

Fall Arrest Systems (Industrial Rope Access)

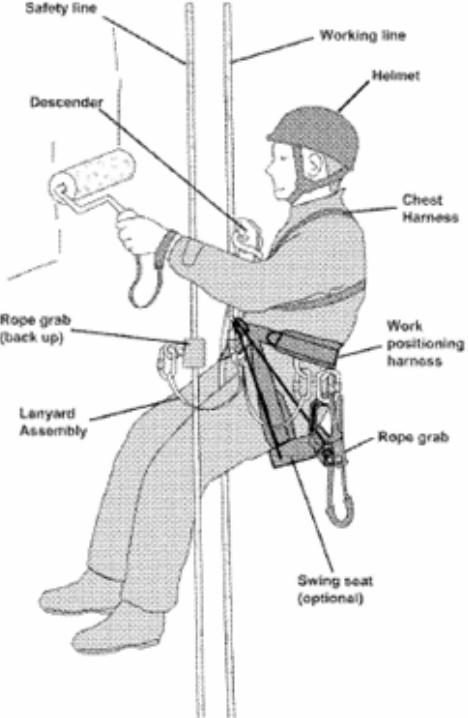
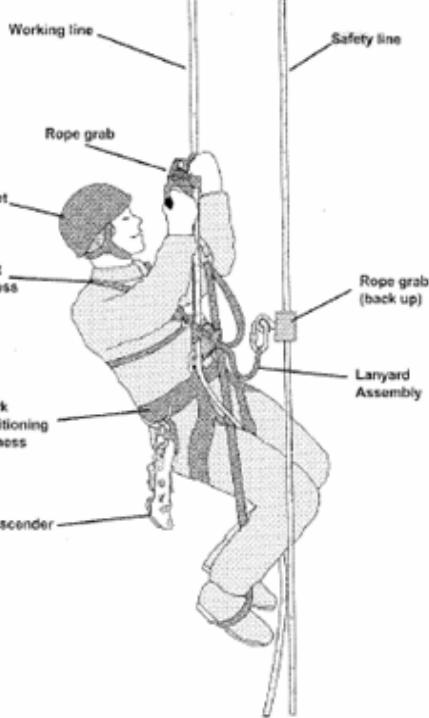
Review date: 27/07/12

Document no.	Work description		
SMS-06-SW-0257	<p>Selection, use and care of industrial rope access systems.</p> <p>Industrial rope access is used for gaining access to a work face, usually by means of vertically suspended ropes.</p>		
Review date	<p>Scope</p> <p>Applies to industrial rope access systems.</p> <p>Does not apply to fall arrest systems.</p>		
	<p>References</p> <ul style="list-style-type: none"> • OHS Reg 2001 Clauses 39, 56-61 • AS/NZS 4488 Industrial rope access systems • IRAA Industry Code (September 2000) published by the Industrial Rope Access Association • SMS-06-GD-0240 Working at Heights • SMS-06-GD-0241 Fall Arrest Systems • SMS-06-SW-0254 Fall Arrest Systems (Anchorages) • SMS-06-SW-0258 Fall Arrest Systems (Inspection and Maintenance) 		
Responsible supervisor <i>Insert name in BLOCK letters</i>	PPE and precautions	Competencies or qualifications	Licences or permits required
	<ul style="list-style-type: none"> • Full body fall arrest harness or work positioning (sit) harness as described below • High vis vest where required • Helmet with chin strap • Non-slip footwear 	Industrial rope access workers must hold a current certificate of competency issued by a relevant industry association (e.g. IRAA, IRATA, etc)	N/A
Tools and equipment required			
See below			
IF CONTROL MEASURES ARE NOT SUITABLE AND MAJOR CHANGES ARE NEEDED, CONDUCT A RISK ASSESSMENT AND DEVELOP NEW CONTROLS ACCORDING TO SMS-06-PR-0104 WORKPLACE RISK MANAGEMENT .			

General	Industrial rope access is a work positioning system for accessing high work areas. It is a commercial form of abseiling used for work such as accessing facades of buildings and structures for window cleaning, sign maintenance and carrying out inspections. Although fall-arrest components are used in the industrial rope access system, the main purpose is to gain access rather than provide backup fall protection. Industrial rope access systems are to be used only where it is not reasonably practicable to use elevating work platforms, scaffolds or building maintenance units. A Safe Work Method Statement (SWMS) is to be developed and implemented for all work involving industrial rope access.
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Equipment	Ropes	Two ropes are to be used – a safety line and a working line. Only static ropes are to be used – dynamic ropes are not permitted for industrial rope access. Each rope is to be the same diameter so that they work the same if inadvertently switched between working line and safety line.
	Helmets	Helmets are to be worn and are to be secured to the head – peaked helmets are not required.
	Harnesses	Harnesses are to be either work positioning (sit) harnesses with compatible chest harnesses, or fall arrest harnesses (full body). If free fall of greater than 600mm is possible a fall arrest harness is to be worn.

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Equipment cont	Rope grabs	<p>All devices are to be specific for commercial industrial rope access use – recreational devices are not to be used</p> <p>Ascender types only – are to be constructed so that it is not possible to move the device down the rope without a deliberate hand action.</p> <p>Ascender and back-up types – are to be a means of preventing the inadvertent removal of the rope from the device (ie. have a safety catch).</p> <p>Back-up types only – can have an automatic function allowing them to move up and down the safety line as the operator moves, without manual intervention.</p>
	Lanyards	<p>Lanyards connecting the harness to the rope grab on the safety line are to be as short as possible. They are to have a free fall of more than 600mm.</p> <p>Lanyards are to connect any tools to the harness to prevent risk of falling objects.</p> <p>Tools and equipment with a weight of over 8kg are to be suspended from individual lines.</p> <p>Tools and equipment are not to be attached to the secondary safety line.</p>
	Bosuns chairs	<p>Are to be used to provide a comfortable sitting position.</p>
	Edge (rope) protection	<p>Are to be used to protect ropes and slings from abrasion, cutting and other damage, eg. at the edge of buildings, when welding or using chemicals.</p>
 <p>The diagram shows a worker in profile, facing right. The worker is wearing a helmet, a chest harness, and work positioning harness. A safety line is attached to the top of the worker's harness. A working line is attached to the worker's harness via a descender. The worker is also wearing a swing seat (optional). Labels include: Safety line, Working line, Helmet, Chest Harness, Work positioning harness, Rope grab (back up), Lanyard Assembly, and Swing seat (optional).</p>		
Figure 1 Descent only, using descender		
 <p>The diagram shows a worker in profile, facing left. The worker is wearing a helmet, a chest harness, and work positioning harness. A safety line is attached to the top of the worker's harness. A working line is attached to the worker's harness via a rope grab. The worker is also wearing a swing seat (optional). Labels include: Working line, Safety line, Helmet, Chest Harness, Work positioning harness, Rope grab, Rope grab (back up), Lanyard Assembly, and Descender.</p>		
Figure 2 Ascent or descent using rope grabs only		

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Anchorage	Anchors used for directly connecting lines	<p>Anchors, and the structure to which they are attached, are to be capable of sustaining a load of 12kN in the direction of the rope pull.</p> <p>The building or structure must be assessed by an engineer, except where it is obvious to a competent person that the anchorage is adequate. eg. an engineer may not be required where a sling of the correct capacity is secured around a solid permanent structure such as a plant room. If there is any doubt an engineer must make the decision based on worst case scenario (ie. free fall arrest). The engineer's approval must be given in writing.</p> <p>All glued, drilled or friction anchors are to be pull tested to 6kN after installation and periodically. Records of pull tests are to be maintained.</p> <p>A fixed plate is to be installed at each permanent anchor point, identifying the installer.</p> <p>Where the anchor is not capable of sustaining an ultimate load of 15kN in the direction of loading, it is to be labelled "For industrial rope access only. Ultimate strength less than 15kN. Check with building/structure owner before use".</p> <p>Before moving into a position where there is a risk of falling, ropes are to be attached to the anchors, and the operator attached to the ropes.</p> <p>All glued, drilled and friction anchors are to be placed so that the shear load is at least twice the tension load, eg. for collared eye-bolts this means a pull at an angle less than 20° to the surface in which the bolt is installed.</p> <p>Refer to the Fall Arrest Systems (Anchorage) SWI.</p>
	Anchors requiring use of a sling	<p>Anchors that require a sling are to comply with the requirements listed above, but are to be rigged for a load of at least 15kN.</p> <p>The sling is to be long enough to be rigged with the angle between the legs no greater than 120°, unless allowance has been made for higher loads imposed by a greater angle which can overload the capacity of the sling (see Figure 3).</p> <p>Slings are to be pull-tested before use.</p> <p>Separate slings are to be used for each rope, ie. one for the working line and one for the safety line.</p> <p>Separate anchor points are to be used for each rope.</p> <p>Refer to the Fall Arrest Systems (Anchorage) SWI.</p>
	Installation	Installation of anchors must be carried out without exposing the installer to a risk of falling.

Manual handling and working environment	UV	Sunscreen and/or clothing to protect from UV is to be worn/used.
	Heat and cold	Sufficient clothing is to be worn to protect against excessively hot and cold working environments. Drinking water is to be available.
	Isolation	<p>Access to emergency services rescue is to be considered when deciding whether to use industrial rope access, due to the difficulty in providing first aid and rescue in the event of a fall.</p> <p>Communications with emergency services are always to be available – consider if mobile phones work in country areas.</p> <p>A dedicated safety observer is always to be used in these circumstances.</p>
	Fatigue/manual handling	A risk assessment of the manual handling risks faced by the workers, including occupational overuse injuries is to be conducted. Refer to the Manual Handling guide.
	Weather	An assessment of the predicted weather for the duration of the work is to be conducted. Industrial rope access work is not to commence if bad weather is forecast.

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Public protection	<p>Where anchors are in places accessible to the public – security of the anchors from unauthorised tampering is to be guaranteed. Use of a safety observer or spotter is to be considered.</p> <p>Where the area below industrial rope access work is open to the public one of the following is to be installed:</p> <ul style="list-style-type: none"> • an exclusion zone using barricades and warning signs • an overhead catch platform above the area. <p>Exclusion zones are to be enforced to prevent entry by unauthorised persons.</p>
Electrical hazards	Because to the difficulty in providing immediate first aid and rescue in the event of a shock, industrial rope access is not to be used where there is a risk of contact with live electrical conductors and equipment.
Falling object protection	Industrial rope access systems are to be installed only in a location where it is possible to provide prompt assistance or rescue if required.
Emergency rescue	<p>Emergency procedures are to be documented and attached to (or included in) the safe work method statement for the task:</p> <ul style="list-style-type: none"> • supervisors must make sure that communication between personnel is sufficient for the task • procedures are to be clearly understood by the operator • two independently anchored ropes are to be used for each person • any person within 2m of an unguarded edge must be adequately secured • operators must not work alone, in case they require assistance in an emergency • barricades and signposts (for both the public and workers) are to be placed on all access areas to the base and anchorage locations
Inspection and maintenance	<p>The operator must make a visual and tactile inspection before and after each use of the equipment and anchors to make sure that they are in serviceable condition.</p> <p>Before commencing work at height, operators must inspect each others equipment to make sure it is set up and damage free. Human error in setting up equipment is a common cause of falls.</p> <p>Permanently installed anchor points are to be inspected annually by a competent person.</p> <p>Glued, drilled or friction anchors are to be pull tested to an axial force of 6kN.</p> <p>For inspection requirements of harnesses, slings and fall arrest devices refer to Fall Arrest Systems (Inspection and Maintenance) SWI.</p>
Training	<p>Before working at heights, RailCorp Employees and Contractors are to be properly trained in:</p> <ul style="list-style-type: none"> • the method of working at heights to be used • an understanding of the particular task requirements and any hazards and risks involved • correct selection, fitting, use, care and storage of: <ul style="list-style-type: none"> - fall prevention systems and arrest equipment - personal protective equipment - tools and equipment to be used • procedures in the event of an emergency such as rescue, accident or injury. <p>Users of fall arrest systems and equipment are to be trained and assessed as competent before being allowed to work without direct supervision in accordance with training requirements defined in the Working at Heights guide.</p> <p>Line Managers are to make sure that employees are properly trained and possess the above competency.</p>
Additional controls	