## Section 401. — ASPHALT CONCRETE PAVEMENT BY GYRATORY MIX DESIGN METHOD

01 APR 2024 –FP24

WFL Specification 01 APR 2024 4010010

Include the following when work is required for this Section.

Coordinate with WFL Materials to determine the pavement roughness and asphalt binder grade.

Note: Include SCR 703.07.

Example for stationing sentence: Pavement roughness type for this project is Type III-A for the following station ranges 10+00 to 22+96, 23+26 to 1022+29, and 1025+07 to 1133+31, according to Subsection 401.16.

Description

### 401.01

Add the following:

Asphalt binder grade for this project is [INSERT GRADE].

Pavement roughness type for this project is [INSERT STATIONING AND ROUGHNESS TYPE (Type I-A, II-A or III-A)] according to Subsection 401.16.

Construction Requirements

WFL Specification 01 APR 2024 4010020

Include the following when work is required under this Section.

### 401.12 Production Start-Up Procedures.

Delete Subsection (a) and substitute the following:

**(a) Preparatory phase meeting.** Conduct a pre-paving preparatory phase meeting according to Subsection 153.04(a) at least 3 days before the start of paving operations. Be prepared to discuss and provide the following:

**(1)** Calibration certification for the gyratory compactor. If gyratory compactor is moved, recalibrate;

**(2)** Asphalt and aggregate correction factors according to AASHTO T 308 and AASHTO T 30 on Form FHWA 1640, *Worksheet for Ignition Furnace Binder Correction Factor AASHTO T* *308*. If RAP is included as part of the JMF, provide the asphalt and aggregate correction factors according to AASHTO T 30 and the FLH Addendum to AASHTO T 308 on Form FHWA 1648, *Worksheet For Ignition Furnace Binder Correction Factor And Aggregate Gradation Correction Factor For Mixes Including RAP*; and

**(3)** Plant mixing temperature.

### 401.16 Pavement Roughness.

Delete this Subsection and substitute the following:

The CO will measure the profile of the pavement surface according to the designated pavement roughness type. If no roughness type is designated, use Type IV. In addition, construct pavement surfaces to meet the requirements of Subsection 401.16(d).

Provide flaggers, pilot car operations, or other temporary traffic control during profile measurement according to Section 635.

**(a) Profile measurement.** The CO will use profile measurements to determine the Mean Roughness Index (MRI) values for the traveled way according to FLH T 401 and using the current version of Profile Viewer and Analysis (ProVAL) software. The CO will determine areas of localized roughness. The MRI and areas of localized roughness will be used to determine payment for the designated pavement roughness type and pavement areas requiring surface corrections.

The CO will identify the starting and ending points of the profile measurements. The CO will identify excluded areas. Cattle guards, bridges not being overlaid, and turning lanes, passing lanes, side roads, and ramps less than 1000 feet in length will be excluded from profile measurement, the calculation of MRI, and the determination of localized roughness. Measure excluded areas with a straightedge according to Subsection 401.16(d).

Areas for which the ProVAL continuous report exceeds the threshold MRI value for the specified roughness type will be considered a defective area requiring correction. If corrections are not allowed, a reduction in payment will be applied according to Subsection 401.19(b). No deduction will be made for areas of localized roughness identified within 12.5 feet of the starting or end of a profile section or within 12.5 feet of excluded areas. Measure these areas with a straightedge according to Subsection 401.16(d).

**(b) Type I and II pavement roughness.** The CO will measure the profile of the initial pavement surface before construction activities disturb the existing pavement surface. The initial pavement surface is defined as the existing pavement surface before construction activities start.

Do not proceed with work that will disturb the initial pavement surface until the CO’s analysis is complete.

The CO will measure the profile of the final pavement surface before placing a surface treatment and within 21 days of completing roadway paving. The original overall surface MRI will be used in conjunction with the final overall MRI to determine an overall percent improvement for the entire traveled way.

**(c) Type III pavement roughness.** The CO will measure the profile of the final pavement surface before placing a surface treatment and within 21 days of completing roadway paving.

**(d) Type IV straightedge measurement.** Measure the pavement surface using a 10-foot metal straightedge at right angles and parallel to the centerline. Defective areas are deviations between the surface and the bottom of the straightedge more than ¼ inch measured between two contacts of the straightedge or deviations more than ¼ inch measured at the end of the straightedge.

**(e) Defective area correction.** Obtain approval before starting corrective work. Allow 7 days for review and approval of correction method proposal. No defective area corrections are allowed on the final pavement surface unless approved. Defective areas, including localized roughness, can be evaluated and corrected on lower paving lifts according to the following.

WFL Specification 01 APR 2024 4010030

Include in all projects that require work in this Section. When Type I-A or Type II-A Pavement Roughness is required, coordinate with WFL Materials to adjust the reporting time in Table 401-10.

Delete Table 401-10 and substitute the following:

Table 401-10

Sampling, Testing, and Acceptance Requirements

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Remarks | **Source** | Not required when using Government- furnished sources | — | Not required when using a pre-crushed commercial source |
| Reporting Time | Before production | " | 24 hours |
| Split Sample | Yes | " | No |
| Point of Sampling | Source of material | Asphalt Supplier or mixing plant | Crusher belt (during production) |
| Sampling Frequency | 1 per type & not less than 5 per source of material(5) | " | 2 per day per stockpile |
| Test Methods Specifications | Subsection 703.07 | AASHTO M 320 | AASHTO T 27 & T 11 |
| Category | — | — | — |
| Characteristic | Aggregate quality | Quality | Gradation |
| Type of Acceptance (Subsection) | Measured and tested for conformance (106.04 & 105) | " | Process control (153.03) |
| Material or Product (Subsection) | Asphalt concrete aggregate (703.07) | Asphalt binder (702.01) | Asphalt concrete aggregate (703.07) |

Table 401-10 (continued)

Sampling, Testing, and Acceptance Requirements

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Remarks | **Mix Design** | — | — | — | — | — | — | — |
| Reporting Time | 30 days before producing | " | " | " | " | " | " |
| Split Sample | Yes | " | " | " | " | " | " |
| Point of Sampling | Stockpiles | " | " | — | — | — | — |
| Sampling Frequency | 1 per Submitted mix design | " | " | " | " | " | " |
| Test Methods Specifications | AASHTO T 27 & T 11 | AASHTO T 308 | AASHTO T 84 & T 85 | AASHTO R 35 | " | " | AASHTO T 283 |
| Category | — | — | — | — | — | — | — |
| Characteristic | Gradation | RAP asphalt binder content | Bulk specific gravity of aggregate (coarse and fine) | VMA | VFA | Air voids | Tensile strength ratio |
| Type of Acceptance (Subsection) | Measured and tested for conformance (106.04) |  |  |  |  |  |  |
| Material or Product (Subsection) | Asphalt concrete mixture |  |  |  |  |  |  |

Table 401-10 (continued)

Sampling, Testing, and Acceptance Requirements

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Remarks | **Production Start-up (control strip)** | — |  |  |  |  | — | — | Deliver cores to CO after determining specific gravity and compaction |
| Reporting Time | 6 hours |  |  |  |  | " | " | 24 hours |
| Split Sample | Yes |  |  |  |  | " | " | " |
| Point of Sampling | Behind the paver before compaction |  |  |  |  | " | " | In-place after compaction |
| Sampling Frequency | 3 minimum |  |  |  |  | " | " | 5 minimum |
| Test Methods Specifications | AASHTO T 30 |  |  |  |  | AASHTO T 308 | AASHTO R 35 | WFLHD W 166 |
| Category |  | I | I | I | II | I | I | I |
| Characteristic | Gradation | No. 4 | No. 30 | No. 200 | Other specified sieves | Asphalt content(1) | VMA | Density(2) |
| Type of Acceptance (Subsection) | Statistical (106.05) |  |  |  |  |  |  |  |
| Material or Product (Subsection) | Asphalt concrete pavement |  |  |  |  |  |  |  |

Table 401-10 (continued)

Sampling, Testing, and Acceptance Requirements

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Remarks | **Production Start-up (control strip)** (continued) | — | — | See Subsection 401.12 |
| Reporting Time | Immediately upon completion of test | 24 hours | 24 hours |
| Split Sample | No | Yes | No |
| Point of Sampling | Hauling vehicle before dumping or windrow before pickup | Behind the paver before compaction | At core location before coring |
| Sampling Frequency | First load and as determined by the CO thereafter | 3 minimum | 5 minimum |
| Test Methods Specifications | — | AASHTO T 209 | ASTM D2950 |
| Category | — | — | — |
| Characteristic | Mix temperature | Maximum specific gravity(4) | Density |
| Type of Acceptance (Subsection) | Measured and tested for conformance (106.04) |  | Process control (153.03) |
| Material or Product (Subsection) | Asphalt concrete pavement |  |  |

Table 401-10 (continued)

Sampling, Testing, and Acceptance Requirements

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Remarks | **Production** | — | — | Deliver cores to CO after testing is completed | — | — | Test by Government |
| Reporting Time | 6 hours | " | 24 hours | Immediately upon completion of measurement | 24 hours | — |
| Split Sample | Yes | " | " | No | Yes | Yes, two 1‑quart samples |
| Point of Sampling | Behind the paver before compaction | " | In-place after compacting | Hauling vehicle before dumping, or windrow before pickup | Behind the paver before compaction | In line between tank and mixing plant |
| Sampling Frequency | 1 per 700 tons | " | " | First load and as determined by the CO thereafter | Minimum 1 per day | 1 per 2000 tons of mix |
| Test Methods Specifications | AASHTO T 308 | AASHTO R 35 | WFLHD W 166 | — | AASHTO T209 | AASHTO M 320 |
| Category | I | I | I | — | — | See Table 401‑7 |
| Characteristic | Asphalt content(1) | VMA | Density(2) | Placement temperature | Maximum specific gravity(3)(4) | Quality |
| Type of Acceptance (Subsection) | Statistical (106.05) |  |  | Measured and tested for conformance (106.04) |  | Measured and tested for conformance (106.04) |
| Material or Product (Subsection) | Asphalt concrete pavement |  |  | Asphalt concrete pavement |  | Asphalt binder (702.01) |

Table 401-10 (continued)

Sampling, Testing, and Acceptance Requirements

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Remarks | **Production** (continued) | — | — | — | — | — | — |
| Reporting Time | 24 hours | " | " | " | 24 hours | " |
| Split Sample | No | " | " | " | No | " |
| Point of Sampling | Cold feed or hot bins as applicable | Behind the paver before compaction | Stockpile | In‑place after compacting | Behind the paver before compaction | " |
| Sampling Frequency | Contractor determined | 1 per 700 tons of mix | Contractor determined | 1 per 500 feet | 1 per 700 tons of mix | " |
| Test Methods Specifications | AASHTO T27 & T 11 | AASHTO T 30 | AASHTO T 255 | ASTM D2950 | AASHTO T 312& WFLHD W 166 | AASHTO R 35 |
| Category | — | — | — | — | — | — |
| Characteristic | Gradation at plant | Gradation at paver | Moisture content of aggregates | Density | Air voids | VFA |
| Type of Acceptance (Subsection) | Process control (153.03) |  |  |  |  |  |
| Material or Product (Subsection) | Asphalt concrete pavement |  |  |  |  |  |

Table 401-10 (continued)

Sampling, Testing, and Acceptance Requirements

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Remarks | **Finished Product** | Original surface before construction | Original surface before construction |  |  | – |
| Reporting Time | Within 21 days before ground disturbing work | Within 21 days after completing paving |  |  | 24 hours |
| Split Sample | No | " |  |  | " |
| Point of Sampling | Left and right wheel paths | " |  |  | See Subsection 401.16(d) |
| Sampling Frequency | See Subsection 401.16 | " |  |  | Contractor determined |
| Test Methods Specifications | FLH T 401 | " |  |  | Straightedge measurements Subsection 401.16(d) |
| Category | – | – |  |  | – |
| Characteristic | Type I & II roughness, before construction (Initial MRI) | Type I, II & III roughness, after construction (Final MRI) |  |  | Surface tolerance |
| Type of Acceptance (Subsection) | Measured and tested for conformance (106.04) |  |  |  | Process control (153.03) |
| Material or Product (Subsection) | Asphalt concrete pavement |  |  |  |  |

Table 401-10 (continued)

Sampling, Testing, and Acceptance Requirements

|  |
| --- |
| (1) Use AASHTO T 308, Method A. Calculate the asphalt binder content by weighing the sample before and after the burn using a calibrated external balance.  (2) Cut 6-inch diameter cores from the compacted pavement. Remove them with a core retriever and fill and compact the core holes with asphalt concrete mixture. Label the cores and protect them from damage due to handling and temperature. Dry the core to constant mass at 125±5 °F or vacuum dry it according to ASTM D7227 before performing the core density and measuring the thickness. Use 62.245 pounds per cubic foot to convert specific gravity to density. Submit cores to the CO after testing is completed.  (3) After production paving has begun, use the average maximum specific gravity value (AASHTO T 209) for each day to adjust the percent compaction for the cores that represent that day’s paving.  (4) Do not use the supplemental procedure for mixtures containing porous aggregate (dry back method of AASHTO T 209).  (5) Furnish a minimum of five reports, but not less than one report per rock type for each source. Reports must be dated within 1 year of intended use. Obtain samples representative of aggregates being furnished. Include rock type and sample location on test reports. |