

Mr. Joseph Morgan, AIA
KMF Architects
839 N. Magnolia Avenue
Orlando, FL 32803

RE: Report of Nuclear Roof Moisture Survey
Orlando Public Library
Roof Sections 4-11
101 E. Central Boulevard
Orlando, FL 32801

Dear Mr. Morgan:

In general accordance with your request and your authorization of our proposal (Number 273623R0 dated June 15, 2022 and authorized August 9, 2022), Intertek is pleased to submit the following roof nuclear moisture survey report for the above-referenced property. Included in this report is an outline of the project information, performed scope of services, results and conclusions.

PROJECT UNDERSTANDING

The project site consists of the Orlando Public Library building located at the above referenced address. Intertek was requested to perform a nuclear roof moisture scan of the roof sections in order to investigate potentially moisture impacted areas within the roof system. The survey included eleven separate roof sections. This report specifically pertains to Roof Sections 4-11. Please refer to the appended annotated aerial map for roof designations. Roof Section 1 is provided under a separate report cover; and Roof Sections 2-3 are provided under a separate report cover also.

The roof system at Roof Sections 4-11 is comprised of low slope built-up roof system with a modified bitumen membrane. The roof system components are as follows (as viewed from the deck up): lightweight insulating concrete (with EPS foam), two modified bitumen inner plies, polyisocyanurate insulation, Securock cover board, and two modified bitumen inner plies with a granule surfaced cap sheet membrane. Please refer to the results table of each roof size scanned.

SCOPE OF SERVICES

On August 31, 2022 and September 1, 2022, Intertek performed a nuclear moisture roof survey of the referenced roof sections. The survey was performed in general accordance with TAS 126-95. This protocol covers the procedures for non-destructive testing for the presence of moisture in a roof system assembly. Roof Sections 4, 5, 6A, 7/8, 9 and 11 were performed on a 3x3 foot grid pattern. Roof Section 6 was performed on a 5x5 foot grid pattern, and Roof Section 10 was performed on a 10x10 foot grid pattern. Three roof core samples were extracted from each roof section and patched by others, for visual observations and gravimetric analysis.

Weather conditions at the time of the scan were partially cloudy with a temperature range of 86-93 °F and average wind speeds up to 10 mph.

^[1] Intertek is a brand name representing the Intertek Group plc legal entities, including but not limited to, Intertek Testing Services NA Inc., Professional Service Industries, Inc. ("INTERTEK-Intertek"), Architectural Testing Inc. ("INTERTEK-ATI"), and MT Group Inc. ("INTERTEK-MT").





METHODOLOGY

Nuclear Roof Moisture Survey

Intertek utilized a Troxler Model 3216 nuclear scanner to survey the roof assemblies. The roof sections were surveyed on either a 3x3, 5x5 or 10x10-foot patterns. The nuclear scanning meter emits neutrons from a radiation source within the scanning meter downward into the roof system assembly. Neutrons which encounter hydrogen atoms are slowed down; a portion of which “bounce back” to be counted by a detector within the scanning meter. Since water contains a significant amount of hydrogen atoms, areas of moisture within the roofing plies and/or insulation record higher levels of slowed neutrons. Gauge readings are inherently unitless and are resultant of a statistical function performed by the gauge based on emitted and measured reflected radiation and known properties of the element hydrogen.

Areas of isolated obstructions due to permanent mechanical appurtenances and drainage structures were not directly scanned; however, the immediately adjacent roof area was scanned, where applicable. Moisture readings were not obtained on roof top equipment, roof areas very close to wall edges and near equipment penetrations; scanning these areas can produce elevated readings compared to the typical roof readings due to hydrogen present within the additional layers of asphaltic materials or due to metallic flashing materials at walls and penetrations. However, the immediate adjacent areas were scanned, where applicable.

In order to calibrate unitless gauge readings to actual moisture content, core samples were obtained as part of the survey. A total of 24 investigative core samples (three at each of the roof sections) were obtained during the performance of the moisture survey. The core locations were spread out throughout the roof. Core locations were selected after the nuke reading histogram was formed on the basis of moisture scan results, generally corresponding to areas of relatively low, mid and high readings as interpreted in the field. Coring of the roof system was performed and patched by others during the site visit.

Gravimetric Laboratory Analysis of Roof Samples

Laboratory testing was performed on 20 of the 24 test core samples obtained in the field from the noted roof sections. The gravimetric analysis for the three roof core samples at Roof Section 4 were inconclusive, and the mid-reading core of Roof Section 5 was inconclusive. It should be noted that both of these roof sections during coring were observed to be relatively dry. Core samples were weighed, oven dried, then reweighed to determine the approximate percentage of moisture by dry weight. The standard formula used to determine the percentage of moisture by dry weight is as follows:

$$\% \text{ Moisture by Dry Weight} = \frac{\text{Weight}_{(wet)} - \text{Weight}_{(dry)}}{\text{Weight}_{(dry)}} \times 100\%$$

All samples were stored in individual, labeled and sealed plastic zipper storage bags immediately after extraction from the roof assembly. Once gathered, the field samples were transported to the Intertek laboratory and weighed to establish their wet weight. Samples were then chamber dried for a minimum of 24 hours. Each specimen was cooled to room temperature and its weight measured. The process was repeated, and this weight was recorded as the specimen’s dry weight.

At the conclusion of the moisture survey and laboratory analysis of core samples obtained, the moisture content value for the roof’s membrane, cover board, insulation board and LWIS/EPS were obtained. Generally, the results of the insulation and cover boards of each core sample was plotted on a linear graph versus the corresponding moisture scan reading. A best-fit linear regression curve and corresponding best-fit line slope equation were developed. It should be noted that a regression curve for Roof Sections 4, 5 and 9 were not



developed due to lack of or inconclusive results from the gravimetric analysis. The line slope equation describes average moisture percentage by dry weight as a function of the moisture scan readings. This function was compared to the histogram of gauge readings and statistical analysis as well as the visual survey of the cores in the field.

SURVEY RESULTS

Nuclear Roof Moisture Survey

Based on the data obtained in the field, a normal distribution curve of the sampled readings was formed. Please refer to the attached documents for results. The mean and standard deviation of the sample set were calculated. As stated in TAS 126-95, Section 13.5.2: Statistically, 99.7% of the measurement counts for the dry areas of the roof will fall between one to three standard deviation limits with the different varying levels of moisture. This is further calibrated via the gravimetric analysis and roof core sample analysis performed.

The following observations were made during coring of the roof system:

Core Location / Nuke Reading	Core Thickness	Observation
Roof Section 4 J7/ 5	9"	Roof components relatively dry
Roof Section 4 B2 / 7	9.75"	Roof components relatively dry
Roof Section 4 G4/ 10	5.75"	Roof components relatively dry
Roof Section 5 E11/ 5	10"	Roof components relatively dry
Roof Section 5 E2/ 7	10.5"	Roof components relatively dry
Roof Section 5 D6/ 11	6"	Roof components relatively dry
Roof Section 6 N3/ 5	13.5"	Roof components relatively dry
Roof Section 6 AE10/ 9	10"	Roof components relatively dry
Roof Section 6 C10/ 21	9"	Moist cover and insulation boards
Roof Section 6A A5/ 6	10.75"	Roof components relatively dry
Roof Section 6A B13/ 8	9.5"	Roof components relatively dry
Roof Section 6A B19 / 10	9.75"	Insulation board facer stained
Roof Section 7/8 G2 / 8	8"	Roof components relatively dry
Roof Section 7/8 H15 / 12	9"	Moist LWIC
Roof Section 7/8 F10/ 16	6.25"	Moist insulation board and LWIC
Roof Section 9 B16 / 13	4"	Roof components relatively dry
Roof Section 9 C6/ 24	3"	Moist EPS foam and LWIC
Roof Section 9 B3 / 30	3.5"	Moist EPS foam and LWIC
Roof Section 10 Q5/ 7	9"	Roof components relatively dry
Roof Section 10 G4 / 13	6.25"	Slightly moist LWIC
Roof Section 10 E3 / 16	7"	Moist insulation board and LWIC
Roof Section 11 B9/ 7	6.75"	Roof components relatively dry
Roof Section 11 J2/ 10	5.5"	Roof components relatively dry – bottom of EPS foam was discolored
Roof Section 11 E7/ 18	2.75"	Mostly dry with slightly humid LWIC with discoloration

It should be noted that the interpretation of the results is based on the combination of the statistical analysis, gravimetric analysis, and field conditions of the cores; and these factors are dependent on one another and



should not be interpreted exclusively. Moisture migration throughout a roof system is possible due to thermal solar loading and live traffic loads on the roof system.

Based on the data obtained, statistical analysis, and visual observations of roof samples and our analysis, the results of the nuclear moisture scan are summarized as follows:

<i>Roof Section</i>	<i>Approximate Scanned Roof Area</i>	<i>Suspect Moisture Roof Area</i>	<i>Wet Area</i>	<i>Total Area of Concern</i>
4	792 SF	0 SF	0 SF	0 SF (0%)
5	756 SF	0 SF	0 SF	0 SF (0%)
6	7,725 SF	525 SF	275 SF	800 SF (10.4%)
6A	378 SF	72 SF	45 SF	117 SF (30.9%)
7/8	1,260 SF	315 SF	180 SF	495 SF (39.3%)
9	522 SF	63 SF	198 SF	261 SF (50%)
10	16,100 SF	1,000 SF	900 SF	1,900 SF (11.8)
11	1,512 SF	12 SF	0 SF	12 SF (0.79%)

A representative roof grid (moisture map) showing the location of moisture gauge readings, and roof cores obtained is presented in the Appendix, along with the histograms depicting the frequency of gauge readings and the linear regression curve with the statistical analysis results. Photographs of the roof sections and cores are also appended to this report.

The Florida Building Code, Chapter 15, Section 1511.1.1, mandates that not more than 25% of a total roof area or roof section of any existing building or structure shall be repaired, replaced or recovered in any 12-month period unless the entire existing roofing system or roof section is replaced to conform to requirements of this code. However, based on a new bill in the Florida Senate (Senate Bill SB 4-D 553.844) if a roof section was built, repaired, or replaced in compliance with the 2007 FBC, any new repair/replace/recover work to that roof can be greater than 25% of the roof section without triggering a full roof section replacement. (Any repair/replacement/recover work done still needs to be compliant with the latest FBC, excluding the 25% rule.)

Any moisture within the roof system has the ability to impact wind uplift performance. Per The FBC 1521.12: “All existing lightweight insulating concrete, gypsum and cementitious wood fiber roof decks shall be tested in accordance with Section 1521.7 to confirm compliance with wind load requirements of Chapter 16 (High-Velocity Hurricane Zones).”

LIMITATIONS

The observations and results presented in this report are time dependent, and conditions may have changed since our site visit. This report speaks only as of the dates of our site visit. Many factors, including solar loading and foot traffic can cause any entrapped moisture to migrate/move throughout the roofing system. Any moisture trapped in between the modified membrane system and the lightweight insulating concrete may eventually find its way to the lower portions of the roof assembly and down to the structural concrete deck where the penetrations for drains are located. This survey should not be interpreted as a code/safety compliance survey or an as-built survey.



Nuclear moisture roof gauge scans generally have depth limitations of around 8-10” which could limit the accuracy of the scans at areas of extra material thickness. It should be noted that most of the cores obtained were within the above listed range.

Intertek was not required to provide intrusive services to investigate or detect the presence of mold or other biological contaminants in or around any structure. Intertek did not provide any services that were designed or intended to prevent or lower the risk of the occurrence or the amplification of the same. Intertek was not required to inspect for mold. Client acknowledges that mold is ubiquitous to the environment with mold amplification occurring when the building materials are impacted by moisture. Client further acknowledges that site conditions are outside of Intertek’s control and that mold amplification will likely occur, or continue to occur, in the presence of moisture. As such, Intertek cannot and shall not be held responsible for the occurrence or recurrence of mold amplification.

CLOSURE

Intertek appreciates that opportunity to have been of service to you. If you have any questions regarding this report, or if we may be of further service, please feel free to contact this office at your convenience.

Respectfully submitted,
Intertek

A handwritten signature in blue ink, appearing to read 'Milan Nikolic'.

Milan Nikolic
Senior Project Manager
Building Science Solutions

A handwritten signature in blue ink, appearing to read 'Craig Williams, R.R.C.'.

Craig Williams, R.R.C.
Principal Consultant
Building Science Solutions

Appendixes:

- Representative Photographs
- Moisture Survey Results - Sketches and Figures
- Gravimetric Analysis Results
- Overall Annotated Roof Aerial Map



Photo 1: Roof Section 4 – Core Location J7.



Photo 2: Roof Section 4 – Core Location J7.



Photo 3: Roof Section 4 – Core Location B2.



Photo 4: Roof Section 4 – Core Location B2.



Photo 5: Roof Section 4 – Core Location G4.



Photo 6: Roof Section 5 – Core Location E11.



Photo 7: Roof Section 5 – Core Location E11.



Photo 8: Roof Section 5 – Core Location E2.



Photo 9: Roof Section 5 – Core Location E2.



Photo 10: Roof Section 5 – Core Location D6.



Photo 11: Roof Section 5 – Core Location D6.



Photo 12: Roof Section 6 – Core Location N3.



Photo 13: Roof Section 6 – Core Location N3.



Photo 14: Roof Section 6 – Core Location AE10.



Photo 15: Roof Section 6 – Core Location AE10.



Photo 16: Roof Section 6 – Core Location AE10.



Photo 17: Roof Section 6 – Core Location C10. Red coloring on litmus paper indicative of the presence of moisture.



Photo 18: Roof Section 6 – Core Location C10. Red coloring on litmus paper indicative of the presence of moisture.



Photo 19: Roof Section 6 – Core Location C10.



Photo 20: Roof Section 6 – Core Location C10.



Photo 21: Roof Section 6A – Core Location A5.



Photo 22: Roof Section 6A – Core Location A5.



Photo 23: Roof Section 6A – Core Location A5.



Photo 24: Roof Section 6A – Core Location B13.



Photo 25: Roof Section 6A – Core Location B13.



Photo 26: Roof Section 6A – Core Location B13.



Photo 27: Roof Section 6A – Core Location B13.



Photo 28: Roof Section 6A – Core Location B19.



Photo 29: Roof Section 6A – Core Location B19.



Photo 30: Roof Section 6A – Core Location B19.



Photo 31: Roof Section 7/8 – Core Location G2.



Photo 32: Roof Section 7/8 – Core Location G2.



Photo 33: Roof Section 7/8 – Core Location G2.



Photo 34: Roof Section 7/8 – Core Location H15.



Photo 35: Roof Section 7/8 – Core Location H15.



Photo 36: Roof Section 7/8 – Core Location H15.



Photo 37: Roof Section 7/8 – Core Location H15.



Photo 38: Roof Section 7/8 – Core Location F10.



Photo 39: Roof Section 7/8 – Core Location F10.



Photo 40: Roof Section 7/8 – Core Location F10.



Photo 41: Roof Section 7/8 – Core Location F10.



Photo 42: Roof Section 9 – Core Location B16.



Photo 43: Roof Section 9 – Core Location B16.



Photo 44: Roof Section 9 – Core Location B16.



Photo 45: Roof Section 9 – Core Location C6.



Photo 46: Roof Section 9 – Core Location C6.



Photo 47: Roof Section 9 – Core Location C6.



Photo 48: Roof Section 9 – Core Location B3.



Photo 49: Roof Section 9 – Core Location B3.



Photo 50: Roof Section 9 – Core Location B3.



Photo 51: Roof Section 10 – Core Location Q5.



Photo 52: Roof Section 10 – Core Location Q5.



Photo 53: Roof Section 10 – Core Location Q5.



Photo 54: Roof Section 10 – Core Location G4.



Photo 55: Roof Section 10 – Core Location G4.



Photo 56: Roof Section 10 – Core Location G4.



Photo 57: Roof Section 10 – Core Location G4.



Photo 58: Roof Section 10 – Core Location E3.



Photo 59: Roof Section 10 – Core Location E3. Red coloring on litmus paper indicative of the presence of moisture.



Photo 60: Roof Section 10 – Core Location E3. Red coloring on litmus paper indicative of the presence of moisture.



Photo 61: Roof Section 10 – Core Location E3.



Photo 62: Roof Section 11 – Core Location B9.



Photo 63: Roof Section 11 – Core Location B9.



Photo 64: Roof Section 11 – Core Location B9.



Photo 65: Roof Section 11 – Core Location J2.



Photo 66: Roof Section 11 – Core Location J2.



Photo 67: Roof Section 11 – Core Location J2.



Photo 68: Roof Section 11 – Core Location E7.



Photo 69: Roof Section 11 – Core Location E7.



Photo 70: Roof Section 11 – Core Location E7.

MOISTURE SCAN RESULTS

Location: Orlando Public Library
 Address: 101 E. Central Blvd., Orlando FL
 Date of Scan: 8/30/2022
 Field Consultant(s): Milan Nikolic, Jason Salle

Roof Type: Low-slope modified bitumen BUR
 Grid Type: 3-ft x 3-ft
 Gauge Type: Troxler 3216
 Roof Section: 4

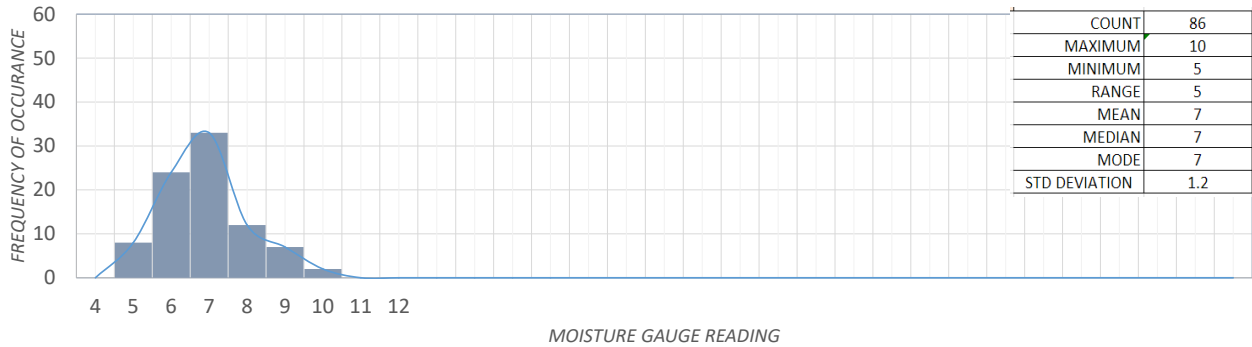
	1	2	3	4	5	6	7	8
A	7	7	7	7	8	8	5	6
B	7	7	6	7	7	6	6	5
C	6	7	6	6	8	6	7	6
D	6	6	9	9	8	7	6	7
E	7	7	9	7	10	9	8	6
F	7	6	8			8	7	6
G	5	5	9	10	9	8	8	6
H	7	5	8	8	7	9	8	7
I	7	5	6	7	7	6	7	6
J	7	7	6	6	6	5	5	5
K	7	7	6	7	7	6	7	7



KEY:	
	Not Scanned (Due to penthouse/material/drain/mechanical/etc.)
#	Core Location
	Suspect Wet Reading
	Dry Reading
	Wet Reading

NUMBERS SHOWN REPRESENT GAUGE READINGS. INTERPRETATION OF MOISTURE CONTENT BASED ON STATISTICAL ANALYSIS AND OF GRAVIMETRIC ANALYSIS AND GAUGE READINGS.

FIGURE 1
 MOISTURE READINGS HISTOGRAM
 Roof Section 4



MOISTURE SCAN RESULTS

Location: Orlando Public Library
 Address: 101 E. Central Blvd., Orlando FL
 Date of Scan: 8/30/2022
 Field Consultant(s): Milan Nikolic, Jason Salle

Roof Type: Low-slope modified bitumen BUR
 Grid Type: 3-ft x 3-ft
 Gauge Type: Troxler 3216
 Roof Section: 5

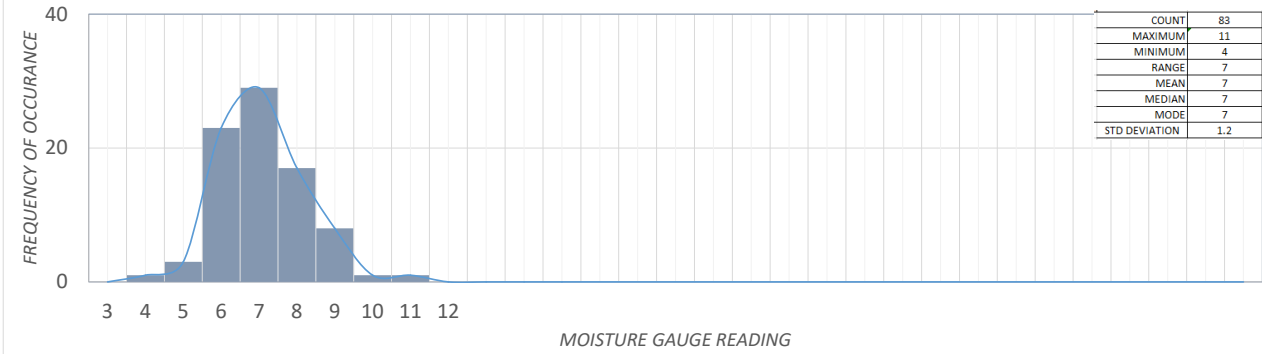
	1	2	3	4	5	6	7	8	9	10	11	12
A	10	7	6	6	8	6	8	7	8	7	8	9
B	5	6	6	6	7	6	7	8	8	6	7	7
C	7	6	6	7	6	9	9	7	6	7	7	8
D	6	6	5	6	8	11	7	6	7	7	7	7
E	9	7	4	7	7	7	9	9	8	6	5	6
F	6	8	7	6	7	6	8	7	7	6	7	7
G	9	8	9	8	8	7	7	6	7	8	8	8



KEY:	
	Not Scanned (Due to penthouse/material/drain/mechanical/etc.)
	# Core Location
	Suspect Wet Reading
	Dry Reading
	Wet Reading

NUMBERS SHOWN REPRESENT GAUGE READINGS. INTERPRETATION OF MOISTURE CONTENT BASED ON STATISTICAL ANALYSIS AND OF GRAVIMETRIC ANALYSIS AND GAUGE READINGS.

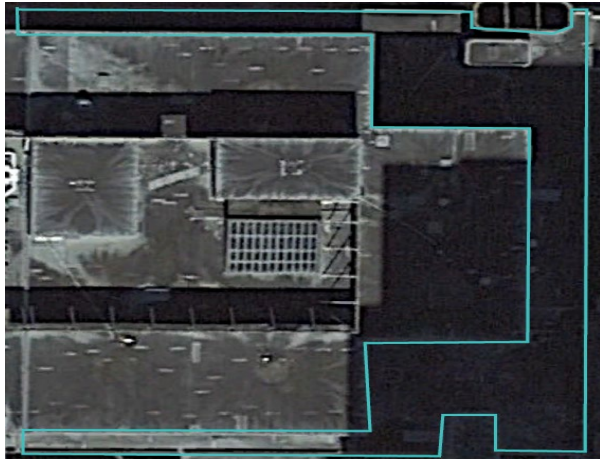
FIGURE 1
 MOISTURE READINGS HISTOGRAM
 Roof Section 5



MOISTURE SCAN RESULTS

Location: Orlando Public Library Roof Type: Low-slope modified bitumen BUR
 Address: 101 E. Central Blvd., Orlando FL Grid Type: 5-ft x 5-ft
 Date of Scan: 8/30/2022 Gauge Type: Troxler 3216
 Field Consultant(s): Shawn Wallace, Jason Salle Roof Section: 6

	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	
A	6	7	8	8	7	9	8	8	9	7	7	9	7	7	9	8	10	7	16	11	18								8
B	5	7	7	8	8	7	7	7	8	7	7	8	10	9	6	7	8	16	22	22	25	17	9	9	10	12	11	13	
C																		17	24	18	20								8
D																		6	19	26	21	21	13	7	8	7	5	7	6
E																		7	15	24	27	21	7	7	8	8	7	6	
F																		7	24	29	23	18	7	8	9	7	6	6	
G																		6	8	21	24	24	16	8	8	9	9	8	
H																		8	7	8	9	11	8	7	9	9	10	11	7
I																													7
J																													8
K																													8
L																													5
M																													5
N																													6
O																													6
P																													7
Q																													7
R																													7
S																													6
T																													5
U																													7
V																													5
W																													7
X																													6
Y																													8
Z																													8
AA																													10
AB																													6
AC																													7
AD																													13
AE																													13
AF																													19



KEY:

Not Scanned (Due to penthouse/material/drain/mechanical/etc.)
Core Locat
Wet Reading
Suspect Wet Reading
Dry Reading

NUMBERS SHOWN REPRESENT GAUGE READINGS. INTERPRETATION OF MOISTURE CONTENT BASED ON STATISTICAL ANALYSIS AND OF GRAVIMETRIC ANALYSIS AND GAUGE READINGS.

FIGURE 1
MOISTURE READINGS HISTOGRAM
Roof Section 6

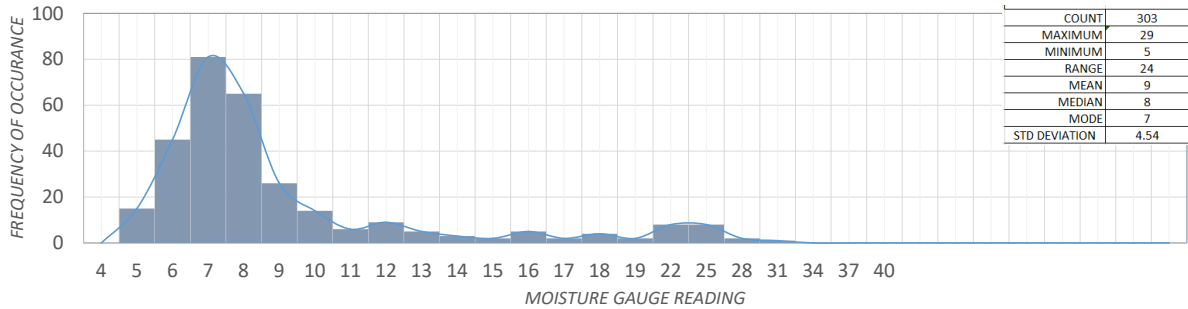
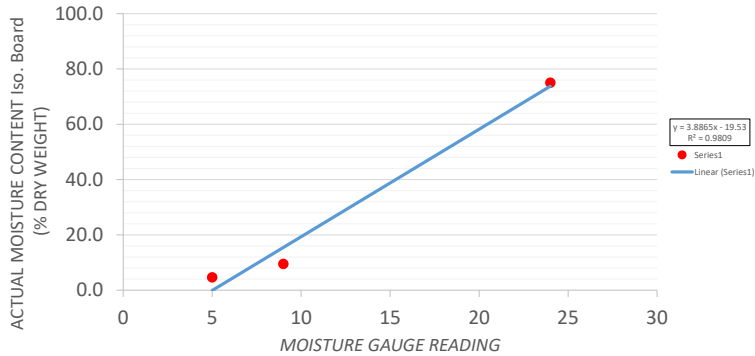


FIGURE 2
ACTUAL MOISTURE CONTENT VS. MOISTURE GAUGE READING
LINEAR REGRESSION CURVE
Roof Section 6



MOISTURE SCAN RESULTS

Location: Orlando Public Library Roof Type: Low-slope modified bitumen BUR
 Address: 101 E. Central Blvd., Orlando FL Grid Type: 3-ft x 3-ft
 Date of Scan: 8/31/2022 Gauge Type: Troxler 3216
 Field Consultant(s): Shawn Wallace, Jason Salle Roof Section 6A

	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
A	9	10	7	7	7	6	8	8	8	9	7	7	7	7	8	8	6	6	7	6	7
B	10	9	10	10	8	8	9	8	9	10	7	9	9	9	7	8	6	6	6	6	6



KEY:

- Not Scanned (Due to penthouse/material/drain/mechanical/etc.)
- # Core Location
- Suspect Wet Reading
- Dry Reading
- Wet Reading

NUMBERS SHOWN REPRESENT GAUGE READINGS. INTERPRETATION OF MOISTURE CONTENT BASED ON STATISTICAL ANALYSIS AND OF GRAVIMETRIC ANALYSIS AND GAUGE READINGS.

FIGURE 1
 MOISTURE READINGS HISTOGRAM
 Roof Section 6A

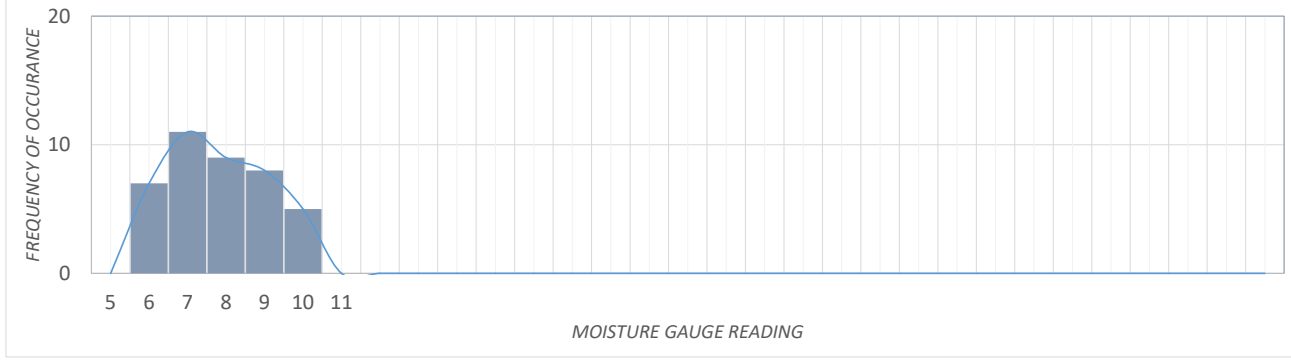
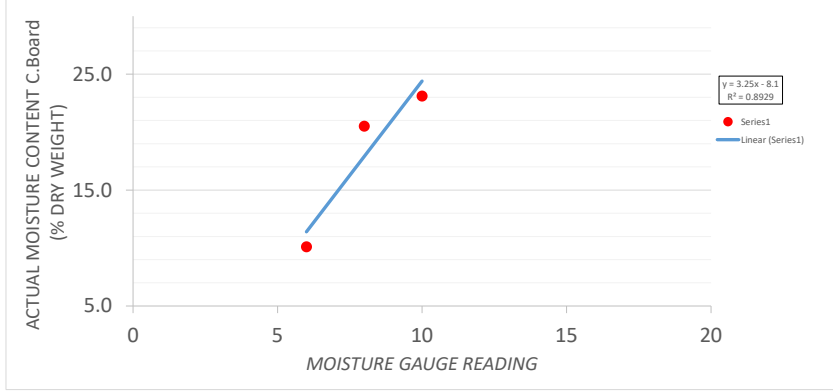


FIGURE 2
 ACTUAL MOISTURE CONTENT VS. MOISTURE GAUGE READING
 LINEAR REGRESSION CURVE
 Roof Section 6A

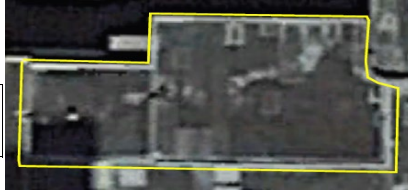


MOISTURE SCAN RESULTS

Location: Orlando Public Library
 Address: 101 E. Central Blvd., Orlando FL
 Date of Scan: 8/31/2022
 Field Consultant(s): Shawn Wallace, Jason Salle

Roof Type: Low-slope modified bitumen BUR
 Grid Type: 3-ft x 3-ft
 Gauge Type: Troxler 3216
 Roof Section 7&8 (one)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
A							10	9	9	11	9	10	9	9	12	11	10	
B							9	14	14	14	9	12	11	12	12	10	12	
C							10	14	13	11	10	10	11	14	13	10	10	
D	8	9	8	9	9	11	15	15	13	14	12	12	8	10	12	8	10	
E	9	10	10	10	11	12	11	12	14	11	12	9	11	12	9	9	9	
F	9	8	9	8	11	11	20	12	13	16	14	12	11	14	14	11	9	10
G	9	8	8	8	9	11	12	10	11	15	11	12	13	14	15	10	12	8
H	10	9	9	8	8	9	10	12	12	12	14	13	11	12	12	7	8	8
I	9	10	11	11	9	9	14	9	13	12	14	12	12	12	13	12	8	10



KEY:

- Not Scanned (Due to penthouse/material/drain/mechanical/etc.)
- Core Location
- Suspect Wet Reading
- Dry Reading
- Wet Reading

NUMBERS SHOWN REPRESENT GAUGE READINGS. INTERPRETATION OF MOISTURE CONTENT BASED ON STATISTICAL ANALYSIS AND OF GRAVIMETRIC ANALYSIS AND GAUGE READINGS.

FIGURE 1
 MOISTURE READINGS HISTOGRAM
 Roof Section 7/8

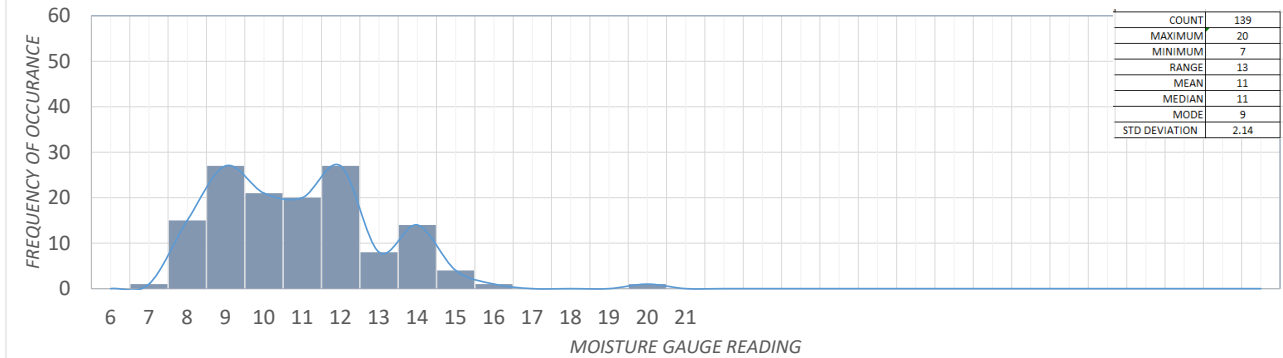
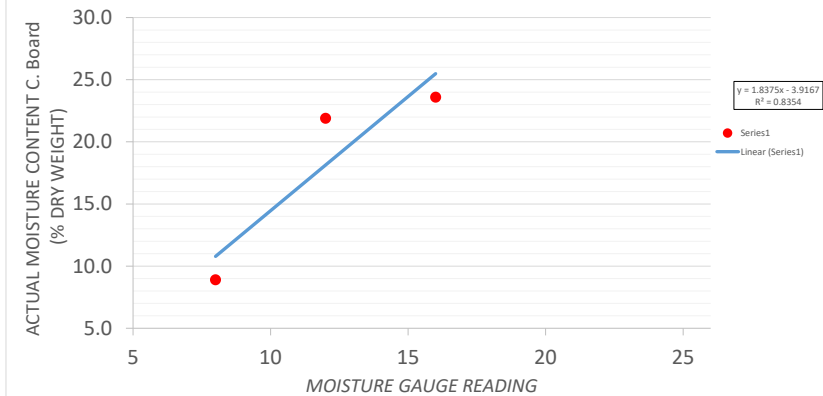


FIGURE 2
 ACTUAL MOISTURE CONTENT VS. MOISTURE GAUGE READING
 LINEAR REGRESSION CURVE
 Roof Section 7-8



MOISTURE SCAN RESULTS

Location: Orlando Public Library Roof Type: Low-slope modified bitumen BUR
 Address: 101 E. Central Blvd., Orlando FL Grid Type: 3-ft x 3-ft
 Date of Scan: 8/30/2022 Gauge Type: Troxler 3216
 Field Consultant(s): Shawn Wallace, Jason Salle Roof Section: 9

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
A	27	29	27	23	29	17	17	18	16	18	14	20	19	19	18	14	14	16	17	17	14
B	28	28	30	26	26	20	29	28	26	16	20	15	18	13	16	17	18	15			
C	24	22	23	29	29	24	19	16	17	22											
D	25	25	27	25	26	26															

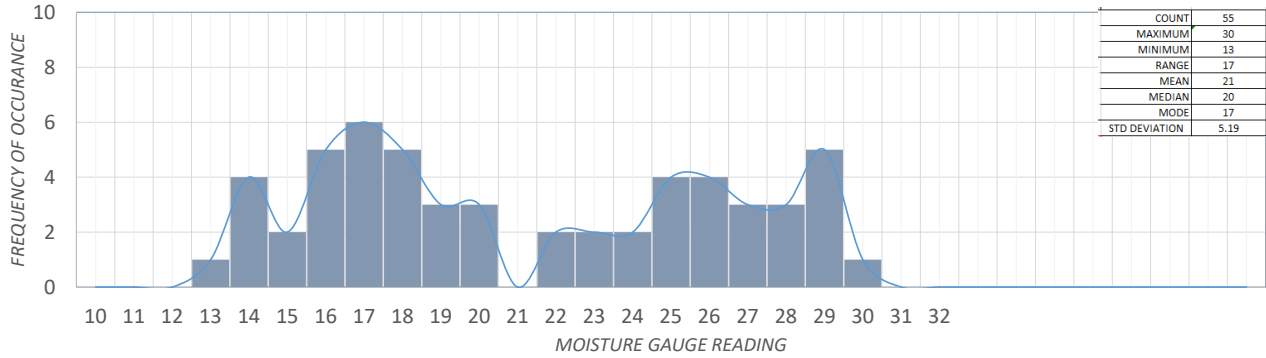


KEY:

[Grey Box]	Not Scanned (Due to penthouse/material/drain/mechanical/etc.)
[Red #]	Core Location
[Light Blue Box]	Suspect Wet Reading
[White Box]	Dry Reading
[Dark Blue Box]	Wet Reading

NUMBERS SHOWN REPRESENT GAUGE READINGS. INTERPRETATION OF MOISTURE CONTENT BASED ON STATISTICAL ANALYSIS AND OF GRAVIMETRIC ANALYSIS AND GAUGE READINGS.

FIGURE 1
 MOISTURE READINGS HISTOGRAM
 Roof Section 9



MOISTURE SCAN RESULTS

Location: Orlando Public Library
 Address: 101 E. Central Blvd., Orlando FL
 Date of Scan: 9/1/2022
 Field Consultant(s): Shawn Wallace, Jason Salle

Roof Type: Low-slope modified bitumen BUR
 Grid Type: 10-ft x 10-ft
 Gauge Type: Troxler 3216
 Roof Sector: 10

	1	2	3	4	5	6	7	8	9	10	11
A									9	9	10
B									11	14	9
C									11	11	14
D	9	7	10	10	11	8	14	10	10	9	9
E	11	12	16	10	10	14	12	15	10	6	
F	13	14	12	8	11	11	13	12	11	10	9
G	15	11	12	13	19	12	14	16	10		
H	16	9	10	10	16	9	19	14	9		
I	10	10			13	9	13	11	13	10	
J	12	22						8	11	8	8
K	9	28						13	13	11	
L	9	16						9	10	10	9
M	10	12	8	8	9	9	8	8	7	10	8
N	9	12	12	10	5	10	11	13	9	11	7
O	9	12	9	12	7	10	16	8	10	8	8
P	9	10	9	9	8	10	12	12	11	6	7
Q	10	9	10	11	7	11	8	7	9	9	10
R	10	12	8	9	10	9		7	6	8	
S	12	10	8	9	8	7		6	7	9	



KEY:

- Not Scanned (Due to penthouse/material/drain/mechanical/etc.)
- Core Location
- Suspect Wet Reading
- Dry Reading
- Wet Reading

NUMBERS SHOWN REPRESENT GAUGE READINGS. INTERPRETATION OF MOISTURE CONTENT BASED ON STATISTICAL ANALYSIS AND OF GRAVIMETRIC ANALYSIS AND GAUGE READINGS.

FIGURE 2
 MOISTURE READINGS HISTOGRAM
 Roof Section 10

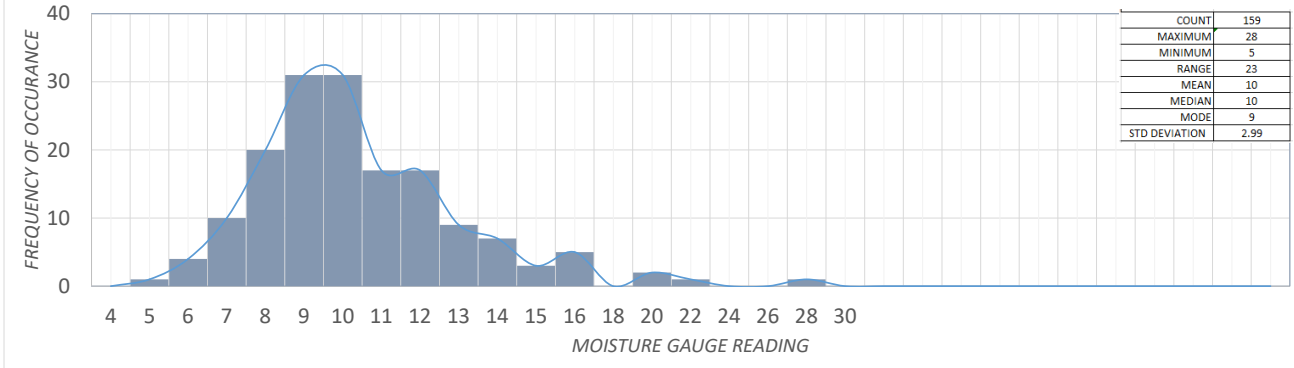
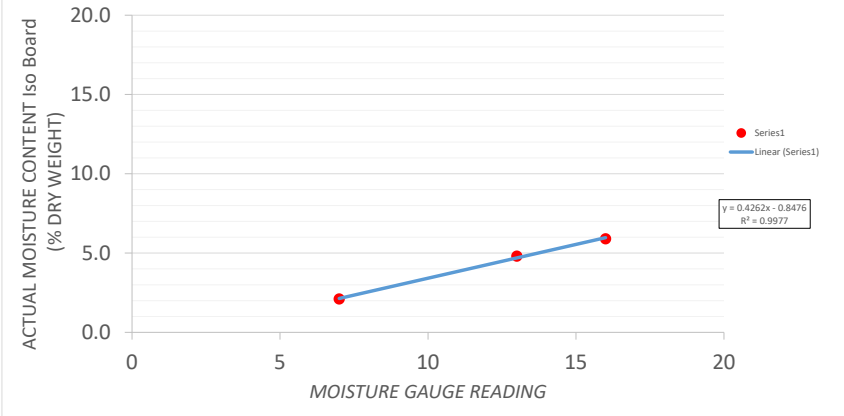


FIGURE 1
 ACTUAL MOISTURE CONTENT VS. MOISTURE GAUGE READING
 LINEAR REGRESSION CURVE
 Roof Section 10

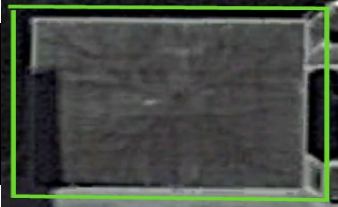


MOISTURE SCAN RESULTS

Location: Orlando Public Library
 Address: 101 E. Central Blvd., Orlando FL
 Date of Scan: 9/1/2022
 Field Consultant(s): Shawn Wallace, Diedrick Jordaan

Roof Type: Low-slope modified bitumen BUR
 Grid Type: 3-ft x 3-ft
 Gauge Type: Troxler 3216
 Roof Section: 11

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
A	9	10	9	8	9	8	8	7	7	7	7	8	8	8
B	8	8	10	10	9	9	9	7	8	9	8	9	8	8
C	9	9	11	10	11	14	11	10	10	10	10	10	8	8
D	7	9	12	9	11	11	10	12	11	10	11	10	9	9
E	8	8	11	9	14	21	18	18	21	12	10	11	9	9
F	8	8	9	10	13	21	19	11	10	9	8	8	8	8
G	7	9	10	9	15	20	17	18	18	10	9	9	8	9
H	7	8	10	10	12	12	12	13	12	12	11	10	9	8
I	9	7	11	10	11	9	9	10	10	10	11	9	8	8
J	8	10	9	8	9	8	8	9	9	10	9	10	9	9
K	8	8	9	8	9	8	8	10	9	9	9	8	9	9
L	10	8	8	7	7	8	9	10	8	9	9	11	11	12



KEY:

Not Scanned (Due to penthouse/material/drain/mechanical/etc.)
Core Location
Suspect Wet Reading
Dry Reading
Wet Reading

NUMBERS SHOWN REPRESENT GAUGE READINGS. INTERPRETATION OF MOISTURE CONTENT BASED ON STATISTICAL ANALYSIS AND OF GRAVIMETRIC ANALYSIS AND GAUGE READINGS.

FIGURE 1
 MOISTURE READINGS HISTOGRAM
 Roof Section 11

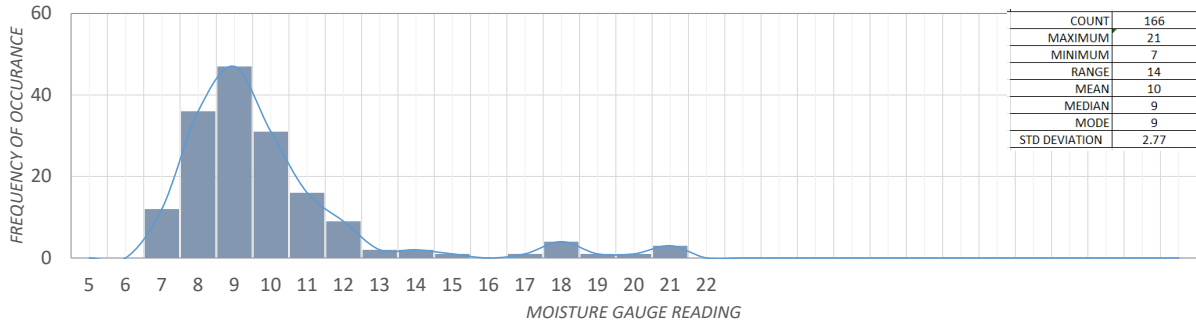
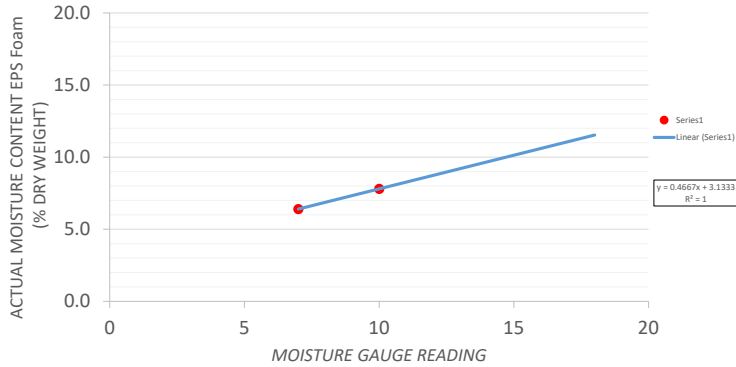


FIGURE 2
 ACTUAL MOISTURE CONTENT VS. MOISTURE GAUGE READING
 LINEAR REGRESSION CURVE
 Roof Section 11



ROOF CORE GRAVIMETRIC ANALYSIS RESULTS

PSI Laboratory
1748 33rd St, Orlando, FL 32839

PSI Project No. _____
 Project Name: _____
 Project Manager: MILAN NIKOLIC

TESTED BY P50010082
 DATE TEST _____
 REF # P0891.01

Roof Section 4

SAMPLE CHARACTERISTICS:

Membrane type:	Asphalt: <u> X </u>	Single-ply: _____	Cementitious Board: _____
Insulation type (check all that apply):	Foam board: <u> X </u>	Board: <u> X </u>	LW Concrete: <u> X </u>

Sample Name	Layer Type	Tare Weight (g)	Tare + Sample (g)	Tare + Sample "Dried" (g)	Weight of Original Sample (g)	Weight of Dried Sample (g)	Weight of Moisture (g)	Percent Moisture by Dry Weight (Sample Layer) (g)

no gravimetric analysis results available.

ROOF CORE GRAVIMETRIC ANALYSIS RESULTS

PSI Laboratory
1748 33rd St, Orlando, FL 32839

PSI Project No.	P0891.01	TESTED BY	P50010082
Project Name:	ORLANDO PUBLIC LIBRARY	DATE TEST	9/6/2022
Project Manager:	MILAN NIKOLIC	REF #	P0891.01

Roof Section 5
*incomplete

SAMPLE CHARACTERISTICS:

Membrane type:	Asphalt: <u> X </u>	Single-ply: <u> </u>	Cementitious Board: <u> </u>	LW Concrete: <u> </u>
Insulation type (check all that apply):	Foam board: <u> X </u>	Board: <u> X </u>	LW Concrete: <u> X </u>	

Sample Name	Layer Type	Tare Weight (g)	Tare + Sample (g)	Tare + Sample "Dried" (g)	Weight of Original Sample (g)	Weight of Dried Sample (g)	Weight of Moisture (g)	Percent Moisture by Dry Weight (Sample Layer) (g)
ROOF 5 E11 LOW	EPS FOAM	70.35	84.14	83.07	13.79	12.72	1.07	8.4%
	ASPHALT	75.91	192.04	191.65	116.13	115.74	0.39	0.3%
	LWI CONCRETE	118.64	723.45	610.9	604.81	492.26	112.55	22.9%

ROOF 5 D6 HIGH	LWI CONCRETE	226.56	442.73	391.71	216.17	165.15	51.02	30.9%
	ISO BOARD	193.58	217.33	215.89	23.75	22.31	1.44	6.5%
	C. BOARD	89	159.13	150.7	70.13	61.7	8.43	13.7%
	ASPHALT	212.9	654.29	652.23	441.39	439.33	2.06	0.5%

1748 33rd St, Orlando, FL 32839

PSI Project No. P0891.01
 Project Name: ORLANDO PUBLIC LIBRARY
 Project Manager: MILAN NIKOLIC

TESTED BY P50010082
 DATE TEST 9/6/2022
 REF # P0891.01

Roof Section 6

SAMPLE CHARACTERISTICS:

Membrane type:	Asphalt: <u> X </u>	Single-ply: <u> </u>	
		Cementitious	
Insulation type (check all that apply):	Foam board: <u> X </u>	Board: <u> X </u>	LW Concrete: <u> X </u>

Sample Name	Layer Type	Tare Weight (g)	Tare + Sample (g)	Tare + Sample "Dried" (g)	Weight of Original Sample (g)	Weight of Dried Sample (g)	Weight of Moisture (g)	Percent Moisture by Dry Weight (Sample Layer) (g)
ROOF 6 LOC N3 LOW5	LWI CONCRETE	66.33	114.77	110.97	48.44	44.64	3.8	8.5%
	ISO BOARD	294.19	348.66	346.26	54.47	52.07	2.4	4.6%
	ASPHALT	396.95	607.06	606.48	210.11	209.53	0.58	0.3%
	C. BOARD	67.15	169.16	163.08	102.01	95.93	6.08	6.3%
	EPS FOAM	208.2	218.29	217.87	10.09	9.67	0.42	4.3%

ROOF 6 LOC AE10 MID9	LWI CONCRETE	193.61	401.46	378.81	207.85	185.2	22.65	12.2%
	ISO BOARD	67.62	97.78	95.17	30.16	27.55	2.61	9.5%
	C. BOARD	67.04	229.84	207.36	162.8	140.32	22.48	16.0%
	ASPHALT	393.58	706.33	703.63	312.75	310.05	2.7	0.9%
	EPS FOAM	218.96	248.97	245.63	30.01	26.67	3.34	12.5%

ROOF 6 LOC C10 HIGH24	ASPHALT	181.36	518.26	489.56	336.9	308.2	28.7	9.3%
	C.BOARD	89.33	304.4	206.22	215.07	116.89	98.18	84.0%
	ISO BOARD	201.53	528.29	387.71	326.76	186.18	140.58	75.5%
	EPS FOAM	16.92	17.4	17.26	0.48	0.34	0.14	41.2%
	LWI CONCRETE	204.9	478.25	371.51	273.35	166.61	106.74	64.1%

1748 33rd St, Orlando, FL 32839

PSI Project No. P0891.01
 Project Name: ORLANDO PUBLIC LIBRARY
 Project Manager: MILAN NIKOLIC

TESTED BY: P50010082
 DATE TESTED: 9/6/2022
 REF # P0891.01

Roof Section 6A

SAMPLE CHARACTERISTICS:

Membrane type:	Asphalt: <u> X </u>	Single-ply: <u> </u>	Cementitious <u> </u>
Insulation type (check all that apply):	Foam board: <u> X </u>	Board: <u> X </u>	LW Concrete: <u> X </u>

Sample Name	Layer Type	Tare Weight (g)	Tare + Sample (g)	Tare + Sample "Dried" (g)	Weight of Original Sample (g)	Weight of Dried Sample (g)	Weight of Moisture (g)	Percent Moisture by Dry Weight (Sample Layer) (g)
ROOF 6A LOC AS LOW6	EPS FOAM	200.33	209.09	208.76	8.76	8.43	0.33	3.9%
	ASPHALT	74.17	240.49	239.9	166.32	165.73	0.59	0.4%
	ISO BOARD	186.27	195.96	195.67	9.69	9.4	0.29	3.1%
	C.BOARD	65.72	124.76	119.33	59.04	53.61	5.43	10.1%
	LWI CONCRETE	184.16	352.08	303.71	167.92	119.55	48.37	40.5%

ROOF 6A LOCB-13 MID8	EPS FOAM	180	209.09	208.76	29.09	28.76	0.33	1.1%
	ASPHALT	124.32	315.3	312.76	190.98	188.44	2.54	1.3%
	LWI CONCRETE	200.32	1076.34	763.42	876.02	563.1	312.92	55.6%
	ISO BOARD	67.04	90.45	85.57	23.41	18.53	4.88	26.3%
	C. BOARD	66.78	211.39	186.82	144.61	120.04	24.57	20.5%

ROOF 6A LOC -19 HIGH10	EPS FOAM	99.88	104.84	104.82	4.96	4.94	0.02	0.4%
	ASPHALT	122.24	315.45	309.76	193.21	187.52	5.69	3.0%
	C. BOARD	7.56	131.57	108.26	124.01	100.7	23.31	23.1%
	BOARD	6.492	87.75	82.4	81.258	75.908	5.35	7.0%
	LWI CONCRETE	213.02	692.84	525	479.82	311.98	167.84	53.8%

1748 33rd St, Orlando, FL 32839

PSI Project No. P0891.01
 Project Name: ORLANDO PUBLIC LIBRARY
 Project Manager: MILAN NIKOLIC

TESTED BY P50010082
 DATE TEST 9/6/2022
 REF # P0891.01

Roof Section 7-8

SAMPLE CHARACTERISTICS:

Membrane type:	Asphalt: <u> X </u>	Single-ply: <u> </u>	Cementitious: <u> </u>
Insulation type (check all that apply):	Foam board: <u> X </u>	Board: <u> X </u>	LW Concrete: <u> X </u>

Sample Name	Layer Type	Tare Weight (g)	Tare + Sample (g)	Tare + Sample "Dried" (g)	Weight of Original Sample (g)	Weight of Dried Sample (g)	Weight of Moisture (g)	Percent Moisture by Dry Weight (Sample Layer) (g)
ROOF 7-8 LOC G2 LOW8	LWIC CONCRETE	208.71	861.7	806.87	652.99	598.16	54.83	9.2%
	ASPHALT	76.02	188.09	187.72	112.07	111.7	0.37	0.3%
	EPS FOAM	229.13	268.22	265.64	39.09	36.51	2.58	7.1%
	ISO BOARD	91	105	104.6	14	13.6	0.4	2.9%
	C.BOARD	92	178	170.94	86	78.94	7.06	8.9%

ROOF 7-8 LOC H-15 MID12	ISO BOARD	89.96	106.43	104.6	16.47	14.64	1.83	12.5%
	C.BOARD	89.19	188.88	170.94	99.69	81.75	17.94	21.9%
	ASPHALT	91.62	199.21	197.25	107.59	105.63	1.96	1.9%
	EPS FOAM	68.28	99.76	82.91	31.48	14.63	16.85	115.2%
	LWI CONCRETE	90.42	596.86	403.25	506.44	312.83	193.61	61.9%

ROOF 7-8 LOC F10 HIGH16	ASPHALT	75.74	310.8	273.47	235.06	197.73	37.33	18.9%
	LWI CONCRETE	203.94	807.44	539.41	603.5	335.47	268.03	79.9%
	C.BOARD	147.97	248.37	229.21	100.4	81.24	19.16	23.6%
	ISO BOARD	7.34	82.46	33.84	75.12	26.5	48.62	183.5%
	EPS FOAM	50.17	57.02	52.99	6.85	2.82	4.03	142.9%

1748 33rd St, Orlando, FL 32839

PSI Project No. P0891.01
 Project Name: ORLANDO PUBLIC LIBRARY
 Project Manager: MILAN NIKOLIC

TESTED BY P50010082
 DATE TEST 9/15/2022
 REF # P0891.01

Roof Section 9

SAMPLE CHARACTERISTICS:

Membrane type:	Asphalt: <u> X </u>	Single-ply: <u> </u>	Cementitious: <u> </u>
Insulation type (check all that apply):	Foam board: <u> X </u>	Board: <u> X </u>	LW Concrete: <u> X </u>

Sample Name	Layer Type	Tare Weight (g)	Tare + Sample (g)	Tare + Sample "Dried" (g)	Weight of Original Sample (g)	Weight of Dried Sample (g)	Weight of Moisture (g)	Percent Moisture by Dry Weight (Sample Layer) (g)
ROOF 9	ASPHALT	103.37	255.79	254.96	152.42	151.59	0.83	0.5%
LOC B16	LWI CONCRETE	366.31	974.3	865.12	607.99	498.81	109.18	21.9%
LOW13	EPS FOAM	7.98	21.04	19.8	13.06	11.82	1.24	10.5%

ROOF 9	ASPHALT	668.43	927	921.13	258.57	252.7	5.87	2.3%
LOC C6 MID24	LWI CONCRETE	529.6	1582.52	1293.63	1052.92	764.03	288.89	37.8%

ROOF 9	ASPHALT	529.5	797.47	771.1	267.97	241.6	26.37	10.9%
LOC B3	Iso Board	203.93	1030.29	729.99	826.36	526.06	300.3	57.1%
HIGH30	EPS FOAM	7.4	141.91	27.1	134.51	19.7	114.81	582.8%

1748 33rd St, Orlando, FL 32839

PSI Project No. P0891.01
 Project Name: ORLANDO PUBLIC LIBRARY
 Project Manager: MILAN NIKOLIC

TESTED BY P50010082
 DATE TEST 9/6/2022
 REF # P0891.01

Roof Section 10

SAMPLE CHARACTERISTICS:

Membrane type:	Asphalt: <u> X </u>	Single-ply: <u> </u>
Insulation type (check all that apply):	Foam board: <u> X </u>	Cementitious Board: <u> X </u> LW Concrete: <u> X </u>

Sample Name	Layer Type	Tare Weight (g)	Tare + Sample (g)	Tare + Sample "Dried" (g)	Weight of Original Sample (g)	Weight of Dried Sample (g)	Weight of Moisture (g)	Percent Moisture by Dry Weight (Sample Layer) (g)
ROOF 10 LOC Q5 LOW7	ASPHALT	74.9	261.24	260.86	186.34	185.96	0.38	0.2%
	Iso Board	95.98	185.2	183.35	89.22	87.37	1.85	2.1%
	EPS FOAM	95.24	108.94	107.88	13.7	12.64	1.06	8.4%
	LWI CONCRETE	96.15	184.26	175.26	88.11	79.11	9	11.4%
	C. BOARD	7.39	132.87	121.67	125.48	114.28	11.2	9.8%

ROOF 10 LOC G4 MID13	ASPHALT	523.25	717.12	714.6	193.87	191.35	2.52	1.3%
	LWI CONCRETE	544.24	900.91	771.65	356.67	227.41	129.26	56.8%
	Iso BOARD	148.11	169.51	168.53	21.4	20.42	0.98	4.8%
	C. BOARD	305.29	472.57	457.88	167.28	152.59	14.69	9.6%

ROOF 10 LOC E3 HIGH16	ASPHALT	180.48	633.54	630.54	453.06	450.06	3	0.7%
	Iso Board	88.66	122.7	120.79	34.04	32.13	1.91	5.9%
	C. BOARD	7.33	189.08	161.26	181.75	153.93	27.82	18.1%
	LWI CONCRETE	543.26	2045.08	1331.91	1501.82	788.65	713.17	90.4%

1748 33rd St, Orlando, FL 32839

PSI Project No. P0891.01
 Project Name: ORLANDO PUBLIC LIBRARY
 Project Manager: MILAN NIKOLIC

TESTED BY P50010082
 DATE TEST 9/3/2022
 REF # P0891.01

Roof Section 11

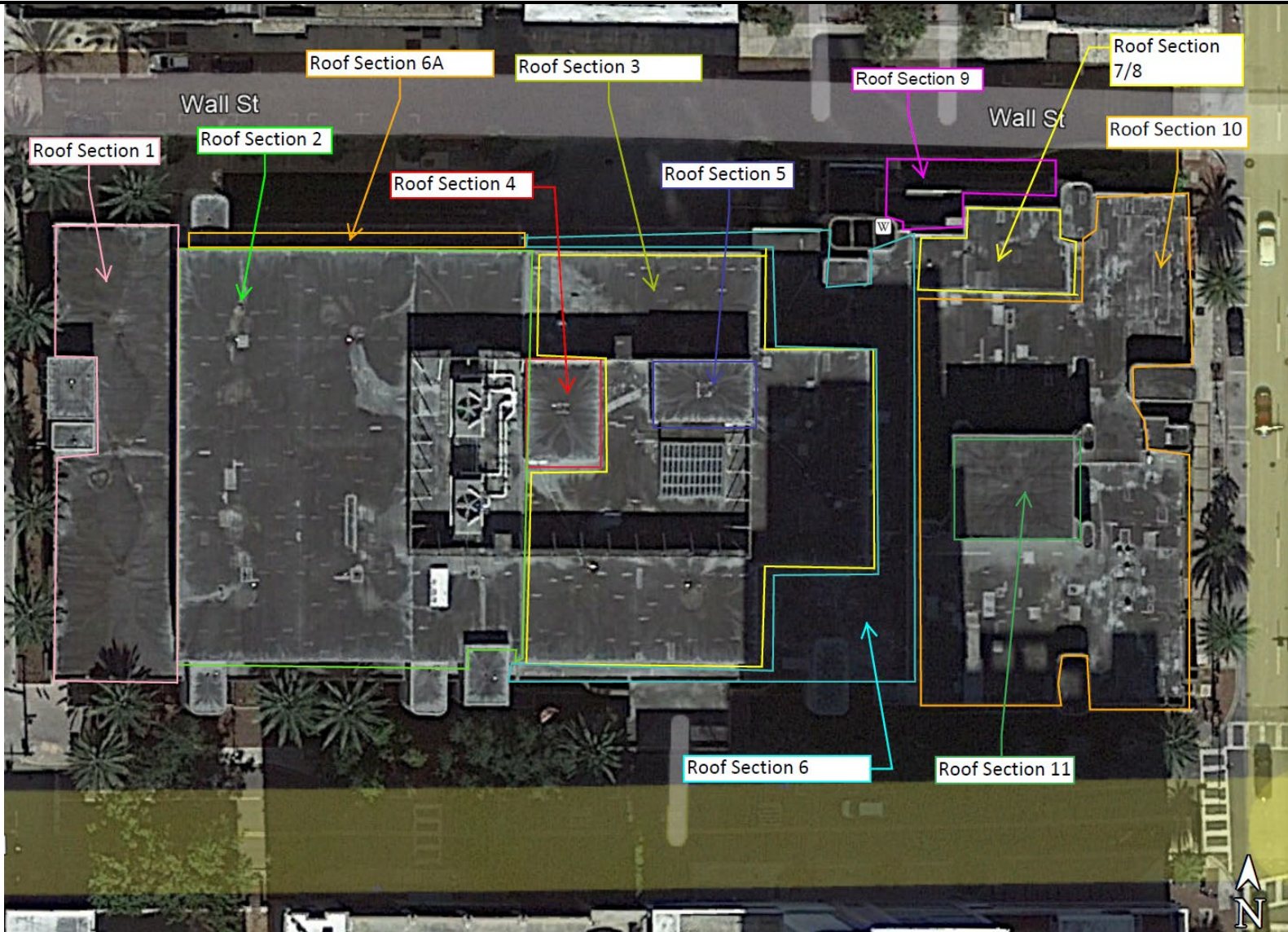
SAMPLE CHARACTERISTICS:

Membrane type:	Asphalt: <u> X </u>	Single-ply: <u> </u>	Cementitious Board: <u> </u>
Insulation type (check all that apply):	Foam board: <u> X </u>	Board: <u> X </u>	LW Concrete: <u> X </u>

Sample Name	Layer Type	Tare Weight (g)	Tare + Sample (g)	Tare + Sample "Dried" (g)	Weight of Original Sample (g)	Weight of Dried Sample (g)	Weight of Moisture (g)	Percent Moisture by Dry Weight (Sample Layer) (g)
ROOF 11 LOC B9 LOW7	ASPHALT	93.7	301.95	301.45	208.25	207.75	0.5	0.2%
	EPS FOAM	89.32	118.5	116.74	29.18	27.42	1.76	6.4%
	LWICONCRETE	687.57	1276.94	1223	589.37	535.43	53.94	10.1%

ROOF 11 LOC J2 MID10	ASPHALT	396.74	558.07	557.32	161.33	160.58	0.75	0.5%
	LWICONCRETE	294.12	789	694.88	494.88	400.76	94.12	23.5%
	EPS FOAM	200	214.03	213.01	14.03	13.01	1.02	7.8%

ROOF 11 LOC E7 HIGH18	ASPHALT	187.51	313.76	313.05	126.25	125.54	0.71	0.6%
	LWICONCRETE	90.3	425.35	307.2	335.05	216.9	118.15	54.5%



Overall Annotated Roof Aerial Map
Orlando Public Library
Orlando, FL