

Safe Work Instruction	Issue date: 28/04/09
<b>Geotechnical Monitoring of Ground Movement &amp; Structures</b>	Review date: 27/04/12

<b>Document no.</b>	<b>Work description</b>		
SMS-06-SW-1353	Geotechnical Survey in monitoring of slope and soil to check ground movement.		
	<b>Scope</b> This document covers soil and rock stability assessment and monitoring along rail corridor, embankments, cuttings and track subsidence. With installations of inclinometers and tiltmeters, monitoring are done with remote access facility. Some of survey monitoring are required to work at height climbing with falls arrest or harness system.		
<b>Review date</b>	<b>References</b>		
27/04/12	AS 1726-1993 Geotechnical Site Investigation Appendix B Slope Indicator and Manual Digitilt DataMate DMM Software and Manual SMS-06-GD-0240 Work at Heights SMS-06-GD-0241 Fall arrest Systems SMS-06-SW-0264 Portable Ladders, Stepladders and Step Platforms		
<b>Responsible super</b>	<b>PPE and precautions</b>	<b>Competencies or qualifications</b>	<b>Licences or permits required</b>
John Pace Geotechnical Monitoring Technician Leader	Falls Arrest System / Safety Harness High Visibility Vest Hard Hat Safety Boots Safety Eye Wear Hearing Plugs (if needed) Insect Repellent Sun Screen Protections & gloves	Rail Safety Protection Officer 4  RISI Rail Industry Safety Induction  Electrical Safety Awareness  Inclinometer Training Course	Electrical Permit Holder
<b>Tools and equipment required</b>			
Inclinometer, Digital DataMate	Tape Extensometer	Mechanical Extensometer	
Tilt Meter	Electronic/Static Water Meter	Pneumatic Pressure Gauge	
Portable Ladders	Vernier Calliper	Three Dimensional Crack Meter	
Brush cutters	Mershety	Brush Hook	
Connecting Cables	Shovel and Pick		
IF CONTROL MEASURES ARE NOT SUITABLE AND MAJOR CHANGES ARE NEEDED, CONDUCT A RISK ASSESSMENT AND DEVELOP NEW CONTROLS ACCORDING TO <a href="#">SMS-06-PR-0104 WORKPLACE RISK MANAGEMENT</a> .			

### Warning



Staff working on fixed ladder job must have SMS-06-FM-0253 Belts & Harness Assembles Inspection Checklist filled in and report to Supervisor before work.

<b>Site / job planning</b>	Ensure all Falls Arrest System and Safety Harness and ropes are checked according to SMS-06-GD-0240 Work at heights Ensure SMS-06-FM-0163 Pre-work Briefing and SMS-06-FM-0774 Worksite Protection Plan are prepared Ensure all tools and equipment are checked safe and operational for work
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<b>Preparation of tools and equipment and to receive work site protection and briefing</b>	Load tools and equipment onto truck, drive to work site  Inform Worksite Protection Officer and to receive Pre-Work Briefing	<b>Hazards:</b> Manual handling Motor car and Truck collisions Struck by Train, Track machine or Vehicle	<b>Control:</b> Ensure operator is trained in manual handling techniques, and use correct tools and posture Use other personnel to "share the load" Take breaks and follow road rules Clear Pre-Work Briefing and Local Safety Induction to All persons on site Ensure personnel kept clear of train and traffic
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<b>Access site and choose the correct equipment for monitoring</b>	Access work site and walk with care	<b>Hazards:</b> Slips, trips and fall Manual handling of chosen equipment Snake bite, insect bites and stings Exposure to hot and cold weather UV exposure, glare	<b>Control:</b> Wear appropriate safety boots, identify slippery surfaces, wet locations and steep embankments to avoid them. Walk slowly. Carry and use correct tools. Avoid long grass, near culverts, burrows and dams. Wear long sleeve shirts and gloves. Drink water at regular interval, schedule work to avoid hottest part of the day, and regular break. Use sunscreen and replace regularly, wear protective UV glasses
	Clear site and set up extensometer with inclinometers, tiltmeter or piezometer for measurement	As above	As above
	Repeat and measure reading and record results	As above	As above
	To climb up or down hands free, ensure falls arrest systems or harness are worn prior to taking extensometer reading	Fall from height & As above	Follow SMS-06-GD-0241 Fall Arrest Systems and SMS-06-FM-Belts & Harness Assembles Inspection Checklist prior to work. & As above
	To observe footbridge movement avoid climbing up when pier tilts can be measured remotely	As above	As above
	Climbing up with ladder to measure span variation with tape extensometers, ladder is less than 3 m long.	As above	Follow SMS-06-SW-0264 Portable Ladders, Stepladders and Step Platforms & As above

<b>Additional controls</b>