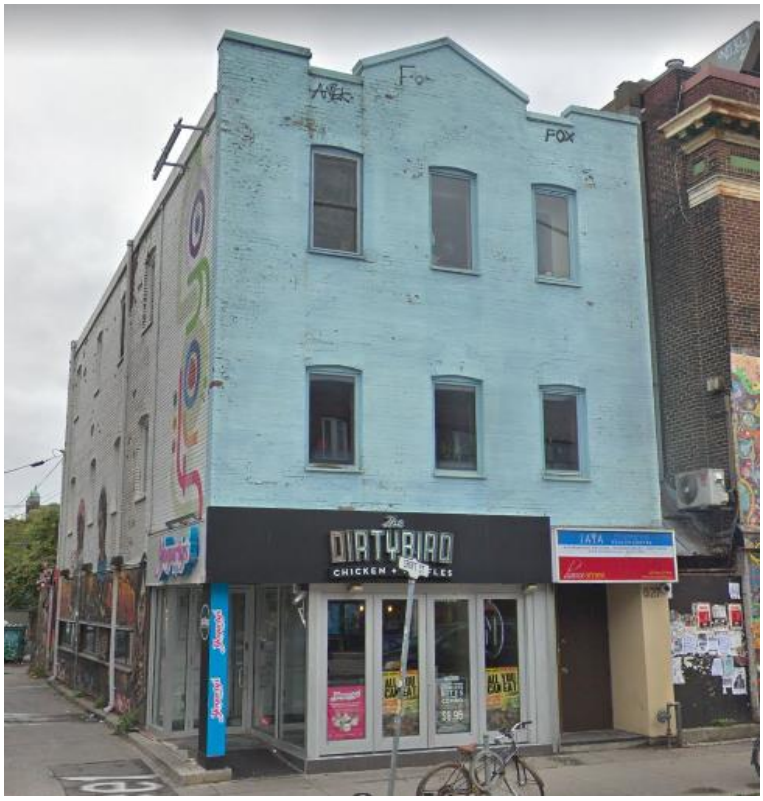
ACG CONSULTING

Your
Commerial & Industrial
FLAT ROOFING EXPERTS

Andrew H. Akerboom
647.408.4992
andrew.a@acgconsultant.ca

SAMPLE INSPECTION REPORT



PROJECT: FLAT ROOF SOLUTION

ROOFING SYSTEM: HIGH ROOF: Inspection & Recommendations.

DATE: April 27, 2019

CONSULTANT: Andrew Akerboom CELL: 647.408.4992

JOB SITE:

CUSTOMER: YOGEN FRUZ

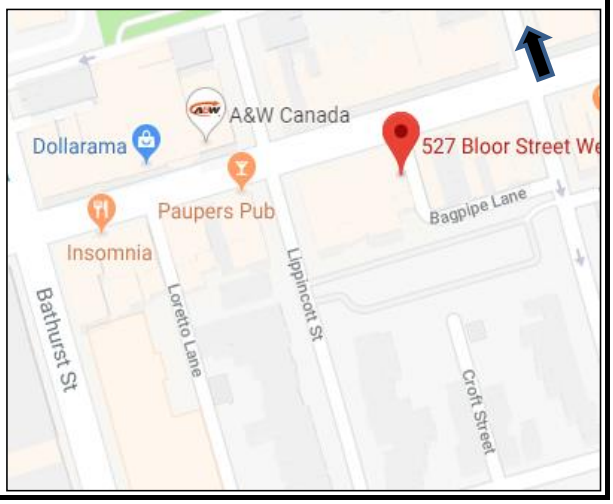
ADDRESS:

CITY:

Contact:

Office #:

EMAIL:



LEGEND	P = PASSED INSPECTION	X = FAILED INSPECTION	N = Not Applicable	Comment in shaded areas

Parapet Flashing	X	Pitch Pans	X	Drains & Scuppers	X	Membrane Blisters	X	Mem Seam Defects	P	Repair Patches	X	
Curb Flashing	X	Equip. Sleepers	P	Ponding	P	Membrane Ridges	X	Mem Deteriorated	X	Debris & Veg.	X	
Penetration Flash.	X	Equip. Platforms	N	Metal Flashing	X	Membrane Splits	X	Membrane Holes	X	Wall Structure	X	

Above: Results of 18 Point Inspection. This Roof Failed 14 of the 17 Applicable points of failure

INSPECTION NOTES: Core Existing Roof: (To be done with on owners consent)

1. Scupper Drains: a. Qty-2 x 6", Asphalt tie-ins are Cracked/Alligatoring & Spliting.

b. Recommend installing one additional scupper.

2. Cones, Pipes & Goose Necks: Seals have dryed out & cracked or completely deteriorated.

3. Curbs & Parapet membrane flashings:

a. 2 dorment curbs. Remove or if future need, Roof over?

b. Membrane is Alligatoring / Dried, Cracked & Splitting

4. Field (Flat Areas)**:**

a. Alot of Blueberries noted: [Blueberries: Asphalt is dried out & Leaving the roof system]

b. A 4-ply system is experiencing ply separatation

c. Separated plys are blistering or even opening up.

d. If not for the slope of this roof, leaks would saviour.

5. Wall structure: Weak

a. Many area of the parapet walls are deteriorated and missing morter. They should be;

Option-1. Either tuck pointed or rebuild

Option-2. Covered with plywood and roofed in.

6. Roof top Mechanical assemblies (HVAC & Ducts)

a. Many of the units are old & rusted.

b.The seal on Ductwork joints is old & poorly applied

Experience has shown that old HVAC assemblies;

1.) Rust right through in some areas allowing water through to penetrate the building interior.

2.) Internal drains clog & overflow, allowing water to enter the duct work & penetrate the building interior.

3.) Ducts & duct joints are common leak sources

Solution: Insulate(Optional) and wrap all ducts & joints with a PVC membrane.

Recommendation: After new roof is installed preform a water test . Test the entire roof & HVAC assemblies

Estimated Remaining Life Expectancy: [**-5**] **Years** (This roof is 15-20 yrs passed it's life expectance)

I RECOMMEND THIS ROOF BE REPLACED, See replacement options on page 9.

For more detail see anotated pictures on pages 3 - 8

COMPANY / CONTACT:	INTERNATIONAL FRANCHISE INC.			
ADDRESS:	210 shields court :	Contact:	Alicia Turturici	
CITY:	Markham	PH #:	905.479.8762 x 333	
JOB SITE:	527 Bloor Street West W/O BATHURST	Email:	Alicia@Yogenfruz.com	
CONSULTANT:	Andrew Akerboom	CELL #:	647.408.4992	

N

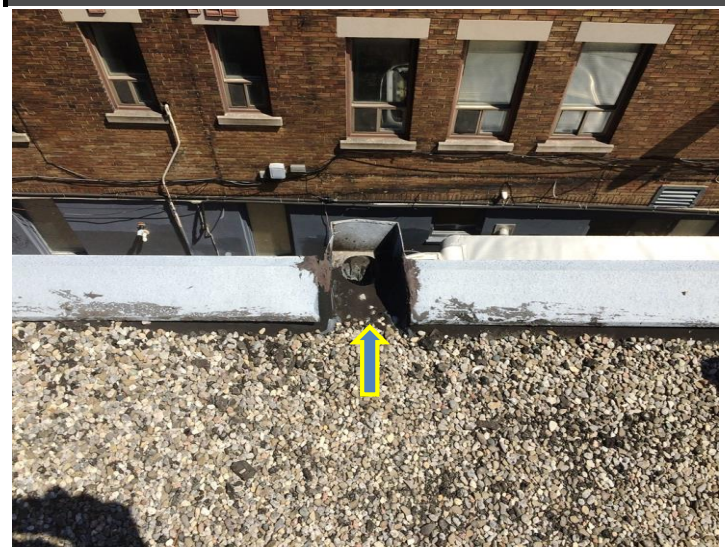
ACG CONSULTING

Your
Commerial & Industrial
FLAT ROOFING EXPERTS

Andrew H. Akerboom
647.408.4992
andrew.a@acgconsultant.ca

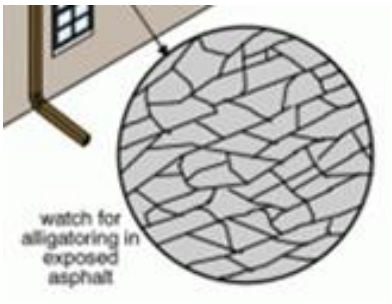
CONSULTANT: Andrew Akerboom **CELL #** 647.408.4992

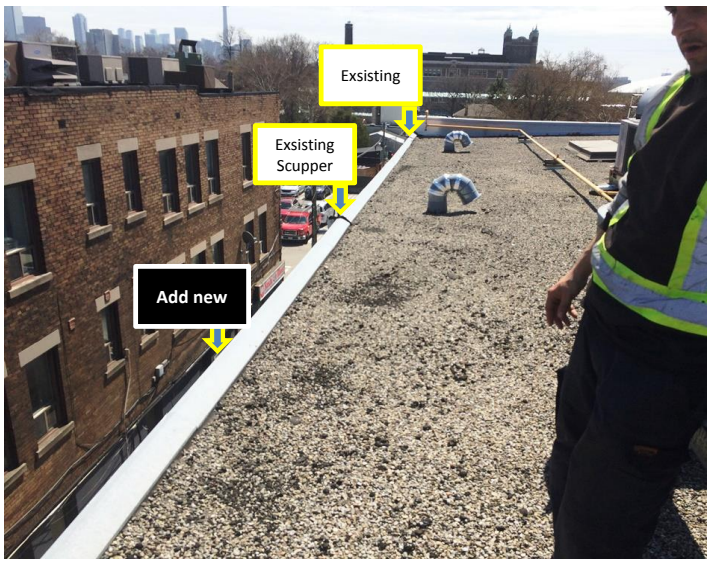
CUSTOMER: **JOB SITE:** 527 Bloor Street West



HIGH ROOF

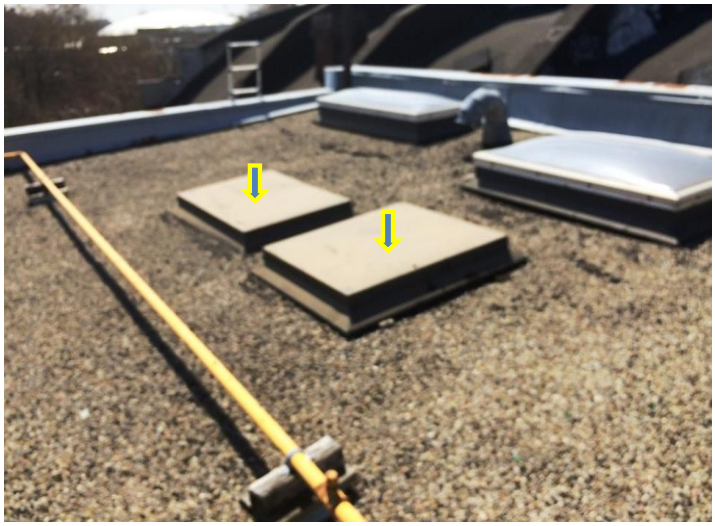
Qty-2 x 6", Asphalt tie-ins are Cracked/Alligatoring & Spliting.





HIGH ROOF

Recommend installing one additional scupper where noted on picture.



HIGH ROOF

There are 2 dorment mechanical curbs.

Recommendations:

Option-1: If you are not adding any HVAC in the future.
- Remove & Restore roof deck before installing new roof system

Option-2: If you believe may have a future need.
- Leave them and roof them in.
- They can be cut open If & when required

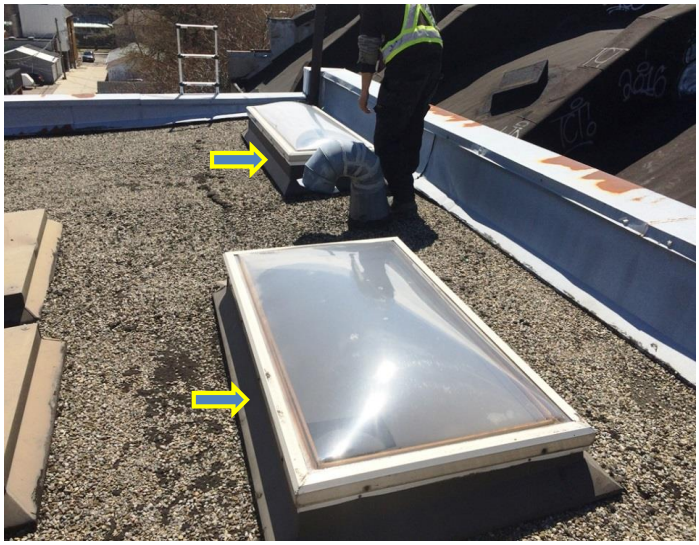
ACG CONSULTING

Your
Commerial & Industrial
FLAT ROOFING EXPERTS

Andrew H. Akerboom
647.408.4992
andrew.a@acgconsultant.ca

CONSULTANT: Andrew Akerboom **CELL #** 647.408.4992

CUSTOMER: **JOB SITE:** 527 Bloor Street West

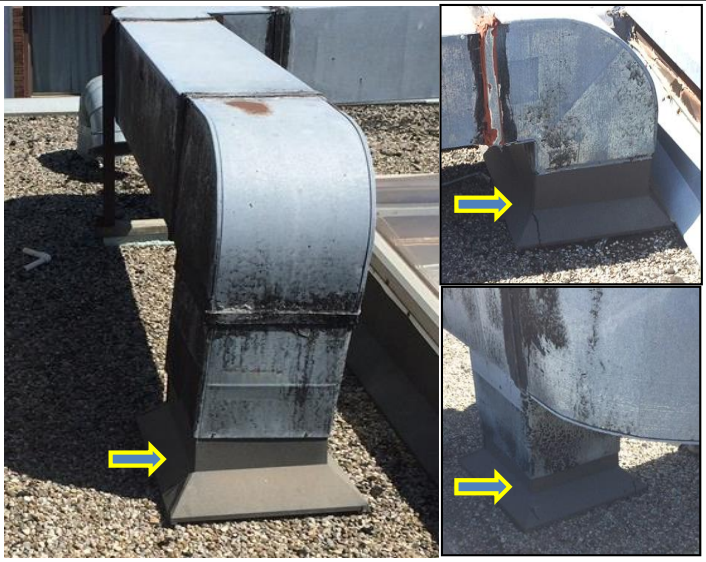


HIGH ROOF

Mechanical Curbs:

- Membrane is Alligatoring / Dried, Cracked & Splitting

[Note: "Alligatoring: a result of the drying out and shrinking of the asphalt surface resulting in a "mud-cracking" pattern. If left untreated, the alligatoring condition can develop into membrane splits.These crack channels will allow water to penetrate roof and possibly damage the building interior."



HIGH ROOF

Mechanical Curbs:

- Are Alligatoring / Dried, Cracked & Splitting

[Note: "Alligatoring: a result of the drying out and shrinking of the asphalt surface resulting in a "mud-cracking" pattern. If left untreated, the alligatoring condition can develop into membrane splits.These crack channels will allow water to penetrate roof and possibly damage the building interior."

HIGH ROOF

Mechanical Curbs:

- Are Alligatoring / Dried, Cracked & Splitting

[Note: "Alligatoring: a result of the drying out and shrinking of the asphalt surface resulting in a "mud-cracking" pattern. If left untreated, the alligatoring condition can develop into membrane splits.These crack channels will allow water to penetrate roof and possibly damage the building interior."

ACG CONSULTING

Your
Commerial & Industrial
FLAT ROOFING EXPERTS

Andrew H. Akerboom
647.408.4992
andrew.a@acgconsultant.ca

CONSULTANT: Andrew Akerboom **CELL #** 647.408.4992

CUSTOMER: **JOB SITE:** 527 Bloor Street West

HIGH ROOF

Mechanical Curbs:

- Are Alligatoring / Dried, Cracked & Splitting

[Note: "Alligatoring: a result of the drying out and shrinking of the asphalt surface resulting in a "mud-cracking" pattern. If left untreated, the alligatoring condition can develop into membrane splits.These crack channels will allow water to penetrate roof and possibly damage the building interior."

HIGH ROOF

Parapet wall membrane flashings:

- Are Alligatoring / Dried, Cracked & Splitting

[Note: "Alligatoring: a result of the drying out and shrinking of the asphalt surface resulting in a "mud-cracking" pattern. If left untreated, the alligatoring condition can develop into membrane splits.These crack channels will allow water to penetrate roof and possibly damage the building interior."

HIGH ROOF

Field (Flat Areas)**:**

- Alot of Blueberries noted:

"Blueberries: The result of dried out asphalt. They appear on the roof as small blue or black balls, When the top pour of asphalt erodes to this stage, the roof system has lost at least 40% of its waterproofing ability."

ACG CONSULTING

Your
Commerial & Industrial
FLAT ROOFING EXPERTS

Andrew H. Akerboom
647.408.4992
andrew.a@acgconsultant.ca

CONSULTANT: Andrew Akerboom **CELL #** 647.408.4992

CUSTOMER: **JOB SITE:** 527 Bloor Street West

HIGH ROOF

Field (Flat Areas)**:**

Asphalt in Roof system has lost most of it's bonding strength and the plys are separating.

The separation will allow water to penitrate & deteriorate the remaining plys below.

When all plys have deteriorated or cracked, water will penitrate the interior of the building & cause damage.

A number of areas have already lost 1 or 2 plys.

HIGH ROOF

Field (Flat Areas)**:**

- This is whats refurred to as a blister

"Blisters: soft spongy pockets or swellings in the roof membrane. They occur between layers of felt or between the roof membrane and substrate. Air or moisture vapour entrapped within a blister expands exponentially as the roof and outside air temperatures rise. This results in sufficient pressure to push the felts upwards and split open. Blisters may be ruptured by roof traffic, expanding frozen water, or hail (especially during colder weather). Some blisters may become so large as to affect drainage and cause pounding water. Seams may split apart, resulting in leakage. A ruptured blister will immediately allow water to penetrate the roof and possibly damage the building interior."

HIGH ROOF

Field (Flat Areas)**:**

- Asphalt in Roof system has lost most of it's bonding strength and the plys are separating.

The separation will allow water to penitrate & deteriorate the

- When all plys have deteriorated or cracked, water will penitrate the interior of the building & cause damage.
- A number of areas have already lost 1 or 2 plys.

ACG CONSULTING

Your
Commerial & Industrial
FLAT ROOFING EXPERTS

Andrew H. Aker
647.408.49
andrew.a@acgcons

CONSULTANT: Andrew Akerboom **CELL #** 647.408.4992

CUSTOMER: **JOB SITE:** 527 Bloor Street West

HIGH ROOF

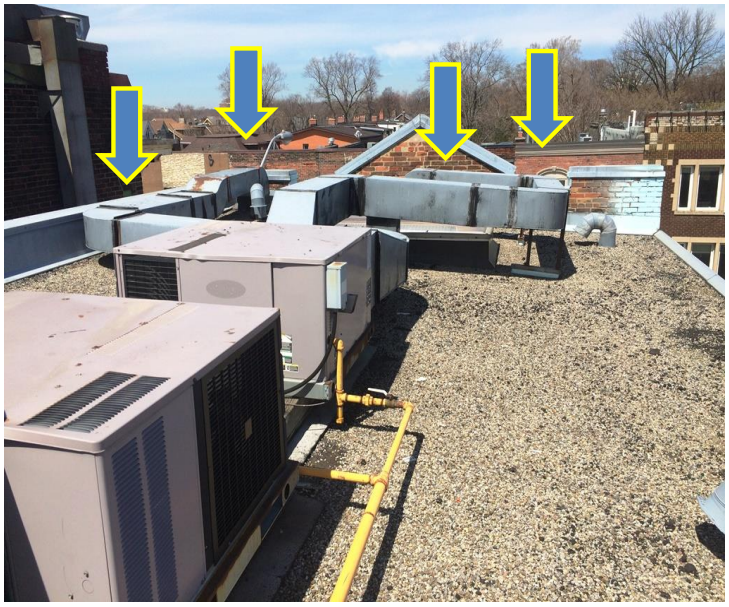
Field (Flat Areas)**:**

Asphalt in Roof system has lost most of it's bonding strength and the plys are separating.

The separation will allow water to penitrate & deteriorate the remaining plys below.

When all plys have deteriorated or cracked, water will penitrate the interior of the building & cause damage.

A number of areas have already lost 1 or 2 plys.



HIGH ROOF

Roof top Mechanical assemblies (HVAC & Ducts)

a. Many of the units are old & rusted.

b.The seal on Ductwork joints is old & poorly applied

Experience has shown that old HVAC assemblies;

1.) Rust right through in some areas allowing water through to penetrate & damage the building interior.
2.) Internal drains clog & overflow, allowing water to enter the duct work, penetrate & damage the building interior.
3.) Ducts & duct joints are common leak sources

Solution:

Insulate and wrap all ducts & joints with a PVC membrane.

Recommendation:

After new roof is installed preform a water test .

Test the entire roof & HVAC assemblies

HIGH ROOF

Wall Terminations are failing.

Water can go behind the metal & penitrate the interior of the building & cause damage.

ACG CONSULTING

Your
Commerial & Industrial
FLAT ROOFING EXPERTS

Andrew H. Akerboom
647.408.4992
andrew.a@acgconsultant.ca

CONSULTANT: Andrew Akerboom **CELL #** 647.408.4992

CUSTOMER: **JOB SITE:** 527 Bloor Street West

HIGH ROOF

Wall structure: Is Weak

Many area, parapet walls are deteriorated and missing morter.

Solution: They should be;

Option-1: Either tuck pointed or rebuild

Option-2: Covered with plywood and roofed in.

HIGH ROOF

Wall structure: Is Weak

Many area, parapet walls are deteriorated and missing morter.

Solution: They should be;

Option-1: Either tuck pointed or rebuild

Option-2: Covered with plywood and roofed in.

HIGH ROOF

Conclusion:

I would estimate the age of this roof to be between 30-40 yrs.
Industry Experts & Manufacters list it's life expectancy at 20-25

This roof has surpassed industry standards because of it's slope.
Water has not been able to pond on & deteriorate this roof.

Is this roof was a truly flat roof, your leaks would have been much more saviour, as would your interior damages.

Attempting to repair this roof would be a very poor investment as repairs would be very expensive & very short lived.
A repair is only a strong as the exsisting membrane you are adhering to.

ACG
CONSULTING

ROOF SYSTEMS OPTIONS

Total Square Feet of roof Field):	30,393		Pipes:	21	AS AT: 23-Feb-17
Total Square Feet of roof Detail):	1,976		Curbs:	5	DRAINS: 11
ROOF DECK:	STEEL	BUILDING HEIGHT:	2-STORY	STRAIGHT DROP TO GARBAGE:	YES

EXISTING ROOF MAKE UP: [Pea Gravel]+[1/4" Flood Coat]+[1/4" 4-Ply felt /Asphalt] + [1" Fiberboard]

TOTAL SQUARE FEET OF ROOF (Field + Flashing): 32,369 SF

ROOF SYSTEM OPTIONS		R-VALUE (add R-9)	Roof Cost	Cost / SF	20 year Warranty Cost	Cost with Warranty	Cost/FT2 (with warranty)	Expected LIFE (Yrs)	Your True Cost. /Yr.
OPTION-1:	TAR & GRAVEL+Modified Flashings: RIP/ 4Ply-BUR Felt:	*R-9*	$ 259,087	$ 8.00	N/A	$ 259,087	$ 8.00	18	$ 14,394
OPTION-2:	TAR & GRAVEL+Modified Flashings: RIP/ 5Ply-BUR 4-Glass & 1-Felt:	*R-9*	$ 277,058	$ 8.56	$ 11,329	$ 288,396	$ 8.91	25	$ 11,082
OPTION-3:	*2-Ply Modified Bitumen :* RIP/ Mop-Base & Torch Cap:	*R-9*	$ 258,382	$ 7.98	$ 11,329	$ 269,719	$ 8.33	25	$ 10,335
OPTION-4:	2-Ply Modified Bitumen: RETROFIT/ MF-Base & Torch Cap:	***R-21****	$ 226,681	$ 7.00	N/A	$ 226,688	$ 7.00	20	$ 11,334
OPTION-5:	60Mill PVC Roof System RETROFIT/ MF-PVC:	***R-21****	$ 235,970	$ 7.29	$ 8,092	$ 244,070	$ 7.54	35	$ 6,742
OPTION-6:	60Mill TPO Roof System RETROFIT/ MF-TPO:	***R-21****	$ 220,285	$ 6.81	$ 8,092	$ 228,384	$ 7.06	25	$ 8,811

** Typical existing 4Ply BUR System has [R-13[+[R-9] in Retorofit= R-21.*

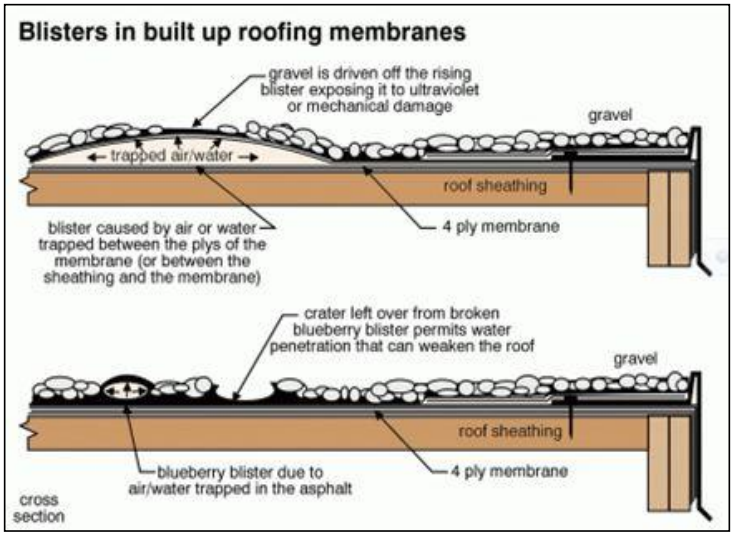
QUALITY CONSIDERATIONS CHART

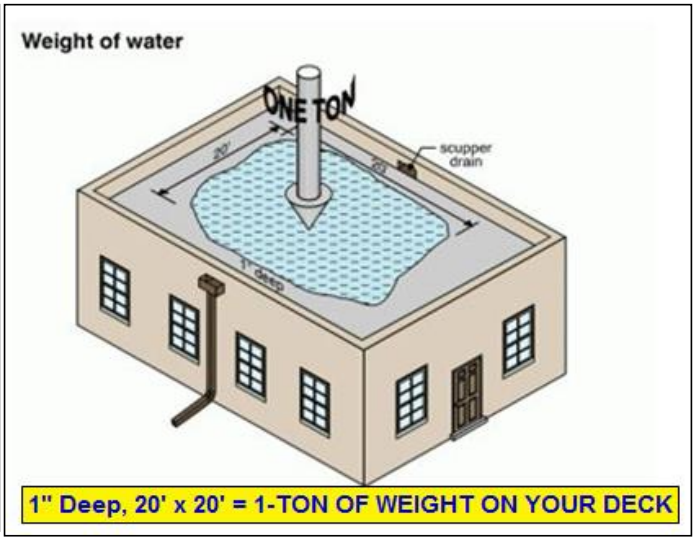
SYSTEM SCORE BOARD		Modified Bitumen	BUR Felt	BUR Glass	PVC	TPO	EPDM
WARRANTY (A lot of Fine Print)		Poor	N/A	Fine Print	Very Good	Fair	Fair
Most Economical (Lowest Cost /Year.)	RANKING FROM 1 to 6:	4	6	3	1	2	7
Sustanability (Longest life)	RANKING FROM 1 to 6:	3	5	4	1	2	6
Reflective (Reduces energy costs)	RANKING FROM 1 to 6:	ABSORBS	ABSORBS	ABSORBS	1-REFLECTS	2-REFLECTS	ABSORB
Deteriorates with Ponding (48-72 hrs)		YES	YES	YES	NO	NO	NO
Easy to Repair		Takes 2-Trips	Takes 2-Trips	Takes 2-Trips	Only 1-Trip	Only 1-Trip	Takes 2-Trips
Heat or Torch Welded (Open flame or Hot air.)		OpenFlame	OpenFlame	OpenFlame	Hot Air	Hot Air	Glue
Common Aging Faults: Alligatoring, Bare felts, Blisters, Ridges, Splits, & Ponding		YES	YES	YES	NO	NO	YES
Supports a fire (Will feed a fire)		YES	YES	YES	NO	YES	YES

ACG CONSULTING

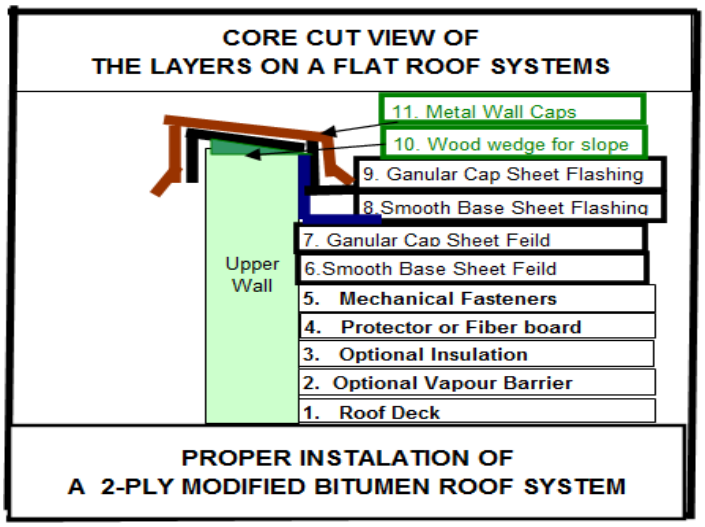
Your
Commerial & Industrial
FLAT ROOFING EXPERTS

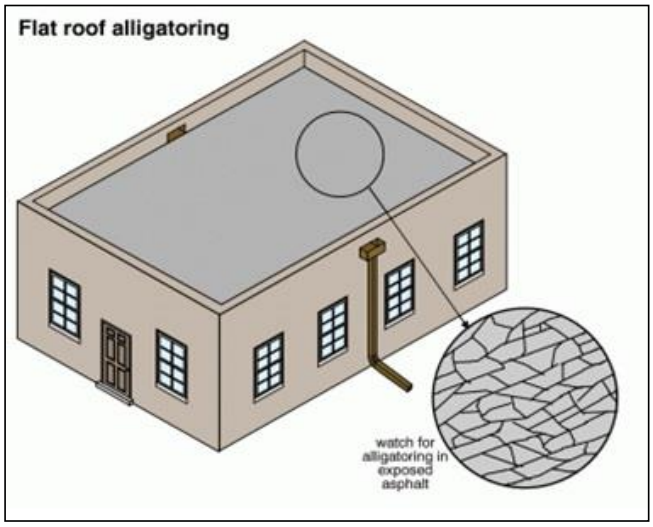
Common Faults that develop as Traditional Built Up Roofs (i.e. TAR & GRAVEL & MODIFIED BITUMEN) age:



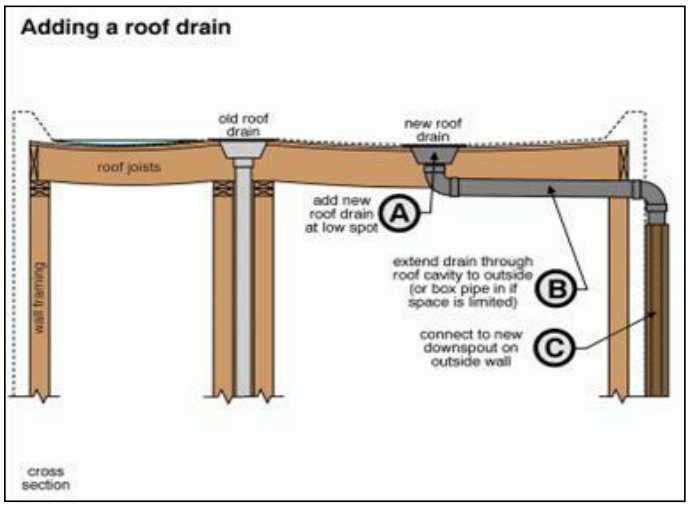


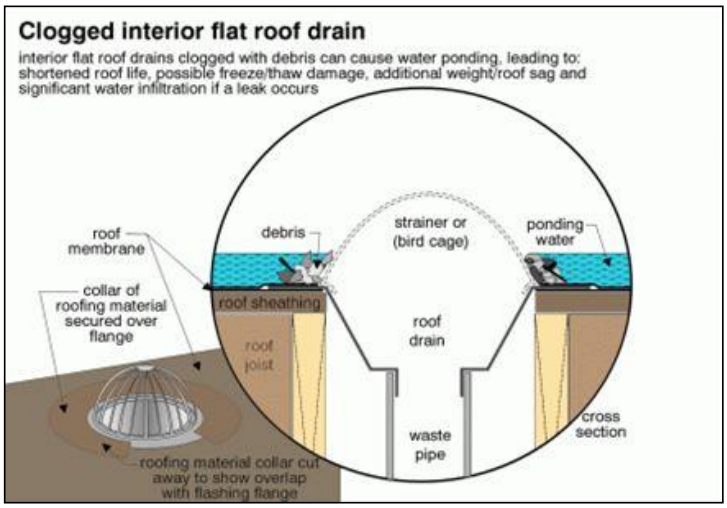
MOST COMMON PROBLEMS WITH AGING FLAT ROOFS





MOST COMMON PROBLEMS WITH AGING FLAT ROOFS





MOST COMMON PROBLEMS WITH AGING FLAT ROOFS

ACG CONSULTING

Your
Commerial & Industrial
FLAT ROOFING EXPERTS

Common Faults that develop as Traditional Built Up Roofs
(i.e. TAR & GRAVEL & MODIFIED BITUMEN) age:

Alligatoring: a result of the drying out and shrinking of the asphalt surface resulting in a “mud-cracking” pattern. The pattern is most pronounced in areas of exposed asphalt. It is caused by the heat and UV rays of the sun beating down. If left untreated, the alligatoring condition can develop into membrane splits. As the surface continues to shrink and dry out, cracks will develop and may stress-crack the membrane in cold weather. These crack channels will allow water to penetrate the roof and possibly damage the building interior.

Bare felts: areas lacking in surface asphalt, mineral, granule, or aggregate due to wind and water erosion. Weathering causes the roofs surfacing materials to oxidize and wear away after a period of time. Loss of UV protection results in accelerated deterioration of asphalt (the roof’s water repellent) and felts (the membrane’s strength). Heat and UV rays dry out unprotected asphalt which then leave the bare felts exposed to the elements. The exposed membrane will then absorb moisture and degrade through freeze/thaw or wet/dry cycles, causing premature failure which will allow water to penetrate the roof and possibly damage the building interior.

Blisters: soft spongy pockets or swellings in the roof membrane. They occur between layers of felt or between the roof membrane and substrate. Air or moisture vapour entrapped within a blister expands exponentially as the roof and outside air temperatures rise. This results in sufficient pressure to push the felts upwards and split open. Blisters may be ruptured by roof traffic, expanding frozen water, or hail (especially during colder weather). Some blisters may become so large as to affect drainage and cause pounding water. Seams may split apart, resulting in leakage. A ruptured blister will immediately allow water to penetrate the roof and possibly damage the building interior.

Ridges: linear buckling felt lines protruding upward through the surface layers of asphalt and aggregate. Ridges are formed by either thermal changes expanding and contracting the roofing felts or by gaps in the underlying insulation that allow vapour to migrate upwards through the roof system. Over a period of time ridges will grow and erode until they are stripped of their protective asphalt. These exposed ridges, through repeated weather cycling, will eventually crack and split to allow water into the roof system and building causing interior damage.

Blueberries: The result of dried out asphalt. They appear on the roof as small blue or black balls, resembling blue berries. *When* the top pour of *asphalt erodes to this stage, the roof system has lost at least 40% of its waterproofing ability.*

Perimeter Flashing Deterioration: expansion and contraction movement of the metal edge causes a sawing action that cuts into the perimeter flashing. Moisture can then enter the roofing system and building. Moisture will damage the insulation and R-value. It will also allow water to enter the building causing interior damage.

Splits: membrane splits are usually caused by building movement, ridges, and expansion and contraction. Weak or inflexible membranes reach a point where they cannot accommodate further movement. At this time the roof splits open. The open split allows water to enter the roofing system, saturating the insulation, and leak into the building causing interior damage.

Pitch Pockets: metal protrusions that penetrate the roof system to allow conduits to run from the roof top into the building. Movement from the protrusion can break the waterproofing compound, creating cracks. Over time, the release of solvents from the compound can cause the material to shrink, leaving gaps. Water can enter through a defective pitch pan and find its way into the interior of the building causing interior damage. Moisture can also penetrate into the roof system leading to premature failure.

Ponding: ponding or pooling water occurs as rain or snow melt water collects in large pools on the surface of a roof system. These pools begin to form for two reasons: (1) roof drains are blocked or clogged with debris, (2) roof drains are attached to support columns which maintain a consistent height while the rest of the roof system is built on a deck which tends to move and sag or sink under the weight of the roof system, mechanical units and pools of water. In both cases, roof depressions that collect and hold water will tend to grow in size as the added weight of the pooling water will continue to cause exponential sagging of the roof deck. Ponding water has many negative effects on a roof system. The weight can crush insulation rendering it a useless thermal barrier - this will cost you big money since your HVAC system will have to work longer and harder to maintain a comfortable interior temperature. In the winter ponding water will expand as it freezes. This expansion will weaken imperfections in the roof system. Small cracks and tears will widen until they rupture to allow water into the building causing interior damage.

Ponding water also accelerates the aging of a roof. The natural waterproofing oils in the asphalt will separate from the membrane if the system remains submerged under water for periods longer than 48 hours. And finally, a negatively sagged deck becomes a structural concern. The deck’s tolerances will onl accept a limited amount of weight before it becomes a candidate for a roof collapse. Did you know that;

A Pool Of Water [1” deep], [20’ long] x [20’ wide] = 1-TON of extra weight on your roof. 1-Ton per inch!!

The roofing felts are not waterproof. They are 100% wood fibre compound and left unprotected, will absorb water. Over time, they ultimately rot, exposing the next layer of asphalt. This layer is installed at one third the rate of the initial top pour and its oxidation rate is much greater. When it breaks down the next layer of roofing felt is exposed and the cycle continues.

Conclusion: Many building owners could prevent premature & costly replacement of their roofs. If properly maintained, roof systems can last 25-35% longer than average.