



# Oklahoma Department of Transportation Mix Design Report

Asphalt Concrete, Type S5 (PG 70-28 OK) Mat'l. Code: asco014  
 (Material Full Name and Material Code)  
 Haskell Lemon Const Co (Asphalt) P/S # m00428  
 (Producer/Supplier Name and Producer/Supplier Code)  
 Haskell Lemon (Shawnee, OK) - 300TPH PLANT ID # m00428-06  
 (Plant Name and Plant ID)

Insoluble ID: I1  
 (Design Type and Design Type ID)  
 WS5qc0381390401  
 (Mix ID)

| Aggregate  | Producer/Supplier  | % USED |
|--|--|--------|
| 1/4" Chips   | Martin-Marietta (Mill Creek, OK) P/S # m002303502          | 44     |
| C-33 Scrns.  | Martin-Marietta (Mill Creek, OK) P/S # m002303502          | 17     |
| Scrns.   | Dolese Co (Davis, OK) P/S # m002745002                     | 24     |
| Sand   | General Materials Inc (Oklahoma City, OK) P/S # m009215515 | 15     |
| Warm Mix Asphalt (WMA) Technology: TEREX (Foaming Process) qual028 Terex Roadbuilding m00801<br>(Product Name, Material Code, Producer/Supplier Name, Producer/Supplier Code)          |  |        |
| Asphalt Cement: Asphaltic Cement Type PG 70-28 OK, acem002, Lion Oil Co. (Muskogee, OK), m00511<br>(Material Full Name, Material Code, Producer/Supplier Name, Producer/Supplier Code) |  |        |

| Producer/Supplier: | Martin-Marietta (Mill Creek, OK) P/S # m002303502 | Martin-Marietta (Mill Creek, OK) P/S # m002303502 | Dolese Co (Davis, OK) P/S # m002745002 | General Materials Inc (Oklahoma City, OK) P/S # m009215515 | Requires Form 93-E0 signed by the Department for production use. -Oklahoma D.O.T. Materials- |     |      |      |            |
|--------------------|---|---|--|--|--|-----|------|------|------------|
|                    | 1/4" Chips  | C-33 Scrns.                                       | Scrns.                                 | Sand   | Comb. Agg.   | JMF | Min. | Max. | % Tol. (±) |
| 1/2 in (12.5 mm)   | 100   | 100   | 100                                    | 100  | 100  | 100 | 100  | 100  | 0          |
| 3/8 in (9.5 mm)    | 100   | 100   | 100                                    | 100  | 100  | 100 | 93   | 100  | 7          |
| #4 (4.75 mm)       | 47  | 99  | 88                                     | 100  | 74   | 74  | 67   | 81   | 7          |
| #8 (2.36 mm)       | 8   | 80  | 57                                     | 100  | 46   | 51  | 46   | 56   | 5          |
| #16 (1.18 mm)      | 4   | 48  | 37                                     | 99   | 34   | 34  | 30   | 38   | 4          |
| #30 (.600 mm)      | 2   | 25  | 26                                     | 94   | 25   | 25  | 21   | 29   | 4          |
| #50 (.300 mm)      | 1   | 8   | 19                                     | 74   | 17   | 17  | 13   | 21   | 4          |
| #100 (.150 mm)     | 1   | 3   | 15                                     | 25   | 8  | 8   | 5    | 11   | 3          |
| #200 (.075 mm)     | 0.7   | 1.6   | 12.1                                   | 1.2  | 3.7  | 3.7 | 1.7  | 5.7  | 2          |
| AC Content %       |   |   |  |  | 5.5  | 5.5 | 5.1  | 5.9  | 0.4        |

Warm Mix Asphalt (WMA) Additive % 1.5

Mix temperature @ discharge from mixer: 275 (135) ± 20 °F (± 10 °C) **Required**  
 Optimum roadway compaction temperature: 260 (127)  
 Laboratory mixing temperature: 325 (163)  
 Laboratory compaction temperature: 300 (149)

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

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| Tests on Compressed Mixtures (@ Design AC) |        |                  |                    |
|--|--------|------------------|--------------------|
|  | # Gyr. | % Density of Gmm | % Density Required |
| Nini                                       | 7      | 89.9             | 85.5 - 90.5        |
| Ndes                                       | 65     |                  | 96.0               |

| Tests on Aggregates | Required | Units                           |
|---------------------|----------|---------------------------------|
| Durability Index    | 74       | 40 min. %                       |
| F.A.A. %U           | N/A      | %                               |
| Flat and Elongated  | 0        | 10 max. %                       |
| Fractured Faces     | 100/100  | 95/90 min. %                    |
| Insoluble Residue   | 78.7     | 40 min. %                       |
| LA Abrasion         | 25.3     | 40 max. %                       |
| Micro-Deval         | 16.2     | N/A %                           |
| Permeability        | 4.2      | 12.5 max. 10 <sup>-5</sup> cm/s |
| Sand Equivalent     | 80       | 45 min. %                       |
| Pba                 | 0.6      | %                               |
| IOC                 | 0.22     | %                               |
| Gse                 | 2.672    |                                 |
| Gsb                 | 2.630    |                                 |
| Specimen Weight     | 4780     | g                               |

| Tests on Compressed Mixtures |       |       |           |                    |       |                |         |
|------------------------------|-------|-------|-----------|--------------------|-------|----------------|---------|
| %AC                          | Gmb   | Gmm   | % Density |                    | % VMA | % VMA Required | % VFA   |
|                              |       |       | of Gmm    | % Density Required |       |                |         |
| 4.8                          | 2.324 | 2.476 | 93.9      | Design / Field     | 15.9  | Design / Field | 61.6    |
| 5.3                          | 2.345 | 2.458 | 95.4      | 96.0 / 94.5 - 97.4 | 15.6  | 15.5 / 15.0    | 70.5    |
| 5.8                          | 2.364 | 2.439 | 96.9      |                    | 15.3  |                | 73 - 78 |

Dust Prop. 0.9, 0.8, 0.7  
 Dust Prop. Req. 0.6 - 1.6  
 ITS (PSI) 85.7 N/A min.  
 TSR 0.84 0.80 / 0.75 min. (Design / Field)  
 Compacted Wt. (lbs/sy/1" thick) = 107.8 @ 5.5 % Asphalt Cement

x 1st JMF Revision

Hamburg Rut Test Depth (mm) 11.84 12.50 max. @ 15,000 cycles

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

Comments: REVISED (GRAD.) Effective 5/19/14 per contractor's request.

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

Date: 5/20/2014 (mm/dd/yyyy)