# ASPHALT DENSITY TESTING REPORT

**Report** 02191565.0073
**Service Date:** 09/26/20
**Report Date:** 11/08/20

Terracon
15620 W 113th St
Lenexa, KS 66219-5102
913-492-7777

**Client**
Axiom Northwest Construction, Inc.
Attn: Norm Hellings
2232 Broadway
Suite 101
Everett, WA 98201

**Project**
DCI - Lee's Summit
2001 Shamrock Rd
Lee's Summit, MO

Project 02191565

## Description of location(s) observed:
Parking lot

## Description of materials observed:
Base layer of asphalt: Mix ID: Type 1-01 RC, supplied by Hot Mix Materials Inc.

## Comments:
Terracon performed field density tests on referenced materials placed at the referenced location(s). Our representative tested the materials using a nuclear density meter and reported the test results verbally to on-site personnel. The test results are in general accordance with the project documents, except as noted below.

Please see attached field density testing data.

## Exceptions:

**Conformance Statement:**
Based on the observations and test results described above, the materials and procedures, at the time of our observations appeared to be:

**Conforming** ☒
**Non-Conforming** ☐

**Services:**

**Terracon Rep.:** Jonathan W. Shipley
**Reported To:** Norm Hellings (Axiom Northwest
**Contractor:** Axiom Northwest Construction
**Report Distribution:**
(1) Axiom Northwest Construction, Inc., norm@axiomnw.com
(1) Axiom Northwest Construction, Inc., tiffani@axiomnw.com

**Reviewed By:**
Feras El-Ghussein
Project Manager

# HMAC FIELD DENSITY TEST REPORT

**Report Number:** 02191565.0073
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**Task:**

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## Client

Axiom Northwest Construction, Inc.
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2232 Broadway
Suite 101
Everett, WA 98201

## Project

DCI - Lee's Summit
2001 Shamrock Rd
Lee's Summit, MO

Project Number: 02191565

## Material Information

| Mat. No. | Reference Number | Classification and Description | Laboratory Test Method | Lab Test Data: Reference Density (pcf) | Project Requirements: Min. Thickness (in) | Min. Comp. (%) | Max. Comp. (%) |
|---|---|---|---|---|---|---|---|
| 1 | 02191565.0074A | Type 1-01 RC | | 150.0 | | 95 | |

## Field Test Data

| Test No. | Test Location | Pave. Lift | Mat. No. | Nuclear Density (pcf) | Core Data: Core Length (in) | Core Data: Core Density (pcf) | Correction Factor (pcf) | Corrected Density (pcf) | Comp. (%) |
|---|---|---|---|---|---|---|---|---|---|
| | **Parking lot (See Attached Diagram)** | | | | | | | | |
| 1 | Y: 38.91588, X: -94.41391 | -2" | 1 | 148.7 | | | | | 99 |
| 2 | Y: 38.91599, X: -94.41408 | -2" | 1 | 145.6 | | | | | 97 |
| 3 | Y: 38.91611, X: -94.41370 | -2" | 1 | 152.8 | | | | | 100+ |
| 4 | Y: 38.91627, X: -94.41377 | -2" | 1 | 151.5 | | | | | 100+ |
| 5 | Y: 38.91658, X: -94.41387 | -2" | 1 | 149.1 | | | | | 99 |
| 6 | Y: 38.91661, X: -94.41414 | -2" | 1 | 148.9 | | | | | 99 |

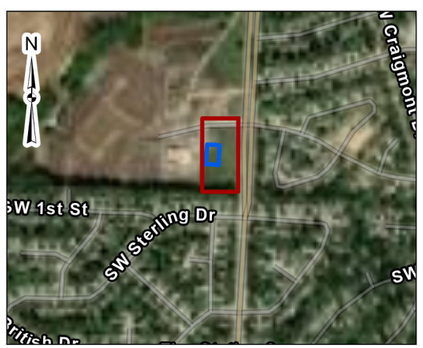
**Datum:** Top of Pavement **Std. Cnt. M:** 660 **Std. Cnt. D:** 2075
**S/N:** 39638 **Make:** TROXLER **Model:** 3430 **Last Cal. Date:** 10/22/2019

**Comments:** **Test and/or retest results on this report meet project requirements as noted above.**
Diagram to be revised, and report resent

**Services:**
**Terracon Rep.:** Jonathan W. Shipley
**Reported To:** Norm Hellings (Axiom Northwest Construction)
**Contractor:** Axiom Northwest Construction
**Report Distribution:**
(1) Axiom Northwest Construction, Inc., norm@axiomnw.com
(1) Axiom Northwest Construction, Inc., tiffani@axiomnw.com

**Reviewed By:**
Feras El-Ghussein
Project Manager

**Test Methods:** ASTM D2950


## Asphalt Density Test Status

- Pass -- 7 Test(s)

0 15 30 60 90 Feet

| | |
|---|---|
| Report No.: | 01191565.0073 |
| Service Date: | 09/26/2020 |
| Technician: | Jon Shipley |
| Scale: | 1" = 30' |

Terracon Consulting Engineers & Scientists
15620 W 113th Street Lenexa, KS 66219
PH. (913) 492-7777 terracon.com

**DCI - Lee's Summit**

Asphalt Field Density Testing

Observed Locations

**Exhibit**

**A-1**

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# ASPHALT DENSITY TESTING REPORT

**Report** 02191565.0076
**Service Date:** 09/28/20
**Report Date:** 11/08/20

Terracon
15620 W 113th St
Lenexa, KS 66219-5102
913-492-7777

**Client**
Axiom Northwest Construction, Inc.
Attn: Norm Hellings
2232 Broadway
Suite 101
Everett, WA 98201

**Project**
DCI - Lee's Summit
2001 Shamrock Rd
Lee's Summit, MO

Project 02191565

## Description of location(s) observed:
All parking/ drive areas

## Description of materials observed:
Surface layer of asphalt - Type Unknown (Subcontractor was completed and demobilized by the time of our arrival). Estimate provided by others.

## Comments:
Terracon performed field density tests on referenced materials placed at the referenced location(s). Our representative tested the materials using a nuclear density meter and reported the test results verbally to on-site personnel. The test results are in general accordance with the project documents, except as noted below.

Please see attached field density testing data.

## Exceptions:

**Conformance Statement:**
Based on the observations and test results described above, the materials and procedures, at the time of our observations appeared to be:

**Conforming** ☒
**Non-Conforming** ☐

**Services:**

**Terracon Rep.:** Kevin L. McCurdy
**Reported To:** Norm Hellings (Axiom Northwest
**Contractor:** Axiom Northwest Construction
**Report Distribution:**
(1) Axiom Northwest Construction, Inc., norm@axiomnw.com
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# HMAC FIELD DENSITY TEST REPORT

**Report Number:** 02191565.0076
**Service Date:** 09/28/20
**Report Date:** 11/08/20
**Task:**

Terracon
15620 W 113th St
Lenexa, KS 66219-5102
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## Client

Axiom Northwest Construction, Inc.
Attn: Norm Hellings
2232 Broadway
Suite 101
Everett, WA 98201

## Project

DCI - Lee's Summit
2001 Shamrock Rd
Lee's Summit, MO

Project Number: 02191565

## Material Information

| Mat. No. | Reference Number | Classification and Description | Laboratory Test Method | Lab Test Data: Reference Density (pcf) | Project Requirements: Min. Thickness (in) | Min. Comp. (%) | Max. Comp. (%) |
|---|---|---|---|---|---|---|---|
| 1 | | Surface estimate | | 150.0 | | | |

## Field Test Data

| Test No. | Test Location | Pave. Lift | Mat. No. | Nuclear Density (pcf) | Core Data: Core Length (in) | Core Density (pcf) | Correction Factor (pcf) | Corrected Density (pcf) | Comp. (%) |
|---|---|---|---|---|---|---|---|---|---|
| | **Parking/drive areas** | | | | | | | | |
| 1 | See sketch | SURF | 1 | 143.8 | | | | | 96 |
| 2 | | SURF | 1 | 143.7 | | | | | 96 |
| 3 | | SURF | 1 | 143.6 | | | | | 96 |
| 4 | | SURF | 1 | 147.5 | | | | | 98 |
| 5 | | SURF | 1 | 144.8 | | | | | 97 |
| 6 | | SURF | 1 | 147.9 | | | | | 99 |
| 7 | | SURF | 1 | 144.0 | | | | | 96 |
| 8 | | SURF | 1 | 144.4 | | | | | 96 |
| 9 | | SURF | 1 | 144.1 | | | | | 96 |

**Datum:** **Std. Cnt. M:** **Std. Cnt. D:**
**S/N:** 39642 **Make:** TROXLER **Model:** 3430 **Last Cal. Date:** 10/22/2019
**Comments:** Diagram to be attached, and report revised and resent

**Services:**
**Terracon Rep.:** Kevin L. McCurdy
**Reported To:** Norm Hellings (Axiom Northwest Construction)
**Contractor:** Axiom Northwest Construction
**Report Distribution:**
(1) Axiom Northwest Construction, Inc., norm@axiomnw.com
(1) Axiom Northwest Construction, Inc., tiffani@axiomnw.com

**Test Methods:** ASTM D2950

# ASPHALT LABORATORY TEST REPORT

**Report Number:** 02191565.0074A
**Service Date:** 09/26/20
**Report Date:** 11/08/20

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## Client

Axiom Northwest Construction, Inc.
Attn: Norm Hellings
2232 Broadway
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Everett, WA 98201

## Project

DCI - Lee's Summit
2001 Shamrock Rd
Lee's Summit, MO

Project Number: 02191565

**Mix Design:** APWA Type 1-01 RC

**Mix Source:** Hot Mix Materials, Inc.

**Sample Location:** Not Provided

**Proposed Use:** Pavement – Base

**Testing Performed:** Extraction by NCAT, Gradation, Marshall Properties

**Source of Specifications:** APWA Specifications

**Summary:**
Terracon's laboratory completed the requested scope of testing for the above-referenced sample. A report of these test results is attached. The results of our laboratory testing services meet the above-referenced specifications.

**Comments:**
Approved submittal was not provided, and the material tested was not compared to the JMF values for gradation, or permissible variation of AC content from the approved submittal. The #16 sieve did not meet the APWA Specifications for a Type 1-01

**Services:**

**Terracon Rep.:** Aaron Parker, P.E.
**Reported To:** N/A
**Contractor:** Axiom Northwest Construction
**Report Distribution:**
(1) Axiom Northwest Construction, Inc., norm@axiomnw.com
(1) Axiom Northwest Construction, Inc., tiffani@axiomnw.com

**Reviewed By:**

Feras El Ghussein
Project Manager

# HMAC LAB PROPERTY TEST REPORT

**Report Number:** 02191565.0074A
**Service Date:** 09/26/20
**Report Date:** 11/08/20
**Task:**

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## Client

Axiom Northwest Construction, Inc.
Attn: Norm Hellings
2232 Broadway
Suite 101
Everett, WA 98201

## Project

DCI - Lee's Summit
2001 Shamrock Rd
Lee's Summit, MO

Project No. 02191565

## SAMPLE INFORMATION

| | | | |
|---|---|---|---|
| Sample Date | 9/26/2020 | Sample Location | |
| Sampled By | Jon Shipley | Placement Lift | Base |
| Ticket No. | 39786 | Supplier | Hot Mix Materials, Inc. |
| Truck No | 18 | Mix Design No. | Type 1-01 RC |
| Coarse Agg. Size, inch | 1" | Batch Plant Location | 1 |
| Quantity Placed,tons | 367.09 | Paving Contractor | Thorne & Sons |

## SAMPLE TEST RESULTS

Physical Properties of Bituminous Mixture

| Description of Tests | Result | Specifications Min | Specifications Max | Pass/Fail |
|---|---|---|---|---|
| Asphalt Content,wt of mix % | 4.56 | 4 | 6 | Pass |
| Marshall Bulk Density, pcf | 149.8 | | | |
| Marshall Bulk Specific Gravity | 2.407 | | | |
| Marshall Stability, pounds | nt | | | |
| Marshall Flow, 0.01 inch | nt | | | |
| Theoretical Maximum Specific Gravity | nt | | | |
| Theoretical Maximum Density, pcf | nt | | | |
| Marshall Air Voids, % | nt | | | |
| Marshall VMA, % | nt | | | |
| Marshall VFA, % | nt | | | |
| Dust / Eff. Asphalt Cement Ratio | nt | | | |

Sieve Analysis

| Sieve Size | Percent Passing | Specifications Min | Specifications Max | Pass/Fail |
|---|---|---|---|---|
| 2" | | | | |
| 1.5" | 100 | | | |
| 1" | 97 | 75 | 100 | Pass |
| 3/4" | 85 | 60 | 85 | Pass |
| 1/2" | 63 | | | |
| 3/8" | 57 | 40 | 65 | Pass |
| #4 | 45 | 30 | 50 | Pass |
| #8 | 36 | 19 | 36 | Pass |
| #16 | 30 | 13 | 26 | **Fail** |
| #30 | 23 | | | |
| #50 | 13 | | | |
| #100 | 8 | 4 | 12 | Pass |
| #200 | 6.5 | 2 | 10 | Pass |

Comments:

Test Methods: ASTM D6926, ASTM D6927, ASTM D6307, ASTM D5444, ASTM D2041
Note: "nt" denotes value not determined on this sample.

**Services:**
**Terracon Rep:** Aaron Parker, P.E.
**Reported To:** N/A
**Contractor:** Axiom Northwest Construction

**Report Distribution**

(1) Axiom Northwest Construction, Inc.,

(1) Axiom Northwest Construction, Inc., nc

**Reviewed by:**
Feras El-Ghussein
Project Manager