**Earth Systems**
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December 19, 2017 PL-02667-01

Recycled Aggregate Materials Company
3713 Alamo Street
Simi Valley, California 93063

Attention: Mr. Dallas Jones

Subject: **Laboratory Test Results**
SSPWC Section 200-2.5 Processed Miscellaneous Base
Recycled Aggregate Materials Company
9005 Bradley Avenue
Sun Valley, California

This report presents the results of laboratory tests performed on one (1) sample of Standard Specification for Public Works Construction (SSPWC) Processed Miscellaneous Base from the above referenced project. The sample was delivered to our laboratory on November 8, 2017. Per your request the following tests were performed:

A) Sieve Analysis (ASTM C-136)
B) Sand Equivalent (Caltest 217)
C) Durability Index (Caltest 229)
D) R-Value (Caltest 301)
E) Los Angeles Abrasion (ASTM C-131)
F) Maximum Density – Optimum Moisture (ASTM D-1557)

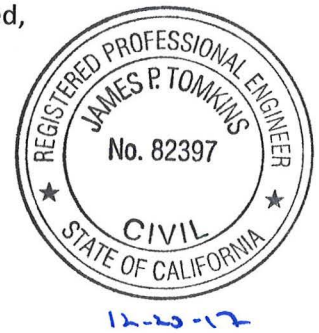
The laboratory test results are attached. We trust this report meets your current needs. If you have any questions please contact us.

**The Material Tested** ☒ **met** ☐ did not meet the requirements of Standard Specifications for Public Works Construction, 2015 edition Section 200-2.5 Processed Miscellaneous Base, Fine.

Respectfully submitted,

**Earth Systems**
**Southern California**

Jim Tomkins
Project Engineer
P. E. #82397




12-20-17

Distribution: e-mail: Dallas@ramco.us.com, manselmo@ramco.us.com; markh@ramco.us.com; josh@ramco.us.com; april@ramco.us.com; dawn@ramco.us.com

**Summary of Laboratory Test Results**
**SSPWC Section 200-2.5**
**Processed Miscellaneous Base**
**Recycled Aggregate Materials Company - Sun Valley, California**
**Delivered on November 8, 2017**

A) **Sieve Analysis** (ASTM C-136)

| Sieve Size | | Percent Passing | SSPWC Section 200-2.5 Processed Miscellaneous Base |
|---|---|---|---|
| 1 1/2" | (37.5 mm) | 100 | 100 |
| 1" | (25.0 mm) | 100 | |
| 3/4" | (19.0 mm) | 92 | 85-100 |
| 1/2" | (12.5 mm) | 74 | |
| 3/8" | (9.5 mm) | 63 | 55-75 |
| #4 | (4.75 mm) | 40 | 35-60 |
| #8 | (2.36 mm) | 26 | |
| #16 | (1.18 mm) | 18 | |
| #30 | (0.6 mm) | 11 | 10-30 |
| #50 | (0.3 mm) | 6 | |
| #100 | (0.15 mm) | 4 | |
| #200 | (0.075 mm) | 2.2 | 2-9 |

B) **Sand Equivalent** (Caltest 217)

Sand Equivalent = 65 35 Min.

C) **Durability Index** (Caltest 229)

$D_f$ = 66
$D_c$ = 60

D) **R-Value** (Caltest 301)

R-Value = 78 78 Min.

E) **Los Angeles Abrasion** (ASTM C-131)

| Revolutions | % Loss | |
|---|---|---|
| 100 | 12.0 | 15% Max. |
| 500 | 38.4 | 52% Max |

**Summary of Laboratory Test Results**
**SSPWC Section 200-2.5**
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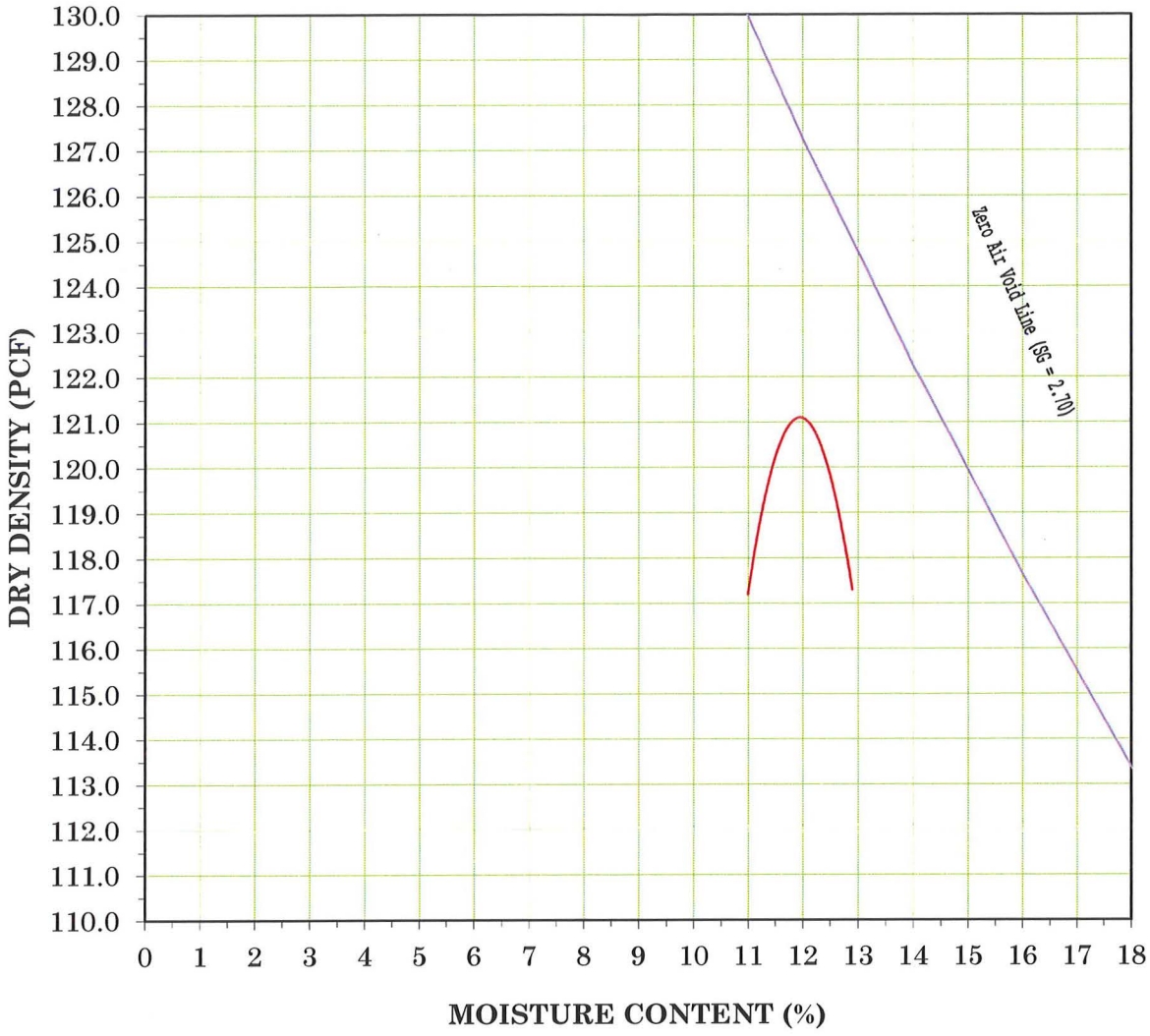
F) **Maximum Density – Optimum Moisture** (ASTM D-1557)

| Sample Description | Maximum Density | Optimum Moisture |
|---|---|---|
| SSPWC<br>Processed Miscellaneous Base * | 122.0 PCF | 10.5 % |

*Note: This product contains crushed recycled asphalt concrete. A bias is required for all nuclear density tests to adjust the tested dry density results to reflect actual in-place densities




**Maximum Density - Optimum Moisture Characteristics***

Sample Location: Sample Delivered on November 8, 2017

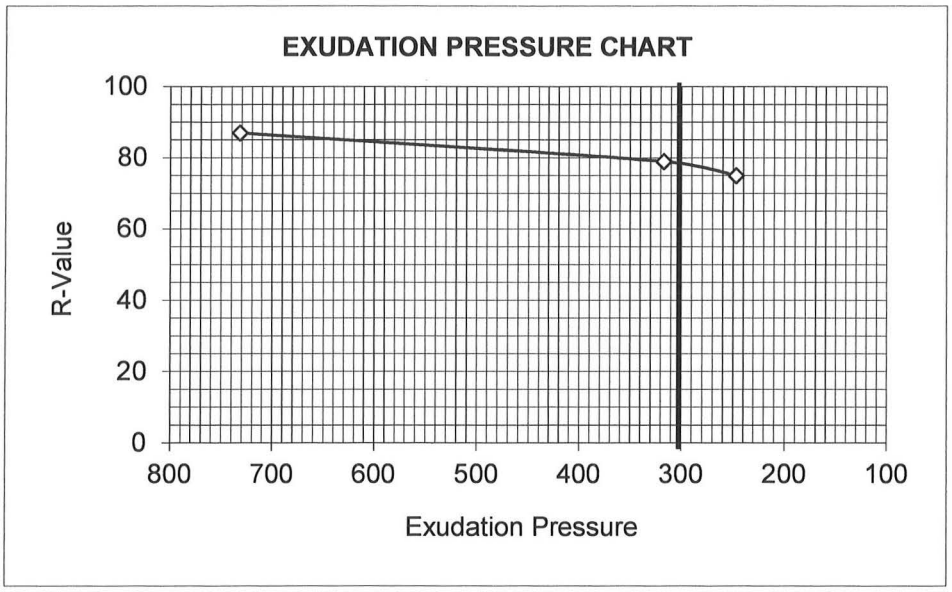
Material: Processed Miscellaneous Base

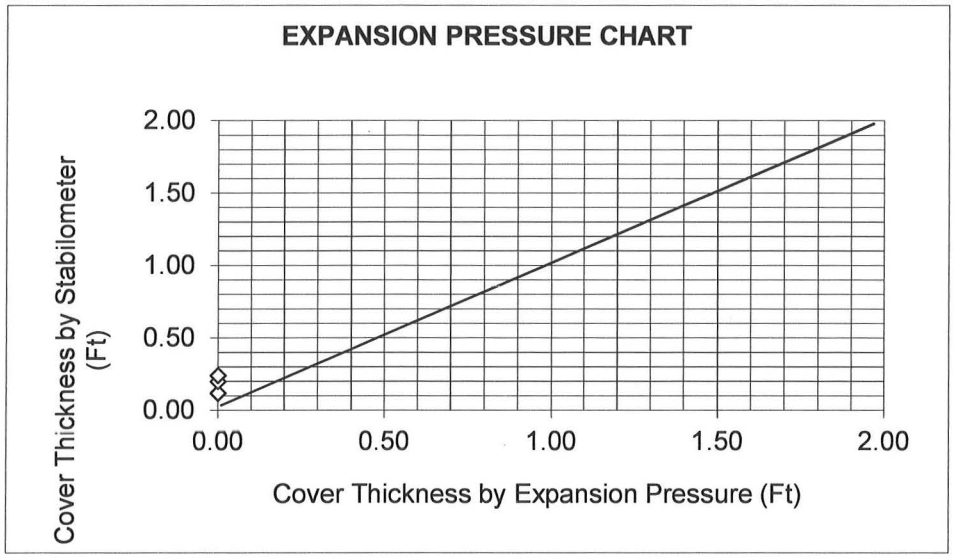
Maximum Density (pcf): 121.0

Optimum Moisture: 12.0%

* Test Method: ASTM D-1557

| MAXIMUM DENSITY - OPTIMUM MOISTURE | |
|---|---|
| RAMCO - Rialto<br>Rialto, California | |
| Earth Systems Southern California | |
| 12/19/2017 | PL-02667-02 |




**JOB NAME:** RAMCO - Sun Valley
**SAMPLE I. D.:** Sample Delivered on November 8, 2017
**SOIL DESCRIPTION:** Processed Miscellaneous Base

| SPECIMEN NUMBER | A | B | C |
|---|---|---|---|
| EXUDATION PRESSURE | 732 | 317 | 247 |
| RESISTANCE VALUE | 87 | 79 | 75 |
| EXPANSION DIAL(0.0001") | 0 | 0 | 0 |
| EXPANSION PRESSURE (PSF) | 0.0 | 0.0 | 0.0 |
| % MOISTURE AT TEST | 12.6 | 13.2 | 13.4 |
| DRY DENSITY AT TEST | 114.2 | 108.0 | 107.6 |

| | |
|---|---|
| **R-VALUE @ 300 PSI EXUDATION** | **78** |
| **R-VALUE by Expansion Pressure*** | **100** |

**Based on a Traffic Index of 5.0 and a Gravel Factor of 1.70*