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 Bureau of Research Testing & Consultation

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.: 1103-19935/CE/23-24; Dt. 21/4/2024
Ref.: Letter; Dt. 20/4/2024
Date of Test: 22/4/2024

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 (%)	Bend Test (Seperate samples)
		mm	mm	kg/m	kg/m	kN	MPa	MPa	kN	MPa	MPa				
1	SSRM B420 DWR	10	9.9	0.607		34.9	**441**	**446**	48.1	**610**	**610**		**18**		Satisfactory
2	SSRM B420 DWR	10	9.9	0.608	**0.609**	34.9	**441**	(64500 psi)	48.1	**610**	(88000 psi)	**1.37**	**18**	**18**	Satisfactory
3	SSRM B420 DWR	10	10.0	0.612		35.9	**454**		48.1	**610**			**17**		Satisfactory
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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

2
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Countersigned by:
Prof. Dr. Hasib Mohammed Ahsan, Test-in-Charge
Dept. of Civil Engg., BUET, Dhaka-1000, Bangladesh

24 April 2024

Test performed by:
Dr. Shohel Rana
Professor, Dept. of Civil Engg., BUET

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

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 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 paper. It is also recommended that the test results be collected by a duly authorized person.*

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BRTC Bureau of Research, Testing & Consultation

STRENGTH OF MATERIALS LABORATORY

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.: 1103-19935/CE/23-24; Dt. 21/4/2024
Ref.: Letter; Dt. 20/4/2024
Date of Test: 22/4/2024

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 (%)	Bend Test (Seperate samples)
		mm	mm	kg/m	kg/m	kN	MPa	MPa	kN	MPa	MPa				
1	SSRM B420 DWR	12	11.9	0.866	**0.861**	51.1	**452**	**446** (64500 psi)	69.4	**615**	**610** (88000 psi)	**1.37**	**18**	**17**	**Satisfactory**
2	SSRM B420 DWR	12	11.8	0.857		50.1	**443**		68.4	**605**			**18**		**Satisfactory**
3	SSRM B420 DWR	12	11.8	0.860		50.1	**443**		68.4	**605**			**16**		**Satisfactory**
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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

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

24 April 2024

Test performed by:
Dr. Shohel Rana
Professor, Dept. of Civil Engg., BUET

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

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 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 paper. It is also recommended that the test results be collected by a duly authorized person.*

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BRTC Bureau of Research, Testing & Consultation

STRENGTH OF MATERIALS LABORATORY

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

BRTC No.: 1103-19935/CE/23-24; Dt. 21/4/2024

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

Ref.: Letter; Dt. 20/4/2024

Project: - - -

Date of Test: 22/4/2024

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 (%)	Bend Test (Seperate samples)
		mm	mm	kg/m	kg/m	kN	MPa	MPa	kN	MPa	MPa				
1	SSRM B420 DWR	16	16.0	1.577		91	**453**	**459**	126	**625**	**630**		**17**		**Satisfactory**
2	SSRM B420 DWR	16	16.0	1.575	**1.573**	93	**463**	(66500 psi)	127	**630**	(91000 psi)	**1.37**	**17**	**17**	**Satisfactory**
3	SSRM B420 DWR	16	15.9	1.568		93	**463**		126	**625**			**18**		**Satisfactory**
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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.
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.

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

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

24 April 2024

Test performed by:
Dr. Shohel Rana
Professor, Dept. of Civil Engg., BUET

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

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 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 paper. It is also recommended that the test results be collected by a duly authorized person.*

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STRENGTH OF MATERIALS LABORATORY

BRTC Bureau of Research, Testing & Consultation

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.: 1103-19935/CE/23-24; Dt. 21/4/2024
Ref.: Letter; Dt. 20/4/2024
Date of Test: 22/4/2024

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 (%)	Average Elongation (%)	Bend Test (Seperate samples)
		mm	mm	kg/m	kg/m	kN	MPa	MPa	kN	MPa	MPa		(G. length = 200 mm)		
1	SSRM B420 DWR	20	20.0	2.474		153	**486**	**482**	211	**670**	**675**		**17**		**Satisfactory**
2	SSRM B420 DWR	20	20.0	2.473	**2.461**	151	**479**	(70000 psi)	212	**675**	(98000 psi)	**1.40**	**17**	**17**	**Satisfactory**
3	SSRM B420 DWR	20	19.9	2.436		151	**479**		212	**675**			**17**		**Satisfactory**
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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

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

24 April 2024

Test performed by:
Dr. Shohel Rana
Professor, Dept. of Civil Engg., BUET

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

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STRENGTH OF MATERIALS LABORATORY

BRTC Bureau of Research, Testing & Consultation

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.: 1103-19935/CE/23-24; Dt. 21/4/2024
Ref.: Letter; Dt. 20/4/2024
Date of Test: 22/4/2024

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 (%)	Bend Test (Seperate samples)
		mm	mm	kg/m	kg/m	kN	MPa	MPa	kN	MPa	MPa				
1	SSRM B420 DWR	25	24.8	3.795		230	**468**	**474**	314	**640**	**645**		**18**		**Satisfactory**
2	SSRM B420 DWR	25	24.8	3.789	**3.794**	231	**470**	(68500 psi)	314	**640**	(93000 psi)	**1.36**	**18**	**18**	**Satisfactory**
3	SSRM B420 DWR	25	24.8	3.799		237	**484**		320	**650**			**18**		**Satisfactory**
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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

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NjQKt5CGr

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

24 April 2024
Test performed by:
Dr. Shohel Rana
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