MANAGEMENT OF WORKING AT HEIGHT

2025-06

mace

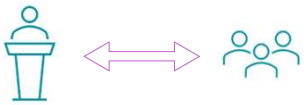
2

ADMIN & INTRO

3

ZOOMING

- Mace require your camera to be on
- Microphones muted if noisy
- Temporary un-mute: <CTRL> & <SPACE BAR>
- Gallery view to see everyone
- Same link for each day



4

SLIDE DECK

Link shared at end
to download
a copy of slides

5

AGENDA

Day 1	Day 2
Admin & Intros	Programme
Programme	Workshop
Assessment #1	Assessment #2

6

ADMIN (F F F F)

Phones

Fags

7

REFRESHMENTS

Tea & coffee will be provided only at the start of the day.

The coffee machine in reception is for use by for external visitors only.

Please use the canteen on the 1st floor for your beverages, or external shops.

8

YOUR TRAINER

John Hynes
BEng(Hons) MSc(Eng)

30 years in Construction:
Design, Site Management, Fixing Technology, Remedials, Nuclear & Petrochem

25 years Work at Height:
Design & Installation,
Trade Bodies & Standards

Family, Sports & Socialising

9

HIGHER SAFETY

AUTUMNAL

Independent & Impartial Height Safety Consultancy

Previously Higher Safety - established by Barney Green - now retired

10

WHAT DO WE DO?

- **Consultancy Service**
  - Project Advice, Design support, Planning, WAH review
- **Business Development**
  - Planning, Processes, Solution Development Support
- **Education & Training**
  - Awareness, Regulations, Best Practice
- **Expert Witness**
  - Advising the court ….

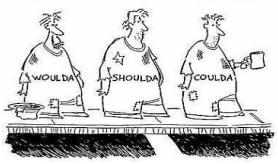
AUTUMNAL

www.autumnalservices.com

11

EXPERT WITNESS

- **Ensure competence**
- **Justify decisions**
- **Keep good records**



12

WHAT ABOUT YOU?

What are your…

- **roles?**
- **current / recent projects?**
- **experiences?**
- **interests outside of work?**

13

MACE
WORKING AT HEIGHT STANDARD

- Overview
- Hazards
- MACE Hierarchy
- MACE Risk Rating
- Tool Tethering Standard
- Exclusion Zones & PPE
- Edge Protection
- Overhead Protection
- Access Equipment
- MEWPs & Low-Level Access Equip't
- Access Towers, Steps & Ladders
- Personal Fall Protection Equp't (PFPE)
- Riser Management
- Floor Horizontal Protection
- Edge Vertical Protection
- Vertical Access Space Protection
- Work at Height Plan

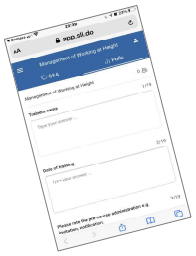
Current version:	Construct	CN-HSW-SD-0007 v1.1 (2024?)
Note also:	Consult	CS-HSW-SD-0005 v1.2 (2024?)

14

FEEDBACK

www.sli.do

Requirement for Mace HSW Team



15

AGENDA

Day 1	
09:00	Introduction
09:30	WaH Regulations & MACE
10:00	MACE WaH Standard
10:30	BREAK
10:45	Tethering, Exclusion Zones, Secondary Systems & Signage
11:00	Edge Protection Standards
11:45	Edge Protection Levels
12:15	LUNCH
12:45	Access Equip Common Management Controls
13:00	Access Scaffold
13:45	MEWPs, PAVs & Peco
14:30	BREAK
14:45	Quiz
15:15	Towers & Podiums
15:45	BREAK
16:00	PFPE – Work Restraint & Fall Arrest
17:00	Assessment

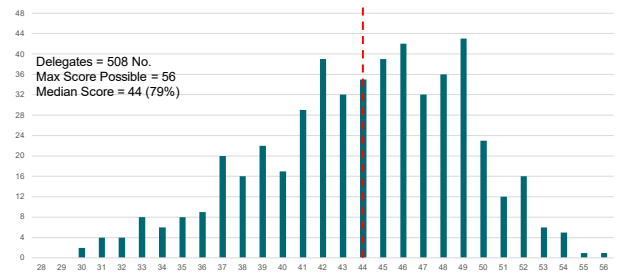
16

AGENDA

Day 2	
09:00	Reminder Competition
09:45	Overhead Protection
10:30	BREAK
10:45	Void Protection
11:00	Mast Climbers (MCWP) & Cradles (TSAE)
11:45	Delta Decks, Ladders, Steps, Hop-Ups
12:00	LUNCH
12:30	Rope Access (Abseiling)
13:30	Riser Management
14:15	BREAK
14:30	MACE WaH Plan
15:00	Workshop Set-Up (WaH & Riser Plans)
15:15	BREAK
15:30	Workshop Team Session
16:30	Feedback & Assessment

17

ASSESSMENT SCORES



18

THE END

Thank you
for your
attention & participation…

19

REGULATIONS & HIERARCHY

20

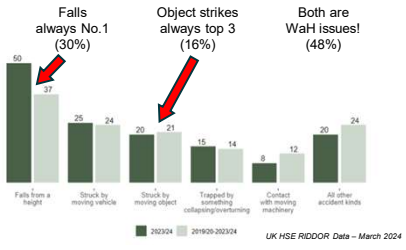
GENERAL H&S LAW

HSWA (Health & Safety at Work Act)
- Duties on all employers & employees
- Protect SFARP (So Far As Reasonably Practicable)
- Enforcement

RIDDOR (Reporting of Injuries, Diseases & Dangerous Occurrences Regulations)
- Report 'hospital treated' injuries without delay
- Source of data

21

RIDDOR STATISTICS



UK HSE RIDDOR Data – March 2024

22

WAHR (WORKING AT HEIGHT REGULATIONS)

- Implemented in 2005
- Nearly lost in Brexit 'sunset' (2023)
- Applies to all work (not just construction)
- Definition of WAH
  "*Any place from which, if no action were taken, a person could fall a distance likely to cause injury*"
- Hierarchy of controls
- Unifies previous regulations on WAH

23

MAIN SECTIONS OF WAHR

- Organization & planning (~60% of WAHR convictions)
- Competency & training
- Avoidance of risks (~30% of WAHR convictions)
- Risks assessment & equipment selection
- Identifying fragile surfaces
- Controlling falling objects
- Identifying danger areas
- Maintenance & Inspection

24

TERMS

Hazard
(potential cause of harm)

x

Likelihood
(chance of encountering Hazard)

=

Risk
(product of Hazard & Likelihood)

Control Measure
(means of reducing Risk)

25

HIERARCHY OF CONTROLS

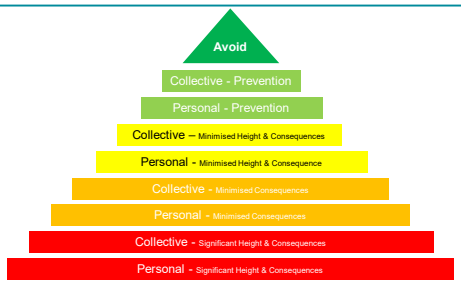
SFARP

Consider

Collective over Personal
Passive over Active
Permanent over Temporary

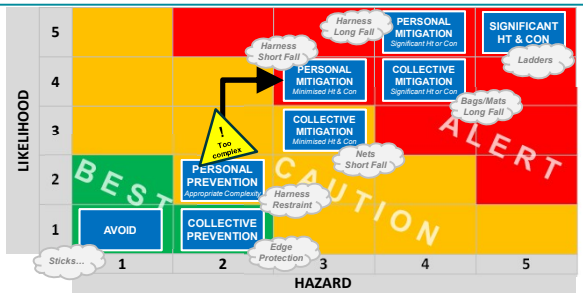
26

COMBINED HIERARCHY



27

RISK MATRIX

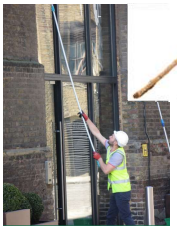


28

AVOID

29

AVOID

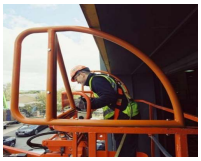


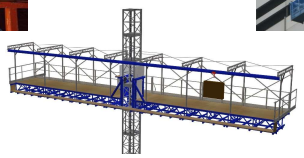
30

COLLECTIVE PREVENTION

31

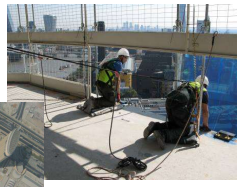
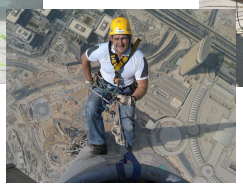
COLLECTIVE PREVENTION





32

PERSONAL PREVENTION

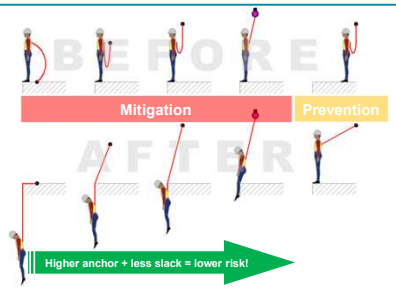




33

COLLECTIVE MINIMISE HEIGHT & CONSEQUENCE

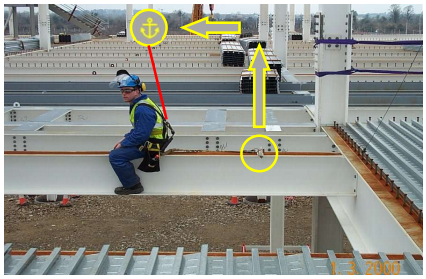
34

PFPE – MITIGATION & PREVENTION



35

PERSONAL MINIMISE CONSEQUENCE



36

RECOMMENDED ORDER FOR OPTIONS

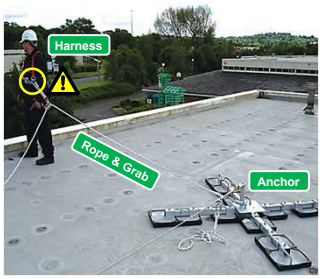
Work Equipment	Collective	Personal
Prevents a fall	Edge protection systems Advanced guard rails Work platforms	PFPE (Fall Factor 0 to 1) Pulpit steps Single user MEWPs
Minimise height and consequence	Nets (close) Material nets Soft landing systems	PFPE (Fall Factor 1 to 2)
Minimises Consequence	Net (Low level <6m) Remote soft landing systems	Lifejackets Inflating air suits Injury reduction
Does neither	Hop-ups Trestles Platforms	Ladders Stilts

37

PASSIVE VS ACTIVE

38

PASSIVE VS ACTIVE



39

OTHER WAH HAZARDS

Responsibility?

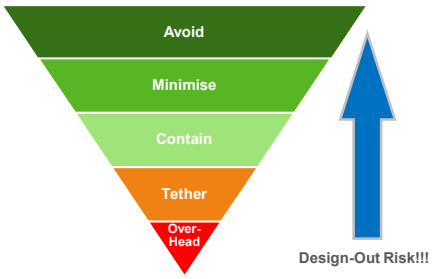
Falling Equipment

Falling Materials

Falling Debris

40

CONTROL OF MATERIALS AT HEIGHT



41

WHAT IS IT REALLY ALL ABOUT?

42

60 DROPPED ITEM REVIEW

- Lifting & Transport
- Shafts & Risers
- Demolition
- Cladding
- Others

Ask more of the package contractor!

43

MAJOR PROJECT WAH REVIEW

Early consideration ....

- CDM
- Asking questions
- Tease-out details
- How? (e.g. minimise repeat cladding visits)

Ask More!

Set expectations ....

- Demand more of the package contractor.
- Check their RAMS and Plan.
- Ensure they delivers.

44

SUGGESTED ACTION SUMMARY

1. Specialist advice early
2. Project/activity specific RAMS
3. Tough stand on competence
4. Vertical segregation
5. Revised sequence consequences
6. MACE tethering standard
7. Early cladding details. Min bits/visits.
8. Specify containment standard.
9. Consistent EP. MACE shafts & risers.
10. Demand more from scaffolder.
11. MACE public protection standard.
12. MACE temp cradles (SAEMA).
13. Housekeeping.
14. Chin straps.
15. MACE ramps and levels.
16. MACE off loading.

MACE Working at Height Standard

45

COMPETENCE

- Scaffolders
- MEWPs
- PASMA
- Slinger
- Banksmen
- Cladders
- Rope Access
- Edge Protection
- Etc.

Ask for More !

46

METHOD STATEMENTS

47

VERTICAL SEGREGATION

48

QUESTIONS?

49

WORKING AT HEIGHT STANDARD

50

WORK AT HEIGHT OVERVIEW

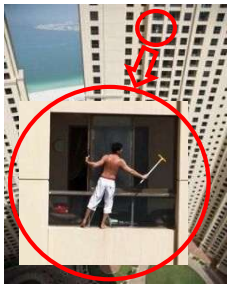
- Largest single cause of significant incident (including within MACE)
- WatH Regulations 2005 require "all that is reasonably practicable"
- Falling and falling materials review
- MACE hierarchy (similar to WAHR)
- MACE "risk rating" system
- Follow the MACE standards:
  - Work at Height Guidelines & Standards
  - Riser Standards & Guidance
  - Tool Tethering Policy

Working at Height Standard
2018 | V5 | MG-H&S-PR-2800

51

MACE WORK AT HEIGHT STANDARD

- Applies to ALL work at height
- Does NOT specify "min height"
- Does NOT specify "time"
- Requires task-specific RAMS



52

MACE RISK RATINGS

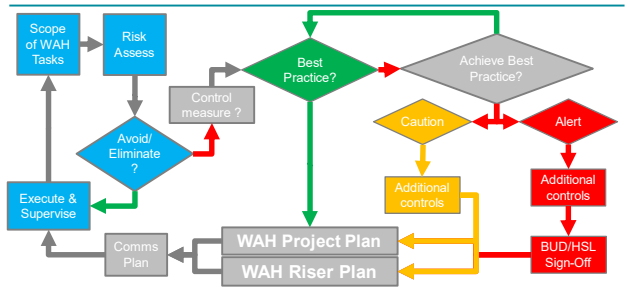
Best Practice
- First consideration
- Preferred Option

Caution
- Additional Management controls
- In task RAMS
- Justification required (WAH plan)

Alert
- Exceptional Use ONLY
- Justification required
- Approval required (BUD/HSL)

53

WORK AT HEIGHT PLANNING PROCESS



54

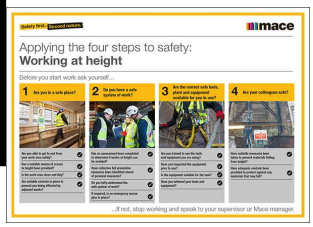
ROLES AND RESPONSIBILITIES

Roles	Responsibilities
Designers	• Design work to prevent or minimise WAH activities. • Review the risk ratings of this document and design work in-line with best practice rating, wherever possible.
Mace project team	• Develop project WAH and Riser Strategy and delivery plan. • Plan, organise and coordinate WAH activities and work relating to risers. • Review and sign off on Safe System of Work (SSOW), including risk assessment and method statement (RAMS). • Review work and report on any issues or opportunities for improvement.
Supply chain	• Develop and work to approved SSOW. • Provide adequate resources. • Supervise and report on any issues or opportunities for improvement.

WAH coordinator	• Co-ordinate the development of the WAH plan with the Mace Project team. • Confirm compliance with the WAH plan and requirements of this standard. • Review the WAH plan and arrange for appropriate sign off. • Additional responsibilities are outlined in the Mace safety coordinators.
Scaffold coordinator	• See Mace approved safety coordinators
Riser coordinator	• Co-ordinate the development of the Riser Strategy and Delivery plan with the Mace project team. • Confirm compliance with the Riser standard and requirements of this standard. • Lead the Riser coordination meetings. • Review the Riser Strategy and arrange for appropriate sign off. • Additional responsibilities are outlined in the Mace safety coordinators.

55

MACE FOUR STEPS...



56

FOUR STEPS AT HEIGHT

Safe Workplace?	• Access & egress • Clean & tidy • Plans communicated & understood
Safe Systems?	• Avoid > Prevent > Mitigate • Collective v Personal - Passive v Active – Perm v Temp • Emergency/ Rescue plan needed & sorted
Safe Equipment?	• Suitable for task • Competent users • Inspected & fit for use
Safe Behaviours?	• Prevent materials falling (contain/ tether) • Protect from falling materials (overhead/ exclusion) • Consider others above & below

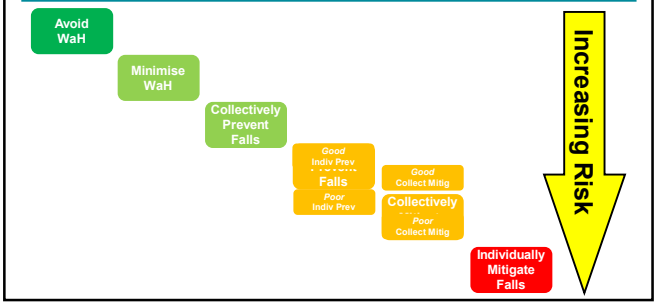
57

MACE WORKING AT HEIGHT HIERARCHY

Avoid WaH	If persons do not have to work at height, DON'T. Your first considerations should be design, pre-fabrication, working from the ground.
Minimise WaH	If working at height cannot be totally avoided, take steps to minimise its need and level of risk.
Collectively Prevent Falls	Select suitable work platforms that prevent all in the area from falling, e.g. suitable edge protection, MEWPs and void covers.
Individually Prevent Falls	Select individual fall prevention/ restraint systems, e.g. PFPE, podiums, Pecos.
Collectively Mitigate Falls	Minimise the height of the fall, e.g. safety nets.
Individually Mitigate Falls	Use PFPE that minimises the fall potential fall height.

58

DETAILS CAN AFFECT RISK HIERARCHY



59

WORK AT HEIGHT PLAN... MINIMUM REQUIREMENTS

Tender Stage	• A high level review should be undertaken. • Involve specialists (steel/MEP/decking). Note: Include all relevant trades e.g. substructure, RC frame, cladding etc. • Allocate correct costs/package splits. • Carry out a design review incorporating CDM/PD obligations are met (use Design Review checklist for the task).
Pre-construction phase	• Produce WAH Plan, at the same time as the project 'Riser Strategy and Delivery Plan'.
Construction phase	• Hold a workshop to communicate the WAH standard and plan [illegible] • Review every four (4) weeks as part of the Pro[illegible] • [illegible] working drawings and have a 'refresh' • The H&S Manager and [illegible] practical implementation of the WAH Plan at regular [illegible] Toolbox.

All members of delivery team … DABs and NABs

60

REMOVE/REDUCE HAZARD AT DESIGN

- **Build at ground-level & hoist into place**
- **Consider Temporary EP vs cladding fixings**
- **Consider changing floor levels (risers, lifts)**
- **Plan lighting; perm / temp / emergency (incl shafts & risers)**
- **Fabricate steel for pre-fitting of EP**
- **Cast-in fittings to minimise site drilling**
- **Sequence tasks to reduce temporary works**
- **Specify workable parapet heights**
- **Use double-height edge trim on metal decking**

61

SYSTEM DETAILS

- Edge Protection (6 levels)
- Ground & Void Protection – fans/ decks/ tunnels/ covers
- Access Methods – scaffolds to ladders (11 methods)
- PFPE – harness-based (3 methods)
- Risers – Horizontal (4 types)
- Risers – Vertical (2 types)
- Access Vertical space (1 type)

62

CCC EXAMPLES

Compliance	Standards Trade Associations (Methods) Specific Limits
Competence	Designer / Selector Installer / Inspector User
Comprehensive Maintenance	Inspection (Frequency / Scope) Servicing Demarcation/ Exclusion Zones

63

QUESTIONS?

64

TETHERING, SIGNAGE & EXCLUSION ZONES

65

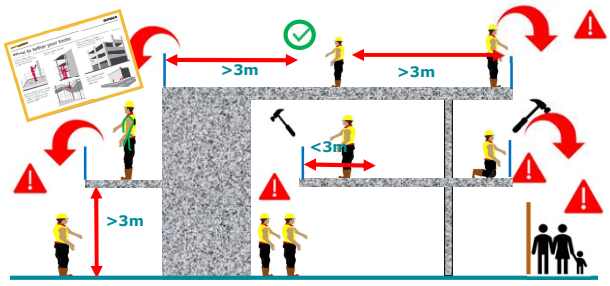
MACE TETHERING

Required:-
- Within 3m of the edge
- When “external”
- Could fall > 3m
- Above PPE free/Public zone

Tethers must be:-
- Specifically for tethering
- Suitable for the item weight
- Lock at the connection points

66

MACE TETHERING



67

TETHERING PRODUCTS

68

DROPPED OBJECTS

What is the worst?

Who is worst?

69

TETHERING AND OTHER CONTROLS

Tethers (Straps)

Zip-Up Pockets
Tool Bags

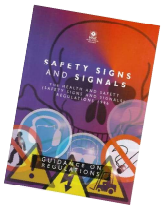
Sterile Zone

Stay > 3m from edge !

70

SIGNAGE

Risers, Edge Protection, Access Points, Hazards, Falling Objects, add Controls



Must be managed !

71

EXCLUSION ZONES

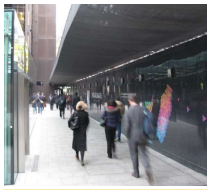
Hierarchically inferior… always required
"Last line of defence"… for when other controls have failed
Size?... Spotters!... Barriers?... Signage?...

72

OVERHEAD PROTECTION (SECONDARY MEASURES)

- Public interface & risk of falling materials
- Required:
  - when risk of fatal injury
  - for all structural works
- Consider trajectory - object shape & weight
- RAMS must include removal/ retrieval

Risk Assess for size of area…
… no agreed ratio yet!
(NFDC guidance 25% of height)



73

QUESTIONS?

74

TEMPORARY EP STANDARDS

75

OVERVIEW

Scaffolding & Edge Protection



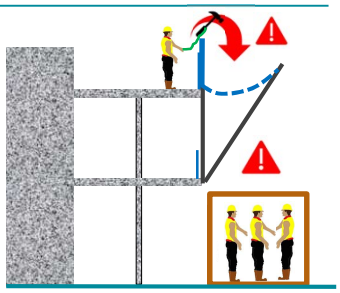
76

MACE TRIPLE LOCK

When >3m high (excluding scaffolds)
3 independent layers of protection .....

Example :-
- Tether
- Containment
- Catch Fan

Example :-
- Tether
- Containment
- Tunnel



77

EARLY ENGAGEMENT... AND DETAILING

Consideration examples

- Steel frame … pre-fitted to perimeter beams ?
- RC frame … in place and fixing considered ?
- Cladding collaboration at design stage / interface ?
- Wind loading (allow for containment / debris netting) ?
- Containment … gaps ?
- Screed allowance … changing levels ?
- Vertical and Horizontal segregation …
- Sterile Zone (3m from edge) ?
- Access controls ?
- Don't compromise products (no mixing ?)
- Tethered components ? (loose fixings ?)
- Plant stop blocks ?

78

CCC

79

CCC- COMPLIANCE

- Regional Standard - BS EN 13374
- EPF Guidance (2 documents):
  - Code Of Practice (for BS EN 13374)
  - Containment Standard (gaps & porosities)
- Safe System Work (RAMS) (up & down)
- Manufacturer User Instructions
- Sterile Zone Permit ?
- TWC re loading

80

CCC- COMPETENCE

- Operative training (Generic/EPF)
- Management - EPF Code of Practice
- Tethered components
- Pre-fitted if possible
- Wind loading – for containment ?
- Maximise captive fittings
- Cladding collaboration
- Vertically alert

81

CCC-COMPREHENSIVE MAINTENANCE

- Inspection
  - Weekly
  - Following adverse weather, adjustment or impact
- Tagged
  (Mace require drawing with tag location & extent)
- Minimal gaps underneath

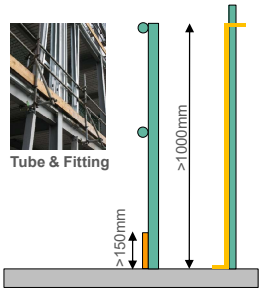
82

DESIGN REQUIREMENTS

- BS EN 13374
- Principle Guardrail
- Vertical gaps < 470mm
- Horizontal gaps < 120mm
- No unintentional removal

Mace standards:
>1500mm (otherwise Alert)

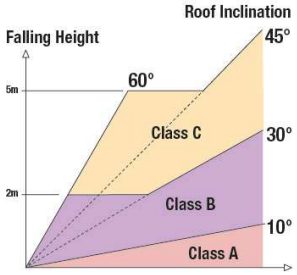
Tube & Fitting



Mesh Panel

83

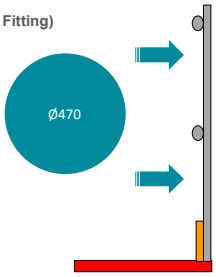
APPLICATION CLASSES



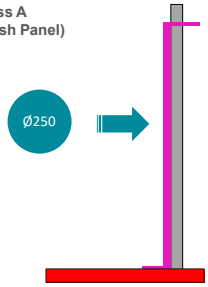
84

CONTAINMENT-CLASS A

Class A
(Tube & Fitting)

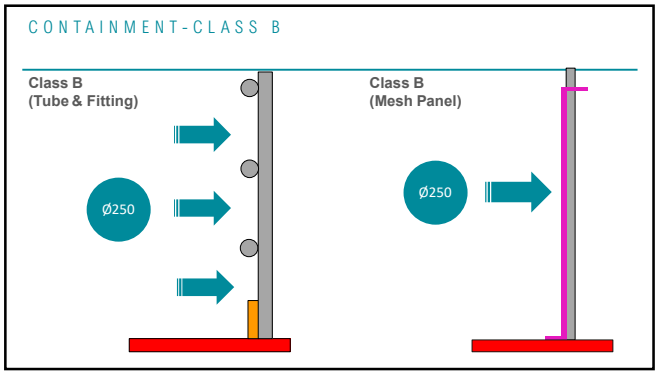


Class A
(Mesh Panel)



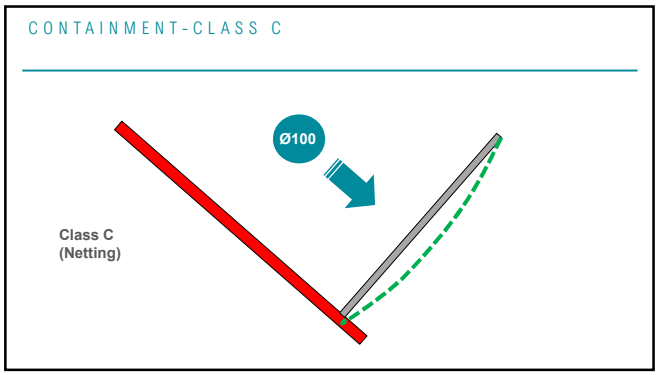
85

CONTAINMENT-CLASS B



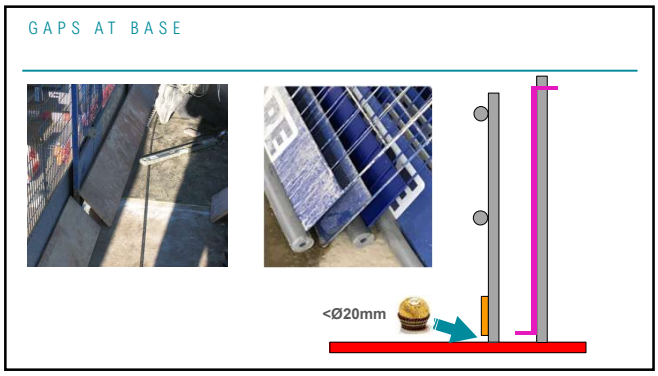
86

CONTAINMENT-CLASS C



87

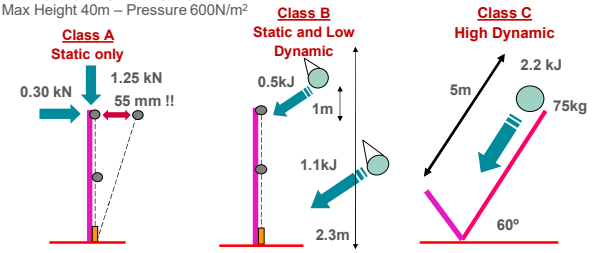
GAPS AT BASE



88

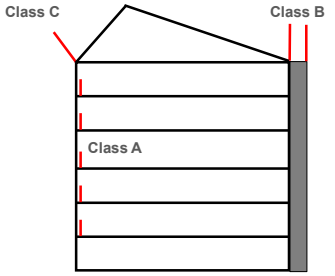
CLASS TEST PERFORMANCE

Wind Load Performance
Static (calc) & Dynamic (test)
Max Height 40m – Pressure 600N/m²



89

EN 13374 - SUMMARY



All Classes:
1.0m min height

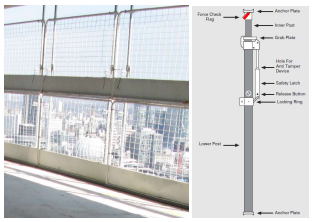
Class	Containment	
	Tube & Fitting	Mesh Panel
A	Ø 470	Ø 250
B	Ø 250	
	Netting	
C	Ø 100	

Gaps beneath < Ø20mm

90

ADDITIONAL FEATURES

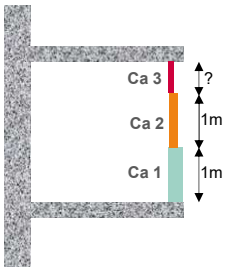
Extended or Full Height systems



Compression Posts

91

CONTAINMENT: EPF STANDARD EXAMPLE

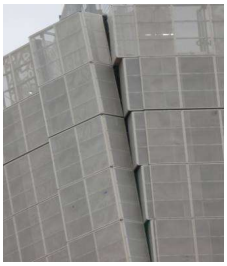


Containment Area (Ca)	Height	Example Containment Porosity (Cp)
3	2m - Soffit	100mm
2	1m – 2m	60mm
1	Floor – 1m	5mm

2m 6mm

93

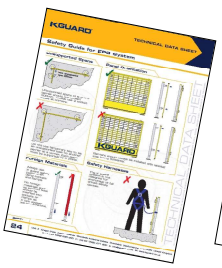
CONTAINMENT: CLIMBING SCREEN EXAMPLE

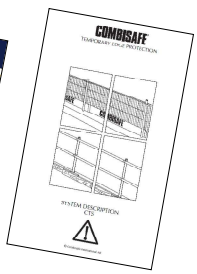


Containment Area (Ca)	Height	Example Containment Porosity (Cp)
3	2m - Soffit	6mm
2	1m – 2m	6mm
1	Floor – 1m	6mm

94

EN 13374: COMPLIANT PRODUCT





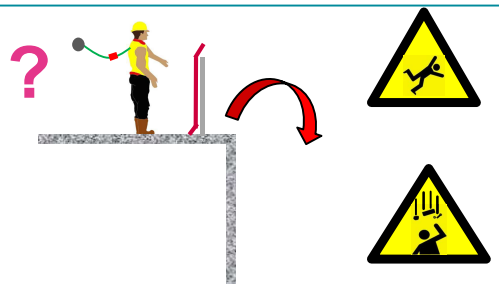
95

COMPETENT INSTALLATION

- Trained installers ? (EPF)
- Method Statement ? (UI)
  - Access Method ?
  - Work sequence ?
  - Erection and Dismantle ?
  - Interface with other trades ?
- Common errors .....

96

COMPETENT INSTALLATION



97

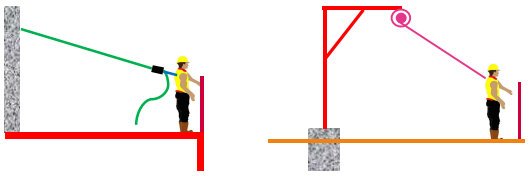
AVOID!

98

COLLECTIVE PREVENTION

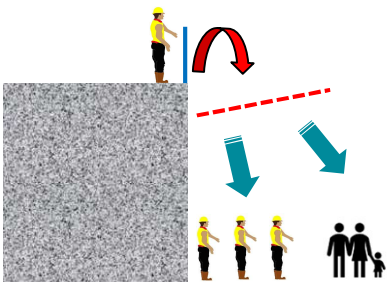
99

PREVENTION VS MITIGATION



100

FALLING MATERIALS AND EQUIPMENT



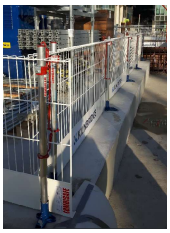
Containment?
Tethering?
Catch Fan?
Crash Deck?

101

CONCRETE FRAME

102

CONCRETE FRAME



On form work – then move on to slab.

103

STEEL FRAME

104

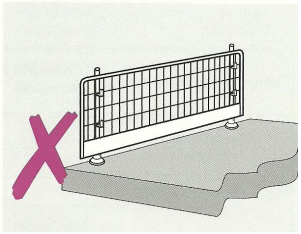
STEEL FRAME

- Bracket Adjustment
- Vertical & Horizontal
- Do it on ground – Avoid!

105

COMMON PROBLEMS

Too close to the edge

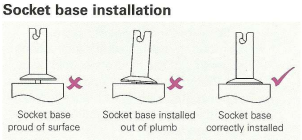


106

POOR ANCHOR SETTING

Anchor installation

Socket base installation

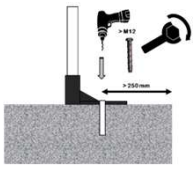


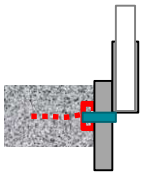
107

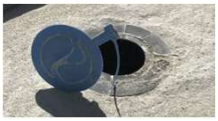
UNSAFE INSTALLATIONS

108

FIXING OPTIONS



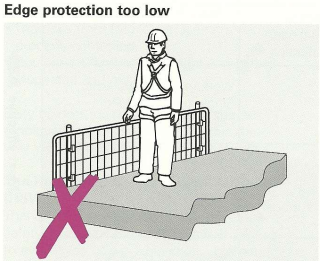




109

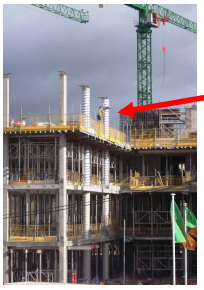
COMMON PROBLEMS:

Edge protection too low



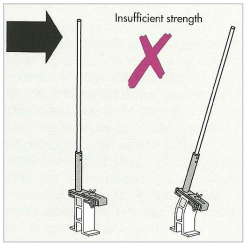
110

RELATIVE HEIGHT:


111

MOUNTING BEAM ORIENTATION



112

WRONG MOUNTING BEAM

113

WRONG MOUNTING BEAM

114

CLIMBING SCREENS

115

COMPREHENSIVE MAINTENANCE:

Handover?
Inspection Frequency?
Recording?

116

MACE INITIATIVES-SHARD



117

MACE INITIATIVES – STERILE ZONES


118

QUESTIONS?

119

TEMPORARY EP MACE LEVELS

120

TRIPLE LOCK ?

Three Independent Layers .. of Protection.

Common Control Measures ?

Ask More !

121

EDGE PROTECTION- MACE LEVELS

EP Description	Panel Height	Guard Rail Height	Screen / Net Height	Risk Rating
Climbing Screen	Full	x	x	Best Practice
Full Panels & Screen	1.5m - Full	> 1.0m	Full	Best Practice
Panels with Guard Rails	> 1.5m	> 1.0m	x	Caution
Scaffolding with Panels	as per Guard Rail	> 1.5m	x	Caution
Panels Only	> 1.0m	x	x	Alert
Scaffolding Only	x	> 1.0m	as per Guard Rail	Alert

122

CLIMBING SCREEN

SAFE

Compliance	Competence	Comprehensive Maintenance
BS5975 - Temporary Works CoP Containment - Usually 6mm for 3/4 levels Off-site fabrication & crane-in Crane or Jack to raise Install EP before raising	Design & Install - Specialist & TWC Lifting Plan - Appointed Person Inter-trade coordination - Site Manager Housekeeping; skirts, flaps, gaskets - Supervisor Platform SWL - Supervisor / Banksman	Inspections: - As per LOLER - Formal & Logged Weekly Keep clean and clear (especially before raising) Good Lighting

Best Practice

Risk Assessment Method Statement

123

CLIMBING SCREEN EXAMPLES

124

POST & PANEL + GUARDRAILS + FULL-HT NETTING

SAFE

Compliance	Competence	Comprehensive Maintenance
EN13374 >1.5m + full-height netting Layout as per Manufacturer's Instructions Containment Porosity Specified at Design Maximise captive / pre-fitted components Pre-fitted for steelwork / Cast-In for Concrete Guardrail vertical gaps < 470mm	System Design - Manufacturer Wind & Fixing Design - TWC Install/Adjust - Certified by Manufacturer / EPF Inter-trade coordination - Site Manager Tethering of tools & materials - Supervisor	Inspections: - Formal, Tagged & Logged Weekly - Following adjustment / adverse events Sterile zone & Materials tied-down Plant stop-blocks

Best Practice

Risk Assessment Method Statement

125

POST & PANEL + GUARDRAILS + FULL-HT NETTING EXAMPLES




126

POST & PANEL + GUARDRAILS MIN HT 1.5M

SAFE

Compliance	Competence	Comprehensive Maintenance
EN13374 >1.5m & Rails Layout as per Manufacturer's Instructions Containment Porosity Specified at Design Maximise captive / pre-fitted components Pre-fitted for steelwork / Cast-In for Concrete Guardrail vertical gaps < 470mm	System Design - Manufacturer Wind & Fixing Design - TWC Install/Adjust - **Certified** by Manufacturer / EPF Inter-trade coordination - Site Manager Tethering of tools & materials - Supervisor	Inspections: - Formal, Tagged & Logged Weekly - Following adjustment / adverse events Sterile zone & Materials tied-down Plant stop-blocks

127

TUBE & FITTING TRIPLE-RAIL + PANEL MIN HT 1.5M

SAFE

Compliance	Competence	Comprehensive Maintenance
EN13374 >1.5m & Panels Layout as per Manufacturer's Instructions Containment Porosity Specified at Design Maximise captive / pre-fitted components Guardrail vertical gaps < 470mm	System Design - Manufacturer Wind & Fixing Design - TWC Install/Adjust - **CISRS** Scaffolder Inter-trade coordination - Site Manager Tethering of tools & materials - Supervisor	Inspections: - Formal, Tagged & Logged Weekly - Following adjustment / adverse events Sterile zone & Materials tied-down Plant stop-blocks

128

MIN HT 1.5M EXAMPLES



129

POST & PANEL ONLY MIN HT 1.0M

SAFE

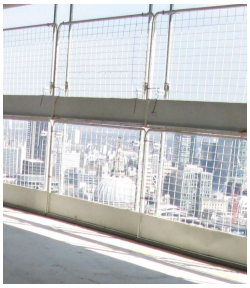
Compliance	Competence	Comprehensive Maintenance
EN13374 Layout as per Manufacturer's Instructions Containment Porosity Specified at Design Maximise captive / pre-fitted components	System Design - Manufacturer Wind & Fixing Design - TWC Install/Adjust - **Certified** by Manufacturer / EPF Inter-trade coordination - Site Manager Tethering of tools & materials - Supervisor	Inspections: - Formal, Tagged & Logged Weekly - Following adjustment / adverse events Sterile zone & Materials tied-down Plant stop-blocks

Alert

Risk Assessment Method Statement

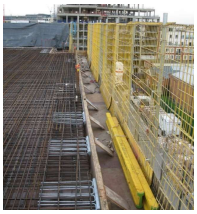
130

POST & PANEL ONLY MIN HT 1.0M EXAMPLES

131

POST & PANEL ONLY MIN HT 1.0M EXAMPLES

133

TUBE & FITTING ONLY MIN HT 1.0M

SAFE

Compliance	Competence	Comprehensive Maintenance
EN13374 Guardrail vertical gaps < 470mm	System Design - Manufacturer Wind & Fixing Design - TWC Install/Adjust - **CISRS** Scaffolder Inter-trade coordination - Site Manager Tethering of tools & materials - Supervisor	Inspections: - Formal, Tagged & Logged Weekly - Following adjustment / adverse events Sterile zone & Materials tied-down Plant stop-blocks

Alert

Risk Assessment Method Statement

134

TUBE & FITTING ONLY MIN HT 1.0M EXAMPLES



135

QUESTIONS?

136

ACCESS EQUIPMENT COMMON MANAGEMENT CONTROLS

137

OVERVIEW

Access Equipment Mgt Ctls
- **Access Scaffold**
- **High Level Access MCWP**
- **High Level AccessTSAE**

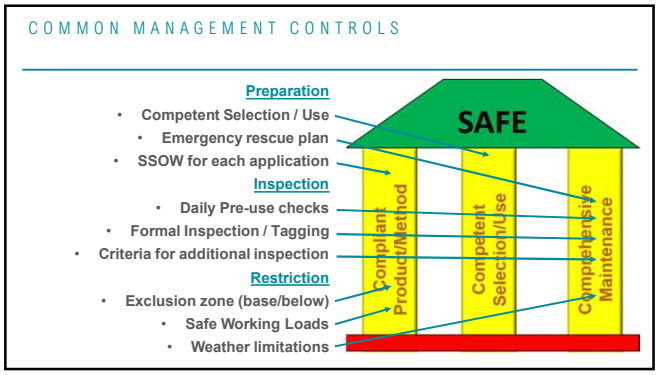
MEWPs & Low Level Mgt Ctls
- **MEWPs**

- **Power Tower / PAVs**
- **Peco / Nano**

Tower, Step, Ladders Mgt Ctls
- **Towers**
- **Podiums**
- **Delta Decks**
- **Ladders & Step Ladders**
- **Hop Ups**

138

COMMON MANAGEMENT CONTROLS



139

COMMON CONTROL MEASURES

Compliant

- SSOW (trade) for each application.
- Equipment/Method meet relevant local Standard.
- Safe Loads clearly signed (not exd).
- LOLER indicators.
- Exclusion Zone (above/below).

IPAF PASMA CPA CONSTRUCT CONCRETE STRUCTURES GROUP BSI British Standards

140

COMMON CONTROL MEASURES

Competent

SQEP ?

- Competent Selection (Mgt train).
- Competent Operation (cards).
- Competent Install, Inspection ?
- Competent Rescue

NASC National Access & Scaffolding Confederation

irata International

epf Edge Protection Federation

FASET Fall Arrest Safety Equipment Training

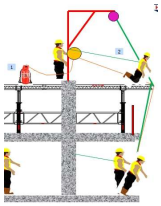
IPAF

141

COMMON CONTROL MEASURES

Comp Maint

- Emergency rescue plan.
- Daily checks (recorded?).
- Periodic TE (as required).
- Tagging.
- Operational limitations.
- Weather limitations.



142

Risk
Assessment
Method
Statement

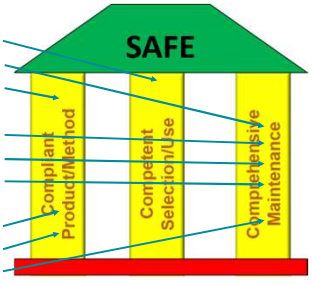
143

COMMON MANAGEMENT CONTROLS

Preparation
- Competent Selection / Use
- Emergency rescue plan
- SSOW for each application

Inspection
- Daily Pre-use checks
- Formal Inspection / Tagging
- Criteria for additional inspection

Restriction
- Exclusion zone (base/below)
- Safe Working Loads
- Weather limitations



144

QUESTIONS?

145

ACCESS EQUIPMENT SCAFFOLDING

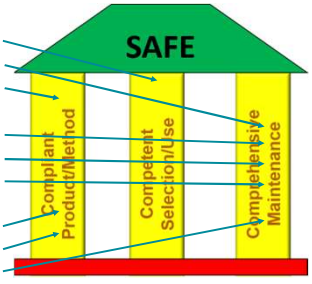
146

COMMON MANAGEMENT CONTROLS

Preparation
- Competent Selection / Use
- Emergency rescue plan
- SSOW for each application

Inspection
- Daily Pre-use checks
- Formal Inspection / Tagging
- Criteria for additional inspection

Restriction
- Exclusion zone (base/below)
- Safe Working Loads
- Weather limitations



147

ACCESS SCAFFOLD (T&F OR SYSTEM)

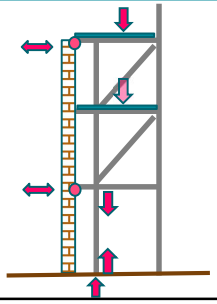
Compliant	T&F – EN 12811 System – EN 12810 Components – EN 74, EN 30, etc Load class on tags
Competent	CISRS (& System) NASC TG20 (:yy) NASC SG4 (:yy) Tethering / Fans (discussed later) AGR / PFPE / Rescue
Comp Maint	Inspection frequency / competence Footings & ties Exclusion zones Clean & clear

Best Practice

Risk Assessment Method Statement

148

KEY SCAFFOLD DATA



Load Class	Butted boards Clipped < 225 gaps
Bracing	Tethered RAMS (up/down) Handover Clean/Clear
Ties	
Leg Load	
Bearing ?	

149

COMPLIANT

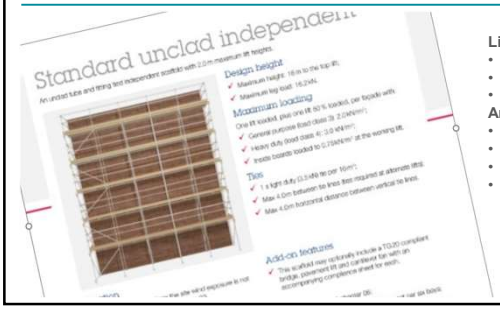
When should a Scaffold be Designed?

NASC TG20:~~13~~ 21

ALL should be designed...
A Compliance Sheet is evidence of design

150

EVIDENCED BY "COMPLIANCE SHEET"



Lists maximum:
- Height
- Loading
- Tie Spacing

And:
- Location
- Other Criteria
- Additions
- Etc....

151

COMPLIANT .. LOAD CLASSES

Four main load classes :-

• Class 1	0.75 kN/m²	Very Light Duty (or 'inspection')
• Class 2	1.5 kN/m²	Light Duty
• Class 3	2.0 kN/m²	General Purpose
• Class 4	3.0 kN/m²	Heavy Duty

153

COMPLIANT .. OTHER DETAILS

- Width
  - Number of boards (+ inside boards)
  - No minimum in Regulations (usually 600mm)
- Max Bay length
  - Depends on loading and width …
- Bracing
  - Usually every other bay… detail options
- Ties
  - Usually every other bay
  - NOTE Duty of ties

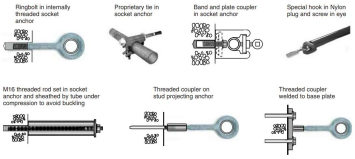
154

SCAFFOLD TIES

Three classes of tie (working load pure tension)

- Light duty 3.5kN
- Standard duty 6.1kN
- Heavy duty 12.2kN

Examples of ties



155

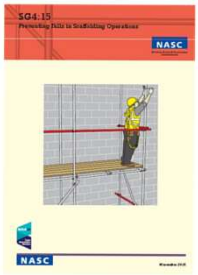
TUNNELLING .....

156

COMPETENT

SG4:15 ~~15~~ 22

November 2015



157

SCAFFOLD COLLAPSE DURING STRIKING

158

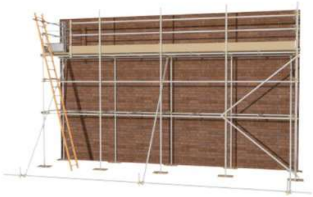
COMPLIANT SCAFFOLDING TYPES

- Tied Independent Scaffolding

159

COMPLIANT SCAFFOLDING TYPES

- Free-standing Independent Scaffolding



160

COMPLIANT
SCAFFOLDING TYPES

- Bridging with Beams

NASC

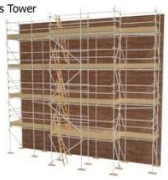
161

COMPLIANT
SCAFFOLDING TYPES

- Loading Bay

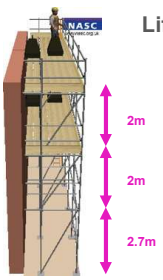
NASC

- Ladder Access Tower



162

LOADED LIFTS



Lifts to 3m !!

NASC

163

LEDGER BRACES

Every other bay.
Every lift ….

Or Readylock
(<30m)

164

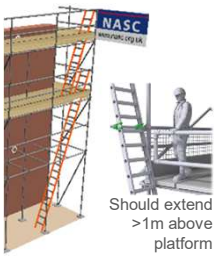
TG20 CAN INCLUDE....

Some bridges.
Some cantilevers and fans
Pavement lifts
Inside board brackets
Some loading bays
Some birdcages
Etc ….

There is still the requirement/opportunity for a full design, if outside the simple Compliance method.

165

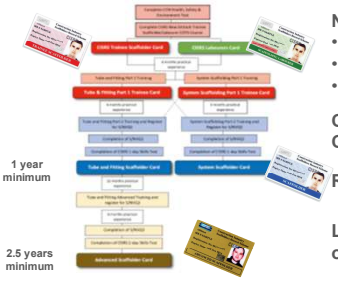
ACCESS & EGRESS



Should extend
>1m above
platform

166

COMPETENT



1 year minimum

2.5 years minimum

Note NASC Safety Guidance.
- Working From Vehicles
- Manual Handling
- Preventing Falls

Considered Trainee until CISRS and NVQ

Refresher training (5 years)

Labourers .. Work on the floor, or on completed scaffold

167

SCAFFOLDING INSPECTION OR FAMILIARISATION?

CISRS
CONSTRUCTION INDUSTRY SCAFFOLDERS RECORD SCHEME

Ask More

168

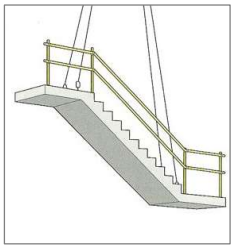
COMPETENT

SG4:15 Preventing Falls in Scaffolding Operations

Section 1	Planning for Work at Height
Section 2	Scaffolders' Safe Zone
Section 3	Other Applications
Section 4	Access and Egress
Section 5	PFPE
Section 6	Rescue

169

PLANNING ... AVOID IF POSSIBLE



170

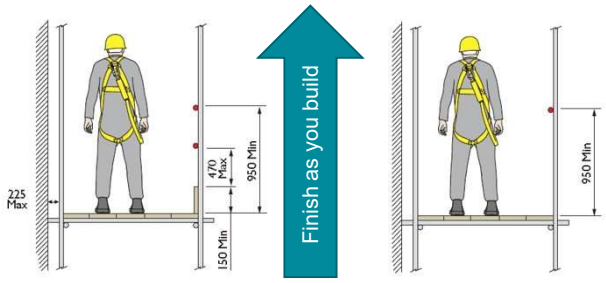
SAFE ZONE = COLLECTIVE PREVENTION

171

PFPE = MITIGATE (HEIGHT & CONSEQUENCES)

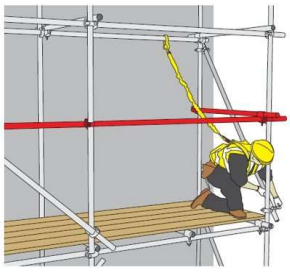
172

SCAFFOLDER'S SAFE ZONE



173

SCAFFOLDER'S SAFE ZONE



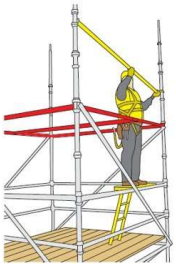
174

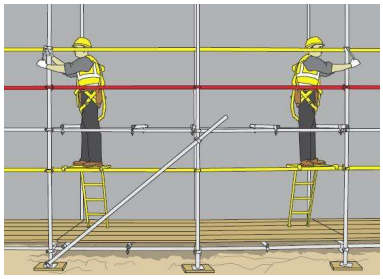
AGR PRINCIPLE

Advanced
Guard
Rail

175

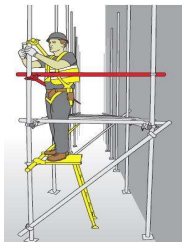
SCAFFOLDER'S SAFE ZONE

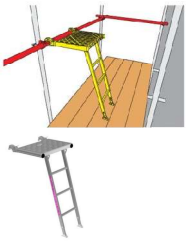




176

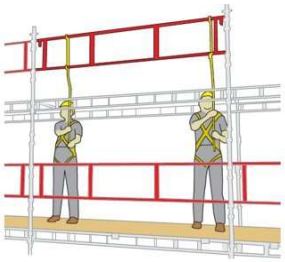
SCAFF STEP





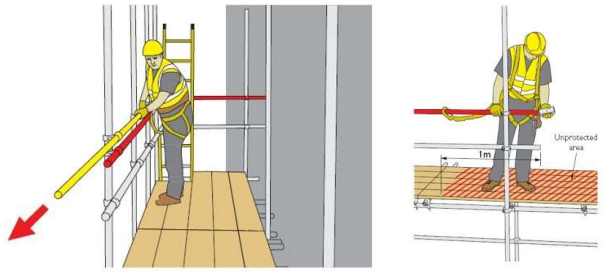
177

AGR OPTIONS



178

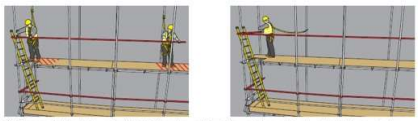
AGR HORIZONTALLY



179

PROTECTED TRAVERSE

(i) To traverse, double lanyards are used to remain continually attached, ideally to the inner standards or ledgers.

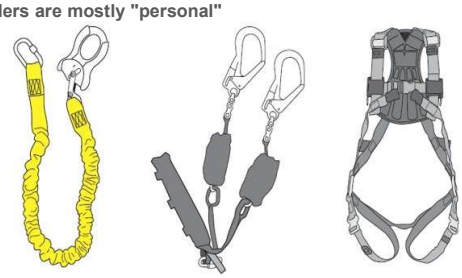


(ii) Progressively install guardrails (including stop-ends etc.) remaining continually attached to create the **scaffolders' safe zone**.

180

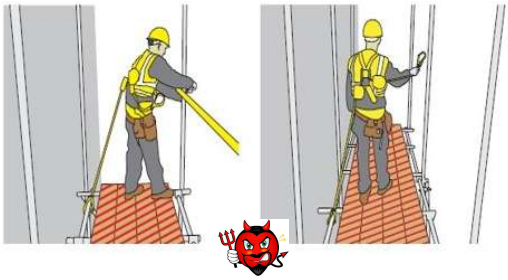
SCAFFOLDERS'S PFPE

Scaffolders are mostly "personal"



181

FRUSTRATION WITH DETAILS



182

COMP MAINT

Handover ?
Inspection Frequency ?
Recording ?
Ties ?

183

MACE INITIATIVES

"Elimin8"
from GKR

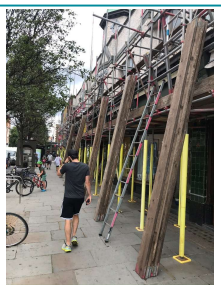
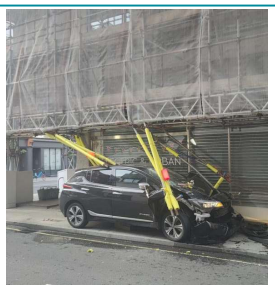
Can everything be tethered?...

184

SAFE MATERIALS STORAGE
VULNERABLE SHEETING


185

INCOMPETENCE

186

MACE CHECKLIST

Scaffold co-ordinator checklist

	Name of Company	Package Number	Supply Chain Assured	Yellow Jacket License Holder	Design / System Scaffold	Scaffold Location & Marked up Site Drawing	Design Drawing & calculation Ref.	3rd party design checks complete	Erection / removal RAMS in place	Start Date	Handover certs complete	Scaffold inspection Tags utilised	Permit to strike	Completion Date
1														
2														
3														
4														
5														
6														
7														
8														
9														
10														

187

QUESTIONS?

188

ACCESS EQUIPMENT

MEWP
(MOBILE ELEVATED WORK PLATFORM)

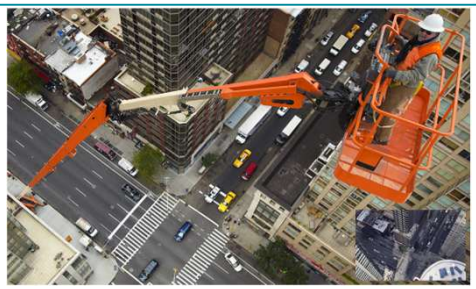
PAV
(PUSH AROUND VERTICAL)

189

MEWP EXAMPLES

190

MEWP OBSERVATIONS



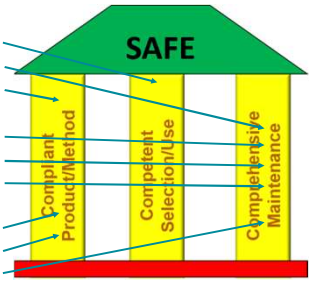
191

COMMON MANAGEMENT CONTROLS

Preparation
- Competent Selection / Use
- Emergency rescue plan
- SSOW for each application

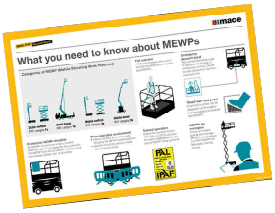
Inspection
- Daily Pre-use checks
- Formal Inspection / Tagging
- Criteria for additional inspection

Restriction
- Exclusion zone (base/below)
- Safe Working Loads
- Weather limitations



192

MEWP



193

PAV
(PUSH AROUND VERTICAL)

Less than 5m Reach height?

194

CCC-MEWPS & PAVS

Compliant	Capacity marked. Lifting plan (task). Rescue plan.	Best Practice
Competent	Competent Selection. IPAF MEWPs for Mgrs. Competent rescue. Zones / Stop blocks.	Risk Assessment Method Statement
Comp Maint	Regular inspection (daily). LOLER Displayed on machine.	

195

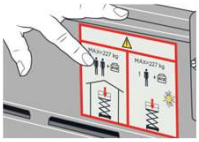
CCC-MEWPS

Compliant	EN 280 / BS 8460 : 2017 Capacity indicated CE marked anti entrapment (Boom) MEWPs for Mgt	Best Practice
Competent	Lifting plan IPAF/PAL (PAL +) Specific operative/task only Rescue plan Exclusion / Wheel stops Tethering.	Risk Assessment Method Statement
Comp Maint	Daily Inspt (tag) Bearing LOLER	

196

MANAGER COMPETENCY

MEWPs for Managers?

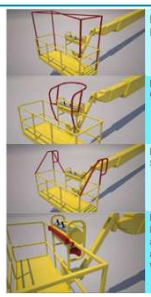


HSE

197

COMPLIANT:

2nd Guarding… Entrapment.



Physical Barrier
Fixed Full Cage Structure

Physical Barrier
Operator Protective Structure

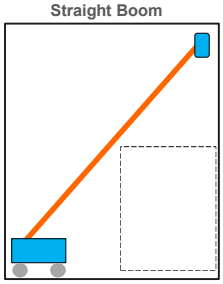
Physical Barrier
Side Protection Barriers

Pressure Sensing Device
Pressure sensing bar – when activated, it stops further movement and activities audible and visual warning devices

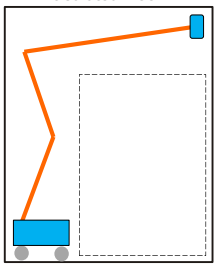
198

CHERRY PICKER:

Straight Boom

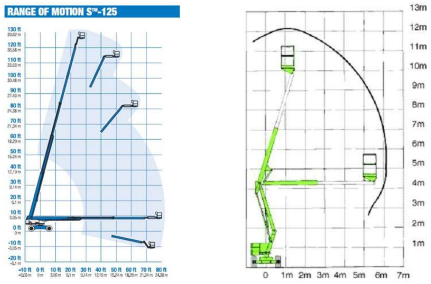


Articulated Boom



199

CHERRY PICKER:



200

CHERRY PICKER:

201

CHERRY PICKER:

202

CHERRY PICKER:

203

CHERRY PICKER:

204

SCISSOR LIFT:

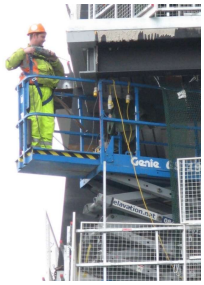
205

SCISSOR LIFT:



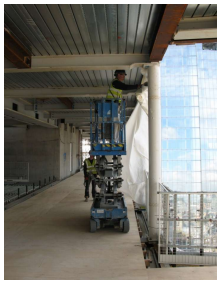
206

WHAT DO YOU THINK?



207

OBSERVATIONS?

208

OBSERVATIONS?

209

COMPETENT:

Specifics listed on the back
1a, 1b (Static) + ?
3a, 3b (mobile) + ?
PAV
Special (Mgt, Mast Climbers …)
Etc …..

210

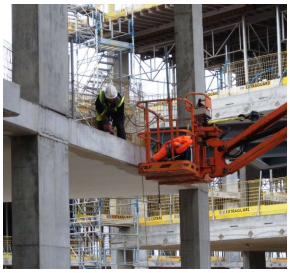
RESTRAINT IN A MEWP

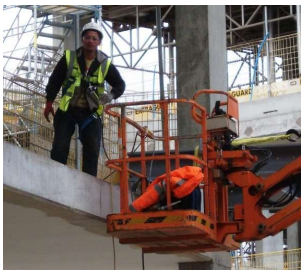
Boom Type Platforms
It is strongly recommended that
- a full body harness with
- an adjustable lanyard (used to provide work restraint and adjusted to be as short as possible)

is used when working from a boom type Mobile Elevating Work Platform (MEWP).
It may contain an energy absorber.

211

CHERRY PICKER:





212

WHAT DO YOU THINK?

213

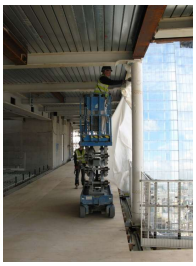
COMPREHENSIVE MAINTENANCE: RESCUE

Additional Competence on the GROUND.

214

COMPREHENSIVE MAINTENANCE:

Exclusion,
Tethering,
Wheel stops,
Wind?



215

COMPREHENSIVE MAINTENANCE

Daily Inspection
6 month LOLER

216

PAVS: (INCLUDING PECO)

Compliant

EN 280 (power tower)
MEWPs for Mgt
Capacity clear
Bearing (raised floor)
< 5m working height
Internal flat only (unless rated)

Best Practice

Competent

Lifting plan
IPAF PAV (or 1a/3a with familiarisation)
Rescue/Lower plan
Exclusion / Wheel stops
Tethering.

Risk Assessment Method Statement

Comp Maint

Daily Op insp (tag)
LOLER.

217

COMPLIANT:

No specific Standard as yet but they meet “others” (EN 280)

218

COMPLIANT:

Internal Use Only!

High bearing pressure?

219

COMPLIANT:

PAV course/card

Considered adequate ?...
1a, 1b, 3a, 3b

MEWPs for Managers
(contractors who use)

220

COMPETENT:

- Wheel stops
- Wind
- Over-reaching
- Access to work area
- Bearing pressure
- Exclusion
- Etc..

221

COMPREHENSIVE MAINTENANCE:

Capacity signs
Emergency "lower"
Daily Op inspect
6 month LOLER

222

OBSERVATIONS?

223

QUESTIONS?

224

ACCESS EQUIPMENT TOWERS & PODIUMS

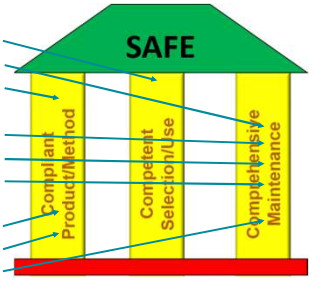
237

COMMON MANAGEMENT CONTROLS

Preparation
- Competent Selection / Use
- Emergency rescue plan
- SSOW for each application

Inspection
- Daily Pre-use checks
- Formal Inspection / Tagging
- Criteria for additional inspection

Restriction
- Exclusion zone (base/below)
- Safe Working Loads
- Weather limitations

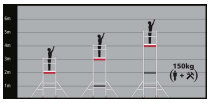


238

LOW-LEVEL WORK PLATFORMS

"PASMA" Tower
EN 1004

Max platform heights:
Indoor: 12m
Outdoor: 8m



"Working Height"
usually includes
2m of human reach

Podium Step
BS 8620 (or PAS 250)

2.5m
max

239

TOWER CCC

Compliant

EN 1004
AGR preferred to 3T
Legs/Riggers as per manufacturer
Platform capacity marked (SWL)
Add stability in wind (<2m edge)

Caution

Competent

PASMA (erect/adjust/inspect)
Users?
Always leave SAFE (up/down) locked
Toe Boards
Tethering
Don't overload

Risk
Assessment
Method
Statement

Comp Maint

Daily pre-use PASMA
Weekly PASMA (tagged)

240

TOWER STANDARDS

BS EN 1004-1:2020
Mobile access and working towers
made of prefabricated elements -
Materials, dimensions, design loads, safety and performance requirements

BS EN 1004-2:2021
Mobile access and working towers
made of prefabricated elements –
Rules and guidelines for the preparation of an instruction manual

241

TOWER TRAINING

PASMA
Prefabricated Access Suppliers and Manufact Association

(Category on Cards)

Basic Tower (T)

On Stairs (A5)

Cantilever (A6)

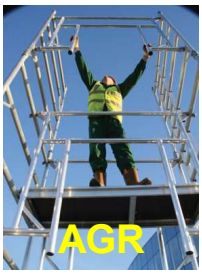
Bridges (A7)

Linked (A8)

Large Deck (A9)

242

TOWER ASSEMBLY TECHNIQUES



AGR
Advanced Guard Rail
Preferred

Technique depends on tower design

Choice at procurement!

3T
Through The Trapdoor
Prone to mis-use & abuse

243

TOWER ASSEMBLY DETAILS

244

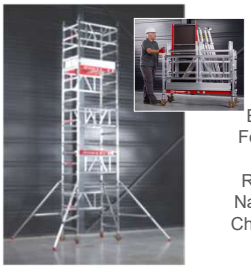
TOWER WIDTH & STABILITY

Choose widest for task space

Use Outriggers whenever tower is tall enough to fit

245

SINGLE PERSON TOWERS

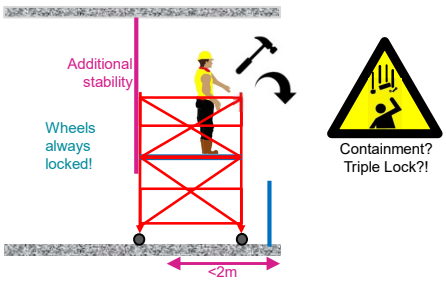


Easier to handle
Fold-away options

Reduced Stability
Narrower Platforms
Challenging Rescue

246

CLOSE TO THE EDGE?



Containment?
Triple Lock?!

247

COMPETENCY LEVELS

Levels (on cards):

U = User (normally acceptable)
I = Instructor
M = Managers
S = Specialist (formerly R = Rigger)

248

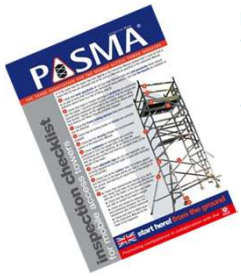
COMPETENT

PASMA (Users?)
Always leave SAFE
Toe Boards
Tethering
Loading Limits
Locked

Risk
Assessment
Method
Statement

249

COMPREHENSIVE MAINTENANCE



Must be inspected:

- **Every time**
  - **Assembled, or**
  - **Altered (significantly)**
- **Every 7 days**

250

OBSERVATIONS ?

- Outriggers
- Deck spacing
- Toe boards
- Bracing positions
- Proximity to glass
- Ladder alignment (outside tower)

251

PODIUM STEPS

Compliant

BS 8620 (PAS 250)
Max 2 wheel
Podiums that do not require outriggers.
Fold out preferred
Erected to Manuf Inst.

Caution

Competent

PASMA (<2.5m)
Clear and Level
Folding preferred
Legs trip hazard ?
Leave SAFE (up /down) Locked

Risk Assessment Method Statement

Comp Maint

Use PASMA check list
Daily pre-use
Weekly (tag)

252

COMPLIANT

Opportunity ?

253

COMPLIANT



BS 8620 (PAS 250)

Max 2 wheels
Max 2.5m high
Prefer Fold-Out

254

BASIC REQUIREMENTS

BS8620 Stability Check
- 0.75kN on platform
- Legs attached
- 0.30kN push at platform

Toe board required?
WaH Regs - Suitable and sufficient steps to prevent falling objects liable to cause injury
Depends on task, tools & environment

255

COMPETENT

Specific < 2.5m course

Card remains the property of PASMA

Report any dangerous or inappropriate activity by the cardholder

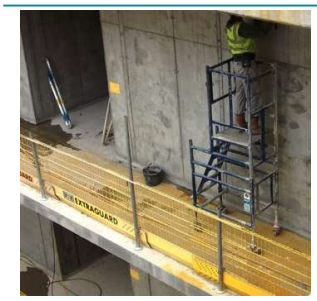
256

COMPREHENSIVE MAINTENANCE

Must be inspected:
- **BEOOU**
- **Every 7 days & tagged**

257

OBSERVATIONS?



- **Outriggers** (in view!)
- **Other means of stabilising** (tied or soffit pole)
- **4 x wheels**
- **Wheel jacks over-extended** (one should always be minimum)
- **Bottom step height**
- **Edge Protection**
- **Containment** (Triple Lock)

258

OBSERVATIONS?

Protecting finishes but can't inspect

Platform too high
No Outriggers
Top step reach
Bracing
Proximity to Riser

259

QUESTIONS?

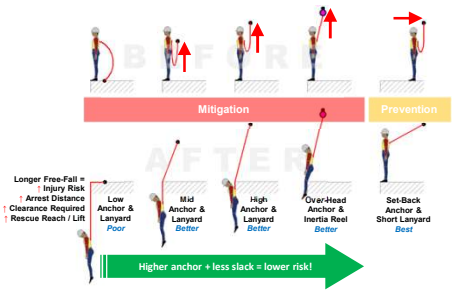
260

PFPE

(PERSONAL FALL PROTECTION EQUIPMENT)

261

MITIGATION & PREVENTION



262

PERSONAL FALL PREVENTION / "WORK RESTRAINT"

A fall CANNOT happen .... it is PREVENTED .....

Person is prevented from getting into a position from which to fall.

263

PFPE - PREVENTION WORK RESTRAINT

Compliant
Prevent Falls Occurring
CE-Marked Equipment
Certified Anchors (Design & Install)

Caution

Competent
PFPE (specific)
Position / ID
Fixed (Passive) better than Adjustable (Active)
Exclusion Zones / Tethering
Site Signs

Risk Assessment Method Statement

Comp Maint
Visual & Tactile (BEOOU)
Formal (3-6 monthly)
Tagged
Storage

264

PFPE – COMPLIANCE STANDARDS

EN 353-1 - Rigid Line Arresters
EN 353-2 - Flexible Line Arresters
EN 354 - Lanyards
EN 355 - Energy Absorbers
EN 358 - Work Positioning Lanyards
EN 360 - Retractable Fall Arresters
EN 361 - Full Body Harnesses
EN 362 - Connectors
EN 795 - Anchor Devices
BS 8513 - Twin-Legged Lanyards

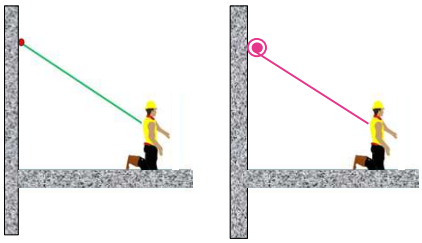
EN 363 - Fall Protection Systems
EN 364 - Test Methods
EN 365 - Instructions, Examination, Marking
BS 7883 - Design, Installation, Inspection
BS 8437 - Selection, Use, Maintenance
BS 8454 - WAH Training Delivery
BS 8610 - Anchor Systems Specification

CE BREXIT UKCA

265

PFPE-COMPETENCE
EQUIPMENT SELECTION

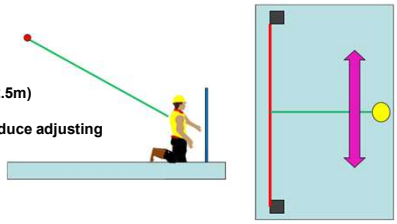
Not just about equipment …
… but also how it is about how it is used!



266

PFPE-COMPETENCE
ANCHOR POSITIONING

Anchor Position:
- Set-back from edge (>2.5m)
- High – but reachable
- Parallel to Edge – to reduce adjusting

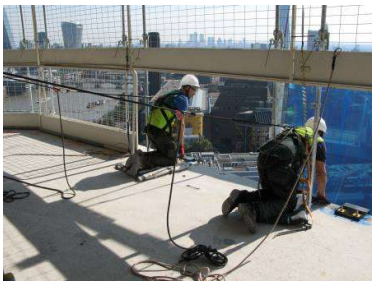


267

PFPE-COMPETENCE
UNSAFE PRACTICE

268

PFPE-COMPETENCE
GOOD PRACTICE

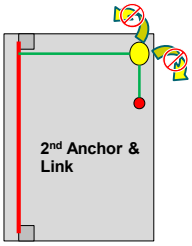


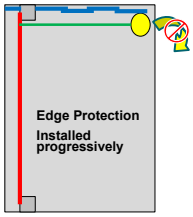
269

PFPE-COMPETENCE
PERMANENT ROOF ANCHOR

270

PFPE-COMPETENCE
WORK RESTRAINT IN CORNERS

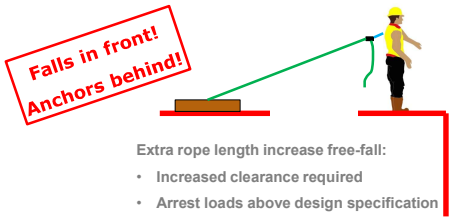




271

PFPE –COMPETENCE VOIDS

Is this effective fall prevention?



Extra rope length increase free-fall:

- **Increased clearance required**
- **Arrest loads above design specification**

272

PFPE-COMPETENCE UNSAFE HARNESS USE

273

PFPE-COMPETENCE NON-USERS

Not just the Operative …

ALL who influence Choice & Use of equipment

- Competency of Procurement & Suppliers
- Planning of tasks
- Inspection & maintenance

274

PFPE – FALL MITIGATION/ FALL ARREST

Compliant	Over-Head Anchor & Inertia Reel Higher Anchor & Shorter Lanyard CE-Marked Equipment Certified Anchors (Design & Install)
Competent	PFPE (specific) Rescue (specific) Clearance & Swings Exclusion Zones/ Tethering Site Signs
Comp Maint	Visual & Tactile (BEOOU) Formal (3-6 monthly) Tagged Storage

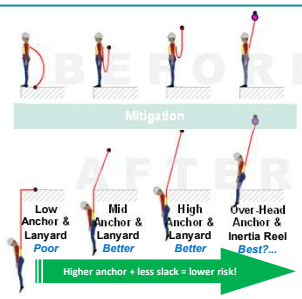
Alert

Risk Assessment Method Statement

275

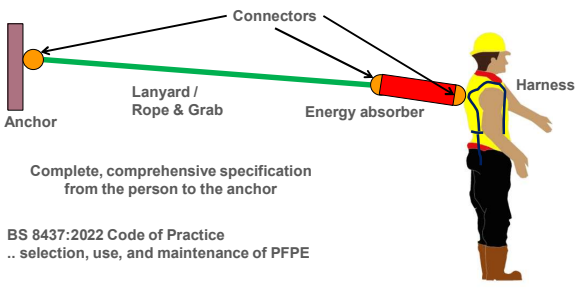
PFPE-COMPETENCE AFFECT OF ANCHOR POSITION

Equipment standards are same for fall arrest & work restraint



276

PFPE-COMPLIANCE SYSTEM ELEMENTS



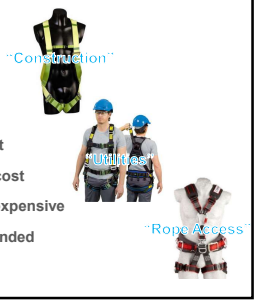
Complete, comprehensive specification from the person to the anchor

BS 8437:2022 Code of Practice
.. selection, use, and maintenance of PFPE

277

PFPE-COMPETENCE
HARNESS SELECTION

- Many types available
- All suitable for Arrest & Restraint
- All need to be fitted correctly
- General categories:
  - Construction – flexible / light / simple / low cost
  - Utilities – stiffer / heavier / more options / mid cost
  - Rope Access – supportive / heavy / complex / expensive
- All have rear (Dorsal) points – generally recommended
- Some also have front (Sternal) points



278

PFPE-COMPETENCE
DORSAL EXTENDERS

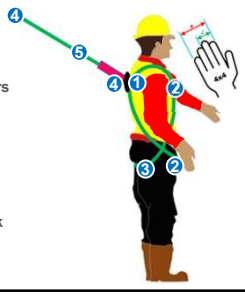
- Reaching rear ("Dorsal") point of correctly-fitted harness is difficult
- Extender allows easier, safe self-attachment
- Fitted to Dorsal Point (factory or retro-fit)
- Length 300mm to 500mm (to minimise slack)

279

PFPE-COMPETENCE
HARNESS CHECKS

1. Rear Attachment Point
   Condition & Position
2. Chest & Thigh Straps
   Tight (2 to 4 fingers)
   Cannot pull off shoulders
   Comfortable at groin
3. Rear Strap
   Beneath back-side
4. Connectors
   All Locked
5. Link to Anchor
   Short with minimal slack

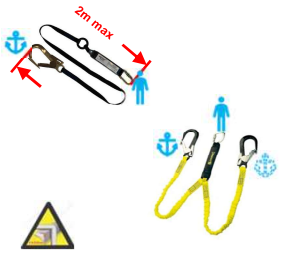
1 + 2 + 3 takes time & effort



280

PFPE-COMPETENCE
LANYARD SELECTION

- Maximum length 2m (including energy absorber)
- Energy absorber always justified
- Always have energy absorber at user end (not anchor)
- Choice of connectors at both ends
- Usually webbing (can be rope)
- Twin tail (single energy absorber)
- Check if rated for edges



281

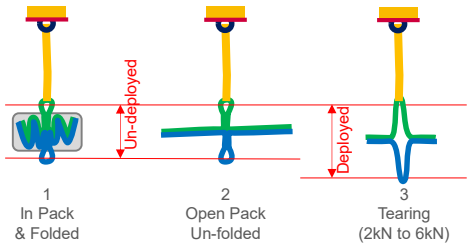
PFPE-COMPLIANCE
ENERGY ABSORBERS

- Many types depending on system
- "Plastic" deformation, not elastic, so no "bounce"
- High initiation force (2kN = 200kg)
- Limited peak force (6kN = 600kg)
- Will not deploy accidentally, can be used in Restraint systems…

"Its better to have one & not need it, than to need one & not have it!"

282

PFPE-COMPLIANCE
LANYARD ENERGY ABSORBERS



283

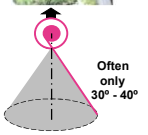
PFPE-COMPETENCE
ROPE & GRAB SYSTEMS

- Manually adjusted to set length
- No energy absorber…
  No fall arrest!
- Good for WORK RESTRAINT
- Most designed only for vertical use
- Ensure rated for horizontal use
  & over edges

284

PFPE-COMPETENCE
RETRACTABLE FALL ARRESTERS

- aka: Inertia Reel / Fall Arrest Block /
  SRL (Self-Retracting Life Line)
- Range of lengths & line materials
- Limited safe (tested) application angle
- Most only rated for overhead use
- Some additionally tested for horizontal & over-
  edge use, but unusual & expensive

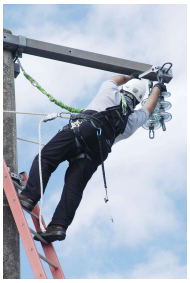
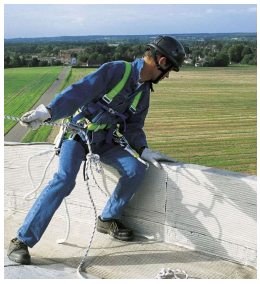


285

PFPE-COMPETENCE
CONNECTORS

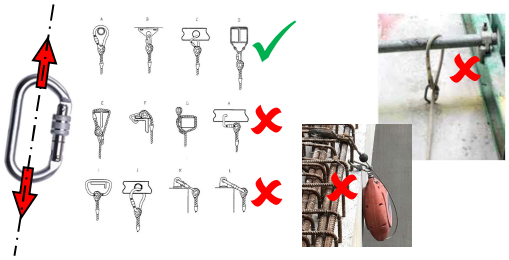
286

PFPE-COMPETENCE
POSITIONING VS RESTRAINT

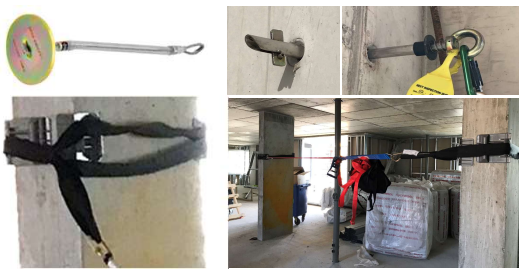
287

PFPE-COMPETENCE
ANCHOR SELECTION



288

PFPE-COMPETENCE
TEMPORARY ANCHORS



289

PFPE-COMPETENCE
ANCHOR STRENGTH

- **Arrest Force = 6kN**
  (limited by Energy Absorber)

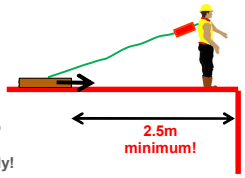
- **Safety Factors**
  = 2.0 (EN) Temporary, or
  = 2.5 (BS) Permanent
- **Required Strength**
  = 2.0 x 6 = **12kN** (1200kg) for EN
  = 2.5 x 6 = 15kN (1500kg) for BS
- **Typical car weight = 12kN**
  (Ford Focus)

290

PFPE-COMPETENCE
DEADWEIGHT ANCHORS

Comply with EN 795 – Type E

Platform surface must be:
- **Tested with anchor (wet & dry)**
- **Max 5° pitch**
- **Clean**
- **Not frozen**



Allowed to slide 1m & still comply!

291

PFPE-COMPREHENSIVE MAINTENANCE
FALL INDICATORS?

292

PFPE-COMPREHENSIVE MAINTENANCE USER INSPECTIONS

293

HARNESS SUSPENSION

Time critical

- Medical issues can develop for 20% within 10 minutes
- Lack of muscle movement affects circulation (orthostatic intolerance)
- Blood collects in feet & legs (Venus pooling)
- Lack of oxygen to brain leads to dizziness (Pre-syncope)

Emergency services too slow
(& medical attention probably not required after prompt rescue)

Site-based plan required

294

RESCUE PLANNING

FIRE RISK

FALL RISK

Keep the emergency kit VERY close!

Practice → Experience → Competence

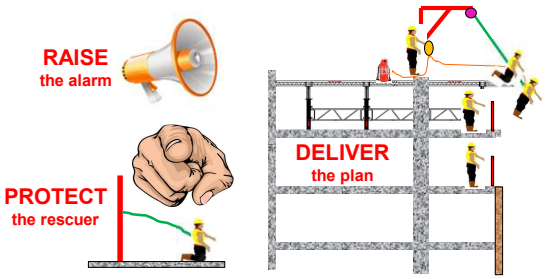
Fully Planned:
Location & Task Specific
Detailed in Task RAMS
DOWNWARDS to 'safe place'
Aim for 10mins

Rescue Ready:
Rescue kit close by
Always >1 person in harnesses

Practice:
Regular toolbox talks
(on the ground – low risk only!)
Spare kit for training
(if main kit 'sealed')

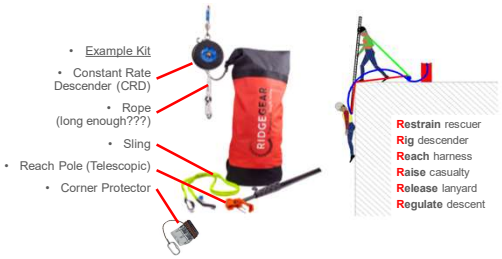
295

RESCUE
RPD(RAISE-PROTECT-DELIVER)



296

RESCUE
EXAMPLE KIT & PLAN



297

PFPE
MANAGEMENT CONTROLS:

Risk
Assessment
Method
Statement

- Signage – "Use PFPE"
- Anchor – Compliant Design & Specification (EN795)
  Anchor – Competent & Certified Installation (BS7883)
- Exclusion Zones
- Tethering
- Competency – Use & Rescue
- Rescue Planning
- Rescue Practice – Low risk

Caution
Restraint
Fall Prevention

Alert
Fall Arrest
Min Ht & Consq

298

QUESTIONS?

299

OVERHEAD PROTECTION

300

OVERHEAD PROTECTION

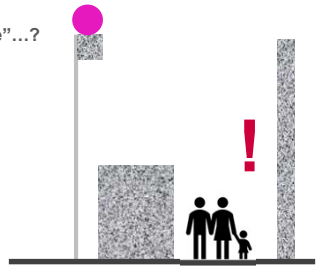
Whom from What & How ?

301

KINETIC ENERGY

- What is the “major” concern?
- What are we trying to “capture”…?

Kinetic Energy!



302

SCAFFOLD FAN

303

SAFETY NET

304

FANS-CCC
NETS & SCAFFOLD

Compliant

BS EN 1263 (Nets)
SG34:17 (new)
Local authority requirements
EP must be in place

Best Practice

Competent

FASET/Manufacturer Training
CISRS / SG4:15.
Design load / Scaffold capacity..
TWC involvement

Risk Assessment Method Statement

Comp Maint

Free of Debris.
7 day inspection.
Recorded.
Lighting etc (tunnels).

305

NETS-COMPLIANT

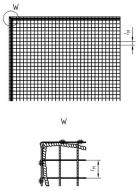
EN 1263 – Safety Nets
- Part 1 - Product Performance, (test, and maintenance)
- Part 2 - Positioning Limits (rigging)

FASET Best Practice Guidance

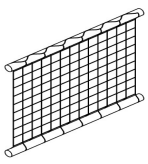
BS 8411 : 2007
Code of Practice for Safety Nets on Construction Sites

306

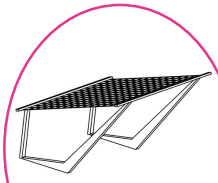
NETS-SYSTEMS



System S
Safety Net with border rope to be fitted to suitable structure



System U
Safety Net attached to supporting frame for vertical use

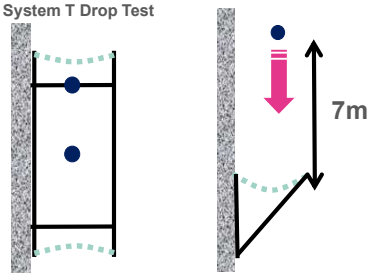


System T
Safety Net attached to brackets for horizontal use

307

NETS-DROP TESTS

System T Drop Test



308

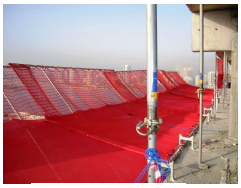
NETS-
LABELS & TEST CORDS

Label:
EN 1263-1 – S – A2 _ Q100 – 18 x 15

- Year/month (first in service)
- Test Cord Min
- Manufacturers Identification
- Serial Number (also on test meshes)

309

NETS-LAYERED



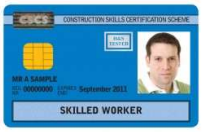
Mesh density :-

- 100 x 100
- 60 x 60
- 20 x 20
- Debris

310

NETS-COMPETENCY

FASET
Fall Arrest Safety Equipment Training



NVQ L2

- Work unsupervised
- Handover
- Supervise

- Work under supervision

311

NETS-INSTALLATION TRAINING

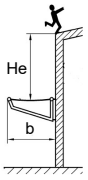
312

NETS-INSTALLATION ISSUES

- Access? • **Working on the edge?**
- Below? • **Exclusion Zones** (how high does that work?)
- Tethers? • **Tools plus components & fixings Scaffold tubes?**
- Interfaces? • **Edge Protection, Cladding, etc …**
- Loading? • **Temporary Works / Scaffold**

313

NETS-
FALL ARREST REQUIREMENTS



maximum fall height

He	≤ 1.0m	≤ 3.0m	≤ 6.0m
b	≥ 2.0m	≥ 2.5m	≥ 3.0m

minimum width

314

NETS-
INSTALLATION ERRORS

315

NETS-
CAPABILITY EXAMPLE

- Mr Rahman fell from 8th floor
- Into Safety Net Fan on 4th floor
- Fall of 15m
- Unknown weight

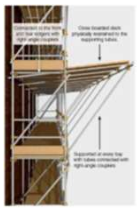
316

NETS - COMPREHENSIVE MAINTENANCE

- Inspection > 7 days? (recorded)
- Keep clear (hats, ply, concrete)
- Check fittings (loosen in wind)
- Tie up in high wind
- (>25MPH, crane down)

317

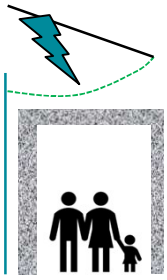
SCAFFOLD FANS



318

FANS, DECKS & TUNNELS

Kinetic Energy ?



319

OBSERVATIONS?

320

FANS - PERFORMANCE

Guidance on Protecting the Public:
HSE - HSG 151
NASC - SG 34

NASC

HSE

Mostly relates to actual "scaffold" .. But has some use.

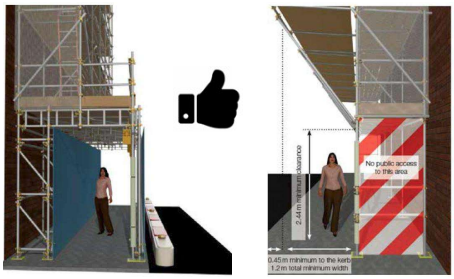
Local Authority requirements

321

LACK OF HAZARD AWARENESS

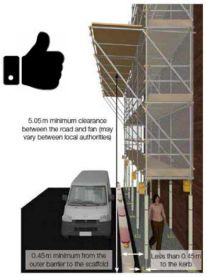
322

PEDESTRIAN PROTECTION



323

VEHICLE CLEARANCE & PAVEMENT ISSSUES



Consider the following:

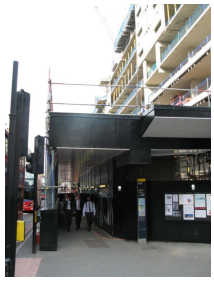
- **Disabled & Buggies / Prams**
- **Children-Proof**
- **Lighting** (incl. emergency)
- **Snagging on sharps**
- **Earthing**
- **Mugging**
- **Escape**
- **Underground services**
- **Drainage**

etc…

LA
Pavement Licence

324

PUBLIC PROTECTION



325

PUBLIC PROTECTION

HSE Guidance on "protecting the public".
Local authority standards?

326

OBSERVATIONS?

- **Gaps Overhead**
- **No lighting**
- **Snagging**
- **Climbable**
- **Trip Hazards**
- **No collision barrier**

327

QUESTIONS?

328

VOID PROTECTION

329

VOID PROTECTION

Compliant

No specific Standard
Load bearing !!
TW Eng / Tworks BS 5975
New designs .. Proper covers
Max load needed (pics/kgs).
MACE Tech Note E16

Best Practice

Competent

Temp Wks Designer
Warning signs (capacity)
Nom Person (mgt)
Riser Coordination meetings
Installation equipment needed

Risk Assessment Method Statement

Comp Maint

Formal Weekly.
Recorded
Signs (pics/numbers)

330

COMPLIANT

Temp Wks Approval ?
HSE Guidance ….

Loading ? (Significant)
Wheels, pods, machines ….
Load factor (often 1.5)
Point load / UDL ?
Bearing (all sides ?)
Secured !!
Temp access hatches, etc ….
Signs

331

COMPLIANT

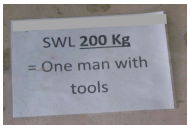
Proprietary load-bearing deck system ?
(provision made in support surface ?)
(designed/selected for the load?)
(fire stopped?)

Best Practice

Inspection tag system

332

COMPLIANT



333

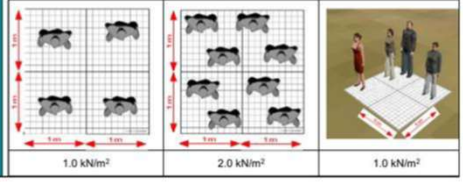
TECH NOTE E 16

Loading intensity:

Imagine a room with a grid of 1m² drawn on the floor, and if we had one operative stood in each 1m square – then you'd have a floor load of 100kg per square metre or 1.0 kN/m².

Similarly, if you then had two operatives stood in each square metre, then it would be 200kg per square metre or 2.0 kN/m². (as shown on central image below).

Noting that people and items move within a space, these loads are looked at as an average, thus in the image (right), the average loading is 1.0 kN/m².



334

WITH VEHICLES .. DIFFICULT TO SIGN ?




335

OBSERVATION ?

336

OBSERVATION ?

337

OBSERVATION ?

338

WHY NOT LEARN FROM SCAFFOLDING?...

339

QUESTIONS?

340

ACCESS EQUIPMENT

MCWP
(MAST CLIMBING WORK PLATFORMS)

TSAE
(TEMPORARY SUSPENDED ACCESS EQUIPMENT)

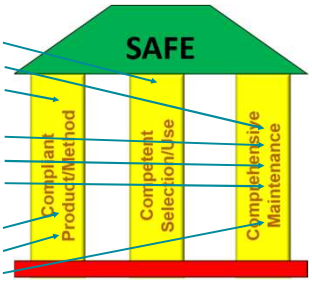
341

COMMON MANAGEMENT CONTROLS

Preparation
- Competent Selection / Use
- Emergency rescue plan
- SSOW for each application

Inspection
- Daily Pre-use checks
- Formal Inspection / Tagging
- Criteria for additional inspection

Restriction
- Exclusion zone (base/below)
- Safe Working Loads
- Weather limitations



342

MCWP

A Work Platform
NOT a hoist

343

TSAE

A cradle or work platform.

344

AE : MCWP

Compliant

BS 7981 (install, maint, TE)
BS EN 1495
Rescue RAMS
Exclusion

Competent

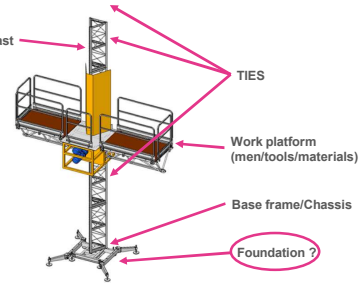
Operator train (IPAF)
Supplier/Manuf (demo)
Inspector (daily)
Temp Wks (Wind)
Debris
PFPE (RAMS)

Comp Maint

Daily pre-use
Specific maint
LOLER
Left clean clear

345

COMPLIANT: MCWP ELEMENTS



346

MCWP - COMPLIANCE

BS7981:2017 - Code of practice
installation, maintenance, thorough examination & safe use of MCWPs

- **Hazards**
- Specification, installation planning, erection and dismantling
- **Management and control**
- Personnel and training
- **Planning of the installation**
- Siting
- **Installation**
- Operation, use, maintenance and inspection
- **Thorough examination and testing**
- Safety at the work site

347

MCWP - COMPLIANCE

BS EN 1495:1997+A2:2009
Lifting platforms. Mast climbing work platforms

- List of hazards
- **Safety requirements and/or measures**
- Verification of the safety requirements and/or measures
- **Information for use**

348

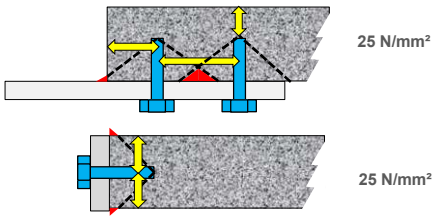
OBSERVATIONS?

349

OBSERVATIONS?

350

TIES



Fixing Type, Edge Distance, Proximity, Thickness, and Age of base material … **ALL impact capacity**

351

COMPLIANT:

Risk
Assessment
Method
Statement

Position
Footing/ties
Capacity/Task/Activity
Access (internal?)
More masts .. Interlocks
Exclusion / Protection
Mis-use
Power
Weather / Wind
Inspection
Additional ….

352

COMPLIANT : MACE REQUIREMENTS

- Limit switches
- Mast Proximity switches
- Levelling system (PFPE … RAMS)
- Stop button, Direction controls (?)
- Gate interlock
- Manual descent & Overspeed brake
- Rescue RAMS
- Max load sign (icons ?)
- Signed Exclusion zone
- Tethering
- Anemometer … (set wind limits)
- Prevent unauthorised use …

Risk
Assessment
Method
Statement

353

OBSERVATIONS?

354

OBSERVATIONS?

355

COMPETENT: BS 7981

"Suitably" Qualified Person (knowledge/experience/training)

- Supplier Competent Person
- User Competent Person
- Installer
- Demonstrator
- User/Operator

IPAF Guidelines for the Safe Use of Mast Climbing Work Platforms

BS 7981:2017

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

356

COMPETENT:

Risk Assessment Method Statement

Installers/Operators/Demonstrators/Inspectors

357

COMPETENCE :

358

COMPREHENSIVE MAINTENANCE:

- TE prior to 1st use after install
  Frequent Inspection / Testing
- Daily Pre-Use Inspection
  User Appointed Person
- LOLER (MACE) / 3 Month (BS)
- Inspection following In-Service Maintenance
  As required by Manufacturer / Installer

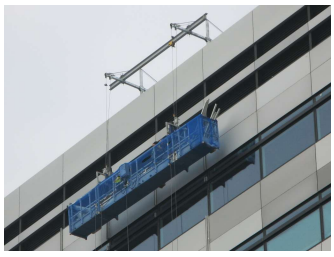
Handover ?

Check Sheet ?

359

TSAE

A cradle or work platform.



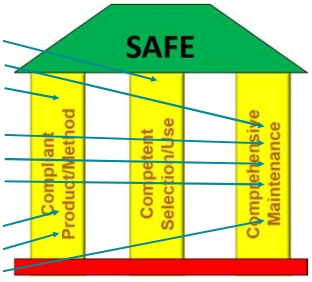
360

COMMON MANAGEMENT CONTROLS

Preparation
- Competent Selection / Use
- Emergency rescue plan
- SSOW for each application

Inspection
- Daily Pre-use checks
- Formal Inspection / Tagging
- Criteria for additional inspection

Restriction
- Exclusion zone (base/below)
- Safe Working Loads
- Weather limitations



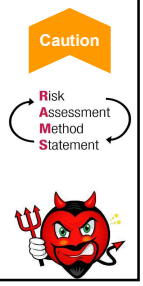
361

AE : TSAE

Compliant
BS 5974
LOLER / TE
Task RAMS
Exclusion / access deck / locked anchors wts

Competent
User Appt Person
Familiarity training for all
Supplier/ Manufacturer (demo)
Rated load
TWC Design (Wind / Debris)
PFPE (RAMS) Rescue
Anemometer

Comp Maint
Inspector (daily)
Daily pre-use
Specific maint
LOLER
Left free clear



362

COMPLIANT:

TSAE

363

TSAE - COMPLIANCE

BS 5974:2017 - Planning, design, setting up and use of temporary suspended access equipment. Code of practice

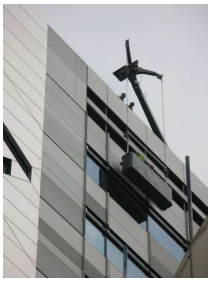
- Identifying hazards
- Planning & info exchange
- Responsibilities
- Health and safety
- Types of TSAE
- Materials & components
- Overturning & righting
- Design criteria
- Components & WLL
- Electrical requirements
- Protection against lightning
- Installation, commissioning, handover & dismantling
- Maintenance, thorough examination and testing
- Using TSAE
- Care in storage
- Personnel and training

364

OBSERVATIONS?

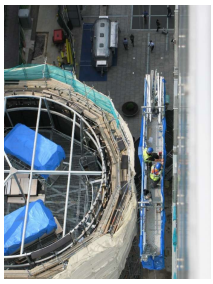
365

OBSERVATIONS?



366

OBSERVATIONS?



367

COMPLIANT:

Risk
Assessment
Method
Statement

Position
Ballast Specific Locked
Support / ties
Capacity / Task / Activity
Access (scaff deck)
Secondary Support/brake
Exclusion / Protection
Mis-use
Power
Weather / Wind (anemometer)
Inspection
Left free clean, secured

368

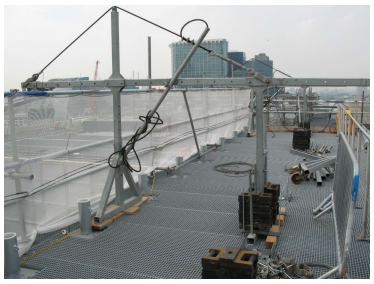
MACE REQUIREMENTS

- Temporary Works Eng for supports / fixings / ballast
- LOLER and TE regular
- Access point (scaffold deck)
- Exclusion below
- Rated Load
- Wind limits
- Overspeed brake /2nd ry support
- Restraint
- User Appointed person

Risk
Assessment
Method
Statement

369

OBSERVATIONS?



370

SECURITY OF RIGGING

- Requiring hand-tools is sufficient level of security
- Steel cables & grips

or

- Lockable enclosure

371

COMPETENT: BS 5974

User Appointed Person

Supplier Appointed Person

Installer

Demonstrator

User/Operator

372

COMPETENT

Previously no “accredited” courses...

SAEMA now offer Operator Course:

- Part 1: On-line
- Part 2: On Site

sæma TRAINING

Risk Assessment Method Statement

Installers/ Operators / Demonstrators / Inspectors

Zarafa GROUP

GLC

APOLLO CRADLES

373

COMPREHENSIVE MAINTENANCE:

- TE prior to 1st use after install
  Frequent Inspection / Testing
- Daily Pre-Use Inspection
  User Appointed Person
- LOLER (MACE) / 3 Month (BS)
- Inspection following In-Service Maintenance
  As required by Manufacturer / Installer

Handover ?

Check Sheet ?

374

QUESTIONS?

375

ACCESS EQUIPMENT

DELTA DECKS, LADDERS, STEPS & HOP-UPS

376

DELTA DECKS, LADDERS, STEPS & HOP-UPS

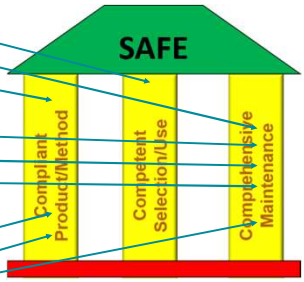
377

COMMON MANAGEMENT CONTROLS

Preparation
- Competent Selection / Use
- Emergency rescue plan
- SSOW for each application

Inspection
- Daily Pre-use checks
- Formal Inspection / Tagging
- Criteria for additional inspection

Restriction
- Exclusion zone (base/below)
- Safe Working Loads
- Weather limitations



378

DELTA DECKS

- **Low & wide**
  good stability
- **Guardrails**
  high & robust – but compliant?!
- **Fold-Away**
  Fewer assembly errors
- **Portable**
  25kg to 30kg




379

DELTA DECKS-CCC

Compliant

EN 1004-1 tested/rated
EN 1004-2 instructions (formerly EN 1298)
SWL 200kgs
Max work height 2.6m

Caution

Competent

Prod Training / Familiarisation
Clear and Level
Leave SAFE

Risk Assessment Method Statement

Comp Maint

Daily pre-use
Weekly (tag).

380

LADDERS & STEPS

381

LADDERS & STEPS-CCC

Compliant

EN 131 (Professional)
Composite or metal
Wooden - with RA (BS1129 C1)

Alert

Competent

LA offer training
Use justified (permit)
Incline Sticker/Rating
Secured (tied braced)
Locked against use

Risk Assessment Method Statement

Comp Maint

Daily pre-use
Tags/Reg.

382

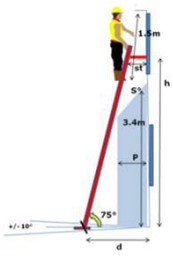
LADDERS & STEPS- COMPLIANT

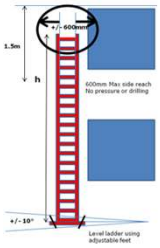
- BS EN 131
- No 'domestic' ladders – now termed 'non-professional'
- Only 'professional'
- No wooden ladders (unless risk assessed)
- Do not use as "work platform" without additional controls:
  - 3 points of contact?
  - Fall Protection?
  - Not telescopic ladders

Remove top three steps/rungs?

383

LADDERS- COMPLIANT



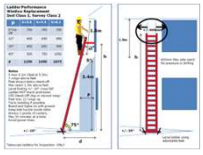


Safe Use Specification

- Competency: Ladder Assoc
- Max height: 6m?
- Marked SWL: 150kg
- Marked Angle: 1H:4V (75°)
- Level Ground: <10°
- Tied / Secured from ground
- Reach: <600mm
- Storage: Locked

384

LADDERS- COMPETENCE



- Tied.
- 1in4 / fully open.
- Locked up
- Loading marked
- Incline marked

385

LADDERS - COMPREHENSIVE MAINTENANCE

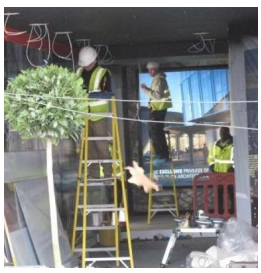
- Daily
- Weekly
- Inspection records
- Tags

386

OBSERVATIONS ?

388

OBSERVATIONS ?



389

OBSERVATIONS ?

390

HOP-UPS-CCC

Compliant

600 x 600 min
< 500 ht
SWL 150kg (EN 131)

Alert

Competent

Permit to use
Justified (RAMS)
Light work
Tool Box Talk

Risk
Assessment
Method
Statement

Comp Maint

Daily pre-use
Weekly Competent
Tag / Locked

391

HOP-UPS-COMPLIANT

Length x width: 600 x 600 (minimum)
Height: 500 (maximum)

Permit to use

392

HOP-UPS- COMPETENT

150 kgs

Short Duration ??
Light duty ??

Tool Box Talk
Evidence ?

Where no alternative possible...

... "constricted space."

393

HOP-UPS- COMPREHENSIVE MAINTENANCE

Daily
Weekly
Tags
Register
maintained

Inspectors
Course

Secured when not in use

394

OBSERVATIONS ?

396

QUESTIONS?

399

ROPE ACCESS

400

ROPE ACCESS.. PERSONAL FALL PREVENTION

401

JUSTIFY DECISION ?

Alternatives from hierarchy?...
MACE rating?.....

Consider :-
- Ease of task when in suspension
- Risks to those below
- Handling of tools
- Reaction forces (drilling etc)
- Pace of task
- Exposure of Technician
- Rescue options (down & away)
- Other task-specific hazards

402

ROPE ACCESS

Compliant
IRATA CoP / BS 7985
Many equipment Standards
2No Anch 15kN (Annex F)
"unquestionably reliable"

Competent
IRATA Level 1-3
Rescue Plan
TWC for Anchor Designs
Exclusion / Tether / Catch Net
Watcher

Comp Maint
Anchor Protection
Rope Protection
TE 6 monthly

403

GUIDANCE

IRATA CoP / BS 7985

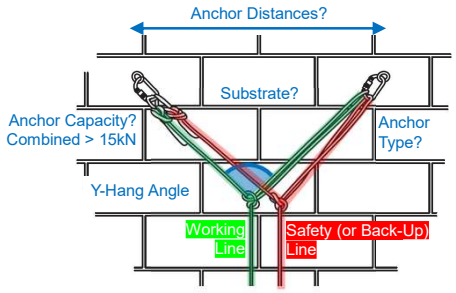
- Generally minimum is team of 3
  Team of 2 permitted for simplest rescue
- 2 independent anchors
- Rescue provision
- All watched by another abseiler
- Exclusion zone with spotter

404

EQUIPMENT & STANDARDS

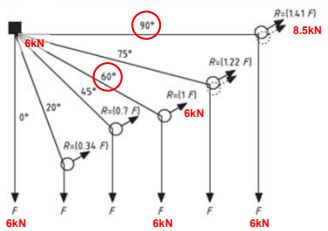
405

RIGGING



406

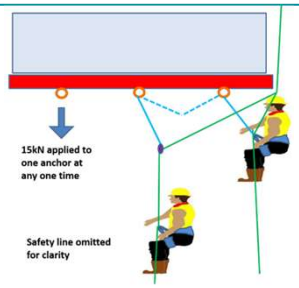
DEVIATIONS



Fall Arrest Load
(without Safety Factors)

407

"AID CLIMBING"

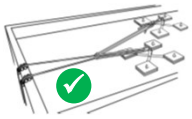


408

OBSERVATIONS ?

409

TEMPORARY ANCHORS



410

COMPETENCY SCHEME

Level 1 (entry)
- 4 days training
- 1 day assessment
- Log book

Level 2
- +12 months @ L1
- +1000 hours @ L1
- Rescue

Level 3 (Supervisor)
- +12 months @ L2
- +1000 hours @ L2
- First Aid
- Advanced Rescue

411

OBSERVATIONS ?

412

OBSERVATIONS ?

413

COMPETENCY

Query:

- **Team size**
- **Qualifications & experience** (logbook)
- **Anchors** (15kN x 2No)
- **Rope length** (down to access level)
- **Rope protection** (physical / thermal / chemical)
- **Monitoring & Communication**
- **Rescue**
- **Material feeding**
- **Tethering**
- **Ground concerns**
- **Timing** (rests / access)
- **Limits** (wind / weather / cold)

414

COMPREHENSIVE MAINTENANCE

- **User Inspection**
  ***B**efore **E**ach **O**ccasion **O**f **U**se*
- **Formal Inspection** (LOLER)
  Every **6** months
- **Anchors**
  Unquestionably reliable
- **Secure**
  Anti-tamper & restricted access

415

CONTROLS BELOW

- **Spotter (radio)**
- **Exclusion Zone**
- **Activity/Materials**

416

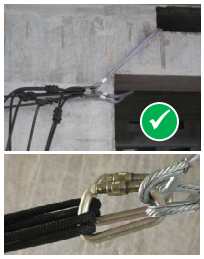
POOR ANCHOR SELECTION & POSITIONING

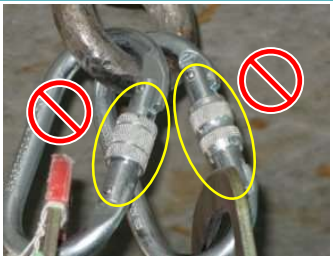
417

ROPE STORAGE

418

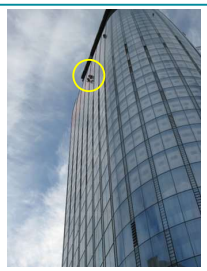
UNQUESTIONABLE?...





420

RIGGED TO RESCUE

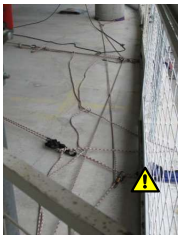


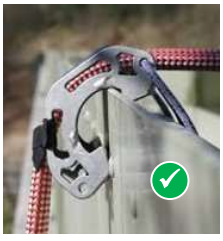

421

HIGHLY COMPETENT?!...


422

ROPE RIGGING & PROTECTION



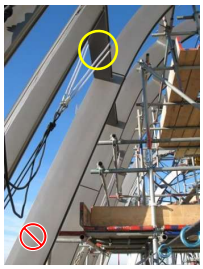


423

EXCLUSION ZONES

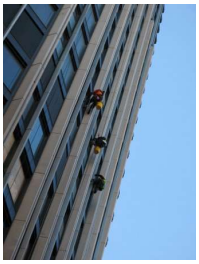
424

OBSERVATIONS



425

OVER-LOADED?!...



426

QUESTIONS?

427

RISERS
STRATEGY & MANAGEMENT

428

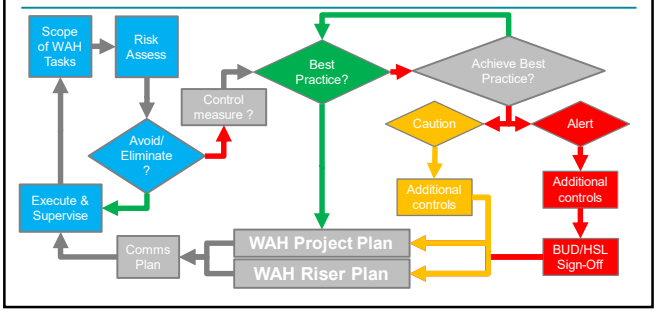
RISER MANAGEMENT : WHY THE FOCUS?

- Start early and run throughout project.
- Change daily.
- Involve many trades.
- Divide responsibilities (horizontal/vertical).
- Varied methods and equipment.
- Involve "live" services.
- Varied shapes and sizes.

Develop Project Riser Strategy…
(including horizontal & vertical protection)… no deviation without approval (BUD/HSL)

429

WORK AT HEIGHT PLANNING PROCESS



430

RISER STRATEGY

- **Developed at Tender / Pre-Construction**
  - Signed-off before frame design finalised - Utilise pre-fabrication & permanent works
  - "Real intent to use Best Practice" - Minimise activity & risk
- **Specify control measures**
  - Vertical & Horizontal - planning & positioning to reduce movement & drilling
  - Clear SWL on floors
  - Wheel stops / upstands to prevent wheeled access

431

RISER STRATEGY

- **Task-specific RAMS**
  - Minimise material falling risks
  - No simultaneous activity (vertically alert)
  - Control cutting of decks.
- **Riser Co-Ordinator**
  - Single point of control
  - Daily meetings & Co-ordination Board
  - Permits / Access / Trade-to-trade hand-overs

432

RISER MANAGEMENT STRATEGY

6 Strategic Plan

Using the table below, list out every riser and explain the build strategy. Refer to the guidance notes on the following page and working examples for clarity.
Please remember to drag formulas down in columns F,G,H,I to allow correct population of cells.

A	B	C	D	E	F	G	H	I
Riser Reference	Location	Riser wall / shaft Construction, incl headline construction strategy	Services to be installed	Headline Services installation strategy	Floor horizontal protection type	Edge vertical protection type (incl headline installation strategy)	Riser types	Risk Summary
2	Level 2 south building Grid x – y	Core concrete (back) Dry lining sides and front	Heating Chilled Drainage Condensate	Prefab modules lifted in by crane/bottom up (start ground floor)	F1 - a) full modular prefabricated b) Modular prefabricated riser deck unit installed as the frame progresses	G1 -	R1 -	Caution
3	Level 1 south building Grid x – y	Core concrete (back) Dry lining sides and front	Busbar Containment Gas	Services installed floor by floor	F2 - Floor deck installation installed after the frame prior to the MEP commencing	G3 -	R1 -	Alert

433

RISER MANAGEMENT STRATEGY

6 Strategic Plan

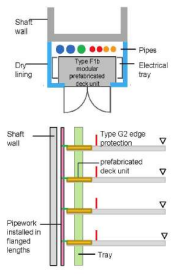
Guidance Notes:

A.	List out the same reference for each riser from the GA plans
B.	Location references as per the project specific plans
C.	Concrete, shaft wall, standard stud partition existing
D.	Exact services in the riser
E.	High Level Services Installation Strategy

F. Floor horizontal protection type	G. Edge vertical protection type	H. Riser types Key – vertical edge protection riser / shaft wall construction			I. Risk Summary
Select from the choices below	Select from the choices below	Select a type of riser from the following and insert into the table. *(If none of the below apply, select the blank cell and introduce a new reference)*			Based on the selected methods give overall status as below - if two different warning categories are shown, choose the "lesser" of the two
F1 - a) Full modular prefabricated solution b) Modular prefabricated riser deck unit installed as the frame progresses	G1 - 1.0m high toe kit system with toe-board and demountable panels	R1 - Fully modular prefabricated cassette with integral platform		R4 - Existing riser condition with platform	Best Practice
F2 - Floor deck installation installed after the frame prior to the MEP commencing	G2 - Scaffold based system 1.0m high with toe-board and netting	R2 - Individual or part prefab services with separately installed platform		R3 - Existing riser condition without platform	Caution
F3 - a) Timber based solution b) Scaffold based solution	G3 - 1.0m high post and panel system ie. no rails	R3 - Ductwork		R5 - Slots and holes formed in the riser	Alert
				R7 - Slots and holes formed in slab - individual	

434

RISER MANAGEMENT STRATEGY



435

RISER MANAGEMENT STRATEGY

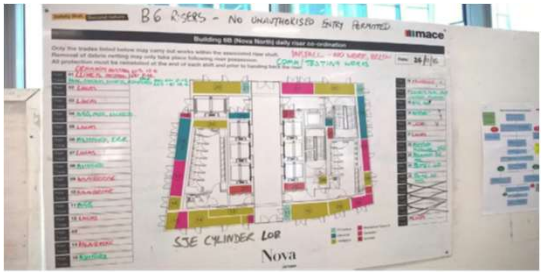
10 Sign Off

Guidance Note
Strategy document to be produced and signed off by the Senior Leadership Team and communicated to "all staff" on the project
This document must be completed during the tender stage if relevant
A full review should be carried out immediately following appointment

	Name	Sign	Date
The Team			
Project Director			
Construction Lead			
MEP Lead			
Structural Lead			
Commercial Lead			
Design Lead			
Planning Lead			
Senior Team			
Construction Director			
H&S Lead			
Business Unit Director			

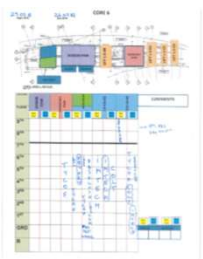
436

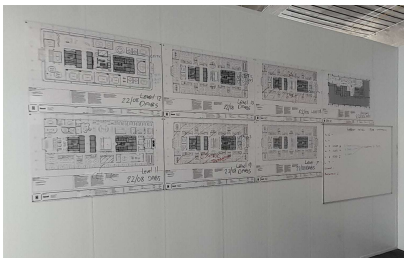
DAILY RISER COORDINATION BOARD



437

EXAMPLES OF 4D PLANS





438

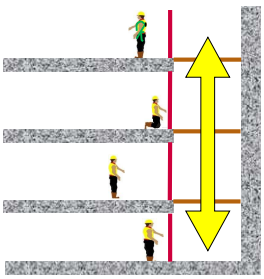
RISER SIGNAGE

439

BEARING SURFACES

440

PROTECTION DIVIDED :



Horizontal Protection
4 Types

Best Practice

Vertical Protection
2 Types

Caution

Access Space Protection
1 Type

Alert

441

COMMON MANAGEMENT CONTROLS- HORIZONTAL

- Competent Install, Adapt, Modify
- Access control
- Tethering
- Vertically alert
- Daily inspection
- Visible tagging signed (<7 days)
- Permit to Work (charged services)
- Lighting
- Signage (robust, clear, pictograms)
- Change/Defect Mgt process

Best Practice
Caution
Alert

442

HORIZONTAL FLOOR PROTECTION:

All Surfaces to be Load-Bearing

F1a - Pre-Fab Modules — Best Practice

F1b - Pre-Fab Deck — Best Practice

F2 - Deck Following Frame — Caution

F3 – Temporary / Scaffolding — Alert

443

F1A - PRE-FAB MODULES

- Self supporting with Integrated services
- Specialist team installation
- Permanent deck (load bearing) and EP
- Voids < 225mm (max)
- All EP designed to permit additional install
- Kick plates
- Fire rated
- Suitably load rating for works within

Best Practice

444

F1B - PRE-FAB DECK

Note Vertical EP must be in place for installation

- Solid Load bearing Deck or Grillage
- Installed as frame progresses
- Covers whole opening (wall to wall)
- Pre-cut & temp covers
- Support designed (no adapt needed)
- Eng support to frame
- Mesh as small as poss (< 225 or EP)
- Suitable bearing for works
- Kick plates
- Deck fire stopped as required

Best Practice

445

F2 DECK FOLLOWING FRAME

- Deck or grillage (whole area) load bearing
- Installed with building frame (from below?)
- Full cover and Cut on site
- Support designed to permit services
- Bearing suitable for works
- Small as possible mesh
- Fire stopped as required
- Kick plates
- EP etc if holes > 225
- Consider EP incorporated

Caution

446

F3 – TEMPORARY / SCAFFOLDING

- Designed for load and bearing
- Covers full opening
- Installed with frame (from below)
- Barriers to prevent overloading
- EP etc if holes > 225
- Toe boards, kick plates
- NOT fire "compartmentable" … use alternative

Alert

447

RISER … EDGE VERTICAL PROTECTION



448

COMMON MANAGEMENT CONTROLS- VERTICAL

- Designed-in where possible
- Competency to Install, Adapt, Modify
- Inspect every 7 days
- Access control & daily inspection
- Illumination when accessed
- Change/Defect Mgt process
- Gaps: Vert < 470, Hor < 100, TB < 6
- Can withstand plant impact or stop blocks
- No protrusions that could harm/ snag
- Signage (robust, clear, pictograms)

449

VERTICAL EDGE PROTECTION

~~Post & Panel with Rail 1.5m~~

G1 - Tube & Fitting (Scaffold) 1.5m

G3 – Panel Only (No rails!) 1.5m
(no rail … no access)

450

G1 - TUBE & FITTING (SCAFFOLDING)

1.5m above slab plus debris
Triple rail
Full debris, mesh, or net cover (containment)
Eng connections
Installed with building frame
Competent installers (CISRS)
Tubes capped, No protrusions.

Caution

451

G3 – PANEL ONLY (NO RAILS!)

1.5m above slab
Only when no access needed
Approved design/fixing
No protrusions.

Alert

452

VERTICAL ACCESS SPACE PROTECTION

Controlled access process (permit to work/keys)
Installed by competent persons
Install ASAP
Signage as before in good condition
Robust defects/change process

Best Practice

Single Specialist Contractor

453

SINGLE SPECIALIST CONTRACTOR ACCESS:

- Proprietary system, covers full opening
- Fitted ASAP .. Designed fixings (NOT friction)
- EP in place before fitted
- Lockable (inside turn/escape)
- 2nd Fall prevention as required
- Mesh unless fire rated
- Vision panels or CCTV when active
- Illuminated when occupied
- Inspected and tagged < 7days

Best Practice

454

QUESTIONS?

455

WORK AT HEIGHT PLAN

456

WORKING AT HEIGHT PLAN

What?
Management process to help Project Teams:-
- **Select most appropriate WaH method for task**
- **Justify, Record, and Track the decision making**

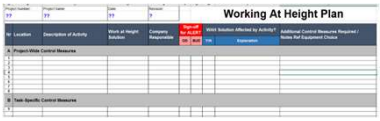
When?
- **All projects**

Who?
- **All MACE Construction Teams**

Where?
- **InfoMACE (MG-H&S-PR 2800-V?)**

457

WORKING AT HEIGHT PLAN



- **All WaH tasks**
- **Each Location & Activity (Project/ Task Specific)**
- **Chosen method & Risk-Rating**
- **ALERT sign-off (link to email?)**
- **Solution affected by activity**
- **Tracks changes & implications**
- **Note references to Guidance**

458

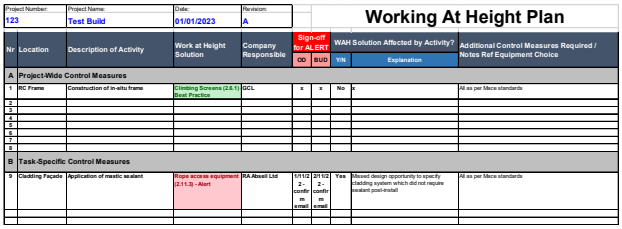
WORKING AT HEIGHT PLAN – OPTIONS

Climbing Screens (2.6.1) - Best Practice
Proprietary post and panel, with horizontal handrail and full height screen/netting (2.6.2) - Best Practice
Proprietary post and panel, with horizontal handrail (1.5 metre height) (2.6.3) - Caution
Triple rail tube and fitting edge protection with mesh panels (minimum 1.5 metre height) (2.6.4) - Caution
Proprietary post and panel minimum 1 metre, no rails (2.6.5) - Alert
Tube and fitting edge protection (scaffolding equipment) (2.6.6) - Alert
Fans/crash decks/tunnels (2.7.1) - Best Practice
Load bearing void protection (2.7.2) - Best Practice
Access scaffold (tube and fitting or system scaffold) (2.8.1) - Best Practice
Mast climbing working platforms (MCWP) (2.8.2) - Caution
Temporary suspended access equipment (TSAE) – temporary cradles (2.8.3) - Caution
Mobile elevated work platforms (MEWPS) (2.9.1) - Best Practice
Low level powered access equipment (up to five metres) (PAV) (2.9.2) - Best Practice
Low level manual access equipment - Pecolecolnano type units (2.9.3) - Best Practice
Mobile Aluminium Towers (2.10.1) - Caution
Aluminium podium towers/podium steps (2.10.2) - Caution
Delta Decks (2.10.3) - Caution
Ladders and step-ladders (2.10.4) - Alert
Extra wide hop-ups (2.10.5) - Alert
Work restraint systems (2.11.1) - Caution
Fall arrest systems (2.11.2) - Alert
Rope access equipment (2.11.3) - Alert

- **Drop down (restrictive).**
- **Discuss with ESH Mgt if not available.**
- **Company responsible for implementation**

459

WORKING AT HEIGHT PLAN



Project Number:	Project Name:	Date:	Revision:
123	Test Build	01/01/2023	A

Working At Height Plan

Nr	Location	Description of Activity	Work at Height Solution	Company Responsible	Sign-off for AI ERT		WAH Solution Affected by Activity?		Additional Control Measures Required / Notes Ref Equipment Choice
					CD	BUD	Y/N	Explanation	
A	Project-Wide Control Measures								
1	RC Frame	Construction of in-situ frame	Climbing Screens (2.6.1) Best Practice	GCL	x	x	No	x	All as per Mace standards
2									
3									
4									
5									
6									
7									
8									
B	Task-Specific Control Measures								
9	Cladding Façade	Application of mastic sealant	Rope access equipment 2.11.3) - Alert	RA Abseil Ltd	1/1 1/2 2 - confirm small	2/1 1/2 2 - confirm small	Yes	Allowed design opportunity to specify cladding system which did not require sealant post-install	All as per Mace standards

460

WORKING AT HEIGHT MANAGEMENT PROCESS

461

MANAGEMENT PROCESS FOR WORKING AT HEIGHT

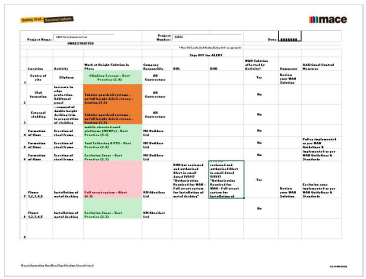
- Live document - reviewed at least every 4 weeks
- Must be reflective of on site activities
- Within Construction Phase Plan of the PDP
- Communicated to all Operatives during DABs/ NABs (evidence required)

462

WORKING AT HEIGHT AUDIT / REVIEW

463

AUDIT PROCESS/REVIEW



Note:-
- Dated (4 weeks)
- ALERT sign-off
- Additional measures

464

AUDIT QUESTIONS:-

- Has the Mace Project Team received the WAH training?
- Does the Project Team know where to find the latest WAH Guidelines & Standards (MG-H&S-PR-2800-V#)?
- Has the WaH Plan been completed for the project?
- Where the WAH Plan identifies risk at 'Alert' level, – has
  - this been communicated and
  - specific approval been granted by the BUD and HSL?
- Has the latest WAH Plan been briefed to Mace employees/ contractors?

465

AUDIT QUESTIONS:-

- Has the latest WAH Plan been briefed to supply chain managers and supervisors?
- Has the WAH Plan been reviewed on a monthly basis?
- At the time of inspection, have all WAH tasks been captured within the WAH Plan?
- Is a permit to work procedure in place for all relevant WAH tasks (e.g. ladder use/ riser access etc)?
- Is safe WAH behaviour observed on site at all times during inspection?

466

QUESTIONS?

467