

Advanced Rigging Study Notes

- You have 60 days to apply for your licence.
- Your licence will be cancelled 12 months after expiry date.
- You can carry out high risk work if you are enrolled and being supervised by someone licensed.
- You have a duty of care to protect yourself and others from harm.
- If you work unsafely your licence will be suspended or cancelled.
- You must provide High Risk Work licence upon request to your employer etc.
- Some tasks an advanced rigger can legally do are:
 - All work intermediate riggers can do, gin poles, flying foxes, suspended & fabricated scaffold.
- By consulting with Safety officers, Engineers & Supervisors you could find out
 - Site-specific hazards & controls, policies & procedures, plans & drawings, load bearings, Job specifics, Work area arrangements & other contractors

You consult about site specific hazards, policies and procedures.
- Hierarchy of control
 - Elimination Every
 - Substitution Saturday
 - Isolation I
 - Engineering Eat
 - Administration Apple
 - PPE Pie
- PPE & communications must be inspected before use.
- Hazard controls need to be in place before work and as they arise.
- Setting up flying fox hazard to plan for & identify to ensure there is a clear pathway are obstructions, overhead power lines, pedestrians, surrounding structures.
- Planning considerations are:
 - Access A
 - Communications C
 - Capacity C
 - Equipment E
 - Site specifics S
 - SWMS S
- Safe minimum distance from power lines for rigging in QLD 3m, 4.5m, 5m, 6m. To work closer than that you need to isolate or insulate, spotters & exclusion zones.
- Installing scaffold under overhead powerlines insulation must extend 5m past scaffold.
- Find out voltage contact electrical authority.

- Tiger tails are a visual aid only to highlight powerlines.
- Choose the appropriate communication in planning stages and check its working correctly before use.
- Consult with engineer to find out ground stability.
- In an emergency you must communicate What & Where the emergency is & Who is involved. (WWW) Alert everyone.
- Installing a gin pole there must be 4 guys a 5th may be added for tracking purposes.
- Maximum sheer leg can be from vertical is 30°
- To allow the derrick & mast to revolve as 1 unit a swivel and spur needs to be attached to the mast
- Minimum number of stays to support a guy derrick is 6 where multiple stays are fitted they must be positioned equally around mast.
- Maximum forward lean from vertical for gin or derrick pole is 1:10
- Using FSWR for gin or derrick pole it's construction must be at least 6 x 19.
- 7 parts of a Span Rope may include: anchorage wire, side guy, traverse rope, hoist rope, bottom block, traverse rope, side guy.
- Using 2 poles maximum slope for poles from vertical is 1 in 5
- Maximum tension in main cable under max working load to cable brake strength is 1/6
- Smallest diameter of a fox block sheave is 10x span rope diameter. For span rope smallest safety factor for reeving, sharp rope bends & load attachment is safety factor of 6
- Minimum sag allowed for span rope is 5% of the span distance if the sag is smaller tension increases.
- Safety factor for FSWR & chain supporting hung scaffold is 6 x rated capacity. To estimate rated capacity of FSWR dia² x 7.5
- Ladder minimum & maximum slops are 6:1 & 4:1 must extend minimum of 900mm above landing
- Rigid tie bars & plan bracing is used to stop grinder trolleys from moving out of alignment on suspended scaffold. To stop grinder trolleys running off end of trolley use through bolts.
- If scaffold is left incomplete overnight remove access, isolate, barricade to prevent access. Once complete must do handover certificate a competent person is responsible for certificate & inspection.
- 2 types of the suspended scaffold are swinging stage, Boatswains chair
- 10 parts of suspended scaffolds may include: counterweights, traversing track, through bolts stopping trolley leaving track, trolley, rigid tie bar, suspended rope, traversing rope, scaffold hoist, cradle, tubular suspension rig.
- Device that stops hoist from overloading on suspended scaffold is a load limiter.
- Some of info that must be shown on data plate of suspended scaffolds are type, model, serial number, rated capacity.
- Allowable slop for hung scaffold platform to be erected level with tolerance of 3° unless specifically designed. Replacing FSWR the rope must be of same construction & size as FSWR can be seriously damaged, sheave distortion & or severing rope.

- Maximum rated work load of trolley supporting suspension rope is 500kg.
- Minimum height above the platform of work cage for stabilising sheave is 2m.
- Things used to secure roof rig supporting suspended scaffold are through bolts, props, bracket bolts.
- Only approved designed counterweights should be used on counterweight needles.
- Counterweights must be fixed in a manner so they can't displace or be moved without a tool.
- 80% of rated capacity is the maximum tension allowed for shackles supporting suspension rope. Using chocked sling supporting suspension rope maximum tension is 40% of rated capacity.
- Electrical powered scaffolding hoist load limiting device maximum setting is 1.25 x the rated capacity of hoist.
- If 2 trolleys are used to support a swinging stage a spreader bar/rigid tie bar must be used to stop them spreading. If debris can fall from above overhead protection must be installed. When rope is at lowest point 3 full turns must remain on drum. Supporting structure of suspended scaffold must be assessed by competent person engineer.

Maths Revision show all workings

Question 1

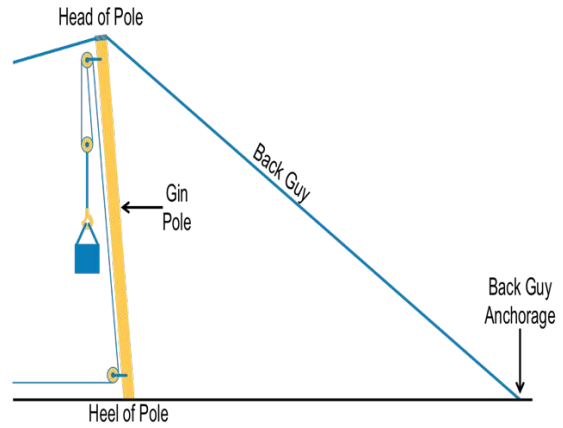
You need to set up a gin pole at the maximum recommended lean to lift a load.

The guys will be anchored at the minimum recommended distances from the foot of the pole.

The lead rope will run parallel to the pole as shown in the diagram.

The load specifics are:

- Length of pole: 10 metres
- Weight of load: 5 tonnes
- Load in lead rope: 1.5 tonnes.



Part 1: What is the minimum distance between the pole heel and the back guy anchor?

Part 2: What is the maximum lean on the pole?

Part 3: What is the Total Head Load (THL)?

Part 4: What is the compression load on the Gin Pole?

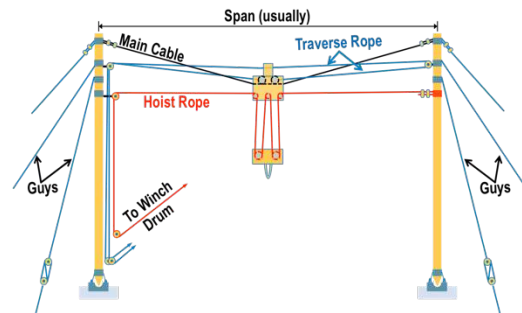
Part 5: What is the tension in the back guy?

Part 6: What is the diameter of the FSWR in the back guy?

Question 2

You need to set up a flying fox with the following specifications:

- The height of the two beams is 8 metres
- The span or distance between the two poles is 25 metres
- The load to be lifted weights 1.5 tonnes.



Part 1: What is the maximum allowable sag of the main cable?

Part 2: What is the rope tension?

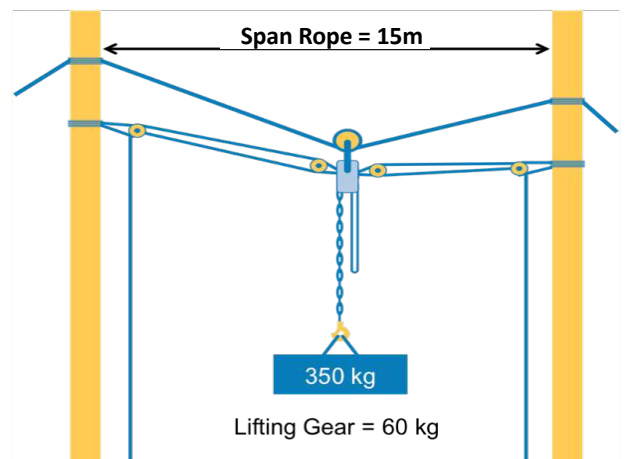
Part 3: What is the rope diameter?

Question 3

You need to install a span rope fixed between two beams.

As shown in the diagram, a chain block or other lifting device will be supported from an inverted snatch block on the span rope to lift a load.

The load specifics are:



- Span between beams: 15 m
- Weight of load: 400 kg
- Weight of lifting gear and load in hauling part: 60 kg.

400kg
Lifting Gear = 60kg

What is the tension in the span rope when the sag is at its recommended minimum?

Question 3

You need to erect a suspended scaffold with a rope 100 metres long supported from a counterweighted cantilevered suspension rig.

The scaffold is an individual cradle supported from two needles with one suspension rope and one scaffolding hoist per needle.

The specifics are:

- The cradle has a dead load of 100 kg and a rated capacity of 250 kg.
- The needles have an outboard of 1.0 m and an inboard of 5.5 m.
- The counterweights weigh 25 kg each.
- The rope weighs 26 kg per 100 metres.

The hoist's rated capacity is 750kg.

Part 1: What is the maximum rope tension?

Part 2: What is the minimum guaranteed breaking load of the suspension rope?

Part 3: How many counterweights are needed at the inboard end of the needle?
