



# Oklahoma Department of Transportation Mix Design Report

Asphalt Concrete, Type S3 (PG 64-22 OK) Mat'l. Code: asco009  
 (Material Full Name and Material Code)  
 MPC Materials P/S # m00906  
 (Producer/Supplier Name and Producer/Supplier Code)  
 MPC Materials - Markwell (Newcastle) PLANT ID # m00906-01  
 (Plant Name and Plant ID)

Insoluble - Recycled ID: I2  
 (Design Type and Design Type ID)  
 S3pv0261200500  
 (Mix ID)

| Aggregate              | Producer/Supplier                                       | % USED |
|------------------------|---|--------|
| 1" Rock                | Hanson Aggregates, WRP Inc (Davis, OK) P/S # m001985008 | 19     |
| 5/8" Chips             | Hanson Aggregates, WRP Inc (Davis, OK) P/S # m001985008 | 15     |
| Man. Sand              | Hanson Aggregates, WRP Inc (Davis, OK) P/S # m001985008 | 15     |
| Scrns.                 | Dolese Co (Davis, OK) P/S # m002745002                  | 15     |
| Sand (Unlisted Source) | General Materials, Inc(Okc,OK)m001911402                | 11     |
| Coarse R.A.P.          | Contractor / Project Site P/S # Contractor              | 15     |
| Fine R.A.P.            | Contractor / Project Site P/S # Contractor              | 10     |

**Asphalt Cement:** Asphaltic Cement Type PG 64-22 OK, acem003, Gary Williams Energy (Wynnewood, OK), m00357  
 (Material Full Name, Material Code, Producer/Supplier Name, Producer/Supplier Code)

| Sieve Size       | Producer/Supplier:                                      |   |   |  |  |  |  |     | Comb. Agg. | Requires Form 93-E0 signed by the Department for production use. -Oklahoma D.O.T. Materials- |      |      |            |
|------------------|---|---|---|--|--|--|--|-----|------------|--|------|------|------------|
|                  | Hanson Aggregates, WRP Inc (Davis, OK) P/S # m001985008 | Hanson Aggregates, WRP Inc (Davis, OK) P/S # m001985008 | Hanson Aggregates, WRP Inc (Davis, OK) P/S # m001985008 | Dolese Co (Davis, OK) P/S # m002745002 | General Materials, Inc(Okc,OK)m001911402 | Contractor / Project Site P/S # Contractor | Contractor / Project Site P/S # Contractor |     |            | JMF  | Min. | Max. | % Tol. (±) |
| 1" Rock          | 100   | 100   | 100   | 100                                    | 100                                      | 100  | 100  | 100 | 100        | 100  | 100  | 0    |            |
| 3/4 in (19 mm)   | 69  | 100   | 100   | 100                                    | 100                                      | 96   | 100  | 94  | 94         | 87   | 100  | 7    |            |
| 1/2 in (12.5 mm) | 24  | 89  | 100   | 100                                    | 100                                      | 83   | 100  | 81  | 81         | 74   | 88   | 7    |            |
| 3/8 in (9.5 mm)  | 7   | 62  | 100   | 100                                    | 100                                      | 70   | 99   | 72  | 72         | 65   | 79   | 7    |            |
| #4 (4.75 mm)     | 2   | 13  | 100   | 87                                     | 100                                      | 46   | 89   | 57  | 57         | 50   | 64   | 7    |            |
| #8 (2.36 mm)     | 2   | 3   | 71  | 54                                     | 100                                      | 33   | 73   | 43  | 43         | 38   | 48   | 5    |            |
| #16 (1.18 mm)    | 2   | 2   | 45  | 34                                     | 98                                       | 27   | 59   | 33  | 33         | 29   | 37   | 4    |            |
| #30 (.600 mm)    | 2   | 2   | 24  | 23                                     | 90                                       | 22   | 48   | 26  | 26         | 22   | 30   | 4    |            |
| #50 (.300 mm)    | 1   | 2   | 14  | 17                                     | 50                                       | 17   | 36   | 17  | 17         | 13   | 21   | 4    |            |
| #100 (.150 mm)   | 1   | 2   | 7   | 13                                     | 9  | 10   | 20   | 8   | 8          | 5  | 11   | 3    |            |
| #200 (.075 mm)   | 1.1   | 1.4   | 3.9   | 10.9                                   | 1.3                                      | 5.7  | 10.8                                       | 4.7 | 4.7        | 2.7  | 6.7  | 2    |            |
| AC Content %     |   |   |   |  |  | 3.9  | 5.4  | 4.3 | 4.3        | 3.9  | 4.7  | 0.4  |            |

Mix temperature @ discharge from mixer: 305 (152) ± 20 °F (± 10 °C) **Required**  
 Optimum roadway compaction temperature: 290 (143)  
 Laboratory mixing temperature: 325 (163)  
 Laboratory compaction temperature: 300 (149)

| Tests on Asphalt Cement   | Found  |
|---------------------------|--------|
| Specific Gravity @ 77 ° F | 1.0100 |

Requires Form 93-E0 signed by the Department for production use. -Oklahoma D.O.T. Materials-

| Tests on Compressed Mixtures (@ Design AC) |        |                  |                    |
|--|--------|------------------|--------------------|
|  | # Gyr. | % Density of Gmm | % Density Required |
| Nini                                       | 6      | 89.5             | 85.5 - 91.5        |
| Ndes                                       | 50     |                  | 96.0               |

| Tests on Aggregates | Required | Units                           |
|---------------------|----------|---------------------------------|
| Durability Index    | 75       | 40 min. %                       |
| F.A.A. %U           |          | N/A %                           |
| Flat and Elongated  | 0        | 10 max. %                       |
| Fractured Faces     | 100/100  | 85/80 min. %                    |
| Insoluble Residue   | 59.5     | 30 min. %                       |
| LA Abrasion         | 25.3     | 40 max. %                       |
| Micro-Deval         | 16.2     | N/A %                           |
| Permeability        | 2.9      | 12.5 max. 10 <sup>-5</sup> cm/s |
| Sand Equivalent     | 83       | 40 min. %                       |
| IOC                 | 0.35     | %                               |
| Gse                 | 2.713    |                                 |
| Gsb                 | 2.684    |                                 |
| Specimen Weight     | 4940     | g                               |

| Tests on Compressed Mixtures |       |       |           |                    |       |                |                |                |
|------------------------------|-------|-------|-----------|--------------------|-------|----------------|----------------|----------------|
| %AC                          | Gmb   | Gmm   | % Density |                    | % VMA | % VMA Required |                | % VFA          |
|                              |       |       | of Gmm    | % Density Required |       | Design / Field | Design / Field |                |
| 4.3                          | 2.425 | 2.530 | 95.8      | Design / Field     | 13.5  | Design / Field | 68.9           | % VFA Required |
| 4.8                          | 2.446 | 2.510 | 97.5      | 96.0 / 94.5 - 97.4 | 13.2  | 13.5 / 13.0    | 81.1           | 70 - 75        |
| 5.3                          | 2.461 | 2.490 | 98.8      |                    | 13.2  |                | 90.9           |                |

**Dust Prop.**  
 1.2 **Dust Prop. Req.**  
 1.1 0.6 - 1.6  
 1.0

**ITS (PSI)** 159.8 N/A min.  
**TSR** 0.85 0.80 / 0.75 min. (Design / Field)  
 Compacted Wt. (lbs/sy/1" thick) = 111.3 @ 4.3 % Asphalt Cement  
 3.2 % New Asphalt Cement

**Hamburg Rut Test Depth (mm)** 1.90 12.50 max. @ 10,000 cycles

MEETS SPECIFICATION REQUIREMENTS PER SPECIAL PROVISION 708-26(a-f) 09

Comments:

Last Modified By: Schratwieser, Edward P. eschratw  
 (User Name and User ID)

Date: 11/27/2012  
 (mm/dd/yyyy)