Basic Scaffolding Study Notes

Legislation

- A trainee is someone who is enrolled in a course of HRW and been supervised by someone with that HRWL class
- After passing your assessment your AS1 is valid for sixty day in which you have to apply for your HRWL
- Your HRWL is valid for 5 years WPHS will give you a 12 month grace period to renew the licence if you don't renew it is cancelled.A duty of care is to protect yourself and others from harm
- When you start your new job you will have to provide your HRWL as proof of your skill set
- If an inspector finds you to be working unsafely they could cancel or suspend your licence
- We have consultation with our supervisors, managers, safety personnel and engineers before we start work to identify hazards and site specific information.

Planning Hazards and Controls

Planning

- ACCESS = Access+Communication+Equipment+Swms+Site specifics
- PLACE = Permits+location+access+capacity+equipment

Hazards

- Hazards are a thing or situation that may cause harm; weather conditions, power lines, overhead services, ground support, trenches, buildings, people, vehicles, roads, wind, chemicals, manual handling, trips, falls
- Hazards must be identified and mitigated before any work starts

Controls

- Hazard controls are implemented before we start work and as they arise

- The hierarchy of controls are 1. Elimination, 2 substitution, 2 isolation, 2 engineering, 3 administration, 3 PPE. We must eliminate all hazards or reduce the risk as far as reasonably practicable.
- Controls that help pedestrians, vehicles and other workers are gantries, hoarding barricades, signage, spotters, traffic management, communication
- PPE is inspected before we start work

- A scaffolder should always inspect his associated safety equipment before and after use such as harnesses, lanyards, inertia reels and static lines to find any faults with the equipment

- A crane is a hazard that can hit the scaffold. Put exclusion zones and barriers in place and use communications to minimise the risk.

Power Lines

- 3m, 4.5m 5m and 6m are the distance for Qld
- If work needs to be carried out in the exclusion zones power must be disconnected, isolated or insulated and a spotter may be required ring power authority
- Power lines must be insulated 5m either side of the scaffold
- Ring power authority if unsure about power line voltage
- Tiger tails may be used as a visual indicator.

Ground Conditions

- Scaffolds need to built on a firm level surface that can support the load know the ground bearing pressure can help us find out what base size we will need to support the scaffold

- Engineers can give information about ground bearing pressure

Communications

- Different communication methods in the workplace could be verbal, written, hand signals, tool box meetings

- Safety training and procedures for plant are lockout and tagout ,risk assessment, confined space training, work at heights training, swms, workplace procedures

Emergencies

- If something unsafe happens while scaffolding the job should stop, assess, seek advice and if necessary
- In a emergency situation always say **who what where** and tell the emergency services, people close by and your supervisor
- In the event of an emergency a secondary access must be available if a personnel hoist is used to access a scaffold

Scaffolding General

- A Basic Scaffolder is responsible for

  Erection and dismantle of modular scaffolds over 4m
  Erection and dismantle of scaffold brackets
  Installation of safety nets
  Installation of static lines
  Installation of gin wheels
  Materials Hoist

Loads and forces

- **Live load** is the weight of material and people on the scaffold
- **Dead load** is the total weight of the scaffold or hoist
- A **static load** is a constantly applied load
- **Dynamic forces** are the force caused by movement of the scaffold
- **Wind loading**s are the forces of the wind blowing on the scaffold
- **Environmental loading**s such as snow, dust hail ectduties are

Scaffold Duty Load

- Light duty 225kg/ two boards, acces only and hand tools
- Medium duty 450kg / three boards, materials and tools
- Heavy duty 675kg/ four boards

General

- 630 kgs is the working load limit of a 90 degree coupler
- Prefabricated scaffolds must be supplied with information on how to erect the scaffold, components of two different scaffold systems must not be mixed unless approved by an engineer.
- 225 is the maximum distance between an unprotected platform edge and a working face
- 3 times the minimum base height is the maximum height of a free standing scaffold
- Base lift is inserted at the lowest connection point on the modular scaffold system

- Scaffold tube and purpose designed components must be used for guard rails. Rope and FSWR and chains are not acceptable.
- An engineer can approve the design of a sheeted scaffold because of extra wind loadings

Base Plates

- A base plate dimension will be 150*150*6mm
- The max extension shall be no greater than 600mm
- There must be a min of 150mm left on the shank when fully wound out
- And a load no greater than 3030 kgs is permitted on base plate

Timbers and Planks

- The gap shall be no greater than 10mm between boards
- A timber board is 32mm thick and 225mm wide
- Planks can be lapped from platform to platform or on returns
- Do not use different size planks as it can create trip hazard
- 32mm hardwood plank can span 1.8m
- 50mm softwood timber plank 2m
- 63mm softwood timber plank 2.5m

Bracing and Ties and HandRails

- No more than 3 bays are allowed between face braces or manufactures specs
- Ties must be in the first bay and every third bay and every second lift or manufacturers specs
- A basic scaffolder can use Tube and clip when
    - For guardrails
    - For gin wheels
    - For kickboards
    - For ties
    - Joining scaffolds
- Types of ties - u tie, box tie, through tie, column tie.
- Guardrails must be fixed between 900 and 1100 mm and mid rails must be fixed between 450 and 550. Tow boards must extend 150mm above the deck

Materilas Hoist

- Materials hoist are installed as per manufacturer instructions
- Basic scaffolder can install a hoist upto 500kgs
- The minimum overrun distance from the attached hoist rope to the head sheave is 1.5m
- Ties need to be installed every 6m
- Last tower section can only free stand 3m past the last tie
- Clearance between the hoist platform and the building must be between 25 and 100mm
- Landing gate height must be a minimum of 1.8m

Static lines for scaffolding

- Minimum anchor points for a static line used for scaffolding is 4T
- Maximum span of a single span FSWR static line is 6m
- Maximum sag in a single span FSWR static line is 50mm/meter
- Static line should be installed over 2.1m
- Minimum make up of FSWR is 6*19 11mm FSWR
- Teminations of FSWR could be swaged fittings, socket and wedge, splice and thimble, double saddle clamps *3
- Anchors can either be mechanical, chemical, or cast in
- You can only use a ratchet and pawl in your static line if its permitted by the manufacturer and tensioning specified
- A engineer is a competent person that proof test anchor points
- Collared eye bolts are uses for installing static lines as they can spread the load and prevent shearing of the bolt
- Open frame turnbuckles are used in static line systems so the can allow visual inspection

Safety Nets

- Safety nets come in two fall measurements 1m or 6m
- Maximum mesh size is 100*100 mm
- Safety nets need to have engineering approval before installation
- Minimum clearance under a net is ⅔ the shortest side or 2m which ever is greater
- A safety net much horizontally extend ⅘ of the fall height plus 2m past the building
- The distance between the building and the net must not exceed 200mm
- ¼ and ⅕ of the shortest side are the max and min sag allowances
- Safety nets can become defective by sun damage, chemical damage, been overloaded, been near flames or hot surfaces, dragged over surfaces, stacking materials in net ect

Pre start inspections

- A timber scaffold plank is unsafe when it is warped, twisted, rotted and broken
- A metal scaffold plank is unsafe when it is twisted distorted, crushed and has no end cap
- A ladder is unsafe when it is not industrial strength, rungs are missing, feet are damaged, twisted, bent or kinked
- A scaffold tube is unsafe when it is bent, mushroom headed, pitted tube, or has the wrong wall thickness
- All unsafe scaffold must be STIRR stop, tag, isolate, report, record.

Gin wheels

- Maximum load you can lift with a gin wheel is 50kgs
- A gin wheel must have rope guides
- 16mm dry natural fibre rope must be used with a gin wheel.
- A gin wheel must not be supported from a right angle coupler
- 600mm is the maximum that can be supported by a unbraced cantilever tube

Ladders

- Must be industrial grade single span ladder
- Ladder opening can be protected by gates, trap doors and edge protection
- Ladders must be fixed internally to access a scaffold
- Ladder access must extend 900 over hand past the platform
- Maximum height allowed between ladder landings is 4 metres

Mobile and aluminium scaffolds

- Aluminum light duty tower scaffold should not be greater than 9 metres
- All mobile scaffolds must be plan braced to stop it from twisting.
- Castor wheels must have wheel locks and have solid tyres

Formulas

Total scaffold deadload = total weight of all components

Dead Load for an adjustable base plate = base plate + standard + half ledger + half transom + half brace and a quarter of the boards
Note, quarter ladder is applied when ladder is on deck

Live load = scaffold duty/3 X by supporting platforms

Sole boards = dead load + live load/soil bearing capacity/soleboard width