Calibrating Rail Weighbridges at Maintenance Centres

SWMS number:
SMS-06-SW-1333

SWMS Name:
Calibrating Rail Weighbridges at Maintenance Centres

SWMS Team:
Ian Ying (Scientific Services Officer)
Gaye Cameron, A/Safety Manager
James Ryan, Safety document writer
Sam El-Rozz, Safety Facilitator

Custodian (Position):
Manager Strategic Projects RSD

Assumptions:
Calibrating is carried out at a Maintenance Centre

Content reviewed by Technical expert (SME) and RailCorp safety professional (position including Div/Group)
Ian Ying, Scientific Services Officer
David Parkinson, Professional Engineer
Suresh Singh Safety Manager RSD
Rob Jackson, Manager SMS Projects

Approving Authority (Position):
GM Safety and Environment

Applicable Standards, Codes of Practice and guidance:
- NSW OHS Act 2000
- NSW OHS Regulation 2001
- ASCC National Standard for Manual Tasks 2007
- NSW Rail Safety Act 2008
- NSW Rail Safety (General) Regulation 2003
- AS 2193-2005

Plant/Equipment/Tools:
- Reference Load cell
- Calibration beam (30Kg)
- Trolley
- Hydraulic pump
- Hydraulic ram
- Rail clamps
- Dead blow Hammer
- Hand tools
- V- block spirit level

Records/Reporting:
- Engineering Reports
- Calibration Reports

Permits/licences required:
- Drivers Licence Class C

Inspection requirements
- Regular Maintenance Procedures
- Annual calibration of the reference load cell

Service schedule:
As per Manufacturers instructions

MIMS or METRE Ref:
Not Applicable

Training/Qualifications required:
- RISI
- Electrical Safety Awareness
- Maintenance Centre Induction
- Manual handling training
- Competent in the use of SWIs
- Competent in fitting lifting gear to engineered lifting points
- Competent in the operation of a crane

PPE required:
- Safety Footwear
- Safety Vest
- Protective Gloves
- Safety Eyewear
- Hard hat
- Hearing protection as required
- Sun protection (hats, sun block, long sleeved shirts, etc.) as required

Number	Step	Hazard or human error (Safety/Environmental hazards identified, including physical environment, human errors, plant and equipment)	Risk ranking before controls	Control (to be Implemented to eliminate or reduce the risk to the lowest practicable level)	Risk ranking after controls	Responsibility	Job step to be completed In accordance with (name associated documentation)
	General Hazards These Hazards and Controls apply throughout this SWMS	Vehicle accident travelling to and from a Maintenance Centre	C- (C2,F3)	• Inspecting the vehicle prior to use • Use of a regularly serviced vehicle • Always driving in accordance with the road rules • Securing all equipment carried • Use of an adequate load barrier	D (C1,F3)	Scientific Services Officer	
		Manual handling of equipment (beam, clamps etc) to and from the transporting vehicle and around the Weighbridge	B - (C3,F4)	• Parking the transport vehicle as close to the Weighbridge as possible • Use of a trolley or an Electric Maintenance vehicle, to transport all equipment • Team lifts (Min. 2 man lifting) • Use of the overhead crane • Use of the portable winch • Manual handling training • Making multiple trips, as required	C+ (C3,F3)	Scientific Services Officer	SMS-06-GD-0001 Guide to Manual Handling
		Slip, trip and fall whilst pushing the equipment trolley to/from the vehicle to the weighbridge	C + (C2,F4)	• Parking the vehicle as close to the Weighbridge as possible • Entry and Exit from the weighbridge using a designated walkway • Safety footwear • Maintenance Centre housekeeping	C - (C2,F3)		
		Strains and sprains climbing under and over weighbridge rails	B - (C3,F4)	• Not carrying any items when climbing rails • Use of access steps and ladders when available • Safety footwear	C - (C2,F3)		
		Electric Shock from test equipment and associated power leads	B - (C3,F4)	• Regular maintenance and inspection schedule of test equipment • Ensuring all equipment is tested & tagged • Covered terminals • First aiders, working in accordance with Electric Shock Protocol • Use of portable Residual Current Devices	C+ (C3,F3)	Scientific Services Officer	SMS-06-SW-0269 Electric Shock Protocol

Number	Step	Hazard or human error (Safety/Environmental hazards identified, including physical environment, human errors, plant and equipment)	Risk ranking before controls	Control (to be Implemented to eliminate or reduce the risk to the lowest practicable level)	Risk ranking after controls	Responsibility	Job step to be completed In accordance with (name associated documentation)
		Strike by train movement on an adjacent line	B - (C4,F3)	• RISI • Site induction • Trained driver • Placing Stop boards and barriers • Hi-Vis clothing • Sounding horn before moving off • Red flag on parked train • Site traffic management plan • Guard's emergency cock lock out • Staying in a 'safe place' in accordance with RISI training and observing the train during movement	C - (C3,F2)	Scientific Services Officer	SMS-12-OI-0886 Red Flagging Trains in stabling yards, depots and Maintenance Centres SMS-06-SW-1133 Guards Emergency Cock Lock-Out
		Strike by a train entering the weighbridge line	B - (C4,F3)	• Road isolation • RISI • Site induction • Trained driver • Placing Stop boards and barriers • Hi-Vis clothing • Sounding horn before moving off • Red flag on parked trains • Site traffic management plan • Guard's emergency cock lock out • Staying in a 'safe place' in accordance with RISI training and observing the train during movement	C - (C3,F2)		
		Injury while using an overhead crane (e.g. Struck or crushed by the beam)	B - (C4,F3)	• Pre-work brief • Use of a trained crane operator • Hard Hat • Never placing any part of your body under a suspended load • Use of an observer when moving the beam • SWL sticker on the beam • Pre-work inspection of all lifting slings, chains	C - (C3,F2)		SMS-06-SW-1151 Overhead Travelling Crane - Safe Operation

Number	Step	Hazard or human error (Safety/Environmental hazards identified, including physical environment, human errors, plant and equipment)	Risk ranking before controls	Control (to be Implemented to eliminate or reduce the risk to the lowest practicable level)	Risk ranking after controls	Responsibility	Job step to be completed In accordance with (name associated documentation)
		Bites and stings from insects and rodents	C + (C3,F3)	• Inspecting area before touching • Lighting, as required • Full length clothing • Safety footwear • Protective gloves • Insect repellent • First Aiders	C - (C2,F3)		
		Trip on track	C + (C3,F3)	• Safety footwear • Ensuring overhead lighting is operational • Use of the 6ft or walkways, where possible, in preference to walking on tracks • Stepping over, not onto, rail head, in accordance with RISI training	C - (C2,F3)		

1	**Static Calibration of in-rail load cell Weighbridges**						
1.1	Transporting the test equipment from Engineering & Planning to the Vehicle	Manual handling of test equipment	B - (C3,F4)	• Securing the beam to the trolley • Use of a trolley • Manual handling training • Use of team lifts	C + (C3,F3)	Scientific Services Officer	SMS-06-GD-0001 Guide to Manual Handling
1.2	Travelling to the Maintenance Centre	Vehicle accident travelling to a Maintenance Centre		• See General Hazards		Scientific Services Officer	
		Removing equipment from the vehicle		• See General Hazards			
1.3	Transporting equipment to the Weighbridge area	Transporting equipment to the Weighbridge area		• See General Hazards • Pre-work brief		Scientific Services Officer	
		Strike by train	B - (C4,F3)	• RISI • Site induction • Placing Stop boards and barriers • Hi - Vis clothing • Trained train drivers • Sounding horns • Site traffic management plan • Red Flag on parked trains	C - (C3,F2)		SMS-12-OI-0886 Red Flagging Trains in stabling yards, depots and Maintenance Centres
		Slip, trip and fall whilst pushing the equipment trolley to/from the vehicle to the weighbridge		• See General Hazards			
1.4	Prepare the calibration equipment (fitting the rail clamps, placing the beam etc)	Manual handling of equipment to and from the load cell positions across the 4 ft		• See General Hazards		Scientific Services Officer	
		Strains and sprains whilst lifting equipment		• See General Hazards			
		Injury while using an overhead crane (e.g. Struck or crushed by the beam)		• See General Hazards			
		Slips, trips, falls within and into the 4 ft		• See General Hazards			
		Strike by train		• See General Hazards			
		Trip on track		• See General Hazards			

		Crush/Pinch injury while fitting test equipment	C + (C2,F4)	• Two person task • Communication • Trained operators • Use of an overhead crane • Protective gloves	C - (C2,F3)		
		Electric shock from the equipment		• See General Hazards		Scientific Services Officer	
		Fall into the 4ft	C + (C3,F3)	• Use designated walkways	C - (C2,F3)		
1.5	Start calibration procedure	Electric shock from the equipment		• See General Hazards		Scientific Services Officer	
		Lifting the 15kg load cell/ram into position		• See General Hazards			
		Load cell/ram falling onto operators	C + (C3,F3)	• Trained operators • Safety footwear • Positioning body parts clear of drop path	C - C2,F3)		
		Crush/Pinch injury while applying the test load	C - (C2,F3)	• Trained operators • Positioning body parts clear of nip and crush points • Protective gloves • Communication	D (C1,F3)		
		Strike by hammer when levelling Load Cell	C - (C2,F3)	• Protective gloves • Trained operators • Communication • Keeping others clear while levelling the Load Cell	D (C1,F3)		
		Injury from hydraulic leak while using the hydraulic pump	C - (C2,F3)	• Trained operator ensures all hydraulic connections are secure • Regular inspection and maintenance of all hydraulic equipment	D (C1,F3)		
1.6	Compare readings between Weighbridge meter panel and test equipment meter or, as required, adjusting testing equipment	Strains and sprains climbing under and over rail		• See General Hazards		Scientific Services Officer	
		Slip and falls whilst walking on walkways		• See General Hazards			
		Strike by a train entering the weighbridge line		• See General Hazards			
		Slips, trips, falls on the 6ft		• See General Hazards			
		Strike by a train entering the weighbridge line		• See General Hazards			

1.7	Moving the equipment from one load cell position to another position, as required	*See step 1.4*		• *See step 1.4*		Scientific Services Officer	
				•			
				•			
1.8	Remove test gear from the Weighbridge	*See step 1.4*		• *See step 1.4*		Scientific Services Officer	
1.9	Transport test equipment from the Weighbridge to the transport vehicle	*See step 1.3*		• *See step 1.3*		Scientific Services Officer	
1.10	Travelling from the Maintenance Centre to 477 Pitt St.	*See step 1.2*		• *See step 1.2*		Scientific Services Officer	
1.11	Transport test equipment from vehicle to Engineering and Planning	*See step 1.1*		• *See step 1.1*		Scientific Services Officer	

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

Team member name (Please print)	Team Member signature	Instructor/ Briefer name	Date	Team member name (Please print)	Team Member signature	Instructor/ Briefer name	Date

RailCorp Level 2 Risk Matrix - Regional & Local (Workplace)		Likelihood/Frequency						
		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
		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
			F1	F2	F3	F4	F5	F6
Consequence			Incredible	Improbable	Remote	Occasional	Probable	Frequent
>10 Fatalities	C6	Disastrous	B-	B+	A	A	A	A
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-

Extreme
High
Medium
Low

Definition for Use - Regional & Local level (Workplace)

Used for workplace hazards and safety risks that do not consider the whole of the network. Indicatively this matrix is appropriate for use where the hazards under consideration are up to 10% of the total network exposure. This includes regional and local workplace risk assessments.

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.

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 liklihood 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 matricies).

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 or risks and/or where the controls may be different. It may be useful to score the risk more than once.