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TECHNICAL REPORT

REPORT TO: Las Vegas Paving Corporation
3401 North 5th Street
North Las Vegas, NV 89032

DATE: 8/28/2015
Revised 9/8/15
WORK ORDER NO: 5478
SHEET: 1 of 6

ATTENTION: Mr. Dan Peressini

REPORT OF: Concrete Aggregate Tests for Materials Sampled at the Apex Pit for use in
Portland Cement Concrete Mixes.

SAMPLE IDENTIFICATION

At your request, our personnel performed testing on samples of No. 4, No. 67, No. 7, and No. 89 concrete coarse aggregates and concrete fine aggregate samples that were delivered to our laboratory on August 11, 2015. In accordance with your request sieve analysis, organic impurities, dry rodded unit weight, sodium sulfate soundness, LA abrasion, clay lumps and friable particles, specific gravity, lightweight pieces in aggregate, and potential reactivity were performed. These tests were performed in accordance with ASTM C29, C40, C88, C117, C123, C127, C128, C535, C136, C142, C229, D75, NDOT T227, T228, and AASHTO T303. Results of these tests are summarized on the attached Tables 1 through 10.



LABORATORY MANAGER: *Jindia A. Rautter*

REVIEWED BY: *[Signature]*

TABLE NO. 3: SIEVE ANALYSIS, SPECIFIC GRAVITY AND ABSORPTION OF NO. 67 (3/4" – NO.4) COARSE AGGREGATE (ASTM C136, C117 AND C127)

| Laboratory Number | 20904 | ASTM C33 Specification TABLE 3 No. 67 |
|----------------------------|---|--|
| Description | Apex Pit No. 67 Coarse Aggregate (3/4" – No.4) | |
| Screen or Sieve Size | Percent Passing | |
| 1" | 100 | 100 |
| 3/4" | 92 | 90 - 100 |
| 1/2" | 66 | - |
| 3/8" | 45 | 20 - 55 |
| No. 4 | 5 | 0 - 10 |
| No. 8 | 1 | 0 - 5 |
| No. 200 | 0.5 | 0 - 1 |
| Bulk Dry Specific Gravity | 2.66 | N/A |
| Bulk Specific Gravity, SSD | 2.68 | N/A |
| Apparent Specific Gravity | 2.72 | N/A |
| Absorption, % | 0.9 | N/A |

TABLE NO. 4: COARSE AGGREGATE PROPERTIES PERFORMED ON NO. 67 (3/4" – NO.4)

| Laboratory Tests | Test Method | Test Results | ASTM C33 Table 4 |
|--|-------------|--------------|---------------------|
| Percentage of Wear (500 Rev.), % | ASTM C131 | 19 | 50 max |
| Clay Lumps and Friable Particles, % | ASTM C142 | 0 | 2 max* |
| Sodium Sulfate Soundness, % Loss after 5 Cycles | ASTM C88 | 2.7 | 12 max* |
| Coal and Lignite-Lightweight Pieces | ASTM C123 | 0 | 0.5 max* |
| Cleanness Value | NDOT T228 | 94 | 71 min |
| Potentially Deleterious Expansion of Mortar Bars Due to ASR** | AASHTO T303 | 0.036 | 0.10 max |
| Dry Rodded Unit Weight, pcf | ASTM C29 | 96.9 | N/A |

* ASTM C33, Table 4 for 5S class designation

** Tests performed by Concrete Materials Consultants, LLC on crusher fines quarried from same parent rock.