

BS 7981:2017



BSI Standards Publication

**Code of practice for the installation,
maintenance, thorough examination
and safe use of mast climbing work
platforms (MCWPs)**

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Foreword

Publishing information

This British Standard is published by BSI Standards Limited, under licence from The British Standards Institution, and came into effect on 31 October 2017. It was prepared by Technical Committee MHE/12, *Lifting Platforms*. A list of organizations represented on this committee can be obtained on request to its secretary.

MHE/12 wishes to acknowledge the personal contributions of Adrian Bolton and David Oldham to the drafting of this and previous editions of BS 7981.

Supersession

This British Standard supersedes BS 7981:2002, which is withdrawn.

Information about this document

Mast climbing work platforms (MCWPs) are used as temporary working places, giving variable height access to specific areas above or below ground level. In many cases they are more convenient to use than other forms of access equipment such as ladders, scaffolding, staging or suspended cradles. Examples of MCWPs are shown in [Figure 1](#) and [Figure 2](#).

This British Standard sets out guidance and recommendations to ensure that MCWPs are installed, dismantled, maintained, thoroughly examined and used in a safe manner.

This British Standard was drawn up with the participation of HSE representatives.

This is a full revision of the standard, and introduces the following principal changes:

- a) greater detail on the implementation of a risk assessment;
- b) simplification of the responsibilities for the safe operation of an MCWP, including:
 - 1) the removal of the term “user” and its replacement with “operator”;
 - 2) new recommendations for the “appointed person (user)” and “appointed person (supplier)”;
 - 3) the recommendation for a trained installer to remove and reinstall a top tie; and
 - 4) clarification of the role of the demonstrator;
- c) the replacement of “induction” with “familiarization”, and additional recommendations for familiarization;
- d) additional recommendations for:
 - 1) alteration;
 - 2) thorough examination, including examination following installation, reconfiguration and repositioning;
 - 3) the use of safety harnesses and the preparation of a rescue plan;
 - 4) record retention;
- e) a new table giving a mast climbing work platform training needs analysis;
- f) new example MCWP daily pre-use and weekly checklists in [Annex A](#); and
- g) a new example checklist for thorough examination ([Annex E](#)).

Use of this document

As a code of practice, this British Standard takes the form of guidance and recommendations. It should not be quoted as if it were a specification and particular care should be taken to ensure that claims of compliance are not misleading.

Any user claiming compliance with this British Standard is expected to be able to justify any course of action that deviates from its recommendations.

Presentational conventions

The provisions of this standard are presented in roman (i.e. upright) type. Its recommendations are expressed in sentences in which the principal auxiliary verb is “should”.

Commentary, explanation and general informative material is presented in smaller italic type, and does not constitute a normative element.

The word “should” is used to express recommendations of this standard. The word “may” is used in the text to express permissibility, e.g. as an alternative to the primary recommendation of the clause. The word “can” is used to express possibility, e.g. a consequence of an action or an event.

Where words have alternative spellings, the preferred spelling of the Shorter Oxford English Dictionary is used (e.g. “organization” rather than “organisation”).

Contractual and legal considerations

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard cannot confer immunity from legal obligations.

In particular, attention is drawn to the Lifting Operations and Lifting Equipment Regulations 1998 (LOLER) [\[1\]](#).

1 Scope

This British Standard gives recommendations and guidance for the installation, dismantling maintenance and thorough examination of mast climbing work platforms (MCWPs), which are temporarily installed, powered and designed to be used by persons from which to carry out work. It also gives recommendations and guidance on the safe use of MCWPs.

NOTE 1 The vertical moving component (work platform/deck) of an MCWP is used to move persons and their equipment and materials for the work carried out from the work platform to and from a single point. This is one of the features that distinguish MCWPs from builders' hoists.

This British Standard does not give recommendations for:

- a) dealing with the hazards involved in the manoeuvring, erection or dismantling, fixing or removal of any materials or equipment which are not part of the mast climbing work platform;
- b) the handling of specific hazardous materials;
- c) delivering persons and/or materials to fixed landing levels; or

NOTE 2 Equipment referred to as lifts, hoists or transport platforms is dealt with by other standards, including BS EN 12158-1, BS EN 12159 and BS EN 81-43.

- d) mobile elevating work platforms (MEWPs) as defined in BS EN 280, suspended access equipment as defined in BS EN 1808 or lifting tables as defined in BS EN 1570 (both parts).

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes provisions of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

BS EN 1495, *Lifting platforms — Mast climbing work platforms*¹

3 Terms and definitions

For the purposes of this British Standard, the following terms and definitions apply.

3.1 advanced/senior installer

installer trained to conduct thorough examination

3.2 appointed person (supplier)

competent person appointed by the supplier who is responsible for liaising with the appointed person (user) and for the specification, installation planning, erection and dismantling of the MCWP

3.3 appointed person (user)

competent person appointed by the management of the user organization who is responsible for liaising with the appointed person (supplier) and the safe use, inspection, servicing and maintenance of the MCWP

3.4 base frame

part of the MCWP which provides support at ground level for the mast and elevating assembly

[SOURCE: BS EN 1495:1997+A2:2009, 3.9, modified]

¹ This standard also gives informative references to BS EN 1495:1997+A2:2009.

3.5 buffer

resilient stop at the end of the travel, comprising a means of arresting using fluids, springs or similar means

[SOURCE: BS EN 1495:1997+A2:2009, 3.26]

3.6 chassis

part of the MCWP which provides mobility and support for the mast at ground level and elevating assembly

[SOURCE: BS EN 1495:1997+A2:2009, 3.10, modified]

NOTE This differs from the standard base frame as it is used with a mobile MCWP.

3.7 competent person

person having such practical and theoretical knowledge and such training or experience of MCWPs as is necessary to carry out the task in hand satisfactorily

[SOURCE: BS EN 1495:1997+A2:2009, 3.30, modified]

3.8 Configurations beyond the scope of the manufacturer's manual

3.8.1 asymmetric configuration

non-identical platforms on either side of the mast

3.8.2 multilevel work platforms

two or more work platforms travelling on the same mast or an additional working level attached to and totally supported by a work platform

[SOURCE: BS EN 1495:1997+A2:2009, 3.2.23, modified]

3.9 demonstrator

competent person responsible for the management of safe use of the specific MCWP and trained to operate MCWPs, as well as carry out pre-use checks and weekly inspections and familiarize trained operators with safe working from a specific MCWP

3.10 familiarization

process of ensuring that a trained operator is familiar with the characteristics of the MCWP they are required to operate where those characteristics differ from machines on which they have been trained

3.11 installer

competent person responsible for installation, including erection, modification and dismantling, of MCWPs

3.12 in-use check

check to establish that the platform responds correctly to the controls both up and down, that the platform stops promptly without slipping, that the emergency stop operates and resets correctly, that all handrails are correct and present, and that there is nothing in the path travelled by the MCWP

3.13 limiting in-service wind speed

maximum wind speed specified by the manufacturer at which an MCWP can continue to be operated and persons remain on the platform

3.14 main platform

part of the work platform which is built up using primary structural elements

[SOURCE: BS EN 1495:1997+A2:2009, 3.21]

3.15 mast

structure that supports and guides the platform

3.16 mast climbing work platform (MCWP)

powered access system that provides moveable access for personnel working at height on structures, consisting of the following four assemblies or groups of parts:

- a) at least one mast which is climbed by and which supports the work platform;
- b) a work platform capable of supporting persons, equipment, tools and materials, etc., to a predetermined safe working load;
- c) a base frame or a wheeled chassis supporting the mast structure; and

NOTE 1 The chassis or base frame can provide stability for MCWPs up to a predetermined free-standing height, above which the mast(s) is tied to the building or other structure.

- d) mast tie assemblies

NOTE 2 Mast tie assemblies are not necessarily required with mobile MCWPs.

NOTE 3 Figure 1 shows a single mast mobile MCWP. Figure 2 shows a twin mast MCWP that for illustrative purposes shows examples of a fixed base and a mobile base. Figure 3 shows typical mast tie arrangements.

3.17 mast tie

anchorage system used to provide lateral restraint to the mast from the building or other structure

3.18 mobile MCWP installation

MCWP installation which is suitably designed with a mobile chassis for horizontal transfer on site

NOTE See Figure 1.

3.19 operator

competent person responsible for the operation and transfer up and down the mast of MCWPs, and trained (and machine-specific familiarized) in the safe legal requirements and best practices of MCWP operation, including emergency procedures, pre-use checks, maintenance and capacities and limitations of the MCWP

3.20 operator (mobile)

person trained (and machine-specific familiarized) in the safe legal requirements and best practices of MCWP operation, including emergency procedures, pre-use checks, maintenance and capacities and limitations of the MCWP, and capable of transferring a mobile MCWP without a top tie

NOTE See 7.4, Table 2.

3.21 outriggers

supports at the base frame level used to maintain or increase the stability of the MCWP within specified conditions

NOTE They may also be used for levelling.

[SOURCE: BS EN 1495:1997+A2:2009, 3.12]

3.22 overspeed

any speed above rated speed

[SOURCE: BS EN 1495:1997+A2:2009, 3.27]

3.23 rated load

load for which the MCWP has been designed for in normal operation as stated in the load diagram/chart

[SOURCE: BS EN 1495:1997+A2:2009, 3.1, modified]

3.24 rated speed

vertical speed for which the MCWP has been designed

[SOURCE: BS EN 1495:1997+A2:2009, 3.3, modified]

3.25 safety gear

mechanical device for stopping and maintaining the work platform stationary on the mast in the event of overspeed

[SOURCE: BS EN 1495:1997+A2:2009, 3.28]

3.26 service engineer

competent person who is responsible for maintenance of MCWPs by assessing wear, replacing components, carrying out adjustments, diagnosing faults, operating the machines as necessary for these activities, and producing comprehensive records of maintenance activities

3.27 transfer

any horizontal movement of the MCWP from one position to another on the same working site

[SOURCE: BS EN 1495:1997+A2:2009, 3.4]

3.28 temporary works

parts of the works that allow or enable construction of, and provide protection, support or access to, the permanent works and which might or might not remain in place at the completion of the works

NOTE Examples of temporary works are structures, supports, back-propping, earthworks and accesses.

3.29 transport

any movement of the MCWP outside the boundaries of the working site

[SOURCE: BS EN 1495:1997+A2:2009, 3.6]

3.30 user organization

body that procures an MCWP and is responsible for its safe use, including operation, checks, inspections, maintenance and thorough examination

[SOURCE: BS 7212:2016, 3.33, modified]

3.31 work platform

travelling part of the MCWP upon which the persons, equipment and materials are carried, and from which work is conducted

NOTE The work platform includes the main platform and any platform extension.

[SOURCE: BS EN 1495:1997+A2:2009, 3.19, modified]

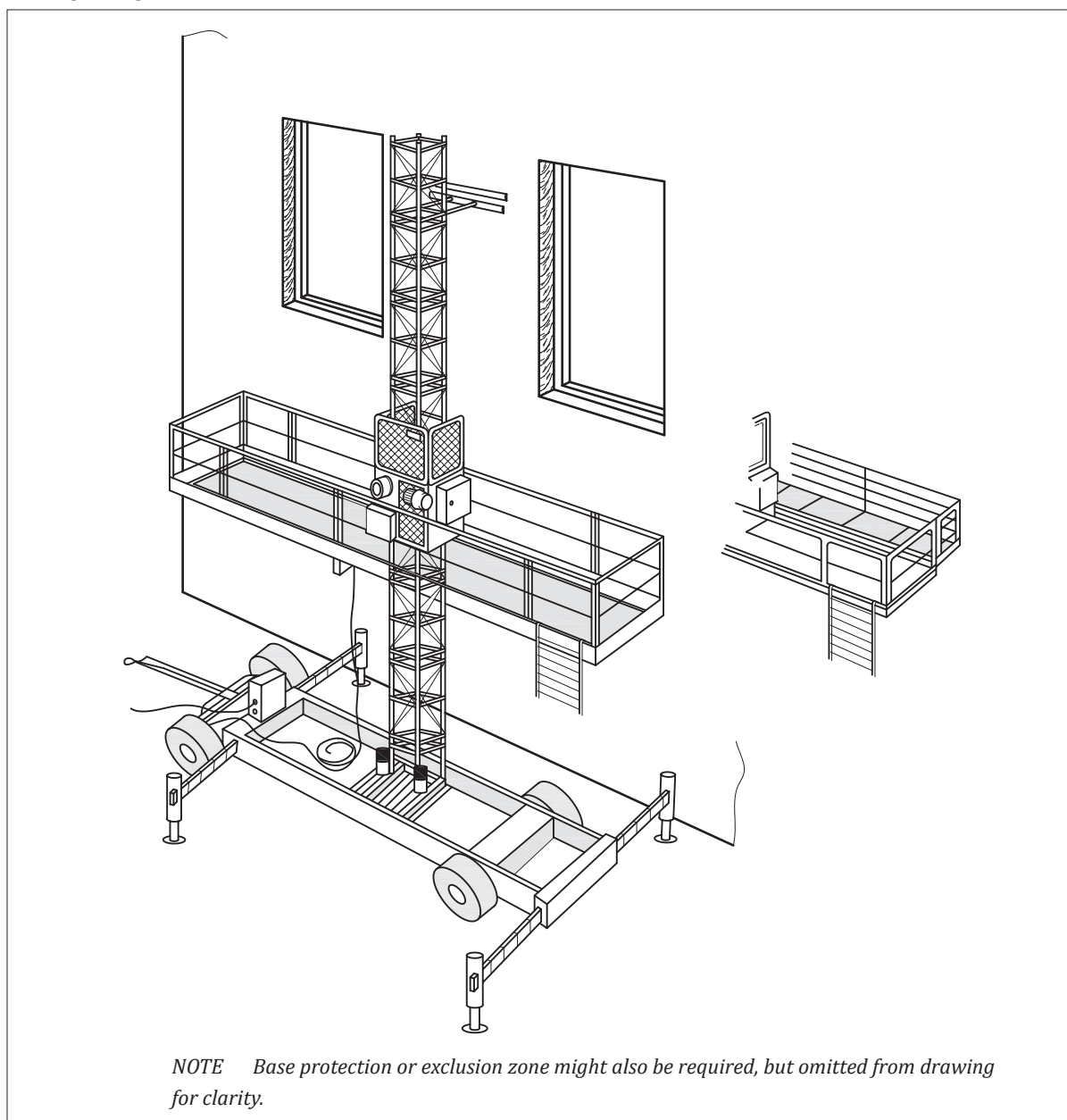
Figure 1 — *Example single mast mobile MCWP*

Figure 2 — Twin mast MCWP illustrating one fixed and one moveable chassis

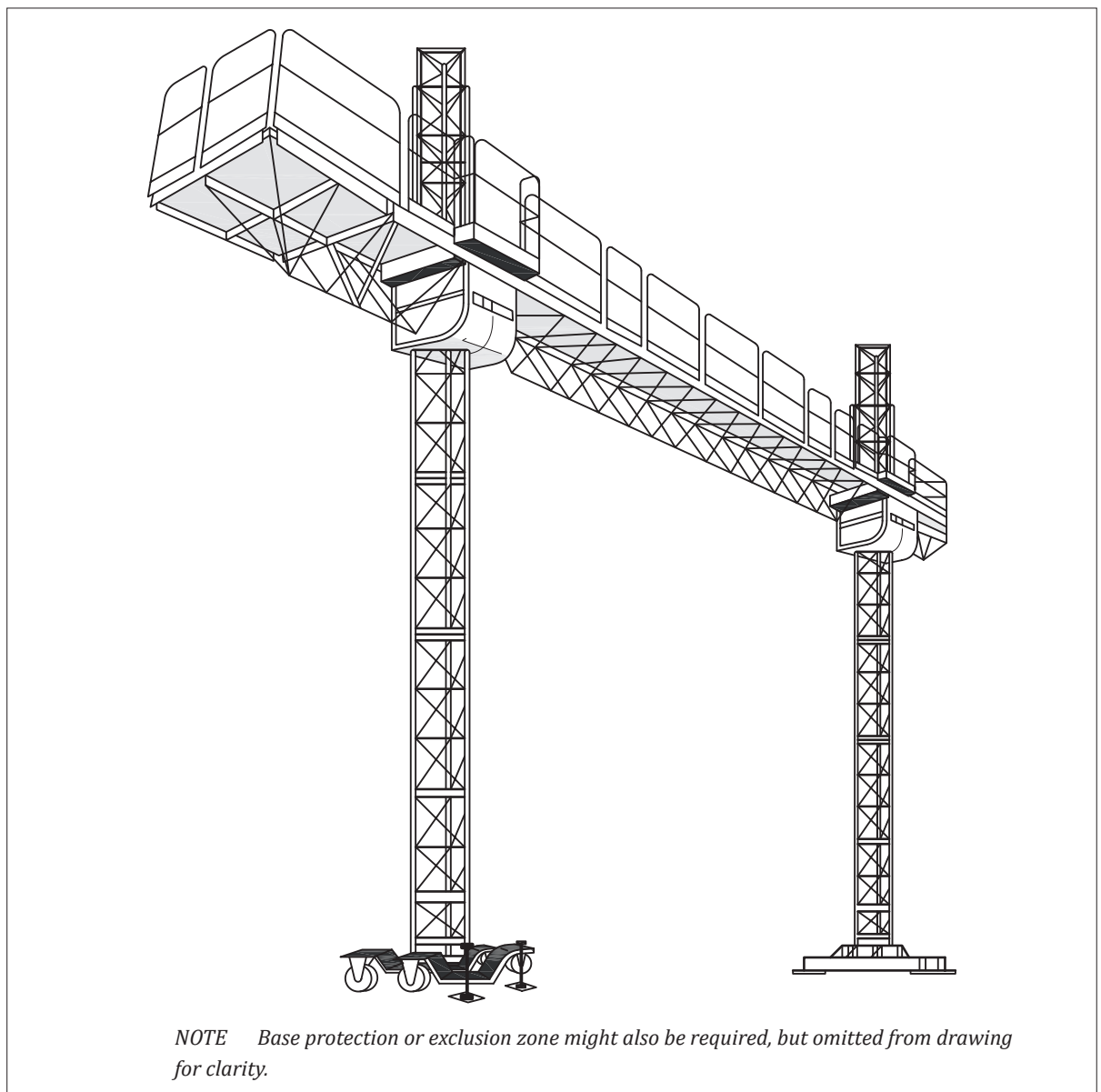
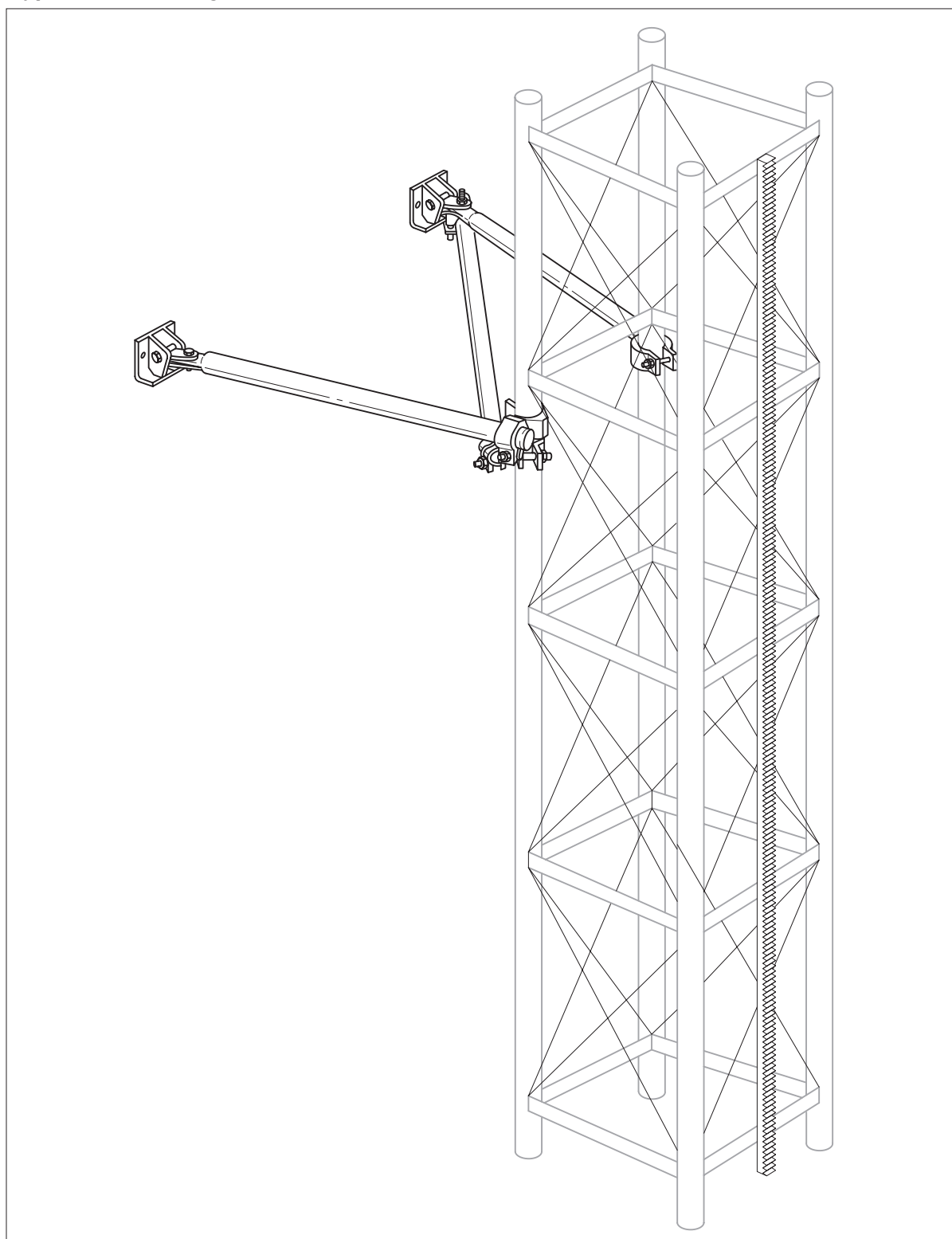


Figure 3 — Typical mast tie arrangements

4 Hazards associated with MCWP working

COMMENTARY ON CLAUSE 4

This clause is intended to assist those persons undertaking risk assessments of the installation planning, erection, dismantling and use of MCWPs.

A risk assessment should be carried out for the activities and their associated hazards.

NOTE Typical activities and associated hazards are set out in [Table 1](#).

Table 1 — Typical hazards associated with the operation of MCWPs

Stage	Activity	Hazard
Site surveys	Access and egress	Working construction site Moving plant and vehicles Overhead lifting operations Other hazards General public Excavations
	Survey	Work at height Works above survey position Works adjacent to survey position Overhead lifting operations Overhead power lines Moving plant and vehicles Underground culverts, adjacent excavations Slips/trips and falls
	Ground survey	Utilities, services
	Confined spaces	Low oxygen level Flammable atmosphere Flooding Collapse of excavation Access/egress Crushing
Preparation of equipment	Lifting	Use of material handling equipment
	Manual handling	Excessive loads No lifting aids Repetitive movements
	Hot works	Fire Burns Heat Arc eye Fire Fumes Dust Noise

Table 1 (continued)

Stage	Activity	Hazard
Preparation of equipment (continued)	Servicing	Restricted space Work at height Manual handling Use of hand and power tools Falling objects Crushing/shearing/drawing in to drive/mast Electric shock/burns Solvents/chemicals Cuts
	Painting	Solvents/chemicals Fume inhalation
	Stacking/storage	Falling objects Crushing Manual handling Moving plant
	Cleaning/blasting	Solvents/chemicals High-pressure jet Eye injury Hot liquids/steam Slip/trip/fall Electric shock
	Testing/inspection/ examination	Restricted space Work at height Manual handling Use of hand and power tools/hand-arm vibration syndrome Falling objects Crushing/shearing/drawing in to drive/mast Electric shock Solvents/chemicals Slip/trip/fall
Transport and delivery	Loading and securing	Restricted space Work at height Manual handling Incorrect strapping/unsecure load
	Working on lorry bed	Work at height Restricted space Crushing

Table 1 (continued)

Stage	Activity	Hazard
Transport and delivery (continued)	Security of load during transit	Insecure load
		Overhead structures
		Incorrectly stowed machines/mast sections/decks
	Site manoeuvring	Working construction site
		Moving plant and vehicles
		Overhead lifting operations
		Overhead obstructions
		Overhead power lines
		Working at height
		Crushing
		Slinging and lifting operations
		Inadequate ground conditions
		Adjacent excavations
		Culverts, buried service ducts
		Excessive gradients
		Environmental conditions – wind speed
Installation	Positioning	Environmental conditions – wind speed/thunderstorms
		Inadequate ground conditions: adjacent excavations, culverts, buried service ducts
		Working construction site
		Moving plant and vehicles
		Overhead lifting operations
		Works above
		Works adjacent
		Overhead obstructions
		Overhead power lines
		Working at height
		Crushing
		Slinging and lifting operations
		Adjacent excavations
		Culverts, buried service ducts
	Platform build	Environmental conditions – wind speed/thunderstorms
		Working construction site
		Moving plant and vehicles
		Overhead lifting operations
		Works above
		Works adjacent

Table 1 (continued)

Stage	Activity	Hazard
Installation (continued)	Platform build (continued)	Overhead obstructions Overhead power lines Working at height Crushing Slinging and Lifting operations Manual handling Overturning due to incorrect deck configuration/support Overturning due to incorrect levelling system configuration Overturning due to incorrect ground frame stabilizer configuration Overturning due to exceeding distance to first tie Overturning due to inadequate ground conditions MCWP failure due to not following the manufacturer's instructions Slip/trip/fall
	Mast structure build	Environmental conditions – wind speed/ thunderstorms Working construction site Moving plant and vehicles Overhead lifting operations Works above Works adjacent Works below – exclusion area Overhead obstructions Overhead power lines Working at height Crushing in mast structure Crushing when MCWP is driven down Slinging and lifting operations Manual handling Falling objects Mast failure due to maximum tie distance being exceeded Mast failure mast sections not correctly fastened together Vibration/noise from impact driver/hand-arm vibration syndrome Slip/trip/fall Lifting, carrying, pulling, pushing

Table 1 (continued)

Stage	Activity	Hazard
Installation (continued)	Tie installation	Environmental conditions – wind speed/thunderstorms
		Working construction site
		Moving plant and vehicles
		Overhead lifting operations
		Works above
		Works adjacent
		Works below – exclusion area
		Overhead obstructions
		Working at height
		Crushing in mast structure
		Crushing when MCWP is driven down
		Slinging and lifting operations
		Manual handling
		Falling objects
		Noise, dust, vibration, flying objects from drilling anchors
		Mast failure due to maximum tie distance being exceeded
		Mast failure mast sections not correctly fastened together
		Vibration/noise from impact driver
		Slip/trip/fall
		Cuts
Handover	Through examination	Environmental conditions – wind speed/thunderstorms
		Working construction site
		Moving plant and vehicles
		Overhead lifting operations
		Works above
		Works adjacent
		Works below – exclusion area
		Overhead obstructions
		Working at height
		Falling objects
		Crushing in mast structure
		Crushing when MCWP is driven down
		Mast failure due to maximum tie distance being exceeded
		Mast failure mast sections not correctly fastened together
		Mast failure due to incorrectly set up levelling system

Table 1 (continued)

Stage	Activity	Hazard
Handover (continued)	Through examination (continued)	Electrocution when testing electrical components Manual handling test load Slip/trip/fall Unauthorized alterations
	Training/Familiarization	Environmental conditions – wind speed/thunderstorms Working construction site Moving plant and vehicles Overhead lifting operations Works above Works adjacent Works below – exclusion area Obstructions in the path of the MCWP Working at height New personnel unfamiliar with MCWP operation New personnel unfamiliar with MCWP emergency procedures and operation
Operation	Access egress	Debris falling from platform when gate opened Shearing between MCWP and raised access position (where fitted) Slip/trip/fall
	Material loading/personnel	Platform failure from overloading/incorrect loading/eccentric loading/ loading on extensions/large area loads Crushing from unsecured materials Loads carried on or leaning against the handrails of the work platform Deck failure from excessive point load Not meeting the minimum number of persons Exceeding SWL and/or maximum number of persons Increasing wind loading on the platform due to large items Increasing wind loadings by addition of signs, banners, roof or wall structures, debris netting Using the MCWP as a crane Using the MCWP as a goods construction hoist Using the MCWP as a passenger hoist Unauthorized alterations

Table 1 (continued)

Stage	Activity	Hazard
Operation (continued)	During use: Ascend/descend the MCWP	Environmental conditions – wind speed/thunderstorms
		Crushing/shearing trapping against the building facade
		Objects within the travel path of the MCWP
		Power cable becoming trapped
		Electrocution due to power cable shearing
		Loss of power due to power cable becoming detached at height
		Persons/materials crushed beneath platform at ground level
		Persons being struck by the MCWP whilst in motion
		Mast failure due to incorrectly set up levelling system
		Mast failure due to maximum tie distance being exceeded
		Mast failure mast sections not correctly fastened together
		Mast failure due to tie failure
		Control system failure rendering the MCWP unsafe to operate
		Increasing wind loadings by addition of signs, banners, roof or wall structures, debris netting
		Using the MCWP as a crane
		Using the MCWP as a goods hoist
		Using the MCWP as a passenger hoist
		Unauthorized alterations
	Working from the MCWP	Environmental conditions – wind speed/thunderstorms
		Electrocution due to power tools
		Electrocution due to unauthorized entry into control panels
		Overhead power lines
		Operating machine outside of SWL
		Increasing wind loadings by addition of signs, banners, roof or wall structures, debris netting
		Operation beyond the MCWP wind speed limit
		Using the MCWP as a crane
		Using the MCWP as a goods hoist
		Using the MCWP as a passenger hoist
		Crushing/shearing/trapping due to unauthorised removal of guards
		Falling from height due to unauthorized removal of handrails
		Works above
		Works adjacent
		Works below – exclusion area