**Asphalt Concrete Mix Design Submittal Form**

**YEAR**

**Mix Design No. XXXXXX**

|  |  |
| --- | --- |
| Date: | Mix Number: |
| Mix Source Company: | Plant Location: |
| Design Type: | Category: |

| Job Mix Formula | | | | |  | Summary | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Sieve Size | | Target | Job-Mix Range | Specification | Traffic Category: |  |
| 1” | 25 mm |  |  |  |  | Marshall Blows: |  |
| 3/4” | 19 mm |  |  |  |  | Aggregate Type: |  |
| 1/2” | 12.5 mm |  |  |  |  | Asphalt Binder (Total) %: |  |
| 3/8” | 9.5 mm |  |  |  |  | Asphalt Cement Grade: |  |
| #4 | 4.75 mm |  |  |  |  | Asphalt Cement Supplier: |  |
| #8 | 2.36 mm |  |  |  |  | Asphalt Binder RAP % |  |
| #16 | 1.18 mm |  |  |  |  | Antistrip Supplier: |  |
| #30 | 0.60 mm |  |  |  |  | Filler Supplier |  |
| #50 | 0.30 mm |  |  |  |  | Bin Percentages and Stockpile Types | |
| #100 | 0.15 mm |  |  |  |  |  | |
| #200 | 75 μm |  |  |  |  | (add as needed) | |
| Mix Temperature: | |  |  |  |  | Compaction Temperature: | |

Mix design samples were mixed at XXX°F and compacted at XX blows, each face, at XXX°F.

**Wet stamp on first page below table**

Prepared By: Reviewed By:

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| **TABLE 1**  **PROPERTIES AT OPTIMUM ASPHALT CONTENT** | | |
|  | Value | CCPW Spec |
| Asphalt Content by Total Wet Weight, % |  |  |
| Marshall Stability, lbs |  |  |
| Marshall Flow, 0.01 in |  |  |
| Air Voids, % |  |  |
| Voids in Mineral Aggregate (VMA) % |  |  |
| Voids Filled with Asphalt, VMA method |  |  |
| Laboratory Compacted Unit Weight (Marshall), g/cc |  |  |
| Laboratory Compacted Unit Weight (Marshall), pcf |  |  |
| Maximum Theoretical unit Weight (Rice), g/cc |  |  |
| Maximum Theoretical unit Weight (Rice), pcf |  |  |
| Surface Area, Sq. Ft. / lb |  |  |
| Film Thickness, Microns (Idaho DOT Method) |  |  |
| Indirect Tensile Strength, Unconditioned, psi |  |  |
| Indirect Tensile Strength, Retained Strength, % |  |  |
| Rut Depth, mm – 20,000 Cycles in Air @ 76oC |  |  |
| Rut Depth, mm – 8,000 Cycles in Air @ 76oC |  | From 20,000 Cycle Graph |
| 8,000 Cycle Acceptance Range , mm |  | Maximum as Calc from Statistics Method (see Figure 1) |
| Plot the following graphs with % on the x-axis  Use as a minimum the graphs shown on page 67 of the Asphalt Institute MS-2 and a graph of the asphalt film thickness. Plot the points based off the average of both the actual specific gravities and the calculated combined specific gravities. The target for the design will be the average of these two. | | |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **TABLE 2**  **AGGREGATE BLEND** | | | | | | | | |
| Material  Source | | Source  1 | Source  2 | Source  3 | Source  4 | Source  5 |  | CCPW  Specs Section 705 | |
| Description | |  |  |  |  |  |  |
| Sieve AASHTO T27 Percent Passing | | | | | | | |
| Bin Percentage | |  |  |  |  |  | Combined |  | |
| 1” | 25 mm |  |  |  |  |  | 100% |  | |
| 3/4” | 19 mm |  |  |  |  |  |  |  | |
| 1/2” | 12.5 mm |  |  |  |  |  |  |  | |
| 3/8” | 9.5 mm |  |  |  |  |  |  |  | |
| #4 | 4.75 mm |  |  |  |  |  |  |  | |
| #8 | 2.36 mm |  |  |  |  |  |  |  | |
| #16 | 1.18 mm |  |  |  |  |  |  |  | |
| #30 | 0.60 mm |  |  |  |  |  |  |  | |
| #50 | 0.30 mm |  |  |  |  |  |  |  | |
| #100 | 0.15 mm |  |  |  |  |  |  |  | |
| #200 | 0.075 mm |  |  |  |  |  |  |  | |

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| **GRADATION CHART**  **0.45 POWER** |
| Place chart here, size as needed |

| TABLE 3AGGREGATE PROPERTIES | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Material  Source | Source  1 | Source  2 | Source  3 | Source  4 | Source  5 |  | Specs Section 705 |
| Description |  |  |  |  |  |  |  |
| **Coarse Aggr +#8** | Specific Gravity & Absorption, AASHTO T85 | | | | | Calc Average |  |
| Bulk Specific Gravity |  |  |  |  |  |  | N/A |
| Bulk Specific Gravity, SSD |  |  |  |  |  |  | N/A |
| Apparent Specific Gravity |  |  |  |  |  |  | N/A |
| Absorption |  |  |  |  |  |  |  |
| **Fine Aggr -#8, +200** | Specific Gravity & Absorption, AASHTO T84 | | | | | Calc Average |  |
| Bulk Specific Gravity |  |  |  |  |  |  | N/A |
| Bulk Specific Gravity, SSD |  |  |  |  |  |  | N/A |
| Apparent Specific Gravity |  |  |  |  |  |  | N/A |
| Absorption |  |  |  |  |  |  |  |
| **#-200, App. SG** |  |  |  |  |  |  |  |
| Combined Aggregate | | | | | Calc Average | Actual  Average |  |
| Bulk Specific Gravity |  | | | |  |  | N/A |
| Bulk Specific Gravity, SSD |  |  | N/A |
| Apparent Specific Gravity |  |  | N/A |
| Absorption |  |  |  |
| Fractured Faces One Side ASTM D5821 |  |  |  |  |  |  |  |
| Fractured Faces Two Side ASTM D5821 |  |  |  |  |  |  |
| L.A. Abrasion  AASHTO T96 |  |  |  |  |  |  |
| Plastic Index  AASHTO T90 |  |  |  |  |  |  |
| Methylene Blue Test  AASHTO T330 |  |  |  |  |  |  |
| Fine Aggregate Angularity  AASHTO T33 |  |  |  |  |  |  |
| Elongation @ 5:1  ASTM D4791 |  |  |  |  |  |  |
| Soundness Test,  AASHTO T104 |  |  |  |  |  |  |
| Deleterious Materials |  |  |  |  |  |  |
| Stripping Test (boiling test) |  |  |  |  |  | Satisfactory |

| **TABLE 4**  **MARSHALL DATA** | | | | | |
| --- | --- | --- | --- | --- | --- |
|  | 1 | 2 | 3 | 4 | 5 |
| Percent Asphalt Content |  |  |  |  |  |
| By Total Weight of Mix |  |  |  |  |  |
| By Dry Weight of Mix |  |  |  |  |  |
| Effective |  |  |  |  |  |
| Absorption |  |  |  |  |  |
| Specific Gravities, g/cc |  |  |  |  |  |
| Bulk Specific Gravity, SSD |  |  |  |  |  |
| Maximum Theoretical SG Measured |  |  |  |  |  |
| Maximum Theoretical SG Calculated |  |  |  |  |  |
| Effective of Aggregate |  |  |  |  |  |
| Unit Weights |  | | | | |
| Bulk, pcf |  |  |  |  |  |
| Maximum Theoretical, Measured, pcf |  |  |  |  |  |
| Maximum Theoretical, Calculated, pcf |  |  |  |  |  |
| Percent Voids |  |  |  |  |  |
| Measured Air Voids |  |  |  |  |  |
| Calculated Air Voids |  |  |  |  |  |
| Voids in Mineral Aggregate |  |  |  |  |  |
| Voids Filled with Asphalt, VMA Method |  |  |  |  |  |
| Marshall Properties |  |  |  |  |  |
| Marshall Stability, lbs |  |  |  |  |  |
| Marshall Flow, in/100 |  |  |  |  |  |
| Film Thickness, Microns |  |  |  |  |  |

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| **TABLE 5**  **TENSILE STRENGTH RATIO – STRIPPING TEST** | | | | |
| Test Method AASHTO T283 freeze thaw | |  | Unconditioned Set | Specification |
| Anti-Strip type: | Average Percent Air Voids | |  |  |
| Average Maximum Load, lbs | |  |  |
| Average Tensile Strength, psi | |  | 65 psi minimum |
|  | | | Conditioned Set | Specification |
|  | Average Percent Air Voids | |  |  |
|  | Average Maximum Load, lbs | |  |  |
|  | Average Tensile Strength, psi | |  |  |
|  | Tensile Strength Ratio, (TSR) % | |  | 75 Minimum |

Insert binder test data used on the design

Use the figure 5.4 on page 65 as a template for the raw data that is to be included here.

CCPW D-401 rev 5/16