**SCOPE 109 ЛИ**

**Sofia, 04.04.2025**

**INGSTROYENGINEERING EOOD****CONSTRUCTION AND ROAD LABORATORY**

**Management Address:** 9000, Varna, 31 Alexander Dyakovich Str.

**Laboratory Address:**

Office 1 – Stationary Office: 9024, Topoli, Varna Municipality, Klise Bair Area, UPI 428;

Office 2 – Mobile Office: 3947, Medovnitsa, Dimovo Municipality, Quarter-91, UPI I-4

**To perform testing of:**

| **Type of the scope:** *flexible* |  |
| --- | --- |
| **№**  | **Tested products** | **Type of test / characteristic** | **Testing methods****(standard / validated method)** |
| 1 | 2 | 3 | 4 |
| 1. | Bituminous mixture | 1.1 Particle size distribution | БДС EN 12697-2 |
| 1.2. Bulk density | БДС EN 12697-6 |
| 1.3. Bituminous mixture temperature | БДС EN 12697-13, cl. 4.1 |
| 1.4. Maximum density | БДС EN 12697-5 |
| 1.5. Voids characteristics: - in the mineral rock material- bitumen-filled voids in mineral rock material | БДС EN 12697-8, cl. 5 |
| 1.6. Air voids content  | БДС EN 12697-8, cl. 4 |
| 1.7. Marshal tests- Marshal stability (test)- Marshall flow (relative ductility) | БДС EN 12697-34 |
| 1.8. Soluble binder content | БДС EN 12697-1Annex B, item B1.7 |
| 1.9. Dimensions of a bituminous specimen | БДС EN 12697-29 |
| 2. | Aggregates for:-for bitumen mixes and pavements of road, airstrip and other traffic areas (1);-non-bound and hydraulically bound mixtures for use in construction facilities and road construction (2); -crushed stone for railway lines (З); Aggregate for: Concrete (4) | 2.1. Particle size distribution | БДС EN 933-1 (1;2;3;4) |
| 2.2. Shape index | БДС EN 933-4 (1;2;3;4) |
| 2.3. Resistance to fragmentation - Los Angeles Index | БДС EN 1097-2, cl. 5, (1;2;4)БДС EN 1097-2 Annex А (3) |
| 2.4. Magnesium sulfate value / resistance to weathering | БДС EN 1367-2 (1;2;3;4) |
| 2.5. Particle density and water absorption - specific particle density- dry particle density- water-saturated particle densitysurface dry particle density - water absorption Wa | БДС EN 1097-6 (1;2;3;4)cl. 7, cl. 8 and cl. 9, Annex А Annex В |
| 2.6. Sand equivalent | БДС EN 933-8 (1;2;4) |
| 2.7. Loose bulk density | БДС EN 1097-3 (1;2;3;4) |
| 2.8. Water content  | БДС EN 1097-5 (1;2;3;4) |
| 2.9. Determination of percentage of particles with: - crushed and broken surfaces - fully crushed and broken surfaces- fully rounded surfaces | БДС EN 933-5 (1;2;3;4) |
| 2.10. Flakiness index. | БДС EN 933-3 (1;2;3;4) |
| 2.11. Content of fine fraction, 0,06З mm sieve | БДС EN 933-1 (1;2;3;4) |
| 2.12. Methylene blue value  | БДС EN 933-9 (1;2;4) |
| 2.13. Resistance to fragmentation under static loads | БДС EN 206 /NA Annex NA .Q (4) |
| 3. | Bitumen and bituminous binders | 3.1. Penetration | БДС EN 1426 |
| 3.2. Softening point | БДС EN 1427 |
| 3.3. Elastic recovery | БДС EN 13398 |
| 3.4. Efflux time /viscosity/ | БДС EN 12846-1 |
| 3.5 Binder residue after distillation | БДС EN 1431 cl. 8.4 |
| 3.6 Residue on sieve and storage stability | БДС EN 1429 |
| 3.7 Density | БДС EN 15326 |
| 4. | Fresh concrete | 4.1. Slump-test | БДС EN 12350-2 |
| 5. | Hardened concrete | 5.1. Compressive strength | БДС EN 12390-3 |
| 5.2. Density of hardened concrete | БДС EN 12390-7 |
| 5.3. Depth of penetration of water under pressure | БДС EN 12390-8 |
| 6. | Construction soils (non-bound and hydraulically bound mixtures; Aggregates for non-bound and hydraulically bound mixtures for use in construction facilities and road construction) | 6.1. Water content  | БДС EN 1097-5БДС 644\*БДС EN ISO 17892-1 |
| 6.2. Bulk density/dry density | БДС EN ISO 17892-2 cl. 5.1 |
| 6.3. Bulk density in situ through substitute sand | AASHTO Т191 |
| 6.4. Liquid limitPlastic limit | БДС 648\*БДС EN ISO 17892-12AASHTO Т 89AASHTO Т 90 |
| 6.5. Plasticity indicator | AASHTO Т 90БДС EN ISO 17892-12 |
| 6.6. Maximum bulk/relative comparative density of the frame and optimum water content | БДС 17146Method with shape Н100 М100 Method with shape Н150М150БДС EN 13286-2Method with shape АMethod with shape В |
| 6.7. Degree of compaction | БДС 17146AASHTO Т191 |
| 6.8. Elasticity modulus in round-plate loading | БДС 15130 |
| - average elasticity modulus - deformation modulus - deformation modulus ratio |  |
| 6.9. Particle size distribution | БДС EN 933-1 БДС EN ISO 17892-4 cl. 5.2; cl. 5.3 |
| 6.10. Particle density | БДС 646\*БДС EN ISO 17892-3 cl. 5.1 |
| 6.11. California bearing ratio - CBR | БДС EN 13286-47 |
| 6.12 Compressive strength | БДС EN 13286-41 |
| 7. | Laid and compacted bituminous layer | 7.1. Thickness of a bituminous pavement | БДС EN 12697-36 cl. 6.1 |
| 7.2. Core bulk density | БДС EN 12697-6 |
| 7.3. Level of compaction | БДС EN 12697-9\* |
| 7.4. Irregularity of pavement courses | БДС EN 13036-7 |
| 8. | Waterproofing of concrete bridge decks and other concrete surfaces trafficable by vehicles | 8.1 Bond strength | БДС EN 13596 |

**To perform sampling of:**

| **Type of the scope:** *flexible* |
| --- |
| **№** | **Product** | **Sampling methods****(standard/validated method)** |
| 1 | 2 | 3 |
| 1. | Bituminous mixture | БДС EN 12697-27 cl. 4.1; cl. 4.3; cl. 4.4; cl. 4.5; cl. 4.6; cl. 4.10 |
| 2. | Aggregates for:-for bitumen mixes and pavements of road, airstrip and other traffic areas;-non-bound and hydraulically bound mixtures for use in construction facilities and road construction-crushed stone for railway lines Aggregate for: Concrete | БДС EN 932-1 cl. 8.5; cl. 8.6; cl. 8.8; cl. 8.9 |
| 3. | Bitumen and bituminous binders | БДС EN 58 cl. 8.1.5БДС EN 12697-3 |
| 4. | Fresh concrete | БДС EN 12350-1 |
| 5. | Construction soils (non-bound and hydraulically bound mixtures; Aggregates for non-bound and hydraulically bound mixtures for use in construction facilities and road construction) | БДС EN 932-1 1 cl. 8.5; cl. 8.6; cl. 8.8; cl. 8.9БДС EN 13286-1 |
| 6. | Laid and compacted bituminous layer | БДС EN 12697-27 cl. 4.7 |

II. Office 2 – Mobile Office: 3947, Medovnitsa, Dimovo Municipality, Quarter-91, UPI I-4

**To perform testing of:**

| **Type of the scope:** *flexible* |  |
| --- | --- |
| **№**  | **Tested products** | **Type of test / characteristic** | **Testing methods****(standard / validated method)** |
| 1 | 2 | 3 | 4 |
| 1. | Bituminous mixture | 1.1. Particle size distribution | БДС EN 12697-2 |
| 1.2. Bulk density | БДС EN 12697-6 |
| 1.3. Maximum density | БДС EN 12697-5 |
| 1.4. Air voids content  | БДС EN 12697-8 |
| 1.5. Marshal tests - Marshal stability (test) - Marshall flow (relative ductility) | БДС EN 12697-34 |
| 1.6. Soluble binder content | БДС EN 12697-1 Asphalt Binder Analyzer Method |
| 1.7. Dimensions of a bituminous specimen | БДС EN 12697-29 |
| 2. | Bitumen and bituminous binders | 2.1. Penetration | БДС EN 1426 |
| 2.2. Softening point | БДС EN 1427 |
| 3. | Fresh concrete | 3.1. Slump-test | БДС EN 12350-2 |
| 4. | Hardened concrete | 4.1. Compressive strength | БДС EN 12390-3 |
| 5. | Construction soils (non-bound and hydraulically bound mixtures; Aggregates for non-bound and hydraulically bound mixtures for use in construction facilities and road construction) | 5.1. Water content  | БДС EN 1097-5 |
| 5.2. Bulk density of the frame through substitute sand | Ordinance № РД-02-20-2/ 2018-Annex № 18 |
| 5.3. Liquid limits | Ordinance № РД-02-20-2/ 2018-Annex № 15 |
| 5.4. Plastic limit. Plasticity indicator | Ordinance № РД-02-20-2/ 2018-Annex № 16 |
| 5.5. Maximum bulk density of the frame and optimum water content | БДС 17146Method with shape Н100М100Method with shape Н150М150БДС EN 13286-2 Method with shape АMethod with shape В |
| 5.6. Degree of compaction | БДС 17146Ordinance № РД-02-20-2/ 2018-Annex № 18 |
| 5.7. Elasticity modulus in round-plate loading- average elasticity modulus - deformation modulus- deformation modulus ratio | БДС 15130 |
| 5.8. Particle size distribution | БДС EN 933-1 |
| 5.9. Content of fine fraction, 0,06З mm sieve | БДС EN 933-1 |
| 5.10. California bearing ratio – CBR | БДС EN 13286-47 |
| 5.11. Compressive strength | БДС EN 13286-41 |
| 6. | Laid and compacted bituminous layer | 6.1. Thickness of a bituminous pavement | БДС EN 12697-36 destructive method |
| 6.2. Core bulk density | БДС EN 12697-6 |
| 6.3. Level of compaction | БДС EN 12697-9\* |

**To perform sampling of:**

| *Type of scope: flexible* |
| --- |
| **№** | **Product** | **Sampling methods****(standard/validated method)** |
| 1 | 2 | 3 |
| 1. | Bituminous mixture | БДС EN 12697-27 from truckload |
| 2. | Bitumen and bituminous binders | БДС EN 58 from three-way stopcock |
| 3. | Construction soils | БДС EN 932-1 from stockpile  |
| 4. | Fresh concrete | БДС EN 12350-1 |
| 5. | Laid and compacted bituminous layer | БДС EN 12697-27 through core test |

***Note:*** *\*Repealed but not replaced standards with regard to the testing method.*

***Flexible Scope:*** *Implementing a new version of standards/documents or standards/ documents replacing them is allowed. An updated list of standards/documents and their dated versions is provided by laboratory.*

**Reference:**

1) Annex № 15 to Art. 160, item 3 of Ordinance № РД-02-20-2/28.08.2018 for road design: Determining the yield strength of soils;

2) Annex № 16 to Art. 160, item 3 of Ordinance № РД-02-20-2/28.08.2018 for road design: Method for determining the Plastic limit of soils and the plasticity indicator of soils;

3) Annex № 18 to Art. 168, para 1 of Ordinance № РД-02-20-2/28.08.2018 for road design: Method for determining the bulk density of construction soils in-situ, through substitute sand.