

# Roof Inspection Report

## Prepared for:

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

## Prepared by:

Roofing Solutions, Inc.  
6728 W. 153<sup>rd</sup> Street  
Overland Park, KS 66223



## Project Location

Betz Elementary  
605 W. 27<sup>th</sup> Avenue  
Bellevue, NE 68005

**Facility:** Betz Elementary  
605 W. 27th Avenue  
Bellevue  
Nebraska  
68005  
U.S.A.



**Contact Name:** Greg Boettger

**Contact Telephone:** (402) 293-5066 Ext:

**Contact Fax:** ( ) -

**Date of Last Inspection:** Mar 08, 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 1996	23,370 sq. ft. 16 ft.	(EPDM) Ethylene-Propylene-Diene-Monomer Roofing	Poor 33 0(Yrs)	\$350,550.00
	Roof B B 1996	3,097 sq. ft. 16 ft.	(EPDM) Ethylene-Propylene-Diene-Monomer Roofing	Poor 33 0(Yrs)	\$27,873.00
	Roof C C 1996	998 sq. ft. 16 ft.	(EPDM) Ethylene-Propylene-Diene-Monomer Roofing	Poor 33 0(Yrs)	\$9,980.00

## Roof Section List Continued...

Photo	Section / Name / Year Installed	Size / Height	Roof Type	Condition Index / *RCI / ASLR(Yrs)	Estimated Replacement Value
	Roof D D 1996	854 sq. ft. 16 ft.	(EPDM) Ethylene-Propylene-Diene-Monomer Roofing	Poor 33 0(Yrs)	\$14,518.00
	Roof E E 1996	6,568 sq. ft. 16 ft.	(EPDM) Ethylene-Propylene-Diene-Monomer Roofing	Poor 33 0(Yrs)	\$98,520.00
	Roof F F 1996	4,288 sq. ft. 24 ft.	(EPDM) Ethylene-Propylene-Diene-Monomer Roofing	Poor 33 0(Yrs)	\$64,320.00
<b>39,175</b>					<b>\$565,761.00</b>
*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	Replacement	Yes	Capital	High	\$350,550
Roof B	2017	Partial Tear-Off	Yes	Capital	Moderate	\$27,873
Roof C	2017	Partial Tear-Off	Yes	Capital	High	\$9,980
Roof D	2017	Replacement	Yes	Capital	High	\$14,518
Roof E	2017	Replacement	Yes	Capital	High	\$98,520
Roof F	2017	Replacement	Yes	Capital	Moderate	\$64,320
						<b>\$565,761</b>

### Capital Budgets - 5 Years

Section ID	2017	2018	2019	2020	2021
Roof A	\$350,550	\$0	\$0	\$0	\$0
Roof B	\$27,873	\$0	\$0	\$0	\$0
Roof C	\$9,980	\$0	\$0	\$0	\$0
Roof D	\$14,518	\$0	\$0	\$0	\$0
Roof E	\$98,520	\$0	\$0	\$0	\$0
Roof F	\$64,320	\$0	\$0	\$0	\$0
	<b>\$565,761</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>

### Total Budgets - 5 Years

Section ID	2017	2018	2019	2020	2021
Roof A	\$350,550	\$0	\$0	\$0	\$0
Roof B	\$27,873	\$0	\$0	\$0	\$0
Roof C	\$9,980	\$0	\$0	\$0	\$0
Roof D	\$14,518	\$0	\$0	\$0	\$0
Roof E	\$98,520	\$0	\$0	\$0	\$0
Roof F	\$64,320	\$0	\$0	\$0	\$0
	<b>\$565,761</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>

**Roof Name:** A**Roof Size:** 23,370 sq. ft.**Est. replacement Cost:** \$ 350,550.00**Existing System Type:** (EPDM) Ethylene-Propylene-Diene-Monomer Roofing**Year Installed:** 1996**Assessed Service Life Remaining (Years) :** 0**Height:** 16 Ft.**Slope:** 1/4" per ft.**Interior Sensitivity:** Normal**Drainage:** Adequate**Currently Leaking?** Yes**History of Leaking?** Yes

**Drainage and Leak Details:** The A roof areas mainly slope to the interior and drain to primary roof drains, however, some of the drains are located along the perimeter edges of the roof areas.

Facility personnel reported scattered leak issues on the A-2 roof area at the time of inspection.



## 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 - .5" (1/2")	Mechanically Fastened
Membrane	EPDM	Cold Adhesive

## Overall Core Condition

Two (2) core samples were taken on the A-1 roof area to verify the roofing layers in place. The deck is poured in place gypsum and both core samples revealed the same type of roofing layers in place. There is one (1) layer of 3" polyisocyanurate board, one (1) layer of air-expanded polystyrene, which is a tapered system, and one (1) layer of .5" wood fiber cover board. The membrane is a fully-adhered, .060 mil Firestone EPDM. Core samples taken on the A-2 and A-3 roof areas revealed the same roof makeup. The wood fiber cover board was found to be deteriorated at all core cut locations.

**Core Photos**

Photos	Date	Description
	Mar 08, 2017	Core cut #1
	Mar 08, 2017	Core cut #2
	Mar 08, 2017	Core cut #3
	Mar 08, 2017	Deck Underside



## Overall Roof Inspection Assessments

Date	Inspection Type	Inspecting Company	Inspector
Mar 08, 2017	Phase 1 Roof Inspection	Roofing Solutions, Inc.	Garry Hendrickson

Roof Section A refers to the low slope roof system over the classroom areas at the Betz Elementary School facility. The roof section includes the A-1, A-2 & A-3 roof areas. The roof is an approximately twenty-one (21) year old, fully-adhered, .060 mil Firestone EPDM. The exterior edges of the roof areas consist of a raised roof edge where the roof membrane terminates with a metal roof edging. The internal wall which divides the A-1 & A-2 roof areas and the common wall with the E roof area is flashed up 12" with the same type of EPDM membrane which terminates with a caulk strip detail. The internal control joints on the A-1 area and the division between the A-3 and B roof section is a raised roof edge with what appears to be an expansion joint detail where the roof slope changes direction. The division between the A-2 and A-3 roof area is a 12" tall curb which is covered with EPDM flashing and topped with a metal expansion cap.

Defects and conditions found during the inspection include the following:

- Open and loose EPDM lap edges observed
- Areas with standing water observed on the A-2 roof area
- Loose areas of EPDM membrane along the edges of the roof areas
- Accumulation of debris observed around the drain strainers and along the sides of the A-3 roof area
- Areas with EPDM stripping repair attempts to the A-1 roof membrane laps
- Open EPDM flashing laps observed
- Abandoned roof curbs with metal covers observed

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

## Recommendations Details

Budget Year	Activity Type	Action Item ?	Allocation	Urgency	Quotation \$
2017	Replacement	Yes	Capital	High	\$350,550

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.

**\$350,550**

**Roof Name:** B**Roof Size:** 3,097 sq. ft.**Est. replacement Cost:** \$ 27,873.00**Existing System Type:** (EPDM) Ethylene-Propylene-Diene-Monomer Roofing**Year Installed:** 1996**Assessed Service Life Remaining (Years) :** 0**Height:** 16 Ft.**Slope:** 1/4" per ft.**Interior Sensitivity:** Normal**Drainage:** Adequate**Currently Leaking?** Yes**History of Leaking?** Yes**Drainage and Leak Details:** Roof Section B slopes to the interior and drains to four (4) primary roof drains.

Recent leaks were reported on the main roof area and there was evidence of a leak under the smaller, lower elevated, B-1 roof area.





### Existing Roof System Construction

Layer Type	Description	Method Of Attachment
Deck	Metal	Spot Attached
Insulation	Polyisocyanurate	Laid - In -Place
Insulation	Expanded Polystyrene (EPS)	Laid - In -Place
Cover board	Fiberboard - .5" (1/2")	Mechanically Fastened
Membrane	EPDM	Cold Adhesive

## Overall Core Condition

One (1) core sample was taken on the main B roof area which revealed a factory primed steel decking. There is one (1) layer of 3" polyisocyanurate insulation, one (1) layer of air-expanded polystyrene, which is a tapered insulation system, and a .5" layer of wood fiber cover board. The membrane is a fully-adhered, .060 mil Firestone EPDM. The wood fiber cover board was found to be deteriorated at the core cut location. Under views of both B roof areas revealed the same type of factory primed steel decking.

## Core Photos

Photos	Date	Description
	Mar 08, 2017	Deck Underside
	Mar 08, 2017	Roof System Core

## Overall Roof Inspection Assessments

Date	Inspection Type	Inspecting Company	Inspector
Mar 08, 2017	Phase 1 Roof Inspection	Roofing Solutions, Inc.	Garry Hendrickson

Roof Section B refers to the low slope roof system over a centrally located area at the south side of the Betz Elementary School facility. The roof section includes the main B roof area and a smaller, lower elevated B-1 roof area, which is near the A-1 & A-2 roof areas. The roof is an approximately twenty-one (21) year old, fully-adhered, .060 mil Firestone EPDM. The exterior edges of the roof areas consist of a raised roof edge where the roof membrane terminates with a metal roof edging. The common side with the C roof area and the common edge with the A-3 roof area are a raised roof edge with what appears to be an expansion joint detail where the roof slope changes direction.

Defects and conditions found during the inspection include the following:

- Open and loose EPDM lap edges observed
- EPDM stripping repair attempts to the roof membrane laps
- Open EPDM flashing laps observed

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

## Recommendations Details

Budget Year	Activity Type	Action Item ?	Allocation	Urgency	Quotation \$
2017	Partial Tear-Off	Yes	Capital	Moderate	\$27,873

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.

**\$27,873**

**Roof Name:** C**Roof Size:** 998 sq. ft.**Est. replacement Cost:** \$ 9,980.00**Existing System Type:** (EPDM) Ethylene-Propylene-Diene-Monomer Roofing**Year Installed:** 1996**Assessed Service Life Remaining (Years) :** 0**Height:** 16 Ft.**Slope:** 1/4" per ft.**Interior Sensitivity:** Normal**Drainage:** Adequate**Currently Leaking?** Yes**History of Leaking?** Yes**Drainage and Leak Details:** Roof Section C slopes from north to south drains to an external guttering and onto Roof Section D.

Facility personnel reported a recent leak at the north end of the roof area, by the large chimney.





## Existing Roof System Construction

Layer Type	Description	Method Of Attachment
Deck	Wood	Nailed
Insulation	Polyisocyanurate	Laid - In -Place
Insulation	Expanded Polystyrene (EPS)	Laid - In -Place
Cover board	Fiberboard - .5" (1/2")	Mechanically Fastened
Membrane	EPDM	Cold Adhesive

## Overall Core Condition

One (1) core cut revealed a wood decking. There is one (1) layer of 3" polyisocyanurate board, one (1) layer of air-expanded polystyrene, which is a tapered system, a .5" layer of wood fiber cover board and a fully-adhered, .060 mil Firestone EPDM. The wood fiber cover board was deteriorated at the core cut location.

## Core Photos

Photos	Date	Description
	Mar 08, 2017	Membrane stamp
	Mar 08, 2017	Roof System Core

## Overall Roof Inspection Assessments

Date	Inspection Type	Inspecting Company	Inspector
Mar 08, 2017	Phase 1 Roof Inspection	Roofing Solutions, Inc.	Garry Hendrickson

Roof Section C refers to the low slope roof system at the east side of the Gymnasium at the Betz Elementary School facility. The roof is an approximately twenty-one (21) year old, fully-adhered, .060 mil Firestone EPDM. The common side with the B roof area roof area is a raised roof edge with what appears to be an expansion joint detail where the roof slope changes direction. The common side with the F roof area is a wall detail which is flashed up 12" with EPDM which terminates with a caulk strip detail. The north wall and the common side with the A-3 roof area is a wall that is covered with the EPDM flashing and topped with a metal coping cap.

Defects and conditions found during the inspection include the following:

- Open and loose EPDM lap edges observed
- Accumulation of debris observed in the guttering
- Open EPDM flashing laps observed

Overall, the roof system is in poor condition due to its age and above referenced defects. 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	Partial Tear-Off	Yes	Capital	High	\$9,980
<p>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.</p>					<b>\$9,980</b>

**Roof Name:** D**Roof Size:** 854 sq. ft.**Est. replacement Cost:** \$ 14,518.00**Existing System Type:** (EPDM) Ethylene-Propylene-Diene-Monomer Roofing**Year Installed:** 1996**Assessed Service Life Remaining (Years) :** 0**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 from north to south and drains to an external gutter.

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	Polyisocyanurate	Laid - In -Place
Cover board	Fiberboard - .5" (1/2")	Mechanically Fastened
Membrane	EPDM	Cold Adhesive

## Overall Core Condition

One (1) core cut revealed a poured in place gypsum deck. There is one (1) layer of 4" polyisocyanurate board, a .5" layer wood fiber cover board and a fully-adhered, .060 mil Firestone EPDM. The wood fiber cover board was deteriorated at the core cut location.



## Core Photos

Photos	Date	Description
	Mar 08, 2017	Roof System Core

## Overall Roof Inspection Assessments

Date	Inspection Type	Inspecting Company	Inspector
Mar 08, 2017	Phase 1 Roof Inspection	Roofing Solutions, Inc.	Garry Hendrickson

Roof Section D refers to the low slope roof system over a small roof area at the south side of the Gymnasium at the Betz Elementary School facility. The roof is an approximately twenty-one (21) year old, fully-adhered, .060 mil adhered Firestone EPDM. The exterior edges of the roof areas consist of a flat edge where the roof membrane terminates with a metal roof edging. The common wall with the E & F roof areas are flashed up 12" with the same type of EPDM membrane which terminates with a caulk strip detail.

Defects and conditions found during the inspection include the following:

- Blocked outlets or downspouts observed in the guttering
- Loose EPDM membrane observed at the west end of the roof area
- Accumulation of debris observed in the guttering
- Open EPDM flashing laps observed

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

## Recommendations Details

Budget Year	Activity Type	Action Item ?	Allocation	Urgency	Quotation \$
2017	Replacement	Yes	Capital	High	\$14,518
<p>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.</p>					
					<b>\$14,518</b>

**Roof Name:** E**Roof Size:** 6,568 sq. ft.**Est. replacement Cost:** \$ 98,520.00**Existing System Type:** (EPDM) Ethylene-Propylene-Diene-Monomer Roofing**Year Installed:** 1996**Assessed Service Life Remaining (Years) :** 0**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 E slopes to the interior and drains to six (6) primary roof drains, however, some of the drains are located along the perimeter edges of the roof.

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	Polyisocyanurate	Laid - In -Place
Insulation	Expanded Polystyrene (EPS)	Laid - In -Place
Cover board	Fiberboard - .5" (1/2")	Mechanically Fastened
Membrane	EPDM	Cold Adhesive

## Overall Core Condition

One (1) core cut revealed a poured in place gypsum deck. There is one (1) layer of 3" polyisocyanurate board, one (1) layer of air-expanded polystyrene, which is a tapered system, one (1) .5" layer of wood fiber cover board and a fully-adhered, .060 mil Firestone EPDM. The wood fiber cover board was deteriorated at the core cut location.

## Core Photos

Photos	Date	Description
	Mar 08, 2017	Roof System Core

## Overall Roof Inspection Assessments

Date	Inspection Type	Inspecting Company	Inspector
Mar 08, 2017	Phase 1 Roof Inspection	Roofing Solutions, Inc.	Garry Hendrickson

Roof Section E refers to the low slope roof system over a roof area at the west side of the Gymnasium at the Betz Elementary School facility. The roof is an approximately twenty-one (21) year old, fully-adhered, .060 mil adhered Firestone EPDM. The exterior edges of the roof areas consist of a raised roof edge where the roof membrane terminates with a metal roof edging. The common walls with the F roof area are flashed up 12" with the same type of EPDM membrane which terminates with a caulk strip detail.

Defects and conditions found during the inspection include the following:

- Open and loose EPDM lap edges observed
- Accumulation of debris around the drain strainers and along the sides of the roof
- EPDM flashings are bridged
- Open EPDM flashing laps observed
- One (1) split edge metal EPDM end lap cover patch observed

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

## Recommendations Details

Budget Year	Activity Type	Action Item ?	Allocation	Urgency	Quotation \$
2017	Replacement	Yes	Capital	High	\$98,520
<p>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.</p>					
					<b>\$98,520</b>

**Roof Name:** F**Roof Size:** 4,288 sq. ft.**Est. replacement Cost:** \$ 64,320.00**Existing System Type:** (EPDM) Ethylene-Propylene-Diene-Monomer Roofing**Year Installed:** 1996**Assessed Service Life Remaining (Years) :** 0**Height:** 24 Ft.**Slope:****Interior Sensitivity:****Drainage:** Adequate**Currently Leaking?** Unknown**History of Leaking?** Yes

**Drainage and Leak Details:** Roof Section F has a slight slope to the exterior sides of the roof and drains to an external guttering. The roof area also has a single roof drain at the south end and a small scupper at the north end.

Facility personnel reported past leak issues at the NE and SW corners of the roof area. EPDM stripping repairs have been performed in these areas and may have resolved the leak issues.





## Existing Roof System Construction

Layer Type	Description	Method Of Attachment
Deck	Tectum	Laid - In -Place
Insulation	Polyisocyanurate	Laid - In -Place
Insulation	Expanded Polystyrene (EPS)	Laid - In -Place
Cover board	Fiberboard - .5" (1/2")	Mechanically Fastened
Membrane	EPDM	Cold Adhesive

## Overall Core Condition

One (1) core cut revealed a tectum panel decking. There is one (1) layer of 3" polyisocyanurate board, one (1) layer of air-expanded polystyrene, which appears to be a tapered system, one (1) .5" layer of wood fiber cover board and a fully-adhered, .060 mil Firestone EPDM. The wood fiber cover board was deteriorated at the core cut location.

## Core Photos

Photos	Date	Description
	Mar 08, 2017	Deck Underside
	Mar 08, 2017	Roof System Core

## Overall Roof Inspection Assessments

Date	Inspection Type	Inspecting Company	Inspector
Mar 08, 2017	Phase 1 Roof Inspection	Roofing Solutions, Inc.	Garry Hendrickson

Roof Section E refers to the low slope roof system over a roof area at the west side of the Gymnasium at the Betz Elementary School facility. The roof is an approximately twenty-one (21) year old, fully-adhered, .060 mil adhered Firestone EPDM. The exterior edges of the roof areas consist of a raised roof edge where the roof membrane terminates with a metal roof edging. The common walls with the F roof area are flashed up 12" with the same type of EPDM membrane which terminates with a caulk strip detail.

Defects and conditions found during the inspection include the following:

- Open and loose EPDM lap edges observed
- Accumulation of debris around the drain strainers and along the sides of the roof
- EPDM flashings are bridged
- Open EPDM flashing laps observed
- One (1) split edge metal EPDM end lap cover patch

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	Moderate	\$64,320

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.

**\$64,320**



Photos and Deficiencies



<b>Defect Code:</b>	<b>3</b>	<b>Quantity:</b>	<b>Widespread</b>	<b>Priority:</b>	<b>Monitor</b>
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.					



<b>Defect Code:</b>	<b>15</b>	<b>Quantity:</b>	<b>Random</b>	<b>Priority:</b>	<b>Monitor</b>
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.					



<b>Defect Code:</b>	<b>18</b>	<b>Quantity:</b>	<b>Widespread</b>	<b>Priority:</b>	<b>Urgent</b>
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.					



<b>Defect Code:</b>	<b>22</b>	<b>Quantity:</b>	<b>Random</b>	<b>Priority:</b>	<b>Monitor</b>
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.					

Photos and Deficiencies



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:	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



<b>Defect Code:</b>	<b>3</b>	<b>Quantity:</b>	<b>20 LF</b>	<b>Priority:</b>	<b>First Year</b>
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.					



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

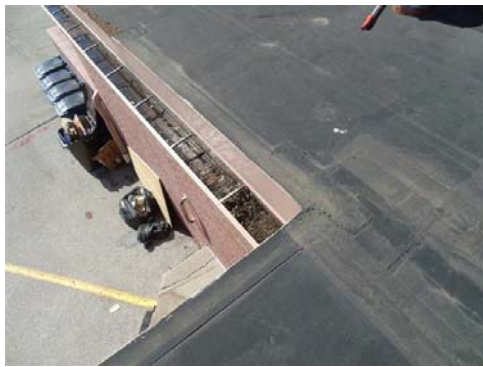


<b>Defect Code:</b>	<b>45</b>	<b>Quantity:</b>	<b>Random</b>	<b>Priority:</b>	<b>First Year</b>
Description: Open flashing lap					
Repair: Open loose lap area and clean thoroughly. Prime and reseam or reweld lap per the manufacturer's requirements. Strip-in defective lap with mimum 6" wide membrane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

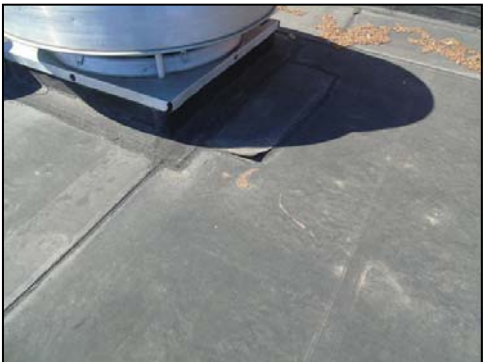
Photos and Deficiencies



<b>Defect Code:</b>	<b>3</b>	<b>Quantity:</b>	<b>Widespread</b>	<b>Priority:</b>	<b>Monitor</b>
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.					



<b>Defect Code:</b>	<b>22</b>	<b>Quantity:</b>	<b>Random</b>	<b>Priority:</b>	<b>Monitor</b>
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.					



<b>Defect Code:</b>	<b>45</b>	<b>Quantity:</b>	<b>Random</b>	<b>Priority:</b>	<b>First Year</b>
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.					

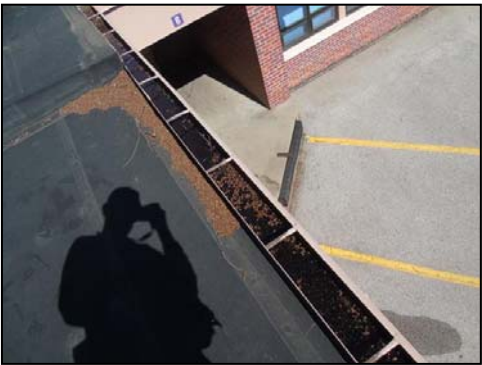
Photos and Deficiencies



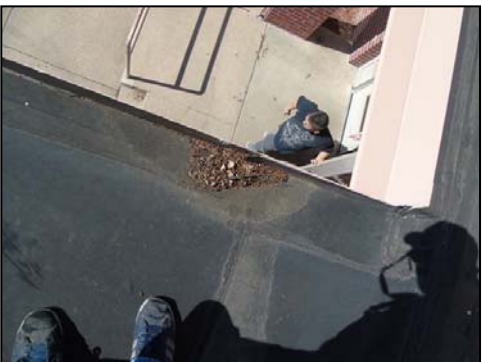
<b>Defect Code:</b>	<b>16</b>	<b>Quantity:</b>	<b>Widespread</b>	<b>Priority:</b>	<b>First Year</b>
Description: Blocked drain, scupper, or downspout.					
Repair: Remove all debris from drainage system and ensure drain or scupper is free flowing without restrictions at strainer or piping.					



<b>Defect Code:</b>	<b>18</b>	<b>Quantity:</b>	<b>150 SF</b>	<b>Priority:</b>	<b>Urgent</b>
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.					



<b>Defect Code:</b>	<b>22</b>	<b>Quantity:</b>	<b>Widespread</b>	<b>Priority:</b>	<b>First Year</b>
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.					



<b>Defect Code:</b>	<b>45</b>	<b>Quantity:</b>	<b>Random</b>	<b>Priority:</b>	<b>Monitor</b>
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



<b>Defect Code:</b>	<b>3</b>	<b>Quantity:</b>	<b>Widespread</b>	<b>Priority:</b>	<b>Monitor</b>
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.					



<b>Defect Code:</b>	<b>22</b>	<b>Quantity:</b>	<b>Random</b>	<b>Priority:</b>	<b>Monitor</b>
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.					



<b>Defect Code:</b>	<b>44</b>	<b>Quantity:</b>	<b>Widespread</b>	<b>Priority:</b>	<b>Monitor</b>
Description: Bridged flashing					
Repair: 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.					



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

Photos and Deficiencies



Defect Code:	46	Quantity:	Under 10 LF	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:	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.					

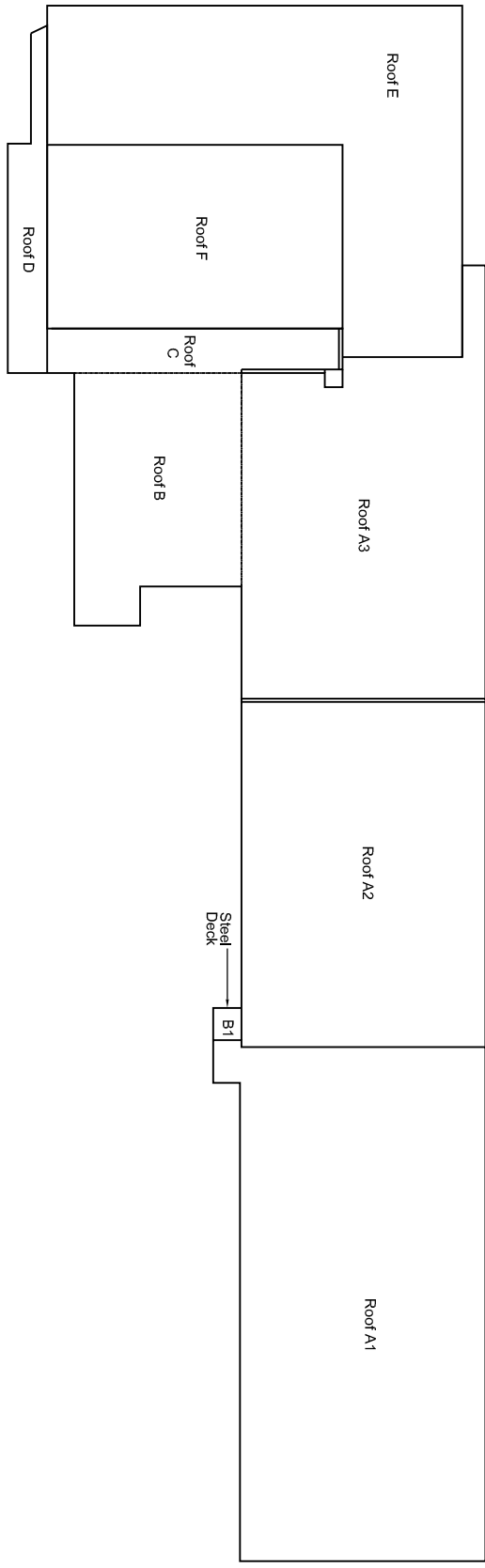


Defect Code:	24	Quantity:	Widespread	Priority:	Monitor
Description: Evidence of past problem and previous repair.					
Repair: Investigate for chronic leak problems and repair any areas that are suspect.					



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





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

Project Name:

**Betz Elementary**

Project Address:

**605 W. 27th. Avenue  
 Bellevue, NE 68005**

Sheet Number:  
**01 of 01**

Date:  
**03/08/2017**

Drawn By:  
 GH

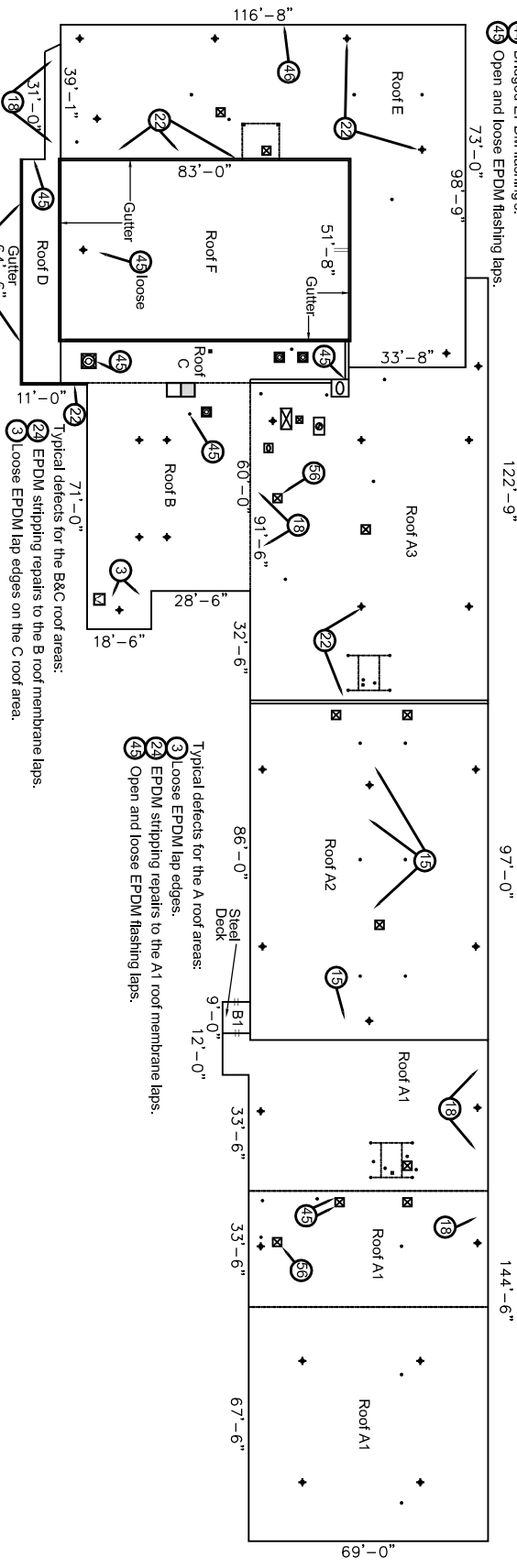
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**00-000000**

Sheet Title:  
**Site Plan**

- DRAWING LEGEND**
- ⊕ DRAIN
  - ⊖ OVERFLOW
  - ⊗ SCUPPER
  - ⊞ HVAC UNIT
  - ⊠ CURB
  - ⊡ SATELLITE
  - ⊟ PITCH PAN
  - PIPE
  - SLEEPER
  - SKYLIGHT
  - ⊞ EXHAUST FAN
  - ⊞ CONDENSER ON SLEEPERS
  - ⊞ DEFECT NOTE
  - ⊞ CONSTRUCTION NOTE
  - N.L.C. NOT IN CONTRACT
  - U.N.O. UNLESS NOTED OTHERWISE



- DRAWING LEGEND**
- ⊕ DRAIN
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  - ⊞ CONSTRUCTION NOTE
  - N.L.C. NOT IN CONTRACT
  - U.L.C. UNLESS NOTED OTHERWISE



Typical defects for the E roof area:  
 3 Loose EPDM lap edges.  
 49 Open and loose EPDM flashing laps.

Typical defects for the F roof area:  
 3 Loose EPDM lap edges.  
 24 EPDM stripping repairs to the gutter edge detail seams.  
 122'-9"

Typical defects for the B&C roof areas:  
 3 Loose EPDM lap edges on the B roof membrane laps.  
 24 EPDM stripping repairs to the B roof membrane laps.  
 3 Loose EPDM lap edges on the C roof area.

Typical defects for the A roof areas:  
 3 Loose EPDM lap edges.  
 24 EPDM stripping repairs to the A1 roof membrane laps.  
 49 Open and loose EPDM flashing laps.



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**Project Name:**  
**Betz Elementary**

**Project Address:**  
**605 W. 27th. Avenue  
 Bellevue, NE 68005**

**Project Number:** 00-000000  
**Sheet Title:** A,B,C,D,E&F-Roof Plan

**Sheet Number:** 01 of 01  
**Date:** 03/08/2017  
**Drawn By:** GH

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 Deficiency Legend
 

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Defect #	<b>FIELD MEMBRANE AND ROOF SURFACE</b>
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: Alligating 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.
	<b>METALWORK AND MISCELLANEOUS</b>
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.

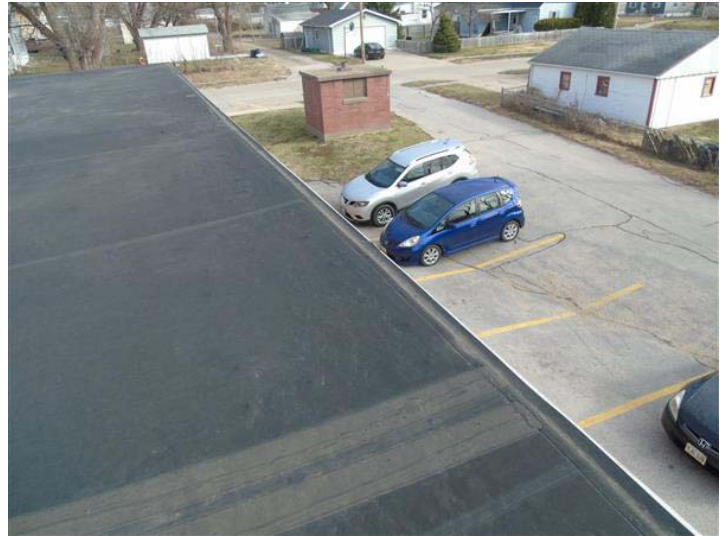
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Betz Elementary\_Bellevue, NE  
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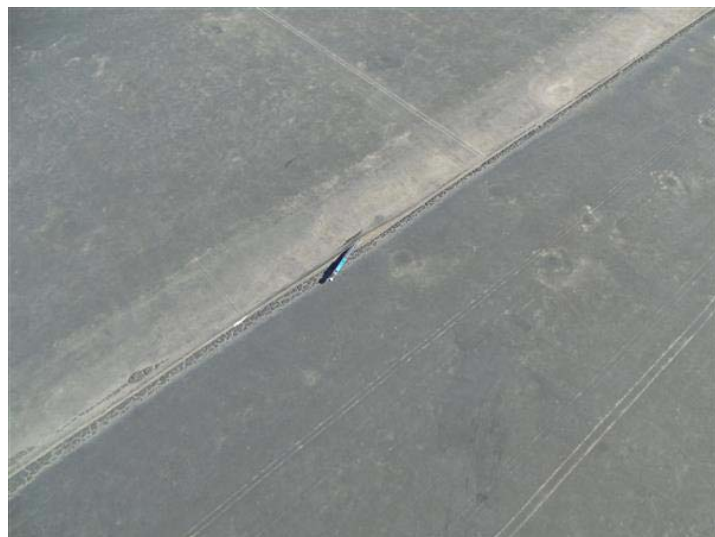


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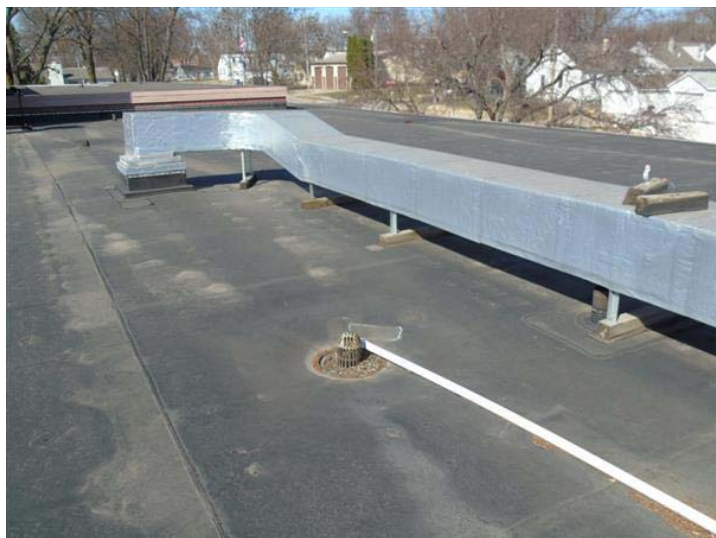




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Betz Elementary\_Bellevue, NE  
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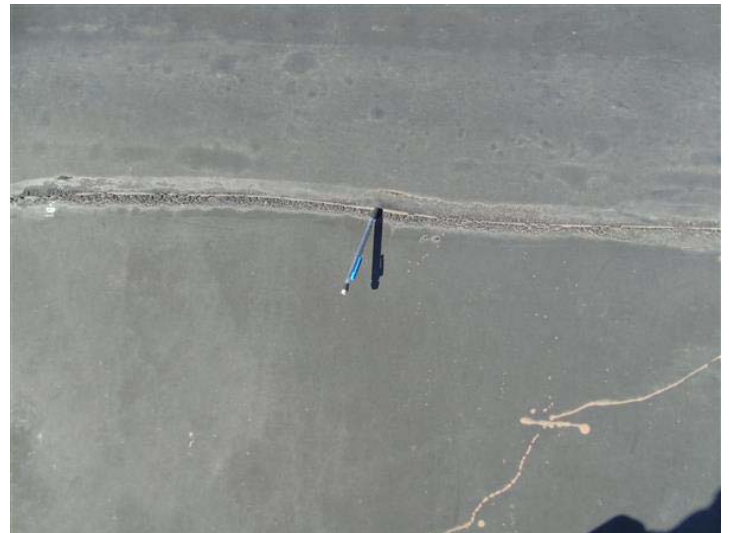
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Betz Elementary\_Bellevue, NE  
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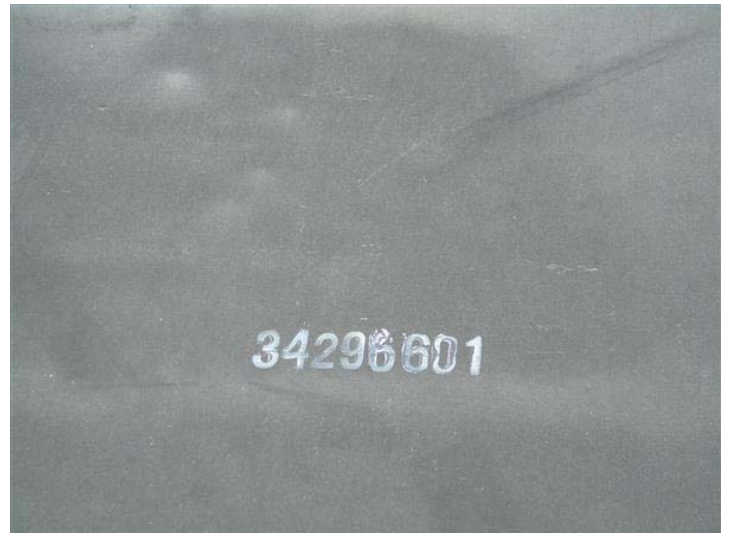
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Betz Elementary\_Bellevue, NE  
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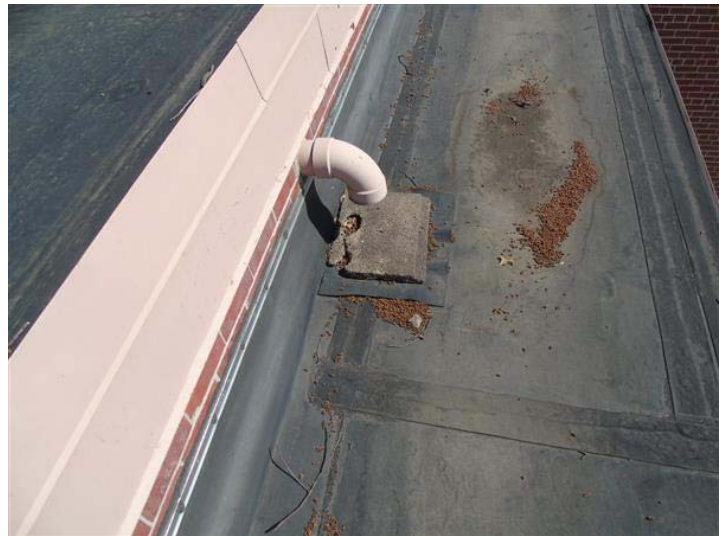
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Betz Elementary\_Bellevue, NE  
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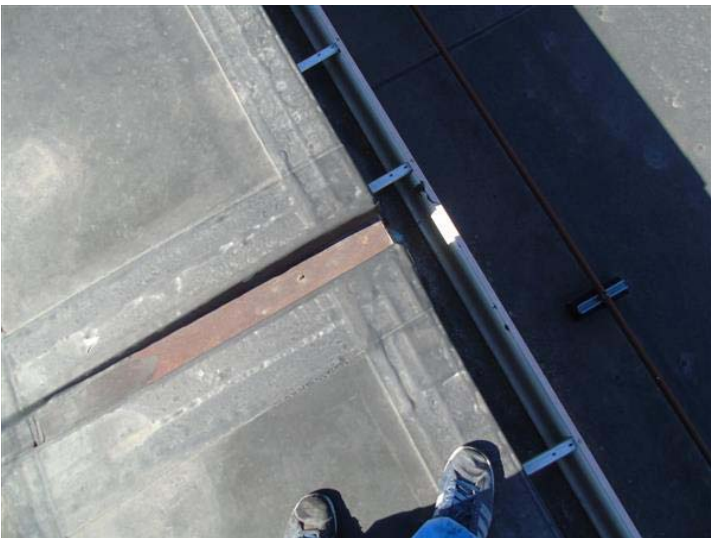




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Betz Elementary\_Bellevue, NE  
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Betz Elementary\_Bellevue, NE  
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