

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY (BUET) DEPARTMENT OF CIVIL ENGINEERING

Mobile: 01819557964; PABX: (8802) - 55167100, 55167228-57 Ext. 7226, Info: http://brtc.ce.buet.ac.bd/#/home, Report verification: http://verify.ce.buet.ac.bd



STRENGTH OF MATERIALS LABORATORY

Sent by: Engr. Md. Maksudul Karim, General Manager (Plant) TEST OF DEFORMED M.S. BARS [BDS ISO 6935-2:2016]

Shahriar Steel Mills Ltd., Jatrabari, Dhaka.

Project: Shahriar Steel Mills Ltd.

Samples were received in UNSEALED condition.

Ref.: Letter, Dt. 7/5/2023

Date of Test: 9/5/2023

BRTC No.: 1102-90360/CE/22-23; Dt. 8/5/2023

BDS ISO 6935-2:2016 Weight Requirements, Nominal Area etc. (Table 2).		1	1	•									3 SSRM B500 CWR 100	2 SSRM B500 CWR 10	1 SSRM B500 CWR 10	mm				TIOG WAIR
14 16 2	-		1				1			-	1	-	9.9	9.9	9.9	n mm			n dia.	Nominal Actual
0 22* 25	1	1	-U								-		0.610	0.605	0.610	kg/m	Length	Unit	Per	al Mass
28 32 4					-									0.608		kg/m	Length	Unit	Mass Per	Average
0 50					•	-,				10000000000000000000000000000000000000			42.2	42.2	42.2	kN		Load	Proof	101
Conver	•												535	535	535	MPa	ReH	Strength	Proof	Tield of Tield of
Conversion factor: 1.0 MPa = 1.0 N/mm ² = 145 psi. Strengths are based on nominal area.		111												535		MPa	Ref	Strength,	Yield	Average
MPa = 1.0			-		-	-		-			-		47.3	47.3	48.3	Š			Load	- GIOIG
$N/mm^2 = 145$,	1	1		8				-	18		600	600	610	MPa	,20 31		Strength	i ci iolic
psi. Strengtl		•												605		MPa	20	Strength,	Tensile	Cherence
ns are base		•												1.13						m' 'en
on nominal		•	•	-					1	•		•	32	30	30	= 5d)	(G.length	(%)	Elongation	2
area.														3			(%)	Elongation	Total	
					1	•		•			•	•	Satisfactory	Satisfactory	Satisfactory		samples)	(Seperate	Test	
													Satisfa	Satista	Satisfa		samp	(Sepe	Teg	

22mm dia. bar is not covered in BDS ISO 6935-2:2016. Its properties are derived following the principle nal cross sectional area, sq.mm

eter of a perfectly round plain bar having same mass per unit length

Steel	Yield S	Steel Yield Strength, Rett, MPa Ductiliy Properti	Du	Ductiliy Properties	ties
Grade	Min.	Max.	Rm/ReH	Elongatio	Elongation, % (min.)
			3 .	Total	At R _m
B400C-R	400		1.15	7.	7
B400CWR	400	-	1.15	14	7
B500C-R	500	-	1.15	14	
B500CWR	500		1.15	14	7
B600C-R	600	-	1.15	00	7
B450CWR	450	1.25 R _{eн} (min.)	1.15		7.5
B400DWR	400	1.3 R eH (min.)	1.25	7.7	8
B420DWR	420	1.3 R _{eH} (min.)	1.25	16	8
				3	

B500DWK | 500 | 1.3 KeH (min.) | 1.25 |

Countersigned by:

Prof. Dr. Hasib Mohammed Ahsan, Test-in-Charge

Dept. of Civil Engg., BUET, Dhaka-1000, Bangladesh



20.00

Test performed by: 09 May 2023 1000re

Dr. Md. Delwar Hossain

Professor, Dept. of Civil Engg., BUET

samples are sent in a secure and sealed cover/packet/container under the signature of a competent authority. In order to avoid fradulent fabrication of test results, this report has been printed on a security page. Important Note: Samples as supplied to us have been tested. BRTC does not have any responsibility as to the representative character of the samples required to be tested. It is recommended that the It is also recommended that the test results be collected by a duly authorized person.



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DEPARTMENT OF CIVIL ENGINEERING

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STRENGTH OF MATERIALS LABORATORY

Sent by: Engr. Md. Maksudul Karim, General Manager (Plant)

Shahriar Steel Mills Ltd., Jatrabari, Dhaka.

Shahriar Steel Mills Ltd.

TEST OF DEFORMED M.S. BARS [BDS ISO 6935-2:2016]

Ref.: Letter; Dt. 7/5/2023

Date of Test: 9/5/2023

BRTC No.: 1102-90360/CE/22-23; Dt. 8/5/2023

Samples were received in UNSEALED condition

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	•										\. \/-	570	560	555	MPa	ReH	Strength	Proof	Yield or	
													560		MPa	Re	Strength,	Yield	Average	
				-	-	-	-					76.8	75.7	74.7	KN			Load	Tensile	
-	•				-			7			•	680	670	660	MPa	R _m		Strength	Tensile	Outilpics in
										•			670		MPa	.ZD ₃	Strength,	Tensile	Average	0101000101
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	•						•						26			(%)	Elongation	Total	Average	410.0
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BDS ISO 6935-2:2016 Weight Requirements, Nominal Area etc. (Table 2). Nominal mass per Nominal, kg/m Nominal bar dia., mm Nominal cross sectional area, sq.mm 28.3 | 50.3 | 78.5 | 113 0.395 | 0.616 | 0.887 | 154 201 1.21 | 1.58 | 2.46 314 380 491 40 50 1964

Actual diameter is the diameter of a perfectly round plain bar having same mass per unit length. Actual diameter of bars are shown for informative purpose only. It is not a requirement of BDS ISO 6935-2:2016. 22mm dia, bar is not covered in BDS ISO 6935-2:2016. Its properties are derived following the principle used for other bar sizes

BDS ISO 6935-2 Tensile Requirements for Common Steel Grades

Steel	Yield S	Yield Strength, Rett, MPa	D	Ductiliy Properties	ties
Grade	Min.	Max.	Rm/ReH	Elongatio	Elongation, % (min.)
			min.	Total	At R _m
B400C-R	400		1.15	1.1	7
B400CWR	400		1.15	7.1	
B500C-R	500		1.15	7.1	
B500CWR	500		1.15	7.1	
B600C-R	600		1.15	01	
B450CWR	450	1.25 R eн (min.)	1.15	-	7.5
B400DWR	400	1.3 R _{eH} (min.)	1.25	77	8
B420DWR	420	1.3 R _{eH} (min.)	1.25	9,6	8
DENODING	200	130 (min.)	30		

DOUDUR DOUGH I.S KeH (MIN.) | 1.25 | 13 | 0

Countersigned by

Dept. of Civil Engg., BUET, Dhaka-1000, Bangladesh Prof. Dr. Hasib Mohammed Ahsan, Test-in-Charge



Conversion factor: 1.0 MPa = 1.0 N/mm² = 145 psi. Strengths are based on nominal area.



Dr. Md. Delwar Hossain Test performed by:

Professor, Dept. of Civil Engg., BUET

It is also recommended that the test results be collected by a duly authorized person. samples are sent in a secure and sealed cover/packet/container under the signature of a competent authority. In order to avoid fradulent fabrication of test results, this report has been printed on a security pa Important Note: Samples as supplied to us have been tested. BRTC does not have any responsibility as to the representative character of the samples required to be tested. It is recommended that the



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STRENGTH OF MATERIALS LABORATORY

BRTC No.: 1102-90360/CE/22-23; Dt. 8/5/2023

Ref.: Letter; Dt. 7/5/2023

Project: Shahriar Steel Mills Ltd.

TEST OF DEFORMED M.S. BARS [BDS ISO 6935-2:2016]

Sent by: Engr. Md. Maksudul Karim, General Manager (Plant) Shahriar Steel Mills Ltd., Jatrabari, Dhaka. Date of Test: 9/5/2023

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1	1	T	·	•		1	1		•	1		SRM B500 CWR	SSRM B500 CWR	SSRM B500 CWR				Identification	Frog Mark /	
	•	•		•		•	•	7	•		-	16	16	16	· . mm			dia.	Nominal	
	1	1		-	-	-			-		1	15.8	15.8	15.8	mm			dia.	Actual	
-	1	1/2			F					-	-	1.549	1.537	1.536	kg/m	Length	Unit	Per	Mass	
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							7. Just 183 183		363636			114	112	110	kN		Load	Proof	Yield or	
		1	•									565	555	545	MPa	ReH	Strength	Proof	Yield or	
													555		MPa	Ren	Strength,	Yield	Average	
				1	-	-						138	134	132	ΚN			Load	Tensile	
	-	•	-	1335								685	665	655	MPa	⊅ 0		Strength	Tensile	Oct. Proof
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										•			25			(%)	Elongation	Total	Average	
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BDS ISO 6935-2:2016 Weight Requirements, Nominal Area etc. (Table 2).

Conversion factor: 1.0 MPa = 1.0 N/mm² = 145 psi. Strengths are based on nominal area.

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*22mm dia haris no	unit length	Nominal mass per	Nominal cross sect	Nominal bar dia., mm
*22mm dia har is not covered in BDS ISO 6935-2-2016	Permissible deviation, %	Nominal, kg/m	inal cross sectional area, sq.mm	
5.2.201	±8	0.222	28.3	6
R	±8	0.222 0.395 0.616 0.887	50.3 78.5 113 154 201 314 380 491	«
Its properties are derived	±6	0.616	78.5	10
00 270	±6	788.0	113	12
dorivo	±5	121	154	14
2	±5	1.58	201	16
	±5	2.46	314	20
thonein	±5 ±5 ±4	2.98	380	22*
neinla	±4	3.85	491	25
1000	±4	4.84	616	28
5	±4 ±4 ±4	1 2.46 2.98 3.85 4.84 6.31 9.87	616 804 1257 1964	32
nor ha	14	9.87	1257	40
rother har sizes	±4	9.87 15.42	1964	50

Actual diameter is the diameter of a perfectly round plain bar having same mass per unit length. Actual diameter of bars are shown for informative purpose only. It is not a requirement of BDS ISO 6935-2:2016.

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Steel	Yield S	Yield Strength, Ren, MPa	Du	Ductiliy Properties	ties
Grade	Min.	Max.	Rm/ReH	Elongatio	Elongation, % (min.)
			min.	Total	At Rm
B400C-R	400		1.15	7.1	7
B400CWR	400		1.15	7.1	7
B500C-R	500		1.15	71	7
B500CWR	500	-	1.15	71	7
B600C-R	600		1.15	0,1	7
B450CWR	450	1.25 R et (min.)	1.15		7.5
B400DWR	400	1.3 R eH (min.)	1.25	2.0	8
B420DWR	420	1.3 R _{eH} (min.)	1.25	91	8
B500DWR	500	1.3 R .H (min.)	1 25	E.V.	39

Countersigned by:

Dept. of Civil Engg., BUET, Dhaka-1000, Bangladesh Prof. Dr. Hasib Mohammed Ahsan, Test-in-Charge

r7L3mCDBQ



Dr. Md. Delwar Hossain

Test performed by:

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Testing & Consulta

STRENGTH OF MATERIALS LABORATORY

Sent by: Engr. Md. Maksudul Karim, General Manager (Plant) TEST OF DEFORMED M.S. BARS IBDS ISO 6935-2:20161

Shahriar Steel Mills Ltd., Jatrabari, Dhaka.

Project: Shahriar Steel Mills Ltd.

Ref.: Letter; Dt. 7/5/2023 Date of Test: 9/5/2023

BRTC No.: 1102-90360/CE/22-23; Dt. 8/5/2023

										Samples w	ere receive	d in UNS	Samples were received in UNSEALED condition.	Idition.		
<u>S</u>	Frog Mark /	Nominal	Actual	Mass	Average	Yield or	Yield or	Average	Tensile	Tensile	Average	R _m /R _{€H}	Total	Average	Bend	
ĕ	Identification	dia.	dia.	Per	Mass Per	Proof	Proof	Yield	Load	Strength			Elongation	Total	Test	
				Unit	Unit	Load	Strength	Strength,			Strength,		(%)	Elongation	(Seperate	~~
				Length	Length		ReH	Ref		7 0 m	⊅ 0 ≅		(G.length	(%)	samples)	s
		mm	mm	kg/m	kg/m	kN	MPa	MPa	2	MPa	MPa		= 5d)			
_	SSRM B500 CWR	20	19.9	2.446		182	580		121	675			22		Satisfactory	Sa
2	SSRM B500 CWR	20	19.9	2.446	2.444	181	575	575	211	675	670	1.17	22	8	Satisfactory	Sat
ယ	SSRM B500 CWR	20	19.9	2.440		179	570		208	665			21		Satisfactory	Sar
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22mm dia. bar is not covered

Vominal mass per Nominal, kg/m

inal cross sectional area, sq.mm

ISO 6935-2:2016 Weight Requirements, Nominal Area etc. (Table 2).

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40 1257 1964

Conversion factor: 1.0 MPa = 1.0 N/mm² = 145 psi. Strengths are based on nominal area.

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Steel	Yield S	Steel Yield Strength, Reff, MPa Ductilly Properti	Du	Ductilly Properties	ties
Grade	MID.	Max.	Rm/ReH	Elongation,	n, % (min.)
			min.	Total	At R
B400C-R	400		1.15	14	7
B400CWR	400		1.15	14	7
B500C-R	500	-	1.15	14	7
B500CWR	500		1.15	14	7
B600C-R	600		1.15	10	7
B450CWR	450	1.25 R eн (min.)	1.15	-	7.5
B400DWR	400	1.3 R eн (min.)	1.25	Z.F.	8
B420DWR	420	1.3 R eн (min.)	1.25	16	8
B500DWR	500	13 Pau (min)	705	3	8

Countersigned by:

Dept. of Civil Engg., BUET, Dhaka-1000, Bangladesh Prof. Dr. Hasib Mohammed Ahsan, Test-in-Charge

RYMZ9Afht



Test performed by: Dr. Md. Delwar Hossain

Professor, Dept. of Civil Engg., BUET

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Testing & Consultat

TRENGTH OF MATERIALS LABORATORY BRTC No.: 1102-90360/CE/22-23; Dt. 8/5/2023

Ref.: Letter, Dt. 7/5/2023

Samples were received in UNSEALED condition.

Sent by: Engr. Md. Maksudul Karim, General Manager (Plant) TEST OF DEFORMED M.S. BARS [BDS ISO 6935-2:2016]

Shahriar Steel Mills Ltd. Shahriar Steel Mills Ltd., Jatrabari, Dhaka. Date of Test: 9/5/2023

Project:

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				•	-			s				SSRM B500 CWR	SSRM B500 CWR	· SSRM B500 CWR			# 42 m	Identification	Frog Mark /
		1	•	-	•		•	•				25	25	25	mm			dia.	Nominal
-	1	-	-	-					-		-	25.1	25.0	25.1	mm			dia.	Actual
1	1	• /									-	3.876	3.868	3.875	kg/m	Length	Unit	Per	Mass
									MARKE SE SE				3.873		kg/m	Length	Unit	Mass Per	Average
					-		-	Jan Sandan				278	279	281	kN		Load	Proof	Yield or
	•											565	570	575	MPa	R _위	Strength	Proof	Yield or
													570		MPa	Ret	Strength,	Yield	Average
				_	-	-					-	336	337	338	kN			Load	Tensile
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						- 10 - 10 - 10 - 10 - 10 - 10 - 10 - 10							22			(%)	Elongation	Total	Average
-	•						•			•	•	Satisfactory	Satisfactory	Satisfactory		samples)	(Seperate	Test	Bend
	1									•		Satisfac	Satisfac	Satisfac		sampl	(Seper		Reber

I	S it	Non	Non	Non	BDS
\$417.40 a \$43.41 153 1 43 49 9	length	ninal mass per	ninal cross secti	lominal bar dia., mm	ISO 6935-2:201
	Permissible deviation, % ±8 ±8 ±6	Nominal, kg/m	al cross sectional area, sq.mm		BDS ISO 6935-2:2016 Weight Requirements, N
200	,% ±8	0.222 0.	28.3	6	s, Nominal Area etc. (Table 2).
SECOND SECOND	8∓	965.0	50.3	8	Area
CONTRACTOR OF	±6	0.616	78.5	10	atc. (Ta
TOTAL CONTRACTOR	±6	0.887	50.3 78.5 113 154 201 314 380 491	12	ıbie 2).
CONTRACTOR AND	±5 ±5	1.21	154	14	
St. Ohio N. Apr. Apr. Apr.	±5	1.21 1.58	201	16	
NYN CANA	±5	2.46 2.98 3.85 4.84 6.31	314	20	
NAME OF STREET	±5	2.98	380	22*	
NAME OF STREET	±4	3.85	491	25	
N NOW A IN	±4	4.84	616	28	
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7	±4	9.87	804 1257	32 40 50	
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Actual diameter of bars are shown for informative purpose only. It is not a requirement of BDS ISO 6935-2:2016. Actual diameter is the diameter of a perfectly round plain bar having same mass per unit length.

Steel	Yield S	Steel Yield Strength, Ret, MPa Ductilly Properti	Du	Ductiliy Properties	ties
Grade	Min.	Max.	Rm/ReH	Elongation,	n, % (min.)
			min.	Total	At R _m
B400C-R	400	-	1.15	rt.	
B400CWR	400	-	1.15	14	7
B500C-R	500		1.15	71	
B500CWR	500		1.15	14	7
B600C-R	009		1.15	10	
B450CWR	450	1.25 R eн (min.)	1.15		7.5
B400DWR	400	1.3 R _{eH} (min.)	1.25	17	8
B420DWR	420	1.3 R eH (min.)	1.25	-16	8
RSOODWR	005	13 P = (min)	1 25	3	.

Prof. Dr. Hasib Mohammed Ahsan, Test-in-Charge Countersigned by: Dept. of Civil Engg., BUET, Dhaka-1000, Bangladesh



Conversion factor: 1.0 MPa = 1.0 N/mm² = 145 psi. Strengths are based on nominal area.



Test performed by: Dr. Md. Delwar Hossain

Professor, Dept. of Civil Engg., BUET

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