

# Jointing Copper Cable

Issue date:01/04/09  
Review date: 31/03/12

<b>SWMS number:</b> SMS-06-SW-0680	<b>SWMS Name:</b> Jointing Copper Cable			<b>SWMS Team:</b> <ul style="list-style-type: none"> <li>Renato Dovecer – Safety Coordinator</li> <li>Brett Gordon – Supervisor Comms Field Cable Network</li> <li>Stephen Lacy – Specialist Cable Network</li> <li>Andrew Brassel - Specialist Cable Network</li> </ul>
<b>Custodian (Position):</b> Safety Coordinator	<b>Assumptions:</b> <ol style="list-style-type: none"> <li>Applicable to all Communications &amp; Control Systems division staff.</li> <li>Work conducted in cable pits or troughing.</li> </ol>			<b>Content reviewed by Technical expert (SME) and RailCorp safety professional</b> (position including Div/Group) <ul style="list-style-type: none"> <li>Supervisor Comms Field Cable Network – C&amp;CS, Asset Management</li> <li>Safety Coordinator – C&amp;CS, Asset Management</li> </ul>
<b>Approving Authority (Position):</b> Manager Communications Field Resources	<b>Plant/Equipment/Tools:</b> <ul style="list-style-type: none"> <li>Rescue Equipment (Rope and Rescue Device)</li> <li>Personal Multi-Gas Monitor</li> <li>Fire Extinguisher</li> <li>Cable Jointing Tools</li> <li>Gas Bottle</li> <li>Hand Tools</li> <li>Barricades</li> </ul>	<b>Records/Reporting:</b> <ul style="list-style-type: none"> <li>Jointing Copper Cable Risk Assessment</li> </ul>	<b>Permits/licences required:</b> <ul style="list-style-type: none"> <li>Entry Permit for Confined Spaces</li> <li>Hot Work Permit</li> <li>Entry Permit for Confined Spaces</li> </ul>	<b>PPE required:</b> <ul style="list-style-type: none"> <li>Safety Boots</li> <li>High Visibility Vest</li> <li>Protective Clothing</li> <li>Safety Glasses</li> <li>Hard Hats</li> <li>Protective Gloves (Cut Resistant or Leather).</li> <li>Disposable Latex Gloves</li> <li>Confined Spaces Harness</li> <li>7500 Series Half-Mask Respirator</li> </ul>
<b>Applicable Standards, Codes of Practice and guidance:</b> <ul style="list-style-type: none"> <li>OHS Regulation 2001</li> <li>Rail Safety Act 2002</li> <li>Australian Standard AS 4292.1 2006 "Railway safety management - General requirements"</li> <li>National Code of Practice for Manual Handling [NOHSC: 2005 (1990)]</li> <li>Manual Handling Resource WorkCover NSW 2004</li> <li>AS/NZS 2865: 2001 Safe working in a confined space</li> <li>WorkCover NSW Code of Practice "Safety Line Systems" 1995</li> <li>AS 1940 The storage and handling of flammable and combustible liquids</li> <li>AS 4939 - 2001: Non-reusable personal use containers for the collection and disposal of hypodermic needles and syringes.</li> </ul>	<b>Inspection requirements</b> <ul style="list-style-type: none"> <li>Fire extinguishers – Inspected every 6 months</li> <li>Confined spaces harness – Inspected every 6 months.</li> <li>Personal Multi-Gas Monitor – Calibrated every 6 months</li> <li>Electrical inspecting &amp; tagging – monthly.</li> <li>Maintain inspection and test records in accordance with SMS-16-SR-0057 Inspection and Testing and SMS-05-SR-0027 Records Management.</li> </ul>	<b>Service schedule:</b> N/A	<b>Training/Qualifications required:</b> <ul style="list-style-type: none"> <li>Rail Industry Safety Induction (RISI)</li> <li>OHS Construction Induction Training Card</li> <li>Course in Confined Spaces 6223</li> </ul>	<b>MIMS or METRE Ref:</b> N/A

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1	Access worksite & setup equipment	Struck by train	A	Check hazardous locations register. Where required apply appropriate worksite protection.  PPE: High Visibility Vest	C-	Protection Officer Line Manager	SMS-06-GD-0223 Hazardous Rail Corridor Locations SMS-06-GD-0323 Personal Protection Equipment
		Slips, trips and falls	B-	Maintain awareness of terrain. Make sure work area is clear of obstacles. Plan a clear path of travel; remove any slip, trip hazards.  PPE: Safety Boots	C-	Line Manager	SMS-06-GD-0323 Personal Protection Equipment
2	Open pit / troughing	Fall from heights (cable pits)	B+	Barricade area.	C-	Line Manager	SMS-06-GD-0240 Working At Heights
		Manual Handling	B-	Follow the correct bending and lifting techniques: keep back straight, elbows in and bend at the knees.  Lift using your legs and body weight, not your back. Perform all movements smoothly, in a controlled, balanced & comfortable position.  Use a mechanical device (pit lid lifter) and if required use assistance when lifting.  Co-ordinate lifting	C-	Line Manager	SMS-06-GD-0001 Guide to Manual Handling
		Crush injuries	C+	Co-ordinate lifting  PPE: Safety Boots	D	Line Manager	SMS-06-GD-0001 Guide to Manual Handling SMS-06-GD-0323 Personal Protection Equipment
		Cuts and abrasions	C+	Be aware of sharp edges.  PPE: Protective Gloves (Cut Resistant or Leather).	D	Line Manager	SMS-06-GD-0323 Personal Protection Equipment

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2	Open pit / troughing (cont.)	Bites and stings (eg. Snakes, spiders, insects)	B+	<p>Inspection of site prior to commencement of work.</p> <p>Fumigate as required</p> <p>Use insecticide in accordance with hazardous substances risk assessment and MSDS as required.</p> <p>PPE: Safety Boots, Protective Gloves (Cut Resistant or Leather)</p>	C-	Line Manager	SMS-06-GD-0323 Personal Protection Equipment
		Contact with sharp objects (eg. Syringes)	B+	<p>Inspection of site prior to commencement of work.</p> <p>Sharps container and tongs to be on-site in case sharps/needles are found and can be disposed of safely.</p> <p>PPE: Protective Gloves (Cut Resistant or Leather).</p>	C-	Line Manager	SMS-06-GD-0323 Personal Protection Equipment  SMS-06-SW-0405 Handling Sharps

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2	Open pit / troughing (cont.)	Confined spaces <u>Note:</u> Only applies to cable pits assessed as a confined space.	A	<p>All work performed in confined spaces must be assessed for risk and be approved by a Line Manager.</p> <p>Where the risk assessment identifies it as necessary, a trained and competent person must conduct atmospheric test.</p> <p>Use gas monitoring device in accordance with the manufactures instructions.</p> <p>Monitoring results are to be recorded in the confined space entry permit and made available to all employees that are required to enter the confined space.</p> <p>Where a safe oxygen level or a safe level of air contaminant cannot be provided, person entering confined space must have appropriate respiratory equipment (eg. 7500 Series Half-Mask Respirator).</p> <p>A Stand-by person is required and must:</p> <ul style="list-style-type: none"> <li>• Be stationed at the entrance to the confined space;</li> <li>• Be available at all times while the confined space is occupied;</li> <li>• Ensure that communication is constantly maintained;</li> <li>• Not enter the confined space.</li> </ul>	C+	Line Manager	SMS-06-GD-0035 Confined Spaces SMS-06-FM-0038 Confined Spaces Identification and Assessment Checklist SMS-06-SW-1105 Use of Gas Monitors SMS-06-GD-0323 Personal Protection Equipment SMS-06-FM-0037 Confined Space Entry Permit

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3	Enter pit  <u>Note:</u> Only applies to cable pits. Cables run through troughing proceed to step 4.	Confined spaces  <u>Note:</u> Only applies to cable pits assessed as a confined space.	A	An Entry Permit must be completed before entering a confined space.  The entry permit must be posted outside the confined space and remain so until the work is completed.  Prior to entry the atmospheric testing device must be charged, calibrated and fully functional.  The atmosphere must be continuously monitored whilst the confined space is occupied.  The person entering the confined space must be competent and certified working confined spaces.  Persons working in the confined space must be constantly alert at all times for any changing conditions within the confined space.  Workers must immediately leave the confined space under the following circumstances: <ul style="list-style-type: none"><li>• In the event of an alarm from monitoring equipment or any other indication of danger</li><li>• When experiencing any dizziness, light-headedness or difficulties.</li><li>• When instructed by the stand-by person to evacuate the confined space</li></ul> PPE: Confined spaces harness, 7500 Series Half-Mask Respirator.	C+	Line Manager	SMS-06-GD-0035 Confined Spaces SMS-06-SW-1105 Use of Gas Monitors SMS-06-GD-0323 Personal Protection Equipment SMS-06-FM-0037 Confined Space Entry Permit
		Inadequate lighting (pits)	B-	Check if lighting is adequate before commencing work.  Use appropriate lighting (flood lights, battery powered torch).	C-	Line Manager	

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3	Enter pit  <u>Note:</u> Only applies to cable pits. Cables run through troughing proceed to step 4.	Fall from heights	B+	Climb and descend facing the ladder maintaining three points of contact with the hands gripping the stiles or each rung.  Tools to be carried using either a bag that allows both hands to be free, or passed down from the pit opening after climbing.	C-	Line Manager	SMS-06-GD-0240 Working At Heights
		Restricted room for movement	C+	Reduce exposure by introducing frequent breaks and rotate jobs.  Use assistance if required	D	Line Manager	
4	Pull cable out of pit or troughing (if there is sufficient slack) and cut cable to appropriate length.	Cuts and abrasions	C+	Be aware of sharp edges.  Cut away from body & limbs.  Use appropriate tools.  PPE: Protective Gloves (Cut Resistant or Leather).	D	Line Manager	SMS-06-GD-0323 Personal Protection Equipment
		Muscular strain	B-	Follow the correct bending and lifting techniques: keep back straight, elbows in and bend at the knees.  Perform all movements smoothly, in a controlled, balanced & comfortable position.  Use assistance if required	C-	Line Manager	SMS-06-GD-0001 Guide to Manual Handling
		Restricted room for movement	C+	Reduce exposure by introducing frequent breaks and rotate jobs.  Use assistance if required	D	Line Manager	
5	Strip & clean cable for jointing	Cuts and abrasions	C+	Be aware of sharp edges.  Cut away from body & limbs.  Use appropriate tools.  PPE: Protective Gloves (Cut Resistant or Leather).	D	Line Manager	SMS-06-GD-0323 Personal Protection Equipment

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5	Strip & clean cable for jointing (cont.)	Contact with chemicals (Cable Cleaner)	B+	<p>Do not touch your eyes while working with chemicals.</p> <p>Make sure there is access to water and soap.</p> <p>Wash hands thoroughly after working with chemicals.</p> <p>PPE: Safety Glasses, Disposable Latex Gloves.</p>	C+	Line Manager	SMS-06-GD-0199 Dangerous Goods and Hazardous Substances SMS-06-GD-0323 Personal Protection Equipment SMS-06-SW-0195 Safe Handling and Storage of Flammable and Combustible Liquids
		Exposure to fumes and odours	B-	Make sure adequate ventilation.	C-	Line Manager	SMS-06-GD-0323 Personal Protection Equipment
6	Joint cable pairs and prepare joint for enclosure.	Exposure to heat / flame (if soldering is required)	B+	<p>Obtain Hot Work Permit if required.</p> <p>If confined space, use exhaust ventilation to extract fumes.</p> <p>Remove all combustible materials not required for the task.</p> <p>Use correct tools, equipment and materials.</p> <p>PPE: Safety Glasses, Safety Gloves, Protective Clothing.</p> <p>Restrict access to work area to essential personnel.</p> <p>Fire fighting equipment is suitable and readily available.</p> <p>Make sure all personnel are trained in emergency procedure in case of fire.</p>	C-	Line Manager	SMS-06-PR-0329 Hot Work SMS-06-GD-0323 Personal Protection Equipment
		Pinch / Crush injuries	B+	Correct use of jointing tool	C+	Line Manager	

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6	Joint cable pairs and prepare joint for enclosure. (cont.)	Repetitive strain injuries	B+	Reduce exposure by introducing frequent breaks and rotate jobs.  Perform all movements smoothly, in a controlled, balanced, comfortable position.	C-	Line Manager	
7	Apply heat shrink to enclosure	Exposure to heat / flame	B+	Obtain Hot Work Permit if required. If confined space, use exhaust ventilation to extract fumes.  Remove all combustible materials not required for the task.  Use correct tools, equipment and materials.  PPE: Safety Glasses, Safety Gloves, Protective Clothing.  Restrict access to work area to essential personnel.  Fire fighting equipment is suitable and readily available.  Make sure all personnel are trained in emergency procedure in case of fire.	C-	Line Manager	SMS-06-PR-0329 Hot Work  SMS-06-GD-0323 Personal Protection Equipment
		Exposure to fumes and odours	B-	Make sure there is adequate ventilation	C-	Line Manager	SMS-06-GD-0323 Personal Protection Equipment
		Compressed gases	C+	Make sure air hoses are in good condition.	D	Line Manager	SMS-06-GD-0199 Dangerous Goods and Hazardous Substances
8	Place cable back into pit / troughing	Fall from heights (pits)	B+	Maintain 3 points of contact with ladder.	C-	Line Manager	SMS-06-GD-0240 Working At Heights  SMS-06-SW-0265 Fixed Ladders, Stairways, Platforms and Walkways

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8	Place cable back into pit / troughing. (cont.)	Inadequate lighting (pits)	B-	Check if lighting is adequate before commencing work. Use appropriate lighting (flood lights, battery powered torch).	C-	Line Manager	
		Restricted room for movement (pits)	C+	Reduce exposure by introducing frequent breaks and rotate jobs. Use assistance if required	D	Line Manager	
		Cuts and abrasions (troughing)	C+	Be aware of sharp edges. PPE: Protective Gloves (Cut Resistant or Leather).	D	Line Manager	SMS-06-GD-0323 Personal Protection Equipment
		Muscular strain	B-	Follow the correct bending and lifting techniques: keep back straight, elbows in and bend at the knees. Perform all movements smoothly, in a controlled, balanced & comfortable position. Use assistance if required	C-	Line Manager	SMS-06-GD-0001 Guide to Manual Handling
9	Exit and close Pit / Troughing lid	Fall from heights (cable pits)	B+	Ascend facing the ladder maintaining three points of contact with the hands gripping the stiles or each rung. Tools to be carried using either a bag that allows both hands to be free, or passed up to the pit opening before climbing.	C-	Line Manager	SMS-06-GD-0240 Working At Heights
		Confined spaces  <u>Note: Only applies to cable pits assessed as a confined space.</u>	A	When immediately exiting the confined space, report to the stand-by person and note the time of exit in the entry permit. At the completion of work, the confined space entry shall be closed and secured; and the permit returned to the issuer and closed. Records of all confined space permits must be kept.	C+	Line Manager	SMS-06-GD-0035 Confined Spaces SMS-06-GD-0323 Personal Protection Equipment SMS-06-FM-0037 Confined Space Entry Permit

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9	Exit and close Pit / Troughing lid (cont.)	Cuts and abrasions	C+	Be aware of sharp edges. PPE: Protective Gloves (Cut Resistant or Leather).	D	Line Manager	SMS-06-GD-0323 Personal Protection Equipment
		Crush injuries	C+	Co-ordinate lifting PPE: Safety Boots.	D	Line Manager	SMS-06-GD-0001 Guide to Manual Handling SMS-06-GD-0323 Personal Protection Equipment
		Manual Handling	B-	Follow the correct bending and lifting techniques: keep back straight, elbows in and bend at the knees. Lift using your legs and body weight, not your back. Perform all movements smoothly, in a controlled, balanced & comfortable position. Use a mechanical device (pit lid lifter) and if required use assistance when lifting. Co-ordinate lifting	C-	Line Manager	SMS-06-GD-0001 Guide to Manual Handling
10	Vacate site	Struck by train	A	Adhere to worksite protection. PPE: High Visibility Vest	C-	Protection Officer Line Manager	SMS-06-GD-0323 Personal Protection Equipment
		Slips, trips and falls	B-	Maintain awareness of terrain. PPE: Safety Boots	C-	Line Manager	SMS-06-GD-0323 Personal Protection Equipment

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**NOTE: Each work group or team member must sign off on the SWMS to acknowledge they have been briefed about or instructed in the SWMS**

RailCorp Level 2 Risk Matrix - Regional & Local (Workplace)		Likelihood/Frequency							Definition for Use - Regional & Local level (Workplace)
		Event Frequency	Less than once every 1000 years	Once every 100 to 1,000 years	Once every 10 to 100 years	Once every 1 to 10 years	More than once per year up to and including 10 times per year	More than 10 times per year	
		Historical (Likelihood)	Unheard of in the rail industry	Has occurred once or twice in the rail industry	Has occurred many times in the rail industry, but not in NSW	Has occurred once or twice in NSW	Has occurred frequently in NSW	Has occurred frequently at specific locations	
Consequence		Workplace Predictive (Likelihood)	Not expected to occur	May occur only in exceptional circumstances	Could occur at some time but not likely	You would expect it to occur at least once in the next 10 years performing similar activities	You would expect it to occur at least once this year performing similar activities	You would expect it to occur at least once this month performing similar activities	As an example, the Level 2 scale would be used when examining the risk of slips, trips and falls on specific RailCorp platforms within a region or at a particular station, or the risk of fire within a depot.
			F1	F2	F3	F4	F5	F6	
Incredible	Improbable	Remote	Occasional	Probable	Frequent				
>10 Fatalities	C6	Disastrous	B-	B+	A	A	A	A	There are 3 options for descriptors which can be used to determine the frequency category. One set of descriptors is provided for frequency, one for historical likelihood, and one for predictive likelihood in the workplace. Choose the most appropriate.  To score the risk, follow the steps:  1. Identify the magnitude of the credible consequence if the risk were to occur. If applicable, risks should be considered in terms of the safety (this matrix), commercial and environmental impact (using other matrices).  2. Identify the likelihood of this level of consequence occurring. (This is done after considering the effectiveness of the current controls in place)  3. Score the risk using the combination of likelihood and consequence ranking.  Note: Where there are a range of credible consequences which may lead to a different level of risks and/or where the controls may be different. It may be useful to score the risk more than once.
2-10 Fatalities	C5	Catastrophic	C+	B-	B+	A	A	A	
1 Fatality (2-10 Major Injuries)	C4	Critical	C-	C+	B-	B+	A	A	
1 Major Injury	C3	Major	D	C-	C+	B-	B+	A	
1 or more Minor Injuries	C2	Minor	D	D	C-	C+	B-	B+	
First aid treatment, or illness/injury not requiring treatment	C1	Negligible	D	D	D	C-	C+	B-	