

# Transportation Engineering Laboratory (TEL)

Department of Civil Engineering (CED)

UNIVERSITY OF ENGINEERING & TECHNOLOGY (UET)

LAHORE – 54890 (PAKISTAN)



Phone: 092-42-9929202 Cable: UNIVENGTECH Fax: 092-42-9922566

Ref.:-----

Date:-----

Mr. Ghulam Rasool Domki  
Resident Engineer,  
NESPAK, Gujrat.

Subject: **Testing of Fine Aggregate (Lawrancepur Sand)**  
Road Restoration Programme, District Gujrat  
Project: Rehabilitation of Gujrat Bhimber Road, Length = 38.40 km

Dear Sir,

It is with reference to your letter No. 4834/RRP/GRT/GRD/82 dated 23-12-2024.

Please find below the results for the tests conducted on the aggregate sample provided to this laboratory on 16-05-2025 through your representative.

## 1. Sieve Analysis (ASTM C-136)

| Sieve Size   | 3/8" | #4    | #8    | #16   | #30   | #50   | #100 | #200 |
|--------------|------|-------|-------|-------|-------|-------|------|------|
| %age Passing | 100  | 98.93 | 97.46 | 85.40 | 64.46 | 10.48 | 3.17 | 0.90 |

## 2. Fineness Modulus (ASTM C-142)

|                      |      |
|----------------------|------|
| Fineness Modulus (%) | 2.40 |
|----------------------|------|

## 3. Specific Gravity & Water Absorption (ASTM C-128)

|                           |      |
|---------------------------|------|
| Specific Gravity (OD)     | 2.67 |
| Specific Gravity (SSD)    | 2.70 |
| Apparent Specific Gravity | 2.74 |
| Water Absorption (%)      | 0.90 |

## 4. Sodium Sulphate Soundness (ASTM C-88)

| Sieve Size           | Weight of Fraction Before Test (gm) | Weight of Fraction After Test (gm) | Percentage Passing Designated Sieve After Test | Weighted Percentage Loss |
|----------------------|-------------------------------------|------------------------------------|--|--------------------------|
| #4 to #8             | 100                                 | 98.5                               | 1.50   | 0.02                     |
| #8 to #16            | 100                                 | 98.4                               | 1.60   | 0.19                     |
| #16 to #30           | 100                                 | 98.5                               | 1.50   | 0.31                     |
| #30 to #50           | 100                                 | 98.6                               | 1.40   | 0.76                     |
| <b>Total = 1.28%</b> |                                     |                                    |  |                          |

**5. Organic Impurities (ASTM C-40)**

|                    |     |
|--------------------|-----|
| Organic Impurities | Nil |
|--------------------|-----|

**6. Unit Weight (*Loose & Rodded*); (ASTM C 29/C 29M)**

|   |      |
|---|------|
| Loose Unit Weight (g/cm <sup>3</sup> )  | 1.61 |
| Rodded Unit Weight (g/cm <sup>3</sup> ) | 1.71 |

If you have further query, please do not hesitate to contact the undersigned.

Best Regards,

Director  
Transportation Engineering Laboratory

**Note:**

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2. Sampling has not been performed by Transportation Engineering Laboratory (TEL), UET and TEL-UET does not accept the responsibility that the sample(s) supplied is/are truly representative sample(s) of any batch or stock or entire project.
3. While TEL-UET agrees to take every reasonable precaution to ensure validity of its test results, it assumes no liability thereof beyond the amount of the fee charged for the analysis or test.
4. The party shall assume full responsibility for the ethical use of the results in the test reports and the TEL-UET shall be held free from any and all claims which may result from the use of such data by client or others.
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Ref.:-----

Date:-----

Mr. Ghulam Rasool Domki  
Resident Engineer,  
NESPAK, Gujrat.

Subject: **Testing of Coarse Aggregate**  
Road Restoration Programme, District Gujrat  
Project: Rehabilitation of Gujrat Bhimber Road, Length = 38.40 km

Dear Sir,

It is with reference to your letter No. 4834/RRP/GRT/GRD/81 dated 23-12-2024.

Please find below the results for the tests conducted on the aggregate sample provided to this laboratory on 16-05-2025 through your representative.

## 1. Sieve Analysis (ASTM C-136)

| Sieve Size   | ¾"  | ½"    | 3/8" | #4   |
|--------------|-----|-------|------|------|
| %age Passing | 100 | 41.90 | 8.71 | 0.35 |

## 2. Specific Gravity & Water Absorption (ASTM C-127)

|  |      |
|--|------|
| Specific Gravity (oven dried condition)            | 2.80 |
| Specific Gravity (saturated surface dry condition) | 2.81 |
| Apparent Specific Gravity                          | 2.83 |
| Water Absorption (%)                               | 0.33 |

## 3. Sodium Sulphate Soundness (ASTM C-88)

| Sieve Size  | Weight of Fraction Before Test. (gm) | Weight of Fraction After Test. (gm) | Percentage Passing Designated Sieve After Test. | Weighted Percentage Loss. |
|-------------|--------------------------------------|-------------------------------------|---|---------------------------|
| 1/2" + 3/8" | 1002.4                               | 991.4                               | 1.10  | 1.00                      |
|             | <b>Total = 1.00%</b>                 |                                     |   |                           |

## 4. Los Angeles Abrasion Value Test (ASTM C-131/535)

| Grading Used | Los Angeles Abrasion Value (%) |
|--------------|--------------------------------|
| B            | 16.48                          |

**5. Unit Weight (*Loose & Rodded*); (ASTM C 29/C 29M)**

|   |      |
|---|------|
| Loose Unit Weight (g/cm <sup>3</sup> )  | 1.49 |
| Rodded Unit Weight (g/cm <sup>3</sup> ) | 1.63 |

If you have further query, please do not hesitate to contact the undersigned.

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Director  
Transportation Engineering Laboratory

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Ref.-----

Date:-----

Mr. M. Usman Rauf  
Resident Engineer,  
NESPAK.

Subject: **Testing of Bitumen – AASHTO Standard (M-20)**  
Restoration/Improvement of Road from Pattoki to Mega via Hanjrai Kalan,  
Length = 23.00 km in District Kasur

Dear Sir,

It is with reference to your letter No. 3811/103/MUR/104/41 dated 23-06-2025.

Please find below the results of tests conducted on the bitumen sample provided to this laboratory on 26-06-2025 through your representative.

| Sr.# | Laboratory Tests                        | Results      |
|------|---|--------------|
| 1    | Penetration (ASTM D-5)                  | 84 Units     |
| 2    | Penetration of Residue (ASTM D-5)       | 79 Units     |
| 3    | Ductility (ASTM D-113)                  | Above 100 cm |
| 4    | Ductility of Residue (ASTM D-113)       | Above 100 cm |
| 5    | Softening Point (ASTM D-36)             | 44.7°C       |
| 6    | Flash Point (ASTM D-92)                 | 290°C        |
| 7    | Solubility (ASTM D-2042)                | 99.80%       |
| 8    | Thin Film Oven Test Value (ASTM D-1754) | 0.476%       |
| 9    | Loss on Heating Value (ASTM D-6)        | 0.472%       |

If you have further query, please do not hesitate to contact the undersigned.

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Director  
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