

North West Harbour Grain Silo Inspection Report



Date: 2020-10-01 Reviewed
By: Frank Robertson

APC Integrity
40 Main St, Toronto, Ontario

EXECUTIVE SUMMARY

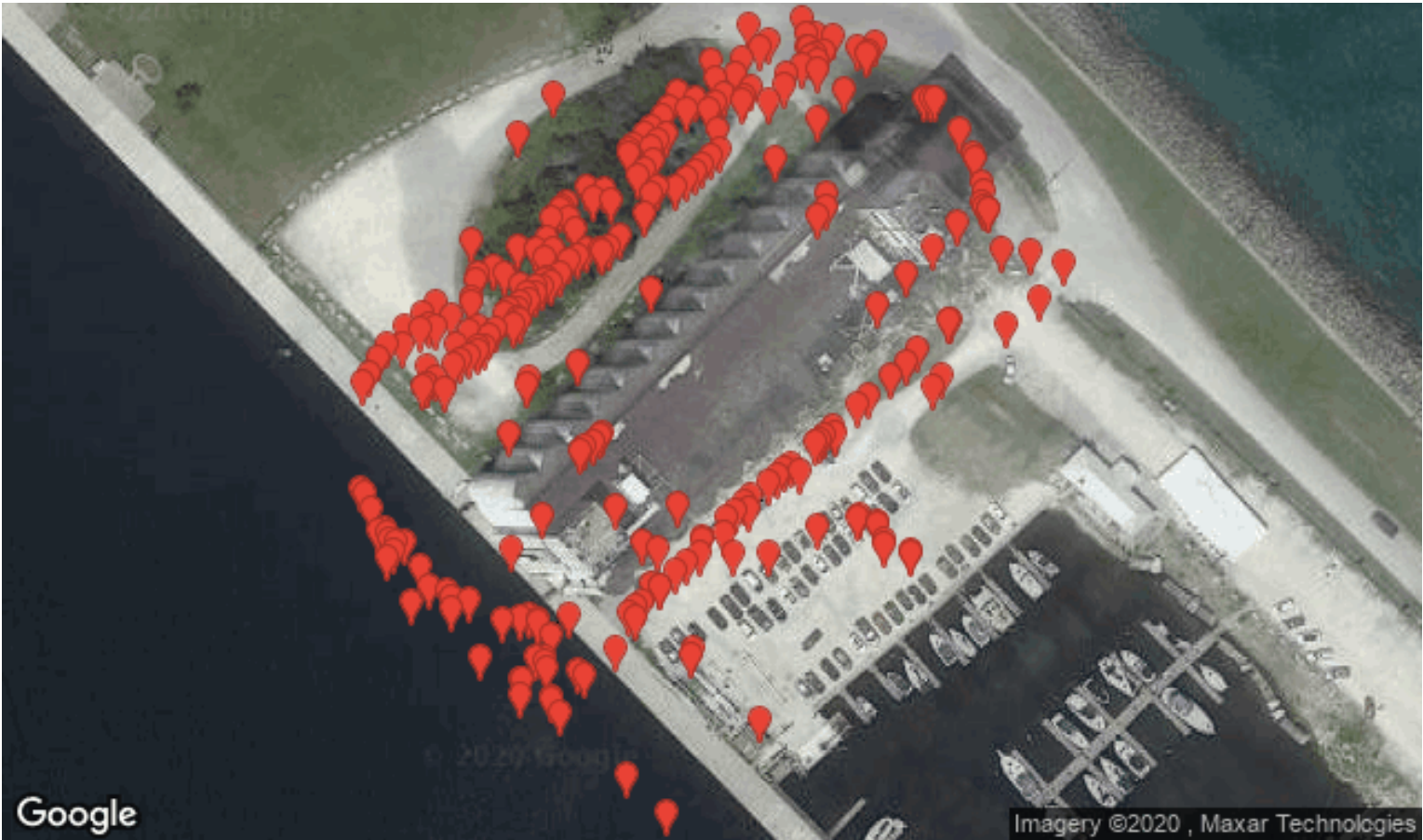
The Collingwood Terminal Facility was constructed over a 9 month period in 1929 by Montreal contractor EGM Cape according to a CD Howe Consulting Engineers design. The construction includes a wood pile foundation, a massive concrete raft slab and 52 monolithic concrete silos rising approximately 100' above the base. The silos are topped with a large operations centre and large material handling towers at each end. The facility remained in active operation for 64 years until its closing in 1993. The facility was purchased by Town of Collingwood in 1993 and is effectively unoccupied with the exception of leased space for communication systems and a municipally run sailing school in one of the lower structures. The facility is currently listed on the Municipal Heritage Registry as part of the Collingwood Heritage District established in 2002.

While the primary building structure is generally in good condition, the secondary elements were frequently found to be in fair to poor condition including interior and exterior platforms, stairs, guards, ladders, doors and windows. The windows are in particularity poor condition and in many locations, they are at risk of failure and falling out of the surrounding concrete walls. Of note was the lack of a certified fall arrest system which will be required to provide safe access to exterior areas.

The existing roofing system is in poor condition and does not provide any effective protection. In many locations, we identified active leakage into the structure and these areas are the location of the most acute concrete deterioration.

INFORMATION

Flight Date	October 01 2020
Flight Time	09:39
Location	Toronto, Ontario
Temp	8C
Wind	17 Kph East (E)
Conditions	Fair/ Clear
RPAS	Phantom 4
Camera	20mpx
Thermal	NA
Pilot	I Hannah
Observer	J Mcphail
Supervisor	C Spagnola



SUMMARY

SEVERITY



HIGH

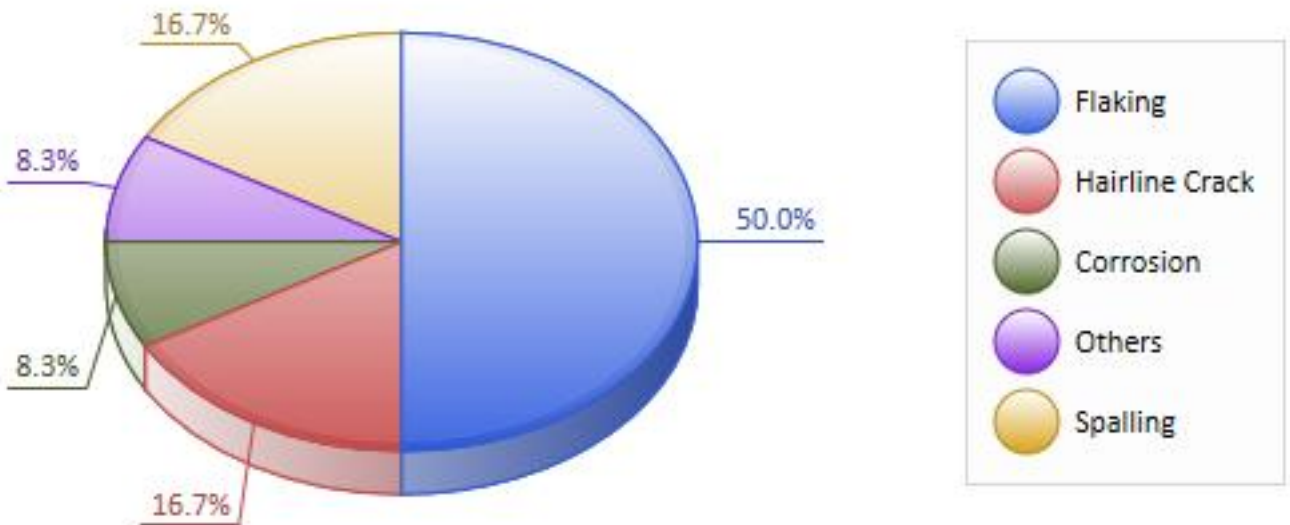


MED



LOW

ANOMALY TYPE



Anomaly Type	Count	Length (m)	Area (sq. m)
Flaking	6	-	23.438721
Hairline Crack	2	-	0.935302
Corrosion	1	-	-
Others	1	-	0.103516
Spalling	2	-	0.080078

OVERVIEW



OVERVIEW

	Page No.	Anomaly No.	Image Name	Anomaly Type	Severity
●	pg. 9	1	DJI_0074.JPG	Spalling	Low
●	pg. 10	2	DJI_0875.JPG	Flaking	Low
●	pg. 11	3	DJI_0029.JPG	Spalling	Low
●	pg. 12	4	DJI_0714.JPG	Flaking	Low
●	pg. 13	5	DJI_0676.JPG	Hairline Crack	Low
●	pg. 14	6	DJI_0714.JPG	Corrosion	Low
●	pg. 15	7	DJI_0011.JPG	Flaking	High
●	pg. 16	8	DJI_0603.JPG	Flaking	High
●	pg. 17	9	DJI_0757.JPG	Flaking	High
●	pg. 18	10	DJI_0673.JPG	Hairline Crack	Low
●	pg. 19	11	DJI_0655.JPG	Flaking	Low
●	pg. 20	12	DJI_0665.JPG	Others	High

Anomaly No. 1



Type	Spalling
Latitude	44.510176
Longitude	-80.222907
Image	DJI_0074.JPG
Area (sq. m)	0.007324
Status	Request for repair



COMMENTS

It is our opinion that the observed concrete deterioration is not structurally significant but should be repaired while other concrete restoration work is being undertaken at the facility.

Anomaly No. 2



Type	Flaking
Latitude	44.510746
Longitude	-80.222495
Image	DJI_0875.JPG
Area (sq. m)	16.704346
Status	Request for repair



COMMENTS

The failure of the roof membrane is allowing considerable leakage into the structure. This leakage is resulting in accelerated deterioration of the concrete structure and if not mitigated could lead to premature failure including the bin top slabs.

Anomaly No. 3



Type	Spalling
Latitude	44.510555
Longitude	-80.222358
Image	DJI_0029.JPG
Area (sq. m)	0.072754
Status	Request for repair



COMMENTS

It is our opinion that the observed concrete deterioration is not structurally significant but should be repaired while other concrete restoration work is being undertaken at the facility.

Anomaly No. 4



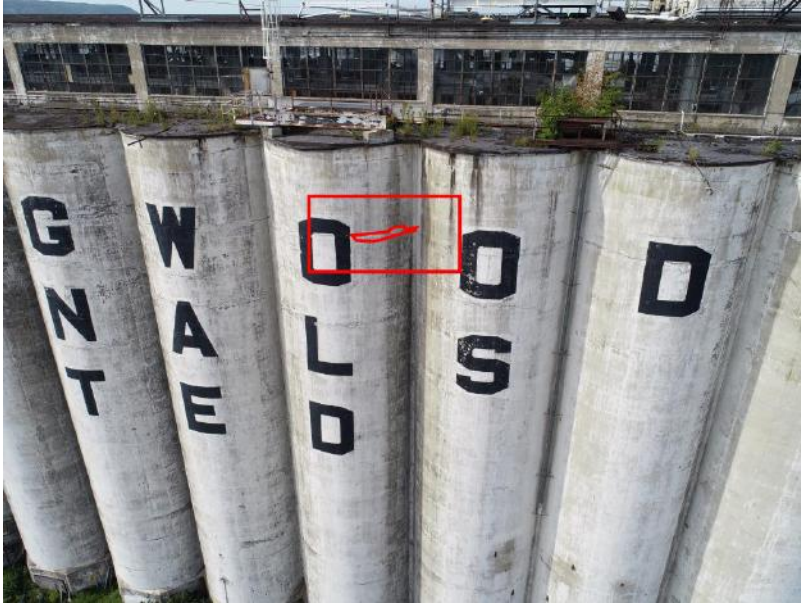
Type	Flaking
Latitude	44.510731
Longitude	-80.222107
Image	DJI_0714.JPG
Area (sq. m)	1.698486
Status	Request for repair



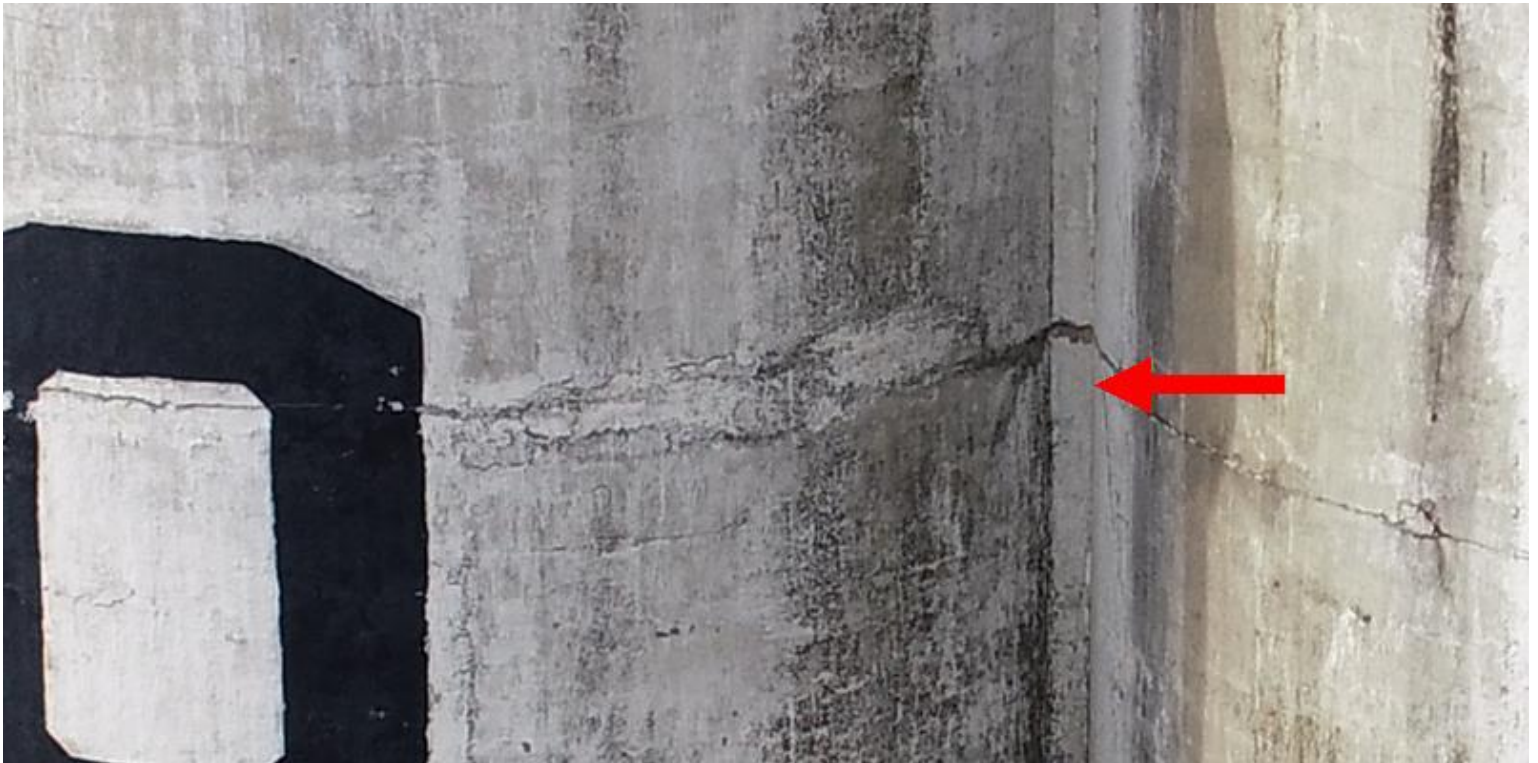
COMMENTS

The failure of the roof membrane is allowing considerable leakage into the structure. This leakage is resulting in accelerated deterioration of the concrete structure and if not mitigated could lead to premature failure including the bin top slabs. Replacement of the roof system is required.

Anomaly No. 5



Type	Hairline Crack
Latitude	44.510624
Longitude	-80.222266
Image	DJI_0676.JPG
Area (sq. m)	0.908447
Status	Request for repair



COMMENTS

While the existing coating (paint) may have been installed only as a decorative finish, we conclude that that the concrete structure would benefit considerably by the application of a new coating that would both return an aesthetically acceptable finish and provide longterm protection to the concrete.

Anomaly No. 6



Type	Corrosion
Latitude	44.510776
Longitude	-80.222136
Image	DJI_0714.JPG
Measurement	NA
Status	Request for repair



COMMENTS

Ladders are not safe for continued use. The observed deteriorated to the access ladder from Switchgear Room to Substation Mezzanine was the result of active water infiltration and must be addressed as part of any remediation.

Anomaly No. 7



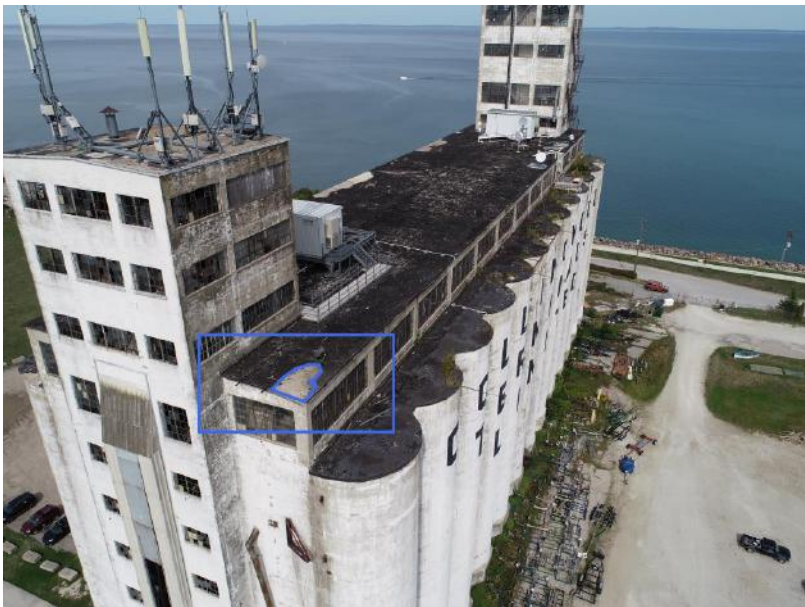
Type	Flaking
Latitude	44.510446
Longitude	-80.223007
Image	DJI_0011.JPG
Area (sq. m)	1.638916
Status	Request for repair



COMMENTS

Critical - Immediate attention required

Anomaly No. 8



Type	Flaking
Latitude	44.510205
Longitude	-80.222938
Image	DJI_0603.JPG
Area (sq. m)	2.756348
Status	Request for repair



COMMENTS

Critical - Immediate attention required

Anomaly No. 9



Type	Flaking
Latitude	44.510835
Longitude	-80.222132
Image	DJI_0757.JPG
Area (sq. m)	0.565186
Status	Request for repair



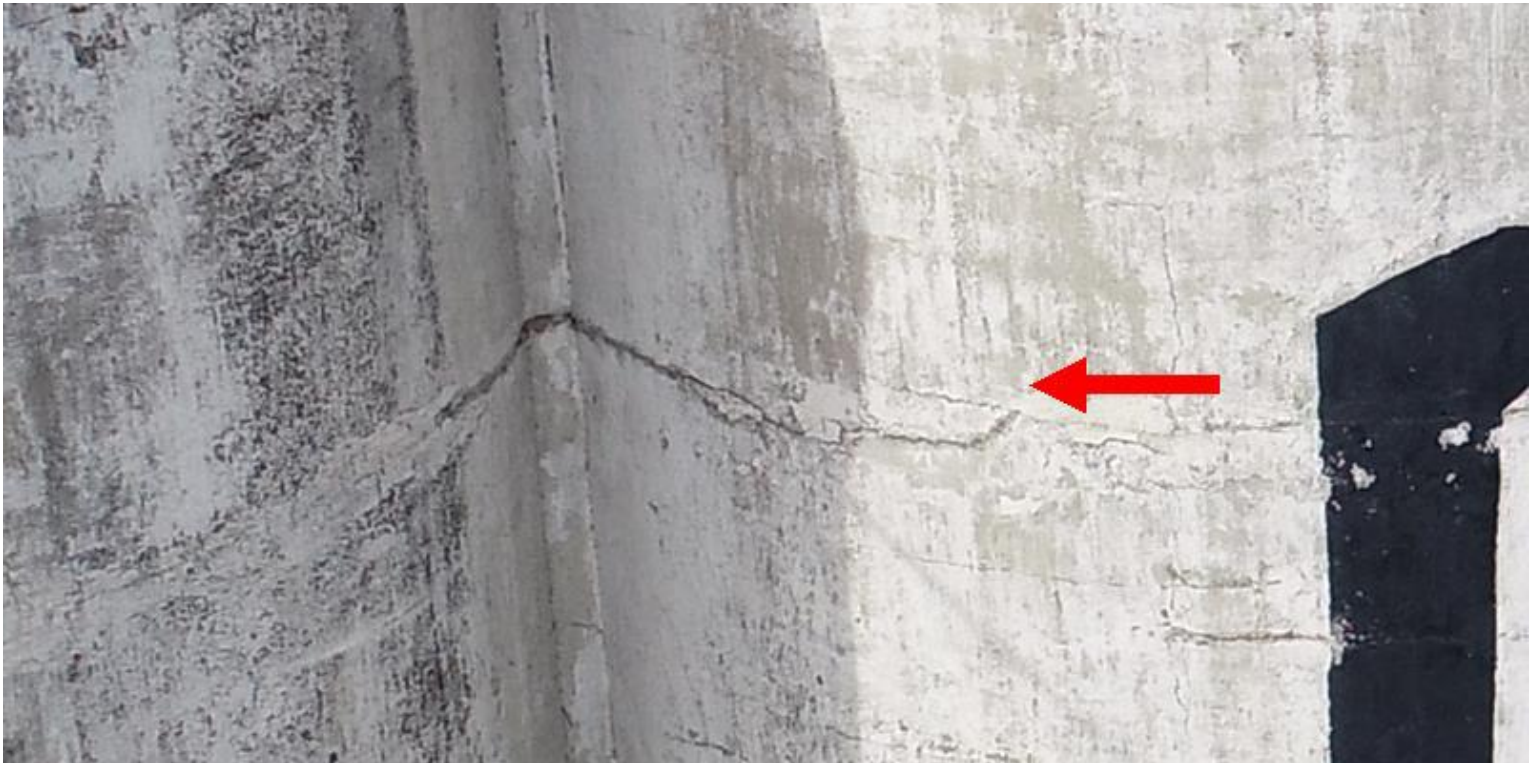
COMMENTS

Critical - Immediate attention required

Anomaly No. 10



Type	Hairline Crack
Latitude	44.510590
Longitude	-80.222324
Image	DJI_0673.JPG
Area (sq. m)	0.026855
Status	Request for repair



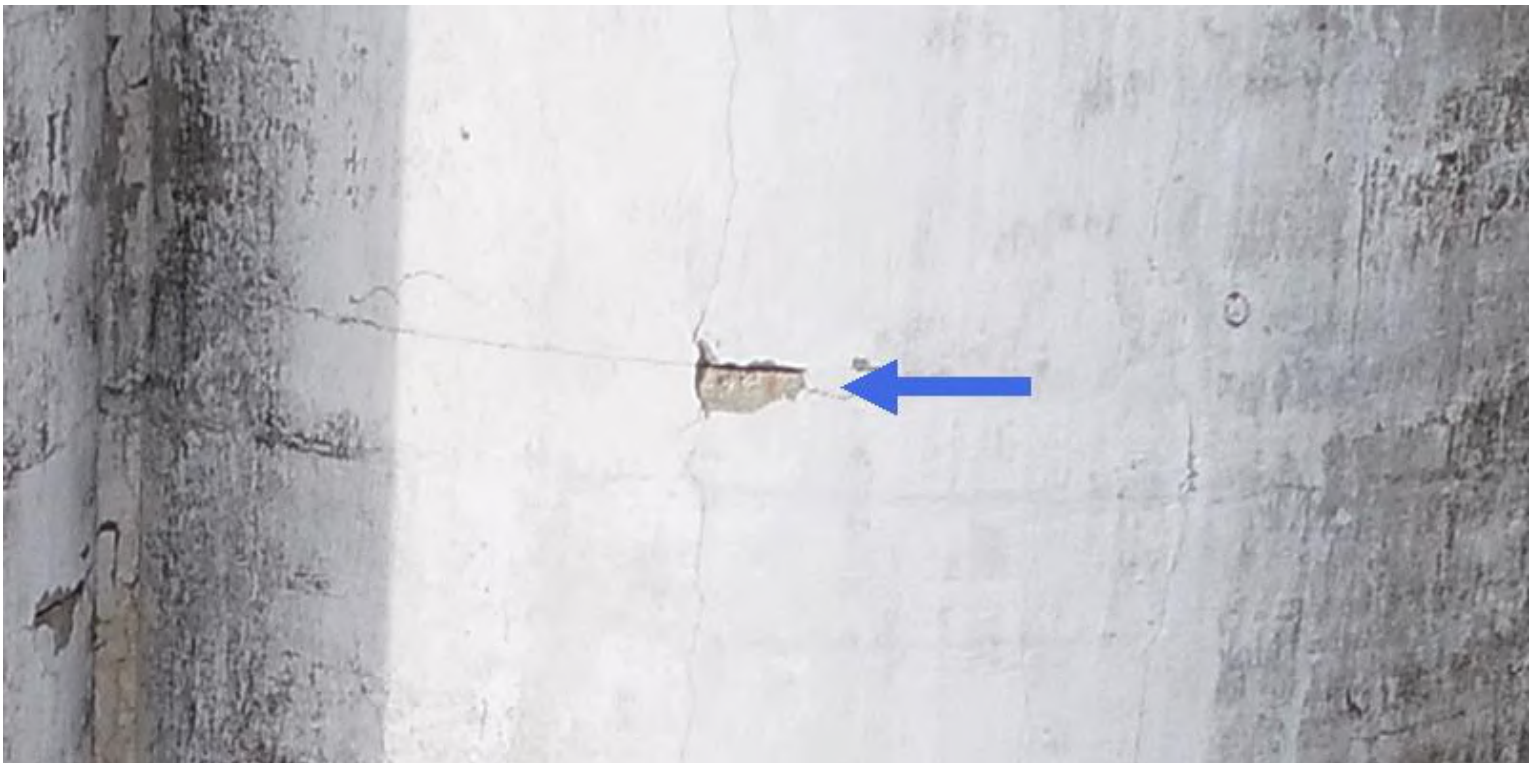
COMMENTS

Not critical but re-exam in 3 years

Anomaly No. 11



Type	Flaking
Latitude	44.510228
Longitude	-80.222829
Image	DJI_0655.JPG
Area (sq. m)	0.075439
Status	Re-request for repair



COMMENTS

Not critical - re examine in 3 years

Anomaly No. 12



Type	Others
Latitude	44.510403
Longitude	-80.222580
Image	DJI_0665.JPG
Area (sq. m)	0.103516
Status	Request for repair



COMMENTS

Critical - Immediate attention required