**ASPHALT CONCRETE PLANT MIX PAVEMENTS:**

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| --- | --- | --- |
| (2-20-18) (Rev. 7-18-23) | 610, 1012 | SP6 R65 |

Revise the *2018* *Standard Specifications* as follows:

**Page 6-14, Table 609-3, LIMITS OF PRECISION FOR TEST RESULTS**, replace with the following:

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| **TABLE 609-3LIMITS OF PRECISION FOR TEST RESULTS** |
| **Mix Property** | **Limits of Precision** |
| 25.0 mm sieve (Base Mix) | ± 10.0% |
| 19.0 mm sieve (Base Mix) | ± 10.0% |
| 12.5 mm sieve (Intermediate & Type P-57) | ± 6.0% |
| 9.5 mm sieve (Surface Mix) | ± 5.0% |
| 4.75 mm sieve (Surface Mix) | ± 5.0% |
| 2.36 mm sieve (All Mixes, except S4.75A) | ± 5.0% |
| 1.18 mm sieve (S4.75A) | ± 5.0% |
| 0.075 mm sieve (All Mixes) | ± 2.0% |
| Asphalt Binder Content | ± 0.5% |
| Maximum Specific Gravity (Gmm) | ± 0.020 |
| Bulk Specific Gravity (Gmb) | ± 0.030 |
| TSR | ± 15.0% |
| QA retest of prepared QC Gyratory Compacted Volumetric Specimens | ± 0.015 |
| Retest of QC Core Sample | ± 1.2% (% Compaction) |
| Comparison QA Core Sample | ± 2.0% (% Compaction) |
| QA Verification Core Sample | ± 2.0% (% Compaction) |
| Density Gauge Comparison of QC Test | ± 2.0% (% Compaction) |
| QA Density Gauge Verification Test | ± 2.0% (% Compaction) |

**Page 6-17, Table 610-1, MIXING TEMPERATURE AT THE ASPHALT PLANT**, replace with the following:

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| **TABLE 610-1MIXING TEMPERATURE AT THE ASPHALT PLANT** |
| **Binder Grade** | **JMF Temperature** |
| PG 58-28; PG 64-22 | 250 - 290°F |
| PG 76-22 | 300 - 325°F |

**Page 6-17, Subarticle 610-3(C), Job Mix Formula (JMF), lines 38-39,** delete the fourth paragraph.

**Page 6-18, Subarticle 610-3(C), Job Mix Formula (JMF), line 12,** replace “SF9.5A” with “S9.5B”.

**Page 6-18, Table 610-3, MIX DESIGN CRITERIA**, replace with the following:

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| **TABLE 610-3****MIX DESIGN CRITERIA** |
| **Mix****Type** | **DesignESALsmillions A** | **BinderPGGrade** | **Compaction Levels** | **Max. Rut Depth(mm)** | **Volumetric Properties B** |
| **Gmm @** | **VMA** | **VTM** | **VFA** | **%Gmm@ Nini** |
| **Nini** | **Ndes** | **% Min.** | **%** | **Min.-Max.** |
| S4.75A | < 1 | 64 - 22 | 6 | 50 | 11.5 | 16.0 | 4.0 - 6.0 | 65 - 80 | ≤ 91.5 |
| S9.5B | 0 - 3 | 64 - 22 | 6 | 50 | 9.5 | 16.0 | 3.0 - 5.0 | 70 - 80 | ≤ 91.5 |
| S9.5C | 3 - 30 | 64 - 22 | 7 | 65 | 6.5 | 15.5 | 3.0 - 5.0 | 65 - 78 | ≤ 90.5 |
| S9.5D | > 30 | 76 - 22 | 8 | 100 | 4.5 | 15.5 | 3.0 - 5.0 | 65 - 78 | ≤ 90.0 |
| I19.0C | ALL | 64 - 22 | 7 | 65 | - | 13.5 | 3.0 - 5.0 | 65 - 78 | ≤ 90.5 |
| B25.0C | ALL | 64 - 22 | 7 | 65 | - | 12.5 | 3.0 - 5.0 | 65 - 78 | ≤ 90.5 |
|  | **Design Parameter** |  | **Design Criteria** |
| All MixTypes | Dust to Binder Ratio (P0.075 / Pbe) |  | 0.6 - 1.4 **C** |
| Tensile Strength Ratio (TSR) **D** |  | 85% Min. **E** |
| 1. Based on 20 year design traffic.
 |
| 1. Volumetric Properties based on specimens compacted to Ndes as modified by the Department.
 |
| 1. Dust to Binder Ratio (P0.075 / Pbe) for Type S4.75A is 1.0 - 2.0.
 |
| 1. NCDOT-T-283 (No Freeze-Thaw cycle required).
 |
| 1. TSR for Type S4.75A & B25.0C mixes is 80% minimum.
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**Page 6-19, Table 610-5, BINDER GRADE REQUIREMENTS (BASED ON RBR%),** replace with the following:

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| **TABLE 610-5****BINDER GRADE REQUIREMENTS (BASED ON RBR%)** |
| **Mix Type** | **%RBR < 20%** | **21% < %RBR < 30%** | **%RBR > 30%** |
| S4.75A, S9.5B, S9.5C, I19.0C, B25.0C | PG 64-22 | PG 64-22A | PG-58-28 |
| S9.5D, OGFC | PG 76-22B | n/a | n/a |

1. If the mix contains any amount of RAS, the virgin binder shall be PG 58-28.
2. Maximum Recycled Binder Replacement (%RBR) is 18% for mixes using PG 76-22 binder.

**Page 6-20, Table 610-6, PLACEMENT TEMPERATURES FOR ASPHALT,** replace with the following:

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| **TABLE 610-6****PLACEMENT TEMPERATURES FOR ASPHALT** |
| **Asphalt Concrete Mix Type** | **Minimum Surface and Air Temperature** |
| B25.0C | 35°F |
| I19.0C | 35°F |
| S4.75A, S9.5B, S9.5C | 40°F **A** |
| S9.5D | 50°F |

1. For the final layer of surface mixes containing recycled asphalt shingles (RAS), the minimum surface and air temperature shall be 50°F.

**Page 6-21, Article 610-8, SPREADING AND FINISHING,** **lines 34-35,** delete the second sentence and replace with the following:

Use an MTV for all surface mix regardless of binder grade on Interstates, US Routes, and NC Routes (primary routes) that have 4 or more lanes and are median divided.

**Page 6-21, Article 610-8, SPREADING AND FINISHING, lines 36-38,** delete the fourth sentence and replace with the following:

Use MTV for all ramps, loops, and Y-lines that have 4 or more lanes and are median divided, and all full width acceleration lanes, full width deceleration lanes, and full width turn lanes that are greater than 1000 feet in length.

**Page 6-23, Table 610-7, DENSITY REQUIREMENTS,** replace with the following:

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| **TABLE 610-7****DENSITY REQUIREMENTS** |
| **Mix Type** | **Minimum % Gmm****(Maximum Specific Gravity)** |
| S4.75A | 85.0 A |
| S9.5B | 90.0 |
| S9.5C, S9.5D, I19.0C, B25.0C | 92.0 |

1. Compaction to the above specified density shall be required when the S4.75A mix is applied at a rate of 100 lbs/sy or higher.

**Page 6-24, Article 610-13, FINAL SURFACE TESTING, lines 35-36,** delete the second sentence and replace with the following:

Final surface testing is not required on ramps, loops and turn lanes.

**Page 6-26,** **Subarticle 610-13(A)(1), Acceptance for New Construction, lines 29-30,** delete the second sentence and replace with the following:

Areas excluded from testing by the profiler may be tested using a 10-foot straightedge in accordance with Article 610-12.

**Page 6-27, Subarticle 610-13(B), Option 2- North Carolina Hearne Straightedge, lines 41-46,** delete the eighth and ninth sentence of this paragraph and replace with the following:

Take profiles over the entire length of the final surface travel lane pavement exclusive of structures, approach slabs, paved shoulders, tapers, or other irregular shaped areas of pavement, unless otherwise approved by the Engineer. Test in accordance with this provision all mainline travel lanes, full width acceleration or deceleration lanes and collector lanes.

**Page 6-28, Subarticle 610-13(B), Option 2- North Carolina Hearne Straightedge, lines 1-2,** delete these two lines.

**Page 6-32, Article 610-16 MEASUREMENT AND PAYMENT,** replace with the following:

|  |  |  |
| --- | --- | --- |
| **Pay Item** |  | **Pay Unit** |
| Asphalt Concrete Base Course, Type B25.0C | Ton |
| Asphalt Concrete Intermediate Course, Type I19.0C | Ton |
| Asphalt Concrete Surface Course, Type S4.75A | Ton |
| Asphalt Concrete Surface Course, Type S9.5B | Ton |
| Asphalt Concrete Surface Course, Type S9.5C | Ton |
| Asphalt Concrete Surface Course, Type S9.5D | Ton |

**Page 10-30, Table 1012-1, AGGREGATE CONSENSUS PROPERTIES,** replace with the following:

**TABLE 1012-1**

**AGGREGATE CONSENSUS PROPERTIESA**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Mix Type** | **Coarse****Aggregate****AngularityB** | **Fine Aggregate****Angularity****% Minimum** | **Sand****Equivalent****% Minimum** | **Flat and****Elongated****5 : 1 Ratio** **% Maximum** |
| *Test Method* | *ASTM D5821* | *AASHTO T 304* | *AASHTO T 176* | *ASTM D4791* |
| S4.75A; S9.5B | 75 / - | 40 | 40 | - |
| S9.5C; I19.0C; B25.0C | 95 / 90 | 45 | 45 | 10 |
| S9.5D | 100 / 100 | 45 | 50 | 10 |
| OGFC | 100 / 100 | 45 | 45 | 10 |
| UBWC | 100 / 85 | 45 | 45 | 10 |

**A**. Requirements apply to the design aggregate blend.

**B**. 95 / 90 denotes that 95% of the coarse aggregate has one fractured face and 90%

 has 2 or more fractured faces.

**Page 10-30, Subarticle 1012-1(B)(6), Toughness (Resistance to Abrasion), line 12,** replace “OGAFC” with “OGFC”.