

## Superpave Asphaltic Concrete Mixtures

**502.01 Description:** These specifications are applicable to superpave asphaltic concrete wearing, binder and base course mixtures of the plant mix type.

*All references herein shall conform the Louisiana Standard Specifications for Roads and Bridges, 2006 Edition, Section 502, and latest revisions thereto. All references to the “department” shall mean the owner’s representative in these specifications. Section 502 shall govern except as amended herein. Wearing Courses shall be (1/2” Nominal Size) and Binder and Base Courses shall be (3/4’ or 1” Nominal Size). The use of a Material Transfer Device is optional depending on job conditions.*

**502.02 Materials:** See 2006 Edition of the Louisiana Standard Specifications including revisions thereto, except as modified herein.

- a) Asphalt Cement: The asphalt cement grades used shall be as specified in Table 502-1.

**Table 502-1**

Current Traffic Load Level	Mixture Type	Grade of Asphalt Cement
Level A	Incidental Wearing Course	PG64-22*
Level 1	Binder and Wearing Course	PG64-22*
	Base Course	PG64-22*
Level 2	Binder and Wearing	**

\* Mixtures containing between 20 and 30 percent RAP shall use PG58-28.

\*\* Engineer will decide which AC type in specifications. Engineer must select from Table 502-2 in Section 502 from the 2006 Blue Book as mentioned under 502.01 – Description (above). Selection must be made prior to the bid for the job.

**502-04 – Job Mix Formula** – Validation will be based on the first lot test results. All the specification criteria must be met for production to continue.

**502-05 Plant Quality Control** - See Section 502-14 of 2006 Edition of Louisiana Standard Specifications for Roads and Bridges.

**502-06 Plant Acceptance** – See Section 502-14 of 2006 Edition of Louisiana Standard Specifications for Roads and Bridges

**502.10 Roadway Quality Control:** See 2006 Edition of the Louisiana Standard Specifications including revisions thereto, except as modified herein. *All references to IRI specifications will not apply to these specifications.*

**502.11 Roadway Acceptance:** See 2006 Edition of the Louisiana Standard Specifications including revisions thereto, except as modified herein.

(a) **Density:** Acceptance testing for pavement density will be conducted by the Engineer and / or his representative. Two pavement cores for each mix use shall be taken from each subplot within 72 hours after placement. Sampling shall be performed using the random number tables shown in DOTD TR 605. The average density of all cores for each lot shall be greater than 92% of Maximum Theoretical Gravity (TR 327)

(b) **Longitudinal Surface Tolerance :** Omit this section

**502.13 Quality Level Analysis:** This section does not apply to these specifications.

**502.14 Lot Sizes:** See 2006 Edition of the Louisiana Standard Specifications including revisions thereto, except as modified herein.

A lot is a segment of continuous production of asphaltic concrete mixture from the same job mix formula produced for a given job at an individual plant. A standard lot will be defined as:

- One day or shift's production if greater than 500 tons production
- If one day or shift's production is expected to be less than 500 tons, the lot will be accepted on one half lot or 2 sublots testing.

Each lot will be sub-divided into four equal sublots based on expected production. Testing will be conducted as follows:

- First Sublot –
  - Tests will be performed on aged specimens compacted to N-design as follows:
    - Percent Voids
    - Percent VFA
    - Percent VMA
  - Theoretical Maximum Specific Gravity (Gmm)
  - Gradation, AC Content and Percent Crushed
  - Aged or un-aged specimens compacted to N-maximum as follows:
    - Percent Gmm at N-initial
    - Percent Gmm at N-Maximum
- Second Sublot –
  - Theoretical Maximum Specific Gravity (Gmm)
  - Aged or un-aged specimens compacted to N-maximum as follows:
    - Percent Gmm at N-initial
    - Percent Gmm at N-Maximum
- Third Sublot –
  - Tests will be performed on aged specimens compacted to N-design as follows:
    - Percent Voids
    - Percent VFA
    - Percent VMA
  - Theoretical Maximum Specific Gravity (Gmm)
  - Gradation, AC Content and Percent Crushed
  - Aged or un-aged specimens compacted to N-maximum as follows:
    - Percent Gmm at N-initial
    - Percent Gmm at N-Maximum
- Fourth Sublot –
  - Theoretical Maximum Specific Gravity (Gmm)
  - Aged or un-aged specimens compacted to N-maximum as follows:
    - Percent Gmm at N-initial
    - Percent Gmm at N-Maximum

Tests for Theoretical Maximum Specific Gravity, Voids, VMA and VFA shall be conducted by the Engineer and / or his representative.

Tests for Gradation, AC Content, and Percent Crushed and for un-aged specimens compacted to N-maximum shall be conducted by the Contractor's Quality Control representative.

**502.15 Measurement:** See 2006 Edition of the Louisiana Standard Specifications including revisions thereto, except as modified herein.

(C) **Surface Tolerance Incentive Measurement:** This section does not apply to these specifications.

(a) **502.16 Payment:** Omit

**Table 502-2  
Superpave Requirements**

A. REQUIREMENTS FOR EXTRACTED ASPHALT CEMENT AND AGGREGATE GRADATION					
U.S. (Metric) Sieve % Passing	1/2 inch (12.5 mm) Nominal	3/4 inch (19 mm) Nominal	1 inch (25 mm) Nominal		Mix Tolerance <sup>1</sup>
2 inch (50 mm)	---	---	---		±4
1 1/2 inch (37.5 mm)	---	---	100		±4
1 inch (25 mm)	---	100	90-100		±4
3/4 inch (19 mm)	100	90-100	89 Max		±4
1/2 inch (12.5 mm)	90-100	89 Max	---		±4
3/8 inch (9.5 mm)	89 Max.	---	---		±4
No. 4 (4.75 mm)	---	---	---		±4
No. 8 (2.36 mm)	28-58	23-49	19-45		±3
No. 16 (1.18 mm)	---	---	---		±2
No. 30 (600 µm)	---	---	---		±2
No. 50 (300 µm)	---	---	---		±2
No 100 (150 µm)	---	---	---		±2
No. 200 (75 µm)	2.0-10.0	2.0-8.0	1.0-7.0		±0.7
Extracted Asphalt, %	---	---	---		±0.2
Mix Temperature	---	---	---		±25°F (±14°C)
Aggregate <sup>2</sup>	A,B,C	A,B,C	A,B,C,D,E		---
B. PAVEMENT REQUIREMENTS					
Density, Min. 92.0 (% of Maximum Theoretical Gravity) Roadway Travel Lane Wearing, Binder and Base Courses					
Density, Min. 89.0 (% of Maximum Theoretical Gravity) Shoulders, Patching and Widening					

<sup>1</sup> Job Mix Formula based on validated mix design.

<sup>2</sup> A - Gravel, B - Slag, C - Stone approved for wearing surface, D - Stone, E - Reclaimed Asphaltic Pavement. See Subsection 502.02(c).

**Table 502-3  
Superpave Mixture Criteria**

Nominal Max., Size Agg.	0.5 inch (12.5 mm)			0.75 inch (19 mm)			1.0 inch (25 mm)			
Type of Mix	Incidental Paving	Wearing Course		Wearing Course	Binder Course		Binder Course	Base Course		
Level	A	1	2	2	1	2	1	2	1	
Asphalt Binder	Table 502-2									
Friction Rating	Table 502-3									
Coarse Agg. Angularity, + No. 4 (4.75 mm)	55	75	90	90	75	90	75	90	75	
Fine Agg. Angularity, Min. % - No. 4 (4.75 mm)	40	40	45	45	40	45	40	45	40	
Flat and Elongated Particles, % Max. (5:1) + No. 4 (4.75 mm)	10									
Sand Equivalent, Min. % (Fine Agg.), - No. 4 (4.75 mm)	40	40	45	45	40	45	40	45	40	
Natural Sand Max. % of New Agg.	N/A	15	15	15	15	15	15	15	15	
RAP, Max. % of Mix <sup>1</sup>	30	20	20	20	30	30	30	30	30	
<b>Compacted Mix Volumetrics</b>										
VMA, Min. %	13	13	13	12	12	12	11	11	11	
Air Voids, %	2.5-4.5									
VFA, % <sup>5</sup>	68-78									
N <sub>initial</sub> 91% max. <sup>6</sup> (Gyrations)	7	7	8	8	7	8	7	8	7	
N <sub>design</sub> 96.5±1.5 % (Gyrations)	75	75	100	100	75	100	75	100	75	
N <sub>max</sub> 98 % max. (Gyrations)	115	115	160	160	115	160	115	160	115	
Moisture Sensitivity, TSR Min.	80									
Dust/Effective Asphalt Ratio, %	0.6 – 1.6									
Lift Thickness, inch (mm)	1.5 – 2.0 (45-50)	1.5-2.0 (45-50)		2.0-3.0 (50-75)			2.0-4.0 (65-100)	2.5+ (65+)		

<sup>1</sup> For RAP percentages between 20 and 30 percent, use asphalt cement grade PG58-28.