



REFURBISHMENT WORKS AT SUBANG ENGINEERING COMPLEX A
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FOR IMPECCABLE VINTAGE PROPERTIES SDN. BHD

FALL PROTECTION & WORKING AT HEIGHT



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1 PURPOSE

Fall protection & Working at height is to list out the EHS requirements for readers to gain sufficient knowledge so that the measures herewith can be implemented

- To ensure that the personnel involved in working at height of 2 metres or more shall observe the safety guidelines to avoid potential injury from falling.
- To ensure personnel below the 'work at height' area are protected against falling objects.
- To ensure all floor openings, edge of building and wall opening where there is a possibility of one falling through/off it are installed with covers or/and barricades.

2 SCOPE

Fall protection & work at height is ensure that Appropriate PPE such as safety harness, life line and fall arrestors, and equipment such as scaffold, and staging, Appropriate signage, Appropriate barrier/barricade, Fall prevention / protection system shall be in place as soon as work allows, where potential exposure to fall exists.

3 REQUIREMENTS

3.1 Work supervisors shall ensure that:

- 3.1.1 A Fall Prevention Plan is developed and approved for the work at height activities.
- 3.1.2 All reasonable precautions are identified and taken to eliminate potential fall hazards through the use of scaffoldings, guard rails, catch platforms, safety nets, personal protective equipment and collective/personal fall restraint/ arrest system.
- 3.1.3 They are trained and completed the relevant Work at Height Course
- 3.1.4 Personnel using fall protection equipment and/or system are trained in the use, maintenance and the recognition of hazards in relation to using them.
- 3.1.5 All devices/equipment/materials used for fall protection are maintained at design specifications and are inspected regularly.
- 3.1.6 Apply Work at Height Permit when there is a requirement to work on height at 2 meters or more.



4.1 Approval instruction for providing optimum fall protection include:

4.1.1 Certified safe to use scaffold (top rail, mid rail, toe-board, working platform and access ladder).

- Mobile scaffolds are not to be moved with any personnel on it. They are to be wheel locked when stationary, outriggers if any have to be fully extended and positioned before use.
- Prior to climbing on/off a scaffold, personal fall protection system must be used.

4.1.2 A proper inspected, maintained and operated boom lift or scissors lift.

4.1.3 A safety harness equipped with a shock absorber and twin lanyards with double action snap hook.

4.1.4 Guardrails and covers for all floor openings

4.1.5 A fall arrest system for ladders more than 6 metres in height.

4.1.6 Approved PE designed life lines.

4.2 When using suspended scaffold/platform systems, the use of an individual life line and safety harness with a fall arrest system is required for each person on the scaffold/platform.

4.3 When using boom lift or scissors lift, the elevated personnel must work within the bucket/platform where the safety harness is tied off to it. User to anchor safety harness at anchorage point provided. No MEWP's are allowed at site Operations if anchorage points are not available.

4.4 Portable ladders:

4.4.1 In good working condition.

4.4.2 Weekly inspected.

4.4.3 Two men system where one man will hold the ladder.

4.4.4 Ladders to be extended 1 meter above any landing.

4.4.5 Materials and tools are not to be placed on the ladder rungs or landing.

4.4.6 Tools to be slung to the body where the length of the sling will not reach the head of the personnel holding the ladder.



4.5 Guardrails

- 4.5.1 Only metallic pipes are allowed to be used as guardrails and posts.
- 4.5.2 Top rail (1m) and mid rail (0.6m).
- 4.5.3 Toe-boards of minimum 90mm height.
- 4.5.4 Guard rails are to be free from sharp protruding points.
- 4.5.5 Distance between posts shall not exceed 3 metres.

4.6 Personal Fall Protection Equipment

- 4.6.1 Safety Harness must not be worn unless works are carried out at height.
- 4.6.2 Safety Harness shall comply with the followings:
 - Double lanyards (not more than 1.5m).
 - When working at height, both lanyards to be anchored at all times.
 - When travelling from one point to another, the hook – unhook – hook method shall apply.
 - Shock absorber for work at height is required.

4.7 Lifelines

- 4.7.1 When vertical lifelines are used, each personnel shall be attached to a separate lifeline. Rigid points where lifelines are tied to shall be calculated by a Professional Engineer.
- 4.7.2 For vertical lifelines, design load of the lifeline shall be based on 13.3kN if free fall distance is limited to less than 0.6m.
- 4.7.3 In situations where free fall distance exceed 0.6m, design load of the lifeline shall be based on 22.2kN.
- 4.7.4 Horizontal lifelines shall be designed, installed and used under the supervision of a qualified person as part of a complete arrest system, which maintains a safety factor of at least two. Horizontal lifelines may be shared by more than one person as designed by the Professional Engineer.
- 4.7.5 The maximum number of personnel allowed on any horizontal lifelines should be displayed on a signage installed close to the lifeline.
- 4.7.6 For horizontal lifelines, vertical design load shall be based on 22.2kN per person on the lifeline.
- 4.7.7 The horizontal lifelines shall be designed so that deflection does not exceed 150 when a fall is arrested while connected on the lifeline.



4.7.8 Lifelines shall be inspected by the Supervisor on a daily basis and recorded.

4.8 Anchorage

4.8.1 Anchorage used for attachment of lifelines, lanyards or deceleration devices shall be designed by a Professional Engineer with a safety factor of 2. Factor of safety of 2 is achieved through the design loads as stated below:

- 1 user per anchor – design load 12kN
- 2 users per anchor – design load 24kN
- 3 users per anchor – design load 26kN
- 4 users per anchor – design load 28kN

4.8.2 Improper anchorage point of selections which are not to be used:

- Hooking onto a lanyard itself, or around an I-beam, or truss using a 'choker connection'.
- Hooking two lanyards together.
- Using the edge of an I-beam so that snap cannot close.
- Wrapping a lanyard around sharp edges.
- Using homemade drop lines such as wire ropes, chains, lifting straps etc.
- Tying off to pipe, conduits and hangars.
- Tying off with a knotted rope lanyard or lifeline that is not designed for.
- Exceeding the number of tying off as prescribed by a Professional Engineer for horizontal lifeline.

4.9 Safety Nets:

4.9.1 Safety nets shall be provided as an alternative fall protection system when it is impractical to use fall protection methods for catch platforms, temporary floors, waffle table etc. Safety nets shall have an impact resistance of 17,500 ft-lbs. To be secured with edge ropes to an anchorage point capable withstanding 2272kg force.

4.9.2 Defective net shall not be used.

4.9.3 Safety nets are to be regularly inspected.

4.10 Inspection and Maintenance

4.10.1 Personal fall protection equipment shall be visual inspected before use each day by the user for wear, damage and deterioration. Equipment found to be defective shall be immediately replaced.

4.10.2 Work supervisor/ EHS personnel shall inspect all safety harness at the end of each month.

4.10.3 Safety harnesses are to comply with the monthly color code.

4.10.4 Personal fall protection equipment which had been subjected to impact loading shall be immediately removed from service.



4.10.5 All protection devices shall be kept clean and stored to prevent exposure to chemicals or excessive dirt or wear. All equipment shall be stored as per manufacturer's recommendations.

4.10.6 All inspection shall be recorded and documented.

4.11 Training

4.11.1 Personnel using personal fall protection equipment are to be trained. The training shall cover usage, inspection, maintenance and care and the do's and don'ts when using them.

4.11.2 Trained personnel shall be identified on their training records.

4.11.3 Work personnel shall have attended the Enhanced Construction Safety Orientation Course or Work at Height Worker Course.

4.11.4 Work supervisor shall be trained in relevant Work at Height Course.

4.12 Permits

4.12.1 Permit to work at height shall be applied where there are works at height of 2m or more.

4.12.2 Any work at height of 2m or more without a permit shall not be allowed.

4.13 Signage

4.13.1 All workplaces with a fall hazard should have a warning signage to warn site personnel around the area and if necessary, advise work personnel on the necessary PPE required.

4.13.2 All fragile covers, ceilings, roof where access is possible shall have a warning sign to warn all site personnel.

4.14 Fall Prevention Plan

4.14.1 A fall prevention/ protection plan shall be formulated where the hazards for fall from heights of work personnel are identified in projects.

4.14.2 The plan shall attempt to identify all work and workplace where the hazards for fall from heights are present, together with a risk evaluation of all the control measures listed in the plan.