

Assistant Director (Maint.)
NHA, Lahore

Test Performed By: Dr. /Engr. Bilal A. Khokhar

Client Reference: U-tum/DD(M)/NHA/LHR/2019/318

Dated: 15-04-2019

SOM Lab Ref: CED/SOM/690(Page-1/1)

Dated: 22-04-2019

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 ² | mm ² | kN | kN | MPa | MPa | MPa | MPa | mm | mm | % | |
| 1 | 3.871 | 25 | 25.05 | 491 | 493 | 254.20 | 330.70 | 518 | 516 | 674 | 671 | 25.0 | 200 | 12.5 | |
| 2 | 3.855 | 25 | 25.00 | 491 | 491 | 252.70 | 329.70 | 515 | 515 | 672 | 672 | 27.5 | 200 | 13.8 | |
| 3 | 2.188 | 20 | 18.84 | 314 | 279 | 144.70 | 179.50 | 461 | 520 | 571 | 644 | 25.0 | 200 | 12.5 | |
| 4 | 2.216 | 20 | 18.96 | 314 | 282 | 142.00 | 176.00 | 452 | 504 | 560 | 624 | 27.5 | 200 | 13.8 | |
| 5 | 1.564 | 16 | 15.93 | 201 | 199 | 103.70 | 141.50 | 516 | 521 | 704 | 711 | 22.5 | 200 | 11.3 | |
| 6 | 1.574 | 16 | 15.98 | 201 | 200 | 103.20 | 140.00 | 513 | 515 | 696 | 699 | 22.5 | 200 | 11.3 | |
| 7 | 0.988 | 12 | 12.66 | 113 | 126 | 65.70 | 80.00 | 581 | 523 | 707 | 636 | 20.0 | 200 | 10.0 | |
| 8 | 0.982 | 12 | 12.62 | 113 | 125 | 65.70 | 80.00 | 581 | 526 | 707 | 640 | 20.0 | 200 | 10.0 | |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |

BEND TEST:

| | | |
|------|--|---|
| 25mm | Sample bend through 180 degrees Satisfactorily without any crack | Note:- Only Twelve Samples Received and Tested |
| 20mm | Sample bend through 180 degrees Satisfactorily without any crack | |
| 16mm | Sample bend through 180 degrees Satisfactorily without any crack | |
| 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

Abdul Ghafar
Project Manager Liberty Builders, Lahore

Test Performed By: Dr. /Engr. S Asad Ali Gillani

Client Reference: CONC - 20190422

SOM Lab

Ref: 691(Page-1/1)

Dated: 22-04-2019

Dated: 22-04-2019

Test: Tension Test & Bend Test

Test Specification:

ASTM-A-615

Gauge Length: 8 inch

Sample Type:

Deformed Bar(Model Power 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 ² | in ² | Tons | Tons | psi | psi | psi | psi | in | in | % | |
| 1 | 0.640 | 4 | 0.489 | 0.20 | 0.188 | 5.83 | 7.92 | 64300 | 68400 | 87340 | 92920 | 1.10 | 8.0 | 13.8 | |
| 2 | 0.662 | 4 | 0.498 | 0.20 | 0.195 | 6.17 | 8.05 | 68010 | 69750 | 88800 | 91080 | 1.30 | 8.0 | 16.3 | |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |

BEND TEST:

| | | |
|-----|--|---|
| # 4 | Sample bend through 180 degrees Satisfactorily without any crack | Note:- Only Three Samples Received and Tested |
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Note: Please always confirm the results of above report on web www.uet-civil.edu.pk

Al- Hamd General
Engineering Services, 55 - A, Mohafiz Town, Canal Road, Lahore.

Test Performed By: Dr. /Engr. Bilal A. Khokhar

Client Reference: nil

SOM Lab

Ref: 693(Page-1/1)

Dated: 22-04-2019

Dated: 22-04-2019

Test: Tension Test & Bend Test

Test Specification:

ASTM-A-615

Deformed

Gauge Length: 8 inch

Sample Type:

Bar

| 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 ² | in ² | Tons | Tons | psi | psi | psi | psi | in | in | % | |
| 1 | 1.642 | 6 | 0.784 | 0.44 | 0.483 | 17.86 | 22.63 | 89520 | 81550 | 113430 | 103330 | 1.00 | 8.0 | 12.5 | |
| 2 | 1.632 | 6 | 0.782 | 0.44 | 0.480 | 17.66 | 22.45 | 88500 | 81120 | 112510 | 103140 | 1.10 | 8.0 | 13.8 | |
| 3 | 0.605 | 4 | 0.476 | 0.20 | 0.178 | 5.22 | 7.80 | 57560 | 64670 | 85990 | 96620 | 1.20 | 8.0 | 15.0 | |
| 4 | 0.658 | 4 | 0.496 | 0.20 | 0.193 | 5.18 | 7.80 | 57110 | 59180 | 85990 | 89110 | 0.90 | 8.0 | 11.3 | |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |

BEND TEST:

| | | |
|-----|--|---|
| # 6 | Sample bend through 180 degrees Satisfactorily without any crack | Note:- Only Six Samples Received and Tested |
| # 4 | Sample bend through 180 degrees Satisfactorily without any crack | |
| | | |
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Note: Please always confirm the results of above report on web www.uet-civil.edu.pk

Muhammad Ishaq
Junior Research Officer-I, Building Research Station, Lahore

Test Performed By: Dr. /Engr. Bilal A. Khokhar

Client Reference: 154-R/865

SOM Lab Ref: 694(Page-1/1)

Dated: 10-04-2019

Dated: 22-04-2019

Test: Tension Test & Bend Test

Test Specification:

ASTM-A-615

Gauge Length: 8 inch

Sample Type:

Deformed Bar(Abbas Steel Mill karachi)

| 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 ² | in ² | Tons | Tons | psi | psi | psi | psi | in | in | % | |
| 1 | 2.628 | 8 | 0.991 | 0.79 | 0.772 | 24.59 | 33.20 | 68640 | 70240 | 92690 | 94850 | 1.20 | 8.0 | 15.0 | |
| 2 | 1.484 | 6 | 0.745 | 0.44 | 0.436 | 15.75 | 20.85 | 78940 | 79670 | 104490 | 105450 | 1.10 | 8.0 | 13.8 | |
| 3 | 1.037 | 5 | 0.623 | 0.31 | 0.305 | 10.88 | 13.46 | 77380 | 78650 | 95730 | 97300 | 1.00 | 8.0 | 12.5 | |
| 4 | 0.668 | 4 | 0.500 | 0.20 | 0.196 | 6.68 | 8.74 | 73630 | 75130 | 96340 | 98300 | 1.20 | 8.0 | 15.0 | |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |

BEND TEST:

| | | |
|-----|--|--|
| # 8 | Sample bend through 180 degrees Satisfactorily without any crack | Note:- Only Eight Samples Received and Tested |
| # 6 | Sample bend through 180 degrees Satisfactorily without any crack | |
| # 5 | Sample bend through 180 degrees Satisfactorily without any crack | |
| # 4 | 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

Maj Adnan khalid®

Test Performed By:

Dr. /Engr.

M Rizwan Azam

Dy Dir MTL, Infra Dev Works of Prism -9, Pkg-II, III & IV - (M/S NLC)

Client Reference: 408/241/E/Lab/536/1107

SOM Lab

Ref:

695(Page-1/1)

Dated: 18-04-2019

Dated:

22-04-2019

Test: Tension Test & Bend Test

Test Specification:

ASTM-A-615

Gauge Length: 8 inch

Sample Type:

Deformed Bar (S. J 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 ² | in ² | Tons | Tons | psi | psi | psi | psi | in | in | % | |
| 1 | 1.494 | 6 | 0.748 | 0.44 | 0.439 | 16.72 | 20.92 | 83800 | 83990 | 104850 | 105090 | 1.00 | 8.0 | 12.5 | |
| 2 | 1.496 | 6 | 0.748 | 0.44 | 0.440 | 19.37 | 22.85 | 97080 | 97080 | 114560 | 114560 | 1.00 | 8.0 | 12.5 | |
| 3 | 0.664 | 4 | 0.498 | 0.20 | 0.195 | 6.93 | 9.89 | 76440 | 78400 | 109040 | 111830 | 0.90 | 8.0 | 11.3 | |
| 4 | 0.673 | 4 | 0.502 | 0.20 | 0.198 | 6.83 | 9.81 | 75320 | 76080 | 108140 | 109230 | 1.00 | 8.0 | 12.5 | |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |

BEND TEST:

| | | |
|-----|--|---|
| # 6 | Sample bend through 180 degrees Satisfactorily without any crack | Note:- Only Six Samples Received and Tested |
| # 4 | 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