Project:

Sent by: Engr. Maksudul Karim, General Manager

Shahriar Steel Mills Ltd., 18, Konapara, Jatrabari, Dhaka

TEST OF DEFORMED M.S. BARS [ASTM A 615M-16]

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

BRTC No.: 1103-02582/CE/23-24; Dt. 8/10/2023 Date of Test: 9/10/2023 Ref.: Letter, Dt. 7/10/2023

Samples were received in UNSEALED condition.

8 o 8 ယ N SSRM B420 DWR SSRM B420 DWR SSRM B420 DWR Identification Frog Mark / Nominal Desig./ dia. Bar m m 25 25 Actual 24.9 24.8 bar 24.8 3 dia. 1 Weight 3.802 3.802 3.812 kg/m Unit Average Weight 3.805 Unit kg/m Proof rield or Load 241 237 240 2 3 1 Strength Yield or Proof 491 482 MPa 489 Yield or Proof (70500 psi) Strength Average 487 MPa (YS) ensile Load 323 320 322 ŝ Strength Tensile 660 655 MPa 650 (95000 psi) Strength Average Tensile MPa 655 (TS) SYS 1.34 Elongation (G. length 200 mm) 18 % **a** 18 Elongation Average 8 18

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mm 8 10 12 10 20 22 22 22 32 32 32 32 32 32 32 32 32 32	111	5.000	66.7	6.373	4.634	3.853	2.98	2.466	1.578	0.888	0.617	0.395	Nominal weight, kg/m 0.395 0.617 0.888 1.578 2.466 2.98 3.853 4.834 6.313 7.99 9.603 13.41 2.2.2
mm «	1/7	CZ	100	604	010	491	380	314	201	113		50.3	ominal area, sq.mm
	200	700	200	200	20	2	22	20	To	7.		œ	ır desig./Nominal dia., mm

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

Actual dia, and TSYS ratio are provided for informative purpose only. These are not requirements of ASTM A615M-16. Area and weight of 8mm and 22m dia, bars are derived based on principle follwed for other sizes in Table A1.1 Actual diameter is the diameter of a perfectly round plain bar having same mass per unit length. Measured unit weight shair

	Grade 60	Grade 60 Grade 75	Grade 80
	[420]	[520]	[550]
Tensile strength, min. psi [MPa]	90 000 [620]	90 000 [620] 100 000 [690] 105 000 [725]	105 000 [725]
Yield strength, min, psi [MPa]	60 000 [420]	60 000 [420] 75 000 [520] 80 000 [550]	80 000 [550]
Elongation in 8 in. [200 mm], min, %			

25, 22

4 & 6

10, 12, 16, 20 Bar Designation No.

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

munum

Y62SGHYKm

16 October 2023

Dr. Annesha Enam Test performed by:

Assistant Professor, Dept. of Civil Engg., Bl

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 securi It is also recommended that the test results be collected by a duly authorized person. 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 28, 32, 36, 40, 50, 60



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STRENGTH OF MATERIALS LABORATORY

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Project:

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ASTM A615M-16 Weight Requirements and Nominal Area of bars (Table A1.1) ö ω 2 8 SSRM B420 DWR SSRM B420 DWR SSRM B420 DWR Identification Frog Mark / Nominal Desig./ dia. 20 mm 20 20 Actual 20.0 20.0 20.0 dia mm bar 1 Weight 2.466 2.461 2.468 kg/m Unit 1 Average Weight 2.465 Unit kg/m Yield or Proof Load 145 145 145 ž Strength Proof Yield or 461 461 MPa 461 Conversion factor: 1.0 MPa = 1.0 N/mm² = 145 psi. Strengths are based on nominal area Yield or Proof (67000 psi) Strength Average MPa (YS) 461 Load Tensile 206 207 206 ŝ Strength Tensile 655 655 660 MPa (95000 psi) Strength Tensile Average MPa 655 (TS) 1.42 SWS Elongation (G. length = 200 mm) 19 20 Elongation Average 8 20 Sati Sati Sati sa S

Actual diameter is the diameter of a perfectly round plain bar having same mass per unit length Actual dia. and TSYS ratio are provided for informative purpose only. These are not requirements of ASTM A615M-16. Area and weight of 8mm and 22m día. bars are derived based on principle follwed for other sizes in Table A1: Measured unit weight shall not be less than 94% of the nominal weight. 8mm bar size is not covered in ASTM A615M-16. Bar desig./Nominal dia., mm Nominal weight, kg/m Nominal area, sq.mm 0.395 50.3 79 113 201 0.888 1.578 2.466 2.98 3.853 12 16 20 314 380 491 4.834 6.313 616 28 32 1018 36 7.99 9.865 1257 8

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1	ISTM A615M-16 Lensile Requirements for Common Steel Grades

	Grade 60	Grade 75	Grade 80
	[420]	[520]	[550]
Tensile strength, min. psi [MPa]	90 000 [620]	90 000 [620] 100 000 [690] 105 000 [725]	105 000 [725]
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Elongation in 8 in. [200 mm], min, %			
Bar Designation No.			
10, 12, 16, 20	9	7	7
25, 22	8	7	7
28, 32, 36, 40, 50, 60	7	6	6

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

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16 October 2023

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	ส area.	sed on nomina	ngths are ba	= 145 psi. Strer	$a = 1.0 \text{ N/mm}^2$	or: 1.0 MP	Conversion factor: 1.0 MPa = 1.0 N/mm² = 145 psi. Strengths are based on nominal area		50 60	32 36 40 50 60	28 32	20 22 25 28	20 22	Bar desig J Nominal dia,, mm 8 10 12 16 20 22 2	Bar desig / Nominal dia., mm	Bar desig/
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Sati	19	20	1,31	(92500 psi)	640	128	(70000 psi)	487	97.8	1.572	1.570	16.0	10	120 DWR	SSRM B420 DWR	20
Sati		18		635	635	127	483	482	96.8		1.573	16.0	16	120 DWR	SSRM B420 DWR	_
		200 mm)		MPa	MPa	KN.	MPa	MPa	kN	kg/m	kg/m	mm	mm			
sa		(G. length =		(TS)			(YS)						dia.			
(Se	(%)			Strength			Strength	Strength	Load	Weight		dia.	Nominal			
	Elongation			Tensile	Strength	Load	Yield or Proof	Proof	Proof	Unit	Weight	bar	Desig./	ication	Identification	2 0
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		condition.	ONSCALER	Samples were received in UNSEALED condition.	odilibies wel											

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feasured unit weight shall not	lominal weight, kg/m	lominal area, sq.mm	3ar desig√Nominal dia., mm
of be less than 94% of the	0.395	50.3	8
han 94	0.617	79	10
% of the	0.888	113	12
e nomi	1.578	201	16
nal wei	2.466	314	20
ght. 8n	2.98	380	22
8mm bar size is not covered	2.466 2.98 3.853 4.834 6.313	491 616 804	25
size is	4.834	616	28
not co	6.313	804	32
vered i	7.99	1018	36
n ASTN	9.865	1257	40
A615	15.41	1963	50
1-16.	22.2	2827	8

Actual diameter is the diameter of a perfectly round plain bar having same mass per unit length. Actual dia. and TS/VS ratio are provided for informative purpose only. These are not requirements of ASTM A615M-16. Area and weight of 8mm and 22m dia. bars are derived based on principle follwed for other sizes in Table A1.1

The second to construct the second the secon	interior commit	oreel Granes	
	Grade 60	Grade 75	Grade 80
	[420]	[520]	[550]
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Elongation in 8 in. [200 mm], min, %			
Bar Designation No.			

28, 32, 36, 40, 50, 60

10, 12, 16, 20

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



Test performed by:

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Dr. Annesha Enam

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١	1	1	1	1	1	1	-	-	- 1	1	1	0.877	0.893	0.869	kg/m			Weight	Unit
				Â									0.880		kg/m		Weight	Unit	Average
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•												461	479	461	MPa		Strength	Unit Proof Proof	Yield or
													(68000 psi)	467	MPa	(YS)	Strength	MIL	Average
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ASTM A615M-16 Weight Requirements and Nominal Area of bars (Table A1.1)

	Nomin	Nomin	Bar de
When the first the loss than 9.0% of the nominal weight 8mm has size is not covered in ASTM A615M-16	al weight, kg/m	lominal area, sq.mm	Bar desig /Nominal dia., mm
	0.395 0.6	50.3	8
10 20	3	79	10
45.70	888.0	113	12
The tribula	1.578	201	16
	2.466	314	20
0.	2.98	380	22
	3.853	491	25
	4.834	616	28
	6.313	804	32
	7.99	1018	36
NOT W	9.865	1257	40
18150	0.888 1.578 2.466 2.98 3.853 4.834 6.313 7.99 9.865 15.41 22.2	113 201 314 380 491 616 804 1018 1257 1963 2827	50
	22.2	2827	50 60

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ASIM A615M-16 Tensile Requirements for Common Steel Grades	nts for Commo	on Steel Grade	•
	Grade 60	Grade 75	Grade 80
	[420]	[520]	[550]
Tensile strength, min. psi [MPa]	90 000 [620]	90 000 [620] 100 000 [690] 105 000 [725]	105 000 [725]
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Elongation in 8 in. [200 mm], min, %			
Bar Designation No.			

28, 32, 36, 40, 50, 60 10, 12, 16, 20

7 8 9

Countersigned by:

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

Y7ANPD2F4

Conversion factor: $1.0 \text{ MPa} = 1.0 \text{ N/mm}^2 = 145 \text{ psi}$. Strengths are based on nominal area

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Dr. Annesha Enam Test performed by:

Assistant Professor, Dept. of Civil Engg.,

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Shahriar Steel Mills Ltd., 18, Konapara, Jatrabari, Dhaka

Project:

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Sa		(G. length =					(VC)						Li	
(၁၉	(%)			Strength			Strength	Load Strength Strength	Load	Weight		dia.	Nominal	
à	Eloridanon	(%)		lensile	Strength	Load		Proof	Proof	Unit	Weight	bar	Desig./	lentification
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	nal area.	ased on nomin	ingths are b	Conversion factor: 1.0 MPa = 1.0 N/mm² = 145 psi. Strengths are based on nominal area.	a = 1.0 N/mm	tor: 1.0 MP	Conversion fac	Д ///	200			e A1.1)	of bars (Tabl	ASTM A615M-16 Weight Requirements and Nominal Area of bars (Table A1.1)	ASTM A615
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2 6	Ū	À N	+	(89000 psi)	070	40.1	(63500 psi)	441	34.9	0.606	0.604	9.9	5	SSRM B420 DWR	2
Sati	•	3 3		615	610	48.1	437	429	33.9		0.605	9.9	10	SSRM B420 DWR	
		200 mm)		MPa	MPa	Ŕ	MPa	MPa	ΚN	kg/m	kg/m	mm	mm		
Sa		(G. length =		(TS)			(YS)						dia.		
(Se	(%)			Strength			Strength	Strength	Load	Weight			Nominal		
)	Elongation	(%)		Tensile	Strength	Load	Yield or Proof	Proof	Proof	Unit	Weight	bar	Desig./	Identification	No.
	Cyclase	2	10/10	Average	rensile	lensile	Average	Yield or	Yield or	Average Yield or Yield or	Unit	Actual	Bar	Frog Mark /	SI.

3	9.865	799	6313	4 834	10 305 0 617 0 888 1 578 2 466 2 98 3 853 4 834 6 313 7 99 9 865 15 41 22 2	208	2 466	1 578	0 888	0.617	50E U	lominal waid ht kaim
	125/	1018	804	616	491	380	113 201 314 380 491 616 804 1018 1257 1963 2827	201	113	79	50.3	Nominal area, sq.mm
50	36 40	36	32	28	25 28	22	20 22	16	12	10	8	Bar desig /Nominal dia., mm

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ASTM A615M-16 Tensile Requirements for Common Steel Grades

Grade 6	Grade 60	Grade 75	Grade 80
	[420]	[520]	[550]
Tensile strength, min. psi [MPa]	90 000 [620]	90 000 [620] 100 000 [690] 105 000 [725]	105 000 [725]
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Bar Designation No.			
	•	1	4

10, 12, 16, 20 Bar Designation

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

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