WEB	15	0.33	20M	20M	20M	20M	20M	20M
WEB	16	1.00	20M	20M	20M	20M	20M	20M
WEB	17	1.67	20M	25L	20M	25L	20M	25L
WEB	18	2.33	32L	32L	32L	32L	32L	32L
WEB	19	1.17	20M	20M	20M	20M	20M	20M
WEB	20	3.00	50L	50L	50L	50L	50L	50L
WEB	21	1.49	25L	25L	25L	25L	25L	25L
WEB	22	1.89	32L	32L	32L	32L	32L	32L
WEB	23	2.40	40L	40L	40L	40L	40L	40L
WEB	24	1.57	20M	20M	20M	20M	20M	20M
WEB	25	1.49	25L	25L	25L	25L	25L	32L
WEB	26	1.89	25L	25L	25L	32L	32L	32L
WEB	27	2.40	25L	32L	32L	40L	40L	50L
WEB	28	2.00	50L	50L	65L	65L	65L	80L
WEB	29	2.00	50L	50L	65L	65L	65L	80L
Sum of Tubes Weight (kg)			214.30	265.43	258.26	298.47	260.95	319.32
Unit Weight (kg/m²)			3.97	3.69	4.78	4.15	4.83	4.43

TABLE 189 STEEL LEAN-TO ROOF TRUSSES (TUBE SECTIONS)

Span = 12 m | Slope = 1 in 5 | Purlins Spacing = 1.36 m

Wind Pressure =			100 kg/m²		150 kg/m²		200 kg/m²	
			Spacing (m)		Spacing (m)		Spacing (m)	
Members	Nos.	Length (m)	4.5	6.0	4.5	6.0	4.5	6.0
TIE	1	1.33	80L	90L	90L	100L	100L	100H
TIE	2	2.67	80L	90L	90L	100L	100L	100H
TIE	3	2.67	80L	90L	90L	100L	100L	100H
TIE	4	2.67	80L	90L	90L	100L	100L	100H
TIE	5	2.67	80L	90L	90L	100L	100L	100H
RAFTER	6	1.36	90L	100L	90L	100L	90L	100L
RAFTER	7	1.36	90L	100L	90L	100L	90L	100L
RAFTER	8	1.36	90L	100L	90L	100L	90L	100L
RAFTER	9	1.36	90L	100L	90L	100L	90L	100L
RAFTER	10	1.36	90L	100L	90L	100L	90L	100L
RAFTER	11	1.36	90L	100L	90L	100L	90L	100L
RAFTER	12	1.36	90L	100L	90L	100L	90L	100L
RAFTER	13	1.36	90L	100L	90L	100L	90L	100L
RAFTER	14	1.36	90L	100L	90L	100L	90L	100L
WEB	15	0.27	20M	25L	20M	25L	20M	25L
WEB	16	0.80	20M	20M	20M	20M	20M	20M
WEB	17	1.33	20M	20M	20M	20M	20M	20M
WEB	18	1.87	25L	25L	25L	25L	25L	25L
WEB	19	0.93	20M	20M	20M	20M	20M	20M
WEB	20	2.40	40L	50L	40L	50L	40L	50L
WEB	21	1.44	25L	32L	25L	32L	25L	32L
WEB	22	1.71	32L	32L	32L	32L	32L	32L
WEB	23	2.08	32L	40L	32L	40L	32L	40L
WEB	24	1.49	20M	20M	20M	20M	20M	20M
WEB	25	1.44	25L	32L	25L	32L	32L	32L
WEB	26	1.71	20M	25L	25L	32L	32L	32L
WEB	27	2.08	25L	25L	32L	32L	40L	40L
WEB	28	1.79	50L	50L	65L	65L	65L	80L
WEB	29	1.79	50L	50L	65L	65L	65L	80L
Sum of Tubes Weight (kg)			247.16	290.79	278.75	312.84	295.73	372.27
Unit Weight (kg/m²)			4.58	4.04	3.16	4.35	5.48	5.17

TABLE 190 STEEL LEAN-TO ROOF TRUSSES (TUBE SECTIONS)

Span = 15 m | Slope = 1 in 3 | Purlins Spacing = 1.32 m

Wind Pressure =			100 kg/m²		150 kg/m²		200 kg/m²	
			Spacing (m)		Spacing (m)		Spacing (m)	
Members	Nos.	Length (m)	4.5	6.0	4.5	6.0	4.5	6.0
TIE	1	1.36	65L	80L	80L	90L	90L	100L
TIE	2	2.73	65L	80L	80L	90L	90L	100L
TIE	3	2.73	65L	80L	80L	90L	90L	100L
TIE	4	2.73	65L	80L	80L	90L	90L	100L
TIE	5	2.73	65L	80L	80L	90L	90L	100L
TIE	6	2.73	65L	80L	80L	90L	90L	100L
RAFTER	7	1.44	80L	90L	80L	90L	80L	90L
RAFTER	8	1.44	80L	90L	80L	90L	80L	90L
RAFTER	9	1.44	80L	90L	80L	90L	80L	90L
RAFTER	10	1.44	80L	90L	80L	90L	80L	90L
RAFTER	11	1.44	80L	90L	80L	90L	80L	90L
RAFTER	12	1.44	80L	90L	80L	90L	80L	90L
RAFTER	13	1.44	80L	90L	80L	90L	80L	90L
RAFTER	14	1.44	65L	65L	65L	65L	65L	80L
RAFTER	15	1.44	65L	65L	65L	65L	65L	80L
RAFTER	16	1.44	65L	65L	65L	65L	65L	80L
RAFTER	17	1.44	65L	65L	65L	65L	65L	80L
WEB	18	0.45	20M	25L	20M	25L	25L	25L
WEB	19	1.36	25L	25L	25L	25L	25L	32L
WEB	20	2.27	25L	25L	25L	25L	25L	25L
WEB	21	3.18	40L	40L	40L	40L	40L	40L
WEB	22	4.09	50L	50L	50L	50L	50L	50L
WEB	23	2.05	25L	25L	25L	25L	25L	25L
WEB	24	5.00	65L	80L	65L	80L	65L	80L
WEB	25	1.64	25L	32L	25L	32L	25L	32L
WEB	26	2.27	32L	32L	32L	32L	32L	32L
WEB	27	3.05	40L	50L	40L	50L	40L	50L
WEB	28	3.88	50L	65L	50L	65L	50L	65L
WEB	29	2.10	20M	20M	20M	25L	25L	25L
WEB	30	1.64	25L	25L	25L	25L	32L	32L
WEB	31	2.27	25L	25L	32L	32L	32L	40L
WEB	32	3.05	32L	32L	40L	50L	50L	50L
WEB	33	3.88	40L	50L	50L	65L	65L	65L
WEB	34	2.85	65L	65L	80L	90L	90L	90L
WEB	35	2.85	65L	80L	90L	90L	90L	90L
Sum of Tubes Weight (kg)			359.81	416.65	393.21	473.67	439.57	494.43
Unit Weight (kg/m²)			5.33	4.03	5.83	5.26	6.51	5.49

TABLE 191 STEEL LEAN-TO ROOF TRUSSES (TUBE SECTIONS)

Span = 15 m | Slope = 1 in 4 | Purlins Spacing = 1.41 m

Wind Pressure =			100 kg/m²		150 kg/m²		200 kg/m²	
			Spacing (m)		Spacing (m)		Spacing (m)	
Members	Nos.	Length (m)	4.5	6.0	4.5	6.0	4.5	6.0
TIE	1	1.36	80L	90L	90L	100L	100L	100H
TIE	2	2.73	80L	90L	90L	100L	100L	100H
TIE	3	2.73	80L	90L	90L	100L	100L	100H
TIE	4	2.73	80L	90L	90L	100L	100L	100H
TIE	5	2.73	80L	90L	90L	80L	90L	90L
TIE	6	2.73	80L	90L	90L	80L	90L	90L
RAFTER	7	1.41	90L	100L	90L	100L	90L	100L
RAFTER	8	1.41	90L	100L	90L	100L	90L	100L
RAFTER	9	1.41	90L	100L	90L	100L	90L	100L
RAFTER	10	1.41	90L	100L	90L	100L	90L	100L
RAFTER	11	1.41	90L	100L	90L	100L	90L	100L
RAFTER	12	1.41	90L	100L	90L	100L	90L	100L
RAFTER	13	1.41	90L	100L	90L	100L	90L	100L
RAFTER	14	1.41	65L	80L	65L	80L	65L	90L
RAFTER	15	1.41	65L	80L	65L	80L	65L	90L
RAFTER	16	1.41	65L	80L	65L	80L	65L	90L
RAFTER	17	1.41	65L	80L	65L	80L	65L	90L
WEB	18	0.34	20M	20M	20M	20M	20M	25L
WEB	19	1.02	25L	32L	25L	32L	25L	32L
WEB	20	1.70	25L	25L	25L	25L	25L	25L
WEB	21	2.39	32L	32L	32L	32L	32L	32L
WEB	22	3.07	40L	40L	40L	40L	40L	40L
WEB	23	1.53	20M	20M	20M	20M	20M	20M
WEB	24	3.75	65L	65L	65L	65L	65L	65L
WEB	25	1.52	25L	32L	25L	32L	25L	32L
WEB	26	1.93	32L	32L	32L	32L	32L	32L
WEB	27	2.46	40L	50L	40L	50L	40L	50L
WEB	28	3.05	50L	50L	50L	50L	50L	50L
WEB	29	1.81	20M	25L	20M	25L	20M	25L
WEB	30	1.52	32L	32L	32L	32L	32L	32L
WEB	31	1.93	25L	25L	32L	32L	32L	40L
WEB	32	2.46	25L	32L	32L	40L	40L	50L
WEB	33	3.05	32L	40L	50L	50L	50L	65L
WEB	34	2.32	65L	65L	65L	80L	80L	90L
WEB	35	2.32	65L	65L	65L	80L	80L	90L
Sum of Tubes Weight (kg)			349.21	403.65	385.88	414.04	403.22	473.99
Unit Weight (kg/m²)			5.17	4.48	5.72	4.60	5.97	5.27

TABLE 192 STEEL LEAN-TO ROOF TRUSSES (TUBE SECTIONS)

Span = 15 m | Slope = 1 in 5 | Purlins Spacing = 1.39 m

Wind Pressure =			100 kg/m²		150 kg/m²		200 kg/m²	
			Spacing (m)		Spacing (m)		Spacing (m)	
Members	Nos.	Length (m)	4.5	6.0	4.5	6.0	4.5	6.0
TIE	1	1.36	90L	100M	100L	100M	100H	125M
TIE	2	2.73	90L	100M	100L	100M	100H	125M
TIE	3	2.73	90L	100M	100L	100M	100H	125M
TIE	4	2.73	90L	100M	100L	100M	100H	125M
TIE	5	2.73	80L	80L	80L	80M	90L	90L
TIE	6	2.73	80L	80L	80L	80M	90L	90L
RAFTER	7	1.39	100L	100M	100L	100M	100L	100M
RAFTER	8	1.39	100L	100M	100L	100M	100L	100M
RAFTER	9	1.39	100L	100M	100L	100M	100L	100M
RAFTER	10	1.39	100L	100M	100L	100M	100L	100M
RAFTER	11	1.39	100L	100M	100L	100M	100L	100M
RAFTER	12	1.39	100L	100M	100L	100M	100L	100M
RAFTER	13	1.39	100L	100M	100L	100M	100L	100M
RAFTER	14	1.39	50L	65L	50L	65L	50L	65L
RAFTER	15	1.39	50L	65L	50L	65L	50L	65L
RAFTER	16	1.39	50L	65L	50L	65L	50L	65L
RAFTER	17	1.39	50L	65L	50L	65L	50L	65L
WEB	18	0.27	25L	32L	25L	32L	25L	32L
WEB	19	0.82	20M	25L	20M	25L	20M	25L
WEB	20	1.36	20M	25L	20M	25L	20M	25L
WEB	21	1.91	25L	25L	25L	25L	25L	25L
WEB	22	2.45	32L	32L	32L	32L	32L	32L
WEB	23	1.23	20M	25L	20M	25L	20M	25L
WEB	24	3.00	50L	65L	50L	65L	50L	65L
WEB	25	1.47	32L	32L	32L	32L	32L	32L
WEB	26	1.75	32L	32L	32L	32L	32L	32L
WEB	27	2.13	32L	40L	32L	40L	32L	40L
WEB	28	2.57	50L	50L	50L	50L	50L	50L
WEB	29	1.66	20M	20M	20M	20M	20M	20M
WEB	30	1.47	32L	50L	32L	50L	40L	50L
WEB	31	1.75	25L	25L	25L	32L	32L	40L
WEB	32	2.13	25L	25L	32L	32L	40L	40L
WEB	33	2.57	32L	32L	40L	50L	50L	50L
WEB	34	2.03	50L	65L	65L	65L	80L	80L
WEB	35	2.03	50L	65L	65L	65L	80L	80L
Sum of Tubes Weight (kg)			335.82	411.74	359.46	412.07	417.27	474.44
Unit Weight (kg/m²)			4.98	4.57	5.33	4.58	6.18	5.27

TABLE 193 CANTILEVER COLUMN SECTIONS FOR STEEL ROOF TRUSSES

Truss Span = 9.0 m

Column Spacing = 4.5 m

Roof Slope	Basic Wind Pressure	Height of Column	Column Forces					Alternate Column Section			
			Compression	Tension	Shear at		Base Moment	ISLB	ISMB	ISWB	ISHB
					Cap	Base					
	(kg/m²)	(m)	(kg)	(kg)	(kg)	(kg)	(kgm)				
1 in 3	100	4.5	2232	118	95	722	1453	200/49.8	175/19.3	175/22.1	150/27.1
	100	6.0	2423	—	124	959	2564	275/33.0	225/31.2	200/28.8	150/27.1
	150	4.5	2232	726	143	1082	2180	250/27.9	200/25.4	175/22.1	150/27.1
	150	6.0	2423	582	186	1438	3846	300/37.7	250/37.3	225/33.9	200/37.3
	200	4.5	2232	1333	191	1443	2907	250/27.9	225/31.2	200/20.0	150/27.1
	200	6.0	2423	1190	248	1918	5129	325/43.1	300/44.2	250/40.9	200/37.3
1 in 4	100	4.5	2354	124	97	700	1358	200/19.8	175/19.3	175/22.1	150/27.1
	100	6.0	2545	—	125	938	2436	250/27.9	225/31.2	200/28.0	150/27.1
	150	4.5	2354	732	145	1050	2037	225/23.5	200/25.4	175/22.1	150/27.1
	150	6.0	2545	588	188	1406	3655	300/37.5	250/37.3	225/33.9	200/37.3
	200	4.5	2354	1339	194	1400	2716	250/27.9	225/31.2	200/28.8	150/27.1
	200	6.0	2545	1196	251	1875	4073	325/43.1	300/44.2	250/40.9	200/37.3
1 in 5	100	4.5	2420	127	104	693	1326	200/19.0	175/19.3	150/17.0	150/27.1
	100	6.0	2619	—	132	930	2394	250/27.9	225/31.2	200/28.8	150/27.1
	150	4.5	2428	734	155	1040	1909	225/23.5	200/25.4	175/22.1	150/27.1
	150	6.0	2619	591	199	1396	3591	300/37.7	250/37.3	225/33.9	200/37.3
	200	4.5	2420	1342	208	1387	2652	250/27.9	225/25.4	200/28.8	150/27.1
	200	6.0	2619	1198	266	1861	4788	325/43.1	300/44.2	250/40.9	200/37.3

NOTE — The forces presented in the above table are after 25% reduction, if the wind load is one of the loads in the combination to account for $33\frac{1}{3}$% increase in allowable stress.

The column axial forces do not include the wall cladding weight (30 kg/m²).

TABLE 194 CANTILEVER COLUMN SECTIONS FOR STEEL ROOF TRUSSES

Truss Span = 9.0 m

Column Spacing = 6.0 m

Roof Slope	Basic Wind Pressure	Height of Column	Column Forces					Alternate Column Section			
			Compression	Tension	Shear at Cap	Shear at Base	Base Moment	ISLB	ISMB	ISWB	ISHB
	(kg/m²)	(m)	(kg)	(kg)	(kg)	(kg)	(kgm)				
1 in 3	100	4.5	3126	45	128	962	1938	225/23.5	200/25.4	175/22.1	150/27.1
	100	6.0	3381	—	165	1278	3419	275/33.0	250/37.3	225/33.9	200/37.3
	150	4.5	3126	855	191	1443	2907	250/27.9	225/31.2	200/28.8	150/27.1
	150	6.0	3381	664	248	1918	5129	326/43.1	300/44.2	250/40.9	200/37.3
	200	4.5	2126	1665	255	1925	3877	275/33.0	225/31.2	200/28.8	200/37.3
	200	6.0	3381	1474	331	2557	6838	350/49.5	350/52.4	250/40.9	225/43.1
1 in 4	100	4.5	3288	53	129	934	1810	225/23.5	200/25.4	175/22.1	150/27.1
	100	6.0	3543	—	167	1250	3249	275/33.0	250/37.3	225/33.9	200/37.3
	150	4.5	3288	863	194	1400	2716	250/27.9	200/25.4	200/28.8	150/27.1
	150	6.0	3543	672	251	1875	4873	325/43.1	300/44.2	250/40.9	200/37.3
	200	4.5	3288	1673	258	1868	3621	275/33.0	225/31.2	200/28.8	200/37.3
	200	6.0	3543	1482	335	2501	6498	350/49.5	350/52.4	250/40.9	225/43.1
1 in 5	100	4.5	3387	57	138	924	1768	200/19.8	200/25.4	175/22.1	150/27.1
	100	6.0	3642	—	176	1241	3192	275/33.0	250/37.3	225/33.9	200/37.3
	150	4.5	3387	867	208	1387	2652	250/27.9	200/25.4	200/28.8	150/27.1
	150	6.0	3642	676	265	1861	4708	325/43.1	300/44.2	250/40.9	200/37.3
	200	4.5	3387	1677	277	1849	3536	275/33.0	225/31.2	200/28.8	150/34.6
	200	6.0	3642	1486	353	2481	6385	350/49.5	350/52.4	250/40.9	225/43.1

NOTE — The forces presented in the above table are after 25% reduction, if the wind load is one of the loads in the combination to account for $33\frac{1}{3}$ % increase in allowable stress.

The column axial forces do not include the wall cladding weight (30 kg/m²).

TABLE 195 CANTILEVER COLUMN SECTIONS FOR STEEL ROOF TRUSSES

Truss Span = 12.0 m

Column Spacing = 4.5 m

Roof Slope	Basic Wind Pressure	Height of Column	Column Forces					Alternate Column Section			
			Compression	Tension	Shear at		Base Moment	ISLB	ISMB	ISWB	ISHB
					Cap	Base					
	(kg/m²)	(m)	(kg)	(kg)	(kg)	(kg)	(kgm)				
1 in 3	100	4.5	2773	310	99	725	1469	200/19.8	175/19.3	175/22.1	150/27.1
	100	6.0	2964	167	128	962	2584	275/33.0	225/31.2	200/28.8	150/27.1
	100	9.0	3347	—	185	1436	5755	400/56.9	400/61.6	300/48.1	225/46.8
	150	4.5	2773	1120	149	1088	2203	250/27.9	200/25.4	175/22.1	150/27.1
	150	6.0	2964	977	191	1443	3877	300/37.7	250/37.3	225/33.9	200/37.3
	150	9.0	3341	690	277	2155	8632	500/75.0	450/72.4	400/66.7	300/58.8
	200	4.5	2773	1930	198	1442	2938	250/27.9	225/31.2	200/28.8	150/27.1
	200	6.0	2964	1787	255	1917	5169	325/43.1	300/44.2	250/40.9	200/37.3
	200	9.0	3347	1500	369	2873	11510	550/86.3	500/86.9	450/79.4	350/67.4
1 in 4	100	4.5	2935	318	101	696	1341	200/19.8	175/19.3	175/22.1	150/27.1
	100	6.0	3126	175	129	934	2414	250/27.9	225/31.2	200/28.8	150/27.1
	100	9.0	3909	—	186	1408	5499	400/56.9	350/52.4	300/48.1	225/43.1
	150	4.5	2935	1128	151	1045	2011	225/23.5	200/25.4	175/22.1	150/27.1
	150	6.0	3126	985	194	1400	3621	300/37.7	250/37.3	225/33.9	200/37.3
	150	9.0	3509	698	279	2112	8249	450/65.3	450/72.4	400/66.7	250/54.7
	200	4.5	2935	1938	201	1393	2682	250/27.9	225/31.2	200/28.8	150/27.1
	200	6.0	3126	1795	259	1868	4828	325/43.1	300/44.2	250/40.9	200/37.3
	200	9.0	3509	1508	372	2816	10999	500/75.0	500/86.9	450/79.4	300/63.0
1 in 5	100	4.5	3034	322	110	687	1298	200/19.8	175/19.3	150/17.0	150/27.1
	100	6.0	3225	118	138	924	2357	250/27.9	225/31.2	200/28.8	150/27.1
	100	9.0	3608	—	195	1399	5414	350/49.5	350/52.4	300/48.1	225/43.1
	150	4.5	3034	1132	165	1031	1948	225/23.5	200/25.4	175/22.1	150/27.1
	150	6.0	3225	988	208	1387	3536	300/37.7	250/37.3	225/33.9	200/37.3
	150	9.0	3608	701	293	2098	8122	450/65.3	450/72.4	400/66.7	250/51.0
	200	4.5	3034	1942	220	1374	2597	250/27.9	200/25.4	200/28.8	150/27.1
	200	6.0	3225	1798	267	1849	4715	325/43.1	300/44.2	250/40.9	200/37.3
	200	9.0	3608	1511	391	2813	10829	500/75.0	500/86.9	450/79.4	300/63.0

NOTE — The forces presented in the above table are after 25% reduction, if the wind load is one of the loads in the combination to account for $33\frac{1}{3}\%$ increase in allowable stress.

The column axial forces do not include the wall cladding weight (30 kg/m²).

TABLE 196 CANTILEVER COLUMN SECTIONS FOR STEEL ROOF TRUSSES

Truss Span = 12.0 m

Column Spacing = 6.0 m

ROOF SLOPE	BASIC WIND PRESSURE	HEIGHT OF COLUMN	COLUMN FORCES					ALTERNATE COLUMN SECTION			
			Compression	Tension	Shear at		Base Moment	ISLB	ISMB	ISWB	ISHB
					Cap	Base					
	(kg/m²)	(m)	(kg)	(kg)	(kg)	(kg)	(kgm)				
1 in 3	100	4.5	3878	278	132	967	1958	225/23.5	200/25.4	175/22.1	150/27.1
	100	6.0	4133	87	170	1238	3446	275/33.0	250/37.3	225/33.9	200/37.3
	100	9.0	4643	—	246	1916	7673	450/65.3	450/72.4	350/56.9	250/51.0
	150	4.5	3878	1358	198	1450	2938	250/27.9	225/31.2	200/28.8	150/27.1
	150	6.0	4133	1167	255	1925	5169	325/43.1	300/44.2	250/40.9	200/37.3
	150	9.0	4643	785	369	2873	11510	550/86.3	500/86.9	450/79.4	350/67.4
	200	4.5	3878	2438	264	1934	3917	275/33.0	225/31.2	225/33.9	200/37.3
	200	6.0	4133	2247	340	2566	6892	350/49.5	350/52.4	300/48.1	225/43.1
	200	9.0	4643	1865	492	3831	15346	600/99.5	550/103.7	500/95.2	400/77.4
1 in 4	100	4.5	4094	289	134	928	1788	225/23.5	200/25.4	175/22.1	150/27.1
	100	6.0	4349	98	172	1245	3119	275/33.0	250/37.3	225/33.9	200/37.3
	100	9.0	4859	—	248	1877	7332	450/65.3	450/72.4	350/56.9	250/51.0
	150	4.5	4094	1369	201	1393	2682	250/27.9	200/25.4	200/28.8	150/27.1
	150	6.0	4349	1178	258	1868	4428	325/43.1	300/44.2	250/40.9	200/37.3
	150	9.0	4859	795	372	2816	10999	500/75.0	500/86.9	450/79.4	300/63.0
	200	4.5	4094	2449	268	1858	3576	275/33.0	225/31.2	200/28.8	200/37.3
	200	6.0	4349	2258	344	2490	6438	350/49.5	350/52.4	250/40.9	225/43.1
	200	9.0	4859	1875	497	3755	14665	600/99.5	550/103.7	500/95.2	400/77.4
1 in 5	100	4.5	4225	294	146	916	1731	200/19.8	200/25.4	175/22.1	150/27.1
	100	6.0	4480	103	185	1232	3143	275/33.0	250/37.3	225/33.9	200/37.3
	100	9.0	4990	—	260	1865	7219	450/65.3	450/72.4	350/56.9	250/51.0
	150	4.5	4225	1374	220	1374	2597	250/27.9	200/25.4	200/28.8	150/27.1
	150	6.0	4480	1183	267	1849	4715	325/43.1	300/44.2	250/40.9	200/37.3
	150	9.0	4990	800	391	2798	10829	500/75.0	500/86.9	450/79.4	300/63.0
	200	4.5	4225	2454	293	1832	3463	275/33.0	225/31.2	200/28.8	150/34.6
	200	6.0	4480	2263	369	2465	6287	350/49.5	350/52.4	250/40.9	225/43.1
	200	9.0	4990	1880	521	3731	14439	600/99.5	550/103.7	500/95.2	400/77.4

NOTE — The forces presented in the above table are after 25% reduction, if the wind load is one of the loads in the combination to account for $33\frac{1}{3}$% increase in allowable stress.

The column axial forces do not include the wall cladding weight (30 kg/m²).

TABLE 197 CANTILEVER COLUMN SECTIONS FOR STEEL ROOF TRUSSES

Truss Span = 18.0 m

Column Spacing = 4.5 m

Roof Slope	Basic Wind Pressure	Height of Column	Column Forces					Alternate Column Section			
			Compression	Tension	Shear at		Base Moment	ISLB	ISMB	ISWB	ISHB
					Cap	Base					
	(kg/m²)	(m)	(kg)	(kg)	(kg)	(kg)	(kgm)				
1 in 3	100	6.0	4087	520	134	969	2624	275/33.0	225/31.2	200/28.8	150/27.1
	100	9.0	4469	233	191	1443	5815	400/56.9	400/61.6	300/48.1	225/46.8
	100	12.0	4852	—	248	1918	10258	600/99.5	550/103.7	450/79.4	400/77.4
	150	6.0	4087	1735	201	1454	3937	300/37.7	250/37.3	225/33.9	200/37.3
	150	9.0	4469	1448	287	2165	8723	500/75.0	450/72.4	400/66.7	300/58.8
	150	12.0	4852	1161	373	2876	15387	—	600/122.6	500/95.2	—
	200	6.0	4087	2950	269	1938	5249	325/43.1	300/44.2	250/40.9	200/37.3
	200	9.0	4469	2663	383	2887	11631	550/86.3	500/86.9	450/79.4	350/67.4
	200	12.0	4852	2376	497	3836	20516	—	600/122.6	550/112.5	—
1 in 4	100	6.0	4330	532	137	926	2369	250/27.9	225/31.2	200/28.8	150/27.1
	100	9.0	4712	245	194	1400	5432	350/49.5	350/52.4	300/48.1	225/43.1
	100	12.0	5095	—	251	1875	9746	600/95.5	550/103.7	450/79.4	350/72.4
	150	6.0	4330	1747	205	1389	3554	300/37.7	250/37.3	225/33.9	200/37.3
	150	9.0	4712	1460	290	2101	8148	450/65.3	450/72.4	400/66.7	250/51.0
	150	12.0	5095	1173	376	2813	14620	—	550/103.7	500/95.2	450/92.5
	200	6.0	4330	2962	273	1853	4738	325/43.1	300/44.2	250/40.9	200/37.3
	200	9.0	4712	2675	387	2801	10864	500/75.0	500/86.9	450/79.4	300/63.0
	200	12.0	5095	2388	502	3750	19493	—	600/122.6	550/112.5	—
1 in 5	100	6.0	4478	538	151	912	2284	250/27.9	225/31.2	200/28.8	150/27.1
	100	9.0	4860	251	208	1387	5305	350/49.5	350/52.4	300/48.1	225/43.1
	100	12.0	5243	—	265	1816	9577	600/99.5	550/103.7	450/99.4	350/72.4
	150	6.0	4478	1753	226	1368	3426	300/37.7	250/37.3	225/33.9	200/37.3
	150	9.0	4860	1466	311	2080	7957	450/65.3	450/72.4	400/66.7	250/51.0
	150	12.0	5243	1179	398	2792	14266	600/99.5	550/103.7	500/95.2	450/87.2
	200	6.0	4478	2968	302	1824	4569	325/43.1	300/44.2	250/40.9	200/37.3
	200	9.0	4860	2691	416	2774	10610	500/75.0	500/86.9	450/79.4	300/63.0
	200	12.0	5243	2394	530	3722	19154	—	600/122.6	550/112.5	—

NOTE — The forces presented in the above table are after 25% reduction, if the wind load is one of the loads in the combination to account for $33\frac{1}{3}$% increase in allowable stress.

The column axial forces do not include the wall cladding weight (30 kg/m²).

TABLE 198 CANTILEVER COLUMN SECTIONS FOR STEEL ROOF TRUSSES

Truss Span = 18.0 m

Column Spacing = 6.0 m

Roof Slope	Basic Wind Pressure	Height of Column	Column Forces					Alternate Column Section			
			Compression	Tension	Shear at		Base Moment	ISLB	ISMB	ISWB	ISHB
					Cap	Base					
	(kg/m²)	(m)	(kg)	(kg)	(kg)	(kg)	(kgm)				
1 in 3	100	6.0	5689	514	179	1292	3499	300/37.7	250/37.3	225/33.9	200/37.3
	100	9.0	6199	131	255	1925	7754	450/65.3	450/72.4	350/56.9	250/51.0
	100	12.0	6709	—	331	2557	13677	600/99.5	550/103.7	500/95.2	450/87.2
	150	6.0	5689	2134	269	1938	5249	325/43.1	300/44.2	250/40.9	200/37.3
	150	9.0	6199	1751	383	2887	11631	550/86.3	500/86.9	450/79.4	350/67.4
	150	12.0	6709	1369	497	3836	20516	—	600/122.6	550/112.5	—
	200	6.0	5689	3754	358	2584	6999	350/49.5	350/52.4	300/48.1	225/43.1
	200	9.0	6199	3371	510	3849	15508	600/99.5	550/103.7	500/95.2	400/77.4
	200	12.0	6709	2989	66	5114	27354	—	—	600/133.7	—
1 in 4	100	6.0	6013	530	182	1235	3159	275/33.0	250/37.3	225/33.9	200/37.3
	100	9.0	6523	147	258	1868	7242	450/65.3	450/72.4	350/56.9	250/51.0
	100	12.0	7033	—	335	2500	12995	600/99.5	550/103.7	500/95.2	450/87.2
	150	6.0	6013	2150	273	1853	4738	325/43.1	300/44.2	250/40.9	200/37.3
	150	9.0	6523	1767	381	2801	10864	500/75.0	500/86.9	450/79.4	300/63.0
	150	12.0	7033	1385	502	3750	19493	—	600/122.6	550/112.5	—
	200	6.0	6013	3770	364	2471	6318	350/49.5	350/52.4	250/40.9	225/43.1
	200	9.0	6523	3387	516	3736	14485	600/99.5	550/103.7	500/95.2	400/77.4
	200	12.0	7033	3005	669	5000	25991	—	—	600/133.7	—
1 in 5	100	6.0	6211	537	201	1216	3046	275/33.0	250/37.3	200/28.8	200/37.3
	100	9.0	6721	155	277	1849	7073	450/65.3	400/61.6	350/56.9	250/51.0
	100	12.0	7231	—	353	2481	12769	600/99.5	550/103.7	500/95.2	450/87.2
	150	6.0	6211	2157	302	1824	4569	325/43.1	300/44.2	250/40.9	200/37.3
	150	9.0	6721	1775	416	2774	10610	500/75.0	500/86.9	450/79.4	350/58.8
	150	12.0	7231	1392	530	3722	19154	—	600/122.6	550/112.5	—
	200	6.0	6211	3777	402	2432	6092	350/49.5	350/52.4	250/40.9	225/43.1
	200	9.0	6721	3395	554	3698	14146	600/99.5	500/86.9	500/95.2	400/77.4
	200	12.0	7231	3012	707	4963	25539	—	—	600/133.7	—

NOTE — The forces presented in the above table are after 25% reduction, if the wind load is one of the loads in the combination to account for $33\frac{1}{3}\%$ increase in allowable stress.

The column axial forces do not include the wall cladding weight (30 kg/m²).

TABLE 199 CANTILEVER COLUMN SECTIONS FOR STEEL ROOF TRUSSES

Truss Span = 24.0 m

Column Spacing = 4.5 m

Roof Slope	Basic Wind Pressure	Height of Column	Column Forces					Alternate Column Section			
			Compression	Tension	Shear at		Base Moment	ISLB	ISMB	ISWB	ISHB
					Cap	Base					
	(kg/m²)	(m)	(kg)	(kg)	(kg)	(kg)	(kgm)				
1 in 3	100	9.0	5646	546	198	1450	5875	400/56.9	400/61.6	350/56.9	225/46.8
	100	12.0	6028	259	255	1925	10338	600/99.5	550/103.7	450/79.4	400/77.4
	150	9.0	5646	2166	297	2175	8813	500/75.0	450/72.4	400/66.7	300/58.8
	150	12.0	6028	1879	383	2887	15508	—	600/122.6	500/95.2	—
	200	9.0	5646	3786	396	2900	11751	550/86.3	500/86.9	450/79.4	350/67.4
	200	12.0	6028	3499	510	3849	20677	—	600/122.6	550/112.5	—
1 in 4	100	9.0	5970	562	201	1393	5364	350/49.5	350/52.4	300/48.1	225/43.1
	100	12.0	6352	275	258	1868	9657	600/99.5	550/103.7	450/79.4	350/72.4
	150	9.0	5970	2182	302	2090	8047	450/65.3	450/72.4	400/66.7	250/51.0
	150	12.0	6852	1895	387	2801	14485	—	550/103.7	500/95.2	450/92.5
	200	9.0	5970	3802	402	2786	10729	500/75.0	500/86.9	450/79.4	300/63.0
	200	12.0	6352	3515	516	3736	19314	—	600/122.6	550/112.5	—
1 in 5	100	9.0	6167	570	220	1374	5195	350/49.5	350/52.4	300/48.1	225/43.1
	100	12.0	6550	283	502	1849	9431	600/99.5	550/103.7	450/79.4	350/67.4
	150	9.0	6167	2190	330	2061	7792	450/65.3	450/72.4	400/66.7	250/51.0
	150	12.0	6550	1903	416	2774	14146	600/99.5	550/103.7	500/95.2	450/87.2
	200	9.0	6167	3810	440	2749	10390	500/75.0	500/86.9	450/79.4	300/58.8
	200	12.0	6550	3523	554	3698	18862	—	600/122.6	550/112.5	—

NOTE — The forces presented in the above table are after 25% reduction, if the wind load is one of the loads in the combination to account for $33\frac{1}{3}$% increase in allowable stress.

The column axial forces do not include the wall cladding weight (30 kg/m²).

TABLE 200 CANTILEVER COLUMN SECTIONS FOR STEEL ROOF TRUSSES

Truss Span = 24.0 m Column Spacing = 6.0 m

Roof Slope	Basic Wind Pressure	Height of Column	Column Forces					Alternate Column Section			
			Com-pression	Tension	Shear at		Base Moment	ISLB	ISMB	ISWB	ISHB
					Cap	Base					
	(kg/m²)	(m)	(kg)	(kg)	(kg)	(kg)	(kgm)				
1 in 3	100	9.0	7828	503	264	1934	7834	450/65.3	450/72.4	350/56.9	250/51.0
	100	12.0	7828	121	340	2567	13784	600/99.5	550/103.7	500/95.2	450/87.2
	150	9.0	7828	2663	396	2900	11751	550/86.3	500/86.9	450/79.4	350/67.4
	150	12.0	8338	2281	510	3849	20677	—	600/122.6	550/112.5	—
	200	9.0	7828	4823	528	3867	15669	600/99.5	550/103.7	500/95.2	400/77.4
	200	12.0	8338	4441	680	5132	27569	—	—	600/133.7	—
1 in 4	100	9.0	8260	525	268	1858	7152	450/65.3	450/72.4	350/56.9	250/51.0
	100	12.0	8770	142	344	2490	12876	600/89.5	550/103.7	500/95.2	450/87.2
	150	9.0	8260	2685	402	2786	10729	500/75.0	500/86.9	450/79.4	300/63.0
	150	12.0	8770	2302	516	3736	19314	—	600/122.6	550/112.5	—
	200	9.0	8260	4845	536	3716	14305	600/99.5	550/103.7	500/95.2	400/77.4
	200	12.0	8770	4462	689	4981	25752	—	—	600/133.7	—
1 in 5	100	9.0	8523	535	293	1832	6926	450/65.3	400/61.6	550/56.9	250/51.0
	100	12.0	9033	152	369	2465	12574	600/99.5	550/103.7	500/95.2	450/87.2
	150	9.0	8523	2695	440	2749	10390	500/75.0	500/86.9	450/79.4	300/58.8
	150	12.0	9033	2312	554	3698	18862	—	600/122.6	550/112.5	—
	200	9.0	8523	4855	587	3665	13854	550/86.3	500/86.9	500/95.2	400/77.4
	200	12.0	9033	4472	739	4931	25149	—	—	600/133.7	—

NOTE — The forces presented in the above table are after 25% reduction, if the wind load is one of the loads in the combination to account for $33\frac{1}{3}$ % increase in allowable stress.

The column axial forces do not include the wall cladding weight (30 kg/m²).

TABLE 201 CANTILEVER COLUMN SECTIONS FOR STEEL ROOF TRUSSES

Truss Span = 30 m

Column Spacing = 4.5 m

Roof Slope	Basic Wind Pressure	Height of Column	Column Forces					Alternate Column Section			
			Compression	Tension	Shear at Cap	Shear at Base	Base Moment	ISLB	ISMB	ISWB	ISHB
	(kg/m²)	(m)	(kg)	(kg)	(kg)	(kg)	(kgm)				
1 in 3	100	9.0	6876	819	205	1457	5936	400/56.9	400/61.6	350/56.9	225/46.8
	100	12.0	7259	532	262	1930	10419	600/99.5	550/103.7	450/79.4	400/77.4
	150	9.0	6876	2844	307	2185	8904	500/75.0	450/72.4	400/66.7	300/58.8
	150	12.0	7259	2557	392	2897	15628	—	600/122.6	500/95.2	—
	200	9.0	6876	4869	410	2914	11872	550/86.3	500/86.9	450/79.4	350/67.4
	200	12.0	7259	4582	524	3863	20838	—	600/122.6	550/112.5	—
1 in 4	100	9.0	7281	839	209	1385	5297	350/49.5	350/52.4	300/48.1	225/43.1
	100	12.0	7664	552	267	1860	9567	600/99.5	550/103.7	450/79.4	350/72.4
	150	9.0	7281	2864	313	2078	7945	450/65.3	450/72.4	400/66.7	250/51.0
	150	12.0	7664	2577	398	2790	14350	—	550/103.7	500/95.2	450/87.2
	200	9.0	7281	4889	417	2771	10594	500/75.0	500/86.9	450/79.4	300/63.0
	200	12.0	7664	4602	531	3721	13134	—	600/122.6	550/112.5	—
1 in 5	100	9.0	7528	848	232	1362	5085	350/49.5	350/52.4	300/48.1	225/43.1
	100	12.0	7910	561	289	1837	9284	600/99.5	550/103.7	450/79.4	350/67.4
	150	9.0	7528	2873	348	2043	7628	450/65.3	450/72.4	350/56.9	250/51.0
	150	12.0	7910	2586	434	2755	13927	600/99.5	550/103.7	500/95.2	450/87.2
	200	9.0	7528	4898	464	2725	10170	500/75.0	500/86.9	450/79.4	300/58.8
	200	12.0	7910	4611	578	3674	18569	—	600/122.6	550/112.5	—

NOTE — The forces presented in the above table are after 25% reduction, if the wind load is one of the loads in the combination to account for $33\frac{1}{3}\%$ increase in allowable stress.

The column axial forces do not include the wall cladding weight (30 kg/m²).

TABLE 202 CANTILEVER COLUMN SECTIONS FOR STEEL ROOF TRUSSES

Truss Span = 30 m

Column Spacing = 6.0 m

Roof Slope	Basic Wind Pressure	Height of Column	Column Forces					Alternate Column Section			
			Compression	Tension	Shear at Cap	Shear at Base	Base Moment	ISLB	ISMB	ISWB	ISHB
	(kg/m²)	(m)	(kg)	(kg)	(kg)	(kg)	(kgm)				
1 in 3	100	9.0	9528	822	273	1943	7915	450/65.3	450/72.4	400/66.7	250/51.0
	100	12.0	10039	439	349	2575	13892	600/99.5	550/103.7	500/95.2	450/87.2
	150	9.0	9528	3522	410	2914	11872	550/86.3	500/86.9	450/79.4	350/67.4
	150	12.0	10039	3139	524	3863	20833	—	600/122.6	550/112.5	—
	200	9.0	9528	6222	546	3885	15830	600/99.5	550/103.7	500/95.2	400/77.4
	200	12.0	10039	5809	698	5150	27784	—	—	600/133.7	—
1 in 4	100	9.0	10069	848	278	1847	7063	450/65.3	400/61.6	350/56.9	250/51.0
	100	12.0	10579	466	354	2480	12756	600/99.5	550/103.7	500/95.2	450/87.2
	150	9.0	10069	3548	417	2771	10594	500/75.0	500/86.9	450/79.4	300/63.0
	150	12.0	10579	3166	531	3721	19134	—	600/122.6	550/112.5	—
	200	9.0	10069	6248	557	3695	14126	600/99.5	550/103.7	500/95.2	400/77.4
	200	12.0	10579	5866	709	4961	25512	—	—	600/133.7	—
1 in 5	100	9.0	10397	861	309	1817	6780	400/56.9	400/61.6	350/56.9	250/51.0
	100	12.0	10907	479	386	2449	12379	600/99.5	550/103.7	500/95.2	400/82.2
	150	9.0	10397	3561	464	2725	10170	500/75.0	500/86.9	450/79.4	300/58.8
	150	12.0	10907	3179	578	3674	18569	—	600/122.6	550/112.5	—
	200	9.0	10397	6261	619	3633	13561	550/86.3	500/86.9	450/79.4	350/72.4
	200	12.0	10907	5879	771	4898	24759	—	—	600/133.7	—

NOTE — The forces presented in the above table are after 25% reduction, if the wind load is one of the loads in the combination to account for $33\frac{1}{3}$% increase in allowable stress.

The column axial forces do not include the wall cladding weight (30 kg/m²).

TABLE 203 CANTILEVER COLUMN SECTIONS FOR LEAN-TO ROOF TRUSSES

Truss Span = 9.0 m

Column Spacing = 4.5 m

Roof Slope	Basic Wind Pressure	Height of Column	Column Forces					Alternate Column Section			
			Compression	Tension	Shear at		Base Moment	ISLB	ISMB	ISWB	ISHB
					Cap	Base					
	(kg/m²)	(m)	(kg)	(kg)	(kg)	(kg)	(kgm)				
1 in 3	100	4.5	2143	185	275	1202	2262	250/27.9	200/25.4	175/22.1	150/27.1
	100	6.0	2335	41	304	1139	3643	300/37.7	250/37.3	225/33.9	200/37.3
	150	4.5	2143	792	398	1352	3394	275/33.0	225/31.2	200/28.8	150/30.6
	150	6.0	2335	649	456	1708	5464	325/43.1	300/44.2	250/40.9	200/37.3
	200	4.5	2143	1400	551	1803	4526	275/33.0	250/37.3	225/33.9	200/37.3
	200	6.0	2335	1256	608	2277	7286	350/49.5	350/52.4	300/48.1	225/43.1
1 in 4	100	4.5	2265	191	228	854	2049	225/23.5	200/25.4	175/22.1	150/27.1
	100	6.0	2456	47	257	1091	3358	275/33.0	250/37.3	225/33.9	200/37.3
	150	4.5	2265	798	342	128	3073	250/27.9	225/31.2	200/28.8	150/27.1
	150	6.0	2456	655	385	1637	5037	325/43.1	300/44.2	250/40.9	200/37.3
	200	4.5	2265	1406	456	1708	4098	275/33.0	250/37.3	225/33.9	200/37.3
	200	6.0	2456	1262	513	2183	6716	350/49.5	350/52.4	250/40.9	225/43.1
1 in 5	100	4.5	2339	300	200	825	1921	225/23.5	200/25.4	175/22.1	150/27.1
	100	6.0	2530	156	228	1063	3187	276/33.0	250/37.3	225/33.9	200/37.3
	150	4.5	2339	960	299	1238	2881	250/27.9	225/31.2	200/28.8	150/27.1
	150	6.0	2530	817	342	1594	4781	325/43.1	300/44.2	250/40.9	200/37.3
	200	4.5	2339	1621	399	1651	3842	275/33.0	225/31.2	200/28.8	200/37.3
	200	6.0	2530	1478	456	2126	6375	350/49.5	350/52.4	250/40.9	225/43.1

NOTE — The forces presented in the above table are after 25% reduction, if the wind load is one of the loads in the combination to account for $33\frac{1}{3}$% increase in allowable stress.

The column axial forces do not include the wall cladding weight (30 kg/m²).

TABLE 204 CANTILEVER COLUMN SECTIONS FOR LEAN-TO ROOF TRUSSES

Truss Span = 9.0 m

Column Spacing = 6.0 m

Roof Slope	Basic Wind Pressure	Height of Column	Column Forces					Alternate Column Section			
			Compression	Tension	Shear at Cap	Shear at Base	Base Moment	ISLB	ISMB	ISWB	ISHB
	(kg/m²)	(m)	(kg)	(kg)	(kg)	(kg)	(kgm)				
1 in 3	100	4.5	2978	156	367	1202	3017	250/27.9	225/31.2	200/28.8	150/27.1
	100	6.0	3233	—	405	1518	4857	325/43.1	300/44.2	250/40.9	200/37.3
	150	4.5	2978	966	551	1803	4525	275/33.0	250/37.3	225/33.9	200/37.3
	150	6.0	3233	775	608	2277	7286	350/49.5	350/52.4	300/48.1	225/43.1
	200	4.5	2978	1776	734	2404	6034	300/37.7	300/44.2	250/40.9	200/40.0
	200	6.0	3233	1585	811	3036	9715	400/56.9	400/61.6	350/56.9	250/51.0
1 in 4	100	4.5	3140	164	304	1139	2732	250/27.9	200/25.4	200/28.8	150/27.1
	100	6.0	3395	—	342	1455	4477	300/37.7	300/44.2	250/40.9	200/37.3
	150	4.5	3140	974	456	1708	4098	275/33.0	250/37.3	225/33.9	200/37.3
	150	6.0	3395	783	513	2183	6716	350/49.5	350/52.4	250/40.9	225/43.1
	200	4.5	3140	1784	608	2277	5464	300/37.7	250/37.3	250/40.9	200/37.3
	200	6.0	3395	1593	684	2910	8955	400/56.9	400/61.6	300/48.1	250/51.0
1 in 5	100	4.5	3239	310	366	1100	2561	250/27.9	200/25.4	200/28.8	150/27.1
	100	6.0	3494	119	304	1417	4250	300/37.7	250/37.3	225/33.9	200/37.3
	150	4.5	3239	1191	399	1651	3842	275/33.0	225/31.2	200/28.8	200/37.3
	150	6.0	3494	1000	456	2126	6375	350/49.5	350/52.4	250/40.9	225/43.1
	200	4.5	3239	2072	532	2201	5123	300/37.7	250/37.3	225/33.9	200/37.3
	200	6.0	3494	1880	608	2834	8500	400/56.9	400/61.6	300/48.1	250/51.0

NOTE — The forces presented in the above table are after 25% reduction, if the wind load is one of the loads in the combination to account for $33\frac{1}{3}\%$ increase in allowable stress.

The column axial forces do not include the wall cladding weight (30 kg/m²).

TABLE 205 CANTILEVER COLUMN SECTIONS FOR LEAN-TO ROOF TRUSSES

Truss Span = 12.0 m

Column Spacing = 4.5 m

Roof Slope	Basic Wind Pressure	Height of Column	Column Forces					Alternate Column Section			
			Compression	Tension	Shear at		Base Moment	ISLB	ISMB	ISWB	ISHB
					Cap	Base					
	(kg/m²)	(m)	(kg)	(kg)	(kg)	(kg)	(kgm)				
1 in 3	100	4.5	2661	394	338	810	2547	250/27.9	200/25.4	200/28.8	150/27.1
	100	6.0	2852	251	367	1202	4022	300/37.7	250/37.3	225/33.9	200/37.3
	100	9.0	3234	—	424	1676	7912	450/65.3	450/72.4	400/66.7	250/51.0
	150	4.5	2661	1204	508	1447	3821	275/33.0	225/31.2	200/28.8	200/37.3
	150	6.0	2852	1061	551	1803	6034	325/43.1	300/44.2	250/40.9	200/40.0
	150	9.0	3234	774	636	2514	11868	550/86.3	500/86.9	450/79.4	350/67.4
	200	4.5	2661	2014	677	1929	5095	300/37.7	250/37.3	225/33.9	200/37.3
	200	6.0	2852	1871	734	2404	8045	350/49.5	400/61.6	300/48.1	250/51.0
	200	9.0	3234	1584	848	3353	15824	600/99.5	550/103.7	500/95.2	400/77.4
1 in 4	100	4.5	2823	402	275	902	2262	250/27.9	200/25.4	175/22.1	150/27.1
	100	6.0	3014	259	304	1139	3643	300/37.7	250/37.3	225/33.9	200/37.3
	100	9.0	3396	—	361	1613	7342	450/65.3	450/72.4	350/56.9	250/51.0
	150	4.5	2823	1212	413	1352	3394	275/33.0	225/31.2	200/28.8	150/34.6
	150	6.0	3014	1069	456	1708	5464	325/43.1	300/44.2	250/40.9	200/37.3
	150	9.0	3396	782	542	2120	11014	500/75.0	500/86.9	450/79.4	300/63.0
	200	4.5	2823	2022	551	1803	4525	275/33.0	250/37.3	225/33.9	200/37.3
	200	6.0	3014	1879	608	2277	7286	350/49.5	350/52.4	300/48.1	225/43.1
	200	9.0	3396	1592	722	3226	14685	600/95.5	550/103.7	500/95.2	400/77.4
1 in 5	100	4.5	2921	548	237	863	2092	225/23.5	200/25.4	175/22.1	150/27.1
	100	6.0	3113	404	266	1100	3415	275/33.0	250/37.3	225/33.9	200/37.3
	100	9.0	3495	118	322	1575	7001	450/65.3	400/61.6	350/56.9	250/51.0
	150	4.5	2921	1429	356	1295	3138	250/27.9	225/31.2	200/28.8	150/27.1
	150	6.0	3113	1285	399	1651	5123	325/43.1	300/44.2	250/40.9	200/37.3
	150	9.0	3495	999	485	2363	10501	500/75.0	500/86.9	450/79.4	300/58.8
	200	4.5	2921	2310	415	1727	4184	275/33.0	250/37.3	225/33.9	200/37.3
	200	6.0	3113	2166	532	2201	6830	350/49.5	350/52.4	300/48.1	225/43.1
	200	9.0	3495	1879	646	3150	14002	550/86.3	500/86.9	500/95.2	350/72.4

NOTE — The forces presented in the above table are after 25% reduction, if the wind load is one of the loads in the combination to account for $33\frac{1}{3}$% increase in allowable stress.

The column axial forces do not include the wall cladding weight (30 kg/m²).

TABLE 206 CANTILEVER COLUMN SECTIONS FOR LEAN-TO ROOF TRUSSES

Truss Span = 12.0 m

Column Spacing = 6 m

Roof Slope	Basic Wind Pressure	Height of Column	Column Forces					Alternate Column Section			
			Com-pression	Tension	Shear at		Base Moment	ISLB	ISMB	ISWB	ISHB
					Cap	Base					
	(kg/m²)	(m)	(kg)	(kg)	(kg)	(kg)	(kgm)				
1 in 3	100	4.5	3698	413	452	1286	3396	275/33.0	225/31.2	200/28.8	250/30.6
	100	6.0	3953	222	490	1602	5363	325/43.1	300/44.2	250/40.9	200/37.3
	100	9.0	4463	—	566	2233	10549	500/75.0	500/86.7	450/79.4	300/58.8
	150	4.5	3698	1493	677	1929	5095	300/37.7	250/37.3	225/33.9	200/37.3
	150	6.0	3953	1302	734	2404	8045	350/49.5	400/61.6	300/48.1	250/51.0
	150	9.0	4463	920	848	3223	15824	600/99.5	550/103.7	500/95.2	400/77.4
	200	4.5	3698	2573	903	2573	6793	325/43.1	300/44.2	250/40.9	225/43.1
	200	6.0	3953	2382	980	3205	10727	450/65.3	450/72.4	350/56.9	300/58.8
	200	9.0	4463	2000	1132	4470	21099	—	600/122.6	500/95.2	450/87.2
1 in 4	100	4.5	3914	424	367	1202	3017	250/27.9	225/31.2	200/28.8	150/27.1
	100	6.0	4169	233	405	1518	4857	325/43.1	300/44.2	250/40.9	200/37.3
	100	9.0	4679	—	482	2150	9790	500/75.0	450/72.4	400/66.7	300/58.8
	150	4.5	3914	1504	551	1803	4525	275/33.0	250/37.3	225/33.9	200/37.3
	150	6.0	4169	1313	600	2277	7286	350/49.5	350/52.4	300/48.1	225/43.1
	150	9.0	4679	980	722	3226	14685	600/99.5	550/103.7	500/95.2	400/77.4
	200	4.5	3914	2584	734	2404	6034	300/37.7	300/44.2	250/40.9	200/40.0
	200	6.0	4169	2392	811	3036	9715	400/56.9	400/61.6	350/56.9	250/51.0
	200	9.0	4679	2010	963	4301	19580	—	550/103.7	500/95.2	450/87.2
1 in 5	100	4.5	4045	618	317	1151	2789	250/27.9	225/31.2	200/28.8	150/27.1
	100	6.0	4300	427	355	1467	4553	300/37.7	300/44.2	250/40.9	200/37.3
	100	9.0	4810	45	431	2100	9334	500/75.0	450/72.4	400/66.7	300/58.8
	150	4.5	4045	1793	475	1727	4184	275/33.0	250/37.3	225/33.9	200/37.3
	150	6.0	4300	1601	532	2201	6830	350/49.5	350/52.4	250/40.9	225/43.1
	150	9.0	4810	1219	646	3150	14002	550/86.9	500/86.9	450/79.4	350/72.4
	200	4.5	4045	2967	633	2303	5578	300/37.7	250/37.3	250/40.9	200/37.3
	200	6.0	4300	2776	710	2935	9107	400/56.9	400/61.6	300/48.1	250/51.0
	200	9.0	4810	2393	862	4200	18667	600/99.5	550/103.7	500/95.2	450/87.2

NOTE — The forces presented in the above table are after 25% reduction, if the wind load is one of the loads in the combination to account for $33\frac{1}{3}$ % increase in allowable stress.

The column axial forces do not include the wall cladding weight (30 kg/m²).

TABLE 207 CANTILEVER COLUMN SECTIONS FOR LEAN-TO ROOF TRUSSES

Truss Span = 15 m

Column Spacing = 4.5 m

Roof Slope	Basic Wind Pressure	Height of Column	Column Forces					Alternate Column Section			
			Compression	Tension	Shear at		Base Moment	ISLB	ISMB	ISWB	ISHB
					Cap	Base					
	(kg/m²)	(m)	(kg)	(kg)	(kg)	(kg)	(kgm)				
1 in 3	100	4.5	3185	599	402	1027	2832	250/27.9	225/31.2	200/28.8	150/27.1
	100	6.0	3376	455	431	1265	4402	300/37.7	250/37.3	250/40.9	200/37.3
	100	9.0	3758	169	488	1739	8481	450/65.3	450/72.4	400/66.7	250/54.7
	150	4.5	3185	1611	603	1542	4248	275/33.0	250/37.3	225/33.9	200/37.3
	150	6.0	3376	1460	646	1898	6603	350/49.5	350/52.4	250/40.9	225/43.1
	150	9.0	3758	1181	731	2609	12722	550/86.3	500/86.9	450/79.4	350/67.4
	200	4.5	3185	2624	804	2055	5665	300/37.7	250/37.3	250/40.9	200/37.3
	200	6.0	3376	2480	861	2531	8805	400/56.9	400/61.6	300/48.1	250/51.0
	200	9.0	3758	2194	975	3479	16963	600/99.5	550/103.7	500/95.2	400/77.4
1 in 4	100	4.5	3387	609	322	949	2476	250/27.9	200/25.4	200/28.8	150/27.1
	100	6.0	3579	466	351	1186	3927	300/37.7	250/37.3	225/33.9	200/37.3
	100	9.0	3961	179	408	1661	7769	450/65.3	450/72.4	350/56.9	250/51.0
	150	4.5	3387	1621	484	1423	3114	275/33.0	225/31.2	200/28.8	150/27.1
	150	6.0	3679	1478	527	1779	5891	325/43.1	300/44.2	250/40.9	200/40.0
	150	9.0	3961	1191	613	2491	11654	550/86.3	500/86.9	450/79.4	350/67.4
	200	4.5	3387	2634	646	1898	4952	300/37.7	250/37.3	250/33.9	200/37.3
	200	6.0	3579	2491	703	2372	7855	350/49.5	350/52.4	300/48.1	225/46.8
	200	9.0	3961	2204	817	3321	15539	600/99.5	550/103.7	500/95.2	400/77.4
1 in 5	100	4.5	3511	791	275	902	2262	250/27.9	200/25.4	175/22.1	150/27.1
	100	6.0	3702	647	304	1139	3643	300/37.7	250/37.3	225/33.9	200/37.3
	100	9.0	4084	361	361	1613	7342	450/65.3	450/72.4	350/56.9	250/51.1
	150	4.5	3511	1892	413	3152	3394	275/33.0	225/31.2	200/28.8	150/34.6
	150	6.0	3702	1749	456	1705	5464	325/43.1	300/44.2	250/40.9	200/37.3
	150	9.0	4084	1462	542	2120	11014	500/75.0	500/86.9	450/79.4	350/67.4
	200	4.5	3511	2993	550	1803	4525	275/33.0	250/37.3	225/33.9	200/37.3
	200	6.0	3702	2850	608	2279	7286	350/49.5	350/52.4	300/48.1	225/43.1
	200	9.0	4084	2563	722	3226	14685	600/99.5	550/103.7	500/95.2	400/77.4

NOTE — The forces presented in the above table are after 25% reduction, if the wind load is one of the loads in the combination to account for $33\frac{1}{3}$ % increase in allowable stress.

The column axial forces do not include the wall cladding weight (30 kg/m²).

TABLE 208 CANTILEVER COLUMN SECTIONS FOR LEAN-TO ROOF TRUSSES

Truss Span = 15.0 m

Column Spacing = 6.0 m

Roof Slope	Basic Wind Pressure	Height of Column	Column Forces					Alternate Column Section			
			Compression	Tension	Shear at		Base Moment	ISLB	ISMB	ISWB	ISHB
					Cap	Base					
	(kg/m^2)	(m)	(kg)	(kg)	(kg)	(kg)	(kgm)				
1 in 3	100	4.5	4426	664	536	1317	3776	275/33.0	225/31.2	200/28.8	200/37.3
	100	6.0	4681	472	574	1687	5870	325/43.1	300/44.2	250/40.9	200/37.3
	100	9.0	5191	90	650	2319	11309	550/86.3	500/86.9	450/79.4	350/67.4
	150	4.5	4426	2014	804	2056	5665	300/37.7	250/37.3	250/40.9	200/37.3
	150	6.0	4681	1822	861	2531	8805	400/56.9	400/61.6	300/48.1	250/51.0
	150	9.0	5191	1440	975	3479	16963	600/99.5	550/103.7	500/95.2	400/77.4
	200	4.5	4426	3364	1072	2741	7553	325/43.1	300/44.2	250/40.9	225/46.8
	200	6.0	4681	3172	1148	3374	11740	450/65.3	450/72.4	350/56.9	300/58.8
	200	9.0	5191	2790	1301	4639	22618	—	600/122.6	500/95.2	—
1 in 4	100	4.5	4697	677	431	1265	3002	250/27.9	225/31.2	200/28.8	150/27.1
	100	6.0	4952	486	468	1581	5237	325/43.1	300/44.2	250/40.9	200/37.3
	100	9.0	5462	103	546	2214	10359	500/75.0	500/86.9	400/66.7	300/58.8
	150	4.5	4697	2027	646	1898	4953	300/37.7	250/37.3	225/43.9	200/37.3
	150	6.0	4952	1836	703	2372	7855	350/49.5	350/52.4	300/48.1	225/46.8
	150	9.0	5462	1453	817	3396	15539	600/99.5	550/103.7	500/95.2	400/77.4
	200	4.5	4697	3377	861	2530	6004	325/43.1	300/44.2	250/40.9	225/43.1
	200	6.0	4952	3186	937	3163	10474	450/65.3	450/72.4	350/56.9	250/54.7
	200	9.0	5462	2803	1089	4428	20719	—	600/122.6	500/95.2	450/87.2
1 in 5	100	4.5	4861	920	367	1202	1117	250/27.9	225/31.2	200/28.8	150/27.1
	100	6.0	5116	728	405	1518	4857	325/43.1	300/44.2	250/40.9	200/37.3
	100	9.0	5626	346	482	2150	9790	500/75.0	500/86.9	400/66.7	300/58.8
	150	4.5	4861	2388	551	1803	4526	275/33.0	250/37.3	225/33.9	200/37.3
	150	6.0	5116	2197	608	2277	7286	350/49.5	350/52.4	300/48.1	225/43.1
	150	9.0	5626	1814	722	3226	14685	600/99.5	550/103.7	500/95.2	400/77.4
	200	4.5	4861	3856	735	2404	6034	300/37.7	300/44.2	250/40.9	225/43.1
	200	6.0	5116	3665	811	3036	9715	400/56.9	400/61.6	350/56.9	250/51.0
	200	9.0	5626	3282	963	4301	19580	—	550/103.7	500/95.2	450/87.2

NOTE — The forces presented in the above table are after 25% reduction, if the wind load is one of the loads in the combination to account for $33\frac{1}{3}$% increase in allowable stress.

The column axial forces do not include the wall cladding weight (30 kg/m^2).

TABLE 209 CRANE LOAD DATA USED FOR DESIGN

Truss Span (m)	Crane Capacity (T)											
	5.0			7.5			10			20		
	W	CW	WB	W	CW	WB	W	CW	WB	W	CW	WB
9 and 12	6.5	2	3	8.5	4	3	10.5	4	3	17.5	7	3.8
18	8.5	2	3.5	10.5	4	3.5	12.5	4	3.5	19.5	7	4.0
24	10.5	2	4	12.5	4	4.0	15.0	4	4.0	23.0	7	4.5
30	12.0	2	4.8	14.0	4	4.8	17.0	4	4.8	25.5	7	5.0

Note — 1. Notation: W—wheel load without impact including the effect of crab crane and weight lifted. (T), CW—crab weight (T), WB—wheel base (m).
2. All the above E.O.T. light duty cranes are cabin operated with no axiliary hoist.
3. Wheel loads do not include impact factor.
4. Crane span may be approximately 1.3 m less than the given truss span.
5. This data shall be verified with the data supplied by crane manufacturer and appropriate modifications shall be made in the design, if necessary.

TABLE 210 ANALYSIS AND DESIGN RESULTS OF GANTRY GIRDERS

Gantry Span = 4.5 m

Truss Span	Crane Capacity	Girder Forces		Forces on Column		Girder Section	
		Vertical Bending Moment	Transverse Moment	Vertical Load	Surge Force	ISMB Section	ISMC Channel Section
(m)	(T)	(Tm)	(Tm)	(T)	(T)		
9 and 12	5.0	9.66	0.20	11.30	0.24	350/52.4	200/22.1
	7.5	12.47	0.33	14.63	0.39	400/61.6	200/22.1
	10.0	15.50	0.39	18.05	0.47	400/61.6	200/22.1
	20.0	25.35	0.76	25.82	0.78	500/86.9	250/30.4
18	5.0	12.46	0.20	13.45	0.22	400/61.6	200/22.1
	7.5	15.28	0.33	16.50	0.36	400/61.6	200/22.1
	10.0	18.31	0.39	19.64	0.43	450/72.4	225/25.9
	20.0	28.15	0.76	27.62	0.75	550/103.7	300/35.8
24	5.0	15.28	0.20	15.04	0.20	400/61.6	200/22.1
	7.5	18.09	0.33	17.82	0.32	450/72.4	225/25.9
	10.0	21.82	0.39	21.37	0.39	500/86.9	250/30.4
	20.0	33.07	0.76	29.29	0.68	550/103.7	300/35.8
30	5.0	17.39	0.20	15.46	0.18	450/72.4	225/25.9
	7.5	20.20	0.33	17.96	0.29	450/72.4	225/25.9
	10.0	24.64	0.39	21.79	0.35	500/86.9	250/30.4
	20.0	36.59	0.76	32.42	0.68	550/103.7	300/35.8

Note — The Girder Section is an I section with top channel (*see* Fig. 5, 45).

TABLE 211 ANALYSIS AND DESIGN RESULTS OF GANTRY GIRDERS

Gantry Span = 6.0 m

Truss Span	Crane Capacity	Girder Forces		Forces on Column		Girder Section	
		Vertical Bending Moment	Transverse Moment	Vertical Load	Surge Force	ISMB Section	ISMC Channel Section
(m)	(T)	(Tm)	(Tm)	(T)	(T)		
9 and 12	5.0	14.54	0.30	12.83	0.27	450/72.4	225/25.9
	7.5	18.76	0.49	16.63	0.44	450/72.4	225/25.9
	10.0	23.29	0.59	20.45	0.53	500/86.9	250/30.4
	20.0	31.78	0.95	30.65	0.93	550/103.7	300/35.8
18	5.0	16.82	0.26	15.68	0.25	450/72.4	225/25.9
	7.5	20.58	0.44	19.22	0.41	500/86.9	250/30.4
	10.0	24.65	0.53	22.89	0.50	500/86.9	250/30.4
	20.0	37.69	1.01	33.25	0.90	550/103.7	300/35.8
24	5.0	20.51	0.26	18.13	0.24	500/86.9	250/30.4
	7.5	24.26	0.43	21.46	0.39	500/86.9	250/30.4
	10.0	29.26	0.53	25.75	0.47	550/103.7	300/35.8
	20.0	44.26	1.01	36.69	0.85	600/122.6	300/35.8
30	5.0	23.32	0.26	18.63	0.21	500/86.9	250/30.4
	7.5	27.07	0.43	21.63	0.35	500/86.9	250/30.4
	10.0	33.01	0.53	26.25	0.42	550/103.7	300/35.8
	20.0	48.94	1.01	37.94	0.79	600/122.6	300/35.8

NOTE — The Girder Section is an I section with top channel (*see* Fig. 5, 45).

TABLE 212 ANALYSIS AND DESIGN RESULTS FOR STEPPED COLUMN

Crane Capacity	Truss Spacing	Total Column Height	Basic Wind Pressure	Column Above Crane Cap			Column Below Crane Cap		
				Design Forces		Design	Design	Design Sections[2]	
				Axial Force[3]	Moment	Section ISMB	Axial Force[3,4]	ISMB	ISMC
(T)	(m)	(m)	(kg/m²)	(T)	(Tm)		(T)		
5	4.5	8.25	100	5.86	1.381	225/31.2	20.692	175/19.3	175/19.1
			150	5.86	2.004	250/37.3	24.271	175/19.3	200/22.1
			200	5.86	2.627	300/44.2	27.851	200/25.4	200/22.1
		9.75	100	5.86	1.381	225/31.2	23.736	175/19.3	175/19.1
			150	5.86	2.004	250/37.3	28.693	200/25.4	200/22.1
			200	5.86	2.627	300/44.2	33.650	200/25.4	225/25.9
	6.0	8.25	100	7.78	1.814	250/37.3	25.922	175/19.3	200/22.1
			150	7.78	2.644	300/44.2	30.694	200/25.4	200/22.1
			200	7.78	3.474	350/42.1	35.467	200/25.4	225/25.9
		9.75	100	7.78	1.814	250/37.3	29.932	200/25.4	200/22.1
			150	7.78	2.644	300/44.2	36.541	225/31.2	225/25.9
			200	7.78	3.474	350/52.4	43.150	225/31.2	250/30.4
7.5	4.5	8.25	100	5.86	1.466	250/37.3	23.186	175/19.3	200/22.1
			150	5.86	2.089	250/37.3	26.765	175/19.3	200/22.1
			200	5.86	2.712	300/44.2	30.345	200/25.4	200/22.1
		9.75	100	5.86	1.466	250/37.3	26.406	200/25.4	200/22.1
			150	5.86	2.089	250/37.3	31.363	200/25.4	225/25.9
			200	5.86	2.712	300/44.2	36.320	225/31.2	225/25.9
	6.0	8.25	100	7.78	1.910	250/37.3	28.960	200/25.4	200/22.1
			150	7.78	2.740	300/44.2	33.732	200/25.4	225/25.9
			200	7.78	3.570	350/52.4	38.505	225/31.2	225/25.9
		9.75	100	7.78	1.910	250/37.3	33.195	200/25.4	225/25.9
			150	7.78	2.740	300/44.2	39.804	225/31.2	250/30.4
			200	7.78	3.570	350/52.4	46.413	250/37.3	300/35.8

NOTE — 1. *See* Fig. 5.

2. Roof column and crane column may be ISMC or ISMB as desired. Preferably the roof column and crane column will have same depth.
3. Axial Force is based on the roof load from 30 m span length.
4. Axial Force includes the self weight, crane load, roof load and contribution of wind moment.
5. The forces presented are after 25% reduction to account for wind load if it is one of the loads in the combination.

TABLE 213 ANALYSIS AND DESIGN RESULTS FOR STEPPED COLUMN

Crane Capacity	Truss Spacing	Total Column Height	Basic Wind Pressure	Column Above Crane Cap			Column Below Crane Cap		
				Design Forces		Design	Design	Design Sections[2]	
				Axial Force[3]	Moment	Section ISMB	Axial Force[3,4]	ISMB	ISMC
(T)	(m)	(m)	(kg/m²)	(T)	(Tm)		(T)		
			100	5.86	1.511	250/37.3	26.395	175/19.3	200/22.1
		8.25	150	5.86	2.134	250/37.3	29.974	200/25.4	200/22.1
			200	5.86	2.757	300/44.2	33.554	200/25.4	225/25.9
	4.5	9.75	100	5.86	1.511	250/37.3	29.712	200/25.4	200/22.1
			150	5.86	2.134	250/37.3	34.669	200/25.4	225/25.9
			200	5.86	2.757	300/44.2	39.626	225/31.2	250/30.4
10			100	7.78	1.961	250/37.3	32.818	200/25.4	200/22.1
		8.25	150	7.78	2.791	300/44.2	37.590	200/25.4	225/25.9
	6.0		200	7.78	3.621	350/52.4	42.363	225/31.2	250/30.4
		9.75	100	7.78	1.961	250/37.3	37.166	225/31.2	225/25.9
			150	7.78	2.791	300/44.2	43.775	225/31.2	250/30.4
			200	7.78	3.621	350/52.4	50.384	250/37.3	300/35.8
			100	5.86	1.685	250/37.3	36.224	200/25.4	225/25.9
		8.25	150	5.86	2.308	250/37.3	39.803	225/31.2	250/30.4
	4.5		200	5.86	2.931	300/44.2	43.383	225/31.2	250/30.4
20		9.75	100	5.86	1.685	250/37.3	39.896	225/31.2	250/30.4
			150	5.86	2.308	250/37.3	44.853	225/31.2	250/30.4
			200	5.86	2.931	300/44.2	49.810	250/37.3	300/35.8
		8.25	100	7.78	2.186	300/44.2	43.668	225/31.2	250/30.4
			150	7.78	3.016	300/44.2	48.440	250/37.3	300/35.8
	6.0		200	7.78	3.846	350/52.4	53.213	250/37.3	300/35.8
			100	7.78	2.186	300/44.2	48.610	250/37.3	300/35.8
		9.75	150	7.78	3.016	300/44.2	55.219	250/37.3	350/42.1
			200	7.78	3.846	350/52.4	61.828	300/44.2	350/42.1

NOTE — 1. *See* Fig. 5.

2. Roof column and crane column may be ISMC toe to toe or ISMB as desired. Preferably the roof column and crane column will have same depth.
3. Axial Force is based on the roof load from 30 m span length.
4. Axial Force includes the self weight, crane load, roof load and contribution of wind moment.
5. The forces presented are after 25% reduction to account for wind load if it is one of the loads in the combination.

TABLE 214 FOUNDATION FORCES FOR CRANE COLUMN FOOTINGS

Span	Spacing	Column Height	Capacity of Crane	Truss Load		Wind Load			Crane Load	
				DL	LL	AF	Base Shear	Base Moment	AF × 10^3	Surge Force
(m)	(m)	(m)	(T)	(kg)	(kg)	(kg)	(kg)	(kg.m)	(kg)	(kg)
9.0	4.5	8.25	5.0	719	982	−2430	2676	10023	11.30	240
			7.5	719	982	−2430	2676	10023	14.63	390
			10.0	719	982	−2430	2676	10023	18.05	470
			20.0	719	982	−2430	2676	10023	25.82	780
		9.75	5.0	719	982	−2430	3151	13880	11.30	240
			7.5	719	982	−2430	3151	13880	14.63	390
			10.0	719	982	−2430	3151	13880	18.05	470
			20.0	719	982	−2430	3151	13880	25.82	780
9.0	6.0	8.25	5.0	1016	1309	−3240	3569	13363	12.83	210
			10.0	1016	1309	−3240	3569	13363	16.63	440
			10.0	1016	1309	−3240	3569	13363	20.45	530
			20.0	1016	1309	−3240	3569	13363	30.65	930
		9.75	5.0	1016	1309	−3240	4202	18506	12.83	270
			7.5	1016	1309	−3240	4202	18506	16.63	440
			10.0	1016	1309	−3240	4202	18506	20.45	530
			20.0	1016	1309	−3240	4202	18506	30.65	930

NOTE — 1. To obtain wind forces for basic wind pressures of 100 kg/m² and 150 kg/m² reduce the wind forces given in the table proportionately.
2. Crane load axial force is the vertical load transmitted by the gantry girder when crane is operating under full capacity.
3. Additional forces from wall and self weight of columns should be considered for foundation design.
4. Forces given in the table for wind loads are actual values for 200 kg/m² wind zone without any reduction.

TABLE 215 FOUNDATION FORCES FOR CRANE COLUMN FOOTINGS

Span	Spacing	Column Height	Capacity of Crane	Truss Load		Wind Load			Crane Load	
				DL	LL	AF	Base Shear	Base Moment	AF × 10^3	Surge Force
(m)	(m)	(m)	(T)	(kg)	(kg)	(kg)	(kg)	(kg.m)	(kg)	(kg)
12.0	4.5	8.25	5.0	986	1310	−3240	2676	10023	11.30	240
			7.5	986	1310	−3240	2676	10023	14.63	390
			10.0	986	1310	−3240	2676	10023	18.05	470
			20.0	986	1310	−3240	2676	10023	25.82	780
		9.75	5.0	986	1310	−3240	3151	13880	11.30	240
			7.5	986	1310	−3240	3151	13880	14.63	390
			10.0	986	1310	−3240	3151	13880	18.05	470
			20.0	986	1310	−3240	3151	13880	25.82	780
	6.0	8.25	5.0	1392	1746	−4320	3569	13363	12.83	270
			7.5	1392	1746	−4320	3569	13363	16.63	440
			10.0	1392	1746	−4320	3569	13363	20.45	530
			20.0	1392	1746	−4320	3569	13363	30.65	930
		9.75	5.0	1392	1746	−4320	4012	18506	12.83	270
			7.5	1392	1746	−4320	4012	18506	16.63	440
			10.0	1392	1746	−4320	4012	18506	20.45	530
			20.0	1392	1746	−4320	4012	18506	30.65	930

NOTE — 1. To obtain wind forces for basic wind pressures of 100 kg/m² and 150 kg/m² reduce the wind forces given in the table proportionately.
2. Crane load axial force is the vertical load transmitted by the gantry girder when crane is operating under full capacity.
3. Additional forces from wall and self weight of columns should be considered for foundation design. (Weight of A.C. cladding + girt = 30 kg/m²).
4. Forces given in the table for wind loads are actual values for 200 kg/m² wind zone without any reduction.

TABLE 216 FOUNDATION FORCES FOR CRANE COLUMN FOOTINGS

Span	Spacing	Column Height	Capacity of Crane	Truss Load		Wind Load			Crane Load	
				DL	LL	AF	Base Shear	Base Moment	AF × 10^3	Surge Force
(m)	(m)	(m)	(T)	(kg)	(kg)	(kg)	(kg)	(kg.m)	(kg)	(kg)
18.0	4.5	8.25	5.0	1562	1964	−4860	2676	10023	13.45	220
			7.5	1562	1964	−4860	2676	10023	16.50	360
			10.0	1562	1964	−4680	2676	10023	19.64	430
			20.0	1562	1964	−4680	2676	10023	27.62	750
		9.75	5.0	1562	1964	−4680	3151	13880	13.45	220
			7.5	1562	1964	−4680	3151	13880	16.50	360
			10.0	1562	1964	−4680	3151	13880	19.64	430
			20.0	1562	1964	−4680	3151	13880	27.62	750
	6.0	8.25	5.0	2198	2619	−6480	3569	13363	15.68	250
			7.5	2198	2619	−6480	3569	13363	19.22	410
			10.0	2198	2619	−6480	3569	13363	22.89	500
			20.0	2198	2619	−6480	3569	13363	33.25	900
		9.75	5.0	2198	2619	−6480	4012	18506	15.68	250
			7.5	2198	2619	−6480	4012	18506	19.22	410
			10.0	2198	2619	−6480	4012	18506	22.89	500
			20.0	2198	2619	−6480	4012	18506	33.25	900

NOTE — 1. To obtain wind forces for basic wind pressures of 100 kg/m² and 150 kg/m² reduce the wind forces given in the table proportionately
2. Crane load axial force is the vertical load transmitted by the gantry girder when crane is operating under full capacity.
3. Additional forces from wall and self weight of columns should be considered for foundation design.
4. Forces given in the table for wind loads are actual values for 200 kg/m² wind zone without any reduction.

TABLE 217 FOUNDATION FORCES FOR CRANE COLUMN FOOTINGS

Span	Spacing	Column Height	Capacity of Crane	Truss Load		Wind Load			Crane Load	
				DL	LL	AF	Base Shear	Base Moment	AF × 10^3	Surge Force
(m)	(m)	(m)	(T)	(kg)	(kg)	(kg)	(kg)	(kg.m)	(kg)	(kg)
24	4.5	8.25	5.0	2192	2619	−6480	2676	10023	15.04	200
			7.5	2192	2619	−6480	2676	10023	17.82	320
			10.0	2192	2619	−6480	2676	10023	21.37	390
			20.0	2192	2619	−6480	2676	10023	29.29	680
		9.75	5.0	2192	2619	−6480	3151	13880	15.04	200
			7.5	2192	2619	−6480	3151	13880	17.82	320
			10.0	2192	2619	−6480	3151	13880	21.37	390
			20.0	2192	2619	−6480	3151	13880	29.29	680
	6.0	8.25	5.0	3077	3492	−8640	3569	13363	18.13	240
			7.5	3077	3492	−8640	3569	13363	21.46	390
			10.0	3077	3492	−8640	3569	13363	25.75	470
			20.0	3077	3492	−8640	3569	13363	36.69	850
		9.75	5.0	3077	3492	−8640	4012	18506	18.13	240
			7.5	3077	3492	−8640	4012	18506	21.46	390
			10.0	3077	3492	−8640	4012	18506	25.75	470
			20.0	3077	3492	−8640	4012	18506	36.69	850

NOTE — 1. To obtain wind forces for basic wind pressures of 100 kg/m² and 150 kg/m² reduce the wind forces given in the table proportionately.

2. Crane load axial force is the vertical load transmitted by the gantry girder when crane is operating under full capacity.

3. Additional forces from wall and self weight of columns should be considered for foundation design. (Weight of A.C. cladding + girts = 30 kg/m²).

4. Forces given in the table for wind loads are actual values for 200 kg/m² wind zone without any reduction.

TABLE 218 FOUNDATION FORCES FOR CRANE COLUMN FOOTINGS

Span	Spacing	Column Height	Capacity of Crane	Truss Load		Wind Load			Crane Load	
				DL	LL	AF	Base Shear	Base Moment	AF × 10^3	Surge Force
(m)	(m)	(m)	(T)	(kg)	(kg)	(kg)	(kg)	(kg.m)	(kg)	(kg)
30.0	4.5	8.25	5.0	2878	3273	−8100	2676	10023	15.46	180
			7.5	2878	3273	−8100	2676	10023	17.96	290
			10.0	2878	3273	−8100	2676	10023	21.79	350
			20.0	2878	3273	−8100	2676	10023	32.42	680
		9.75	5.0	2878	3273	−8100	3151	13880	15.46	180
			7.5	2878	3273	−8100	3151	13880	17.96	290
			10.0	2878	3273	−8100	3151	13880	21.79	350
			20.0	2878	3273	−8100	3151	13880	32.42	680
	6.0	8.25	5.0	4030	4364	−10800	3569	13363	18.63	210
			7.5	4030	4364	−10800	3569	13363	21.63	350
			10.0	4030	4364	−10800	3569	13363	26.25	420
			20.0	4030	4364	−10800	3569	13363	37.94	790
		9.75	5.0	4030	4364	−10800	4012	18506	18.63	210
			7.5	4030	4364	−10800	4012	18506	21.63	350
			10.0	4030	4364	−10800	4012	18506	26.25	420
			20.0	4030	4364	−10800	4012	18506	37.94	790

NOTE — 1. To obtain wind forces for basic wind pressures of 100 kg/m² and 150 kg/m² reduce the wind forces given in the table proportionately.
2. Crane load axial force is the vertical load transmitted by the gantry girder when crane is operating under full capacity.
3. Additional forces from wall and self weight of columns should be considered for foundation design. (Weight of A.C. cladding + girts = 30 kg/m²).
4. Forces given in the table for wind loads are actual values for 200 kg/m² wind zone without any reduction.

TABLE 219 CONNECTION DETAILS OF A-TYPE ANGLE TRUSSES

Truss Span (m)						Detail No.
	9	12	18	24	30	
	1	1	1	1	1	RT
	6	3,8	3,6,1	3,6,9,14	3,6,9,17	R1
					12	R1f
		4	4	4	4	R2
	2					R3
			7	10	7,10,13	R4
			4,7	7		R4s
	4	6	9	12	15	R5
	8	10			19	R6
			13	16		R6f
		2	2	2	2	T1
	3	5	5,8	5,8,11	5,8,14	T2
					11	T2f
	7	9			18	T3
			12	15		T3f
	5	7	10	13	16	W1

NOTE — For number and size of fasteners to be used in this connection (*see* Tables 221 and 222).

TABLE 220 CONNECTION DETAILS OF LEAN-TO-ROOF ANGLE TRUSSES

Truss Span (m)				Detail No.
	9	12	15	
	1	1	1	RT
	3,6,1	3,6,9,14	3,6,9,17	R1
			12	R1f
	4	4	4	R2
	7	7,10	7,10,13	R4
	9	12	15	R5
	13	16	19,21	R7
	2	2	2	T1
	5,8	5,8,11	5,8,14	T2
			11	T2f
	12	15	18	T4
	10	13	16	W1

NOTE — For number and size of fasteners to be used in this connection (*see* Tables 221 and 222).

TABLE 221 THICKNESS OF GUSSET PLATE FOR STEEL ROOF TRUSSES

SPAN	SPACING	A-TRUSS GUSSET PLATE THICKNESS	LEAN-TO-ROOF TRUSS GUSSET PLATE THICKNESS
(m)	(m)	(mm)	(mm)
9.0	4.5	8	8
9.0	6.0	8	8
12.0	4.5	8	8
12.0	6.0	10	10
15.0	4.5	—	10
15.0	6.0	—	10
18.0	4.5	10	—
18.0	6.0	10	—
24.0	4.5	10	—
24.0	6.0	12	—
30.0	4.5	12	—
30.0	6.0	12	—

NOTE — The gusset plate thickness given above can be used for tubular truss also in case jointing is done through gussets.

TABLE 222 FASTENER DETAILS FOR ANGLE TRUSSES

Truss Member Size	Welded Connection		Bolt Dia	No. of Fitted Bolts		No. of Black Bolts		Splice Angle	Splice Angle Details		Tack Welding Spacing
	Size	Total Effective Weld per Angle		Single Angle	Double Angle	Single Angle	Double Angle		Length for Bolted Splice	Effective Length for Welded Splice	
	(mm)	(mm)	(mm)						(mm)	(mm)	(mm)
4040 × 6	4.5	210	12	4	5	5	6	4040 × 6	220	180	300
5050 × 6	4.5	265	12	5	7	6	8	5050 × 6	260	220	350
6060 × 6	4.5	320	16	4	6	4	7	6060 × 6	300	300	450
7070 × 6	4.5	380	16	5	7	5	8	6060 × 6	340	360	500
8080 × 6	4.5	435	20	4	7	4	8	6060 × 6	350	400	600
9090 × 6	4.5	490	20	4	6	5	7	7070 × 6	410	450	600
100100 × 6	4.5	545	20	5	7	6	8	8080 × 6	410	500	600
8080 × 8	6.0	430	20	4	7	5	8	6060 × 6	410	400	600
9090 × 8	6.0	485	22	4	7	5	8	7070 × 8	460	450	600
100100 × 8	6.0	540	22	5	8	5	9	8080 × 8	460	500	600
130130 × 8	6.0	710	24	5	8	6	10	9090 × 8	630	650	600
8080 × 10	7.5	425	22	4	6	5	7	8080 × 10	460	375	600
100100 × 10	7.5	535	24	5	8	6	9	8080 × 10	570	485	600

NOTE — 1. All shop connections are welded and field connections may be bolted or welded.

2. Fastener requirements shown above are to connect web members to gusset plates and for splice connections in tie and rafter members whenever these members are discontinuous.
3. When rafter or tie members continue through the node, provide a nominal 4.5 mm weld over entire gusset length.
4. The length of welds required should be increased by twenty five percent in case of field welding.
5. Refer Fig. 25 for tack welding details.
6. Spacing and edge distance of bolts shall be as per IS : 800-1962 (**28.2**).
7. Fastener details have been worked on total strength of members joined for typification purposes. If further economy required, fasteners details can be worked out on actual forces in members.

TABLE 223 CONNECTION DETAILS OF A-TYPE TUBE TRUSSES

Truss Span (m)	9	12	18	24	30	Detail No.
	1	1	1	1	1	RT
	6	3,8	3,6,11	3,6,9,14	3,6,9,17	R1
					12	R1f
	*	4	4	4	4	R2
	2	*	*	*	*	R3
	*	*	7	10	7,10,13	R4
NODE NUMBERS	*	*	4/7	7	*	R4s
	4	6	9	12	15	R5
	8	10	13	16	19	R6
	*	2	2	2	2	T1
	3	5	5	5,8	5,8,14	T2
			8	11	11	T2f
	7	9	12	15	18	T3
	5	7	10	13	16	W1

TABLE 224 CONNECTION DETAILS OF LEAN-TO ROOF TUBE TRUSSES

Truss Span (m)	9	12	15	Detail No.
	1	1	1	RT
	3,6,11	3,6,9,14	3,6,9,17	R1
			12	R1f
	4	4	4	R2
NODE NUMBERS	7	7,10	7,10,13	R4
	9	12	15	R5
	13	16	19	R7
	2	2	2	T1
	5,8	5,8,11	5,8,14	T2
			11	T2f
	12	15	18	T4
	10	13	16	W1

Note — For size of weld in gusseted connection *see* Table 225.

TABLE 225 TUBE FASTENER DETAILS

Is Tube	Peripheral Weld Size	Welded Gusset Connection	
		Size	Total Length
	(mm)	(mm)	(mm)
20L	6	3	130
25L	7	3	185
32L	7	3	240
40L	6	5	180
50L	6	5	225
65L	7	5	320
80L	7	6	310
90L	8	6	400
100L	8	7	385
100M	10	7	470
125M	10	8	540
150M	10	8	640
100H	11	8	490
150H	11	8	720

NOTE — The length of welds required should be increased by twenty five percent in case of field welding.

TABLE 226 EXTERIOR COLUMN CAP AND SHOE ANGLE DETAILS

Depth of Column Section	Shoe Angle Section	Column Cap Plate	Shoe Angle Column Cap Connection Bolts	
			Black Bolts Dia	No. of Bolts
(mm)	(mm)	(mm)	(mm)	
200	2-ISA100100 × 12	220 × 220 × 12	16	4
300	2-ISA100100 × 12	320 × 270 × 12	28	4
400	2-ISA110110 × 15	420 × 270 × 14	20	4
500	2-ISA110110 × 15	520 × 270 × 14	20	4
600	2-ISA110110 × 15	620 × 270 × 14	20	4

NOTE — 1. For details of columns not specified above use tne details given for the next higher section in the above table.
2. The length of shoe angle shall be same as length of column cap plate.
3. Refer Fig. 42 for drawing details.

TABLE 227 INTERIOR COLUMN CAP AND SHOE ANGLE DETAILS

Depth of Column Section (mm)	Shoe Angle Section (mm)	Column Cap Plate (mm)	Shoe Angle Column Cap Connection Bolts	
			Black Bolts Dia (mm)	No. of Bolts
200	2-ISA100100 × 12	220 × 220 × 12	18	8
300	2-ISA100100 × 12	320 × 270 × 12	20	8
400	2-ISA110110 × 15	420 × 270 × 14	22	8
500	2-ISA110110 × 15	520 × 270 × 14	22	8
600	2-ISA110110 × 15	620 × 270 × 14	22	8

Note — 1. For details of columns not specified above use the details given for the next higher section in the above table.
2. The length of shoe angle shall be same as length of column cap plate.
3. Refer Fig. 43 for drawing details.

TABLE 228 CANTILEVER COLUMN BASE DETAILS

Type	Depth of Column Sections (mm)				Slab Base Size (mm)*				Anchor Bolts	
	ISLB	ISMB	ISWB	ISHB	a	b	c	t	Dia (mm)	Total Number
I	175	175	150	150						
	200	200	175							
	225	225	200		475	360	50	36	33	6
	250		225							
	275									
II	300	250	250	200						
	325	275	300	225						
	350	300		250	600	450	50	50	39	6
	400	350								
		400								
III			350	300						
			400	350	700	500	60	50	39	6
			450							
IV	450	450								
	500	500			800	500	60	36	39	6
	550									
V				400						
				450	700	600	60	45	45	6
VI			500							
			550		800 650	60	45	45	6	
VII	600	550								
		600			850	650	60	40	45	6
VIII			600		850	700	60	40	50	6

*Refer Fig. 44.

TABLE 229 CRANE COLUMN CAP PLATE DETAILS

Depth of Column Section (mm)	Shoe Angle	Column Cap Plate Size (mm)	Black Bolt Dia	No. of Bolts
225	2-110110 × 15	325 × 210 × 14	20	4
250	2-110110 × 15	350 × 225 × 14	20	4
300	2-110110 × 15	400 × 240 × 14	20	4
350	2-110110 × 15	450 × 240 × 14	20	4

Note — 1. Refer Fig. 42 for drawing details.
2. The length of shoe angle shall be same as length of column cap plate.

TABLE 230 CRANE COLUMN BASE PLATE DETAILS

Depth of Column Section (mm)	Size of Slab Base (mm)				Anchor Bolt/Plate	
	a	b	c	t	Dia (mm)	No.
175	350	350	55	20	28	6
200	370	250	55	20	28	6
225	400	300	65	25	32	6
250	420	320	65	25	32	6
300	470	320	65	25	32	6
350	520	350	65	25	32	6

Note — 1. Refer Fig. 46 for drawing details.

TABLE 231 A-TYPE ANGLE TRUSS WEIGHTS

5 Wind Zone = 100 kg/m²

Span (m)	Slope	Spacing (m)	Truss Members Weight (kg)	Gusset Weight (kg)	Purlins Weight (kg)	Sagrod Weight (kg)	Tie Runner Weight (kg)	Total Weight (kg)	Unit Weight (kg/m²)
9.0	1 in 3	4.5	197	59	414	6	57	733	18.1
		6.0	216	65	762	9	98	1150	21.3
	1 in 4	4.5	208	83	414	6	57	768	19.0
		6.0	224	67	762	8	98	1159	21.5
	1 in 5	4.5	220	66	414	6	57	763	18.8
		6.0	258	77	762	8	98	1203	22.3
12.0	1 in 3	4.5	293	79	497	8	57	934	17.3
		6.0	317	86	914	11	98	1426	19.8
	1 in 4	4.5	326	88	497	7	57	975	18.1
		6.0	370	100	914	11	98	1493	20.7
	1 in 5	4.5	361	97	497	7	57	1019	18.9
		6.0	434	117	914	11	98	1574	21.5
18.0	1 in 3	4.5	517	129	662	11	85	1404	17.3
		6.0	585	146	1219	17	148	2114	19.6
	1 in 4	4.5	537	134	662	11	85	1429	17.6
		6.0	6399	160	1219	17	148	2183	20.2
	1 in 5	4.5	611	150	662	11	85	1519	18.7
		6.0	749	187	1219	17	148	2320	21.5
24.0	1 in 3	4.5	889	196	828	15	113	2041	18.9
		6.0	1009	222	1524	23	197	2975	20.7
	1 in 4	4.5	913	201	828	15	113	2070	19.2
		6.0	1098	241	1524	22	197	3082	21.4
	1 in 5	4.5	1059	233	828	15	113	2248	20.8
		6.0	1320	290	1524	22	197	3353	23.3
30.0	1 in 3	4.5	1364	273	994	19	142	2792	20.7
		6.0	1622	324	1829	28	246	4219	23.6
	1 in 4	4.5	1485	297	994	19	142	2937	21.8
		6.0	1885	377	1829	28	246	4365	24.3
	1 in 5	4.5	1720	404	994	18	142	3278	24.3
		6.0	2019	249	1829	28	246	4471	24.8

TABLE 232 A-TYPE TUBULAR TRUSS WEIGHTS

Wind Zone = 100 kg/m²

SPAN (m)	SLOPE	SPACING (m)	TRUSS MEMBERS WEIGHT (kg)	GUSSET WEIGHT (kg)	PURLINS WEIGHT (kg)	TIE RUNNER WEIGHT (kg)	TOTAL WEIGHT (kg)	UNIT WEIGHT (kg/m²)
9.0	1 in 3	4.5	104	5	381	23	513	12.7
		6.0	122	6	726	49	903	16.7
	1 in 4	4.5	133	7	381	23	544	13.4
		6.0	147	7	726	49	929	17.2
	1 in 5	4.5	145	7	381	23	556	13.7
		6.0	178	9	726	49	962	17.8
12.0	1 in 3	4.5	188	8	457	23	676	12.5
		6.0	190	9	871	49	1119	15.5
	1 in 4	4.5	193	10	457	23	683	12.6
		6.0	257	13	871	49	1190	16.5
	1 in 5	4.5	252	12	457	23	744	13.8
		6.0	289	14	871	49	1223	17.0
18.0	1 in 3	4.5	332	15	610	35	992	12.2
		6.0	394	19	1162	74	1649	15.3
	1 in 4	4.5	366	17	610	35	1028	12.7
		6.0	478	24	1162	74	1738	16.1
	1 in 5	4.5	423	20	610	35	1058	13.4
		6.0	610	29	1162	74	1875	17.4
24.0	1 in 3	4.5	599	29	762	46	1416	13.1
		6.0	726	34	1452	99	2311	16.0
	1 in 4	4.5	687	32	762	46	1527	14.1
		6.0	878	42	1452	99	2471	17.2
	1 in 5	4.5	812	40	762	46	1660	15.4
		6.0	975	49	1452	99	2575	17.9
30.0	1 in 3	4.5	921	45	915	58	1939	14.4
		6.0	1209	60	1742	125	3136	17.4
	1 in 4	4.5	1142	56	915	58	2171	16.1
		6.0	1421	70	1742	125	3358	18.7
	1 in 5	4.5	1210	60	915	58	2243	16.6
		6.0	1602	80	1742	125	3549	19.7

TABLE 233 A-TYPE ANGLE TRUSS WEIGHTS

Wind Zone = 150 kg/m²

Span (m)	Slope	Spacing (m)	Truss Members Weight (kg)	Gusset Weight (kg)	Purlins Weight (kg)	Sagrod Weight (kg)	Tie Runner Weight (kg)	Total Weight (kg)	Unit Weight (kg/m²)
9.0	1 in 3	4.5	197	59	414	6	57	733	18.1
		6.0	234	70	762	9	98	1173	21.7
	1 in 4	4.5	226	68	414	6	57	771	19.0
		6.0	242	73	762	8	98	1183	21.9
	1 in 5	4.5	238	71	414	6	57	786	19.4
		6.0	274	82	762	8	98	1224	22.7
12.0	1 in 3	4.5	317	86	497	8	57	935	17.9
		6.0	339	86	914	11	98	1448	20.1
	1 in 4	4.5	347	94	497	7	57	1002	18.6
		6.0	370	100	914	11	98	1493	20.7
	1 in 5	4.5	383	98	497	7	57	1042	19.3
		6.0	434	117	914	11	98	1574	21.8
18.0	1 in 3	4.5	564	139	662	11	85	1461	18.0
		6.0	631	150	1219	17	148	2165	20.0
	1 in 4	4.5	578	136	662	11	85	1582	19.5
		6.0	662	161	1219	17	148	2207	20.4
	1 in 5	4.5	631	155	662	11	85	1544	19.1
		6.0	771	188	1219	17	148	2343	21.7
24.0	1 in 3	4.5	956	210	828	15	113	2122	19.6
		6.0	1096	230	1524	23	197	3070	21.3
	1 in 4	4.5	940	205	828	15	113	2101	19.5
		6.0	1130	253	1524	22	197	3161	22.0
	1 in 5	4.5	1063	234	828	15	113	2253	20.9
		6.0	1342	295	1524	22	197	3380	23.5
30.0	1 in 3	4.5	1492	299	994	19	142	2946	21.8
		6.0	1663	353	1829	29	246	4120	22.9
	1 in 4	4.5	1554	311	994	19	142	3020	22.4
		6.0	1917	385	1829	28	246	4405	24.5
	1 in 5	4.5	1746	349	994	18	142	3249	24.1
		6.0	2032	406	1829	28	246	4541	25.2

TABLE 234 A-TYPE TUBULAR TRUSS WEIGHTS

Wind Zone = 150 kg/m^2

SPAN (m)	SLOPE	SPACING (m)	TRUSS MEMBERS WEIGHT (kg)	GUSSET WEIGHT (kg)	PURLINS WEIGHT (kg)	TIE RUNNER WEIGHT (kg)	TOTAL WEIGHT (kg)	UNIT WEIGHT (kg m^2)
9.0	1 in 3	4.5	123	6	381	23	533	13.2
		6.0	145	7	726	49	927	17.2
	1 in 4	4.5	141	7	381	23	552	13.6
		6.0	160	8	726	49	943	17.5
	1 in 5	4.5	158	8	381	23	570	14.1
		6.0	195	9	726	49	979	18.1
12.0	1 in 3	4.5	207	10	457	23	697	12.9
		6.0	208	10	871	49	1138	15.8
	1 in 4	4.5	237	11	457	23	728	13.5
		6.0	262	13	871	49	1195	16.6
	1 in 5	4.5	257	13	457	23	750	13.9
		6.0	289	14	871	49	1223	17.0
18.0	1 in 3	4.5	383	17	610	35	1045	12.9
		6.0	430	20	1162	74	1686	15.6
	1 in 4	4.5	394	18	610	35	1057	13.0
		6.0	509	25	1162	74	1770	16.4
	1 in 5	4.5	480	21	610	35	1146	14.1
		6.0	623	29	1162	74	1889	17.5
24.0	1 in 3	4.5	650	30	762	46	1488	13.8
		6.0	848	35	1452	99	2434	16.9
	1 in 4	4.5	795	34	762	46	1637	15.2
		6.0	897	43	1452	99	2491	17.3
	1 in 5	4.5	863	41	762	46	1712	15.9
		6.0	1030	50	1452	99	2631	18.3
30.0	1 in 3	4.5	1160	48	915	58	2074	15.4
		6.0	1323	62	1742	123	3250	18.1
	1 in 4	4.5	1220	59	915	58	2252	16.7
		6.0	1472	71	1742	123	3408	18.9
	1 in 5	4.5	1307	61	915	58	2341	17.3
		6.0	1611	80	1742	123	3586	19.8

TABLE 235 A-TYPE ANGLE TRUSS WEIGHTS

Wind Zone = 200 kg/m²

Span (m)	Slope	Spacing (m)	Truss Members Weight (kg)	Gusset Weight (kg)	Purlins Weight (kg)	Sagrod Weight (kg)	Tie Runner Weight (kg)	Total Weight (kg)	Unit Weight (kg/m²)
9.0	1 in 3	4.5	234	70	414	6	57	781	19.3
		6.0	267	80	762	9	98	1216	22.5
	1 in 4	4.5	242	73	414	6	57	792	19.6
		6.0	285	86	762	8	98	1239	22.9
	1 in 5	4.5	264	79	414	6	57	820	20.2
		6.0	300	90	762	8	98	1258	23.3
12.0	1 in 3	4.5	339	91	497	8	57	992	18.4
		6.0	360	91	914	11	98	1474	20.5
	1 in 4	4.5	369	94	497	7	57	1024	19.0
		6.0	429	109	914	11	50	1513	21.0
	1 in 5	4.5	409	104	497	7	57	1074	19.9
		6.0	466	126	914	11	98	1615	22.4
18.0	1 in 3	4.5	612	153	662	11	85	1521	18.8
		6.0	689	170	1219	17	148	2225	20.6
	1 in 4	4.5	626	154	662	11	85	1538	19.0
		6.0	737	175	1219	17	148	2296	21.2
	1 in 5	4.5	707	168	662	11	85	1633	20.2
		6.0	911	212	1219	17	148	2510	23.2
24.0	1 in 3	4.5	1058	233	828	15	113	2247	20.8
		6.0	1255	265	1524	23	197	3264	22.7
	1 in 4	4.5	1041	221	828	15	113	2156	20.0
		6.0	1326	279	1524	22	197	3348	23.3
	1 in 5	4.5	1150	251	828	15	113	2348	21.7
		6.0	1410	321	1524	22	197	3518	24.5
30.0	1 in 3	4.5	1650	326	994	19	142	3131	23.2
		6.0	1982	370	1829	28	246	4455	24.8
	1 in 4	4.5	1718	329	994	19	142	3202	23.7
		6.0	2164	419	1829	28	246	4686	26.0
	1 in 5	4.5	1910	375	994	18	142	3439	25.5
		6.0	2215	431	1829	28	246	4749	26.4

TABLE 236 A-TYPE TUBULAR TRUSS WEIGHTS

Wind Zone = 200 kg/m²

SPAN (m)	SLOPE	SPACING (m)	TRUSS MEMBERS WEIGHT (kg)	GUSSET WEIGHT (kg)	PURLINS WEIGHT (kg)	TIE RUNNER WEIGHT (kg)	TOTAL WEIGHT (kg)	UNIT WEIGHT (kg/m²)
9.0	1 in 3	4.5	144	7	381	23	555	13.7
		6.0	165	8	726	49	948	17.6
	1 in 4	4.5	151	7	381	23	562	13.9
		6.0	187	9	726	49	971	18.0
	1 in 5	4.5	176	9	381	23	589	14.5
		6.0	205	10	726	49	990	18.3
12.0	1 in 3	4.5	230	10	457	23	720	13.3
		6.0	255	12	871	49	1187	16.5
	1 in 4	4.5	251	12	457	23	743	18.8
		6.0	313	14	871	49	1247	17.3
	1 in 5	4.5	282	13	457	23	775	14.4
		6.0	373	16	871	49	1309	18.2
18.0	1 in 3	4.5	406	19	610	35	1070	13.2
		6.0	497	23	1162	74	1756	16.3
	1 in 4	4.5	520	20	610	35	1085	13.4
		6.0	583	27	1162	74	1846	17,1
	1 in 5	4.5	567	24	610	35	1236	15.3
		6.0	623	31	1162	74	1890	17.5
24.0	1 in 3	4.5	844	36	762	46	1688	15.6
		6.0	945	44	1452	99	2540	17.6
	1 in 4	4.5	799	37	762	46	1644	15.2
		6.0	981	44	1452	99	2576	17.9
	1 in 5	4.5	939	42	762	46	1789	16.6
		6.0	1088	51	1452	99	2690	18.7
30.0	1 in 3	4.5	1222	55	915	58	2250	16.7
		6.0	1493	69	1742	123	3427	19.0
	1 in 4	4.5	1329	65	915	58	2367	17.5
		6.0	1641	75	1742	123	3581	19.9
	1 in 5	4.5	1383	64	915	58	2420	17.9
		6.0	1624	75	1742	123	3564	19.8

TABLE 237 LEAN-TO ROOF ANGLE TRUSS WEIGHTS

Wind Zone = 100 kg/m²

Span (m)	Slope	Spacing (m)	Truss Members Weight (kg)	Gusset Weight (kg)	Purlins Weight (kg)	Sagrod Weight (kg)	Tie Runner Weight (kg)	Total Weight (kg)	Unit Weight (kg/m²)
9.0	1 in 3	4.5	240	72	331	6	28	677	16.7
		6.0	240	72	610	9	49	980	18.1
	1 in 4	4.5	229	69	331	6	28	663	16.4
		6.0	247	74	610	8	49	988	18.3
	1 in 5	4.5	236	71	331	6	28	672	16.6
		6.0	269	81	610	8	49	1017	18.8
12.0	1 in 3	4.5	426	115	414	8	57	1020	18.9
		6.0	426	115	762	11	98	1412	19.6
	1 in 4	4.5	358	97	414	8	57	934	17.3
		6.0	404	109	762	11	98	3084	19.2
	1 in 5	4.5	371	100	414	7	57	949	17.6
		6.0	448	121	762	11	98	1440	20.0
15.0	1 in 3	4.5	622	162	497	9	57	1347	20.0
		6.0	670	174	914	14	98	1870	20.8
	1 in 4	4.5	540	140	497	9	57	1243	18.4
		6.0	599	156	914	14	98	1781	19.8
	1 in 5	4.5	512	133	497	9	57	1208	17.9
		6.0	573	149	914	14	98	1748	19.4

TABLE 238 LEAN TO ROOF TUBULAR TRUSS WEIGHTS

Wind Zone = 200 kg/m²

Span (m)	Slope	Spacing (m)	Truss Members Weight (kg)	Gusset Weight (kg)	Purlins Weight (kg)	Tie Runner Weight (kg)	Total Weight (kg)	Unit Weight (kg/m²)
9.0	1 in 3	4.5	129	6	305	12	452	11.2
		6.0	163	7	581	25	778	14.4
	1 in 4	4.5	144	6	305	12	467	11.5
		6.0	152	7	581	25	765	14.2
	1 in 5	4.5	145	7	305	12	469	11.6
		6.0	186	9	581	25	801	14.8
12.0	1 in 3	4.5	244	11	381	23	659	12.2
		6.0	269	13	726	49	1057	14.7
	1 in 4	4.5	214	11	381	23	629	11.6
		6.0	265	13	726	49	1053	14.6
	1 in 5	4.5	247	12	381	23	663	12.3
		6.0	291	14	726	49	1080	15.0
15.0	1 in 3	4.5	360	17	457	23	857	12.7
		6.0	417	20	671	49	1357	15.1
	1 in 4	4.5	349	17	457	23	846	12.5
		6.0	404	19	871	49	1048	14.9
	1 in 5	4.5	336	16	457	23	832	12.2
		6.0	412	20	871	49	1852	15.0

TABLE 239 LEAN-TO ROOF ANGLE TRUSS WEIGHTS

Wind Zone = 150 kg/m²

Span (m)	Slope	Spacing (m)	Truss Members (kg)	Gusset Weight (kg)	Purlins Weight (kg)	Sagrod Weight (kg)	Tie Runner Weight (kg)	Total Weight (kg)	Unit Weight (kg/m²)
9.0	1 in 3	4.5	243	73	331	6	28	681	16.8
		6.0	261	73	610	9	49	1002	18.6
	1 in 4	4.5	247	74	331	6	28	686	16.9
		6.0	249	75	610	8	49	991	18.4
	1 in 5	4.5	236	71	331	6	28	672	16.6
		6.0	270	81	610	8	49	1018	18.9
12.0	1 in 3	4.5	462	125	414	8	57	1066	19.7
		6.0	465	126	762	11	98	1462	20.3
	1 in 4	4.5	383	98	414	7	57	959	17.8
		6.0	416	112	762	11	98	1399	19.4
	1 in 5	4.5	373	101	414	7	57	952	17.6
		6.0	459	124	762	11	98	1454	20.2
15.0	1 in 3	4.5	669	179	497	9	57	1411	20.9
		6.0	719	187	914	14	98	1932	21.5
	1 in 4	4.5	597	147	497	9	57	1307	19.4
		6.0	658	163	914	14	98	1847	20.5
	1 in 5	4.5	537	137	497	9	57	1237	18.3
		6.0	598	153	914	14	98	1777	19.7

TABLE 240 LEAN-TO ROOF TUBULAR TRUSS WEIGHTS

Wind Zone = 150 kg/m²

Span (m)	Slope	Spacing (m)	Truss Members (kg)	Gusset Weight (kg)	Purlins Weight (kg)	Tie Runner Weight (kg)	Total Weight (kg)	Unit Weight (kg/m²)
9.0	1 in 3	4.5	152	7	305	12	476	11.7
		6.0	172	9	581	25	787	14.6
	1 in 4	4.5	157	7	305	12	481	11.9
		6.0	168	9	581	25	783	14.5
	1 in 5	4.5	160	7	305	12	484	12.0
		6.0	214	9	581	25	829	15.4
12.0	1 in 3	4.5	268	13	381	23	685	12.7
		6.0	289	14	726	49	1078	15.0
	1 in 4	4.5	258	11	381	23	673	12.5
		6.0	298	14	726	49	1087	15.1
	1 in 5	4.5	279	13	381	23	696	12.9
		6.0	313	15	726	49	1103	15.3
15.0	1 in 3	4.5	393	18	457	23	891	13.2
		6.0	474	22	871	49	1416	15.7
	1 in 4	4.5	386	17	457	23	833	13.1
		6.0	414	20	871	49	1354	15.0
	1 in 5	4.5	359	17	457	23	856	12.7
		6.0	412	21	871	49	1353	15.0

TABLE 241 LEAN-TO ROOF ANGLE TRUSS WEIGHTS

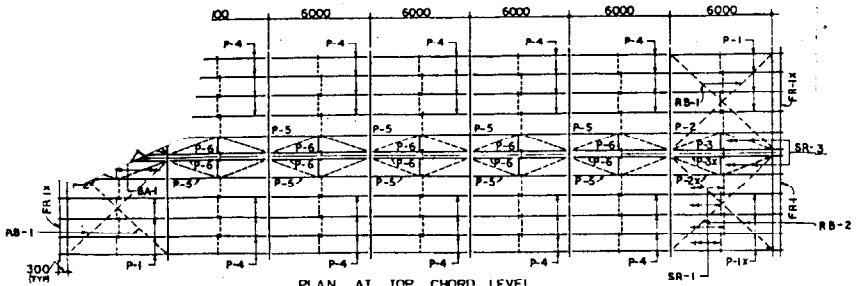
Wind Zone = 200 kg/m²

Span (m)	Slope	Spacing (m)	Truss Members (kg)	Gusset Weight (kg)	Purlins Weight (kg)	Sagrod Weight (kg)	Tie Runner Weight (kg)	Total Weight (kg)	Unit Weight (kg/m²)
9.0	1 in 3	4.5	267	81	331	6	28	713	17.6
		6.0	271	81	610	9	49	1020	18.9
	1 in 4	4.5	265	75	331	6	28	705	17.4
		6.0	273	82	610	8	49	1022	18.9
	1 in 5	4.5	271	77	331	6	28	713	17.6
		6.0	294	88	331	8	49	1049	19.4
12.0	1 in 3	4.5	511	132	414	8	57	1122	20.8
		6.0	525	142	762	11	98	1538	21.4
	1 in 4	4.5	413	106	414	7	57	997	18.5
		6.0	467	120	762	11	98	1458	20.3
	1 in 5	4.5	431	110	414	7	57	1019	18.9
		6.0	506	131	762	11	98	1508	20.9
15.0	1 in 3	4.5	722	188	497	9	57	1473	21.8
		6.0	787	205	914	14	98	2018	22.4
	1 in 4	4.5	627	158	497	9	57	1348	20.0
		6.0	698	174	914	14	98	1878	20.8
	1 in 5	4.5	579	146	497	9	57	1288	19.1
		6.0	658	163	914	14	98	1837	20.4

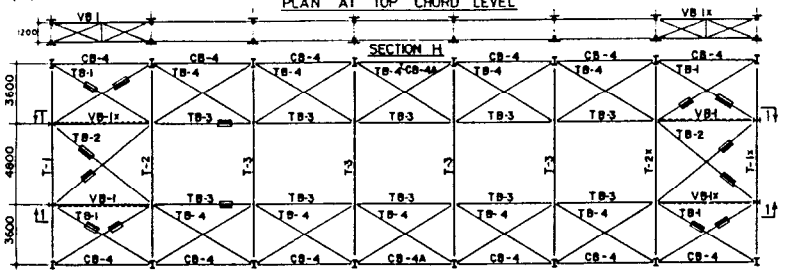
TABLE 242 LEAN-TO ROOF TUBULAR TRUSS WEIGHTS

Wind Zone = 200 kg/m²

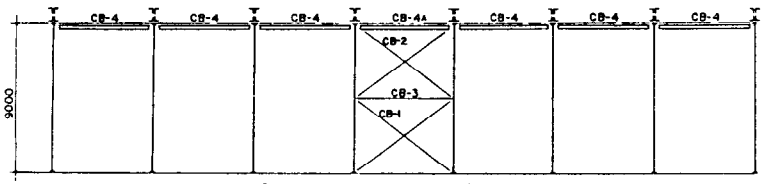
SPAN (m)	SLOPE	SPACING	TRUSS MEMBERS WEIGHT (kg)	GUSSET WEIGHT (kg)	PURLINS WEIGHT (kg)	TIE RUNNER WEIGHT (kg)	TOTAL WEIGHT (kg)	UNIT WEIGHT (kg/m²)
9.0	1 in 3	4.5	162	8	305	12	487	12.0
		6.0	181	9	581	25	796	14.7
	1 in 4	4.5	182	8	305	12	507	12.5
		6.0	186	8	581	25	790	14.6
	1 in 5	4.5	190	8	305	12	515	12.7
		6.0	226	10	581	25	842	15.6
12.0	1 in 3	4.5	312	14	381	23	730	13.5
		6.0	342	16	726	49	1149	16.0
	1 in 4	4.5	261	13	381	23	678	12.6
		6.0	319	15	726	49	1109	15.4
	1 in 5	4.5	296	14	381	23	714	13.2
		6.0	372	16	726	49	1163	16.2
15.0	1 in 3	4.5	440	20	457	23	940	13.9
		6.0	494	23	871	49	1437	16.0
	1 in 4	4.5	403	19	457	23	902	13.4
		6.0	474	22	871	49	1416	15.7
	1 in 5	4.5	417	18	457	23	925	13.7
		6.0	474	22	871	49	1416	15.7



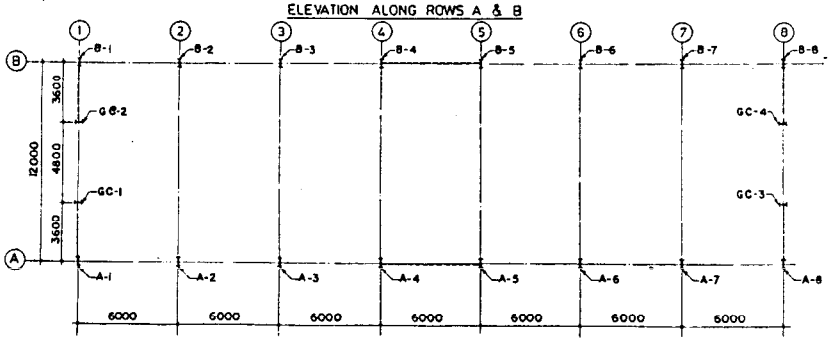
PLAN AT TOP CHORD LEVEL



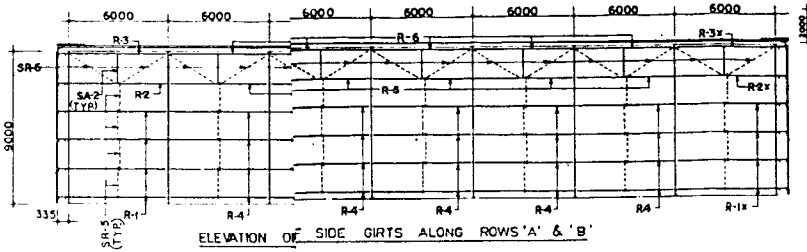
PLAN AT BOTTOM CHORD LEVEL



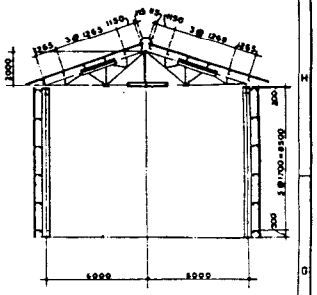
ELEVATION ALONG ROWS A & B



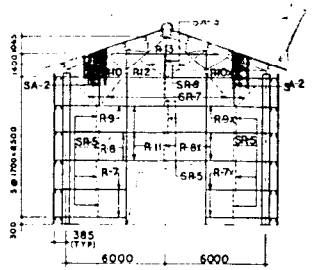
PLAN AT BASE LEVEL



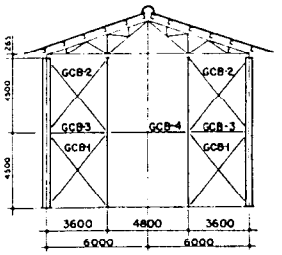
ELEVATION OF SIDE GIRTS ALONG ROWS 'A' & 'B'



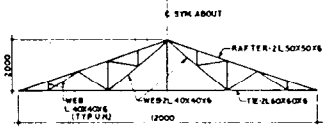
TYPICAL CROSS SECTION



ELEVATION OF GABLE END GIRTS



ELEVATION ALONG AXES 1 & 8
SHOWING GABLE FRAME



DETAIL OF TRUSS

MARK NO.	NO. REQD	DESCRIPTION	SECTION	DETAIL DRG. NO.
R-1	8	SIDE GIRT	ISMC 125	04
R-1X	8			
R-2	2			
R-2X	2			
R-3	2			
R-3X	2			
R-4	40			
R-5	10			
R-6	10			
R-7	4			
R-7X	4		ISMC 100	
R-8	4			
R-8X	4			
R-9	2			
R-9X	2			
R-10	2			
R-10X	2			
R-11	6			
R-12	2			
R-13	2			
SR-5	78	SAG ROD	12ϕ ROD	04
SR-6	28			
SR-7	8			
SR-8	4			
SA-2	18	SAG ANGLE	L 50X50X6	
SA-3	3	"	"	
GCB-1	4-SETS	GABLE END BRCG.	L 55X55X6	04
GCB-2	4-SETS			
GCB-3	4		ISMB 250	
GCB-4	2			

LIST OF MARKS

MARK NO.	NO'SET REQD	DESCRIPTION	SECTION	DETAIL DRG. NO.
A- 1	1	MAIN COLUMN	ISMB 500	02
A- 2				
A- 3				
A- 4				
A- 5				
A- 6				
A- 7				
A- 8				
B- 1	1	MAIN COLUMN	ISMB 500	02
B- 2				
B- 3				
B- 4				
B- 5				
B- 6				
B- 7				
B- 8				
GC- 1	1	GABLE END COL.	ISMB 450	02
GC- 2				
GC- 3				
GC- 4				
CB- 1	2-SETS	COLUMN BRCG.	L 70X70X6	04
CB- 2	2-SETS			
CB- 3	2		ISMB 250	
CB- 4	12			
CB- 4A	2			04
T- 1	1	TRUSS.	AS/DETAIL	03
T- 2	1			
T- 3	4			
T- 2X	1			
T- 1X	1			
TB- 1	4-SETS	TIE BRCG.	L 70X70X6	05
TB- 2	2-SETS			05
TB- 3	10	TIE RUNNER	L 90X90X6	04
TB- 4	90-SETS	TIE BRCG.	L 65X65X6	04
RB- 1	2-SETS	RAFTER BRCG.	L 80X80X6	03
RB- 2	2-SETS			03
VB-1,1X	2+2 SETS	ROOF VERT. BRCG.	L 65X65X6	05
P- 1	8+8	PURLIN	ISMC 125	
P- 2	2+2			
P- 3	2+2			
P- 4	40			
P- 5	10			
P- 6	10			
SR- 1	56	SAG ROD	12 ϕ ROD	05
SR- 2	8 NOS	"	"	
SR- 3	28			
SR- 4	7			
SA- 1	14	SAG ANGLE	L 50X50X6	
FR- 1X	2+2	FALSE RAFTER	L 65X65X6	05

GENERAL NOTES

1. ALL DIMENSIONS ARE IN MILLIMETRES & LEVELS ARE IN METERS UNLESS SPECIFIED OTHERWISE.
2. MATERIAL SPECIFICATION a) ALL STRUCTURAL STEEL ROLLED SECTIONS & PLATES SHALL CONFORM TO IS: 226-1975 & IS: 2062-1980
3. WELDING SHALL CONFORM TO IS:816-1969.
4. ALL ELECTRODES SHALL CONFORM TO IS:814 (PART-I)-1974
5. ALL M.S BLACK BOLTS & NUTS SHALL CONFORM TO IS:1363 (PART 1 TO 3)-1984
6. WASHERS SHALL CONFORM TO IS:5369-1975, IS: 5370-1969, IS:5372-1975 OR IS: 5374-1975.
7. WELD LENGTH AND SIZE OF GUSSET PLATES HAS NOT BEEN SPECIFIED IN THE DRAWINGS. THESE WILL HAVE TO BE WORKED OUT AT THE TIME OF FABRICATION DEPENDING UPON THE SIZE OF WELD USED.
8. IN DETAIL DRG. WHILE DETAILING A PARTICULAR MEMBER (SAY COLUMN), RELATED STRUCTURES (SAY BRACINGS, GIRTS ETC.) ARE SHOWN IN CHAIN DOTTED TO PICK UP CONNECTION.
9. RAIN WATER PIPES AND GUTTERS HAVE NOT BEEN SHOWN IN DRAWINGS
10. ALL DIMENSIONS ARE TO BE CHECKED & VERIFIED BY SHOP LAYOUT.
11. WELDING SYMBOLS ARE AS PER IS: 813-1961
12. OPEN HOLES FOR ERECTION BOLTS SHOWN AS
13. OPEN HOLES FOR PERMANENT BOLTS SHOWN AS
14. SURFACE TO BE MACHINED SHOWN AS
15. PAINTING: ALL STRUCTURES AFTER FABRICATION SHALL BE PAINTED AS PER RESPECTIVE SPECIFICATION.
16. ALL THE STRUCTURES AFTER FABRICATION SHALL BE CONTROL ASSEMBLED IN SHOP TO MATCH THE MATCHING DIMENSIONS AND CONNECTIONS OF DIFFERENT ERECTION MARKS BEFORE DESPATCH TO SITE

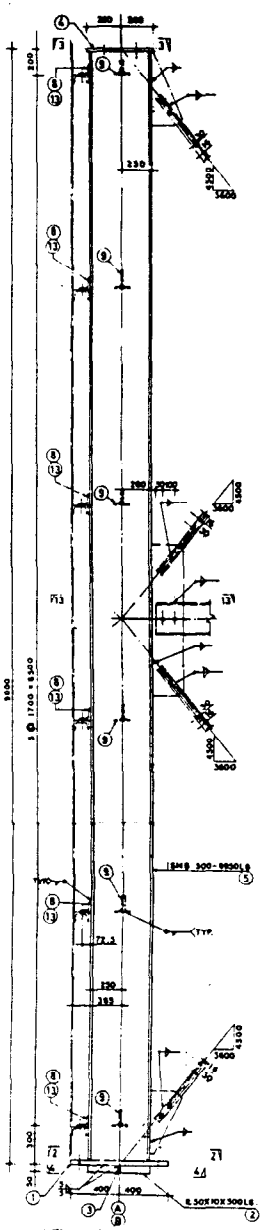
17. NOTATION:-

U.N.O	: UNLESS NOTED OTHERWISE
TYP	: TYPICAL
N	: NORTH
S	: SOUTH
E	: EAST
W	: WEST
N/S	: NEAR SIDE
F/S	: FAR SIDE
B/S	: BOTH NEAR & FAR SIDE
DRG.	: DRAWING
REQD	: REQUIRED
MKD	: MARKED
m	: METRE
mm	: MILLIMETRE

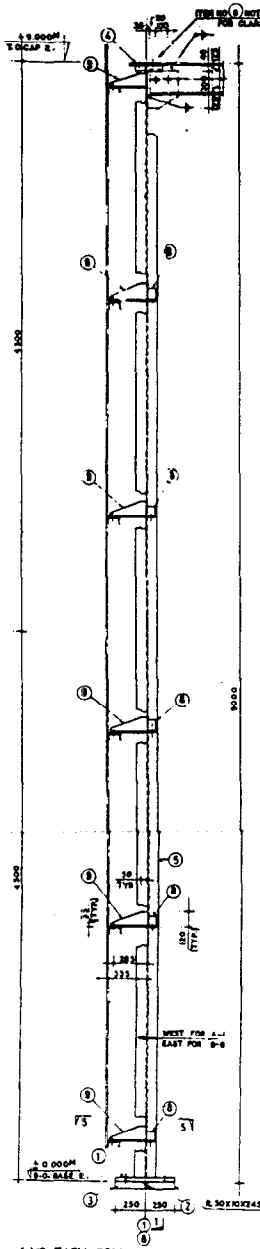
GENERAL ARRANGEMENTS DRG. FOR A SHED OF 12m x 42m

DRAWING NO. 01

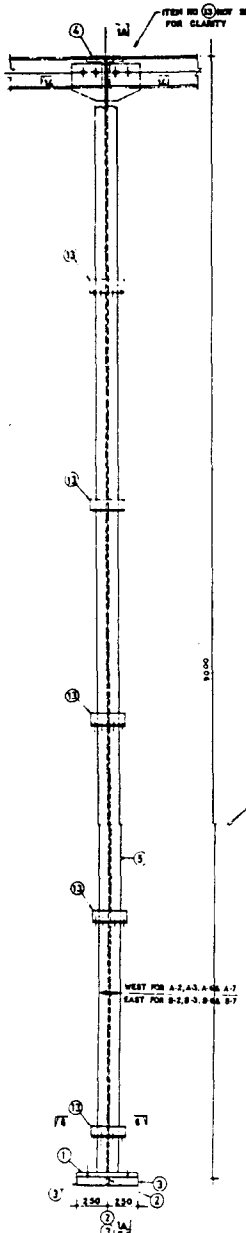
DRAWING NO. 02



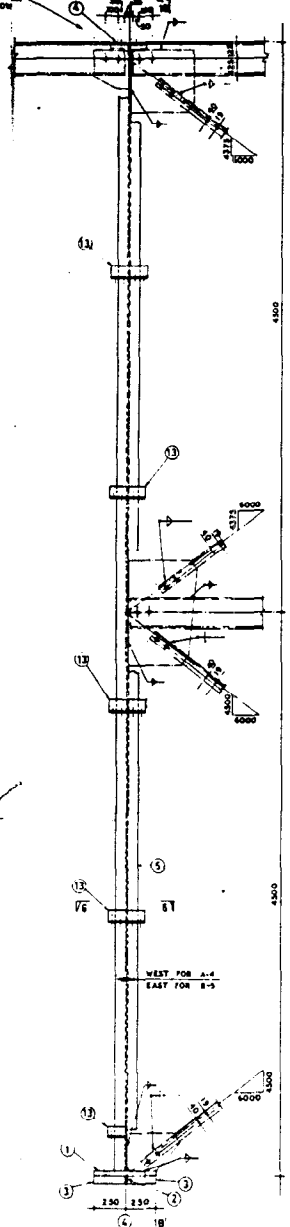
VIEW 1-1
VIEW 1A - 1A
VIEW 1B - 1B
} AS DRN & NOTED



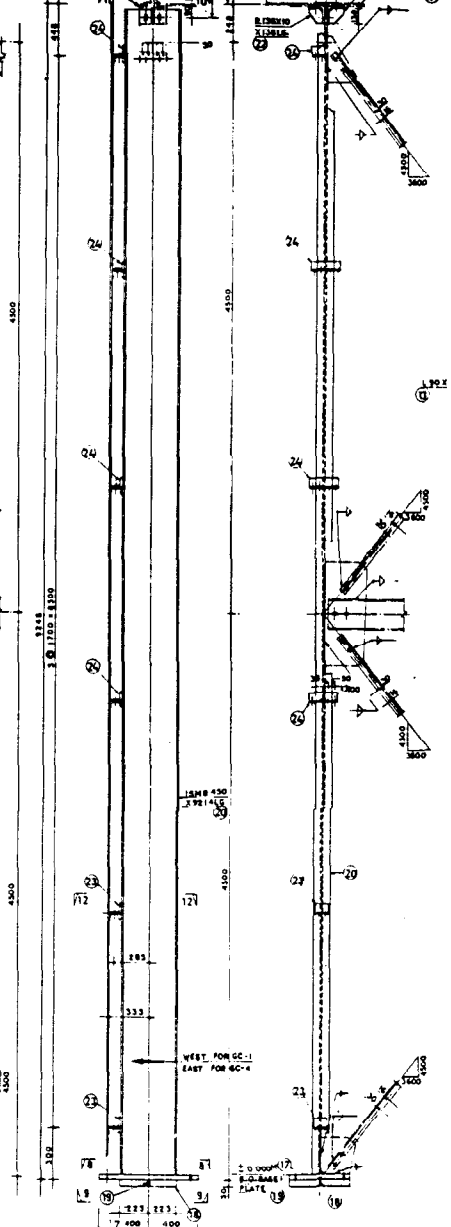
1-NO. EACH COLM. REQD. MKD A-1 & B-8 AS DRN & NOTED.
1-NO. " " " MKD. A-8 & B-1 OPP. HAND



1-NO. EACH COLM. REQD. MKD. A-2, A-3, A-6 & A-7 AS DRN & NOTED
1-NO. " " " MKD. B-2, B-3, B-6 & B-7 AS DRN & NOTED

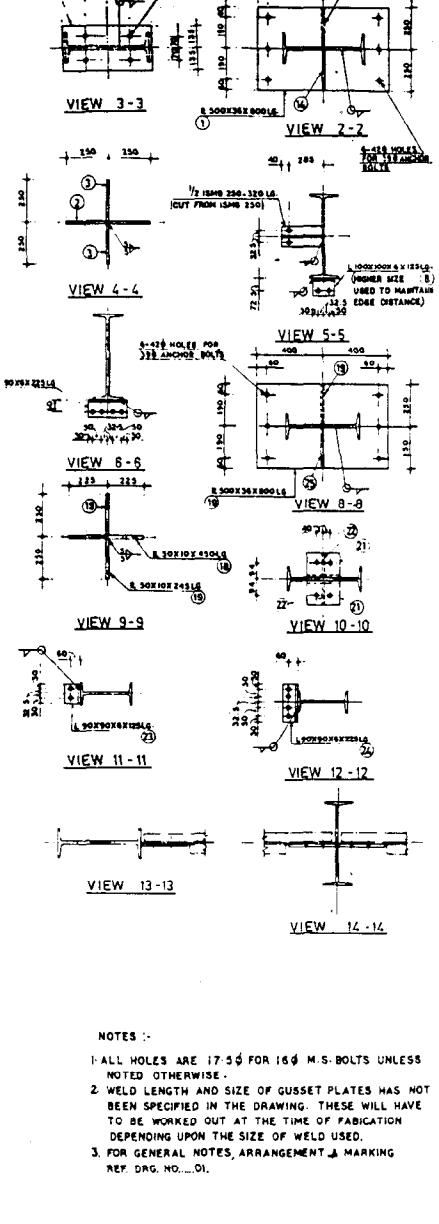


1-NO. EACH COLM. REQD. MKD A-4 & B-5 AS DRN & NOTED
1-NO. " " " MKD. A-5 & B-4 OPP. HAND.



VIEW 7-7

1-NO. EACH GABLE COLM. REQD. MKD. GC-1 & GC-4 AS DRN & NOTED
1-NO. " " " MKD. GC-2 & GC-3 OPP. HAND.



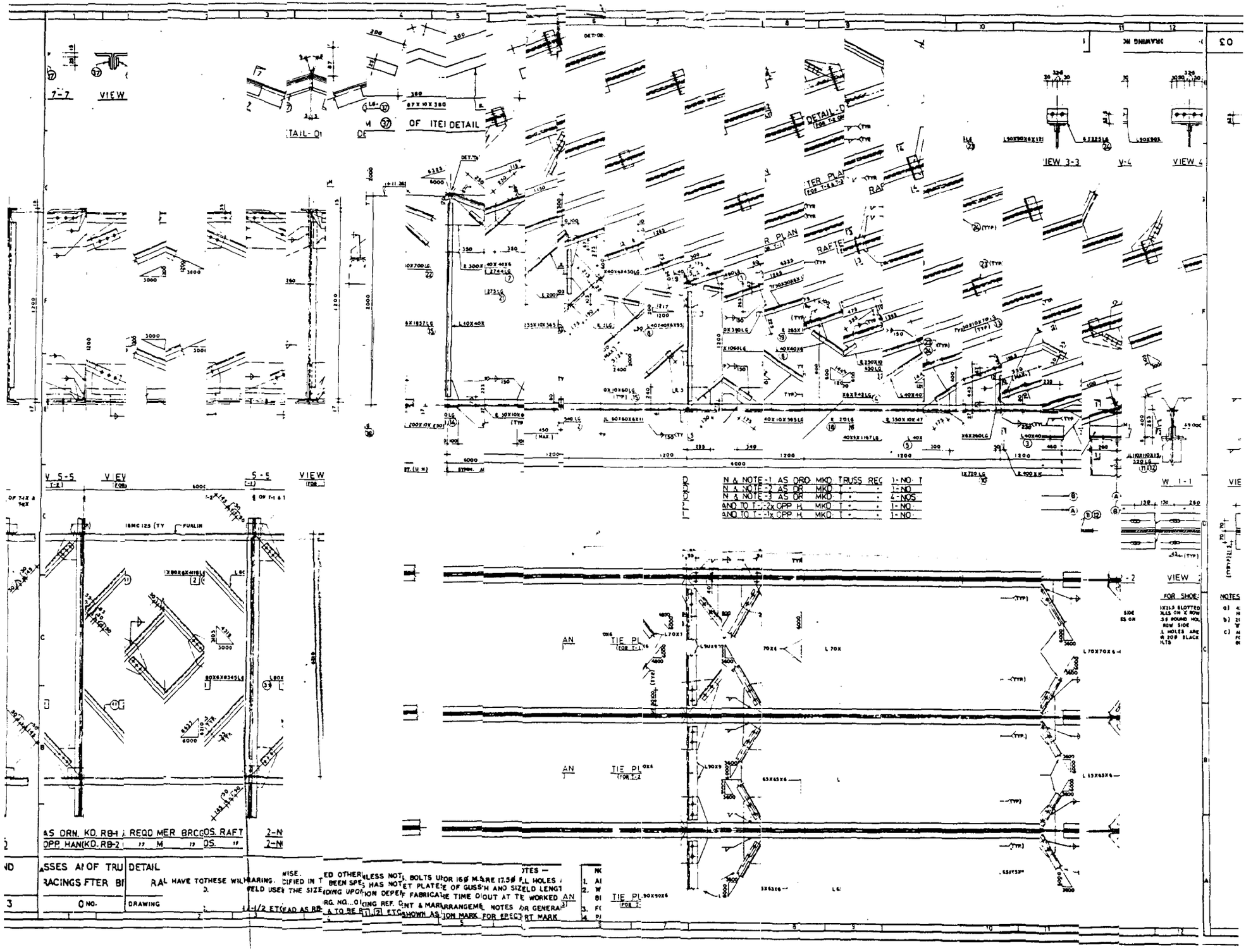
VIEW 3-3
VIEW 2-2
VIEW 4-4
VIEW 5-5
VIEW 6-6
VIEW 8-8
VIEW 9-9
VIEW 10-10
VIEW 11-11
VIEW 12-12
VIEW 13-13
VIEW 14-14

NOTES:
I) ITEM NO. 9, 10, 11 & 12 FOR VIEW 1-1 ONLY
II) ITEM NO. 14, 15 & 17 FOR VIEW 1B-1B ONLY.

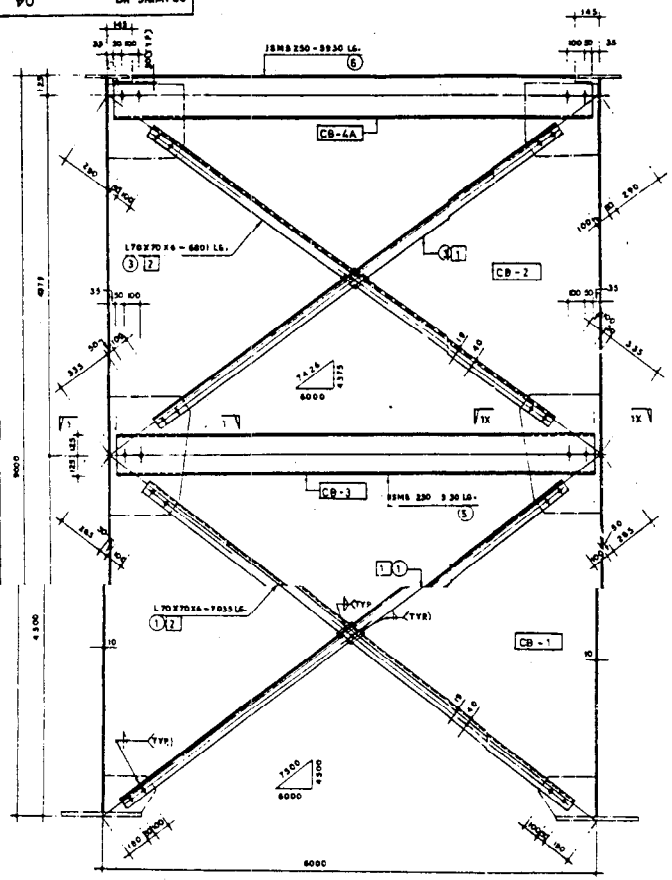
NOTES :-
1. ALL HOLES ARE 17.5 ϕ FOR 16 ϕ M.S. BOLTS UNLESS NOTED OTHERWISE.
2. WELD LENGTH AND SIZE OF GUSSET PLATES HAS NOT BEEN SPECIFIED IN THE DRAWING. THESE WILL HAVE TO BE WORKED OUT AT THE TIME OF FABICATION DEPENDING UPON THE SIZE OF WELD USED.
3. FOR GENERAL NOTES, ARRANGEMENT & MARKING REF. DRG. NO.....01.

DETAIL OF COLUMNS

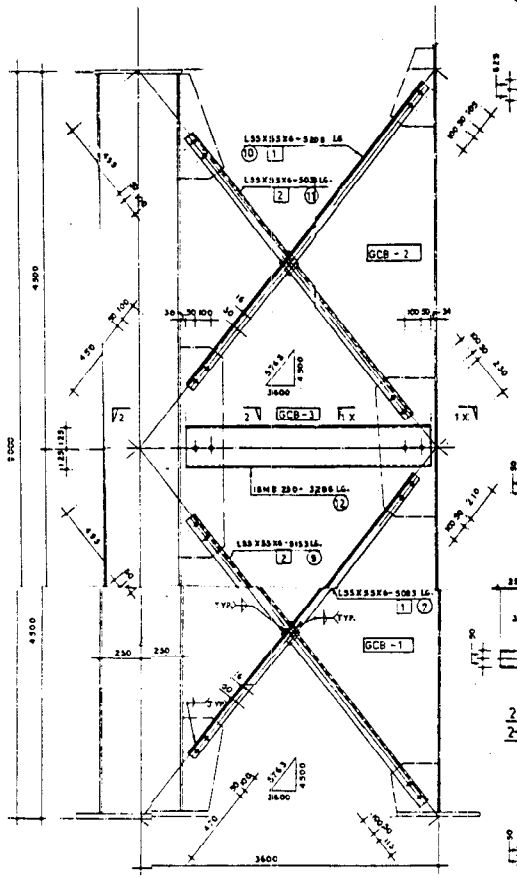
DRAWING NO. 02


7-7 VIEW
DETAIL-D
RAFTER PLAN
VIEW 3-3
V-4
VIEW 4
W 1-1
S-S VIEW
V 5-5 VIEW
ISMC 125 (TY
PURLIN
TIE PL
NOTES
FOR SHOE
AS DRN. KD. RB-1 / REQD MER BRCGS. RAFT 2-N
OPP. HAN(KD. RB-2 " M " OS. " 2-N
DETAIL
RACINGS AFTER BF
DRAWING
NO.

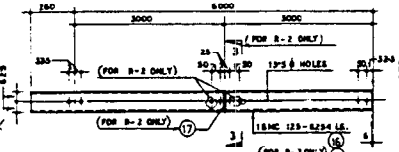
DRAWING NO 04



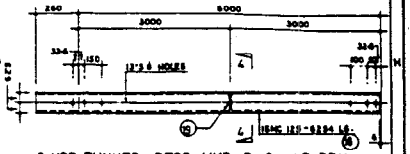
2-NOS. EACH COLUMN BRACING REQD. MKD. CB-1, CB-2, CB-3 & CB-4A AS DRN.



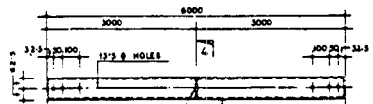
4-NOS. EACH GABLE END BRACING REQD. MKD. GCB-1, GCB-2 & GCB-3 AS DRN.



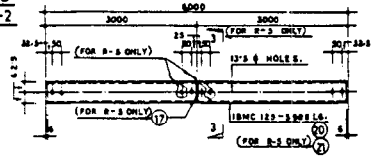
8-NOS. RUNNER REQD. MKD. R-1 AS DRN.
8-NOS. RUNNER REQD. MKD. R-1x OPP. HAND.
2-NOS. RUNNER REQD. MKD. R-2 AS DRN. & NOTED.
2-NOS. RUNNER REQD. MKD. R-2x OPP. HAND TO R-2



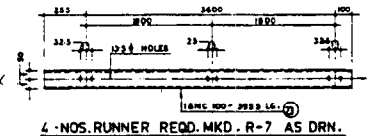
2-NOS. RUNNER REQD. MKD. R-3 AS DRN.
2-NOS. RUNNER REQD. MKD. R-3x OPP. HAND.



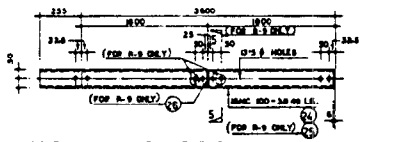
10-NOS. RUNNER REQD. MKD. R-6 AS DRN.



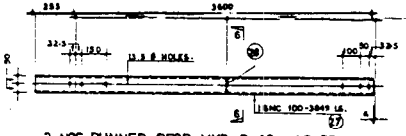
40-NOS. RUNNER REQD. MKD. R-4 AS DRN.
10-NOS. RUNNER REQD. MKD. R-5 AS DRN. & NOTED



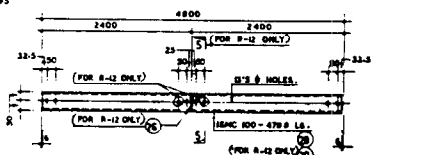
4-NOS. RUNNER REQD. MKD. R-7 AS DRN.
4-NOS. RUNNER REQD. MKD. R-7x OPP. HAND.



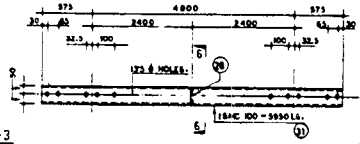
4-NOS. RUNNER REQD. MKD. R-8 AS DRN.
4-NOS. RUNNER REQD. MKD. R-8x OPP. HAND. TO R-8.
4-NOS. RUNNER REQD. MKD. R-9 AS DRN. & NOTED.
2-NOS. RUNNER REQD. MKD. R-9x OPP. HAND TO R-9.



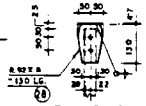
2-NOS. RUNNER REQD. MKD. R-10 AS DRN.
2-NOS. RUNNER REQD. MKD. R-10x OPP. HAND.



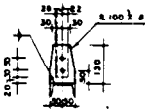
6-NOS. RUNNER REQD. MKD. R-11 AS DRN.
2-NOS. RUNNER REQD. MKD. R-12 AS DRN. & NOTED.



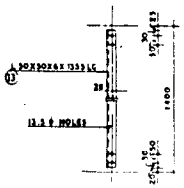
2-NOS. RUNNER REQD. MKD. R-13 AS DRN.



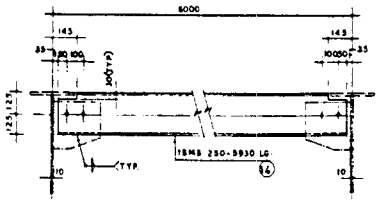
VIEW 6-6



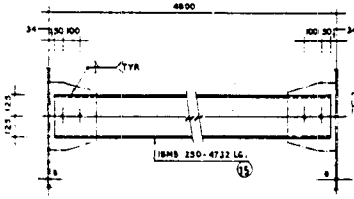
VIEW 5-5



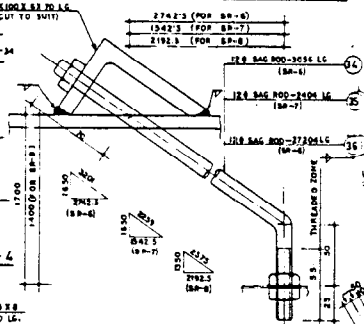
2-NOS SAG ANGLE REQD MKD SA-3 AS DRN.



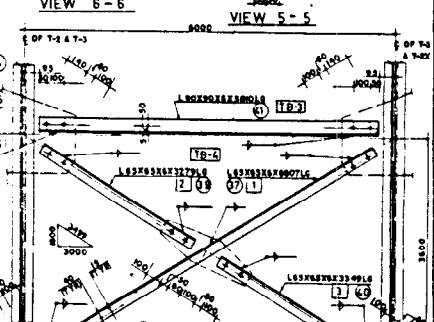
12-NOS. COLUMN BRACING REQD. MKD. CB-4 AS DRN.



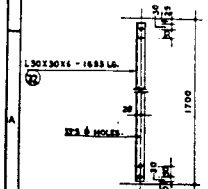
2 NOS. GABLE END BRACING REQD. MKD. GCB-4 AS DRN.



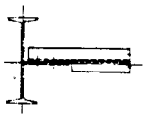
28-NOS. SAG ROD REQD. MKD. SR-6 AS DRN. & NOTED.
8 NOS. " " " " SR-7 AS DRN. & NOTED.
4 NOS. " " " " SR-8 AS DRN. & NOTED.



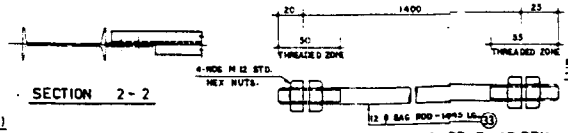
10 NOS TIE RUNNER REQD. MKD TB-3 AS DRN.
10 SETS TIE BRCG. REQD. MKD TB-4 AS DRN.



18-NOS. SAG ANGLE REQD. MKD. SA-2 AS DRN.



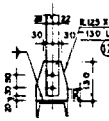
SECTION 1-1 (AS DRN.)
SECTION 1x-1x (OPP. HAND)



SECTION 2-2

78-NOS. SAG ROD REQD. MKD. SR-5 AS DRN.

VIEW 4-4

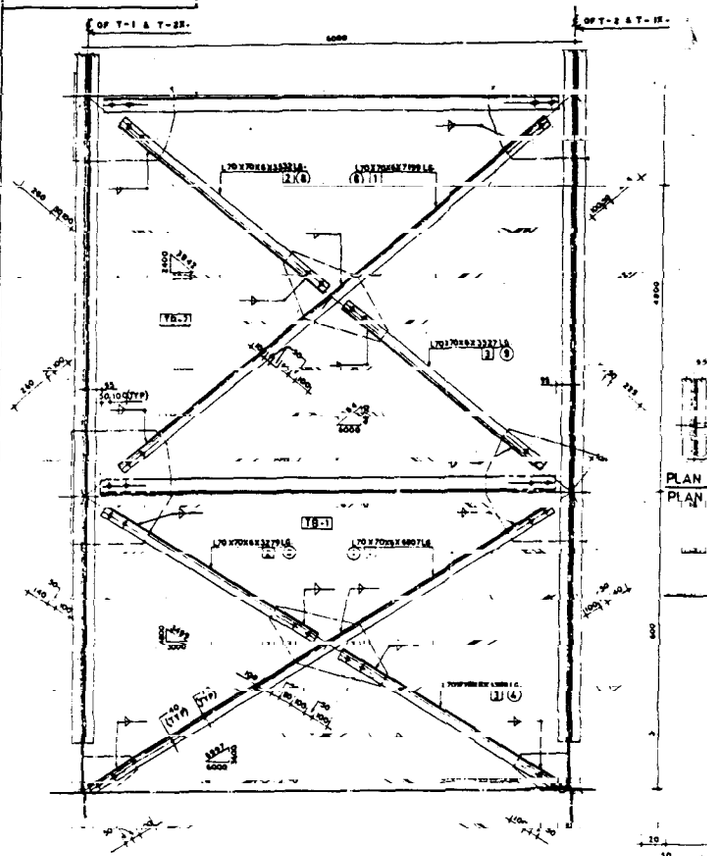


VIEW 3-3

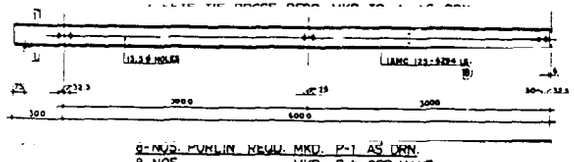
NOTES:-
1. ALL HOLES ARE 17·5 ϕ FOR 16 ϕ M-16 BOLTS UNLESS NOTED OTHERWISE.
2. PART MARK FOR ERECTION MARK SHOWN AS [1][2] ETC. & TO BE READ AS CB-1/1 CB-1/2 ETC.
3. FOR GENERAL NOTES, ARRANGEMENT & MARKING REF. DRG. NO- 01.
4. WELD LENGTH AND SIZE OF GUSSET PLATES HAS NOT BEEN SPECIFIED IN THE DRAWING. THESE WILL HAVE TO BE WORKED OUT AT THE TIME OF FABRICATION DEPENDING UPON THE SIZE OF WELD USED.

DETAIL OF COLUMN BRACINGS & SIDE GIRTS.

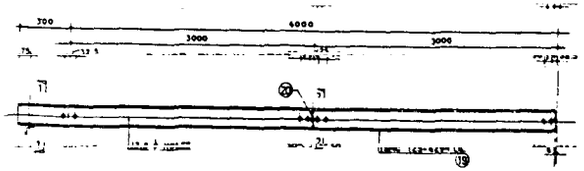
DRAWING NO- 04



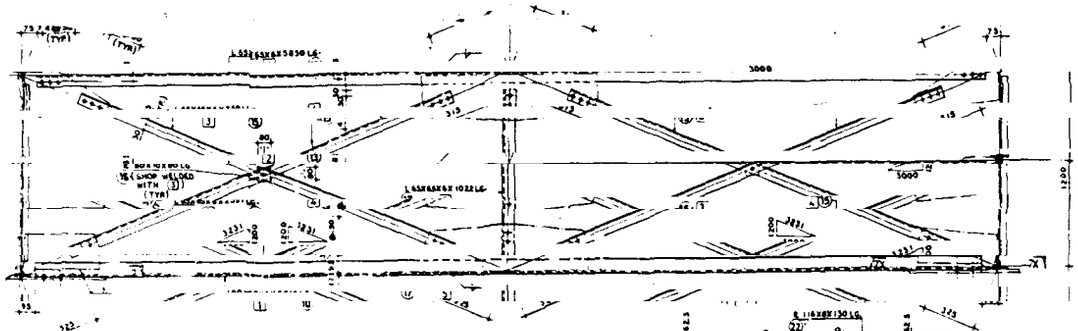
4-SETS. TIE GRDGS. REQD. MKD. TB-1 AS DRN.
2-SETS. " " " MKD. TB-2 AS DRN.



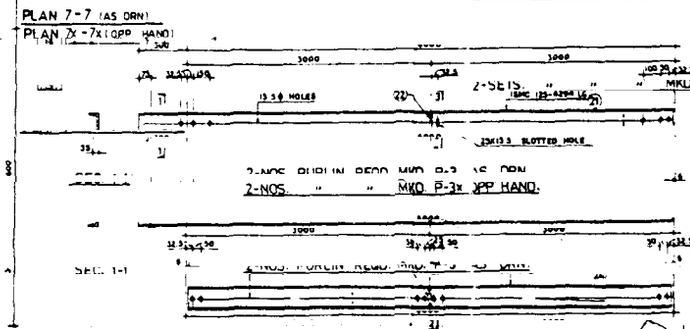
6-NOS. PURLIN REQD. MKD. P-1 AS DRN.
8-NOS. " " MKD. P-1x OPP HAND.



2-NOS. PURLIN REQD. MKD. P-2 AS DRN.
2-NOS. " " MKD. P-2x OPP HAND.



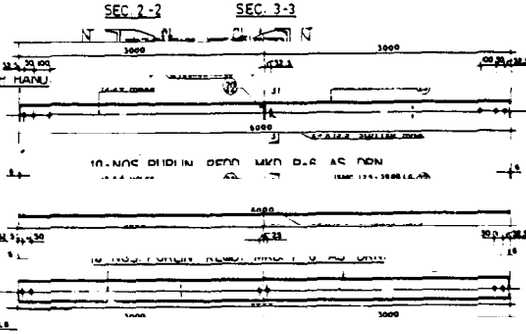
2-SETS VERT. BRCG. REQD. MKD. VB-1 AS DRN.



PLAN 7-7 (AS DRN)
PLAN 7x-7x (OPP HAND)

2-SETS. " " MKD. VB-1x OPP HAND.
2-NOS. " " MKD. P-3x OPP HAND.

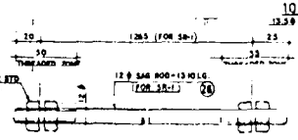
10-NOS PURLIN REQD. MKD. P-5 AS DRN.



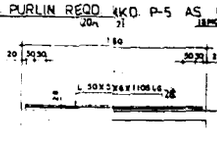
SEC. 2-2 SEC. 3-3

10-NOS PURLIN REQD. MKD. P-6 AS DRN.

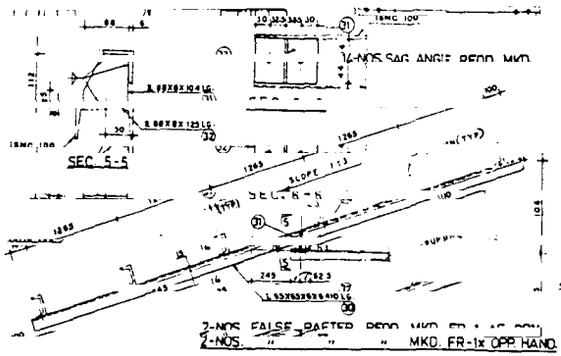
40-NOS. PURLIN REQD. MKD. P-4 AS DRN.



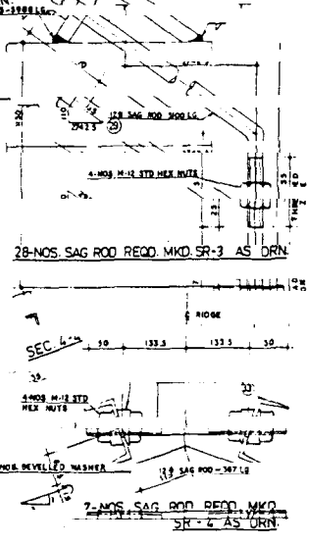
56-NOS. SAG ROD REQD. MKD. SR-1 AS DRN.



SR-1 AS DRN.



16-NOS. SAG ANGLE REQD. MKD.
SEC. 5-5
SEC. A-A
7-NOS. FALSE RAFTER REQD. MKD. FR-1 AS DRN.
2-NOS. " " " MKD. FR-1x OPP HAND.



28-NOS. SAG ROD REQD. MKD. SR-3 AS DRN.
SEC. 6-6
7-NOS. SAG ROD REQD. MKD. SR-4 AS DRN.

NOTES:-

NOTED OTHERWISE.
2. PART MARK FOR ERECTION MARK SHOWN AS (1) (2) ETC.
3. FOR GENRERAL NOTES, ARRANGEMENT & MARKING REF. DRG. NO. 01
4. ALL HOLES ARE 17.5Ø FOR 16Ø H.S. BOLTS UNLESS BEEN SPECIFIED IN THE DRAWING. THESE WILL HAVE TO BE WORKED OUT AT THE TIME OF FABRICATION [illegible] & TO BE Ø 19 AS TB (1) TB (2) ETC. WELD USED.
5. WELD LENGTH AND SIZE OF GUSSET PLATES HAS NOT TO BE WORKED OUT AT THE TIME OF FABRICATION [illegible]

DETAIL OF ROOF BRACINGS & PURLINS

DRAWING NO. 05