Roof Inspection Report

Prepared for:

Mr. Greg Boettger
Bellevue Schools
&
Mr. Ralph Gladbach
GP Architecture, LLC.

Prepared by:

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

Project Location

East High School
1401 High School Drive
Bellevue, NE 68005

Facility: East High School
1401 High School Drive
Bellevue
Nebraska
68005
U.S.A.

Contact Name: Greg Boettger

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Date of Last Inspection: Apr 03, 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 2001	3,976 sq. ft. 20 ft.	Built-Up Asphalt Roofing	Poor 40 2(Yrs)	$39,760.00
	Roof B B 2001	8,143 sq. ft. 20 ft.	Built-Up Asphalt Roofing	Poor 40 2(Yrs)	$122,145.00
	Roof C C 1990	16,026 sq. ft. 16 ft.	(EPDM) Ethylene-Propylene-Diene-Monomer Roofing	Poor 33 0(Yrs)	$320,520.00

Roof Section List Continued...

Photo	Section / Name / Year Installed	Size / Height	Roof Type	Condition Index/ *RCI/ ASLR(Yrs)	Estimated Replacement Value
	Roof D D 2000	1,523 sq. ft. 16 ft.	(EPDM) Ethylene-Propylene-Diene-Monomer Roofing	Fair 55 3(Yrs)	$18,276.00
	Roof E E 1990	16,771sq. ft. 16 ft.	(EPDM) Ethylene-Propylene-Diene-Monomer Roofing	Poor 33 0(Yrs)	$335,420.00
	Roof F F 1992	1,720 sq. ft. 16 ft.	Built-Up Asphalt Roofing	Poor 33 0(Yrs)	$43,000.00

Roof Section List Continued...

Photo	Section / Name / Year Installed	Size / Height	Roof Type	Condition Index/ *RCI/ ASLR(Yrs)	Estimated Replacement Value
	Roof G G 2000	9,646 sq. ft. 22 ft.	(SBS) Modified Bituminous Membrane Roofing	Fair 55 3(Yrs)	$96,460.00
	Roof H H 1992	37,221 sq. ft. 28 ft.	Built-Up Asphalt Roofing	Poor 33 0(Yrs)	$558,315.00
	Roof I I 1997	5,591 sq. ft. 24 ft.	Built-Up Asphalt Roofing	Poor 33 0(Yrs)	$83,865.00

Roof Section List Continued...

Photo	Section / Name / Year Installed	Size / Height	Roof Type	Condition Index/ *RCI/ ASLR(Yrs)	Estimated Replacement Value
	Roof J J 1997	11,575 sq. ft. 28 ft.	Built-Up Asphalt Roofing	Poor 40 1(Yrs)	$231,500.00
	Roof K K 1990	18,655 sq. ft. 28 ft.	(EPDM) Ethylene-Propylene-Diene-Monomer Roofing	Poor 40 1(Yrs)	$373,100.00
	Roof L L 2009	8,667 sq. ft. 28 ft.	(SBS) Modified Bituminous Membrane Roofing	Fair 55 7(Yrs)	$86,670.00

Roof Section List Continued...

Photo	Section / Name / Year Installed	Size / Height	Roof Type	Condition Index/ *RCI/ ASLR(Yrs)	Estimated Replacement Value
	Roof M M 1987	16,073 sq. ft. 32 ft.	(EPDM) Ethylene-Propylene-Diene-Monomer Roofing	Poor 40 1(Yrs)	$321,460.00
	Roof N N 1997	1,056 sq. ft. 28 ft.	Built-Up Asphalt Roofing	Poor 40 1(Yrs)	$21,120.00
	Roof O O 1987	26,272 sq. ft. 32 ft.	(EPDM) Ethylene-Propylene-Diene-Monomer Roofing	Poor 33 0(Yrs)	$394,080.00

Roof Section List Continued...

Photo	Section / Name / Year Installed	Size / Height	Roof Type	Condition Index/ *RCI/ ASLR(Yrs)	Estimated Replacement Value
	Roof P P 2004	4,743 sq. ft. 20 ft.	Built-Up Asphalt Roofing	Fair 55 7(Yrs)	$47,430.00
	Roof Q Q 1990	5,278 sq. ft. 20 ft.	(EPDM) Ethylene-Propylene-Diene-Monomer Roofing	Poor 40 1(Yrs)	$52,780.00
	Roof R R 1990	10,486 sq. ft. 28 ft.	(EPDM) Ethylene-Propylene-Diene-Monomer Roofing	Poor 33 1(Yrs)	$104,860.00

Roof Section List Continued...

Photo	Section / Name / Year Installed	Size / Height	Roof Type	Condition Index/ *RCI/ ASLR(Yrs)	Estimated Replacement Value
	Roof S S 2001	2,485 sq. ft. 20 ft.	(EPDM) Ethylene-Propylene-Diene-Monomer Roofing	Fair 55 4(Yrs)	$74,550.00
	Roof T T 1992	574 sq. ft. 28 ft.	(EPDM) Ethylene-Propylene-Diene-Monomer Roofing	Poor 40 1(Yrs)	$28,700.00
	Roof U U 2010	1,113 sq. ft. 16 ft.	(EPDM) Ethylene-Propylene-Diene-Monomer Roofing	Fair 55 3(Yrs)	$33,390.00
		207,594			**$3,387,401.00**

*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	High	$1,500
Roof A	2019	Retrofit	Yes	Capital	High	$39,760
Roof A	2019	Infrared Scan	Yes	Expense	High	$1,000
Roof B	2017	Repair	Yes	Expense	High	$2,500
Roof B	2019	Replacement	Yes	Capital	High	$122,145
Roof C	2017	Replacement	Yes	Capital	High	$320,520
Roof D	2017	No Action	No	N/A	N/A	$0
Roof D	2020	Partial Tear-Off	Yes	Capital	High	$18,276
Roof E	2017	Replacement	Yes	Capital	High	$335,420
Roof F	2017	Replacement	Yes	Capital	High	$43,000
Roof G	2017	Repair	Yes	Expense	High	$2,500
Roof G	2020	Retrofit	Yes	Capital	High	$96,460
Roof G	2020	Infrared Scan	Yes	Expense	High	$1,000
Roof H	2017	Replacement	Yes	Capital	High	$558,315
Roof I	2017	Retrofit	Yes	Capital	High	$83,865
Roof I	2017	Infrared Scan	Yes	Expense	High	$1,000
Roof J	2017	Repair	Yes	Expense	Moderate	$1,500
Roof J	2018	Replacement	Yes	Capital	High	$231,500
Roof K	2017	Repair	Yes	Expense	Moderate	$2,500
Roof K	2018	Replacement	Yes	Capital	High	$373,100
Roof L	2017	Repair	Yes	Expense	High	$3,500
Roof M	2017	Repair	Yes	Expense	Moderate	$2,000
Roof M	2018	Replacement	Yes	Capital	High	$321,460
Roof N	2017	Repair	Yes	Expense	Moderate	$500
Roof N	2018	Replacement	Yes	Capital	High	$21,120
Roof O	2017	Replacement	Yes	Capital	High	$394,080
Roof P	2017	Repair	Yes	Expense	High	$1,500
Roof Q	2017	Repair	Yes	Expense	High	$2,500
Roof Q	2018	Partial Tear-Off	Yes	Capital	High	$52,780
Roof R	2017	Repair	Yes	Expense	High	$2,000
Roof R	2018	Partial Tear-Off	Yes	Capital	High	$104,860
Roof S	2017	Repair	Yes	Expense	Moderate	$300

Recommendation Summary Continued...

Section ID	Budget Year	Activity Type	Action Item ?	Allocation	Urgency	Budget Amount
Roof S	2021	Replacement	Yes	Capital	Moderate	$74,550
Roof T	2017	Repair	Yes	Expense	Moderate	$1,000
Roof T	2018	Replacement	Yes	Capital	Moderate	$28,700
Roof U	2017	Repair	Yes	Expense	High	$1,500
Roof U	2020	Replacement	Yes	Capital	High	$33,390
						$3,281,601

Capital Budgets - 5 Years

Section ID	2017	2018	2019	2020	2021
Roof A	$0	$0	$39,760	$0	$0
Roof B	$0	$0	$122,145	$0	$0
Roof C	$320,520	$0	$0	$0	$0
Roof D	$0	$0	$0	$18,276	$0
Roof E	$335,420	$0	$0	$0	$0
Roof F	$43,000	$0	$0	$0	$0
Roof G	$0	$0	$0	$96,460	$0
Roof H	$558,315	$0	$0	$0	$0
Roof I	$83,865	$0	$0	$0	$0
Roof J	$0	$231,500	$0	$0	$0
Roof K	$0	$373,100	$0	$0	$0
Roof M	$0	$321,460	$0	$0	$0
Roof N	$0	$21,120	$0	$0	$0
Roof O	$394,080	$0	$0	$0	$0
Roof Q	$0	$52,780	$0	$0	$0
Roof R	$0	$104,860	$0	$0	$0
Roof S	$0	$0	$0	$0	$74,550
Roof T	$0	$28,700	$0	$0	$0
Roof U	$0	$0	$0	$33,390	$0
	$1,735,200	**$1,133,520**	**$161,905**	**$148,126**	**$74,550**

Expense Budgets - 5 Years

Section ID	2017	2018	2019	2020	2021
Roof A	$1,500	$0	$1,000	$0	$0
Roof B	$2,500	$0	$0	$0	$0
Roof G	$2,500	$0	$0	$1,000	$0
Roof I	$1,000	$0	$0	$0	$0
Roof J	$1,500	$0	$0	$0	$0
Roof K	$2,500	$0	$0	$0	$0
Roof L	$3,500	$0	$0	$0	$0
Roof M	$2,000	$0	$0	$0	$0
Roof N	$500	$0	$0	$0	$0
Roof P	$1,500	$0	$0	$0	$0
Roof Q	$2,500	$0	$0	$0	$0
Roof R	$2,000	$0	$0	$0	$0
Roof S	$300	$0	$0	$0	$0
Roof T	$1,000	$0	$0	$0	$0
Roof U	$1,500	$0	$0	$0	$0
	$26,300	**$0**	**$1,000**	**$1,000**	**$0**

Total Budgets - 5 Years

Section ID	2017	2018	2019	2020	2021
Roof A	$1,500	$0	$40,760	$0	$0
Roof B	$2,500	$0	$122,145	$0	$0
Roof C	$320,520	$0	$0	$0	$0
Roof D	$0	$0	$0	$18,276	$0
Roof E	$335,420	$0	$0	$0	$0
Roof F	$43,000	$0	$0	$0	$0
Roof G	$2,500	$0	$0	$97,460	$0
Roof H	$558,315	$0	$0	$0	$0
Roof I	$84,865	$0	$0	$0	$0
Roof J	$1,500	$231,500	$0	$0	$0
Roof K	$2,500	$373,100	$0	$0	$0
Roof L	$3,500	$0	$0	$0	$0
Roof M	$2,000	$321,460	$0	$0	$0
Roof N	$500	$21,120	$0	$0	$0

Total Budgets - 5 Years Continued...

Section ID	2017	2018	2019	2020	2021
Roof O	$394,080	$0	$0	$0	$0
Roof P	$1,500	$0	$0	$0	$0
Roof Q	$2,500	$52,780	$0	$0	$0
Roof R	$2,000	$104,860	$0	$0	$0
Roof S	$300	$0	$0	$0	$74,550
Roof T	$1,000	$28,700	$0	$0	$0
Roof U	$1,500	$0	$0	$33,390	$0
	$1,761,500	**$1,133,520**	**$162,905**	**$149,126**	**$74,550**

Roof Name: A

Roof Size: 3,976 sq. ft.

Est. replacement Cost: $ 39,760.00

Existing System Type: Built-Up Asphalt Roofing

Year Installed: 2001

Assessed Service Life Remaining (Years) : 2

Height: 20 Ft.

Slope: 1/4" per ft.

Interior Sensitivity: Normal

Drainage: Adequate

Currently Leaking? Yes

History of Leaking? Yes

Drainage and Leak Details: Roof Section A slopes towards the perimeter sides and drains to five (5) primary roof drains.

Facility personnel reported leaks over the band room.

Existing Roof System Construction

Layer Type	Description	Method Of Attachment
Deck	Metal	Spot Attached
Insulation	Polyisocyanurate	Laid - In -Place
Insulation	Polyisocyanurate	Mechanically attached
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 factory primed steel decking. The insulation is one (1) layer of 3” and one (1) layer of 2” polyisocyanurate board and one (1) layer of .50” wood fiber cover board. The membrane is a multiply BUR with a gravel surface. An under view of the structure revealed that tectum panels have been installed on the underside of the steel decking for acoustical purposes.

Core Photos

Photos	Date	Description
	Apr 03, 2017	Deck Underside
	Apr 03, 2017	Deck Underside #2
	Apr 03, 2017	Roof System Core

Overall Roof Inspection Assessments

Date	Inspection Type	Inspecting Company	Inspector
Apr 03, 2017	Phase 1 Roof Inspection	Roofing Solutions, Inc.	Garry Hendrickson

Roof Section A refers to the low slope roof system over the Band area at the Bellevue East High School facility. The roof is an approximately sixteen (16) year old BUR with a gravel surface. The southern portion of this roof area may have been an addition to the facility in 2001 and the northern portion may be older. There is no raised roof area divider in place at the addition location. The exterior perimeter sides of the roof area are a raised roof edge detail where the roof system terminates with a metal roof edging. The internal walls and the expansion joint curb are flashed with a BUR type of membrane flashing which has been coated with an aluminum paint. The common wall with the raised H-1 roof area has the membrane flashing extending under a surface mounted counter flashing. The expansion joint curb is topped with a metal cap.

Defects and conditions found during the inspection include the following:

- One (1) split in the BUR membrane
- Random areas with blistered roof membrane and flashing plies
- Roof mastic repair attempts observed to the BUR system
- The expansion joint BUR flashing is weathered
- Loose attachment anchors observed in the expansion joint cap

Overall, the roof system is in poor condition due to the above referenced defects and deteriorated nature of the roof system. With leak repairs performed only as needed, the roof system should remain effective for the duration of its assessed service life, approximately two (2) years. 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	High	$1,500
RSI recommends leak repairs be performed only as needed until the roofs recommended replacement in 2019.					
2019	Infrared Scan	Yes	Expense	High	$1,000
RSI recommends an infrared scan be performed to locate any wet insulation present in the current roof system.					
2019	Retrofit	Yes	Capital	High	$39,760
RSI recommends the installation of a new twenty (20) year design life roof system. We further recommend installation of new perimeter metal and projection details per the SMACNA Architectural Sheet Metal Manual.					
					$42,260

Roof Name: B

Roof Size: 8,143 sq. ft.

Est. replacement Cost: $ 122,145.00

Existing System Type: Built-Up Asphalt Roofing

Year Installed: 2001

Assessed Service Life Remaining (Years) : 2

Height: 20 Ft.

Slope: 1/4" per ft.

Interior Sensitivity: Unknown

Drainage: Adequate

Currently Leaking? No

History of Leaking? Yes

Drainage and Leak Details: Roof Section B slopes to the east and drains to eight (8) 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 - 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. There is a heavy base ply with one (1) layer of 1.5” polyisocyanurate board and one (1) layer of .50” wood fiber cover board. The membrane is a multiply BUR with a gravel surface. An under view of the structure revealed that tectum panels have been installed on the underside of the gypsum decking for acoustical purposes.

Core Photos

Photos	Date	Description
	Apr 03, 2017	Deck Underside
	Apr 03, 2017	Roof System Core

Overall Roof Inspection Assessments

Date	Inspection Type	Inspecting Company	Inspector
Apr 03, 2017	Phase 1 Roof Inspection	Roofing Solutions, Inc.	Garry Hendrickson

Roof Section B refers to the low slope roof system over the A-21 and A-23 roof areas at the Bellevue East High School facility. The roof is an approximately sixteen (16) year old BUR with a gravel surface. Facility personnel indicated that the roofing was installed in 2001, but the conditions indicate that the roof system is older. The exterior perimeter side of the roof area is a raised roof edge detail where the roof system terminates with a metal roof edging. The internal walls and the expansion joint curbs are flashed with a BUR type of membrane flashing which has been coated with an aluminum paint. The wall flashings terminate with a caulk strip detail and the expansion joint curbs are topped with a metal cap.

Defects and conditions found during the inspection include the following:

- Deteriorated caulking observed in the brick wall expansion joints located above the roof system
- Ridged or buckling roof membrane plies observed near the roof drains
- Surface loss of the gravel roof surfacing
- Cold process and roof mastic repair attempts observed to the BUR system
- Open laps observed in the edge metal stripping laps
- One (1) detached tectum sound panel observed on the underside of the decking

Overall, the roof system is in poor condition due to the above listed defects and the deteriorated nature of the roof system. 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, approximately two (2) years. There was no warranty information available for this roof section at the time of inspection.

Please Note: RSI further recommends that the detached tectum panel be repaired or replaced as soon as possible as it poses a safety issue.

Recommendations Details

Budget Year	Activity Type	Action Item ?	Allocation	Urgency	Quotation $
2017	Repair	Yes	Expense	High	$2,500

RSI recommends repairs be completed in accordance with the attached deficiency list.

Please Note: RSI further recommends that the detached tectum panel be repaired or replaced as soon as possible as it poses a safety issue.

2019	Replacement	Yes	Capital	High	$122,145

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.

$124,645

Roof Name: C

Roof Size: 16,026 sq. ft.

Est. replacement Cost: $ 320,520.00

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

Year Installed: 1990

Assessed Service Life Remaining (Years) : 0

Height: 16 Ft.

Slope: 1/8" per ft.

Interior Sensitivity: Normal

Drainage: Adequate

Currently Leaking? Yes

History of Leaking? Yes

Drainage and Leak Details: The C roofs slope to the interior and drain to primary roof drains.

Facility personnel reported ongoing leak issues over the cafeteria and adjoining rooms, along with reported leaks over the pool lobby area.

Existing Roof System Construction

Layer Type	Description	Method Of Attachment
Deck	Gypsum	Poured - In - Place
Insulation	Polyisocyanurate	Laid - In -Place
Insulation	Expanded Polystyrene (EPS)	Laid - In -Place
Cover board	Fiberboard - 1/2"	Mechanically attached
Membrane	EPDM	Cold Adhesive

Overall Core Condition

Core samples were taken on the C-1, C-2 and C-3 roof areas, each of which revealed the same type of roofing layers in place. The deck is poured in place gypsum. There is one (1) layer of 2” polyisocyanurate insulation board, one (1) layer of air-expanded polystyrene insulation, which appears to be part of a tapered insulation system, and a .5” layer of wood fiber cover board. The membrane is a fully-adhered, .060 mil Firestone EPDM.

Core Photos

Photos	Date	Description
	Apr 03, 2017	Core cut #1
	Apr 03, 2017	Core cut #2
	Apr 03, 2017	Core cut #3
	Apr 03, 2017	Deck Underside

Core Photos Continued...

Photos	Date	Description
	Apr 03, 2017	Membrane stamp

Overall Roof Inspection Assessments

Date	Inspection Type	Inspecting Company	Inspector
Apr 03, 2017	Phase 1 Roof Inspection	Roofing Solutions, Inc.	Garry Hendrickson

Roof Section C refers to the low slope roof system over the cafeteria, kitchen, serving & snack areas (C-1 & C-2) at the Bellevue East High School facility. There is also the C-3 roof area, which covers a small portion of the pool lobby area. The roof section also includes four (4) lower roof areas at the south end of the kitchen, over a dock area and two (2) entryways to the building. The roof is a twenty-seven (27) year old, fully-adhered, .060 mil EPDM. The exterior perimeter walls are raised roof edge detail where the roof membrane terminates with a metal roof edging. The internal walls are flashed up 12" with the EPDM flashing where it terminates with a caulk strip detail. The internal control joints are a 6" tall curbs which are covered with the same type of EPDM membrane. The control joint between the C-1 and C-2 roof area is topped with a metal cap. The control joint at the D roof area is covered with an EPDM membrane flashing. There is a large wall mounted skylight at the NW corner of the C-1 roof area which is flashed in the same manner as the walls where the membrane flashing extending under the metal counter flashing on the skylight curb. The C-3 roof area has a wall which is common with the raised K-2 area which is flashed up 4" where it extends under a metal counter flashing. The counter flashing is set under an EIFS wall covering which covers the remainder of the wall height.

Defects and conditions found during the inspection include the following:

- Split or deteriorated caulking observed in the wall joints
- Open or loose EPDM lap edges observed
- Standing water observed around the skylight curbs
- Areas of loose EPDM field membrane at the SE corner of the C-2 roof area
- Accumulation of debris in the corner of the C-3 roof area
- One (1) puncture in the EPDM membrane was temporarily sealed with caulking at the time of inspection
- Past EPDM patch repair attempts observed to the roof system laps
- One (1) set of deteriorated wood equipment supports
- Low flashing height observed on the common wall with the raised K-2 roof area
- The EPDM flashings are bridged
- There are open or loose EPDM lap edges
- Split EPDM corner and curbed unit flashings

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	$320,520
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.					
					$320,520

Roof Name: D

Roof Size: 1,523 sq. ft.

Est. replacement Cost: $ 18,276.00

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

Year Installed: 2000

Assessed Service Life Remaining (Years) : 3

Height: 16 Ft.

Slope: 1/4" per ft.

Interior Sensitivity: Normal

Drainage: Adequate

Currently Leaking? No

History of Leaking? Yes

Drainage and Leak Details: Roof Section D slopes to the interior and drains to two (2) 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	Metal	Spot Attached
Thermal barrier	5/8" Gypsum board	Laid - In -Place
Insulation	Polyisocyanurate	Laid - In -Place
Insulation	Polyisocyanurate	Mechanically attached
Membrane	EPDM	Cold Adhesive

Overall Core Condition

One (1) core cut revealed a factory primed steel decking. There is one (1) layer of 5/8” gypsum board. The insulation is one (1) layer of 2” and one (1) layer of 1.5” polyisocyanurate board. The membrane is a fully-adhered, .060 mil Carlisle EPDM.

Core Photos

Photos	Date	Description
	Apr 03, 2017	Membrane stamp
	Apr 03, 2017	Roof System Core

Overall Roof Inspection Assessments

Date	Inspection Type	Inspecting Company	Inspector
Apr 03, 2017	Phase 1 Roof Inspection	Roofing Solutions, Inc.	Garry Hendrickson

Roof Section D refers to the low slope roof system over the 2000 addition to the west end of the cafeteria area at the Bellevue East High School facility. The roof is an approximately sixteen (16) year old, fully-adhered, .060 mil Carlisle EPDM. The exterior perimeter sides of the roof area are a raised edge detail where the roof membrane terminates with a water dam type of metal roof edging. The control joint at the common side with the C-1 roof area is a 6” tall curb which is flashed with the same type of EPDM membrane.

Overall, the roof system is in fair working condition with no defects observed at the time of the roof inspection. With routine maintenance and regular inspection, the roof system should remain effective for the duration of its assessed service life, approximately three (3) years. 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	No Action	No	N/A	N/A	$0
No action is recommended at this time.					
2020	Partial Tear-Off	Yes	Capital	High	$18,276
RSI recommends a partial tear-off of the existing roof system, leaving the existing insulation in place, and installation of a new twenty (20) year design life roof system. We further recommend installation of new perimeter metal and projection details per SMACNA Architectural Sheet Metal Manual.					
					$18,276

Roof Name: E

Roof Size: 16,771 sq. ft.

Est. replacement Cost: $ 335,420.00

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

Year Installed: 1990

Assessed Service Life Remaining (Years) : 0

Height: 16 Ft.

Slope: 1/8" per ft.

Interior Sensitivity: Normal

Drainage: Adequate

Currently Leaking? Yes

History of Leaking? Yes

Drainage and Leak Details: The E roofs slope to the interior and drain to primary roof drains.

Facility personnel reported recent leaks over the H-01 room.

Existing Roof System Construction

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

Overall Core Condition

There were core sample taken on the E-1 and E-2 roof areas, both of which revealed the same type of roofing layers in place. The deck is poured in place gypsum decking. There is one (1) layer of air-expanded polystyrene insulation, which appears to be part of a tapered insulation system, and a .5” layer of wood fiber cover board. The membrane is a fully-adhered, .060 mil Firestone EPDM.

Core Photos

Photos	Date	Description
	Apr 03, 2017	Core cut #1
	Apr 03, 2017	Core cut #2
	Apr 03, 2017	Membrane stamp

Overall Roof Inspection Assessments

Date	Inspection Type	Inspecting Company	Inspector
Apr 03, 2017	Phase 1 Roof Inspection	Roofing Solutions, Inc.	Garry Hendrickson

Roof Section E refers to the low slope roof system over the H01, H02, H04, H06, H07 and H08 areas (E-1) and the Auto Shop (E-2) area at the Bellevue East High School facility. The roof is a twenty-seven (27) year old, fully-adhered, .060 mil EPDM. The exterior perimeter sides of the roof areas are raised roof edge detail where the roof membrane terminates with a metal roof edging. The internal walls are flashed up 12" with the EPDM flashing which terminates with a caulk strip detail.

Defects and conditions found during the inspection include the following:

- Open or loose EPDM lap edges observed
- Past EPDM patch repair attempts to the roof system laps
- Split EPDM cover patches on the edge metal lap joints
- One (1) section of loose metal roof edging observed at the north end of the E-2 roof area
- One (1) detached piece of EIFS trim observed below a window

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	$335,420

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.

$335,420

Roof Name: F

Roof Size: 1,720 sq. ft.

Est. replacement Cost: $ 43,000.00

Existing System Type: Built-Up Asphalt Roofing

Year Installed: 1992

Assessed Service Life Remaining (Years) : 0

Height: 16 Ft.

Slope: 1/4" per ft.

Interior Sensitivity:

Drainage: Adequate

Currently Leaking? Yes

History of Leaking? Yes

Drainage and Leak Details: Roof Section F slopes to the south and drains to one (1) primary roof drain with an overflow drain adjacent.

Facility personnel reported ongoing leak issues over the Pool Lobby area.

Existing Roof System Construction

Layer Type	Description	Method Of Attachment
Deck	Concrete	Spot Attached
Insulation	Polyisocyanurate	Hot Asphalt
Insulation	Polyisocyanurate	Hot Asphalt
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 concrete decking. There are multiple layers of polyisocyanurate insulation, which appears to be part of a tapered insulation system, and one (1) layer of .50" wood fiber cover board. The membrane is a multiply BUR with a gravel surface. An under view of the adjoining Pool area revealed a precast concrete decking.

Core Photos

Photos	Date	Description
	Apr 03, 2017	Roof System Core

Overall Roof Inspection Assessments

Date	Inspection Type	Inspecting Company	Inspector
Apr 03, 2017	Phase 1 Roof Inspection	Roofing Solutions, Inc.	Garry Hendrickson

Roof Section F refers to the low slope roof system over the Pool Lobby area at the Bellevue East High School facility. The roof is an approximately twenty-five (25) year old BUR with a gravel surface. The exterior perimeter side of the roof areas are a short wall detail which are flashed with a BUR type of flashing and topped with a metal cap. The internal walls are flashed up 8" with a BUR type of membrane flashing which extends under a metal counter flashing or an EIFS wall covering. The common side with the C-3 roof area is terminated with a metal roof edging.

Defects and conditions found during the inspection include the following:

- Deteriorated caulking observed on the top of the northern pool wall counter flashing
- Roof mastic repair attempts observed near the HVAC unit at the reported leak area
- One (1) abandoned roof curb has a metal cover

Overall, the roof system is in poor condition due to its age and reported leak history. 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	$43,000
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.					
					$43,000

Roof Name: G

Roof Size: 9,646 sq. ft.

Est. replacement Cost: $ 96,460.00

Existing System Type: (SBS) Modified Bituminous Membrane Roofing

Year Installed: 2000

Assessed Service Life Remaining (Years) : 3

Height: 22 Ft.

Slope: 1/4" per ft.

Interior Sensitivity: Normal

Drainage: Adequate

Currently Leaking? No

History of Leaking? Yes

Drainage and Leak Details: Roof Section G slopes from a central ridge line towards the east and west and drains to six (6) 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	Concrete	Spot Attached
Vapor retarder	2 ply hot	Hot Asphalt
Insulation	Polyisocyanurate	Hot Asphalt
Cover board	Dens-Deck - .25" (1/4")	Hot Asphalt
Membrane	Mod Bit - 2 ply	Hot Asphalt
Surfacing	Granules	Factory Installed

Overall Core Condition

One (1) core cut revealed a precast concrete panel decking. There is a mopped vapor barrier, one (1) layer of 1.5" polyisocyanurate board and one (1) layer of .25" Dens-Deck cover board. The membrane is a two (2) ply modified bitumen with a granulated surfacing.

Core Photos

Photos	Date	Description
	Apr 03, 2017	Deck Underside
	Apr 03, 2017	Roof System Core

Overall Roof Inspection Assessments

Date	Inspection Type	Inspecting Company	Inspector
Apr 03, 2017	Phase 1 Roof Inspection	Roofing Solutions, Inc.	Garry Hendrickson

Roof Section G refers to the low slope roof system over the pool area at the Bellevue East High School facility. The roof is an approximately seventeen (17) year old modified bitumen with a granulated surface. The exterior perimeter sides of the roof area are a raised roof edge detail where the roofing terminates with a metal roof edging. The internal wall detail is up 8" with the same type of modified bitumen which extends under a metal ledge flashing. The ledge flashing is set under a metal counter flashing.

Defects and conditions found during the inspection include the following:

- Fishmouths observed in the modified bitumen laps
- There are fan hoods and metal filter frames which have been left on the roof area
- Random areas with open modified bitumen edge metal stripping laps at the edge metal end laps
- Split pipe penetration flashing seals and split sealant observed on the edge metal end laps
- One (1) roof drain has a detached retaining ring and missing drain strainer

Overall, the roof system is in fair working condition due to its age and above referenced defects. 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, approximately three (3) years. 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	High	$2,500
RSI recommends repairs be completed in accordance with the attached deficiency list.					
2020	Infrared Scan	Yes	Expense	High	$1,000
RSI recommends an infrared scan be performed to locate any wet insulation present in the current roof system.					
2020	Retrofit	Yes	Capital	High	$96,460
RSI recommends the installation of a new twenty (20) year design life roof system. We further recommend installation of new perimeter metal and projection details per the SMACNA Architectural Sheet Metal Manual.					
					$99,960

Roof Name: H

Roof Size: 37,221 sq. ft.

Est. replacement Cost: $ 558,315.00

Existing System Type: Built-Up Asphalt Roofing

Year Installed: 1992

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: The H roof areas slope to the interior and drain to primary roof drains.

Facility personnel reported active leaks over the stage area.

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

Core samples were taken on the H-1, H-2, H-3 & H-4 roof areas to verify the roofing layers in place, all of which revealed the same type of roofing layers. The deck is poured in place gypsum decking. There is a heavy base sheet with one (1) layer of 1.5" polyisocyanurate insulation and one (1) layer of .50" wood fiber cover board. The membrane is a multiply BUR with a gravel surface. An under view of the H-5 roof area structure revealed the same type of construction used with the poured in place gypsum decking and the same BUR system in place. The under view also revealed that toggle bolts may have been used to attach some of the insulation layers.

Core Photos

Photos	Date	Description
	Apr 03, 2017	Core cut #1
	Apr 03, 2017	Core cut #2
	Apr 03, 2017	Core cut #3
	Apr 03, 2017	Core cut #4

Core Photos Continued...

Photos	Date	Description
	Apr 03, 2017	Deck Underside
	Apr 03, 2017	Deck Underside #2

Overall Roof Inspection Assessments

Date	Inspection Type	Inspecting Company	Inspector
Apr 03, 2017	Phase 1 Roof Inspection	Roofing Solutions, Inc.	Garry Hendrickson

Roof Section H refers to the low slope roof system over the auditorium, stage and lobby along with the first floor nurse, career center, lounge, counseling, deans office and other front office rooms at the Bellevue East High School facility. The roof is an approximately twenty-five (25) year old BUR with a gravel surface. The H-1 area is over the stage area. The H-2 roof area is over the Auditorium. The H-3 roof area is over the Lobby area. The H-4 roof area is over the Front offices, Lounge and Counseling areas. The exterior perimeter side of the roof areas are a raised roof edge detail where the roof system terminates with a metal roof edging. The internal walls and the control joint curbs are flashed with a BUR type of membrane flashing which has been coated with an aluminum paint. The H-2 and H-4 wall flashings terminate with a caulk strip detail. The H-3 wall flashings extend under a two (2) piece metal counter flashing. The control joint curb is flashed in the same manner as the raised edge details with a metal roof edging termination.

Defects and conditions found during the inspection include the following:

- Deteriorated caulking observed in the brick wall expansion joints located above the roof system
- Loose BUR ply edges observed
- Ridged or buckling roof membrane plies
- One (1) split area in BUR field membrane
- Surface loss of the gravel roof surfacing
- Deteriorated BUR flashings and field membrane observed
- Blistered BUR flashings observed
- Standing water observed along the edges of the crickets
- One (1) blocked roof drain plumbing line
- Cold process and roof mastic repair attempts observed to the BUR system
- Low flashing heights observed on the explosion hatches on the H-1 roof area
- The BUR flashings are weathered/deteriorated
- Open laps observed in the edge metal stripping laps and wall flashing laps
- Random areas with split BUR flashings, corner flashings, edge metal stripping and pipe flashing seals
- The BUR flashings are racked at the corners
- One (1) loose fan hood cover
- Cracks observed in the brick wall located above the roof system
- One (1) open hole observed in the metal wall panel on the raised H-5 area wall

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	$558,315
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.					
					$558,315

Roof Name: I

Roof Size: 5,591 sq. ft.

Est. replacement Cost: $ 83,865.00

Existing System Type: Built-Up Asphalt Roofing

Year Installed: 1997

Assessed Service Life Remaining (Years) : 0

Height: 24 Ft.

Slope: 1/4" per ft.

Interior Sensitivity: Normal

Drainage: Adequate

Currently Leaking? No

History of Leaking? Yes

Drainage and Leak Details: The I roof areas slope to the interior and drain to primary roof drains. Some of the roof drains are accompanied by an overflow drain.

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	Metal	Spot Attached
Thermal barrier	5/8" Gypsum board	Laid - In -Place
Insulation	Polyisocyanurate	Laid - In -Place
Insulation	Polyisocyanurate	Mechanically attached
Cover board	Fiberboard - .5" (1/2")	Hot Asphalt
Membrane	BUR - Multiply	Hot Asphalt
Surfacing	Gravel	Hot Asphalt

Overall Core Condition

One (1) core sample was taken on the I-1 roof area which revealed a factory primed steel decking. There are multiple layers of polyisocyanurate insulation board which appear to be part of a tapered insulation system or extensive tapered crickets and one (1) layer of .50" wood fiber cover board. The membrane is a multiply BUR with a gravel surface. An under view of the I-2 roof area revealed the same type of steel decking and the roof system appears to be the same type and age. The insulation layers may differ on the I-2 roof area.

Core Photos

Photos	Date	Description
	Apr 03, 2017	Deck Underside
	Apr 03, 2017	Roof System Core

Overall Roof Inspection Assessments

Date	Inspection Type	Inspecting Company	Inspector
Apr 03, 2017	Phase 1 Roof Inspection	Roofing Solutions, Inc.	Garry Hendrickson

Roof Section I refers to the low slope roof system over the main entrance to the office area (I-1) and the entryway to the south gym (I-2) area at the Bellevue East High School facility. The roof is an approximately twenty (20) year old BUR with a gravel surface. The exterior perimeter side of the roof areas are a wall detail which are flashed with a BUR type of flashing that has been coated with an aluminum paint. The exterior walls are topped with a stone wall cap. The internal walls are flashed up 8" with same type of BUR membrane flashing which extends under a metal counter flashing or a metal wall panel. The south gym entryway also has a metal roof area at the west side of the I-2 roof area. This area is covered with a prefinished metal roof panel with a standing seam. The metal roof system appears to be performing as needed at this time, although damaged guttering was observed along both rake edges. The metal roof area is approximately 250 SF of roof area and was included into the estimated square footage of the I total roof area.

Defects and conditions found during the inspection include the following:

- Split caulking observed on the upper edge metal where it ends into higher walls
- The BUR flashings are weathered and/or deteriorated
- Roof mastic or cold process repair attempts made to the I-1 roof area
- The BUR flashings are weathered with exposed reinforcement layer visible
- The BUR flashing corners are splitting

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	Infrared Scan	Yes	Expense	High	$1,000
RSI recommends an infrared scan be performed to locate any wet insulation present in the current roof system.					
2017	Retrofit	Yes	Capital	High	$83,865
RSI recommends the installation of a new twenty (20) year design life roof system. We further recommend installation of new perimeter metal and projection details per the SMACNA Architectural Sheet Metal Manual.					
					$84,865

Roof Name: J

Roof Size: 11,575 sq. ft.

Est. replacement Cost: $ 231,500.00

Existing System Type: Built-Up Asphalt 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: The J roof areas slope to the interior and drain primary roof drain with overflow 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	Concrete	Spot Attached
Insulation	Polyisocyanurate	Hot Asphalt
Insulation	Polyisocyanurate	Hot Asphalt
Cover board	Fiberboard - .5" (1/2")	Hot Asphalt
Membrane	BUR - Multiply	Hot Asphalt
Surfacing	Gravel	Hot Asphalt

Overall Core Condition

Core samples were taken on the J-1 and J-2 roof areas, both of which revealed the same type of roofing layers in place. The deck is concrete. There is one (1) 3” layer and a 2.5” layer of polyisocyanurate insulation board, which may be part of a tapered insulation system, and one (1) layer of .50” wood fiber cover board. The membrane is a multiply BUR with a gravel surface.

Core Photos

Photos	Date	Description
	Apr 03, 2017	Core cut #1
	Apr 03, 2017	Core cut #2

Overall Roof Inspection Assessments

Date	Inspection Type	Inspecting Company	Inspector
Apr 03, 2017	Phase 1 Roof Inspection	Roofing Solutions, Inc.	Garry Hendrickson

Roof Section J refers to the low slope roof system over the second floor D wing at the Bellevue East High School facility. The J-1 roof area refers to the southern portion of the roof section and J-2 area refers to the northern portion of the area. The roof is an approximately twenty (20) year old BUR with a gravel surface. The perimeter side of the roof areas are a short wall detail which are flashed with a BUR type of flashing which has been coated with an aluminum paint and topped with a metal cap. The internal walls are flashed up 12" with the same type of BUR membrane flashing which extends under a metal counter flashing. The counter flashing is set under an EIFS wall covering. The common side with the C-3 roof area terminated with a metal roof edging. The common walls with the raised N roof area are flashed in the same manner as the other walls where the membrane flashing extends under a metal counter flashing that is set under a prefinished metal wall panel. The common wall with the H-4 area has the counter flashing set under an EPDM wall covering.

Defects and conditions found during the inspection include the following:

- Split caulking observed on the upper edge metal where it ends into a higher wall
- Damaged BUR flashings observed below the access doors
- The wall cap is hail dented
- Cold process repair attempts observed at the northern wall
- The BUR flashings are weathered with exposed reinforcement layers visible
- Damaged spots observed on the EIFS wall covering around the windows

Overall, the roof system is in poor condition due to its age and the deteriorated nature of the roof system. With the aforementioned defects addressed, 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 repairs be completed in accordance with the attached deficiency list.					
2018	Replacement	Yes	Capital	High	$231,500
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.					
					$233,000

Roof Name: K

Roof Size: 18,655 sq. ft.

Est. replacement Cost: $ 373,100.00

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

Year Installed: 1990

Assessed Service Life Remaining (Years) : 1

Height: 28 Ft.

Slope: 1/8" per ft.

Interior Sensitivity: Normal

Drainage: Adequate

Currently Leaking? No

History of Leaking? Yes

Drainage and Leak Details: The K roof areas slope to the interior and drain to 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	Expanded polystyrene	Laid - In -Place
Cover board	Fiberboard - .5" (1/2")	Mechanically attached
Membrane	EPDM	Cold Adhesive

Overall Core Condition

Core samples were taken on the K-1 and K-2 roof areas, both of which revealed the same type of roofing layers in place. The deck is poured in place gypsum. There is one (1) layer of air-expanded polystyrene insulation, which appears to be part of a tapered insulation system, and one (1) .5” layer of wood fiber cover board. The membrane is a fully-adhered, .060 mil Firestone EPDM.

Core Photos

Photos	Date	Description
	Apr 03, 2017	Core cut #1
	Apr 03, 2017	Core cut #2

Overall Roof Inspection Assessments

Date	Inspection Type	Inspecting Company	Inspector
Apr 03, 2017	Phase 1 Roof Inspection	Roofing Solutions, Inc.	Garry Hendrickson

Roof Section K refers to the low slope roof system over the second floor F wing at the Bellevue East High School facility. The roof section includes the K-1 area covering the larger southern portion of the roof section and the K-2 area, which covers the northern smaller roof area. The roof is a twenty-seven (27) year old, fully-adhered, .060 mil EPDM. The exterior perimeter sides of the roof area are raised roof edge detail where the roof membrane terminates with a metal roof edging. The internal walls are flashed up 12" with the EPDM flashing which terminates with a caulk strip detail. The common side with the L roof area is an expansion joint detail where the EPDM membrane is adhered to an expando-flash metal flange. The common wall with the J roof areas is 18" tall and covered with the EPDM membrane. The wall is topped with a metal cap.

Defects and conditions found during the inspection include the following:

- Open or loose EPDM lap edges observed on the K-2 roof area
- Missing drain strainers
- Past EPDM patch repair attempts observed to the K-1 roof area field laps
- The EPDM flashings are bridged
- Open or loose EPDM 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, 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	$2,500
RSI recommends leak repairs be performed only as needed until the roofs recommended replacement in 2018.					
2018	Replacement	Yes	Capital	High	$373,100
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.					
					$375,600

Roof Name: L

Roof Size: 8,667 sq. ft.

Est. replacement Cost: $ 86,670.00

Existing System Type: (SBS) Modified Bituminous Membrane Roofing

Year Installed: 2009

Assessed Service Life Remaining (Years) : 7

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 L slopes to the interior and drains to four (4) primary roof drains, each of which are accompanied by an overflow drain adjacent.

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	Metal	Spot Attached
Insulation	Polyisocyanurate	Laid - In -Place
Insulation	Polyisocyanurate	Laid - In -Place
Insulation	Polyisocyanurate	Mechanically attached
Membrane	BUR - Multiply	Hot Asphalt
Membrane	Mod Bit - 2 ply	Hot Asphalt
Surfacing	Granules	Factory Installed

Overall Core Condition

One (1) core cut revealed what appears to be two (2) roof systems in place. The deck is a steel decking. The original roof system consists of multiple layers of polyisocyanurate insulation, which appear to be part of a tapered insulation system, and multiple BUR plies. That roof system was later covered with one (1) layer of .25" Dens-Deck cover board and a two (2) ply modified bitumen membrane with a granulated surfacing.

Core Photos

Photos	Date	Description
	Apr 03, 2017	Roof System Core

Overall Roof Inspection Assessments

Date	Inspection Type	Inspecting Company	Inspector
Apr 03, 2017	Phase 1 Roof Inspection	Roofing Solutions, Inc.	Garry Hendrickson

Roof Section L refers to the low slope roof system over the second floor K02 thru K06 & K08 rooms along with the GAR and BAR rooms at the Bellevue East High School facility. The roof is an approximately eight (8) year old modified bitumen with a granulated surface. The exterior perimeter sides of the roof area are a wall detail which is flashed with the same type of modified bitumen and topped with a metal cap. The common side with the K-1 roof area is an expansion joint curb is flashed with an expando-flash membrane. The expansion joint is flashed with the same type of modified bitumen flashing which is adhered to the metal flange on the expando-flash membrane.

Defects and conditions found during the inspection include the following:

- Fishmouths observed in the modified bitumen laps at the ridge membrane ply area
- One (1) area with ridged or buckling roof membrane plies observed
- Roof mastic repair attempts to the flashing laps
- The expansion joint flashing lap is loose along the metal flange lap
- Random areas with open modified bitumen laps or corner seals
- Split drain flashings and pipe penetration flashing seals observed
- The roof drain areas are not properly sumped.

Overall, the roof system is in fair working condition due to the above referenced defects. 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.

Recommendations Details

Budget Year	Activity Type	Action Item ?	Allocation	Urgency	Quotation $
2017	Repair	Yes	Expense	High	$3,500
RSI recommends repairs be completed in accordance with the attached deficiency list.					
					$3,500

Roof Name: M

Roof Size: 16,073 sq. ft.

Est. replacement Cost: $ 321,460.00

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

Year Installed: 1987

Assessed Service Life Remaining (Years) : 1

Height: 32 Ft.

Slope: 1/8" per ft.

Interior Sensitivity: Normal

Drainage: Adequate

Currently Leaking? No

History of Leaking? Yes

Drainage and Leak Details: The M roof areas slope to the interior and drain to 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	Expanded polystyrene	Laid - In -Place
Cover board	Fiberboard - .5" (1/2")	Mechanically attached
Membrane	EPDM	Cold Adhesive

Overall Core Condition

One (1) core sample was taken on the M-1 roof area. The deck is poured in place gypsum. There is one (1) layer of air-expanded polystyrene insulation, which is part of a tapered insulation system, and one (1) .5” layer of wood fiber cover board. The membrane is a fully-adhered, .060 mil Firestone EPDM. An under view of the M-2 roof area revealed the same type of form board generally used for poured in place gypsum and the roof system appears to be the same type and age as M-1.

Core Photos

Photos	Date	Description
	Apr 03, 2017	Deck Underside
	Apr 03, 2017	Membrane stamp
	Apr 03, 2017	Roof System Core

Overall Roof Inspection Assessments

Date	Inspection Type	Inspecting Company	Inspector
Apr 03, 2017	Phase 1 Roof Inspection	Roofing Solutions, Inc.	Garry Hendrickson

Roof Section M refers to the low slope roof system over the third floor E wing (M-1) and a lower roof area over a connector hall way (M-2) at the Bellevue East High School facility. The roof is a thirty (30) year old, fully-adhered, .060 mil EPDM. The exterior perimeter sides of the roof area are raised roof edge detail where the roof membrane terminates with a metal roof edging. The internal wall on the M-2 roof area is flashed up 12" with the EPDM flashing which terminates with a caulk strip detail.

Defects and conditions found during the inspection include the following:

- Past EPDM stripping repairs to the M-1 roof area field laps
- Open or loose EPDM flashing lap edges observed
- Abandoned roof curbs have metal covers

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, 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	$2,000
RSI recommends leak repairs be performed only as needed until the roofs recommended replacement in 2018.					
2018	Replacement	Yes	Capital	High	$321,460
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.					
					$323,460

Roof Name: N

Roof Size: 1,056 sq. ft.

Est. replacement Cost: $ 21,120.00

Existing System Type: Built-Up Asphalt 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 N slopes to the SW corner and drains to a single drain with an overflow scupper.

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	Metal	Spot Attached
Thermal barrier	1/4" Gypsum board	Laid - In -Place
Insulation	Polyisocyanurate	Mechanically attached
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 steel decking. There is one (1) .25"" layer of Dens-Deck, one (1) 3" layer of polyisocyanurate insulation board and one (1) layer of .50" wood fiber cover board. The membrane is a multiply BUR with a gravel surface.

Core Photos

Photos	Date	Description
	Apr 03, 2017	Roof System Core

Overall Roof Inspection Assessments

Date	Inspection Type	Inspecting Company	Inspector
Apr 03, 2017	Phase 1 Roof Inspection	Roofing Solutions, Inc.	Garry Hendrickson

Roof Section N refers to the low slope roof system over a small roof area which adjoins the third floor E wing roof area at the Bellevue East High School facility. The roof is an approximately twenty (20) year old BUR with a gravel surface. The perimeter side of the roof areas are a short wall detail which are flashed with a BUR type of flashing which has been coated with an aluminum paint and topped with a metal cap.

Defects and conditions found during the inspection include the following:

- The BUR flashings are weathered with exposed reinforcement layers visible

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, 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	$500
RSI recommends leak repairs be performed only as needed until the roofs recommended replacement in 2018.					
2018	Replacement	Yes	Capital	High	$21,120
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.					
					$21,620

Roof Name: O

Roof Size: 26,272 sq. ft.

Est. replacement Cost: $ 394,080.00

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

Year Installed: 1987

Assessed Service Life Remaining (Years) : 0

Height: 32 Ft.

Slope: 1/8" per ft.

Interior Sensitivity: Normal

Drainage: Adequate

Currently Leaking? No

History of Leaking? Yes

Drainage and Leak Details: The O roof areas slope to the perimeter sides and drain to 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	Expanded polystyrene	Laid - In -Place
Cover board	Fiberboard - .5" (1/2")	Mechanically attached
Membrane	EPDM	Cold Adhesive

Overall Core Condition

Core samples were taken on the O-1, O-2 & O-3 roof areas, all of which revealed the same type of roofing layers in place. The deck is poured in place gypsum. There is one (1) layer of air-expanded polystyrene insulation, which is part of a tapered insulation system, and a .5” layer of wood fiber cover board. The membrane is a fully-adhered, .060 mil Firestone EPDM.

Core Photos

Photos	Date	Description
	Apr 03, 2017	Core cut #1
	Apr 03, 2017	Core cut #2
	Apr 03, 2017	Core cut #3
	Apr 03, 2017	Deck Underside

Core Photos Continued...

Photos	Date	Description
	Apr 03, 2017	Membrane stamp

Overall Roof Inspection Assessments

Date	Inspection Type	Inspecting Company	Inspector
Apr 03, 2017	Phase 1 Roof Inspection	Roofing Solutions, Inc.	Garry Hendrickson

Roof Section O refers to the low slope roof system over the South Gym (O-1), Fitness Room (O-2) and a lower roof area at the north side of the South Gym (O-3) at the Bellevue East High School facility. The roof is a thirty (30) year old, fully-adhered, .060 mil EPDM. The exterior perimeter sides of the roof area are raised roof edge detail where the roof membrane terminates with a metal roof edging. The internal walls are flashed up 12" with the EPDM flashing which terminates with a caulk strip detail.

Defects and conditions found during the inspection include the following:

- Deteriorated caulking observed in the brick wall expansion joints located above the O-3 roof area
- Open or loose EPDM lap edges observed on the 0-2 roof area
- Past EPDM stripping repairs to the 0-1 roof area field laps
- Open or loose EPDM flashing lap edges
- Abandoned roof curbs have metal covers
- Numerous high roof attachment anchors observed
- One (1) area of loose EPDM membrane at the SW corner of the O-1 area
- EPDM stripping repairs to the O-3 roof area field laps
- Numerous past EPDM patch repairs to the O-1 roof area
- Open or loose EPDM flashing lap edges observed
- One (1) detached drain retaining ring at the SW corner of the O-1 roof area

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	$394,080
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.					
					$394,080

Roof Name: P

Roof Size: 4,743 sq. ft.

Est. replacement Cost: $ 47,430.00

Existing System Type: Built-Up Asphalt Roofing

Year Installed: 2004

Assessed Service Life Remaining (Years) : 7

Height: 20 Ft.

Slope: 1/4" per ft.

Interior Sensitivity: Normal

Drainage: Adequate

Currently Leaking? Yes

History of Leaking? Yes

Drainage and Leak Details: Roof Section P slopes towards the perimeter sides and drains to four (4) primary roof drains with three (3) overflow scuppers.

Facility personnel reported leaks over the weight room by the expansion joint.

Existing Roof System Construction

Layer Type	Description	Method Of Attachment
Deck	Metal	Spot Attached
Insulation	Polyisocyanurate	Mechanically attached
Cover board	Dens-Deck - .25" (1/4")	Hot Asphalt
Membrane	Mod Bit - 2 ply	Hot Asphalt
Surfacing	Granules	Factory Installed
Surfacing	Gravel	Hot Asphalt

Overall Core Condition

One (1) core cut revealed an acoustical steel decking. The insulation is one (1) layer of 3" polyisocyanurate insulation and one (1) layer of .25" Dens-Deck cover board. The membrane is a two (2) ply modified bitumen with a granulated surfacing that also has a gravel surface.

Core Photos

Photos	Date	Description
	Apr 03, 2017	Deck Underside
	Apr 03, 2017	Roof System Core

Overall Roof Inspection Assessments

Date	Inspection Type	Inspecting Company	Inspector
Apr 03, 2017	Phase 1 Roof Inspection	Roofing Solutions, Inc.	Garry Hendrickson

Roof Section P refers to the low slope roof system over the weight room at the Bellevue East High School facility. The roof is an approximately thirteen (13) year old, two (2) ply modified bitumen with a granulated surfacing that also has a gravel surface. The perimeter sides of the roof area are a wall detail. The exterior walls are covered with the same type of modified bitumen flashing which has been coated with an aluminum paint and the walls are topped with a metal coping cap. The internal walls are flashed up 12" with the same type of membrane flashing which extends under a metal ledge or counter flashing. Note that there were roofers performing leak repairs at the time of the roof inspection and the splitting expansion joint flashings may have been repaired later that day.

Defects and conditions found during the inspection include the following:

- Surface loss of the gravel roof surfacing
- General debris has been thrown or blown onto the roof area
- Spray foam repair attempts observed to a window frame
- The modified bitumen flashings are weathered and cracking
- Random areas with splitting observed along the expansion joint flashing

Overall, the roof system is in fair working condition due to the reported leaks issues. 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.

Recommendations Details

Budget Year	Activity Type	Action Item ?	Allocation	Urgency	Quotation $
2017	Repair	Yes	Expense	High	$1,500
RSI recommends repairs be completed in accordance with the attached deficiency list.					
					$1,500

Roof Name: Q

Roof Size: 5,278 sq. ft.

Est. replacement Cost: $ 52,780.00

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

Year Installed: 1990

Assessed Service Life Remaining (Years) : 1

Height: 20 Ft.

Slope: 1/8" per ft.

Interior Sensitivity: Normal

Drainage: Adequate

Currently Leaking? Yes

History of Leaking? Yes

Drainage and Leak Details: Roof Section Q slopes to the interior and drains to three (3) primary roof drains.

Facility personnel reported leaks along the control joint that adjoins the Q and O-3 areas.

Existing Roof System Construction

Layer Type	Description	Method Of Attachment
Deck	Metal	Spot Attached
Thermal barrier	5/8" Gypsum board	Laid - In -Place
Insulation	Expanded polystyrene	Laid - In -Place
Insulation	Expanded polystyrene	Laid - In -Place
Cover board	Fiberboard - .5" (1/2")	Mechanically attached
Membrane	EPDM	Cold Adhesive

Overall Core Condition

One (1) core cut revealed a steel decking and one (1) layer of 5/8” gypsum board. The insulation consists of multiple layers of air-expanded polystyrene, which are a part of a tapered insulation system, and a .50” layer of wood fiber cover board. The membrane is a fully-adhered, .060 mil Firestone EPDM.

Core Photos

Photos	Date	Description
	Apr 03, 2017	Membrane stamp
	Apr 03, 2017	Roof System Core

Overall Roof Inspection Assessments

Date	Inspection Type	Inspecting Company	Inspector
Apr 03, 2017	Phase 1 Roof Inspection	Roofing Solutions, Inc.	Garry Hendrickson

Roof Section Q refers to the low slope roof system over the coach's offices, training room and a corridor at the south side of the north gym at the Bellevue East High School facility. The roof is an approximately twenty-seven (27) year old, fully-adhered, .060 mil Firestone EPDM. The perimeter sides of the roof area are a wall detail. The northern exterior wall is covered with the same type of EPDM membrane which terminates with a metal roof edging on the top of the short wall. The eastern wall is 4' tall and covered with EPDM flashing and topped with a metal coping cap. The common walls with the raised R roof area are flashed up 12" with the EPDM membrane which extends under a metal counter flashing. The internal control joints are covered with the EPDM membrane.

Defects and conditions found during the inspection include the following:

- Random areas with open or loose EPDM lap edges
- One (1) area with loose EPDM membrane
- Recent EPDM stripping repairs to the roof system field laps
- Numerous open or loose EPDM flashing laps

Overall, the roof system is in poor condition due to its age and the deteriorated nature of the roof system. With the aforementioned defects addressed, 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	High	$2,500
RSI recommends repairs be completed in accordance with the attached deficiency list.					
2018	Partial Tear-Off	Yes	Capital	High	$52,780
RSI recommends a partial tear-off of the existing roof system, leaving the existing insulation in place, and installation of a new twenty (20) year design life roof system. We further recommend installation of new perimeter metal and projection details per SMACNA Architectural Sheet Metal Manual.					
					$55,280

Roof Name: R

Roof Size: 10,486 sq. ft.

Est. replacement Cost: $ 104,860.00

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

Year Installed: 1990

Assessed Service Life Remaining (Years) : 1

Height: 28 Ft.

Slope: 1/8" per ft.

Interior Sensitivity: Normal

Drainage: Adequate

Currently Leaking? No

History of Leaking? Yes

Drainage and Leak Details: Roof Section R slopes from a central ridge line towards the north and south and drains to four (4) primary roof drains with overflow scuppers.

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

Existing Roof System Construction

Layer Type	Description	Method Of Attachment
Deck	Metal	Spot Attached
Thermal barrier	5/8" Gypsum board	Laid - In -Place
Insulation	Expanded polystyrene	Laid - In -Place
Insulation	Expanded polystyrene	Laid - In -Place
Cover board	Fiberboard - .5" (1/2")	Mechanically attached
Membrane	EPDM	Cold Adhesive

Overall Core Condition

One (1) core cut revealed a steel decking and one (1) layer of 5/8” gypsum board. The insulation is two (2) layers of 2” air-expanded polystyrene and a .50” layer of wood fiber cover board. The membrane is a fully-adhered, .060 mil Firestone EPDM.

Core Photos

Photos	Date	Description
	Apr 03, 2017	Deck Underside
	Apr 03, 2017	Roof System Core

Overall Roof Inspection Assessments

Date	Inspection Type	Inspecting Company	Inspector
Apr 03, 2017	Phase 1 Roof Inspection	Roofing Solutions, Inc.	Garry Hendrickson

Roof Section R refers to the low slope roof system over the north gym at the Bellevue East High School facility. The roof is an approximately twenty-seven (27) year old, fully-adhered, .060 mil Firestone EPDM. The perimeter sides of the roof area are a wall detail. The walls are covered with the same type of EPDM membrane which terminates with a metal roof edging on the top of the wall.

Defects and conditions found during the inspection include the following:

- Random high roof attachment anchors observed in the NW corner of the area
- One (1) missing drain strainer
- Past EPDM stripping repairs to the roof system field laps
- The NW corner of the roof area was recovered in approximately 2007
- The EPDM flashing attachment in the SW corner is beginning to fail
- Open or loose EPDM flashing laps observed on the scupper and edge metal stripping laps

Overall, the roof system is in poor condition due to its age and the deteriorated nature of the roof system. With the aforementioned defects addressed, 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	High	$2,000
RSI recommends repairs be completed in accordance with the attached deficiency list.					
2018	Partial Tear-Off	Yes	Capital	High	$104,860
RSI recommends a partial tear-off of the existing roof system, leaving the existing insulation in place, and installation of a new twenty (20) year design life roof system. We further recommend installation of new perimeter metal and projection details per SMACNA Architectural Sheet Metal Manual.					
					$106,860

Roof Name: S

Roof Size: 2,485 sq. ft.

Est. replacement Cost: $ 74,550.00

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

Year Installed: 2001

Assessed Service Life Remaining (Years) : 4

Height: 20 Ft.

Slope: 1/8" per ft.

Interior Sensitivity: Normal

Drainage: Adequate

Currently Leaking? No

History of Leaking? Yes

Drainage and Leak Details: Roof Section S slopes to the interior and drains to three (3) primary roof drains with a single overflow drain.

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	Unknown
Membrane	EPDM	Cold Adhesive
Surfacing	Elastomeric coating	Brush/Spray Applied

Overall Core Condition

No core sample was taken on this roof area. An under view of the structure revealed the same type of form board generally used for the poured in place gypsum decking. The under view also revealed that the insulation layers have a toggle bolt attachment. The membrane is a fully-adhered EPDM which has been coated with an elastomeric roof coating.

Core Photos

Photos	Date	Description
	Apr 03, 2017	Deck Underside

Overall Roof Inspection Assessments

Date	Inspection Type	Inspecting Company	Inspector
Apr 03, 2017	Phase 1 Roof Inspection	Roofing Solutions, Inc.	Garry Hendrickson

Roof Section S refers to the low slope roof system on the sunken mechanical area at the Bellevue East High School facility. The roof is an approximately sixteen (16) year old, fully-adhered, .060 mil EPDM which has been coated with an elastomeric roof coating. The perimeter sides of the roof area are a wall detail and are flashed with the EPDM flashing which extends under a metal counter flashing. Most of the walls have the counter flashing set under a prefinished metal wall panel. The common walls with the O and the I-2 roof areas have the membrane flashing extending under a surface mounted metal counter flashing.

Defects and conditions found during the inspection include the following:

- The elastomeric roof coating is peeling around the drain areas
- One (1) detached or missing drain strainer observed
- There are low flashing heights on the metal wall panel detail

Overall, the roof system is in fair working condition with no defects observed which appear to be effecting the long term performance of the roof system. 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, approximately four (4) years. 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	$300
RSI recommends repairs be completed in accordance with the attached deficiency list.					
2021	Replacement	Yes	Capital	Moderate	$74,550
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.					
					$74,850

Roof Name: T

Roof Size: 574 sq. ft.

Est. replacement Cost: $ 28,700.00

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

Year Installed: 1992

Assessed Service Life Remaining (Years) : 1

Height: 28 Ft.

Slope: 1/8" per ft.

Interior Sensitivity: Normal

Drainage: Adequate

Currently Leaking? No

History of Leaking? Yes

Drainage and Leak Details: Roof Section T slopes to the interior and drains to two (2) 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	Concrete on metal pan	Poured - In - Place
Insulation	Unknown	Unknown
Membrane	EPDM	Cold Adhesive
Surfacing	Elastomeric coating	Brush/Spray Applied

Overall Core Condition

No core sample was taken on this roof area. An under view of the structure revealed a metal form panel which is typical for a poured in place concrete decking. The membrane is a fully-adhered EPDM which has been coated with an elastomeric roof coating.

Core Photos

Photos	Date	Description
	Apr 03, 2017	Deck Underside

Overall Roof Inspection Assessments

Date	Inspection Type	Inspecting Company	Inspector
Apr 03, 2017	Phase 1 Roof Inspection	Roofing Solutions, Inc.	Garry Hendrickson

Roof Section T refers to the low slope roof system on the sunken cooling tower roof area at the Bellevue East High School facility, which sets at the north end of the third floor E wing. The roof is an approximately twenty-five (25) year old, fully-adhered, .060 mil EPDM. The perimeter sides of the roof area are a wall detail and are flashed up 6” with the EPDM flashing which terminates with a caulk strip detail. The roof area has a large cooling tower which is set on support beams that covers 90% of this roof area. There is limited access height under the steel framing.

Defects and conditions found during the inspection include the following:

- General debris has been left on the roof area
- Low flashing height at the threshold for the access door to the 3rd floor hallway

Overall, the roof system is in poor condition due to its age. With leak repairs performed only as needed, 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	$1,000
RSI recommends leak repairs be performed only as needed until the roofs recommended replacement in 2018.					
2018	Replacement	Yes	Capital	Moderate	$28,700
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.					
					$29,700

Roof Name: U

Roof Size: 1,113 sq. ft.

Est. replacement Cost: $ 33,390.00

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

Year Installed: 2010

Assessed Service Life Remaining (Years) : 3

Height: 16 Ft.

Slope: Steep

Interior Sensitivity: Normal

Drainage: Adequate

Currently Leaking? Yes

History of Leaking? Yes

Drainage and Leak Details: Roof Section U is a steep sloped saw tooth design roof area with small drains and small overflow scuppers.

Facility personnel reported active leaks on this roof area. There is also evidence of leaks on the underside of the decking, although it is not clear if these leaks only persist when the drains are blocked or if they are ongoing leak issues.

Existing Roof System Construction

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

Overall Core Condition

No core sample was taken on this roof area. An under view of the structure revealed a concrete decking. The membrane is a fully-adhered, .060 mil EPDM.

Core Photos

Photos	Date	Description
	Apr 03, 2017	Membrane stamp

Overall Roof Inspection Assessments

Date	Inspection Type	Inspecting Company	Inspector
Apr 03, 2017	Phase 1 Roof Inspection	Roofing Solutions, Inc.	Garry Hendrickson

Roof Section U refers to the steep sloped, saw tooth design roof system over the open-air canopy at the entrance to the auditorium area at the Bellevue East High School facility. The roof is an approximately seven (7) year old, fully-adhered, .060 mil EPDM. The exterior perimeter sides of the roof area are a wall detail. The exterior perimeter walls are covered with the same type of EPDM membrane and topped with a metal cap. The internal walls are flashed up 8” with the EPDM flashing which extends under a metal counter flashing. The rake edge counter flashings are set under an EIFS wall covering.

Defects and conditions found during the inspection include the following:

- Roof drains were blocked with debris at the time of the inspection
- Accumulation of debris observed around the drains
- Evidence of roof leaks on the underside of the decking
- Low flashing heights observed on the columns on the common wall with the raised H-3 area
- There are loose EPDM flashing lap edges
- The roof drains are small and not typical roof drains with retaining rings

Overall, the roof system is in fair working condition due to its poor drainage design and reported leak issues. With the aforementioned defects addressed, which should include continued cleaning of the roof area to insure proper drainage, in addition to routine maintenance and regular inspection, the roof system should remain effective for the duration of its assessed service life, approximately three (3) years. 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	High	$1,500
RSI recommends repairs be completed in accordance with the attached deficiency list, which should also include continued cleaning of the roof area to insure proper drainage of the roof system.					
2020	Replacement	Yes	Capital	High	$33,390
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.					
					$34,890

Photos and Deficiencies

Defect Code:	6	Quantity:	10 LF	Priority:	First Year

Description: Split in membrane.

Repair: Cut out splits and repair membrane with similar membrane material. Extend repair material a minimum of 6" in all directions past repair areas.

Defect Code:	11	Quantity:	Random	Priority:	Monitor

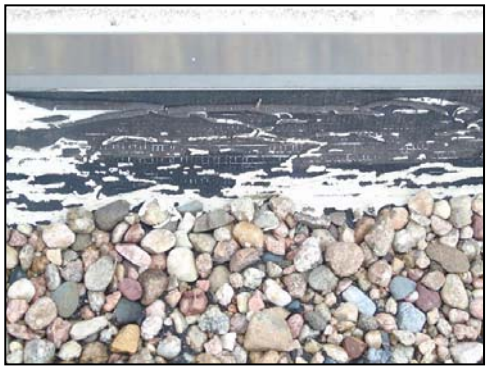
Description: Blister in field membrane or flashing.

Repair: Monitor blisters that are not broken. Repair any broken blisters or blisters in traffic areas or those applying stress to seams or flashings. Cut out blistered membrane and remove wet materials. Apply new membrane and extend a minimum of 6" on

Defect Code:	24	Quantity:	Random	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:	43	Quantity:	Widespread	Priority:	Monitor

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.

Photos and Deficiencies

Defect Code:	75	Quantity:	Widespread	Priority:	First Year
Description: Inadequate attachment of metal flashings.					
Repair: Reattach metal flashings a maximum of two EPDM washered fasteners per side of curb or attach a maximum of 12" O.C for flashings more than 24 " in length.					

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:	5	Quantity:	Random	Priority:	Monitor

Description: Buckling or ridging of membrane.

Repair: Cut out deteriorated buckles and ridges and repair membrane with similar membrane material. Extend repair material a minimum of 6" in all directions past repair areas.

Defect Code:	8	Quantity:	Widespread	Priority:	Monitor

Description: Surface erosion.

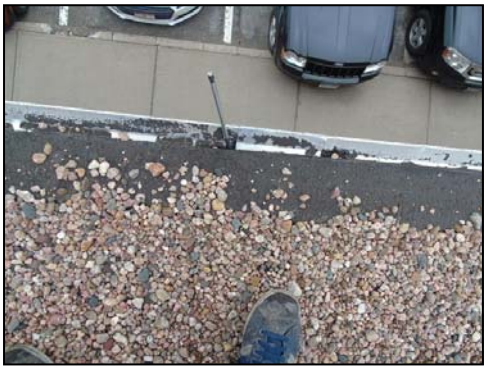
Repair: Prepare membrane surface by thoroughly cleaning and priming. Apply new surfacing of like materials to eroded areas. On gravel surfaced systems apply gravel in hot asphalt or recommended cold adhesive. Apply granulated fiberglass cap sheet or modifed bitumen membrane on like systems. Apply coating system on smooth asphalt

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:	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:	84	Quantity:	1	Priority:	Urgent
Description: Deck deflection					
Repair: Significant deck deflection creating localized, moderate to severe ponding shall be investigated to determine the cause and severity of deflection.					

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:	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:	15	Quantity:	Random	Priority:	Monitor

Description: Ponding of water.

Repair: Monitor areas for severe or chronic ponding. Provide sacrificial membrane ply in ponded areas where existing membrane is deteriorated. Install additional drain or scupper including collectors and drain piping where ponding conditions are severe and chronic.

Defect Code:	18	Quantity:	Random	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.

Photos and Deficiencies

Defect Code:	22	Quantity:	Random	Priority:	Monitor
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 SF	Priority:	Monitor
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:	Random	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:	27	Quantity:	Under 10 LF	Priority:	Monitor
Description: Missing or damaged membrane protection layer at sleeper, antenna, satellite sled, blocking, pipe stand, paver, etc.					
Repair: Install protective membrane layer and extend a minimum of 4" in all directions past sleeper, blocking, etc. Adhere or weld to synthetic membranes and set in cold adhesive for asphalt systems.					

Photos and Deficiencies

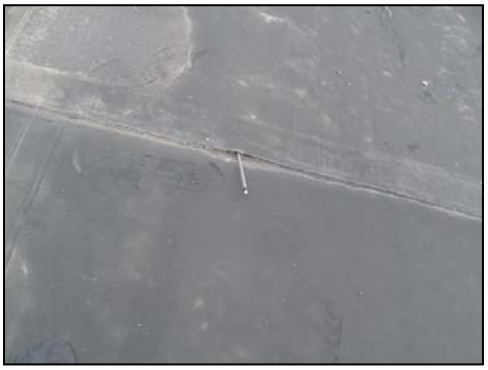
Defect Code:	40	Quantity:	20 LF	Priority:	Monitor
Description: Low flashing height.					
Repair: Raise flashing height to a minimum of 8" above finished roof surface. Provide appropriate termination of flashings with metal copings or counterflashings. Provide a compression bar termination of flashings to concrete or block surface if flashings cannot be maintained at 8" minimum height.					

Defect Code:	44	Quantity:	Random	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:	46	Quantity:	Under 10 LF	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:	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:	24	Quantity:	Random	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:	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:	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:	75	Quantity:	40 LF	Priority:	First Year
Description: Inadequate attachment of metal flashings.					
Repair: Reattach metal flashings a maximum of two EPDM washered fasteners per side of curb or attach a maximum of 12" O.C for flashings more than 24 " in length.					

Defect Code:	89	Quantity:	Under 10 LF	Priority:	Monitor
Description: Missing wall covering/cladding.					
Repair: Replace cladding/wall covering with matching materials and methods. Reattach and reseal all joints, seams, laps, etc.					

Photos and Deficiencies

Defect Code:	1	Quantity:	50 LF	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:	24	Quantity:	1	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:	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:	2	Quantity:	Under 10 LF	Priority:	First Year

Description: Fishmouth in field or flashing seam.

Repair: Cut away fishmouth and lay material flat. Apply repair of like material and extend onto existing roof surface a minimum of 4". Complete laps per manufacturer's requirements. On asphalt systems, apply three-course of mastic and fabric over lap. Resurface membrane with ballast, gravel, or granules.

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:	45	Quantity:	Random	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:	58	Quantity:	1	Priority:	First Year
Description: Inadequate, incomplete, nonconforming membrane flashings or flashing details.					
Repair: Complete membrane flashing repairs in accordance with NRCA recommendations and good roofing practices. Follow manufacturer requirements on warranted systems.					

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:	10 LF	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:	5	Quantity:	Random	Priority:	Monitor

Description: Buckling or ridging of membrane.

Repair: Cut out deteriorated buckles and ridges and repair membrane with similar membrane material. Extend repair material a minimum of 6" in all directions past repair areas.

Defect Code:	6	Quantity:	Under 10 SF	Priority:	First Year

Description: Split in membrane.

Repair: Cut out splits and repair membrane with similar membrane material. Extend repair material a minimum of 6" in all directions past repair areas.

Photos and Deficiencies

Defect Code:	8	Quantity:	Widespread	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:	9	Quantity:	Random	Priority:	First Year

Description: Membrane deterioration.

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

Defect Code:	11	Quantity:	Random	Priority:	Monitor

Description: Blister in field membrane or flashing.

Repair: Monitor blisters that are not broken. Repair any broken blisters or blisters in traffic areas or those applying stress to seams or flashings. Cut out blistered membrane and remove wet materials. Apply new membrane and extend a minimum of 6" on

Defect Code:	15	Quantity:	Random	Priority:	Monitor

Description: Ponding of water.

Repair: Monitor areas for severe or chronic ponding. Provide sacrificial membrane ply in ponded areas where existing membrane is deteriorated. Install additional drain or scupper including collectors and drain piping where ponding conditions are severe and chronic.

Photos and Deficiencies

Defect Code:	16	Quantity:	1	Priority:	Urgent

Description: Blocked drain, scupper, or downspout.

Repair: Remove all debris from drainage system and ensure drain or scupper is free flowing without restrictions at strainer or piping.

Defect Code:	24	Quantity:	Random	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:	40	Quantity:	6	Priority:	Monitor

Description: Low flashing height.

Repair: Raise flashing height to a minimum of 8" above finished roof surface. Provide appropriate termination of flashings with metal copings or counterflashings. Provide a compression bar termination of flashings to concrete or block surface if flashings cannot be maintained at 8" minimum height.

Defect Code:	43	Quantity:	Widespread	Priority:	Monitor

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.

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:	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.					

Defect Code:	47	Quantity:	Random	Priority:	Monitor
Description: Racked flashings					
Repair: Monitor flashings and repair when identified as deteriorated.					

Defect Code:	52	Quantity:	1	Priority:	First Year
Description: Missing rain cap, rain collar, or hood.					
Repair: Install rain cap, hood, or collar and secure and seal to pipe.					

Photos and Deficiencies

Defect Code:	79	Quantity:	Random	Priority:	First Year
Description: Cracks in walls.					
Repair: Investigate and repair cracks in walls. Apply elastomeric coating or membrane waterproofing to seal wall surface.					

Defect Code:	89	Quantity:	Random	Priority:	First Year
Description: Missing wall covering/cladding.					
Repair: Replace cladding/wall covering with matching materials and methods. Reattach and reseal all joints, seams, laps, etc.					

Photos and Deficiencies

Defect Code:	1	Quantity:	Under 10 LF	Priority:	Monitor

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:	9	Quantity:	Random	Priority:	Monitor

Description: Membrane deterioration.

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

Defect Code:	24	Quantity:	Random	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:	43	Quantity:	Widespread	Priority:	Monitor

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.

Photos and Deficiencies

Defect Code:	46	Quantity:	Random	Priority:	Monitor
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:	1	Quantity:	Under 10 LF	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:	23	Quantity:	10 SF	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:	23	Quantity:	Random	Priority:	Monitor

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:	Random	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:	43	Quantity:	Widespread	Priority:	Monitor
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:	89	Quantity:	Random	Priority:	Monitor
Description: Missing wall covering/cladding.					
Repair: Replace cladding/wall covering with matching materials and methods. Reattach and reseal all joints, seams, laps, etc.					

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:	17	Quantity:	4	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.					

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:	Numerous	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:	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:	2	Quantity:	Under 10 LF	Priority:	First Year

Description: Fishmouth in field or flashing seam.

Repair: Cut away fishmouth and lay material flat. Apply repair of like material and extend onto existing roof surface a minimum of 4". Complete laps per manufacturer's requirements. On asphalt systems, apply three-course of mastic and fabric over lap. Resurface membrane with ballast, gravel, or granules.

Defect Code:	5	Quantity:	500 SF	Priority:	Monitor

Description: Buckling or ridging of membrane.

Repair: Cut out deteriorated buckles and ridges and repair membrane with similar membrane material. Extend repair material a minimum of 6" in all directions past repair areas.

Defect Code:	24	Quantity:	Random	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:	45	Quantity:	Under 10 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.					

Defect Code:	46	Quantity:	40 LF	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.					

Defect Code:	58	Quantity:	4	Priority:	Monitor
Description: Inadequate, incomplete, nonconforming membrane flashings or flashing details.					
Repair: Complete membrane flashing repairs in accordance with NRCA recommendations and good roofing practices. Follow manufacturer requirements on warranted systems.					

Photos and Deficiencies

Defect Code:	3	Quantity:	10 LF	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:	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:	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:	43	Quantity:	Widespread	Priority:	Monitor
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.					

Photos and Deficiencies

Defect Code:	1	Quantity:	Widespread	Priority:	Monitor
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:	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:	Widespread	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:	100SF	Priority:	First Year
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.					

Photos and Deficiencies

Defect Code:	23	Quantity:	Random	Priority:	Monitor
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:	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:	58	Quantity:	1	Priority:	First Year
Description: Inadequate, incomplete, nonconforming membrane flashings or flashing details.					
Repair: Complete membrane flashing repairs in accordance with NRCA recommendations and good roofing practices. Follow manufacturer requirements on warranted systems.					

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:	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:	Random	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:	43	Quantity:	Widespread	Priority:	Monitor

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.

Photos and Deficiencies

Defect Code:	46	Quantity:	Random	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:	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:	18	Quantity:	50 SF	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:	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:	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.					

Photos and Deficiencies

Defect Code:	10	Quantity:	3	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:	1	Priority:	First Year

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.

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:	41	Quantity:	Under 10 LF	Priority:	Monitor

Description: Missing or inadequate flashing attachment.

Repair: Mechanically attach flashings a maximum of 6" O.C using screws and plates or 1" cap nails. Terminate with metal flashings or compression bar.

Photos and Deficiencies

Defect Code:	45	Quantity:	Random	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:	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:	17	Quantity:	1	Priority:	First Year
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.					

Defect Code:	40	Quantity:	Widespread	Priority:	Monitor
Description: Low flashing height.					
Repair: Raise flashing height to a minimum of 8" above finished roof surface. Provide appropriate termination of flashings with metal copings or counterflashings. Provide a compression bar termination of flashings to concrete or block surface if flashings cannot be maintained at 8" minimum height.					

Photos and Deficiencies

Defect Code:	22	Quantity:	Random	Priority:	Monitor
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:	40	Quantity:	Under 10 LF	Priority:	Monitor
Description: Low flashing height.					
Repair: Raise flashing height to a minimum of 8" above finished roof surface. Provide appropriate termination of flashings with metal copings or counterflashings. Provide a compression bar termination of flashings to concrete or block surface if flashings cannot be maintained at 8" minimum height.					

Photos and Deficiencies

Defect Code:	16	Quantity:	2	Priority:	Urgent
Description: Blocked drain, scupper, or downspout.					
Repair: Remove all debris from drainage system and ensure drain or scupper is free flowing without restrictions at strainer or piping.					

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.					

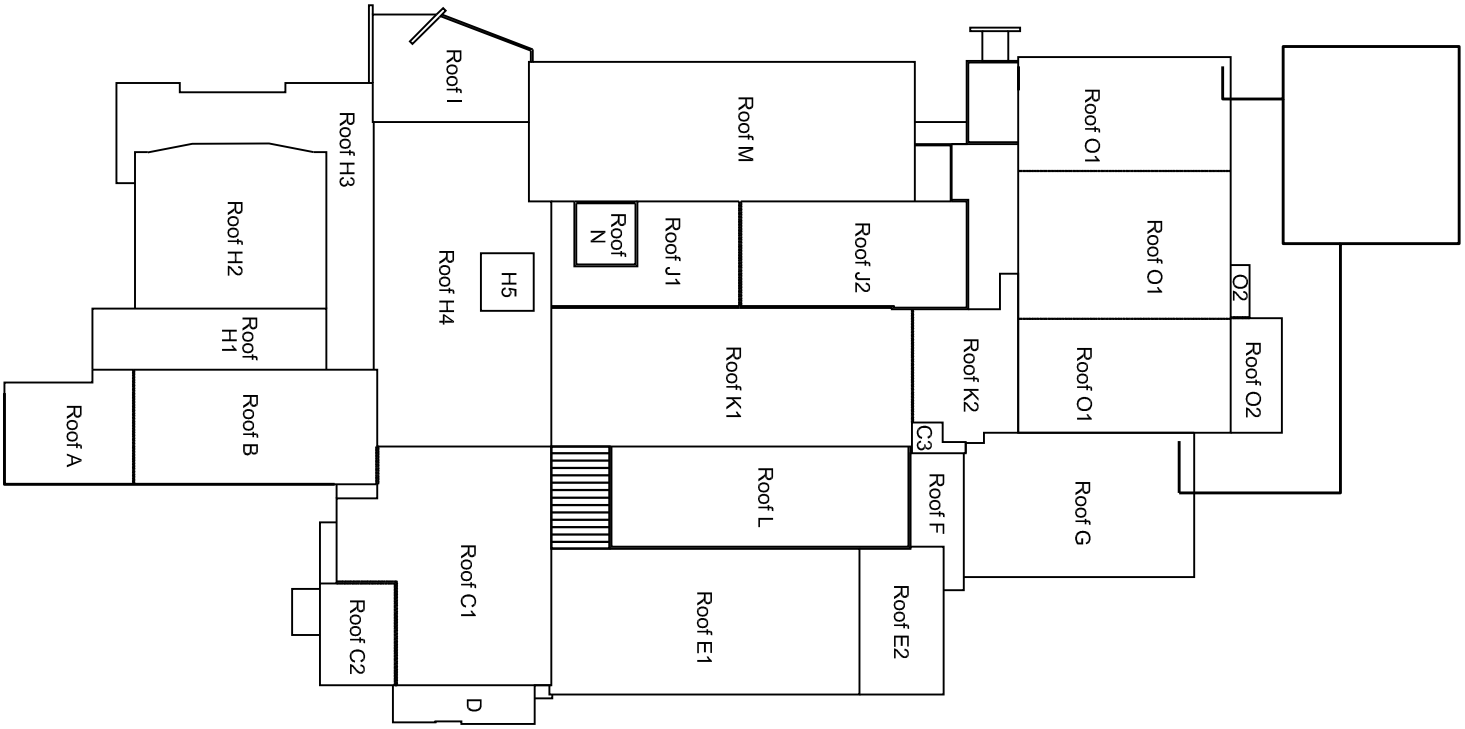
Defect Code:	28	Quantity:	Random	Priority:	Monitor
Description: Reported leak location					
Repair: Investigate leak and determine source. Repair areas with like materials of appropriate gauge and plies.					

Defect Code:	40	Quantity:	4	Priority:	Monitor
Description: Low flashing height.					
Repair: Raise flashing height to a minimum of 8" above finished roof surface. Provide appropriate termination of flashings with metal copings or counterflashings. Provide a compression bar termination of flashings to concrete or block surface if flashings cannot be maintained at 8" minimum height.					

Photos and Deficiencies

Defect Code:	45	Quantity:	Random	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:	58	Quantity:	4	Priority:	Monitor
Description: Inadequate, incomplete, nonconforming membrane flashings or flashing details.					
Repair: Complete membrane flashing repairs in accordance with NRCA recommendations and good roofing practices. Follow manufacturer requirements on warranted systems.					



DRAWING LEGEND

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

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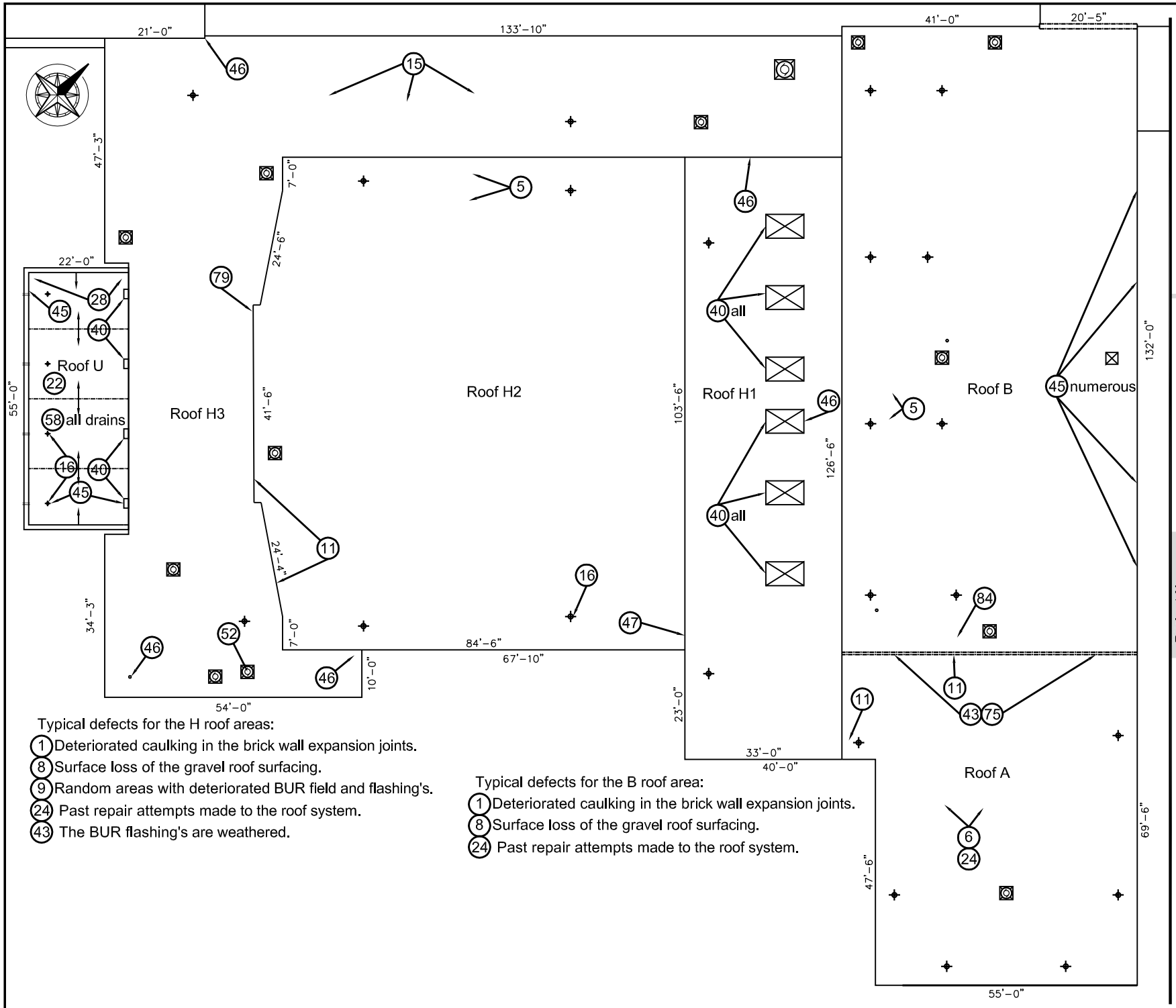
Project Name:
Bellevue East High School

Project Address:
1401 High School Drive
Bellevue, NE 68005

Sheet Number:	Date:	Drawn By:	Project Number:	Sheet Title:
01 of 01	04/03/2017	GH	17-7630	Site Plan



Typical defects for the H roof areas:

(1) Deteriorated caulking in the brick wall expansion joints.
(8) Surface loss of the gravel roof surfacing.
(9) Random areas with deteriorated BUR field and flashing's.
(24) Past repair attempts made to the roof system.
(43) The BUR flashing's are weathered.

Typical defects for the B roof area:

(1) Deteriorated caulking in the brick wall expansion joints.
(8) Surface loss of the gravel roof surfacing.
(24) Past repair attempts made to the roof system.

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: Bellevue East High School

Project Address: 1401 High School Drive Bellevue, NE 68005

Project Number: 17-7630

Sheet Title: A.B,H1-3 & U Roof Plan

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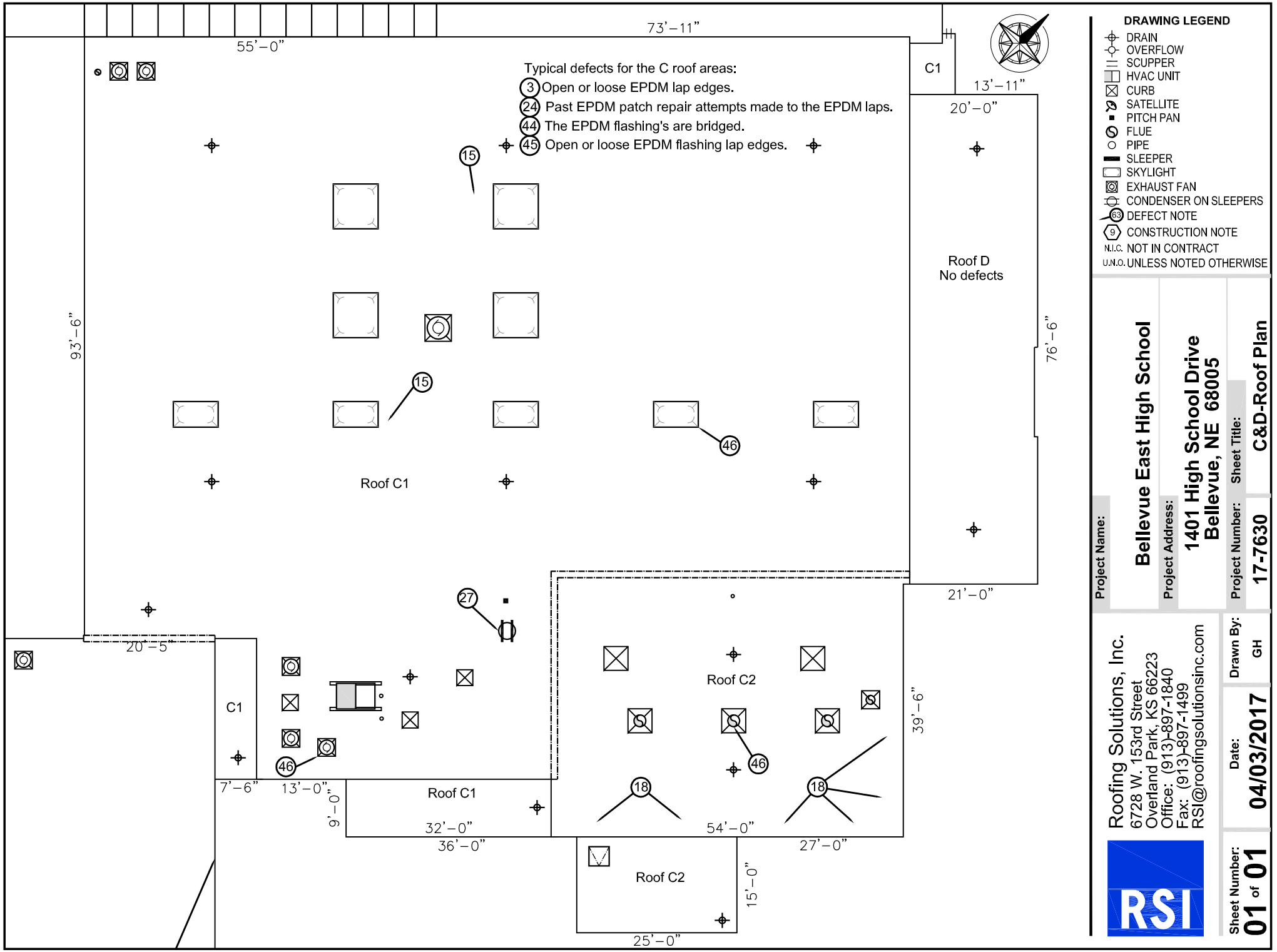
Drawn By: GH

Date: 04/03/2017

Sheet Number: 01 of 01



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: Bellevue East High School

Project Address: 1401 High School Drive Bellevue, NE 68005

Project Number: 17-7630

Sheet Title: C&D-Roof Plan

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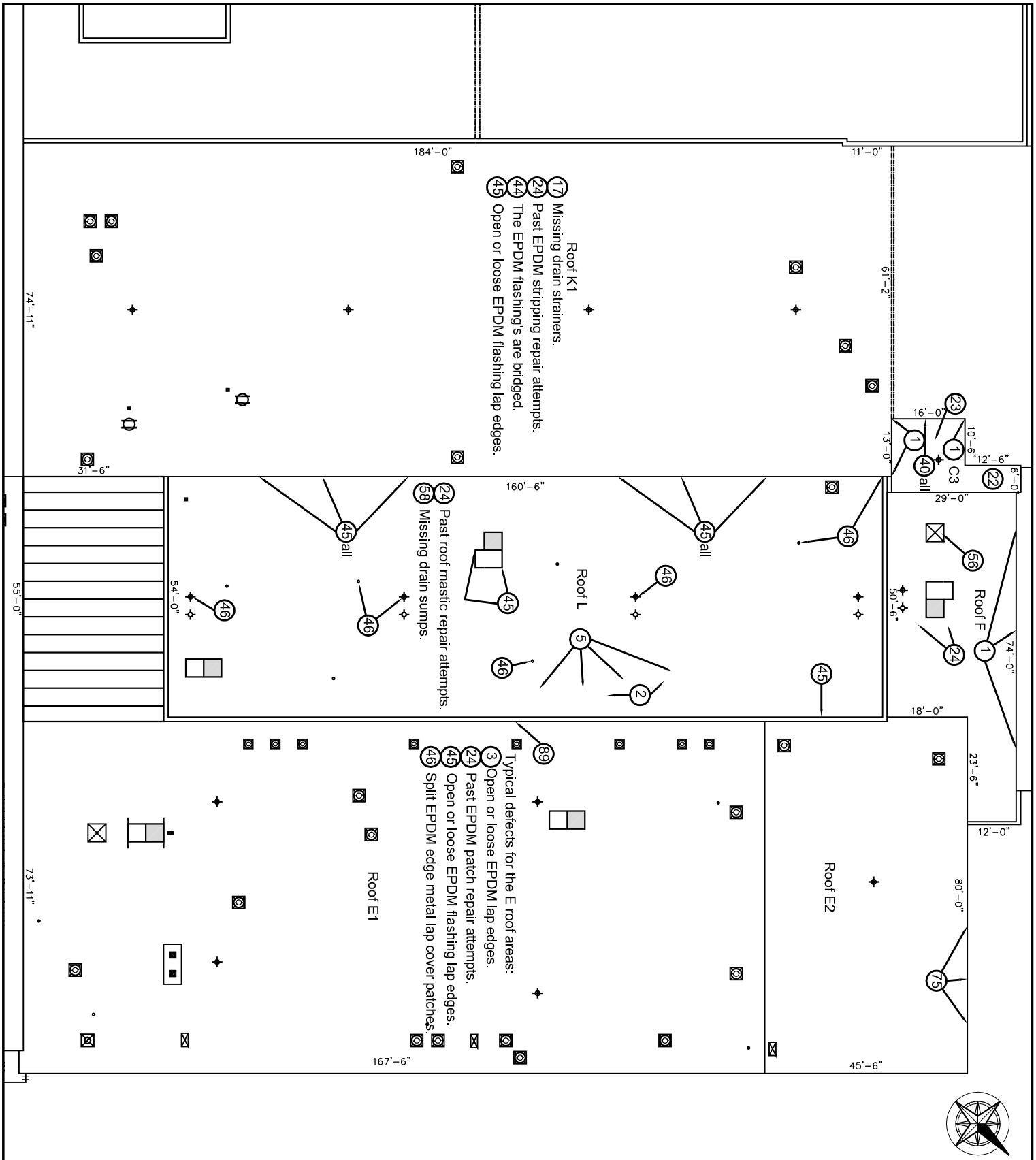
Date: 04/03/2017

Sheet Number: 01 of 01



DRAWING LEGEND

DRAIN
OVERFLOW
SCUPPER
HVAC UNIT
CURB
SATELLITE
PITCH PAN
FLUE
PIPE
SLEEPER
SKYLIGHT
EXHAUST FAN
CONDENSER ON SLEEPERS
DEFECT NOTE
CONSTRUCTION NOTE
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Project Name:
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Project Address:
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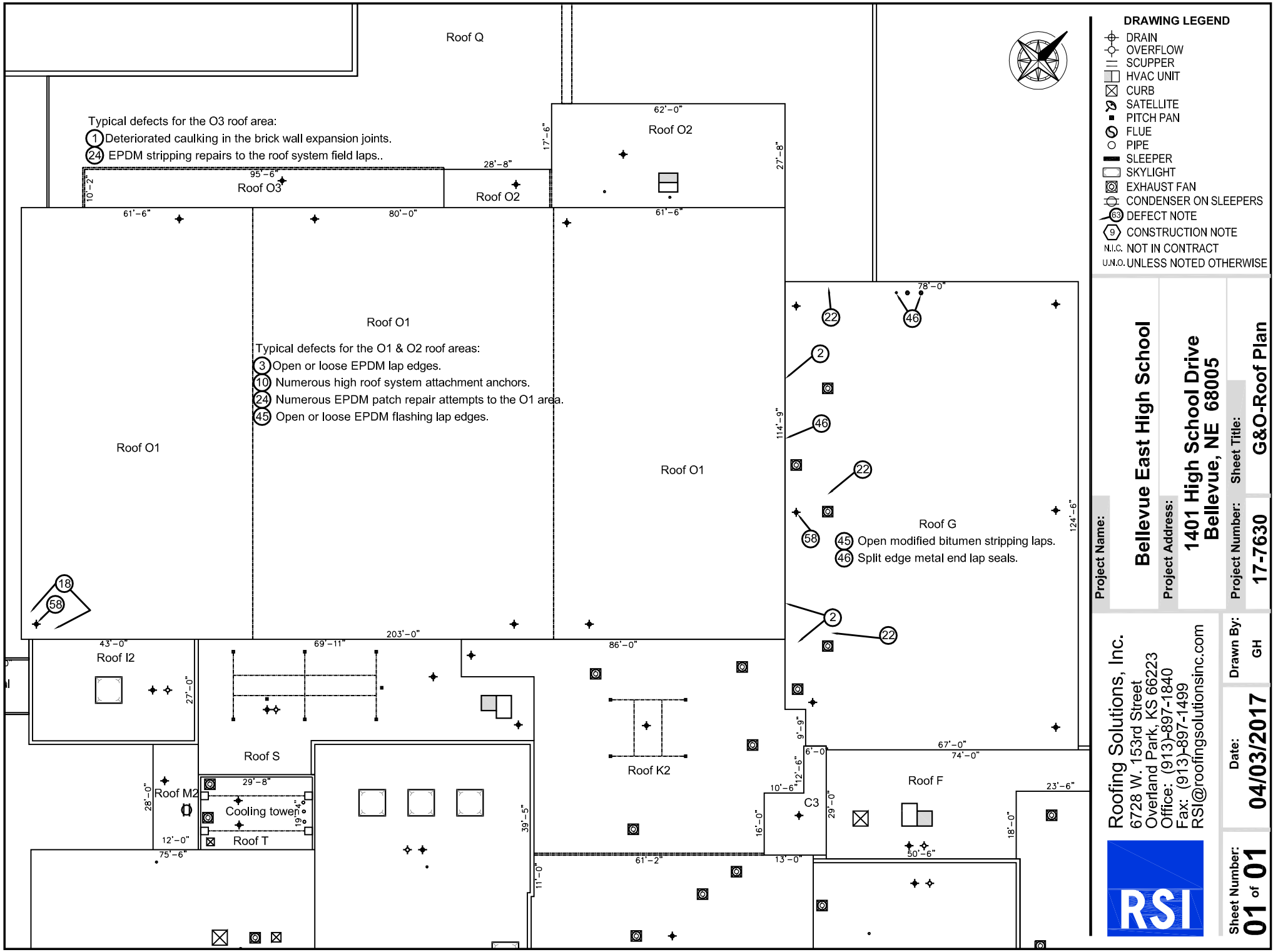
Sheet Number:	Date:	Drawn By:	Project Number:	Sheet Title:
01 of 01	04/03/2017	GH	17-7630	E,F,C3,K1&L-Roof Plan



Project Name: **Bellevue East High School**

Project Address: **1401 High School Drive Bellevue, NE 68005**

Project Number: **17-7630**

Sheet Title: **G&O-Roof Plan**

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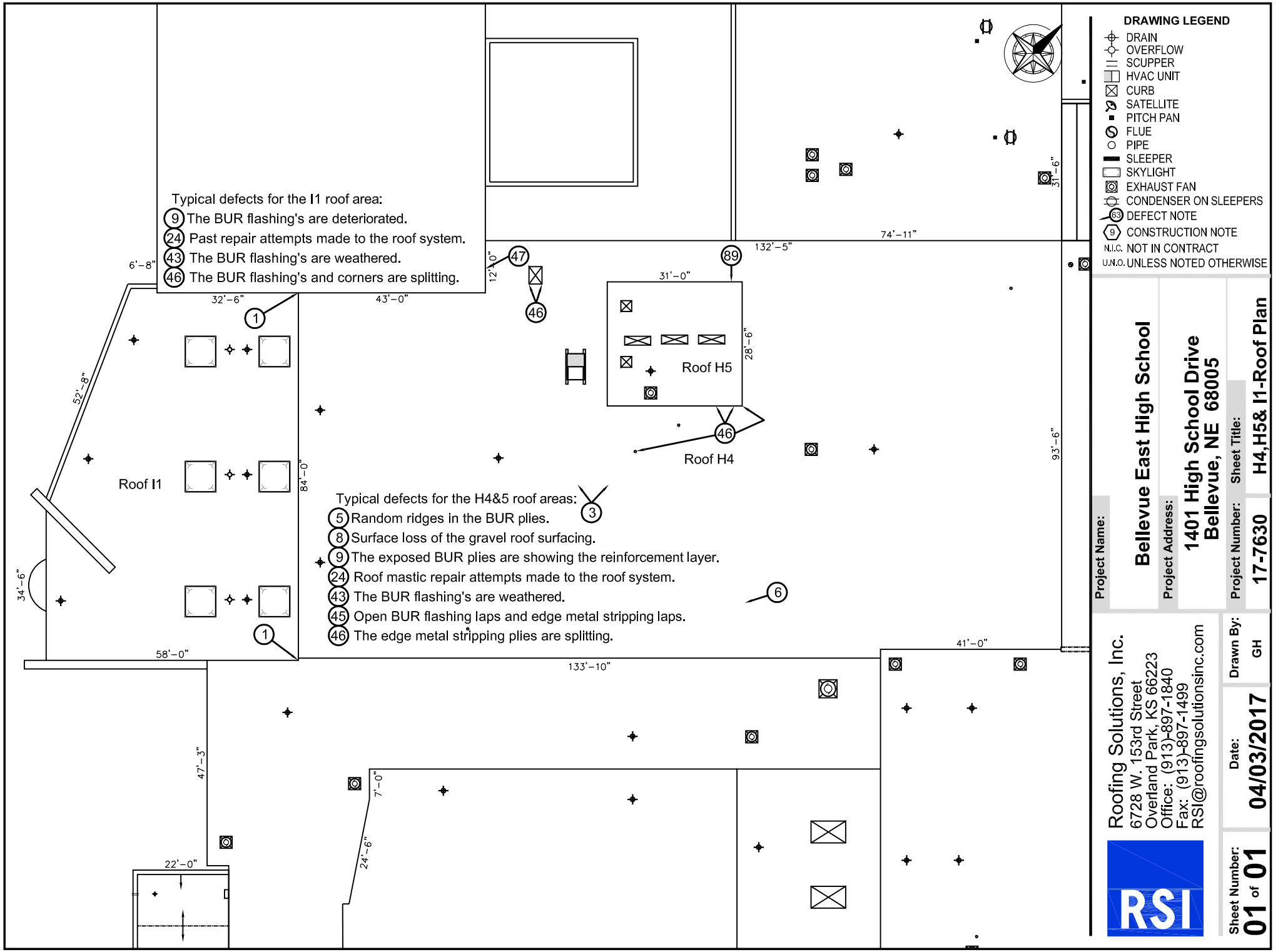
Date: 04/03/2017

Sheet Number: 01 of 01



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: Bellevue East High School

Project Address: 1401 High School Drive Bellevue, NE 68005

Project Number: 17-7630

Sheet Title: H4,H5& I1-Roof Plan

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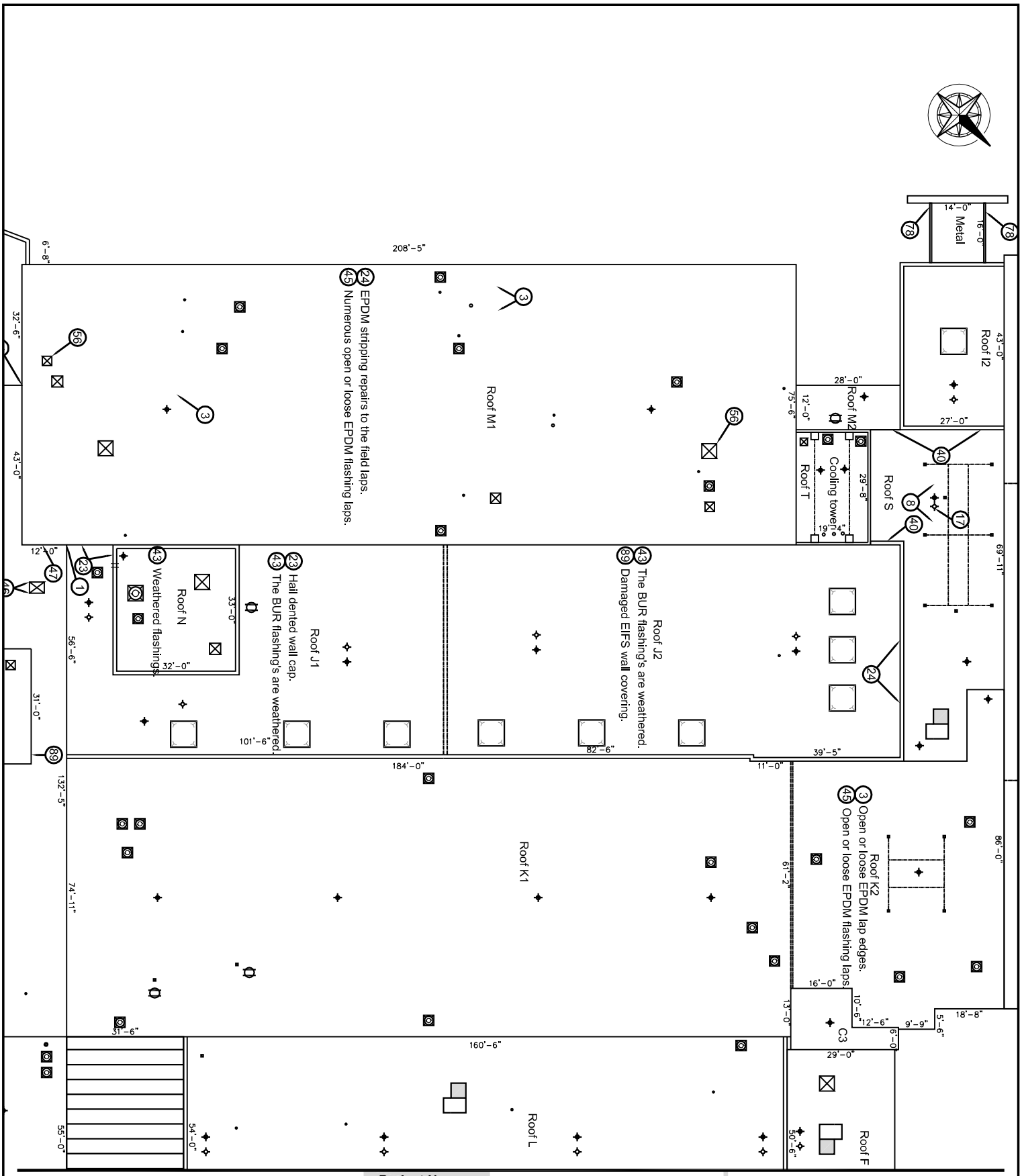
Drawn By: GH

Date: 04/03/2017

Sheet Number: 01 of 01



DRAWING LEGEND

DRAIN
OVERFLOW SCUPPER
HVAC UNIT
CURB
SATELLITE
PITCH PAN
FLUE
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Project Name:

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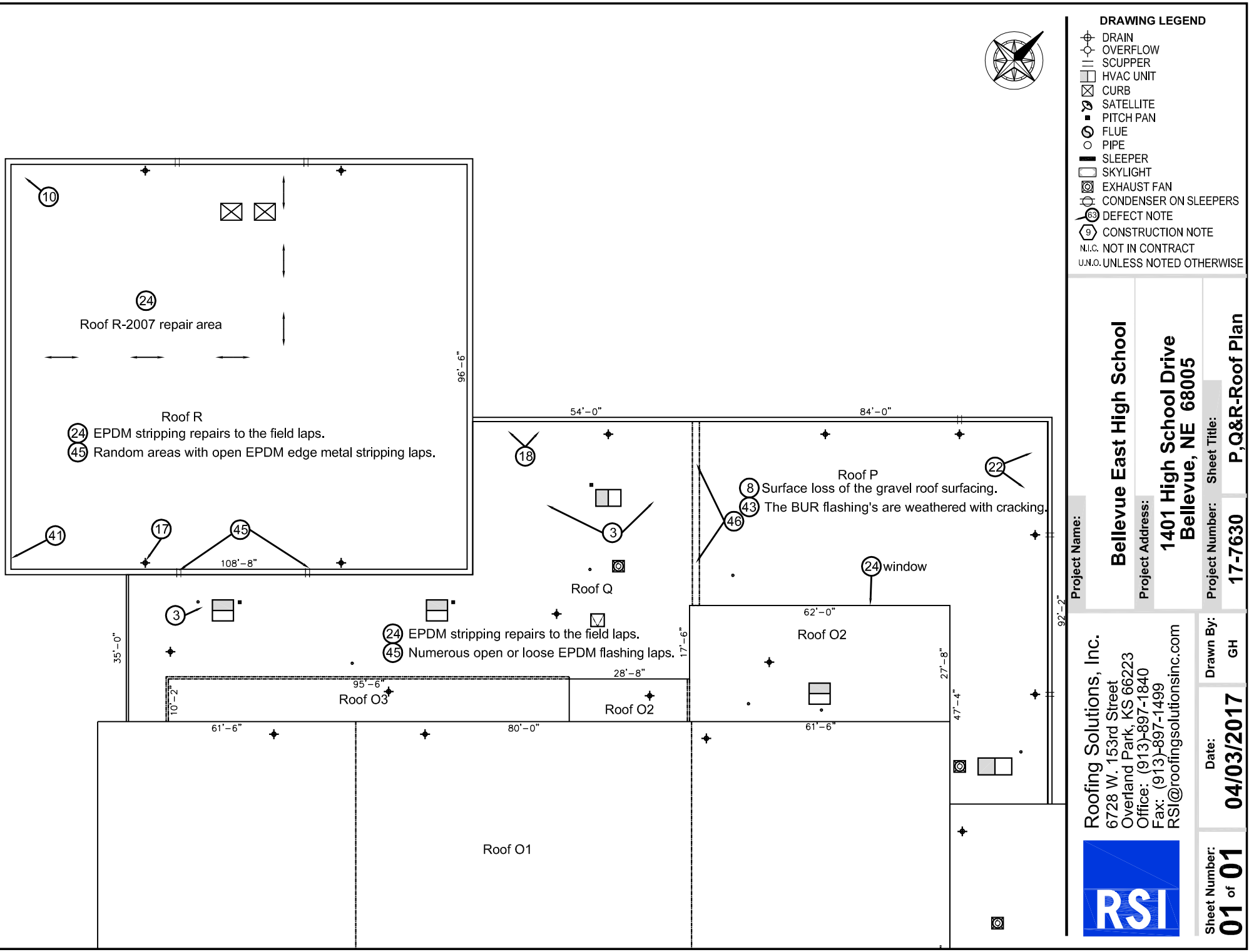
Sheet Number:	Date:	Drawn By:	Project Number:	Sheet Title:
01 of 01	04/03/2017	GH	17-7630	J,M,N,S,T,I2&K2-Roof


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
10
24
Roof R-2007 repair area
96'-6"
Roof R
24 EPDM stripping repairs to the field laps.
45 Random areas with open EPDM edge metal stripping laps.
41
17
45
108'-8"
54'-0"
84'-0"
18
3
Roof Q
22
Roof P
8 Surface loss of the gravel roof surfacing.
43 The BUR flashing's are weathered with cracking.
46
24 window
92'-2"
62'-0"
Roof O2
27'-8"
47'-4"
61'-6"
3
35'-0"
24 EPDM stripping repairs to the field laps.
45 Numerous open or loose EPDM flashing laps.
17'-6"
28'-8"
95'-6"
Roof O3
10'-2"
Roof O2
61'-6"
80'-0"
Roof O1
Project Name:
Bellevue East High School
Project Address:
1401 High School Drive
Bellevue, NE 68005
Project Number:
17-7630
Sheet Title:
P,Q&R-Roof Plan
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Drawn By:
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Date:
04/03/2017
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.