DEBORAH SERVICES
CONTRACT SCAFFOLD & HIRE AND SALES

SMALL WORKS DIVISION

ALUMINIUM TOWER

ERECTOR'S

MANUAL

DEBORAH SERVICES
CONTRACT SCAFFOLD & HIRE AND SALES

DEBORAH SERVICES

"PRINCIPLES"

TO BE A WORLD CLASS SERVICE TEAM

*

DELIVERING CUSTOMER VALUE

*

THROUGH PERSONAL COMMITMENT

*

TRUST & IMAGINATION

484/980/0 april 1997

DEBORAH SERVICES

SAFETY, HEALTH AND ENVIRONMENT (SH&E) POLICY STATEMENT

Deborah Services' goal is to be world class in matters of safety, health and environmental protection.

To this end we will:

- develop and maintain a positive SH&E culture.
- systematically identify hazards and adequately assess and control risk to which employees and others may be exposed.
- pursue improvements in SH&E performance and the SH&E management systems as we believe they are a integral part of a successful business.
- promote positive health practices.
- provide appropriate SH&E training to develop employees as a key resource.
- make use of the competent Company SH&E advisers.
- periodically review the SH&E management system and audit compliance to policy.
- plan, set and publicise internal SH&E targets.
- operate to world class industry practices, in accordance with available recognised guidance and compliance with legal requirements as the minimum.
- set and document standards, safe working procedures and guidance in the Company Procedures Manual.

The ultimate responsibility for SH&E lies with the Managing Director who will ensure it is given equal priority with other major business objectives. Implementation of this policy is a line management responsibility at all levels together with participation of all employees. Staff are reminded that adherence to this policy is a condition of employment.

The policy and the way it is implemented will be reviewed at least annually by the Main Board to meet new legislative and business requirements, and to identify deficiencies. It will be revised and updated as necessary. An annual SH&E performance review report will be published.

This policy and accompanying documentation will be brought to the attention of all staff at all locations with whom relevant consultation will take place.

Signed: ..... Date: .....

CK WELSH - MANAGING DIRECTOR

CUSTOMER CARE

BE POLITE AND COURTEOUS AT ALL TIMES

Remember that you represent the company on site and your general behaviour reflects on the company's image. A polite, positive, friendly attitude is a good advertisement for us all.

Company overalls and personal protective equipment should be worn at all times.

When arriving on site always report to :-

a. Site Agent
or
b. Customer Representative
or
c. Owner/Occupier

Identify who you are and explain what you have been instructed to erect or dismantle and how you propose to go about it.

a/b. On sites comply with site safety requirements and instructions from the Site Agent, or our customer's representative.

c. At domestic locations ensure that there are no children or pets in the vicinity of where you are to work. Take care not to damage lawns, flower beds, fences and walls. Avoid using bad language or shouting unnecessarily.

Always work carefully and maintain our standards

HI-WAY HIRE & ERECT

BASIC ERECTION CRITERIA

THE STRUCTURE

Most proprietary aluminium tower systems consist of the following components -

Castor / Base plate assemblies

Frames

Braces

Platforms

Guard-rails and toe-boards

Stabilisers / outriggers

Ties

THE BASE.

Base components consist of:-

Castor assemblies or
Base plates - (fixed or swivel)

All standard frames (and if required outriggers) will accept castor or base plate assemblies , and apart from the obvious mobility feature of the castor assembly, both types can be adjusted in the same manner.

FOUNDATIONS

a. The foundations of a scaffold shall be kept and maintained in an adequate condition for the life of the scaffold. It shall be adequate to carry the load imposed locally at each end frame post and in general carry the whole weight of the scaffold.

b. On hard surfaces such as concrete or where there is an adequate hardness to stop the castors/base plates from sinking into the ground, then they can be placed directly onto the ground.

c. Where there is a possibility of castors/base plates sinking into the surfaces, e.g. asphalt, wooden floors etc., then sole boards are required.

d. On surfaces such as soft soil, gravel or any surface that the castor/base plate can sink into, then care must be taken to ensure that the sole boards are well compacted down, free from any irregularities, of adequate thickness (scaffold board) and as level as possible.

e. Sole boards must be long enough to cover two uprights along their length .

f. Where the ground slopes ensure that the sole boards run across and not along the slope wherever possible.

g. When erecting a facade scaffold complete the base of the structure, ensure that the uprights and horizontal tubes are vertical and level before commencing to build upwards. Where the structure is to be built on a sloping surface always start at the highest point, using the minimum amount of extension on the screwed leg. Always, wherever possible, fill in by dropping the end frame down onto the base plate using couplers.

NOTE:- Always use base plates wherever possible.

OTHER FACTORS.

If the structure is to be erected on a public thoroughfare ensure that:-

a. A pavement licence has been obtained.

b. That it is quite clear to the customer what we will do to comply and what they must do to comply (in writing if necessary).

c. That whatever we do to comply is correct and meets the relevant statutory requirements.

d. If there is any change in the structure that was agreed upon due to unforeseen circumstances, then the authorities must be informed of the change.

e. Account must be taken of the area in which the structure is to be erected , e.g. vandals. If it is an area where children have access then more care must be taken to prevent accidents from occurring.

When erecting the base ensure that any gratings, delivery hatches etc. are not covered. They are not load bearing and could break under imposed load.

Ensure that walk-through areas are adequate for the access and egress that is required of them, e.g. prams, invalid carriages, etc. If signs are required make sure that they can be seen and not obstructed in any way.

When handing over to the user make sure they understand any special conditions that are relative to its use, e.g. loading in specific areas due to the foundations. Put it in writing where necessary, keep a copy in the depot and ensure that the structure is signed for.

Where the structure is mobile the ground must not be sloping as to cause instability and always ensure that the height to base ratio is correct:-

3 to 1 Outside 3.5 to 1 Inside

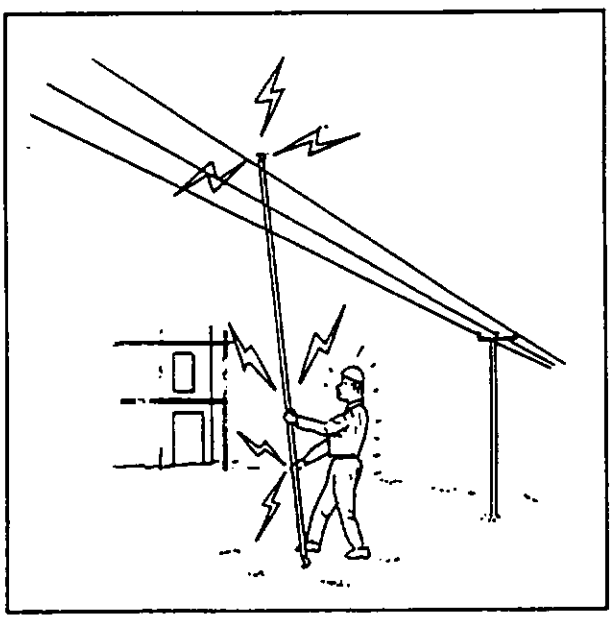
As a company we have made it a rule to maintain a 3 to 1 ratio both inside and outside because we cannot guarantee that the structure will not be pushed outside of the building for use or when it has been finished with. It is advisable to use outriggers only on large structures, e.g. over three sections/lifts high, and stabilisers for three sections/lifts or less, as the stabilisers have to be raised when moving, and over three sections/lifts the structure could become unstable.

When a mobile structure has to be used on tarmac, soft ground, etc. then scaffold boards must be used to roll the scaffold on , or some other suitable material must be used to prevent the castors from sinking into the surface, e.g. steel channel used as a track.

Where a correct height to base ratio cannot be maintained then the structure shall be tied in , counter weighted , a designed structure, in all cases advise advice must be sought from a company design engineer suitably qualified in such structures.

CODE OF PRACTICE

FOR THE AVOIDANCE OF DANGER FROM OVERHEAD ELECTRIC LINES.



Contact with overhead lines can be lethal whether they are carrying voltages as high as 400,000v or 240v Overhead electric lines are not normally insulated and if contact is made with them by a scaffolding component or similar object, an electric current will discharge with a risk of severe or fatal shock and burns to any person in the immediate vicinity.

accidents of this nature can be avoided

for your own and your workmate's safety
follow the do's and don'ts.

TO AVOID DANGER FROM OVERHEAD ELECTRICITY LINES:-

DO adopt the principle of noting the position of all overhead lines in the working area.

DO adopt the principle of co-operation during the planning stage and carrying out of works with the Electricity company.

DO keep overhead lines in view when manoeuvring the scaffold components.

DO ensure before commencing work that the overhead lines are dead or safe. This can be done by contacting Electricity company office.

DO NOT stack equipment below or in the close vicinity of overhead lines.

DO NOT handle or use platforms, tube, frames etc. . unless they are kept a safe distance from overhead lines. Where it is necessary to carry long objects under overhead lines, they shall always be carried in a horizontal position.

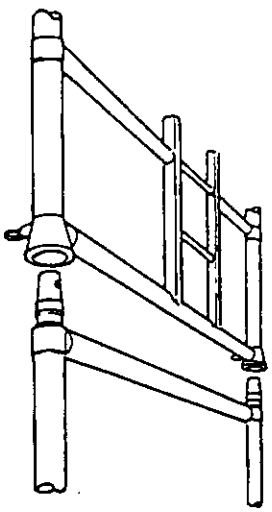
DO NOT drive a high loaded vehicle below overhead lines if an alternative route is available.

DO NOT approach or touch any broken or fallen conductors, or any plant in contact with an overhead line before the Electricity company confirms that conditions are safe.

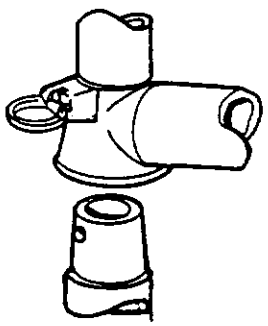
HI-WAY HIRE & ERECT

FRAMES

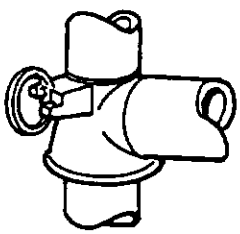
The most important function of the "Frame", is to support all other components in the structure throughout its height. The design incorporates a system which enables the frames to be physically locked with compatible frames by means of spigots provided at its upper end, and sockets, in the form of " cone castings " at its lower end.



LOCK BOLT
Released.



LOCK BOLT
Engaged.



Basic types of frames used are:-

a. Ladda Span D/W and S/W.

b. Span D/W and S/W.

c. Base Walkthrough D/W and 1.7m (pedestrian access).

d. Walkthrough D/W (worker access).

"LADDA SPAN" have a ladder incorporated in the design of the frame and provide the necessary means of access when erected.

*Coloured instruction and caution notices are affixed to all frames for safety reasons, and should never be removed.

HI-WAY HIRE & ERECT

BRACES

There are two types of Brace used in all Hi-Way scaffolds:-

Diagonal. Horizontal.

Both are manufactured as fixed lengths, and as illustrated below incorporate a self-locking snap-action hook with spring ,on each end to lock onto the structure's Frames. This ensures squareness and rigidity of the configuration being erected.

The method of releasing a Brace is simply by lifting the hook latch as illustrated below. The hand position will obviously vary, in accordance with which hand is used, and from which angle the hand is gripping. An additional feature of the latch operation is that it creates a "self-cleaning" hook.

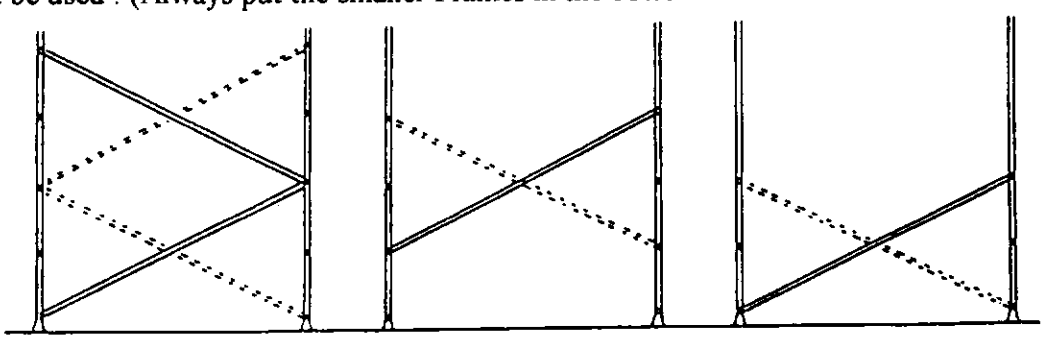
BRACING:-

a. When commencing bracing ensure that the horizontal braces are level, that the uprights of the frames are in line with each other and are vertically straight.

b. Ensure that the correct bracing pattern is followed throughout the whole of the structure.

c. When diagonally bracing the tower ensure that the braces trap the tower lower Frames to the upper Frames. This is an added precaution if one of the lock bolts should fail as well as increasing the structural stability by reducing some of the movement in spigot and socket joints.

d. Where Frames are used at less than five rungs high the following diagonal brace patterns must be used . (Always put the smaller Frames in the bottom of the structure).



e. Braces should always be used in compression not in tension. If at any time the Braces are in tension the pinned braces must be used , e.g. the lower horizontal run of braces in a bridge structure.

HI-WAY HIRE & ERECT

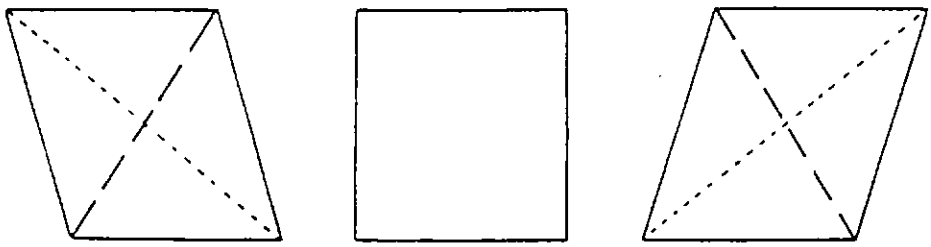
PRINCIPLES OF CONSTRUCTION

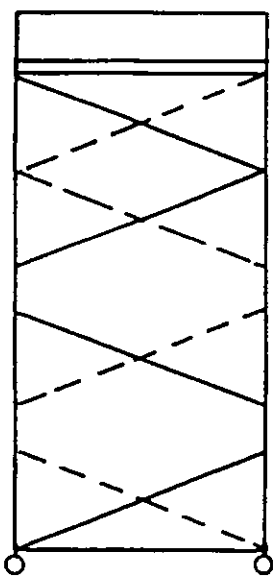
TENSION

Pulling
Stretching
Lengthen
The strength of the weld is limiting factor.

COMPRESSION

Pressing together
Forcing
Shorten
The strength of the weld does not become a factor.



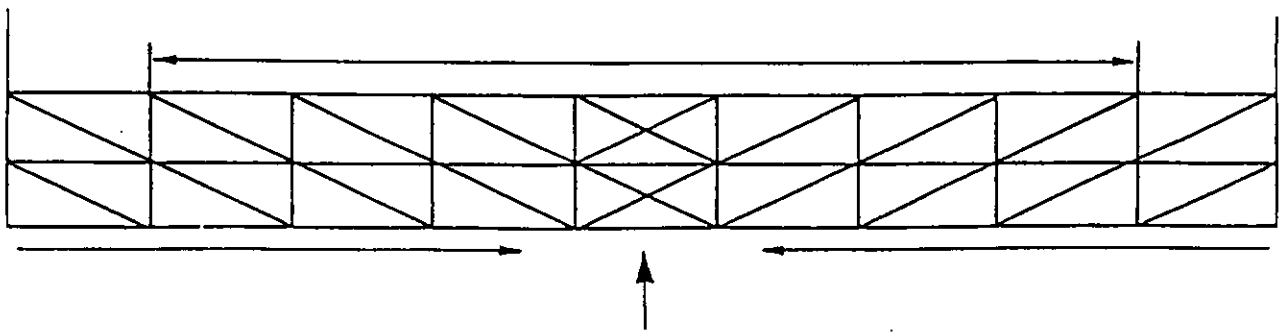


NOTES:-

When erecting and designing a structure one of the basic principles is to ensure that all the members of the structure come under compression. Where this is not possible and the members come under tension, then a supporting tube must be used or the brace hooks must be pinned as backup for the weld.

STRUCTURE BRACING

As force is applied to the structure the framewor as a whole will try to shear. The bracing in the standard construction of structures always incorporates the principle of members in compression to compensate for members in tension.



Where braces are in tension as in this bridge beam , the lower run of horizontal braces MUST be pinned braces.

PLATFORM

The width of the platform is dependent upon the work that is to be carried out upon it, or the use to which it is to be put.. There are two main uses of platforms which are as follows:

Access and Egress

These platform areas are for the passage of persons and materials only, no deposits of materials, or work can be carried out on these platforms. The widths are as follows:

a. *Suffient dimensions to permit the free passage of persons.*

b. *If for the passage of materials the platform must be wide enough to allow the person and the material being moved to move along the platform freely.*

Working Platforms

These platforms are used at the place at which the work is to be done, The widths are as follows;

a. *A working platform shall-- be of sufficient dimensions to permit the free passage of persons and the safe use of any equipment or materials required to be used* and to provide, so far as is reasonably practicable, a safe working area having regard to the work there being carried out, and

b. *without prejudice to paragraph (a), be not less than 600 millimetres wide, and*

c. *be so constructed that the surface of the working platform has no gap giving rise to the risk of injury to any person or, where there is a risk of any person below the platform being struck,through which any material or object could fall.*

Intermediate Platforms

Where a ladder or run of ladders rises a vertical distance of 9 meters or more above its base, there shall, where practicable, be provided at suitable intervals sufficient safe landing areas or rest pltforms.Therefore an intermediate platform area must be put in at approximately half-way up the structure, e.g. a five section structure would require an intermediate platform area at a height of two or three sections. The platform area would need to rise as the structure heights increase until 60 ft, then an additional platform area would go in at approximately l/3 and 2/3 of the structure's total height. The intermediate platform areas would require the following material:

1 off P62 or P82 or P102
1 off PT62 or PT81 or PT102
4 off BH6 or BH8 or BH10

dependent on the length of the tower used to provide adequate guard-rails

Where the structure is a run only the access/egress tower would require intermediate platform areas.

GUARD-RAILS AND TOE-BOARDS

Any working place of 2 meters and above in height must be guard-railed and toe-boarded to prevent the fall of persons and materials. When complying with the above the following must be maintained;

a. *The minimum height of the main guard-rail shall be at least 910 milllimeters.*

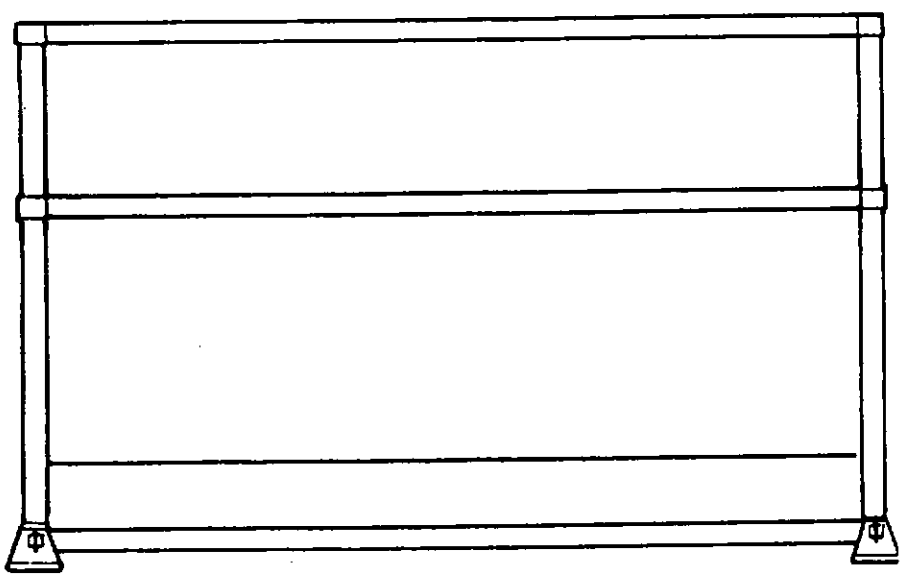
b. *There shall not be an unprotected gap exceeding 470 millimeters between any guard-rail, toe-board, barrier or other similar means of protection.*

c. *The minimum height of a toe-board shall be not less than 150 millimeters.*

Where material is to be stacked on the platform and it is foreseeable that such material can fall over the toe-board, then the toe-board must be extended to afford such protection as is necessary, or some other barrier must be used to effect the same. All guard-rails must be securely fixed to prevent any movement.. Where the permissible gap of 470 millimeters cannot be maintained, an intermediate guard-rail must be secured.

INTERMEDIATE PLATFORM LEVEL

GUARD-RAILS AND TOE-BOARDS



A = *Main guard-rail at* min height *of 910 millimeters.*
B = *Unprotected gap maximum 470 millimeters.*
C = *Minimum height of toe-board 150 millimeters, only to be fitted i intermediate platform to be used as a work place.*

TOWER STABILITY

The stability of towers may be affected by the following applied forces:-

Wind
Working Operation
Vertical eccentric loads, e.g. lifting of materials

The forces may occur singly or in combination with each other. Both the assessment of the_ forces and the righting effect of the tower self weight, stabilisers, outriggers, ties, ballast weights,, guy ropes etc. is usually fairly complex. The stability calculation needs to take account of the type and construction of the tower as well as the direction and attitude of the applied forces.

The information following gives guidance for a range of standard towers without ballast weights, but fitted with outriggers or stabilisers to give a height to base ratio of 3:1

A simple approximate means of calculation and information is also given for guidance on the basis that this is preferable to the forces being `ignored.

Wind Loading

Wind imposes loads on the tower tending to overturn it. The extent of the forces generated depends for the most part on the shape and area of the individual structural components, wind speed, shielding effects and the wind attitude.

Wind tunnel tests on single full size 'Hi-Way' span and step (unsheeted, 1.35 x1.68 x 1.83 meters) sections show that this overturning force depending on the type of section and construction varies approximately between 5.45 kg and 9.1 kg at a wind velocity of force 4 maximum (18 mph). The force generated varies as the square of the wind speed, i.e. doubling and trebling of the wind speed increases the overturning force by factors of four and nine times respectively.

It is occasionally necessary to enclose the frame of the tower with some form of sheeting. This greatly increases the effect of the wind on the tower and will normally mean that such towers have to be tied in at all times.

Generally free-standing towers erected in accordance with the Safety and Training Manual are safe to be used in winds up to force 4 on the Beaufort Scale (medium breeze, 13-18 m.p.h.) refer to Table II. Wind conditions around groups of buildings are particularly difficult to anticipate and local wind speeds due to funnelling effects may be much greater than the mean value.

For guidance purposes Table I indicates the approximate wind speed which will cause towers (stabilised to a height/base ratio of 3 : 1) to tip.

Note that the value given in Table I will actually start tip the tower and are not safe working wind speeds.

Generally the maximum overturning force on the tower occurs with the wind blowing from direction X. However, for practical purposes the minimum stability generally occurs with the wind blowing on the side of the tower. The wind speeds at which the tower will start to tip shown in Table I are therefore relevant for the wind blowing on the long side of the tower, i.e. direction Y. Table II gives the Beaufort scale relating wind speed to an approximate identification of visible effects.

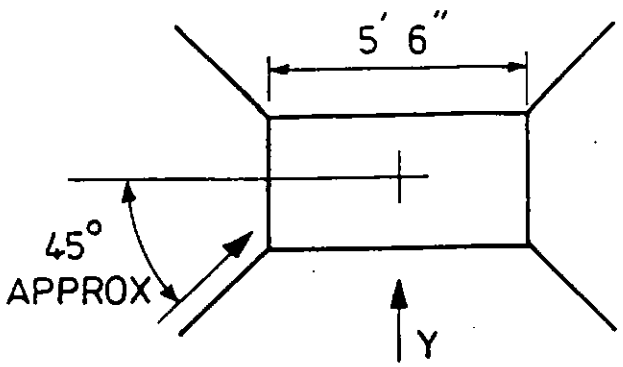


Table I

Approximate wind speed which will cause instability, i.e. initial tipping of the tower.

TOWER CONSTRUCTION (Single Platform & Toeboard at each section)			
Number of Tower Sections	**SPAN TOWERS**		**STEP TOWERS**
	2' 6" x 5'6"	4'6" x 5' 6"	4'6" x 5'6"
One*	---	40 m p h	40 m p h
Two*	24 m p h	26 m p h	25 m p h
Three*	26 m p h	30 m p h	29 m p h
Four*	26 m p h	27 m p h	26 m p h
***Note: It is likely that on these very light towers at thses wind speeds the upward force may be generated may result in towers moving along the ground, even with castor brakes applied**			

TABLE II

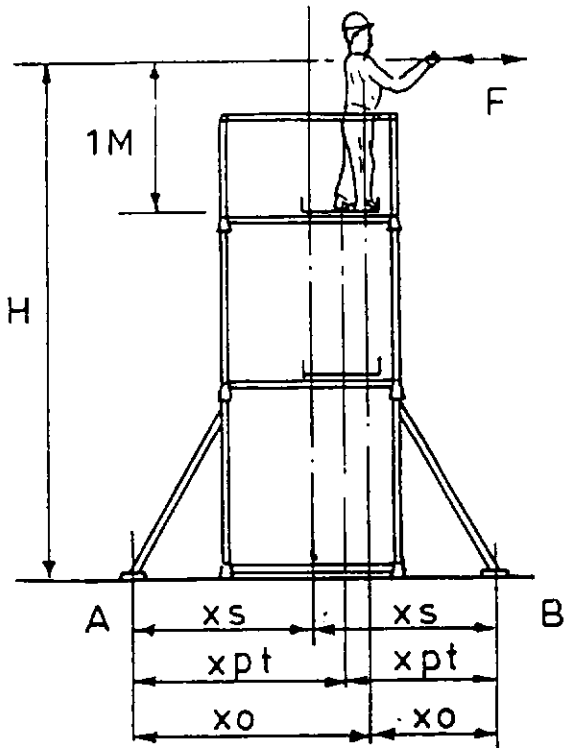
Beaufort Number	General Description	Sprecification of Beaufort Scale	Limits of Speed in Miles per Hour
3	Gentle Breeze	leaves and small twigs in motion: a light flag will be extended	8 -12
4	Medium Breexe	Raises dust and loose paper: small branches are torn off	13-18
5	Fresh Breexe	Small trees in leaf begin to sway	19-24
6	Strong Breeze	Large branches in motion, telegraph wires whistle	32-38
7	High Wind	Whole Trees move	32-38
8	Gale	Twigs snap off: walking difficult	39-46
9	Strong Gale	Slight structural damage: chimney pots removed, etc.	47-54

Working Operations

The actions of workmen on a tower may cause loads tending to overturn the tower. For example the use of a hand drill on an adjacent structure causes an equal and opposite overturning force on the tower. Generally the minimum stability of the tower occurs when an operator at the working platform pulls towards an adjacent structure. Table III gives the forces which a workman will need to exert to cause initial tipping of the tower for both pulling and pushing against an adjacent structure. Note that users are advised to minimise these forces as much as possible. In no circumstances should a force caused by a working operation exceed 20kg on free-standing towers.

HI-WAY HIRE & ERECT

Basis of calculation for the values shown in Table III



1. Working operation at an effective height of 1 metre from the working platform.
2. Tower height/base ratio - **3 : 1**
3. Tower structure weight is evenly distributed about the tower centre line.
4. Operator's weight acts at a distance of .36 metres from the tower, centre line (4'5" wide tower only)

Restoring movement if workman pushing i.e. tower will start to tip about point A.

- Weight of structure (Ws) x distance from point A to centre of gravity of structure (Xs)

+ Weight of operator (Wo) x distance from point A to centre of gravity of operator (Xo)

+ Weight of platforms and toeboards (Wpt) x distance from point A to centre of gravity of platforms and toeboards (Xpt)

Overturning moment if workman pulling i.e. tower will start to tip about point B

- Weight of structure (Ws) x distance from point B to centre of gravity of structure (Xs)

+ Weight of operator (Wo) x distance from point B to centre of gravity of operator.

+ Weight of platforms and toe-boards (Wpt) x distance from point B to centre of gravity of platforms and toe-boards (Xpt)

i.e.

Tower will start to tip when: $F = \underline{Ws \times Xs + Wo \times Xo + Wpt \times Xpt}$

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Table III

Approximate pushing and pulling forces (F) as a result of working operations which will cause instability, i.e. initial tipping of the tower.

Tower Construction	No. of Sections	Tipping Force kg. F	
		Pushing	Pulling
S/W x 1.68M Ladda Span Single Top Level Platform and toe-board only	2 3 4	26 32 36	26 32 36
S/W x 1.58M Ladda Span Single Platform and toe-board at all sections	2 3 4	30 38 46	30 38 46
D/W x 1.68M Ladda Span Single Top Level Platform and toe-boards only	2 3 4	35 45 54	22 34 44

Combined Wind and Working Operations

Table IV shows the approximate forces which a workman pulling towards an adjacent building will need to exert to cause initial tipping of a tower if at the same time a wind of force is blowing.

The combined effect of wind and working operations can significantly affect the stability of towers and will normally mean that such towers have to be tied in.

Note that the values given in Table IV will actually start to tip the tower and are not safe working forces.

Table IV

Approximate pulling force as a result of a working operation which will cause instability, i.e. initial tipping of the tower with a wind of force 4.

Tower Construction	No. of Sections	Tipping Force Workman Pulling F Kg
S/W x 1.68 M Span single top level platforms and toe-board only	3 4	20 25
D/W x 1.68 M Span single platform and toe-board at each section	3 4	25 32

Vertical Eccentric Loads, e.g. Lifting of Materials

Any vertical loads produced by men or materials within the area of the working platform, add to the stability of the tower, but any vertical load outside the area of the working platform can be hazardous.

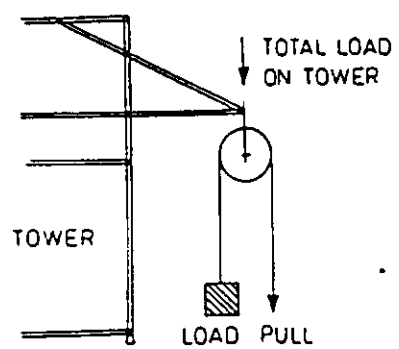
For example materials hoisted with a rope outside the tower have a tendency to overturn the tower, particularly if no outriggers or stabilisers are fitted as can be the case with low height towers. When outriggers or stabilisers are fitted there is less of a problem, provided that the loads are pulled up within the **EFFECTIVE BASE AREA** of the tower. For practical purposes the load can generally be assumed to be taken by the tower leg or legs as appropriate adjacent to the load being lifted. Care must be taken to ensure this is taken into account when determining the maximum load which can be safely lifted. Refer to Fig. 1.

e.g. Assume load to be 10kg. lifted

Pull required to hoist load = 10kg.

Total downward load = 20kg.

Fig. 1.



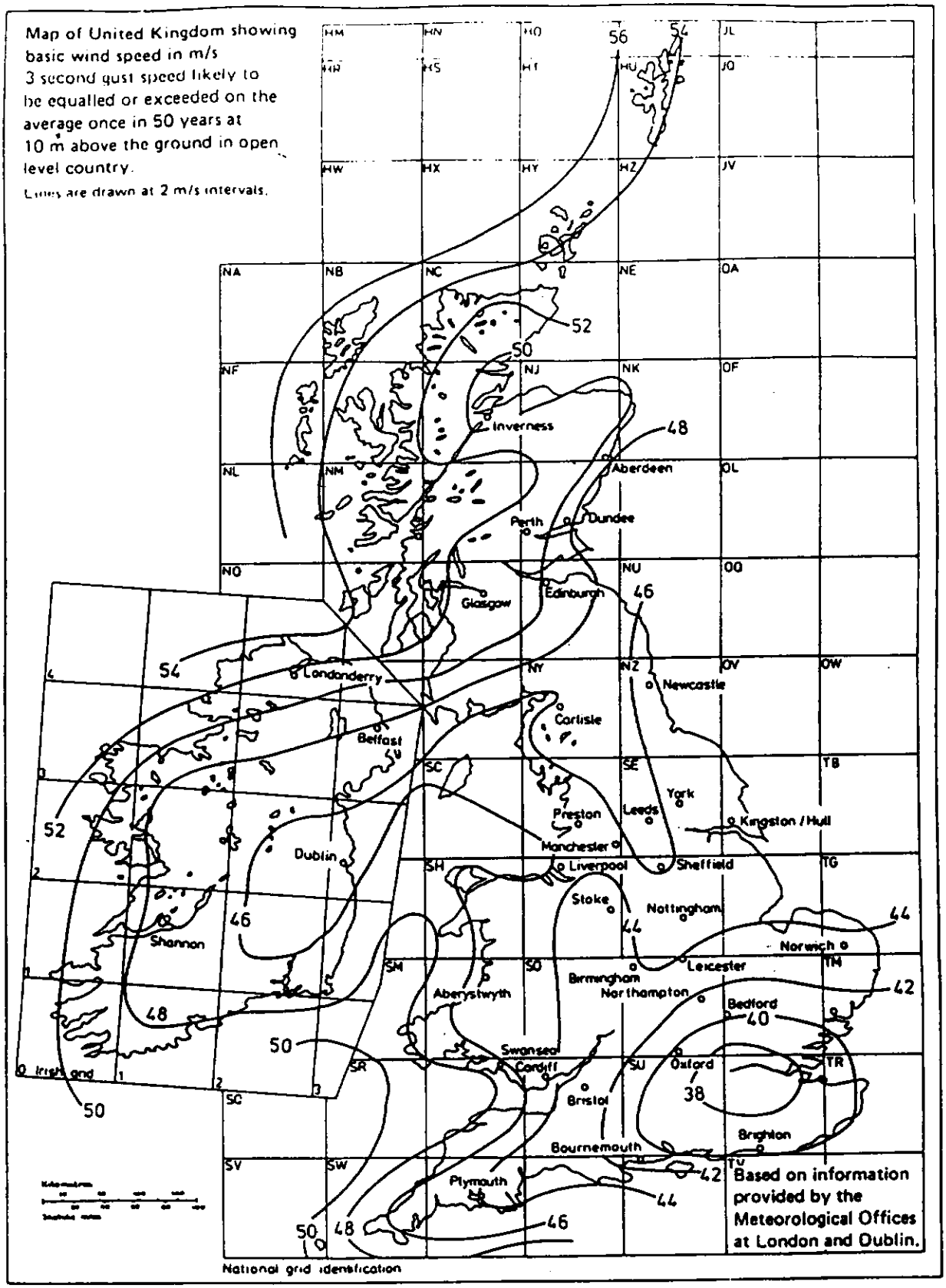
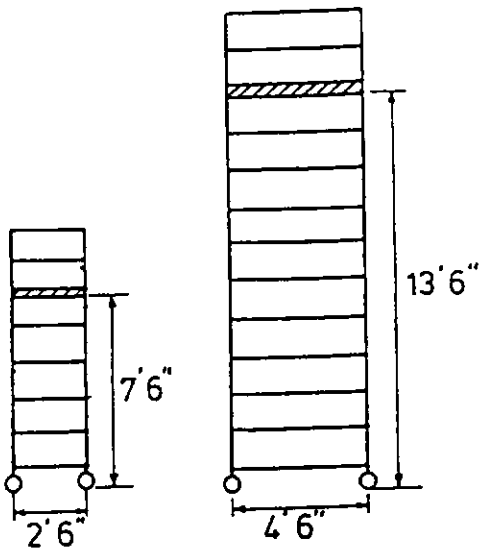


Figure 31. Basic wind speed, *V*

HI-WAY HIRE & ERECT

BASE TO HEIGHT RATIO



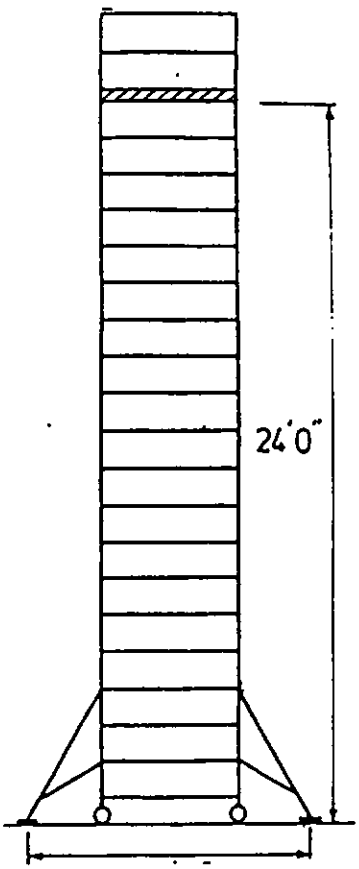
The base to height ratio is 1 : 3 - the smallest base dimension x 3 = maximum height.

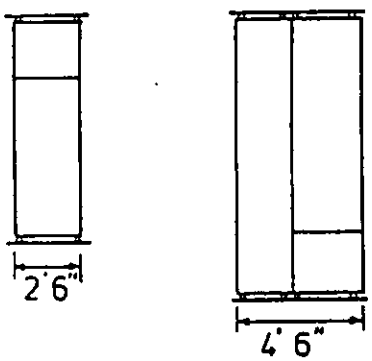
Therefore if:

A. 0.76 M (Being the smallest base dimension), maximum platform height = 2.28 M

B. 1.37 M (Being the smallest base dimension), maximum platform height = 4.11 M

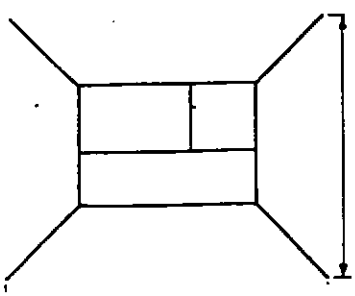
C. 2.44 M (Being the smallest base dimension), maximum platform height = 7.32 M





Where the minimum base dimension is known, the maximum permissible height can be determined. Where the platform height is known, the minimum base dimension can be determined, which must be maintained at all times.

These conditions apply to all free-standing towers.



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STABILISERS/OUTRIGGERS

To enable added stability in relation to the correct Height-to-Base Ratio (see PASMA Code of Practice, Item 5, Pages 7 to 11), the following components must be used in accordance with the type and nature of the structure being built.

a. Stabilisers

b. Outriggers

It is emphasised that (a) and (b) must be correctly fitted to towers to provide a maximum platform height to minimum base width ratio of 3.5:1 for inside use, and 3:1 for outside use.

Free-Standing Towers
Maximum Heights

Platform	Outrigger	Max. Height in metres	
Type	or Stabilizer	Type 76	Type 137
P62	SF	6.4	8.4
P82	SF	6.8	8.7
P102	ST	7.2	9.1
P62	S3	12.1	16.3
P82	S3	12.9	16.7
P102	S3	13.7	17.5
P62	SOR	8.3	7.6
P82	SOR	7.2	7.6
P102	SOR	6.1	7.6
P62	LOR	---	15.6
P82	LOR	---	14.8
P102	LOR	---	14.8

HI-WAY HIRE & ERECT

STABILISERS/OUTRIGGERS

Fig.1

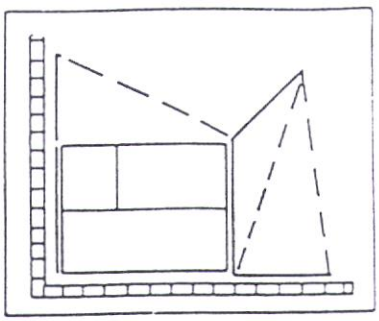


Fig.2

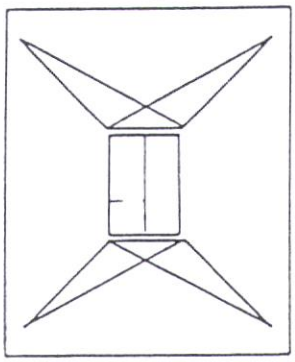


Fig. 1 Free standing tower with no obstructions using stabilisers.

Fig. 2 Free standing tower with no obstructions using small outriggers.

Fig. 3 Free standing tower with no obstructions using large outriggers.

Fig. 4 Denotes the use of outrigger where there is an obstruction along two sides. The same positions would apply for stabilisers.

Fig. 5 Denotes the use of stabilisers where there is an obstruction along the length of the tower.

Fig. 6 Denotes the use of outriggers where there is an obstruction along the length of the tower.

NOTE: It is important that when moving towers where stabilisers are used. the stabiliser feet are as close to the ground as possible and in contact with the ground when the move has been completed.

Fig.3

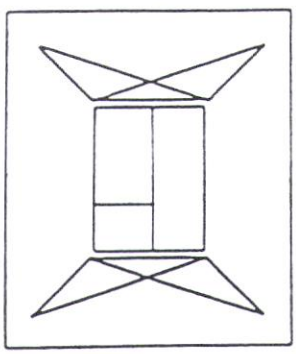


Fig.4

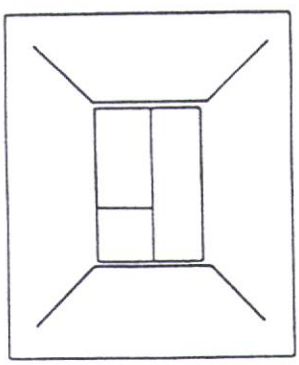


Fig.5

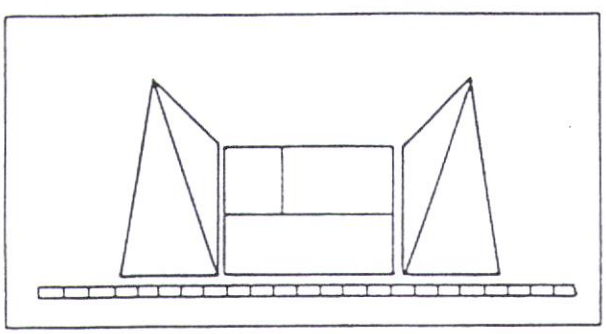
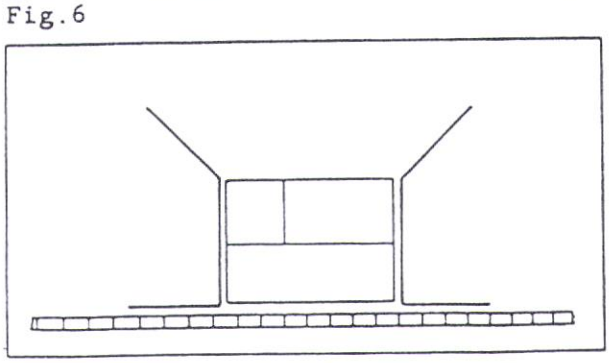


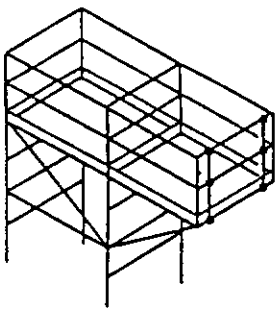
Fig.6



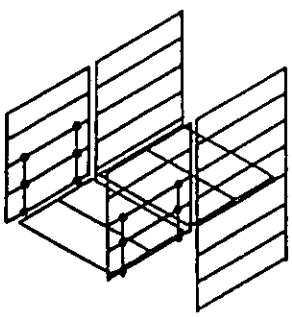
HI-WAY HIRE & ERECT

CANTILEVER ASSEMBLIES

A

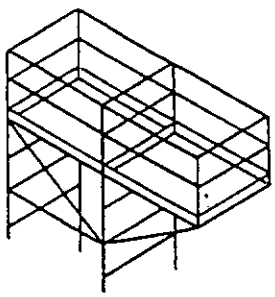


A

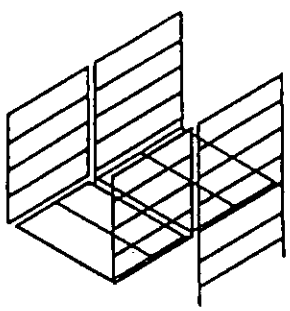


Figs. B are not recommended due to the position of the welds, but are acceptable if supported by tube and couplers as shown in Figs. A

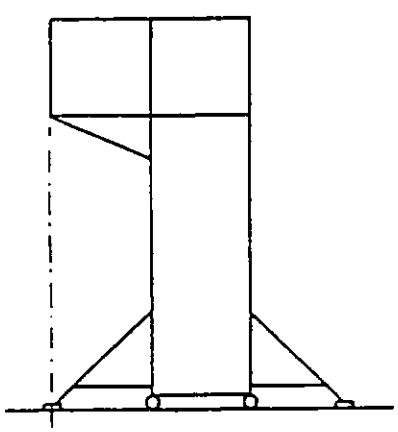
B



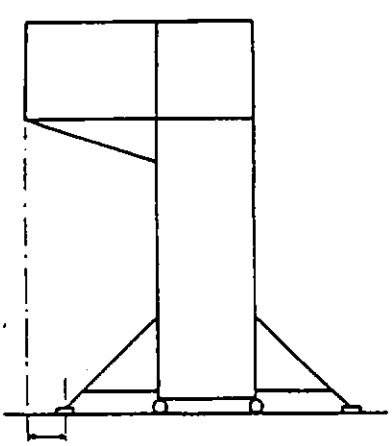
B

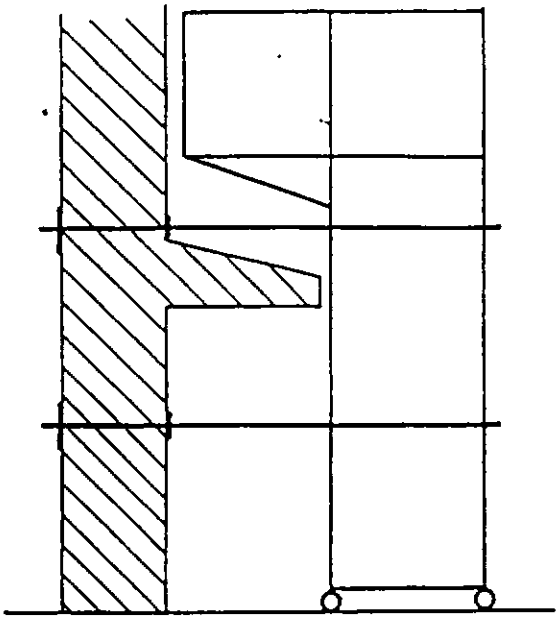


It is important when erecting, dismantling or using cantilevers that the stability is maintained. This can be achieved by:

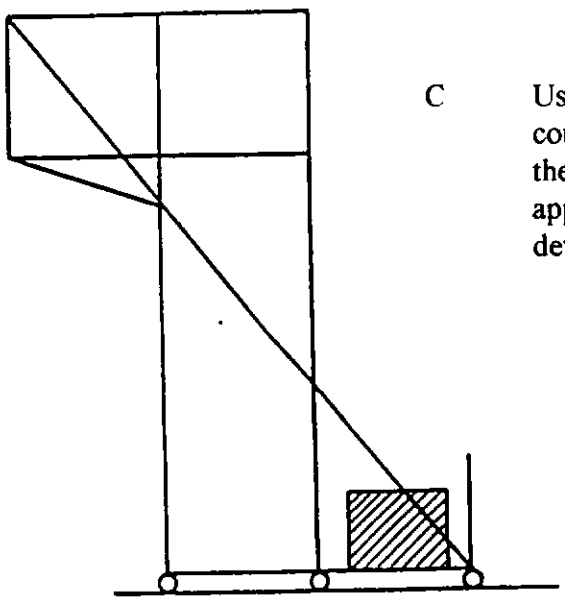


A. Using stabilisers or outriggers, but the cantilever platform must not extend past this outside stabiliser or outrigger.





B Tying in the structure.
The type of tie required would have to be either a physical type tie or a multi - anchor type tie using the large 2" I.D. rings



C Use of ballast at the base to counteract the imposed load on the cantilever. Head Office approval would be required to determine the weight needed

Note

When erecting this type of structure the method of overcoming the tipping moment must be fixed before assembling the cantilevered area. When dismantling check that the method used, e.g. ties, ballast or stabilisers/outriggers, is in position before commencing to dismantle the cantilevered area.

Any restrictions as to load or the structure's use must be given to the user before the structure is handed over. This would include the way in which it is to be moved (if mobile), worked upon, or left for any amount of time. Only structures with outriggers or of the ballast type can be used as a mobile cantilevered structure.

TIES

All ties should be fixed to prevent inwards and outwards movement, and, wherever possible, lateral movement. Only compatible tubes and fittings can be used in their construction.

Types of Ties

There are two main types of ties that should be considered:

a. *Removable Ties.*

b. *Non-removable Ties.*

When (a) above is considered it is obvious that when a tie is removed a larger area of scaffold will be without ties. Therefore the spacing of the ties where this occurs should be closer together, i.e. a greater number of ties over a given area. The frequency should always be 32m of scaffold area and should be evenly distributed over the scaffold area horizontally and vertically.

Where ties will not be removed the frequency should be 40m evenly distributed over the scaffold area horizontally and vertically.

Where towers are concerned the spacing should not exceed 6m (19'6") either horizontally or vertically, e.g. a 30' tower would require two ties, but if reveal ties are used only one of the ties can be of the reveal type.

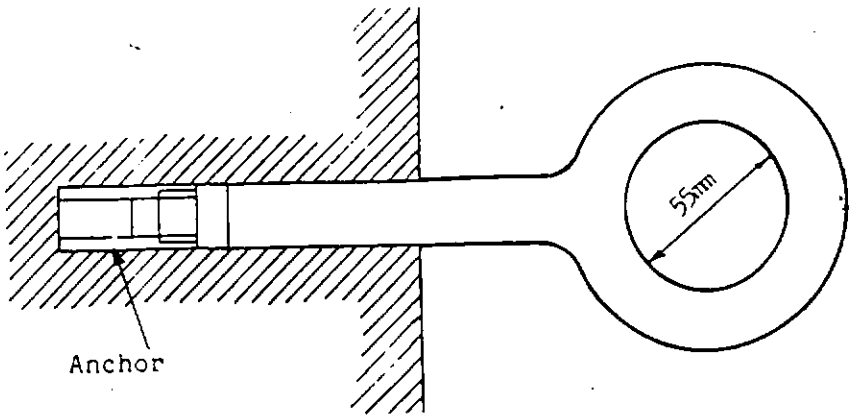
The areas quoted are maximums. The use, position, and area in which the scaffold is to be used must be taken into account, but under no circumstances must these tie spacing be exceeded.

Fixing of Ties

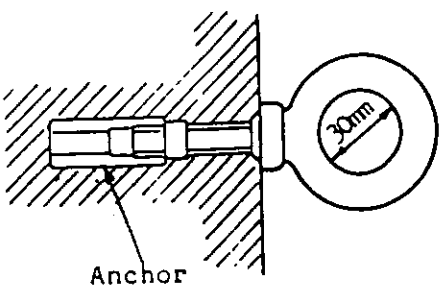
As mentioned above only compatible tubes and fittings are to be used. When fixing the tubes to the scaffold the tubes should be horizontal or sloping downwards, they should never slope upwards.

The building should be strong enough at the point of attachment of the tie to resist the forces that will be put upon it. The ties should be attached to both the inside and outside standards of the scaffold and fixed couplers used wherever possible. Where a wire bond is used and there is a possibility of it slipping down or along the tube then a safety check coupler must be used at this point.

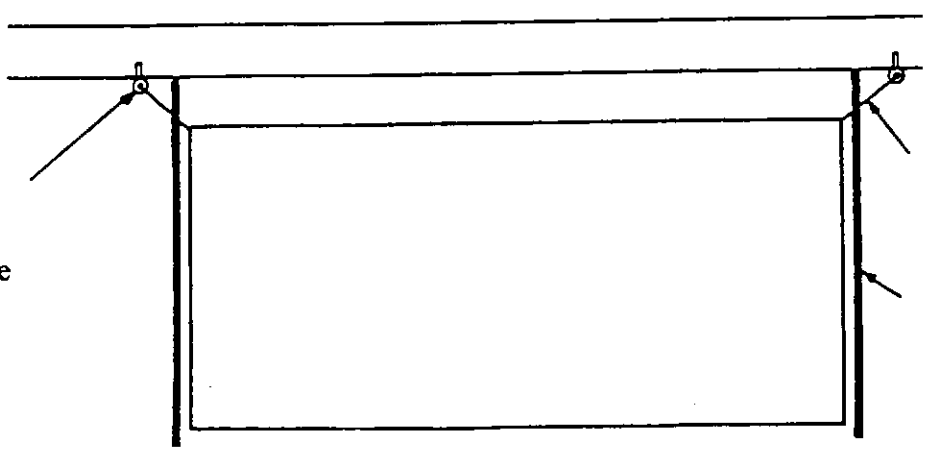
Where the type of tie is of the Anchor kind and a hole is required in the brickwork the centre of the brick must be drilled carefully to ensure that a good fixing is maintained. Where the smaller ring bolt is used, a 6mm wire bond may be used to tie the scaffolding to the building. A minimum of three turns must be used through the ring and around the member of the structure. They must be fixed at an angle to the member to give adequate security against sideways movement. The butt ties must be fixed to both the inside and outside standards, and be fixed with fixed couplers.



Typical ring bolt tie



Typical wire or bank tie anchorage



Conditions When Ties Must be Used

a. Where there is a possibility of adverse weather conditions, e.g. high winds.

b. Where the structure is located where the wind has a tunnelling effect, e.g. large empty buildings where the ends are open.

c. When the work is of the nature where force is applied in a horizontal attitude, e.g. drilling.

d. When a gin wheel is used.

e. It is advisable to tie the tower in when it is to be left unattended for any appreciable time. This is especially relevant if it is being used where the public has access, e.g. schools, high streets, etc.

General Guidance

a. Anchor or through ties should be used whenever possible.

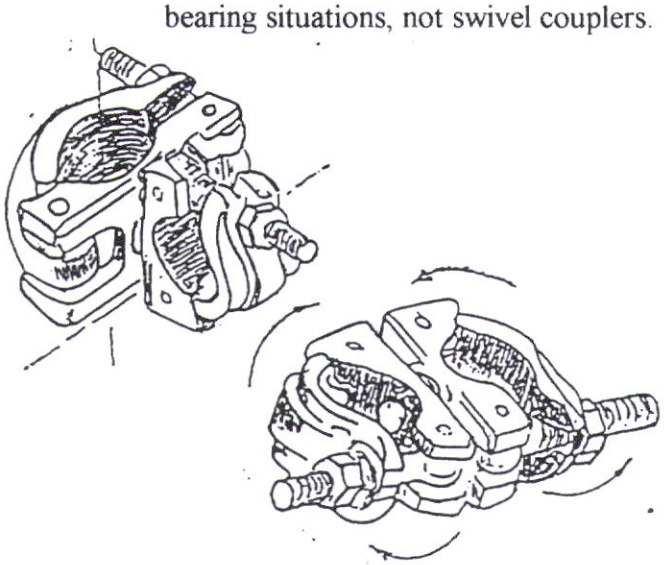
b. Reveal ties should only be used where anchor or through ties cannot.

c. Only a maximum of 50% of reveal ties are permissible throughout the structure. Anchor or through ties must constitute the other 50%

d. When fixing ties, connecting tubes must be kept as near as possible to the underside of the platforms.

e. Wherever possible reveal ties should be fixed into place horizontally and not vertically, and as close to the window reveal at the opposite end of the tube to where the reveal pin is situated as possible.

f. Only fixed couplers of the recommended type should be used in load-bearing situations, not swivel couplers.



FIXED COUPLER Part No. 4-7-1730

Used for joining two tubes together at right angles to each other only

SWIVEL COUPLER Part No. 2465

Used for joining two tubes together at any angle

WIRE ROPES

Most wire ropes have fibre strands included in the lay. The fibre is used as a reservoir for lubricant, which should be applied to prevent internal abrasion.

Regular and careful examinations of wire ropes is necessary to detect faults. Signs to look for carefully are broken wires, flats on outer wires, birdcaging, the strands starting to unlay, corrosion, and any evidence of crushing.

Standards are laid down to determine when a rope is no longer serviceable. No wire rope should be used if in any length of ten times the diameter the total number of visible broken wires exceeds 5% of the total wires in that rope. The cause of the breaks should be determined wherever possible. Some ways in which wires are broken are:

a. *A wire can be cut, such breaks are easily distinguished.*

b. *A wire may be pulled by tension. This will produce a typical 'Cup and Cone' break with some necking. Necking comes from the ductility of wire metal It is usually the result of overloading.*

c. *A wire may be broken by fatigue which will produce no necking, but square ends having a granular structure that could be visible to the naked eye.*

d. *A wire may be broken by crushing.*

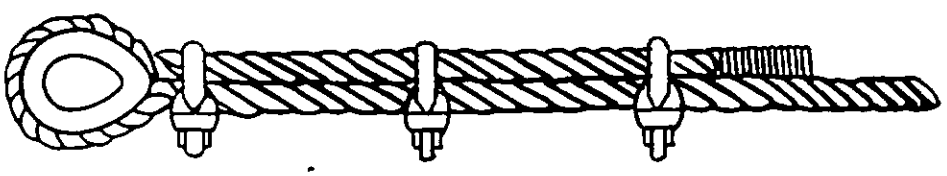
e. *A wire may be broken by twisting.*

f. *A wire may be broken by abrasion. This is visible as a highly polished surface of wire, and at the break the surface reduced to a knife-edge.*

g. *A wire may break because it has been contaminated by a corrosive material. The general condition of the rope may reveal this, but pitting of individual wires will also be visible.*

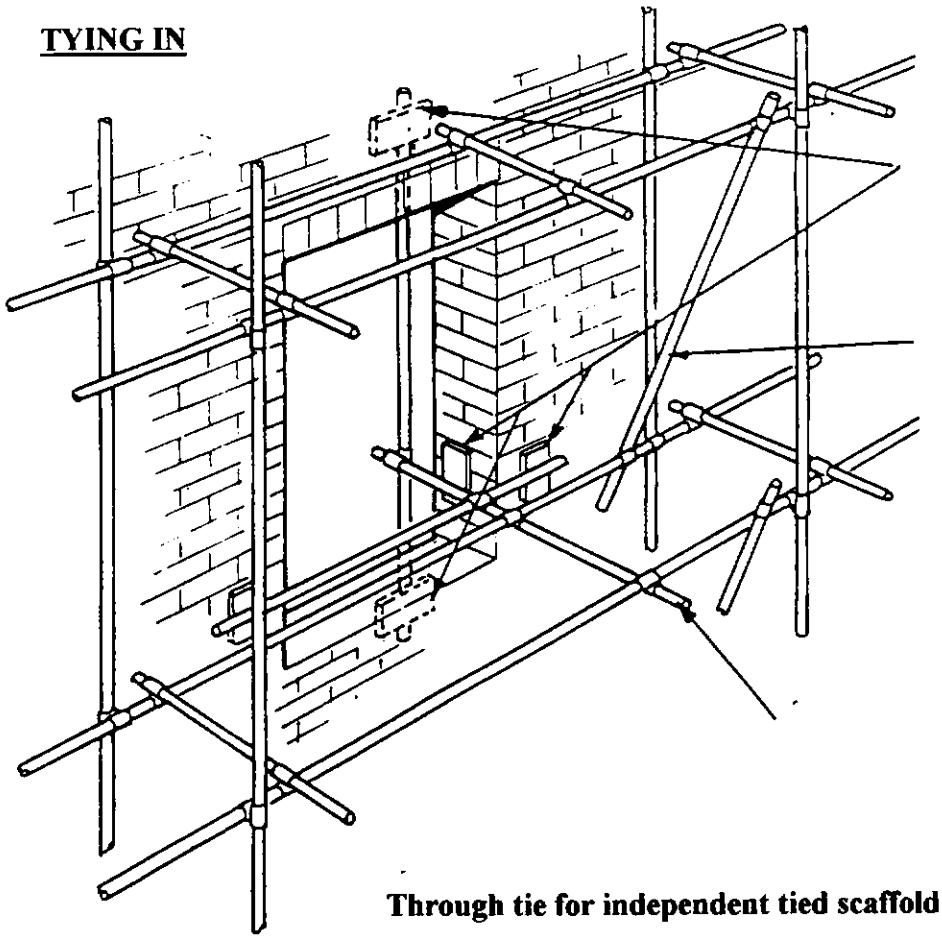
Usually wires fail because of a combination of fatigue, tension and abrasion.

Bull-dog grips can be an effective means of securing the end of a wire rope. If the grips are fitted correctly they should be fitted as in Fig. 1. The nuts must be tightened as much as possible, and periodic checks made to ensure that they have not become loose.



HI-WAY HIRE & ERECT

TYING IN

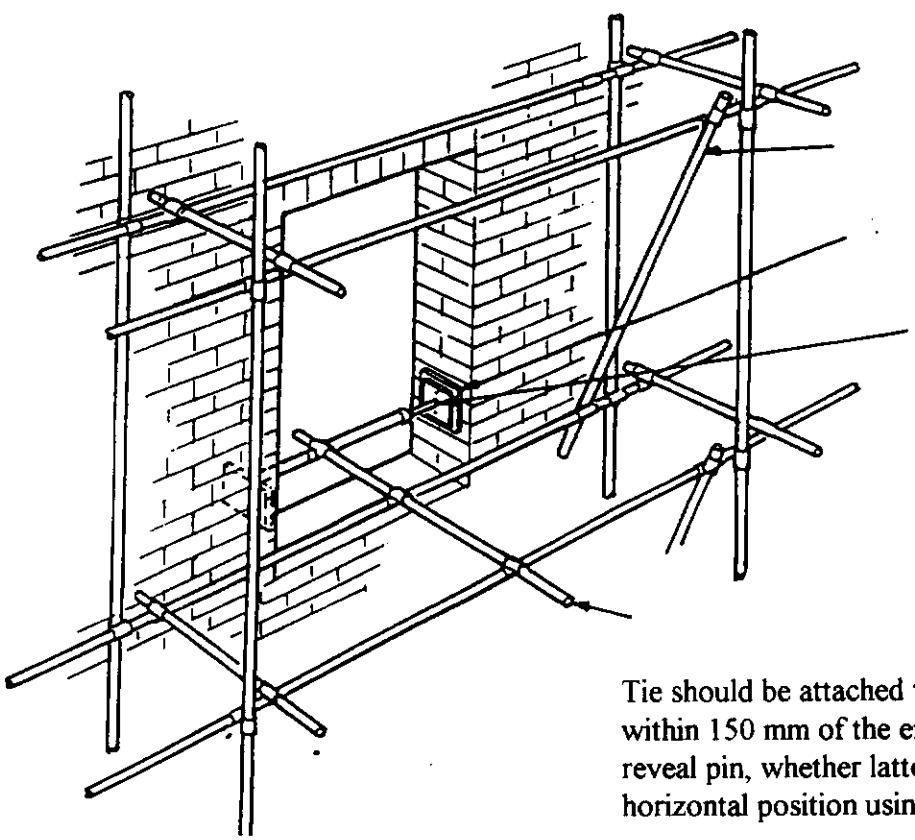


Secured Packing

Ledger Bracing

Tie fixed with right angle couplers and placed close to the window reveal

Through tie for independent tied scaffold



Ledger Bracing

Timber Packing

Reveal Pin

Tie should be attached to the reveal tube within 150 mm of the end opposite to the reveal pin, whether latter is the vertical or horizontal position using right angle couplers

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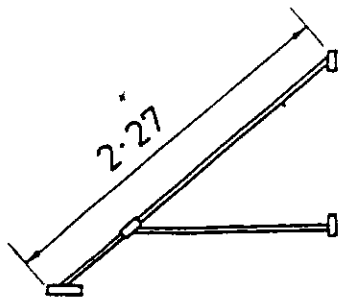
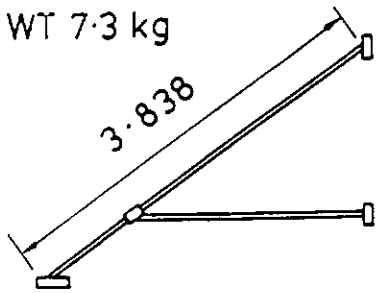
STABILISERS

WT 3·9 kg



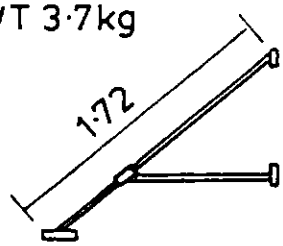
CODE : SF

WT 7·3 kg



CODE : S3

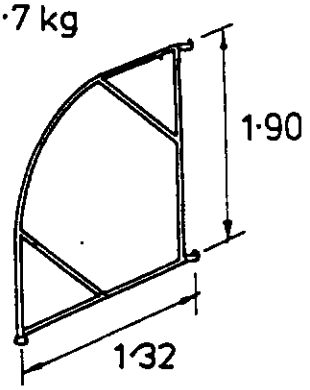
WT 3·7kg



CODE: S1

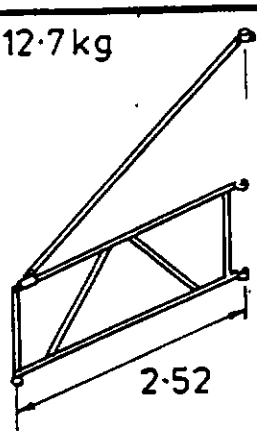
OUTRIGGERS

WT 5·7 kg



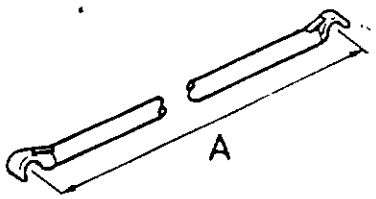
CODE : SOR
NOTE! USE BRACE
BDS 8 TO LOCK

WT 12·7 kg



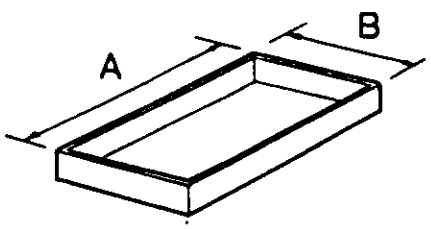
CODE: LOR
NOTE ! USE BRACE
LOR B TO LOCK

BRACES



CODE	TITLE	DIM A	WT kg
BH 6	6'-0" HORIZONTAL BRACE	1·67	1·7
BH 8	8'-0" HORIZONTAL BRACE	2·36	2·2
BH 10	10'-0" HORIZONTAL BRACE	2·97	2·6
BDS 6	6'-0" DIAGONAL BRACE	1·84	1·8
BDS 8	8'-0" DIAGONAL BRACE	2·48	2·3
BDS 10	10'-0" DIAGONAL BRACE	3·09	2·6

TOE BOARD SETS



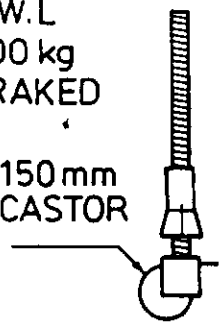
CODE	DIMENSION A	DIMENSION B	WT kg
T 62	1·57	0·61	6·2
T 82	2·26	0·61	9·6
T 102	2·87	0·61	11·9
T 64	1·57	1·22	7·9
T 84	2·26	1·22	11·4
T 104	2·87	1·22	14·5

ADJUSTABLE LEGS

WT 4·1 kg
S.W.L
300 kg
BRAKED

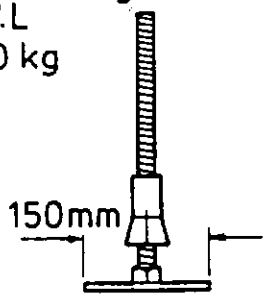
S.W.L
120 kg
ROLLING

150mm
CASTOR



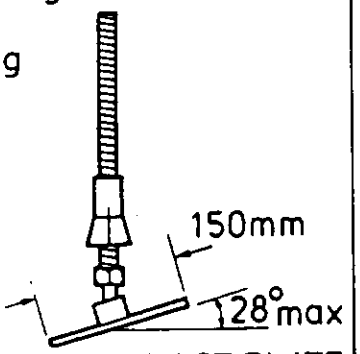
LEG WITH CASTOR
CODE : CA 6

WT 1·85 kg
S.W.L
300 kg



LEG
WITH FIXED BASE PLATE
CODE : BP/A

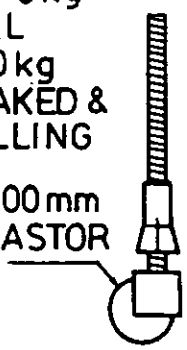
WT 2·1kg
S.W.L
300 kg



WITH SWIVEL BASE PLATE
CODE : SBP/A

WT 6 kg
S.W.L
550 kg
BRAKED &
ROLLING

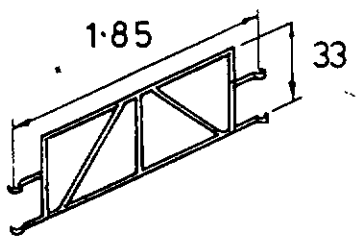
200mm
CASTOR



LEG WITH CASTOR
CODE : CA 8

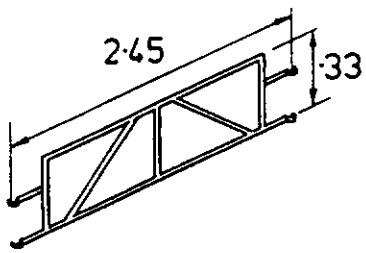
BEARER BEAMS

WT 8·1kg



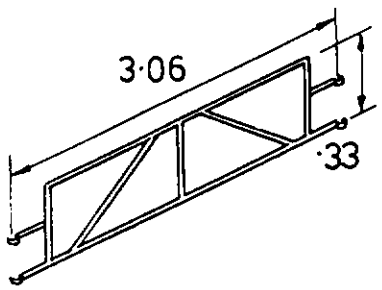
CODE : BB 6

WT 9·6kg



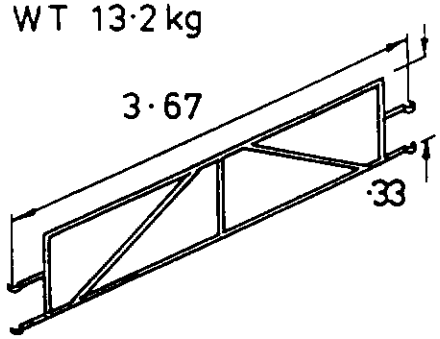
CODE : BB 8

WT 11·7kg



CODE : BB 10

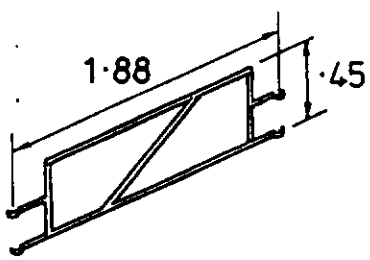
WT 13·2kg



CODE : BB 12

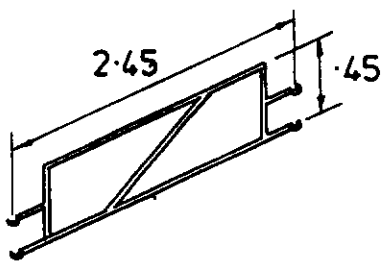
LINK FRAMES

WT 6·1kg



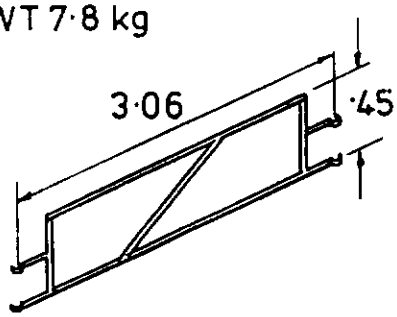
CODE : LF 6

WT 6·8kg



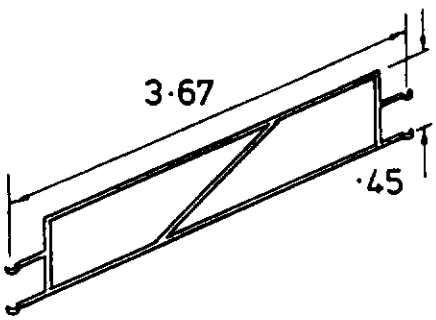
CODE : LF 8

WT 7·8kg



CODE : LF 10

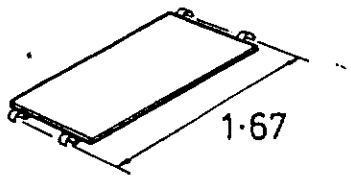
WT 8·5kg



CODE : LF 12

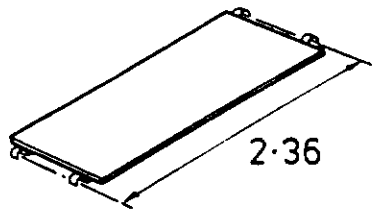
PLATFORMS 0·61 WIDE

WT 14·1kg
SWL 364kg



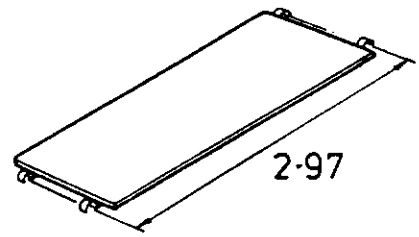
CODE : P62

WT17·8kg
SWL 295kg



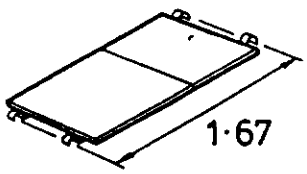
CODE: P82

WT25·4kg
SWL 273kg



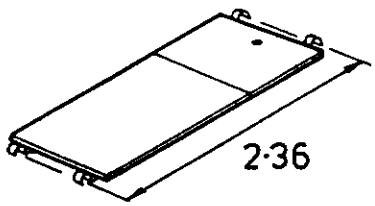
CODE: P 102

WT 14·9 kg
SWL 364kg



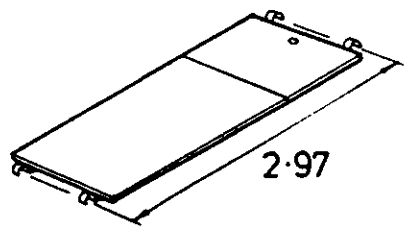
WITH TRAPDOOR
CODE : PT 62

WT 20·5 kg
SWL 295kg



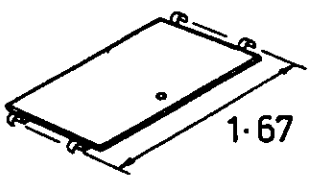
WITH TRAPDOOR
CODE: PT 82

WT 25·6kg
SWL 273kg



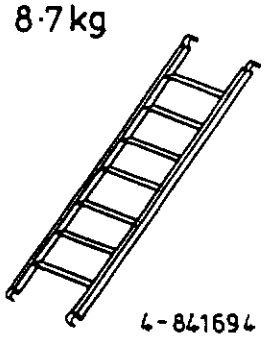
WITH TRAPDOOR
CODE: PT 102

WT 14·9 kg
SWL 364kg



HINGED PLATFORM
CODE : PH 62

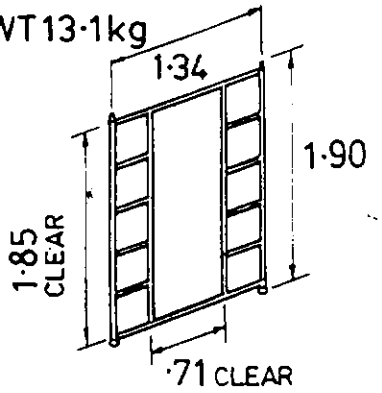
WT 8·7kg



CLIP IN STAIRWAY
6'0" SPAN [1·83m]
CODE : STC/S 1623B

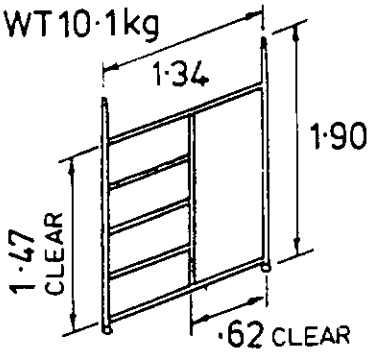
WALK THROUGH FRAMES

WT 13·1kg



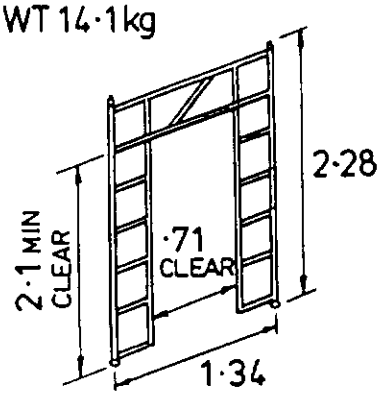
CODE : MLWT

WT 10·1kg



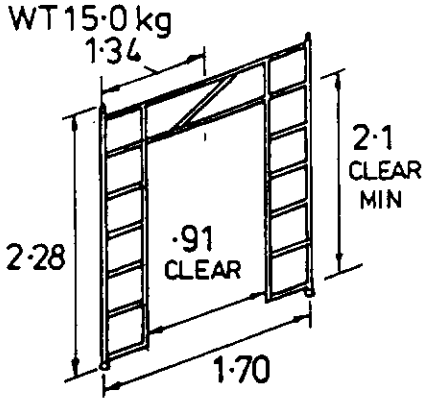
CODE : WEF 46

WT 14·1kg



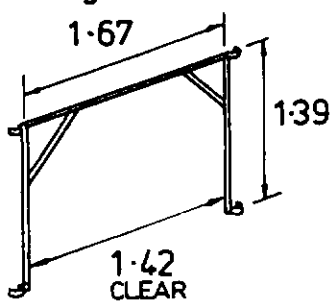
CODE : WBF 46

WT 15·0 kg



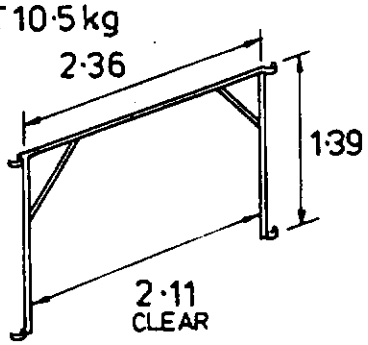
CODE : WBF 63

WT 10·0 kg



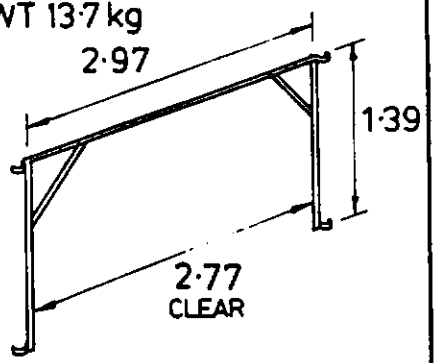
CODE : HCF 6

WT 10·5 kg



CODE : HCF 8

WT 13·7 kg



CODE : HCF 10

END FRAMES WITH 1·34 CENTRES

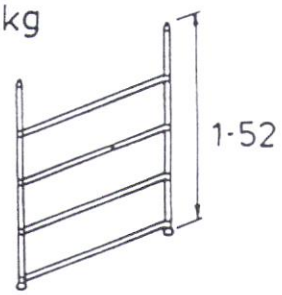
WT 10·3 kg

6 RUNG
CODE : EF 646

WT 9·0 kg

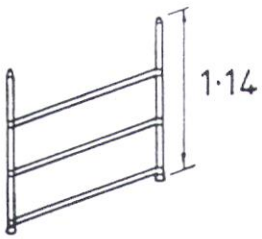
5 RUNG
CODE : EF 546

WT 7·7 kg



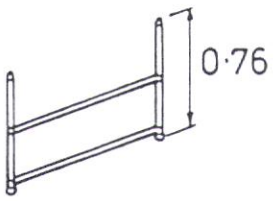
4 RUNG
CODE : EF 446

WT 6·0 kg



3 RUNG
CODE : EF 346

WT 4·2 kg



2 RUNG
CODE : EF 246

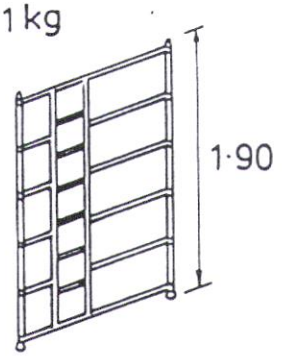
WT 1·7 kg

1 RUNG
CODE : EF 146

WT 16·0kg

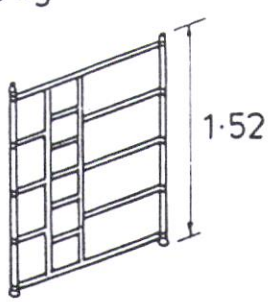
LADDASPAN 6 RUNG
CODE : SL 646

WT 13·1 kg



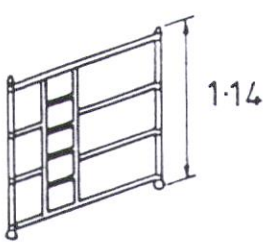
LADDASPAN 5 RUNG
CODE : SL 546

WT 10·5 kg



LADDASPAN 4 RUNG
CODE : SL 446

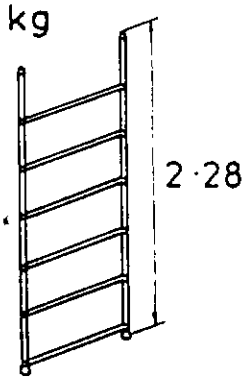
WT 8·6 kg



LADDASPAN 3 RUNG
CODE : SL 346

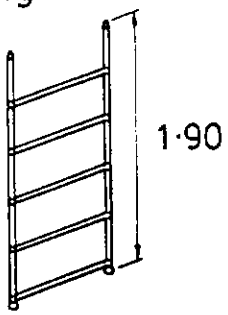
END FRAMES WITH 0·67 CENTRES

WT 8·9 kg



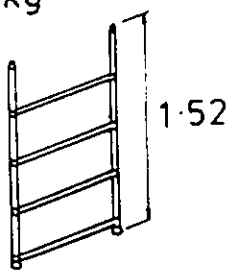
6 RUNG
CODE: EF 626

WT 7·5 kg



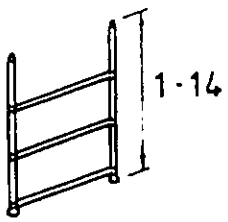
5 RUNG
CODE: EF 526

WT 6·1 kg



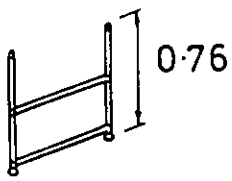
4 RUNG
CODE: EF 426

WT 4·7 kg



3 RUNG
CODE: EF 326

WT 3·3 kg

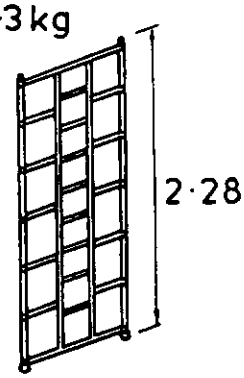


2 RUNG
CODE: EF 226

WT 1·3 kg

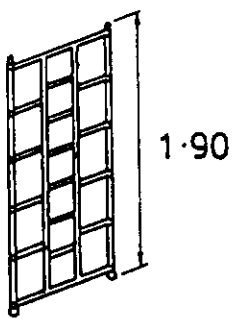
1 RUNG
CODE EF 126

WT 12·3 kg



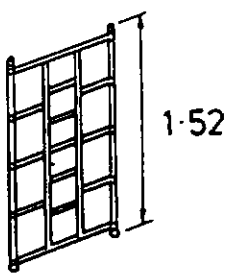
LADDASPAN 6RUNG
CODE: SL 626

WT 10·5 kg



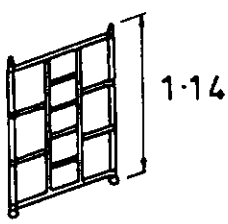
LADDASPAN 5 RUNG
CODE: SL 526

WT 8·7 kg



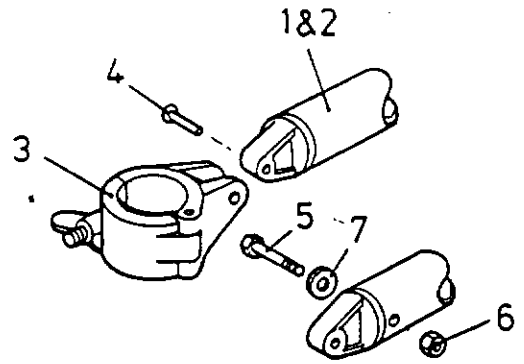
LADDASPAN 4 RUNG
CODE: SL 426

WT 6·9 kg

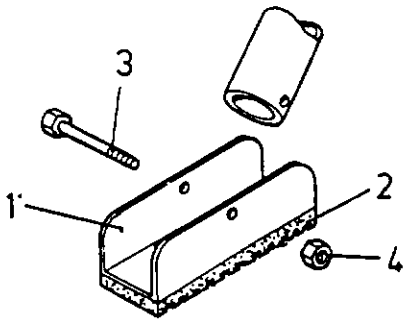


LADDASPAN 3 RUNG
CODE 326

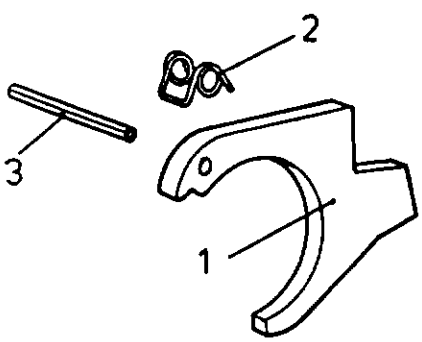
SPARE PARTS



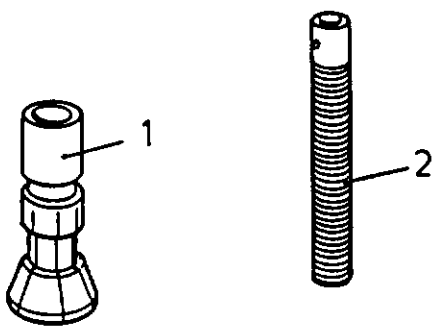
STABILISER CLAMP/EYE ASSY.



STABILISER FOOT ASSY.

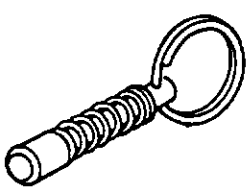


HOOK LATCH & SPRING



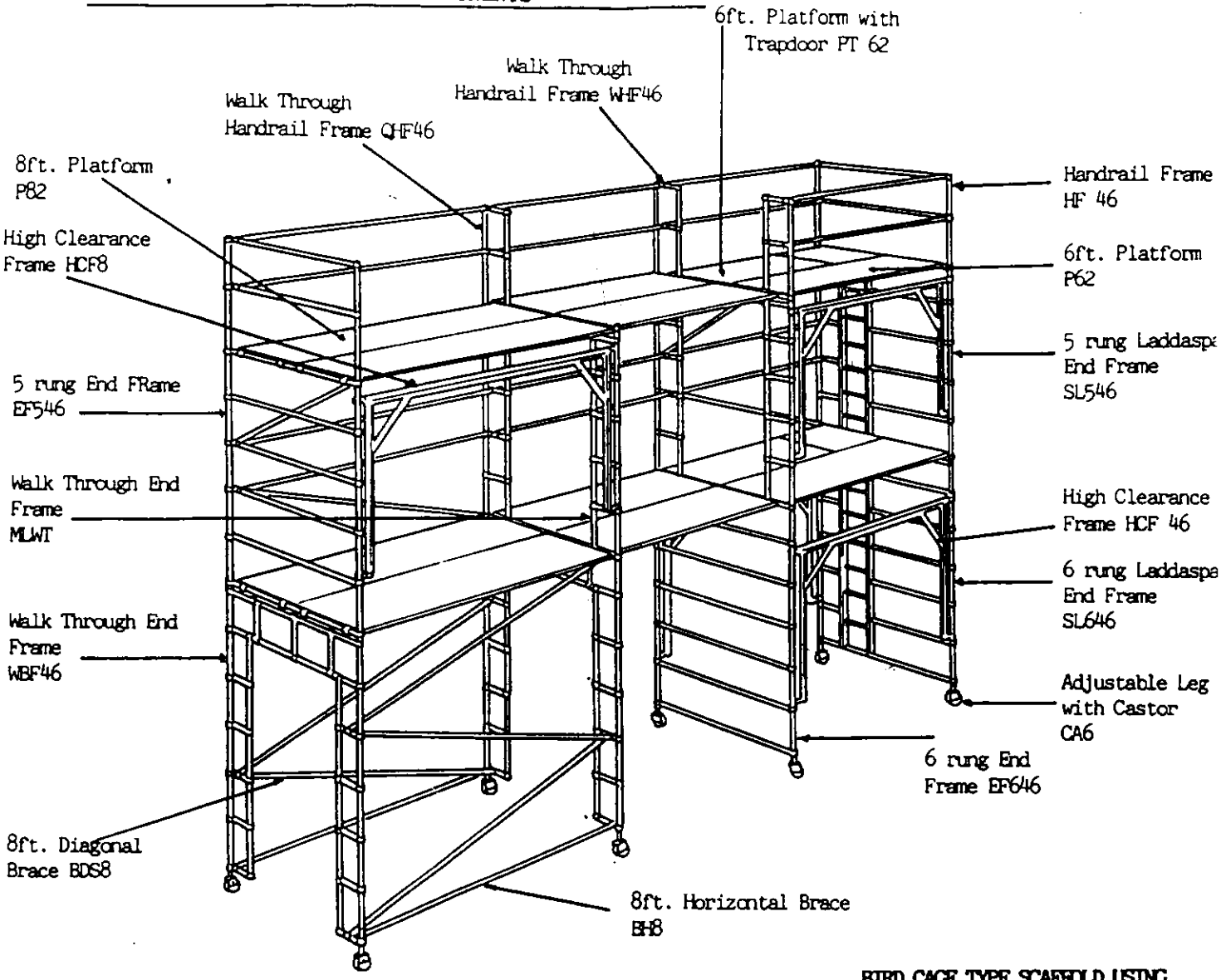
COLLET

SCREWED LEG



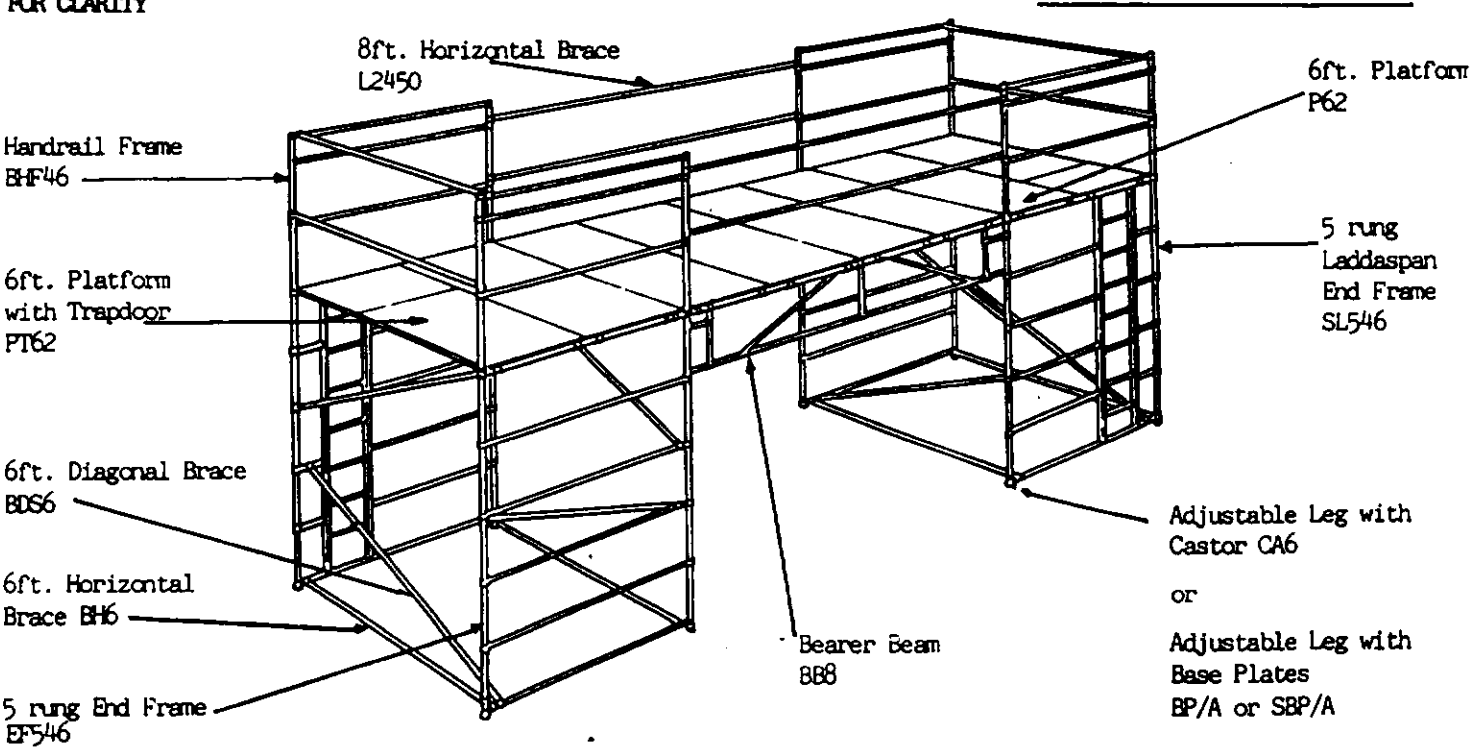
LOCK BOLT ASSY.

STANDARD TYPE SCAFFOLD USING STANDARD EQUIPMENT AND ADDITIONAL STANDARD COMPONENTS



TOEBOARDS ARE REQUIRED BUT HAVE BEEN OMITTED FOR CLARITY

BIRD CAGE TYPE SCAFFOLD USING BEARER BEAMS



ASSEMBLY PROCEDURES (LADDA SPAN)

For this training exercise it is assumed that a free-standing 2-section Tower, with Guard-Rails will be erected on a firm and level surface. Protective clothing must be worn, i.e. overalls, sturdy shoes and helmet. Refer where appropriate to sections in Part I where necessary.

LEG AND CASTOR/BASE PLATE ASSEMBLIES

To prepare either assembly. First ensure that the collet and screwed leg are not damaged; that they are free from dirt, and can travel freely. (If a CA6 is being prepared as shown in FIG. 1..apply the brake). Set the collet on both types to approximately 6mm (1/4") above the adjustment nut.

'Leg Adjustment' is explained on Page 4.

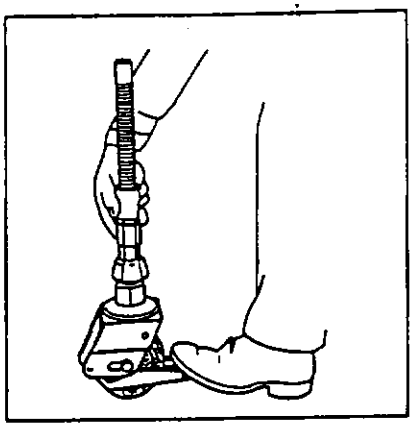


Fig.1

BASE FRAMES

a. Two standard End Frames - i.e. one Ladda-Span (SL546) and one Span Frame (EF546) are used for Base Frames.

Prepare one of the Frames to receive the Castor/Base Plate assemblies by standing it on its side.

b. Release lockbolt as in Fig.2.

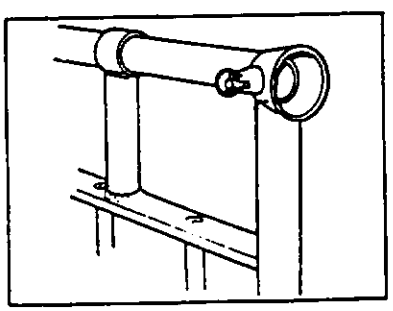


Fig.2

c. Fully insert the correct assembly into the End Frame (in this case a CA6), and engage the lock-bolt as shown in Figure 3.

Ensure that the 6mm (1/4") gap between the collet and adjustment nut is maintained, and that the brake is still on.

Turn the End Frame over onto its opposite side and repeat as above.

Repeat the procedure for the second end frame.

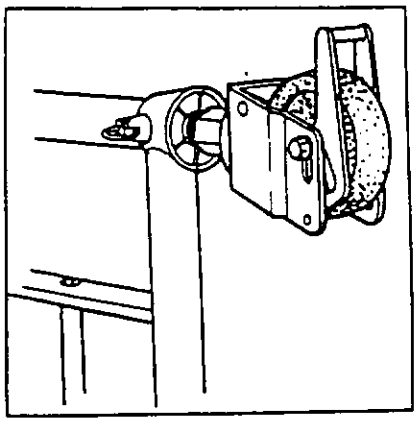


Fig.3

BASE SECTION

a. Stand the SL546 Ladda-Span End Frame up on its Castors, and using a horizontal BH6 Brace, clip one end of the Brace to the inside of the Frame's vertical post above the second rung.

Temporarily support the Frame by lowering the free end of the attached Brace to the ground, as shown in Fig. 4.

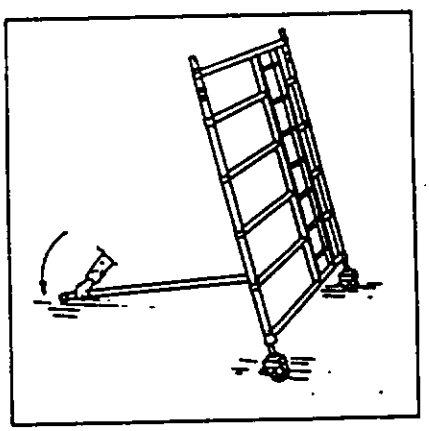
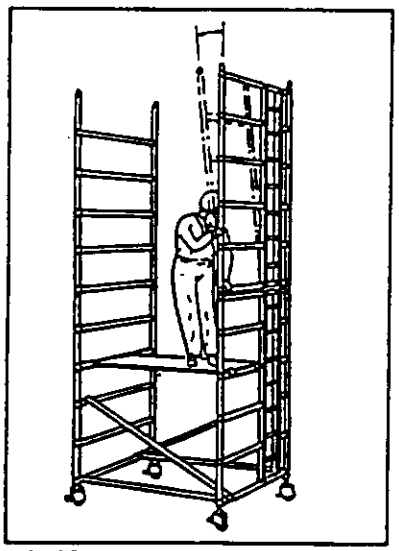


Fig.4

UPPER SECTIONS

a. Having ensured that the Base Section is level, fit two End Frames onto the top of the Base Section and secure, as in Figures 12 and 13.

b. Remember to climb the ladders on the inside of the Structure, and to tilt all upper Frames inwards for ease of location before straightening them up and lock-bolting.



(Tilt Frames inward for ease of location.).

Fig.12

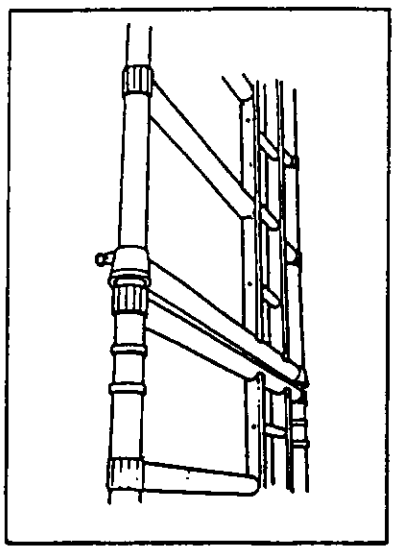


Fig.13

c. Attach two BDS6 Diagonal Braces to the Base Section as in Figure 14, and two more Braces to the upper two End Frames as illustrated in Figure 15.

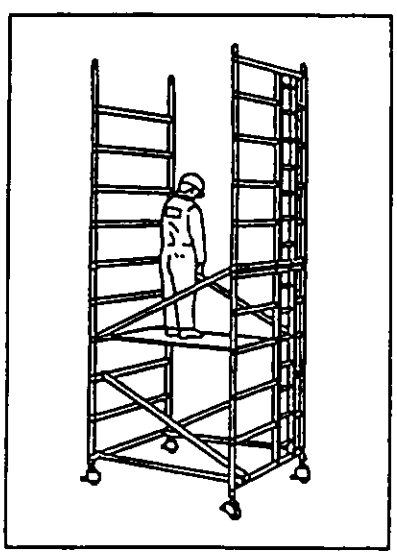


Fig.14

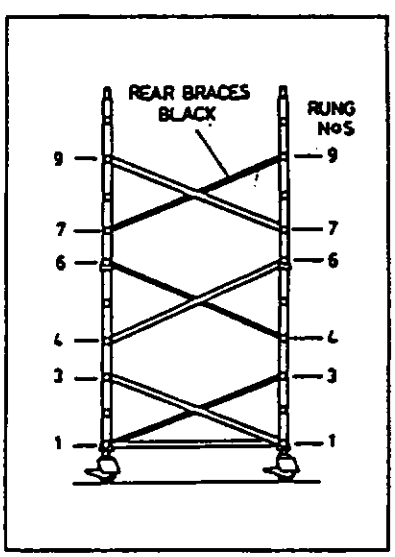


Fig.15

GUARD -RAILS, PLATFORMS & TOE-BOARDS

a. Raise the Platform up three rungs so that it fits into place on the second rung of the upper two End Frames (Figure 16)

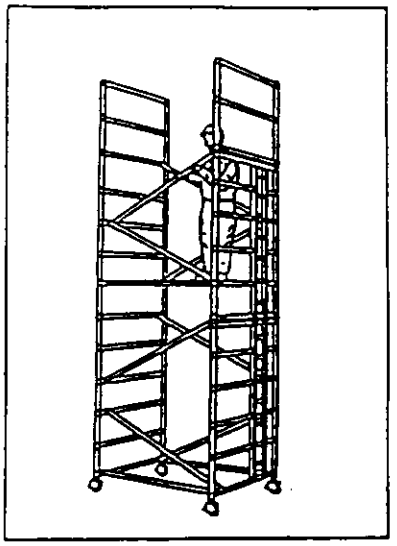


Fig.16

b. Fit two HF46 Guard-Rail Frames to the top of the upper section and fit two BDS6 Diagonal Braces in a criss-cross pattern so that one end is clipped to the fourth rung of each End Frame, and the other end to the bottom rung of the HF46 Frames.

c. To complete the working platform and guard-rail section, use the existing P62 Platform as an 'intermediate' level and have raised a second P62 Platform, which should be passed up through one of the Frames from outside of the Tower and placed onto the bottom rungs of the Guard-Rail Frames (Figure 17)

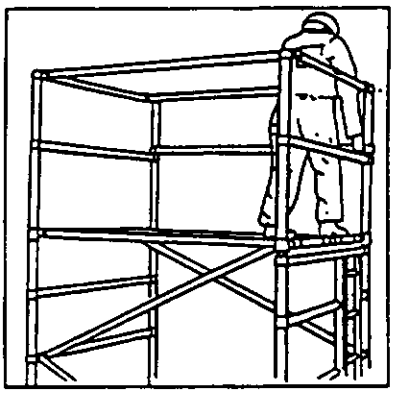


Fig.17

d. Fit three horizontal Braces as in Figure 19. and fit toe-boards into place against the Guard-Rails, sliding the side boards into place in their appropriate slots (Figure 18)

Fig.18

STABILISERS/OUTRIGGERS

There are two basic types of Stabiliser/Outrigger

i. Those used on Towers from 19'9" - 32'3" high (6m to 9.83m)

ii. Those used on Towers from 19'9" - 44'9" high (6m to 13,64m)

Although stabilisers/outriggers are not necessarily required for work which might be carried out on the now completed two section tower, it is vital that the assembly instruction continues on the assumption that either will be required in relation to the tower's height, mobility and other considered features.

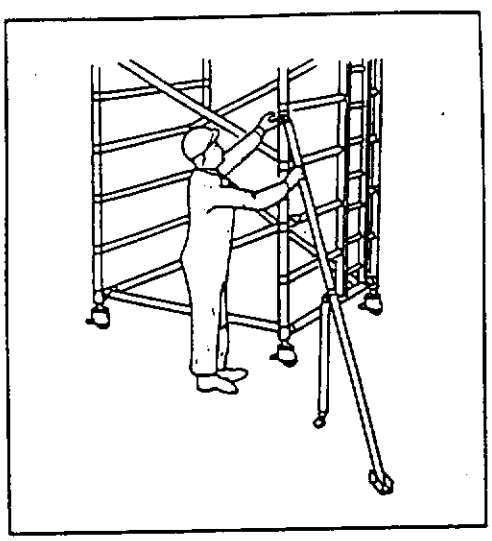


Fig.21

STABILISERS

a. In Fig. 21, an SF type stabiliser is shown being fitted to the Base Section. Four of these will be fitted, one to each corner post.

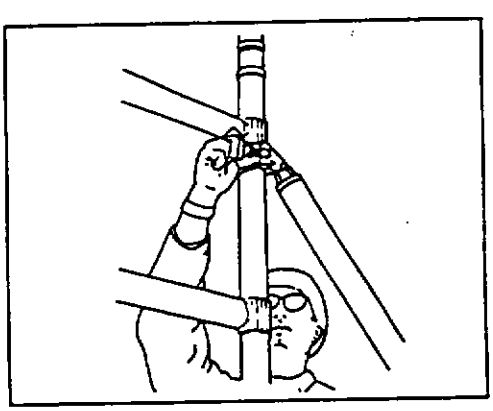


Fig.22

b. Fit Stabilisers as in Plan 'A' (f) at about 45 from each corner post, by first of all connecting the main spar tube-coupling of the Stabiliser near to the underside of the fifth rung of the End Frame. Lightly tighten up the wing nut. (Figure 22)

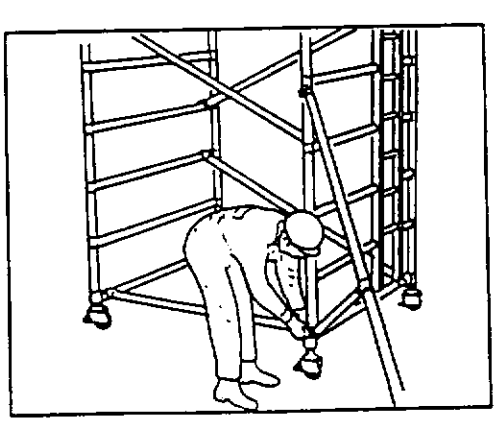
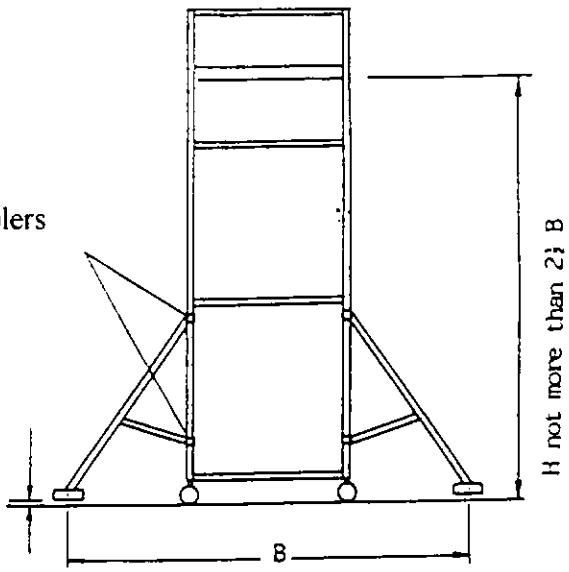


Fig.23

c. Connect the tube-coupling of the Stabiliser 'swing-arm' (Fig. 23) to a position between the first and second rung of the End Frame.

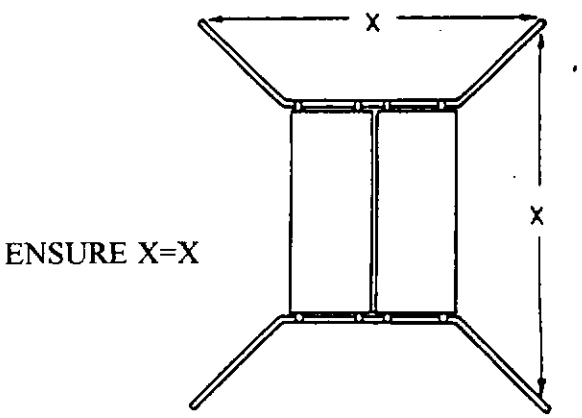
d. Ensure that the padded foot on the stabiliser touches the ground by moving, to a small degree, the stabiliser's swing-arm up or down and tighten all wing nuts.

e. Never attempt to move a mobile tower with stabilisers unless action has been taken to ensure that the stabiliser feet are approximately 1/2" (12mm) off the ground (Elevation A). Adjust as in (d).



Elevation 'A'

f. As stated in the PASMA Code of Practice (Page 13, Fig. 7) a tower should be dismantled to 2 1/2 times its smallest base dimension before being moved.



OUTRIGGERS - SOR (small) LOR (large)

Small Outrigger (SOR)

a. Insert a CA6 castor assembly into the outrigger as shown in Fig. 5. Fit the outrigger to the corner post of the base section (Fig. 24)

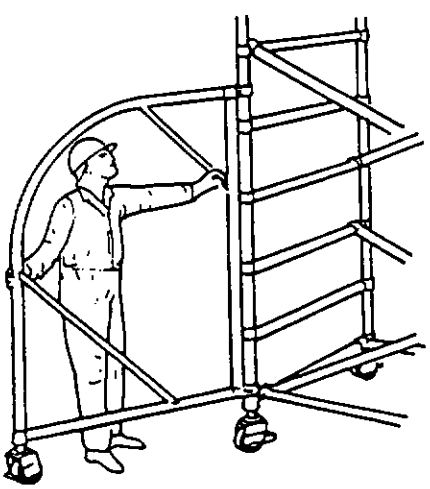


Figure 24

b. Ensure that the upper hook clips into place between the two collars as showwn in Fig. 25.

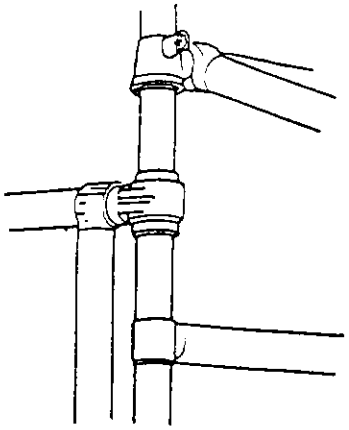


Fig.25

c. Clip a BDS8 (small outrigger brace) into position as indicated in Fig. 26 to obtain the correct positioning of the outrigger.

Adjust CA6 so that all 8 wheels are on the ground with brakes on.

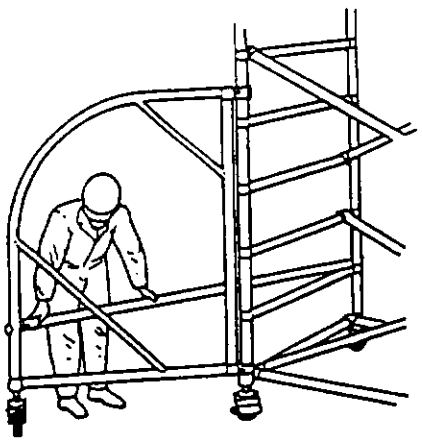


Fig.26

d. For a free-standing tower (no obstructions) all four fully connected SOR's would look like the configuration shown in Fig. 27.

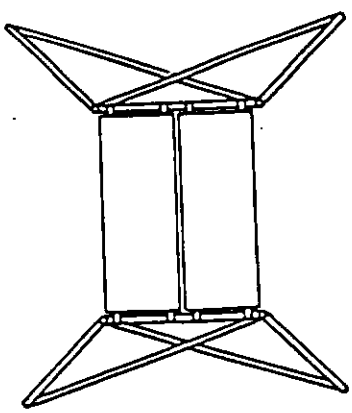


Fig.27

<u>Large Outrigger</u> (LOR)

a. Insert a CA6 castor assembly in the outrigger as shown in Fig. 5. Fit the outrigger to the corner post of the base section (Fig. 28)

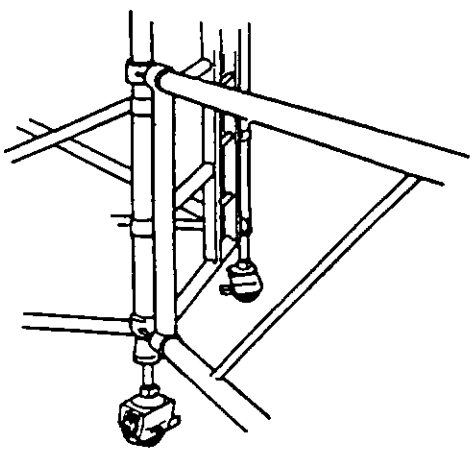


Fig.28

Note:

Any final Leg Adjustments on the Outriggers should be made by turning the hexagonal wheel nut by hand - i.e. before any weight is put on the Tower.

BEFORE USE, ENSURE THAT .....

All wheels touch the ground.

All Brace couplers have been connected.

All Wing Nuts are tightened.

All wheels are locked.

ROPES AND TYING PROCEDURE

EXAMINATION OF ROPES (GUIDANCE)

Examination of ropes necessitates the definition of a standard of rejection or acceptance. As there can be no hard and fast boundary lines drawn between ropes fit for further use and those that should be scrapped, reliance must be placed upon the assessment of a competent person. He must review all the circumstances and be familiar with the range of causes of damage. The assessment will take into account many factors that are the commonest cause of damage, including the following:-

a. External wear due to dragging over rough surfaces. Filamentation or the breakage of fibres is readily noticeable on the outer surfaces of the rope, and its extent and importance assessed.

b. Local abrasion due to the passage of the rope over a sharp edge.

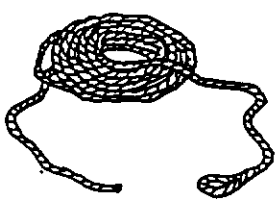
c. Cuts indicated by local rupture or loosening of the yarn or strands causing possibly internal as well as external damage.

d. Internal wear caused by repeated flexing of the rope, particularly when wet and when aggravated by particles of grit picked up and held, Excessive looseness of strands or powdered fibre are indications of this.

e. Heat and strong sunlight may both contribute to the weakening of the rope fibres.

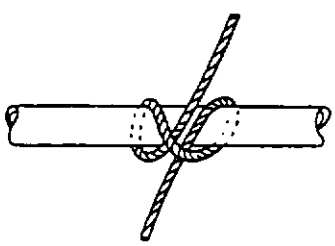
f. Mildew and chemical rot. It is necessary to open up the strands slightly and inspect at about every two feet along the length of the rope.

ROPES



Ruigging ropes should only be used for rigging and for no other purpose.

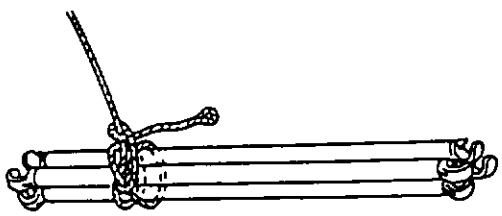
CLOVE HITCH KNOT



This knot should be used when tying braces, step sections and end frames.

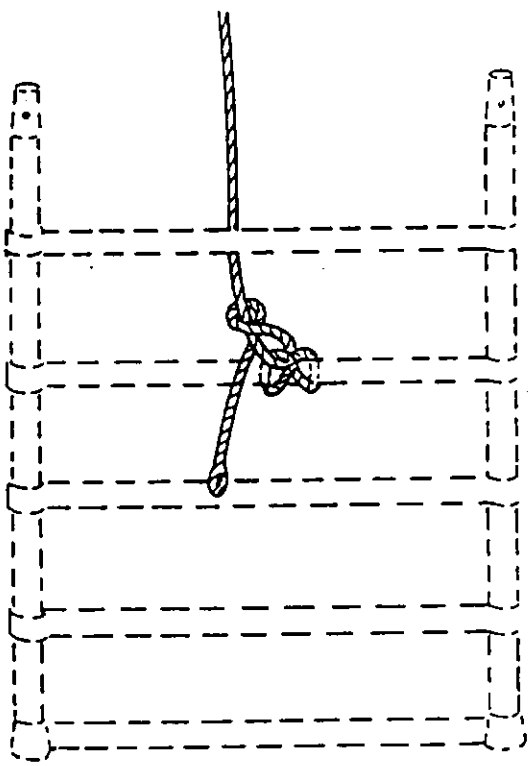
TYING BRACES

Braces should be tied using a clove hitch knot at a point about two thirds along the length of the braces.



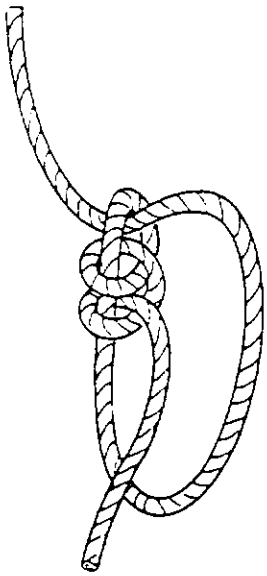
TYING END FRAMES

End frames should be tied as illustrated using a clove hitch knot. The rope should be passed under the top rung when hoisting.



HI-WAY HIRE & ERECT

A **SLIP KNOT**



TYING PLATFORMS

Platforms should be tied using the slip knot, at an 'end over end' position. An alternative knot is illustrated in the sketch below which is called a timber hitch.

(***Note*** which way the board faces as opposed to 'A')

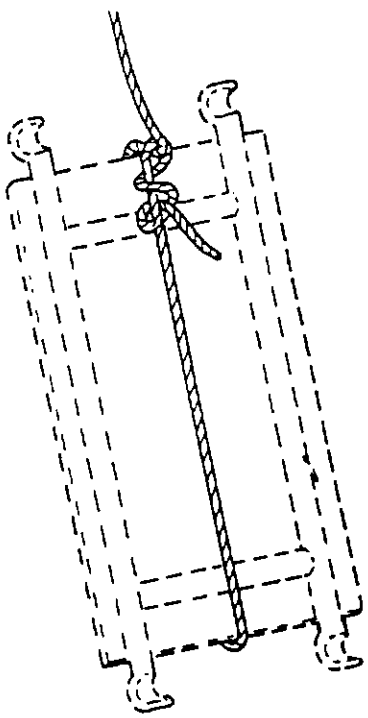
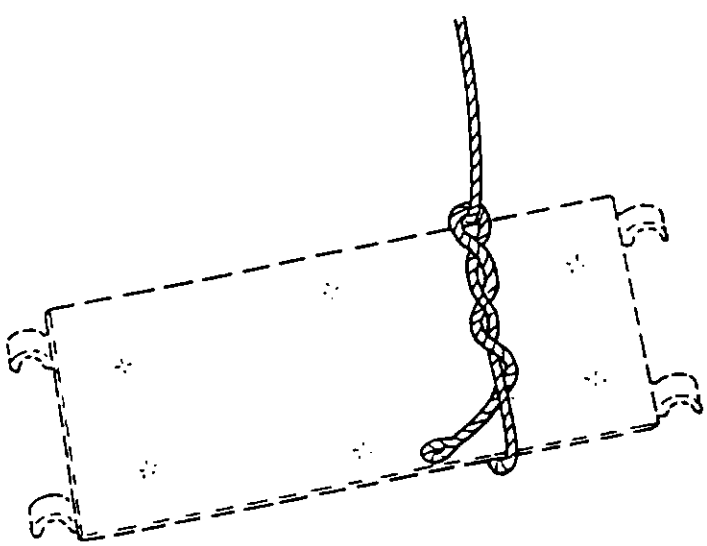


Figure A

Note:

Trapdoor platforms must be tied as in Fig. 'A'

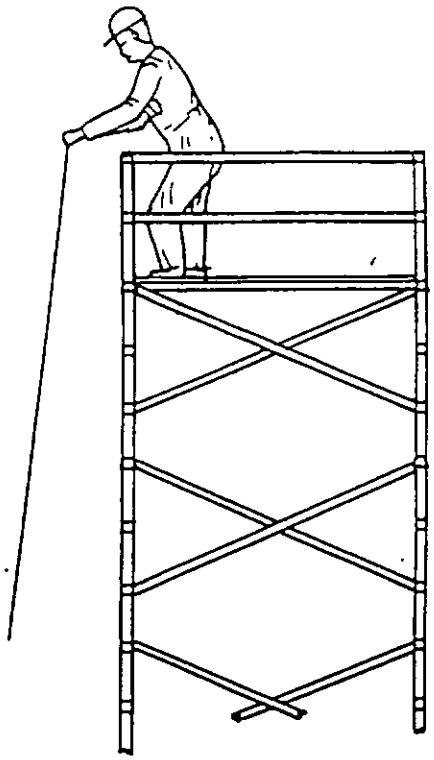


HI-WAY HIRE & ERECT

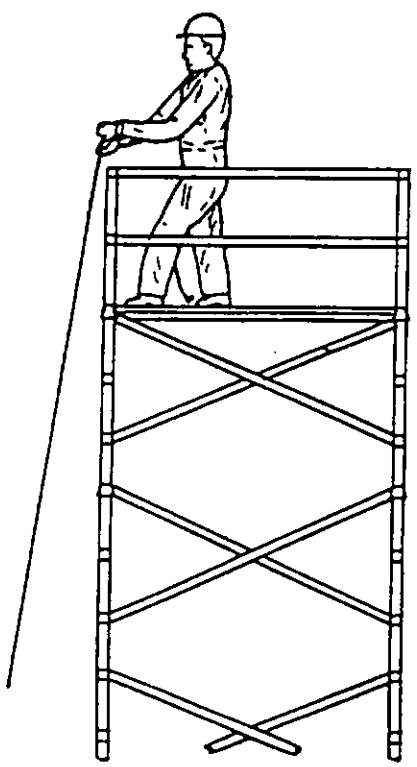
RECOMMENDED PULLING UP PROCEDURE

This method to be avoided.

Pulling up in this way can result in back injuries and should the rope break or snag, the person could very easily fall back or topple off the platform.



Recommended method



HI-WAY HIRE & ERECT

INSTRUCTIONS IN THE USE OF ERECTION PLATFORMS WHEN ERECTING LADDASPAN TOWERS

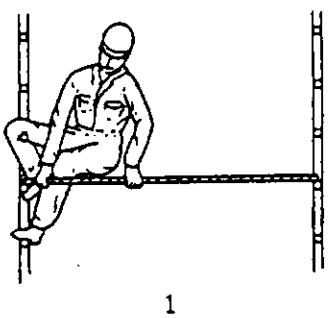
Start by positioning Erection Platform in the centre of the 3rd rung of the base section.

RAISING

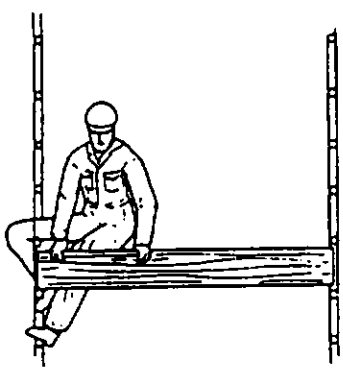
Position yourself by placing one leg over the rung immediately above the platform and place your foot around the rung that the platform is seated on. Place your other foot on the rung immediately below the platform (1)

Tip the platform on its side (2) and pull towards you the lifting board at an angle (3). At the same time place the end of the platform on the fifth rung above the rung it was sitting upon, on the opposite end frame (4) and (5)

Using one hand to climb and the other hand to control the board (6) climb the end frame and place the board on the opposite rung as in (2), ensure all the hooks are fixed securely (7).



1



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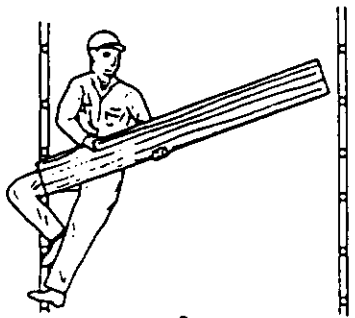

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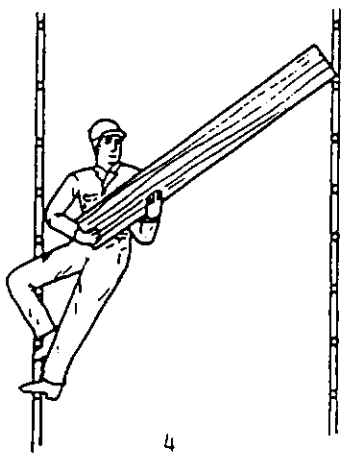

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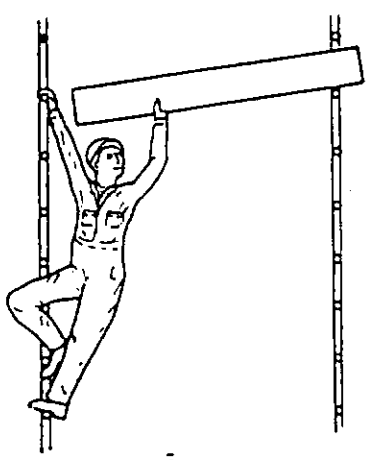

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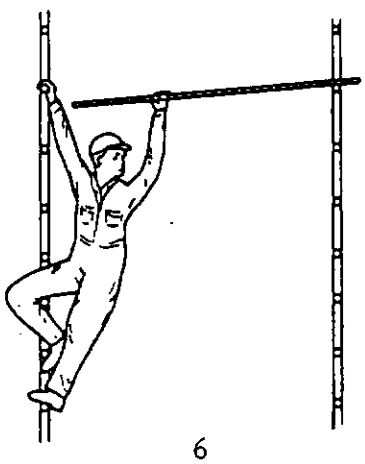

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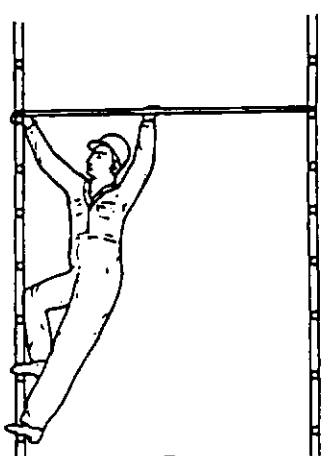


7

SAFETY CHECKLIST

When Erecting the Tower

Keep to the instructions in the Hi-Way manual.

Keep to the recommended height/base ratios.

Fit outriggers or stabilisers where required.

Check that the castor brakes are on.

Check that the scaffold is vertical.

Check adjustable legs are secure.

Fit bracings as the erection proceeds.

Secure interlocking pins on all spigot and socket joints.

Fit Guardrails and toeboards to all working platform levels.

Tie into the structure if at all possible, or arrange for other methods of stability.

Place a notice showing the allowable safe load at the base of the tower.

SAFETY CHECK LIST

During Use of the Tower

Ensure S.W.L. of the Tower is not exceeded.

Inspect before each use to see that the height/base ratio is within limits, and that no parts have been removed or altered from the correct configuration.

Ensure outriggers or stabilisers are correctly positioned and secured.

Check that ties, ballast weights or guys are in order if fitted.

Check that the tower is vertical. and adjustable legs are secure.

Check that castors and brakes are operative.

Check that the floor surface is firm and level.

Check that the tower is clear of overhead obstructions before moving.

Check that the tower is undamaged.

Limit horizontal forces on the platform as much as possible.

TABLE I

SAFE WORKING LOADS & COMPONENTS LIST

FOR

LADDA SPAN TOWERS

1346mm x 1676mm 4'5" x 5'6"

Number of Sections	Platform Height.	Safe Working Load (Kg) for each additional Working Level on Tower						
		0	1	2	3	4	5	6
1	7'	1000	-	-	-	-	-	-
2	13'	970	926	-	-	-	-	-
3	19'	940	896	852	-	-	-	-
4	25'	910	866	822	778	-	-	-
5	31'	862	836	792	748	704	-	-
6	37'	832	806	762	718	674	630	-
7	43'	802	776	732	688	644	600	556

Number of Sections	COMPONENTS											
	P62	BH6	EF546	SL546	BDS6	CA6	HF46	SF	SOR	LOR	PT56	T64
1	1	5	1	1	4	4	2	-	-	-	1	1
2	1	5	2	2	8	4	2	-	-	-	1	1
3	1	5	3	3	12	4	2	4	-	-	1	1
4	1	5	4	4	16	4	2	4	-	-	1	1
4	1	5	4	4	16	8	2	-	4	-	1	1
5	2	7	5	5	20	4	2	4	-	-	1	1
5	2	7	5	5	20	8	2	-	4	-	1	1
6	2	7	6	6	24	8	2	-	-	4	1	1
7	2	7	7	7	28	8	2	-	-	4	1	1

+4 off BDS8
Note:

Those components needed to assemble a fully decked intermediate working platform are not listed above, but are itemised per platform as shown below.

1. All intermediate working platforms unless otherwise stated (see 2.) are fully decked using the following additional components per level.

1 PT62 Trapdoor Platform	-	14.9 Kg
1 P62 Platform	-	14.4 Kg
1 T64 Toeboard Set	-	7.9 Kg
		43.74 Kg

Total weight subtracted from S.W.L.
Per working platform - 44 Kg

2. On 5, 6, and 7 section towers with one intermediate working platform use the following additional components

1 PT62 Trapdoor Platform	-	14.9 Kh
1 T64 Toeboard Set	-	7.9 Kg
2 BH6 Brace	-	3.42 Kg
		26.22 Kg

Total weight subtracted from S.W.L. = 26Kg

TABLE 2

SAFE WORKING LOADS

FOR

LADDA SPAN TOWERS

1346mm x 2362mm 4'5" x 7'9"

Number of Sections	Platform Height.	Safe Working Load (Kg) for each Additional Working Level on Tower						
		0	1	2	3	4	5	6
1	7'	1000	-	-	-	-	-	-
2	13'	968	910	-	-	-	-	-
3	19'	936	878	820	-	-	-	-
4	25'	904	846	788	730	-	-	-
5	31'	850	814	756	698	640	-	-
6	37'	818	782	724	666	608	550	-
7	43'	786	750	692	634	576	518	460

Number of Sections	COMPONENTS											
	P82	BH8	EF546	SL546	BDS8	CA6	HF46	SF	SOR*	LOR	PT82	T84
1	1	5	1	1	4	4	2	-	-	-	1	1
2	1	5	2	2	8	4	2	-	-	-	1	1
3	1	5	3	3	12	4	2	4	-	-	1	1
4	1	5	4	4	16	4	2	4	-	-	1	1
4	1	5	4	4	16	8	2	-	4	-	1	1
5	2	7	5	5	20	4	2	4	-	-	1	1
5	2	7	5	5	20	8	2	-	4	-	1	1
6	2	7	6	6	24	8	2	-	-	4	1	1
7	2	7	7	7	28	8	2	-	-	4	1	1

+4 off BDS8

Note:

Those components needed to assemble a fully decked intermediate working platform are not listed above, but are itemised per platform as shown below.

1. All intermediate working platforms unless otherwise stated (see 2.) are fully decked using tthe folllowing additional components per level.

1.	PT82 Trapdoor Platform	-	20.5 Kg
1	P82 Platform	-	17.8 Kg
1	T84 Toeboard Set	-	11.4 Kg
4	BH8 Brace	-	8.6 Kg
			58.5 Kg

Total weight subtracted from S.W.L. Per working platform = 58 Kg

2. On 5, 6, and 7 section towers with one intermediate working platform use the following additional components.

1.	PT62 Trapdoor Platform	-	20.5 Kg
1	T64 Toeboard Set	-	11.4 Kg
2	BH6 Brace	-	4.3 Kg
			36.2 Kg

Total weight subtracted from S.W.L. = 36 Kg

TABLE 3

SAFE WORKING LOADS & COMPONENTS LIST

FOR

LADDA SPAN TOWERS

1346mm x 2922mm 4'5" x 9'9"

Number of Sections	Platform Heights	Safe Working Load (Kg) for each ddditional Working Level on Tower						
		0	1	2	3	4	5	6
1	7'	1000	-	-	-	-	-	-
2	13'	967	891	-	-	-	-	-
3	19'	933	857	781	-	-	-	-
4	25'	900	824	748	672	-	-	-
5	31'	836	791	715	639	563	-	-
6	37'	803	758	682	606	530	454	-
7	43'	769	724	648	572	496	496	344

Number of Sections	COMPONENTS											
	P102	BH10	EF546	SL546	BDS10	CA6	HF46	SF	SOR*	LOR	PT102	T104
1	1	5	1	1	4	4	2	-	-	-	1	1
2	1	5	2	2	8	4	2	-	-	-	1	1
3	1	5	3	3	12	4	2	4	-	-	1	1
4	1	5	4	4	16	4	2	4	-	-	1	1
4	1	5	4	4	16	8	2	-	4	-	1	1
5	2	7	5	5	20	4	2	4	-	-	1	1
5	2	7	5	5	20	8	2	-	4	-	1	1
6	2	7	6	6	24	8	2	-	-	4	1	1
7	2	7	7	7	28	8	2	-	-	4	1	1

+4 off BDS8

Note:

Those components needed to assemble a fully decked intermediate working platform are not listed above, but are itemised per platform as shown below.

1. All intermediate working platforms unless otherwise stated (see 2.) are fully decked using the following additional components per level.

1.	PT102 Trapdoor Platform	-	25.6 Kg
1	P102 Platform	-	25.4 Kg
1	T104 Toeboard Set	-	14.5 Kg
4	BH10 Brace	-	10.36 Kg
			75.86 Kg
	Total weight subtracted from S.W.L. Per working platform	=	76 Kg

2. On 5, 6 and 7 section towers with one intermediate working platform use the following additional components.

1	PT102 Trapdoor Platform	-	25.6 Kg
1	T104 Toeboard Set	-	14.5 Kg
2	BH10 Brace	-	5.18 Kg
			45.28 Kg
	Total weight subtracted from S.W.L.	=	45 Kg

TABLE 4

SAFE WORKING LOADS & COMPONENTS LIST

FOR

LADDA SPAN TOWERS

673mm x 1676mm 2'6" x 5'6"

4 BRACES PER SECTION

Number of Sections	Platform Height	Safe Working Load (Kg) for each Additional Working Level on Tower						
		0	1	2	3	4	5	6
1	7'	1000	-	-	-	-	-	-
2	13'	975	947	-	-	-	-	-
3	19'	950	922	894	-	-	-	-
4	25'	924	896	868	840	-	-	-
5	31'	877	871	843	815	787	-	-
6	37'	852	846	818	790	762	734	-
7	43'	827	821	793	765	737	709	681

Number of sections	COMPONENTS											
	P62	BH6	EF526	SL526	BDS6	CA6	HF26	SF	SOR*	LOR	PT62	T62
1	-	6	1	1	4	4	2	-	-	-	1	1
2	-	6	2	2	8	4	2	4	-	-	1	1
3	-	6	3	3	12	4	2	4	-	-	1	1
4	-	6	4	4	16	4	2	4	-	-	1	1
4	-	6	4	4	16	8	2	-	4	-	1	1
5	-	10	5	5	20	4	2	4	-	-	2	1
5	-	10	5	5	20	8	2	-	4	-	2	1
6	-	10	6	6	24	8	2	-	-	4	2	1
7	-	10	7	7	28	8	2	-	-	4	2	1

+4 off BDS8

Note:

Those components needed to assemble a fully decked intermediate working platform are not listed above, but are itemised per platform as shown below.

1. All intermediate working platforms unless otherwise stated (see 2.) are fully decked using the following additional components per level

1	PT62 Trapdoor Platform	-	14.9 Kg
1	T62 Toeboard Set		6.2 Kg
4	BH6 Brace	-	6.84 Kg
			27.94 Kg
	Total weight subtracted from S.W.L. Per working platform	=	28 Kg

2. On 5, 6, and 7 section towers with one intermediate working platform use the following additional components.

1	T62 Toeboard Set	-	6.2 Kg
	Total weight subtracted from S.W.L.	=	6 Kg

TABLE 5

SAFE WORKING LOADS & COMPONENTS LIST

FOR

LADDA SPAN TOWERS

673mm x 2362mm 2'6" x 7'9"

4 BRACES PER SECTION

Number of Sections	Platforms Height.	Safe Working Load (Kg) for each Additional Working Level on Tower						
		0	1	2	3	4	5	6
1	7'	1000	-	-	-	-	-	-
2	13'	973	934	-	-	-	-	-
3	19'	946	907	868	-	-	-	-
4	25'	919	880	841	802	-	-	-
5	31'	863	853	814	775	736	-	-
6	37'	836	826	787	748	709	670	-
7	43'	809	799	760	721	682	643	604

Number of Sections	COMPONENTS											
	P82	BH8	EF526	SL526	BDS8	CA6	HF26	SF	SOR*	LOR	PT82	T82
1	-	6	1	1	4	4	2	-	-	-	1	1
2	-	6	2	2	8	4	2	4	-	-	1	1
3	-	6	3	3	12	4	2	4	-	-	1	1
4	-	6	4	4	16	4	2	4	-	-	1	1
4	-	6	4	4	16	8	2	-	4	-	1	1
5	-	10	5	5	20	4	2	4	-	-	2	1
5	-	10	5	5	20	8	2	-	4	-	2	1
6	-	10	6	6	24	8	2	-		4	2	1
7	-	10	7	7	28	8	2	-	-	4	2	1

+4 off BDS8

Note:

Those components needed to assemble a fully decked intermediate working platform are not listed above, but are itemised per platform as shown below:

1. All intermediate working platforms unless otherwise stated (see 2,) are fully decked using the following additional components per level.

1	PT82	Trapdoor Platform	-	20.5 Kg
1	T82	Toeboard Set	-	9.6 Kg
4	BH8	Brace	-	8.6 Kg
				38.7 Kg
		Total weight subtracted from S.W.L. Per working platform	=	39 Kg

2. On 5, 6 and 7 section towers with one intermediate working platform use the following additional components.

1	T82	Toeboard Set	-	9.6 Kg
		Total weight subtracted from S.W.L.	=	10 Kg

TABLE 6

SAFE WORKING LOADS & COMPONENTS LIST

FOR

LADDA SPAN TOWERS

673mm x 2972mm 2'6" x 9'9"

4 BRACES PER SECTION

Number of Sections	Platform Heights.	Safe Working Load (Kg) for each Additional Working Level on Tower						
		0	1	2	3	4	5	6
1	7'	1000	-	-	-	-	-	-
2	13'	972	924	-	-	-	-	-
3	19'	943	895	847	-	-	-	-
4	25'	915	867	819	771	-	-	-
5	31'	850	838	790	742	694	-	-
6	37'	822	810	762	714	666	618	-
7	43'	793	781	733	685	637	589	541

Number of Sections	COMPONENTS											
	P102	BH10	EF526	SL526	BDS10	CA6	HF26	SF	SOR*	LOR	PT10	T102
1	-	6	1	1	4	4	2	-	-	-	1	1
2	-	6	2	2	8	4	2	4	-	-	1	1
3	-	6	3	3	12	4	2	4	-	-	1	1
4	-	6	4	4	16	4	2	4	-	-	1	1
4	-	6	4	4	16	8	2	-	4	-	1	1
5	-	10	5	5	20	4	2	4	-	-	2	1
5	-	10	5	5	20	6	2	-	4	-	2	1
6	-	10	6	6	24	8	2	-	-	4	2	1
7	-	10	7	7	28	8	2	-	-	4	2	1

+4 off BDS8

Note:

Those components needed to assemble a fully decked intermediate working platform are not listed above, but are itemised per platform as shown below.

1. All intermediate working platforms unless otherwise stated (see 2,) fully decked using the following additional components per level.

1	PT102	Trapdoor Platform	-	25.6 Kg
1	T10	Toeboard Set	-	11.9 Kg
4	BH10	Braces	-	10.36 Kg
				47.86 Kg
	Total weight subtracted from S.W.L. Per working platform		=	48 Kg

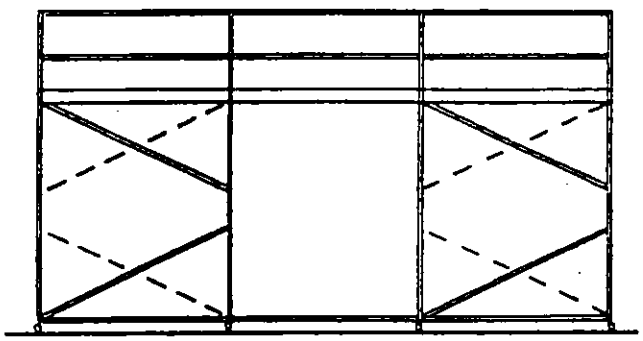
2. On 5, 6 and 7 section towers with one intermediate platform, add the following component

1	T10	Toeboard Set	-	11.9 Kg
	Weight subtracted from S.W.L.		=	12 Kg

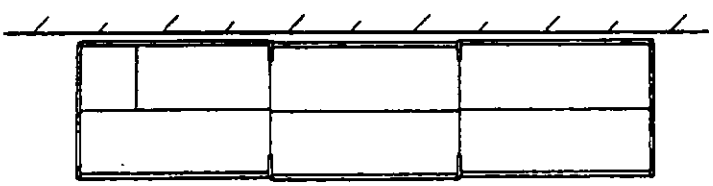
HI-WAY HIRE & ERECT

Safe Working Load

Using the Table Mass of Men & Materials, providing the information as to the use and materials that are to be stored upon a structure is obtained from the customer, the S.W.L. can be calculated and any restrictions as to the use and loadings can be given to the user. The following example is based upon using two 5'6" x 4'6" x 7' platform towers linked together by 5'6" platform boards. The structure is to be used for bricklaying and raised a further 6' for the same use.



Each tower has the SWL of 2240 lbs. (1 ton); therefore the SWL of the structure is 4480 lbs. (2 tons)



As the load has to be evenly distributed over each standard the SWL of each standard must be determined.

S.W.L. of the structure =- 4480 lbs

Weight of the additional components (2xP62, Toe-Boards & Guardrails for Link) = 75 lbs

Safety Factor, e.g. Shock Loading = 25%

No. of Standards = 8

$\frac{4480 - 75 - 25\%}{8}$ = 412 lbs over each standard

Mass of Men and Materials

100 Bricks = 605 lbs
1 Brick = 6.05 lbs

Maximum amount of bricks to be stored over one standard = $\frac{412}{6.05}$ = 68 Bricks

1 Man	=	176 lbs.
Spot Board & Mortar	=	66 lbs
		242 lbs

Using the above calculations the following instructions can now be issued to the customer or user:

1. A total of 272 bricks can be evenly distributed on the platform over the back standards.

2. No more than two persons plus their spot boards and mortar are allowed inside the working face.

3. Under no circumstances must the above S.W.L. be exceeded.

When the structure is raised by the additional 6' the following calculations must be made.

S.W.L. of Structure	=	4480 lbs
Additional Equipment	=	200 lbs
Safety Factor	=	25%
No. of Standards	=	8

$\frac{4480 - 200 - 25\%}{8}$ = 401 lbs

Total number of bricks over one standard = $\frac{401}{6.05}$ = 66 Bricks

The instructions given to the customer and/or user will be the same, except the amount of bricks that can be stored safely over the back platforms is now 264.

The combined weight of the 2 men and materials exceeds the S.W.L. As the work being carried out would only allow them to be over one standard infrequently, the 25% safety factor would cover the additional load, but when their combined weight approaches the safety factor, e.g. when other lifts are added, then the restriction would be for 1 man only working upon the structure would apply.

safety factor, e.g. when other lifts are added, then the restriction would be for l man only working upon the structure would apply.

The example is based upon one working lift being used. If more than one lift is to be used at the same time then the final S.W.L. would have to be divided by the number of lifts to determine the loading and the number of work people per lift, e.g. taking the last figure of 401 lbs if both lifts are to be worked upon at the same time when the calculation would be :

$$\frac{401}{2} = 200 \text{ lbs over one standard at each lebel}$$

The instructions to the customer and/or user would then be:

1. A total of 132 bricks evenly distributed over the back platforms of each lift.

2. One man to work on each lift only.

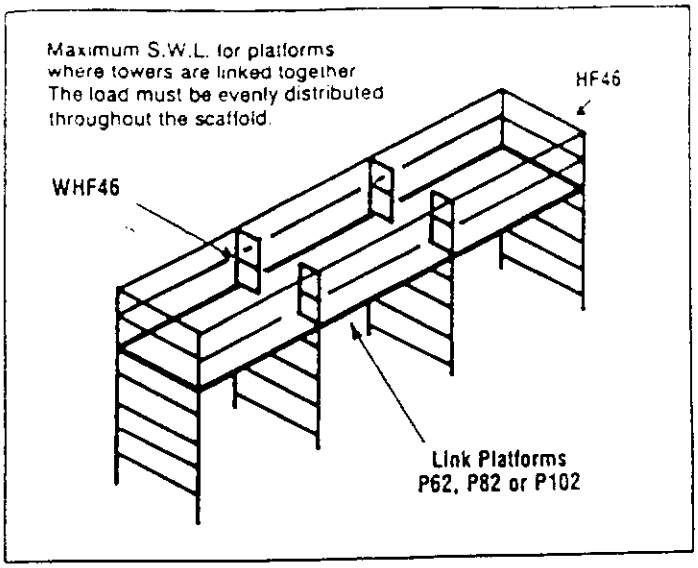
It is important with structures of this type that all the relevant information given to us by the customer and that any restrictions which apply to the structure's use and/or loading must be given to the customer and/or user.

Note. All the figures quoted have been rounded down to the nearest pound.

MASS OF MEN & MATERIALS

ITEM	MASS (Kg)	MASS (1bs)
Tarpaulin & Fixings	1 kg/sq m	2.2 1b/3.2sq.H
Ladder & Fixings	8 kg/m	17.5 1b/3.2H
Packaged Flooring Tiles, Ceramic Tiles, Roofing Tiles, Slates	1600kg/cu.m	3572 1b.3.2cu.H
Man (average)	80 kg	176 lbs
Man with samll tools (average)	90 kg	198 lbs
Spot board & mortar	30 kg	66 lbs
100 bricks	275 kg	605 lbs
Timber (softwood)	500 - 650 kg	1102 - 1433 lbs
180 litres of water or liquids in containers	200kg	440 lbs

Linked Towers and Facades



PLATFORMS P62. PT62. PH62

Height in Sections	NUMBER OF LINKS 1	2	3	4	5	6	7
1	363	291	278	268	263	259	256
2	316	282	267	260	255	251	248
3	306	273	259	251	246	243	240
4	296	264	250	243	238	235	232
5	280	250	237	230	225	222	220
6	270	240	228	221	217	214	211
7	260	231	220	213	209	205	203

LOAD PER PLATFORM IN KGS.

PLATFORMS P82. PT82.

Height In Sections	NUMBER OF LINKS 1	2	3	4	5	6	7
1	295	288	273	265	259	255	253
2	295	278	264	255	250	247	244
3	295	267	255	247	242	238	236
4	291	259	245	238	233	230	227
5	273	243	230	223	218	215	212
6	263	233	221	214	210	206	205
7	252	224	212	205	201	198	197

LOAD PER PLATFORM IN KGS.

PLATFORMS P102. PT102.

Height In Sections	NUMBER OF LINKS 1	2	3	4	5	6	7
1	273	273	269	260	255	251	249
2	273	273	260	251	246	242	240
3	273	264	250	242	237	233	231
4	273	255	240	232	228	225	222
5	265	235	222	215	210	207	205
6	255	225	213	206	201	198	196
7	243	215	203	196	192	189	187

LOAD PER PLATFORM IN KGS.

NOTES:

1. *Only two platform levels may be loaded at one time.*
2. *Facade scaffolds must be tied to a rigid structure.*

HI-WAY HIRE & ERECT

TOWER SAFE WORKING LOADS

	183 cm LONG (6')		244 cm LONG (8')		305 cm LONG (10')	
	kg	lbs	kg	lbs	kg	lbs
7 Section	616	1360	590	1300	560	1235
6 Section	680	1500	660	1450	635	1395
5 Section	744	1640	725	1595	700	1550
4 Section	825	1820	810	1780	800	1770
3 Section	890	1960	890	1945	875	1925
2 Section	952	2100	950	2090	940	2080
1 Section	1000	2240	1000	2240	1000	2240

The above Safe Working Loads are for maximum loadings (1 working lift below 30', 1 working lift and 1 intermediate level for over 30'). Where the loads to be imposed are more than 1 working lift then the customer must be informed of any change in the above loadings.

CHAPTER 4

SECTION A - **RIDGE CHIMNEY SCAFFOLD**

SECTION B - **HIP CHIMNEY SCAFFOLD**

SECTION C - **FACADE AND RETURN**

SECTION D - **BRIDGE STRUCTURES**

RIDGE CHIMNEY SCAFFOLD

The following is a guidance to cover a typical type of the above named structure. It does not cover all eventualities. If further assistance is required contact Head Office.

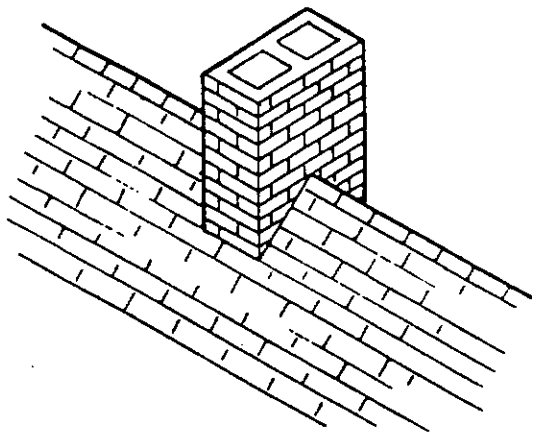


Figure 1

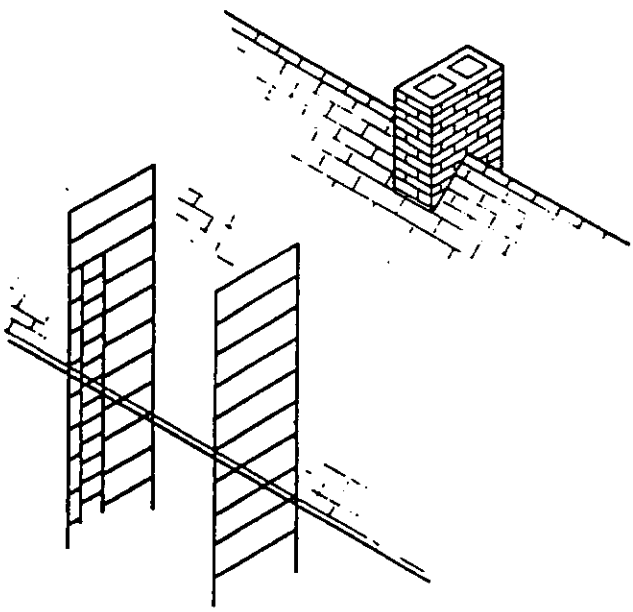


Figure 2

a. The tower structure should be of the 8' long type at least. to enable 4 scaffold boards to be used alongside the chimney under typical circumstances.

b. The tower must be bedded down. tied in. and stabilised using 4 stabilisers/outriggers

c. The bracing platform must be as recommended in the basic tower structure, as a minimum.

d. Fixed couplers must be used wherever possible and fixed the correct way up.

e. Crawling boards will be required to erect the structure to protect roof tiles etc., and the erectors, especially at the rear of the chimney.

f. Structures of this type must be handed over to the customer or his representative.

g. Care must always be taaken with this type of structure to safeguard property and persons.

NOTES

1. Ensure when erecting that the rung level required is horizontal to the ridge.

2. Ensure that at this stage of erection the tower is level, upright and tied to the building.

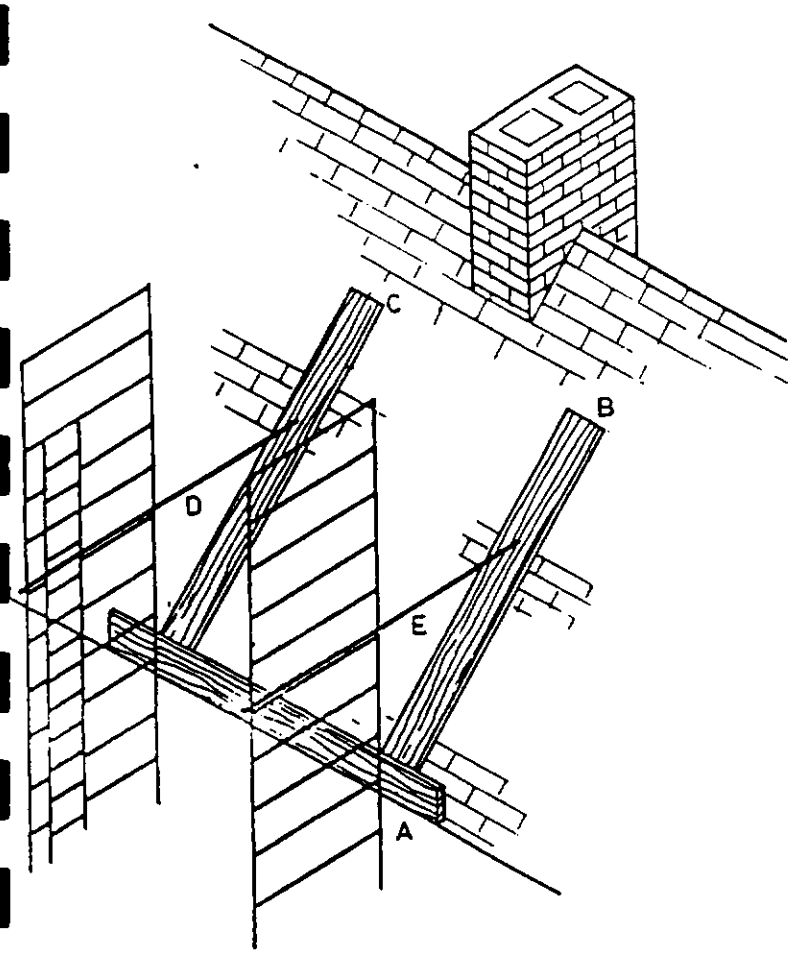


Figure 3

NOTES

1 Lay the scaffold Board (A) along the gutter shown. Ensure that it is leaning against the tower at an angle. This can then be used to retain the scaffold boards (B) and (C) and any loose materials that may fall. Ensure that the guttering is strong enough for this purpose.

2. Fix tubes (D) and (E) to the uprights of the tower using fixed couplers. Ensure that the other end of the tubes are resting on the scaffold boards (B) and (C). When fixing the tubes fix one outside the ladder side of the tower

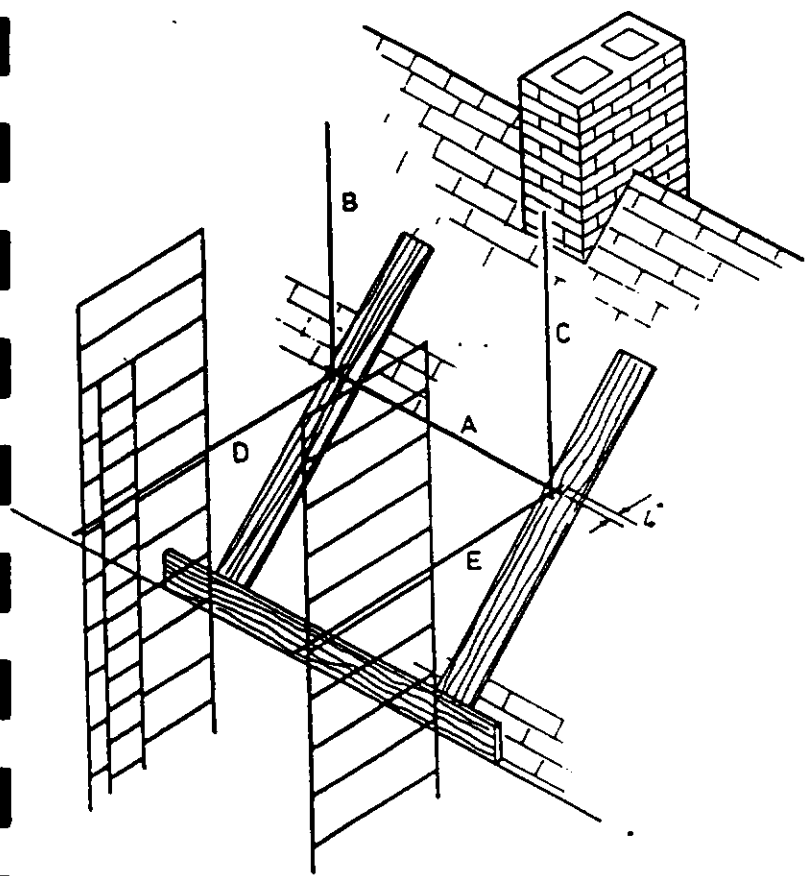


Figure 4

NOTES

1. Fix a clip in brace (A) approximately 4" from the end of the tubes as shown.

2 Fix uprights (B) and (C) to the tubes (D) and (E). These must be long enough to be used as a guardrail when the structure is complete.

3. Use rigging boards to enable the fixing to be completed in safety. Position on tubes (D) and (E)

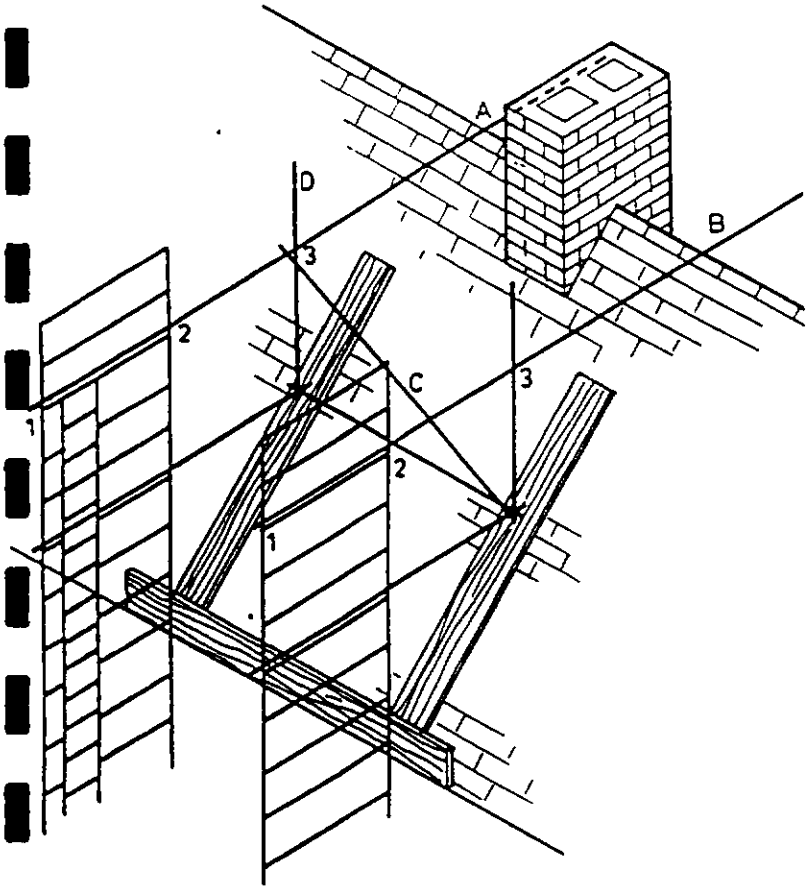


Figure 5

NOTES

1. Fix tubes (A) abd (B) as shown using fixing couplers in positions 1, 2 and 3.

2. Fix diagonal brace (C) as shown. Ensure tube (D) is upright. When fixing tube C) ensure that it passes underneath (A)

3. Tubes (A) and (B) must be long enough to ensure that a 3' wide board can be fixed at the back of the stack and packing is used to protect the ridge where necessary.

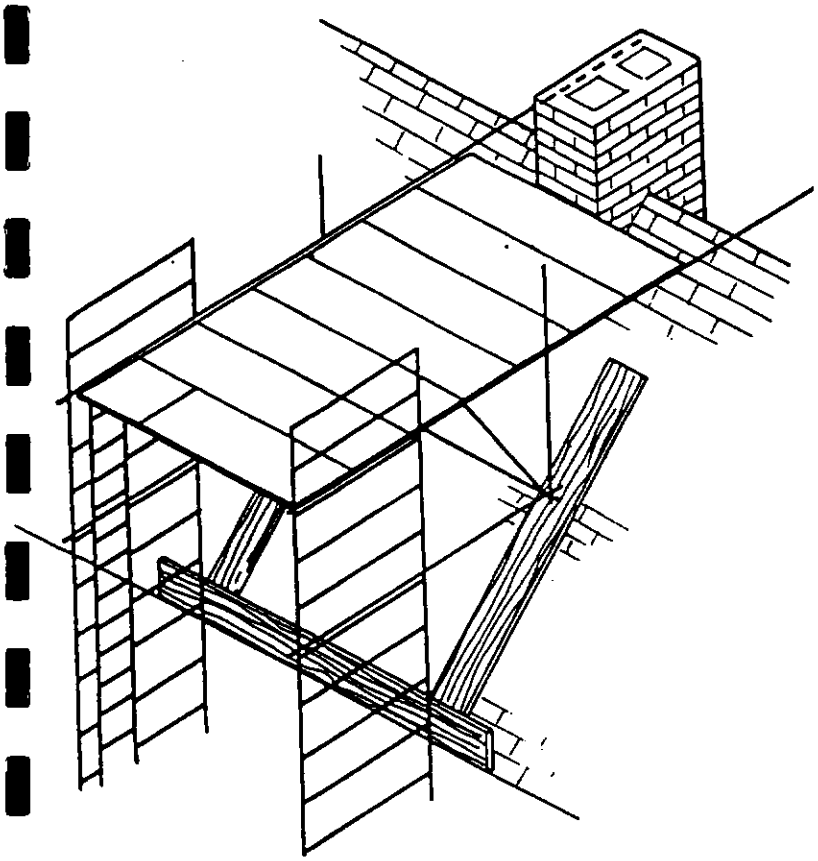


Figure 6

NOTES

1. Close board up to the chimney using 2' wide platforms.

2. Ensure that no gaps are left. Fill in by using 3' and 1' platforms.

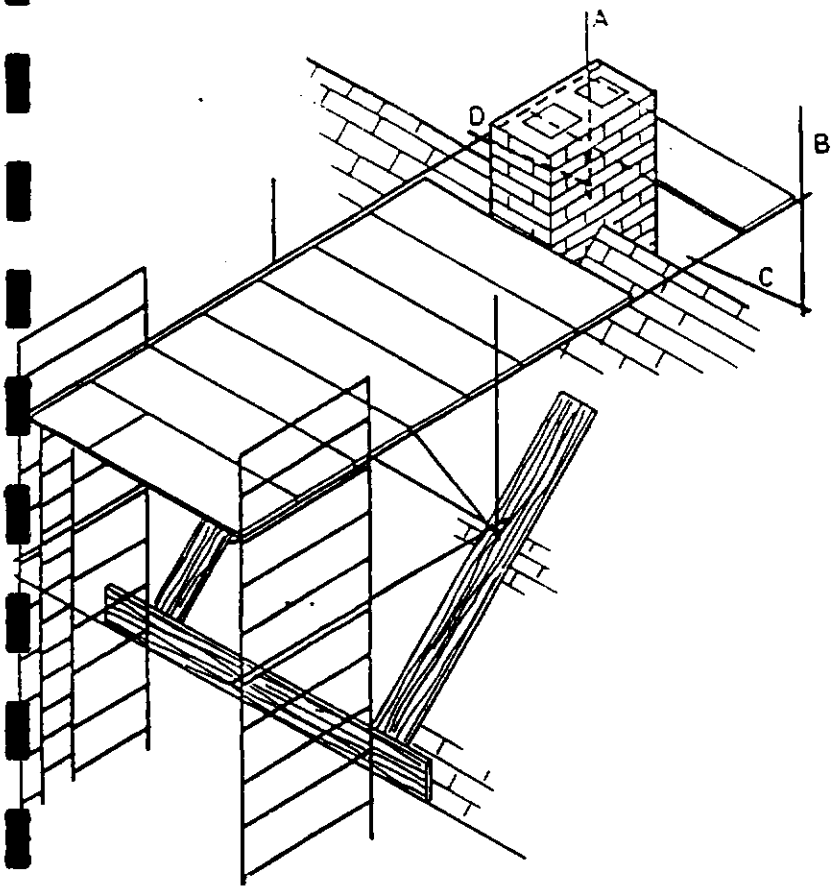


Figure 7

NOTES

1. Position an over-ridge or 6' scaffold board over the back of the chimney by tying the board to the front scaffold.

2. Fix tubes (A), (B), (C) and (D) as shown.

3. Ensure the tubes are in contact with the board. It may be necessary to fit horizontal and diagonal bracing as illustrated in Figs. 4 and 5. Diagonal bracing must be fitted at the opposite angle as shown in Fig. 5.

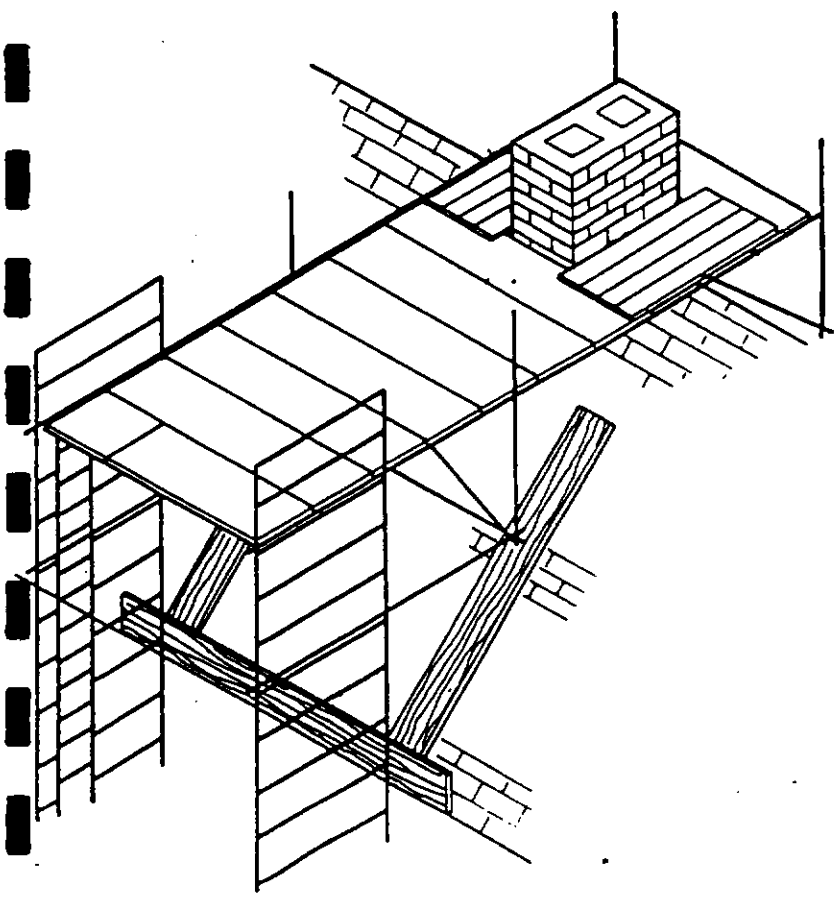


Figure 8

NOTES

1. Position the scaffold boards each side of the chimney as shown.

2. The boards will have to be solidly fixed down (lashed) to stop accidental displacement.

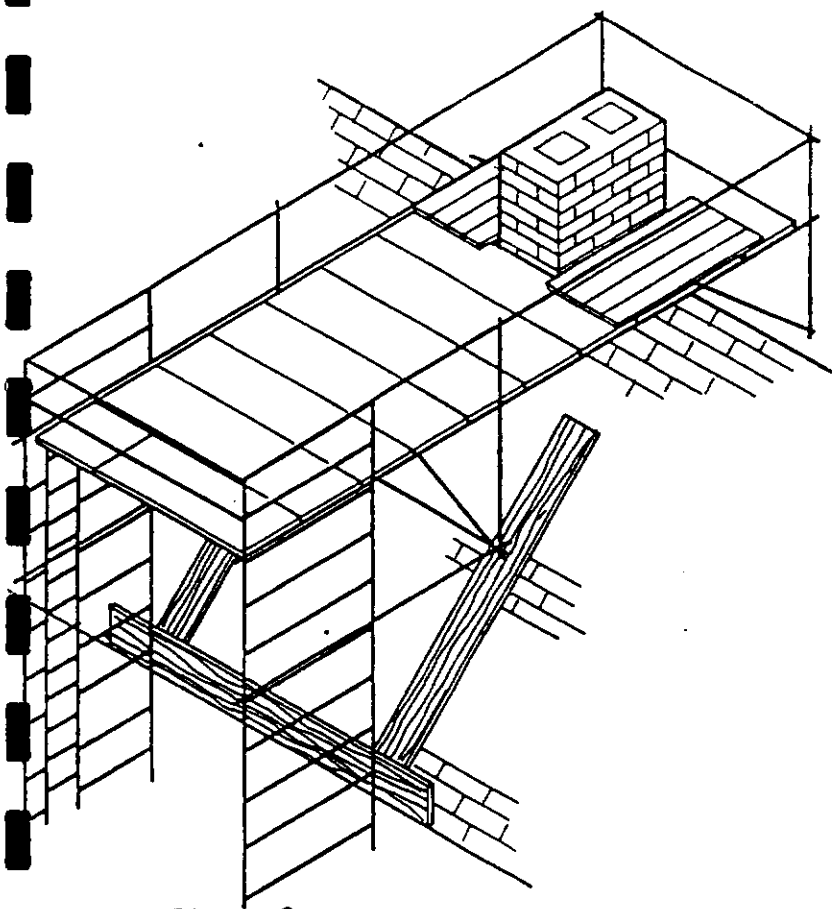


Figure 9

NOTES

1 Fix the guardrails as illustrated, no higher than 3'9" and no lower than 3'0" from the platform.

If the guardrail is fixed higher than 3'0" then a mid-level guardrail will be required.

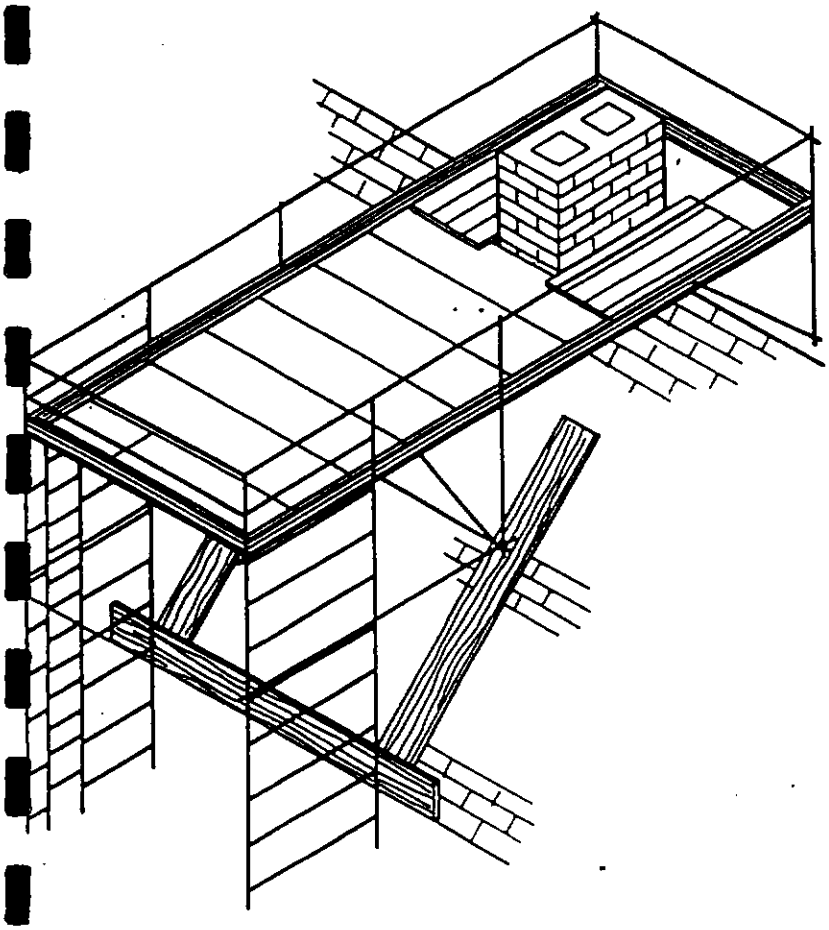


Figure 10

NOTES

1. Fix toeboards around all sides as shown using clips or fittings to ensure they cannot be accidentally displaced.

HI-WAY HIRE & ERECT

HIP CHIMNEY SCAFFOLD

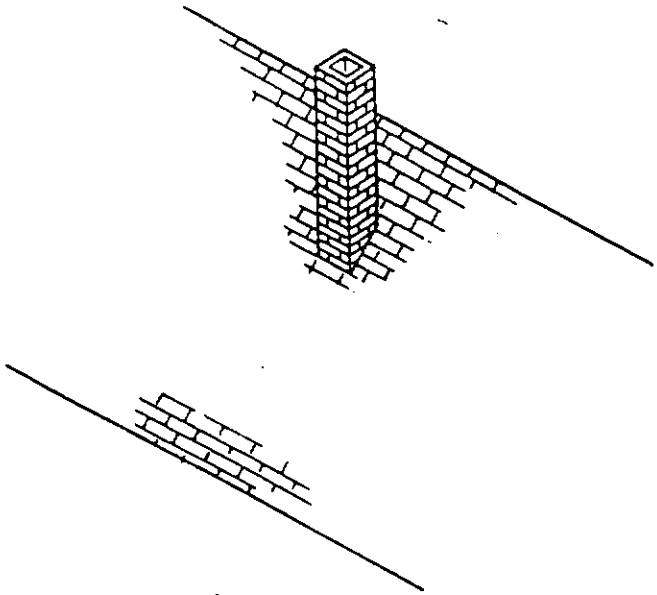


Figure 1

The following is a guidance to cover a typical type of the above named structure. It does not cover all eventualities. If further assistance is required contact Head Office.

See notes Fig. 1 - Ridge Chimney Scaffold for general notes.

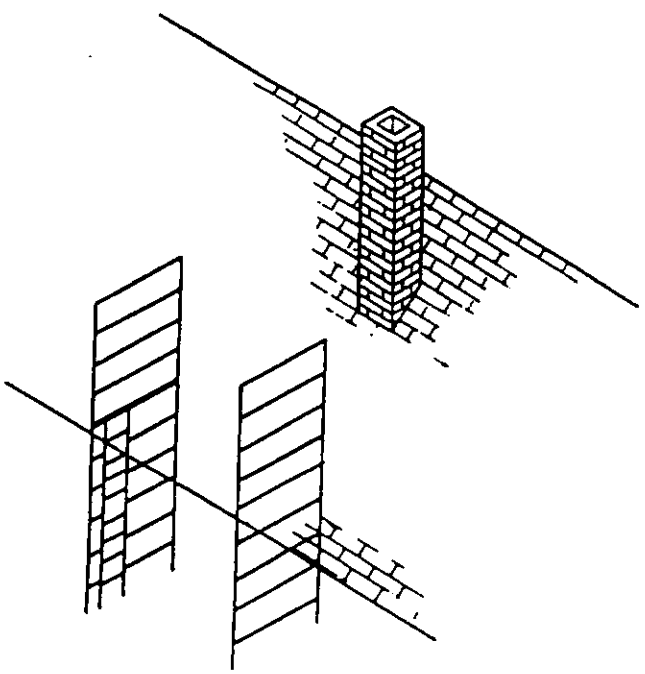


Figure 2

NOTES

1. Ensure at this stage of erection that the tower is bedded down (if necessary), upright and tied into the building.

15/12/96 mjm 88

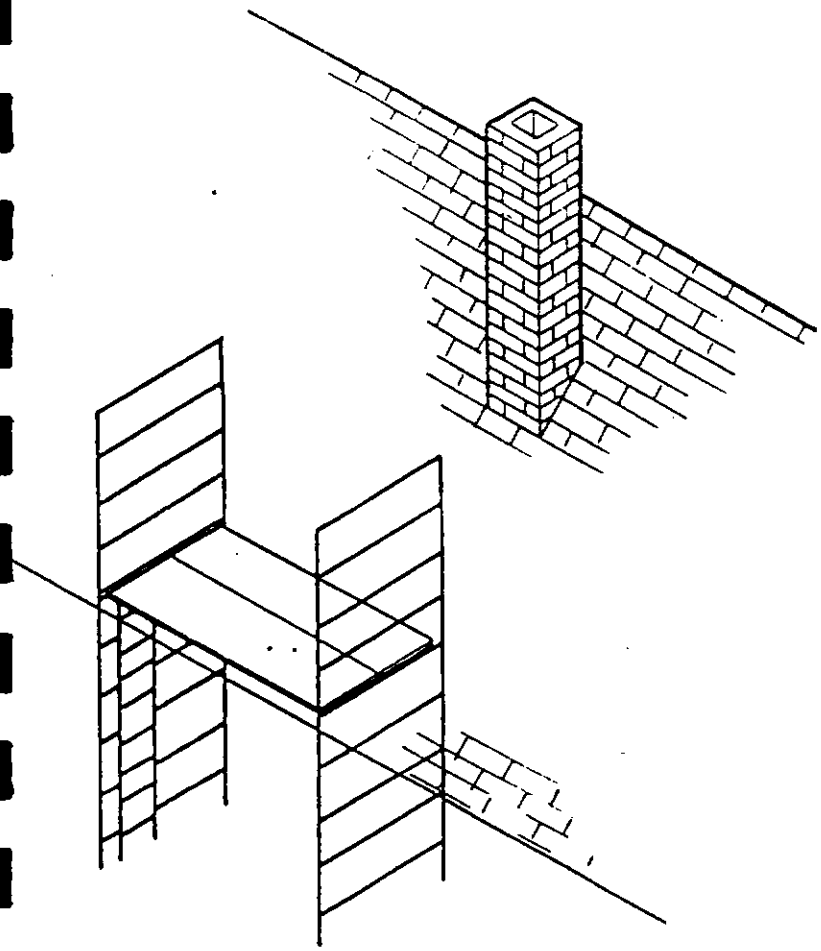


Figure 3

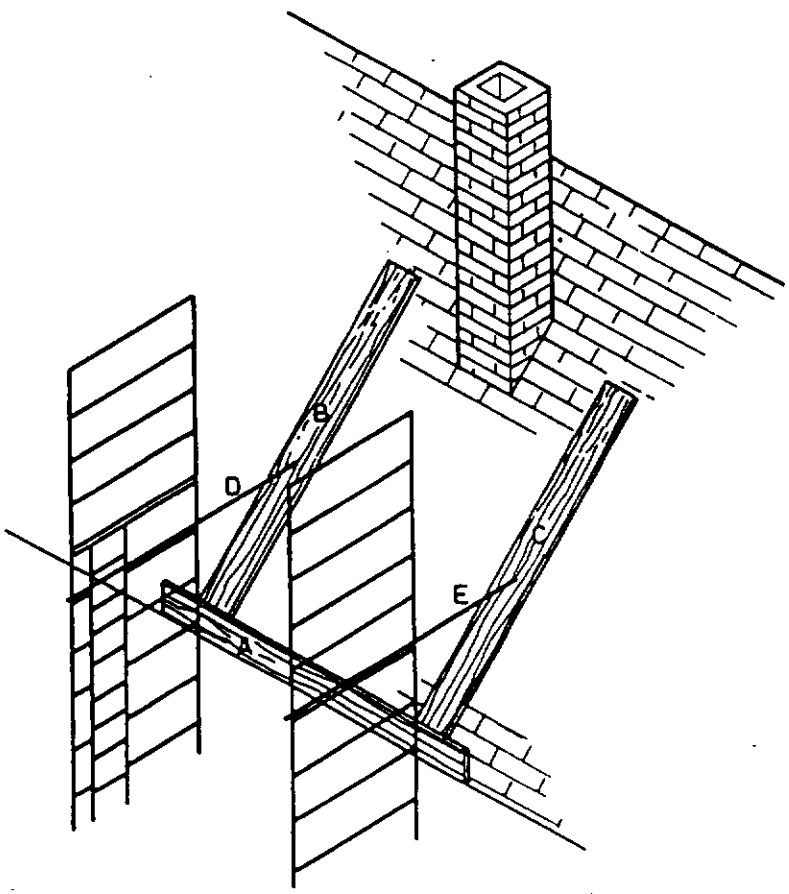


Figure 4

NOTE

A platform and hinged platform are fixed at this stage, but on the following illustrations are left out for clarity.

1. Lay the scaffold boards (A) along the gutter as shown, ensuring that they lean against the tower at an angle. They will then retain boards (B) and (C) and loose materials that may fall. Ensure that the gutter is strong enough for this purpose.

2 Fix tube (D) and (E) as shown using fixed couplers. Ensure that the tubes are resting on boards (B) and (C). When fixed, the tube on the ladder side must be fixed to the outside of the tower, and the ther one to the inside.

3. If tube (E) fouls the hinger platform, fix to the inside upright only.

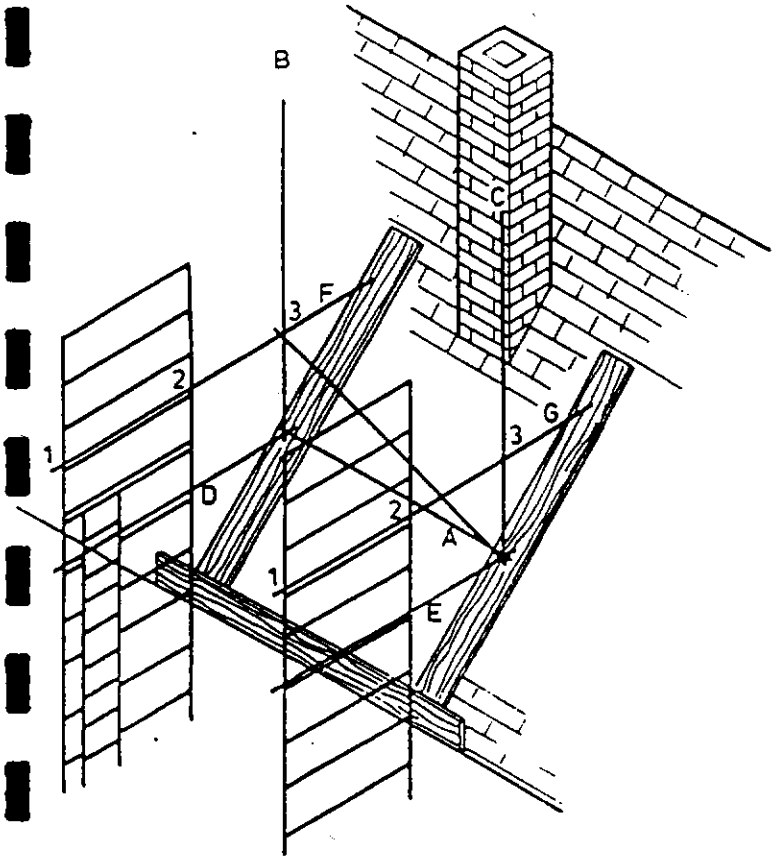


Figure 5

NOTES

1. Fix a clip-in brace (A) approximately 4" from the end of tube (E) as shown.
2. Fix uprights (B) and (C) at the ends and on the outside of tubes (D) and (E). Tubes (B) and (C) must be long enough to be used as a guardrail when complete.
3. Fix tubes (F) and (G) as shown using fixed couplers in positions l, 2 and 3.
4. Fix diagonal brace (H) as shown. Ensure tube (B) is upright and that tube (H) is fixed under tube (F)
5. Tubes (F) and (G) must rest on the boards as shown.
6. Use a rigging or 2' platform while fixing.

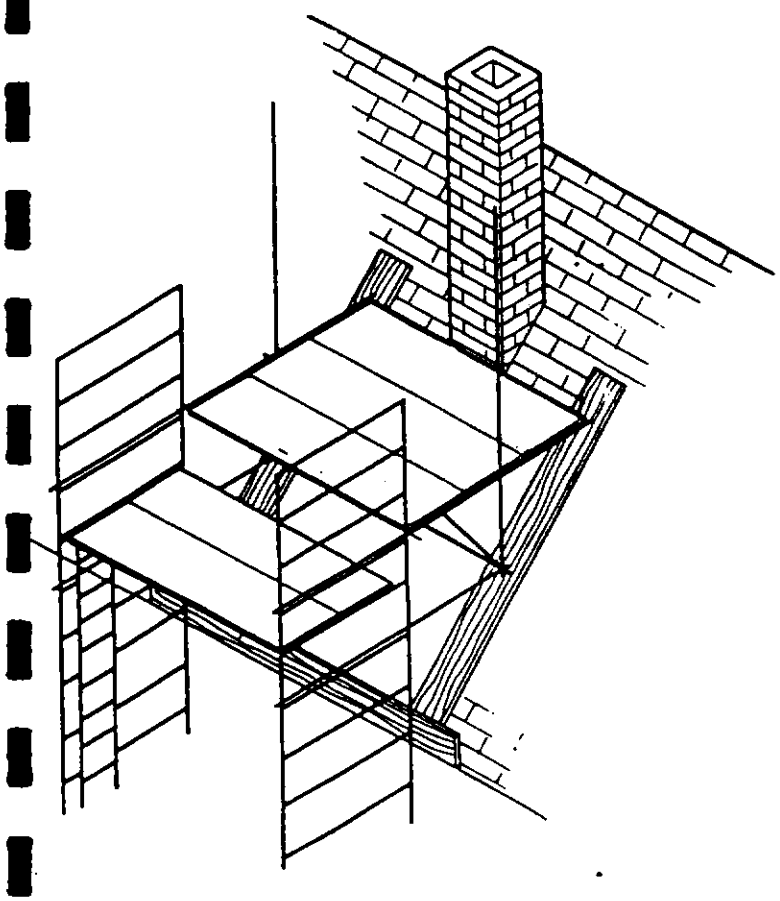


Figure 6

NOTES

1. Close board up to the chimney stack and fill in where necessary with 3' or 1' platforms.
2. Ensure that no gaps are left in the platform area.

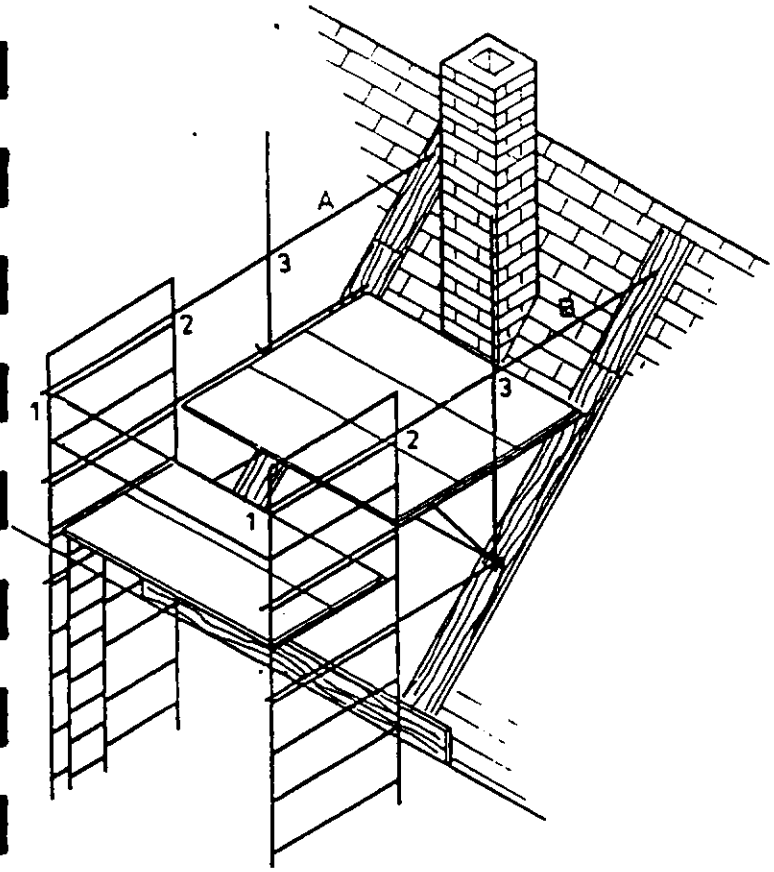


Figure 7

NOTES

1. Position two scaffold boards as shown.

2. Fix tubes (A) and (B) using fixed couplers in positions 1, 2 and 3.

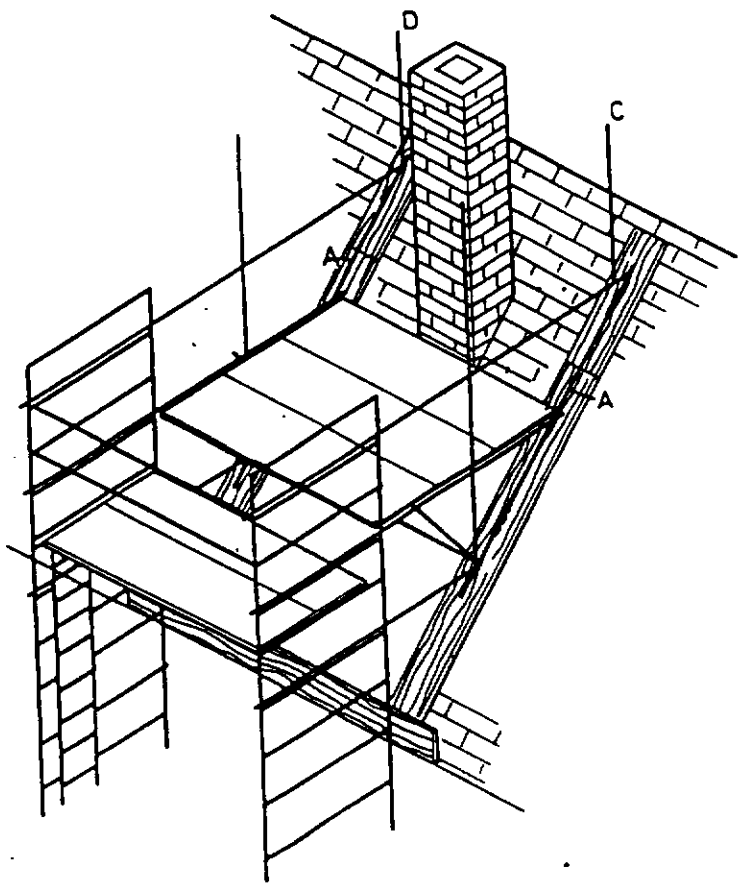


Figure 8

NOTES

1. Fix standards (D) and (E)

2. Fix raker tubes as shown at (A) both sides using swivel couplers.

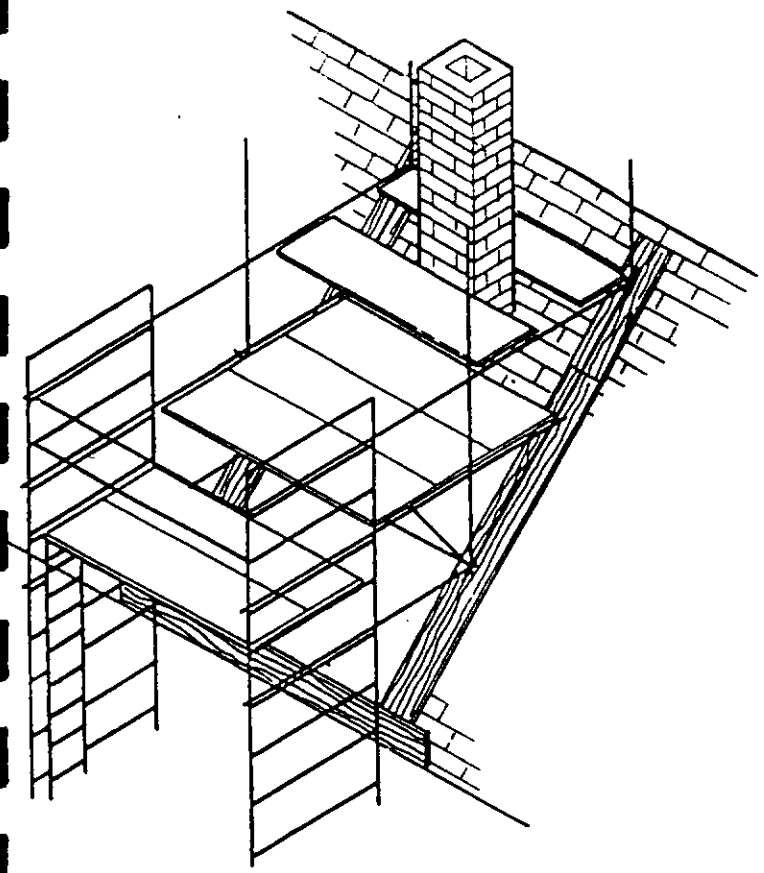


Figure 9

NOTE

Position a platform at the rea of the stack.

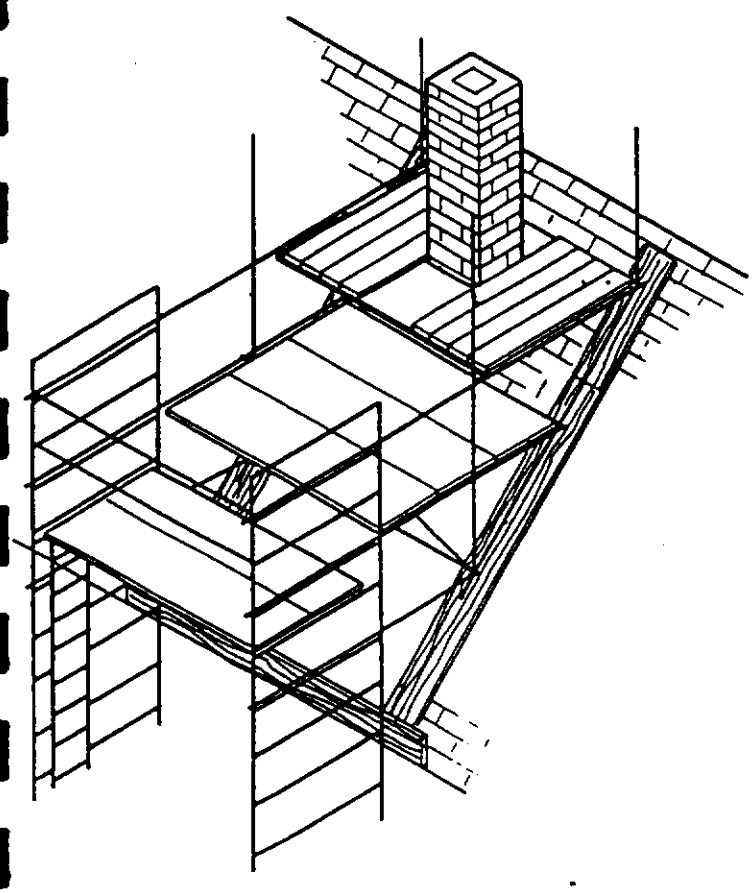


Figure 10

NOTES

1. Position scaffold boards alongside the chimney stack as shown.

2. The boards will have to be fixed down (lashed) to ensure accidental displacement does not take place.

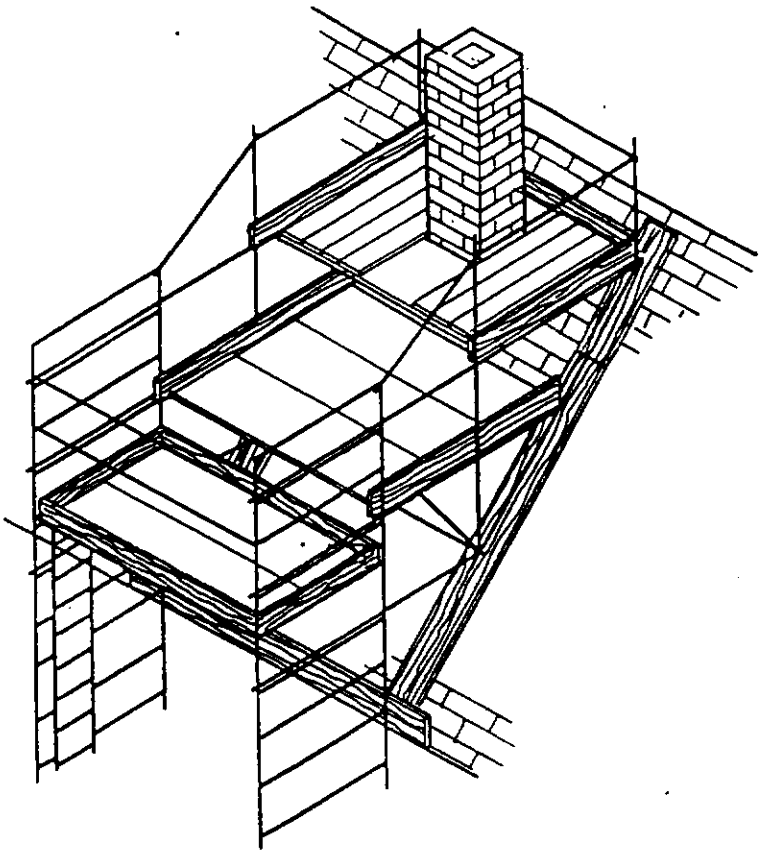


Figure 11

NOTES

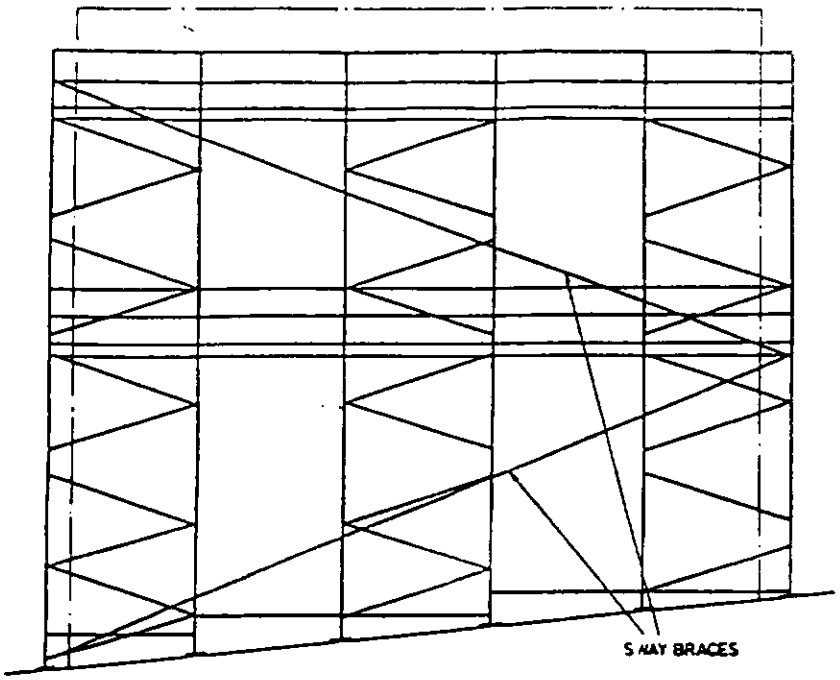
1. Position guardrails as shown, minimum height 910 mm from the platform.

   maximum unprotected gap 470 mm mid-level guardrail will be required.

2. Fix toeboards as shown. Use toeboard clips or fittings to eliminate accidental displacement.

3. Check all fittings, ties, footings, guardrails etc. before handing the structure over.

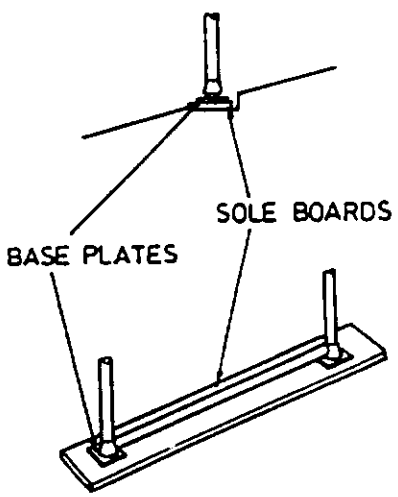
FACADE STRUCTURE



FACADE SCAFFOLDS

The above structure is a typical example of a facade scaffold erected on a grass slope running along the length of the building, where the slope runs away from the face of the building. The sole boards will need to be bedded down in the opposite direction so that they will not assist any movement down the slope, if any movement of the structure occurs.

When building this type of structure first complete all of the base around the building starting at the highest point before commencing to build up lifts using the minimum amount of leg adjustment on the screwed leg. Fill in with rung spacings and adjust for the drop along the length when the next lift is erected. Ensure that the sole boards are firmly and evenly bedded down.



When using locking castors ensure that the direction of the wheel is at right angles to the slope.

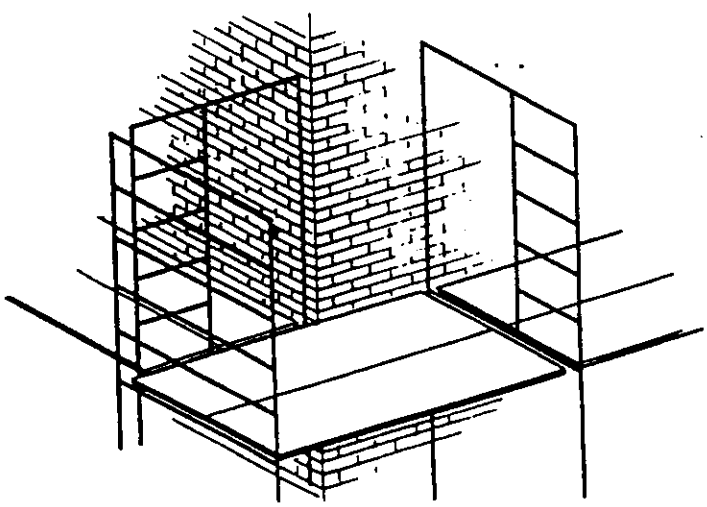
When erecting such structures on tarmac, sole boards will also be required to stop the base from sinking into the ground. If the structure is to be erected on a public thoroughfare then manhole covers, gratings, delivery hatches etc. must be avoided. Base walkthrough frames would have to be used and the requirements of any pavement licence must be met.

Sway bracing must be used to prevent sideways movement on structures of this type and size.

RETURNS ON SCAFFOLDS

NOTES

Where a return is required, ensure that the platform levels are correct, that the towers butt up to each other, that they are permanently fixed together and that any gaps between the two towers are covered.



HI-WAY HIRE & ERECT

BRIDGE STRUCTURE - PREFERRED ERECTION SEQUENCE (5 BAYS SHOWN)

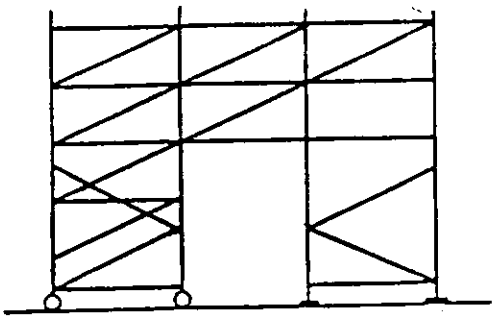


Fig.1

a. Erect tower (A) with castors. Erect support tower (B) with base plates, with legs extended to give the same height as (A). Connect (A) - see Fig. 1.

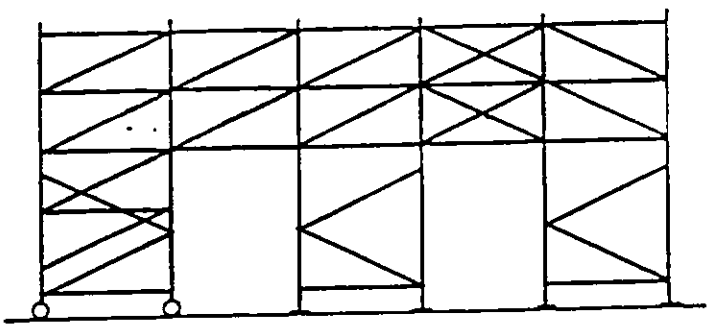


Fig.2

b. Erect support tower (C) with base plates and legs extended to give the same height as (A) and (B)

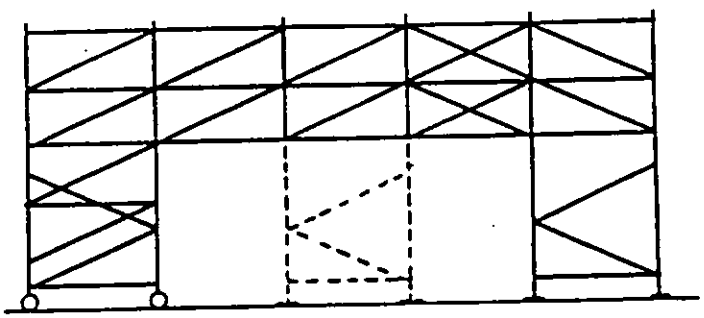


Fig.3

c. Remove the base plates from tower (B) by raising the base plates to allow the spigots to drop out of the cones. See Fig. 3.

d. Erect tower (D) using the base from (B) replacing the base plate with castors. Connect to (C). See Fig 4

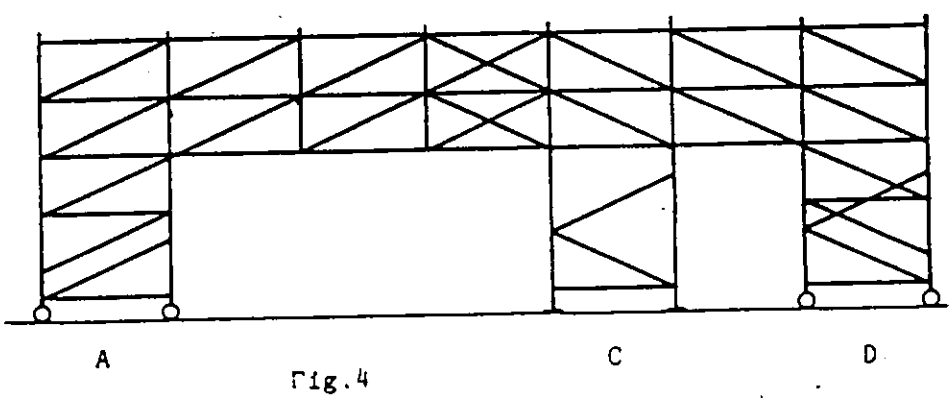


Fig.4

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e. Remove the base of (C) as in Fig 3. See Fig 5

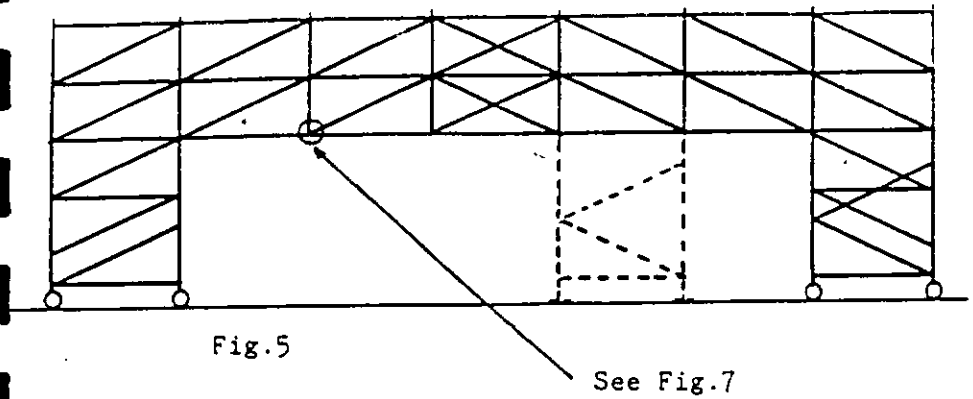

Fig.5

Add raker braces. See Fig. 6.

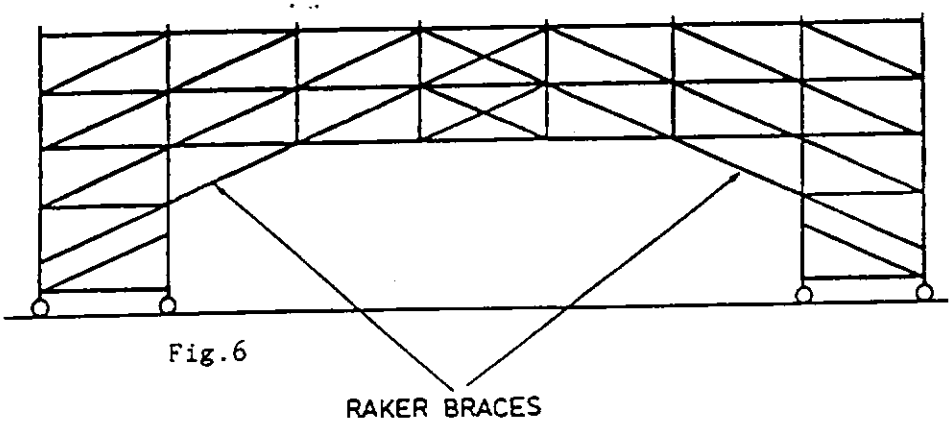

Fig.6

Fit dumbell end frames,guardrail frames. Deckout and fit guardrails and toeboards. For bridges longer than shownrepeat Figs. 2 and 3until the required lengthis achieved.

SWL is 600 lbs evenly distributed over the middle l0 feet.

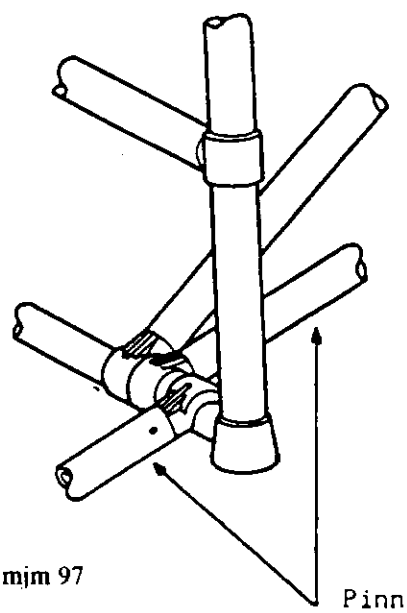

Fig.7

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SMALL WORKS SITE SURVEY FORM

DATE TIME

APPOINTMENT

CUSTOMER

SITE

Site Contact

Site Telephone No

Description.

HAZARDS:

ACCESS	UNRESTRICTED	IN USE 24 HOURS	RESTRICTED LOADING	PEDESTRIAN AREA	NARROW ENTRANCE	LONG CARRY
GROUND CONDITIONS	CONCRETE	TARMAC	PAVING	GRASS	SOIL	GRAVEL
TIES	REVEAL	THROUGH	HILTI & TUBE	WIRE BONDS	RAKERS	
USE	PAINTING	POINTING	ELECTRICAL	MECHANICAL	CHIMNEY	ROOFING
	GUTTER/FASCIA	CEILING	CLADDING	INSULATION		

STRUCTURE DRAWING :

NOTES

1. Similar bridges may be constructed or erected in a safe manner in different constructions than that shown. to meet specific requirements. If in any doubt of the safe use of any other construction contact the Safety Department at Head Office.

2. Safe Working Load - 600 lbs (272 kg) evenly distributed load over the middle l0 feet (3.048m) for bridges up to 8 bays.

3. Tower height to base ratio over two sections must be maintained. Adequate stability is built into a structure two sections high - additional lateral stability is required for structures above this height.

INFORMATION THAT MUST BE PASSED ON TO THE USER

1. Do not exceed the Safe Working Load.

2. The brakes must be in the 'on' position when the structure is in use.

3. Ensure that no persons or materials are on the structure when it is being moved.

4. That the structure only be moved by pushing or pulling at the base.