

2021 [REDACTED] Roof Review

Main Mall Building

Office Tower

Prepared for:



Prepared by:

O'Neil Consulting Ltd.

Box 531

Water Valley, Alberta

T0M 2E0

June 2021



403 651 1542

doneilconsulting@gmail.com

Date: 06 2021

Roof Review [REDACTED]

BACKGROUND:

As requested, O'Neil Consulting performed a site investigation on [REDACTED], to review the condition of the existing roofing system on the above buildings. The investigation was requested by [REDACTED].

METHODOLOGY:

O'Neil Consulting undertook to perform the following to assess the condition of the roof and to prioritize repairs and replacement on the building:

- Interview with site personnel to obtain recent performance, repair history and existing roof leaks.
- Review of original drawings, previous investigation reports and repair documentation provided by the client.
- Visual review of all exposed roofing elements.
- Visual review of structural elements and roof underside for unusual deterioration.
- Thermal scan and moisture tests with a Tramex RWS to locate wet areas within the roof system.
- Cut tests were required to confirm wet areas.

OBSERVATIONS (ROOFING):

[REDACTED]

The building is a one and two storey building with a low slope roofing system. The roof consists of several distinct roof sections identified on the figure below. Roof areas are primarily built up roofing (BUR) with some small overhangs reroofed with PVC.

The parapet on this roof area is not a standard roof parapet type and could cause some issues and difficulty when reroofing. My recommendation would be to remove it if possible and replace it with a more conventional roof edge detail.

This roof is for the most part in the same condition throughout and is showing sign of failure, interply blistering, ridging and exposed felts are on all sections of the roof. Repairs could extend the life of this roof but would only be a temporary fix, in my opinion money would be best spent on a reroofing program.

[REDACTED] Review



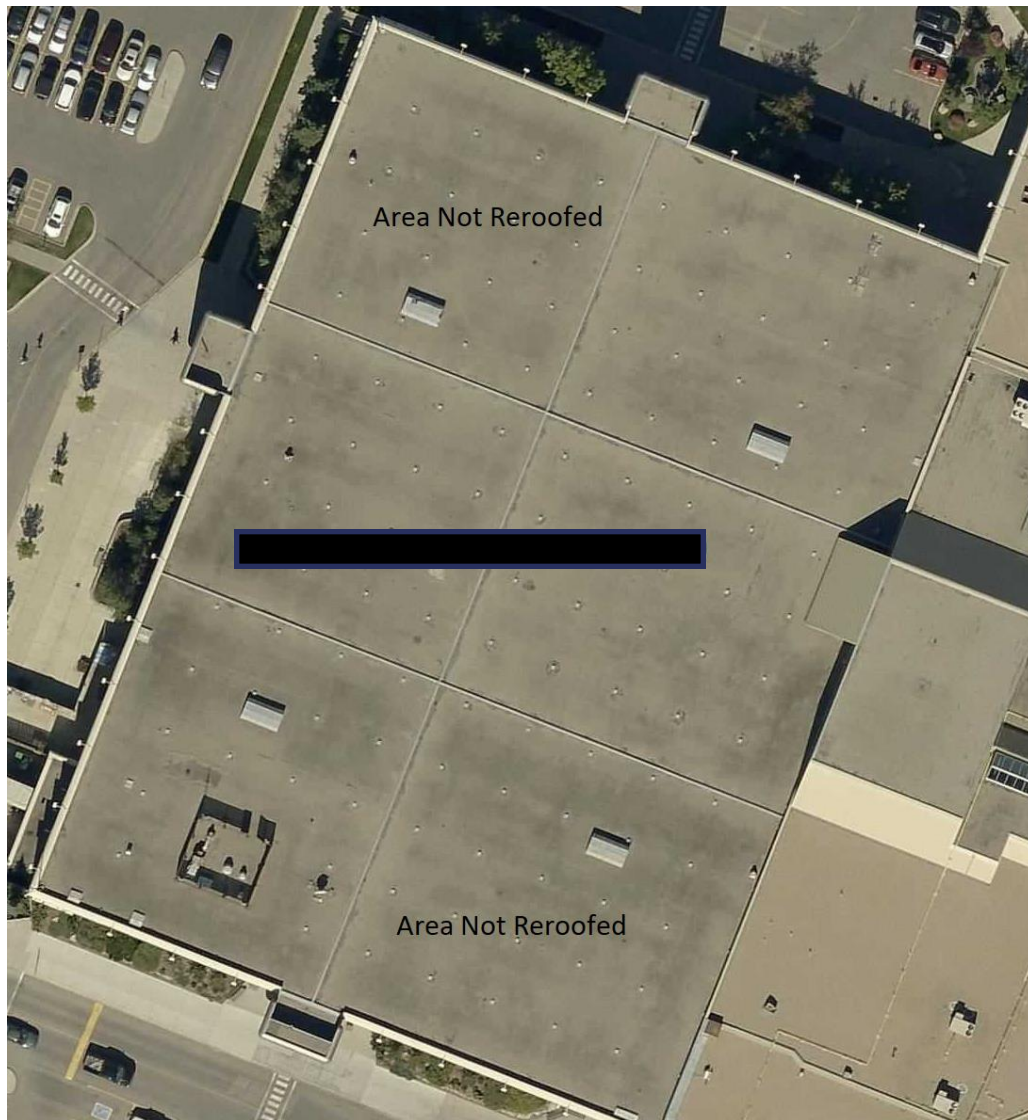
403 651 1542

doneilconsulting@gmail.com

Date: 06 2021

Roof Review [REDACTED]

Update: 2/3 of [REDACTED] roof was reroofed about a year ago, the areas not reroofed are shown on the picture below. They have substantial moisture in the system detected by our thermal scan recently and should be reroofed soon.





403 651 1542

doneilconsulting@gmail.com

Date: 06 2021

Roof Review [REDACTED]

[REDACTED] BUILDING NORTH CENTRAL

The building is a one and two storey building with a low slope roofing system. The roof consists of several distinct roof sections identified on the figure below. Roof areas are primarily built up roofing (BUR) with some newer areas roofed with PVC and EPDM.

Areas A, B, E, F, I, L, and K; Good Condition. These areas are all BUR membrane with SBS perimeter stripping, they are in good shape and should provide years of additional service. They should be walked yearly and maintained when necessary. There is one open tall cone on area A with no plumbing pipe through it, this should be sealed to prevent water from entering the building during a rain. Update: These roof areas will require reroofing within 15 years.

Areas G, H, M, N, and P; Poor Condition. These areas are obviously older roof areas and are showing their age, there are numerous ridges blisters, blueberries and exposed felt on these roof areas and although not facing imminent failure they should be scheduled for replacement in the next few years. These roof areas should be monitored yearly. Update: Areas N and P have been reroofed and should last at least 25 years. Areas H & G are the top priority for reroofing and should be done next year. They have substantial moisture in the system.

Area Q; Good Condition. This is a relatively new PVC single ply roof system and is in good shape and should provide years of service, it should be walked yearly to monitor any changes.

Area C, D, and R; Good Condition. These are relatively new EPDM ballasted single ply roof system and is in good shape and should provide years of service, it should be walked yearly to monitor any changes. One plumbing vent detail on area C was not completed during installation and should be completed to ensure there is no infiltration of water.

Areas X; Fair Condition These roof areas were not accessible although I had a look at them at a distance from other roof areas, these are similar to the older roof areas above and it would be prudent to schedule them in for reroof in the next few years. Update: These roof areas are very old and should be reroofed in the next few years.

Update: Area N and P are reroofed. Areas H and G have substantial water in the system and should be prioritized for reroofing.

Roof Review [REDACTED]





403 651 1542

doneilconsulting@gmail.com

Date: 06 2021

Roof Review [REDACTED]

MAIN MALL BUILDING SOUTH CENTRAL

The building is a one and two storey building with a low slope roofing system. The roof consists of several distinct roof sections identified on the figure below. Roof areas are primarily built up roofing (BUR) with some newer areas roofed with PVC.

Areas B and C; Good Condition. These areas are all BUR membrane with SBS perimeter stripping, they are in good shape and should provide years of additional service. They should be walked yearly and maintained when necessary. There is one open tall cone on area A with no plumbing pipe through it, this should be sealed to prevent water from entering the building during a rain. Update: These roof areas should be reroofed in the next 15 years

Areas A, J, K and G; Fair Condition. These areas are obviously older roof areas and are showing their age, there are numerous ridges blisters, blueberries and exposed felt on these roof areas and although not facing imminent failure they should be scheduled for replacement in the next few years. These roof areas should be monitored yearly. Area G had a roof area removed and temporarily sealed with vapour retarder membrane, this will not provide adequate protection from water egress and could compromise the roof system. The roof should only be removed when they are ready to install the curb. Update: Reroofed other than the west side of area G which has moisture in the system and should be reroofed soon. Area K has not been reroofed and is not accessible to evaluate.

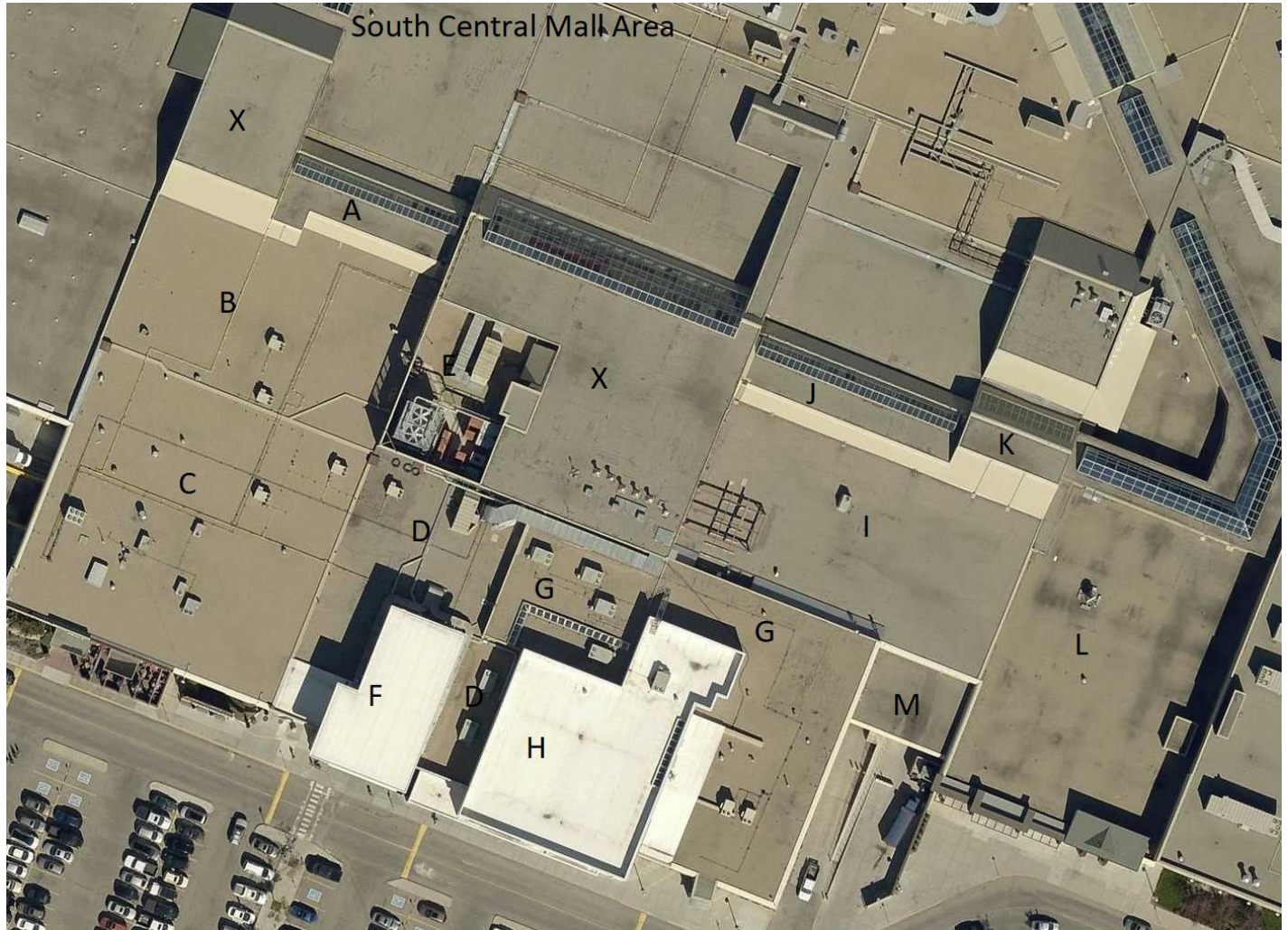
Areas I, L, D and M; Poor Condition. These areas are obviously older roof areas and are showing their age, there are numerous ridges blisters, blueberries and exposed felt on these roof areas and although not facing imminent failure they should be scheduled for replacement in the next few years. These roof areas should be monitored yearly.

Area F and H; Good Condition. This is a relatively new PVC single ply roof system and is in good shape and should provide years of service, it should be walked yearly to monitor any changes.

Areas X; Fair to Poor Condition These roof areas were not accessible although I had a look at them at a distance from other roof areas, these are like the older roof areas and it would be prudent to schedule them in for reroof in the next few years. Update: These roof areas should be reroofed in the next few years as they have not been touched in the last 25 years and drone photos show deterioration.

Update: Area D and most of G to the east have been reroofed, the area of G not reroofed has moisture in the system and should be reroofed soon. Area B has a small amount of moisture in the system just west of the cooling tower.

Roof Review [REDACTED]



MAIN MALL BUILDING EAST (SEARS)

The building is a one and two storey building with a low slope roofing system. The roof consists of one roof section identified on the figure below. Roof areas are primarily built up roofing (BUR).

This roof is for the most part in the same condition throughout and is in good shape, I found only 2 interply blisters located in the northeast corner, this roof should provide years of additional service if maintained properly.

Update: This roof was installed in 2007 so it will reach its lifespan in the next 15 years.



403 651 1542

doneilconsulting@gmail.com

Date: 06 2021

Roof Review



Review

Roof Review [REDACTED]

OFFICE TOWER

The building is a multi storey building with a low slope roofing system. All roof areas are IRMA (inverted roof membrane assemblies). Generally, this type of roof system has an excellent service life as the roof membrane is protected from UV and heat. My suspicions are this membrane is a four ply BUR just going on the age of the building although it is not visible. These types of roofs are not that common any more as they are very expensive and not very energy efficient. There is no evidence of failure on this roof. Update: The roof system is confirmed to be a BUR membrane system with the extruded polystyrene insulation bonded to the surface, this makes it very difficult to inspect but we did manage to remove a small piece of insulation and confirm the membrane. The membrane is in very good condition. This type of roof is known to have a very long service life. See photos below.



Roof Review [REDACTED]





403 651 1542

doneilconsulting@gmail.com

Date: 06 2021

Roof Review [REDACTED]

Roof areas prioritized as #1 for Re-roof.

The budget price includes 10% contingency and 10% for consulting.

Roof Area	Work	Size	Budget
The Bay	Two areas not re-roofed	27,000 Sq.ft	[REDACTED]
Areas 1 and 6	Complete Reroof		Year 1
Roof Areas H&G North	Complete Reroof	12,000 Sq.ft	[REDACTED] Year 2

Roof areas prioritized as #2 for Re-roof.

The budget price includes 10% contingency and 10% for consulting.

Roof Area	Work	Size	Budget
South Central Mall Area GW	Complete Reroof	5,000 sq.ft	[REDACTED] Year 2
Safeway South 1/3rd	Complete Reroof	23,000 sq.ft	[REDACTED] Year 3
South Central Mall Area I	Complete Reroof	15,000 sq.ft	[REDACTED] Year 4
South Central Mall Area M	Complete Reroof	2,300 sq.ft	[REDACTED] Year 4
South Central Mall Area L	Complete Reroof	19,000 sq.ft	[REDACTED] Year 5
North Central Mall Area I	Complete Reroof	2,700 sq.ft	[REDACTED] Year 6
North Central Mall Area M	Complete Reroof	15,000 sq.ft	[REDACTED] Year 6
Priority #1 & #2	Total	121,000 sq.ft	[REDACTED]

If the prioritized areas 1 & 2 are completed in six years, the yearly budget would need to be approximately [REDACTED] per year.

Most of the remaining roofs would require reroofing in the following 15 years, not including the areas reroofed in the last five years.

The cost to reroof the remaining roofs including the Sears building would be approximately [REDACTED] this would require a budget of around [REDACTED] per year. This does not include for inflation.

[REDACTED] Review



403 651 1542

doneilconsulting@gmail.com

Date: 06 2021

Roof Review [REDACTED]

Roof areas prioritized as #3 for Re-roof.

The budget price includes 10% contingency and 10% for consulting.

Roof Area	Work	Size	Budget
South Central Mall X & X	Complete Reroof	18,500 sq.ft	[REDACTED] Year 7
North Central Mall Area J	Complete Reroof	10,000 sq.ft	[REDACTED] Year 8
North Central Mall Area I	Complete Reroof	2,800 sq.ft	[REDACTED] Year 8
North Central Mall Area L	Complete Reroof	14,000 sq.ft	[REDACTED] Year 9
North Central Mall Area K	Complete Reroof	14,000 sq.ft	[REDACTED] Year 10
Priority #3	Total	59,300 sq.ft	[REDACTED]

Note: Roof areas prioritized as #3 are basically a guess as the actual areas could change in priority as the condition of the roofs change.



403 651 1542

doneilconsulting@gmail.com

Date: 06 2021

Roof Review [REDACTED]

Limitations

This report is limited to the visual observations recorded during the site visit and condition review only. This report does not include a review of structural capacity of the building elements, and is not intended to confirm that the roof has been constructed in accordance with building codes, plans, specifications, or other jurisdictional authorities, or will remain watertight in its current condition.

Achieving the objectives stated in this report has required O'Neil Consulting to arrive at conclusions based upon the best information available to O'Neil Consulting at time of report preparation. No investigative method can completely eliminate the possibility of obtaining partially imprecise or incomplete information; it can only reduce the possibility to an acceptable level. Professional judgement was exercised in gathering and analyzing the information obtained and in the formulation of the conclusions.

The passage of time will alter the roof assembly's condition and may affect the accuracy of the information provided in this report. The material presented in this report has been prepared for the Oxford Properties for the property at 100 Anderson Road SE, Calgary Alberta. Any action taken based on the information provided in this report by a Third Party is the responsibility of such Third Party. O'Neil Consulting accepts no responsibility for damages, if any, suffered by any Third Party as a result of decisions made or actions based on this report.

This report has been prepared in accordance with generally accepted study and or accepted practises. No other warranties, either expressed or implied, are made as to the professional service provided under terms of our agreement and included in this report.

We trust this meets your present requirements. If you have any questions or concerns, or if we may be of further assistance, please do not hesitate to contact the undersigned.

Yours truly,

O'NEIL CONSULTING

DAN O'NEIL

Project Manager

Email; doneilconsulting@gmail.com

403 651 1542

Southcentre [REDACTED]



403 651 1542

doneilconsulting@gmail.com

Date: 06 2021

Roof Review [REDACTED]

Appendix A

Photographic Documentation

Roof Review [REDACTED]

1) The Bay – Overview



2) The Bay – Typical interply blister, they are numerous in all areas.



Roof Review [REDACTED]

3) The Bay – Typical exposed felts



4) The Bay – Repairs undertaken.



Roof Review [REDACTED]

- 5) The Bay – Exposed felts around the drain.



- 6) The Bay – Parapet Wall.



Roof Review [REDACTED]

- 7) North Central Mall - Area A Tall cone with no pipe should be capped to keep the water out of the building.



- 8) North Central Mall – Area C Plumbing detail not complete.



Roof Review [REDACTED]

- 9) North Central Mall – Area G overview, this area has some ridging, blisters and blueberries, it is not a high priority but will require reroofing in the next few years.



- 10) North Central Mall – Area H overview, this area has some ridging, blisters and blueberries, it is not a high priority but will require reroofing in the next few years.

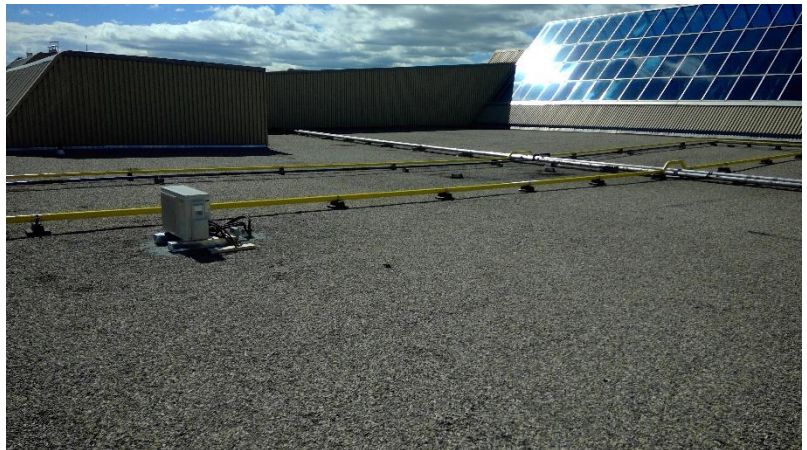


Roof Review [REDACTED]

- 11) North Central Mall – Area J overview, this area has some ridging, blisters and blueberries, it is not a high priority but will require reroofing in the next few years.



- 12) North Central Mall – Area M overview, this area has some ridging, blisters and blueberries, it is not a high priority but will require reroofing in the next few years.



Roof Review [REDACTED]

- 13) North Central Mall – Area N overview, this area has some ridging, blisters and blueberries, it is not a high priority but will require reroofing in the next few years.



- 14) South Central Mall – Area D overview, this area has some ridging, blisters and blueberries, it also has been leaking frequently and has many repairs. This area is a high priority for reroof.



Roof Review [REDACTED]

- 15) South Central Mall - Area D recent repairs.



- 16) South Central Mall - Area D Ridging and exposed felts.



Roof Review [REDACTED]

- 17) South Central Mall - Area D
Temporary leak repair.



- 18) South Central Mall - Area E, unusual detail, concrete not waterproofed but stripped in at the edges to the roof system. Cracks in the concrete could cause leaks.



Roof Review

- 19) South Central Mall - Area E vegetize growth between pavers .



- 20) South Central Mall - Area G , temporary seal for unit install is not adequate for longer term. This should only be used for an overnight seal with little rain expected.



Roof Review [REDACTED]

- 21) South Central Mall - Area G Evidence of "sweep prime and repour".



- 22) South Central Mall - Area L Overview. You can see the areas that are starting to rig



Roof Review [REDACTED]

- 23) South Central Mall - Area I Ridges and blisters.



- 24) South Central Mall - Area I Proper cladding should be installed on this detail, wind driven rain can get in the building.



Roof Review [REDACTED]

- 25) South Central Mall - Area L Ridging
exposed felts.



- 26) South Central Mall - Area M evidence
of repairs.



Roof Review [REDACTED]

- 27) Sears, north parapet, 2 blisters near the north-east corner.



- 28) Sears, blisters near the north-east corner.



Roof Review [REDACTED]

- 29) Sears, 2nd blisters near the north-east corner.



- 30) Safeway, the south 1/3 of the roof is in very poor shape blisters and ridging is everywhere.



Roof Review [REDACTED]

- 31) Sears, 2nd blisters near the north-east corner.



- 32) Safeway, the south 1/3 of the roof is in very poor shape blisters and ridging is everywhere.



Roof Review [REDACTED]

CIBC – This roof is in good shape and I found no issues.



- 33) Milestones – This grease collector is not working properly and allowing grease onto the roof. This could damage the roof over time.



Roof Review

- 34) Milestones – Displaced pavers and gravel should be replaced.



- 35) Milestones – 2 vents look like they were pulled down after they were sealed, these should be resealed as the seal is almost at the membrane surface.



Roof Review [REDACTED]

36) Milestones – Seal to low at vent.



37) Office Tower – No issues.

