



Full Facility Roof Report

Prepared for:

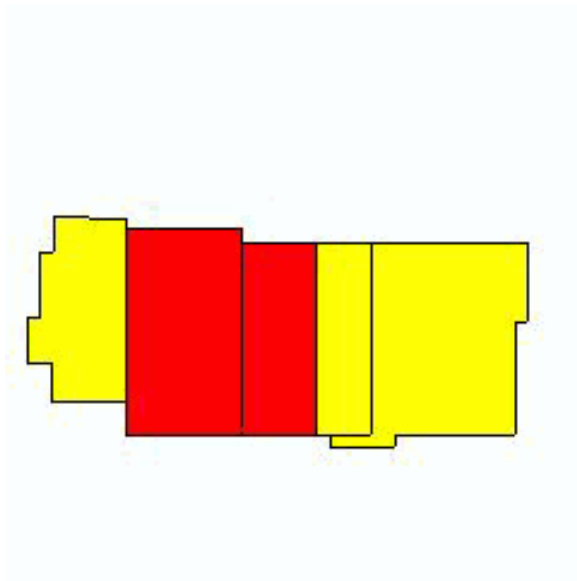
Jack Smith
Sample Warehouse
1085 Typical Avenue
Charlotte, North Carolina
28262

Prepared by:

Chuck Marvin
Roof Solutions Inc.
10307 Bailey Rd
Cornelius, NC 28031
704-896-0022
704-896-7592



Sample Warehouse



Date : October 26, 2010

Facility: Sample Warehouse
 1085 Typical Avenue
 Charlotte
 North Carolina
 28262
 U.S.A.



Contact Name: Jack Smith

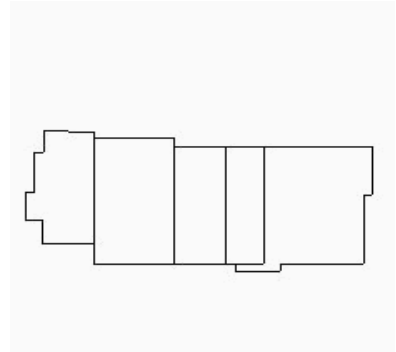
Contact Telephone: (123) 456-7890 Ext:

Contact Fax: (123) 456-7890



Date of Last Inspection: Nov 07, 2008

Type of building: Warehouse




Type of Neighborhood: Urban



Roof Section List

Photo	Section / Name / Year Installed	Size / Height	Roof System	Condition Index / ASLR(Yrs)	Estimated Replacement Value
	Roof 1 Retail 2000	37,000 sq. ft. 40 ft.	Modified Bitumen with smooth surface	Good 8(Yrs)	\$240,500.00
	Roof 2 Retail 2000	13,650 sq. ft. 15 ft.	Modified Bitumen with Granules	Good 8(Yrs)	\$88,725.00

Roof Section List Continued...

Photo	Section / Name / Year Installed	Size / Height	Roof System	Condition Index/ ASLR(Yrs)	Estimated Replacement Value
	Roof 3 General 1989	17,900 sq. ft. 15 ft.	Modified Bitumen with smooth surface	Critical 0(Yrs)	\$250,600.00
	Roof 4 High roof 1989	29,000 sq. ft. 25 ft.	Modified Bitumen with smooth surface	Poor 0(Yrs)	\$188,500.00
	Roof 5 Human Resource 1989	18,140 sq. ft. 15 ft.	Modified Bitumen with smooth surface	Fair 0(Yrs)	\$117,910.00
115,690					\$886,235.00

Action Items - Summary

Section ID	Activity Type	Allocation	Urgency	Amount
Roof 1	Inspection & Repairs	Expense	High	\$7,250
Roof 3	Replacement	Capital	High	\$250,600
Roof 4	Inspection & Repairs	Expense	High	\$7,500
				\$265,350

Capital Budgets - 5 Years

Section ID	2010	2011	2012	2013	2014
Roof 4	\$0	\$190,000	\$0	\$0	\$0
Roof 5	\$0	\$0	\$0	\$118,000	\$0

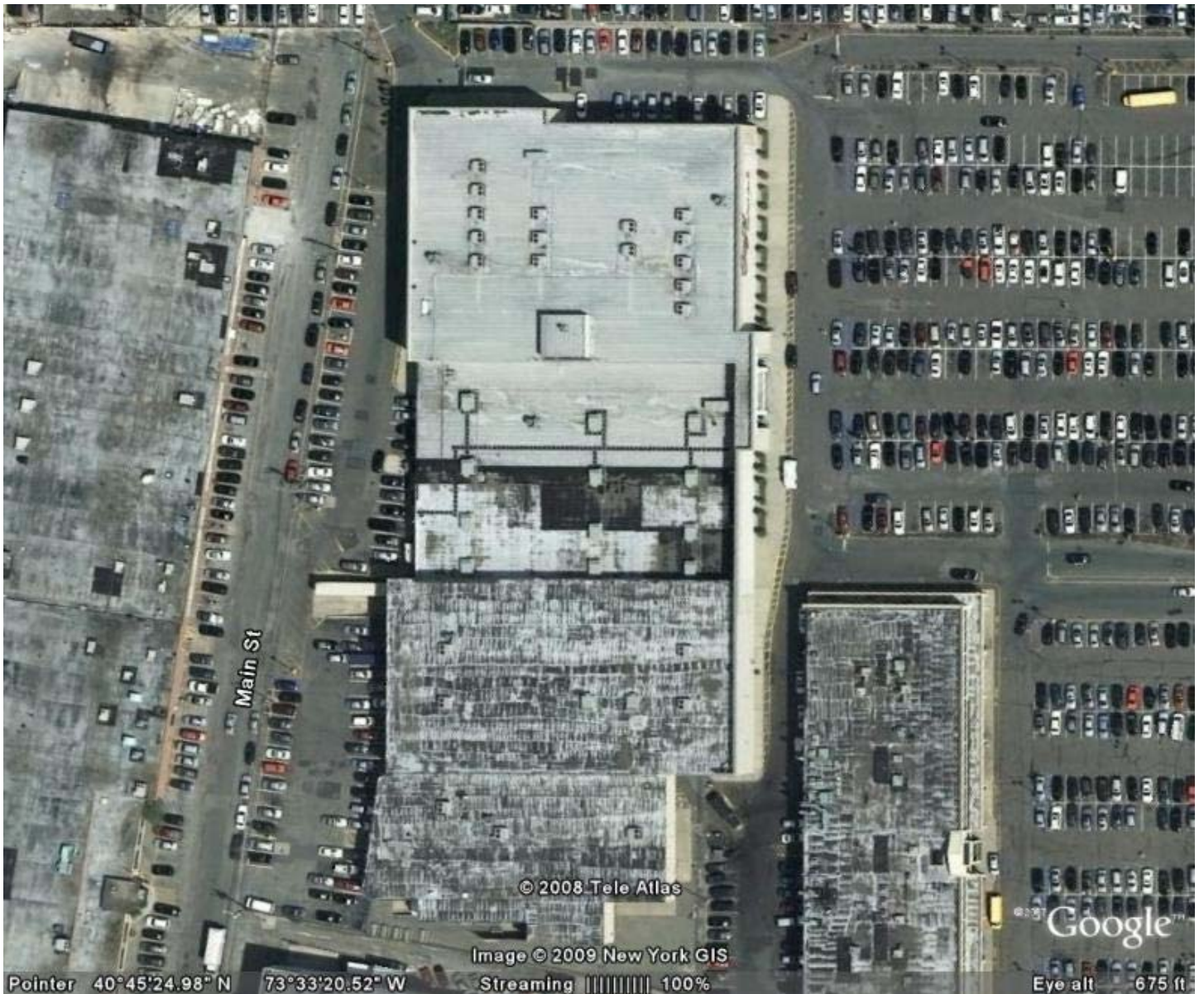
	\$0	\$190,000	\$0	\$118,000	\$0
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Total Budgets - 5 Years

Section ID	2010	2011	2012	2013	2014
Roof 1	\$2,500	\$2,500	\$2,500	\$2,500	\$0
Roof 2	\$2,500	\$2,500	\$2,500	\$2,500	\$0
Roof 3	\$2,500	\$2,500	\$2,500	\$2,500	\$0
Roof 4	\$3,500	\$190,000	\$2,500	\$2,500	\$0
Roof 5	\$2,500	\$2,500	\$2,500	\$118,000	\$0
	\$13,500	\$200,000	\$12,500	\$128,000	\$0

Warranties

Section ID	Issue Date	Expiry Date	Warranty Type	Issued By
Roof 1	Nov 07, 2006	Nov 07, 2006	Requested	GAF
Roof 2	Nov 07, 2006	Nov 07, 2006	Requested	GAF
Roof 3	Jul 11, 1988	Jul 11, 2003	15 yr. manufacturer	Siplast



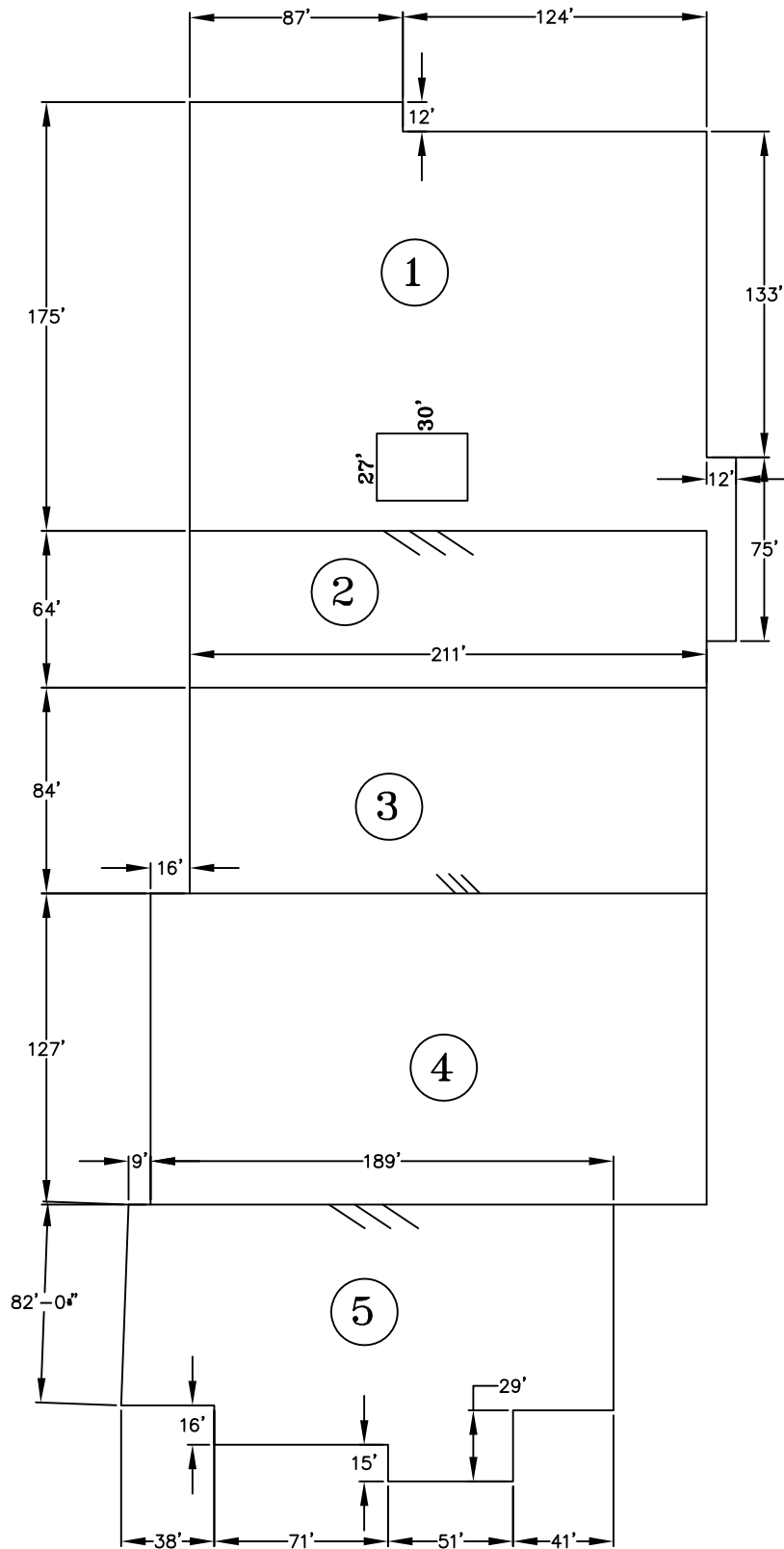
Main St

© 2008 Tele Atlas

Image © 2009 New York GIS

Google

Pointer 40°45'24.98" N 73°33'20.52" W Streaming 100% Eye alt 675 ft



SQUARE FOOTAGE	
SECTION 1	37,000s.f.
SECTION 2	13,650s.f.
SECTION 3	17,900s.f.
SECTION 4	29,000s.f.
SECTION 5	18,140s.f.
TOTAL	115,690s.f.



Project Name:
Sample Warehouse
1085 Typical Ave.
Charlotte, NC 28262

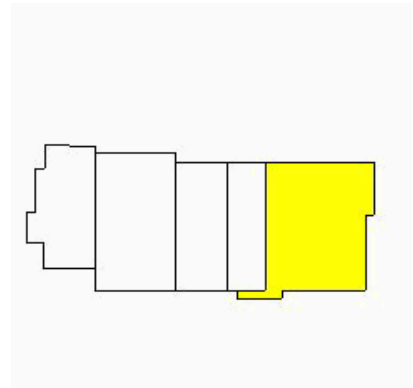
Drawn By: JWJ
Date: 1/09

Reviewed By:
Date:

Title: RP

Scale: N.T.S.

Roof Name: Retail
Roof Size: 37,000 sq. ft.
Est. replacement Cost: \$ 240,500.00
Existing System Type: Modified Bitumen with smooth surface
Year Installed: 2000
Assessed Service Life Remaining (Years) : 8
Height: 40 Ft.
Slope: 1/4" per ft.
Interior Sensitivity: Normal Sensitivity
Drainage: Adequate
Currently Leaking? Yes
History of Leaking? Yes
Drainage and Leak Details: Internal drains and raised edge



Existing Roof System Construction

Layer Type	Description	Method Of Attachment
Underside	Fireproofing	Spray applied
Deck	Metal	Mechanically attached
Insulation	Isocyanurate	Mechanically attached
Insulation	Wood Fiber	Hot asphalt
Membrane	Mod Bit - 2 ply	Hot asphalt
Surfacing	Granules	Factory installed

Moisture Surveys

Survey Date	Type of Survey	Insulation Condition	Membrane Condition
Nov 07, 2008	Infra red	Partially damp	Partially damp

The infra red showed this warranted roof to contain areas of wet insulation. Two areas of wet insulation were identified and marked on the roof. These wet areas are the result of punctures through the membrane. These roof had been previously scanned and marked by others. No action was taken to repair the holes resulting in the wet insulation areas increasing in size. Roof Solutions temporarily repaired the holes while on site to prevent further damage and expense.

Overall Roof Inspection Assessments

Date	Inspection Type	Inspecting Company	Inspector
Nov 07, 2008	Bi - Annual PM	Roof Solutions, Inc	Richard Britt

This warranted roof will fail prematurely due to minor punctures in the membrane. Trades other than roofers caused these defects. This roof requires work ASAP in order to allow it to perform. Areas of wet insulation and defective details will allow the premature failure of the roof. Once complete this roof is in good condition. Granular loss is severe and should be monitored. Many repairs require notice to the manufacturer. This work will restore the warranted condition.

Recommendations Details

Budget Year	Activity Type	Action Item ?	Allocation	Urgency	Quotation \$
2009	Inspection & Repairs	Yes	Expense	High	\$7,250
Fill and cover with hood and band ~ 20 pitch pockets - Action Item Remove wet insulation and replace - two wet areas less than 1/2 square each - Action Item Caulk joints ~ 100 LF Remove, prime, pack and seal Monitor blisters (6 - not open) - one by drain is critical Reband and secure all wood blocking ~ 40 Wood blocking - one digging into membrane - Action Item Monitor granular loss - will degrade SBS if exposed Add slip metal on flat side of all curbs ~ 50 (This will take care of the open hatch and curb flashing) The National Roofing Contractors Association's "Repair Manual for Low-Sloped Roofing" will be used to establish quality standards for all repairs.					
2010	Inspection & Maintenance	No	Expense	Low	\$2,500
2011	Inspection & Maintenance	No	Expense	Low	\$2,500
2012	Inspection & Maintenance	No	Expense	Low	\$2,500
2013	Inspection & Maintenance	No	Expense	Low	\$2,500
					\$17,250

Roof Name: Retail

Roof Size: 13,650 sq. ft.

Est. replacement Cost: \$ 88,725.00

Existing System Type: Modified Bitumen with Granules

Year Installed: 2000

Assessed Service Life Remaining (Years) : 8

Height: 15 Ft.

Slope: 1/4" per ft.

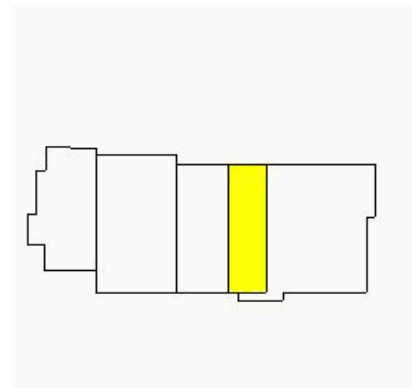
Interior Sensitivity: Normal Sensitivity

Drainage: Adequate

Currently Leaking? Yes

History of Leaking? Yes

Drainage and Leak Details: Interior drains and raised edges. Leaking is occurring along the tie-in to Roof Section 3.



Existing Roof System Construction

Layer Type	Description	Method Of Attachment
Underside	Fireproofing	Spray applied
Deck	Metal	Mechanically attached
Insulation	Isocyanurate	Mechanically attached
Insulation	Wood Fiber	Hot asphalt
Membrane	Mod Bit - 2 ply	Hot asphalt
Surfacing	Granules	Factory installed

Moisture Surveys

Survey Date	Type of Survey	Insulation Condition	Membrane Condition
Nov 07, 2008	Infra red	Dry	Dry

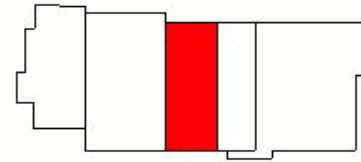
Overall Roof Inspection Assessments

Date	Inspection Type	Inspecting Company	Inspector
Nov 07, 2008	Bi - Annual PM	Roof Solutions, Inc	Richard Britt

This roof is in good condition. The repairs listed under recommendations should be completed. Monitoring the blisters and other roof conditions are needed to ensure the warranty remains valid.

Recommendations Details

Budget Year	Activity Type	Action Item ?	Allocation	Urgency	Quotation \$
2009	Inspection & Repairs	No	Expense	Low	\$3,875
<p>Monitor blisters One mole run Reband all wood blocking ~ 30 One pitch pocket Caulk joints ~ 250 LF Conduit flashing - 12 (one is missing and there is an open hole) Repair flashing - 1 Clean drain Remove debris Monitor HVAC units - Seals are failing</p> <p>The National Roofing Contractors Association's "Repair Manual for Low-Sloped Roofing" will be used to establish quality standards for all repairs.</p>					
2010	Inspection & Maintenance	No	Expense	Low	\$2,500
2011	Inspection & Maintenance	No	Expense	Low	\$2,500
2012	Inspection & Maintenance	No	Expense	Low	\$2,500
2013	Inspection & Maintenance	No	Expense	Low	\$2,500
					\$13,875

Roof Name: General**Roof Size:** 17,900 sq. ft.**Est. replacement Cost:** \$ 250,600.00**Existing System Type:** Modified Bitumen with smooth surface**Year Installed:** 1989**Assessed Service Life Remaining (Years) :** 0**Height:** 15 Ft.**Slope:** Flat**Interior Sensitivity:** Normal Sensitivity**Drainage:** Inadequate**Currently Leaking?** Yes**History of Leaking?** Yes**Drainage and Leak Details:** Several areas of ponding observed.

Existing Roof System Construction

Layer Type	Description	Method Of Attachment
Underside	Fireproofing	Spray applied
Deck	Form Pan	Mechanically attached
Insulation	Lightweight concrete fill	Poured - in - place
Membrane	Mod Bit	Adhered Asphalt
Insulation	1/2" Wood Fiber Board	Adhered Asphalt
Membrane	APP Mod Bit	Torched

Moisture Surveys

Survey Date	Type of Survey	Insulation Condition	Membrane Condition
Nov 07, 2008	Infra red	Mostly wet	Mostly wet

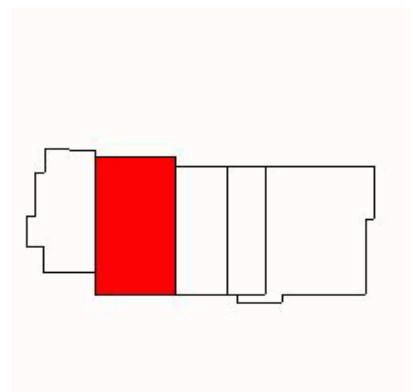
The infra red and core cuts showed this roof to contain wet insulation.

Overall Roof Inspection Assessments

Date	Inspection Type	Inspecting Company	Inspector
Nov 07, 2008	Bi - Annual PM	Roof Solutions, Inc	Richard Britt
<p>This roof has failed. It should be considered a safety hazard; only qualified employees and contractors should be allowed access. Significant areas of deck replacement are required. Additional decking will fail until the roof is properly replaced increasing the cost. Immediate replacement is required as soon as weather permits. Ponding must be addressed. Details will affect the warranty of the adjoining roof system.</p>			

Recommendations Details

Budget Year	Activity Type	Action Item ?	Allocation	Urgency	Quotation \$
2009	Replacement	Yes	Capital	High	\$250,600
<p>Repairs should be completed if replacement is delayed: Cordon off areas of bad deck Refer to the photo section. HVAC units: Failing seals: missing screws: rust Clean drains and secure drain strainers Repair conduit flashing Secure wood blocking ~30</p> <p>The National Roofing Contractors Association's "Repair Manual for Low-Sloped Roofing" will be used to establish quality standards for all repairs.</p>					
2010	Inspection & Maintenance	No	Expense	Low	\$2,500
2011	Inspection & Maintenance	No	Expense	Low	\$2,500
2012	Inspection & Maintenance	No	Expense	Low	\$2,500
2013	Inspection & Maintenance	No	Expense	Low	\$2,500
					\$260,600

Roof Name: High roof**Roof Size:** 29,000 sq. ft.**Est. replacement Cost:** \$ 188,500.00**Existing System Type:** Modified Bitumen with smooth surface**Year Installed:** 1989**Assessed Service Life Remaining (Years) :** 0**Height:** 25 Ft.**Slope:** 1/4" per ft.**Interior Sensitivity:** Normal Sensitivity**Drainage:** Adequate**Currently Leaking?** Yes**History of Leaking?** Yes**Drainage and Leak Details:** Interior Drains and raised edge.

Existing Roof System Construction

Layer Type	Description	Method Of Attachment
Underside	Fireproofing	Spray applied
Deck	Form Board on Bulb "T"	Mechanically attached
Insulation	Fiberboard	Mechanically attached
Insulation	Wood Fiber	Poured - in - place
Membrane	APP Mod Bit	Adhered Asphalt
Insulation	1.5" Fiberboard	Adhered Asphalt
Membrane	APP Mod Bit	Torched

Moisture Surveys

Survey Date	Type of Survey	Insulation Condition	Membrane Condition
Nov 07, 2008	Infra red	Partially damp	Partially damp

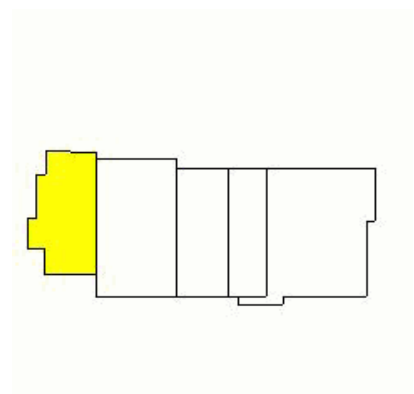
The infra red and core cuts showed this roof to contain wet insulation. Over one-third of the roof is wet.

Overall Roof Inspection Assessments

Date	Inspection Type	Inspecting Company	Inspector
Nov 07, 2008	Bi - Annual PM	Roof Solutions, Inc	Richard Britt
<p>This roof is failing. Over one-third of the roof contains wet insulation. The moisture will continue to deteriorate the substrate. Extensive repairs are need as identified in the photo section. Replacement should be budgeted for in the next few years. The bowing wall is a hazard and should be further investigated and repaired.</p>			

Recommendations Details

Budget Year	Activity Type	Action Item ?	Allocation	Urgency	Quotation \$
2009	Inspection & Repairs	Yes	Expense	High	\$7,500
<p>Seal all open seams on the wall flashing~Random Repair approximately ~100 LF of perimeter flashing Secure the metal edge ~15 LF Install drain strainers ~10 Flash open pipe Secure all wood blocking and install protection pads beneath the blocking. Strip in all edge metal joints. Refer to the photo section.</p> <p>The National Roofing Contractors Association's "Repair Manual for Low-Sloped Roofing" will be used to establish quality standards for all repairs.</p>					
2010	Inspection & Maintenance	No	Expense	Low	\$3,500
2011	Replacement	No	Capital	Moderate	\$190,000
2012	Inspection & Maintenance	No	Expense	Low	\$2,500
2013	Inspection & Maintenance	No	Expense	Low	\$2,500
					\$206,000

Roof Name: Human Resource**Roof Size:** 18,140 sq. ft.**Est. replacement Cost:** \$ 117,910.00**Existing System Type:** Modified Bitumen with smooth surface**Year Installed:** 1989**Assessed Service Life Remaining (Years) :** 0**Height:** 15 Ft.**Slope:** 1/4" per ft.**Interior Sensitivity:** Normal Sensitivity**Drainage:** Adequate**Currently Leaking?** No**History of Leaking?** No**Drainage and Leak Details:** The drainage is along the roof's edge.

Existing Roof System Construction

Layer Type	Description	Method Of Attachment
Underside	Fireproofing	Spray applied
Deck	Metal	Mechanically attached
Insulation	1" Perlite	Loose laid
Insulation	1.5" ISO	Mechanically attached
Membrane	Multi-Ply Built Up Roof	Adhered Asphalt
Membrane	APP Mod Bit	Torched

Moisture Surveys

Survey Date	Type of Survey	Insulation Condition	Membrane Condition
Nov 07, 2008	Infra red	Dry	Dry

The infra red scan and core cut showed this roof to be dry.

Overall Roof Inspection Assessments

Date	Inspection Type	Inspecting Company	Inspector
Nov 07, 2008	Bi - Annual PM	Roof Solutions, Inc	Richard Britt

This roof is in fair poor condition. With the repairs and preventative maintenance, the service life of this roof may be extended five years and perhaps longer.

Recommendations Details

Budget Year	Activity Type	Action Item ?	Allocation	Urgency	Quotation \$
2009	Inspection & Repairs	No	Expense	Low	\$3,500
<p>Repair hole as marked. Flash all ninety degree angle changes at penetrations. Secure wood blocking and add protection pads beneath. Refer to the photo section.</p> <p>The National Roofing Contractors Association's "Repair Manual for Low-Sloped Roofing" will be used to establish quality standards for all repairs.</p>					
2010	Inspection & Maintenance	No	Expense	Low	\$2,500
2011	Inspection & Maintenance	No	Expense	Low	\$2,500
2012	Inspection & Maintenance	No	Expense	Low	\$2,500
2013	Replacement	No	Capital	Low	\$118,000
					\$129,000



Roof Section 1
The high roof is in the distance.



Roof 1-1
Small blisters are typical and need to be monitored.



Roof 1-2
The top of the flashing are exposed. Install termination bar and slip metal counter flashing.



Roof 1-3
The wall joints are deteriorated.



Roof 1-4
Metal debris will puncture the membrane.



Roof 1-5
The pile of granules is an indication of the extensive granular loss exhibited on this roof. This situation should be monitored.



Roof 1-6
The penetration pockets are all in poor condition and should be topped off and a hood added.



Roof 1-7
The base flashing needs to be properly terminated and have counter flashing installed.



Roof 1-8
Metal panels and debris can become airborne and cause damage to the roof or pedestrians.



Roof 1-9
Wood blocking should be secured to the pipe. Protection pads should be installed under all wood blocking.



Roof 1-10
This wood block has damaged the membrane.



Roof 1-11
A hole was discovered in the roof membrane and was temporarily repaired by Roof Solutions.



Roof 1-12

The infra-red camera has detected moisture in the system as seen in the lighter area. This corresponds with the hole repaired in the photo above.



Roof 1-13

A temporary repair completed by Roof Solutions.



Roof 1-14

This wet area was detected with the infra-red camera. This corresponds with the repair shown in the previous photo.



Roof 1-15

Lighter colored areas indicate more mass radiating at a higher temperature. Water is the additional mass in this case. The right angles are created as water spills over into an adjacent insulation board.



Roof 1-16
The right angles are created as water spills over into an adjacent insulation board.



Roof 1-17
The capacitance meter registered moisture in the insulation.



Roof 1-18
Moisture was registered on the Tramex/Capacitance Meter.



Roof Section 2
Overview of this roof section. Roof 1 is the high roof to the left.



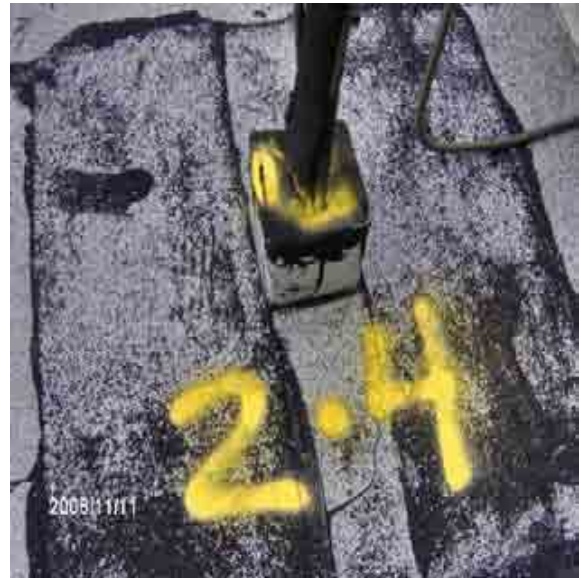
Roof 2-1
Blister was observed and marked. These should be monitored.



Roof 2-2
This mole run should be cut open and patched.



Roof 2-3
All the wood blocking should have new bands installed to secure the blocking from moving.



Roof 2-4
This penetration pocket needs to be topped off with pourable sealer.



Roof 2-5
Apply sealant to joints.



Roof 2-6
Improper flashing. The hole is open.



Roof 2-7
Open conduit flashing. Conduits should not be installed through the side of the curb wall.



Roof 2-8
Clean drains periodically.



Roof 2-9
Remove all debris from the roof.



Roof 2-10
The seals are failing. These types of conditions should be monitored.



Roof 2-11
This is an infra-red overview of Roof 2. No anomalies were discovered.



Roof 2-12
Another infra-red overview of Roof 2.



Roof Section 3
Overview of roof section.



Roof 3
Core sample.



Roof 3-1
HVAC units. These units have failing seals, missing fasteners and screw.



Roof 3-2
Drain strainer not attached. Clean debris.



Roof 3-3
Improper conduit flashing.



Roof 3-4
Attach all wood blocking with straps.



Roof 3-5
Area of bad deck. An area of ~ 18' x 18' is of serious concern. This should be cordoned off.



Roof 3-6
An infra-red overview of Roof 3. The amount of ponding and patches made this roof section difficult to scan. Cores showed the roof to be wet.



Roof Section 4
An overview of this roof section.



Roof 4
Core cut.



Roof 4
The infra-red overview of this roof section showed the rear one third of the roof to be wet.



Roof 4-1
Wall flashings are splitting open.



Roof 4-2

The vertical seams are open. The membrane has pulled away from the wall.



Roof 4-2a

The wall is bowing out in the same area as the two previous photos. This is a serious condition and should be further investigated and corrected.



Roof 4-3

Water is coming out of this split seam.



Roof 4-4

The edge metal is a potential blow off hazard. Moisture will enter under the metal.



Roof 4-4a
This is the metal as seen from below.



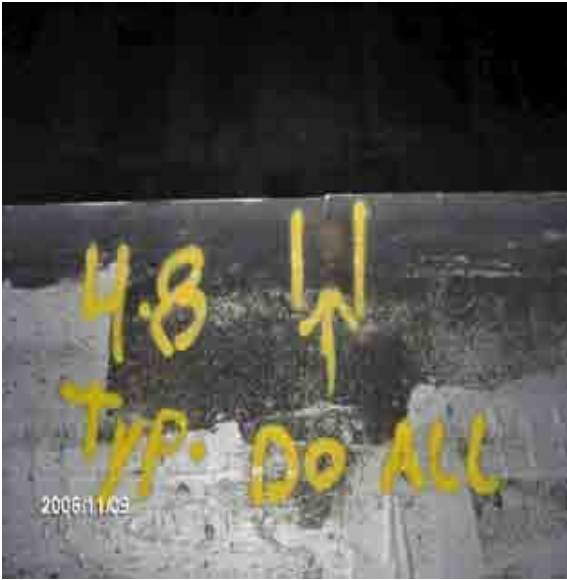
Roof 4-5
Drain strainers should be installed to prevent debris from blocking the drain lines.



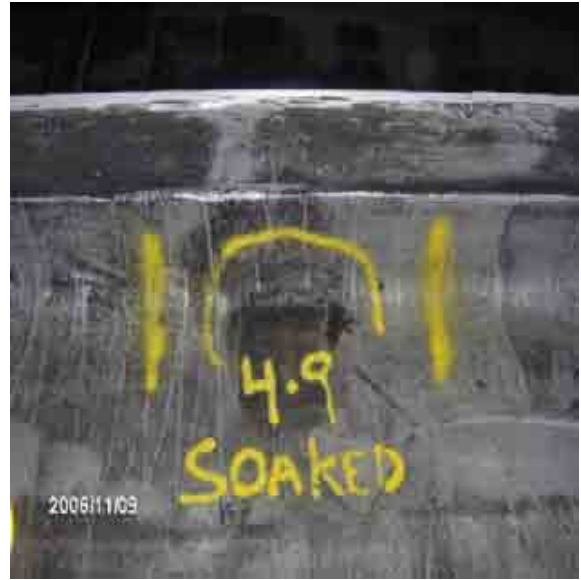
Roof 4-6
This flashing is open. It was marked as wet in a previous scan.



Roof 4-7
Protection pads need to be installed at all locations of wood sleepers.



Roof 4-8
All edge metal joints are split. Strip in all joints.



Roof 4-9
This area contains water.



Roof 4-10
Another location with water present under the membrane.



Roof Section 5
Overview of Roof 5.



Roof 5
Core sample was dry.



Roof 5
Deck underside. The fireproofing was spray applied to a metal mesh attached to the deck underside.



Roof 5
Infra-red overview of Roof section 5. No wet areas were observed.



Roof 5
The roof was also checked with a capacitance moisture meter.



Roof 5-1
Water was found along the edge at this hole in the membrane.



Roof 5-2
Reflash all 90 degree angles on the penetrations.



Roof 5-3
An expansion joint should have been installed to accommodate the movement of the two separate buildings.



Roof 5-4
Secure all wood blocking with a band and add a protection pad beneath.