

### WORKSHEET FOR SUPERPAVE ASPHALT CONCRETE MIX DESIGN AASHTO R 35

| Project:                 |  |  |  |  |  |  |
|--------------------------|--|--|--|--|--|--|
| Contractor:              |  |  |  |  |  |  |
| Asphalt supplier:        |  |  |  |  |  |  |
| Sources for: Aggregates: |  |  |  |  |  |  |
| Testing laboratory name: |  |  |  |  |  |  |
| Testing performed by:    |  |  |  |  |  |  |

Testing reported by:

English

### Date:

Nominal Maximum Aggregate Size, : Grade of asphalt: Mineral filler:

Phone:

### SUMMARY OF THE PROPOSED JOB-MIX-FORMULA

1. Number of gyrations (N<sub>int</sub>/ N<sub>des</sub>/ N<sub>max</sub>)

Metric

- 2. Percent binder by mass of total mix  $(P_b)^1$
- 3. Percent binder by mass of aggregate
- 4. Air voids (V<sub>a</sub>) at N<sub>des</sub>
- 5. Voids in mineral aggregate (VMA) at  $N_{des}$
- 6. Voids filled with asphalt (VFA) at N<sub>des</sub>
- 7. Maximum unit mass (G<sub>mm</sub>)
- 8. Effective specific gravity of aggregate (G<sub>se</sub>)
- 9. Dust-to-Binder Ratio (DP)

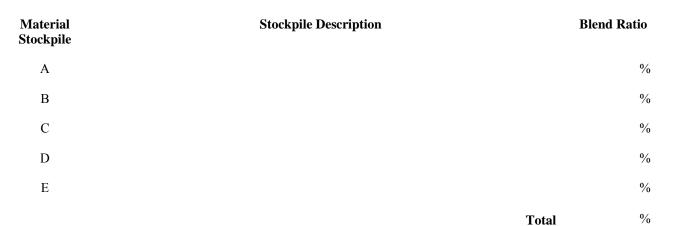
- 10. Specific gravity of binder (G<sub>b</sub>)
- 11. Recommended plant mixing temperature, (Attach Temperature Viscosity Curve)
- 12. Percent compaction at Nmax
- 13. Hveem stabilometer value (If specified)
- 14. Moisture Susceptibility:
  - a. Dry strength,
  - b. Wet strength,
  - Index of Retained Strength, % c.

| GRADATION TARGET VALUES AND<br>ALLOWABLE DEVIATIONS |   |  |                               | SPECIFIC (                         | GRAVITY AND AB                       | SORPTION              |
|---|---|--|-------------------------------|------------------------------------|--------------------------------------|-----------------------|
| Sieve Sizes   | Job Mix<br>Formula<br>Target Value <sup>2</sup> | Allowable<br>Deviation <sup>3</sup><br>% |                               | Fine<br>Aggregate<br>(AASHTO T 84) | Coarse<br>Aggregate<br>(AASHTO T 85) | Combined<br>Aggregate |
|   |   |  | -                             |                                    |                                      |                       |
|   |   |  | Bulk SG (G <sub>sb</sub> )    |                                    |                                      |                       |
|   |   |  | Bulk SSD SG                   |                                    |                                      |                       |
|   |   |  | Apparent SG(G <sub>sb</sub> ) |                                    |                                      |                       |
|   |   |  |                               |                                    |                                      |                       |
|   |   |  | Absorption                    | %                                  | %                                    | %                     |
|   |   |  |                               |                                    |                                      |                       |
|   |   |  |                               |                                    |                                      |                       |

<sup>1</sup> Establish asphalt cement content (percent by mass of mix) to the nearest 0.01 percent.
<sup>2</sup> Establish target values to the nearest 0.1 percent as a part of the job mix formula.

<sup>3</sup> Allowable deviations plus or minus from established target values.

# WORKSHEET FOR A SUPERPAVE MIX DESIGN (Continued)



### **Stockpile Gradation**

| Sieve<br>Size | Stockpile<br>A<br>% | Stockpile<br>B<br>% | Stockpile<br>C<br>% | Stockpile<br>D<br>% | Stockpile<br>E<br>% | Blended<br>Stockpile<br>Gradation | Job Mix<br>Formula<br>Target Values | Specification<br>Limits |
|---------------|---------------------|---------------------|---------------------|---------------------|---------------------|-----------------------------------|-------------------------------------|-------------------------|
|               |                     |                     |                     |                     |                     |                                   |                                     |                         |
|               |                     |                     |                     |                     |                     |                                   |                                     |                         |
|               |                     |                     |                     |                     |                     |                                   |                                     |                         |
|               |                     |                     |                     |                     |                     |                                   |                                     |                         |
|               |                     |                     |                     |                     |                     |                                   |                                     |                         |
|               |                     |                     |                     |                     |                     |                                   |                                     |                         |
|               |                     |                     |                     |                     |                     |                                   |                                     |                         |
|               |                     |                     |                     |                     |                     |                                   |                                     |                         |
|               |                     |                     |                     |                     |                     |                                   |                                     |                         |
|               |                     |                     |                     |                     |                     |                                   |                                     |                         |

### **Aggregate Properties**

| Property                                    | Result | Specification | Property  | Result | Specification |
|---|--------|---------------|---|--------|---------------|
| LA Abrasion, % - Grading<br>AASHTO T 96     |        |               | Fine aggregate angularity,<br>AASHTO T 304 - method A               |        |               |
| Sodium Sulfate Soundness, %<br>AASHTO T 104 |        |               | Flat and elongated particles,<br>ASTM D 4791 - 1: ratio             |        |               |
| Durability index (Coarse)<br>AASHTO T 210   |        |               | Sand Equivalent<br>AASHTO T 176, Alt method<br>#2, reference method |        |               |
| Durability index (Fine)<br>AASHTO T 210     |        |               | Other:  |        |               |
| Fractured Faces, % -<br>ASTM D 5821         |        |               | Other:  |        |               |

# WORKSHEET FOR A SUPERPAVE MIX DESIGN (Continued)

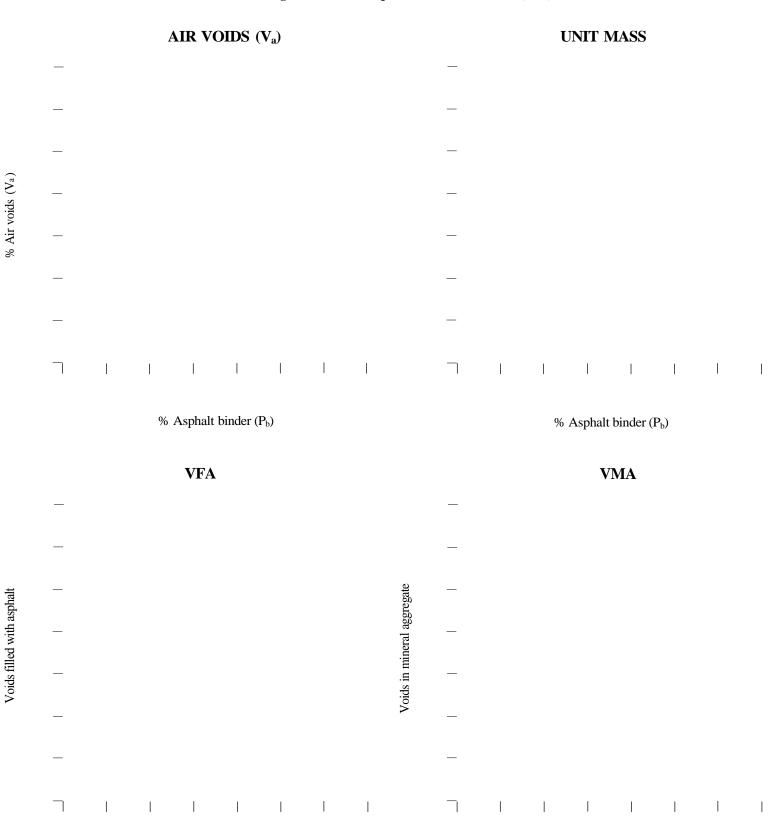
| Trial Number  | 1 | AVG | 2 | AVG | 3 | AVG |
|---|---|-----|---|-----|---|-----|
| % Asphalt by mass of total mix (Pb)   |   |     |   |     |   |     |
| Specimen height,  |   |     |   |     |   |     |
| Effective Binder Content (P <sub>be</sub> )   |   |     |   |     |   |     |
| Bulk specific gravity at $N_{des}(G_{mb})$  |   |     |   |     |   |     |
| % compaction at $N_{int}$   |   |     |   |     |   |     |
| % Air voids at $N_{des}(V_A)$   |   |     |   |     |   |     |
| Max. unit mass G <sub>mm</sub>  |   |     |   |     |   |     |
| Voids in mineral aggregate (VMA) at N <sub>des</sub>  |   |     |   |     |   |     |
| Voids filled with asphalt (VFA) at $N_{des}$  |   |     |   |     |   |     |
| Dust-to-Binder Ratio, (DP)  |   |     |   |     |   |     |
| Hveem Stabilometer value  |   |     |   |     |   |     |
| Trial Number  | 4 | AVG | 5 | AVG | 6 | AVG |
| % Asphalt by mass of total mix (Pb)   |   |     |   |     |   |     |
| Specimen height,  |   |     |   |     |   |     |
| Effective Binder Content (P <sub>be</sub> )   |   |     |   |     |   |     |
|   |   |     |   |     |   |     |
| Bulk specific gravity at N <sub>des</sub> (G <sub>mb</sub> )  |   |     |   |     |   |     |
|   |   |     |   |     |   |     |
| Bulk specific gravity at N <sub>des</sub> (G <sub>mb</sub> )  |   |     |   |     |   |     |
| Bulk specific gravity at N <sub>des</sub> (G <sub>mb</sub> )<br>% compaction at N <sub>int</sub>  |   |     |   |     |   |     |
| Bulk specific gravity at N <sub>des</sub> (G <sub>mb</sub> )     % compaction at N <sub>int</sub> % Air voids at N <sub>des</sub> (V <sub>A</sub> )   |   |     |   |     |   |     |
| Bulk specific gravity at N <sub>des</sub> (G <sub>mb</sub> )     % compaction at N <sub>int</sub> % Air voids at N <sub>des</sub> (V <sub>A</sub> )     Max. unit mass G <sub>mm</sub>  |   |     |   |     |   |     |
| Bulk specific gravity at N <sub>des</sub> (G <sub>mb</sub> )     % compaction at N <sub>int</sub> % Air voids at N <sub>des</sub> (V <sub>A</sub> )     Max. unit mass G <sub>mm</sub> Voids in mineral aggregate (VMA) at N <sub>des</sub> |   |     |   |     |   |     |

# Test Results for Each of the Individual Moisture Susceptibility Test Specimens

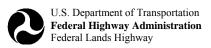
| Percent asphalt binde<br>Antistrip, type, amou | in asphan onider. |  | AASHTO | T 283 | Specimen Dia<br>Freeze cycle: | : 6 inch<br>Yes | 4 inch<br>No |
|--|-------------------|--|--------|-------|-------------------------------|-----------------|--------------|
| Sample I                                       | .D.               |  |        |       |                               |                 | Average      |
| Height   | Dry               |  |        |       |                               |                 |              |
| C  | Wet               |  |        |       |                               |                 |              |
| Bulk Specific                                  | Dry               |  |        |       |                               |                 |              |
| Gravity  | Wet               |  |        |       |                               |                 |              |
| Air  | Dry               |  |        |       |                               |                 |              |
| Voids  | Wet               |  |        |       |                               |                 |              |
|  | Dry               |  |        |       |                               |                 |              |
| Strength                                       | Wet               |  |        |       |                               |                 |              |
| <b>Retained Strengt</b>                        | h, %              |  |        |       |                               |                 |              |

### WORKSHEET FOR A SUPERPAVE MIX DESIGN (Continued)

#### Design Curves for Proposed Job Mix Formula (JMF)



% Asphalt binder (P<sub>b</sub>)



## **RECLAIMED ASPHALT PAVEMENT (RAP) DATA SHEET**

Location: \_\_\_\_\_

Sampled by: \_\_\_\_\_

Tested by: \_\_\_\_\_

Date: \_\_\_\_\_

|                     | RA               | AP 1                         | RA               | P 2                          |
|---------------------|------------------|------------------------------|------------------|------------------------------|
| % of RAP in Mixture |                  |                              |                  |                              |
| Sieve Size          | Dry<br>Gradation | T 308<br>Burned<br>Gradation | Dry<br>Gradation | T 308<br>Burned<br>Gradation |
|                     |                  |                              |                  |                              |
|                     |                  |                              |                  |                              |
|                     |                  |                              |                  |                              |
|                     |                  |                              |                  |                              |
|                     |                  |                              |                  |                              |
|                     |                  |                              |                  |                              |
|                     |                  |                              |                  |                              |
|                     |                  |                              |                  |                              |

| AC by % mix, Pb                             |                  |                  |
|---|------------------|------------------|
|   | Specific Gravity | Specific Gravity |
| Gmm   |                  |                  |
| Gse<br>Gse = (100 - Pb)/(10/Gmm - Pb/Gb)    |                  |                  |
| Gsb<br>Gsb = Gse/(((Pba*Gse)/(100*Gb)) + 1) |                  |                  |
| Pba = (assumed)                             |                  |                  |
| Gb = (assumed)                              |                  |                  |

### **Remarks:**