DRYDEN

SUMMARY FACILITY EVALUATION REPORT (BREIF)

Quartek

Maintenance Building

1012 Airport Rd., Dryden, ON

Facility Details			
Gross Area (Sq.m.):	589		
Construction Year:	1984 (estimate)		
Replacement Cost:	$1.5 million		
Previous Evaluation:	2010	By:	Stantec
Date of Evaluation:	09-Aug-22	Project #:	22091
Evaluator:	Quartek Group Inc. architects, engineers, planners		

Repair/Maintenance Events **See attached breakdown of action items by period.*

0-5 year Recommended Event Action Budget	$	-
6-10 year Recommended Event Action Budget	$	235,000.00
11-20 year Recommended Event Action Budget	$	-

Building Description:

The main storage/repair bay portion of the Airport Maintenance Building is approximately 21m x 21m in dimension. It is a purpose-built open-span enclosure using a pre-engineered framing system with metal cladding on its walls and roof and a poured slab concrete floor. Although we have not found a specific date for its construction, the storage/repair bay portion of the building was likely built at the same time or there abouts as the terminal building of the airport, which was constructed in 1984 .

It would appear that the one-storey crew office was an addition built in 2004, which is approximately 6 m x 10m in dimension (66 m2) and is much lower in height compared to the storage/repair bay portion of the building. The crew area addition (Ready Room) appears to be constructed using a light-member wood stud framing system, pre-engineered wood trusses and it is also clad with pre-finished metal on its roof and side walls like the main storage/repair bay portion. This lean-to addition houses the crew lunch room, a washroom and offices as well as a small vestibule that has pedestrian links to the exterior and to the main storage/repair bay portion of the airport maintenance building.

General Summary:

The survey visit was conducted in fair August weather and this was a high-level visual review only with no intrusive inspection or examination of building equipment and fixtures. The are several repair/replacement events noted in the summary survey.

As a pre-engineered system, the framing and method of assembly affords a cost-effective solution for uses that require shelter but only limited comfort control and air-tightness. Given the general age of the building, the metal cladding of wall exteriors and in particular as a roof finish material would have well exceeded the manufacturers warranty period by over 20 years, whereby the roofing ought to be replaced or coated to extend water protection.

Structural Summary (Superstructure):

The foundations and the primary structural framing of the storage/repair bay portion of the building appear sound but an independent review of the original loading assumptions, stability to wind and other lateral forces be conducted to assure that the structure meets current standards of a pre-engineered building before investing in renovations such as recladding. Particular focus on the framing around portal openings (overhead doors) should be given. The lean-to crew offices should also be reviewed for integrity of the light-member framing since a history of moisture infiltration has been noted.

Envelope Summary (Shell):

The envelope of the building would provide a generally low insulation values compared to a new facility. From a moisture protection study, the shed and dormer roofs perform well but they are deteriorating and prone to water infiltration under certain climatic conditions. Fasteners get loose and there is exposure at joint lines, around openings, at ridge flashing and at eaves We understand that interim measures have been carried out in 2020-2021 to replace fastening screws on the roof sheathing, which had rusted and lost gasketing effectiveness to the metal.

There has been a history of water leakage causing localized damage; Please review the Pinchin report dated 2022 that describes location of remediation measures for localized areas of the lean-to addition, most likely caused from direct roof leakage and/or condensation events. With the factory coating on the roof sheathing worn to the extent, it is recommended that both the storage/repair bay portion and the lean-to crew offices have metal roofs replaced within the next two or three years to avoid more water damage and to ensure an extended operation life by another 20 years or longer. The metal roof over the lean-to, although newer by comparison to the repair/storage bays, is a very low slope angle and may warrant further study into control of air/vapour infiltration. Such a replacement event would allow for the renewal of insulation roof liners within the storage/repair bay portion of the building. Other insulation methods, such as spray foam or a rubberized membranes may be considerations on the crew office addition and a superior solution.

If the cost of roof replacement is out of reach, the City may consider the option of recoating the roof with an approved liquid sealant designed specifically for renewal of metal roofs, which would typically offer an extension of several years depending on the coating manufacturer claims. Other elements of the envelope are original and will warrant replacement particularly windows. A further study to evaluate the windows and doors is recommended so that scheduled replacement and budgeting.

Interior Summary:

The interior of the storage/repair bays are generally in fair to good but there are areas where the interior cladding has rusted at the base and where the wall liners have been torn. Localized repair events would be recommended. The interior surfaces of the crew offices are in good to fair condition. If there will be localized ceiling repair as a function of the mold mitigation, it would be appropriate to undertake repainting of the entire ceiling and walls to coincide. Replace the flooring throughout.

Mechanical Summary:

While the facility is reported to have good operational history. Our review of past Stantec report indicates that a 2010 budget of $40K was recommended for Heating equipment to be replaced for this building. Our observations made of the storage/repair bays would support that equipment was replaced and is relatively in good condition at an age of ten-years old or there abouts. Within the next ten years a HVAC /Heating study should be conducted to provide a more precise replacement schedule. The washroom fixtures appeared to be original and therefore are due for replacement due to age with more water-use efficient offerings.

Electrical Summary:

Due to the concealment of most electrical wiring, the study could not fully determine the wiring age or its overall condition beyond a sampling of the age of the panel boards and main which are due for replacement within the next 5 to 10 years. The emergency lighting batteries will require routine replacement. Due to the overall age of system installation, the theoretical life of various electrical systems are likely to require partial or whole replacement.

Cost Opinion

A roof replacement budget in the range of $80K to $95K would appear to be a early expenditure for the City's consideration to undertake in the next five to ten years. Replacing the liner and spray foaming the underside of the roof frame over the crew office lean-to, would be a solid investment into the building while reroofing and may represent another $30 to $40K of cost. The estimate is based on 2022 Canadian dollars and should be indexed to reflect the date of future budgets. Other incidental items (refinishing of the crew office interiors, some plumbing and electrical switch gear replacement work noted) is likely to amount to $100K based on a $170/m2 estimate.

Study References and Methodology:

The study provides a snapshot of the physical condition and age of building components or systems of the facility at the time of the site visit conducted for evaluation. The site visit is a brief visual, non-invasion walk-through survey of the readily accessible aspects of the building and its site. The survey should not be considered technically exhaustive. The study team also reviews any technical drawings and or other reports and/or building records that are supplied to the evaluator by the facility owner/operator. A brief interview is conducted with maintenance personnel or building users, when possible, to further ascertain known issues for the facility assessment.

The study follows the Uniformat II method for categorizing building components and identifies a potential repair or replacement event. Such an event is provided with an approximate estimate of quantities and cost to maintain the building and not necessarily create an improvement of building feature or performance. The events are organized into potential risk of occurrence over three periods starting with the next five years, years 6 to 10 thereafter and for a period not exceeding a horizon of 20 years from the visit date. In each period, the variables affecting repair or replacement events diminish in accuracy of event cost the further this action is undertaken from the date of the report.

The methodology used in this study is based on the contract scope and the terminology/limitations of ASTM E2018-15 Standard Guide for Property Assessments. Event estimates provided herein are represented in 2022 Canadian dollars. Future periods referred to in this report should be indexed based on several factors affecting future costs, of which may include inflation indexing, regional changes in labour or material availability in the construction industry. The reader would apply these accordingly.

Extra Study: In context to a Uniformat II item, our report may on occasion make a recommendation for the City to engage an expert to conduct addition investigation and/or study concerning an existing building component. This is because a determination could not be reasonably ascertained by Quartek within the parameters of our study scope or because the study/investigation will afford the City more latitude as to the best remedial action other than simply a repair/replacement option. The study/investigation recommendation is in itself an event and we identify a potential cost amounts for budgeting this action. The studies we noted:

Steel Framing Study: Pre-engineered buildings are by nature built to minimum tolerances. The steel framing is typically designed to use least steel and meet design tolerances based on snow loading used from NBC weather data charts of the day and by applying design tolerances according to the version of the Ontario Building Code governing at the date of building's design/construction. As of the date of this study, NBC weather data hasn't been updated recently and instead there is new data sources available that is being used in energy and structural analysis for today's buildings and for today's more extreme weather occurrences. The OBC has vastly changed particularly Part 4 (Structural Designs) since the construction of the pre-engineered buildings reviewed in this study. For the City to invest into the recladding of a building of this age, our recommendation would be to conduct a structural analysis before hand to determine if reinforcement and other structural changes are required to make the building safe for continued use.

We may determine that as a follow-up after implementing a recommended study/investigation, the result (findings)are likely to facilitate a cost for replacement, remediation or other action, a budgetary amount in the form of an allowance has been noted. The findings of the recommended study may exceed this allowance depending on the outcome, but some funding will presumably be allocated to cover a portion of the action.

Theoretical Life: (References provided from RECapp and Other M/E reference documents) We have provided selective examples of typical operational/functional life for various building components as a general guide to readers:

Electrical Components	
Electrical Switch gear	40 years
Electrical Light Fixtures	20 - 30 years + *Efficiency Obsolescence
Radiant Electrical Heating	20 years + *Efficiency Obsolescence
Main Conductors	60 – 70 years
Transformers	30 - 40 years + *Efficiency Obsolescence
Mechanical Components	
Plumbing Piping (Copper)	50 - 60 years
Hydronic Piping (galv.Iron)	70 - 90 years + *Efficiency Obsolescence
Washroom Fixtures	30 years + *Efficiency Obsolescence
San.Waste Piping (Iron)	60 – 70 years
Gas Furnaces(combustion)	20 - 30 years + *Efficiency Obsolescence
Air handling with H/C coils	50 years + *Efficiency Obsolescence
Light Metal Ducting	60 – 70 years
Enclosure Components	
Window Units (Alum.Frame)	40 - 50 years + *Efficiency Obsolescence
Flat Roofing Membranes	30 - 40 years + *Efficiency Obsolescence
Sloped Roofs (Shingles)	20 - 40 years
San. Waste piping (Iron)	30 - 70 years
Standard Brick (Veneer)	80 - 100 years
Conventional EIFS wall	40 - 60 years
Exterior Metal Siding	40 - 60 years
Superstructure Components	
Concrete Foundations	40 - 50 years + *Efficiency Obsolescence
Structural Steel Framing	30 - 40 years + *Efficiency Obsolescence
Masonry Walls	20 - 40 years
San. Waste piping (Iron)	30–70 years

General Report Disclaimer:

The report should be reviewed in context to any prior hazardous building materials assessment studies as to further budgeting considerations beyond the limited repair/replacement events described in this report.
The intended use of the report is for assistance with long-range asset management planning for a facility under its current state so ideally adequate budgeting can be provided.

The repair replacement events identified in the report are not intended to capture routine maintenance of various components of the facility that would be generally anticipated as part of the day-to-day operations.
Deferred maintenance can lead to earlier than predicted failure of equipment, systems, materials, etc.
Not withstanding the described methodology, the study findings are only as accurate as the available information provided, the allowable time to conduct a site visit to properly document findings and the level of access afforded the surveyors by the owner's representative. Costing accuracy may vary due to our ability to fully assess that collateral affects of a repair/replacement event on other elements of the building or surrounding site.