



# MILITARY ENGINEER SERVICES (MES)

## MATERIAL TESTING LABORATORY

Mobile: 01769-012888, <http://mes.org.bd>



### TEST RESULT FOR TENSILE STRENGTH OF PLAIN/DEFORMED/RIBBED COLD TWISTED M.S BARS

Page no: 672

Job No : 04/2026-2027(Steel).

Name of Client : GE (Navy) North Chattogram.

Ref.ltr.No : CEN/189 of 2024-2025/26/E-6 Dt.14 Jun'2026.

Project Name : Construction of Multipurpose Complex.

Dt. of Sample Collection : 05 Jul'2026

Copy No : 01

Sample Specimen : Length 600mm , Dia 10mm

Sample Grade : 60

Frog Mark : GPH B-420 DWR.

Dt. Of Test : 05 Jul'2026

| Sample No | Nominal Dia | Actual Dia | Area Under Test | Actual Unit Weight | Average Actual Unit Weight | Yield or Proof load | Yield or Proof Strength | Average Yield or Proof load | Ultimate load | Ultimate Strength | Average Ultimate Strength | Ratio     | Elongation% (gauge length) | Average Elongation% (gauge length) |
|-----------|-------------|------------|-----------------|--------------------|----------------------------|---------------------|-------------------------|-----------------------------|---------------|-------------------|---------------------------|-----------|----------------------------|------------------------------------|
|           | inch        | inch       | sq.inch         | lb/ft              | lb/ft                      | lb                  | psi                     | psi                         | lb            | psi               | psi                       | (Fult/Fy) | 8inch                      | 5d                                 |
|           | mm          | mm         | sq.mm           | kg/m               | kg/m                       | kn                  | Mpa                     | Mpa                         | kn            | Mpa               | Mpa                       |           |                            |                                    |
| 1         | 0.394       | 0.394      | 0.1217          | 0.415              |                            | 10754.35            | 88341                   |                             | 13987.64      | 114901            |                           | 1.30      | 21.5                       |                                    |
|           | 10.00       | 10.01      | 78.5398         | 0.618              |                            | 47.84               | 609                     |                             | 62.22         | 792               |                           |           |                            |                                    |
| 2         | 0.394       | 0.394      | 0.1217          | 0.415              | 0.415                      | 10689.22            | 87806                   | 87901                       | 13945.77      | 114557            | 114028                    | 1.30      | 20                         | 20                                 |
|           | 10.00       | 10.01      | 78.5398         | 0.618              | 0.618                      | 47.55               | 606                     | 606                         | 62.03         | 790               | 786                       |           |                            |                                    |
| 3         | 0.394       | 0.394      | 0.1217          | 0.415              |                            | 10658.98            | 87557                   |                             | 13710.84      | 112627            |                           | 1.29      | 19.5                       |                                    |
|           | 10.00       | 10.01      | 78.5398         | 0.618              |                            | 47.41               | 604                     |                             | 60.99         | 777               |                           |           |                            |                                    |

Observation on Specimen(if any):

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

Conveion factor: 1.0 Mpa = 1.0 N/mm<sup>2</sup> = 145 Psi. Strengths are based on nominal area.

| Bar design/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   | 615   | 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 & 22mm 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<br>[420] | Grade 75<br>[520] | Grade 80<br>[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, 60 | 7 | 6 | 6 |

Report Prepared by :

MD IKBAL HOSSEN

SAE B/R

AHQ E in C 's Br

Wks Dte, Dhaka Cantt.

Test Performed by :

AHASAN HABIB

AE B/R

Actg SO-III (Lab)

AHQ E in C 's Br

Wks Dte, Dhaka Cantt.

Countersigned by :

MD ATIKUR RAHMAN

MAJOR

OIC (Lab)

AHQ E in C 's Br

Wks Dte, Dhaka Cantt.





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MES  
Material Testing  
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## TEST RESULT FOR TENSILE STRENGTH OF PLAIN/DEFORMED/RIBBED COLD TWISTED M.S BARS

Page no: 673

Job No : 04/2026-2027(Steel).

Name of Client : GE (Navy) North Chattogram.

Ref.ltr.No : CEN/189 of 2024-2025/26/E-6 Dt.14 Jun'2026.

Project Name : Construction of Multipurpose Complex.

Dt. of Sample Collection: 05 Jul'2026

Copy No : 02

Sample Specimen : Length 600mm , Dia 12mm

Sample Grade : 60

Frog Mark : GPH B-420 DWR.

Dt. Of Test : 05 Jul'2026

| Sample No | Nominal Dia    | Actual Dia     | Area Under Test  | Actual Unit Weight | Average Actual Unit Weight | Yield or Proof load | Yield or Proof Strength | Average Yield or Proof load | Ultimate load     | Ultimate Strength | Average Ultimate Strength | Ratio     | Elongation% (gauge length) | Average Elongation% (gauge length) |
|-----------|----------------|----------------|------------------|--------------------|----------------------------|---------------------|-------------------------|-----------------------------|-------------------|-------------------|---------------------------|-----------|----------------------------|------------------------------------|
|           | inch<br>mm     | inch<br>mm     | sq.inch<br>sq.mm | lb/ft<br>kg/m      | lb/ft<br>kg/m              | lb<br>kn            | psi<br>Mpa              | psi<br>Mpa                  | lb<br>kn          | psi<br>Mpa        | psi<br>Mpa                | (Fult/Fy) | 8inch<br>5d                | 8inch<br>5d                        |
| 1         | 0.472<br>12.00 | 0.473<br>12.01 | 0.175<br>113.097 | 0.598<br>0.890     |                            | 14436.58<br>64.22   | 82353<br>568            |                             | 19430.74<br>86.43 | 110842<br>764     |                           | 1.35      | 18                         |                                    |
| 2         | 0.472<br>12.00 | 0.473<br>12.01 | 0.175<br>113.097 | 0.598<br>0.890     | 0.598<br>0.890             | 14366.80<br>63.91   | 81955<br>565            | 82388<br>568                | 19579.61<br>87.09 | 111691<br>770     | 111408<br>768             | 1.36      | 16.5                       | 18                                 |
| 3         | 0.472<br>12.00 | 0.473<br>12.01 | 0.175<br>113.097 | 0.598<br>0.890     |                            | 14524.97<br>64.61   | 82857<br>571            |                             | 19579.61<br>87.09 | 111691<br>770     |                           | 1.35      | 18.5                       |                                    |

Observation on Specimen(if any):

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

Conveion factor: 1.0 Mpa = 1.0 N/mm<sup>2</sup>= 145 Psi. Strengths are based on nominal area.

| Bar design/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   | 615   | 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 & 22mm dia. Bars are derived based on principle followed 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<br>[420] | Grade 75<br>[520] | Grade 80<br>[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

25, 22

28, 32, 36, 40, 60

9

8

7

7

7

6

7

7

6

Report Prepared by :

MD IKBAL HOSSEN

SAE B/R

AHQ E in C's Br

Wks Dte, Dhaka Cantt.

Test Performed by :

AHASAN HABIB

AE B/R

Actg SO-III (Lab)

AHQ E in C's Br

Wks Dte, Dhaka Cantt.

Countersigned by :

MD ATIKUR RAHMAN

MAJOR

OIC (Lab)

AHQ E in C's Br

Wks Dte, Dhaka Cantt.





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### TEST RESULT FOR TENSILE STRENGTH OF PLAIN/DEFORMED/RIBBED COLD TWISTED M.S BARS

Page no: 674

Job No : 04/2026-2027(Steel).

Copy No : 03

Name of Client : GE (Navy) North Chattogram.

Sample Specimen : Length 600mm , Dia 16mm

Ref.ltr.No : CEN/189 of 2024-2025/26/E-6 Dt.14 Jun'2026.

Sample Grade : 60

Project Name : Construction of Multipurpose Complex.

Frog Mark : GPH B-420 DWR.

Dt. of Sample Collection: 05 Jul'2026

Dt. Of Test : 05 Jul'2026

| Sample No | Nominal Dia    | Actual Dia     | Area Under Test  | Actual Unit Weight | Average Actual Unit Weight | Yield or Proof load | Yield or Proof Strength | Average Yield or Proof load | Ultimate load      | Ultimate Strength | Average Ultimate Strength | Ratio     | Elongation% (gauge length) |    | Average Elongation% (gauge length) |    |
|-----------|----------------|----------------|------------------|--------------------|----------------------------|---------------------|-------------------------|-----------------------------|--------------------|-------------------|---------------------------|-----------|----------------------------|----|------------------------------------|----|
|           | inch mm        | inch mm        | sq.inch sq.mm    | lb/ft kg/m         | lb/ft kg/m                 | lb kn               | psi Mpa                 | psi Mpa                     | lb kn              | psi Mpa           | psi Mpa                   | (Fult/Fy) | 8inch                      | 5d | 8inch                              | 5d |
| 1         | 0.630<br>16.00 | 0.631<br>16.03 | 0.312<br>201.062 | 1.065<br>1.585     | 1.065<br>1.585             | 22589.59<br>100.48  | 72485<br>500            | 72696<br>501                | 31468.35<br>139.98 | 100974<br>696     | 101634<br>701             | 1.39      | 18.5                       |    | 20                                 |    |
| 2         | 0.630<br>16.00 | 0.631<br>16.03 | 0.312<br>201.062 | 1.065<br>1.585     |                            | 22750.09<br>101.20  | 73000<br>503            |                             | 31873.09<br>141.78 | 102273<br>705     |                           | 1.40      | 22.5                       |    |                                    |    |
| 3         | 0.630<br>16.00 | 0.631<br>16.03 | 0.312<br>201.062 | 1.065<br>1.585     |                            | 22626.81<br>100.65  | 72604<br>501            |                             | 31680.03<br>140.92 | 101654<br>701     |                           | 1.40      | 19                         |    |                                    |    |

Observation on Specimen(if any):

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

Conveion factor: 1.0 Mpa = 1.0 N/mm<sup>2</sup> = 145 Psi. Strengths are based on nominal area.

| Bar design/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   | 615   | 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 & 22mm 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<br>[420] | Grade 75<br>[520] | Grade 80<br>[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, 60 | 7 | 6 | 6 |

Report Prepared by :

Test Performed by :

Countersigned by :

MD IKBAL HOSSEN  
SAE B/R  
AHQ E in C 's Br  
Wks Dte, Dhaka Cantt.

AHASAN HABIB  
AE B/R  
Actg SO-III (Lab)  
AHQ E in C 's Br  
Wks Dte, Dhaka Cantt.

MD ATIKUR RAHMAN  
MAJOR  
OIC (Lab)  
AHQ E in C 's Br  
Wks Dte, Dhaka Cantt.





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## MATERIAL TESTING LABORATORY

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### TEST RESULT FOR TENSILE STRENGTH OF PLAIN/DEFORMED/RIBBED COLD TWISTED M.S BARS

Page no: 675

Job No : 04/2026-2027(Steel).

Copy No : 04

Name of Client : GE (Navy) North Chattogram.

Sample Specimen : Length 600mm , Dia 20mm

Ref.ltr.No : CEN/189 of 2024-2025/26/E-6 Dt.14 Jun'2026.

Sample Grade : 60

Project Name : Construction of Multipurpose Complex.

Frog Mark : GPH B-420 DWR.

Dt. of Sample Collection: 05 Jul'2026

Dt. Of Test : 05 Jul'2026

| Sample No | Nominal Dia | Actual Dia | Area Under Test | Actual Unit Weight | Average Actual Unit Weight | Yield or Proof load | Yield or Proof Strength | Average Yield or Proof load | Ultimate load | Ultimate Strength | Average Ultimate Strength | Ratio     | Elongation% (gauge length) | Average Elongation% (gauge length) |
|-----------|-------------|------------|-----------------|--------------------|----------------------------|---------------------|-------------------------|-----------------------------|---------------|-------------------|---------------------------|-----------|----------------------------|------------------------------------|
|           | inch        | inch       | sq.inch         | lb/ft              | lb/ft                      | lb                  | psi                     | psi                         | lb            | psi               | psi                       | (Fult/Fy) | 8inch                      | 5d                                 |
|           | mm          | mm         | sq.mm           | kg/m               | kg/m                       | kn                  | Mpa                     | Mpa                         | kn            | Mpa               | Mpa                       |           |                            |                                    |
| 1         | 0.787       | 0.787      | 0.4869          | 1.657              |                            | 35953.09            | 73834                   |                             | 50249.36      | 103192            |                           | 1.40      | 25                         |                                    |
|           | 20.00       | 20.00      | 314.1593        | 2.465              |                            | 159.93              | 509                     |                             | 223.52        | 712               |                           |           |                            |                                    |
| 2         | 0.787       | 0.787      | 0.4869          | 1.657              | 1.657                      | 35441.35            | 72783                   | 72959                       | 50121.42      | 102930            | 102987                    | 1.41      | 25.5                       | 26                                 |
|           | 20.00       | 20.00      | 314.1593        | 2.465              | 2.465                      | 157.65              | 502                     | 503                         | 222.95        | 710               | 710                       |           |                            |                                    |
| 3         | 0.787       | 0.787      | 0.4869          | 1.657              |                            | 35187.80            | 72262                   |                             | 50077.22      | 102839            |                           | 1.42      | 26.5                       |                                    |
|           | 20.00       | 20.00      | 314.1593        | 2.465              |                            | 156.52              | 498                     |                             | 222.75        | 709               |                           |           |                            |                                    |

Observation on Specimen(if any):

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

Conveion factor: 1.0 Mpa = 1.0 N/mm2= 145 Psi. Strengths are based on nominal area.

| Bar design/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   | 615   | 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 & 22mm 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<br>[420] | Grade 75<br>[520] | Grade 80<br>[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, 60 | 7 | 6 | 6 |

Report Prepared by :

Test Performed by :

Countersigned by :

MD IKBAL HOSSEN

SAE B/R

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### TEST RESULT FOR TENSILE STRENGTH OF PLAIN/DEFORMED/RIBBED COLD TWISTED M.S BARS

Page no: 676

Job No : 04/2026-2027(Steel).

Name of Client : GE (Navy) North Chattogram.

Ref.ltr.No : CEN/189 of 2024-2025/26/E-6 Dt.14 Jun'2026.

Project Name : Construction of Multipurpose Complex.

Dt. of Sample Collection: 05 Jul'2026

Copy No : 05

Sample Specimen : Length 600mm , Dia 25mm

Sample Grade : 60

Frog Mark : GPH B-420 DWR.

Dt. Of Test : 05 Jul'2026

| Sample No | Nominal Dia | Actual Dia  | Area Under Test | Actual Unit Weight | Average Actual Unit Weight | Yield or Proof load | Yield or Proof Strength | Average Yield or Proof load | Ultimate load   | Ultimate Strength | Average Ultimate Strength | Ratio     | Elongation% (gauge length) |    | Average Elongation% (gauge length) |    |
|-----------|-------------|-------------|-----------------|--------------------|----------------------------|---------------------|-------------------------|-----------------------------|-----------------|-------------------|---------------------------|-----------|----------------------------|----|------------------------------------|----|
|           | inch mm     | inch mm     | sq.inch sq.mm   | lb/ft kg/m         | lb/ft kg/m                 | lb kn               | psi Mpa                 | psi Mpa                     | lb kn           | psi Mpa           | psi Mpa                   | (Fult/Fy) | 8inch                      | 5d | 8inch                              | 5d |
| 1         | 0.984 25.00 | 0.986 25.05 | 0.7609 490.8739 | 2.601 3.870        |                            | 54875.99 244.10     | 72124 497               |                             | 75348.07 335.16 | 99031 683         |                           | 1.37      | 26.5                       |    |                                    |    |
| 2         | 0.984 25.00 | 0.986 25.05 | 0.7609 490.8739 | 2.601 3.870        | 2.601 3.870                | 55210.95 245.59     | 72564 500               | 72567 500                   | 75645.82 336.49 | 99422 686         | 99301 685                 | 1.37      | 25                         |    | 26                                 |    |
| 3         | 0.984 25.00 | 0.986 25.05 | 0.7609 490.8739 | 2.601 3.870        |                            | 55552.88 247.11     | 73014 504               |                             | 75666.75 336.58 | 99450 686         |                           | 1.36      | 26.5                       |    |                                    |    |

Observation on Specimen(if any):

ASTM A61M-16 Weight Requirements and Nominal Area of bars (Table A1.1)

Conveion factor: 1.0 Mpa = 1.0 N/mm2= 145 Psi. Strengths are based on nominal area.

| Bar design/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   | 615   | 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 & 22mm 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<br>[420] | Grade 75<br>[520] | Grade 80<br>[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, 60 | 7 | 6 | 6 |

Report Prepared by :

  
MD IKBAL HOSSEN

SAE B/R

AHQ E in C 's Br

Wks Dte, Dhaka Cantt.

Test Performed by :

  
AHASAN HABIB

AE B/R

Actg SO-III (Lab)

AHQ E in C 's Br

Wks Dte, Dhaka Cantt.

Countersigned by :

  
MD ATIKUR RAHMAN

MAJOR

OIC (Lab)

AHQ E in C 's Br

Wks Dte, Dhaka Cantt.

