

ITEM NO: 2000-001



# Supervisor's Inspection Course

## COURSE NOTES

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### Instructor's Copy

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**Advancing safety and standards in**  
**the UK mobile access tower industry**

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## SUPERVISOR'S INSPECTION COURSE

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<p style="text-align: center;"><b>ADVANCED PASMA COURSES ARE AVAILABLE</b></p>
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Do not let operatives dupe you. The PASMA card is for Standard Towers only. This is a YELLOW or more recently a WHITE Identification Card.

**MODULE 1: Roof Scaffolds**

**MODULE 2: Cantilevers**

**MODULE 3: Bridging of All Types**

**MODULE 4: Walk Through Towers,  
Staircases and Swimming  
Pool Bridges etc.**

Each Advanced Course has it's own different coloured card and it identifies in which module the operator is qualified.

# OVERVIEW OF LEGAL DOCUMENTATION

*Delegates are advised that where safety matters are at variance PASMA advise the use of the highest standard of safety.*

*However, it must be accepted that the Manufacturer's Instruction manual must be followed and takes precedence.*



## THE HEALTH & SAFETY AT WORK ACT 1974

### General Duties of the Employer:

#### Sect 2 (2)

Employers must provide: Safe Plant and Safe Systems of Work, Necessary Information, Instruction, Training and Supervision, a Safe Place of Work, with Safe Access and Egress, Safe Handling, Storage, Maintenance and Transport of Articles and Substances.

### General Duties of the Employee:

#### Sect 7 + 8

Employees must take reasonable care of their own Health and Safety and that of others who may be affected by their Acts or Omissions.

Employees must co-operate with the Employer.

It is an offence for anyone to intentionally or recklessly interfere with or misuse anything provided in the interests of Health, Safety and Welfare.

### General Duties of Manufacturers and Suppliers etc:

#### Section 6

Manufacturers, Suppliers and Hirers have Duties to provide:

Information for the Safe Use of the Equipment

Ensure equipment provided is safe to use when being used correctly

Adequate inspection of equipment.

## THE MANAGEMENT OF HEALTH & SAFETY AT WORK REGULATIONS 1999

### Regulation 3:

Every employer shall make suitable and sufficient assessment of Health and Safety risks to employees and others who may be affected by their works.

Put in place appropriate control measures arising from these assessments (Independent Method Statements).

### Regulation 13:

Every employer shall take into account the capabilities of employees with regards to Health and Safety.

Every employer shall ensure employees are provided with adequate Health and Safety training.

## THE PROVISION AND USE OF WORK EQUIPMENT REGULATIONS 1998

### General Requirements:

Suitability of the work equipment

Maintenance and Inspection of work equipment

Training Requirements, Information and Instruction for the use of work equipment

Stability of the work equipment.

## THE CONSTRUCTION (Health, Safety and Welfare) REGULATIONS 1996

Provision of safe access and egress.  
 Provision of a safe place to work.  
 Protection from falls.  
 Protection from falls 2 meters or above.  
 Provision of Information, Instruction and Training.

Inspection of working platforms

- \* Before first use
  - \* After substantial addition, dismantling or alteration
  - \* After any event likely to affect it's strength and/or stability
  - \* At regular intervals not exceeding 7 days.
- \* *Please refer to Page 58 regarding the reporting of towers.*

## MANUAL HANDLING OPERATIONS REGULATIONS

Avoid the need to undertake Manual Handling Operations.

Where Manual Handling Operations cannot be avoided, assess the Health and Safety risks associated with the task.

## PERSONAL PROTECTIVE EQUIPMENT OF WORK REGULATIONS 1992

Personal Protective Equipment of Work Regulations.

1992 PPE is to be used as last resort. PPE must be suitable for the task. PPE shall be maintained.



## Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995

### General Duties:

Requirement to report all notifiable Injuries, Diseases and Dangerous Occurrences

Partial or total collapse of more than 5 metres of scaffold

Contact with overhead cables

Injury to member of public

Risk of drowning, working adjacent to water

3-day absence from normal duties

Major Injuries

Fatalities

Guidance

## Health and Safety in Construction (HSG 150) Health and Safety, Protecting the Public (your next move) HSG151

Copies of the above are available from HSE books suppliers

### Standards

BS 1139, Part 3 (1994)

HD 1004: 1992

BS EN 1298

Copies of standards can be obtained from:

British Standards Institution  
389 Chiswick High Road  
London W4 4AC

## THE HEALTH & SAFETY EXECUTIVE

Is a government appointed body to act as an enforcing authority and is responsible for enforcing the law and the regulations.

They produce guidance notes to elaborate on the interpretation and implementation of the regulations.

They are responsible for appointing health and safety inspectors to ensure compliance.

Let us have a look at some of the powers of these inspectors.

## POWERS OF THE INSPECTOR

- Right of entry without appointment
- Right to investigate and examine
- Right to take photographs or samples or equipment
- Right to see documents and take copies
- Right to dismantle or take away substances
- Right to assistance
- Right to ask questions
- Right to seize articles or substances



## ACCIDENT AWARENESS & PREVENTION

Every accident causes a lot of pain, a lot of agony and a lot of paperwork. Listed below are some common practices by operatives on sites all over the country.

These are over and above the hazards we cover later.

- a) Stepping onto or into a building from a freestanding tower
- b) Internal stabilisers removed when a tower is against a wall, thereby reducing the effective base dimension.
- c) When pulling the tower along at ground level (instead of pushing) the people moving the tower cannot see where they are going. They do not see hazards on the ground or in the air.
- d) Fixing cantilevers to towers when operatives are not qualified to do so.
- e) Borrowing components from towers near by.
- f) Operators such as cladders removing the guard rails & toe boards from the inside elevation of the tower. Leaving a gap more than 150mm.

## COMPETENCY

Only competent persons should erect, move, inspect or disassemble access towers.

Delegates are advised that the definition of a competent person as defined by the Construction (Health, Safety & Welfare) Regulations is;

Any person who carries out an activity shall possess such Training, Technical Knowledge or Experience as may be appropriate, or be supervised by such a person.

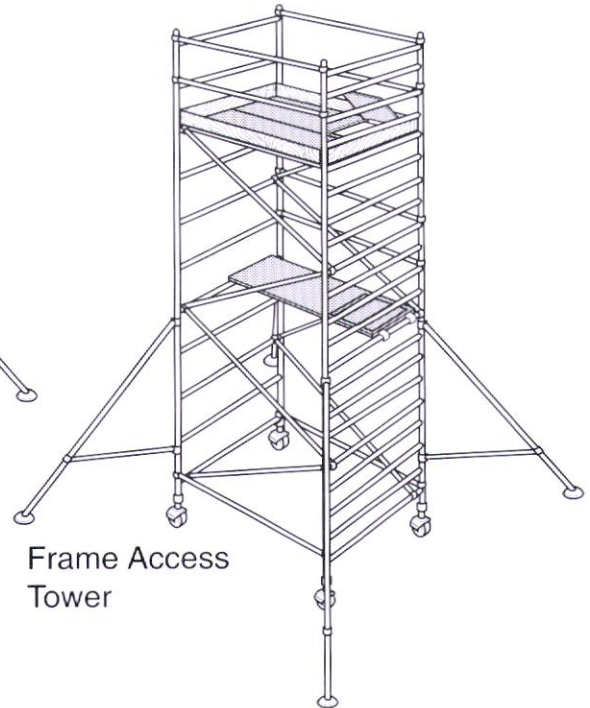
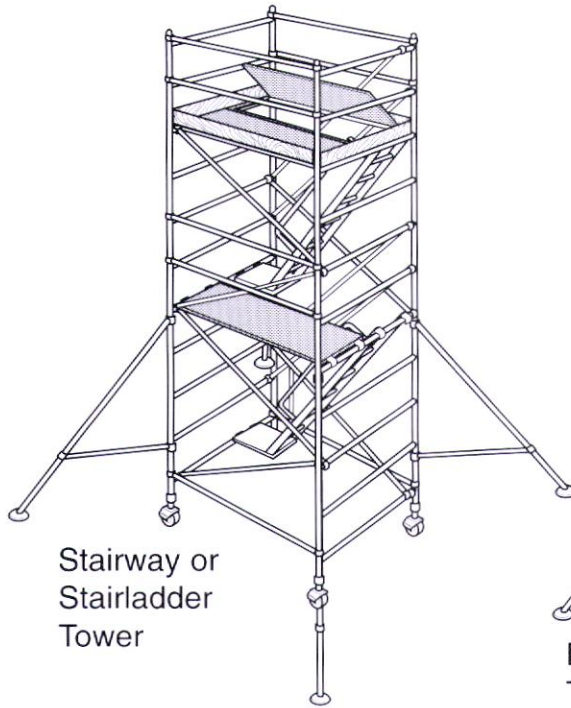
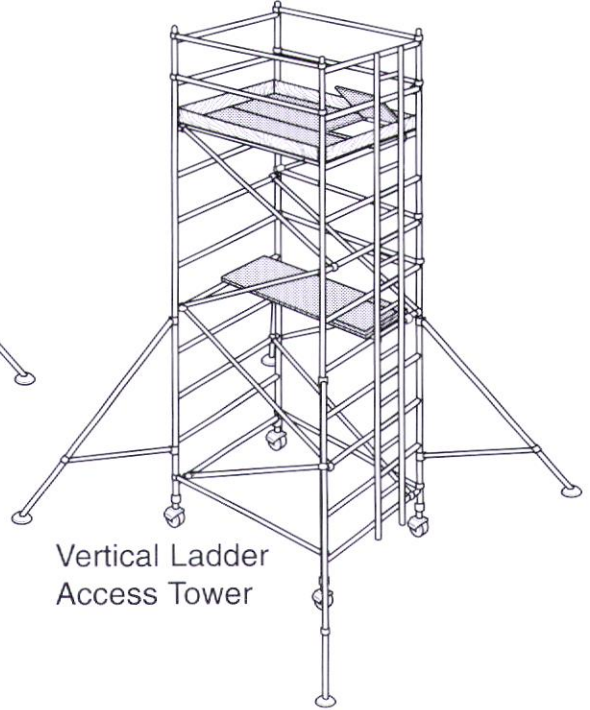
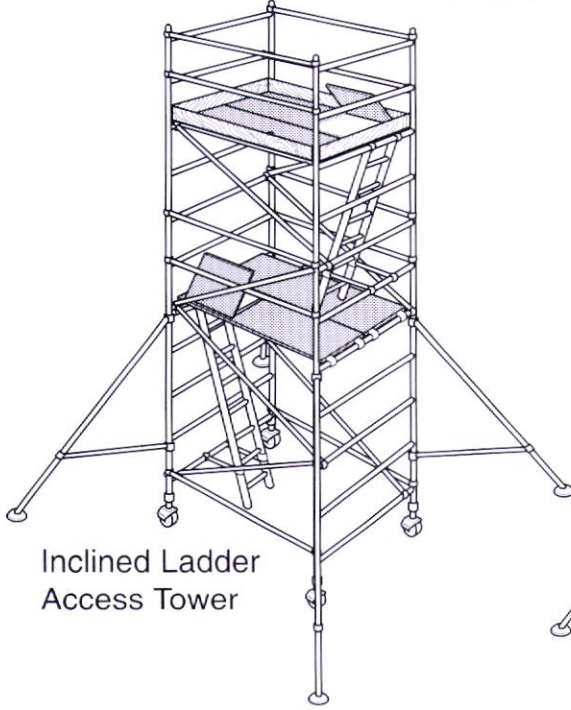
# TOWERS AND TOWER COMPONENTS

*All components must be checked  
prior to use.*

*It is essential that these notes are  
used in conjunction with the  
manufacturer's instruction manual.*

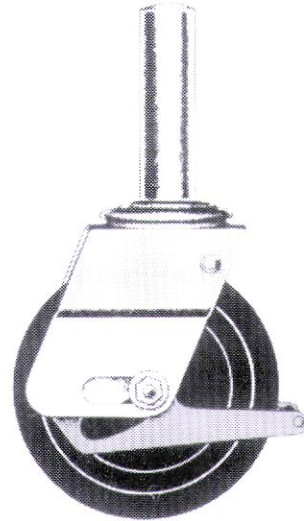
# TYPICAL TYPES OF TOWERS

Towers are usually 1.8m, 2m or 3m long, with a width of 0.6m or 1.4m





## CASTOR WHEELS



125mm, 150mm or 200mm Diameter.

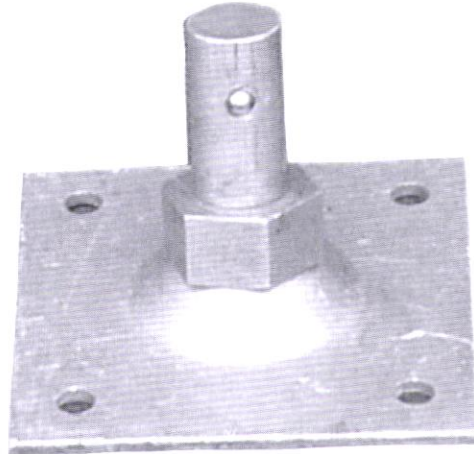
The Castor Wheel is a separate component, although you normally see them attached to the adjustable leg.

The Castor Wheel is attached to the adjustable leg by a spigot which has a spring loaded retention device.

The Brake **MUST** always be applied, except when the tower is being moved.

The Castor Wheel carries the sum of all the loadings including the self weight of the tower.

**DO NOT USE ON UNFIRM GROUND**

**BASE PLATE**

The Base Plate is connected to the adjustable leg instead of the castor.

It is intended for use if the

**TOWER IS NOT TO BE MOVED**

or

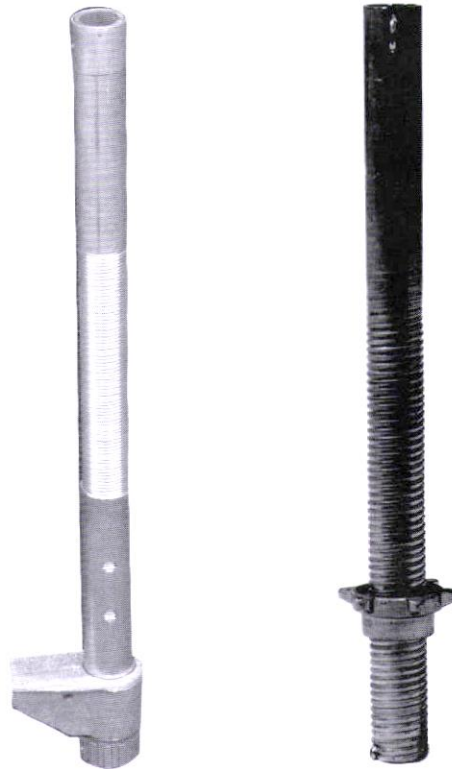
**THE TOWER IS ON UNEVEN GROUND**

or

**IF THE TOWER IS ERECTED ON A STAIRCASE OR STAIRS - BASE PLATES MUST BE USED**



## ADJUSTABLE LEG



The Adjustable Leg is attached to either the Castor or the Base Plate and is installed in the bottom of the Base Frame.

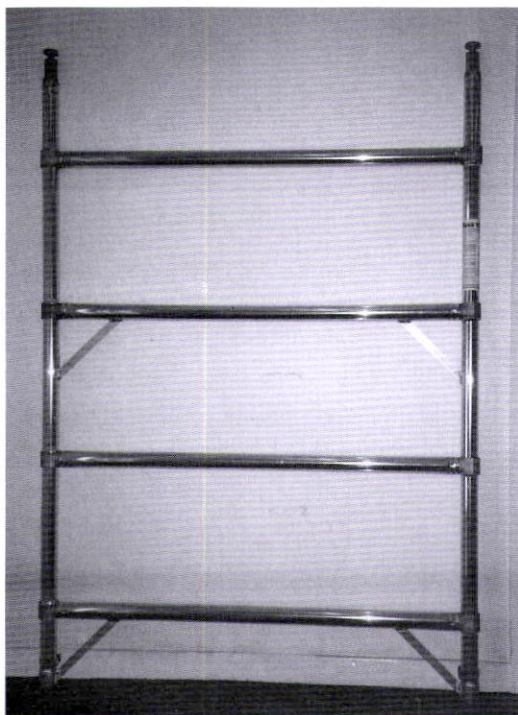
It is adjusted by winding up or down and is intended only to take account of any unevenness or inclines.

### **ADJUSTABLE LEGS ARE NOT INTENDED TO BE USED TO GAIN EXTRA HEIGHT.**

Some Manufacturers use Adjustable Legs with quick release mechanisms.

It is a good working practice that when erecting a Tower one leg should ALWAYS remain fully retracted.

## SPAN FRAME (Double Width)



This is a 4 Rung Double Width Span Frame, usually 2 metres high and is not intended to be climbed.

Double Width is approximately 1.5 metres wide but will vary slightly from manufacturer to manufacturer.

Various rung versions are available depending on the manufacturer.

This Frame takes TWO Platforms side by side, one of which must be a Trapdoor version.

Some manufacturers have different ways of connecting two frames together, two examples being the usual tube spigot and the conical spigot.

Similarly the way of locking frames together may vary, some manufacturers use a semi-automatic system but most use the more familiar interlock clip.

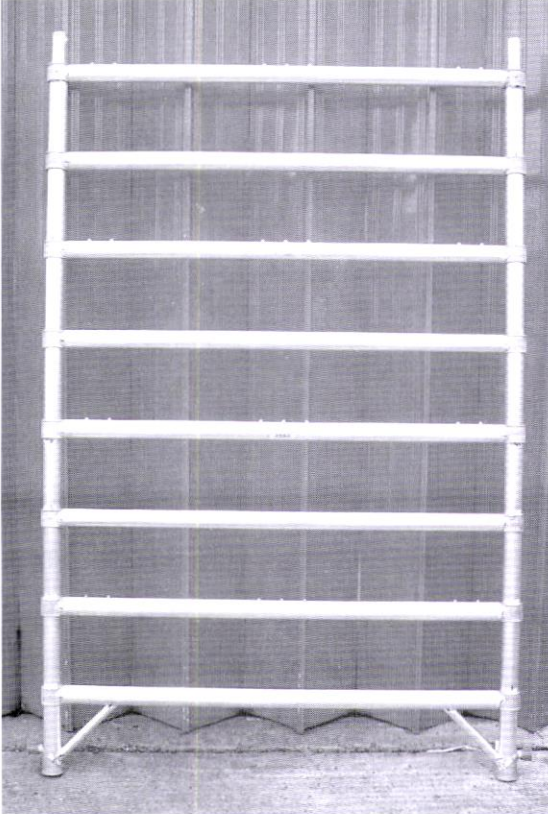
It is the use of 2, 3, 4 and 5 rung frames that provide the variance in height.

**DO NOT CLIMB UP OR DOWN THE RUNGS**

**YOU MUST USE A LADDER AND IT MUST BE ON THE INSIDE OF THE TOWER**

**REFER TO MANUFACTURER'S INSTRUCTION MANUAL FOR SUITABLE LADDER ACCESS**

## SPAN FRAME (Double Width)



Various rung versions are available depending on the manufacturer.

This Frame takes TWO Platforms side by side, one of which must be a Trapdoor version.

This frame is allowed to be climbed as the rungs are anti-slip and comply with the ladder rung spacing of 230mm to 300mm.

This is an eight rung double width span frame, usually 2 metres high which is intended to be climbed. Double width is approximately 1.5 metres wide but will vary slightly manufacturer to manufacturer.

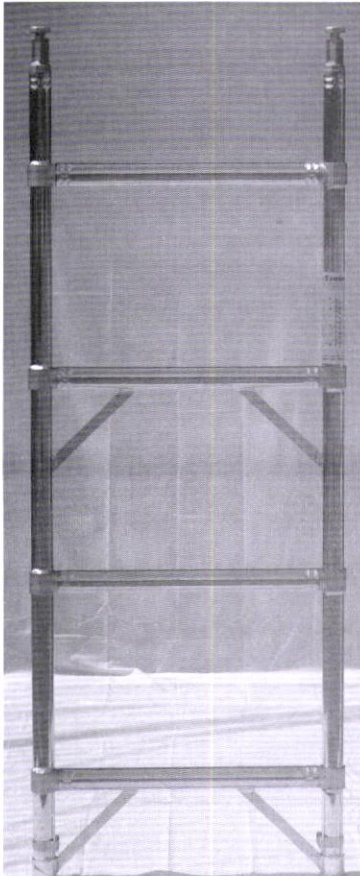
Some manufacturers have different ways of connecting two frames together, two examples being the usual tube spigot and the conical spigot.

Similarly the way of locking frames together may vary, some manufacturers use a semi-automatic system but most use the more familiar interlock clip.

It is the use of 2, 3, 4 and 5 rung frames that provide the variance in height.



## SPAN FRAME (Single or Narrow Width)



Similar to a Double Width Frame except it is usually only 0.8 metres wide, and is not intended to be climbed.

It is intended for Restricted / Narrow Space Applications.

Various rung versions are available depending on the manufacturer.

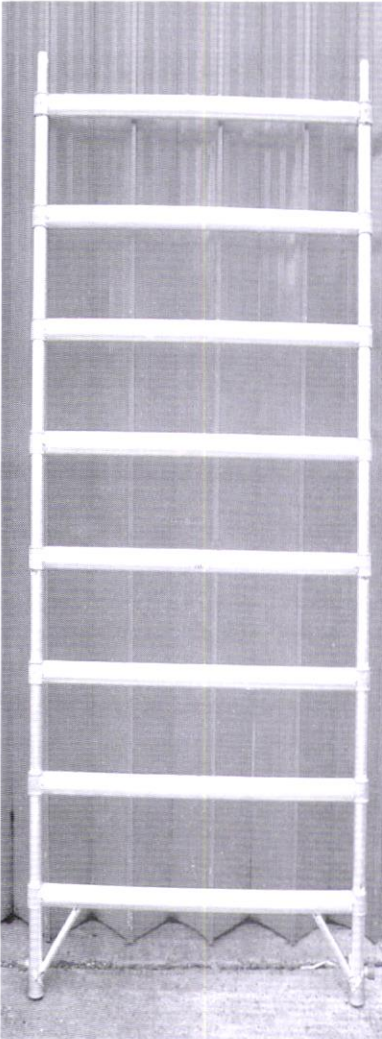
This Frame takes only one Platform and this must be complete with a Trapdoor arrangement. (Do NOT use the Full Hatch type of Platform)

Some manufacturers have different ways of connecting two frames together, two examples being the usual tube spigot and the conical spigot.

Similarly the way of locking frames together may vary, some manufacturers use a semi-automatic system but most use the more familiar interlock clip. It is the use of 2, 3, 4 and 5 rung frames that provide the variance in height.

**DO NOT CLIMB UP OR DOWN THE RUNGS**

## SPAN FRAME (Single or Narrow Width)



Various rung versions are available depending on the manufacturer.

Similar to a Double Width Frame except it is usually only 0.8 metres wide.

It is intended for Restricted / Narrow Space Applications.

This frame is allowed to be climbed as the rungs are anti-slip and comply with the ladder rung spacing of 230mm to 300mm.

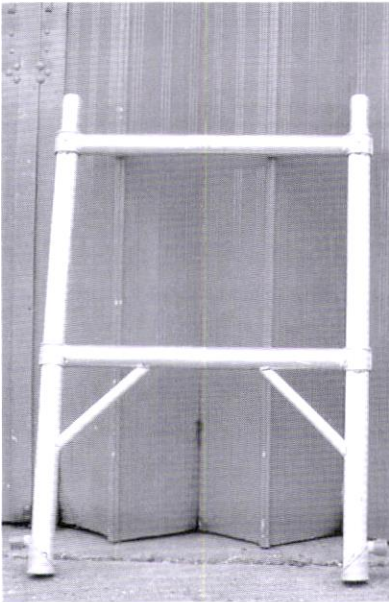
This is an eight rung single width span frame, usually 2 metres high which is intended to be climbed.

Some manufacturers have different ways of connecting two frames together, two examples being the usual tube spigot and the conical spigot.

Similarly the way of locking frames together may vary, some manufacturers use a semi-automatic system but most use the more familiar interlock clip.

It is the use of 2, 3, 4 and 5 rung frames that provide the variance in height.

## GUARDRAILS / GUARDRAIL FRAMES



The Construction Regulations specify the minimum height of Guardrail is 910mm.

However the Product Standard specifies 1.0 metre  $\pm 50$ mm

A Mid Guardrail is required with a maximum gap of 470mm.

Double Guardrails are mandatory on all work platforms. Refer to manufacturer's instruction manual.

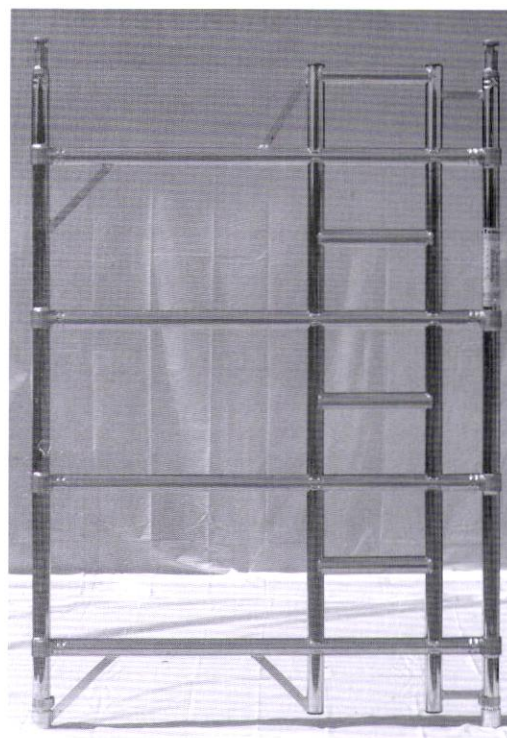
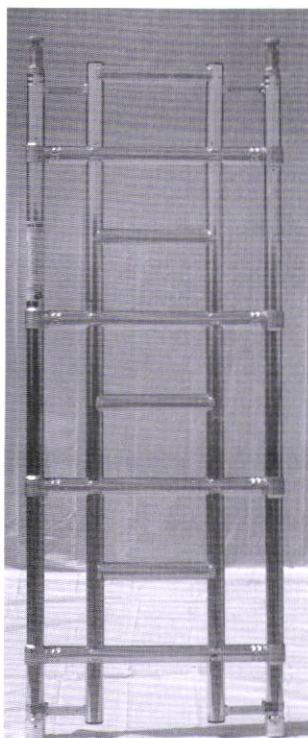
Where Toe Boards are intended to prevent materials from falling, a Double Guardrail is intended to prevent people or materials falling off the Tower or through the gap between the Platform and the Guardrails.

The Construction Regulations are currently under review and it is anticipated that the minimum height of the guardrail will become 950mm.

The Product Standard is also due to change to read 'minimum guardrail height of minimum 950mm'.



## LADDER FRAME

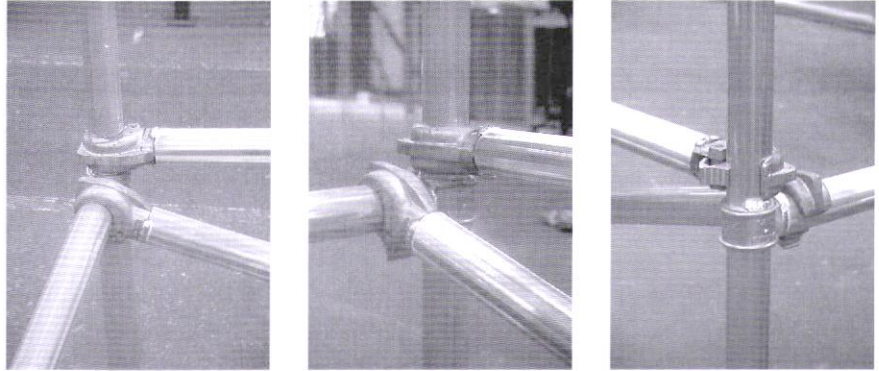


With this Frame the Ladder is an integral part of the Frame.

A Tower will normally have a Span Frame on the opposite side of the Tower.

**YOU MUST ONLY CLIMB UP OR DOWN THE TOWER ON THE INSIDE**

## BRACES - Horizontal and Diagonal



### HORIZONTAL

Horizontal braces have a Hook Mechanism at each end.

They are the same length as the Platform.

The Hook Mechanism should face outward when located on a Vertical Frame Member. Unless the manufacturer states differently.

### DIAGONAL

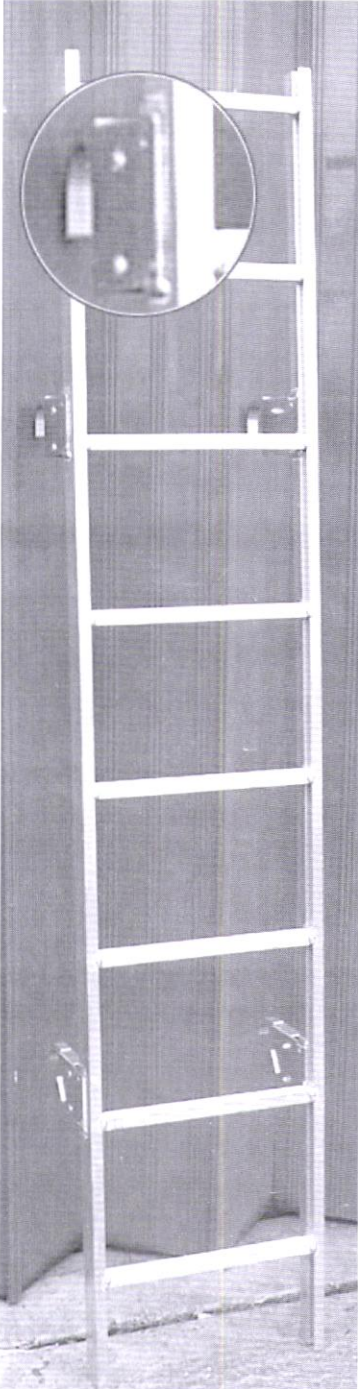
Diagonal Braces are similar to the Horizontal Braces except they are slightly longer.

You must refer to Manufacturer's Instruction Manuals for the bracing pattern.

Never use force to fit or remove braces, they are intended to be at 90° to the connecting member.

Ensure the braces are kept line when one end has been removed.

## VERTICAL CLIP-IN LADDER



This is a clip-in type ladder, which clips on to the horizontal rungs of the frames.

This ladder must be on the inside and 150mm from the frame unless the rungs coincide with the rungs of the frame.



## INCLINED LADDER

Variations include:  
single length and extending type.

Whatever type is used, it must not rest on the ground.

Ladders must be on the inside of the tower.

Ladders should be placed directly under the trapdoor unless the manufacturer states differently.

## STAIR LADDER

45° Inclined Ladder.

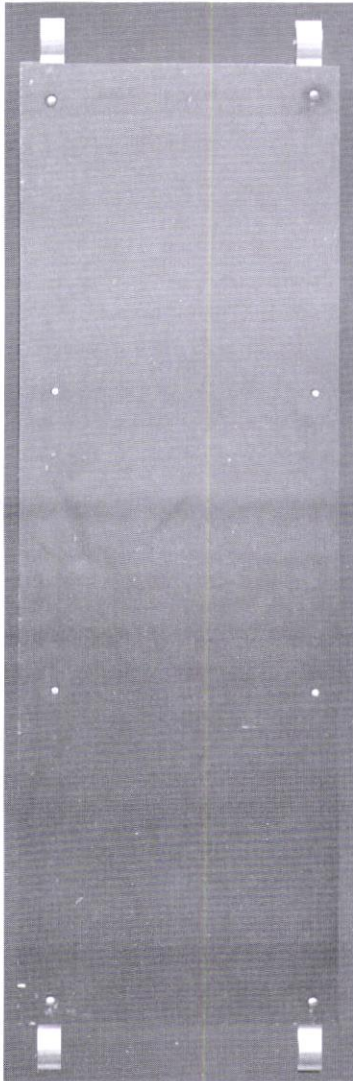
Tower components include banister braces  
(2 per ladder).

Rest platforms at every lift (usually 2 metre intervals).

This type of ladder usually has flat steps and not rungs.

A tower c/w stair ladder and banister braces provides a safer access when carrying tools or equipment.

## FIXED OR STANDARD PLATFORM



Platform lengths are usually 2, 2.5 or 3 metres with a **MINIMUM** width of 600mm.

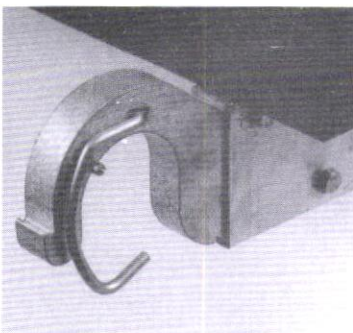
Usually fitted with a wind lock device.

The platform has a non-slip ply deck supported by a platform frame.

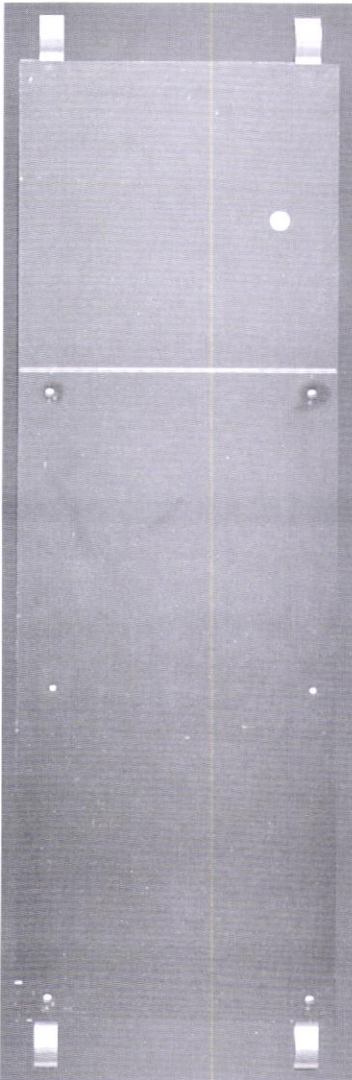
Never paint the deck as this can conceal any defects and negate a non-slip surface.

These platforms are for use in double width towers in conjunction with trap platforms.

**NEVER USE A FIXED OR STANDARD PLATFORM IN A SINGLE WIDTH OR NARROW WIDTH TOWER. THERE IS NO TRAPDOOR & THEREFORE NO ACCESS ON TO THE PLATFORM**



## TRAPDOOR OR HINGED PLATFORM



Same platform lengths and width as the standard platform.

Usually fitted with a wind lock device.

The platform has a non-slip ply deck supported by a platform frame.

Never paint the deck as this can conceal any defects and negate a non-slip surface.

The trapdoor or hinged platform is the **ONLY** type of platform to be used in a single or narrow width tower.

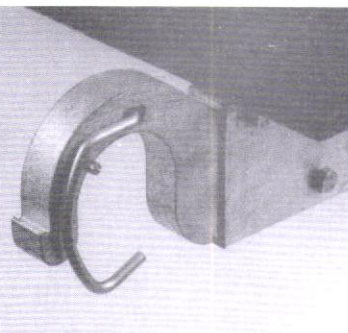
The trap allows access and egress to the platform.

There is a full hinged platform available, and is normally used with a stairladder type tower.

Hinges should be on the outboard of the tower.

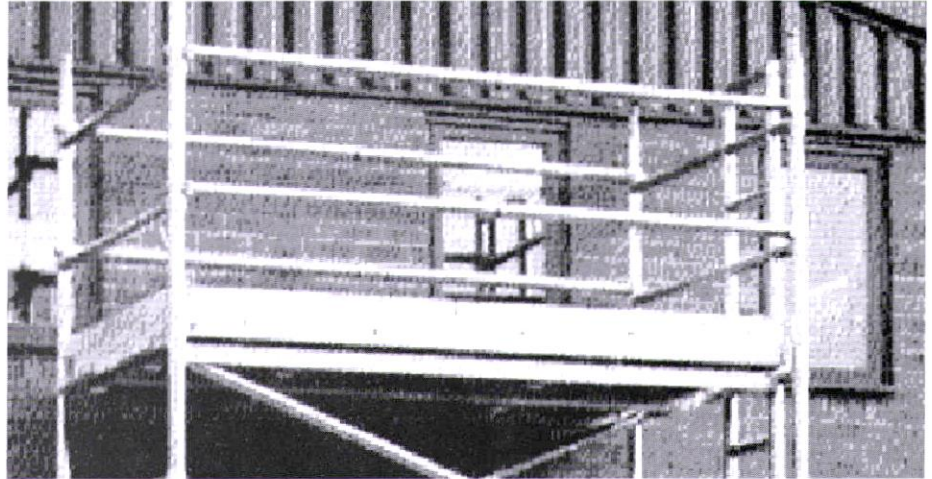
This type of platform was designed for access using a vertical or inclined ladder, e.g. 70 degree ladder.

The trapdoor must be above the ladder.





## TOE BOARDS



Toe boards are to be fitted in accordance with manufacturer's instructions.

Minimum height of toeboard is 150mm.

Toe boards are mandatory on working platforms to prevent materials from falling.

Toe boards are required if materials or equipment are stored on a platform.

Toe boards are not required on rest or access platforms, providing nothing is stored on them.

## STABILISERS



The purpose of stabilisers is to increase the base size, which in turn increases the stability. It will therefore allow you to increase the height.

The narrowest base dimension dictates stability. It follows that a perfect square provides optimum stability.

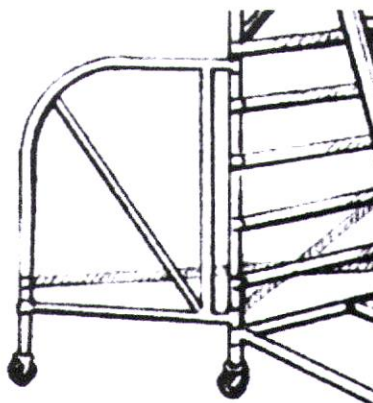
Stabilisers are used when the tower is not going to be moved frequently.

They must be fitted as per the manufacturer's instructions and fitted as soon as possible after the first lift has been erected.

To obtain the maximum extension of the stabiliser, the lower arm should be as close to horizontal as possible.

Three types of stabilisers are available; Standard, Telescopic & Jumbo.

## OUTRIGGERS



Outriggers are fitted with adjustable legs and castors, which provide mobility.

Outriggers must be plan braced.

Outriggers are used in preference to stabilisers when a tower is to be moved frequently.

As with stabilisers they allow an increase in the height of the tower.

The narrowest base dimension still dictates stability.

Outriggers are not suitable for rough or uneven ground.

Standard and Jumbo versions are available.

## STORAGE & MAINTENANCE

The life of access towers will be increased if proper care is taken during transportation or storage.

Before storage, components should be cleaned to remove corrosive or concrete substances.

During transportation, avoid loading heavy equipment on top of components, space can be saved by placing braces, platforms and stairways in available space within vertically stacked frames.

Refer to the manufacturer's recommendation regarding maintenance, if in doubt do not use that component.



## ERECTION PROCEDURES

*Both PASMA and the HSE specifically recommend that you do not attach safety harness lanyards to mobile access towers. In the event of an arrested fall, you are likely to cause the tower to overturn, not only increasing the risk of further injury to yourself, but also occasioning the additional risk of putting others in the vicinity of danger from the falling tower.*

*Some employers insist on the mandatory use of safety harnesses when working at height. Where an employer makes this a mandatory requirement you must ensure that the lanyard is always attached to a suitable anchor point outside the tower.*

## ASSEMBLING A TOWER

### *Remember to:*

Ensure that you have the appropriate Manufacturer's Instruction Manual in your possession and that you follow them at all times

Read the Instruction Manual and follow the step by step instructions

Order the correct tower for the job, i.e. dimensions, height, mobile/static, loading capacity etc.

Check the components check list; identify components, noting the quality and condition

Check the suitability of the site

Check the suitability of the route if the tower is to be moved

Ensure the correct positioning of braces having first checked the brace hooks

Level the tower, and the importance of the assembly process

Apply the correct procedure when lifting or lowering components.

## MOVING A TOWER

Moving an aluminium tower is a serious business.

Ensure sufficient people are available to complete the move.

Check the intended route for hazards (typical hazards will be covered later). You may find you need more people than you thought.

Remove all materials from, and ensure no personnel are on the tower, reduce the height of the tower to 4 metres before moving.

If the tower is tied in, remove the ties progressively as you dismantle the tower to a point where it becomes free standing (refer to Manufacturer's Instruction Manual).

When moving the tower lift stabilisers 25mm only off the ground.

Unlock the castors, this is the only time that the brakes should be released; the brakes must be put back on at the earliest opportunity.

The tower should only be moved by manually pushing at the base. Never use mechanical means, e.g. towed by a fork lift or dumper truck.

Never re-position a tower by lifting with a crane.

## MOVING A TOWER

When moving a tower avoid pot holes, ducts, drains, manholes and overhead hazards.

After moving the tower, check the alignment (vertical and both planes).

Ensure that frame interlocking clips are still engaged, re-position stabilisers/outriggers as necessary and ensure that they are still fully in contact with the ground.

Tighten clamps/fittings on the stabilisers; when using outriggers check hooks.

Remember to tie in again if the tower was tied in before and if it wasn't it may now need to be.

Do not be careless.

Do not try to move the tower by pulling along from the platform level.

Once again remember to apply 'Belt & Braces' principles when moving the tower.

**IF IN DOUBT SEEK ADVICE**



## DISMANTLING A TOWER

### *Remember:*

The Dismantling procedure

Never drop components to the ground, pass them down or use a rope

Never force components on or off

Keep braces in line when one end has been removed

If the tower was tied in, remove the ties progressively as you dismantle the tower until the tower becomes freestanding

Only remove the stabilisers/outriggers when you have to; leave them in place as long as possible

Dismantling is often the reverse of the erection procedure, however be aware that site conditions can change

**If you have difficulty - GET HELP!**

# SAFE USE

## SAFE USE

Ensure that the appropriate manufacturer's instructions are on site and have been read and understood.

Make sure that all local by-laws and police regulations are adhered to when towers are erected in public places.

Ensure reasonable precautions are taken to prevent collision with towers by people or vehicles.

Check that all components are of the same make and the correct type and number are on site.

Check that the components are not damaged.

Check that the floor is level, firm and not obstructed if the tower is to be moved.

Check that the scaffold can be tied to a structure if necessary.

Check that the weather conditions are fit to work in.

Take account of any Risk Assessment and Method Statement that may apply.

## WHEN ERECTING THE TOWER

Keep to the instructions in the erection manual.

Keep to the recommended height.

Check that the castor brakes are on.

Check adjustable legs are secure.

Check that the scaffold is vertical and horizontal.

Fit the manufacturer's recommended bracing pattern as the erection proceeds.

Fit outriggers or stabilisers, as soon as the base lift has been erected.

Secure interlocking pins on all spigot and socket joints.

Fit guardrails and toe boards to all working platforms.

Fit rest platforms, complete with handrails every 4 metres in height.

Tie into a structure wherever possible, or arrange for other methods of stability.

Incomplete towers should have recommended Warning Signs displayed in a prominent position, ie. close to all access points.



## DURING USE OF THE TOWER

Ensure safe working load of the tower is not exceeded.

Inspect the tower before each use. An inspection report may have to be made.

Ensure that no parts have been removed or altered from the correct configuration or have been vandalised.

Ensure that outriggers or stabilisers are correctly positioned and secured.

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

Check the tower is vertical and horizontal.

Check that the castors and brakes are operating and are in the locked position.

Ensure the recommended means of access is in place.

Limit horizontal forces at the platform as much as possible - 20kg (44lb) maximum.

Avoid using the tower in windy or severe weather conditions.

Never climb from a freestanding tower into a nearby building or vice-versa.

**CEASE WORK ON TOWERS IF EXPOSED TO  
WINDS IN EXCESS OF 17 mph**

**17 mph** - a moderate breeze or where the wind raises dust, loose paper, and moves small branches on trees.

In industrial areas, housing estates, public places, etc. take all necessary precautions, like fencing the base of the tower to prevent children or vandals from climbing the tower and vehicles colliding with the tower.

Ensure that platforms are tied down using the wind-locking device in windy or severe weather conditions.

## MOVING THE TOWER

When moving, check that the floor or surface is suitable.

Check the tower is clear of over-head obstructions before moving, particularly electric cables.

Never move towers with men or materials on any platform.

Towers should only be moved by pushing manually at the base.

Never use powered vehicles to move the tower.

Never move towers in high winds.

Ensure any holes, ducts, pits or grates are avoided or securely covered.

Clearance on the stabiliser should not be more than 25mm (1").

## DISMANTLING THE TOWER

When dismantling the tower:

- keep to the instructions in the erection manual
- never drop equipment from the tower; always lower materials to the ground by rope or by hand
- avoid dismantling the tower in windy or severe weather conditions.

It is quite possible the tower may not be in the same place as originally erected, therefore the route etc. needs to be re-checked to ensure a safe operation.

**IF YOU ARE IN DOUBT ABOUT ANYTHING  
CONCERNING YOUR TOWER PLEASE  
CONTACT THE SUPPLIER**



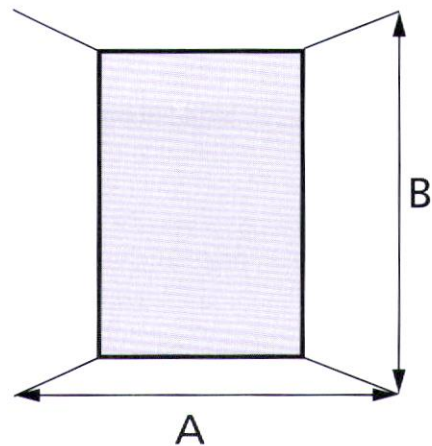
# STABILITY

## STABILITY

The height of the tower affects its stability.

The effective base dimension of the tower is the smaller of the base dimensions of the tower when no stabilisers are fitted.

PLAN VIEW

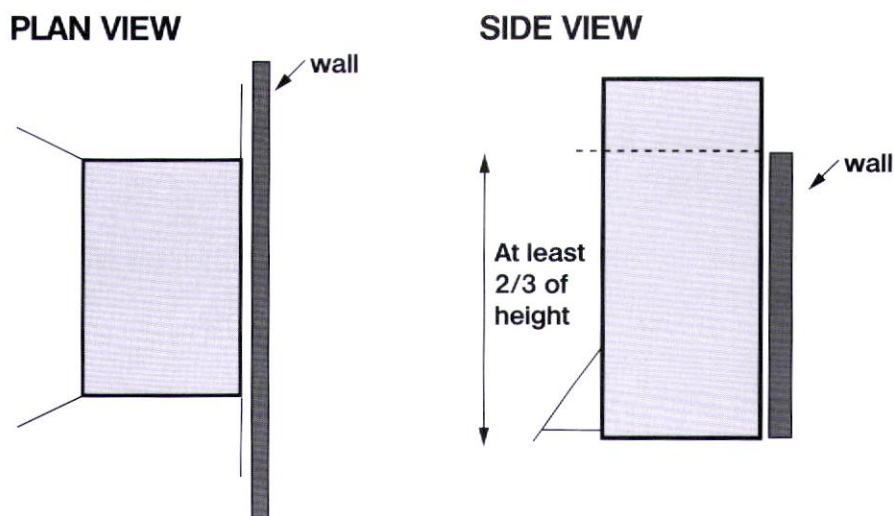


$$A = B$$

The effect of using stabilisers or outriggers is to increase the effective base dimension of the tower, therefore increasing the stability.

When fitted, stabilisers should form a perfect square to provide optimum stability.

## STABILITY



When using a tower against a wall or building you must use the stabilisers to their best effect.

The outside stabilisers are to follow the normal configuration, whereas the internal ones must run parallel to the wall.

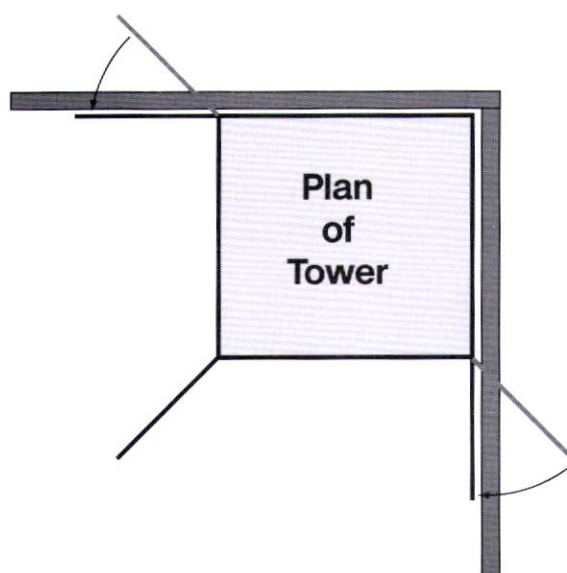
If you do not use the inside stabilisers at all, the effect is to reduce the narrowest dimension substantially and with it the height limitation.

Remember that the wall **MUST** be at least two thirds the height of the tower, if not then the tower must be tied into or stabilised over the wall.

The centre of gravity of the tower is higher with this application.

## STABILITY

### IN A CORNER



With a tower in this position we only have one stabiliser in the 'correct' position. To move this tower we need to dismantle it to 2 metres high because we cannot achieve a full compliment of 4 stabilisers.

Remember, to move a tower we need to dismantle it to a height of 4 metres when the tower has a full compliment of stabilisers and 2 metres without.

However we could use the tower in it's present position providing the three stabilisers are in the position shown in the diagram.



## TYING IN

A tower should be **Tied In** whenever and wherever possible.

Tying in simply means fastening to a solid structure by a suitable method.

Popular tying in methods are shown on the following pages.

Remember that 'Reveal Ties' are known to slip and therefore considered as only 50% effective, this means that no more than 50% of the ties used can be Reveal Ties.

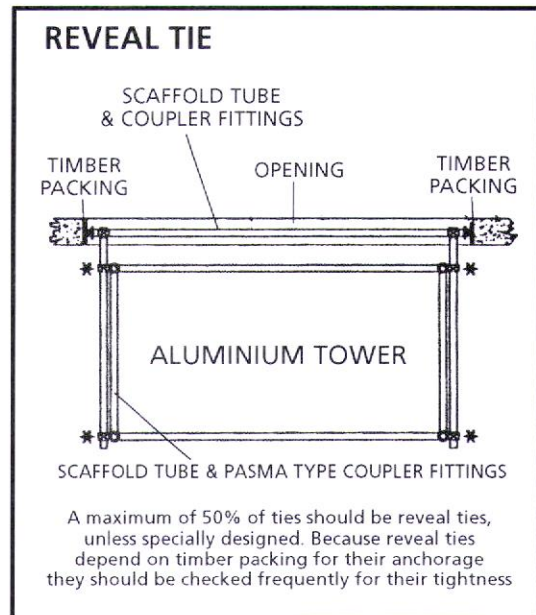
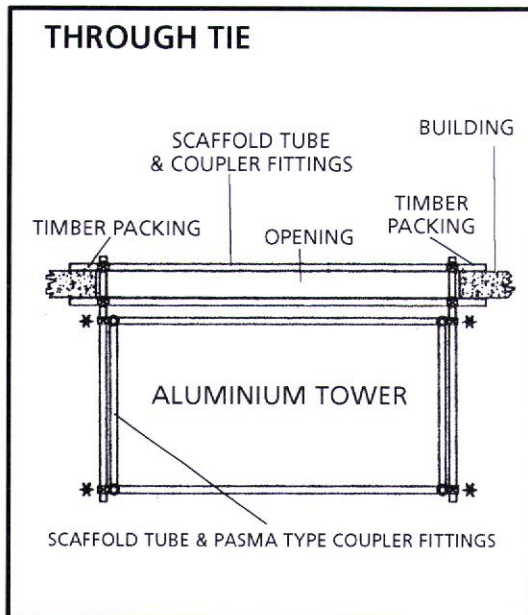
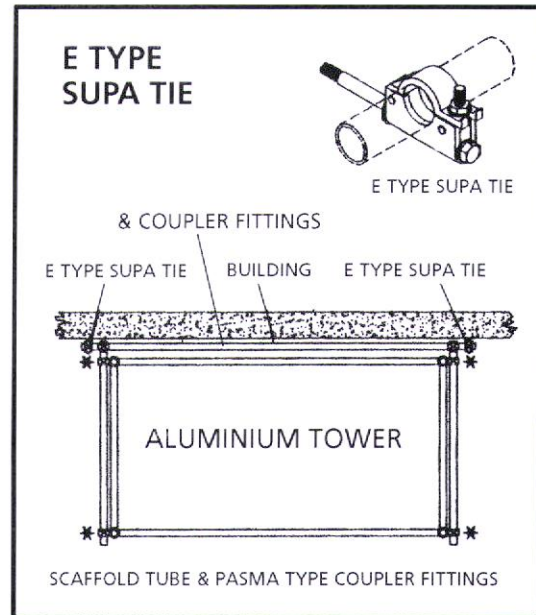
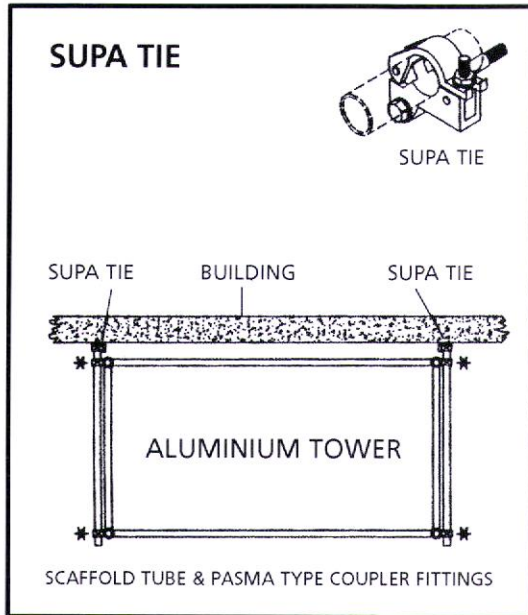
Remember if you move or re-locate your tower you need to reconsider the position regarding tying in.

A tower which is not tied in before moving may have to be tied in after relocation.

The tube used in the manufacture of towers is thin walled and of a greater diameter than conventional scaffold tube, it is therefore essential that specially designed purpose made couplers are used.

Never use conventional scaffold fittings on access towers.

# TIE ARRANGEMENTS



- \* Ensure use of correct coupler fitting if scaffold tube (48.3mm diameter) and aluminium tower tube (50.8mm diameter) interface.

## KENTLEDGE AND GUY ROPES

### **KENTLEDGE**

Is the use of weight/ballast attached to a mobile tower to provide stability.

If used, ballast must be of solid materials i.e. not sand or water and must be securely attached to the tower structure.

Your supplier should specify the correct amount of ballast weight and give advice to check that the total load on the structure and particularly the castors is not exceeded.

### **GUY ROPES**

Formed by connecting wire ropes to the tower to provide stability.

Advice on the use of Guy Ropes and Ground Anchors and their method of attachment to the tower should be specified by the supplier.

# HAZARDS

**THIS LIST SHOULD NOT BE REGARDED  
AS EXHAUSTIVE**



## HAZARDS - INSTRUCTION MANUALS

Ensure erection manual is on site.

Ensure erection manual has been read.

Ensure the erection manual has been understood.

Ensure braces have been fitted according to manufacturer's instructions. Failure to fit correctly can cause the tower to collapse.

Do not build to a height higher than the manufacturer states is safe.

Ensure castors, base plates and stabilisers are not 'floating'.

**LEAVE LEVITATION TO THE MAGICIANS.**

Ensure the erection manual is for the tower about to be used and from the manufacturer of the tower in question.

## HAZARDS

### COMPLACENCY

'I have been doing this for years, I don't need anyone to tell me how to do it.'

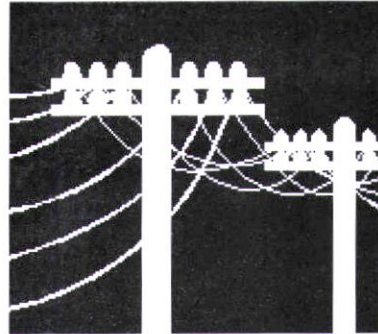
Instructors often hear this comment. Just think, you could have been doing it wrongly all these years. Legislation changes regularly these days. Are you sure you are up to date? We can all relate sad tales of injury etc. so let's remember 'belt & braces' and YOU will be going home safely to your FAMILY at the end of the day in one piece.

### MOVING A TOWER

Moving a tower is a hazardous operation.

- Remove all people and materials from the tower
- Check the intended route for hazards such as pot holes, ducts, drains; also obstructions such as walls, lamp posts and open windows
- Do not try to move the tower by pulling along at the platform level
- Always apply the effort at the base and by pushing
- Never use powered vehicles to move the tower
- High winds are hazardous; reduce the height of the tower to 4 metres
- Beware of overhead electrical cables

## HAZARDS - ELECTRICITY CABLES



The Health & Safety Executive have issued a Guidance Note called 'GS 6(Rev)'  
Avoidance of Danger from Overhead Electric Lines.

### SAFE RECOMMENDED CLEARANCES

Your tower &  
Electricity Pylons  
**15 Metres**

### SAFE RECOMMENDED CLEARANCES

Your tower &  
wooden poles  
carrying cables  
**9 Metres**

Preferred course of action - refer to the local  
Electricity Authority.

**ELECTRICITY IS A SERIOUS HAZARD  
IN ALL ASPECTS.**



## HAZARDS

### Beaufort Scale 4

is classed as  
*'moderate  
breeze'*.

*One would  
expect wind  
to raise dust  
and loose  
paper; small  
branches move.*

**SPEED**  
**13-18 mph**

### WINDY CONDITIONS

Under normal conditions the self weight of the tower and the stabilisers counteract the horizontal pressures.

Wind increases the horizontal pressures on the tower.

If the wind reaches **17 mph** cease work on the tower. If the wind speed is expected to reach **25 mph** tie the tower in. If the wind speed is likely to reach **40 mph** the tower should be dismantled as quickly as possible.

Towers erected in accordance with the manufacturer's instructions are safe to be used in winds up to **17 mph**.

Be cautious about the use of towers in open ended buildings such as hangers or unclad buildings, as the wind forces in such locations can often be greater than if the towers are used outside the building, due to the funnelling effect of the wind.

Hand tools, shot blasting or water jetting the horizontal pressure must not exceed 20kgs on a free standing tower.

### NEVER SHEET IN A FREE STANDING TOWER

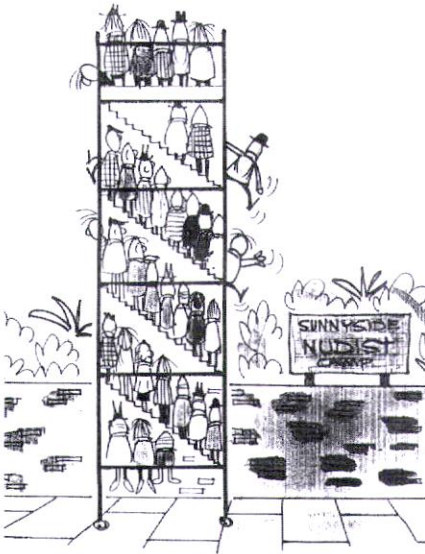


## HAZARDS



### ADVERSE WEATHER

**PRECAUTIONS MUST BE TAKEN**  
 In Snow, in Frost or in Icy Conditions,  
 ensure you have a safe place of work,  
 at all times.



### OVERLOADING

**DO NOT OVERLOAD!**  
 Each manufacturer may have a different  
 design load for his towers.

Platforms also have maximum design loads  
 and these also vary between manufacturers,  
 the typical being 250kgs.

The design loads can be found in the  
 Manufacturer's Manual.

**Typical SWL for a tower is 750kgs.**

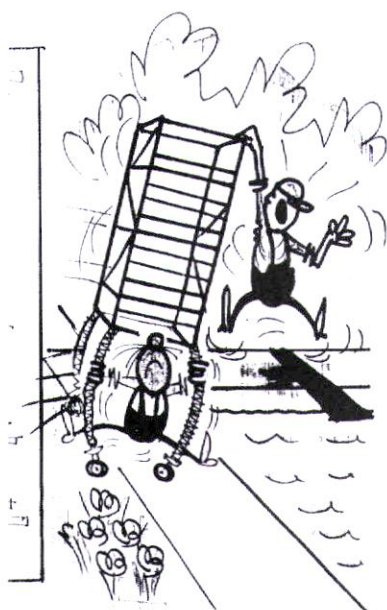
## HAZARDS

### ACCESS TO PLATFORMS

Never climb the frame rungs of a tower unless they are specially designed for this purpose (refer to manufacturer's erection manual).

Never climb the tower on the outside.

Always use an **Internal Ladder** access specified by the manufacturer.



### ADJUSTABLE LEGS

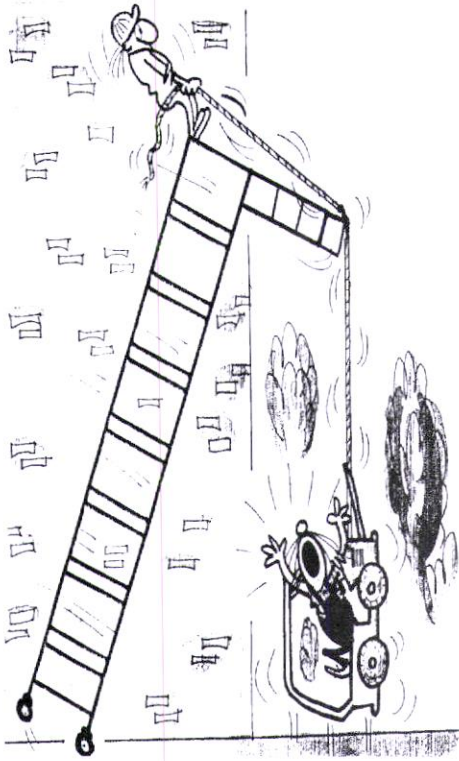
Do not use adjustable legs to gain extra height.

Adjustable legs are for levelling purposes only.

One adjustable leg must be fully retracted at all times.

Some adjustable legs have a quick release mechanism.

## HAZARDS



### LIFTING LOADS

Do not lift excessive loads (lifting excessive loads can lead to the tower overturning).

Do not lift outside the base area of the tower.

Always lift loads within the footprint of the tower.

Always avoid any form of shock loading.

### GUARD RAILS

Fit double guard rails to all platforms to prevent people falling (remember the maximum gap is 470mm).

Fit toe boards to prevent materials falling from working or storage platforms.

### THESE ARE MANDATORY REQUIREMENTS

## HAZARDS

### WORKING IN PUBLIC PLACES

If working in a public place, you have a statutory obligation to ensure you take precautions to prevent children or unauthorised persons from gaining access to the tower.

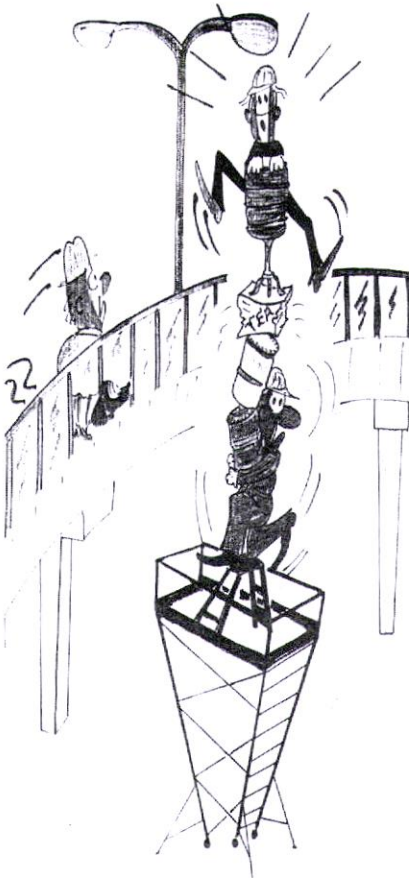
You also have an important obligation to protect the public from danger.

Use cones, barriers or even traffic diversions (with permission) to ensure no vehicle(s) can come into contact with the tower structure.

You may need to obtain a special licence to erect a tower in a public place (*sometimes referred to as a 'Pavement Permit'*).



## HAZARDS



### ADDITIONAL HEIGHT

Avoid the temptation to use ladders, steps or boxes to gain addition height.

Don't *s-t-r-e-t-c-h*.  
If you need more height you need more components.

Decide what you require from the Instruction Manual Chart.

### INCOMPLETE TOWERS

If your tower is incomplete or is in a dangerous condition you **MUST** let other people know.

Fix a 'SCAFFOLD INCOMPLETE' or 'DANGER' sign, placed in a prominent position or adjacent to access point.

# RISK ASSESSMENT EXERCISES

## **RISK ASSESSMENT EXERCISE**

Carry out a risk assessment highlighting possible risks and stating clearly what you will expect the contractor to do about them. Also use the opportunity to advise them of any extras you would expect to be included in the tower over and above what is normally sent out by hirers.

### **SCENARIO ONE**

A double width mobile access tower is to be erected in a space between two brick buildings.

The distance between the buildings is 2.5 metres.

The scaffold is required to provide access to replace a series of eleven windows on one wall.

Each window being 2 metres wide and 3 metres high with a 1 metre section of brick work separating each window.

The base of each window is 4 metres from the ground. The ground is flat having a tarmac covering.

The weather is fine with a wind speed at ground level of 8 mph.

## RISK ASSESSMENT EXERCISE

### RESULT (Scenario One)

The tower should be at least 2.5 metres long and 6 metres to the platform height, complete with 2 working levels both fully hand-railed and toe boarded.

Stabilisers would not be of use and therefore the tower must be tied in.

Even though the tower will have to be moved frequently, it has to be tied in to the brickwork.

Each tube used should be fastened to both uprights of the same frame using specially designed couplers suitable for the purpose.

The tower will need to be reduced in height to 2 metres to allow the tower to be moved.

Wind will become a greater problem because of the tunnelling effect and should be monitored regularly.



## RISK ASSESSMENT EXERCISE

### SCENARIO TWO

A 2 metre long double width tower is required to provide access to a number of locations around a building for repairs/replacement of cladding sheets.

There are 28 different locations on the one building the highest point to reach being 9 metres.

The ground is solid and will take the weight required to carry out the repairs.

There are no ground restrictions at any of the locations except one and this location must be the starting point.

A wall runs into the building at 90° to the building creating an internal angle and the tower is to fit snugly into it.

The first move of the tower is to simply move it along 6 metres to location two.

## RISK ASSESSMENT EXERCISE

### RESULT (Scenario Two)

At the first location only 3 stabilisers can be used and one of them is not at the correct angle.

Therefore the tower will need to be tied in.

Before commencing the first move, the tower will have to be dismantled to a height of 2 metres.

The stabilisers have to be corrected and the fourth stabiliser added when the tower is to be re-erected.

All lifts should be treated as working lifts thereby ensuring sufficient equipment is on site. The top working height of the tower would be 8 metres.

Delegates may well suggest that a mobile tower is not the most efficient way to resolve the issue and may be a mobile access machine is. This would be an acceptable solution.

## RISK ASSESSMENT EXERCISE

### SCENARIO THREE

An 8 metre high tower has to be erected outside a shop in a pedestrian shopping precinct.

It is to be located to the left' of the shop door leaving only 600mm between the door and the scaffold.

There is ample room for pedestrians to walk around the structure.

The scaffold is to provide access only to the roof for men and tools.

All materials will be cleared by chute located at the rear of the building.

## RISK ASSESSMENT EXERCISE

### RESULT (Scenario Three)

The tower has to be tied in avoiding the need for stabilisers that would create a trip hazard.

Protection needs to be provided against falling objects around the door area, perhaps even a head protection scaffold should be considered.

The scaffold needs to be fenced off preventing unauthorised access.

Lighting will probably be necessary, a pavement permit from the local council will be required.

The scaffold should be erected on base plates thus removing the possibility of vandals moving the tower at night.

Cones or hazard tape or both should be used.



# INSPECTION OF A TOWER

## INSPECTION OF A TOWER

Whilst a tower should be inspected prior to each use (see in italics below), there is no requirement to issue a report unless the tower remains in the same place for 7 days or more, and then only if it is possible to fall more than 2 metres.

An inspection report should be made on mobile/static access towers from which there is a possibility of injury if it remains in the same place 7 days or longer, plus:

*Before being taken into use for the first time, or*

*After any substantial addition, dismantling or other alteration, or*

*After any event likely to have affected its strength or stability, or*

*At regular intervals not exceeding 7 days since the last inspection.*

A sample Check Sheet and Inspection Form can be seen on the following pages.

The Construction (Health, Safety & Welfare) Regulations 1996, regulation 29 (1) requires that a mobile access tower be inspected and approved by a competent person and within 24 hours a report thereof provided to the person on whose behalf the inspection was carried out.

Whilst an **inspection is still required**, no **report** is required in respect of any mobile tower from no part of which a person is liable to fall 2m or more, and no report is required in respect of any mobile tower unless it remains erected in the same place for a period of 7 days or more.

The timing of the inspection is as follows:-

- i. Before being taken into use for the first time and
- ii. after any substantial addition, dismantling or other alteration and
- iii. after any event likely to have affected its strength or stability and
- iv. at regular intervals not exceeding 7 days since the last inspection

It must be remembered that before the tower was erected the components should have been checked for damage by the operative erecting the tower, despite this the inspector should check components for condition as he progressively climbs the tower with particular attention to cracked welds and obvious deformation.

**Checklist**

**From the Ground:**

- |   |                          |
|---|--------------------------|
| 1. Check that you have a copy of the manufacturers instructions manual (MIM) on site and that it has been read and understood.  | <input type="checkbox"/> |
| 2. Check the risk assessment document.  | <input type="checkbox"/> |
| 3. Check that no environmental changes have influenced the safe use of the tower.   | <input type="checkbox"/> |
| 4. Check that all the castors are locked and that castors or base plates are bearing their share of the weight of the tower and the surface they are on is firm and stable.           | <input type="checkbox"/> |
| 5. Check that all the pad feet of the stabilisers or the castors on the outriggers are bearing their share of the weight of the tower and the surface they are on is firm and stable. | <input type="checkbox"/> |
| 6. Check that the wing nuts/lamb's tails on the stabilisers are fully tightened by gloved hand.   | <input type="checkbox"/> |
| 7. Check that the narrowest side of the footprint is sufficient to support the free standing part of the tower.   | <input type="checkbox"/> |
| 8. Check that the outriggers are correctly triangulated.  | <input type="checkbox"/> |
| 9. Check that the tower is vertical and level in both planes.   | <input type="checkbox"/> |
| 10. From the ground using the manufacturer's erection guide check that all the components are in their correct positions.   | <input type="checkbox"/> |

**Climbing the tower progressively:**

- |  |                          |
|--|--------------------------|
| 11. Check that the hooks on both ends of horizontal braces, diagonals and platform boards (with wind clips if fitted) are correctly positioned in their opposing positions.  | <input type="checkbox"/> |
| 12. Check that the mechanisms of the hooks have operated correctly.  | <input type="checkbox"/> |
| 13. Check that hatches open towards the outboard side of the tower and that the positioning of the guardrail prevents it being left open.                                    | <input type="checkbox"/> |
| 14. Check that the interlocking mechanisms joining spigots to sockets (interlock clips etc.) are in position and are effective.  | <input type="checkbox"/> |
| 15. If the MIM indicates that the tower should be tied in, check the method of tying in to ensure that it is adequate and at the correct height.                             | <input type="checkbox"/> |
| 16. If any of the platform boards are to be used for storing items or as a working platform check that they are fitted with toeboards and that the hatch still opens easily. | <input type="checkbox"/> |

Site Location:..... Description of Tower.....

Time/date: ..... Name: ..... Signature: .....

PASMA Certificate No.....



Report of Inspection of an Aluminium Tower as required by Section 29 and 30 of the Construction (Health, Safety & Welfare) Regulations 1996 (schedules 7 and 8)

NB Section 30 (5 & 6a) states:-

- 5) No report is required to be prepared under paragraph (1) in respect of any working platform or alternative means of support from no part of which a person is liable to fall 2m or more
- 6) Nothing in this regulation shall require
  - (a) a report to be prepared in respect of any mobile tower scaffold unless it remains erected in the same place for a period of 7 days or more

Schedule 7 (1)

Timing of inspection:-

- i. Before being taken into use for the first time; and
- ii. after any substantial addition, dismantling or other alteration (max one per 24 hours); and
- iii. after any event likely to have affected its strength or stability; and
- iv. at regular intervals not exceeding 7 days since the last inspection

SCHEDULE 8

Regulation 30

**PARTICULARS TO BE INCLUDED IN A REPORT OF INSPECTION**

1. Name and address of the person on whose behalf the inspection was carried out


2. Location of the place of work inspection

--

3. Description of the place of work of that place inspected (including any plant and equipment and materials, if any)


4. Date and time of inspection

--

5. Details of any matter identified that could give rise to a risk to the health or safety of any person


6. Details of any action taken as a result of any matter identified in paragraph 5 above


7. Details of any further action considered necessary


8. Name and position of the person making the report

--

Signature .....

PASMA Certificate No. ....

One copy of the report to be retained by signatory. One copy to be given (within 24 hours of the inspection) to the person on whose behalf the inspection was carried out (and a signature for receipt obtained).



# PRACTICAL EXERCISES

## PRACTICAL EXERCISES

Inspect a previously erected tower, finding previously determined faults

Use a checklist (where applicable) and check the tower for defects

Check the components and run through the erection procedure using the Manufacturers Instruction Leaflet

Recording of the visual examination of the tower (using a checklist where applicable)

# PASMA

## SUPERVISOR'S INSPECTION COURSE

<h3>FAULT IDENTIFICATION SHEET</h3>
-------------------------------------

### FAULTS

1. ....
2. ....
3. ....
4. ....
5. ....
6. ....
7. ....
8. ....
9. ....
10. ....
11. ....

DELEGATE: .....

Date: .....



# PASMA

## SUPERVISOR'S INSPECTION COURSE

<h3>FAULT IDENTIFICATION SHEET</h3>
-------------------------------------

### FAULTS

1. WINDLOCK LEFT UNLOCKED.
2. DIAGONAL BRACES CROSSED.
3. TOWER NOT LEVEL.
4. LEGS USED FOR EXTRA HEIGHT.
5. DIFFERENT SIZE CASTORS.
6. INCORRECT ANGLE OF STABILISERS.
7. TWO PLAIN PLATFORMS AS TOP WORKING PLATFORM.
8. CRACKED WELD ON DIAGONAL BRACE.
9. WRONG INTERMEDIATE PLATFORM FITTED.
10. NO MID GUARDRAILS FITTED.
11. CASTOR UNLOCKED.



## SUPERVISOR'S INSPECTION COURSE

### DELEGATE MARKING SHEET

Name: ..... Date: .....

Company Name: .....

1. Experience of delegate:  
 under 1 year     1-3 years     over 3 years
2. Marking
- Written test mark: .....
  - Practical test mark: .....

Total Marks = .....

#### Practical Test

	YES	NO
Wind lock unlocked		
Crossing of braces		
Tower not level		
Adjustable leg being used for extra height		
Different size wheels		
Angle of Stabilisers		
Two plain platforms at top of tower – working platform		
Brace with crack in weld		
Wrong platform fitted half way up		
No mid guard rails fitted		
Castors un-locked		

#### Signatures:

Delegate: .....

Instructor: .....

# TEST PAPER

PASS MARK 17 OUT OF 20

<b>TEST PAPER</b>
-------------------

1. What is the platform height where it becomes a legal requirement to fit guardrails and toe boards. Especially in the absence of a Risk Assessment?
  - a. ....
2. What is the only acceptable way to climb to the working platform of an access tower?
  - a. ....
3. Where would you find the common hazards associated with aluminium towers listed?
  - a. ....
4. What document must be available on site, for reference at all times, when erecting, inspecting or dismantling a mobile access tower?
  - a. ....
5. Under BS 1 139 what is the maximum height between platforms?
  - a. ....
6. In what respect do rest/access platforms differ to working platforms?
  - a. ....
7. What is the definition of a competent person given by the Construction (Health, Safety & Welfare) Regulations 1996?
  - a. ....
8. When would 'base plates' be preferred to Castors?
  - a. ....
9. When fitting stabilisers, what 'footprint' provides the best stability?
  - a. ....
10. When moving or erecting a mobile tower what is THE MAJOR overhead hazard?
  - a. ....

<b>TEST PAPER</b>
-------------------

1. What is the platform height where it becomes a legal requirement to fit guardrails and toe boards. Especially in the absence of a Risk Assessment?
  - a. ***2 metres and above***
2. What is the only acceptable way to climb to the working platform of an access tower?
  - a. ***From the inside using the method provided.***
3. Where would you find the common hazards associated with aluminium towers listed?
  - a. ***The PASMA Code of Practice***
4. What document must be available on site, for reference at all times, when erecting, inspecting or dismantling a mobile access tower?
  - a. ***The relevant manufacturer's assembly guide.***
5. Under BS 1 139 what is the maximum height between platforms?
  - a. ***4 metres***
6. In what respect do rest/access platforms differ to working platforms?
  - a. ***They do not require toe-boards providing nothing is stored on them.***
7. What is the definition of a competent person given by the Construction (Health, Safety & Welfare) Regulations 1996?
  - a. ***Someone that possesses such training, experience or technical knowledge as may be appropriate.***
8. When would 'base plates' be preferred to Castors?
  - a. ***When the ground is uneven, on an incline or the tower is to be static, or the tower is erected on stairs.***
9. When fitting stabilisers, what 'footprint' provides the best stability?
  - a. ***A perfect square.***
10. When moving or erecting a mobile tower what is THE MAJOR overhead hazard?
  - a. ***Electricity.***



**TEST PAPER**

- 11. When is the only time castor brakes may be unlocked?  
a. ....
- 12. Why should you not use a full hatch platform on a single or narrow width tower?  
a. ....
- 13. Why must you not use a plain or standard platform on a single or narrow width tower?  
a. ....
- 14. What two things must not be on a tower if it is to be moved?  
a. ....
- 15. When should you inspect the components for an access tower?  
a. ....
- 16. Before moving a tower c/w stabilisers or outriggers what height should the tower be reduced to, according to PASMA's recommendation?  
a. ....
- 17. When a tower is erected against a building, what would be the effect of your removing the two inside stabilisers?  
a. ....
- 18. What action should you take when the wind is likely to reach:  
a) 25 mph  
b) 40 mph
- 19. Under what conditions would you be expected to issue an Inspection Certificate?  
1) .....  
2) .....  
3) .....  
4) .....
- 20. What is the minimum height of a toe board?  
a. ....



<b>TEST PAPER</b>
-------------------

11. When is the only time castor brakes may be unlocked?
  - a. ***When actually moving the tower.***
12. Why should you not use a full hatch platform on a single or narrow width tower?
  - a) ***There is nowhere to stand when you raise the platform.***
13. Why must you not use a plain or standard platform on a single or narrow width tower?
  - a. ***Access to the platform is prevented.***
14. What two things must not be on a tower if it is to be moved?
  - a. ***People & material/tools***
15. When should you inspect the components for an access tower?
  - a. ***Before use.***
16. Before moving a tower c/w stabilisers or outriggers what height should the tower be reduced to, according to PASMA's recommendation?
  - a. ***4 metres to the platform (usually two lifts plus guardrail). Providing the full compliment of stabilisers are in place.***
17. When a tower is erected against a building, what would be the effect of your removing the two inside stabilisers?
  - a. ***Reduces the narrowest base dimension and therefore reduces the manufacturer's stated free standing height of the tower.***
18. What action should you take when the wind is likely to reach:
  - a) ***25 mph***            ***tie in the tower.***
  - b) ***40 mph***            ***dismantle the tower.***
19. Under what conditions would you be expected to issue an Inspection Certificate?
  - 1) ***Before taken into use for the first time***
  - 2) ***After any substantial addition, dismantling or other alteration.***
  - 3) ***After any event likely to have affected it's strength or stability.***
  - 4) ***After regular intervals not exceeding 7 days since the last inspection.***
20. What is the minimum height of a toe board?
  - a. ***150 mm or 6 inches.***

## COURSE HANDOUTS

- a) The PASMA Code of Practice
- b) Relevant Manufacturer's Assembly Guide
- c) Copy of the Course Notes

**SUPERVISOR'S INSPECTION COURSE**

**COURSE HANDOUT RECEIPT**

I confirm having received:

- 1. The PASMA Code of Practice
- 2. Relevant Manufacturer's Assembly Guide
- 3. Copy of the Course Notes

<b>NAME</b>	<b>SIGNATURE</b>
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Instructor: .....

Date: .....





<b>CLOSE OF COURSE</b>
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- a) Re-visit all questions answered wrongly
- b) Issue course evaluation sheets
- c) Invite and answer any questions
- d) Close the course