

Maj Tanveer Ahmad (R )

**Test Performed By:**

Dr. /Engr.

M Irfan Ul Hassan

Resident Engineer-2, ( SRE)ACES Sector -V, - DHA, Multan (Civil Infrastructure Development )

**Client Reference:** ACES-DHAM-DEV-SEC-V-147

**Dated:** 12-09-2020

**SOM Lab Ref:** CED/SOM/2950 (Page-1/1)

**Dated:** 14-09-2020

**Test:** Tension & Bend Test

**Test Specification:** ASTM-A 615

**Sample Type:** Deformed Bar

**Gauge Length:** 200 mm

| S.No. | Weight | Dia.    |            | Area            |                 | Yield Load | Ultimate Load | Yield Stress                |                              | Ult. Stress                 |                              | Elongation | Gauge Length | %age Elongation | Remarks |
|-------|--------|---------|------------|-----------------|-----------------|------------|---------------|-----------------------------|------------------------------|-----------------------------|------------------------------|------------|--------------|-----------------|---------|
|       |        | Nominal | Calculated | Nominal         | Calculated      |            |               | (according to nominal area) | (according to measured area) | (according to nominal area) | (according to measured area) |            |              |                 |         |
|       | kg/m   | mm      | mm         | mm <sup>2</sup> | mm <sup>2</sup> | kN         | kN            | MPa                         | MPa                          | MPa                         | MPa                          | mm         | mm           | %               |         |
| 1     | 2.188  | 20      | 18.85      | 314             | 279             | 141.00     | 186.50        | 449                         | 506                          | 594                         | 669                          | 35.0       | 200          | 17.5            |         |
| 2     | 2.203  | 20      | 18.90      | 314             | 281             | 142.00     | 189.00        | 452                         | 506                          | 602                         | 674                          | 32.5       | 200          | 16.3            |         |
| 3     | 0.879  | 12      | 11.94      | 113             | 112             | 60.00      | 79.00         | 531                         | 536                          | 699                         | 706                          | 25.0       | 200          | 12.5            |         |
| 4     | 0.880  | 12      | 11.95      | 113             | 112             | 60.00      | 79.00         | 531                         | 536                          | 699                         | 705                          | 27.5       | 200          | 13.8            |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               | -       |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               | -       |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               | -       |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               | -       |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               | -       |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               | -       |

**BEND TEST:**

|      |  |   |
|------|--|---|
| 20mm | Sample bend through 180 degrees Satisfactorily without any crack | <b>Note:-</b><br><br>Only Six Samples Received and Tested |
| 12mm | Sample bend through 180 degrees Satisfactorily without any crack |   |
|      |  |   |
|      |  |   |

Note: Please always confirm the results of above report on web [www.uet-civil.edu.pk](http://www.uet-civil.edu.pk)

Maj Tanveer Ahmad (R )

**Test Performed By:**

Dr. /Engr.

M Irfan Ul Hassan

Resident Engineer-2, ( SRE)ACES Sector -V, - DHA, Multan (Civil Infrastructure Development )

**Client Reference:** ACES-DHAM-DEV-SEC-V-147

**Dated:** 12-09-2020

**SOM Lab Ref:** CED/SOM/2950 (Page-1/1)

**Dated:** 14-09-2020

**Test:** Tension & Bend Test

**Test Specification:** ASTM-A 615

**Sample Type:** Deformed Bar

**Gauge Length:** 200 mm

| S.No. | Weight | Dia.    |            | Area            |                 | Yield Load | Ultimate Load | Yield Stress                |                              | Ult. Stress                 |                              | Elongation | Gauge Length | %age Elongation | Remarks |
|-------|--------|---------|------------|-----------------|-----------------|------------|---------------|-----------------------------|------------------------------|-----------------------------|------------------------------|------------|--------------|-----------------|---------|
|       |        | Nominal | Calculated | Nominal         | Calculated      |            |               | (according to nominal area) | (according to measured area) | (according to nominal area) | (according to measured area) |            |              |                 |         |
|       | kg/m   | mm      | mm         | mm <sup>2</sup> | mm <sup>2</sup> | kN         | kN            | MPa                         | MPa                          | MPa                         | MPa                          | mm         | mm           | %               |         |
| 1     | 2.188  | 20      | 18.85      | 314             | 279             | 141.00     | 186.50        | 449                         | 506                          | 594                         | 669                          | 35.0       | 200          | 17.5            |         |
| 2     | 2.203  | 20      | 18.90      | 314             | 281             | 142.00     | 189.00        | 452                         | 506                          | 602                         | 674                          | 32.5       | 200          | 16.3            |         |
| 3     | 0.879  | 12      | 11.94      | 113             | 112             | 60.00      | 79.00         | 531                         | 536                          | 699                         | 706                          | 25.0       | 200          | 12.5            |         |
| 4     | 0.880  | 12      | 11.95      | 113             | 112             | 60.00      | 79.00         | 531                         | 536                          | 699                         | 705                          | 27.5       | 200          | 13.8            |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               | -       |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               | -       |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               | -       |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               | -       |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               | -       |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               | -       |

**BEND TEST:**

|      |  |   |
|------|--|---|
| 20mm | Sample bend through 180 degrees Satisfactorily without any crack | <b>Note:-</b><br><br>Only Six Samples Received and Tested |
| 12mm | Sample bend through 180 degrees Satisfactorily without any crack |   |
|      |  |   |
|      |  |   |

Note: Please always confirm the results of above report on web [www.uet-civil.edu.pk](http://www.uet-civil.edu.pk)

Rana Muhammad Nadeem  
Deputy Director (Maintenance) Lahore Maintenance Unit, Kasur

**Test Performed By:**

**Dr. /Engr.**

M Irfan UI Hassan

**Client Reference:** BC-PN18-05-01/DD(Maint)NHA/LHR/2020/715

**Dated:** 07-09-2020

**SOM Lab Ref:** CED/SOM/2951(Page-1/1)

**Dated:** 14-09-2020

**Test:** Tension Test & Bend Test

**Test Specification:** ASTM-A 615

**Sample Type:** Deformed Bar

**Gauge Length:** 200 mm

| S.No. | Weight | Dia.    |            | Area            |                 | Yield Load | Ultimate Load | Yield Stress                |                              | Ult. Stress                 |                              | Elongation | Gauge Length | %age Elongation | Remarks |
|-------|--------|---------|------------|-----------------|-----------------|------------|---------------|-----------------------------|------------------------------|-----------------------------|------------------------------|------------|--------------|-----------------|---------|
|       |        | Nominal | Calculated | Nominal         | Calculated      |            |               | (according to nominal area) | (according to measured area) | (according to nominal area) | (according to measured area) |            |              |                 |         |
|       | kg/m   | mm      | mm         | mm <sup>2</sup> | mm <sup>2</sup> | kN         | kN            | MPa                         | MPa                          | MPa                         | MPa                          | mm         | mm           | %               |         |
| 1     | 0.966  | 12      | 12.51      | 113             | 123             | 74.00      | 90.00         | 654                         | 602                          | 796                         | 732                          | 25.0       | 200          | 12.5            |         |
| 2     | 0.972  | 12      | 12.56      | 113             | 124             | 74.70      | 90.20         | 660                         | 604                          | 798                         | 729                          | 25.0       | 200          | 12.5            |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               | -       |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               | -       |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               | -       |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               | -       |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               | -       |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               | -       |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               | -       |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               | -       |

**BEND TEST:**

|      |  |   |
|------|--|---|
| 12mm | Sample bend through 180 degrees Satisfactorily without any crack | <b>Note:-</b><br><br>Only Three Samples Received and Tested |
|      |  |   |
|      |  |   |
|      |  |   |

Note: Please always confirm the results of above report on web [www.uet-civil.edu.pk](http://www.uet-civil.edu.pk)

Rana Muhammad Nadeem  
Deputy Director (Maintenance) Lahore Maintenance Unit, Kasur

**Test Performed By:**

**Dr. /Engr.**

M Irfan UI Hassan

**Client Reference:** BC-PN18-05-01/DD(Maint)NHA/LHR/2020/715

**Dated:** 07-09-2020

**SOM Lab Ref:** CED/SOM/2951(Page-1/1)

**Dated:** 14-09-2020

**Test:** Tension Test & Bend Test

**Test Specification:** ASTM-A 615

**Sample Type:** Deformed Bar

**Gauge Length:** 200 mm

| S.No. | Weight | Dia.    |            | Area            |                 | Yield Load | Ultimate Load | Yield Stress                |                              | Ult. Stress                 |                              | Elongation | Gauge Length | %age Elongation | Remarks |
|-------|--------|---------|------------|-----------------|-----------------|------------|---------------|-----------------------------|------------------------------|-----------------------------|------------------------------|------------|--------------|-----------------|---------|
|       |        | Nominal | Calculated | Nominal         | Calculated      |            |               | (according to nominal area) | (according to measured area) | (according to nominal area) | (according to measured area) |            |              |                 |         |
|       | kg/m   | mm      | mm         | mm <sup>2</sup> | mm <sup>2</sup> | kN         | kN            | MPa                         | MPa                          | MPa                         | MPa                          | mm         | mm           | %               |         |
| 1     | 0.966  | 12      | 12.51      | 113             | 123             | 74.00      | 90.00         | 654                         | 602                          | 796                         | 732                          | 25.0       | 200          | 12.5            |         |
| 2     | 0.972  | 12      | 12.56      | 113             | 124             | 74.70      | 90.20         | 660                         | 604                          | 798                         | 729                          | 25.0       | 200          | 12.5            |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               | -       |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               | -       |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               | -       |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               | -       |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               | -       |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               | -       |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               | -       |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               | -       |

**BEND TEST:**

|      |  |   |
|------|--|---|
| 12mm | Sample bend through 180 degrees Satisfactorily without any crack | <b>Note:-</b><br><br>Only Three Samples Received and Tested |
|      |  |   |
|      |  |   |
|      |  |   |

Note: Please always confirm the results of above report on web [www.uet-civil.edu.pk](http://www.uet-civil.edu.pk)

Ejaz Khan

Test Performed By:

Dr. /Engr.

Nauman KhurramM  
Yousaf

Resident Engineer , Asif Ali &amp; Associates (Pvt) Ltd. Lahore

Client Reference: THDP/RE/RE/01/550

Dated: 01-09-2020

SOM Lab Ref: CED/SOM/2957(Page-1/1)

Dated: 14-08-2020

Test: Tension and Bend Test

Test Specification: ASTM-A 615

Sample Type: Deformed Bar

Gauge Length: 200 mm

| S.No. | Weight | Dia.    |            | Area            |                 | Yield Load | Ultimate Load | Yield Stress                |                              | Ult. Stress                 |                              | Elongation | Gauge Length | %age Elongation | Remarks |
|-------|--------|---------|------------|-----------------|-----------------|------------|---------------|-----------------------------|------------------------------|-----------------------------|------------------------------|------------|--------------|-----------------|---------|
|       |        | Nominal | Calculated | Nominal         | Calculated      |            |               | (according to nominal area) | (according to measured area) | (according to nominal area) | (according to measured area) |            |              |                 |         |
|       | kg/m   | mm      | mm         | mm <sup>2</sup> | mm <sup>2</sup> | kN         | kN            | MPa                         | MPa                          | MPa                         | MPa                          | mm         | mm           | %               |         |
| 1     | 1.659  | 16      | 16.39      | 201             | 211             | 118.70     | 157.00        | 590                         | 563                          | 781                         | 745                          | 27.5       | 200          | 13.8            |         |
| 2     | 1.659  | 16      | 16.40      | 201             | 211             | 118.20     | 157.00        | 588                         | 560                          | 781                         | 743                          | 30.0       | 200          | 15.0            |         |
| 3     | 0.934  | 12      | 12.31      | 113             | 119             | 72.50      | 91.50         | 641                         | 610                          | 809                         | 770                          | 35.0       | 200          | 17.5            |         |
| 4     | 0.937  | 12      | 12.33      | 113             | 119             | 73.20      | 92.20         | 647                         | 614                          | 815                         | 773                          | 30.0       | 200          | 15.0            |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |

**BEND TEST:**

|      |  |   |
|------|--|---|
| 16mm | Sample bend through 180 degrees Satisfactorily without any crack | <b>Note:-</b><br><br>Only Six Samples Received and Tested |
| 12mm | Sample bend through 180 degrees Satisfactorily without any crack |   |
|      |  |   |
|      |  |   |

Note: Please always confirm the results of above report on web [www.uet-civil.edu.pk](http://www.uet-civil.edu.pk)

Ejaz Khan

Test Performed By:

Dr. /Engr.

Nauman KhurramM  
Yousaf

Resident Engineer , Asif Ali &amp; Associates (Pvt) Ltd. Lahore

Client Reference: THDP/RE/RE/01/550

Dated: 01-09-2020

SOM Lab Ref: CED/SOM/2957(Page-1/1)

Dated: 14-08-2020

Test: Tension and Bend Test

Test Specification: ASTM-A 615

Sample Type: Deformed Bar

Gauge Length: 200 mm

| S.No. | Weight | Dia.    |            | Area            |                 | Yield Load | Ultimate Load | Yield Stress                |                              | Ult. Stress                 |                              | Elongation | Gauge Length | %age Elongation | Remarks |
|-------|--------|---------|------------|-----------------|-----------------|------------|---------------|-----------------------------|------------------------------|-----------------------------|------------------------------|------------|--------------|-----------------|---------|
|       |        | Nominal | Calculated | Nominal         | Calculated      |            |               | (according to nominal area) | (according to measured area) | (according to nominal area) | (according to measured area) |            |              |                 |         |
|       | kg/m   | mm      | mm         | mm <sup>2</sup> | mm <sup>2</sup> | kN         | kN            | MPa                         | MPa                          | MPa                         | MPa                          | mm         | mm           | %               |         |
| 1     | 1.659  | 16      | 16.39      | 201             | 211             | 118.70     | 157.00        | 590                         | 563                          | 781                         | 745                          | 27.5       | 200          | 13.8            |         |
| 2     | 1.659  | 16      | 16.40      | 201             | 211             | 118.20     | 157.00        | 588                         | 560                          | 781                         | 743                          | 30.0       | 200          | 15.0            |         |
| 3     | 0.934  | 12      | 12.31      | 113             | 119             | 72.50      | 91.50         | 641                         | 610                          | 809                         | 770                          | 35.0       | 200          | 17.5            |         |
| 4     | 0.937  | 12      | 12.33      | 113             | 119             | 73.20      | 92.20         | 647                         | 614                          | 815                         | 773                          | 30.0       | 200          | 15.0            |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |

**BEND TEST:**

|      |  |   |
|------|--|---|
| 16mm | Sample bend through 180 degrees Satisfactorily without any crack | <b>Note:-</b><br><br>Only Six Samples Received and Tested |
| 12mm | Sample bend through 180 degrees Satisfactorily without any crack |   |
|      |  |   |
|      |  |   |

Note: Please always confirm the results of above report on web [www.uet-civil.edu.pk](http://www.uet-civil.edu.pk)

Rashid Hashmi  
 Manager Projects, Ittefaq Construction Associates, Lahore

**Test Performed By:** Dr. /Engr. S. Asas Ali Gillani

**Client Reference:** ICA/S. S. F/01

**SOM Lab**

**Ref:** 2949 (Page-1/1)

**Dated:** 12-09-2020

**Dated:** 14-09-2020

**Test:** Tension Test

**Test Specification:** ASTM-A-615

**Gauge Length:** 8 inch

**Sample Type:** Deformed Bar(FF Steel)

| S.No. | Weight | Dia.    |            | Area            |                 | Yield Load | Ultimate Load | Yield Stress                |                              | Ult. Stress                 |                              | Elongation | Gauge Length | %age Elongation | Remarks |
|-------|--------|---------|------------|-----------------|-----------------|------------|---------------|-----------------------------|------------------------------|-----------------------------|------------------------------|------------|--------------|-----------------|---------|
|       |        | Nominal | Calculated | Nominal         | Calculated      |            |               | (according to nominal area) | (according to measured area) | (according to nominal area) | (according to measured area) |            |              |                 |         |
|       | lb/ft  | #       | in         | in <sup>2</sup> | in <sup>2</sup> | Tons       | Tons          | psi                         | psi                          | psi                         | psi                          | in         | in           | %               |         |
| 1     | 1.419  | 6       | 0.729      | 0.44            | 0.417           | 13.86      | 20.44         | 69490                       | 73320                        | 102450                      | 108100                       | 1.10       | 8.0          | 13.8            |         |
| 2     | 1.428  | 6       | 0.731      | 0.44            | 0.420           | 14.04      | 19.54         | 70360                       | 73710                        | 97950                       | 102610                       | 1.10       | 8.0          | 13.8            |         |
| 3     | 1.442  | 6       | 0.735      | 0.44            | 0.424           | 14.32      | 20.03         | 71790                       | 74500                        | 100400                      | 104190                       | 1.20       | 8.0          | 15.0            |         |
| 4     | 0.650  | 4       | 0.493      | 0.20            | 0.191           | 7.46       | 9.99          | 82290                       | 86160                        | 110160                      | 115350                       | 1.10       | 8.0          | 13.8            |         |
| 5     | 0.661  | 4       | 0.497      | 0.20            | 0.194           | 7.21       | 9.45          | 79470                       | 81930                        | 104200                      | 107430                       | 1.20       | 8.0          | 15.0            |         |
| 6     | 0.665  | 4       | 0.498      | 0.20            | 0.195           | 7.34       | 9.84          | 80940                       | 83010                        | 108480                      | 111260                       | 1.00       | 8.0          | 12.5            |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |

**BEND TEST:**

|    |                        |   |
|----|------------------------|---|
| -- | No Bend test performed | <b>Note:-</b><br><br>Only Six Samples Received and Tested |
|    |                        |   |
|    |                        |   |
|    |                        |   |

Note: Please always confirm the results of above report on web [www.uet-civil.edu.pk](http://www.uet-civil.edu.pk)

Rashid Hashmi  
 Manager Projects, Ittefaq Construction Associates, Lahore

**Test Performed By:** Dr. /Engr. S. Asas Ali Gillani

**Client Reference:** ICA/S. S. F/01

**SOM Lab**

**Ref:** 2949 (Page-1/1)

**Dated:** 12-09-2020

**Dated:** 14-09-2020

**Test:** Tension Test

**Test Specification:** ASTM-A-615

**Gauge Length:** 8 inch

**Sample Type:** Deformed Bar(FF Steel)

| S.No. | Weight | Dia.    |            | Area            |                 | Yield Load | Ultimate Load | Yield Stress                |                              | Ult. Stress                 |                              | Elongation | Gauge Length | %age Elongation | Remarks |
|-------|--------|---------|------------|-----------------|-----------------|------------|---------------|-----------------------------|------------------------------|-----------------------------|------------------------------|------------|--------------|-----------------|---------|
|       |        | Nominal | Calculated | Nominal         | Calculated      |            |               | (according to nominal area) | (according to measured area) | (according to nominal area) | (according to measured area) |            |              |                 |         |
|       | lb/ft  | #       | in         | in <sup>2</sup> | in <sup>2</sup> | Tons       | Tons          | psi                         | psi                          | psi                         | psi                          | in         | in           | %               |         |
| 1     | 1.419  | 6       | 0.729      | 0.44            | 0.417           | 13.86      | 20.44         | 69490                       | 73320                        | 102450                      | 108100                       | 1.10       | 8.0          | 13.8            |         |
| 2     | 1.428  | 6       | 0.731      | 0.44            | 0.420           | 14.04      | 19.54         | 70360                       | 73710                        | 97950                       | 102610                       | 1.10       | 8.0          | 13.8            |         |
| 3     | 1.442  | 6       | 0.735      | 0.44            | 0.424           | 14.32      | 20.03         | 71790                       | 74500                        | 100400                      | 104190                       | 1.20       | 8.0          | 15.0            |         |
| 4     | 0.650  | 4       | 0.493      | 0.20            | 0.191           | 7.46       | 9.99          | 82290                       | 86160                        | 110160                      | 115350                       | 1.10       | 8.0          | 13.8            |         |
| 5     | 0.661  | 4       | 0.497      | 0.20            | 0.194           | 7.21       | 9.45          | 79470                       | 81930                        | 104200                      | 107430                       | 1.20       | 8.0          | 15.0            |         |
| 6     | 0.665  | 4       | 0.498      | 0.20            | 0.195           | 7.34       | 9.84          | 80940                       | 83010                        | 108480                      | 111260                       | 1.00       | 8.0          | 12.5            |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |

**BEND TEST:**

|    |                        |   |
|----|------------------------|---|
| -- | No Bend test performed | <b>Note:-</b><br><br>Only Six Samples Received and Tested |
|    |                        |   |
|    |                        |   |
|    |                        |   |

Note: Please always confirm the results of above report on web [www.uet-civil.edu.pk](http://www.uet-civil.edu.pk)



Sajid Mahmood

Test Performed By:

Dr. /Engr.

M Irfan Ul Hassan

Manager Construction Projects, 3 & 4, Tipu Block New Garden Town, Allied Bank Head Office, Lahore

Client Reference: HOL/ENGG. C.P./SM/2020/17

SOM Lab

Ref: 2952 (Page-1/1)

Dated: 14-09-2020

Dated: 14-09-2020

Test: Tension Test & Bend Test

Test Specification:

ASTM-A-615

Gauge Length: 8 inch

Sample Type:

Deformed Bar (Amreli Steel)

| S.No. | Weight | Dia.    |            | Area            |                 | Yield Load | Ultimate Load | Yield Stress                |                              | Ult. Stress                 |                              | Elongation | Gauge Length | %age Elongation | Remarks |
|-------|--------|---------|------------|-----------------|-----------------|------------|---------------|-----------------------------|------------------------------|-----------------------------|------------------------------|------------|--------------|-----------------|---------|
|       |        | Nominal | Calculated | Nominal         | Calculated      |            |               | (according to nominal area) | (according to measured area) | (according to nominal area) | (according to measured area) |            |              |                 |         |
|       | lb/ft  | #       | in         | in <sup>2</sup> | in <sup>2</sup> | Tons       | Tons          | psi                         | psi                          | psi                         | psi                          | in         | in           | %               |         |
| 1     | 1.508  | 6       | 0.751      | 0.44            | 0.443           | 14.98      | 18.86         | 75110                       | 74600                        | 94530                       | 93890                        | 1.20       | 8.0          | 15.0            |         |
| 2     | 1.514  | 6       | 0.753      | 0.44            | 0.445           | 15.09      | 18.96         | 75620                       | 74770                        | 95040                       | 93970                        | 1.30       | 8.0          | 16.3            |         |
| 3     | 1.051  | 5       | 0.627      | 0.31            | 0.309           | 10.83      | 13.43         | 77020                       | 77270                        | 95510                       | 95820                        | 1.30       | 8.0          | 16.3            |         |
| 4     | 1.051  | 5       | 0.627      | 0.31            | 0.309           | 10.47      | 13.07         | 74480                       | 74720                        | 92970                       | 93280                        | 1.20       | 8.0          | 15.0            |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |

**BEND TEST:**

|     |  |   |
|-----|--|---|
| # 6 | Sample bend through 180 degrees Satisfactorily without any crack | <b>Note:-</b><br><br>Only Six Samples Received and Tested |
| # 5 | Sample bend through 180 degrees Satisfactorily without any crack |   |
|     |  |   |
|     |  |   |

Note: Please always confirm the results of above report on web [www.uet-civil.edu.pk](http://www.uet-civil.edu.pk)

Sajid Mahmood

Test Performed By:

Dr. /Engr.

M Irfan UI  
Hassan

Manager Construction Projects, 3 &amp; 4, Tipu Block New Garden Town, Allied Bank Head Office, Lahore

Client Reference: HOL/ENGG. C.P./SM/2020/17

SOM Lab

Ref: 2952 (Page-1/1)

Dated: 14-09-2020

Dated: 14-09-2020

Test: Tension Test &amp; Bend Test

Test Specification:

ASTM-A-615

Gauge Length: 8 inch

Sample Type:

Deformed Bar (Amreli Steel)

| S.No. | Weight | Dia.    |            | Area            |                 | Yield Load | Ultimate Load | Yield Stress                |                              | Ult. Stress                 |                              | Elongation | Gauge Length | %age Elongation | Remarks |
|-------|--------|---------|------------|-----------------|-----------------|------------|---------------|-----------------------------|------------------------------|-----------------------------|------------------------------|------------|--------------|-----------------|---------|
|       |        | Nominal | Calculated | Nominal         | Calculated      |            |               | (according to nominal area) | (according to measured area) | (according to nominal area) | (according to measured area) |            |              |                 |         |
|       | lb/ft  | #       | in         | in <sup>2</sup> | in <sup>2</sup> | Tons       | Tons          | psi                         | psi                          | psi                         | psi                          | in         | in           | %               |         |
| 1     | 1.508  | 6       | 0.751      | 0.44            | 0.443           | 14.98      | 18.86         | 75110                       | 74600                        | 94530                       | 93890                        | 1.20       | 8.0          | 15.0            |         |
| 2     | 1.514  | 6       | 0.753      | 0.44            | 0.445           | 15.09      | 18.96         | 75620                       | 74770                        | 95040                       | 93970                        | 1.30       | 8.0          | 16.3            |         |
| 3     | 1.051  | 5       | 0.627      | 0.31            | 0.309           | 10.83      | 13.43         | 77020                       | 77270                        | 95510                       | 95820                        | 1.30       | 8.0          | 16.3            |         |
| 4     | 1.051  | 5       | 0.627      | 0.31            | 0.309           | 10.47      | 13.07         | 74480                       | 74720                        | 92970                       | 93280                        | 1.20       | 8.0          | 15.0            |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |

**BEND TEST:**

# 6 Sample bend through 180 degrees Satisfactorily without any crack

# 5 Sample bend through 180 degrees Satisfactorily without any crack

**Note:-**Only Six Samples  
Received and TestedNote: Please always confirm the results of above report on web [www.uet-civil.edu.pk](http://www.uet-civil.edu.pk)