



Construction Safety Education Forum

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Scaffolding

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Presentation Outline

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Session Aim

- The aim of this session is to give participants an overview of scaffolding requirements as detailed in Guidelines to scaffolding AS/NZS:4576 1995, and AS 1576 part1—General requirements for scaffolding, in particular what is required for inspections

Definition of Scaffolding

- A temporary structure, specifically erected to support access platforms or working platforms.
- Source: AS/NZS 1576.1:1995 - Definitions

Key WHS Regulation 2011 requirements:

Chapter 4: Part 4.4 Falls and Part 4.5 High risk work

Chapter 5:

- Part 5.1 General duties for plant and structures
(Note: Clause 225 – Scaffolds)
- Part 5.2 Additional duties re registered plant designs
- Part 5.3 Registration of plant designs

Chapter 6: Clause 299 – SWMS for HRCW and
Clause 309 – WHS Mgt Plan for construction projects

Guidance

- Code of Practice Technical Guidance, calls up AS/NZS 4576 Guidelines for scaffolding
- A guide on health and safety standards Erecting, altering and dismantling scaffolding
 - Part 1: Prefabricated steel modular scaffolding
 - Part 2: Aluminium tower-frame scaffolding
- (Future) Model Code of Practice Scaffolding Work

High risk work licence Requirements

- A high risk work licence is required for scaffold erection, alteration or demolition, if any person or object can fall a distance of more than 4 metres from the working platform.

There are 3 classes of certificate:

- Basic includes:
 - Prefabricated scaffolds, bracket scaffolds, work with ropes, safety nets, static lines and the erection and demolishing of cantilever materials hoists.

Classes Continued

- Intermediate includes:
 - All of basic, and, tube and coupler scaffolds, cantilevered crane loading platforms, cantilever and spurred scaffolds, barrow ramps, scaffolding associated with perimeter screens and mask climbing platforms.

Classes Continued

- Advanced scaffolding includes:
 - All of basic and intermediate and, hung scaffolds, suspended scaffolds and the installation of all types of hoists.

Further requirements

- Foundations, must support the load at its specific location
- Prefabricated scaffolding system requires WorkCover Design Registration
- Designers is required to provide information to manufacture, manufacture to supplier, supplier to installer, installer to user

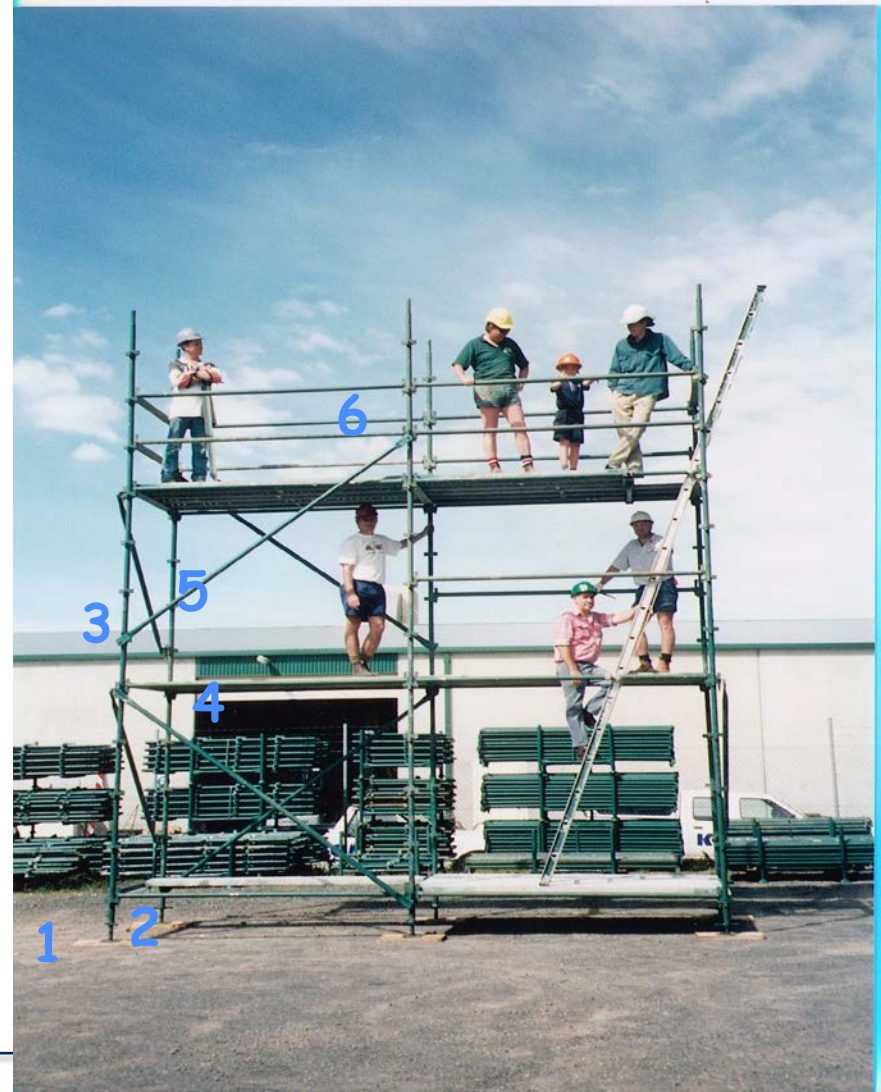
Selection of best method, consider:

- the size of the scaffold
- the suitability of the scaffold for the task to be undertaken
- is scaffolding the safest way to obtain access to the task?
- the proximity of hazards
- Suitably qualified scaffolders



Components of a modular scaffold.

- Sole plate 1
- Adjustable base plate 2
- Standards 3
- Ledgers 4
- Putlog
- Brace, face, and transverse 5
- Handrails, midrails and toe boards 6
- Ties or spurs



Setting up

- There are a range of hazards which must be considered, including:
 - Public spaces
 - Work area for the scaffolders
 - Close proximity of power lines;
4 metres, or install no conductive hoarding
 - Structural adequacy of building its tied into
 - No mixing of scaffold components except
tube and coupler

Setting up continued

- Corrosive substances
- Foundations for scaffold;
sole boards, base plates etc
- Awareness of excavation and trenches
- Volatile atmospheres
- Movement of cranes and machinery
- High wind areas.

Safe system of work

- That ensures scaffolding is
 - Inspected, transported and stored without damage
 - safely used, cleaned, maintained and/or repaired

Scaffolding suppliers

- Must inspect all scaffolding components for damage before they leave their premises and also upon their return.
- Must also undertake testing and inspections as per manufacturer's instructions, taking into account their design life.

Scaffolders and scaffolding installers

- Must inspect all scaffolding components for damage and/or deterioration before installing, and provide written confirmation that the scaffolding is complete (including the stair flights) to the person with management and control of the workplace after their installation.
- Inspection should also occur after scaffolding is dismantled, and where damage and/or deterioration are identified, it should be reported to the company that owns the scaffolding.

Contractors who manage and use scaffolding systems

- Must not work on an incomplete or damaged scaffolding system. Prior to receiving written confirmation that the scaffold is complete or working on the scaffolding system, contractors must check that the system is complete. In particular, check for any visible signs of cracks, rust and/or damage

Inspections when scaffolding system is complete

- Once written confirmation is accepted, the WHS obligations fall on the contractors managing and using scaffolding systems.
- For constructed scaffolding, written confirmation that the scaffold is complete is as required eg as per supplied information, otherwise:
 - Before first use
 - Intervals not exceeding 30 days
 - If integrity affected eg struck by car etc
 - Prior to use if any repairs made

Inspections when scaffolding system is complete – con't

Use of checklist/handover certificate (Appendix J. AS/NZS:4576 1995)

- Inspection to be carried out by scaffolder
- Unsuitable or defective scaffolding equipment (Table 7.2. AS/NZS:4576 1995)

Where an inspection indicates that the scaffold system creates a risk to the health and safety of persons, then necessary repairs must be carried out before work resumes.

Stability

- A scaffold must have the stability to prevent it from overturning.
- This can be achieved by:
 - Tying the scaffold to the supporting frame.
- Guying to a supporting structure.
- Increasing the dead load by attaching counterweights to the base.
- Increasing back up bays (height not exceed 3 times the width of the scaffold).

Tying in the Scaffold

- A rule of thumb method of position of ties, is to have them located every second lift and every second standard.
- Ideally, ties should be positioned through window, door, or purpose made openings, tied to both standards and fixed to same with a 90° double coupler.
- They can also be fixed to the structure with masonry anchors

Mobile Scaffolds

- Construction details similar to prefabricated scaffold, in addition:
 - To be used on hard level surfaces.
 - Access ladder inside scaffold frame.
- Not to be located closer than 1 metre to any edge or opening in slab.
- To have wheel locks (no pneumatic tyres)

Mobile Scaffolds Continued

- Height 3 x minimum base width
- Free stand scaffolding – stability can be achieved by increasing the least base dimension
 - Eg stabiliser outriggers without slip, rotation or other movement ie “rule of thumb”
- Persons not to be on working platform while moving.

Considerations

- ORGANISING THE WORK SEQUENCE.
 - Allocate specific tasks to each scaffolder.
 - Organise the work.
 - Ensure the work area is properly secured.

Adverse Weather

- Special precautions to be taken for:
 - Working aloft in high winds or rain.
 - Working on incomplete scaffolds where handrails are not installed.

Working Platforms

- Scaffolders should work from fully decked platforms
- Platform to have a slip resistant surface
- Planks to be closely decked
- Planks to be secured to prevent sliding
- Handrails to be installed as soon as practicable
- Access to the of erection
- Can working platform should be provided at start be constructed out of scaffold planks or prefab unit platforms

Working Platforms

- Must extend over entire width of scaffold
- Minimum size 450 mm
- Secured to prevent uplift in high wind areas or where danger of falling from scaffold
- Scaffold planks (timber) to comply with AS1577
- Prefabricated platform units to comply with AS/NZS 1576.3

Edge Protection

- Must be provided to the open sides and ends of any platform where a person or object could fall 2 metres or more.
- Must include hand rail (900 mm to 1100 mm above platform) midrail and toe board.

Edge Protection Continued

- Brick guards
 - 50 x 50 mm aperture
 - 4mm diameter
 - Toeboard incorporated (150 mm high)
- (other forms of edge protection should be considered if danger of objects falling from scaffold)

Edge Protection Continued

- Toeboards
 - Min 150mm above platform (majority 225mm in height)
 - Max 10mm gap between platform and toeboard
 - Edge protection is required when scaffolding > 225mm from face of structure
 - Planks to comply with AS 1577

Access - ladder or purpose made stairs

- Ladders to be placed at an angle of 1 in 4 to 1 in 6, extend 900 mm above the working platform, secured against displacement.
- Stairs need to be compatible with the rest of the scaffolding system

Lifting of Components

- There are several methods of lifting components in place, these include:
 - Handballing; forming human chain to lift gear
 - Handlines; fibre rope to raise and lower gear
- Must have a system in place to protect against falling objects

Types of scaffolding – Light Duty

- Width shall not be less than 450mm
- 1 or 2 workers in any bay carry out work
- Max load 225 kg per bay
- Very small amounts of stored material, hand tools etc
- Negligible impact forces
- Typical examples
 - Window cleaning
 - Painting
 - Sign writing
 - Electrical wiring

Medium Duty

- Width shall not be less than 900mm
- Broad range of construction work
- Significant amounts of stored material
- Heavier concentrations of people
- Max load of 450 kg per bay
- Moderate impact forces
- Typical application
 - General carpentry
 - Plumbing installation
 - Metal roof installation
 - General fit out work

Heavy Duty

- Width shall not be less than 1000mm
- Suitable for majority of construction activities
- Large amounts of stored material
- Dense concentrations of people
- Max load of 675 kg per bay
- Relatively high impact forces
- Typical applications
 - Bricklaying
 - Blocklaying
 - Concreting
 - Steel fixing
 - Heavy rigging
 - Demolition

Examples of Unsafe Scaffolding



Examples of unsafe scaffolding



Examples of unsafe scaffolding



Examples of unsafe scaffolding



Examples of unsafe scaffolding



Examples of unsafe scaffolding

Too close to power source



Conclusion

- Workers should be able to expect the scaffold they use is adequate for them to carry out their work in a safe manner.
- The construction of a scaffold must comply with relevant Australian Standards for scaffolding.
- Scaffolding requirements must encompass;
 - training and certification of scaffolders
 - preparation of sites for scaffolding
 - safe selection, supply, erection, alteration, dismantling, maintenance, inspection and use of scaffolding and scaffolding equipment

Discussion and questions



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