

<b>Laboratory</b>	<b>Usha Martin Limited (Wire &amp; Wire Ropes Division), Tatisilwai, Ranchi, Jharkhand</b>		
<b>Accreditation Standard</b>	<b>ISO/IEC 17025: 2005</b>		
<b>Discipline</b>	<b>Mechanical Testing</b>	<b>Issue Date</b>	<b>12.02.2015</b>
<b>Certificate Number</b>	<b>T-2435</b>	<b>Valid Until</b>	<b>11.02.2017</b>
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<b>S.No.</b>	<b>Product / Material of Test</b>	<b>Specific Test Performed</b>	<b>Test Method Specification against which tests are performed</b>	<b>Range of Testing / Limits of Detection</b>
<b>I. MECHANICAL PROPERTIES OF MATERIAL</b>				
<b>1.</b>	<b>Wire, Strand &amp; Wire Ropes</b>	Tensile Test (0.1% & 0.2% Proof Load, Load at 1% Elongation, Breaking Load, % Elongation)	IS 1608: 2005 (RA 2010)	1 kN to 600 kN
			IS 14268: 1995 (RA 2003)	
			AS/NZS 4672-2007	
			BS 5896: 2012	
			PrEN 10138:3.2:2005	
			IS 6594: 2001	0.5 kN to 1000 kN
			IS 1608: 2005 (RA 2010)	
			IS 14268: 1995 (RA 2003)	
			AS/NZS 4672-2007	
			BS 5896: 2012	
			PrEN 10138:3.2 :2005	
			IS 1608: 2005 (RA 2010)	0.1 kN to 50 kN
			IS 1608: 2005 (RA 2010)	5 N to 2000 N
		Modulus of Elasticity (MOE)	IS 2854: 1990 (RA 2006)	1 kN to 600 kN
			IS 9282: 2002 (RA 2008)	
<b>2.</b>	<b>Pre-Stressed Concrete Strand</b>	Horizontal Relaxation	AS/NZS 4672.1-2007	1 kN to 500 kN
			IS 14268: 1995 (RA 2003)	
			BS 5896: 2012	
			PrEN 10138:3.2: 2005	
			UML/LAB/SOP/08,	
			Issue Date 16.09.2011	
		Vertical Relaxation	AS/NZS 4672.1-2007	1 kN to 400 kN
			IS 14268: 1995 (RA 2003)	
			BS 5896: 2012	
			PrEN 10138:3.2: 2005	
			UML/LAB/SOP/08,	
			Issue Date 16.09.2011	

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S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
3.	Steel Wires, Ropes & Strand	Diameter Measurement	IS 6594: 2001 UML/LAB/SOP/01 Issue Date 16.09.2011	0.1 mm to 150 mm
		Lay Length Measurement	IS 2363: 1981 (RA 2001) IS 6594: 2001 UML/LAB/SOP/03 Issue Date 16.09.2011	1 mm to 2000 mm
		Core Vs Outer Wire Difference	IS 14268: 1995 (RA 2003) AS/NZS 4672.1-2007	0.10 % to 4 %
		Metallic Area	IS 14268: 1995 (RA 2003) AS/NZS 4672.1-2007	0.50 mm <sup>2</sup> to 16000 mm <sup>2</sup>
		Torsion	IS 1717: 2012	Qualitative
		Reverse Bend	IS 1716: 1985 (RA 2006)	Qualitative

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