Static calibration of high speed weighbridge transducers

SWMS number:
SMS-06-SW-0928

SWMS Name:
Static calibration of high speed weighbridge transducers

SWMS Team:
- Renato Dovecer – Safety Project Officer
- Gerry Kan - Manager, Wayside and Train Monitoring Systems
- Steve Haggett - Manager, Train Monitoring Systems Unit
- Saiprasad Kulkarni - Technical Specialist
- Phil Clelland- Technical Specialist
- Peter Reay - Technical Specialist
- Emmanuel Fernandez - Technical Specialist

Custodian (Position):
Safety Project Officer

Assumptions:
N/A

Approving Authority (Position):
Manager, Wayside and Train Monitoring Systems

Applicable Standards, Codes of Practice and guidance:
- OHS Act 2000
- OHS Regulation 2001
- National Code of Practice for Manual Handling [NOHSC: 2005 (1990)]
- Manual Handling Resource WorkCover NSW 2004
- NSW Rail Safety Act 2002
- Network Rules and Network Procedures

Plant/Equipment/Tools:
- Calibration Rig – clamps, load cell transducer, hydraulic pump, cabling & display
- Hand Tools

Records/Reporting:
Wayside systems maintenance Risk Assessment

Permits/licences required:
N/A

Inspection requirements
- Maintain inspection and test records in accordance with SMS-16-SR-0057 Inspection and Testing and SMS-05-SR-0027 Records Management.
- Load cell transducer (Calibration Rig) – calibrated every 12 months
- Hydraulic pump (Calibration Rig) – serviced every 12 months

Service schedule:
N/A

MIMS or METRE Ref:
N/A

Training/Qualifications required:
- Rail Industry Safety Induction (RISI)
- Protection Officer Level 1, 2, 3 or 4 - depending on site location.

Content reviewed by Technical expert (SME) and RailCorp safety professional (position including Div/Group)
- Steve Haggett - Manager, Train Monitoring Systems Unit - C&CS, Asset Management
- Safety Project Officer - C&CS, Asset Management

PPE required:
- Safety Boots
- High Visibility Vest
- PPE: Protective Gloves (Cut resistant or Leather)

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)
1	Apply appropriate worksite protection & access worksite	Struck by train	A	Adhere to worksite protection. PPE: High Visibility Vest	C-	Protection Officer Team Member	SMS-06-GD-0323 Personal Protection Equipment
		Slips, trips and falls	B-	Awareness of terrain. Look for the best access and exit paths to and from area. Plan a clear path of travel; remove any slip, trip hazards. PPE: Safety Boots	C-	Team Member	SMS-06-GD-0323 Personal Protection Equipment
		Exposure to heat/cold (climate)	C+	Reduce exposure by introducing frequent breaks and rotate jobs. Make sure there is access to cool, palatable drinking water.	D	Team Member	
		Exposure to UV Radiation	C+	PPE: Broad Brimmed Hat, Protective Clothing (long sleeves), Sunscreen Reduce exposure by introducing frequent breaks and rotate jobs.	D	Team Member	SMS-06-GD-0323 Personal Protection Equipment
		Fatigue	B+	Ensure fatigue guide lines are undertaken. Reduce exposure by introducing frequent breaks and rotate jobs.	C-	Team Leader Team Member	SMS-20-SR-0169 Health Management

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2	Assemble Calibration Rig – clamps, load cell transducer, hydraulic pump, cabling & display.	Muscular Strain	B-	Use team lifting for heavy loads. Adequate staff to help with lifting and transporting. Co-ordinate lifting. 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. Avoid reaching and stretching. When turning move your feet rather than twisting. Use correct tools for the task.	C-	Team Member	SMS-06-GD-0001 Guide to Manual Handling
		Crush injuries	B-	Co-ordinate lifting PPE: Safety Boots	B-	Team Member	SMS-06-GD-0323 Personal Protection Equipment
		Pinch injuries	C+	Secure handling Use correct tools for the task. Keep hands & body clear of pinching points. PPE: Protective Gloves (Cut resistant or Leather).	D	Team Member	SMS-06-GD-0323 Personal Protection Equipment

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)
3	Fit Calibration Rig to the rail above the transducer.	Muscular Strain	B-	Use team lifting for heavy loads. Adequate staff to help with lifting and transporting. Co-ordinate lifting. 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. Avoid reaching and stretching. When turning move your feet rather than twisting. Use correct tools for the task.	C-	Team Member	SMS-06-GD-0001 Guide to Manual Handling
		Crush injuries	B-	Co-ordinate lifting PPE: Safety Boots	B-	Team Member	SMS-06-GD-0323 Personal Protection Equipment
		Pinch injuries	C+	Secure handling Use correct tools for the task. Keep hands & body clear of pinching points. PPE: Protective Gloves (Cut resistant or Leather).	D	Team Member	SMS-06-GD-0323 Personal Protection Equipment
		Slips, trips & falls	B-	Awareness of terrain. Look for the best access and exit paths to and from area. Plan a clear path of travel; remove any slip, trip hazards. PPE: Safety Boots	C-	Team Member	SMS-06-GD-0323 Personal Protection Equipment

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4	Apply load to the rail by operating hydraulic pump, to pre-determined increments and making comparison measurements.	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. Where postures / positions are sustained for long periods, alter your posture or take a break. Avoid reaching and stretching. Avoid twisting of the back.	C-	Team Member	SMS-06-GD-0001 Guide to Manual Handling
		Slips, trips & falls	B-	Awareness of terrain. Look for the best access and exit paths to and from area. Plan a clear path of travel; remove any slip, trip hazards. PPE: Safety Boots	C-	Team Member	SMS-06-GD-0323 Personal Protection Equipment
5	Remove load by releasing hydraulic pressure.	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. Where postures / positions are sustained for long periods, alter your posture or take a break. Avoid reaching and stretching. Avoid twisting of the back.	C-	Team Member	SMS-06-GD-0001 Guide to Manual Handling

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5	Remove load by releasing hydraulic pressure. (cont.)	Slips, trips & falls	B-	Awareness of terrain. Look for the best access and exit paths to and from area. Plan a clear path of travel; remove any slip, trip hazards. PPE: Safety Boots	C-	Team Member	SMS-06-GD-0323 Personal Protection Equipment
6	Unclamp and remove Calibration Rig.	Muscular Strain	B-	Use team lifting for heavy loads. Adequate staff to help with lifting and transporting. Co-ordinate lifting. 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. Avoid reaching and stretching. When turning move your feet rather than twisting. Use correct tools for the task.	C-	Team Member	SMS-06-GD-0001 Guide to Manual Handling
		Crush injuries	B-	Co-ordinate lifting PPE: Safety Boots	B-	Team Member	SMS-06-GD-0323 Personal Protection Equipment
		Pinch injuries	C+	Secure handling Use correct tools for the task. Keep hands & body clear of pinching points. PPE: Protective Gloves (Cut resistant or Leather).	D	Team Member	SMS-06-GD-0323 Personal Protection Equipment

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6	Unclamp and remove Calibration Rig. (cont.)	Slips, trips & falls	B-	Awareness of terrain. Look for the best access and exit paths to and from area. Plan a clear path of travel; remove any slip, trip hazards. PPE: Safety Boots	C-	Team Member	SMS-06-GD-0323 Personal Protection Equipment
7	Disassemble Calibration Rig	Muscular Strain	B-	Use team lifting for heavy loads. Adequate staff to help with lifting and transporting. Co-ordinate lifting. 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. Avoid reaching and stretching. When turning move your feet rather than twisting. Use correct tools for the task.	C-	Team Member	SMS-06-GD-0001 Guide to Manual Handling
		Crush injuries	B-	Co-ordinate lifting PPE: Safety Boots	B-	Team Member	SMS-06-GD-0323 Personal Protection Equipment
		Pinch injuries	C+	Secure handling Use correct tools for the task. Keep hands & body clear of pinching points. PPE: Protective Gloves (Cut resistant or Leather).	D	Team Member	SMS-06-GD-0323 Personal Protection Equipment
8	Vacate worksite and remove worksite protection	Struck by train	A	Adhere to worksite protection. PPE: High Visibility Vest	C-	Protection Officer Team Member	SMS-06-GD-0323 Personal Protection Equipment

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8	Vacate worksite and remove worksite protection (cont.)	Slips, trips and falls	B-	Awareness of terrain. Plan a clear path of travel; remove any slip, trip hazards. PPE: Safety Boots	C-	Team Member	SMS-06-GD-0323 Personal Protection Equipment

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.