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FINAL

Property Condition Assessment

Thornlea Pool Building
8075 Bayview Avenue
Markham, ON

YORK REGION DISTRICT SCHOOL BOARD

PROJECT NO. 1044354

Jacques Whitford

An Environment
of Exceptional
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de qualité

PROJECT NO. 1044354

REPORT TO	**York Region District School Board** **1260 Gorham Street** **Newmarket, ON L3Y8W4**
FOR	**Property Condition Assessment**
ON	**Thornlea Pool Building** **8075 Bayview Avenue** **Markham, ON**

2008-10-02

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Detailed Report

1.0 GENERAL INFORMATION

Client Information:
Jacques Whitford Limited
Norman Lobo
3 Spectacle Lake Drive
Dartmouth, NS B3B 1W8

Project Information:
1044354 - Assessment of the Thornlea Pool Building
1044354
Evaluation Period: 10 years
Inflation Rate: 0.00%

Site Information:
Thornlea Pool Building
8075 Bayview Avenue
Markham, ON L3T 4N4
Latitude, Longitude: 43.82931600, -79.40375200
Site Access Contact:

Consultant Information:
Jacques Whitford Limited
7271 Warden Ave
Markham, ON L3R 5X5

Phone: (905) 474-7700 **Fax:** (905) 479-9326
E-mail Address:
Inspection Date: 09/18/2008
Report Date: 2008-10-02
Site Assessor: Chris Van Dongen - Facility Assessor
Senior Reviewer: Norman . Lobo - Project Manager

Signed By:

Norman Lobo, Project Manager

2.0 EXECUTIVE SUMMARY

2.1 DESCRIPTION

Jacques Whitford Limited (Jacques Whitford) was commissioned by the York Region District School Board (YRDSB) to conduct a Property Condition Assessment (PCA) on the property referred to as "Thornlea Pool" located at 8075 Bayview Ave in Markham, Ontario, L3T 4N4.

The site is located on the northeast corner of the intersection of Bayview Avenue and Willowbrook Road and the pool is associated with the adjacent Thornlea Secondary School. The site features were not assessed as they are reportedly maintained by the Thornlea High School. The exceptions are the concrete paved walkways, the concrete pation and the concrete retaining wall which are immediately adjacent to the Thornlea Pool.

The subject building is a two-storey pool facility with a partial basement level. The floor area of the pool building is approximately 2,575 sq. m (27,700 sq. ft.). The building was reportedly constructed in 1973 and is occupied primarily by the public swimming pool and gymnasium on the main floor. The second level includes change rooms, a viewing gallery, and a classroom, added with interior renovation approximately 10-15 years ago. A boiler room is also located on the second floor, at the northeast corner of the building.

It was reported that maintenance of the pool facility is currently undertaken by school staff. Capital replacement and maintenance costs are reportedy shared by the YRDSB and the Town of Markham, each contributing approximately 35% and 65% respectively. For the purposes of this report, the opinion of probable costs are provided in full.

2.2 ASSESSMENT

Based on information gathered and observations made by Jacques Whitford on September 18th, 2008, the site building appears to be in good condition overall.

The following deficiencies require immediate attention:
-Repair of the foundation wall and waterproofing on the east side of the building to prevent further water infiltration;

The following significant deficiencies were observed that will require attention during the evaluation period:

-Repair of localized scaling and cracking on the concrete sidewalks;
-removal and replacement of sealant on masonry expansion joints;
-localized repair of the roof assembly;
-reconstruction of the concrete patio to the south of the building;
-replacement of the direct applied ceiling tiles in the gymnasium storage room;

2.0 EXECUTIVE SUMMARY continued

2.2 ASSESSMENT continued

-replacement of the vinyl floor tiles in the gymnasium storage room; and
-repainting of the storage room walls and second floor change room ceiling
-replacement of the carpet flooring in the Town of Markham office;
-replacement of the original hot water heating boilers #1 & #2;
-refurbishment of hot water heating boiler #3;
-replacement of the gymnasium and change room air handling units;
-refurbishment of the pool area air handling unit (Dectron);
-replacement of the main fire alarm panel and end devices; and
-refurbishment and part replacement for the swimming pool systems.

2.3 OPINIONS OF PROBABLE COST

Tables indicating cost estimates for immediate repairs, and replacement reserve costs are included in this report.

Immediate repair costs are for deficiencies observed during the Property Condition Assessment that require immediate action in order to prevent further deterioration to the element or to prevent possible injury due to an unsafe condition and/or code violation. The immediate repair items identified represent an estimated cost of $45,000.

Replacement reserves are costs anticipated for repairs, part replacements associated with the maintenance of mechanical systems, and for elements that will have exceeded their expected useful life (EUL) over the 10-year evaluation period. The average cost per square foot per year (uninflated) is $ 1.68.

2.4 RECOMMENDATIONS

Based on the findings of the PCA, further studies, research testing, or exploratory probing are not recommended for this Project at this time.

3.0 INTRODUCTION

3.1 PURPOSE

The purpose of the assessment was to provide a general overview of the present condition of the site improvements and to determine an opinion of probable costs to remedy any identified physical deficiencies and replace dated and deteriorated building components and equipment, over an evaluation period of 10 years.

3.2 SCOPE

The PCA carried out by Jacques Whitford on the Site is based on the ASTM Standard Guide for Property Condition Assessments: Baseline Property Condition Assessment Process (E 2018-01) and consisted of the following:

- Interviews;
- Walk-through Site Visit;
- Preparation of Opinions of Probable Costs to Remedy Physical Deficiencies; and,
- Preparation of Property Condition Assessment Report.

ASTM defines a physical deficiency as a conspicuous defect or significant deferred maintenance of a site's material systems, components or equipment as observed during the site assessor's walk-through site visit. Included within this definition are material systems, components or equipment that are approaching, have reached, or have exceeded their typical expected useful life (EUL) or whose remaining useful life (RUL) should not be relied upon in view of actual or effective age, abuse, excessive wear and tear, exposure to the elements, lack of proper or routine maintenance, etc. This definition specifically excludes deficiencies that may be remedied with routine maintenance, miscellaneous minor repairs, normal operating maintenance, etc., and excludes conditions that generally do not constitute a material physical deficiency of the site.

The review of the Site was based on a visual review of the visible and accessible components of the property, building(s) and related structures. The roof surface, interior and exterior wall finishes, and floor and ceiling finishes of the on-site building(s) and related structures were visually assessed to check their condition and to identify if any physical deficiencies were present. The assessment

3.0 INTRODUCTION continued

3.2 SCOPE continued

does not include an intrusive investigation of wall assemblies, ceiling cavities or any other enclosures. No physical tests are conducted and no samples of building materials are collected to substantiate observations made.

The non-specialist review of the mechanical and electrical systems, and fire / life safety systems at the property included discussions with the site contact and review of any available maintenance records. A visual assessment of the mechanical and electrical systems is conducted to determine the type of systems present, age and aesthetic condition. No physical tests were conducted on the mechanical and electrical operating systems.

A detailed evaluation of the property development's compliance with national and provincial Building Codes and/or Fire Codes is not part of the scope of this assessment. However, applicable codes may be used as a reference in determining appropriate recommendations. It is assumed that the existing building was reviewed and approved by local authorities at the time of construction.

3.3 DEVIATIONS FROM THE GUIDE

This property condition assessment was generally carried out as per ASTM E 2018-01. No additional consultants were used in the assessment and preparation of the PCA.

3.4 LIMITING CONDITIONS

This report has been prepared for the sole benefit of the York Region District School Board. The report may not be relied upon by any other person or entity without the express written consent of Jacques Whitford Limited and the York Region District School Board.

Any use that a third party makes of this report, or any reliance on decisions made based on it, are the responsibility of such third parties. Jacques Whitford accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made, or actions taken, based on this report.

No legal survey, soil tests, environmental assessments, detailed engineering calculations, or quantity surveying compilation have been made. No responsibility, therefore, is assumed concerning these matters. Jacques Whitford did not design or construct the building or structure and therefore will not be held responsible for the impact of any design or construction defects, whether or not described in this report. No guarantee or warranty, expressed or implied, with respect to the property or building components and systems is made

The recommendations and our opinion of costs associated with these recommendations, presented in this report are based on the parts of the building which were accessible during our visual review. Conditions may exist that are not as per the general condition of the system being observed and reported in this report. Opinions of costs presented in this report are also based on information received during interviews with operations and maintenance staff. During the assessment, we have attempted to verify all information received. In certain instances, Jacques Whitford has been required to assume that the information provided is accurate, and cannot be held responsible for incorrect information received during the interview process. Should additional information become available with respect to the structural elements of the building, Jacques Whitford requests that this information be brought to our attention so that we may reassess the conclusions presented herein.

The opinions of cost are intended for global budgeting purposes only. Actual costs for work recommended can only be determined after preparation of tender documents, understanding of the site restrictions, effects on ongoing operations of the building and definition of the construction schedule. The scope of work recommended in our report must be confirmed with a more detailed site investigation prior to implementation. We expressly waive any responsibilities for the effects of any action taken as a result of this service unless we are specifically advised and participate in the action, in which our responsibility will be agreed to at that time. No other warranty, expressed or implied is made.

4.0 PROPERTY DESCRIPTION

4.1 SITE SUMMARY

Site Information		**Visit Information**	
Primary Use:	Institutional	**Site Assessor:**	Chris Van Dongen

4.0 PROPERTY DESCRIPTION continued

4.1 SITE SUMMARY continued

Site Information

Ownership Entity:	Town of Markham
Property Management Firm:	N/A
Reported Gross Site Area:	Not Provided

Visit Information

Date of Site Visit:	September 18, 2008
Weather:	Sunny
Temperature:	15 degrees celsius
Accompanied By:	Mr. Allen Dawds

4.2 BUILDING SUMMARY

The Site Building is located at 8075 Bayview Avenue in Markham, Ontario. It is located at the northeast corner of the intersection of Bayview Avenue and Willowbrook Road. The pool is associated with the adjacent Thornlea Secondary School.

The subject building, referred to as 'Thornlea Pool' is a two-storey pool facility with a partial basement level and a total area of 2,575 sq. m (27,700 sq. ft.). The building was reportedly constructed in 1973 and is occupied primarily by the public swimming pool and gymnasium on the main floor. The second level includes change rooms, a viewing gallery, and a classroom. The classroom was reportedly added approximately 10-15 years ago. A boiler room is also located on the second floor, at the northeast corner of the building.

Selected photographs of the site are presented in Appendix A.

Building Name	# of Stories	# of Basement Levels	Leasable Area	# of Rooms
Thornlea Pool	2	1	27700 SF	

Structure	Exterior Walls	Roof	Foundation	HVAC
load bearing	brick veneer	conventional builtup roof	Slab-on-Grade	Central Plant

Electrical	Vertical Transportation	Life Safety/Fire Protection:
OffSite Source	None	fire alarm panel, fire extinguishers, smoke detectors, heat detectors, emergency exit lighting, pull stations

4.3 OTHER STRUCTURES

The pool building is associated with the adjacent Thornlea Secondary School building, located on the same property. Assessment was completed only on the Thornlea Pool Building.

5.0 FINDINGS

5.1 SITE ELEMENTS

Topography

Description: The site features surrounding the building were reported to be maintained as part of the adjacent Thornlea Secondary School property. Therefore, topography was not included in the assessment of the Thornlea Pool Building.

Assessment: Not Applicable

Recommendation: Not Applicable

5.0 FINDINGS continued

5.1 SITE ELEMENTS continued

Storm Water Drainage

Description: The site features surrounding the building were reported to be maintained as part of the adjacent Thornlea Secondary School property. Therefore, the storm water drainage was not included in the assessment of the Thornlea Pool Building.

Assessment: Not Applicable

Recommendation: Not Applicable

Ingress and Egress

Description: The site features surrounding the building were reported to be maintained as part of the adjacent Thornlea Secondary School property. Therefore, the ingress and egress were not included in the assessment of the Thornlea Pool Building.

Assessment: Not Applicable

Recommendation: Not Applicable

Paving, Curbing, Parking

Description: The site features surrounding the building were reported to be maintained as part of the adjacent Thornlea Secondary School property. Therefore, the paved surfaces were not included in the assessment of the Thornlea Pool Building.

Assessment: Not Applicable

Recommendation: Not Applicable

Flat-Work

Description: There are cast in place concrete sidewalks located to the west and north of the building.

A barrier free access ramp connects the west concrete sidewalk to the main entrance.

Assessment: Localized scaling and longitudinal cracking of the concrete sidewalks were observed during the assessment, particularly around the main west entrance. Repair of the deficient areas is recommended to prevent pedestrian trip hazards.

Recommendation: Based on observed conditions, localized repairs to the cast-in-place sidewalks are recommended. An allowance for these repairs is included in the cost table.

5.0 FINDINGS continued

5.1 SITE ELEMENTS continued

Flat-Work continued

ASSOCIATED PHOTOGRAPHS

Localized deteriroation of concrete sidewalk.

Typical concrete sidewalk on the west side of the building.

COST SUMMARY

Recommendation	Expected Useful Life (yrs)	Effective Age	Remaining Useful Life (yrs)	Year	Cost
Repair localized scaling and cracking of concrete sidewalks	20-25 yrs	Varies	Varies	1	$10,000.00

Landscaping and Appurtenances

Description: A retaining wall is provided to the southeast of the pool building. The retaining wall appears to be poured concrete with concrete cap and a chain link fence. The north face of the retaining wall is covered by brick.

Assessment: The retaining wall is in good condition.

Recommendation: Based on observed conditions, no significant capital expenditures are expected during the evaluation period.

Recreational Facilities

Description: The paved and landscaped areas surrounding the building were reported to be maintained as part of the adjacent Thornlea Secondary School property. Therefore, these features were not included in the assessment of the Thornlea Pool Building.

Assessment: Not Applicable

Recommendation: Not Applicable

Utilities

Description: The property is serviced with electricity and natural gas supplied by local providers. Telephone service is provided by Bell Telephone.

Assessment: It is reported that the quantity and pressure of the utilities provided are adequate for their intended use. The meters appeared to be in good condition. No significant deficiencies associated with the water, electrical or natural gas services to the buildings were reported or observed.

5.0 FINDINGS continued

5.1 SITE ELEMENTS continued

Utilities continued

Recommendation: The site utilities are reportedly adequate for the Site buildings. Therefore no recommendations are provided for the evaluation period.

5.2 STRUCTURAL FRAME & BUILDING ENVELOPE

Foundation

THORNLEA POOL

Description: The type and extent of building footings are not known. The basement pool tunnel has poured concrete walls and a concrete slab-on-grade. As-built drawings were not available for review.

Assessment: No significant cracking, settlement, or heaving of building elements that would suggest a potential foundation problem were noted at the time of the assessment.

On the east elevation, the exterior wall, which is a poured concrete wall, is partially below grade. Here water infiltration is reported to occur, and this is evident in storage room. Water damaged interior finishes, including peeling paint and damaged floor tiles, were observed.

An excavation reportedly to check the source of the water infiltration was recently undertaken. Findings of the excavation were not available for review during the assessment. It is likely that water infiltration is the result of an ineffective waterproofing system on the wall.

Recommendation: Reported water infiltration and interior damage are indicative of failure of the foundation waterproofing. Replacement of the waterproofing system, and repair of the building foundation wall, including parging is reportedly scheduled to be undertaken. An allowance for this replacement and repair is included in the cost table.

ASSOCIATED PHOTOGRAPHS

Evidence of previous excavation at site of moisture infilration through foundation wall.

Damaged interior finishes due to water water infiltration through foundation wall.

COST SUMMARY

Building	Recommendation	Expected Useful Life (yrs)	Effective Age	Remaining Useful Life (yrs)	Year	Cost
Thornlea Pool	Repair foundation wall and waterproofing on east elevation	N/A	N/A	N/A	Immediately	$45,000.00

5.0 FINDINGS continued

5.2 STRUCTURAL FRAME & BUILDING ENVELOPE continued

Building Frame

THORNLEA POOL

Description: The building is a one storey and a two storey building. The two storey building is located at the western building portion, and at the northeast corner.

The swimming pool and gymnasium area have a raised roof. Here building structure is prestress 'Double T' roof deck likely supported on the concrete load bearing masonry wall. The roof deck in the two storey section is precast concrete slabs supported on the concrete load bearing masonry wall. The suspended slab in the two storey section was mostly encapsulated.

The basement is reinforced concrete construction with poured concrete foundation walls supporting a poured concrete suspended slab.

Assessment: The building structure is generally in good condition. The exposed slab-on-grade and structural components did not have any significant cracking, deformation, twist of deflection that might affect tenant operations.

Recommendation: Significant repair work is not anticipated for the building frame during the evaluation period.

Exterior Walls

THORNLEA POOL

Description: The exterior wall system is cavity wall with weeps on all elevations. Outside face of the exterior wall is brick veneer. Glazing is provided on the west and south elevations.

On the south elevation there is glass covered entrance vestibule that extends beyond the footprint of the building. The vestibule glazing is fixed insulating glazing units (IGUs) in prefinished anodized aluminum frames. The two entrance doors are storefront-type doors with IGUs in aluminum frames

Glazing at the main west entrance door consists of wire reinforced security glass in metal frames. Sloped glazing in the second floor lobby above the main entrance consists of IGUs in prefinished aluminum frames.

Access at the main entrance is provided by two sets of hollow metal doors with single-glazed, wire reinforced vision glazing. Utility doors around the building are generally hollow metal doors in metal frames.

Assessment: The exterior wall system appears to be in good condition overall, with no significant deficiencies observed. Minor spalling of the clay bricks was observed on the south and east sides of the building.

The stamped dates on windows and doors of the south vestibule is 2000. The sloped glazing in the second floor lobby was reportedly replaced approximately 10 years ago, in 1998. Both appear to be in good condition.

The wire reinforced glazing and doors at the main entrance likely date to original construction and are in fair condition. Exterior utility doors were generally observed to be in fair condition.

The window and door perimeter sealant was observed to be in fair condition with signs of deterioration in localized areas. The building control joint sealant is in poor condition, with cohesive failure observed in most locations.

5.0 FINDINGS continued

5.2 STRUCTURAL FRAME & BUILDING ENVELOPE continued

Exterior Walls continued

Recommendation:

Repair of localized spalling brick is required to prevent falling brick on the north elevation. Repairs should be undertaken in the immediate term to mitigate risk, and should be handled as operations and maintenance cost.

Based on the observed condition, it is recommended to replace the deteriorating sealant on building control joints. The associated costs are included in the costs table.

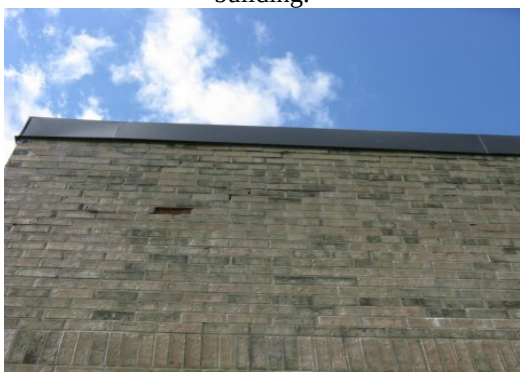
Localized replacement of the window and door perimeter sealant is anticipated throughout the evaluation period and should be undertaken as part of routine maintenance.

Based on observed condition, replacement of the exterior doors is not anticipated within the evaluation period. Repainting of the doors, to extend service life, should be handled as a routine operations and maintenance cost.

ASSOCIATED PHOTOGRAPHS

Glazed vestibule on the south side of the building.

Sloped glazing in second floor lobby.



Brick spalling observed on the east elevation.

Deteriorated control joint sealant.

5.0 FINDINGS continued

5.2 STRUCTURAL FRAME & BUILDING ENVELOPE continued

Exterior Walls continued

ASSOCIATED PHOTOGRAPHS continued

North elevation of Thornlea Pool

COST SUMMARY

Building	Recommendation	Expected Useful Life (yrs)	Effective Age	Remaining Useful Life (yrs)	Year	Cost
Thornlea Pool	Replace Expansion Joint Sealant in Masonry walls	10-15 yrs	15 yrs	1 yr	1	$8,000.00
Thornlea Pool	Repair/replace localized spalling of clay brick (Operations and Maintenance cost)	N/A	N/A	N/A	Immediately	$0.00

Roofing

THORNLEA POOL

Description: The roof assembly system on the building is a conventional insulated type in that the membrane is installed directly on rigid roof insulation. The inclusion of a vapour retarder in this roof construction was not confirmed as no core tests were conducted.

The membrane component of this roofing system is a built-up roof (BUR)membrane, consisting of multiple plies of reinforced felts and waterproofing bitumen. The membrane is surfaced with a flood coat of bitumen and pea gravel.

Assessment: No deficiencies associated with the roofing assembly system were reported or observed at the time of the site visit. According to the chief caretaker the roof assembly system was replaced in approximately 1998. This appears to be consistent with the observation made during the assessment.

Recommendation: Similar roof assembly systems are known to have a service life of approximately 22 years. The service life is subject to construction, type of materials used and maintenance. Based on age and conditions observed during the assessment replacement of the roof assembly system is not anticipated between 2008 and 2018.

Roof replacement is subject to maintenance, and immediate repair roof leaks, which may occur. A provision to undertake interim repairs is included in the Replacement Reserve cost table.

5.0 FINDINGS continued

5.2 STRUCTURAL FRAME & BUILDING ENVELOPE continued

Roofing continued

ASSOCIATED PHOTOGRAPHS

General view of Built up roof assembly.

COST SUMMARY

Building	Recommendation	Expected Useful Life (yrs)	Effective Age	Remaining Useful Life (yrs)	Year	Cost
Thornlea Pool	Interim repair of the roof assembly system.	22 yrs	10 yrs	12 yrs	4	$3,000.00
					7	$3,000.00
					10	$15,000.00

Exterior and Interior Stairs

THORNLEA POOL

Description: Exterior concrete stairs provide access to the gymnasium north entrance door.

The exterior concrete stairs which provides access to the north tennis courts and upper walkway, was not assessed. It is reported that these stairs are maintained as part of Thornlea High School.

There are four interior stairwells located in the building. The main staircase, which is at the west side of the building, is concrete framed with quarry tile on the treads. Two staircases provide access to the 2nd floor change rooms. These staircases are concrete framed with ceramic tiles on the treads. The fourth staircase is located at the northeast corner of the building. It provides access to the boiler room and pool tunnel. This staircase is concrete framed with painted treads and steel guards.

Assessment: The exterior concrete staircase is in fair condition. Localized minor repair of the spalled concrete on the treads should be undertaken as part of routine operations and maintenance.

No evidence of significant damage or deterioration associated with the interior staircases was observed during our review.

Recommendation: No action other than routine maintenance is anticipated during the evaluation period.

5.0 FINDINGS continued

5.2 STRUCTURAL FRAME & BUILDING ENVELOPE continued

Patio, Terrace, and Balcony

THORNLEA POOL

Description: A patio/terrace constructed with cast-in-place concrete is located to the south of the building.

Assessment: Differential settlement was observed during the assessment, on the cast-in-place concrete patio. The differential settlement is likely the result of poor construction on the underlying soils.

Recommendation: In its current condition the concrete patio is a potential tripping hazard. Reconstruction will require removal of the existing concrete and engineering the underlying soils to support the concrete patio and to minimize future settlement. A cost to reconstruct the concrete patio is provided in the cost table.

ASSOCIATED PHOTOGRAPHS

Uneven settlement of concrete patio at the south side of the building.

COST SUMMARY

Building	Recommendation	Expected Useful Life (yrs)	Effective Age	Remaining Useful Life (yrs)	Year	Cost
Thornlea Pool	Reconstruction of the south concrete patio	20-25 yrs	20-25 yrs	1 yr	1	$20,000.00

5.3 INTERIOR ELEMENTS

Unit Types and Unit Mix/Building Area

THORNLEA POOL

Description: The total building area is approximately 27,700 sq.ft. The building interior has a variety of interior finishes. Wall finish in most locations consists of paint applied to concrete masonry partitions. Ceramic wall tiles are provided in some locations, including showers in the change room. Acoustic wall panels are provided in the swimming pool area.

The flooring is mostly covered with ceramic and quarry tiles in the common areas, change rooms and on the pool deck. The gymnasium has strip hardwood flooring. Vinyl tiles are provided in several areas, including the storage room, office and 2nd floor classroom. Carpet flooring is provided in the Town of Markham office, which is at the southwest corner of the building.

The ceilings in common areas, change rooms, washrooms and offices are generally painted gypsum board or plaster. The main lobby has a wood-paneled ceiling. Suspended 2'x 4' acoustic ceiling tiles are located in the 2nd floor classroom. Direct-applied acoustic ceiling tiles are provided in the gymnasium storage room. In the pool, gymnasium and mechanical rooms, the ceiling structure is exposed, and has a paint finish.

5.0 FINDINGS continued

5.3 INTERIOR ELEMENTS continued

Unit Types and Unit Mix/Building Area continued

Assessment:

The interior finishes are in good condition overall and are reportedly upgraded or replaced on an ongoing basis. Improvements to the interior finishes in the last two years, 2006 and 2007, include repainting of the pool ceiling structure, resealing of the pool deck, re-grouting of the ceramic tiles in the pool and refinishing of the gymnasium floor. Vinyl tile flooring in the office was also recently replaced, in 2008.

Repainting of the concrete masonry walls and gypsum ceilings is reportedly undertaken periodically. Paint finish generally appears to be in good to fair condition. Exceptions are the 2nd floor men's change room ceiling and main floor storage room walls. Repainting of the these locations should be undertaken in the short term as recent repairs and water damage have resulted in discoloured and peeling paint.

The vinyl tile floor in the gymnasium storage room is in poor condition. Debonded, discoloured and missing tiles were observed as result of the experienced water infiltration. Stained and debonded ceiling tiles were also observed. The existing tiles have likely been in place since construction of the building in 1977. Replacement of the storage room finishes is anticipated within the evaluation period.

Carpet in the Town of Markham office is also in poor condition, with visible wear and stains.

Recommendation:

The 2nd floor men's change room ceiling and the main floor storage room walls will require repainting in the short term due to discolouration and peeling paint. Costs to undertake the painting are included in the opinion of cost table.

Interior finishes in the gymnasium storage room are in poor condition. Replacement of the vinyl floor tile and direct-applied ceiling tiles is recommended due to age and poor condition. An allowance for their replacement is provided in the cost tables.

The carpet in the Town of Markham office in poor condition, with visible wear and stains. Replacement is recommended in the short term and a cost is included in the cost table.

ASSOCIATED PHOTOGRAPHS

Damaged interior finishes due to water water infiltration through foundation wall.

Debonding of direct applied ceiling tiles in gymnasium storage room.

5.0 FINDINGS continued

5.3 INTERIOR ELEMENTS continued

Unit Types and Unit Mix/Building Area continued

ASSOCIATED PHOTOGRAPHS continued

Water damaged vinyl tile flooring in the gymnasium storage room.

Deteriorated carpet flooring in Town of Markham office.

COST SUMMARY

Building	Recommendation	Expected Useful Life (yrs)	Effective Age	Remaining Useful Life (yrs)	Year	Cost
Thornlea Pool	Replace vinyl tile floor in gymnasium storage room	25 yrs	25 yrs	0 yrs	1	$3,000.00
Thornlea Pool	Replace ceiling tiles in gymnasium storage room	25 yrs	25 yrs	0 yrs	1	$3,000.00
Thornlea Pool	Replace carpet flooring in Town of Markham office	10-15 yrs	14 yrs	1 yr	1	$2,000.00
Thornlea Pool	Repaint storage room walls and men's change room ceiling	10 yrs	10 yrs	0 yrs	1	$5,000.00

Common Areas

5.4 MECHANICAL & ELECTRICAL SYSTEMS

Plumbing

THORNLEA POOL

Description: The municipal water utility provides water to the building. The water entrance and meter is located in the basement level pool tunnel.

The domestic water supply distribution piping is copper. The plumbing fixtures are standard commercial grade models with the water closets and urinals equipped with manual flush valves and the lavatories equipped with commercial quality trim.

The domestic hot water is provided to the building by four gas-fired hot water heaters located in the 2nd floor fan room. Two of the heaters, which are manufactured by A O Smith, have a heating capacity of 199,000 Btuh and a storage capacity of 100 US gallons. Each of the remaining two units, which are manufactured by Rheem Rudd, have a heating capacity of 75,000 Btuh and a storage capacity of 75 US gallons.

Assessment: The distribution piping and plumbing fixtures appear to be in good condition. No significant deficiencies were observed or reported. Replacement or repair of fixtures should be undertaken as needed as part of operations and maintenance costs.

The domestic hot water heaters were reportedly replaced in 2006 and appear to be in good

5.0 FINDINGS continued

5.4 MECHANICAL & ELECTRICAL SYSTEMS continued

Plumbing continued

Assessment: condition. Replacement is not anticipated within the evaluation period.

Recommendation: Based on observed and reported conditions, no further action is recommended.

ASSOCIATED PHOTOGRAPHS

Natural gas-fired Domestic hot water heaters.

Heating

THORNLEA POOL

Description: The building is heated by three natural gas-fired atmospheric boilers. Two of the boilers (Boilers #1 & #2) are manufactured by Teledyne Laars, and were installed with construction in 1972. Each boiler has a heating capacity of 2,450 MBh. A third boiler (Boiler #3), is manufactured by Teledyne Laars. Boiler #3, which was installed in approximately 1999, has a heating capacity of 715 MBh. These boilers supply heating water to terminal units and to the heating coils in the air handling units. The heating water from the boilers is used to heat the swimming pool water, through the shell and tube heat exchanger, which is located in the basement.

The 2nd floor classroom is heated and cooled by forced air natural gas-fired rooftop air handling unit. The rooftop unit, which is manufactured by Trane. The rooftop air handling unit has a heating capacity of 80,000 MBh. The unit provides electric cooling to the classroom area.

Assessment: The heating boilers are reportedly in good condition with regular maintenance contracts in place. No deficiencies were reported with respect to the base building heating.

The pumps and terminal units appear to be in good condition and functioning properly.

The rooftop air handling unit was installed in approximately 2002 and is in good condition. No deficiencies were reported with respect to building comfort in the classroom area.

Recommendation: Heating water boilers are designed to provide a service life of approximately 30 years. After this period the hot water tubes begin to deteriorate. Therefore, based on age a replacement of the two original boilers (Boilers #1 & #2) is recommended between 2008 and 2018. A replacement cost is provided in the cost tables.

Boiler #3 is reported to operate as intended. Based on age, a replacement is not anticipated within the 10 year evaluation period. In order that the boiler achieve its service life, repairs and part replacement are required. A cost provision is included in the cost table.

The shell and tube heat exchanger, which is used to provide pool hot water, appears to date to the commission of the building in 1972. Similar heat exchangers are known to provide a service life

5.0 FINDINGS continued

5.4 MECHANICAL & ELECTRICAL SYSTEMS continued

Heating continued

Recommendation: of 15 years. Given the age of the shell and tube heat exchanger replacement is recommended.

The rooftop air handling unit, which was installed in 2002, is in good condition and is not anticipated to require replacement between 2008 and 2018.

ASSOCIATED PHOTOGRAPHS

Original hot water heating boiler.

Upgraded hot water heating boiler.

Rooftop air handling unit for Classroom addition.

COST SUMMARY

Building	Recommendation	Expected Useful Life (yrs)	Effective Age	Remaining Useful Life (yrs)	Year	Cost
Thornlea Pool	Replace original hot water heating boilers	25-30 yrs	23-26 yrs	2-4 yrs	2	$200,000.00
Thornlea Pool	Refurbishment and part replacement of Boiler #3	25-30 yrs	9 yrs	16-20 yrs	6 10	$5,000.00 $5,000.00
Thornlea Pool	Replacement of the shell and tube heat exchanger.	15	15	0	3	$15,000.00

Air Conditioning and Ventilation

THORNLEA POOL

Description: Ventilation of the building is provided by two Air Handling Units (AHUs). The gymnasium is ventilated by the AHU located in 2nd floor boiler room. Change room ventilation is provided by an AHU located in the 2nd floor fan room. The units appear to be original to construction of the building in 1972.

Ventilation and humidity control in the pool area is provided by an air handling unit manufactured

5.0 FINDINGS continued

5.4 MECHANICAL & ELECTRICAL SYSTEMS continued

Air Conditioning and Ventilation continued

Description: by Dectron, installed in approximately 1999. Heat recovery from the Dectron unit is cycled to heat the pool water. Mechanical cooling is provided by an exterior air-cooled condenser, which is located at grade to the east of the building.

Ventilation is supplemented by exhaust fans serving specific areas including washrooms and service areas. A through-wall AC unit provides spot cooling in the Town of Markham office.

Electric air conditioning and natural gas-fired heating of the 2nd floor classroom is provided by a rooftop Air Handling Unit. See Heating section 5.4.2 for information.

Assessment: The air handling units are reported to be function as intended, with maintenance undertaken regularly. There was no reported problems concerning building comfort provided by the AHUs.

The pool area Dectron unit is approximately 10 years old, but was reported to require frequent maintenance to ensure continued operation.

Recommendation: Air handling units have an Expected Useful Life (EUL) of 25-30 years, replacement of the two air handling units is anticipated between 2008 and 2018.

The pool area Dectron unit is reported to require frequent maintenance and repair. Based on age and reported maintenance history, an allowance for the refurbishment and part replacement is provided to ensure uninterrupted operation and extended service life.

ASSOCIATED PHOTOGRAPHS

Original Air Handling Unit for Gymnasium area.

Pool area Air Handling Unit (Dectron)

Exterior condensing unit for Dectron.

5.0 FINDINGS continued

5.4 MECHANICAL & ELECTRICAL SYSTEMS continued

Air Conditioning and Ventilation continued

COST SUMMARY

Building	Recommendation	Expected Useful Life (yrs)	Effective Age	Remaining Useful Life (yrs)	Year	Cost
Thornlea Pool	Replace the Gymnasium and Change Room Air Handling Units	25-30 yrs	27 yrs	3 yrs	3	$80,000.00
Thornlea Pool	Refurbishment and part replacement of the Pool Area air handling unit (Dectron)	20-25 yrs	9 yrs	11-16 yrs	1 5	$8,000.00 $5,000.00

Electrical

THORNLEA POOL

Description: Electricity is supplied by the local utility and fed from the adjacent Thornlea Secondary School building. The electricity meter and entrance is located in the basement level and the service is rated at 400 Amp, 600 V, 3 phase 3 wire.

The interior lighting for the building is provided by a combination of T8 and T12 fluorescent tubes. There are recessed pot lights in the lobbies and viewing gallery. The exterior lighting consists of wall-mounted fixtures.

Assessment: The electrical service was reported to be adequate for the needs of the site building. There have been no reported problems associated with the electrical systems. Major repairs or replacement are not expected to be required.

Recommendation: No repairs or replacements are anticipated with respect to the electrical distribution system, or to the interior or exterior lighting beyond routine maintenance. It is recommended that infrared scans of the electrical equipment be conducted as part of general maintenance.

ASSOCIATED PHOTOGRAPHS

Electrical service entry in basement level.

5.5 VERTICAL TRANSPORTATION

THORNLEA POOL

Description: There are no vertical transportation devices present.

Assessment: Not Applicable.

5.0 FINDINGS continued

5.5 VERTICAL TRANSPORTATION continued

Recommendation: Not Applicable.

5.6 LIFE SAFETY/FIRE PROTECTION

THORNLEA POOL

Description: Fire detection consists of heat and smoke detectors located throughout the building. There are also manual pull stations located throughout the building. The detection and alarm devices are connected to an Edwards EST6616 fire alarm panel located in the Town of Markham Office.

Wall-mounted fire extinguishers are also provided throughout the building.

Emergency lighting and exit signage is powered by battery packs located throughout the building.

Assessment: There are no reported issues or concerns with respect to the Life Safety and Fire Protection Systems associated with the building.

The emergency lights were mostly refurbished in 2006. Refurbishment included replacement of the batteries and lamps. The exit lights generally remain from the building commission in 1972.

The tag on the main fire alarm panel indicated that the system was last inspected and tested in August of 2007 by Viking Fire Protection Inc. The system is reportedly functional, but appears to be at the end of its expected useful life. Part replacement and service may be difficult to obtain due to age. Upgrade of the system should be undertaken within the evaluation period.

Recommendation: Regular inspection of the fire suppression and detection systems should be continued as part of routine maintenance.

The fire alarm system is dated and will require replacement within the evaluation period. The replacement is recommended in view of poor availability of replacement parts and integration of new components. An allowance for replacement of the main panel and end devices is provided in the cost table.

Based on age and condition replacement of the exit lights is recommended.

ASSOCIATED PHOTOGRAPHS

Main fire alarm panel.

COST SUMMARY

Building	Recommendation	Expected Useful Life (yrs)	Effective Age	Remaining Useful Life (yrs)	Year	Cost
Thornlea Pool	Replace main fire alarm panel and end devices	20 yrs	15 yrs	5 yrs	5	$60,000.00
Thornlea Pool	Replace exit signs in the building.	15	15	0	3	$5,000.00

5.0 FINDINGS continued

5.7 ADDITIONAL CONSIDERATIONS

Swimming Pool Systems

Description: The swimming pool mechanical systems are located in the basement level pool tunnel. Water quality is maintained by an automated chlorination and acid treatment system and mixing/filtration tank. Circulation is provided by base-mounted pumps.

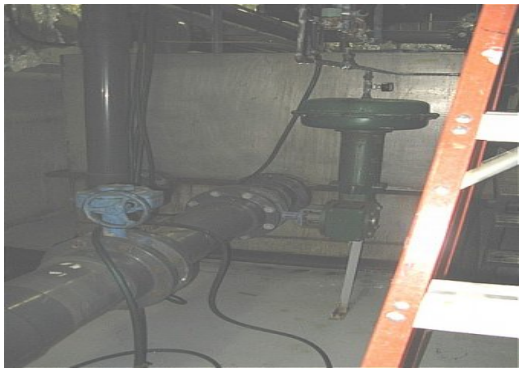
Pool water heating is provided by a shell and tube heat exchanger located in the basement. Heating water is supplied by the central boilers and the Dectron air handling unit.

Assessment: The swimming pool systems are reported to be in good working order. Upgrade of the chlorination/acid treatment system and pool piping have reportedly been undertaken within the last 2 years, in 2006. Maintenance and periodic replacement of piping and circulation equipment are reportedly undertaken as needed.

Recommendation: The pool mechanical systems are reported to be in good working order. Major replacement is not anticipated within the evaluation period, however an allowance for maintenance and refurbishment of the system components is provided in the cost tables.

ASSOCIATED PHOTOGRAPHS

Automatic chlorination and acid feed for swimming pool.



Mixing/filtration tank for swimming pool.

Shell and tube heat exchanger for pool water heating.

COST SUMMARY

Recommendation	Expected Useful Life (yrs)	Effective Age	Remaining Useful Life (yrs)	Year	Cost
Refurbishment and part replacement of the swimming pool system.	20-25 yrs	10-15 yrs	10-15 yrs	4	$3,000.00
				7	$3,000.00
				10	$3,000.00

6.0 DOCUMENT REVIEW AND INTERVIEWS

6.1 BUILDING & FIRE CODE COMPLIANCE

Jacques Whitford was informed by Mr. Allen Dawds that he is not aware of any outstanding work orders, building code infractions, building code violations and/or regulations, building ordinances and municipal health and fire safety by-laws which would affect the future operation and maintenance of the subject project.

6.2 DOCUMENT REVIEW

Document Title	Date	Conducted By

Findings: No documents were reviewed at the time of site visit.

6.3 INTERVIEWS

Source	Division/Department	Person Interviewed	Date
York Region District School Board	Maintenance	Allen Dawds	September 18, 2008

7.0 OPINIONS OF PROBABLE COST

Tables indicating cost estimates for immediate repairs and replacement reserve costs are included in this report.

Immediate repair costs are for deficiencies observed during the Property Condition Assessment that require immediate action in order to prevent further deterioration to the element or to prevent possible injury due to an unsafe condition and/or code violation. The immediate repair items identified represent an estimated cost of $45,000.

Replacement reserves are costs anticipated for repairs, part replacements associated with the maintenance of building systems, and for elements that will have exceeded their expected useful life (EUL) over the 10-year evaluation period. The average cost per square foot per year (uninflated) is $ 1.68.

Cost Tables

Item	Expected Useful Life (yrs)	Effective Age (yrs)	Remaining Useful Life (yrs)	Quantity	Unit	Unit Cost	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Total Cost
5.1 Site Elements																	
Repair localized scaling and cracking of concrete sidewalks	20-25 yrs	Varies	Varies		LS		$10,000										$10,000
5.2 Structural Frame and Building Envelope																	
Replace Expansion Joint Sealant in Masonry walls	10-15 yrs	15 yrs	1 yr		LS		$8,000										$8,000
Interim repair of the roof assembly system.	22 yrs	10 yrs	12 yrs		LS					$3,000			$3,000			$15,000	$21,000
Reconstruction of the south concrete patio	20-25 yrs	20-25 yrs	1 yr		LS		$20,000										$20,000
5.3 Interior Elements																	
Replace vinyl tile floor in gymnasium storage room	25 yrs	25 yrs	0 yrs		LS		$3,000										$3,000
Replace ceiling tiles in gymnasium storage room	25 yrs	25 yrs	0 yrs		LS		$3,000										$3,000
Replace carpet flooring in Town of Markham office	10-15 yrs	14 yrs	1 yr		LS		$2,000										$2,000
Repaint storage room walls and men's change room ceiling	10 yrs	10 yrs	0 yrs		LS		$5,000										$5,000
5.4 Mechanical and Electrical Systems																	
Replace original hot water heating boilers	25-30 yrs	23-26 yrs	2-4 yrs	2	EA	$100,000		$200,000									$200,000
Refurbishment and part replacement of Boiler #3	25-30 yrs	9 yrs	16-20 yrs		LS							$5,000				$5,000	$10,000
Replacement of the shell and tube heat exchanger.	15	15	0		LS				$15,000								$15,000
Replace the Gymnasium and Change Room Air Handling Units	25-30 yrs	27 yrs	3 yrs	2	EA	$40,000			$80,000								$80,000
Refurbishment and part replacement of the Pool Area air handling unit (Dectron)	20-25 yrs	9 yrs	11-16 yrs		LS		$8,000				$5,000						$13,000
5.5 Vertical Transportation																	
No significant deficiencies reported or observed																	
5.6 Life Safety/Fire Protection																	
Replace main fire alarm panel and end devices	20 yrs	15 yrs	5 yrs		LS						$60,000						$60,000
Replace exit signs in the building.	15	15	0		LS				$5,000								$5,000
5.7 Additional Considerations																	
Refurbishment and part replacement of the swimming pool system.	20-25 yrs	10-15 yrs	10-15 yrs		LS					$3,000			$3,000			$3,000	$9,000
Total (Uninflated)							$59,000	$200,000	$100,000	$6,000	$65,000	$5,000	$6,000	-	-	$23,000	$464,000
Inflation Factor							1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Total (Inflated)							$59,000	$200,000	$100,000	$6,000	$65,000	$5,000	$6,000	-	-	$23,000	$464,000

Evaluation Period	10
Total Square Footage	27,700
Reserve per SF per year (Uninflated)	$1.68
Reserve per SF per year (Inflated)	$1.68

Item	Quantity	Unit	Unit Cost	Immediate Total
5.1 Site Elements				
No immediate deficiencies reported or observed				
5.2 Structural Frame and Building Envelope				
Repair foundation wall and waterproofing on east elevation		LS		$45,000
Repair/replace localized spalling of clay brick (Operations and Maintenance cost)		LS		$0
5.3 Interior Elements				
No immediate deficiencies reported or observed				
5.4 Mechanical and Electrical Systems				
No immediate deficiencies reported or observed				
5.5 Vertical Transportation				
No immediate deficiencies reported or observed				
5.6 Life Safety/Fire Protection				
No immediate deficiencies reported or observed				
5.7 Additional Considerations				
No immediate deficiencies reported or observed				
				Total Repair Cost: $45,000

Appendix A:

Photographs

Flat-Work

Localized deteriroation of concrete sidewalk.

Typical concrete sidewalk on the west side of the building.

Foundation

Evidence of previous excavation at site of moisture infilration through foundation wall.

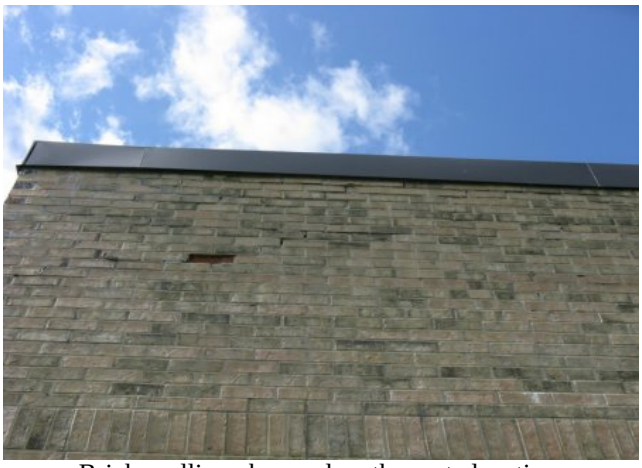
Damaged interior finishes due to water water infiltration through foundation wall.

Exterior Walls

Glazed vestibule on the south side of the building.

Sloped glazing in second floor lobby.

Exterior Walls continued



Brick spalling observed on the east elevation.

Deteriorated control joint sealant.

North elevation of Thornlea Pool

Roofing

General view of Built up roof assembly.

Patio, Terrace, and Balcony

Uneven settlement of concrete patio at the south side of the building.

Unit Types and Unit Mix/Building Area

Damaged interior finishes due to water water infiltration through foundation wall.

Debonding of direct applied ceiling tiles in gymnasium storage room.

Unit Types and Unit Mix/Building Area

Water damaged vinyl tile flooring in the gymnasium storage room.

Deteriorated carpet flooring in Town of Markham office.

Plumbing

Natural gas-fired Domestic hot water heaters.

Heating

Original hot water heating boiler.

Upgraded hot water heating boiler.

Heating

Rooftop air handling unit for Classroom addition.

Air Conditioning and Ventilation

Original Air Handling Unit for Gymnasium area.

Pool area Air Handling Unit (Dectron)

Exterior condensing unit for Dectron.

Electrical

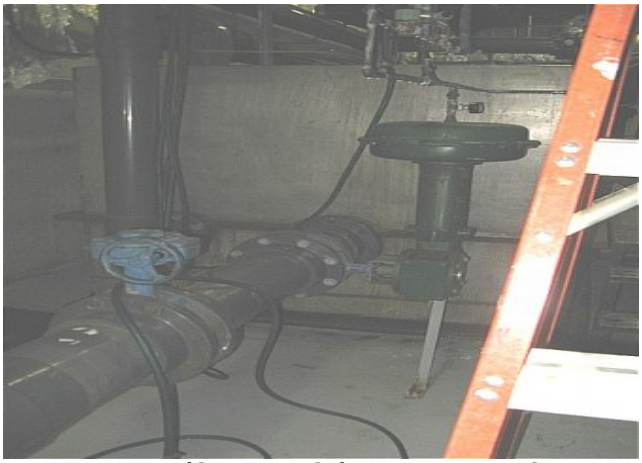
Electrical service entry in basement level.

Life Safety/Fire Protection

Main fire alarm panel.

Swimming Pool Systems


Automatic chlorination and acid feed for swimming pool.


Mixing/filtration tank for swimming pool.

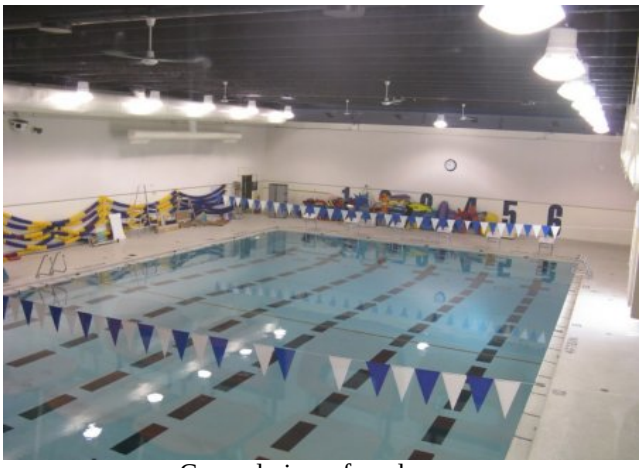
GENERAL PHOTOGRAPHS


West elevation of Thornlea Pool.


South elevation of Thornlea Pool

GENERAL PHOTOGRAPHS continued

East elevation of Thornlea Pool



General view of pool area.

Shell and tube heat exchanger for pool water heating.

Appendix B:

Assessor Qualifications

Jacques Whitford

Engineering, Scientific, Planning and Management Consultants

www.jacqueswhitford.com

Norman Lobo, B.Sc.

Project Manager and Site Assessor – Facility Assessment & Sustainable Renewal

Profile

As a Project Manager and Site Assessor, Mr. Lobo is responsible for project managing and performing Property Condition Assessments (PCAs) within Jacques Whitford's Facility Assessment & Sustainable Renewal service lines. Mr. Lobo has been with Jacques Whitford since 1992 and has extensive experience in both laboratory and field testing. He has personally completed property condition assessments of numerous properties. He also carried out and supervised bridge deck condition surveys for the Ministry of Transportation, and has carried out and supervised several geotechnical subsurface investigations for proposed commercial and residential developments. As a Project Coordinator/Manager, Mr. Lobo will provide technical support and advice related to material issues to the field engineers during their property condition assessment and recommend rehabilitation and repairs costs.

Education

B.Eng.; University of Bombay, India, 1974

Competencies

Site Investigation

Report Writer

Construction Management

Project Management