

SWMS – Civil maintenance Wire feed Welding

Issue date: 04/10/07
Review date: 04/10/10

SWMS number: SMS-06-SW-0773	SWMS Name: Wire feed welding.			SWMS Team: Livio Radman Tony Karakolevski Dragan Sukara John Jobson Mick Meehan
Custodian (Position): Business Systems Officer, Illawarra Region. Peter Sharpe.	Assumptions: Fine weather, daylight hours, railway tracks operational with OHW power live. Staff have had Regional Induction. Staff briefed in SWMS: Civil inspections and maintenance in the danger zone of the railway track.			Content reviewed by Technical expert (SME) and RailCorp safety professional (position including Div/Group)
Approving Authority (Position): General Manager, Infrastructure Maintenance.	Plant/Equipment/Tools: <ul style="list-style-type: none"> Wire feed welding unit. Magnetic Particle test unit. Oxy/LPG equipment. Flint gun. Disc grinder. Profile grinder. Points and crossing grinder. Electric generator. Welding screens. Spray paint. Thermo melt crayon. Fire fighting equipment. Hand tools. 	Records/Reporting: <ul style="list-style-type: none"> Scope of work. Weld identification label. Wire feed welding return (Form WFR1, TMC 222) Smartweld. 	Permits/licences required: <ul style="list-style-type: none"> Hot work permit when applicable. Plant operator competency as required. Minor Plant operator competency as required. Electrical permit holder QEL as required. 	PPE required: <ul style="list-style-type: none"> Steel Cap Boots. Safety Glasses. Long sleeve shirt. Long trousers. Safety Vest. Hard Hat as required. Long welding gloves. Spats. Welding helmet, shade 11 or 12 lens. Safety goggles. Flip type Welding goggles, shade 5 lenses. Welder's assistant – Anti flash glasses. Hearing protection.
Applicable Standards, Codes of Practice and guidance: <ul style="list-style-type: none"> AS4839. 	Inspection requirements <ul style="list-style-type: none"> Electrical equipment has current test tag. Daily plant check. Pre work check of tools and equipment. Inspection of oxy-fuel gas equipment, see TMC 222, chapter 6. 	Service schedule: Nil. MIMS or METRE Ref: P08800 – Build up turnout XING and wing rail. P08C04 - Build up turnout XING and wing rail. P03C09 – Repair wheelburn by wirefeed weld.	Training/Qualifications required: <ul style="list-style-type: none"> RIC54W. Weld using wire feed welding. TDTD3397B. Operate vehicle mounted loading crane. Railcorp Infrastructure Engineering - Track Installation and Maintenance Manual TMC 222 chapters 5 and 6. 	

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1.	Unloading/loading tools and equipment from vehicle, and positioning at worksite.	Manual handling.	C+	Correct manual handling techniques. Team Lifts. Use mechanical aids as required.	C-	Team Member	SMS-06-GD-0001. Guide to Manual Handling.
		Explosion from oxy/LPG bottles.	B+	Ensure oxy acetylene bottles are secured in upright position at all times.	C-	Team Member	
		Struck by object when loading truck with vehicle mounted crane.		Staff to keep safe distance from vehicle loading. Hard hat PPE. Operator to hold vehicle crane loading competency TD TD 3397B SWI vehicle mounted crane.			SWI: Vehicle mounted crane. SMS-06-SW-0532. Protective helmets. TD TD 3397B
		Contact with sharp objects.	C+	Remove or blunt if possible. Wear gloves.	C-	Team Member.	SMS-06-SW-0530. Protective gloves.
		Crush injury.	B-	Correct manual handling techniques. Team lifts. Orderly loading of truck. Use mechanical lifting device where possible. Stay clear of moving equipment such as tail gate loaders and lifting devices.	C+	Team Member	SMS-06-GD-0001. Guide to Manual Handling.
		Incorrect loading of truck resulting in roll over, equipment/plant/tools coming of vehicle.	B+	All equipment/plant and tools to be secured. Balanced loading of truck.	B-	Worksite supervisor Truck driver.	
		Electric shock from overhead power lines or wiring.	B+	Staff to have been trained in Electrical Awareness or RISI. Maintain Electrical clearances. Obtain Electrical Isolation permit prior to commencing work if required.	B-	Worksite supervisor.	SMS-06-GD-0268. Working around electrical infrastructure.

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		Slips, trips, falls and fall from heights.	B+	Correct manual handling techniques. Team lifts. Orderly loading of truck. Get on and off truck using steps provided.	B-	Worksite supervisor Team member	SMS-06-GD-0001. Guide to Manual Handling.
2.	Inspect worksite.	See SWMS – Civil inspections and maintenance in the danger zone.		See SWMS – Civil inspections and maintenance in the danger zone.			SWMS – Civil inspections and maintenance in the danger zone.
3.	Gouge out, or grind out area to be welded.	Muscular strain.	C+	Rotate task. Do not overstretch.	C-	Worksite supervisor Team member	
		Crush injury from moveable rail turnout equipment.	B+	Contact signaller before inspection points. Clip points if required.	D	Worksite supervisor Team member	
		Struck by flying object , eg disintergrating disc, metal fragments.	B+	Safety goggles, or flip type welding goggles. Other workers to keep safe distance. Periodic check of tools. Clean ballast from grinder impact area. SWI – Disc Grinder.	C-	Team Member. Worksite supervisor.	SMS-06-SW-0529. Eye protection. SWI – Disc Grinder.
		Burns from oxy - fuel gas equipment.	B+	Wear long pants, spats and long sleeved shirt. PPE. Wear long welding gloves PPE. Use flint gun to light torch. Wear Flip type Welding goggles, shade 5 lense, PPE.	C-	Team Member.	Long pants, spats and long sleeved shirt. PPE. Long welding gloves PPE. Flip type Welding goggles, shade 5 lense, PPE.
		Setting fire to surrounding vegetation.	B+	Keep area clear of combustible materials. Appropriate fire fighting equipment on site. Fire watch person where applicable. Provide protective screen when required.	C-	Worksite supervisor.	
		Hearing damage.	B-	Hearing protection PPE.	C-	Team Member.	SMS-06-GD-0531. Hearing protection.

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4.	Test work area for cracks with the magnetic particle test kit.	Damage to lungs or airways from chemical fumes.	B-	MSDS for applicable paint or dye.	C-	Team Member.	MSDS for applicable paint or dye.
5.	Pre heat work area and test with thermo melt crayon.	Burns from oxy - fuel gas equipment and from hot rail	B+	Wear long pants, spats and long sleeved shirt. PPE. Wear long welding gloves PPE. Use flint gun to light torch. Wear Flip type welding goggles, shade 5 lenses, PPE. Define the hot work area to keep non welders away.	C-	Team Member.	Long pants, spats and long sleeved shirt. PPE. Long welding gloves PPE. Flip type Welding goggles, shade 5 lense, PPE.
6.	Carry out wire feed welding.	Electrocution from severed power cables.	B-	Protect cables from damage. Always run cables under rail.	C-	Team Member.	
		Damage to eyes by welding flash, and removal of slag from weld.	B-	Welder to wear welding helmet, shade 11 or 12 lense, PPE. Welder assistant to wear anti flash glasses. Place welding screens around area. Inform other workers that welding is to commence. Other workers not to look at the arc.	C-	Team Member.	Welder to wear welding helmet, shade 11 or 12 lense, PPE. Welder assistant to wear anti flash glasses.
		Damage to eyes of the public by welding flash, and removal of slag from weld.	B-	Place welding screens around area. Clear area of public.	C-	Worksite supervisor	
		Burns to body.	B+	Wear long pants, spats and long sleeved shirt. PPE. Wear long welding gloves PPE. Define the hot work area to keep non welders away.	C-	Team Member	Long pants, spats and long sleeved shirt. PPE. Long welding gloves PPE.
		Damage to lungs or airways from welding fumes.	C+	Staff not involved in task instructed to stay up wind.	C-	Team Member	
7.	Finish grinding of weld.	Manual handling.	C+	Correct manual handling techniques. Team lift to lift grinder.	C-	Team Member	SMS-06-GD-0001. Guide to Manual Handling.

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		Muscular strain.	C+	Rotate task. SWI grinder	C-	Worksite supervisor Team member	SWI: Grinder
		Struck by flying object, eg disintergrating disc, metal fragments.	B+	Safety goggles, or flip type welding goggles. Other workers to keep safe distance. Clean ballast from grinder impact area. SWI – Profile Grinder.	C-	Team Member. Worksite supervisor.	SWI – Profile Grinder.
		Burns to body.	B+	Wear long pants, spats and long sleeved shirt. PPE. Safety goggles PPE. Do not touch hot rail.	C-	Team Member.	Long pants, spats and long sleeved shirt. PPE. Safety goggles PPE.
		Setting fire to surrounding vegetation.	B+	Keep area clear of combustible materials. Appropriate fire fighting equipment on site. Fire watch person where applicable. Provide protective screen when required.	C-	Worksite supervisor.	
		Hearing damage.	B-	Hearing protection PPE.	C-	Team Member.	SMS-06-GD-0531. Hearing protection.
8.	Paint and tag finished weld.	Damage to lungs or airways from chemical fumes.	B-	MSDS for applicable paint or dye.	C-	Team Member.	MSDS for applicable paint..
	Pack up worksite.	Work incomplete.	C+	Carry post work inspection.	D	Worksite supervisor.	
		Material or equipment left on site.	C+	Carry post work inspection.	D	Worksite supervisor.	

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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	
Consequence		Incredible	Improbable	Remote	Occasional	Probable	Frequent		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.
>10 Fatalities	C6	Disastrous	B-	B+	A	A	A	A	To score the risk, follow the steps:
2-10 Fatalities	C5	Catastrophic	C+	B-	B+	A	A	A	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).
1 Fatality (2-10 Major Injuries)	C4	Critical	C-	C+	B-	B+	A	A	2. Identify the likelihood of this level of consequence occurring. (This is done after considering the effectiveness of the current controls in place)
1 Major Injury	C3	Major	D	C-	C+	B-	B+	A	3. Score the risk using the combination of likelihood and consequence ranking.
1 or more Minor Injuries	C2	Minor	D	D	C-	C+	B-	B+	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.
First aid treatment, or illness/injury not requiring treatment	C1	Negligible	D	D	D	C-	C+	B-	