

Maj Mansoor Khaliq  
 General Manager, H. Sadar Ali Akhtar Ali (Pvt) Ltd. Halloki, Lahore

Test Performed By: Dr. /Engr. M Rizwan Azam

Client Reference: nil

SOM Lab

Ref: 1332 (Page-1/1)

Dated: 02-09-2019

Dated: 03-09-2019

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 <sup>2</sup> | in <sup>2</sup> | Tons       | Tons          | psi                         | psi                          | psi                         | psi                          | in         | in           | %               |         |
| 1     | 1.469  | 6       | 0.742      | 0.44            | 0.432           | 13.46      | 19.11         | 67450                       | 68700                        | 95800                       | 97580                        | 1.10       | 8.0          | 13.8            |         |
| 2     | 1.465  | 6       | 0.741      | 0.44            | 0.431           | 13.37      | 19.27         | 67040                       | 68440                        | 96570                       | 98590                        | 1.10       | 8.0          | 13.8            |         |
| 3     | 0.633  | 4       | 0.487      | 0.20            | 0.186           | 5.61       | 7.80          | 61830                       | 66480                        | 85990                       | 92470                        | 1.20       | 8.0          | 15.0            |         |
| 4     | 0.635  | 4       | 0.488      | 0.20            | 0.187           | 5.63       | 7.87          | 62050                       | 66370                        | 86780                       | 92810                        | 1.30       | 8.0          | 16.3            |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |

**BEND TEST:**

|     |  |   |
|-----|--|---|
| # 6 | Sample bend through 180 degrees Satisfactorily without any crack | <b>Note:-<br/><br/>Only Six Samples<br/>Received and Tested</b> |
| # 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](http://www.uet-civil.edu.pk)

Javaid Iqbal  
 Managing Director, Excellent Builders, Deals in All Kind of Civil Works, Lahore

Test Performed By: Dr. /Engr.

S.Asad Ali  
Gillani

Client Reference: nil

SOM Lab

Ref: 1335(Page-1/1)

Dated: 03-09-2019

Dated: 03-09-2019

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 <sup>2</sup> | in <sup>2</sup> | Tons       | Tons          | psi                         | psi                          | psi                         | psi                          | in         | in           | %               |         |
| 1     | 1.647  | 6       | 0.785      | 0.44            | 0.484           | 11.28      | 17.30         | 56560                       | 51420                        | 86710                       | 78830                        | 1.30       | 8.0          | 16.3            |         |
| 2     | 1.606  | 6       | 0.775      | 0.44            | 0.472           | 11.39      | 17.45         | 57080                       | 53210                        | 87480                       | 81550                        | 1.40       | 8.0          | 17.5            |         |
| 3     | 0.648  | 4       | 0.492      | 0.20            | 0.190           | 6.03       | 9.09          | 66550                       | 70050                        | 100270                      | 105550                       | 1.10       | 8.0          | 13.8            |         |
| 4     | 0.656  | 4       | 0.496      | 0.20            | 0.193           | 6.01       | 9.09          | 66320                       | 68730                        | 100270                      | 103910                       | 1.10       | 8.0          | 13.8            |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |

**BEND TEST:**

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

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

Ch Abdul Ghafoor

Test Performed By:

Dr. /Engr.

S. Asad Ali Gillani

Resident Engineer, PEPAC, W. W. C. Adjacent to Sundar Ind. Estate, District Kasur (Package-A & B)

Client Reference: RE/PEPAC/Sundar/AB-203

SOM Lab Ref: 1336(Page-2/3)

Dated: 02-09-2019

Dated: 03-09-2019

Test: Tension Test & Bend Test

Test Specification:

ASTM-A-615

Gauge Length: 8 inch

Sample Type:

Deformed Bar (Ittefaq 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     | 1.039  | 5       | 0.623      | 0.31            | 0.305           | 10.14      | 13.07         | 72160                       | 73340                        | 92970                       | 94500                        | 1.00       | 8.0          | 12.5            |         |
| 2     | 1.093  | 5       | 0.639      | 0.31            | 0.321           | 13.48      | 15.57         | 95880                       | 92590                        | 110740                      | 106950                       | 1.00       | 8.0          | 12.5            |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |

**BEND TEST:**

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

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

Ch Abdul Ghafoor

Test Performed By:

Dr. /Engr.

S. Asad Ali Gillani

Resident Engineer, PEPAC, W. W. C. Adjacent to Sundar Ind. Estate, District Kasur (Package-A & B)

Client Reference: RE/PEPAC/Sundar/AB-203

SOM Lab Ref: 1336(Page-2/3)

Dated: 02-09-2019

Dated: 03-09-2019

Test: Tension Test & Bend Test

Test Specification:

ASTM-A-615

Gauge Length: 8 inch

Sample Type:

Deformed Bar (Ittefaq 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     | 1.039  | 5       | 0.623      | 0.31            | 0.305           | 10.14      | 13.07         | 72160                       | 73340                        | 92970                       | 94500                        | 1.00       | 8.0          | 12.5            |         |
| 2     | 1.093  | 5       | 0.639      | 0.31            | 0.321           | 13.48      | 15.57         | 95880                       | 92590                        | 110740                      | 106950                       | 1.00       | 8.0          | 12.5            |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |

**BEND TEST:**

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

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

Ch Abdul Ghafoor

Test Performed By:

Dr. /Engr.

S. Asad Ali  
Gillani

Resident Engineer, PEPAC, W. W. C. Adjacent to Sundar Ind. Estate, District Kasur (Package-A & B)

Client Reference: RE/PEPAC/Sundar/AB-204

SOM Lab Ref: 1336(Page-3/3)

Dated: 02-09-2019

Dated: 03-09-2019

Test: Tension Test & Bend Test

Test Specification:

ASTM-A-615

Gauge Length: 8 inch

Sample Type:

Deformed Bar (Ittefaq 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     | 1.504  | 6       | 0.750      | 0.44            | 0.442           | 15.55      | 19.34         | 77920                       | 77570                        | 96930                       | 96490                        | 1.00       | 8.0          | 12.5            |         |
| 2     | 1.509  | 6       | 0.751      | 0.44            | 0.443           | 15.24      | 18.81         | 76390                       | 75870                        | 94270                       | 93630                        | 1.10       | 8.0          | 13.8            |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |

**BEND TEST:**

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

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

Assistant Director Engg,  
Gujranwala Development Authority, Gijranwala

Test Performed By: Dr. /Engr. M. Irfan Hussan

Client Reference: GDA/ADE/68

SOM Lab

Ref: 1337(Page-1/1)

Dated: 24-09-2019

Dated: 03-09-2019

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 <sup>2</sup> | in <sup>2</sup> | Tons       | Tons          | psi                         | psi                          | psi                         | psi                          | in         | in           | %               |         |
| 1     | 0.662  | 4       | 0.498      | 0.20            | 0.195           | 6.54       | 8.92          | 72170                       | 74020                        | 98360                       | 100880                       | 1.00       | 8.0          | 12.5            |         |
| 2     | 0.661  | 4       | 0.497      | 0.20            | 0.194           | 6.37       | 8.84          | 70260                       | 72430                        | 97460                       | 100470                       | 1.10       | 8.0          | 13.8            |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |

**BEND TEST:**

|     |  |   |
|-----|--|---|
| # 4 | Sample bend through 180 degrees Satisfactorily without any crack | <b>Note:-<br/><br/>Only Three Samples Received and Tested</b> |
|     |  |   |
|     |  |   |
|     |  |   |

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

Ali Raza qureshi  
Project Director, (HVDC) NTDC, Lahore

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

Client Reference: 1754-58/PD/HVDC/NTDC/LHR

SOM Lab

Ref: 1338(Page-1/1)

Dated: 03-09-2019

Dated: 03-09-2019

Test: Tension 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 <sup>2</sup> | in <sup>2</sup> | Tons       | Tons          | psi                         | psi                          | psi                         | psi                          | in         | in           | %               |         |
| 1     | 1.047  | 5       | 0.626      | 0.31            | 0.308           | 10.55      | 12.95         | 75060                       | 75550                        | 92100                       | 92700                        | 1.20       | 8.0          | 15.0            |         |
| 2     | 1.038  | 5       | 0.623      | 0.31            | 0.305           | 9.02       | 12.46         | 64180                       | 65240                        | 88620                       | 90080                        | 1.30       | 8.0          | 16.3            |         |
| 3     | 1.038  | 5       | 0.623      | 0.31            | 0.305           | 9.02       | 12.49         | 64180                       | 65240                        | 88840                       | 90300                        | 1.30       | 8.0          | 16.3            |         |
| 4     | 1.029  | 5       | 0.620      | 0.31            | 0.302           | 9.79       | 13.97         | 69620                       | 71470                        | 99360                       | 101990                       | 1.20       | 8.0          | 15.0            |         |
| 5     | 1.042  | 5       | 0.624      | 0.31            | 0.306           | 8.97       | 12.33         | 63820                       | 64660                        | 87750                       | 88900                        | 1.30       | 8.0          | 16.3            |         |
| 6     | 1.041  | 5       | 0.624      | 0.31            | 0.306           | 8.94       | 12.44         | 63600                       | 64440                        | 88480                       | 89630                        | 1.20       | 8.0          | 15.0            |         |
| 7     | 1.047  | 5       | 0.626      | 0.31            | 0.308           | 10.01      | 14.12         | 71220                       | 71680                        | 100440                      | 101100                       | 1.00       | 8.0          | 12.5            |         |
| 8     | 1.033  | 5       | 0.622      | 0.31            | 0.304           | 8.99       | 12.44         | 63970                       | 65230                        | 88480                       | 90220                        | 1.10       | 8.0          | 13.8            |         |
| 9     | 1.047  | 5       | 0.626      | 0.31            | 0.308           | 9.12       | 12.69         | 64910                       | 65330                        | 90290                       | 90880                        | 1.10       | 8.0          | 13.8            |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |

Witnessed By: M. Umair Aslam, DM (HVCD), M. Abbas, EO, And Ali Adnan, CET Lot 7 & 8 Pakpattan

**BEND TEST:**

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

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

Ghani Ceramics Ltd.,  
40 - L Model Town Lahore

Test Performed By: Dr. /Engr. M. Irfan Hussan

Client Reference: nil

SOM Lab

Ref: 1339(Page-1/1)

Dated: 03-09-2019

Dated: 03-09-2019

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 <sup>2</sup> | in <sup>2</sup> | Tons       | Tons          | psi                         | psi                          | psi                         | psi                          | in         | in           | %               |         |
| 1     | 2.627  | 8       | 0.991      | 0.79            | 0.772           | 26.06      | 33.40         | 72740                       | 74440                        | 93260                       | 95430                        | 1.20       | 8.0          | 15.0            |         |
| 2     | 2.625  | 8       | 0.991      | 0.79            | 0.771           | 27.02      | 34.61         | 75440                       | 77300                        | 96620                       | 99000                        | 1.20       | 8.0          | 15.0            |         |
| 3     | 1.480  | 6       | 0.744      | 0.44            | 0.435           | 17.20      | 20.95         | 86200                       | 87190                        | 105000                      | 106210                       | 0.90       | 8.0          | 11.3            |         |
| 4     | 1.465  | 6       | 0.741      | 0.44            | 0.431           | 15.36      | 19.39         | 77000                       | 78610                        | 97180                       | 99210                        | 1.00       | 8.0          | 12.5            |         |
| 5     | 0.647  | 4       | 0.492      | 0.20            | 0.190           | 7.03       | 8.72          | 77560                       | 81650                        | 96110                       | 101170                       | 1.00       | 8.0          | 12.5            |         |
| 6     | 0.647  | 4       | 0.492      | 0.20            | 0.190           | 7.00       | 8.77          | 77230                       | 81290                        | 96670                       | 101760                       | 1.00       | 8.0          | 12.5            |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |

**BEND TEST:**

|     |  |  |
|-----|--|--|
| # 8 | Sample bend through 180 degrees Satisfactorily without any crack | <b>Note:-<br/><br/>Only Nine Samples<br/>Received and Tested</b> |
| # 6 | 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](http://www.uet-civil.edu.pk)



Ch Abdul Ghafoor

Test Performed By:

Dr. /Engr.

Nauman  
Khurram

Resident Engineer, PEPAC, W. W. C. Adjacent to Sundar Ind. Estate, Kasur (Package-Q)

Client Reference: RE/PEPAC/WWC/96-00

SOM Lab

Ref:

1341(Page-1/1)

Dated: 31-08-2019

Dated:

03-09-2019

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 <sup>2</sup> | in <sup>2</sup> | Tons       | Tons          | psi                         | psi                          | psi                         | psi                          | in         | in           | %               |         |
| 1     | 1.532  | 6       | 0.757      | 0.44            | 0.450           | 15.11      | 21.25         | 75720                       | 74040                        | 106530                      | 104170                       | 1.20       | 8.0          | 15.0            |         |
| 2     | 1.538  | 6       | 0.759      | 0.44            | 0.452           | 15.01      | 21.02         | 75210                       | 73220                        | 105360                      | 102560                       | 1.20       | 8.0          | 15.0            |         |
| 3     | 1.039  | 5       | 0.623      | 0.31            | 0.305           | 10.16      | 13.00         | 72310                       | 73490                        | 92470                       | 93980                        | 1.10       | 8.0          | 13.8            |         |
| 4     | 1.050  | 5       | 0.627      | 0.31            | 0.309           | 10.65      | 13.91         | 75790                       | 76030                        | 98990                       | 99310                        | 1.20       | 8.0          | 15.0            |         |
| 5     | 0.678  | 4       | 0.503      | 0.20            | 0.199           | 6.75       | 8.48          | 74420                       | 74790                        | 93530                       | 94000                        | 1.20       | 8.0          | 15.0            |         |
| 6     | 0.671  | 4       | 0.501      | 0.20            | 0.197           | 6.95       | 8.72          | 76660                       | 77830                        | 96110                       | 97570                        | 1.10       | 8.0          | 13.8            |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |
| -     | -      | -       | -          | -               | -               | -          | -             | -                           | -                            | -                           | -                            | -          | -            | -               |         |

**BEND TEST:**

|     |  |   |
|-----|--|---|
| # 6 | Sample bend through 180 degrees Satisfactorily without any crack | <b>Note:-</b><br><br><b>Only Nine Samples Received and Tested</b> |
| # 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](http://www.uet-civil.edu.pk)

Test Performed By: Dr Irfan UI Hassan

DCRE / RE -1,  
Zeeruk International (Pvt) Ltd,  
Lahore Sialkot Motorway Project

Client Reference: LSMP/RE-1/2019/1032

Dated 29-06-2019

SOM Laboratory Reference: CED/SOM/1333(Page-1/2)

Dated 03-09-2019

Test: Shear Modulus Test & Adhesion Test

Sample Type: Elastomeric Bearing Pad (500mm x 450mm )

(Manufacturer: Interbuna)

Shear Strength and Adhesion Test (AS PER ASTM- D-429-08 & -D-4014)

| S. No | PROPERTIES                             | RESULTS                  |
|-------|--|--------------------------|
| 1     | Shear Modulus                          | 10.45 Kg/cm <sup>2</sup> |
| 2     | Adhesion Between Elastomeric and Steel | 28.75 N/mm               |

Test Performed By: Dr Irfan UI Hassan

DCRE / RE -1,  
Zeeruk International (Pvt) Ltd,  
Lahore Sialkot Motorway Project

Client Reference: LSMPRE-1/2019/1032

Dated 29-08-2019

SOM Laboratory Reference: CED/SOM/1333(Page-2/2)

Dated 03-09-2019

Test: Shear Modulus Test & Adhesion Test

Sample Type: Elastomeric Bearing Pad (500mm x 400mm )

(Manufacturer: Interbuna)

Shear Strength and Adhesion Test (AS PER ASTM- D-429-08 & -D-4014)

| S. No | PROPERTIES                             | RESULTS                 |
|-------|--|-------------------------|
| 1     | Shear Modulus                          | 9.28 Kg/cm <sup>2</sup> |
| 2     | Adhesion Between Elastomeric and Steel | 28.12 N/mm              |

Test Performed By: S. Asad Ali Gillani

Hamid Ali  
Resident Engineer  
M. Garh - D. G. Khan Road

Client Reference: 3949/HA/01/306,  
SOM Laboratory Reference: CED/SOM/1334(Page-1/1)

Dated: 02-09-2019

Dated: 03-09-2019

Test: Compression Strength

Sample Type: Aluminum Stud, .

Test Specification: ASTM-D4280

### Test Results

| Sr. No. | Sample Type   | Top Dimensions (mm) | Bottom Dimensions (mm) | Thickness (mm) | Inclination (Degree) | Compression Load (Kg) |
|---------|---------------|---------------------|------------------------|----------------|----------------------|-----------------------|
| 1       | Aluminum Stud | 126.0 x 50.0        | 195.0 x 101.0          | 49.0           | 56.82°               | 17992.00              |

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

Test Performed by: Dr. Nauman Khurram

M/S K K Steel  
International, Faisalabad

Client Reference No.: Nil

Dated: 02-09-2019

SOM Lab Ref: CED/SOM/1344(P-1/1)

Dated: 04-09-2019

Test Type: Compressive Strength

Sample Type: Sandwich Panel Sheet

Tensile Test Results: Sandwich Panel Sheet Compressive Strength as ASTM C365/365M

| Sample No. | Sample Size | Load at 2% Deflection (N) | Ultimate Load (N) | Strength at Deflection (kpa) | Ultimate Strength (kpa) | Remarks                     |
|------------|-------------|---------------------------|-------------------|------------------------------|-------------------------|-----------------------------|
| 1          | 4" x 4"     | 870                       | 1750              | 83.62                        | 168.20                  | Uniform Compressive Failure |

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