

# General Concrete Works

Issue date: 20/10/10

Review date: 14/06/13

<b>SWMS number:</b> SMS-06-SW-0971	<b>SWMS Name:</b> General Concrete Works			<b>SWMS Team:</b> Civil Construction Review Team
<b>Custodian (Position):</b> Services Manager Civil	<b>Assumptions:</b> Site specific risks are addressed and assessed in pre- work briefing			<b>Content reviewed by Technical expert (SME) and RailCorp safety professional</b> (position including Div/Group) Services Manager Civil and Safety facilitator, Safety Support Services Division.
<b>Approver (Position):</b> Civil Electrical Works Manager Infrastructure Renewals	<b>Plant/Equipment/Tools:</b> <ul style="list-style-type: none"> <li>Crane, Lifting Equipment, Hi-Rail Excavator, Bobcat, Excavator, Backhoe, Dumper, Concrete Truck, Concrete Boom, Trolley, Hi-Rail Agitator, Water cart, Street Sweeper</li> <li>Straps, Ties, Construction Equipment (i.e. Vibrator, Bolt Cutters, Concrete Finishing tools) Oxy Acetylene</li> <li>Barricades, Demarcation Fencing, Signs, Plywood, Safety Tape, Markers, Shoring, Benching</li> <li>No-Spill Fuel Cans, Spill Response Kit</li> <li>Silt Fencing, Hay Bales, Bungs, Sediment Cloth</li> <li>Rigging Tools, Podger, Power Tools, Pelican Pick , Bolt Cutters, Concrete Sealer, Bond Crete</li> <li>Concrete, Reinforcement, Formwork, Dunnage, Pallets, Ballast</li> <li>Hydraulic Bender</li> </ul>	<b>Records/Reporting:</b> <ul style="list-style-type: none"> <li>Worksite Protection Plan</li> <li>Pre-work Brief</li> <li>Electrical Test Tags</li> <li>Site Specific Management Plan</li> <li>Daily Plant Checklist</li> <li>Environmental Protection Plan</li> <li>Services searches</li> <li>Pollution Control Approval</li> <li>Electrical Permits</li> <li>Hazardous Substance Register</li> <li>MSDS</li> <li>Site Induction</li> <li>Traffic Management Plan</li> </ul>	<b>Permits/licences required:</b> <ul style="list-style-type: none"> <li>Electrical Permit Holder</li> <li>Dogman Certificate</li> <li>Crane / Hi-Rail Excavator / Bobcat / Excavator / Backhoe / Dumper / Concrete Boom Operators Certificate</li> <li>Track certifier</li> </ul>	<b>PPE required:</b> <ul style="list-style-type: none"> <li>Safety Boots</li> <li>High Visibility Vests</li> <li>Hardhats</li> <li>Protective Clothing</li> <li>Safety Glasses / Goggles</li> </ul> <p>And as specified below.</p> <ul style="list-style-type: none"> <li>Gloves</li> <li>During all Site Works a FIRST AIDER MUST be Present</li> </ul>
<b>Applicable Standards, Codes of Practice and guidance:</b> <ul style="list-style-type: none"> <li>OH&amp;S Act 2000</li> <li>OH&amp;S Regulation 2001</li> <li>Rail Safety Regulation 2003</li> <li>RailCorp Network Rules &amp; Procedures</li> <li>RailCorp Safety Management System.</li> <li>MSDS for all chemicals and hazardous Substances used on site</li> <li>Working near Overhead Power Lines</li> <li>National Code of Practice for Manual Handling [NOHSC:2005]</li> <li>WorkCover NSW Plant Guide</li> <li>AS 2550.5-2002 Cranes, hoists and winches - Safe use - Mobile cranes</li> <li>EC14 – Guide to Electrical Workers' Safety Equipment</li> <li>WorkCover Code of Practice Excavation 2000</li> </ul>	<b>Inspection requirements</b> Nil	<b>Service schedule:</b> Nil	<b>Training/Qualifications required:</b> <ul style="list-style-type: none"> <li>Construction Industry Induction</li> <li>RISI (Rail Industry Safety Induction)</li> </ul>	

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1	Delivery Of Materials	Traffic/ Pedestrians	B+	Provide traffic control	C+	Team leaders Work group leaders RTA ticketed traffic controllers	Traffic management plan workplace Work-on/near roads SMS-06-GD-0372
		Manual handling injuries	B-	Correct manual handling procedures. "back-safe" training. Plant to move heavy and/or bulky items. As per Risk assessment.	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre Work Briefing SMS-06-FM-0163 Manual Handling SMS-06-GD-0001
		Personnel struck by machinery	B+	Implement restriction zones (6m). Use reversing beepers. Use ticketed operators. Plan work to avoid site congestion. Competent Operator	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre Work Briefing SMS-06-FM-0163 Plant SMS-06-PR-0225
		Struck by load	B+	Keep clear of suspended loads, reversing beepers. Ticketed operators. Exercise due care	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre Work Briefing SMS-06-FM-0163 Plant SMS-06-PR-0225
		Failure of lifting equipment from overloading	B+	Competent operators to assess loads carefully prior to lifting equipment to be properly maintained and marked	C+	Workcover Ticketed Operator And Dogman SMS-11-GD-0243	SSMP, Pre Work Briefing SMS-06-FM-0163 Lifting Equipment SMS-16-FM-0089 Plant SMS-06-PR-0225
		Plant roll-over	B+	Ensure that outriggers or stabilisers in position prior to lifting	C-	Ticketed Operator Team Leaders Work Group Leaders All Staff	SSMP, Pre Work Briefing SMS-06-FM-0163 Plant SMS-06-PR-0225
		Unstable loads	B+	Ensure materials are secured during transit. Don't exceed safe working load of plant.	C+	Workcover TICKETED OPERATOR SMS-11-GD-0243	SSMP, Pre Work Briefing SMS-06-FM-0163 Plant SMS-06-PR-0225
2	Track Access	Contact with live o/h wiring or other services	A	Maintain regulated clearances on wires at all times. Isolate power when in side Safe approach distance (SAD).	C+	Qualified Permit Holder QEL29/MEI61 Team Leaders Work Group Leaders All Staff	Electrical Equipment SMS-06-GD-0268 Electrical Permits SMS-06-EN-0577
		Personnel struck by machinery	B+	Implement restriction zones (6m). Use reversing beepers. Use ticketed operators. Plan work to avoid site congestion. Competent Operator	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre Work Briefing SMS-06-FM-0163 Plant SMS-06-PR-0225

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		Oil/fuel leakage or loss	C-	Plant to be inspected daily. Use correct methods for filling machinery. Maintain spill response kits on-site.	D	Team Leaders Work Group Leaders All Staff	SSMP, Pre Work Briefing SMS-06-FM-0163 Environmental Protection Plan Plant SMS-06-PR-0225
3	Mark Out	Manual handling injuries	B-	Correct manual handling procedures. "back-safe" training. Plant to move heavy and/or bulky items. As per Risk assessment.	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre Work Briefing SMS-06-FM-0163 Manual Handling SMS-06-GD-0001
4	Set-Up Of Machinery	Personnel struck by machinery	B+	Implement exclusion zones. Use reversing beepers. Use ticketed operators. Plan work to avoid site congestion	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre Work Briefing SMS-06-FM-0163 Plant SMS-06-PR-0225
		Plant roll-over	B+	Plant fitted with roll-over-protection.	C-	Ticketed Operator Team Leaders Work Group Leaders All Staff	
		Contact with o/h wires	A	Maintain regulated clearances on wires at all times. Isolate power when in side Safe approach distance (SAD).	C+	Qualified Permit Holder QEL29/ME161 Team Leaders Work Group Leaders All Staff	Electrical Equipment SMS-06-GD-0268 Electrical Permits SMS-06-EN-0577
		Damage to rail infrastructure	B+	Vigilance/cover to protect. Report any damage.	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre Work Briefing SMS-06-FM-0163
		Slips from oil/fuel spillage	C-	Plant to be inspected daily. Use correct methods for filling machinery. Spill response kits on-site.	D	Team Leaders Work Group Leaders All Staff	SSMP, Pre Work Briefing SMS-06-FM-0163 ENVIRONMENTAL PROTECTION PLAN
5	Excavation	Personnel struck by machinery	B+	Implement restriction zones (6m). Use reversing beepers. Use ticketed operators. Plan work to avoid site congestion. Competent Operator	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre Work Briefing SMS-06-FM-0163 Plant SMS-06-PR-0225
		Contact with services	B+	Locate services prior to starting work. Service searches to be on site and signed off mark and/or isolate services as appropriate maintain regulated clearances on electrical services	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre Work Briefing SMS-06-FM-0163 Excavation & Earthworks SMS-06-GD-0378

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		Contact with live o/h wires	A	Maintain regulated clearances on wires at all times. Isolate power when in side Safe approach distance (SAD).	C+	Qualified Permit Holder QEL29/MEI61 Team Leaders Work Group Leaders All Staff	Electrical Equipment SMS-06-GD-0268 Electrical Permits SMS-06-EN-0577
		Damage to rail infrastructure	B+	Vigilance/cover to protect	C+	Competent Person Team Leaders Work Group Leaders All Staff	SSMP, Pre Work Briefing SMS-06-FM-0163
		Plant roll-over/collapse	B+	SWL of machinery not to be exceeded	C-	Ticketed Operator Team Leaders Work Group Leaders All Staff	SSMP, Pre Work Briefing SMS-06-FM-0163 Plant SMS-06-PR-0225
		Head injuries	C-	Briefing. Hard hats must be worn. Keep clear if machines operating, signage	D	Team Leaders Work Group Leaders All Staff	SSMP, Pre Work Briefing SMS-06-FM-0163 PPE- SMS-06-GD-0323
		Excavation collapse	B+	Shoring, benching, keep plant and employees clear of edges.	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre Work Briefing SMS-06-FM-0163 Excavation & Earthworks SMS-06-GD-0378
		Personal injuries	C-	Briefing additional PPE as necessary	D	Team Leaders Work Group Leaders All Staff	SSMP, Pre Work Briefing SMS-06-FM-0163
6	Stockpiling Materials	Dust	B-	Implement exclusion zone wear dust mask	D	Team Leaders Work Group Leaders All Staff	SSMP , Pre work Briefing SMS-06-FM-0163 PPE- SMS-06-GD-0323
		Personnel struck by machinery	B+	Implement restriction zones (6m). Use reversing beepers. Use ticketed operators. Plan work to avoid site congestion. Competent Operator	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre Work Briefing SMS-06-FM-0163 Plant SMS-06-PR-0225
		Machine hit by train	B+	Operators to be made aware of extent of safe-working area	C+	Worksite Protection Officer Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Plant SMS-06-PR-0225 Network Rules and Procedures.

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		Contact with live o/h wires, Other Services (high voltage )	A	Maintain regulated clearances on wires at all times. Isolate power when in side Safe approach distance (SAD).	C+	Qualified Permit Holder QEL29/MEI61 Team Leaders Work Group Leaders All Staff	Electrical Equipment SMS-06-GD-0268 Electrical Permits SMS-06-EN-0577
		Dirt tracking onto external roads	C-	Bobcats with sweepers to clean road. Brooms	D	Team Leaders Work Group Leaders All Staff	Pollution Control Approval
		Runoff from stock piles	C-	Sediment traps placed around perimeter	D	Team Leaders Work Group Leaders All Staff	Environmental Protection Plan
		Residual dirt on external roads flowing into stormwater	C-	Place hay bale around inlet	D	Team Leaders Work Group Leaders All Staff	Environmental Protection Plan
7	Materials Transfer	Personnel struck by machinery	B+	Implement exclusion zones. Use reversing beepers. Use ticketed operators. Plan work to avoid site congestion	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre Work Briefing SMS-06-FM-0163 Plant SMS-06-PR-0225
		Manual handling injuries	B-	Correct manual handling procedures. "back-safe" training. Plant to move heavy and/or bulky items. As per Risk assessment.	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre Work Briefing SMS-06-FM-0163 Manual Handling SMS-06-GD-0001
		Unstable loads	B+	Ensure materials are secured during transit. Don't exceed safe working load of plant.	C+	Licence, Competent Team Leaders Work Group Leaders All Staff	Plant SMS-06-PR-0225
		Runaway trolley	C-	Trolley to be fitted with braking system/drawbar to dumper.	D	Licence, Competent Team Leaders Work Group Leaders All Staff	Workcover
8	Placement Of Reinforcement	Working or Walking on Reinforcement	C-	Be Aware of Surroundings, Step Carefully	D	Team Leaders Work Group Leaders All Staff	SSMP, Pre Work Briefing SMS-06-FM-0163
		Manual handling injuries	B-	Correct manual handling procedures. "back-safe" training. Plant to move heavy and/or bulky items. As per Risk assessment.	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre Work Briefing SMS-06-FM-0163 Manual Handling SMS-06-GD-0001
		Crushed fingers	B+	Keep hands clear of joining steel when positioning	C+	Competent Person Team Leaders Work Group Leaders All Staff	SSMP, Pre Work Briefing SMS-06-FM-0163 PPE- SMS-06-GD-0323

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		Cuts, scratches and abrasions	C-	Gloves to be worn as necessary.	D	Team Leaders Work Group Leaders All Staff	SSMP, Pre Work Briefing SMS-06-FM-0163 PPE- SMS-06-GD-0323
9	Construct Formwork	Electrocution. Use of power tools	B+	All electrical equipment to be tagged /tested, earth leakage units to be used with all tools. Equipment to be fitted with effective safe guards *SWI training *. Correct use of PPE	C-	Team Leaders Work Group Leaders All Staff	SSMP, Pre Work Briefing SMS-06-FM-0163 Electrical Equipment SMS-06-GD-0268
		Object in eye	C-	Protective eye-wear must be worn	D	Team Leaders Work Group Leaders All Staff	SSMP, Pre Work Briefing SMS-06-FM-0163 PPE- SMS-06-GD-0323
		Manual handling injuries	B-	Correct manual handling procedures. "back-safe" training. Plant to move heavy and/or bulky items. As per Risk assessment.	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre Work Briefing SMS-06-FM-0163 Manual Handling SMS-06-GD-0001
		Cuts, scratches and abrasions	C-	Gloves to be worn as necessary.	D	Team Leaders Work Group Leaders All Staff	SSMP, Pre Work Briefing SMS-06-FM-0163 PPE- SMS-06-GD-0323
10	Concrete Truck Accessing Site	Personnel struck by machinery and or trucks	B+	Implement exclusion zones. Use reversing beepers. Use ticketed operators. Plan work to avoid site congestion, pilots to be used when necessary, Worksite Traffic Management Plan.	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre Work Briefing SMS-06-FM-0163 Plant SMS-06-PR-0225 Truck Pilots SMS-11-GD-0243
		Contact with high voltage power.	A	Maintain regulated clearances on wires at all times. Isolate power when in side Safe approach distance (SAD).	C+	Qualified Permit Holder QEL29/MEI61 Team Leaders Work Group Leaders All Staff	Electrical Equipment SMS-06-GD-0268 Electrical Permits SMS-06-EN-0577
		Damage to rail infrastructure	B+	Be aware. Report any damage/disturbance.	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre Work Briefing SMS-06-FM-0163
11	Placement Of Concrete	Concrete	C-	Protective clothing. Gloves	D	Competent Person Team Leaders Work Group Leaders All Staff	SSMP, Pre Work Briefing SMS-06-FM-0163 MSDS
		Skin irritations	C-	Wear gloves long sleeve shirts	D	Team Leaders Work Group Leaders All Staff	SSMP, Pre Work Briefing SMS-06-FM-0163 MSDS
		Concrete in eyes	C-	Wear glasses/goggles. First aid	D	Team Leaders Work Group Leaders All Staff	SSMP, Pre Work Briefing SMS-06-FM-0163 PPE- SMS-06-GD-0323

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		Manual handling injuries	B-	Correct manual handling procedures. "back-safe" training. Plant to move heavy and/or bulky items. As per Risk assessment.	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre Work Briefing SMS-06-FM-0163 Manual Handling SMS-06-GD-0001 MSDS
		Struck by boom / concrete truck / Plant	B+	Be aware, reversing beepers. Ticketed operators.	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre Work Briefing SMS-06-FM-0163 Plant SMS-06-PR-0225
12	Finishing And Curing Of Concrete	Manual handling injuries	B-	Correct manual handling procedures. "back-safe" training. Plant to move heavy and/or bulky items. As per Risk assessment.	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre Work Briefing SMS-06-FM-0163 Manual Handling SMS-060-GD-0001
		Curing Compound / Oxide	B-	Read MSDS first. Use recommended PPE. Use recommended handling methods. Have spill kit available. Place in suitable secure storage.	C-	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 MSDS Hazardous Substances SMS-06-GD-0199
13	Strip Formwork	Clean and De-nail Timber	C-	Take care stripping and de-nailing formwork	D	Team Leaders Work Group Leaders All Staff	SSMP, Pre Work Briefing SMS-06-FM-0163 PPE- SMS-06-GD-0323
		Electric shock	B+	All tools tested and tagged	C-	Team Leaders Work Group Leaders All Staff	SSMP, Pre Work Briefing SMS-06-FM-0163 Electrical Equipment SMS-06-GD-0268
		Cuts, scratches and abrasions	C-	Take care stripping and de-nailing formwork	D	Team Leaders Work Group Leaders All Staff	SSMP, Pre Work Briefing SMS-06-FM-0163 PPE- SMS-06-GD-0323
		Unstable loads	B+	Formwork components to be stacked securely to prevent collapse.	C+	Team Leaders Work Group Leaders All Staff	Plant SMS-06-PR-0225
		Manual handling injuries	B-	Correct manual handling procedures. "back-safe" training. Plant to move heavy and/or bulky items. As per Risk assessment.	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre Work Briefing SMS-06-FM-0163 Manual Handling SMS-06-GD-0001
14	Reinstatement Of Ballast Profile	Dust	B-	Implement exclusion zone wear dust mask	D	Team Leaders Work Group Leaders All Staff	SSMP , Pre work Briefing SMS-06-FM-0163 PPE- SMS-06-GD-0323

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		Contact with services	B+	Mark position of cables with high visibility marking paint. Be aware.	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre Work Briefing SMS-06-FM-0163 Excavation & Earthworks SMS-06-GD-0378
		Personnel struck by machinery	B+	Implement exclusion zones. Use reversing beepers. Use ticketed operators. Plan work to avoid site congestion	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre Work Briefing SMS-06-FM-0163 Plant SMS-06-PR-0225
		Struck by flying object	C-	Protective eye-wear must be worn	D	Team Leaders Work Group Leaders All Staff	SSMP, Pre Work Briefing SMS-06-FM-0163 PPE- SMS-06-GD-0323
		High ballast shoulder	C-	Keep shoulder ballast below head of rail	D	Competent Person Team Leaders Work Group Leaders All Staff	SSMP, Pre Work Briefing SMS-06-FM-0163
		Damage to rail infrastructure	B+	Be aware. Report any damage/disturbance.	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre Work Briefing SMS-06-FM-0163

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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**

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							<b>Definition for Use - Regional &amp; Local level (Workplace)</b>  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 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 or risks and/or where the controls may be different. It may be useful to score the risk more than once.
			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-		