

Roof Inspection Report

Prepared for:

City of Lawrence
Mr. Jason Stowe
PO Box 708
Lawrence, KS 66044

Prepared by:

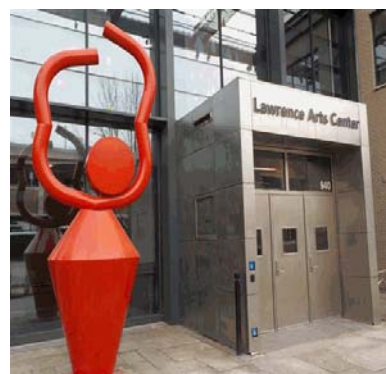
Roofing Solutions, Inc.
6728 W. 153rd Street
Overland Park, KS 66223



Project Location

Arts Center
940 New Hampshire Street
Lawrence, KS 66044

Facility: Arts Center
940 New Hampshire Street
Lawrence
Kansas
66044
U.S.A.



Contact Name: Jason Stowe

Contact Telephone: (785) 832-3126 Ext:

Contact Fax: () -

Date of Last Inspection: Feb 09, 2018

Type of building: Municipal

Type of Neighborhood: Commercial

Roof Section List

Photo	Section / Name / Year Installed	Size / Height	Roof Type	Condition Index/ *RCI/ ASLR(Yrs)	Estimated Replacement Value
	Roof A A1 - A7 2002	15,528 sq. ft. 30 ft.	(SBS) Modified Bituminous Membrane Roofing	Poor 33 0(Yrs)	\$232,920.00
	Roof B B, B1, B2 2002	2,848 sq. ft. 40 ft.	Standing Seam Sheet Metal Roofing	Very Good 92 14(Yrs)	\$56,960.00
	Roof C C 2002	670 sq. ft. 18 ft.	Concrete Roof Tiles	Good 78 9(Yrs)	\$13,400.00
19,046					\$303,280.00
*RCI Rating 0 -100 where 100 is excellent					

Recommendation Summary

Section ID	Budget Year	Activity Type	Action Item ?	Allocation	Urgency	Budget Amount
Roof A	2018	Retrofit	Yes	Capital	High	\$155,280
Roof B	2018	No Action	No	Not Applicable	Not Applicable	\$0
Roof C	2018	No Action	No	Not Applicable	Not Applicable	\$0
						\$155,280

Capital Budgets - 5 Years

Section ID	2018	2019	2020	2021	2022
Roof A	\$155,280	\$0	\$0	\$0	\$0
	\$155,280	\$0	\$0	\$0	\$0

Total Budgets - 5 Years

Section ID	2018	2019	2020	2021	2022
Roof A	\$155,280	\$0	\$0	\$0	\$0
Roof B	\$0	\$0	\$0	\$0	\$0
Roof C	\$0	\$0	\$0	\$0	\$0
	\$155,280	\$0	\$0	\$0	\$0

Roof Name: A1 - A7

Roof Size: 15,528 sq. ft.

Est. replacement Cost: \$ 232,920.00

Existing System Type: (SBS) Modified Bituminous Membrane Roofing

Year Installed: 2002

**Assessed Service Life
Remaining (Years) :** 0

Height: 30 Ft.

Slope: Varies

Interior Sensitivity: Normal

Drainage: Adequate

Currently Leaking? Yes

History of Leaking? Unknown

**Drainage and Leak
Details:** Roof sections A1-A7 slopes in the direction of internal drains, external mounted gutters or thru wall scuppers.



Existing Roof System Construction

Layer Type	Description	Method Of Attachment
Deck	Metal	Spot attached
Insulation	Fiberglass	Laid - in - place
Insulation	Extruded Polystyrene (XPS)	Laid - in - place
Insulation	Lightweight Insulating Concrete	Poured - in - place
Base sheet	Vented	Nailed
Membrane	Modified Bitumen	Cold adhesive

Overall Core Condition

Five (5) cores were performed at the time of the inspection revealing one (1) roof system in place consisting of metal deck, fiberglass insulation, rigid insulation, lightweight concrete, vented base sheet, 2-ply modified bitumen membrane.

All core areas were permanently repaired.

Core Photos

Photos	Date	Description
	Feb 09, 2018	Deck Underside
	Feb 09, 2018	Deck Underside
	Feb 09, 2018	Roof System Core
	Feb 09, 2018	Roof System Core

Core Photos Continued...

Photos	Date	Description
	Feb 09, 2018	Roof System Core

Overall Roof Inspection Assessments

Date	Inspection Type	Inspecting Company	Inspector
Feb 09, 2018	Ph 1 Roof Inspection	Roofing Solutions, Inc.	John Johnston

Roof Section A refers to the low slope roof which includes A1-A7 over Arts Center in Lawrence, KS. The roof is accessed by an internal hatch at A1. The membrane is a sixteen (16) year old 2-ply modified bitumen. The parapet walls separating the different A sections are flashed up terminating under stainless steel coping cap or counter flashing. The decks slope in multiple directions to internal drains, external mounted gutters and thru wall scuppers. A large chiller is supported by a steel platform on A1.

Conditions and defects identified at the time of the inspection include the following:

- Random areas of deteriorated sealant - No. 1 (A1, A2)
- Random areas of ridging membrane - No. 5 (A3)
- Random areas of membrane deterioration - No. 8 (A2)
- Blocked gutter - No. 16 (A7)
- Twelve (12) areas physical damage to the membrane - No. 23 (A4)
- Random areas of repairs - No. 24 (A2, A4, A5, A6)
- Random areas of low flashing heights - No. 40 (A4, A6)
- Random areas of deteriorated flashing - No. 43 (A4, A6)
- Random areas of open flashing laps - No. 45 (A1, A2, A3, A4, A6)
- Two (2) areas of rusted pitch pan bases - No. 86 - (A1)

Overall, the roof is in poor working condition and is nearing the end of its design life expectancy. Given the deteriorated flashing at the base of the wall, the onset of ridging membrane, and physical damage to the membrane additional comprehensive repairs in an effort to extend the life of the system would not be feasible or cost effective. RSI recommends a retrofit of the existing roof system and installation of a new twenty (20) year design life gray fleeceback TPO roof system utilizing the existing coping cap and terminating at new slip counter flashing.

The warranty for the existing roof system expired in 2017.

Recommendations Details

Budget Year	Activity Type	Action Item ?	Allocation	Urgency	Quotation \$
2018	Retrofit	Yes	Capital	High	\$155,280
RSI recommends retrofit of the existing roof system with a twenty (20) year design life system.					
					\$155,280

Roof Name: B, B1, B2**Roof Size:** 2,848 sq. ft.**Est. replacement Cost:** \$ 56,960.00**Existing System Type:** Standing Seam Sheet Metal Roofing**Year Installed:** 2002**Assessed Service Life
Remaining (Years) :** 14**Height:** 40 Ft.**Slope:** Varies**Interior Sensitivity:** Normal**Drainage:** Adequate**Currently Leaking?** No**History of Leaking?** Unknown**Drainage and Leak
Details:** Roof sections B, B1 and B2 slopes in the direction of the eaves draining to external mounted gutters or off the edge.

Existing Roof System Construction

Layer Type	Description	Method Of Attachment
Membrane	Metal	Mechanically Fastened

Core Photos

Photos	Date	Description
	Feb 09, 2018	Roof Construction

Overall Roof Inspection Assessments

Date	Inspection Type	Inspecting Company	Inspector
Feb 09, 2018	Ph 1 Roof Inspection	Roofing Solutions, Inc.	John Johnston
Roof Section B refers to the sloped metal roofs which includes B1 and B2 over Arts Center in Lawrence, KS. The roof is accessed by ladder. The membrane is a sixteen (16) year old stainless steel standing seam panel at B, flat panel at B1 and standing seam galvalume at B2. No defects were identified at the time of the inspection. Overall, the roof is very good working condition. With regular inspections and routine maintenance, the roof system should remain effective for the duration of its assessed service life. No warranty information was available at the time of the inspection.			

Recommendations Details

Budget Year	Activity Type	Action Item ?	Allocation	Urgency	Quotation \$
2018	No Action	No	Not Applicable	Not Applicable	\$0
					\$0

Roof Name: C**Roof Size:** 670 sq. ft.**Est. replacement Cost:** \$ 13,400.00**Existing System Type:** Concrete Roof Tiles**Year Installed:** 2002**Assessed Service Life
Remaining (Years) :** 9**Height:** 18 Ft.**Slope:** Flat**Interior Sensitivity:** Normal**Drainage:** Adequate**Currently Leaking?** No**History of Leaking?** Unknown**Drainage and Leak
Details:** Roof section C slopes in the direction of centrally
located internal drains.

Existing Roof System Construction

Layer Type	Description	Method Of Attachment
Membrane	Paver	Laid - in - place

Core Photos

Photos	Date	Description
	Feb 09, 2018	Roof Construction

Overall Roof Inspection Assessments

Date	Inspection Type	Inspecting Company	Inspector
Feb 09, 2018	Ph 1 Roof Inspection	Roofing Solutions, Inc.	John Johnston
Roof Section C refers to the paver patio areas at Arts Center in Lawrence, KS. The roof is accessed by door. The membrane is a sixteen (16) year old paver. Defects identified at the time of the inspection include the following: - Minor cracks in the pavers Overall, the roof is very good working condition. With regular inspections and routine maintenance, the roof system should remain effective for the duration of its assessed service life. No warranty information was available at the time of the inspection.			

Recommendations Details

Budget Year	Activity Type	Action Item ?	Allocation	Urgency	Quotation \$
2018	No Action	No	Not Applicable	Not Applicable	\$0
					\$0

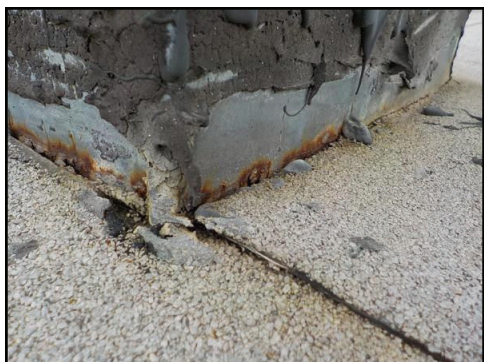
Photos and Deficiencies



Defect Code:	1	Quantity:	Under 10 LF	Priority:	First Year
Description: Deteriorated or missing sealant at counterflashing, termination bar, sealant lip, metal flashing, expansion joint, etc.					



Defect Code:	45	Quantity:	2	Priority:	First Year
Description: Open flashing lap					



Defect Code:	86	Quantity:	2	Priority:	First Year
Description: Corrosion or rust					

Photos and Deficiencies



Defect Code:	1	Quantity:	Under 10 LF	Priority:	First Year
Description: Deteriorated or missing sealant at counterflashing, termination bar, sealant lip, metal flashing, expansion joint, etc.					



Defect Code:	8	Quantity:	Under 10 SF	Priority:	First Year
Description: Surface erosion.					



Defect Code:	24	Quantity:	1	Priority:	Monitor
Description: Evidence of past problem and previous repair.					



Defect Code:	45	Quantity:	1	Priority:	First Year
Description: Open flashing lap					

Photos and Deficiencies



Defect Code:	5	Quantity:	Random	Priority:	Monitor
Description: Buckling or ridging of membrane.					



Defect Code:	45	Quantity:	2	Priority:	First Year
Description: Open flashing lap					

Photos and Deficiencies



Defect Code:	23	Quantity:	12	Priority:	First Year
Description: Physical damage to membrane including cuts, holes, tears, scrapes, scuffs, or abrasions.					



Defect Code:	24	Quantity:	Random	Priority:	Monitor
Description: Evidence of past problem and previous repair.					



Defect Code:	40	Quantity:	1	Priority:	Monitor
Description: Low flashing height.					



Defect Code:	43	Quantity:	Random	Priority:	Monitor
Description: Weathered and deteriorated flashing					

Photos and Deficiencies



Defect Code:	45	Quantity:	2	Priority:	First Year
Description: Open flashing lap					

Photos and Deficiencies



Defect Code:	24	Quantity:	Random	Priority:	Monitor
Description: Evidence of past problem and previous repair.					

Photos and Deficiencies



Defect Code:	24	Quantity:	Random	Priority:	Monitor
Description: Evidence of past problem and previous repair.					



Defect Code:	40	Quantity:	1	Priority:	Monitor
Description: Low flashing height.					



Defect Code:	43	Quantity:	Random	Priority:	Monitor
Description: Weathered and deteriorated flashing					



Defect Code:	45	Quantity:	1	Priority:	First Year
Description: Open flashing lap					

Photos and Deficiencies



Defect Code:	16	Quantity:	1	Priority:	First Year
Description: Blocked drain, scupper, or downspout.					

Photos and Deficiencies



Defect Code:	59	Quantity:	Random	Priority:	Monitor
Description:					
Minor cracks in pavers					



DRAIN
 OVERFLOW
 SCUPPER
 HVAC UNIT
 CURB
 SATELLITE
 PITCH PAN
 PIPE
 SLEEPER
 SKYLIGHT
 EXHAUST FAN
 CONDENSER ON SLEEPERS
 DEFECT NOTE
 CONSTRUCTION NOTE

N.C. NOT IN CONTRACT
 UNO, UNLESS NOTED OTHERWISE

Roof Plan

Deficiency Legend

Defect #	FIELD MEMBRANE AND ROOF SURFACE
1	Description: Deteriorated or missing sealant at counterflashing, termination bar, sealant lip, metal flashing, expansion joint, etc.
2	Description: Fishmouth in field or flashing seam.
3	Description: Open lap in field membrane.
4	Description: Dry lap edge.
5	Description: Buckling or ridging of membrane.
6	Description: Split in membrane.
7	Description: Wrinkle in membrane.
8	Description: Surface erosion.
9	Description: Membrane deterioration.
10	Description: Tented membrane at fastener.
11	Description: Blister in field membrane or flashing.
12	Description: Alligatoring of asphalt surfacing.
13	Description: Tar boils/blueberries.
14	Description: Displaced ballast.
15	Description: Ponding of water.
16	Description: Blocked drain, scupper, or downspout.
17	Description: Missing or damaged drain/scupper strainer
18	Description: Unadhered membrane or inadequate membrane attachment.
19	Description: Unadhered insulation or inadequate insulation attachment.
20	Description: Displaced insulation
21	Description: Loose walkway pad or deteriorated paver.
22	Description: Debris, trash, construction materials, HVAC equipment, filters, motors, etc. on roof surface.
23	Description: Physical damage to membrane including cuts, holes, tears, scrapes, scuffs, or abrasions.
24	Description: Evidence of past problem and previous repair.
25	Description: Membrane slippage
26	Description: Membrane shrinkage
27	Description: Missing or damaged membrane protection layer at sleeper, antenna, satellite sled, blocking, pipe stand, paver, etc.
28	Description: Reported leak location
29	Description: Missing, loose, or broken shingles
30	Description: Open or missing tile eave stop.
31	Description: Missing or open mortar joints at the ridge or hip.
32	Description: Broken or missing tile.
33	Description: Loose, displace, or unsecured tiles.

Deficiency Legend

Defect #	FLASHINGS AND PENETRATIONS
40	Description: Low flashing height.
41	Description: Missing or inadequate flashing attachment.
42	Description: Loose or unadhered flashings.
43	Description: Weathered and deteriorated flashing
44	Description: Bridged flashing
45	Description: Open flashing lap
46	Description: Split in flashing
47	Description: Racked flashings
48	Description: Missing termination
49	Description: Missing counterflashing
50	Description: Missing pipe flashing.
51	Description: Leaking or damaged gutters/downspouts.
52	Description: Missing rain cap, rain collar, or hood.
53	Description: Open lead flashing.
54	Description: Fallen or loose backer rod.
55	Description: Deteriorated or shrunken pitch pan filler.
56	Description: Abandoned and obsolete equipment.
57	Description: Expansion joint deficiencies.
58	Description: Inadequate or nonconforming membrane flashing detail.
59	Description: Missing, broken, or open mortar joints in stone capping detail.
	METALWORK AND MISCELLANEOUS
69	Description: Open or deteriorated mortar joints in brick or block wall.
70	Description: Open joint in metal flashing.
71	Description: Open or missing joint cover.
72	Description: Signage penetration not sealed properly.
73	Description: Improper sheet metal detail.
74	Description: Inadequate coverage of metal flange.
75	Description: Inadequate attachment of metal flashings.
76	Description: Inadequate transition flashings.
77	Description: Grease or other contaminants exhausted or vented onto roof surface.
78	Description: Leaking or damaged gutters/downspouts.
79	Description: Cracks in walls.
80	Description: Broken, plugged, or disconnected condensate line.
81	Description: Displaced antenna, sign, bracing, support, strap, etc.
82	Description: Open or deteriorated wall joint.
83	Description: Efflorescence.
84	Description: Deck deflection
85	Description: Vegetation growth.
86	Description: Corrosion or rust
87	Description: Mechanical defect
88	Description: Skylight defect/cracked/deteriorated
89	Description: Missing wall covering or cladding materials.
90	Description: EIFS surface fractures.

Arts Center - Lawrence, KS
Roof Inspection Photos_A1_2018-02-08



Arts Center - Lawrence, KS
Roof Inspection Photos_A2_2018-02-08



Arts Center - Lawrence, KS
Roof Inspection Photos_A2_2018-02-08



Arts Center - Lawrence, KS
Roof Inspection Photos_A3_2018-02-08



Arts Center - Lawrence, KS
Roof Inspection Photos_A4_2018-02-08



Arts Center - Lawrence, KS
Roof Inspection Photos_A4_2018-02-08



Arts Center - Lawrence, KS
Roof Inspection Photos_A4_2018-02-08



Arts Center - Lawrence, KS
Roof Inspection Photos_A4 (23)_2018-02-08



Arts Center - Lawrence, KS
Roof Inspection Photos_A4 (23)_2018-02-08



Arts Center - Lawrence, KS
Roof Inspection Photos_A5_2018-02-08



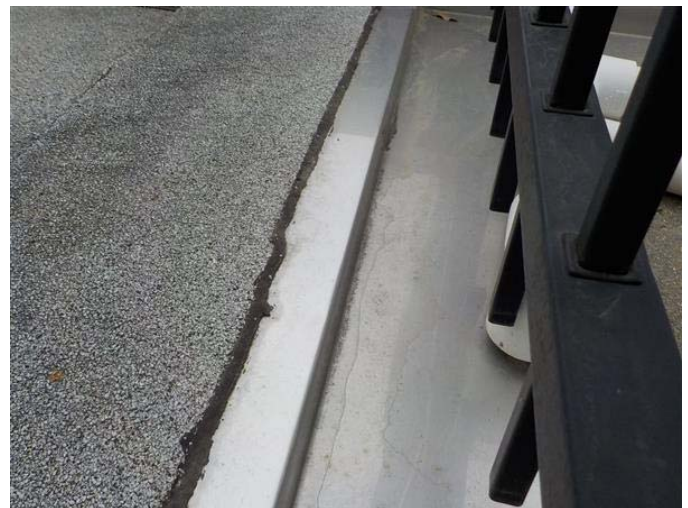
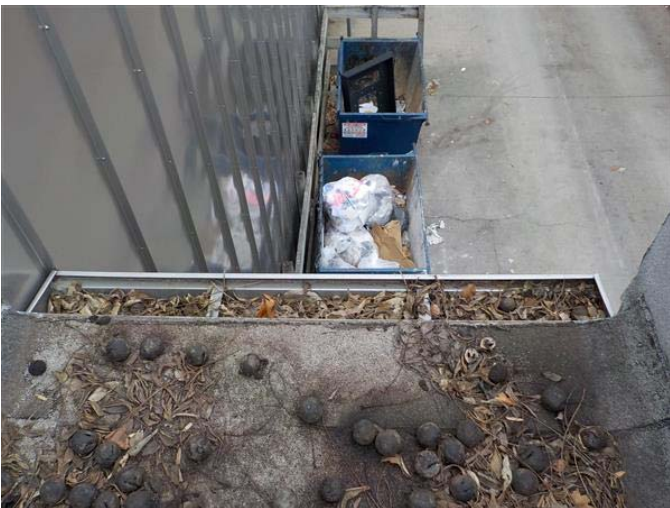
Arts Center - Lawrence, KS
Roof Inspection Photos_A5_2018-02-08



Arts Center - Lawrence, KS
Roof Inspection Photos_A6_2018-02-08



Arts Center - Lawrence, KS
Roof Inspection Photos_A7_2018-02-08



Arts Center - Lawrence, KS
Roof Inspection Photos_B_2018-02-08



Arts Center - Lawrence, KS
Roof Inspection Photos_C_2018-02-08

