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

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

BRTC No.: 1103-13677/CE/23-24; Dt. 8/2/2024
Ref.: Letter; Dt. 8/2/2024
Date of Test: 10/2/2024

Sent by: Eng. Md. Maksudul Karim, General Manager (Plant)
Shahriar Steel Mills Limited, Konapara, Jatrabari, Dhaka.

Project: - - -

Samples were received in UNSEALED condition.

Sl. No.	Frog Mark / Identification	Bar Desig./ Nominal dia.	Actual bar dia.	Unit Weight	Average Unit Weight	Yield or Proof Load	Yield or Proof Strength	Average Yield or Proof Strength (YS)	Tensile Load	Tensile Strength	Average Tensile Strength (TS)	TS/YS	Elongation (%) (G. length = 200 mm)	Average Elongation (%)	(S sa
		mm	mm	kg/m	kg/m	kN	MPa	MPa	kN	MPa	MPa				
1	SSRM B500 DWR	10	10.0	0.614	**0.615**	41.6	**525**	**520** (75500 psi)	58	**735**	**735** (106000 psi)	**1.41**	**13**	**13**	Sat
2	SSRM B500 DWR	10	10.0	0.614		40.3	**510**		57.5	**730**			**14**		Sat
3	SSRM B500 DWR	10	10.0	0.617		41.6	**525**		58.4	**740**			**13**		Sat
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Conversion factor: 1.0 MPa = 1.0 N/mm^2 = 145 psi. Strengths are based on nominal area.

ASTM A615M-16 Weight Requirements and Nominal Area of bars (Table A1.1)

Bar desig./Nominal dia., mm	*8*	10	12	16	20	*22*	25	28	32	36	40	50	60
Nominal area, sq.mm	*50.3*	79	113	201	314	*380*	491	616	804	1018	1257	1963	2827
Nominal weight, kg/m	*0.395*	0.617	0.888	1.578	2.466	*2.98*	3.853	4.834	6.313	7.99	9.865	15.41	22.2

Measured unit weight shall not be less than 94% of the nominal weight. 8mm bar size is not covered in 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 dia. and TS/YS ratio are provided for informative purpose only. These are not requirements of ASTM A615M-16.
Actual diameter is the diameter of a perfectly round plain bar having same mass per unit length.

ASTM A615M-16 Tensile Requirements for Common Steel Grades

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

61
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12 February 2024

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

Test performed by:
Dr. Md. Mafizur Rahman
Professor, Dept. of Civil Engg., BUET

Department of Civil E... BUET, Dhaka-1000, Ban...

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STRENGTH OF MATERIALS LABORATORY

BRT Bureau of R... Testing & Co...

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

Sent by: Eng. Md. Maksudul Karim, General Manager (Plant)
Shahriar Steel Mills Limited, Konapara, Jatrabari, Dhaka.
Project: - - -

BRTC No.: 1103-13677/CE/23-24; Dt. 8/2/2024
Ref.: Letter; Dt. 8/2/2024
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		mm	mm	kg/m	kg/m	kN	MPa	MPa	kN	MPa	MPa				
1	SSRM B500 DWR	12	11.8	0.853	**0.851**	61.9	**550**	**530** (77000 psi)	78.8	**695**	**685** (99500 psi)	**1.29**	**14**	**14**	S
2	SSRM B500 DWR	12	11.8	0.856		61.1	**540**		78.3	**695**			**14**		S
3	SSRM B500 DWR	12	11.7	0.845		57.1	**505**		75.7	**670**			**15**		S
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Conversion factor: 1.0 MPa = 1.0 N/mm^2 = 145 psi. Strengths are based on nominal area.

ASTM A615M-16 Weight Requirements and Nominal Area of bars (Table A1.1)

Bar desig./Nominal dia., mm	*8*	10	12	16	20	*22*	25	28	32	36	40	50	60
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ASTM A615M-16 Tensile Requirements for Common Steel Grades

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

59

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12 February 2024

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

Test performed by:
Dr. Md. Mafizur Rahman
Professor, Dept. of Civil Engg., BUET

Department of Civil Engineering BUET, Dhaka-1000, Bangladesh

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STRENGTH OF MATERIALS LABORATORY

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

BRTC No.: 1103-13677/CE/23-24; Dt. 8/2/2024

Ref.: Letter; Dt. 8/2/2024

Date of Test: 10/2/2024

Sent by: Eng. Md. Maksudul Karim, General Manager (Plant)
Shahriar Steel Mills Limited, Konapara, Jatrabari, Dhaka.

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Samples were received in UNSEALED condition.

Sl. No.	Frog Mark / Identification	Bar Desig./ Nominal dia.	Actual bar dia.	Unit Weight	Average Unit Weight	Yield or Proof Load	Yield or Proof Strength	Average Yield or Proof Strength (YS)	Tensile Load	Tensile Strength	Average Tensile Strength (TS)	TS/YS	Elongation (%) (G. length = 200 mm)	Average Elongation (%)
		mm	mm	kg/m	kg/m	kN	MPa	MPa	kN	MPa	MPa			
1	SSRM B500 DWR	16	16.0	1.570		106	**525**	**525**	136	**675**	**680**		**15**	
2	SSRM B500 DWR	16	16.0	1.580	**1.575**	106	**525**	(76500 psi)	137	**680**	(98500 psi)	**1.30**	**16**	**16**
3	SSRM B500 DWR	16	16.0	1.575		106	**525**		137	**680**			**16**	
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Conversion factor: 1.0 MPa = 1.0 N/mm^2 = 145 psi. Strengths are based on nominal area.

ASTM A615M-16 Weight Requirements and Nominal Area of bars (Table A1.1)

Bar desig./Nominal dia., mm	*8*	10	12	16	20	*22*	25	28	32	36	40	50	60
Nominal area, sq.mm	*50.3*	79	113	201	314	*380*	491	616	804	1018	1257	1963	2827
Nominal weight, kg/m	*0.395*	0.617	0.888	1.578	2.466	*2.98*	3.853	4.834	6.313	7.99	9.865	15.41	22.2

Measured unit weight shall not be less than 94% of the nominal weight. 8mm bar size is not covered in 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
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ASTM A615M-16 Tensile Requirements for Common Steel Grades

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

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12 February 202

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

Test performed by:
Dr. Md. Mafizur Rahman
Professor, Dept. of Civil Engg., BUET

★ Department of Civil ... BUET, Dhaka-1000, Ban...

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Sent by: Eng. Md. Maksudul Karim, General Manager (Plant)
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Project: - - -

BRTC No.: 1103-13677/CE/23-24; Dt. 8/2/2024
Ref.: Letter; Dt. 8/2/2024
Date of Test: 10/2/2024

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Sl. No.	Frog Mark / Identification	Bar Desig./ Nominal dia.	Actual bar dia.	Unit Weight	Average Unit Weight	Yield or Proof Load	Yield or Proof Strength	Average Yield or Proof Strength (YS)	Tensile Load	Tensile Strength	Average Tensile Strength (TS)	TS/YS	Elongation (%) (G. length = 200 mm)	Average Elongation (%)	
		mm	mm	kg/m	kg/m	kN	MPa	MPa	kN	MPa	MPa				
1	SSRM B500 DWR	20	20.0	2.467		183	585	585	243	775	775		17		Sa
2	SSRM B500 DWR	20	20.0	2.457	2.464	183	585	(85000 psi)	243	775	(112000 psi)	1.32	17	17	Sa
3	SSRM B500 DWR	20	20.0	2.467		185	590		243	775			17		Sa
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ASTM A615M-16 Weight Requirements and Nominal Area of bars (Table A1.1)

Bar desig./Nominal dia., mm	8	10	12	16	20	22	25	28	32	36	40	50	60
Nominal area, sq.mm	50.3	79	113	201	314	380	491	616	804	1018	1257	1963	2827
Nominal weight, kg/m	0.395	0.617	0.888	1.578	2.466	2.98	3.853	4.834	6.313	7.99	9.865	15.41	22.2

Measured unit weight shall not be less than 94% of the nominal weight. 8mm bar size is not covered in ASTM A615M-16.
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Yield strength, min, psi [MPa]	60 000 [420]	75 000 [520]	80 000 [550]
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

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12 February 2024

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

Test performed by:
Dr. Md. Mafizur Rahman
Professor, Dept. of Civil Engg., BUET

Department of Civil Engineering, BUET, Dhaka-1000, Bangladesh

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2	SSRM B500 DWR	25	24.9	3.824	3.839	257	525	(76500 psi)	355	720	(105000 psi)	1.37	18	17	Sa
3	SSRM B500 DWR	25	25.0	3.853		260	530		356	725			17		Sa
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Bar desig./Nominal dia., mm	8	10	12	16	20	22	25	28	32	36	40	50	60
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Bar Designation No.			
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25, 22	8	7	7
28, 32, 36, 40, 50, 60	7	6	6

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12 February 2024

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

Test performed by:
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