

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. M. Armughan Khan
Deputy Director (QCD),
WASA, LDA, Lahore.

Subject: **Testing of Crushed Stone**

Tender No. XEN (O&M-I)/J.T/2024-2025/334

Replacement of Outlived Trunk Sewer from Shouq Chowk to Shaukat Khanum Lahore at
Main Khayaban-e-Firdousi Johar Town (M/s EDDCO-ANEM Joint Venture)

Dear Sir,

It is with reference to your letter No. QCD/1891 dated 29-04-2025.

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

1. Sieve Analysis (ASTM C-136)

| Sieve Size | 1" | 3/4" | 1/2" | 3/8" | #4 |
|--------------|-----|-------|-------|-------|------|
| %age Passing | 100 | 56.50 | 40.00 | 20.00 | 2.50 |

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

| | |
|--|------|
| Specific Gravity (oven dried condition) | 2.81 |
| Specific Gravity (saturated surface dry condition) | 2.82 |
| Apparent Specific Gravity | 2.83 |
| Water Absorption (%) | 0.28 |

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

| | |
|---|------|
| Loose Unit Weight (g/cm ³) | 1.55 |
| Rodded Unit Weight (g/cm ³) | 1.63 |

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

Best Regards,

Director
Transportation Engineering Laboratory

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Ref.:-----

Date:-----

The Resident Engineer,
NESPAK – RHC (J.V).

Subject: **Testing of Coarse and Fine Aggregates**
Construction of VR Bridge of Main Qutab Drain at RD 228+000

Dear Sir,

It is with reference to your letter No. 4688/13/MAB/03/54 dated 02-05-2025.
Please find below the results for the tests conducted on the aggregate samples provided to this laboratory on 08-05-2025 through your representative.

Coarse Aggregate

1. Sieve Analysis (ASTM C-136)

| Sieve Size | 1" | 3/4" | 1/2" | 3/8" | #4 |
|--------------|-----|-------|------|------|----|
| %age Passing | 100 | 54.26 | 6.89 | 0.08 | 0 |

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

| | |
|--|------|
| Specific Gravity (oven dried condition) | 2.67 |
| Specific Gravity (saturated surface dry condition) | 2.70 |
| Apparent Specific Gravity | 2.75 |
| Water Absorption (%) | 1.06 |

3. Flakiness & Elongation Index (BS 812: Part 105)

| Sieve Size | | Individual Flakiness Index (%) | Weighted Flakiness Index (%) | Individual Elongation Index (%) | Weighted Elongation Index (%) |
|-------------------------|----------------|--------------------------------|------------------------------|---------------------------------|-------------------------------|
| Passing (in.) | Retained (in.) | | | | |
| 1 | 3/4 | 0 | 0 | 4.98 | 2.28 |
| 3/4 | 1/2 | 4.91 | 2.33 | 9.38 | 4.44 |
| 1/2 | 3/8 | 1.36 | 0.09 | 23.49 | 1.60 |
| 3/8 | 1/4 | 0 | 0 | 0 | 0 |
| Flakiness Index = 2.42% | | | Elongation Index = 8.32% | | |

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

| Grading Used | Los Angeles Abrasion Value (%) |
|--------------|--------------------------------|
| B | 25.93 |

Fine Aggregate

1. Sieve Analysis (ASTM C-136)

| Sieve Size | 3/8" | #4 | #8 | #16 | #30 | #50 | #100 | #200 |
|--------------|------|-------|-------|-------|-------|-------|------|------|
| %age Passing | 100 | 98.00 | 90.00 | 68.00 | 43.00 | 19.99 | 7.99 | 3.50 |

2. Fineness Modulus (ASTM C-142)

| | |
|----------------------|------|
| Fineness Modulus (%) | 2.73 |
|----------------------|------|

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

| | |
|---------------------------|------|
| Specific Gravity (OD) | 2.68 |
| Specific Gravity (SSD) | 2.70 |
| Apparent Specific Gravity | 2.74 |
| Water Absorption (%) | 0.79 |

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Ref.-----

Date:-----

Mr. Jawad Qayyum Khan
Resident Engineer,
NESPAK,
Sargodha.

Subject: **Testing of Bitumen – AASHTO Standard (M-20)**
Restoration/Improvement of Road from Qanchi More to Pull Millatabad via Larri
Adda, Length = 4.30 km in District Sargodha

Dear Sir,

It is with reference to your letter No. RE/4834/JQK/25/7968 dated 22-05-2025.
Please find below the results of tests conducted on the bitumen sample provided to this
laboratory on 18-06-2025 through your representative.

| Sr.# | Laboratory Tests | Results |
|------|---|--------------|
| 1 | Penetration (ASTM D-5) | 62 Units |
| 2 | Ductility (ASTM D-113) | Above 100 cm |
| 3 | Softening Point (ASTM D-36) | 48.7°C |
| 4 | Flash Point (ASTM D-92) | 295°C |
| 5 | Specific Gravity Value (ASTM D-70) | 1.021 |
| 6 | Thin Film Oven Test Value (ASTM D-1754) | 0.265% |
| 7 | Loss on Heating Value (ASTM D-6) | 0.238% |

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Ref.-----

Date:-----

Mr. Jawad Qayyum Khan
Resident Engineer,
NESPAK,
Sargodha.

Subject: **Testing of Bitumen – AASHTO Standard (M-20)**
Restoration/Improvement of Road from Dherama to Shahpur Sahiwal Road via 92
Morr & Bangalow Sultanpur, Length = 26.20 km in District Sargodha

Dear Sir,

It is with reference to your letter No. RE/4834/JQK/25/7979 dated 24-05-2025.
Please find below the results of tests conducted on the bitumen sample provided to this
laboratory on 18-06-2025 through your representative.

| Sr.# | Laboratory Tests | Results |
|------|---|--------------|
| 1 | Penetration (ASTM D-5) | 85 Units |
| 2 | Ductility (ASTM D-113) | Above 100 cm |
| 3 | Softening Point (ASTM D-36) | 45.0°C |
| 4 | Flash Point (ASTM D-92) | 310°C |
| 5 | Specific Gravity Value (ASTM D-70) | 1.035 |
| 6 | Thin Film Oven Test Value (ASTM D-1754) | 0.292% |
| 7 | Loss on Heating Value (ASTM D-6) | 0.256% |

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Ref.:-----

Date:-----

Mr. Adnan Yasir
Assistant Resident Engineer,
Package-III (PCP), Jaranwala.

Subject: **Testing of Fine Aggregate**
Upgradation of Sewerage System and Construction of Waste Water Treatment
Plant (WWTP), Jaranwala City
Package 02 – Disposal station

Dear Sir,

It is with reference to your letter No. MMP/1095/Jaranwala/DS/104/2025 dated 21-06-2025.
Please find below the results for the tests conducted on the aggregate sample provided to this
laboratory through your representative.

1. Sieve Analysis (ASTM C-136)

| Sieve Size | 3/8" | #4 | #8 | #16 | #30 | #50 | #100 | #200 |
|--------------|------|-------|-------|-------|-------|-------|-------|------|
| %age Passing | 100 | 99.67 | 99.18 | 98.44 | 97.37 | 81.83 | 10.28 | 1.96 |

2. Fineness Modulus (ASTM C-142)

| | |
|----------------------|------|
| Fineness Modulus (%) | 1.13 |
|----------------------|------|

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Date:-----

The A.R.E,
Package V, MMP – PCP,
Okara.

Subject: **Testing of Coarse Aggregate**
Comprehensive Sewerage System in Okara City Under Punjab Cities Program,
Package-2, Construction of Waste Water Treatment Plant

Dear Sir,

It is with reference to your letter No. MMP/PCP/MCO/418/2025 dated 16-06-2025.
Please find below the results for the tests conducted on the aggregate sample provided to this laboratory through your representative.

Sample # 1

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

| | |
|---|------|
| Specific Gravity (oven dried condition) | 2.83 |
| Specific Gravity (saturated surface dry condition) | 2.84 |
| Apparent Specific Gravity | 2.85 |
| Water Absorption (%) | 0.15 |

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

| Grading Used | Los Angeles Abrasion Value (%) |
|---------------------|---------------------------------------|
| 1 | 16.40 |

Sample # 2

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

| | |
|---|------|
| Specific Gravity (oven dried condition) | 2.82 |
| Specific Gravity (saturated surface dry condition) | 2.83 |
| Apparent Specific Gravity | 2.84 |
| Water Absorption (%) | 0.16 |

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

| Grading Used | Los Angeles Abrasion Value (%) |
|---------------------|---------------------------------------|
| 1 | 16.90 |

Sample # 3

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

| | |
|---|------|
| Specific Gravity (oven dried condition) | 2.83 |
| Specific Gravity (saturated surface dry condition) | 2.84 |
| Apparent Specific Gravity | 2.85 |
| Water Absorption (%) | 0.12 |

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

| Grading Used | Los Angeles Abrasion Value (%) |
|---------------------|---------------------------------------|
| 1 | 16.10 |

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