



L&T-STECC JV MUMBAI

Mumbai Metro Line 3
Package No : UGC 01

AUDIT NOTIFICATION

QUALITY MANAGEMENT SYSTEM

PROJECT QUALITY PLAN
ISSUE No. 01

PQP / WP 16 F04

Location: L & T STECC Office, UGC01 Mumbai

Date: 08-03-21

Sl. No: 109

To : **Mr. Atul Kokare**
Operational Manager-M/s TCR Lab

Section : **Material testing Lab**
Navi Mumbai

cc: **Priyank Kulshreshtha**

This notification is to advise that an Audit has been scheduled to take place in your Site/Department as detailed below.

Please acknowledge receipt of this notification by signing and returning a copy of this form during the time of audit.

Audit Details

Audit Number: **01**

Date Planned: **16-03-2021**

Time: **02:30 PM**

Proposed Audit Scope: **Process of Material testing & Documentation as per ISO/IEC: 17025 and ISO 9001, Calibration records of testing equipment's, Internal audit reports, Management review records, Training records, Storage of documents, Uncertainty records Customer feedback/Complaints Records.**

The Auditor / Audit Team will be: **Mr. Rashpal Pahwa, Mr. Sampath & Mr. Shaikh Abdul Majid**

The following personnel will be required to be available during the audit:

Laboratory Manager and his concerned team.

Issued by
QAM Site: Mr. Rashpal Pahwa

Signature:

Date: 08-03-2021

Received by Audi tee (Lab. head)

Name: **GANESH A. SONAWANE**

Signature:

Date: **16/03/2021**



	L&T-STECC JV MUMBAI Mumbai Metro Line 3 Pkg. No : UGC 01 AUDIT SUMMARY REPORT	Doc No : LTS/QAS/P01/R/105	
		Contract No: MM3-CBS-UGC-01	

BU / PROJECT : Metros / MML3

AUDIT NO: 01

AUDIT TEAM: Mr. Sampath

DATE OF AUDIT: 16-03-21

SCOPE OF AUDIT: Process of Material testing & Documentation as per ISO/IEC: 17025 and ISO 9001, Calibration records of testing equipment's, Internal audit reports, Management review records, Training records, Storage of documents, Uncertainty records Customer feedback/Complaints Records.

PERSONS CONTACTED: Mr. Jayesh, Mr. Ganesh, Mr. Atul and all concerned team

AUDIT HIGHLIGHTS:

Number of Minor NCRs	Number of Major NCRs	Number of Observations	Number of Improvements
Nil	Nil	-	-

ENCLOSURE: Detailed audit report & photographs

Note: Audit Report is issued to TCR Lab concerned team

	L&T-STECH JV MUMBAI Mumbai Metro Line 3 Pkg. No : UGC 01	Doc No : LTS/QAS/P01/R/105	
	AUDIT SUMMARY REPORT	Contract No: MM3-CBS-UGC-01	

DETAILED AUDIT REPORT:

S.NO	ISO Clause /Doc. Ref	Description of Item	Remarks
01.	General	BIS license records for the laboratory were verified and found within validity up to 31-12-23.	
02.	ISO/IEC: 17025:2017	NABL accreditation certificate (ref no:TC-6905) verified and found within validity up to 26-02-22.	-
03.	8.1	Process of material inward and testing was verified and found OK.	-
04.	9.2	Internal audit records of TCR lab were verified. Three non-conformances were recorded on 31-10-20. All the non-conformance is found closed.	-
05.	7.1.5.2	Calibration records were verified, and all equipment calibrations were performed by external third party NABL accredited agencies. Calibration reports of measuring scale, Vernier caliper, UTM and extensometer (ref no: 42546/14,42405/01zd-100,270,30911014,25mm and 50mm GL) was verified.	-
06.	7.2	Training records were verified. Competent persons were involved in material testing.	-
07.	9.3	Management review meeting records were verified. Latest MRM was conducted on 04-11-20 and minutes were recorded.	-
08.	7.1.5.2	All equipment's in the laboratory were labelled with calibration due date and deviation limits.	Good
09.	8.1	Reinforcement chemical analysis process was verified and found OK.	-
10.	10.2	Customer complaints records were verified, and all were attended.	-
11.	General	As a process verification, coupler samples physical testing (Tensile and elongation) were witnessed and found testing process is complying to the codal requirements	-

Auditor Signature:



	L&T-STECH JV MUMBAI Mumbai Metro Line 3 Pkg. No : UGC 01 AUDIT SUMMARY REPORT	Doc No : LTS/QAS/P01/R/105 Contract No: MM3-CBS-UGC-01	
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भारतीय मानक ब्यूरो
उपभोक्ता मामले, खाद्य एवं सार्वजनिक वितरण मंत्रालय
भारत सरकार
BUREAU OF INDIAN STANDARDS
Ministry of Consumer Affairs, Food & Public Distribution
Government of India

Our Ref: LPPD/LRS/OSL-7103506

26-02-2021

TCR Engineering Services (P) Ltd

VKB House, EL-182, electronic Zone,
MIDC, TTC, Mahape,
Navi Mumbai-400710.

Sub: Renewal of recognition under BIS Lab Recognition Scheme 2020

Dear Sir,

With reference to your application seeking renewal of recognition of your laboratory by BIS and the subsequent assessment(s) / correspondences made in this regard, we are pleased to inform you that the recognition of your lab operating at the address " TCR Engineering Services (P) Ltd, VKB House, EL-182, electronic Zone, MIDC, TTC, Mahape, Navi Mumbai-400710" has been renewed by the Competent Authority for a period of three years w.e.f. **01 Jan 2021 to 31 Dec2023** under BIS Lab Recognition Scheme 2020 and the recognized scope of your lab is given as **Annex-I**.

The recognition shall stand automatically withdrawn unless renewed further subject to satisfactory performance of your laboratory based on periodic review/surveillance by BIS. The recognition shall stand expired if renewal is not sought by your laboratory in advance of the expiry date along with the prescribed fee. In this connection, you may kindly go through BIS LRS 2020 available at BIS website www.bis.org.in.

It may be noted that you are required to comply with the Terms & Conditions as laid down under item 5.0 of the BIS LRS 2020 and also the Undertaking given by you along with the application form. In case your laboratory is found violating any of the provisions of the Scheme or the undertaking given by you, the recognition of your laboratory may be suspended or your lab may be de-recognized by BIS. The conditions under which the laboratory can be suspended/ deferred /expired or can be de-recognized are given under Item 7 & 8 of BIS LRS 2020.

You are advised to get all the clauses of each ISs applied/covered in BIS scope in your NABL accreditation scope within 1 year from the implementation of BIS LRS 2020 i.e. by 31 May 2021, thereafter scope of the lab will be reviewed.

It may also be noted that this recognition does not bind BIS to make use of the test facilities available in your laboratory. However as and when required your test facilities would be utilized as decided by BIS from time to time.

Thanking you,

Yours faithfully,
Anushree
(Anushree) 26/2/2021
Sc.B, LPPD

एलपीपीडी डायरी नं.
LPPD Diary No.. 862
दिनांक: 26/02/2021

मानक भवन, 9, बहादुरशाह ज़फ़र मार्ग, नई दिल्ली 110002
दूरभाष : 23230131, 23233375, 23239402
ई-मेल : info@bis.gov.in वेबसाईट : www.bis.gov.in

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi-110002
230131, 23233375, 23239402
in Website : www.bis.gov.in

Photo evidence to point no 1 of the report



L&T-STECC JV MUMBAI

Mumbai Metro Line 3
Pkg. No : UGC 01

AUDIT SUMMARY REPORT

Doc No : LTS/QAS/P01/R/105

Contract No: MM3-CBS-UGC-01



 		National Accreditation Board for Testing and Calibration Laboratories	
CERTIFICATE OF ACCREDITATION			
TCR ENGINEERING SERVICES PVT. LTD.			
has been assessed and accredited in accordance with the standard			
ISO/IEC 17025:2017			
"General Requirements for the Competence of Testing & Calibration Laboratories"			
for its facilities at			
VKB HOUSE, PLOT NO. EL 182, MIDC TTC, INDUSTRIAL AREA, ELECTRONIC ZONE, MAHAPE, NAVI MUMBAI, THANE, MAHARASHTRA, INDIA			
in the field of			
TESTING			
Certificate Number:	TC-6905	Valid Until:	26/02/2022
Issue Date:	27/02/2020		
This certificate remains valid for the Scope of Accreditation as specified in the annexure subject to continued satisfactory compliance to the above standard & the relevant requirements of NABL. (To see the scope of accreditation of this laboratory, you may also visit NABL website www.nabl-india.org)			
Signed for and on behalf of NABL			
	 N. Venkateswaran Chief Executive Officer		
Photo evidence to point no 2 of the report			

	L&T-STECH JV MUMBAI Mumbai Metro Line 3 Pkg. No : UGC 01	Doc No : LTS/QAS/P01/R/105	
	AUDIT SUMMARY REPORT	Contract No: MM3-CBS-UGC-01	



TESTING MACHINE SERVICES

VASANT GALAXY, NEPTUNE 704 B, BANGUR NAGAR,
 GOREGAON (WEST), MUMBAI - 400 104 (INDIA).
 ● TEL.: (022) 28783413 ● E-MAIL : testing_m_s@yahoo.co.in

CALIBRATION CERTIFICATE

Certificate No.: 10399
 ULR No. – CC251720000000134F
 Discipline: Mechanical Calibration, Group: UTM, Tension Creep & Torsion Testing Machine

Format No. : TMS/CERT/01
 Date of Issue: 05th June – 2020
 Page : 1 of 2

CUSTOMER NAME AND ADDRESS	:	M/S. TCR Engineering Services Pvt. Ltd., TTC Electronic Zone, Navi Mumbai .
REF.	:	As Per request dated 28 th May – 2020 .
ITEM DESCRIPTION	:	UNIVERSAL TESTING MACHINE .
MACHINE MAKE/SR. NO.	:	MTS SYSTEMS (CHINA) CO. LTD. 30911014 .
DIGITAL CONTROL SYSTEM MAKE/MODEL :	:	MTS SYSTEMS (CHINA) CO. LTD. DCS - 300 .
LOAD CELL MAKE/SR. NO.	:	CELTRON / AE88669
MACHINE MAX CAPACITY	:	0 - 1000 kN .
METHOD OF FORCE APPLICATION	:	COMPRESSION .
CALIBRATION MASTER	:	Dynamometer .
TRACEABILITY	:	National Phy. Laboratory, New Delhi through FRI .
ROOM TEMPERATURE AT CALIBRATION	:	1) 25.8° C 2) 25.8° C 3) 25.8° C MEAN : 25.8° C
CALIBRATION METHOD	:	IS 1828 PART 1 - 2015 & ISO 7500-1:2018 (E)
UNCERTAINTY OF MEASUREMENT (AT 95% CONFIDENCE LEVEL)	:	± 0.59 % .
DATE OF CALIBRATION	:	03 rd June – 2020 .
NEXT CALIBRATION DUE	:	02 nd June – 2021 .

1. This report refers only to the particular item (s) calibrated at customer site.
2. The calibration results reported are valid at the time of and under the conditions of measurement.
3. This report may not be reproduced, except in full without prior permission of Testing Machine Services.
4. Any correction in this certificate, invalidates the certificate.
5. TMS is not liable for any change in calibration data and performance specifications on account of malfunctioning of standard/Instrument/Equipment covered by this report due to damage caused to it after issuance of this report.
6. Uncertainty of Measurement at 95 % Confidence level where coverage factor K = 2.
7. The Accuracy Error is not considered for Uncertainty calculation.
8. The machine is calibrated as per TMS Calibration Procedure No.: QP/019 based on IS 1828 Part 1 – 2015 & ISO 7500-1:2018 (E) .
9. The machine shall in any case be verified (Re-calibrated) if it is moved to a new location necessitating dismantling or if it is subject to major repairs or adjustments.



For Testing Machine Services

Photo evidence to point no :5 of the report (GEHANI)

	L&T-STECC JV MUMBAI Mumbai Metro Line 3 Pkg. No : UGC 01	Doc No : LTS/QAS/P01/R/105	
	AUDIT SUMMARY REPORT	Contract No: MM3-CBS-UGC-01	



SIZE MASTERS CALIBRATION SERVICES

Final Plot No. 123, Lane No. 10, Ramtekdi Industrial Estate, Hadapsar,
 Pune - 411 013. (INDIA) Tel. : +91 9890644445, 8237644445
 E-mail : kiranzanwar@yahoo.com / smscalibration@gmail.com



CERTIFICATE OF CALIBRATION

ELECTRONIC EXTENSOMETER			
Date of Calibration: 09/01/2020	Next Due Date: 08/01/2021	Date of Issue: 11/01/2020	Page 1 of 2
Certificate No: 2020 / 39291 / 06	ULR: CC246020400000053F	Discipline: Mechanical	Product Group: Dimension

Customer Name & Address:	M/s. TCR Engineering Services Pvt Ltd. LAB – VKB House-EL-182, TTC Industrial Area, MIDC Electronic Zone, Mahape, Navi Mumbai – 400 710.
Reference Standard: ASTM E-83	Calibration Procedure : LAB PROCEDURE WI 71

Details of Extensometer Under Calibration	Make	EPSILON	Model / Type	---
	Sr. No.	---	Id No.	GL 50 mm
	Gauge Lengths	50 mm	Location	LAB.
	Extension Capacity	10.0 mm	Mounting Position	Vertical / Horizontal

Details of Digital Indicator	Make	Display on Computer	Model	---
	Sr. No. / Id No.		Least count	0.0001 mm

EQUIPMENT USED FOR CALIBRATION & IT'S TRACEABILITY:

- Electronic Probe & D.R.O.: (Make: HEIDENHAIN, L.C. 0.00001mm, Sr. No.: 37407936A) Traceable to National standard through NABL Lab No. C-0313 Through it's certificate no. 2019/08/1870 Cal. On 27/11/2019 & valid up to 27/11/2021
- Digital Vernier Caliper : (Make: Mitutoyo, L.C. 0.010 mm, Sr. No. 11261747) Traceable to National standard through NABL Lab No CC-2460 through its certificate no. 2019/37760/02 Cal. On 24/09/2019 & valid up to 24/09/2020.

UNCERTAINTY OF MEASUREMENT: $\pm 2.0 \mu\text{m}$

The uncertainty stated is the Expanded uncertainty of Measurement obtained by Multiplying the standard uncertainty by coverage factor K=2 corresponds to confidence level of 95.45%


D G NANAWARE
 Calibrated By

Photo evidence to point no :5 of the report


K. ZANWAR
 Manager Calibration Lab

Note : This certificate is issued subject to conditions stated overleaf.

	L&T-STECH JV MUMBAI Mumbai Metro Line 3 Pkg. No : UGC 01	Doc No : LTS/QAS/P01/R/105	
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SIZE MASTERS CALIBRATION SERVICES

Final Plot No. 123, Lane No. 10, Ramtekdi Industrial Estate, Hadapsar,
 Pune - 411 013. (INDIA) Tel. : +91 9890644445, 8237644445
 E-mail : kiranzanwar@yahoo.com / smscalibration@gmail.com



CERTIFICATE OF CALIBRATION

CALIBRATION CERTIFICATE OF: VERNIER CALIPER (DIGITAL TYPE)	DATE: 12/10/2020	CERTIFICATE NO. 2020/42405/01	PAGE 1 OF 1
DATE OF CALIBRATION: 12/10/2020	NEXT DATE OF CALIBRATION: 11/10/2021 (As per customer requirement)	ULR: CC246020600003045 F	
CUSTOMER'S REF. D.C.NO.: 2846 DATED: 09/10/2020	DATE OF RECEIPT: 10/10/2020 CONDITION OF ITEM: SATISFACTORY	DISCIPLINE: MECHANICAL	
		GROUP: DIMENSION (BASIC- MEASURING INSTRUMENT, GAUGES ETC.)	

CUSTOMER: TCR ENGINEERING SERVICES.
 EL-182 TTC INDL AREA ELECTRONIC ZONE MIDC MAHAPE, NAVI MUMBAI-400710.

CALIBRATION PROCEDURE: LAB PROCEDURE WI 05.

REF. DOCUMENT USED: N.A.

EQUIPMENT USED FOR CALIBRATION & IT'S TRACEABILITY:

a) Caliper checker: (Make: Mikronix, Sr.No. 2322, Range: 0-1000 mm, I.D. No.: R-18-2) having Traceability to National Standards by NABL Lab NO. CC-2282 via. CER. NO. SCL/20-21/08/098-001, cal. On 14/08/2020 & valid upto 13/08/2022.

UNCERTAINTY OF MEASUREMENT: $\pm 16.0 \mu\text{m}$

The uncertainty stated is the Expanded uncertainty of Measurement obtained by Multiplying the standard uncertainty by coverage factor $K=2$ corresponds to confidence level of 95.45%

ENVIRONMENTAL CONDITION: $20 \pm 1^\circ\text{C}$

VERNIER CALIPER (DIGITAL TYPE) RANGE: 0-200 mm, L.C.: 0.010 mm
 (ALL DIMENSIONS ARE IN mm)

CUSTOMER CODE: TCR/DVC/WS/01	MAKE: AEROSPACE
SR.NO.: 0505191391	LAB. I.D.: 42405/01

RESULTS:

Sr. No.	REFERENCE STD. READINGS IN mm	OBSERVED AVG. READINGS	
		EXTERNAL MEASUREMENT ERROR IN μm	INTERNAL MEASUREMENT ERROR IN μm
1.	SET '00.00'	00	00
2.	20.00	00	-10
3.	50.00	-10	00
4.	100.00	-10	+10
5.	150.00	-20	+10
6.	200.00	-20	+10

THE ABOVE READINGS ARE THE AVERAGE OF 3 READINGS TAKEN

-----X-----


M. TINGRE
 Calibrated by




A. PATIL
 Technical Manager, Dimension Lab

Note : This certificate is issued subject to conditions stated overleaf

Photo evidence to point no :5 of the report

	L&T-STECH JV MUMBAI Mumbai Metro Line 3 Pkg. No : UGC 01	Doc No : LTS/QAS/P01/R/105	
	AUDIT SUMMARY REPORT	Contract No: MM3-CBS-UGC-01	



SIZE MASTERS CALIBRATION SERVICES

Final Plot No. 123, Lane No. 10, Ramtekdi Industrial Estate, Hadapsar,
Pune - 411 013. (INDIA) Tel. : +91 9890644445, 8237644445
E-mail : kiranzanwar@yahoo.com / smcscalibration@gmail.com



CERTIFICATE OF CALIBRATION

CALIBRATION CERTIFICATE OF: MEASURING SCALE	DATE: 20/10/2020	CERTIFICATE NO. 2020/42546/14	PAGE 1 OF 1
DATE OF CALIBRATION: 19/10/2020	NEXT DATE OF CALIBRATION: 18/10/2021 (As per customer requirement)	ULR: CC246020600003283 F	
CUSTOMER'S REF. D.C.NO.: 2920 DATED: 16/10/2020	DATE OF RECEIPT: 17/10/2020 CONDITION OF ITEM: SATISFACTORY	DISCIPLINE: MECHANICAL	
		GROUP: DIMENSION (BASIC- MEASURING INSTRUMENT, GAUGES ETC.)	

CUSTOMER: TCR ENGINEERING SERVICES PVT. LTD.
EL-182 TTC INDL AREA ELECTRONIC ZONE MIDC MAHAPE, NAVI MUMBAI-400710.

CALIBRATION PROCEDURE: LAB PROCEDURE WI 45.

REF. DOCUMENT USED: IS 1481.

EQUIPMENT USED FOR CALIBRATION & IT'S TRACEABILITY:

- a) Tape & Scale Measuring Machine: (Make: Octagon, Sr.No. 054, Range: 0-1000 mm, L.C.: 0.001 mm, I.d. No.: E-9-1) having Traceability by NABL Lab NO. CC-2460 via. CER. NO.2020/40430/01 cal. On 21/05/2020 & valid upto 21/05/2021.

UNCERTAINTY OF MEASUREMENT: $\pm 75.0 \mu\text{m}$.

The uncertainty stated is the Expanded uncertainty of Measurement obtained by Multiplying the standard uncertainty by coverage factor $K=2$ corresponds to confidence level of 95.45%

ENVIRONMENTAL CONDITION: $20 \pm 1^\circ\text{C}$

MEASURING SCALE RANGE: 0-1000 mm, L.C.: 0.5 mm
(ALL DIMENSIONS ARE IN mm)

CUSTOMER CODE: TCR/MEC/MS/1000	MAKE: TECHNIKA
SR. NO.: ---	LAB I.D.: 42546/14

RESULTS:

Sr. No.	REFERENCE STD. READINGS IN mm	OBSERVED AVG. ERROR IN mm
1.	SET '00.00'	0.0
2.	100.00	+0.167
3.	200.00	+0.149
4.	300.00	+0.082
5.	500.00	+0.071
6.	600.00	+0.028
8.	800.00	-0.053
9.	1000.00	-0.115

THE ABOVE READINGS ARE THE AVERAGE OF 3 READINGS TAKEN


P. GHULE
Calibrated by




A. PATIL
Technical Manager, Dimension Lab

Note : This certificate is valid only for the purpose mentioned above.

Photo evidence to point no :5 of the report

**L&T-STEEL JV MUMBAI**

Mumbai Metro Line 3

Pkg. No : UGC 01

AUDIT SUMMARY REPORT

Doc No : LTS/QAS/P01/R/105

Contract No: MM3-CBS-UGC-01



TCR/FRM-37

TCR ENGINEERING SERVICES PVT LTDLAB: VKB House EL-182, TTC Industrial Area, MIDC, Electronic Zone, Mahape, Navi Mumbai 400 710.
Phone: 022- 67380900 Fax: 022 2761 2044 Email:sales@tcrceng.com**RECORDS OF CRM VERIFICATIONS**

Date	Calibration/ Standardization done (Yes/No)	Standard checked and found within acceptable %MU (Yes/No)	Standard/CRM	Element/ Parameter	Assigned value	Observed value	Analysed by Sign
17.03.21	Yes	Yes	MPA 486200	C	0.208	0.21	
				S	0.025	0.024	
				P	0.015	0.014	
				Mn	0.866	0.87	
				Si	0.301	0.31	
				Cr	0.573	0.58	
				Ni	0.523	0.52	
				Mo	0.231	0.21	
				Cu	0.026	0.026	
				V	0.004	0.004	
				Al	0.021	0.023	
	Yes	Yes	BAS 466/2	C	0.014	0.014	Satisfactory
				S	0.007	0.010	
				P	0.016	0.010	
				Mn	1.31	1.33	
				Si	0.48	0.47	
				Cr	17.84	17.80	
				Ni	10.20	10.26	
				Mo	2.77	2.75	
				Cu	0.028	0.024	
				V	0.035	0.033	
				N	0.051	0.053	
	Yes	Yes	BS 8001 B	C	0.10	0.10	
				Mn	0.95	0.94	
				Si	0.16	0.15	
				Cr	20.40	20.50	
				Ni	31.30	31.35	
				Mo	0.51	0.52	
				Al	0.47	0.49	
				Ti	0.53	0.55	
				Co	1.09	1.10	

Prepared By

Approved By

Name of CAB: TCR ENGINEERING SERVICES PVT. LTD. Navi Mumbai

Document No.: TCR/FRM-37

Document Name: RECORD OF CRM VERIFICATIONS

Issue No.: 9

Issue Date:

Prepared by: Asso. QA

Photo evidence to point no :9 of the report

1 of 1



L&T-STEEL JV MUMBAI
Mumbai Metro Line 3
Pkg. No : UGC 01

AUDIT SUMMARY REPORT

Doc No : LTS/QAS/P01/R/105

Contract No: MM3-CBS-UGC-01



ISO/IEC 17025 : 2017
Accredited Testing Laboratory by
NABL
Wide Certificate No. TC - 6808

TCR Engineering Services Pvt. Ltd.
V/33 House, EL-182 MIDC TTC
Electronic Zone, Mahape
Navi Mumbai - 400 710, India
T: +91-90221372951 W: www.tcrang.com

TEST REPORT

ULR - TC690521000006381F

Page 1 of 1

T.C. No. : CC1665

Date: 17-03-2021

Issued To. : M/s L&T STEEL JV MUMBAI
MMRCL, UGC-01, Project-MIDC Ground, Near Back Bay Bus Depot
Colaba, Mumbai-400005

Party Ref. : LT-STEEL-JV/QC/UGC01/L-1152 (RFI No- SHC/040) Condition of Sample : Test Piece

Ref. Date : 12-03-2021

Description of Sample : Coupler with TMT Steel Bars, Coupler Grade: EN 8D.

Specification : IS 1786:2008 (Rs 2018) Grade Fe 500D / IS 16172:2014 Sample Received on : 13-03-2021

Sample Drawn By : Party Date of Completion : 17-03-2021
Enclosure : Graph

Test : STATIC TENSILE

Manufacturer : Steel Era Pvt Ltd
Sample Code : Sample No-01: 25mm Coupler/SHC/UGC-01
Batch No : SPL250330620H
Size : 25mm

I. Mechanical Testing

1. Mechanical Properties of Metals

STATIC TENSILE TEST

Test Method : IS 16172 : 2014

Equipment : ZD 100/D-1000KN

Requirement

Nominal Cross-sectional area (mm ²)	491.1	
Overall Gauge length (mm)	250.00	
Gauge length at maximum force (mm)	262.00	
Ultimate tensile load (N)	337170	
U.T.S (N/mm ²)	686.56	565 min.
Total elongation at maximum force (%)	4.80	3.00 min.
Distance of fracture from centre of coupler	220.80	
Location of failure	Outside the length of the mechanical splice	
Result	Satisfactory	

Remark: The above result(s) meets the specified requirements of IS 1786:2008 (Rs 2018) Grade Fe 500D / IS 16172:2014 with respect to test(s) carried out.

Test Witnessed By : 1) Mr.Shariq of Maple 2) Mr.sampath Kumar of L&T 3) Mr.Saravana Kumar of L&T on 16-MAR-21

Srs/-

CHECKED BY

Checked By

*****END OF REPORT*****

Reviewed & Authorised By
Mukesh Kumar
Metallurgist

TCR Engineering Services, India: Redefining On-Time Quality since 1973
A NABL/ISO 17025 : 2017 and BIS accredited Material Testing, Metallurgical Evaluation, Corrosion Testing, NDT/Inspection, Civil Audit, Engineering Consulting & Research Laboratory.

- The results that are reported in this Test Report only relate to the sample(s) provided and tested.
- This Test Report cannot be used as evidence to support or to refute the product without the audit evidence presented along.
- TCR always strives to provide financial/legal liability arising.

TCR/SP/0101

Photo evidence to point no :10 of the report





L&T-STEEL JV MUMBAI
Mumbai Metro Line 3
Pkg. No : UGC 01

AUDIT SUMMARY REPORT

Doc No : LTS/QAS/P01/R/105

Contract No: MM3-CBS-UGC-01



ISO/IEC 17025 : 2017
Accredited Testing Laboratory by
NABL
Valid Certificate No. TC - 6508

TCR Engineering Services Pvt. Ltd.
VGG House, EL-188 MIDC-TTC
Electronic Zone, Malape
Navi Mumbai - 400 710, India
T: +91-7022137295 | W: www.tcrng.com

TEST REPORT

ULR - TC690521000006382#

T.C. No. : CC1666
Issued To : M/s L&T STEEL JV MUMBAI
MMRCL, UGC-01, Project-MIDC Ground, Near Back Bay Bus Depot
Colaba, Mumbai-400005

Page 1 of 1
Date: 17-03-2021

Party Ref.	: LT-STEEL-JV/QC/UGC01/L-1152 (RFI No-SHC/040)	Condition of Sample	: Test Piece
Ref. Date	: 12-03-2021		
Description of Sample	: TMT Steel Bar		
Specification	: IS 1786 : 2008 (Re 2018) Grade Fe 500D	Sample Received on	: 13-03-2021
Sample Drawn By	: Party	Date of Completion	: 17-03-2021
		Enclosure	: Graph
Test	: TENSILE		
Manufacturer	: JSW Steel		
Sample Code	: Sample No-01.1: 25mm Un-spiced specimen		
Batch No	: 21200151		
Size	: 25mm		

I. Mechanical Testing

1. Mechanical Properties of Metals

TENSILE TEST

Equipment : ZD 100/D-1000KN

Test Method : IS 1608 Part 1:2018

Weight of specimen (gm)	2712
Length of specimen (mm)	705.00
Sectional weight (kg/m)	3.8468
Cross-sectional area (mm ²)	490.04
Original gauge length (mm)	250.00
Gauge length at maximum force (mm)	270.00
0.2% Proof load (N)	282414
0.2% Proof strength (N/mm ²)	576.31
Ultimate tensile load (N)	338430
U.T.S (N/mm ²)	690.62
Final gauge length (mm)	281.60
TS/YS ratio (N/mm ²)	1.20
Elongation (%)	12.64
Total elongation at maximum force (%)	8.00
Fracture	W.G.L

Test Witnessed By : 1) Mr.Shariq of Maple 2) Mr.sampath Kumar of L&T 3) Mr.Saravana Kumar of L&T on 16-MAR-21

Srs/-

CHECKED BY

Checked By

*****END OF REPORT*****

Reviewed & Authorised By
Mukesh Kumar
Metallurgist

TCR Engineering Services, India: Redefining On-Time Quality since 1973
A NABL/ISO 17025: 2017 and BIS accredited Material Testing, Metallurgical Evaluation, Corrosion Testing, NDT/Inspection, Civil Audit, Engineering Consulting & Research Laboratory.

1. The results that are reported in this Test Report only relate to the samples provided and tested.
2. This Test Report cannot be reproduced either in part or in full without the explicit written approval of TCR.
3. TCR always strives to provide accurate and reliable results.
Financial/legal liability arising out of use of this report is limited to the scope of the test.

TCR/MS/5599

Photo evidence to point no :10 of the report



**L&T-STEEL JV MUMBAI**

Mumbai Metro Line 3
Pkg. No : UGC 01

AUDIT SUMMARY REPORT

Doc No : LTS/QAS/P01/R/105

Contract No: MM3-CBS-UGC-01



PROJECT: Mumbai Metro Line 3 (UGC-01)

CLIENT: Mumbai Metro Rail Corporation

ENGINEER: MAPLE Consortium

CONTRACTOR: L&T - STEEL JV MUMBAI (LTS)

**MMRC****ATTENDANCE RECORD**

Ref: LTS/QAS/P01/F14

Subject		Joint Sub-Contractor Audit - H/L TCR Engineering			
Contents covered in brief		As mentioned in audit scope			
Name		Mr. Samant			
Date		15-03-24			
Staffs / Workmen Attended					
S.No	Name	*ID No.	Department	Location/ Station of Work	Signature
1	GANESH A. SAMANT		Quality	TCR	
2	Prabhakar Singh		H&O R	TCR	
3	Mohd. Reham		Mechanical	TCR	
4	SAMANT KUMAR VERMA	2001120	QA/QC	Project Office - 1st	V. Samant
5					
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15					
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* Compulsory For Staff

Name & sign of coordinator: