



CCM Policy 12.5

Working at Height

Document Ref:	QA-0000-HS-P-0012.5	Revision:	A	16-Oct-16	
Document Temp:					
Issue Date:	1 November 2015				
Status:	Issued				



Contents

12.5 Working at Height

Introduction

12.5.1 Scope

12.5.2 Certification & Enforcement

12.5.3 Planning

12.5.4 Edge Protection

12.5.5 Hole Protection

12.5.6 General Hole Protection Standards

12.5.7 General Scaffolding

12.5.8 Mobile Access Towers (MATS), PAVS, and Mobile Elevated Working Platforms (MEWPs)

12.5.9 Ladders, Step Ladders & Podium Steps

12.5.10 Collective Fall Arrest

Key Appendices

Revision Schedule

12.5 Introduction

The Work at Height Regulations 2005 consolidates previous WAH legislation and emphasises the responsibility of CENVE management to avoid work at height where possible.

Where work at height cannot be avoided, the hierarchy of measures: Avoid; Use Work Equipment; Minimise; PFPE as described below must be applied to reduce risk.

12.5.1 Scope

All project, establishment or facilities managers who may contract others to work at height on their premises have a legal duty to assess and reduce the risk of work at height as they 'control the work of others' to the extent of their control'.

12.5.2 Certification & Enforcement

In order to demonstrate determination in the commitment to Health and Safety Standards and Requirements, Cenv ensures that relevant local regulations are being highly referred and are being consistently enforced on all of its projects.

The relevant local regulations that being enforced in this policy are listed below, but are not limited to the following:

- 12.5.2.1 Qatar Labor Law
- 12.5.2.2 Qatar Traffic Law No. 19 - 2007
- 12.5.2.3 QCS 2014 Section 1 - Part 10 Occupational Health and Safety
- 12.5.2.4 QCS 2014 Section 11- Part 1.3 Working at Heights
- 12.5.2.5 QCS 2014 Section 11- Part 2.3.12 Control of Working at Heights
- 12.5.2.6 QCS 2014 Section 11 – Part 1.4 Safe Use of Plant Equipment (Regulatory Document)

12.5.3 Planning

All precautionary measures for protecting the workers during the work from any injury that may result from the work performed shall be effectively be taken, assessed and eliminated or mitigated to a reasonably practicable risk. **(Refer to Qatar Labor Law, for further details)**

There is a duty to do everything that is reasonably practicable to prevent anyone falling. The emphasis is on continuing effective application of risk assessment, planning of the operation, management and control.

The hierarchy for managing and selecting equipment for working at height is to:

- a) Avoid work at height where possible.
- b) Use work equipment or other measures to prevent falls where work is necessary, including guardrails and safe working platforms, (static or MEWPs).
- c) Minimise the distance and consequences of a fall where the risk of a fall cannot be eliminated, by using work equipment or other measures. This may include the use of passive restraint such as nets and airbags.

- d) The last resort will be the use of Personal Fall Protection Equipment (PFPE).

12.5.3.1 Overall Responsibilities:

Duty Holders must ensure that:

- a) All work at Height is properly planned, organised and supervised
- b) Work is carried out in a manner which is safe (so far as is reasonably practicable)
- c) Those involved in work at height are competent, from planning stage to use
- d) Risks are assessed, with appropriate work equipment selected and used
- e) Operational Risk Assessments consider the risk involved in removal, temporary protection and replacement of edge or fall protection.
- f) Objects are prevented from falling (e.g. edge protection, tools with wrist lanyards)
- g) Where necessary, areas below are adequately protected or have access restricted.
- h) Risks from fragile surfaces are properly controlled
- i) Equipment for work at height is properly inspected and maintained
- j) There is adequate planning for emergencies and rescue

12.5.4 Edge Protection

(Refer to QCS 2014 Section 1 - Part 10 Occupational Health and Safety and QCS 2014 Section 11- Part 1.3 Working at Heights, for further details)

Where work at height cannot be avoided, it is essential that a safe working environment is provided through the design and provision of safe working areas, including leading edges, with adequate edge protection wherever this is reasonably practicable.

12.5.4.1 CENVE Standards

12.5.4.2 Planning & Design

- a) When alternative methods of construction are being assessed at tender stage, the practicality of designing, detailing and providing adequate edge protection during erecting, use and dismantling of those systems must also be carefully considered.
- b) Edge protection systems should be provided at any location where a person might fall or where materials could fall on others. This could include slab edges, leading edges, large hole or void perimeters, excavations or embankments, shaft and lift openings (refer CS3), the edge of roofs, leading edges and temporary works such as table forms.
- c) The flexibility and adaptability of the proposed system must be considered in light of the need to adapt and change access requirements during the works.
- d) Edge protection systems may be called upon to resist large dynamic loads and must be designed accordingly. Therefore any edge protection system should be considered and assessed as adequate by the Temporary Works Coordinator.

- e) A suitable inspection and maintenance regime must be agreed.
- f) Components should be designed to allow any required edge protection to be either pre-installed at ground level or alternatively safely installed immediately after erection.



Pre-installed Edge Protection Prior to Lifting



Pre-installed sockets in PC Unit

12.5.4.3 Overall Responsibilities for Edge Protection

The Main Contractors **Temporary Works Coordinator** must:

- a) Assess the adequacy of proprietary or tube & fitting edge protection systems.
- b) Agree a suitable and safe fixing method in association with the Main Contractors management team

The Responsible Manager (usually the Section Manager) must ensure that:

- a) Edge protection systems are erected and maintained to the standards agreed
- b) Edge protection is checked at suitable intervals for adequacy and completeness.

12.5.4.4 Minimum Height of Guardrails:

- a) Note that any edge protection which is not a integral part of a scaffold (including free standing tube & fitting guardrails must be at least 1m high. (BS EN 12811) whereas a guardrail integral to a scaffold system must be at least 950mm above the edge.
- b) To avoid confusion, the CENVE standard minimum height to the top of any guardrails will always be a minimum of 1m.

12.5.4.5 Gaps between Guardrails, Mesh & Infill:

- a) The maximum clear unprotected vertical gap must not exceed 470mm and toeboard 150mm high minimum. However, twin tube and toeboard arrangements can still allow materials to fall through.
- b) To reduce the risk of falling materials and tools, consideration must be given to infills such as brick guards, netting or a proprietary panel system.
- c) The use of infill panels is strongly advised on all loading towers or platforms where loose materials are stacked.

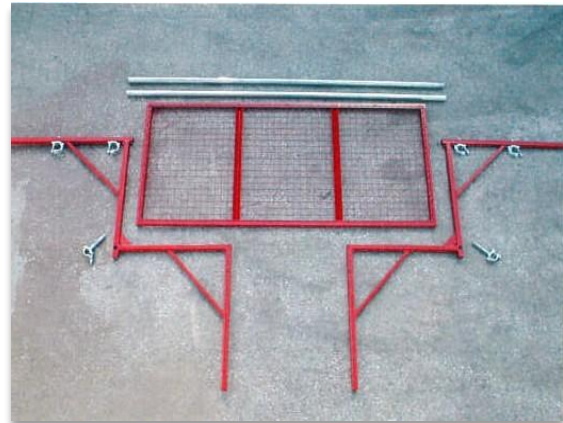
12.5.4.6 Proprietary Systems:

Several manufactures provide and install proprietary edge protection systems. CENVE has no objection to the use of such systems providing they are installed in strict adherence to the manufacturers system recommendations and the selected system has been duly assessed as being suitable for its intended use on the site. The Main Contractor is responsible for and must introduce management systems to demonstrate that they maintain any proprietary edge protection system in accordance with the manufacturers requirements.

Installation and adaptations to any proprietary system can only be undertaken by workers whom have been trained and certified by the particular manufacturer as being competent to do so and will be treated to the same controls by the Main Contractors Temporary Works Coordinator as apply to the use of scaffolding.

12.5.4.7 Loading Bay Gates:

- a) Gates at loading bays should be of a counterbalanced type with an infill mesh arrangement wherever possible. They are considerably easier to lift from a position of safety and there is always either a front or back guard in position.
- b) When ordering from Select Plant always ensure that counterbalanced gates are ordered where it is possible to fit them onto the loading bay arrangement.



Components of typical loading bay gate

12.5.4.8 Access Points:

- a) Where possible, either permanent stairs or stair towers should be used in preference to ladders to provide safe and easy access with good edge protection.
- b) Where ladders must be used, care should be taken to position them correctly and protect the openings to reduce the risk of any persons falling through.
- c) Ladders should be positioned away from the scaffold walkway in their own tower.
- d) Gaps in the guardrail can be filled with proprietary or tube and fitting gates.
- e) Ladder openings in working platforms can be fitted with safety hatches



Proprietary Ladder Gate



Ladder Hatch (note cutout)

12.5.4.9 Material Storage

Where there is any risk of materials falling outside the structural envelope due to handling or high winds, the method of storing and securing materials and disposing of waste must be very carefully planned and implemented. Additional edge protection or screening must be considered and provided where appropriate to ensure that no materials can be dropped or blown outside the confines of the structure particularly where the public could be at risk.

12.5.4.10 Tool Tethering

Where there is a risk of tools being dropped and the potential to cause injury, the use of tethered tools must be considered. On high-rise developments their use will be mandatory.

12.5.5 Hole Protection

(Refer to QCS 2014 Section 1 - Part 10 Occupational Health and Safety and QCS 2014 Section 11- Part 1.3 Working at Heights, for further details)

12.5.5.1 Introduction

Designers and specifiers have a responsibility under the CDM regulations to try to eliminate the need for potentially hazardous holes and voids in a structure. (For example, they may minimise or relocate services and service risers. Failing that, designers can reduce the risk by designing in either permanent or temporary protection details such as flooring or cast-in structural mesh in riser shafts.

During construction, the Main Contractor must ensure that all holes or voids are protected and that protection is maintained to the highest possible standard.

This standard shall apply to holes, openings in floors, floor slabs, risers, inspection chambers, valve chambers, lift shafts, stairwells, manholes, storage tanks or any other type of opening where there is a risk of persons and/or materials falling through.

The size, type of hole and possible loading from plant or vehicles will determine the type of protection required and these design criteria must be addressed by the Temporary Works Coordinator.

12.5.5.2 Planning

To avoid forming holes in slabs, where possible, the design should be reviewed by the design team and the construction team, with the assistance of the CDM Coordinator.

Programmes must be reviewed to minimise periods when voids have to remain open.

The Project Manager must coordinate hole and void protection and maintenance involving the management team and TW Coordinator in order to ensure that all holes and openings in floor areas will be fitted with temporary covers or effectively guarded in order to prevent objects falling to lower levels of the structure.

12.5.5.3 Management

- a. The Project Manager will nominate (and record in the Project or Establishment Plan) those staff member/s appointed to take responsibility for the on-site management of the procedures i.e. identifying location, hazards associated with the installation/removal of protection, ongoing inspection and maintenance of the protection.
- b. There will be a "hole register" system used which will identify the number, size and location of holes/openings and the agreed protection solution.
- c. Ongoing maintenance of protective measures is vital. Hole protection must be inspected daily by the Supervisor nominated for that area and any deficiencies must be rectified immediately.

- d. Records of inspection will be formally recorded. A 'Hole / Duct /Shaft Opening Inspection Sheet' may be used.
- e. When access to voids is required, specific arrangements must be identified and detailed in Risk Assessment / Method Statements for the protection removal / modification / replacement as necessary, ensuring holes are never left unprotected.
- f. All persons must be warned at induction not to interfere with any protective measures and to immediately report any damaged or missing protection to their Supervisor. This should be reinforced in subsequent toolbox talks.
- g. Where risers etc. are handed over to another contractor or trade, there must be a clear handover of responsibilities with protection standards specified and understood.
- h. The controls established must be detailed in the Project Health and Safety Plan, communicated and agreed with those involved in the work.

12.5.6 General Hole Protection Standards

(Refer to QCS 2014 Section 1 - Part 10 Occupational Health and Safety and QCS 2014 Section 11- Part 1.3 Working at Heights, for further details)

12.5.6.1 Holes in Slabs Procedure

- a) Where detailed reinforcement is not continuous across a hole, then, as a general rule a minimum of one layer of A142 mesh or closer mesh should be incorporated prior to concreting to guard against fall and should be properly covered to avoid trip hazard or leg traps.
- b) Where mesh is not an appropriate solution, then covers must be provided to be:-
 - Sufficiently strong, robust and designed for the size of hole and any impact and point loads that could be imposed.
 - Securely fixed in place e.g. plugged and screwed; As an alternative to mesh, profiled metal deck permanent formwork can be allowed to 'run through' and perforated at a later date.

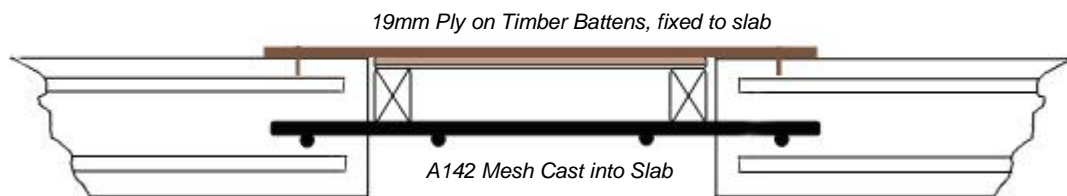


A142 Mesh in Void

Note additional perimeter barrier

12.5.6.2 Covers to Holes from 250 - 750mm, not subject to vehicle/ plant movement:

- a) 19mm plywood cover secured to a frame of 50mm battens fabricated as follows:
- The frame of the made-up cover shall fit into hole to be covered.
 - The plywood covering the frame shall be at least 150mm wider than the void on all sides to provide bearing outside of the hole and must be firmly secured.
 - The ply shall must be either new or in very good condition and carefully checked to ensure it is structurally sound and with no damage or de-lamination.
 - The hole shall be identified with signage, minimum size of sign 300 mm x 300.
 - Clearly identifiable as a hole cover, e.g. brightly painted and marked “WARNING – HOLE BELOW” usually in black on a yellow background.
 - Trim pieces also to be painted yellow and must not present a trip hazard.



Hole Warning Spray paint Templates (ex COINS)



Typical Hole Covers

12.5.6.3 Holes over 750mm not subject to vehicle/ plant movement:

Method 1

- a) Fully secured scaffold boards, adequately supported at 1.2m centres.
- b) The hole shall be identified with signage as previously stated.

Method 2

- a) Securely fixed joist hangers with appropriate size timber joist, 19mm plywood cut 10mm smaller than the hole size on all sides set in the opening making the edges visible.

12.5.6.4 Large Holes which are required to remain open:

- a) Proprietary system or scaffold double guardrail with 1m high top rail, toe-boards and brick guards securely fixed around all open sides of the hole.
- b) Toe-boards must be a minimum height of 150 mm (225mm recommended) and no gap between boards or rails may exceed 470 mm.
- c) Fall prevention netting and debris netting must be placed across the hole at every floor level if mesh and edge debris guarding cannot be incorporated.
- d) The hole shall be identified with signage as previously stated.



Typical Protection to Larger Opening

For fuller protection debris nets directly under the void or brick guards to the scaffold should be used.

12.5.6.5 Holes where plant movement is required:

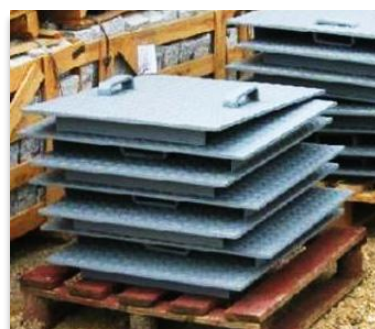
- a) Special consideration must be given to the protection of holes that may be trafficked by plant and vehicles e.g. scissor lifts, cherry pickers, forklift trucks.
 - Steel plate of sufficient strength to support 1.5 X the maximum load imposed must be placed across any holes that will be trafficked by plant and vehicles. This must be checked and approved by the Temporary Works Co-ordinator.
 - The steel plate must have a bearing surface of no less than 200mm on all sides of the hole and must have lugs welded to the underside at the dimension of the hole to secure it firmly in place.
 - The hole shall be identified with signage as previously stated.
 - In addition to signage, the plate must be clearly marked with its load bearing capacity
 - Holes such as newly built manholes or access chambers must also have temporary covers fixed to prevent falls of people or traffic, until the permanent covers are fixed in place. Full consideration must also be given to possible loads or tendency to displacement due to traffic in both the temporary and permanent conditions.

Temporary access chamber cover in trafficked area



Note fixing hole in plate & cruciform to allow positive location in opening

Temporary Manhole covers.



Note provision of 'handles' on top designed for forklift handling location in opening

12.5.6.6 Vertical Openings to Lift Shafts & Risers:

- a) Vertical holes and openings such as lift shafts and access to risers should be fitted with permanent doors as early as possible.
- Where this is not possible, lockable temporary doors must be installed, preferably covering the full height of the opening and must be secured and marked.
 - Where scaffolding is used as a short-term solution the vertical opening must be protected by the following measures:
 - 4 guardrails (minimum) to a height of 2m including a minimum 150mm toe board (recommended 225mm) must be solidly fixed to the opening entrance.
 - Brick guards must be fitted to the guardrails to prevent the insertion of heads or limbs into the hole or shaft.
 - Signage stating "Warning - Open Shaft!" must be securely fixed to the guardrails. Minimum size of sign 300mm x 300mm.
 - For large risers, ducts or shafts a specific permit system for entry may be deemed necessary to limit uncontrolled access.



Typical Proprietary Temporary Lift Shaft Protection



12.5.6.7 Holes used for lifting operations

- a) Where holes in slabs etc are required to be left open for lifting operations then they must be protected by guardrails to a minimum height of 1m, with intermediate rails at spacing not exceeding 470mm, toe boards of minimum 150mm, (225mm recommended). This barrier should be fully meshed with brick guards or similar.
- b) Removal of guardrails for the passage of materials will only be acceptable on the basis that a risk assessment is in place, which addresses how guardrails are to be removed,

how those involved in the operation will be prevented from falling, how people not involved will be prevented from accessing the area, how those below will be protected from the possibility of falling materials and how the location will be made safe once the lifting operation is completed.

12.5.6.8 Main Service Risers

- a) If the design can be challenged early enough and the position of the services installation is finalised within a riser shaft, we can optimise the size of the service hole and install a permanent metal deck floor to reduce the risk.
- b) The following photographs show how permanent holes may be formed including the provision of thin gauge metal perimeter upstands.
- c) The perimeter upstand can be a means for fixing protection and assist in the prevention of adjacent material falling through. Prior to permanent services being installed a plywood cover with 100mm x 50mm timbers can be tightly fitted over the upstand with the 'Hole Below' warning painted on top.
- d) The above process lowers the risk of working within the riser shaft, making temporary plywood hole protection removal much simpler and increasing safe access to install the permanent services and future Client maintenance.

Metal Riser Flooring (with 65mm perimeter upstand)

Metal Flooring with holes for future services viewed from underneath

Note temporary ply protection



12.5.6.9 Removable Protection to Concrete Placing Boom Holes in Slab

- a) Temporary removable covers of sufficient strength to support 1.5 X the maximum load imposed must be placed across any holes that will be trafficked by light plant and vehicles. This must be checked and approved by the Temporary Works Co-ordinator.
- b) The cover must have a bearing surface around the holes and have locating lugs which allow it to be firmly secured in place.



*Temporary Cover
(Awaiting permanent fixing to slab)*

12.5.6.10 Protection of Roof Slab Openings

- a) Designed joists and plywood fitted at top of upstand to roof void
- b) Temporary weathering protection in place and handrails to discourage people walking over the hole protection.



*Typical Weatherproofed
Roof Slab Opening*

12.5.6.11 MAINTENANCE OF HOLE PROTECTION

- a) Materials can be damaged, de-laminate, fixings loosen or warning paints fade.
- b) A nominated individual for each area must inspect the hole protection on a daily basis recording their findings and immediately rectifying any faults found.
- c) All holes must be uniquely numbered and identified on drawings to ensure that the protection measures are effectively managed.
- d) Where several holes are closely grouped together, e.g. a lift motor room, they may be recorded under one reference and signed off as a group to minimise paperwork.
- e) A typical Inspection sheet is attached overleaf for guidance.





TYPICAL HOLE / DUCT / SHAFT OPENING - WEEKLY INSPECTION RECORD SHEET

Project:	RECORDS OF ONCE/TWICE WEEKLY/DAILY INSPECTIONS															
	MON		TUE		WED		THU		FRI		SAT		SUN			
Area:	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm		
Week Commencing:	am		pm		am		pm		am		pm		am		pm	
All holes (including manholes & voids) identified on drawing?																
A142 or similar mesh cast in as necessary?																
Do all protective covers meet Cenve standards?																
<ul style="list-style-type: none"> ▪ Secured in position? 																
<ul style="list-style-type: none"> ▪ Marked 'Warning Hole Below'? 																
<ul style="list-style-type: none"> ▪ Strong enough to support persons or possible plant? 																
Are barriers to the Cenve standard?																
<ul style="list-style-type: none"> ▪ Double guard rails and toe boards? 																
<ul style="list-style-type: none"> ▪ Brick guards where materials could fall on people? 																
Any work adjacent to openings where falls possible?																
Temporary manhole covers to Cenve standard and secure?																
Are vertical faces of all shafts & risers fully protected?																
Location of any Defects Identified & details of Actions Taken to Rectify Problems: <i>(list below)</i>																

Key: ✓ Protection measures in good order x Protection inadequate/missing/defective

Signed:	Date:
Name:	Position:

12.5.7 General Scaffolding

(Refer to QCS 2014 Section 1 - Part 10 Occupational Health and Safety and QCS 2014 Section 11- Part 1.3 Working at Heights, for further details)

12.5.7.1 Introduction

Scaffold use should be avoided where possible due to risks inherent in erection and dismantling and programme interface considerations but where other safe working platforms are not suitable scaffold can provide both a safe place of work and safe access.

Problems with scaffolding have included inadequate edge protection, poor foundations, removal of designed ties or bracing and overloading of platforms so it is imperative that scaffolds for CENVE projects are responsible are designed, erected, altered and dismantled to agreed standards.

12.5.7.2 CENVE Standards

a) Planning:

- Eliminate/Reduce - Early involvement in detail design, particularly of external elements, cladding etc, to allow internal fixing, removing the need for external scaffolds.
- Control - Where scaffolding is the most appropriate work equipment, the team must identify the full scope of all scaffolding required at the planning meeting and record this in the Temporary Works Control Register held by the project TW Co-ordinator.
- Planning meetings must also consider any additional plant, equipment, materials or sheeting that could impose additional loadings over the standard scaffold design loads.
- Consents may be required from Local Authority (Highways Act, Section 169) or adjacent property owners where scaffolding is to be installed on footpaths or public areas. Therefore permissions must be sought prior to work commencing.

b) Design of Scaffolding:

- The design of scaffolding must always be to a recognised standard.
- The UK scaffold standard, BS EN 12811, requires the supply of specific designs and calculations to prove compliance with the design brief.
- Scaffolding designed to BS 5973 (withdrawn June 2004) must not be used.
- Where we use system scaffolding including proprietary staircases etc, they can only be erected, altered and dismantled on CENVE projects if the manufacturer or suppliers technical booklet is available to both the TWC and scaffolders carrying out the task.
- The WAH Regs and BS 12811 require the primary guardrail be a minimum 950mm high. Where scaffold components are used to form edge protection which is not

part of a scaffold structure, the minimum height is 1m. Therefore CENVE requires a minimum guardrail height of 1m.

c) Competence of Scaffolders:

- On any CENVE project, tube and fitting Scaffolding and system scaffolding, can only be erected, altered and dismantled by competent scaffolders that are Third Party Certified. The competent scaffolders must have a valid Third Party Certificate (TPC) issued by a recognised Third Party Institution in Qatar for Scaffolding Erection and Dismantling.
- Competent Scaffolders must not undertake work that is not appropriate to their respective Third Party Certification that they hold.
- Recognised Third Party Certification for Scaffolders are, but not limited to the following:
 - i. Basic Scaffolder
 - ii. Advanced Scaffolder
 - iii. Scaffolding Supervisor
 - iv. Scaffolding Inspector
- Systems Competence - Managers must ensure scaffolders can demonstrate prior to commencement of work, that they are also knowledgeable in those particular proprietary scaffold systems i.e. Kwikstage, Cuplock, Hakki etc.
- UK National Access and Scaffolding Confederation (UK NASC) - Any Scaffolder working on a CENVE project must also be able to demonstrate that they have been instructed in the procedures in the UK NASC publications TG20:08; SG4; SG4:05; and SG4:10

d) Inspection:

- Scaffold Inspection can only be undertaken by competent people, including scaffolders, who have completed a scaffold inspection course or either the Basic or Advanced Scaffold Inspection course offered by a recognised Third Party Institution in Qatar for Scaffolding. The competent scaffolding inspector must have a valid Third Party Certificate (TPC) issued by a recognised Third Party Institution in Qatar for Scaffolding.
- Contractors who supply their own scaffolding and carry out inspections must have their training and competence to inspect scaffolding verified by the Temporary Works Coordinator.
- Temporary Works Co-ordinators will always maintain overall responsibility, even where a competent sub contract scaffolder carries out inspections. Therefore the Temporary Works Co-ordinator or Inspector must make sufficient checks to maintain confidence in the level and competences of inspections carried out by others and either countersign the sub contractor inspection record or maintain their own independent records.

- Inspection Frequency - All scaffolding must be inspected in accordance with the QCS 2014 Section 1 - Part 10 Occupational Health and Safety and QCS 2014 Section 11- Part 1.3 Working at Heights e.g.
 - i. Before it is first used in that position.
 - ii. Where conditions may cause deterioration of the structure
 - iii. Within a 7 day period (Min. weekly inspection) or as specified by TWC or designer
- Inspection Records All the above inspections must be recorded, App. T17-A. A scafftag type system may be used if wished but all incomplete or restricted areas must be clearly identified, signed and barriered off.
- Completed reports must remain available on the project for inspection.
- Archive: After project completion, reports must be retained for at least 3 months.

e) Signage

- Access to incomplete scaffolding must be prevented at all times. Ladders should be removed or covered to prevent unauthorised access when work is not in progress.
- Physical barriers, consisting of scaffold tubing should be used with warning signs (red and white with black pictogramme)
- Restrictions on loading or use of scaffolding must be clearly identified.



12.5.8 Mobile Access Towers (MATS), PAVS, and Mobile Elevated Working Platforms (MEWPs)

(Refer to QCS 2014 Section 1 - Part 10 Occupational Health and Safety, QCS 2014 Section 11- Part 1.3 Working at Heights, and QCS 2014 Section 11 – Part 1.4 Safe Use of Plant Equipment (Regulatory Document), for further details)

12.5.8.1 Introduction

Falls from height are a major cause of injury at work. Mobile Access Tower Systems (MATS) , Push Around Vertical (PAV) platforms, and Mobile Elevated Working Platforms (MEWPs) are one of the best methods of providing both a safe means of access and a safe place of work.



12.5.8.2 Group Standards

a) Planning:

- The Work at Height Regulations 2005 require an assessment to be undertaken before starting any work at height and this risk assessment process will often identify mobile access towers as the most suitable means of access and work
- We must ensure towers /PAVs can be used correctly e.g. does it fit the work area, are there obstructions, can we get to the correct height? Is the area prepared?
- The correct selection of the equipment relative to the work location is very important e.g. do not use alloy or steel adjacent to exposed electrical cables.
- Some PAV platforms are zero wind rated precluding use externally or in partially completed buildings. Always check manufacturer's information and data plates.
- Users will have to be identified and trained before work commences (See competence standards overleaf)
- Consider tower storage requirements to avoid damage or loss of critical components.
- If towers could block accesses, consider and plan alternative routes.

b) Erecting, Altering and Dismantling Towers:

- Manufacturer's instructions must be held and followed by those carrying out the work.
- Tower scaffolds must always be erected following a safe method of work, preferably the "advanced guardrail" system which is part of any formal training. HSE Guidance
- The tower should ideally be tied into the structure as soon as possible.
- If wheels are used, they must always be locked as soon as the platform is positioned
- Required outriggers or stabilisers must be fitted when the first set of frames are built. Never wait until the tower is at its optimum height.
- Towers must never exceed the manufacturer's working height for that configuration.
- The access system i.e. ladders or stairs that are supplied should always be used as work progresses and people must never climb the tower framework!
- There must always be double guardrails to 1m height with and no gap greater than 470mm and with toe boards in place prior to use.
- Bracing as defined in manufacturer's information must always be properly installed

c) Stability of Towers:

- Towers and PAV platforms must be constructed and used on a firm and level base
- Unless the tower or platform has been specifically designed and approved for such use, activities such as the following should never be carried out:
 - Sheeting of a tower or platform
 - Loading out with material in excess of the specified guidance
 - Use of the tower frame to lift materials.

d) Use of Towers:

- Tower users are frequently not the tower erectors, therefore any user must receive instruction on the safe use of the tower including limitations of use.
- Before anyone is allowed to work on a tower they should be issued with a copy of the “mobile scaffold tower” card. These cards are individually numbered with the number recorded on the training record against each person’s name.
- Tool box talks must be recorded on induction/briefing register [App T4-G](#).
 - i. Never use the tower:
 - ii. In high winds which will make it unstable
 - iii. As any type of ladder support
 - iv. With any parts missing or broken.

e) Inspection and reports:

- All towers used at any CENVE establishment or project, regardless of height, will be routinely inspected:
- After assembly in any position (pre-use check)
- After alteration – If guardrails or other components are removed to allow the tower to be moved, another pre-use check is required once the components are re-installed
- After any event liable to have affected its stability
- Reports are required after its assembly at intervals not exceeding seven days thereafter, with the report completed before the end of the working period.
- Reports should be recorded on the form in [App T17-A](#).
- Each tower or PAV platform must be uniquely identified. A “Scafftag” system may be used to record both pre-use checks and supplement formal inspection report forms.

12.5.9 Ladders, Step Ladders & Podium Steps

(Refer to QCS 2014 Section 1 - Part 10 Occupational Health and Safety and QCS 2014 Section 11- Part 1.3 Working at Heights, for further details)

12.5.9.1 Introduction

The misuse of ladders and stepladders has caused a significant number of serious accidents with falls from ladders/steps averaging 14 deaths and 1200 serious injuries per year. They remain a key element in both CENVE and HSE Safety campaigns.

This standard applies to all CENVE employees or Contractors who are our responsibility and seeks to ensure the selection of the safest access solution in all situations.

12.5.9.2 Risk Assessment of Ladder Use

- Ladders or stepladders can only be used in exceptional circumstances where a risk assessment shows that there is no suitable alternative.
- Risk assessments must cover both safe means of workplace access and the workplace itself, with any justification of ladders or stepladders specifically stated and recorded, taking into account the nature, duration and location of the work.
- Justification for any use of ladders would normally be recorded on the Risk Assessment sheet (App. T6-B) or the Task Sheet (App. T6-C) and authorised by the responsible manager or supervisor. A prompt sheet to assist in this assessment is available for guidance if required in App. T12.5-A.
- The responsible manager can only approve sub-contractor's Risk Assessments and Method Statements specifying ladder use where they have clearly demonstrated there is no reasonable or safer alternative.
- The specific method statement must be briefed to the workforce and describe the areas and conditions under which ladders can or cannot be used.
- Persons using ladders or stepladders must also have had a relevant toolbox talk.

12.5.9.3 Additional Considerations during Risk Assessment:

- When assessing the use of stepladders adjacent to stairwells, balconies, etc consideration must be given to additional measures to prevent falls of operatives or materials over the normal height guard rail/barrier.
- It is vital that those climbing up or descending should have both hands free to climb and should not carry materials or tools.
- BS EN 131 ladders only have a rung loading of 95Kg, so this must be considered.
- Ladders can only be used for low risk, relatively short term requirements. Such authorisation should not be granted for work exceeding 10 minutes duration, regardless of whether these tasks are individual or sequential.

- In most situations, there are safer alternatives to using ladders or stepladders and these must always be used in preference if reasonably practicable to do so.
- Safer alternatives include use of a MEWP's scaffold towers or podium steps etc.
- For main access and escape routes, stair towers are to be used, where possible. Ladders should only be used for low use, temporary accesses.

The use of trestles or bandstands for access is not permitted at any workplace unless in very special circumstances specifically approved by the CENVE HS&E Manager.

12.5.9.4 Ladder Use:

- Domestic grade aluminium or timber ladders are prohibited at all CENVE projects.
- Ladders must be kept clean, slip free, with clear access and a handhold at top.
- Tools and materials should not be carried by hand on ladders. It is vital that those climbing up or descending should have both hands free to climb.
- Three points of contact must always be maintained whilst on the ladder.
- CENVE prefer the use of wooden pole ladders, rather than metal ladders.
- Ladders must be founded on a firm and level base.
- Ladders must be angled to minimise the risk of slipping outwards; as a rule of thumb this should be '1 out for every 4 up', i.e. approximately 75°.
- Ladders must be securely tied at both styles (or footed) regardless of length.

12.5.9.5 Stepladders

12.5.9.5.1 Standards for Stepladders

- Domestic grade aluminium or timber stepladders are prohibited at all Cenvé projects.
- Those types of stepladder acceptable for use within CENVE are those:-
 - i. Provided with a working platform at least 400mm square and complying with EN131, known in UK as BS EN131 or;
 - ii. To BS 2037 (non-pulpit type) but the top three steps must not be used and a notice affixed to this effect, preferably with these top steps clearly identified.
 - iii. Of composite or metal construction - wooden stepladders can only be used if specifically justified through risk assessment, e.g. adjacent to live services.

12.5.9.5.2 Use of Stepladders

- Once again, tasks undertaken from stepladders must be the subject of a detailed risk assessment by the manager/supervisor responsible for the task, specifying its nature, duration, location, the type of stepladder to be used and why other working platforms are unsuitable.
- Ladders should not exceed 8 working steps in height and any exceptions to this principle must receive special consideration from the Safety Adviser.
- Ladders must be founded on a firm, level base. See manufacturer's instructions.
- Three point contact must always be maintained whilst on the stepladder
- Ladders must be kept clean and slip free, with clear access.
- The user must never have to work in a position where they need to over reach or may have to work in a manner which could impose a lateral load to the ladder.
- If lateral stability is an issue, additional stabilisation methods must be considered.
- Where ladders must be used in a location exposed to passing traffic or pedestrians, suitable barriers or other means of isolation must be used.
- In energised areas or when carrying out commissioning activities where there is risk of electric shock, a composite stepladder or wooden stepladder is to be used. Carbon fibre steps should not be used in these circumstances.
- When not in use, stepladders should be secured to ensure they are not removed and used for unauthorised purposes.

12.5.9.5.3 Pulpit or Podium Steps

- Pulpit or podium steps should only be used after considering whether work at height can be avoided, or other work equipment, (Mobile Access Tower or Push Around Vertical (PAVs)) cannot be used. Where they are considered suitable, they would be included in the Work at Height Access Strategy as a safer alternative to stepladders
- Care and vigilance is required when using podium steps due to the increase in the amount of industry wide reported accidents through unsuitability, misuse, damage including the failure of welds through poor handling and generally inadequate maintenance and inspection regimes.
- The user must be competent and authorised to erect and operate this type of equipment safely through training or briefing. G12.5-D gives detail guidance on Safe Use of Podium steps

12.5.9.5.4 Inspection of Ladders:

- Ladders should be visually inspected before each use by the user to ensure they are free of damage. Damaged ladders must be removed immediately and rendered unserviceable for any further use.
- All ladders must be subject to a regular formal inspection regime, usually weekly, either as an integral part of a scaffold inspection or as a stand-alone process. Records of inspection must be kept.
- Painting of ladders for identification purposes can obscure damage, therefore alternative methods such as tagging (Scafftag, laddertag etc) should be used.

12.5.9.5.5 Stilts:

Stilts may be used by contractors as an alternative to ladders or platforms but only receipt and approval of a suitable risk assessment which must cover:

- Suitability for the planned task
- Confidence and demonstrated competence of the stilt user
- Satisfactory arrangements for mounting and demounting from stilts
- Arrangements for the regular inspection of stilts for damage before use
- Ability to keep working surface clear of obstructions and manage trip hazard

12.5.9.5.6 References and British Standards for Ladders

The minimum acceptable standard of construction of ladders is as follows:-

- BS EN 131 (previously BS, Industrial Class 2)
- Timber Ladders to BS 1129, Kite Marked 'Class 1 Industrial'
- Aluminium ladders to BS 2037:1994, Kite Marked 'Class 1 Industrial'
- Glass fibre ladders to BS EN 131:1993, Kite Marked 'Class 1 Industrial'
- Rating information should be clearly marked on the ladder

Example of Stepladders / Folding Work Platforms

Pulpit type stepladders - Points of note

- Box section aluminium construction
- Pulpit type work platform (min 400x400mm)
- 80mm deep rungs, sharp edge free construction
- 8 steps maximum height, incl. platform
- Lockable separator bars, optional tool tray
- Handrail fittings, non-slip feet



Height Adjustable Work Platform

- Box section aluminium construction
- Work platform 400x400mm minimum
- Safety rail closure to work platform
- Optional height adjustment facility
- Fitted outriggers, Optional wheels
- Additional stabilizer fitted, toe board on 3 sides of platform



Non-pulpit, Composite type

- Glass fibre stiles
- Glass fibre channel section and braces used for the back legs
- Serrated aluminium treads angled to 65°
- 8 steps maximum height
- Top three steps must not be used



Aluminium Work Platform Points of Note

- Lightweight
- Easily Transportable
- Work Platform Enclosed
- Some adjustable for height
- Positive snap locking components



12.5.10 Collective Fall Arrest

(Refer to QCS 2014 Section 11- Part 1.3 Working at Heights and QCS 2014 Section 11- Part 2.3.12 Control of Working at Heights, for further details)

12.5.10.1 Introduction

Falls from height remain the biggest single cause of workplace deaths, therefore all work at height must be reduced in scope with necessary remaining work carefully planned with measures out in place to minimise any risk of fall.

12.5.10.2 CENVE Standards

Where work at height cannot be avoided, CENVE management must plan and detail their work methods to avoid the risk of falls from height by providing edge protection.

If a residual risk of fall cannot be completely eliminated, collective fall arrest such as nets or air bags are preferable to individual fall arrest such as harnesses systems.

12.5.10.3 Nets

Nets are an approved option where, for example, roof work leaves the potential for fall from leading edges or temporarily unprotected openings. They should be used in conjunction with a leading edge protection system where possible.

It must be remembered that nets do not stop people falling and they will reduce the potential for injury rather than remove it altogether.



12.5.10.3.1 Planning:

- Rig or de-rig safety nets using remote attachment devices. Remote rigging is aided by detailing hooks or tie positions on I beams early on in the design process.
- Rig or de-rig using powered access such as MEWPS subject to floor loading
- As last resort, rig or de-rig with ladders (max 4.5m) or industrial climbing techniques
- Use in conjunction with proprietary or constructed leading edge protection.
- Plan & agree rescue procedures

- Agree methods of protection to roof lights / openings

12.5.10.3.2 Competencies:

- Erectors must be trained to the FASET industry standard

12.5.10.3.3 Erection of Nets

- Nets must comply with BS EN 1263-1&2
- Nets must be erected as close as possible to the work level to reduce effect of fall and certainly less than 2m below the work area.
- A close check is required on lap sizes to avoid potential gaps when tightened.
- Anchorages must be a maximum of 2.5m apart.
- Test certificates and handover certificates must be provided prior to first use.

12.5.10.3.4 Management of Netting:

- Areas below the work area must be cleared & barriered before work commences.
- There should be controlled, dedicated stair access provided to the roof.
- For fragile roofing, dedicated walkways with warning signs must be provided.
- Operations must be restricted and materials secured if high winds are forecast.
- The use of nets is prohibited as a means of access
- If there is a fall into any net, it must be replaced.
- Adjacent work must be anticipated and controlled as welding sparks & paint damage can damage nets.
- Nets must be regularly inspected and yearly test certificates acquired.

12.5.10.4 Air Bags

Air bags or other progressive collapse systems may be fitted under the work area. Because the distance of any fall must be limited, air bags systems are best suited to low rise applications such as under timber trusses on housing scheme.



12.5.10.4.1 Planning and Use:

- Bags are usually specially manufactured to required size.
- Minimise the fall distance between workplace and bag.
- Ensure the bags have the minimum gaps at edges to reduce risk of bounce and fall.
- Ensure over inflation or poor fit does not push block walls over when bags are being inflated!

12.5.10.5 Personal Fall Protective Equipment (PFPE) Introduction

The use of Personal Fall Protection Equipment must be a last resort where no realistic practical alternative can be identified. Collective measures for preventing falls must always be the preferred option. The HSE publication INDG 401 is a useful guide.

This standard applies to all CENVE projects under our responsibility and seeks to ensure the selection of the safest personal fall protection solution in all situations.

12.5.10.5.1 Risk Assessment of PFPE:

CENVE will only sanction the use of PFPE after a specific risk assessment.

In most situations, there are safer alternatives to using PFPE and these should always be used where it is reasonably practicable to do so.

These would normally include the consideration of prefabrication, edge protection and use of MEWPS or temporary work platforms.

- The risk assessment must be carried out and the justification for the use of PFPE specifically stated and recorded. This would normally be done on the Risk Assessment sheet in App. T6-B.
- The risk assessment must specify the nature, duration and location of the work and be authorised by the responsible supervisor. Full consideration must also be given to possible weather conditions and required rescue procedures.
- Safer collective alternatives for minimising the effects of a fall include use of nets, crash decks, air bags and bean bags.
- Fall restraint must always be considered in preference to fall arrest.
- Anchor points must be fully considered including the presence, proving and approval of suitable anchorages. The use of fall arrest equipment should only be considered where the person can ideally attach above head height.
- Suitable anchor points (Usually rated at a minimum of 2 Tonnes) should only be determined by a competent person, usually the Temporary Works Coordinator.
- MEWP anchor points may be used as long as they are rated by manufacturers.
- The method statement for the work task must be briefed to the workforce and must describe the areas and conditions under which PFPE can or cannot be used.

Persons must never be permitted to work alone, while using PFPE

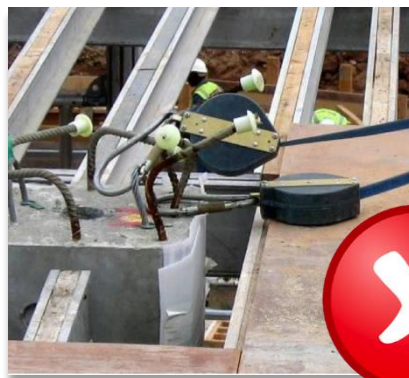
12.5.10.5.2 Training:

- No persons, including sub-contractors will be allowed to use or inspect PFPE unless they have successfully completed training covering safe use and inspection of PFPE equipment.
- Training must also extend to those persons planning the work, ordering the equipment and supervising the work
- Individual misunderstanding of the specification, fitting and use of personal fall protection equipment could lead to serious injury.
- Training requirements must also be considered in the rescue method and equipment.

Serious injury could result in this equipment being used incorrectly

12.5.10.5.3 Selection and Procurement of PFPE:

- Contractors PFPE equipment must be appropriate and comply with current standards.
- Fall Arrest Blocks (inertia reels) are only approved for vertical use above the user's head. Horizontal use could lead to serious injury if rigged or used incorrectly.
- Fall arrest lanyards are suitable when used as work restraint but their lanyards are susceptible to damage on concrete or sharp edges. Back pack inertia reels have reinforced steel lines (i.e. Sala Talon) but these should only be attached above head height.



12.5.10.5.4 Inspection of PFPE:

- PFPE must be visually inspected before each use by the user to ensure it is free of damage. Damaged PFPE must be removed immediately and rendered unserviceable.

- A register of all PFPE must be kept using App. T12.4-B or similar
- The PFPE issue sheet must be completed prior to issue of equipment (App. T12.4-D)
- All PFPE must be subject to a regular inspection regime, group requirements are 3 monthly, recorded and carried out by a competent person. Details and records of inspections must be kept using App. T12.4E or similar.

12.5.10.5.5 Suspension Trauma:

A person suspended in a harness will immediately be in Suspension Trauma as a result of the Femoral Arteries being restricted, especially if they cannot move.

This could have serious affects on the body, such as:

- The body will automatically go into shock, the degree of which will depend on the circumstances and any injuries suffered as a result of the fall.
- The Spanset loop is available from the PPE catalogue and can be used to alleviate discomfort and minimise the effect of suspension trauma in a conscious person suspended in a harness.
- Low oxygen levels to the brain could cause the person to faint, putting further pressure on the Femoral Arteries and possibility shutting off the blood supply to the legs.
- Suspension in the unconscious state can lead a lowering of the Blood Pressure
- Suspension Trauma could lead to Venus pooling and build up of Toxins in the legs within 10-15 minutes leading to Cardiac Arrest, Toxic Shock or renal failure if treated incorrectly.
- The suspended person must receive immediate medical attention no matter how long they have been suspended.
- Persons that have been rescued should be seated with their knees (legs) pulled up to their chest and kept in this position for 20 – 30 minutes or until the emergency services arrive. This must be stated in the emergency rescue procedures and briefed to the first aid team.

The Emergency Services MUST be called immediately.

12.5.10.5.6 Rescue:

- Before any work is carried out using PFPE, a written rescue procedure, possibly requiring proprietary rescue equipment, must be in place and methods communicated to all involved.
- When considering potential methods of rescue, remember that rescuers will usually be more comfortable and competent when using more common equipment and techniques such as man-riding baskets suspended from cranes, MEWPs etc, rather than specialist rope access techniques of which they would have acquired little or no practical experience.

- Rescue equipment such as 'Gotcha' kits, Webbing ladders, retrieval blocks etc not be ordered without the approval of Central HS&E Manager.
- Any equipment designated to be used in the case of rescue must be kept as close to the workplace as possible and be available at all times.

12.5.10.6 Loading & Offloading Vehicles

(Refer to QCS 2014 Section 1 - Part 10 Occupational Health and Safety; QCS 2014 Section 11- Part 1.3 Working at Heights; and Qatar Traffic Law No. 19 - 2007, for further details)

12.5.10.6.1 Introduction

Serious injury is commonly caused by falls and lifting accidents while loading and unloading vehicles. This is frequently due to poor stacking and securing of loads, unsafe or inappropriate working methods, poor access arrangements, the difficulty of identifying and reaching slinging points, uneven or slippery surfaces while working at a height on load platforms and a general lack of edge protection.

12.5.10.6.2 Group Standards:

Planning for Delivery and Safe Access onto Delivery Vehicles

- Planning of safe loading and storage areas must be considered as early as possible in the planning process to ensure these areas suit the nature of the deliveries, the types of delivery vehicles, the layout of the access routes and the location of crane or other means of distribution.
- Accidents frequently occur when suitable handling equipment is not available on site and ad hoc methods are devised. It is important that the sizes and weights are known prior to delivery and the loading / unloading methods used by the supplier and the contractor are understood and agreed to allow the use of a consistent, safe handling system.
- Agreement should be reached with suppliers on the way loads are called forward and delivered. Correct loading / offloading sequences can be agreed to reduce double handling, lifting eyes and other specialist equipment can be procured and sufficient resource made available for offloading.
- For some activities such as moving cabins, containers, storage units, suspended loads etc, agreed methods should be referenced in the lifting plan where this is required to comply with LOLER (Lifting Operations and Lifting Equipment Regulations).



Key Appendices

Procedure

- P12.5 This Document
- P12.5.2 Offloading Vehicles

Guidance

- G12.5.D Detail Guidance on Safe Use of Podium Steps
- CHt Working at Height Guidance Manual
- HSE Guidance CIS10 Tower Scaffolds (Including Erection)
- HSE Work at Height – Frequently Asked Questions
- MATS User Card
- On Site Tethered Tools Catalogue

Plans and Forms

- T12.4.A General Inspection Register
- T12.4.B Fall Arrest Equipment Register
- T12.4.C Safety Harness Questionnaire
- T12.4.D Fall Arrest Equipment Issue Sheet
- T12.4.E Fall Arrest Equipment Formal Inspection Sheet
- T12.4.H PUWER Inspection Register
- T12.5.A Ladder Use Assessment Sheet
- T12.5.B Height Safety Work and Rescue Plan

Check Sheets

- C12.5.C Access Cradle Checklist

Date	Section	Page Nos.	Issue No.	Amendment Made	Reason of Amendment

.....end of Policy 12.5