Roof Inspection Report

Prepared for:

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Bellevue Schools
&
Mr. Ralph Gladbach
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Prepared by:

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6728 W. 153rd Street
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Project Location

Logan Fontenelle Middle School
701 Kayleen Drive
Bellevue, NE 68005

Facility: Logan Fontenelle Middle School
701 Kayleen Drive
Bellevue
Nebraska
68005
U.S.A.

Contact Name: Greg Boettger

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Date of Last Inspection: Mar 21, 2017

Type of building: School

Type of Neighborhood: Residential

Roof Section List

Photo	Section / Name / Year Installed	Size / Height	Roof Type	Condition Index/ *RCI/ ASLR(Yrs)	Estimated Replacement Value
	Roof A A 1995	12,097 sq. ft. 28 ft.	Built-Up Asphalt Roofing	Poor 40 1(Yrs)	$145,164.00
	Roof B B 1987	14,581 sq. ft. 28 ft.	(EPDM) Ethylene-Propylene-Diene-Monomer Roofing	Urgent 20 0(Yrs)	$160,391.00
	Roof C C 1997	6,084 sq. ft. 28 ft.	(EPDM) Ethylene-Propylene-Diene-Monomer Roofing	Urgent 20 0(Yrs)	$91,260.00

Roof Section List Continued...

Photo	Section / Name / Year Installed	Size / Height	Roof Type	Condition Index/ *RCI/ ASLR(Yrs)	Estimated Replacement Value
	Roof D D 1987	25,449 sq. ft. 12 ft.	(EPDM) Ethylene-Propylene-Diene-Monomer Roofing	Poor 33 0(Yrs)	$381,735.00
	Roof E E 1997	11,350 sq. ft. 28 ft.	(EPDM) Ethylene-Propylene-Diene-Monomer Roofing	Poor 33 1(Yrs)	$170,250.00
	Roof F F 2012	16,558 sq. ft. 12 ft.	(EPDM) Ethylene-Propylene-Diene-Monomer Roofing	Good 75 15(Yrs)	$198,696.00

Roof Section List Continued...

Photo	Section / Name / Year Installed	Size / Height	Roof Type	Condition Index/ *RCI/ ASLR(Yrs)	Estimated Replacement Value
	Roof G G 1987	1,015 sq. ft. 12 ft.	(EPDM) Ethylene-Propylene-Diene-Monomer Roofing	Poor 33 0(Yrs)	$15,225.00
		87,134			**$1,162,721.00**

*RCI Rating 0 -100 where 100 is excellent

Recommendation Summary

Section ID	Budget Year	Activity Type	Action Item ?	Allocation	Urgency	Budget Amount
Roof A	2017	Repair	Yes	Expense	Moderate	$1,500
Roof A	2018	Replacement	Yes	Capital	High	$145,162
Roof B	2017	Replacement	Yes	Capital	Urgent	$160,391
Roof C	2017	Replacement	Yes	Capital	Urgent	$91,260
Roof D	2017	Replacement	Yes	Capital	High	$381,735
Roof E	2017	Repair	Yes	Expense	Moderate	$1,500
Roof E	2018	Replacement	Yes	Capital	Moderate	$170,250
Roof F	2017	Repair	Yes	Expense	High	$4,500
Roof G	2017	Replacement	Yes	Capital	High	$15,225
						$971,523

Capital Budgets - 5 Years

Section ID	2017	2018	2019	2020	2021
Roof A	$0	$145,162	$0	$0	$0

Capital Budgets - 5 Years Continued...

Section ID	2017	2018	2019	2020	2021
Roof B	$160,391	$0	$0	$0	$0
Roof C	$91,260	$0	$0	$0	$0
Roof D	$381,735	$0	$0	$0	$0
Roof E	$0	$170,250	$0	$0	$0
Roof G	$15,225	$0	$0	$0	$0
	$648,611	**$315,412**	**$0**	**$0**	**$0**

Expense Budgets - 5 Years

Section ID	2017	2018	2019	2020	2021
Roof A	$1,500	$0	$0	$0	$0
Roof E	$1,500	$0	$0	$0	$0
Roof F	$4,500	$0	$0	$0	$0
	$7,500	**$0**	**$0**	**$0**	**$0**

Total Budgets - 5 Years

Section ID	2017	2018	2019	2020	2021
Roof A	$1,500	$145,162	$0	$0	$0
Roof B	$160,391	$0	$0	$0	$0
Roof C	$91,260	$0	$0	$0	$0
Roof D	$381,735	$0	$0	$0	$0
Roof E	$1,500	$170,250	$0	$0	$0
Roof F	$4,500	$0	$0	$0	$0
Roof G	$15,225	$0	$0	$0	$0
	$656,111	**$315,412**	**$0**	**$0**	**$0**

Roof Name: A

Roof Size: 12,097 sq. ft.

Est. replacement Cost: $ 145,164.00

Existing System Type: Built-Up Asphalt Roofing

Year Installed: 1995

Assessed Service Life Remaining (Years) : 1

Height: 28 Ft.

Slope: 1/4" per ft.

Interior Sensitivity: Normal

Drainage: Adequate

Currently Leaking? No

History of Leaking? Yes

Drainage and Leak Details: Roof Section A slopes to the interior and drains to four (4) primary roof drains.

No recent leaks were reported on this roof section at the time of inspection.

Existing Roof System Construction

Layer Type	Description	Method Of Attachment
Deck	Gypsum	Poured - In - Place
Base sheet	Fiberglass Base	Nailed
Insulation	Polyisocyanurate	Hot Asphalt
Cover board	Fiberboard - .5" (1/2")	Hot Asphalt
Membrane	BUR - Multiply	Hot Asphalt
Surfacing	Gravel	Hot Asphalt

Overall Core Condition

One (1) core cut revealed a poured in place gypsum decking. The insulation is one (1) layer of 2.25" polyisocyanurate board and one (1) layer of 1/2" wood fiber cover board. The membrane is a multiply BUR with a gravel surface.

Core Photos

Photos	Date	Description
	Mar 21, 2017	Roof System Core
	Mar 21, 2017	Deck Underside

Overall Roof Inspection Assessments

Date	Inspection Type	Inspecting Company	Inspector
Mar 21, 2017	Phase 1 Roof Inspection	Roofing Solutions, Inc.	Garry Hendrickson

Roof Section A refers to the low slope roof system over the NW wing at the Logan Fontenelle Middle School facility. The roof is an approximately twenty-two (22) year old BUR with a gravel surface. The exterior perimeter sides of the roof areas are a raised roof edge where the roof membrane terminates with a metal roof edging. The common side with the B roof area is an 8" tall curb which is flashed with a BUR flashing and topped with a metal cap.

Defects and conditions found during the inspection include the following:

- Surface loss of the gravel roof surfacing
- The raised edge flashing is weathered and splitting
- Open laps observed in the edge metal stripping laps
- Splits observed in the raised edge flashing, ends of the control joint & around pipe penetration flashings
- The edge metal laps are beginning to open
- The large vent curb has an additional curb set on top of the original curb

Overall, the roof system is in poor condition due to its age and the deteriorated nature of the roof system. With leaks performed only as needed, in addition to routine maintenance and regular inspection, the roof system should remain effective for the duration of its assessed service life, approximately one (1) year. There was no warranty information available for this roof section at the time of inspection.

Recommendations Details

Budget Year	Activity Type	Action Item ?	Allocation	Urgency	Quotation $
2017	Repair	Yes	Expense	Moderate	$1,500
RSI recommends leak repairs be completed only as needed until the roofs recommended replacement in 2018.					
2018	Replacement	Yes	Capital	High	$145,162
RSI recommends a complete tear-off of existing roof system and the installation of a new twenty (20) year design life roof system. We further recommend the replacement of all perimeter coping cap and projection details per SMACNA Architectural Sheet Metal Manual.					
					$146,662

Roof Name: B

Roof Size: 14,581 sq. ft.

Est. replacement Cost: $ 160,391.00

Existing System Type: (EPDM) Ethylene-Propylene-Diene-Monomer Roofing

Year Installed: 1987

Assessed Service Life Remaining (Years) : 0

Height: 28 Ft.

Slope: 1/4" per ft.

Interior Sensitivity: Normal

Drainage: Adequate

Currently Leaking? Yes

History of Leaking? Yes

Drainage and Leak Details: Roof Section B slopes to the interior and drains to nine (9) primary roof drains.

The poor condition of the roof system indicates that active roof leaks are likely.

Existing Roof System Construction

Layer Type	Description	Method Of Attachment
Deck	Gypsum	Poured - In - Place
Insulation	Extruded polystyrene - R 5.0	Laid - In -Place
Insulation	Extruded polystyrene - R 5.0	Laid - In -Place
Cover board	Fiberboard - .5" (1/2")	Mechanically Fastened
Membrane	EPDM	Cold Adhesive

Overall Core Condition

One (1) core cut revealed a poured in place gypsum decking. The insulation consists of one (1) layer of 1.5” and one (1) layer of 1” extruded polystyrene insulation board with one (1) layer of 1/2” wood fiber cover board. The membrane is a fully-adhered, .060 mil Firestone EPDM. Note that the wood fiber cover board was deteriorated at the core cut location. Most of the EPDM membrane is no longer adhered on this roof section.

Core Photos

Photos	Date	Description
	Mar 21, 2017	Deck Underside
	Mar 21, 2017	Roof System Core

Overall Roof Inspection Assessments

Date	Inspection Type	Inspecting Company	Inspector
Mar 21, 2017	Phase 1 Roof Inspection	Roofing Solutions, Inc.	Garry Hendrickson

Roof Section B refers to the low slope roof system over a portion of the SW wing at the Logan Fontenelle Middle School facility. The roof is an approximately thirty (30) year old, fully-adhered, .060 mil Firestone EPDM. The roof area recently had emergency ballast (tires) placed due to the EPDM roofing blowing up during a wind event at the facility. The exterior perimeter sides of the roof areas consist of a raised roof edge where the roof membrane terminates with a metal roof edging. The common side with the A roof area is an 8" tall curb which is flashed with the same type of EPDM flashing and topped with a metal cap. The common side with the C roof area is a raised edge detail where the EPDM membrane runs continuously through the area.

Defects and conditions found during the inspection include the following:

- Numerous open EPDM laps observed
- Most of the EPDM membrane is no longer adhered with emergency ballast in place
- The flexible walkway pads are deteriorated and loose
- Past EPDM stripping repairs observed
- The EPDM membrane is pulling at the pipe penetrations and edges of the roof area
- The EPDM flashings are bridged
- Open EPDM flashing laps observed
- Abandoned equipment stand post supports observed

Overall, the roof system is in urgent condition due to the loose roof membrane along with its age, leak history and the deteriorated nature of the roof system. Given the observed conditions, it is our opinion comprehensive repairs in an effort to extend the life of the system would be neither feasible nor cost effective. We recommend the roof be replaced. There was no warranty information available for this roof section at the time of inspection.

Recommendations Details

Budget Year	Activity Type	Action Item ?	Allocation	Urgency	Quotation $
2017	Replacement	Yes	Capital	Urgent	$160,391

RSI recommends a complete tear-off of existing roof system and the installation of a new twenty (20) year design life roof system. We further recommend the replacement of all perimeter coping cap and projection details per SMACNA Architectural Sheet Metal Manual.

$160,391

Roof Name: C

Roof Size: 6,084 sq. ft.

Est. replacement Cost: $ 91,260.00

Existing System Type: (EPDM) Ethylene-Propylene-Diene-Monomer Roofing

Year Installed: 1997

Assessed Service Life Remaining (Years) : 0

Height: 28 Ft.

Slope: 1/4" per ft.

Interior Sensitivity: Normal

Drainage: Adequate

Currently Leaking? Yes

History of Leaking? Yes

Drainage and Leak Details: Roof Section C slopes to the interior and drains to four (4) primary roof drains, each of which is accompanied by an overflow drain.

The poor condition of the roof system indicates that active leaks are likely.

Existing Roof System Construction

Layer Type	Description	Method Of Attachment
Deck	Gypsum	Poured - In - Place
Insulation	Extruded polystyrene - R 5.0	Laid - In -Place
Cover board	Fiberboard - .5" (1/2")	Mechanically Fastened
Membrane	EPDM	Cold Adhesive

Overall Core Condition

One (1) core cut revealed a poured in place gypsum decking. The insulation is air expanded polystyrene insulation, which appears to be part of a tapered insulation system, with one (1) layer of 1/2” wood fiber cover board. The membrane is a fully-adhered, .060 mil Firestone EPDM. A majority of the EPDM membrane is no longer adhered.

Core Photos

Photos	Date	Description
	Mar 21, 2017	Roof System Core

Overall Roof Inspection Assessments

Date	Inspection Type	Inspecting Company	Inspector
Mar 21, 2017	Phase 1 Roof Inspection	Roofing Solutions, Inc.	Garry Hendrickson

Roof Section C refers to the low slope roof system over the southern portion of the SW wing at the Logan Fontenelle Middle School facility. The roof is an approximately twenty (20) year old, fully-adhered, .060 mil EPDM. The roof area recently had emergency ballast placed due to the EPDM roofing blowing up during a wind event at the facility. The exterior perimeter sides of the roof areas consist of a raised roof edge where the roof membrane terminates with a metal roof edging. The common side with the B roof area is a raised edge detail where the EPDM membrane runs continuously through the area.

Defects and conditions found during the inspection include the following:

- Open EPDM field laps observed
- Random areas with high roof system attachment anchors observed
- Some of the insulation appears to be displaced and bowing up
- The EPDM curb covering is loose
- The EPDM flashings are bridged
- Open EPDM flashing laps observed
- One (1) abandoned roof curb has a plywood top and loose EPDM membrane covering

Overall, the roof system is in urgent condition due to the loose roof membrane, along with its age, leak history and the deteriorated nature of the roof system. Given the observed conditions, it is our opinion comprehensive repairs in an effort to extend the life of the system would be neither feasible nor cost effective. We recommend the roof be replaced. There was no warranty information available for this roof section at the time of inspection.

Recommendations Details

Budget Year	Activity Type	Action Item ?	Allocation	Urgency	Quotation $
2017	Replacement	Yes	Capital	Urgent	$91,260
RSI recommends a complete tear-off of existing roof system and the installation of a new twenty (20) year design life roof system. We further recommend the replacement of all perimeter coping cap and projection details per SMACNA Architectural Sheet Metal Manual.					
					$91,260

Roof Name: D

Roof Size: 25,449 sq. ft.

Est. replacement Cost: $ 381,735.00

Existing System Type: (EPDM) Ethylene-Propylene-Diene-Monomer Roofing

Year Installed: 1987

Assessed Service Life Remaining (Years) : 0

Height: 12 Ft.

Slope: 1/4" per ft.

Interior Sensitivity: Normal

Drainage: Adequate

Currently Leaking? Yes

History of Leaking? Yes

Drainage and Leak Details: The D roof areas slope to the interior and drain to primary roof drains.

The poor condition of the roof system indicates that active leaks are likely.

Existing Roof System Construction

Layer Type	Description	Method Of Attachment
Deck	Gypsum	Poured - In - Place
Insulation	Extruded polystyrene - R 5.0	Laid - In -Place
Cover board	Fiberboard - .5" (1/2")	Mechanically Fastened
Membrane	EPDM	Cold Adhesive

Overall Core Condition

Core cuts were performed on the D-1, D-3 & D-4 roof areas to verify the roofing layers in place. All three (3) core samples revealed the same type of roofing layers in place. The deck is poured in place gypsum. The insulation is an air expanded polystyrene insulation board, which appears to be part of a tapered insulation system, with one (1) layer of 1/2” wood fiber cover board. The membrane is a fully-adhered, .060 mil Firestone EPDM. The wood fiber cover board was deteriorated at all three (3) core cut locations. An under view of the D-2 roof area revealed a fiberglass form board with what appears to be toggle bolt attachment of the roof system.

Core Photos

Photos	Date	Description
	Mar 21, 2017	Core cut #1
	Mar 21, 2017	Core cut #2
	Mar 21, 2017	Core cut #3
	Mar 21, 2017	Deck Underside

Core Photos Continued...

Photos	Date	Description
	Mar 21, 2017	Deck Underside #2
	Mar 21, 2017	Membrane stamp

Overall Roof Inspection Assessments

Date	Inspection Type	Inspecting Company	Inspector
Mar 21, 2017	Phase 1 Roof Inspection	Roofing Solutions, Inc.	Garry Hendrickson

Roof Section D refers to the low slope roof system over the first story, NW portion of the Logan Fontenelle Middle School facility. The roof is an approximately thirty (30) year old, fully-adhered, .060 mil Firestone EPDM. The exterior perimeter sides of the roof areas consist of a raised roof edge where the roof membrane terminates with a metal roof edging. The internal wall details are flashed with the same type of EPDM membrane and most of the EPDM flashing terminates with a caulk strip detail. Portions of the common wall with the raised B roof area have the membrane flashing extending under a metal counter flashing which is set under a wall panel.

Defects and conditions found during the inspection include the following:

- Split caulking observed in the brick wall expansion joints above the roof system
- Numerous open EPDM laps observed
- High roof system attachment anchors observed
- Loose and unadhered EPDM membrane observed
- Accumulation of debris observed around a drain strainer and along the side of the roof areas
- Cuts or damage observed to the EPDM membrane
- Past EPDM stripping repairs observed
- The EPDM flashings are bridged
- Open EPDM flashing laps observed
- Abandoned roof curbs with EPDM covering
- Rusted flue stacks and vent covers observed
- One (1) damaged skylight lens observed

Overall, the roof system is in poor condition due to its age and the deteriorated nature of the roof system. Given the observed conditions, it is our opinion comprehensive repairs in an effort to extend the life of the system would be neither feasible nor cost effective. We recommend the roof be replaced. There was no warranty information available for this roof section at the time of inspection.

Recommendations Details

Budget Year	Activity Type	Action Item ?	Allocation	Urgency	Quotation $
2017	Replacement	Yes	Capital	High	$381,735

RSI recommends a complete tear-off of existing roof system and the installation of a new twenty (20) year design life roof system. We further recommend the replacement of all perimeter coping cap and projection details per SMACNA Architectural Sheet Metal Manual.

$381,735

Roof Name: E

Roof Size: 11,350 sq. ft.

Est. replacement Cost: $ 170,250.00

Existing System Type: (EPDM) Ethylene-Propylene-Diene-Monomer Roofing

Year Installed: 1997

Assessed Service Life Remaining (Years) : 1

Height: 28 Ft.

Slope: 1/4" per ft.

Interior Sensitivity: Normal

Drainage: Adequate

Currently Leaking? No

History of Leaking? Yes

Drainage and Leak Details: Roof Section E slopes from a central ridge line towards the east and west and drains to four (4) primary roof drains.

No recent leaks were reported on this roof section at the time of inspection.

Existing Roof System Construction

Layer Type	Description	Method Of Attachment
Deck	Gypsum	Poured - In - Place
Insulation	Extruded polystyrene - R 5.0	Laid - In -Place
Cover board	Fiberboard - .5" (1/2")	Mechanically Fastened
Membrane	EPDM	Cold Adhesive

Overall Core Condition

One (1) core cut revealed a poured in place gypsum decking. The insulation is air expanded polystyrene insulation, which appears to be part of a tapered insulation system, with one (1) layer of 1/2” wood fiber cover board. The membrane is a fully-adhered, .060 mil Firestone EPDM.

Core Photos

Photos	Date	Description
	Mar 21, 2017	Deck Underside
	Mar 21, 2017	Roof System Core

Overall Roof Inspection Assessments

Date	Inspection Type	Inspecting Company	Inspector
Mar 21, 2017	Phase 1 Roof Inspection	Roofing Solutions, Inc.	Garry Hendrickson

Roof Section E refers to the low slope roof system over the gymnasium at the Logan Fontenelle Middle School facility. The roof is an approximately twenty (20) year old, fully-adhered, .060 mil EPDM. The exterior perimeter sides of the roof areas consist of a raised roof edge where the roof membrane terminates with a metal roof edging.

Defects and conditions found during the inspection include the following:

- Open EPDM laps observed on the repair patches
- Random areas with high roof system attachment anchors
- Loose EPDM flashing lap edges observed

Overall, the roof system is in poor condition due to its age and the deteriorated nature of the roof system. With leak repairs performed only as needed, in addition to routine maintenance and regular inspection, the roof system should remain effective for the duration of its assessed service life, approximately one (1) year. There was no warranty information available for this roof section at the time of inspection.

Recommendations Details

Budget Year	Activity Type	Action Item ?	Allocation	Urgency	Quotation $
2017	Repair	Yes	Expense	Moderate	$1,500
RSI recommends leak repairs performed only as needed until the roofs recommended replacement in 2018.					
2018	Replacement	Yes	Capital	Moderate	$170,250
RSI recommends a complete tear-off of existing roof system and the installation of a new twenty (20) year design life roof system. We further recommend the replacement of all perimeter coping cap and projection details per SMACNA Architectural Sheet Metal Manual.					
					$171,750

Roof Name: F

Roof Size: 16,558 sq. ft.

Est. replacement Cost: $ 198,696.00

Existing System Type: (EPDM) Ethylene-Propylene-Diene-Monomer Roofing

Year Installed: 2012

Assessed Service Life Remaining (Years) : 15

Height: 12 Ft.

Slope: 1/4" per ft.

Interior Sensitivity: Normal

Drainage: Adequate

Currently Leaking? No

History of Leaking? Yes

Drainage and Leak Details: Roof Section F slopes to the interior and drains to twelve (12) primary roof drains.

No recent leaks were reported on this roof section at the time of inspection.

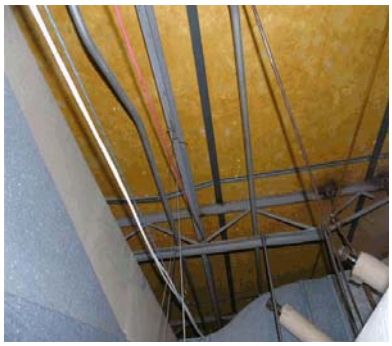
Existing Roof System Construction

Layer Type	Description	Method Of Attachment
Deck	Gypsum	Poured - In - Place
Insulation	Unknown	Mechanically Fastened
Membrane	EPDM	Cold Adhesive

Overall Core Condition

Due to relatively recent installation of the roof system, no core cut was performed on this roof section. An under view of the structure revealed a fiberglass form board which is typical for a poured in place gypsum decking. There are unknown, mechanically attached insulation layer(s). The membrane is a fully-adhered, .060 mil Firestone EPDM.

Core Photos

Photos	Date	Description
	Mar 21, 2017	Deck Underside
	Mar 21, 2017	Membrane stamp

Overall Roof Inspection Assessments

Date	Inspection Type	Inspecting Company	Inspector
Mar 21, 2017	Phase 1 Roof Inspection	Roofing Solutions, Inc.	Garry Hendrickson

Roof Section F refers to the low slope roof system over the SE roof area at the Logan Fontenelle Middle School facility. The roof is a five (5) year old, fully-adhered, .060 mil Firestone EPDM. The exterior perimeter sides of the roof areas consist of a raised roof edge where the roof membrane terminates with a metal roof edging. The center portion of the southern side is a wall detail which is flashed with the same type of EPDM membrane. The wall is flashed up 12” with the same type of EPDM membrane which terminates with a caulk strip detail just below the stone wall cap.

Defects and conditions found during the inspection include the following:

- High roof system attachment anchors observed in the SW corner of the roof area
- Caulking repair attempts observed to the cracks in the stone wall cap
- Numerous cracks observed in the stone wall cap

Overall, the roof system is in good working condition. With the aforementioned defects addressed, in addition to routine maintenance and regular inspection, the roof system should remain effective for the duration of its assessed service life. There was no warranty information available for this roof section at the time of inspection.

Please Note: The high roof system attachment anchors may be covered under a roofing manufacturer’s warranty if one is found to be active. Possible further investigations may need to be performed to determine if there is bad gypsum decking under this roof section, which could be the cause of the loose anchors.

Recommendations Details

Budget Year	Activity Type	Action Item ?	Allocation	Urgency	Quotation $
2017	Repair	Yes	Expense	High	$4,500

RSI recommends repairs be completed in accordance with the attached deficiency list. If a warranty is in effect, the roofing manufacturer's warranty department should be contacted prior to repairs for investigation and repairs possibly covered by warranty.

**Please Note: Warranty services will only respond if the defect(s)specific roof area in question is actively leaking.*
**Please Note: Costs associated with repairs and/or replacement of loose attachment anchors or bad gypsum decking (if applicable) are not included in this budget estimate.*

$4,500

Roof Name: G

Roof Size: 1,015 sq. ft.

Est. replacement Cost: $ 15,225.00

Existing System Type: (EPDM) Ethylene-Propylene-Diene-Monomer Roofing

Year Installed: 1987

Assessed Service Life Remaining (Years) : 0

Height: 12 Ft.

Slope: 1/4" per ft.

Interior Sensitivity: Normal

Drainage: Adequate

Currently Leaking? Yes

History of Leaking? Yes

Drainage and Leak Details: Roof Section G slopes from a central ridge line towards the north and south and drains to an external guttering.

The poor condition of the roof system indicates that active leaks are likely.

Existing Roof System Construction

Layer Type	Description	Method Of Attachment
Deck	Metal	Spot Attached
Insulation	Extruded polystyrene - R 5.0	Laid - In -Place
Cover board	Fiberboard - 1"	Mechanically Fastened
Membrane	EPDM	Cold Adhesive

Overall Core Condition

One (1) core cut revealed a factory primed steel decking. The insulation is air expanded polystyrene insulation, which appears to be part of a tapered insulation system, with one (1) layer of 1” wood fiber cover board. The membrane is a fully-adhered, .060 mil Firestone EPDM.

Core Photos

Photos	Date	Description
	Mar 21, 2017	Deck Underside
	Mar 21, 2017	Roof System Core

Overall Roof Inspection Assessments

Date	Inspection Type	Inspecting Company	Inspector
Mar 21, 2017	Phase 1 Roof Inspection	Roofing Solutions, Inc.	Garry Hendrickson

Roof Section G refers to the low slope roof system over the garage building at the Logan Fontenelle Middle School facility. The roof is an approximately thirty (30) year old, fully-adhered, .060 mil EPDM. The exterior perimeter sides of the roof areas are a flat or raised roof edge where the roof membrane terminates with a metal roof edging.

Defects and conditions found during the inspection include the following:

- The EPDM edge metal stripping is deteriorated
- Accumulation of debris observed in the guttering
- EPDM stripping repairs observed to the field membrane seams
- Open EPDM flashing laps observed in the edge metal stripping laps
- The EPDM edge metal stripping is splitting.

Overall, the roof system is in poor condition due to its age, leak history and the deteriorated nature of the roof system. Given the observed conditions, it is our opinion comprehensive repairs in an effort to extend the life of the system would be neither feasible nor cost effective. We recommend the roof be replaced. There was no warranty information available for this roof section at the time of inspection.

Recommendations Details

Budget Year	Activity Type	Action Item ?	Allocation	Urgency	Quotation $
2017	Replacement	Yes	Capital	High	$15,225
RSI recommends a complete tear-off of existing roof system and the installation of a new twenty (20) year design life roof system. We further recommend the replacement of all perimeter coping cap and projection details per SMACNA Architectural Sheet Metal Manual.					
					$15,225

Photos and Deficiencies

Defect Code:	8	Quantity:	Random	Priority:	Monitor

Description: Surface erosion.

Repair: Prepare membrane surface by thoroughly cleaning and priming. Apply new surfacing of like materials to eroded areas. On gravel surfaced systems apply gravel in hot asphalt or recommended cold adhesive. Apply granulated fiberglass cap sheet or modifed bitumen membrane on like systems. Apply coating system on smooth asphalt surfaces. Transition surfacing to provide for a smooth and neat finished appearance to match the existing surfacing.

Defect Code:	43	Quantity:	Widespread	Priority:	First Year

Description: Weathered and deteriorated flashing

Repair: Clean and prepare surfaces by removing loose granules, dirt, and other debris. Apply two coats of elastomeric coating compatible with the flashing materials.

Defect Code:	45	Quantity:	Widespread	Priority:	First Year

Description: Open flashing lap

Repair: Open loose lap area and clean thoroughly. Prime and reseam or reweld lap per the manufacturer's requirements. Strip-in defective lap with mimum 6" wide membrane on single ply systems or 6" wide fabric and mastic three-course application on asphalt systems. Regranulate or coat flashing repairs.

Defect Code:	46	Quantity:	Widespread	Priority:	First Year

Description: Split in flashing

Repair: Cut away loose flashing and clean and prime repair area. Apply strip in of like material centered over split extending a minimum of 4" in all directions past prepared area.

Photos and Deficiencies

Defect Code:	70	Quantity:	Random	Priority:	First Year
Description: Open joint in metal flashing.					
Repair: Remove metal and old selants from joint. Reinstall metal with new polyurethane sealants at joints per SMACNA requirements.					

Defect Code:	73	Quantity:	1	Priority:	Monitor
Description: Improper sheet metal detail.					
Repair: Remove sheet metal and fabricate new metal per SMACNA requirements. Solder all joints in drainage systems, scuppers, etc., and seal all other sheet metal joints with polyurethane sealant.					

Photos and Deficiencies

Defect Code:	3	Quantity:	Widespread	Priority:	Monitor

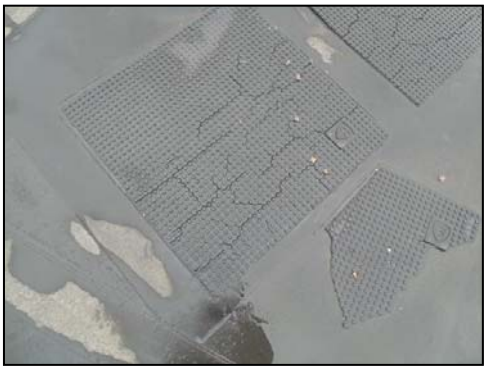
Description: Open lap in field membrane.

Repair: Clean lap of all dirt and close seam. Overlay edge of affected seam with strip-in of new membrane of like material. Extend a minimum of 4" in all directions past seam edges and repair areas.

Defect Code:	18	Quantity:	Widespread	Priority:	Urgent

Description: Unadhered membrane or inadequate membrane attachment.

Repair: At unadhered areas, cut open membrane and readhere to substrate with manufacturer's approved adhesive. At areas with missing securement, provide securement in the form of screws and plates installed a maximum of 12" O.C. Overlay repaired areas with new membrane of similar gauge, type, and plies and extend repairs a minimum of 4" past cut areas or edges of plates.



Defect Code:	21	Quantity:	Widespread	Priority:	Monitor

Description: Loose walkway pad or deteriorated paver.

Repair: Readhere or reweld wakway pads. Provide new pads to replace damaged or missing pads. Replace deteriorated concrete pavers with pavers of like kind and weight to ensure a flush walking surface.

Defect Code:	24	Quantity:	Widespread	Priority:	Monitor

Description: Evidence of past problem and previous repair.

Repair: Investigate for chronic leak problems and repair any areas that are suspect.

Photos and Deficiencies

Defect Code:	26	Quantity:	Widespread	Priority:	Monitor
Description: Membrane shrinkage					
Repair: Investigate and repair cause of shrinkage. Cut away affected areas and prepare to receive new membrane. Install new membrane and secure at base flashings. Adhere to walls and substrates and reinstall metal copings, counterflashings, and termnation bars to complete the repair. On ballasted systems redistribute ballast evenly.					

Defect Code:	44	Quantity:	Widespread	Priority:	Monitor
Description: Bridged flashing					
Cut out all bridged flashings. Clean area thoroughly and apply new flashings. Apply corner flashings and overlay all T-laps, flashings laps, and splice intersections.					

Defect Code:	45	Quantity:	Widespread	Priority:	Monitor
Description: Open flashing lap					
Repair: Open loose lap area and clean thoroughly. Prime and reseam or reweld lap per the manufacturer's requirements. Strip-in defective lap with mimum 6" wide membrane on single ply systems or 6" wide fabric and mastic three-course application on asphalt systems. Regranulate or coat flashing repairs.					

Defect Code:	56	Quantity:	2	Priority:	Monitor
Description: Abandoned and obsolete equipment.					
Repair: Monitor for leaks. Check systems are abandoned and disconnected and will not be used in the future. Remove abandoned equipment and repair deck at scheduled roof replacement.					

Photos and Deficiencies

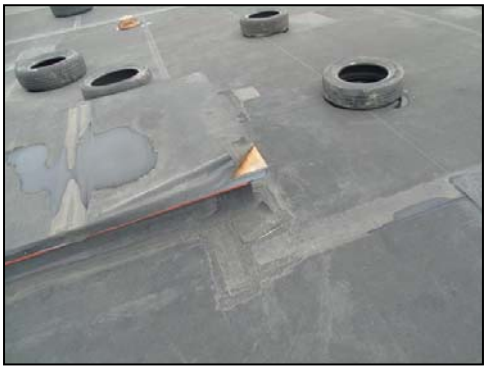
Defect Code:	3	Quantity:	Random	Priority:	Monitor
Description: Open lap in field membrane.					
Repair: Clean lap of all dirt and close seam. Overlay edge of affected seam with strip-in of new membrane of like material. Extend a minimum of 4" in all directions past seam edges and repair areas.					

Defect Code:	10	Quantity:	Random	Priority:	Monitor
Description: Tented membrane at fastener.					
Repair: Remove fasteners that are loose or not flush with the substrate. Remove underlying substrate materials including insulation and coverboard and replace with matching materials of similar thicknesses to provide for a smooth flush surface.. Install new fasteners and plates per manufacturer's recommendations for system type and apply new membrane repair materials of similar type, gauge, and plies as existing roof system.					

Defect Code:	18	Quantity:	Widespread	Priority:	Monitor
Description: Unadhered membrane or inadequate membrane attachment.					
Repair: At unadhered areas, cut open membrane and readhere to substrate with manufacturer's approved adhesive. At areas with missing securement, provide securement in the form of screws and plates installed a maximum of 12" O.C. Overlay repaired areas with new membrane of similar gauge, type, and plies and extend repairs a minimum of 4" past cut areas or edges of plates.					

Defect Code:	19	Quantity:	Random	Priority:	Monitor
Description: Unadhered insulation or inadequate insulation attachment.					
Repair: On systems with adhered insulation, open system and readhere all loose insulation to substrate using manufacturer's approved adhesive. On systems with mechanically attached insulation, open system and attach insulation with screws and plates at a minimum rate of one fastener and plate per every 2 square feet. Install new membrane over all repaired areas and seam per the manufacturer's requirements.					

Photos and Deficiencies



Defect Code:	42	Quantity:	Random	Priority:	Monitor
Description: Loose or unadhered flashings.					
Repair: Cut away loose and unadhered flashing materials. Apply new flashings of like material and fully adhere to substrate with manufacturer's recommended adhesive. Mechanically attach top of flashings 6" O.C. and reinstall all metal terminations.					

Defect Code:	44	Quantity:	Widespread	Priority:	Monitor
Description: Bridged flashing					
Cut out all bridged flashings. Clean area thoroughly and apply new flashings. Apply corner flashings and overlay all T-laps, flashings laps, and splice intersections.					

Defect Code:	45	Quantity:	Widespread	Priority:	Monitor
Description: Open flashing lap					
Repair: Open loose lap area and clean thoroughly. Prime and reseam or reweld lap per the manufacturer's requirements. Strip-in defective lap with mimum 6" wide membrane on single ply systems or 6" wide fabric and mastic three-course application on asphalt systems. Regranulate or coat flashing repairs.					

Defect Code:	56	Quantity:	1	Priority:	Monitor
Description: Abandoned and obsolete equipment.					
Repair: Monitor for leaks. Check systems are abandoned and disconnected and will not be used in the future. Remove abandoned equipment and repair deck at scheduled roof replacement.					

Photos and Deficiencies

Defect Code:	1	Quantity:	Widespread	Priority:	First Year

Description: Deteriorated or missing sealant at counterflashing, termination bar, sealant lip, metal flashing, expansion joint, etc.

Repair: Clean loose sealant and dirt from all surfaces. Apply new polyurethane sealant and tool to shed water.

Defect Code:	3	Quantity:	Widespread	Priority:	First Year

Description: Open lap in field membrane.

Repair: Clean lap of all dirt and close seam. Overlay edge of affected seam with strip-in of new membrane of like material. Extend a minimum of 4" in all directions past seam edges and repair areas.

Defect Code:	10	Quantity:	Random	Priority:	Monitor

Description: Tented membrane at fastener.

Repair: Remove fasteners that are loose or not flush with the substrate. Remove underlying substrate materials including insulation and coverboard and replace with matching materials of similar thicknesses to provide for a smooth flush surface.. Install new fasteners and plates per manufacturer's recommendations for system type and apply new membrane repair materials of similar type, gauge, and plies as existing roof system.

Defect Code:	17	Quantity:	Random	Priority:	Monitor

Description: Missing or damaged drain/scupper strainer

Repair: Replace damaged or missing strainer with a new cast iron strainer sized to fit the drain assembly or scupper opening. Lock in place to prevent loss.

Photos and Deficiencies

Defect Code:	22	Quantity:	Random	Priority:	First Year
Description: Debris, trash, construction materials, HVAC equipment, filters, motors, etc. on roof surface.					
Repair: Remove all trash and debris from roof. Clean and inspect surfaces and repair any damages to the membrane or flashings.					

Defect Code:	23	Quantity:	Under 10 LF	Priority:	First Year
Description: Physical damage to membrane including cuts, holes, tears, scrapes, scuffs, or abrasions.					
Repair: Apply repair membrane over damaged area, extending repair material a minimum 6" past damage.					

Defect Code:	24	Quantity:	Widespread	Priority:	Monitor
Description: Evidence of past problem and previous repair.					
Repair: Investigate for chronic leak problems and repair any areas that are suspect.					

Defect Code:	44	Quantity:	Widespread	Priority:	Monitor
Description: Bridged flashing					
Cut out all bridged flashings. Clean area thoroughly and apply new flashings. Apply corner flashings and overlay all T-laps, flashings laps, and splice intersections.					

Photos and Deficiencies

Defect Code:	45	Quantity:	Widespread	Priority:	First Year
Description: Open flashing lap					
Repair: Open loose lap area and clean thoroughly. Prime and reseam or reweld lap per the manufacturer's requirements. Strip-in defective lap with mimum 6" wide membrane on single ply systems or 6" wide fabric and mastic three-course application on asphalt systems. Regranulate or coat flashing repairs.					

Defect Code:	56	Quantity:	2	Priority:	Monitor
Description: Abandoned and obsolete equipment.					
Repair: Monitor for leaks. Check systems are abandoned and disconnected and will not be used in the future. Remove abandoned equipment and repair deck at scheduled roof replacement.					

Defect Code:	86	Quantity:	Random	Priority:	Monitor
Description: Corrosion or rust					
Repair: Remove rusted components and replace with similar metal fabricated and installed per SMACNA requirements.					

Defect Code:	88	Quantity:	1	Priority:	First Year
Description: Skylight defect/cracked/deteriorated					
Repair: Remove and replace affected components.					

Photos and Deficiencies

Defect Code:	3	Quantity:	Random	Priority:	First Year
Description: Open lap in field membrane.					
Repair: Clean lap of all dirt and close seam. Overlay edge of affected seam with strip-in of new membrane of like material. Extend a minimum of 4" in all directions past seam edges and repair areas.					

Defect Code:	10	Quantity:	Random	Priority:	Monitor
Description: Tented membrane at fastener.					
Repair: Remove fasteners that are loose or not flush with the substrate. Remove underlying substrate materials including insulation and coverboard and replace with matching materials of similar thicknesses to provide for a smooth flush surface.. Install new fasteners and plates per manufacturer's recommendations for system type and apply new membrane repair materials of similar type, gauge, and plies as existing roof system.					

Defect Code:	45	Quantity:	Random	Priority:	Monitor
Description: Open flashing lap					
Repair: Open loose lap area and clean thoroughly. Prime and reseam or reweld lap per the manufacturer's requirements. Strip-in defective lap with mimum 6" wide membrane on single ply systems or 6" wide fabric and mastic three-course application on asphalt systems. Regranulate or coat flashing repairs.					

Photos and Deficiencies

Defect Code:	10	Quantity:	1000+ SF	Priority:	First Year

Description: Tented membrane at fastener.

Repair: Remove fasteners that are loose or not flush with the substrate. Remove underlying substrate materials including insulation and coverboard and replace with matching materials of similar thicknesses to provide for a smooth flush surface.. Install new fasteners and plates per manufacturer's recommendations for system type and apply new membrane repair materials of similar type, gauge, and plies as existing roof system.

Defect Code:	24	Quantity:	Widespread	Priority:	Monitor

Description: Evidence of past problem and previous repair.

Repair: Investigate for chronic leak problems and repair any areas that are suspect.

Defect Code:	79	Quantity:	Widespread	Priority:	Monitor

Description: Cracks in walls.

Repair: Investigate and repair cracks in walls. Apply elastomeric coating or membrane waterproofing to seal wall surface.

Photos and Deficiencies

Defect Code:	9	Quantity:	150 LF	Priority:	First Year

Description: Membrane deterioration.

Repair: Replace all deteriorated membrane with new membrane of similar type, gauge, and plies.

Defect Code:	22	Quantity:	Random	Priority:	First Year

Description: Debris, trash, construction materials, HVAC equipment, filters, motors, etc. on roof surface.

Repair: Remove all trash and debris from roof. Clean and inspect surfaces and repair any damages to the membrane or flashings.

Defect Code:	24	Quantity:	Widespread	Priority:	Monitor

Description: Evidence of past problem and previous repair.

Repair: Investigate for chronic leak problems and repair any areas that are suspect.

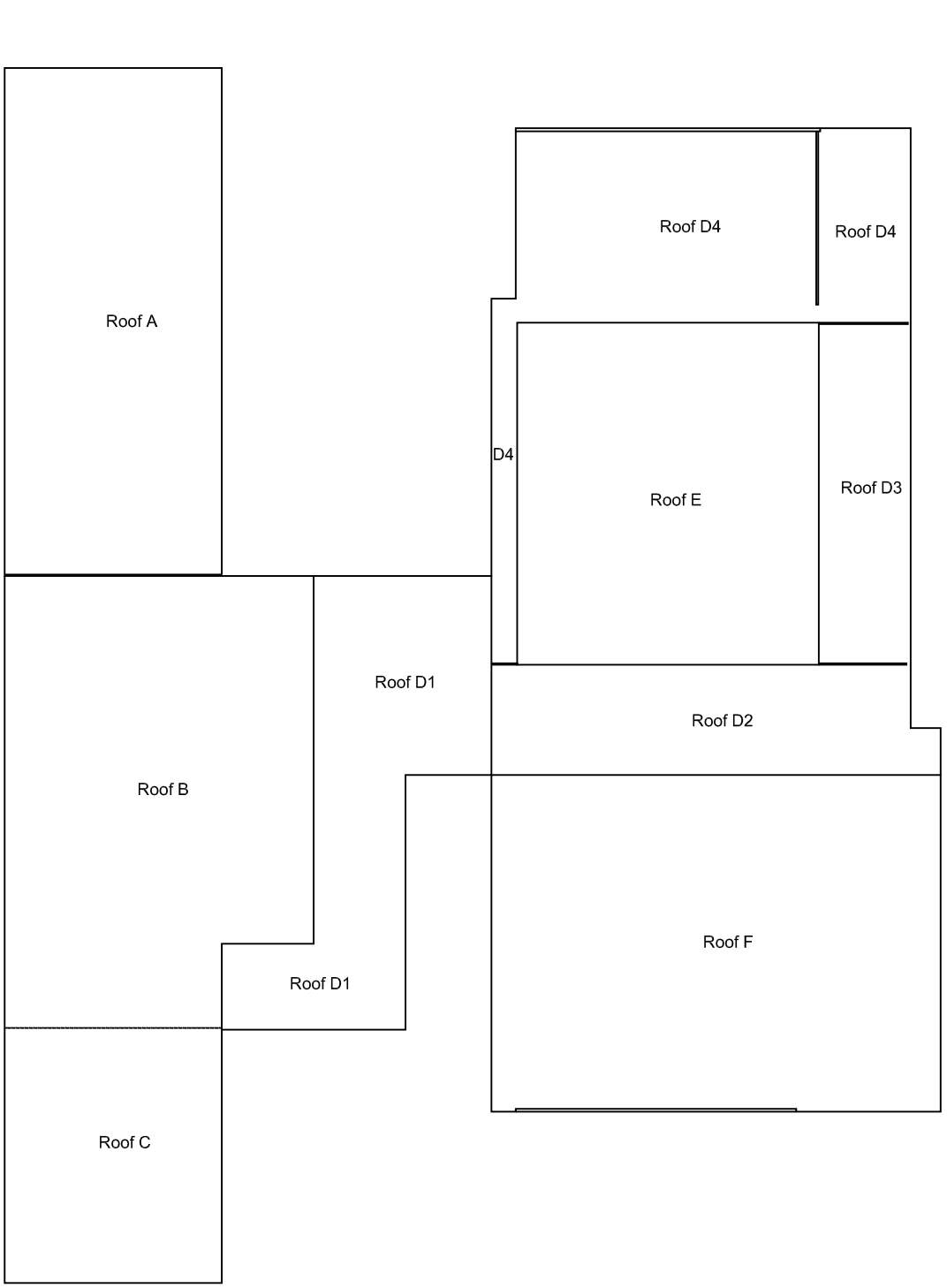
Defect Code:	45	Quantity:	150 LF	Priority:	First Year

Description: Open flashing lap

Repair: Open loose lap area and clean thoroughly. Prime and reseam or reweld lap per the manufacturer's requirements. Strip-in defective lap with mimum 6" wide membrane on single ply systems or 6" wide fabric and mastic three-course application on asphalt systems. Regranulate or coat flashing repairs.

Photos and Deficiencies

Defect Code:	46	Quantity:	Widespread	Priority:	First Year
Description: Split in flashing					
Repair: Cut away loose flashing and clean and prime repair area. Apply strip in of like material centered over split extending a minimum of 4" in all directions past prepared area.					



DRAWING LEGEND

- DRAIN
- OVERFLOW
- SCUPPER
- HVAC UNIT
- CURB
- SATELLITE
- PITCH PAN
- FLUE
- PIPE
- SLEEPER
- SKYLIGHT
- EXHAUST FAN
- CONDENSER ON SLEEPERS
- 63 DEFECT NOTE
- 9 CONSTRUCTION NOTE
- N.I.C. NOT IN CONTRACT
- U.N.O. UNLESS NOTED OTHERWISE

Project Name: Logan Fontenelle Middle School

Project Address: 701 Kayleen Drive Bellevue, NE 68005

Project Number: 00-000000

Sheet Title: Site Plan

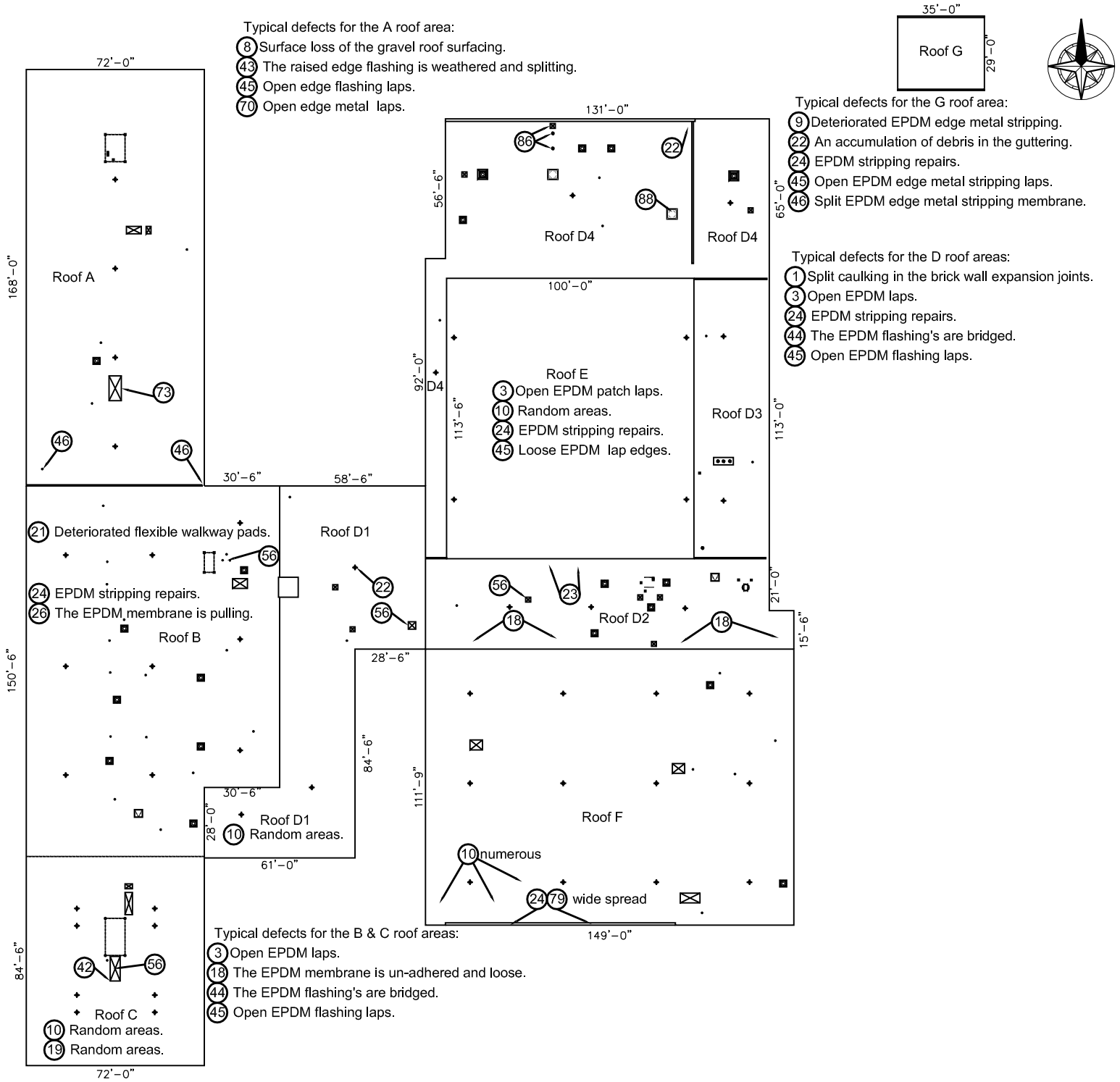
Roofing Solutions, Inc.
6728 W. 153rd Street
Overland Park, KS 66223
Office: (913)-897-1840
Fax: (913)-897-1499
RSI@roofingsolutionsinc.com

RSI

Drawn By: GH

Date: 03/21/2017

Sheet Number: 01 of 01



DRAWING LEGEND

- DRAIN
- OVERFLOW
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- HVAC UNIT
- CURB
- SATELLITE
- PITCH PAN
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- PIPE
- SLEEPER
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- EXHAUST FAN
- CONDENSER ON SLEEPERS
- (63) DEFECT NOTE
- (9) CONSTRUCTION NOTE
- N.I.C. NOT IN CONTRACT
- U.N.O. UNLESS NOTED OTHERWISE

Project Name: Logan Fontenelle Middle School

Project Address: 701 Kayleen Drive Bellevue, NE 68005

Project Number: 00-000000

Sheet Title: A,B,C,D,E,F&G-Roof

Roofing Solutions, Inc.
6728 W. 153rd Street
Overland Park, KS 66223
Office: (913)-897-1840
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RSI@roofingsolutionsinc.com

RSI

Drawn By: GH

Date: 03/21/2017

Sheet Number: 01 of 01

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.
	METALWORK AND MISCELLANEOUS
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.

Logan Fontenelle Middle School_Bellevue, NE
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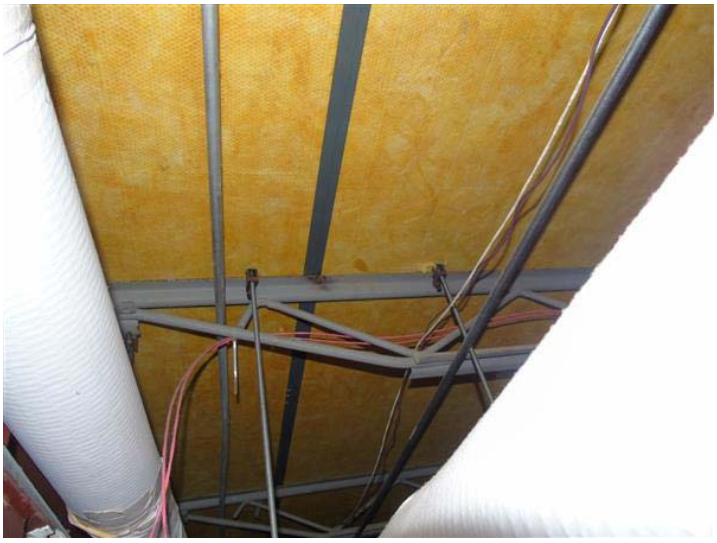
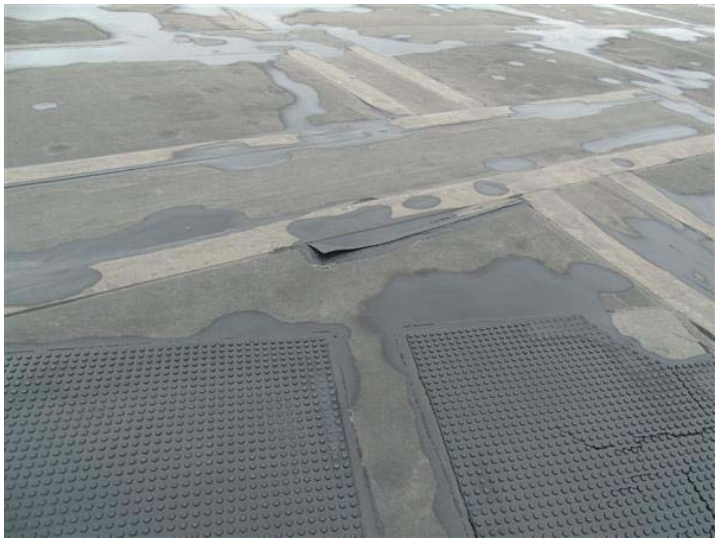


Logan Fontenelle Middle School_Bellevue, NE
Ph 1 Roof Inspection_Roof B_2017-03-21

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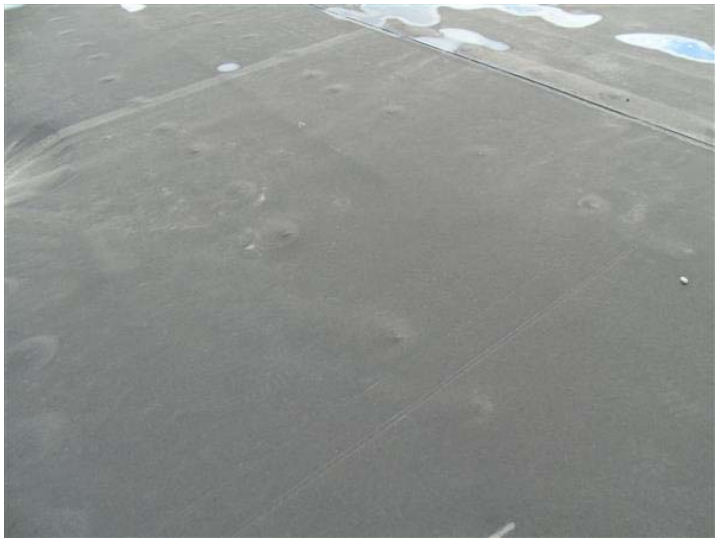


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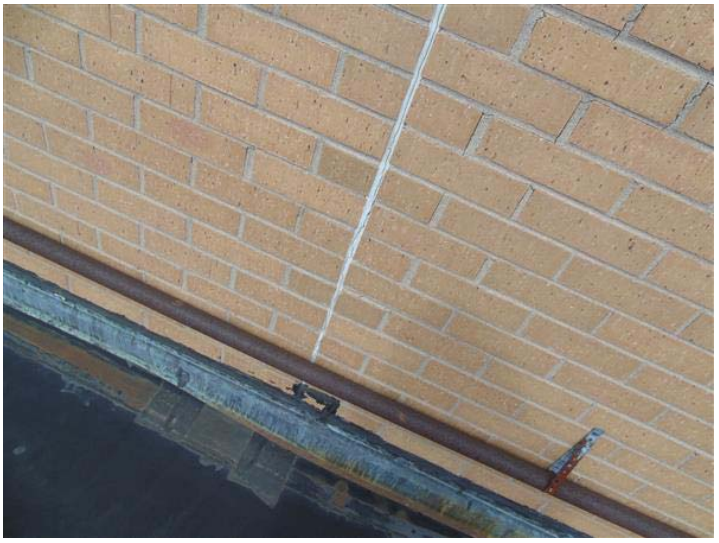

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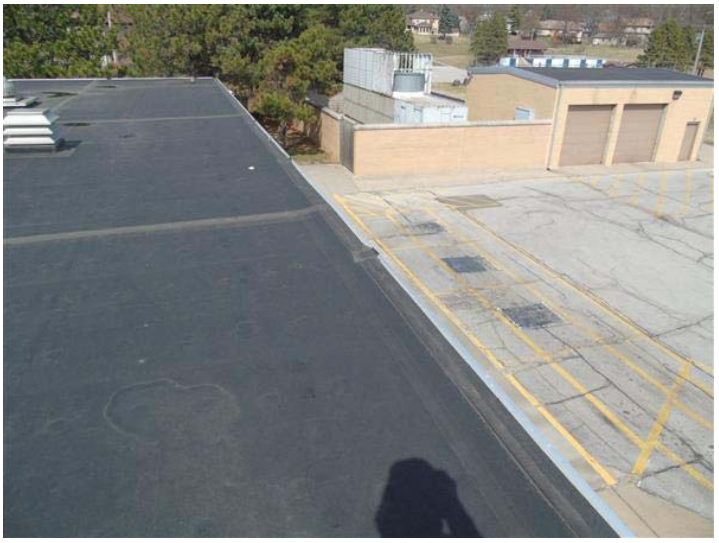


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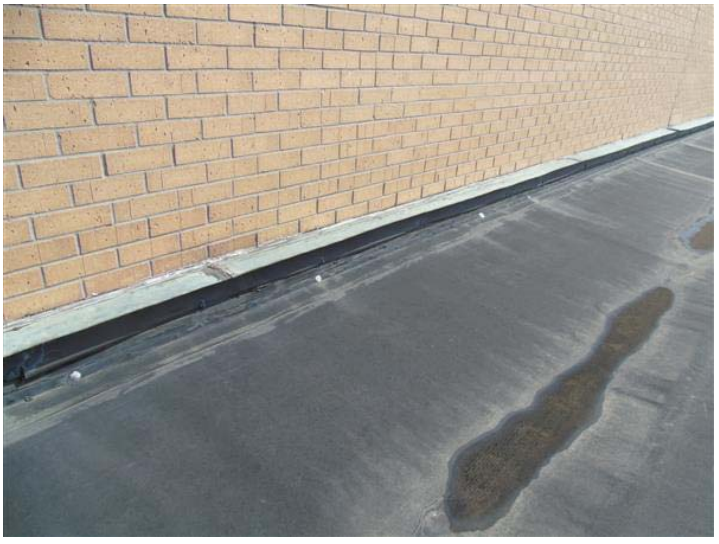
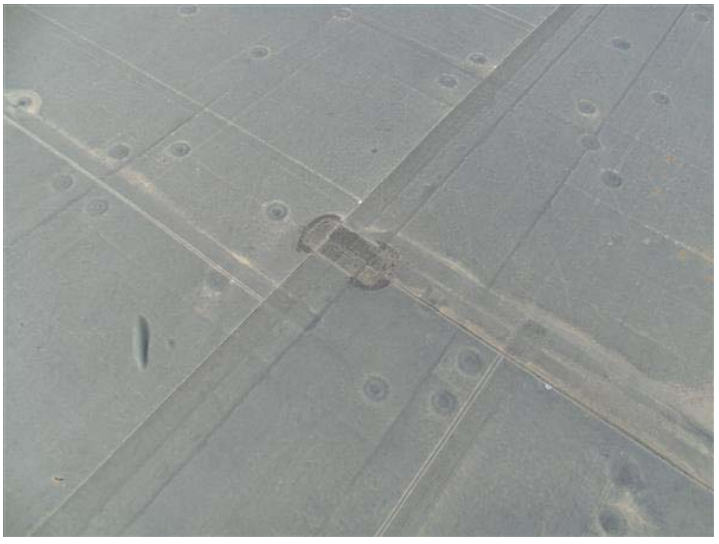


Logan Fontenelle Middle School_Bellevue, NE
Ph 1 Roof Inspection_Roof E_2017-03-21



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Ph 1 Roof Inspection_Roof G_2017-03-21