CITY OF ST. CATHARINES

ST. CATHARINES YMCA BUILDING CONDITION ASSESSMENT & STUDIES

JULY 24, 2024

CONFIDENTIAL

ST. CATHARINES YMCA BUILDING CONDITION ASSESSMENT & STUDIES

CITY OF ST. CATHARINES

PROJECT NO.: CA0036719.6657
DATE: JULY 30, 2024

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July 30, 2024

City of St. Catharines
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Attention: Vincent Covatta, Senior Project Manager

Dear Vincent,

Subject: St. Catharines YMCA Assessment & Studies

Alongside our collaborators from mcCallumSather, Studio Canoo, Aquatics Design & Engineering and XGC, WSP is pleased to provide the City of St. Catharines with the enclosed Building Condition Assessment, along with studies that have examined accessibility requirements, potential alternative uses for the facility, and a program for the immediate and long-term decarbonization of the facility.

With a very quick turn-around time, the team has had to mobilize quickly to undertake this report. Given the short time-frame, the team has prioritized capturing all relevant items that will impact the City's decision to potentially acquire the facility.

Don't hesitate to contact our team should you have any questions or concerns.

Yours sincerely,

Brant Oldershaw
Director, Southwestern Ontario
Buildings

WSP ref.: CA0036719.6657

SIGNATURES

APPROVED[1] BY

July 24, 2024

Brant Oldershaw, M.A.Sc., P.Eng
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1 EXECUTIVE SUMMARY

WSP (Structural, Mechanical, Electrical, Civil), alongside mcCallumSather & Studio Canoo (Architectural), Aquatics Design & Engineering (Pool), and XGC (Costing) have carried out a comprehensive evaluation of the former St. Catharines YMCA. The team has also undertaken studies to evaluate accessibility alterations needed, a decarbonization program for the facility to meet its short and long-term sustainability goals, and potential alternative uses for the space. This high-level assessment and studies have been carried out over a quick timeline for the purpose of advising the City of St. Catharines on potential costs to be considered in the evaluation of the facility for potential acquisition.

Class D Costing has been put forward for the immediate needs and other potential costs for the facility, as shown in the summary table below.

Figure 1: Class D Costing Summary Table & Pool Recommissioning Summary/Comparison

	Total ROM Project Costs ($)
Building Condition Assessment Costing (Immediate)	**$13,230,011**
Decarbonization Costing (Immediate)	**$5,286,069**
• Optional Decarb Costing: Additional Exterior Wall Insulation	**$3,865,835**
Decarbonization Costing (Future - 10-15yrs)	**$9,947,666**
Accessibility Costing	**$1,009,825**
Alternative Use: Option 1 - Convert Existing 2nd Floor Exercise Area to New Multipurpose Space	**$680,998**
Alternative Use: Option 2 - Convert Existing 2nd Floor Exercise Area to New Office Space	**$878,516**
Alternative Use: Option 3 - New Building Addition to House Therapy Pool or Children's Pool	**$2,552,320**
Alternative Use: Option 4 - Convert Existing Pool to New Sports Court Zone	**$2,577,286**

	Total Net Construction Costs ($)	Contingencies & Fees ($)	Total ROM Project Costs ($)
Existing Pool Recommissioning	$1,293,590	$870,948	**$2,165,538**
Alt Use - Option 4: Convert Existing Pool Areas to New Sports Court Zone	$1,540,260	$1,037,026	**$2,368,612**

This table provides a summary of the anticipated costs for recommissioning the facility's pool. It should be noted that this assessment was only visual in nature, and a water tightness test has been included in the costs, but has not been completed, so this testing may reveal further leaks or issues that have not been accounted for.

Meanwhile, one of the alternative use studies looked at repurposing the pool space to become a sports court. This side-by-side comparison shows that the anticipated costs would be a little cheaper to recommission the pool, as opposed to retiring it and repurposing the space.

1.1 BUILDING CONDITION ASSESSMENT

A comprehensive condition assessment was undertaken to evaluate nearly all aspects of the building. While it was found that the main building structure is in very good condition, the team's observations reveal that approximately $13.3M in alterations are recommended to bring the facility back up to speed, should the City purchase the facility and bring it back to life for the local community. More notable anticipated expenditures include:

- Mechanical (HVAC) systems & controls - $2.2 M.
- Electrical Systems & Lighting - $1.9 M.
- Pool Recommissioning (equipment and fittings) - $1.3 M.
- Roofing replacement - $1.2 M.
- Site works and paving - $890 K.
- Floor finishes - $360 K.

It should be noted that these values above are anticipated construction costs, and do not include consulting fees.

1.2 ACCESSIBILITY STUDY

An accessibility review of 25 YMCA Drive was conducted to assess compliance with The City of St. Catharines Facility Accessibility Design Standards (FADS) based on the current program and use of the facility. The intent of the FADS is to capture the 7 principles of Universal Design (Equitable Use, Flexibility in Use, Simple and Intuitive Use, Perceptible Information, Tolerance for Error, Low Physical Effort, Size and Space for Approach and Use), and translate these into design requirements for building access, circulation, amenities, systems and controls, and other facility-specific requirements. The FADS is a municipal level guideline which is mandatory for all newly constructed and retrofitted facilities owned, leased or operated by the City of St. Catharines.

This accessibility review has been based on visual observations and referenced against available building plans with the intent of providing, to the best of our ability, a thorough understanding of compliance with the FADS requirements. The format of this report reviews all applicable sections of the FADS document and notes those items

which appear to be compliant, and those which do not. Furthermore, it is understood that any future alternation and renovation to the existing facility would need to comply with current OBC and all FADS requirements.

Overall, the building meets many of the accessibility requirements, however, there are several areas, as noted, which would require retrofit for compliance. As the scope of required updates varies in complexity and ease of adaptation, this report proposes solutions to meet compliance. That said, the accessibility study is objective in its findings, understanding that the scope of any retrofits is at the discretion of the City of St. Catharines.

Overall, it is anticipated that the accessibility upgrades required would cost in the order of $1 M.

1.3 ALTERNATIVE USES STUDY

The team has explored several potential alternative uses for the space. They include:

1. Converting the 2nd floor exercise area to a new multipurpose space.
2. Converting the 2nd floor exercise area to new office space.
3. A new building addition to house a therapy pool or children's pool.
4. The conversion of the existing pool area to a new sports court zone.

Costs for modifying these spaces are anticipated to range from $680 K up to $2.6 M.

1.4 DECARBONIZATION STUDY

A high-level decarbonization study has been executed to examine the work and costs associated with converting the building to meet its immediate and long-term sustainability goals. This primarily involves the implementation of new mechanical systems that will capitalize on modern technologies and solar panel power generation to greatly reduce the carbon consumption and emissions of the building.

It is anticipated that if the immediate decarbonization measures put forward are adopted, costs would be in the scale of $5.3 M, with future decarbonizations efforts anticipated to cost an additional $9.9 M over the next 10 to 15 years.

2 BUILDING CONDITION ASSESSMENT

2.1 PROPERTY ASSESSMENT

2.1.1 CIVIL/SITE CONDITIONS

2.1.1.1 *PARKING LOT ASPHALT*

The area of the parking lot as identified by MacDonald Zubereck Ensslen (MZE) September 5, 2002 drawing Site Parking & Ground Floor Plan is approximately 8,745m^2. A visual inspection of it and the parking lot, concrete sidewalks, interlocking block sidewalks, and curbs was conducted on June 5, 2024.

The visual inspection identified extensive cracking, alligatoring, asphalt erosion, oxidation and, in small areas, the loss of the surface asphalt indicating the pavement is at or near the end of useful life. Some of the cracks have been sealed and areas of pavement replaced – predominately in the vicinity of catch basins. The lack of rutting suggests that parking lot has sufficient base strength – i.e. granular, to support what will likely be mostly light vehicular traffic. The base structure is under drained with 100 mm HDPE piping discharging to the catch basins.

The alligator and longitudinal cracking is more predominant in low areas (i.e. areas where parking lot is graded to the center for drainage, for example on the north and south sides of building), which suggests the seam between two areas where asphalt put down let water in and that the alligator cracking resulted from water infiltration and not a result of base failure. It is noted that the storm sewer mains are not installed under these low points, so failure at the low areas is not a result of trench conditions.

Photos of the Asphalt Conditions can be found below.

Figure 2: Photos of Asphalt Conditions

Photo C1:
East parking lot closest to building looking south from north end. Longitudinal cracks, some sealed and grass growing in others. CB3 just east of light standard.

Photo C2:
East parking lot looking from northeast corner of property southwesterly. Cracking, grass growing in cracks. Oxidized asphalt. CB1 in mid picture.

Photo C3:
East parking lot looking from northeast corner of property southwesterly. Cracking, grass growing in cracks. Oxidized asphalt. CB1 mid picture, at left.

Photo C4:
North Parking lot looking east near north entrance. Alligator cracking along longitudinal cracks, longitudinal cracking 5.5 m off curb, patching CB 5.

Photo C5:
North Parking Lot looking east from northeast entrance. CB 4 in background, patching down center of lot and around CB, longitudinal cracks, some sealed. Grass in others.

Photo C6:
North Parking Lot looking west from northeast corner of the lot. Cracking, some previously sealed, grass growing in some.

Photo C7:
North Parking looking west from area of transformer. STMH 4 and CB6 in background. Longitudinal cracking, some previously sealed and sealing failing.

Photo C8:
North Parking looking east from area of transformer. STMH 3 and CB5 in background. Longitudinal cracking, some previously sealed and sealing failing, patching at MH and CB.

Photo C9:
North Parking looking south from STMH 5. Alligator cracking outside patch at STMH but significantly reduced cracking closer to the curbs. Sealed longitudinal crack in background, 5.5 m north of curb.

Photo C10:
West Parking – Looking north from south end, cracking, previously sealed, patching, asphalt erosion. CB7 top right.

Photo C11:
West Parking – Longitudinal and alligator cracks, loss of asphalt.

Photo C12:
West Parking – North end, looking south, alligator and longitudinal cracks with grass growing.

Photo C13:
South Parking Lot Looking East to CB8 – Extensive cracking, patching, asphalt erosion, asphalt loss.

Photo C14:
South Entrance – Alligator cracking, loss of asphalt.

Photo C15:
South Entrance Looking West – Better condition than to east. cracking, cracks sealed and sealing failing, asphalt erosion.

Photo C16:
Southeast parking lot looking northeasterly. Longnitidunal cracking, eroding asphalt, retaining wall in background.

Photo C17:
Southeast parking lot looking southerly. Longnitidunal cracking, alligator cracking, eroding asphalt, retaining wall in background.

Photo C18:
East Entrance – Extensive cracking & asphalt erosion.

Photo C19:
East Entrance – Extensive cracking & asphalt erosion

Photo C20:
East Entrance – Extensive cracking & asphalt erosion, loss of asphalt

RECOMMENDATION

Replacement of parking lot asphalt by milling and placement of 55 mm Medim Duty Binder Course asphalt with maximum 20% RAP and 50 mm of HL 3HS asphalt. Opinion of probable cost for repaving the parking lot is included in Appendix G, Cost Feasibility Report.

2.1.1.2 *PARKING LOT STRIPING*

Based on the MZE drawing Site Parking & Ground Floor Plan, there was approximately 1,100 metres of striping plus accessibility symbols, directional arrows, no parking signs and cross hatching.

Opinion of probable cost for restriping the parking lot to its 2002 configuration is included in Appendix G, Cost Feasibility Report.

We completed a review of the existing parking supply. The current facility has 253 spaces of which five are barrier free. The existing spaces meet the current requirements for parking space dimensions in the current zoning by-law. The existing drive aisles are 6.7 m wide and the current requirement is 6.0 m width.

Current barrier free requirements call for 3% BF parking stalls for any supply over 200 spaces with a minimum of eight. (The FADS document requires two spaces + 2% for supply over 200 = 7 spaces). The front stalls at the entrance can be re-striped to provide three additional BF spaces. The overall count would be reduced to 251 spaces as a result of the re-striping.

In terms of parking supply, the current code calls for 1 space per 20 m^2 of 'gross leasable' space for recreational centres and 1 space per 25 m^2 for day cares. The overall GFA for the building is 10,000 m^2 so there has been some accommodation for mechanical spaces, washrooms and other uses that would be considered ancillary. (I.e. change rooms, etc) As the building is existing and complied with whatever zoning code was in place at the time this should be an adequate supply however, if there are any concerns a traffic engineering consultant can provide a parking study to determine whether the current parking supply is adequate for the intended use.

2.1.1.3 *SIDEWALKS*

Sidewalk around perimeter of building generally settled at curb and is lower than curb, representing a trip hazard.

Interlocking block at the east and north entrances settled relative to the concrete sidewalk and represents a trip hazard.

Several areas of the sidewalk totaling about 220 m^2 are cracked, particularly at the South and West entrances.

The sidewalk is heaved and cracked at the north-west entrance and represents a trip hazard.

Bolts stick up out of the sidewalk at the North entrance and out of the concrete slab beside the gas meter and should be cut flush with the sidewalk/slab to remove trip hazards.

There are no tactile strips in the sidewalks.

Figure 3: Photos of the Sidewalk Conditions

Photo C21:
East Entrance – Sidewalk cracked, differential settlement sidewalk, curb.

Photo C22:
East Entrance – Sidewalk crack at SAN MH2. MH2 requires replacement of adjustment rings.

Photo C23:
East Entrance – Sidewalk cracked, concrete and interlocking brick settled relative to each other and curb.

Photo C24:
North Entrance –Sidewalk and interlocking block settled relative to each other.

Photo C25:
North Entrance – Bolts sticking up in sidewalk.

Photo C26:
Northeast Entrance to Splash Pad: Sidewalk heaved and broken, differential settlement.

Photo C27:
West at Splash Pad Entrance cracked sidewalk.

Photo C28:
West Entrance – Cracked sidewalk and broken curb. Sidewalk settled relative to curb.

Photo C29:
West Playground Area – Cracked sidewalk, differential settlement.

Photo C30:
South Entrance – Cracked sidewalk, differential settlement.

Photo C31:
South Entrance – Cracked sidewalk. STMH 5 requires replacement of adjustment rings, differential settlement.

Photo C32:
Southeast Corner – Cracked sidewalk, differential settlement.

RECOMMENDATIONS

- Level settled sidewalks.
- Level interlocking block that has settled relative to adjacent concrete.
- Rout and grouted or the cracked sections sidewalk or removed and replace.
- Remove and replaced cracked and heaved sidewalk at northeast corner of building.

Opinion of Probable Cost for replacing sections of damaged sidewalk, for leveling sections that have settled relative to the curb, and for the supply and installation of tactile strips is included in Appendix G Cost Feasibility Report.

2.1.1.4 *CURBS*

The curbs are generally in good condition, with some cracked and broken sections and some damage from likely winter maintenance activities. Three of the concrete bumper blocks on the south-east by the retaining wall are broken.

Opinion of Probable Cost for replacing sections of damaged curb is included in in Appendix G, Cost Feasibility Report.

Photos of typical damage to curbs can be found below.

Figure 4: Photos of Damage Curbs

Photo C33

Photo C34

Photo C35

Photo C36

Photo C37

Photo C38

2.1.2 STORM AND SANITARY SEWERS

The locations of catch basins and maintenance access structures (MH) are shown on Drawing 9103 M101 (M101), Site Plan by Shore Tilbe Irwin/MacDonald Zuberec (STI/MZ) and A. J. Clark & Associates (AJC) Plan of Survey drawing. Three structures shown on the STI/MZ drawing could not be located in the field - STMH 6, SAN MH1 and a catch basin immediately south of STMH 6. The locations of the others were confirmed visually on June 10, 2024. The locations of the CBs and MHs are shown on the CB and MH Location Plan below. The numbering system in the Location Plan was used by BRC in their report.

Remote inspection of ten catch basins (CB), five storm maintenance holes (STMH), and one sanitary maintenance hole (SAN MH) was completed using LiDAR by Bob Robinson & Sons Construction (BRC) on June 17, 2024.

CCTV inspection of the storm sewers, CB laterals and sanitary sewers was completed by BRC the same day, following the PACP 7.0 inspection standard. Where access was available, the lines were inspected both upstream and downstream from the access point. The lines were not flushed before inspection. HDPE weepers to the CBs were not inspected.

Hard and electronic copies of BRC reports Stormwater Manhole CCTV Inspection Report, Stormwater Mainline CCTV Inspection Report, Sanitary Sewage Mainline CCTV Inspection Report and Sanitary Manhole CCTV Inspection Report are very large in volume and will be provided to the City for future records.

The CB and MH Location Plan identifies the inferred location of two buried MHs - SAN MH1 and STMH 6. STI/MZ Drawing M101 locates SAN MH1 in the landscaped area adjacent to the north side of the east entrance and STMH 6 in the fenced, landscaped area at the southwest corner of the building, between CB 7 and STMH 5. The presence of both MHs was confirmed by the CCTV inspection. Neither is shown on the A. J. Clark & Associates AJC) Plan of Survey drawing. The buried structures were not inspected. It is expected their conditions would be like that of those that were inspected. Drawing M101 shows a CB just south of STMH 6. As noted previously, it was not observed in the field. The inferred location of the trunk storm sewer to which STMH 1 and CB 2 discharge to is also shown on the plan, as is that of the connection between STMH 5 through CB 9 to the property limits.

Refer to Appendix E for CB and MH location plan identifies the inferred location of two buried MHs.

2.1.2.1 *STORM AND SANITARY SEWER INSPECTION OVERVIEW*

MACP Condition Rating summary for CBs and MHs per BRC Report, along with a brief description of the results, is presented below.

Figure 5: MACP Condition Rating Summary

Summary: MACP Condition Rating for CBs and MHs per Bob Robinson Report

		Pipe Seals #	# 100 mm[a] Connections	Defective # Seals #	Adjustment Rings Cracked	CB/MH Riser Cracked	Frame Mortar Failing	Structural Rating	O&M Rating	Comment
Storm	CB1	3	2	2	Y	Y	Y	2	1	
	CB2	4	2	4	Y	Y	Y	3	1	
	CB3	4	2/1[b]	2	N	N	N	2	1	
	CB4	4	3	2, soil visible at one	N	N	N	5	2	Structural damage to catch basin
	CB5	4	3	0	N	Hole	Y	4	1	
	CB6	4	3	3	Y	Y	Y	5	1	Structural damage to catch basin STI/MZ Drawing M101 shows a 250 mm connection from the building (possibly a roof drain)
	CB7	3	1	1	N	Y, holes	N	4	1	
	CB8	4	3	0	N	Y	N	4	1	
	CB9	2	0	2	Y	Y	Y	4	1	
	CB10	2	1	0	Y	Y	Y	4	1	
	STMH1	2	0	0	Y	Y	Y	5	1	
	STMH2	3	0	2	Y	Y	Y	3	2	
	STMH3	3	0	3	Y	Y	Y	4	1	
	STMH4	3	0	1	Y	Y	Y	5	1	
	STMH5	3	0	3	Y	Y	Y	4	1	
	STMH6-Buried	STMH 6 not inspected. CCTV confirmed it is connected to CB7 and STMH 5. Drawing M101 shows CB on south side of STMH 6.								
Sanitary	SAN MH2	3	0	0	Y	Y	Y	3	1	Brick chimney

NOTE (a) The 100 mm pipes are HDPE parking lot underdrains. They were not inspected.
NOTE (b) 2 @ 100 mm, 1 @ 125 mm

PACP Defect Grades

Grade	Descritption	Estimated Time to Failure
1	EXCELLENT: Minor Defects.	Unlikely in the foreseeable future
2	GOOD: Defects that have not begun to deteriorate.	20 years or more
3	FAIR: Moderate defects that will continue to deteriorate.	10 to 20 years
4	POOR: Severe defects that will become grade 5 defects within the foreseeable future.	5 to 10 years
5	IMMEDIATE ATTENTION: Defects requiring immediate attention.	Has failed or will likely fail within the next 5 years

PACP Condition Rating for Pipes per BRC, along with a brief description of the results, is presented below.

Figure 6: PACP Condition Rating for Pipes

Summary: PACP Condition Rating per Bob Robinson Report

	MH		Pipeline		CCTV'd	Rating		
	Upstream	Downstream	Est Length (m)*	Diameter (mm)	Inspected Length (m)	Structural	O&M	Comment
Storm Sewer	STMH 4	STMH 3	38	300	18.5	0	5	Debris , 15% to 40%
	STMH 3	STMH 2	59	450	4.3	0	3	Debris, 20%
	STMH 2	STMH 1	15	525	11.5	0	3	Debris, 15%
	STMH 1	East Limit	7.3	600	7.3	0	2	Debris at 3.2 m, 10%
	CB 1	CB 2	18	300	17.4	0	0	
	CB 2	Tee 2 at trunk	4	300	4.1	0	0	
	CB 3	STMH 2	35	300	33.4	2	3	Debris at 22.3 m 15%. TAP @ 25 m (lead from CB 4). Sag @ 31 m
	CB 4	Tee 4 at trunk	2	200	2.0	0	0	
	CB 5	Tee 5 to line STMH 3 & STMH 2	2.9	200	2.9	0	0	
	CB 6	STMH 4	2	200	1.7	0	0	
	CB 10	STMH 4	17	200	16.6	3	2	Debris at 2.14 & 15.41 m (10%). Offset joints at 1.32 & 16.21 m
	CB 7	STMH 6	21	350	16.9	0	5	Debris starting at 1.20 m, 45%. STMH 6 buried.
	STMH 6	STMH 5	30	350	29.6	0	3	Debris almost full length, 15%
	STMH 5	CB 9	43	525	35.0	0	4	STI/MZ Drawing M101 shows STMH 5 connected to storm sewer in street. Determined on site that STMH 5 connected to CB 9 and CB 9 to storm sewer in street. Debris at 2.87 m, rock at 16.44 m. TAP in from CB 8 at 16.44 m (from south). TAP in from roof drain at 27 m (from north). Rock at 28 m.
	CB 9	property limit	11	525	3.6	0	3	Debris 1.77 m, 15%
	CB 8	Tee 8 to line STMH5 & CB 9	6	200	8.7	3	3	Roots at 1.55 & 4.20 m, off set joints 4.95 & 6.14 m, deposits 6.42 m
Sanitary Sewer	Building, gravity, north connection	SAN MH 2	20	150	16.5	2	0	Sag in line. Pipe material changes at approximate 4.5 m from building (scaled from AJC drawing). TAP at 12 o'clock at approximate 4 m from building. STI/MX Drawings M101 and M103 show two gravity connections to the line, one from the north side ot the building and one from the south side.
	Building, forcemain, south connection	SAN MH 2	20	150	20.6	2	0	Pipe material changes approximately 1.5 m from building. TAP at 12:00 at approximately 1 m from building (scaled from AJC drawing). STI/MZ Drawing M101 shows SP4 in north basement connected to a 100 mm line that connects to the 150 mm forcemain outside the building.
	SAN MH 2	SAN MH 1	39	200	39.5	2	0	SAN MH 1 buried. Sag at 30.83 m and 38.12 m.

* Scaled from AJC drawing

2.1.2.2 *STORM SEWER PIPES NORTH*

Observed pipe is generally in good condition.

STMH 4 to STMH 1 is approximately 112 m of 300 mm, 375 mm, and 525 mm pipe. Over the majority of the pipe length, gravel and debris cover the bottom of the pipe, preventing CCTV inspection.

STMH 1 extends 7.3 m east of the STMH at which point the pipe Tees into a storm trunk sewer. Flow was observed in the trunk sewer. From STMH 1 east to the storm trunk, the pipe is 650 mm.

The condition of the pipe in sections that could not be inspected because of the debris is likely similar to that in that inspected.

RECOMMENDATION:

The entire length from STMH 5 to the connection with the trunk storm sewer main should be flushed and the removed material disposed off site in accordance with applicable regulations.

To establish a condition baseline and for risk reduction, the City may wish to have the entire network CCTV'd after flushing.

2.1.2.3 *STORM SEWER PIPES SOUTH*

Observed pipe generally in good condition.

Buried STMH 6 is located approximately 30 m west of STMH 5 and 17 m east of CB 7. The pipe between CB 7 and STMH 6 is 350 mm. That between STMH 6 and STMH 5 is 375 mm.

From CB 7 to STMH 6, gravel debris in pipe was estimated to be 45%. Less debris was observed in the pipe from STMH 5 to STMH 6.

The 525 mm pipe between STMH 5 and the discharge point to City storm sewers runs through CB 9. Debris was observed in the pipe at both connection points, 15.6 m east of STMH 5 (lead from CB 8) and at 17 m from CB 9, approximately opposite door at southeast side of building, the latter presumably a downspout connection.

CB 9 to storm sewer in street: 15% debris to approximate property limit.

The condition of the pipe in sections that could not be inspected because of the debris is likely similar to that on the portions that were inspected.

Photos of the catch basin leads and storm sewer pipes showing their condition and taken from the BRC report are presented below.

Figure 7: Selected Photos of Catch Basin Leads and Storm Sewer Condition Photos from BRC Report (With Permission)

Photo C39:
CB 2 Lead: Connection to storm trunk sewer.

Photo C40:
Lead CB 3 to STMH 2: Connection from CB 4.

Photo C40:
Lead CB 3 to STMH 2: Deposits in pipe.

Photo C41:
STMH 3 – STMH 4: Deposits in pipe.

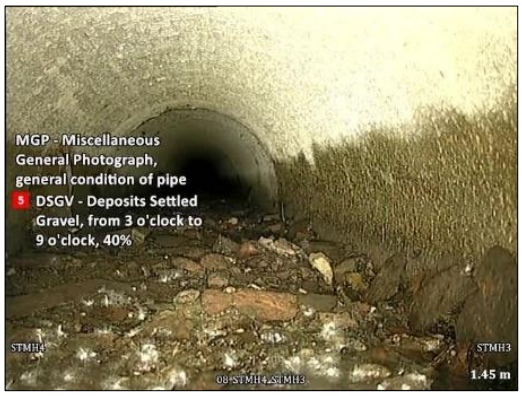


Photo C42:
STMH 4 – STMH 3: Deposits in pipe.

Photo C43:
STMH 2 – STMH 3: Deposits in pipe, survey abandoned 1.88 m due to deposits.

Photo C44:
CB 7 to Buried STMH 6: Debris in pipe

Photo C45:
STMH 5 – CB 9: Debris in pipe, lead from CB 8 top right.

RECOMMENDATION:

The entire length from CB 7 through CB 9 and to the street should be flushed and the removed material disposed off site in accordance with applicable regulations.

To establish a condition baseline and for risk reduction, the City may wish to have the entire network CCTV'd after flushing.

2.1.2.4 *CATCH BASINS*

Many catch basins have cracked adjustment rings and/or risers and frame mortar bed failure. In addition, many of the pipe seals in the catch basins are defective.

Catch basins 4 and 6 have structural damage. All catch basins require cleaning.

RECOMMENDATION:

- Catch basins with cracked adjustment rings and/or risers and those with frame mortar bed failure should be rebuilt.
- Repair defective pipe seals in the catch basins.
- Catch basins 4 and 6 have structural damage and should be repaired or replaced.
- Clean catch basins and dispose the removed material off site in accordance with applicable regulations.

2.1.2.5 *CATCH BASIN LEADS*

- Catch basin leads are generally in good condition.
- CB 2: Lead extends approximately 3.8 m to a Tee connection to a trunk storm sewer. Flow was observed in the trunk storm sewer.
- CB 8: Some root intrusion and offset joints.
- CB 10: Debris in lead.

RECOMMENDATION:

- Flush CB 10 lead dispose the removed material off site in accordance with applicable regulations.
- Regularly monitor CB 8 lead for any deterioration.

2.1.2.6 *SANITARY SEWERS*

SAN MH 2 West to Building:

- Two pipes from the building discharge to SAN MH 2. Each is150 mm PVC. The north pipe is shown as a gravity drain on M101 drawing and the south as a forcemain. The pipes are generally in good condition.
- Gravity line from SAN MH 2 to Building: sag in line at approximately 3.5 m. Connection to a different pipe material at approximately 15.5 m from SAN MH 2. Connection to top of pipe at approximately 16.8 m.
- Forcemain from SAN MH 2 to Building: Connection to a smaller sized pipe of different material at approximately 20 m from SAN MH 2.

SAN MH 2 to Buried SAN MH 1 at Sidewalk:

- The 200 mm pipe is generally in good condition. A buried MH was discovered at roughly 39 m east from SAN MH 2.
- The condition of the pipe in sections that could not be inspected because of the debris is likely similar to that on the portions that were inspected. The inspected pipes were generally found in good condition. For risk reduction, the City may wish to have the entire network CCTV'd after flushing.

Storm and Sanitary Maintenance Holes

- All of the storm and maintenance holes suffer from one or more deficiencies of pipe seals, cracked adjustment rings, cracked risers, failure of the mortar grout, or some structural damage.
- Photos of the CBs, STMHs and SAN MHs showing their condition and taken from the BRC report are presented below.

Figure 8: Selected Photos Typical Catch Basin and Storm Maintenance Hole and SAN MH 2 Condition Photos from BRC Report (With Permission)

Photo C46:
CB 1: Frame mortar bed failure, typical of bed failures. Adjustment rings.

Photo C47:
CB 1: 100 mm HDPE weeper with joint seal.

Photo C48:
CB 2: Joint Seal

Photo C49:
CB 3: Weeper connection above storm pipe.

Photo C50:
CB 4: Weeper Connection

Photo C51:
CB 6: Structure Damaged

Photo C52:
CB 8: Damage to CB structure, mortar bed failure.

Photo C53:
CB 10: Cracked adjustment units/riser.

Photo C54:
STMH 1: Adjustment ring crack and mortar bed failure.

Photo C55:
STMH 1: Cracks in MH

Photo C56:
STMH 2: Cracks Riser/Adjustment Ring

Photo C57:
STMH 3: Adjustment Ring Cracks

Photo C58:
STMH 3: Structure Cracks

Photo C59:
STMH 5: Mortar bed/adjustment ring cracked.

Photo C60:
STMH 5: Structure Cracks

Photo C61:
SAN MH2: Cracked adjustment rings mortar bed.

RECOMMENDATION:

Repair or replace as appropriate.

2.2 SUBSTRUCTURE

2.2.1 FOUNDATIONS

2.2.1.1 A1010 STANDARD FOUNDATIONS

The foundations of the building are constructed with conventional cast in place concrete spread footings and strip footings. The footings bear on soil with 200 kPa bearing resistance in the basements, and 150 kPa elsewhere. Along the exterior, where there is no basement, strip footings support masonry block foundation walls with a bond beam and corbel at ground level to provide bearing for the brick veneer.

The existing foundations could not be reviewed, but there was no sign of any structural foundation issues, such as heaving or excessive settlement, during our investigation.

2.2.1.2 *A1020 SPECIAL FOUNDATIONS*

Not Applicable.

2.2.1.3 *A1030 SLAB ON GRADE*

The basement slab on grade, and the slab on grade on the ground level, are 125 mm to 150 mm thick fibre reinforced concrete, with additional reinforcement where required as per the structural drawings.

The majority of the slab on grade was covered by finishes and could not be directly viewed, but no issues were seen via any sort of disturbances in the floor. Some areas of the building had the slab on grade exposed, such as the mechanical and electrical rooms in the basement as well as maintenance areas on the ground floor within the ladies changerooms.

The visible portions of the slab on grade mostly looked in good shape with small cracks which are expected for the age of the building. Within the maintenance walls of the ladies changerooms, there was some heaving with unknown origin, which can be a tripping hazard for people working within that confined space.

Figure 9: Photo of Slab on Grade Change Room

Photo ST 1:
Slab on Grade Heaving

2.2.2 *BASEMENT CONSTRUCTION*

2.2.2.1 *A2010 BASEMENT EXCAVATION*

Not Applicable.

2.2.2.2 *A2020 BASEMENT WALLS*

Within the area of the building with a basement, a 290 mm cast in place concrete foundation wall supports the adjacent soil as well as for framing out the pool walls. The pool is empty, but there were multiple locations within the service tunnel around the pool that showed signs of past leakage through cracks in the pool walls. No additional signs of leaking were observed which would be consistent with the fact that the pool has been empty and unused for several years.

Figure 10: Photo of Pool Wall

Photo ST 2:
Signs of leaking through pool wall.

There are many services running along these walls, such as electrical conduit, that the water would drip onto. The swimming pool should have a new waterproofing system installed, to contain any future problems, which would require retiling the surface of the pools walls and deck.

There were also signs of leaking within the laundry room, with water streaks and peeling paint with signs of water entry from above. The source of the leak is unknown and would require to be investigated further.

Figure 11: Photo of Laundry Basement Wall

Photo ST 3:
Leaking in laundry room.

2.3 SHELL

2.3.1 SUPERSTRUCTURE

2.3.1.1 B1010 FLOOR CONSTRUCTION

Ground Floor

Over the areas of the building with a basement is a cast in place structural floor system. The floor is supported by concrete beams and columns, the latter of which terminates at the ground floor and has steel columns continuing up for the other floors. Similar to the leaking found around the pool walls, there are signs of leakage coming from pool deck. The leaking can be seen rusting conduit running along the underside of the slab.

The repair suggestion for the pool walls would also be applied to the floor. The remainder of the floor shows no signs of structural distress and appears to be in good condition.

Figure 12: Photo of Underside of Pool Slab

Photo ST 4:
Signs of leaking through Slab.

Second and Third Floors

The second and third floors are framed with steel beams and columns supporting a mix of cast in place concrete and composite steel decks. Ceiling tiles were removed in some locations to see the structure beneath. The locations were generally chosen where water stains could be seen in the drop-down ceiling.

The structure observed in these areas showed no signs of distress.

There were also areas where the ceiling showed water issues, but the structure beneath could not be viewed.

These areas should be investigated further to ensure that no structural concerns are found within.

Figure 13: Photos of Ceiling Damage

Photo ST 5:
Leaking through ceiling tile.

Photo ST 6:
Signs of ceiling water damage.

2.3.1.2 *B1020 ROOF CONSTRUCTION*

Typical Roof

The structure has two different roof elevations. The high roof, which is at the same elevation as the top of the pool, and the low roof over areas of the building with no third floor. The typical construction for the roof consists of steel deck spanning between either open webbed steel joists (OWSJs) or steel beams. There are signs that water has leaked through the roof, in the form of paint peeling off the beams and the steel deck with signs of rust starting.

It is understood that the roofing of the structure will need to be replaced, and while the observed areas are not at a high level of concern, the areas showing rust should be protected once the source of the leakage is fixed by removing the peeled paint and applying a fresh coat.

Figure 14: Photo of Roof Framing

Photo ST 7:
Signs of water damage on structural framing.

Pool Roof

The pool roof structure utilizes 200 mm deep precast slabs spanning between steel beams. The observable area of the underside of precast slabs showed no structural concerns.

2.3.2 EXTERIOR ENCLOSURE

2.3.2.1 B2010 EXTERIOR WALLS

Exterior walls are generally in good shape. We did note some areas that might require maintenance. In addition to the areas identified in the original BCA we noted some discolouration of mortar joints along the weep holes under the second storey windows in the pool area west elevation.

Cracking of joints and discolouration of masonry at the front entry indicating possible moisture issues. Roof drain outline at grade appeared to be unblocked. It was not possible to view the roof of the vestibule from inside of the building. It did not appear serious and can be investigated during routine building maintenance.

2.3.2.2 B2020 EXTERIOR WINDOWS

Exterior windows did not show any signs of failure.

We noted two areas where the glazing of roof skylights had cracked glazed units which would require replacement. This was noted in the original report BCA.

We noted areas where the flashing around skylights will require replacement

2.3.2.3 B2030 EXTERIOR DOORS

Exterior doors appeared to be in working condition although they were locked so we could not test their operation. No failures were observed

2.3.3 ROOFING

2.3.3.1 B3010 ROOF COVERINGS

Roof coverings were identified as past their service life in the 2021 BCA. There is evidence of roof leakage in multiple areas of the building. There was no evidence of serious or worsening leaks since the previous BCA in 2021. The roof membranes where visible were wearing and showed signs of UV degradation. There were several areas with moss or other growth indicating a wet environment and possible drainage issues. The parapet membranes have stretched and bowed in several areas likely due to membrane shrinkage. One small area of the roof was identified as having a new roof replacement in the area of three new mechanical roof top units.

There was no visible ponding at the time of our visit. There had been a significant rainfall on Sunday in the area just three days before our visit.

2.3.3.2 B3020 ROOF OPENINGS

The flashing around roof openings should be replaced when a new roof membrane is installed.

2.4 INTERIORS

2.4.1 INTERIOR CONSTRUCTION

2.4.1.1 C1010 PARTITIONS

Interior partitions are generally in good shape. No evidence of cracking or settlement.

2.4.1.2 C1020 INTERIOR DOORS

Interior doors were investigated on a random basis and found to be operable.

2.4.1.3 C1030 FITTINGS

Hardware was operable. We did not find any instances of non-functioning hardware or door operators.

2.4.2 STAIRS

2.4.2.1 C2010 STAIR CONSTRUCTION

Stair construction – cast in place concrete. No issues.

Fire exiting signage within exit stairs will need to be brought up to code.

2.4.2.2 C2020 STAIR FINISHES

Fire exit stairs are unfinished concrete and block walls. No issues. Main stairs are terrazzo finish. No issues.

Pool deck access stair from Men's change area is finished in porcelain tile. Front edge nosing is deteriorating and should be replaced at a minimum. The entire stair should be refinished at same time if pool and deck are being waterproofed and refinished.

2.4.3 INTERIOR FINISHES

2.4.3.1 C3010 WALL FINISHES

Wall finishes are generally in reasonable shape. New painting refresh is optional.

2.4.3.2 C3020 FLOOR FINISHES

Terrazzo floor finish is in good shape. Resilient flooring varies. Signs of bubbling in ground floor daycare area (no basement below) which indicates excessive moisture in slab. No details shown on the architectural set to determine the floor assembly.

Resilient flooring on gym is in reasonable condition.

Carpeted areas are not showing excessive wear although it has likely come to the end of its service life. Carpet tile replacement optional but recommended.

Matt floor flooring in weights area is uneven and worn. Likely does not meet current accessibility requirements.

Hardwood flooring in sports courts appears in reasonable shape although there is excessive squeaking when walked on.

2.4.3.3 C3030 CEILING FINISHES

Many areas of the building have exposed ceiling finishes. They are in reasonable shape.

Areas with T-bar ceilings are serviceable however there are areas of the locker rooms where some of the tiles have sagged. Possibly due to higher humidity from pool and shower areas. There are discreet areas with some water damage from leaking pipes or roof leaks. Recommend replace in locker areas and a 5% allowance to replace in other areas. Option to replace throughout.

2.5 SERVICES

2.5.1 CONVEYING

2.5.1.1 D1010 ELEVATORS & LIFTS

An in-depth assessment of the elevators was not undertaken as part of this assessment. That said, the elevator was used while the team carried out the evaluation of the building. The elevator worked without issue by our team. It was disclosed the elevator had not been serviced since 2021.

2.5.1.2 D1020 ESCALATORS & MOVING WALKS

Not Applicable.

2.5.1.3 D1030 OTHER CONVEYING SYSTEMS

Not Applicable.

2.5.2 PLUMBING

2.5.2.1 D2010 PLUMBING FIXTURES

The plumbing fixtures throughout the building appeared to be in good working condition. They are a mixture of automatic and manually operated fixtures. Replacement of some of the plumbing fixtures particularly in the public washrooms and change rooms should be considered as part of an overall building modernization and face-lift, which should include upgrades to automatic touchless fixtures with low flow for water conservation. This has not been included in the cost report.

2.5.2.2 D2020 DOMESTIC WATER DISTRIBUTION

The incoming municipal water supply enters the building in the basement level and is currently not equipped with a Backflow Preventer. We recommend adding a backflow preventer to the main incoming DCW service.

The domestic water distribution piping was generally hidden inside walls and was not accessible for review and destructive testing of the piping condition was not within the scope of this study. Based on the age of the building and piping, it is assumed that the piping is original to the building construction in the early 90's and is therefore approximately 30 years old. Based on typical lifespan of copper DCW, DHW and DHWR piping, it can be expected that the piping can remain in operation and small sections of the piping system can be replaced as needed when pinhole leaks are found. This will be considered as regular building maintenance and has not been included in the cost report.

2.5.2.3 D2030 SANITARY WASTE

The sanitary waste piping inside the building was generally hidden inside walls and was not accessible for review and destructive testing or camera scoping of the piping to determine condition was not within the scope of this study. Based on the age of the building and piping, it is assumed that the piping is original to the building construction in the early 90's and is therefore approximately 30 years old. Based on typical lifespan of sanitary waste piping systems, it can be expected that the piping can remain in operation. If any concerns of drainage piping backing up, the sanitary waste piping can be flushed and camera scoping of the piping can be performed to confirm if any system obstructions remain. This is considered part of regular building maintenance and has not been included in the cost report.

There are sanitary waste sump pits and pumps located in the basement. These were not opened or reviewed as part of the work in this study and the current condition could not be confirmed. The previous condition assessment report from 2021 noted them to be maintained and they have not likely seen much use since the building became unoccupied. We anticipate them to continue to operate with regular maintenance and no cost has been included for this in the cost report.

2.5.2.4 D2040 RAIN WATER DRAINAGE

The rainwater leaders inside the building are generally hidden inside walls and not accessible for review and destructive testing or camera scoping of the piping to determine condition was not within the scope of this study. Based on the age of the building and piping, it is assumed that the piping is original to the building construction in the early 90's and is therefore approximately 30 years old. Based on typical lifespan of storm water piping systems, it can be expected that the piping can remain in operation. If any concerns of blockage appear, the storm drain piping can be flushed and camera scoping of the piping can be performed to confirm if any system obstructions remain. This is considered part of regular building maintenance and has not been included in the cost report.

There are storm water sanitary sump pits with pumps located in the basement mechanical room. These were not opened or reviewed as part of the work in this study and the current condition could not be confirmed. There were

no reports of issues, we anticipate with regular maintenance these will continue to operate and no costs have been included in the cost report.

2.5.2.5 D2050 OTHER PLUMBING SYSTEMS

Refer to Aquatics Design Report in the Appendix.

2.5.3 HVAC

2.5.3.1 C3010 ENERGY SUPPLY

The gas service for the building enters from the north side of the building and distributed at 2 psi pressure to the gas consuming appliances with pressure regulators at each appliance. The gas piping inside the building was generally hidden inside walls and not accessible for review but is assumed to be in acceptable condition.

The natural gas piping located at the roof level of the building is painted so it can be easily identified, however; we observed some surface corrosion. We recommend cleaning and re-painting (with yellow rust resistant paint) the natural gas pipes located at roof level. This is considered to be part of regular building maintenance and has not be included in the cost report.

Figure 15: Photos of Gas Services

Photo M1:
2 PSI incoming gas service meter and regulator.

Photo M2:
Typical gas piping connection to equipment with regulator.

2.5.3.2 C3020 HEAT GENERATING SYSTEMS

Hot water for space heating is generated by three natural gas fired heating boilers located in the 2nd floor mechanical room.

Boiler #1 is manufactured by Volcano (Model No. 222745c) having a maximum input firing rate of 2,520,000 Btu/Hr. Based on the review of the date plate, the heating boiler was manufactured in 1993 and is therefore approximately 31 years old. This boiler has reached end of life and is recommended to be replaced. For the base "like for similar" analysis, we recommend replacing the boiler B-1 with a new high efficiency condensing boiler piped directly into the existing condenser loop. This will maximize the efficiency of the condensing boiler. Refer to the decarbonization section of the report for further recommendations for replacement of the boiler B-1.

Boilers #2 and #3 have maximum input firing rate of 1,000,000 Btu/Hr. Boiler #2 and #3 are manufactured by LAARS (model no. NTH1000NCX1). Based on the review of the data plate, the serial number indicates the heating boilers were manufactured in 2013 and are therefore approximately 11 years old. These boilers can remain

connected to the main hydronic heating system loop until end of life. Refer to the decarbonization section of the report for further recommendations for replacement of these boilers at their end of life. In our interview with the existing building operator, they indicated that one of the boilers has been offline due to a control issue. We recommend having an authorized boiler service technician perform a full inspection and servicing of the boilers and boiler controls and replace any components that have failed. An allowance for this work has been included in the cost report. Refer to the decarbonization section of the report for further recommendations for replacement of the boilers B-2 and B-3.

The hydronic heating loop currently is connected to the condenser loop to inject heat into the condenser loop through heat exchanger HE-2. HE-2 is original to the building and has reached end of life and requires replacement. As part of the replacement of boiler B-1, we recommend removal of HE-2 and associated pumps and piping to connect the new condensing boiler directly to the condenser loop.

Figure 16: Photos of Heating Equipment

Photo M3:
Boiler #1

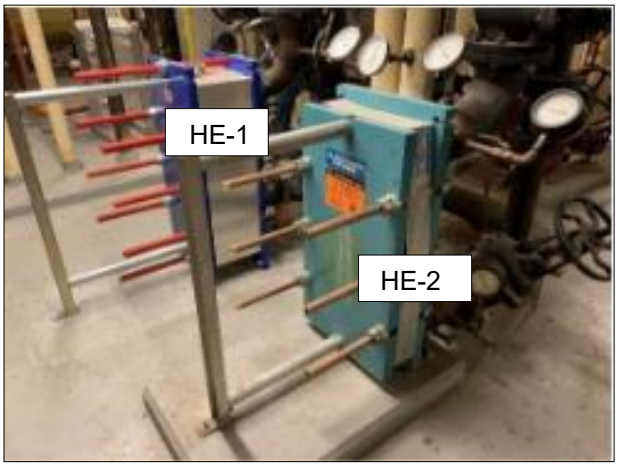


Photo M4:
Heat Exchangers #1 and 2

Photo M5:
Boilers # 2 and #3

Steam humidification for the steam saunas is generated by two natural gas-fired steam boilers having a maximum input firing rate of 360,000 Btu/Hr. The steam boilers are manufactured by “Weil McLain”. According to the service tag on the boilers, they were both replaced in 2019 and have approximately 20 years of service life left in them. We will recommend including for initial servicing of the boilers prior to restarting. An allowance for this has been included in the cost report.

Figure 17: Photo of Steam Boilers

Photo M6:
Steam Boilers Serving Steam Rooms

2.5.3.3 *C3030 HEAT REJECTION EQUIPMENT*

The building is equipped with an open induced draft cooling tower manufactured by Baltimore Air Coil (BAC) to reject heat from the condenser loop serving the water source heat pump fan coil units which was replaced in 2014. We recommend performing a full servicing and refurbishment of the cooling tower including replacement of the fill media. This cost has been included in the cost report.

The cooling tower is connected to the condenser loop system through plate and frame heat exchanger HE-1 and cooling tower pumps P-5 and P-6 circulate water through the cooling tower and heat exchanger HE-1. Heat exchanger HE-1 was replaced in 2016. Pumps P-5 and P-6 are original to the building and have reached end of life. However, at the end of life of the cooling tower, we will recommend replacing it and the HE-1 with a closed-circuit fluid cooler instead of a cooling tower. At this time, the fluid cooler will be able to be connected directly to the condenser loop and pumps P-5 and P-6 can be eliminated. Therefore, we will recommend extending the life of the pumps P-5 and P-6 through a full pump re-build so they can remain in operation until the end of life of the existing cooling tower. We recommend opening up the heat exchanger HE-1, inspecting and cleaning the plates, and replacing any plates and/or gaskets that might be worn. The cost for all of this has been included in the cost report. Refer to the decarbonization section of the report for further recommendations related to the cooling tower, pumps and HE-1.

There is a make-up water connection complete with backflow preventer as well as water treatment which can be re-instated. These require on-going servicing and maintenance which should be completed prior to re-instatement. This is considered regular maintenance and has not been included in the cost report.

Figure 18: Photos of Cooling Tower

Photo M7:
Cooling Tower

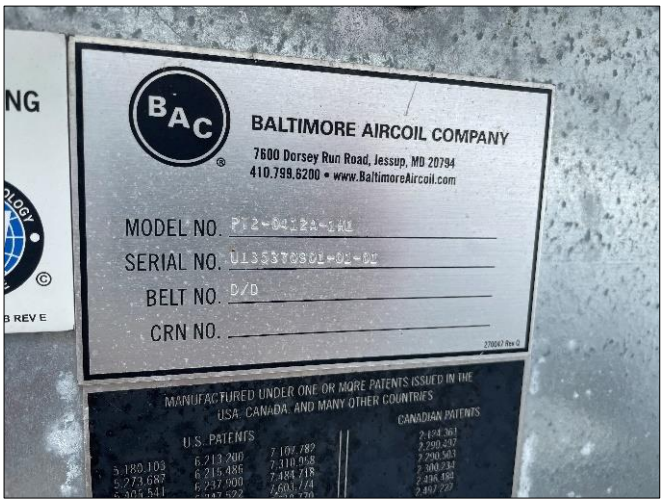


Photo M8:
Cooling Tower Nameplate

2.5.3.4 *C3040 DISTRIBUTION SYSTEMS*

The building heating and cooling is distributed through two piping systems:

- High temperature hydronic heating system which serves perimeter wall fin heaters and ceiling radiant panels, hydronic duct mounted re-heat coils, unit heaters, fan forced heaters, DHW generation, and pool heating.
- Low temperature condenser system which serves water source heat pumps (WSHP) fan coil units throughout the building.

These two systems have likely not been properly maintained over the last few years with proper water treatment and therefore we recommend performing full flushing of the piping in both systems prior to putting back into operation. Local repairs to the piping can be performed as required if pinhole leaks are discovered during the flushing process. An allowance for initial flushing of the systems and initial inspection and replacement of any local sections of piping which are in poor condition or leaking has been included in the cost report.

The building has multiple circulator pumps serving the various heating and condensing loops as well as heat recovery systems, summarized in the table below.

Table 2.1 Summary of Multiple Circulator Pumps Service

REF NO.	SERVICE	MAKE	MODEL	TYPE	QTY.	CAPACITY (GPM)	HEAD (FT)	RPM	MOTOR POWER HP
P-7,8	Heating Water	Armstrong	3x3x10, 4380	Vertical inline	2	175	70	1800	7.5
P-6,5	Cooling Tower Water	Armstrong	4x4x10, 4300	Vertical inline	2	360	60	1800	10
P-9,10	Heat Pump System	Armstrong	4x4x10, 4300	Vertical inline	2	380	85	1800	15
P1,2,3	HRU circulation	Armstrong		Vertical inline	2	175	70	1800	7.5

Heating water pumps P-7 and P-8 serve the main hydronic heating loop and are original to the building from early 90's. They have reached the end of their expected life and were not functioning at the time of our site visit. These pumps must be replaced with new duplex pump set and we recommend including built-in VFDs on the pumps to allow the system to be converted to variable flow for additional energy conservation and on-going electrical savings. The cost to replace the pumps has been included in the cost report.

Heat Pump System Pumps P-9 and P-10 serve the condenser loop connected to the water source heat pumps through-out the building and are original to the building from early 90's. They have reached end of their expected life. We recommend replacing pumps P-9 and P-10 with new duplex pump set with built-in VFDs to allow for the system to operate with variable flow for additional energy conservation and on-going electrical savings. The cost to replace the pumps has been included in the cost report.

Cooling Tower Pumps P-5 and P-6 have been addressed already in the Heat Rejection Equipment section of this report, please refer to that section for more details.

HRU Circulation Pumps P-1, P-2 and P-3 serve existing heat recovery loops that circulate glycol between make-up air units RT-2, RT-3, and RT-4, and exhaust heat recovery units HRU-1, HRU-2, and HRU-3. These pumps are original to the building from the early 90's and have reached end of life and should be replaced. However, as these are serving other equipment that is planned for replacement at a future date, we will recommend extending the life of the existing pumps by performing a full pump re-build instead of replacement. Refer to the decarbonization section of this report for further information and recommendations related to these pumps. The cost to re-build the pumps has been included in the cost report.

We observed insulation was missing in some sections of the hydronic and condenser piping inside the 2nd floor mechanical room which should be replaced. This is considered regular maintenance and has not been included in the cost report.

Figure 19: Photos of Hydronic Pumps

Photo M9:
Pumps P-5, P-6, P-7, P-8, P-9 and P-10

Photo M10:
Pumps P-1 and P-2

2.5.3.5 *C3050 TERMINAL & PACKAGE UNITS*

Hydronic (hot water) force flow heaters provide heating to the main entrance vestibule and near exit doors. Hydronic wall finned heaters and hydronic ceiling radiant panels provide perimeter heating to the building. Hydronic unit heaters generate heat to the loading dock area and service rooms. These are generally in acceptable condition and can remain in operation. We recommend adding new pressure independent control valves for all perimeter wall finned heaters and radiant ceiling panels to allow for better space temperature control and variable flow in the hydronic heating system. An allowance for this has been included in the cost report.

Figure 20: Photos of Hydronic Heaters

Photo M11:
Typical Wall Finned
Baseboard Heater

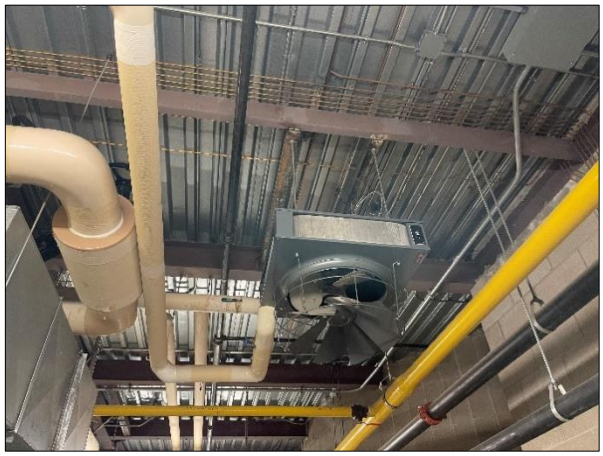


Photo M12:
Typical Unit Heater

Heating and cooling to the basement levels, general purpose spaces on the ground floor and 2nd floor and the running track on the 3rd floor is provided by water source heat pumps (WSHP) located in ceiling spaces within the building. WSHPs have an expected useful service life of 20 years. The heat pumps are original to the building and therefore are approximately 30 years old and are beyond their useful life. We recommend replacing the WSHP and including new water strainers and control valves with the heat pumps. Refer to the decarbonization section of this report for further recommendations related to the WSHPs.

Ventilation air for the spaces served by the WSHPs is delivered from RT-4 and the ventilation air is ducted directly to the return ductwork for each WSHP. For additional energy savings, we recommend adding variable airflow (VAV) boxes to the ventilation distribution ductwork connected to carbon dioxide (CO_2) sensors in the respective spaces to allow for demand-controlled ventilation. For full implementation, this will also require addition of a VFD onto the supply and exhaust fans in RT-4 and HRU-3.

RT-2 and RT-3 serve ventilation make-up air and space conditioning for the main men's and women's change rooms. They are equipped with a glycol pre-heat coil, DX cooling coil and an indirect gas fired burner. In addition, there are duct mounted hydronic re-heat coils mounted in the distribution supply ductwork to allow for some individual space temperature control. These units were replaced in 2013 and have approximately nine years of service life remaining. We recommend engaging an authorized service technician to perform a full unit service and maintenance on the units to ensure they are operating correctly. An allowance for this is included in the cost report. For further recommendations for these units, refer to the decarbonization section of this report.

RT-4 is serving ventilation air for the WSHPs throughout the building. It is equipped with a glycol pre-heat coil, DX cooling coil and an indirect gas fired burner. It was replaced in 2013 and has approximately nine years of service life remaining. We recommend engaging an authorized service technician to perform a full unit service and maintenance on the unit to ensure it is operating correctly. An allowance for this is included in the cost report. For further recommendations for this unit, refer to the decarbonization section of this report.

RT-1 is a mixed air unit serving the gym and basketball court and includes economizer with barometric relief, DX cooling, hot gas reheat coil and indirect gas fired burner. It was replaced in 2013 and has approximately nine years of service life left. We recommend engaging an authorized service technician to perform a full unit service and maintenance on the unit to ensure it is operating correctly. An allowance for this is included in the cost report. For further recommendations for this unit, refer to the decarbonization section of this report.

RT-5 is a mixed air unit serving the 2nd floor fitness area and upper levels of the main entrance lobby atrium and includes economizer with barometric relief, DX cooling hot gas reheat coil and indirect gas fired burner. It was replaced in 2013 and has approximately nine years of service life left. We recommend engaging an authorized service technician to perform a full unit service and maintenance on the unit to ensure it is operating correctly. An allowance for this is included in the cost report. For further recommendations for this unit, refer to the decarbonization section of this report.

RT-6 is a mixed air unit serving the ground floor main entrance lobby atrium and interconnected corridors and includes economizer with barometric relief, DX cooling and indirect gas fired burner. It was replaced in 2013 and has approximately nine years of service life left. We recommend engaging an authorized service technician to perform a full unit service and maintenance on the unit to ensure it is operating correctly. An allowance for this is included in the cost report. For further recommendations for this unit, refer to the decarbonization section of this report.

RT-7 is a mixed air unit serving the 2nd floor addition onto the fitness area and is equipped with economizer with barometric relief dampers, DX cooling and indirect gas fired burner. This unit is using R22 refrigerant which has been phased out and no longer being manufactured, making it difficult and costly to procure in the event of a refrigerant leak. This unit is original to the addition which was in the late 90's, making the unit approximately 25 years old and at end of its expected service life. We recommend replacement of RT-7 with a new unit like-for-like utilizing new low global warming potential (GWP) refrigerant. The cost for the like-for-like replacement of RT-7 is included in the cost report. For further recommendations for this unit, refer to the decarbonization section of this report.

Figure 21: Space Heating, Cooling and Ventilation Units

Photo M13:
Typical Water Source Heat Pump

Photo M14:
RTU-1 – Serving Gymnasium

Photo M15:
RTU-2 and RTU-3 – Providing Ventilation for Change Rooms

Photo M16:
RTU-4 – Serving Ventilation Air for Water Source Heat Pump Units

Photo M17:
RTU-5 – Serving Second Floor Fitness and Upper Main Lobby

Photo M18:
RTU-6 – Serving Ground Floor Lobby

Photo M19:
RTU-7 - Serving 2nd Floor Addition

Table 2.2 Rooftop Unit Schedule

TAGS	MODEL	YEAR	SERVICE	AIR FLOW (CFM)	NET TOTAL COOLING CAPACITY (MBH)	INPUT HEATING CAPACITY (MBH)	ESP (in)	UNIT CONFIGURATION
RT-1	Trane (YCD480B5T-6C3L5DA0000H0K0000RT) VOYAGER™	2013	Gymnasium	12,500	415.7	750	1.5	Roof Mounted, Recirculating, Down Discharge, Gas Heat, Hot Gas Reheat
RT-2	Trane (SXHLF4050K00D49D2C00ABWEF) INTELLIPAK™	2013	GF, SF Men/Women Locker /Washroom	8,000	448.2	500	1.9	Roof Mounted, 100% OA, Down Discharge, With Heat Recovery
RT-3	(SXHLF2550K003BD2C00ABWEFH) INTELLIPAK™	2013	GF, SF Men/Women Locker /Washroom	5,000	304.4	400	2	Roof Mounted, 100% OA, Down Discharge, With Heat Recovery
RT-4	Trane (SXHLF5550K00C5AD2C00ABWEF) INTELLIPAK™	2013	Running Track, SF	11,000	634.4	1000	2.2	Roof Mounted, 100% OA, Down Discharge, With Heat Recovery
RT-5	Trane (YCD480B5T-6C3L5DA0000H0K0000RT) VOYAGER™	2013	SF Main Lobby	15,000	510.0	750	1.25	Roof Mounted, Recirculating, Down Discharge, Gas Heat, Hot Gas Reheat
RT-6	Trane (YHD240FWRVA03FAC0A102004) VOYAGER™	2013	FF Main Lobby	6,400	219.9	355	1.75	Roof Mounted, Recirculating, Down Discharge, Gas Heating
RT-7	Engineered Air FWA-224/DJE-60-0, SN:B35981 RT1	1998	New Extension	8,500	264.0	600	0.85	Roof Mounted, Recirculating, Down Discharge, Gas Heating

Heating and ventilation to the swimming pool is provided by an air handling unit (AHU-1) Trane Model No T35MPHFBH. The air handling unit is located in the basement level mechanical room. The air handling unit consists of a supply air fan, a bank of heating (glycol) coils, filters, and outdoor air dampers. It currently is operating with 100% outdoor air to manage the humidity in the pool area with large volumes of outside air. The unit is original to the building and has reached the end of its expected service life. To increase efficiency and significantly reduce energy consumption related to the pool, we recommend replacing the AHU-1 with a new dedicated pool dehumidifier unit which includes DX cooling with heat recovery to heat the pool water. The unit will require a remote condenser to be installed on the roof above. The refrigerant piping can be installed through the fresh air shaft and up the side of the building to the unit on the roof. The unit will operate to bring in the minimum amount of outside air required to meet the ventilation requirements for the pool area and recirculate the rest of the supply air.

Ventilation exhaust from the swimming pool area is provided by an exhaust fan located in the basement level mechanical room. The exhaust fan associated with AHU-1 will be replaced with a new return fan integrated with the new pool dehumidifier unit.

There is an existing laundry room in the basement adjacent to the mechanical room. All laundry equipment has currently been removed from the laundry room and it is empty. The building operator mentioned that they originally had large commercial washing machines and gas fired dryers in the laundry room but changed to using a third-party company for laundry. Heating and ventilation to the laundry room was originally provided by an air handling unit (AHU-2). The air handling unit is suspended from the ceiling located in the basement level mechanical room. The air handling unit consists of a supply air fan, a bank of heating (glycol) coils, filters, and outdoor air dampers. In addition, there is a large commercial grade laundry lint trap filter unit located in the basement mechanical room. This equipment is at end of life. If the city does not intend to re-instate the on-site laundry facilities, we recommend removing the AHU-2 and all mechanical services in the laundry room to repurpose the space for another use. Depending on the new use of the space, we will recommend providing a new WSHP connected to the existing condenser piping in the basement and extending a ventilation air duct branch from the existing ventilation ductwork distribution in the basement to serve the room. This will also free up space inside the basement mechanical room for the new pool dehumidifier unit, which will require more space than the existing unit. Costing related to the laundry room has not been included in the cost report as it is not known at this time what will be required for the new space.

Figure 22: Basement Mechanical Room Equipment

Photo M20:
AHU-1 Swimming Pool Unit

Photo M21:
F-3 Swimming Pool Exhaust Fan

Photo M22:
AHU-2 Serving ventilation for laundry room.

Photo M23:
Laundry Dryer Lint Filter Unit

Photo M24:
Glycol Heat Exchanger, Pump and
Feed Tank Serving AHU-1.

2.5.3.6 *C3060 CONTROLS & INSTRUMENTATION*

Existing controls system is pneumatic based. Compressed air pneumatic controls system is provided by an air compressor manufactured by "DeVibliss" (DV Systems). The air compressor is mounted on a concrete housekeeping pad located in the basement level mechanical room. We observed the air compressor was cycling on and off frequently during our site visit despite the building being unoccupied, which is a good indicator of leaks in the pneumatic tubing system. We recommend removing the air compressor, abandoning the pneumatic control system and replacing entirely with new DDC BAS.

The new BAS is recommended to be open source BACnet based including new controls for all major mechanical equipment, new control valves, damper actuators, new space temperature, humidity and CO_2 sensors, global outdoor temperature and humidity sensors, duct mounted static air pressure sensors, differential pressure sensors for pump controls, and occupancy sensors as required.

Figure 23: Photos of Controls Equipment

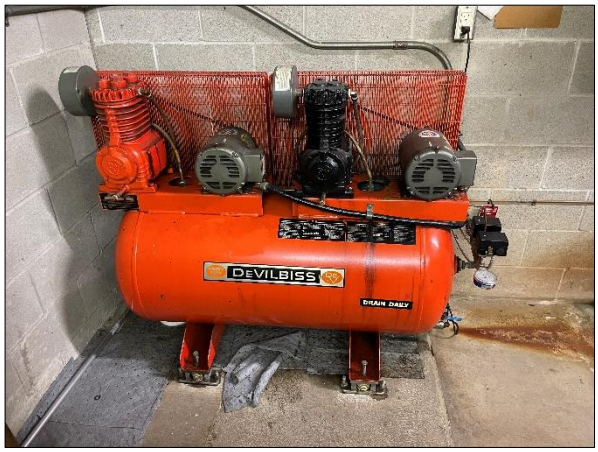


Photo M25: Pneumatic Controls Air Compressor

Photo M26: Typical Pneumatic Actuator

2.5.3.7 C3070 SYSTEMS TESTING & BALANCING

Testing and balancing of the hydronic heating system, the condenser water system, and all the air distribution systems should be completed as part of regular building maintenance. Testing and balancing of these systems is included in the pricing where the systems are being modified as part of other recommendations. Otherwise, testing and balancing is considered part of the building's on-going maintenance and has not been included for in the cost report.

2.5.3.8 C3090 OTHER HVAC SYSTEMS & EQUIPMENT

Refer to Aquatics Design Report in the Appendix A.

2.5.4 FIRE PROTECTION

2.5.4.1 C4010 SPRINKLERS

The fire protection system is fed from a dedicated water main entering the building from the north side storage room off of the gymnasium. It is currently not equipped with a backflow preventer. The building is currently fully sprinklered on all floors with four separate sprinkler zones. Zone valve stations are located on each floor inside a recessed fire hose cabinet. No issues with the sprinkler system were reported by the property manager, it is assumed to be in acceptable condition. The system requires on-going inspections, servicing and maintenance to comply with local fire codes. We recommend installing a backflow preventer on the main incoming service where it enters the building in compliance with local code requirements.

2.5.4.2 C4020 STANDPIPES

The building does not have a standpipe system.

2.5.4.3 *C4030 FIRE PROTECTION SPECIALTIES*

The building is equipped with fire extinguishers located inside recessed cabinets throughout the building. According to the service tag on the fire extinguishers, they were last inspected in 2022 and must be inspected and checked as required by local fire codes.

Figure 24: Photos of Fire Extinguisher Cabinet and Inspection Tag

Photo M27: Typical Recessed Fire Extinguisher Cabinet

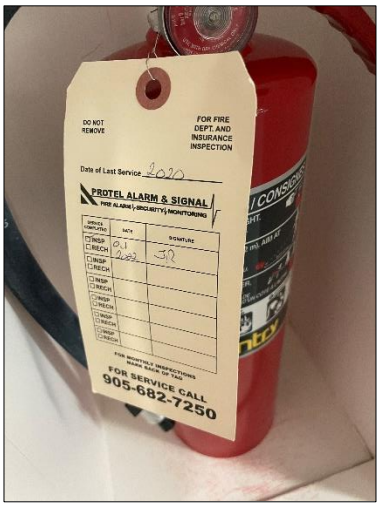


Photo M28: Typical Fire Extinguisher Inspection Tag

2.5.4.4 *C4090 OTHER FIRE PROTECTION SYSTEMS*

Not applicable.

2.5.5 ELECTRICAL

2.5.5.1 *C5010 ELECTRICAL SERVICE AND DISTRIBUTION*

The electrical incoming service is provided from Hydro transformer located outside on the north side of the building. The main feeders are run underground and are feeding the main switchboard located in main electrical room in basement.

The main switchboard ‘AAA’ is rated 1200 Amperes, 347/600 Volts, 3 Phase, 4 Wire, 35kA, manufactured by “Siemens” dated 1993 (31 years old) and the main disconnect switch is rated 1200A/1000AT/3Ph. This switchboard is feeding distribution panels, transformers and Motor Control Centers (MCCs) within the building. The Hydro meter is located in the basement level electrical room as well.

Figure 25: Photos of Transformer and Main Switchboard

Photo E1:
Hydro Transformer

Photo E2:
Main Switchboard

Typical life cycle of switchboard and service entrance equipment is around 40 years and it can be extended by proper maintenance. The equipment is in fair condition and will be approaching their end of life in 10 to 15 years.

The electrical distribution of the building is through step-down transformers, splitters, disconnect switches for isolation of equipment and distribution panels for receptacles, lighting and appliance circuits located throughout the building and original to the building (31 years old) and observed to be in fair condition. These units are located in electrical rooms on each floor and provide power for each level loads.

Figure 26: Photos of Electrical Rooms

Photo E3:
Typical Ceiling Mounted Transformer in Elec Rooms

Photo E4:
Typical Distribution Equipment in Elec Rooms

Typical life cycle of distribution equipment including panels, transformers, disconnect switches and splitters is around 30 years and it can be extended by proper maintenance. The equipment will be approaching their end of life in one to five years.

The electrical distribution of the mechanical loads of the building are through MCCs and panels. MCC-1 located in 3rd floor mechanical room and rated 600V, 800A, 3Ph, 42kA manufactured by Klockner Moeller. MCC-2 located in basement mechanical room and rated 600V, 600A, 3Ph, 42kA manufactured by Klockner Moeller. The motor control centres are original to the building (31 years old) and were observed to be in fair condition.

The feeders throughout the mechanical rooms appear to be tidy and the overall mechanical rooms were observed to be clean at the time of inspection.

Figure 27: Photos of MCC 1 and MCC 2

Photo E5:
MCC 1 in 3rd Floor Mechanical Room

Photo E6:
MCC 2 in Basement

Typical life cycle of MCCs is around 30 years and it can be extended by proper maintenance. The equipment will be approaching their end of life in one to five years.

RECOMMENDATIONS

- It is recommended to perform short circuit, coordination, and arc flash studies to determine the settings of the breakers and/or fuses of all electrical equipment and PPE requirements for end users. It is recommended that these studies are conducted a minimum of every five years. A review of the annual peak demand load profile would provide a more accurate analysis of the available load capacity.
- It is recommended to have infrared thermal scans performed on the main switchboards on a yearly basis to ensure that all internal connections are safe and operational.
- It is recommended to conduct the power quality study every five years for reliable operation of the equipment.
- Replacement to be phased within next five years.

2.5.5.2 C5020 LIGHTING AND BRANCH WIRING

The base building light fixtures used throughout the building is a combination of fluorescent and metal halide light fixtures.

The lighting fixtures in lobbies/corridors are typically recessed round fixtures.

The lighting fixtures in basketball court are typically high bay fixtures.

The lighting fixtures in offices/gym area are typically a combination of recessed downlight, 1ft x 4ft and 2ft x 4ft light fixtures.

The lighting fixtures in mechanical and electrical rooms and storages are typically 4 ft 2xT8 fluorescent lamp pendent type fixtures.

The lighting fixtures in stairwells are combination of recessed, surface mounted and pendant light fixtures.

The lighting fixtures in parking area and exterior of building are combination of high intensity discharge (HID) lamp wall pack fixtures and pole mounted lighting fixtures.

The lighting fixtures have passed their life expectancy; however, the spare lamps are available in the building and the burnt ones were replaced time to time. The exterior lights were not in fair condition and most of them were burnt.

The base building exit signs consist of the old red 'EXIT' type throughout the building.

Emergency lighting in the building is provided by battery units installed in main electrical room and electrical rooms in each floor. These battery units are feeding the exit signs and remote heads within the building.

Figure 28: Photos of Lighting Fixtures

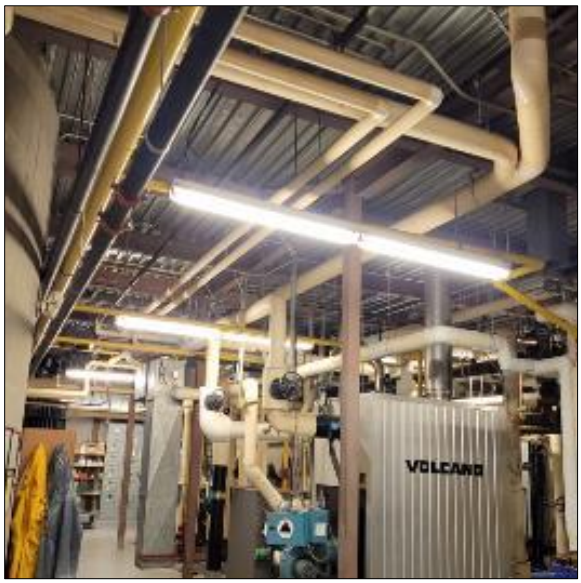


Photo E7:
Typical Lighting Fixtures in Mechanical Rooms

Photo E8:
Typical Lighting Fixtures in 3rd Floor

Photo E9:
Typical Lighting Fixtures in Gym and Change Rooms

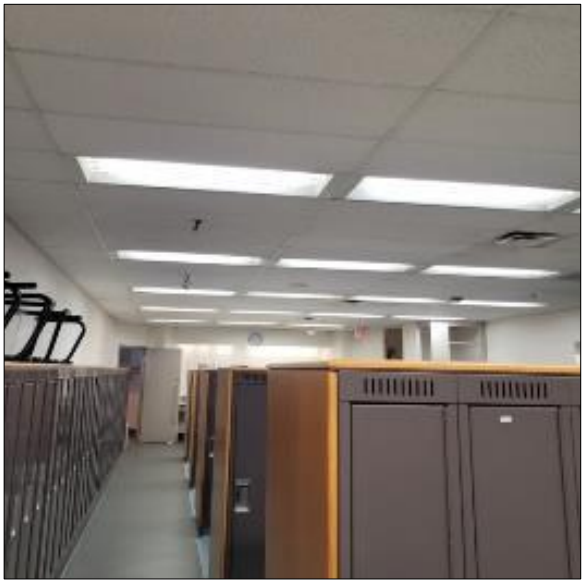


Photo E10:
Typical Lighting Fixtures in Rooms

Photo E11:
Typical Exterior Lighting Fixtures on Pole

Photo E12:
Typical Basketball Court Lighting Fixture

Photo E13:
Typical Remote Heads and Battery Units

Photo E14:
Typical Exit Sign

Typical life cycle of lighting fixtures is around 20 years. The equipment passed their end of life.

Typical life cycle of batteries and emergency lighting fixtures is around 15 years. The equipment passed their end of life.

Retrofitting existing fixtures/tubes with LED retrofit kit would reduce the lighting load. LED fixtures are more energy efficient and would last longer than fluorescent lamps. Furthermore, maintenance and operational costs for LED fixtures are generally lower than fluorescent fixtures.

The existing red exit signs are grandfathered to the building. The latest OBC requires the “green running-man” pictograms as new permits are taken out. Existing exit signs can be replaced all in one shot or in stages per project. Existing exit signs do not need to be replaced just because the code changed as noted above. However, replacement is required if any major renovation being undertake in the building.

The lighting levels were not measured during our visit; however, the building appears to have adequate lighting in the interior spaces.

RECOMMENDATIONS

It is recommended to have all base building fixtures/tubes be retrofitted with new LED retrofit kits or replaced with new LED fixtures to reduce the energy consumption.

It is recommended that all exit signs in the building to be replaced with new “green running man” pictograms to suit OBC, AODA and City policies at the time of lighting upgrades.

It is recommended to have the entire emergency lighting battery units and remote heads to be replaced with new equipment.

Replacement to be phased within next five years.

2.5.5.3 *C5030 COMMUNICATIONS & SECURITY*

Main IT rack and server are located in the elevator machine room in basement and seems to be in good condition. There is another IT rack in an electrical room. The data/voice drops seem to be old.

Main security panel is located in main electrical room in basement and seems to be in fair condition. The intrusion alarm system is monitored by General Security Services. There are some cameras around the building as well which seems to be in fair condition.

The PA system is located in main electrical room in basement and seems to not be in fair condition and is not working.

Figure 29: Photos of Main Communication, PA System and Security Panel

Photo E15:
Main IT Rack in Elevator Machine Room

Photo E16:
Main Security Panel

Photo E17:
Obsolete PA System

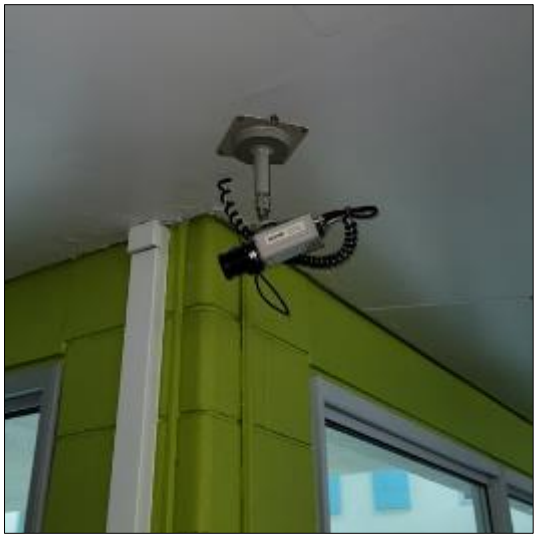


Photo E18:
Typical Camera

RECOMMENDATIONS

Replacement to be done within next five years according to the building operation requirements.

2.5.5.4 C5090 OTHER ELECTRICAL SYSTEMS

Fire Alarm System - The building has a fire alarm system which monitors initiating and signalling devices throughout the building. The fire alarm control panel is manufactured by “Simplex”, Model 4020 and is located in main electrical room in basement.

There are fire alarm bells/horns/strobes throughout the floors, corridors, service rooms, and elevator lobbies.

It was observed that smoke detectors are installed within the electrical rooms throughout the building.

It appears that the mounting heights of the fire alarm pull stations at exit doors throughout the building may not all meet the current AODA requirements.

Figure 30: Photos of Fire Alarm System

Photo E19:
Main Fire Alarm Control Panel

Photo E20:
Typical Fire Alarm Detector in Elec Rooms

Photo E21:
Typical Fire Alarm Bell in Common Area

Photo E22:
Typical Fire Alarm Pull Station at Exit Door

The fire alarm control panel has an expected useful service life of 20 years and the fire alarm devices has 10 years useful service life. Most of the devices passed their useful life cycle.

Emergency Power

There is no emergency generator in the building and the life Safety loads of the building are backed up by batteries in electrical rooms as indicated in previous section.

Grounding System

It appears that there are copper bonding conductors in the electrical rooms which are bonded to the building ground through grounding bars. The grounding system is original to the building and was observed to be in good condition throughout all electrical rooms.

Figure 31: Photos of Grounding

Photo E23:
Grounding Busbar in Elevator Machine Room

Photo E24:
Typical Grounding in Elec Rooms

Typical life cycle of grounding system is around 40 years. The equipment will be approaching their end of life in 10 to 15 years.

As electrical distribution work is completed over time, the grounding and bonding of equipment will need to meet the requirements of latest Ontario Electrical Safety Code (OESC), Section 10.

RECOMMENDATIONS

It is recommended to investigate the mounting heights of the existing fire alarm pull stations to determine whether they satisfy AODA's latest requirements.

It is recommended to verify the capacity of the existing fire alarm panel to determine if new strobes can be added. This can be investigated with the fire alarm panel manufacturer and the fire alarm contractor on site.

It is recommended to have the entire fire alarm system replaced with new equipment.

2.6 EQUIPMENT & FURNISHINGS

2.6.1 FURNISHINGS

2.6.1.1 E2010 FIXED FURNISHINGS

Millwork reception counter is in good shape although there is some minor peeling of the plam finish on the outside.

Childcare cubbies are in reasonable shape although showing some wear after 30 years of use.

Childcare kitchen millwork is serviceable although showing signs of wear after 30 years.

Limited millwork (washroom counters, vanities, etc.) throughout the rest of the facility was generally in reasonable shape.

Men's and women's locker areas were in reasonable condition.

2.6.1.2 E2020 MOVABLE FURNISHINGS

The only moveable furnishings we found were operable walls in the multi-use rooms in the day care. Both partitions were manually operated, and we were able to close and open both although with some effort.

2.7 SPECIAL CONSTRUCTION & DEMOLITION

2.7.1 SPECIAL CONSTRUCTION

Not applicable.

2.7.2 SELECTED BUILDING DEMOLITION

2.7.2.1 F2010 BUILDING ELEMENTS DEMOLITION

Not applicable.

2.7.2.2 F2020 HAZARDOUS COMPONENTS ABATEMENT

A designated substance survey (DSS) on the facility was undertaken by Soil Engineers Ltd, dated April 30, 2024. The report indicates limited concerns, such as free crystalline silica in the brick, cement mortar and concrete; lead being present in some paints and possibly in the solder joints of the water pipes, and the presence of mercury in paints and fluorescent lamps. It was recommended that appropriate respiratory protection be used during renovation/demolition of any lead/mercury/silica-based products to avoid inhalation.

3 ACCESSIBILITY STUDY

3.1 ACCESSIBILITY AUDIT REPORT

Refer to Appendix B for Accessibility Audit Report by mcCallumSather.

4 ALTERNATIVE USES STUDY

4.1 ARCHITECTURAL CONSIDERATIONS

Refer to Alternative Uses outline by Studio Canoo in Appendix C, and associated sketched is Appendix D.

The ground floor pool area has been identified as a logical location to add an additional gym, basketball courts, pickleball courts and climbing wall if the repair of the pool is deemed to be prohibitive. The pool would need to have a deck built across the pool area to accommodate the new uses. The existing change areas could service both gyms although the amount of shower areas and other facilities would be more than required but expensive to remove. Recommendation to keep the change areas as designed for if the pool function is being abandoned. Refer to Diagram - Ground Floor Alternate Uses Option 4 and the outline scope document for high level scope description.

If squash and racquet ball courts are not required they are also double height spaces and could accommodate the installation of climbing walls. (No diagram attached)

The existing daycare facilities were identified as a possible revenue generator. They are in reasonable condition and could be leased to an independent operator. It would be possible to isolate this use from the rest of the building for security purposes without affecting the fire exiting or life safety systems. The only issue discovered was bubbling in the resilient flooring finish which can indicate the presence of excessive moisture in the slab. This should be addressed prior to offering the space to for lease. The area of the space is approximately 14,800 sf. The space is configured as a day care and would generally meet the requirements of the Day Nurseries Act but a review by potential operators would be required to confirm it conforms to current requirements. Any modifications should be the responsibility of any future operator. Area in question is identified on Ground Floor Diagram

There is a small café area in the ground floor lobby. This area is likely too small to attract an independent operator (i.e. Tim Horton’s etc). It would likely be best advised to remove the existing equipment and allocate the space for additional office or site security office unless an operator can be found. (No diagram attached)

The second-floor exercise area was identified as an area that could be easily converted to other uses such as multi-purpose rooms for many uses or administrative offices with very little work required. New partition walls, modified ceiling layout, and possible modifications to the mechanical distribution would be required. Possible modifications to the sprinkler system might be required as well depending on the layout. The area of the space identified on the diagram is approximately 4400 sf. Refer to Diagrams – Options 1 and 2 Second Floor Alternate Uses for layout options and outline spec.

We considered the possibility of adding a small branch library in this area however there is an existing branch of the St. Catharines Public Library system located 5 minutes away in the Kiwanis Aquatics Centre. A library floor also has to be designed to a higher design load than a typical floor and it is unlikely that the existing floor would be able to accommodate this use without structural upgrades which would go beyond the minimal intervention the City is considering.

The original BCA noted that the west wall of the pool area had been designed structurally to allow the removal of the wall to accommodate an extension/addition. We have identified the area in question (See Site Alt Uses diagram Option 3) which is fairly limited unless the addition extended to the parking areas. It would also involve significant cost. Possible uses for such an addition would be a therapy pool or children’s wading pool.

4.1.1 IMPACTS TO STRUCTURAL

The structural implications of changes of use to the building will be minor or negligible in the likely event that the newer occupancy does not increase the live load on the structure beyond that for which it was designed and constructed for.

The current floor live loads for the structure are 4.8 kPa for all suspended floors, except for the mechanical rooms where it is 6.0 kPa. These design loads are high enough to allow flexibility in the usage, with the exception of any sort of heavy storage areas such as a library, which should be placed on the slab on grade if it is being considered.

If the pool area is to change, care must be taken with respect to the current pool walls. If it is to be backfilled, with a new slab on grade at the top, the total horizontal pressure on the walls should be less than that of the water. Typical backfill will usually achieve this result, but when the weight of the new floor and the use and occupancy load is applied on top of it, it may push it over the design limits of the walls. Alternatively, new structure can be placed within the pool to allow a suspended floor to span across the top to cover the pool.

4.1.2 IMPACTS TO MECHANICAL/ELECTRICAL

Ground Floor Alternative 1: Option 4

Existing AHU-1 and exhaust fan F-3 complete with ductwork and accessories shall be removed and replaced with one or two ASHP RTU(s) with electric back-up located on the roof. Existing supply air ductwork, air outlets and accessories shall be removed however a portion of existing return ductwork can potentially be utilised and routed to the new ASHP RTUs. New supply air distribution comprising of ductwork air outlets, dampers etc shall be provided.

Second Floor Alternative 1: Option 1

Multipurpose halls shall be served by new dedicated ASHP RTUs complete with new air distribution system for each space. Ductwork from RTU-5 shall be rerouted to serve the studio and the upper chapel. Hydronic / electric reheat coils shall be provided within the ductwork for temperature control of studio and the upper chapel.

Second Floor Alternative 2: Option 2

The office space shall be served from new RTU-7. New air flow distribution system shall be provided to suit the new layout. VAVs with reheat coils shall be provided for individual temperature control. The studio and the upper chapel shall also be served by new RTU-7. Ductwork within the studio and the upper chapel be retained however new VAVs with reheat coils shall be installed for temperature control.

Building Addition Alternative 1: Option 3

The proposed new building addition shall be served by a dedicated ASHP RTU. New air distribution system shall be provided to suit.

Additional Lighting to increase the suitable light levels and additional feeders for upgraded mechanical loads will be provided.

5 DECARBONIZATION STUDY

5.1 ALTERNATIVE 1

5.1.1 MECHANICAL MEASURES FOR EQUIPMENT CURRENTLY AT END-OF-LIFE

Remove Boiler#1 and heat exchanger HX-1 connecting the hydronic heating loop to the condenser loop and replace with new ASHP boilers with remote condensers, located on the roof adjacent to the 2nd floor mechanical room. Provide new structural steel platform for supporting the new ASHP boilers, including provision for future additional units to be added later, including any roof reinforcement as required. Remote condenser heat exchangers to be located inside main 2nd floor mechanical room and pipe to the existing condenser loop system. Provide new electric boilers install in parallel with the ASHP boilers to supplement the ASHP boilers.

Replace existing RTU-7 with new ASHP RTU with electric back-up.

5.1.2 FUTURE MECHANICAL MEASURES TO BE IMPLEMENTED AT END-OF-LIFE OF EXISTING EQUIPMENT

At end of life of existing LAARS boilers, add additional ASHP boiler modules with remote condensers to the condenser loop. Remove the existing LAARS boilers and replace with water-to-water heat pumps connected to the condenser loop to feed the hydronic heat loop. Add additional electric boilers to supplement the capacity of the ASHP boilers.

At end of life of existing cooling tower, replace with new closed circuit adiabatic fluid cooler. The capacity of the fluid cooler to be increased based on new cooling load on the WSHPs. Remove existing heat exchanger between cooling tower and condenser loop and remove existing cooling tower pumps. Connect the condenser loop directly to the fluid cooler, c/w isolation valves to allow for draining of the fluid cooler in winter.

At end of life of existing RTU-6, replace with new ASHP RTU with electric back-up. Unit to be relocated on the roof to make space for new RTU-5A and RTU-5B units.

At end of life of existing RTU-1 and RTU-5 each to be split into two ASHP RTUs with electric back-up (at the time of this report, direct replacement ASHP RTUs are not available, but higher capacity ASHP RTUs may become available to be able to replace these units one-to-one in the future). Re-work existing supply and return ductwork to connect to the new units.

At end of life of RTU-2 and RTU-3, we will recommend replacing with new HRVs with energy recovery cores and ducting the exhaust air from the change rooms directly to the new units. This will eliminate the associated HRU-1 and HRU-2 as well as circulator pumps P-3 and P-2. The new HRVs should be equipped with DX cooling with hot-gas re-heat for dehumidification and space temperature control in summer. With the increased energy recovery from the heat recovery cores, the indirect gas fired burners can be eliminated and the duct mounted hydronic heating coils used for final heating of the supply air in winter. This is part of future work and costs have been included under future decarbonization work in the cost report.

At end-of-life RTU-4, we will recommend replacing the unit with new high efficiency energy recovery ventilation (ERV) and ducting the associated sanitary and general exhaust currently connected to HRU-3 across the roof to connect directly to the new ERV. This will significantly increase energy recovery, eliminating the need for heating and cooling within the new unit. The supply air will be partially conditioned by the ERV and then ducted directly to the WSHPs through the new VAV boxes described earlier in this report for final conditioning. The cost for this has been included under the future decarbonization measures in the cost report.

Additional distribution equipment and feeders for upgraded mechanical loads will be provided. Upsizing of the main incoming service and hydro transformer is required for this option.

5.2 ALTERNATIVE 2

5.2.1 MECHANICAL MEASURES FOR CURRENTLY END-OF-LIFE EQUIPMENT

Replace all existing WSHP fan coil units throughout the building with new ASHP VRF system with heat recovery, equal to Mitsubishi R2 series. Existing condenser loop piping can be demolished where accessible and abandoned in place where in-accessible. Outdoor units to be located on the roof. New horizontal ducted indoor units to be installed in the same location of existing WSHP units and reconnect to existing supply distribution ductwork.

Remove existing cooling tower and associated pumps, heat exchanger HE-1 and water treatment system.

Remove existing two 1,500 gallon DHW storage tanks and replace with vertical storage tanks designed for use with ASHP DHW systems and an electric storage tank heater for use as supplement to the ASHP modules. Remove existing double wall plate and frame heat exchanger and install new ASHP DHW heaters and connect to new DHW storage tanks. The system will require multiple ASHP DHW heater modules complete with dedicated heat exchangers and glycol loops for each module. Outdoor modules to be located on the roof outside of the 2nd floor mechanical room.

Remove Boiler#1 and heat exchanger HX-2 connecting the hydronic heating loop to the condenser loop. and replace with new ASHP boilers with remote condensers located on the roof adjacent to the 2nd floor mechanical room. Provide new structural steel platform for supporting the new ASHP boilers, including any roof reinforcement as required. Remote condenser heat exchangers to be located inside main 2nd floor mechanical room. Existing LAARS boilers to remain to supplement the capacity of the ASHP boilers.

Replace existing RTU-7 with new ASHP RTU with electric back-up.

5.2.2 FUTURE MECHANICAL MEASURES TO BE IMPLEMENTED AT END-OF-LIFE OF EXISTING EQUIPMENT

At end of life of existing two LAARS boilers, replace with electric boilers to supplement the capacity of the ASHP boilers.

At end of life of existing RTU-6, replace with new ASHP RTU with electric back-up. Unit to be relocated on the roof to make space for new RTU-5A and RTU-5B units.

At end of life of existing RTU-1 and RTU-5 each to be split into two ASHP RTUs with electric back-up (at the time of this report, direct replacement ASHP RTUs are not available, but higher capacity ASHP RTUs may become available to be able to replace these units one-to-one in the future). Re-work existing supply and return ductwork to connect to the new units.

At end of life of RTU-2 and RTU-3, we will recommend replacing with new HRVs with energy recovery cores and ducting the exhaust air from the change rooms directly to the new units. This will eliminate the associated HRU-1 and HRU-2 as well as circulator pumps P-3 and P-2. The new HRVs should be equipped with DX cooling with hot-gas re-heat for dehumidification and space temperature control in summer. With the increased energy recovery from the heat recovery cores, the indirect gas fired burners can be eliminated and the duct mounted hydronic heating coils used for final heating of the supply air in winter. This is part of future work and costs have been included under future decarbonization work in the cost report.

At end-of-life RTU-4, we will recommend replacing the unit with new high efficiency energy recovery ventilation (ERV) and ducting the associated sanitary and general exhaust currently connected to HRU-3 across the roof to

connect directly to the new ERV. This will significantly increase energy recovery, eliminating the need for heating and cooling within the new unit. The supply air will be partially conditioned by the ERV and then ducted directly to the WSHPs through the new VAV boxes described earlier in this report for final conditioning. The cost for this has been included under the future decarbonization measures in the cost report.

Additional distribution equipment and feeders for upgraded mechanical loads will be provided. Upsizing of the main incoming service and hydro transformer is required for this option.

Refer to Appendix F for Proposed Roof Layout.

5.2.2.1 *STRUCTURAL IMPACTS*

Solar Panels

There are large areas of the roof that are under consideration for solar panel installation. The existing roof has been designed for the following loads:

- 1.2 kPa Snow load + snow drift which varies depending on the location on the roof.
- 0.9 kPa superimposed dead load (SDL) on the steel deck.
- 1.0 kPa SDL on the P/C core slab.

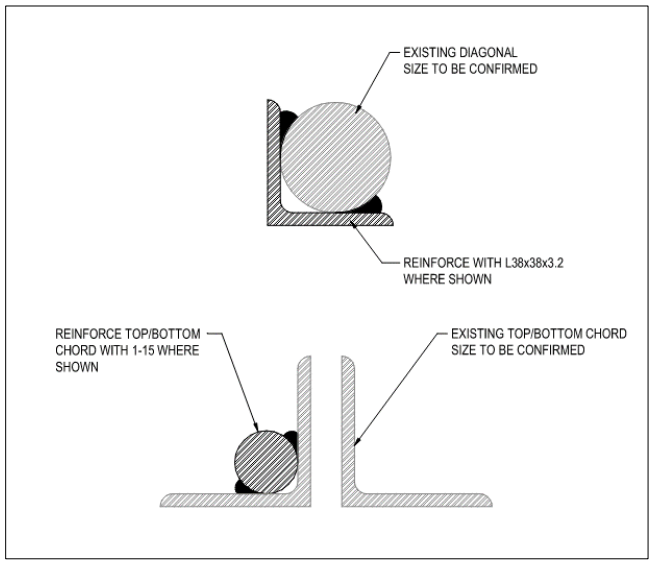
The St. Catharines base snow load has remained 1.2 kPa and no increase in base snow load would have to be accounted for if solar panels are installed.

To limit the amount of additional dead load on the structure, it is typical to use a low-profile ballasted system. This prevents additional wind uplift on the roof and typically weighs around 0.25 kPa.

In addition to the assumed weight of the solar panel system, the solar panels themselves encourage more snow pile up between the panels. The exact increase of snow load depends on a handful of factors, including panel size, spacing, layout, and tilt. Based on past assessments the panels tend to increase the overall snow load by approximately 25 to 30%.

The areas with OWSJ's are typically designed efficiently and this added load will require reinforcement of the joists, however the joists will need to be fully measured before confirming how much. Typically, at a minimum, both the top chord and bottom chord will be reinforced along with the first few diagonals on either end. Such reinforcement could be either rods or rebar within the chord angles, and angles welded to the diagonals. A typical example of joist reinforcement may look as follows:

Figure 32: Image of Typical Joist Reinforcement



A spot check of the roof over the third-floor mechanical room, which used beams instead of joists, shows that there is some excess strength, but the deflection of the beams may become excessive and require reinforcement. The roof above the pool, which is precast, would not be able to directly support this additional load.

The existing roof has stone ballast throughout, taking up a part of the roof SDL. If the roof is being replaced, it may be possible to replace the roofing system with one that is more lightweight, and that difference in weight between the systems can be used as an allowance towards the solar panel weight. The existing weight of the roof should be verified prior to this approach, to get an accurate estimate of the difference in the systems.

Another option is to raise the solar panels off the roof and framing them between main structural beams below. This limits the snow pile up and does not directly load any joists or precast, limiting the reinforcement to the main structural members only. This approach would require direct connection between the structure and uplift forces could pose challenges to the existing structure.

Support of Roof-top Units

The existing roof top units will be replaced with newer units and will require for the existing joists or beams supporting them to be reinforced. The reinforcement of these members would be similar to the typical example above. Some areas will not require reinforcement, because the new units are either lighter or being separated into two smaller units, each with less weight than the existing units. This applies to the structure below where the new proposed RTU-1A, RTU-5A, RTU-5B and RTU-7 are located. While the structure supporting these units won't need any reinforcements, the units will still need additional channel framing between members to support the edge of the units. These framing supports are typically C150x12 or similar and apply to all the new equipment on the roof.

There are new ASHP boilers being placed on raised structural platforms, which will require steel HSS posts penetrating the roof to connect to the structure below, with steel channels or W beams in between to support the boilers.

5.3 BUILDING ENVELOPE UPGRADE OPTIONS

Opportunities to upgrade the building envelope exist in 3 areas: roof insulation, wall, insulation, U-values of glazing. We will discuss the pros and cons of all 3 options.

5.3.1 OPTION 1: ROOF INSULATION

This is by far the most feasible option to implement immediately. The roof membrane, insulation and sheathing require replacement down to the deck as discussed in the BCA portion of the report. Increasing the amount of insulation estimated at R20 value based on existing details would be easy to increase to R30 or even greater. Energy modelling could help determine the most effective level of insulation to reduce the loads on the mechanical system. The existing parapets appear to have adequate height to accept thicker levels of insultation. Newer insulation types such as polyisocyanurate at R6 per inch are also available.

5.3.2 OPTION 2: WALL INSULATION

The existing walls are composed of 8" concrete block interior walls with roughly 2" of rigid insulation, a ¾" air space and brick veneer. This would imply that the wall insulation is R10. Opportunities to increase the insulation would include over-cladding with another layer of insulation and a new cladding material such as a light-weight panel system. This is the most effective way to increase the insulation value without significant thermal breaks. It would also completely alter the appearance of the current building and be very expensive. Prior to consideration of this type of intervention an energy model should be undertaken to see if the increased wall insulation values pay off both in terms of the cost payback but also in terms of the carbon budget. The embodied carbon of any insulation

product must be considered in vs the amount of operating energy saved. (extruded polystyrene insulations have far higher embodied carbon than mineral wool types of insulations)

5.3.3 OPTION 3: WINDOW REPLACEMENT

The existing windows are double-glazed, but it is unknown whether they were specified with low e-coatings, argon filled air space or warm-edge spacers. Current double-glazed products would all have these features. Given that the existing windows are not showing signs of failure it would only be recommended to replace the glazing units once they have failed. Existing frames could be retained as they are likely thermally broken. The final option would be to consider a triple glazed unit which have significantly lower u-values but that would require the replacement of the entire unit including the frame. Given the cost of window replacement it would be recommended to run an energy model to determine the cost effectiveness of wholesale replacement in advance of any signs of failures (moisture detected between the frames, cracking etc).

6 COSTING

6.1 CLASS D COST ESTIMATE

Refer to Appendix G for Cost Report by XGC.

APPENDIX

A

POOL AUDIT REPORT (BY AQUATIC DESIGN & ENGINEERING)

Walker Family YMCA
25 YMCA Drive, St. Catharines, ON

Pool Audit Report

Prepared for:

4 Hughson Street South 300

Hamilton , Ontario , L8N 3Z1

July 10, 2024

Prepared by:

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Project #24193

EXECUTIVE SUMMARY

The Walker Family YMCA facility in St. Catharines, ON contains a 25m Main Pool that is approximately 3,471 sq. ft., Men and Womens' Whirlpools that are approximately 110 sq. ft each, and an outdoor splash pad. The pools have not been in use since the facility's closure in 2022.

Aquatic Design & Engineering was retained to provide an in-depth technical report outlining the general conditions of the swimming pool and whirlpool tanks and filtration systems, to provide an assessment of the pools' compliance with the current Ontario Building Code and Health Regulations.

Based on a non-invasive review of the existing pools, Aquatic Design & Engineering recommends remedial action be taken to address items concerning health and life safety, as well as for compliance with current OBC and Health Regulation requirements, before this facility is to be reopened. These recommendations include: the reinstallation of all pool safety signage; new main drain sumps and/or covers to address the suction entrapment hazard; installation of an emergency stop button with audible and visual alarm, and emergency telephone at the Main Pool deck; installation of an accessible means of entry at the Men and Womens' Whirlpools; the removal of the existing vacuum pump and all associated components; the replacement of the existing Whirlpool skimmer suction piping; a full retile of the Main Pool deck and Whirlpool tanks, and an area of the Main Pool tank where the tile was found to be delaminated; and the replacement of the existing horizontal sand filter media and/or full replacement of the Main Pool filtration system, including filters, piping, drains, return fittings, and any other associated components.

Other findings outlined in this report identify items that are not of immediate concern but are to be considered as they would improve the efficiency, operation, and maintenance of the pools once addressed. The installation of an ultraviolet system would improve water quality and reduce the amount of chemicals required for maintaining water balance, while aiding in improving air quality by destroying chloramine build-up. The installation of variable frequency drives would result in an improvement in energy efficiencies by controlling the pump speeds and reducing energy consumption.

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1.0 INTRODUCTION

Aquatic Design & Engineering attended the site on June 14, 2024, to review the pool in detail. The facility has been closed since 2022, and the pools have not seen any use since their closure. Mr. Jamie Lopes and Mr. Zachary Carlyle Tolentino met with building staff to review the general condition of the pool and to gather information relating to its operation and compliance with the current *Ontario Building Code 2012, Division B, Section 3.11 Public Pools* (henceforth referred to within the report as "OBC 2012") and the *Health Protection and Promotion Act R.R.O. 1990, Reg. 565: Public Pools* (henceforth referred to within the report as "Reg. 565").

The purpose of this report is to identify areas of concern with regards to operation of the filtration systems, pool tanks, and pool deck, that are required to be addressed before the pools are to be reopened, as well as to propose solutions on how to improve the swimming pool amenity and prioritize those solutions in order of importance. These recommendations are to focus on the safety of swimming pool users, and to provide more reliable, less hands-on solutions to maintain the pool.

2.0 ENGINEERING CALCULATIONS

Calculations are based on requirements for the swimming pool classification set out by OBC 2012 and Reg. 565. The Main Pool at the Walker Family YMCA is classified as a Class A Public Pool, and the Men and Womens' Whirlpools classified as Public Spas. There are critical pieces of information required to determine the performance of the filtration system, some of which were not available during the time of the site visit. Aquatic Design & Engineering has reverse engineered the system to make educated assumptions where no information could be confirmed.

	Main Pool	Women's Whirlpool	Men's Whirlpool
Dimensions (~)	82 ft x 42 ft (25m x 12.9 m)	10.7 ft ⌀ (3.3 m ⌀)	10.7 ft ⌀ (3.3 m ⌀)
Perimeter (~)	249 ft	33.8 ft	33.8 ft
Area (~)	3471 sq. ft.	115 sq. ft.	115 sq. ft.
Volume (US gallons) (~)	184,000 USG	2,000 USG	2,000 USG
Required Turn Over Rate (OBC 2012)	4.00 hrs	0.50 hrs	0.50 hrs
Actual Turn Over Rate	4.95 hrs	0.24 hrs	0.24 hrs
Estimated Flow Rate	620 US GPM	140 US GPM	140 US GPM
Required Filtration Rate (US GPM/sq. ft.)	15 US GPM/sq. ft.	15 US GPM/sq. ft.	15 US GPM/sq. ft.
Actual Filtration Rate (US GPM/ sq. ft.)	10.00 US GPM/sq. ft.	10.00 US GPM/sq. ft.	10.00 US GPM/sq. ft.
Approximate Filter Area (sq. ft) (estimated)	62.00 sq. ft.	14.00 sq. ft.	14.00 sq. ft.
Filter Type	Sand	Sand	Sand
Filter Manufacturer (estimated)	Kenloch	Kenloch	Kenloch

3.0 POOL FILTRATION AND SANITATION

3.1 Existing Pool Information

The Main Pool's volume is estimated to be 184,000 US Gallons. The Lap Pool's circulation system consists of two (2) filter circulation pumps. Based on the original design drawings, the Lap Pool filtration is designed to operate at 620 US Gallons Per Minute (GPM). This results in an approximate turn over every 4.95 hours (or 4.8 times per 24-hour period). As per OBC 2012, a Class A pool requires a maximum 4-hour turnover rate (or minimum 6 times per 24-hour period). Therefore, this pool is not in compliance with current OBC 2012 requirements for turnover rate, although this turnover rate complied with OBC requirements at the time of original design and construction. Reg. 565 Section 6.(2).(d).(i) sets a minimum 6-hour turnover rate for a Class A pool, which the current flowrate is in compliance with. As the requirements outlined in OBC 2012 are more stringent than Reg. 565, they thus govern and are required to be met for Building Permit for any modifications or renovations to the filtration system. For a pool of this volume, if a new filtration system were to be installed, it is recommended that the pool filtration system be upgraded to accommodate an increase of flowrate to at least 1000 US GPM to provide a turnover rate of 3.07 hours (or 7.8 times per 24-hour period), improving filtration quality, and allowing the pool to comply with current codes and industry standards.

The Men and Womens' Whirlpool volumes are estimated to each be 2,000 US Gallons. The Whirlpool circulation systems each consist of one (1) filter circulation pump and one (1) hydrotherapy jet pump, for each Whirlpool. Based on the original design drawings and information found on each of the filtration pumps' nameplates, the Whirlpools are designed to operate at 140 US GPM each. This results in a turn over approximately every 0.24 hours (14 minutes). As per OBC 2012, a Public Spa with a volume of water that exceeds 6 m^3 (1585 US Gallons) must have a turnover period of not more than 30 minutes. Therefore, the whirlpools are in compliance with current OBC 2012 requirements for turnover rate.

3.2 Existing Balance Tanks

The Main Pool system contains one (1) vertical balance tank located in the pool mechanical room. The main drains and gutters from the Main Pool work on a gravity system connected to the balance tank, from which the filter pump pulls water. As the balance tank did not have a visible nameplate, the manufacturer and capacity could not be verified. The balance tank and associated Schedule 80 PVC pool water piping appeared to be in fair condition

The Splash Pad system contains three (3) vertical interconnected balance tanks, from which the Splash Pad filter and feature pumps draw water from. A water level sensor complete with clear sight glass was observed. While the Splash Pad balance tanks appeared to be in fair condition, they require a thorough cleaning, as a significant amount of black grime was found settled at the bottom of the tanks, appearing to have not been cleaned since the facility's closure.

Figure 1 – Main Pool Balance Tank

Figure 2 – Splash Pad Balance Tanks

3.3 Existing Pumps

The Main Pool has two (2) filter circulation pumps; one manufactured by Leeson, the other manufactured by U.S. Electrical Motors, that are both 15HP, 575V, 3-phase. The handle of the isolation valve from one of the pumps has broken off, leaving it inoperable. Two (2) feature pumps manufactured by Sta-Rite are installed on opposite sides of the pool tank, connected to the pool return line. The Main Pool pumps appear all to be in fair condition from a visual inspection, although they were not operational during the time of site visit. If the Main Pool's flowrate is to be increased to at least 1000 US GPM in order to produce a turnover period that complies with OBC 2012 Section 3.11.8.1.5.(a), the filter pump will need to be replaced to accommodate the greater flowrate as well. A vacuum pump was also observed to be installed, connected to vacuum fittings around the Main Pool tank. While the vacuum fittings have been plugged and are not in use, vacuum fittings are not permitted in public pools as per OBC 2012, and it is required that the existing vacuum pump and associated piping are removed from the Main Pool system entirely.

The Whirlpools each have one (1) filter circulation pump, both of which are manufactured by Armstrong and are 5 HP, 575V, 3-phase. The pumps are both designed to operate at 140 US GPM at 70 ft of total dynamic head. The Whirlpools each also have one (1) hydrotherapy jet pump, both of which are manufactured by WEG and are 7.5 HP, 575V, 3-phase. All of these pumps appear to be in fair condition from a visual inspection, though were not operational during time of site visit.

The Splash Pad system contains one (1) filter circulation pump, a WhisperFlo model pump manufactured by Pentair that is 1 HP, 208V, 3-Phase. The system also has one (1) water feature pump, manufactured by Armstrong, that is 10 HP, 575V, 3-phase, and has a capacity of 120 US GPM at 140 ft of total dynamic head. The Splash Pad pumps appear all to be in fair condition from a visual inspection, although they were not operational during the time of site visit.

Figure 3 – Main Pool Filter Pumps

Figure 4 – Whirlpools' Filter Pumps

Figure 5 – Whirlpools' Hydrojet Pumps

Figure 6 – Vacuum Pump

No variable frequency drives (VFD) were noted on the circulation pumps for any of the pools. VFDs are motor control devices which control the speed of circulation pumps. They are devices connected and controlled by the flow meter within the filtration system. The flow meter is programmed to a set flow and the VFD controls the pump; increasing or decreasing the pump speed to maintain a set flow rate. It is recommended that VFDs be incorporated into the filtration systems. The addition of this system would result in an improvement in energy efficiencies by controlling the pump speed and reducing energy consumption.

3.4 Existing Filtration System

The Main Pool filtration system consists of two (2) horizontal sand filters (SFE-113), manufactured by Kenloch, from the original construction of the facility. The bodies of the filter tanks are constructed of stainless steel, appear to be in fair condition for their age, with a moderate amount of corrosion observed on the surface. The filters have a filter area of approximately 31.0 sq. ft. each, for a total combined filter area of 62.0 sq. ft. The two (2) existing filter pumps are 15.0 HP each. As the pool was not in operation due to the closure of the facility, it could not be confirmed whether the pumps are run simultaneously, or if they operate on a switch-over system for redundancy. However, considering the HP of the pump and the design flowrate of 620 US GPM, it is possible that only one pump is run at a time. With a total filter area of 62.0 sq. ft. this data would translate into a filtration rate of 10.0 gallons per sq. ft. which is an ideal filtration rate for this type of filter. At a minimum, if the existing filtration system is to remain, it is recommended that all new filter media be installed, and the filter internals be assessed to confirm that they are still in acceptable working condition. The manufacturer of these filters, Kenloch, has been long out of business, which means that replacement components may be difficult to obtain.

If the Main Pool filtration system were to be upgraded to accommodate a turnover rate that complies with OBC 2012 Section 3.11.8.1.5.(a), an increased flowrate of 1000 US GPM would be recommended. This would meet and exceed OBC 2012 requirements, and providing a buffer for when the pool is in active use and the filters are under heavy load. The existing filtration system does not have the capacity to service this increase, and a new filter system would be required.

The Men and Womens' Whirlpool filtration systems each consist of one (1) horizontal sand filter (SFD-61), manufactured by Kenloch, from the original construction of the facility. The bodies of the filter tanks are constructed of stainless steel, and appear to be in fair condition for their age, with a moderate amount of corrosion observed on the surface. Each respective filter has a filter area of 14 sq. ft. Each of the Whirlpool filter pumps are 5 HP, and operate at 140 US GPM to each of their respective filters. For both Whirlpools, this data would translate into a filtration rate of 10.0 gallons per sq. ft. which is an ideal filtration rate for this type of filter. As with the Main Pool filtration system, if this filtration system is to remain, it is recommended that all new filter media be installed, and the filter internals be assessed to confirm that they are still in acceptable working condition. Water level controllers for each of the two Whirlpools were observed to be installed, automatically sensing the water level in the pools and signalling when replenishment is required.

Figure 7 – Main Pool Horizontal Sand Filters

Figure 8 – Whirlpools' Horizontal Sand Filters

The pool filtration systems discharge into an existing backwash sump in the pool mechanical room. If the Main Pool filtration system were to be upgraded, increasing its flowrate, the size of the existing sanitary line must be verified to ensure that it is sufficiently sized to accommodate the new flowrate when a backwash cycle is run.

The Splash Pad filtration system consists of two (2) top mount sand filters (TA-100HD), manufactured by Pentair. The bodies of the filter tanks appeared to be in good condition. Each respective filter has a filter area of 4.9 sq. ft., for a combined total filter area of 9.8 sq. ft. Downstream of the sand filters are two (2) water softener tanks that appeared to be in good condition. The existing Splash Pad filter pump is 1 HP, although its operating flowrate could not be determined. The water in the interconnected balance tanks are drawn by a dedicated filter pump, and goes through the sand filters, water softener tanks, and UV system before feeding back into the same interconnected balance tank system. A feature pump on the other side of the balance tank system then draws water and sends them to the splash pad water features, which means the filtered and UV-sanitized water in the balance tanks appear to be mixed together with the water from the splash pad drains that return directly to the same balance tank system. This system does not comply with current Health Regulations related to Splash Pads and Recreational Water Illness and must be reworked before the Splash Pad is reopened.

Figure 9 – Splash Pad Vertical Sand Filters

Figure 10 – Splash Pad Water Softeners

3.5 Existing Sanitation

The pool and splash pad water treatment systems use liquid chlorine for sanitation, and CO2 for pH balance.

Two (2) closed-top, bulk chlorine storage tanks are located in the pool mechanical room, which feed liquid chlorine into Main Pool and Men and Womens' Whirlpool circulation systems. The chemical tanks are not are vented into the atmosphere. It is recommended that bulk chemical tanks are vented to the atmosphere with at least a 2" PVC pipe to prevent buildup of chemical fumes in the mechanical room. The chlorine tanks have dedicated metering pumps for each pool system that draw chlorine from the bulk storage tanks and inject the solution into the pool return piping.

The pH balance for the pools is provided by a CO2 system. The CO2 is fed into the pools by individual Victor CO2 Regulator Systems for each pool. For health and safety, it is recommended that a CO2 monitoring system is installed in the mechanical room, connected to a central unit in the lifeguard office, to monitor CO2 levels in the air and alert any occupants of a leak.

The amount of chlorine and CO2 injected is based on the chemical levels in the water, being constantly monitored by the existing Hayward CAT-2000 chemical controllers for each pool system. Parameters are set within the chemical controller and probes monitor the chemical levels in the pool water. When the water balance falls outside those set parameters the dosing pumps will engage and inject the appropriate chemicals into the pool. The chemical controllers appeared to be in fair condition.

Figure 11 –Chemical Controllers

Figure 12 – Chlorine Storage Tanks

The Splash Pad has an existing ultra violet (UV) system (ECP-113-5VPTHY) manufactured by ETS. It is recommended that appropriately sized UV systems be installed in the Main Pool and both Whirlpools' circulation systems as well. UV systems consist of a high intensity lamp that produces an ultraviolet light spectrum that changes the molecular structure of the bacteria within the pool water. The UV system

sterilizes and weakens the bacteria within the water, allowing the chlorine within the water to be more effective at targeting and neutralizing bacteria, thus over time reducing chlorine consumption.

It is recommended that the working condition of all existing chemical systems be verified to ensure they are all properly operational and connected to their respective circulation systems before the pools are reopened.

3.6 Existing Piping System, Valves and Fittings

The existing piping for the pools mainly consists of Schedule 80 PVC. Piping should be either Schedule 40 or Schedule 80 PVC with CPVC piping installed, +/- 10 ft. (3m) connected to any heating element(s) or heat exchanger(s) and any dehumidification unit(s).

For the Main Pool, based on existing schematic drawings and the design flowrate of 620 US GPM, the piping appears to be undersized on the gravity side; from the main drains and gutters to the balance tank, but adequately sized on the suction and pressure side. If the replacement of the Main Pool filtration system is to be pursued, increasing the system flow rate, the current piping will be too small and will need to increase in size to accommodate the recommended filtration system upgrades and comply with pipe velocity requirements as per OBC 2012. This will result in a more invasive approach to upgrading the pool system.

For the Men and Womens' Whirlpools, based on existing schematic drawings and the design flow rates of 140 US GPM, the skimmer suction piping appears to be undersized, while the main drain piping appears to be appropriately sized. The return and hydrotherapy jet piping appears to be appropriately sized. As per OBC 2012 requirements for pipe velocity, it is recommended that the undersized suction piping be replaced with larger pipe to accommodate the flowrate of 112 US GPM from the skimmers (80% of the total flowrate of 140 US GPM).

For the Splash Pad, based on the Feature pump flow rate of 120 US GPM, the piping appeared to be adequately sized. The feature return piping appeared to be a combination of Schedule 80 PVC piping; stainless steel piping at the return header; and flexible hose tubing off the return branches to the individual water features. It is recommended that the existing gear clamps and hose barbs in the Splash Pad return system be upgraded.

No check valves were found to be installed on any of the discharge piping from the pool pumps. It is recommended that check valves be installed on all of the pool pump discharge lines, located before the isolation valves, in order to prevent backflow into the pumps.

Significant rust and corrosion on some old valves and pipe hangers was observed. It is recommended that these corroded valves, pipe hangers and supports be replaced.

Figure 13 –Splash Pad Feature Return Piping

Figure 14 – Corroded Pipe Supports

Figure 15 – Corroded Valves

3.7 Existing Heating

The Main Pool, as well as the Men and Womens' Whirlpools, are heated by existing plate heat exchangers for each pool, manufactured by Alfa Lafal. The heat exchangers appear to be in moderate condition. The insulation on the heating-side piping to and from the heat exchangers is heavily damaged, appears to be is falling apart. Further investigation of the internal elements by a mechanical consultant and contractor would be required to determine the overall condition and life expectancy of the heat exchangers, along with present efficiencies.

Figure 16 – Main Pool Heat Exchanger

4.0 POOL TANK AND DECK

4.1 Emergency Devices and Signage

No emergency stop button or emergency telephone was found on the Main Pool deck. There are indications on the walls where pool safety signage appeared to have been posted, but seem to have been taken down with the closure of the facility. All of this is not in compliance with the requirements set by OBC 2012 and Reg. 565. All recirculating pumps in a public pool shall be capable of being deactivated by a common emergency stop button, clearly labelled with the appropriate signage as required by OBC 2012 and Reg. 565, located beside an emergency telephone on the pool deck, and be connected to an audible and visual alarm located by the emergency stop. For a Class A pool, an emergency telephone must be located adjacent to the emergency stop button on the pool deck. All pool notices and signage as required by OBC 2012 and Reg. 565 must be posted at suitable locations in the pool deck area before the pool is to be reopened.

Each of the Men and Womens' Whirlpools have existing emergency stop buttons complete with audible and visual alarms. Emergency stop button signage was found at the Womens' Whirlpool on the ground floor, but not at the Mens' Whirlpool on the second floor. For Public Spas, an emergency telephone must be located within 30 meters of the spa. All pool notices and signage as required by OBC 2012 and Reg. 565 must be at appropriate locations at each Whirlpool, and there must be an emergency phone present within 30 meters of each Whirlpool before they are to be reopened.

Figure 17 – Main Pool Deck, Old Signage Location

Figure 18 – Womens' Whirlpool Signage

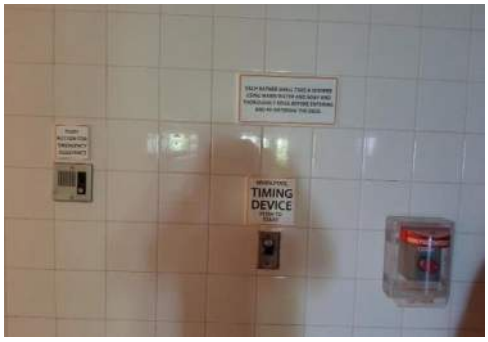


Figure 19 – Mens' Whirlpool Signage

4.2 Existing Pool Deck and Accessories

The Main Pool deck is finished with non-slip 2x2 tile that appears overall clean and in good condition on the surface. The deck is sloped towards area floor drains located around the perimeter of the pools, which appeared to be in good condition. A chain drag test performed on the deck tile has revealed that most of the tile has been debonded from the substrate, with one particular area of severe delamination at the area of the deck near the shallow end of the pool. It is recommended that the tile on the entire pool deck be removed and replaced completely using new mortar bed, membrane, and porcelain mosaic tiles. Depth markers were found to be installed, in contrasting tile along the pool gutter roll-out rim and comply with OBC 2012 requirements.

Depth markers in metric units were found to be installed on the main pool, in contrasting tile along the pool gutter roll-out rim and comply with OBC 2012 requirements. Depth markers in imperial units were found installed in contrasting tile along the elevated deck around each Whirlpool.

Figure 20 – Main Pool Deck, Marked Location of Severe Delamination

Figure 21 – Typical Whirlpool Deck and Tank

It is recommended that tactile walking surface indicator (TWSI) tiles be installed at the Main Pool and Whirlpool areas to warn users with visual impairment that they are approaching a hazard, as required by OBC 2012. The location and placement of the tactile indicator tile is to be reviewed with an Architectural Consultant based on upcoming revisions to the Ontario Building Code that related to this clause.

4.3 Existing Pool Tank - Finishes

The Main Pool's tank interior is finished with 1" x 1" white mosaic tile throughout, and was found to be overall clean and in good condition on the surface. Racing lanes, end targets, and a diving board guide radius were observed to be present, tiled in a contrasting black, white, and grey pattern. There were no accent bands observed around the perimeter of the floor main drains, which is not in compliance with the requirements of OBC 2012. It is a requirement that a 2 inch wide (50mm) contrasting band will need to be installed around the main drains. It was observed that a 6 inch (150mm) black disc is present at the bottom of the deep end, which is in compliance with code. A chain drag test performed on the Main Pool tank tile has revealed that there were only one areas where the tiles were found to have been delaminated from the substrate, at the slope break point transition from the deep to shallow end. It is recommended that the tile in this area be removed and replaced.

Figure 22 – Main Pool Tank

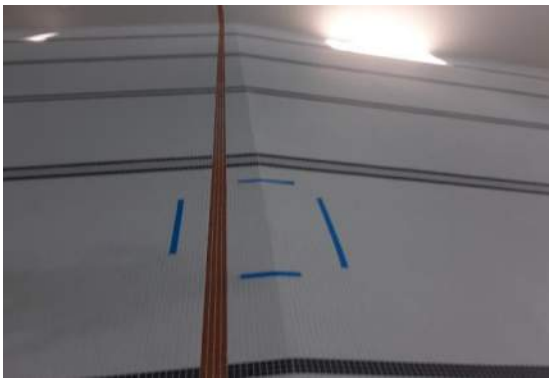


Figure 23 – Main Pool Tank, Marked Location of Tile Delamination

The Men and Womens' Whirlpool tank interiors are virtually identical, and are both finished with 1" x 1" white mosaic tile throughout. The tile finish was found to be overall clean and in good condition on the surface. Contrasting tile bands were found along the step and bench edges, however are not compliant with OBC 2012 requirements as the bands must be of contrasting color 50 mm wide along the entire juncture of the side and top of the edges. Around each main drain installed at the corner of the bench and floor is are stainless steel plates that provide a contrast around the drain covers. No 6" (150mm) black disc was observed at the deepest point of either of the Whirlpools; it is recommended that this is installed at the Whirlpool floor. A chain drag test performed on both Whirlpools has revealed significant areas of delamination from the substrate; especially all along the benches and stairs. Based on discussion with operations staff, the Whirlpools have had a history of leaking. It is recommended that a static water test as well as a piping pressure test be performed on the Whirlpool tanks to establish that they are watertight. Afterwards, it is recommended that the tile finish for both Whirlpool tanks be removed and replaced completely using new mortar bed, membrane, and porcelain mosaic tiles, complete with all required accent bands and markings as per OBC 2012 and Reg. 565.

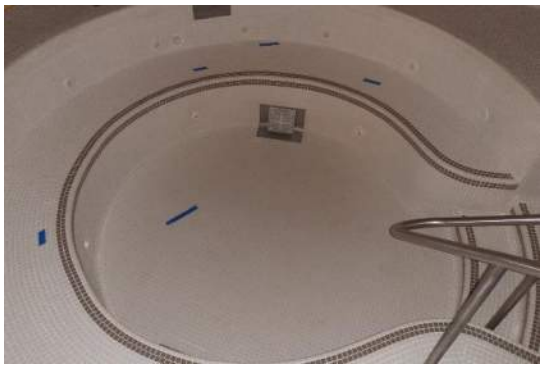


Figure 24 – Womens' Whirlpool Tank, Marked Locations of Tile Delamination

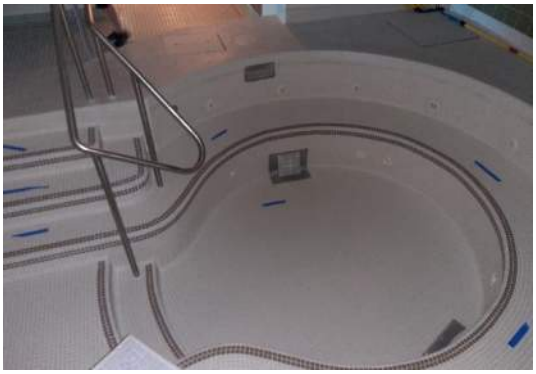


Figure 25 – Mens' Whirlpool Tank, Marked Locations of Tile Delamination

4.4 Existing Pool Tank – Mechanical Components

The Main Pool contains three (3) 16" x 16" square main drains with flat grates located at the deep end of the pool. These main drains do not have contrasting bands around the perimeter. As per OBC 2012 Section 3.11.8.1.(17), the flow velocity through a main drain grate shall not exceed 0.45 m/s (1.5 ft/s). Measurements of the drain grates on site have allowed the total open area of each grate to be calculated, and has been estimated to be 97.44 in^2 (0.062 m^2). This information along with the design flowrate of 620 US GPM, results in a flow velocity of 0.63 m/s (2.1 ft/s), therefore the current main drain covers are not compliant with code requirements.

Both Men and Womens' Whirlpools contain two (2) 9" x 9" square main drains installed at the interface between the pool tank floor and bench. Based on the appearance of the main drain covers, the drains were found to be WG1031BHF2 model drains manufactured by Hayward, with an open area of 23.18 in^2 based on manufacturer information (0.015 m^2). With the design flowrate of 140 US GPM plus an estimated 150 US GPM for the hydrotherapy jets, this results in a flow velocity of 1.22 m/s (4.0 ft/s), therefore the current main drain covers are not compliant with code requirements.

It is strongly recommended to install precautions where feasible to ensure safety of users and to prevent an entrapment hazard, as well as to comply with OBC 2012 and Reg. 565 requirements. At a minimum, this would include installing new main drain covers and/or sumps for the Main Pool and both Whirlpools, with a more open and "unblockable" area.

Figure 26 – Main Pool Main Drains

Figure 27 – Typical Whirlpool Main Drain

The Main Pool has a modified gutter system with twenty-four (24) bronze grilles with openings on the vertical faces of the pool roll out gutter rim. The grilles were all visibly corroded and tarnished with a blue-green layer of corrosion typical of bronze material. It is recommended all gutter grilles be ground polished, and refinished with a protective coating for restoration, or be replaced entirely with stainless steel grilles. Based on the design flowrate of 496 US GPM (80% of the total flow rate of 620 US GPM) the number of gutter drop fittings are sufficient; even if the Main Pool filtration system were upgraded and its flowrate increased.

The Men and Womens' Whirlpools each have two existing skimmers installed to remove surface debris from the pool. Based on the design flow rate of 112 US GPM (80% of the total flow rate of 140 US GPM); this is not an adequate quantity for optimal circulation. In addition to the previous recommendation of replacing the existing skimmer suction piping, it is recommended that an additional skimmer be installed to

each Whirlpool to accommodate the existing flow rate. Stainless steel skimmer grilles were installed at the openings, and were found to be in good condition with minor staining.

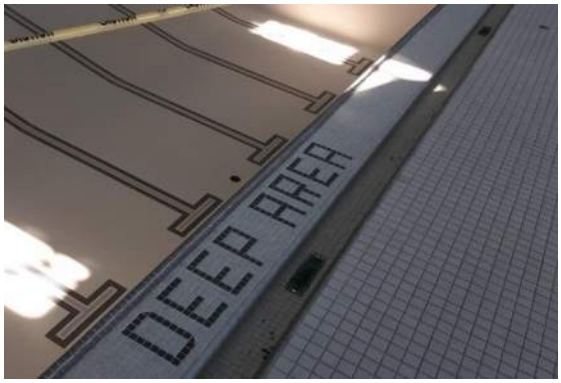


Figure 28 – Main Pool Gutter Drop-outs

Figure 29 –Typical Whirlpool Skimmers

The Main Pool was found to have twenty (20) wall return inlet fittings around the perimeter of the pool. The wall return fittings are constructed of stainless steel with adjustable PVC eyeballs installed within and appeared to be in good condition, though some of the inlets were found to be missing the eyeball fittings. Based on the flowrate of 620 GPM, this number of inlets is not adequate to return water to the pool, which will be further be magnified if the flowrate were to be increased following an upgrade to the Main Pool filtration system. It is recommended that additional wall return fittings be installed in order to accommodate flowrate of the pool. Additionally, four (4) vacuum fittings were found to be installed along the perimeter of the pool as well. The vacuum fittings were plugged. It is recommended that these vacuum fittings be removed completely, along with all associated piping and equipment, as they are not permitted in Public Pools as per OBC 2012.

Figure 30 – Main Pool Return Fitting, Missing Eyeball

Figure 31 – Main Pool Return and Vacuum Fitting

The Men and Womens' Whirlpools were both found to have four (4) wall return inlet fittings along the lower bench face. The wall return fittings are of PVC construction with adjustable eyeballs installed and appeared to be in good condition. Based on the flowrate of 140 GPM, this number of inlets is not adequate to return water to the Whirlpools. It is recommended that additional wall return fittings be installed in order to accommodate flowrate of the whirlpools. Additionally Ten (10) hydrotherapy jet fittings are installed along the upper bench faces, and appeared to be in good condition. Skimmer equalizer and vacuum fittings were observed to be installed on the Whirlpools. It is recommended that these vacuum and equalizer fittings be removed completely, as they are not permitted in Public Pools as per OBC 2012.

Figure 32 – Typical Whirlpool Return Fitting

Figure 33 – Typical Whirlpool Vacuum, Equalizer, Hydrojet Fittings

The Main Pool was found to have two (2) spray water features installed on opposite sides of the pool deck. The water feature fittings are constructed of bronze has visibly corroded. It is recommended all gutter grilles be ground polished, and refinished with a protective coating for restoration

Figure 34 – Main Pool Spray Feature at Deck

4.5 Existing Pool Tank – Accessories

The Main Pool has four (4) sets of stainless steel grabrails located at the shallow and deep ends of the pool, with recessed steps at each set of rails. The rails are in overall good condition. Cup anchors for racing lane divider ropes, as well as for the safety rope at the slope break point, were observed around the perimeter of the pool, installed on the pool walls. The cup anchors appeared visibly deteriorated, with the chrome finish flaking off exposing the corroded metal beneath. It is recommended that the cup anchors be removed and replaced. Two (2) fixed lifeguard chairs were located in the vicinity of the Main Pool at the shallow and deep ends. As per Ontario Building Code requirements, this is an appropriate number of lifeguard stations for a pool of this surface area. The lifeguard chairs appeared to be in fair condition. Pool lights were also observed to be installed along the walls across the length of the pool and appeared to be in good condition. One (1) fixed accessibility lift and one (1) set of accessibility steps were observed to be installed at the shallow end of the pool and appeared to be in good condition.

The Men and Womens' Whirlpools both have one (1) set of stainless-steel handrails located along the entry stairs to the whirlpools. The handrails were in overall fair condition.

Figure 35 – Main Pool Accessibility Steps

Figure 36 – Main Pool Accessibility Lift

Figure 37 – Main Pool Lifeguard Chair

Figure 38 – Typical Whirlpool Handrails

It was observed that neither of the Whirlpools have any means of barrier free access into the pool, which does not comply with OBC 2012. It is recommended that an accessible means of entry such as transfer rails or pool lifts be installed at each of these pools in order to provide an accessible means of entry for users who require it, as well as comply with OBC 2012 requirements and the Accessibility for Ontarians with Disabilities Act (AODA) expects all public and private organizations to implement all accessibility standards by January 1, 2025.

Overall, it is recommended that all stainless-steel components and accessories on the pool deck be polished and cleaned to remove signs of staining, corrosion, and discolouration.

4.6 Lane Pool Accessibility

Although the current lane pool is equipped with an accessibility lift and steps, adding a dedicated accessibility ramp would offer a more dignified and inclusive means of entry for all individuals, regardless of their abilities. This ramp would not only facilitate easier access to the pool but also contribute to enhancing the overall pool environment by reducing the pool's volume, which in turn helps improve the circulation and filtration systems. The ramp would be designed with finishes that match the existing pool tank aesthetics and will include all necessary handrails and markings in compliance with current legislation

5.0 RECOMMENDATION SUMMARY

5.1 POOL TANK(S) and SYSTEMS – remaining idle

The present condition, water tightness, of each tank and circulation system is unknown, as the system has been emptied and has remained idle for some time. Visal evidence of previous leaks from the lane pool tank can be seen from the basement, along with water marks on the ceiling below each respective spa. Further evidence of leaks on the piping systems can be seen as well, however in all instances it cannot be determined at this time if these leak points have all be addressed previously or presently remain. A watertightness test of each tank, along with a pressure test of each individual piping system should be conducted to determine system integrity.

As the pool(s) have remained idle, the pumps, valves, controls, etc could have seized or, the o-rings and gaskets related to these items may have dried out, further complicating the water tightness testing. All components should be tested after the water tightness and pressure testing to determine functionality of each component and to determine if additional component replacement is required.

5.2 ESTIMATE OF PROBABLE COSTS

The estimated probable costs are based on Aquatic Design & Engineering's best judgement. It is important to note that construction costs vary widely due to various factors outside of Aquatic Design & Engineering's control.

5.3 SUMMARIES

The following is a summary of the recommendations mentioned herein for remedial work to the existing conditions. Also listed are additional recommendations to optimize the function, operation, and maintenance of the pools. Please note that HST or engineering fees have not been included in the estimate of probable costs presented below.

Recommendation	Estimate of Probable Costs ($)
Filters	
Replacement of filtration system to suit acceptable flowrate based on code requirements	
1. Replacement of Filter Media Only (Main Pool, Whirlpools)	$9,500.00-15,000.00 per Filter
2. New Main Pool Filtration System	
a. New Filters	$80,000.00-100,000.00
b. New Filter Pump	$12,000.00-17,000.00
c. New Piping, Fittings, Etc.	$80,000.00-100,00.00
Sanitation	
Recommended options regarding the sanitation system	
1. Chemical tank vents to atmosphere	$600.00-850.00 per tank
Pool Deck	
Replacement of tile and/or grout	
1. Retile	$65.00/sq.ft.

Pool Tank

Replacement of tile and/or grout

1.	Retile	$65.00/sq.ft.

Emergency Devices

1.	Emergency Stop Button c/w Audible and Visual Alarm & Wiring	$4,000.00-6,000.00 each

Piping Accessories

1.	Replacement of valves, hangers and supports	Est. $10,000.00 (Based on pipe size and span)

Ultraviolet System

Installation of an appropriately sized UV system for each pool.

1a.	Main Pool UV system assuming existing flow rate of 620 GPM: (Chlorking, SAG-720A)	$22,000.00
1b.	Main Pool UV system assuming increased flow rate of 1000 GPM: (Chlorking, SAG-1200A)	$30,000.00
2.	Whirlpool UV system assuming existing flow rate of 140 GPM (ChlorKing, SAG-480A)	$18,000.00 (each Whirlpool)

*Verification of electrical service and modifications not included.

Variable Frequency Drives (VFDs)

Installation of VFDs to the pool filtration pumps.

1.	DanFoss, AquaDrive	$5,000.00-10,000.00/unit (Based on HP required)

Accessibility Ramp

Installation of accessibility ramp into the existing lane pool

1.	Concrete ramp with finishes to match existing c/w handrails	$150,000.00 - $220,000.00

Watertightness testing

Preform a water tightness test on each tank, and pressure test of all lines.

1.	Provide all plugs and cap for watertightness	$6,500.00 - $$8,900.00
2.	Simulate system start-up for pump, valves, controls, etc functionality.	$4,500.00 - $5,500.00

6.0 CONCLUSION

In conclusion, Aquatic Design & Engineering recommends the noted health and safety items, as well as OBC 2012 and Reg. 565 compliancy items to be addressed before the pool facilities are to be reopened. Further recommendations have also been provided to promote a more sustainable, automated, and efficient pool systems for users and operators.

The following is a breakdown Aquatic Design & Engineering identifies as items requiring immediate remedial action, in order of importance:

1. Reinstall all pool notices and safety signage as required by OBC 2012 and Reg. 565.
2. Install new main drain sumps and/or covers complete with contrasting bands.
3. Install emergency stop button c/w audible and visual alarm and emergency phone at Main Pool deck area.
4. Remove existing vacuum pump and all associated piping and fittings.
5. Install of accessible means of entry (transfer rail or pool lifts) at Men and Womens' Whirlpools.
6. Install Tactile Walking Surface Indicator tile at appropriate locations.
7. Perform static water test and piping pressure test on Whirlpool tanks, and fully retile Whirlpool tanks complete with all required contrasting bands, accents, and depth markers.
8. Replace Men and Womens' Whirlpool skimmer suction piping to accommodate existing flowrate to meet OBC 2012 pipe velocity requirements, and install an additional skimmer to each Whirlpool.
9. Retile delaminated tile area at Main Pool tank.
10. Replace existing horizontal sand filter media.
11. Install CO2 monitoring system in pool mechanical room.
12. Complete retile of delaminated Main Pool deck with new mortar bed, membrane, and mosaic tile.
13. Replace all corroded valves, pipe hangers, and supports.
14. Install PVC vent to atmosphere on the chlorine tanks.
15. Install check valves on all pump discharge piping.
16. Upgrade of Splash Pad return piping gear clamps and hose barbs.
17. Replace existing Main Pool's filtration system to support the recommended increase in flowrate to improve water quality and comply with OBC 2012 requirements, including new filters, circulation pump, piping, main drains, suction fittings, and return fittings.
18. Install appropriately sized UV systems to Main Pool and Men and Womens' Whirlpool filtration systems.
19. Install variable frequency drives on all pool filter pumps.

We trust that you will find this satisfactory. Should you have any questions or concerns please do not hesitate to contact our office.

Sincerely,

Jamie Lopes, Senior Project Manager – Recreation Division
24193 - City of St. Catharines YMCA - Pool Audit Report DRAFT Jun 19 24.docx

APPENDIX

B

ACCESSIBILITY AUDIT REPORT (BY MCCALLUMSATHER)

25 YMCA Drive

Accessibility Audit Draft - Non-Compliant Items

4.1.2 Ground and Floor Surfaces

Requirement: Be stable, firm, slip-resistant and glare-free.
Appears to be non-compliant

Refer to colour coded plans

Example 1
Floors appear firm but some photos show glare on the shiny floor from lights and windows above.
***Possible resolution:** Install shading devices on exterior windows, investigate cleaning methods, or install compliant glare-free flooring.*

Example 2
Wood look sheet floor in Gross Motor Room is bubbling at doors and is a trip hazard.
***Possible resolution:** Replace flooring.*

Example 3
Some seams appear to be lifting in Playrooms.
***Possible resolution:** Replace flooring.*

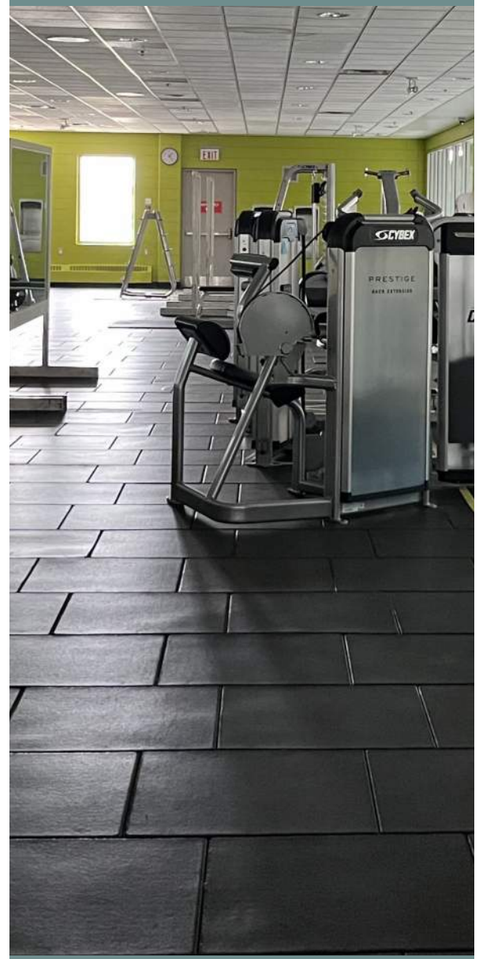
Example 4
Free Weight Exercise Area has a resilient tile floor with pronounced seams that appear lifting and present a possible trip hazard.
***Possible resolution:** Replace flooring.*

Example 1

Example 1

Example 2

Example 3

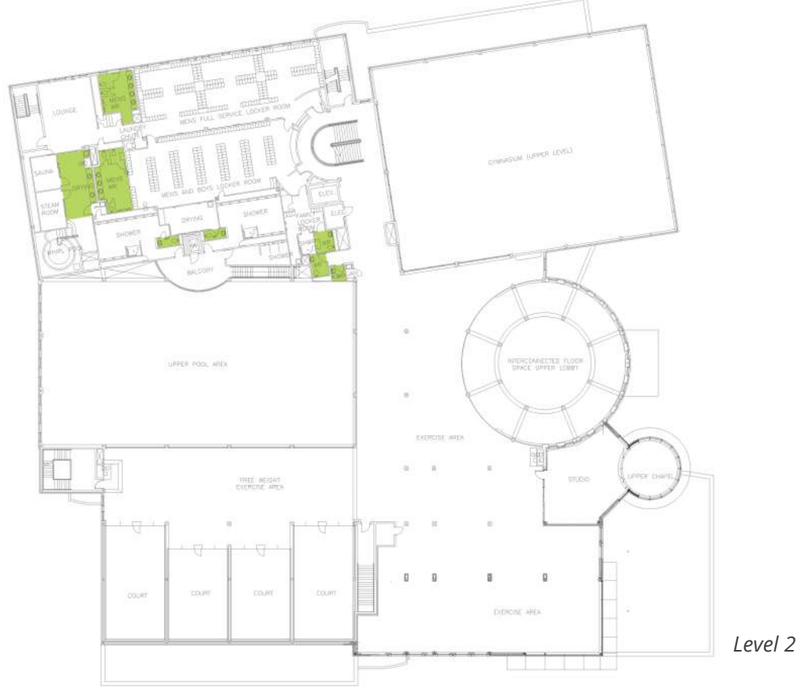


Example 4

4.1.3 Protruding and Overhead Objects

Requirement: Between 680 - 2100 mm objects can protrude 100 mm max.
Appears to be non-compliant
The waste bins in the change rooms appear to protrude well over 100 mm.
Possible resolution: *Replace with compliant waste bins.*
Total waste bins: *+/- 21 (site verify)*

Level 1



Level 2

4.1.6 Doors

Requirement: When doors do not have closing device, edge of door to be colour contrasting to door face.
Appears to be non-compliant

Doors do not have contrasting paint at edges.
Possible resolution: *Install closing devices at required doors or paint edge of all doors in contrasting colour to door face.*

Refer to photos on the following pages

Requirement: Door frame colour to contrast with door leaf colour.
Appears to be non-compliant

Painted doors match the painted frame colour; some doors are wood and contrast with the painted frames but it is not consistent throughout.
Possible resolution: *Repaint doors and frames to suit.*

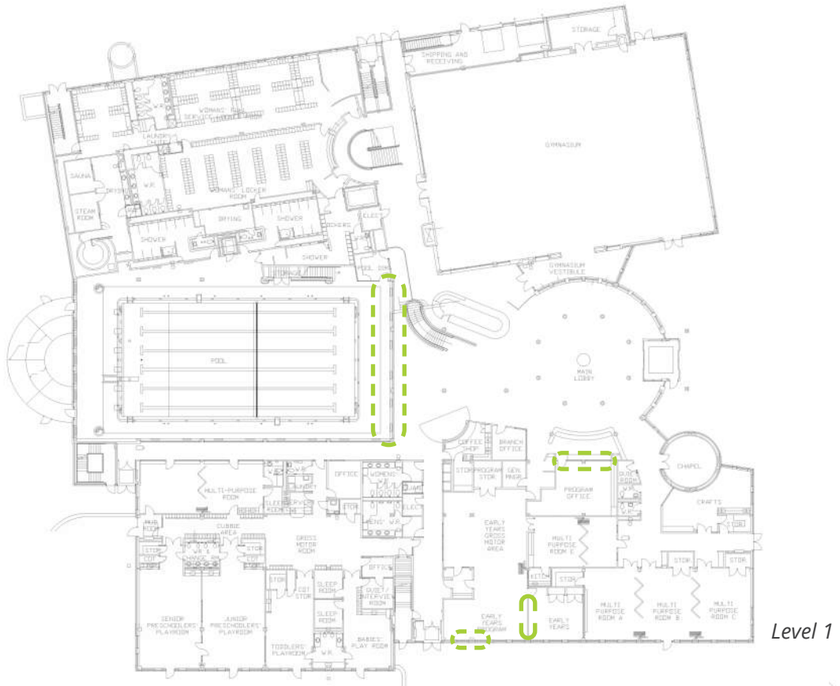
4.1.8 Windows, Glazed Screens and Sidelights

Requirement: Fully glazed doors and sidelights need opaque vision strip, 50 mm wide at 1350 - 1500 mm high.
Appears to be non-compliant

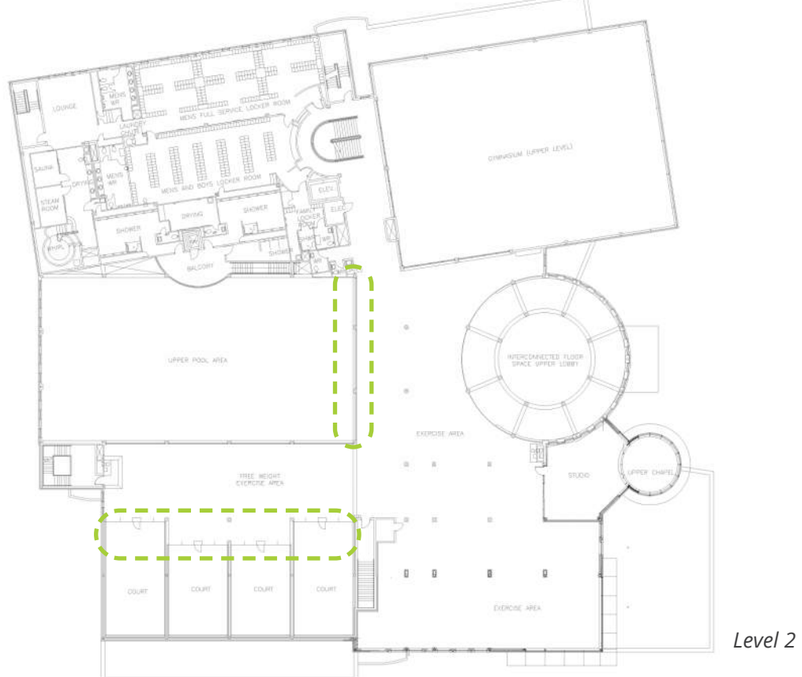
Full height glazing in Lobby, childcare area and full height glazing in Level 2 weight room and racketball areas are not compliant.
Possible resolution: *Add vision strips to glazing.*

Requirement: Where etched or patterned glass is used, need decals or stripes in highly contrasting colour.
Appears to be non-compliant

There is fluted glass in Level 1 administrative area without decals.
Possible resolution: *Add vision strips or decals to glazing.*



Level 1



Level 2

4.1.11 Stairs

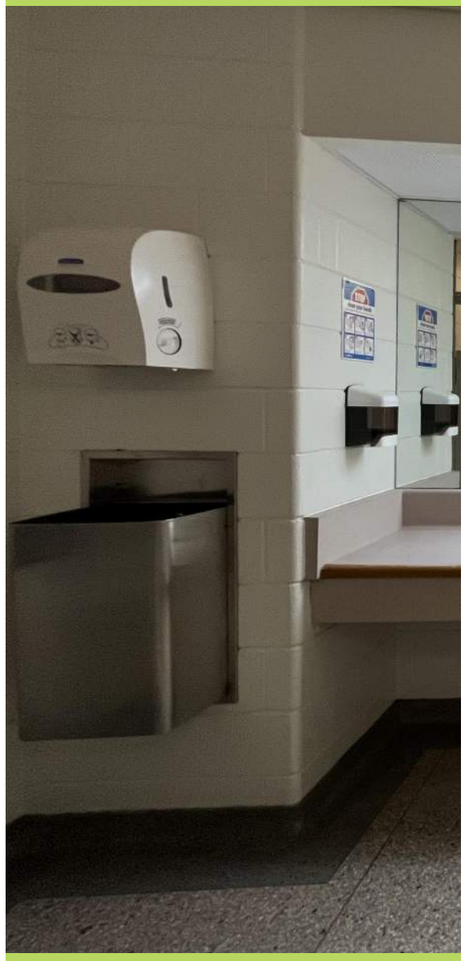
Requirement: Have detectable warning surfaces.

Appears to be non-compliant

No detectable warning surface at top, bottom or landings of stairs but appears tactile nosing is added on the top step.
Possible resolution: *Install tactile warning area where required.*

Level 1

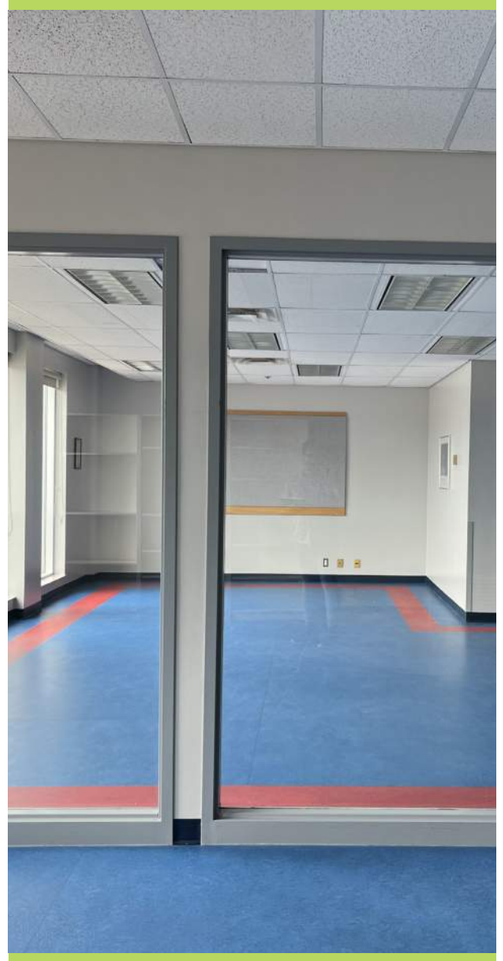
Level 2



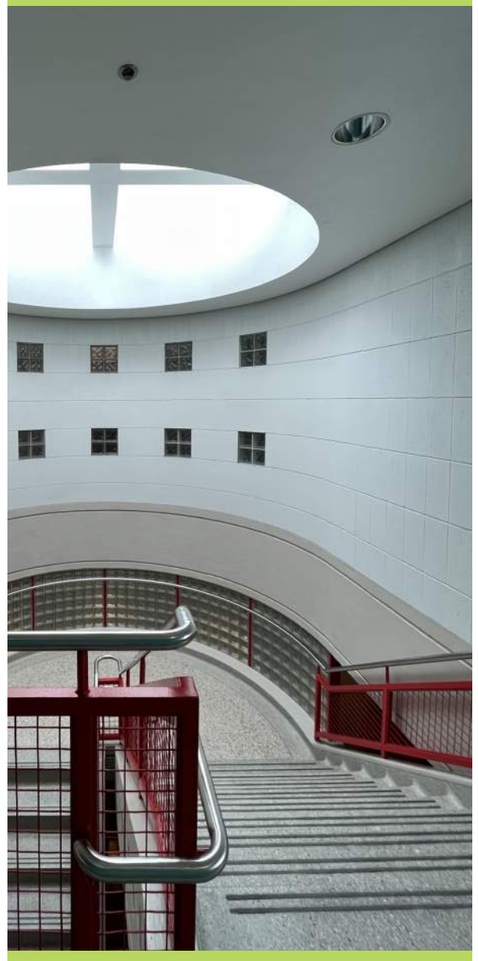
4.1.3 Protruding and Overhead Objects

4.1.6 Doors

4.1.6 Doors



4.1.8 Windows, Glazed Screens and Sidelights



4.1.11 Stairs

4.2.2 Toilet Stalls

Requirement: Stall 1830 x 1830 mm min with 900 mm door opening, swinging outward (door to align with transfer space).
Appears to be non-compliant

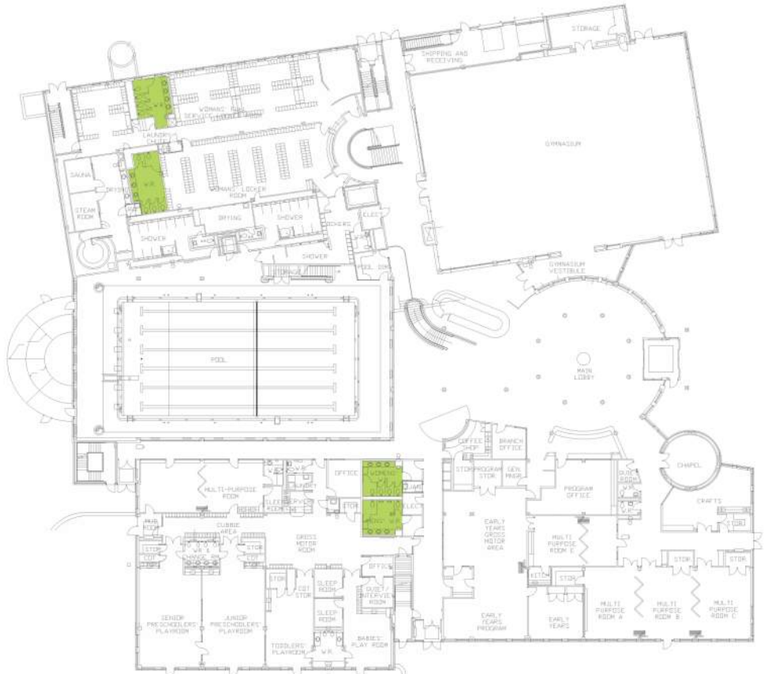
Stalls measure 1524 x 1524 mm and doors measure 813 mm.
Doors do swing outward and align with transfer space at toilet.
Possible resolution: *Reconfiguration of washroom layout; however, may not be able to achieve compliance easily without compromising fixture count. Further investigation required.*
Total accessible stalls: *6*

Requirement: Collapsable coat hook and grab bars.
Appears to be non-compliant

Hooks and grab bars are present but hooks are not collapsable.
Possible resolution: *Install required hooks.*
Total collapsable coat hooks: *6 (not including Universal Washroom)*

Requirement: Colour contrasting stalls and D-type pulls.
Appears to be non-compliant

Beige stalls do not contrast much with white walls or white wall tile but they do contrast with the colourful wall tile when present.
D-type pulls are present on some stalls, but pulls missing from others.
Possible resolution: *Install required D-type pulls. Paint existing stalls or replace with new to meet contrast levels.*
Total stalls: *20*



Level 1

Level 2

4.2.3 Toilets

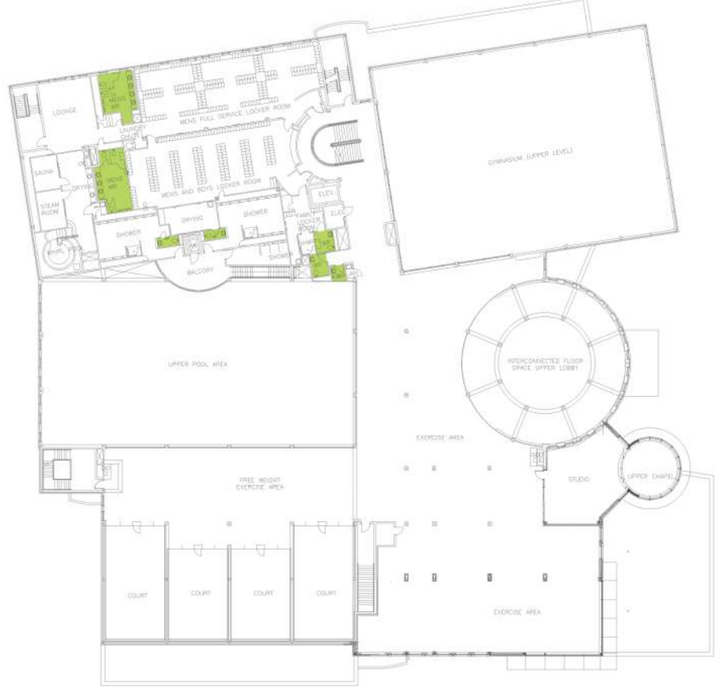
Requirement: Lever style handles on transfer side but automatic flush is preferred.
Appears to be non-compliant

Lever not on transfer side in most accessible multi-stalls.
Possible resolution: *Replace toilets with automatic flush valve.*
Total toilets: *31 adult, 6 child (7 toilets are accessible, includes Universal Washroom) Confirm count on site*

Requirement: Top of toilet 460 mm AFF, without spring activated seat, but include back support if no tank is present.
Appears to be non-compliant

Top of toilets appear in line with heights but are missing back support, though no spring activated seat is present.
Possible resolution: *Replace toilets with tank model or add back support to existing toilets.*
Total accessible toilets: *7 (includes Universal Washroom)*

Level 1

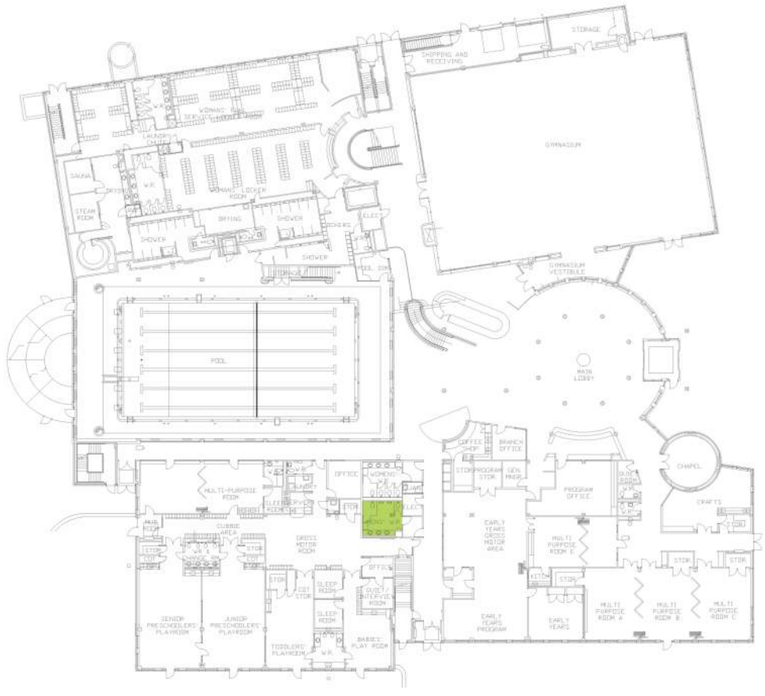


Level 2

4.2.5 Urinals

Requirement: Grab bars on each side of accessible urinal that are 600 mm long, vertically mounted 380 - 400 mm from centre of urinal and 1000 mm to centre AFF.

Appears to be non-compliant
No grab bars are present.
Possible resolution: *Install grab bars as required at urinals.*
Total urinals: *4*



Level 1

Level 2

4.2.2 Toilet Stalls

4.2.2 Toilet Stalls

4.2.2 Toilet Stalls

4.2.3 Toilets

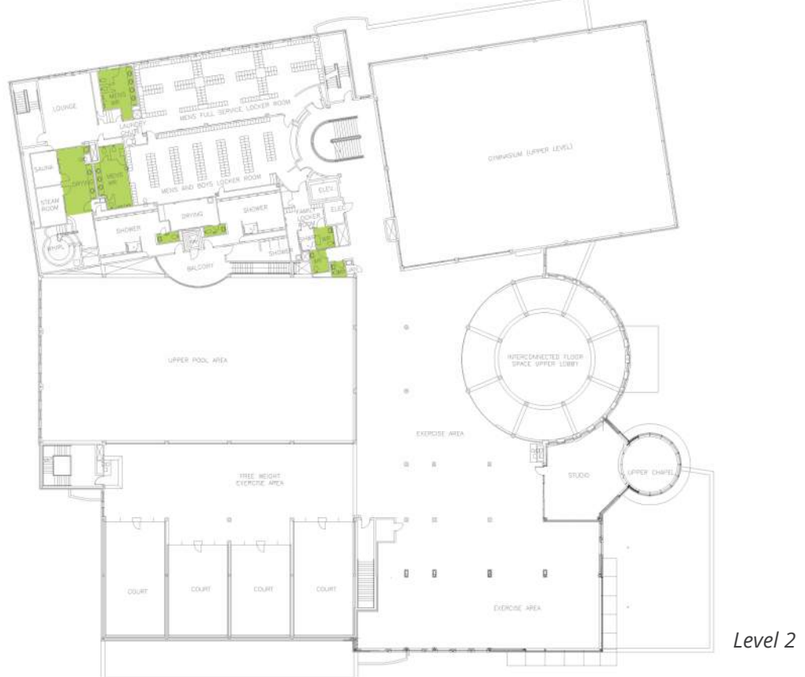
4.2.5 Urinals

4.2.4 Lavatories

Requirement: Exposed pipes to be insulated.
Appears to be non-compliant
Pipes not insulated in multi-stall or single washrooms.
Possible resolution: *Insulate pipes as required.*
Total sinks: *41 (31 undermount, 10 wall hung, site verify) Confirm count on site*

Requirement: Lever faucet 485 mm back from front of counter
Appears to be non-compliant
Appears to comply and operable with 1 hand, but 2 handles are less ideal than 1 lever in multi-stall washrooms.
Possible resolution: *Replace faucets with single lever style.*
Total sinks: *41 (31 undermount, 10 wall hung, site verify) Confirm count on site*

Level 1



Level 2

4.2.6 Washroom Accessories - All would require site verification

Requirement: 600 mm to u/s of toilet paper, located below the grab bar.
Appears to be non-compliant
Dispensers are shown above the grab bar and appear to be mounted too high.
They also appear to protrude deeper than 100 mm in all washrooms.
Possible resolution: *Update to new toilet paper dispenser installed at correct location.*
Total toilet paper dispensers: *+/- 31 adult, 6 child (7 toilets are accessible, includes Universal Washroom, site verify)*

Requirement: 750 mm to centreline of L-shaped grab bar and 840 - 920 mm to centreline of straight grab bar.
Undetermined compliance
Heights appear too high or low in some areas, would need to confirm.
Possible resolution: *Install grab bars at correct heights.*
Total grab bar sets: *7 (includes Universal Washroom)*

Requirement: 900 - 1100 mm to soap and paper towels.
Appears to be non-compliant
Paper towel dispensers appear mounted above 1220 mm to operating height in all washrooms.
They also appear to stick out further than 100 mm.
Garbages appear to stick out further than 100 mm but appear to be mounted at the correct height.
Soap dispensers require reach over the sink/counter in some washrooms.
They also appear mounted on the higher end in the multi-stall washrooms.
Possible resolution: *Update to new paper towel dispensers, garbages and soap dispensers installed at correct locations.*
Total soap dispensers: *+/- 31 (site verify)*
Total paper towel dispensers: *+/- 21 (site verify)*

Requirement: 1000 mm to u/s of mirror (no tilt mirrors).
Appears to be non-compliant
Underside of mirrors appear slightly higher than 1000 mm AFF in multi-stall washrooms.
They also appear too high in some single room washrooms.
Possible resolution: *Reduce depth of multi-stall vanity backsplash to lower mirror height and lower mirrors in other washrooms as required.*
Total individual mirrors *+/- 13 (site verify)*
Total full length mirrors *+/- 9 (site verify)*

Level 1

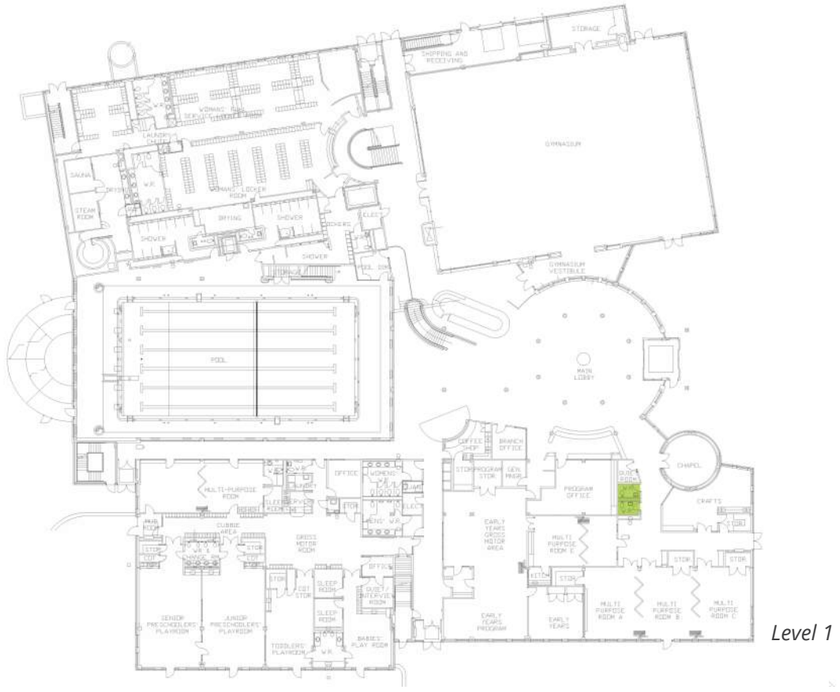
Level 2

4.2.7 Universal Washrooms

Requirement: Service animal tie offs in practical locations in washrooms, change rooms, shower areas, pool decks, etc.
Appears to be non-compliant
Not pictured: Appear to not be located anywhere in the building.
Possible resolution: *Install at required locations.*
Total service animal tie off: *1 (if in Universal Washroom only)*

Requirement: Collapsable coat hook, mirror and accessories that comply.
Undetermined compliance
Not pictured: Coat hook not captured in photos, would need to confirm.
Toilet paper dispenser appears mounted too high or far away from toilet, grab bar appears mounted too high.
Possible resolution: *Install collapsable coat hook, mirror and other accessories at required locations and heights.*
Total coat hook: *1*
Refer to 4.2.6 Washroom Accessories for other accessory counts.

Requirement: Toilet 460 mm from wall with grab bars and clear toilet transfer space.
Appears to be non-compliant
Toilet appears to comply but flush lever is not on transfer space side in all washrooms.
Possible resolution: *Replace toilets with automatic flush valve.*



Level 1

4.2.9 Showers

Requirement: 1-7 showers = at least 1 shower must be barrier-free and 1 more for every increment of 7.
Appears to be non-compliant

Not pictured: Total 52 showers, 6 are accessible, there should be 8 accessible or 4 per floor
Possible resolution: *Reconfiguration of shower layout; however, may not be able to achieve compliance.*

Requirement: Folding shower seat, not spring loaded that is 450 mm W x 400 mm D mounted 430 - 485 mm AFF. Located within 500 mm of shower controls; and recessed soap dispenser reachable from seat.
Appears to be non-compliant

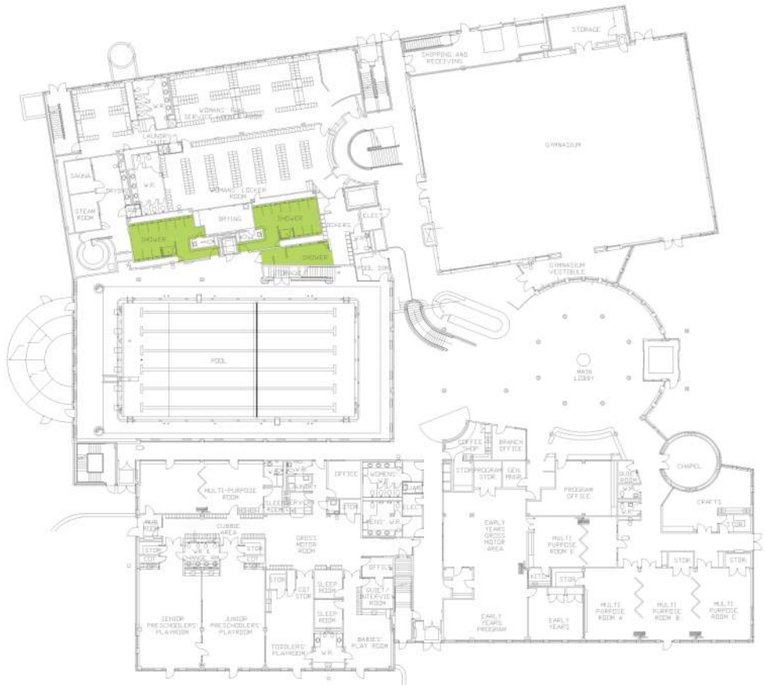
Bench appears to comply but surface mounted soap dispensers are mounted too far from seat in some showers.
Possible resolution: *Install soap dispensers within reach of shower seat.*
Total folding shower seats: *6*
Total soap dispensers: *52*

Requirement: Min 760 x 760 mm L-shaped grab bar at 850 mm AFF, overlapping the seat by 300 mm and between shower head and controls.
Appears to be non-compliant

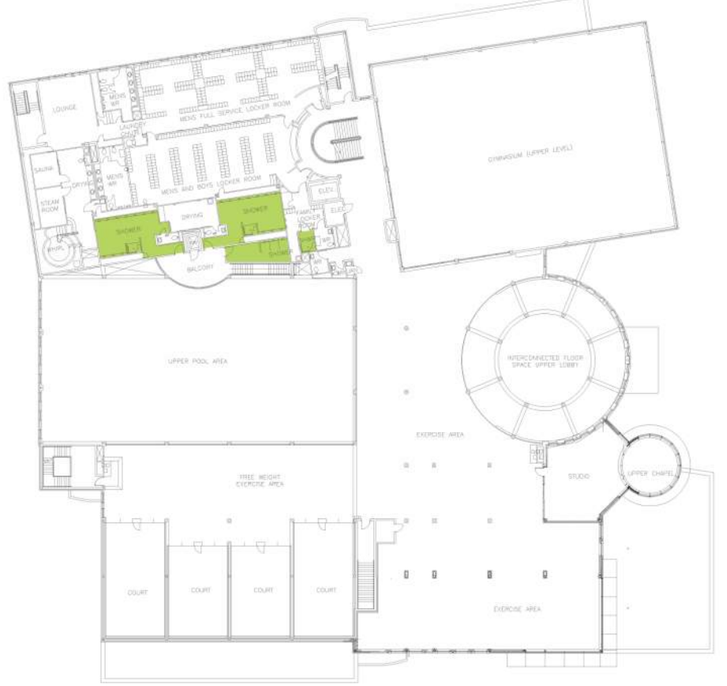
Length is good but does not overlap shower seat by 300 mm and is not between controls and shower head.
Possible resolution: *Relocate grab bar to be between shower head and controls and overlap the bench.*
Total L-shaped grab bars: *6*

Requirement: Min 760 mm long vertical grab bar on each end wall 80 - 120 mm from front edge and 700 - 800 mm AFF
Appears to be non-compliant

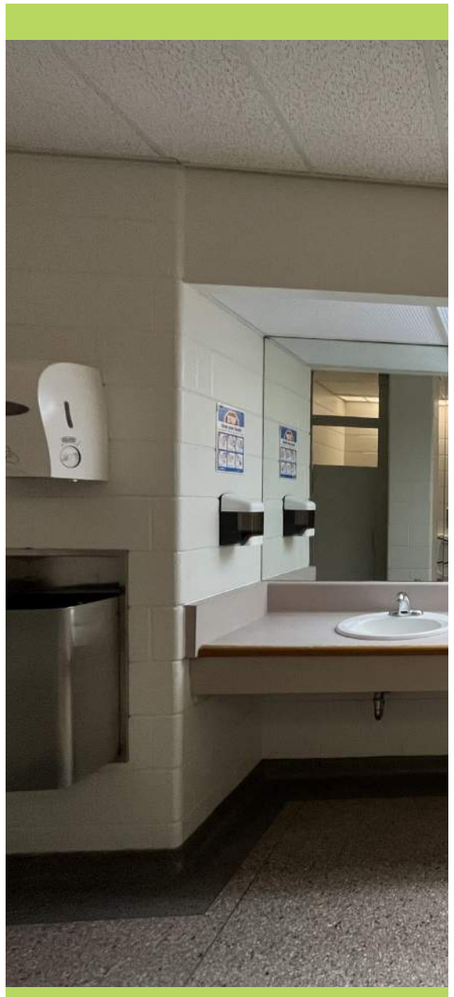
There is one vertical grab bar on shower head wall of some units, but not on all 3 walls.
Possible resolution: *Install at required locations.*
Total straight grab bars: *1 per wall for 6 showers, site verify*



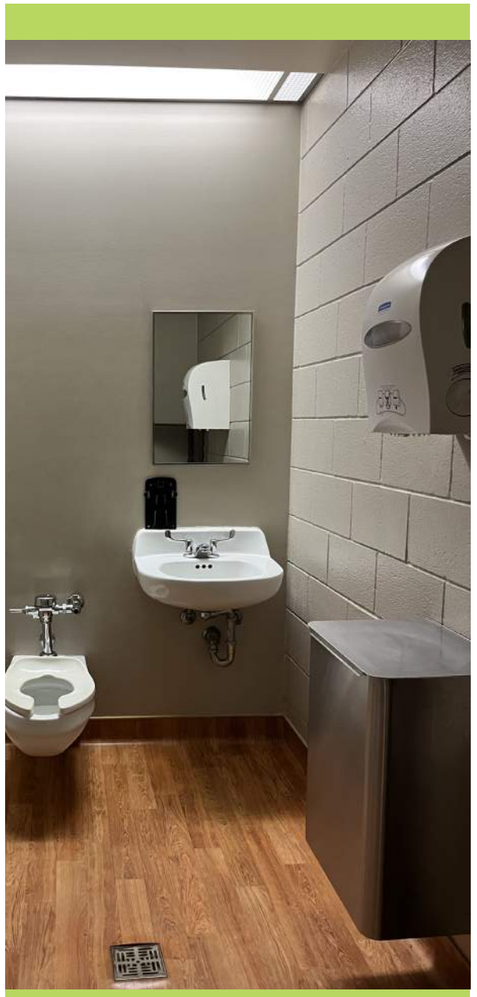
Level 1



Level 2



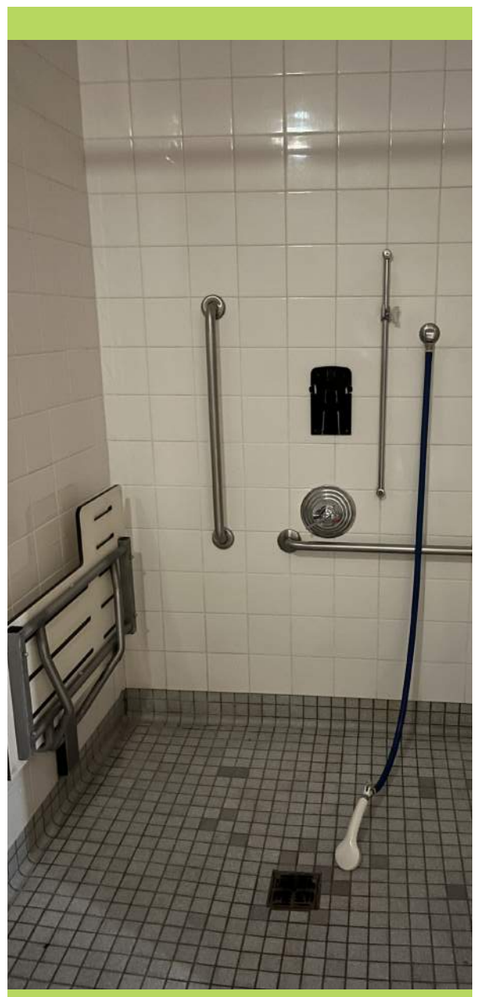
4.2.4 Lavatories
4.2.6 Washroom Accessories



4.2.4 Lavatories
4.2.6 Washroom Accessories

4.2.6 Washroom Accessories

4.2.6 Washroom Accessories
4.2.7 Universal Washrooms



4.2.9 Showers

4.3.4 Change/Dressing Rooms

Requirement: 810 x 1830 mm bench mounted 450 - 500 mm AFF with 760 mm clear transfer space beside.
Appears to be non-compliant

There are no benches.

Possible resolution: *Add benches as per dimensions above and ensure clear transfer space, adjacent grab bars and clear path of travel.*

Requirement: Collapsable coat hooks x 2 max 1200 mm AFF adjacent to bench, not over the bench.
Appears to be non-compliant

There are no coat hooks visible and are likely located inside lockers.

Possible resolution: *Add collapsable coat hooks adjacent to bench at required height.*

Requirement: Min 760 x 760 mm L-shaped grab bar at 850 mm AFF overlapping the seat by 300 mm.
Min 760 mm long vertical grab bar on each end wall 80 - 120 mm from front edge and 700 - 800 mm AFF.
Appears to be non-compliant

Horizontal grab bars are provided in Drying Rooms at adult and child height.

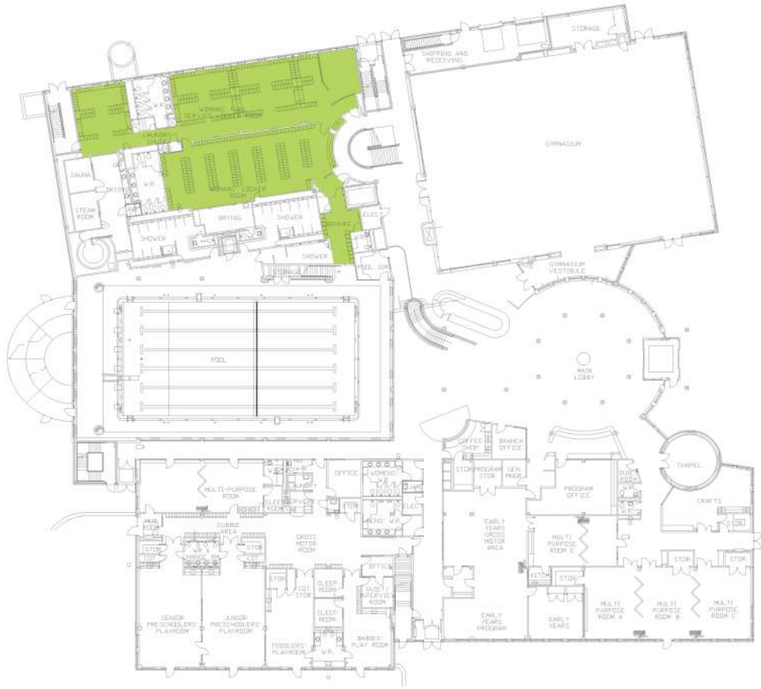
There are no grab bars in the Locker Rooms.

Possible resolution: *Add grab bars adjacent to bench at required height.*

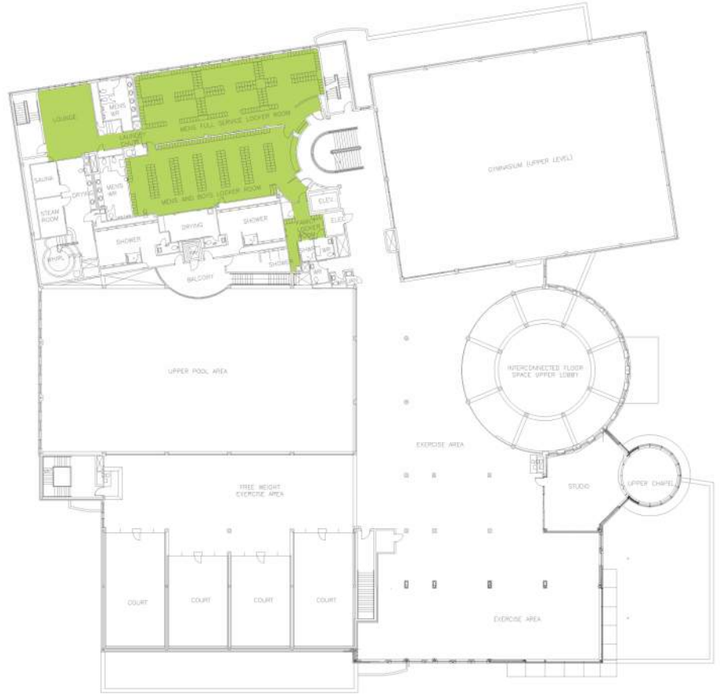
Requirement: Full length mirror 460 x 1370 mm.
Appears to be non-compliant

Mirrors are not full height but are standard 610 x 915 mm above convenience countertops.

Possible resolution: *Add full height mirrors.*



Level 1



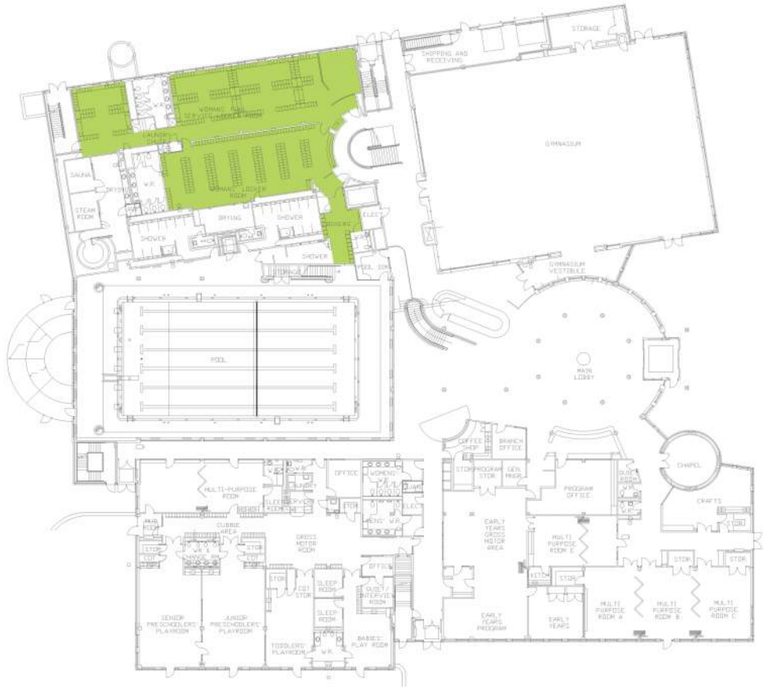
Level 2

4.3.10 Lockers and Baggage Storage

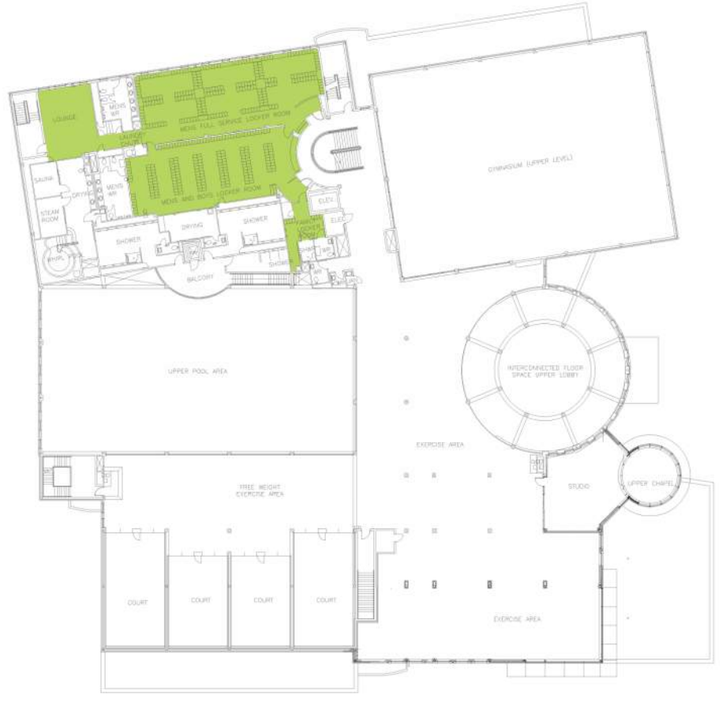
Requirement: At least 10% but not less than 1 locker should be accessible (identified with symbol) and located on an accessible route.
Appears to be non-compliant
Accessible locker not identified on plan.
***Possible resolution:** Add accessibility symbol to locker that meets accessibility requirements.*

Requirement: Advisable to provide a bench in close proximity to accessible lockers with grab bars.
Appears to be non-compliant
There are no benches.
***Possible resolution:** Add benches as per dimensions above and ensure clear transfer space, adjacent grab bars and clear path of travel.*

Requirement: Operating mechanism operable with one hand and at 1060 mm AFF.
Appears to be non-compliant
Operating mechanisms appear slightly too high as lockers are on a raised base; they are padlock style .
***Possible resolution:** Site verify to ensure locks are within accessible range. Raised base may need to be removed.*



Level 1



Level 2

4.3.5 Offices, Work Areas and Meeting Rooms

Requirement: Be located on accessible route and equipped with door complying with 4.1.6 and space for 180 degree turn at door.
Appears to be non-compliant

They are located on accessible routes and door clear widths appear to comply, however workstations in the Program Office impede the door latch side clearances and ability for a 180 degree turning circle, and there are no push buttons.
Possible resolution: *Remove/relocate furniture to meet door clearances.*

Requirement: Access route to all activity elements, storage, etc.
Appears to be non-compliant

Appears to comply with access route requirements however upper storage is mounted higher than accessible requirements.
Possible resolution: *Add storage within accessible heights or lower existing storage to meet requirements.*

Level 1

4.3.18 Kitchens and Kitchenettes

Requirement: Storage elements to be located on accessible route and at 1200 mm max AFF.
Appears to be non-compliant
Storage elements are too high.

Requirement: Sinks located on accessible route with clear space for forward approach and knee space of 810 mm W x 480 mm D x 685 mm H.
Insulated pipes under sink and no sharp edges.
Appears to be non-compliant
No knee space underneath sinks and clear space overlaps with dishwasher and range clear space in the Servery.
There is also a small corner sink in the Servery that is completely inaccessible.

Requirement: Counter height between 710 - 856 mm AFF.
Appears to be non-compliant
Appears at 915 mm.

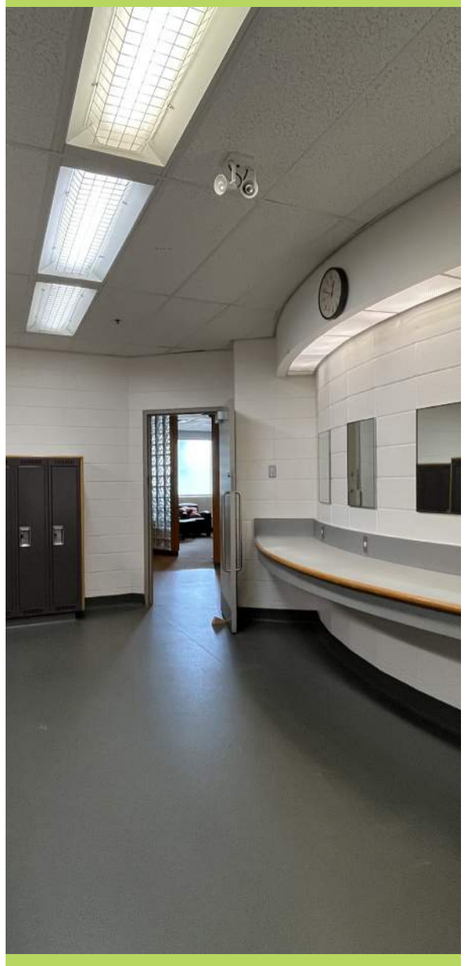
Requirement: Clear floor space adjacent to a dishwasher and when door is open it cannot obstruct clear space at dishwasher or sink.
Appears to be non-compliant
There is clear floor space but dishwasher door opens to obstruct clear space at sink.

Requirement: Ranges/cooktops with controls at front to avoid reaching over surface.
Forward approach at range with knee space of 810 mm W x 480 mm D x 685 mm H.
Appears to be non-compliant
Controls are at rear and range is typical model with no space for a parallel approach.

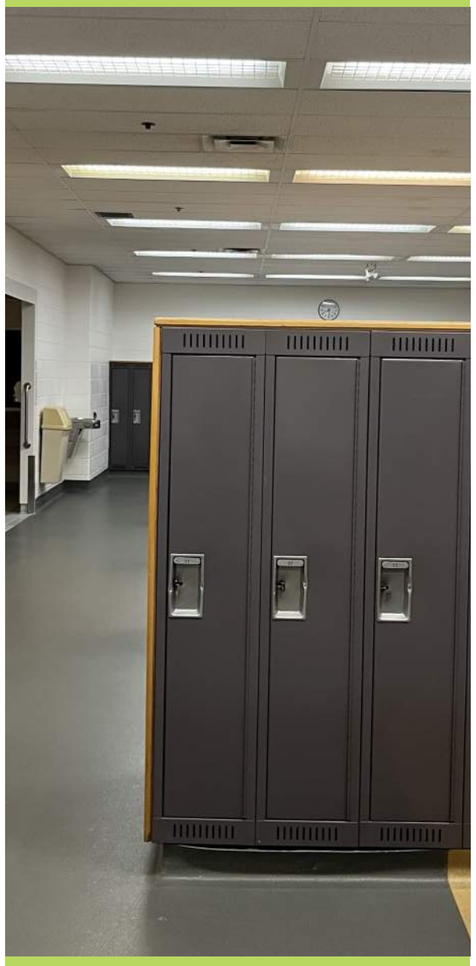
Requirement: Ovens with front controls no higher than 1400 mm AFF and have adjacent work surface to one side of door.
If for childrens' programs, ranges and ovens need a safety switch to de-activate appliance controls.
Appears to be non-compliant
Controls are within range but there is no adjacent worksurface.
Would need to confirm if safety controls exist.

Requirement: Incorporate colour contrast to differentiate cabinets and appliances from walls and floors.
Appears to be non-compliant
Cabinets are too close in colour to walls in the Servery.
Possible resolution: *Replace millwork and appliances accordingly.*

Level 1



4.3.4 Change/Dressing Rooms



4.3.10 Lockers and Baggage Storage

4.3.5 Offices, Work Areas and Meeting Rooms

4.3.18 Kitchens and Kitchenettes

4.4.1 Emergency Exits, Fire Evacuation and Areas of Rescue Assistance

Requirement: Accessible means of egress identified with signage in compliance with 4.4.7 and designated on plan within the facility.
Appears to be non-compliant
Emergency exits identified but no specific signage for area of refuge.
Possible resolution: *Area of Refuge is not noted via signage. This could be located at top landing of exiting stairs within rated shaft.*
Further code study required.

Refer to photos on the following pages

4.4.2 Controls and Operating Mechanisms

Requirement: Clear floor area of 760 x 1370 mm at controls such as dispensers and receptacles.
Appears to be non-compliant

Some light switches are above countertops and some outlets are too close to adjacent surfaces or beneath obstructions such as garbage cans to allow for clear floor area.
Possible resolution: *Replace switches at millwork. Relocate obstructing garbage cans. Other existing switches may not easily be able to achieve compliance without changing multiple locations.*

Requirement: Outlets mounted no lower than 400 mm.
Appears to be non-compliant

Appear mounted closer to 305 mm AFF.
Possible resolution: *Replace and relocate all receptacles; however, this may not be able to achieve compliance easily as they are mostly in CMU block walls.*

Requirement: Controls to have colour contrast from surrounding environment.
Appears to be non-compliant

They are white on white walls.
Possible resolution: *Replace light switch and outlet covers to contrast with the wall colour.*

Refer to photos on the following pages

4.4.7 Signage

Requirement: Accessible entrances, toilet or bathing facilities, elevators, areas of rescue to be identified with the International Symbol of Accessibility.

Refer to photos on the following pages

Appears to be non-compliant

International Symbol of Accessibility is not present where required.

Possible resolution: *Add International Symbol of Accessibility to required locations as per above.*

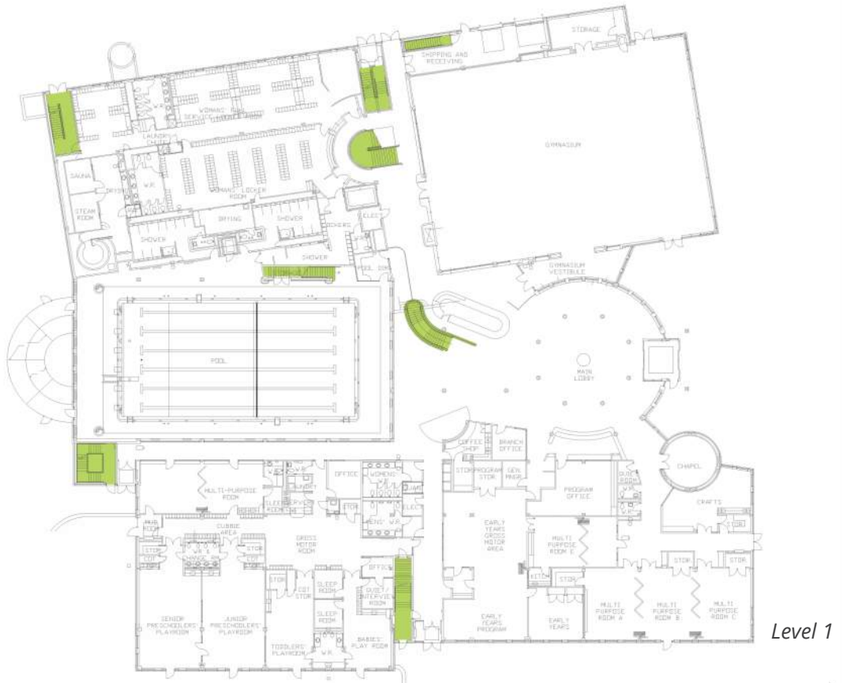
4.4.8 Detectable Warning Surfaces

Requirement: All textured surfaces as detectable warning surfaces must be detectable by walking on them (not paint), must contrast visually and be slip-resistant; provided at the top of stairs and at landings with entry points, extending for width of stair and depth of 920 mm, commencing one tread depth back; flat topped domes to be 4-5 mm high and comply with diameter and spacing in Table 4.4.8.

Appears to be non-compliant

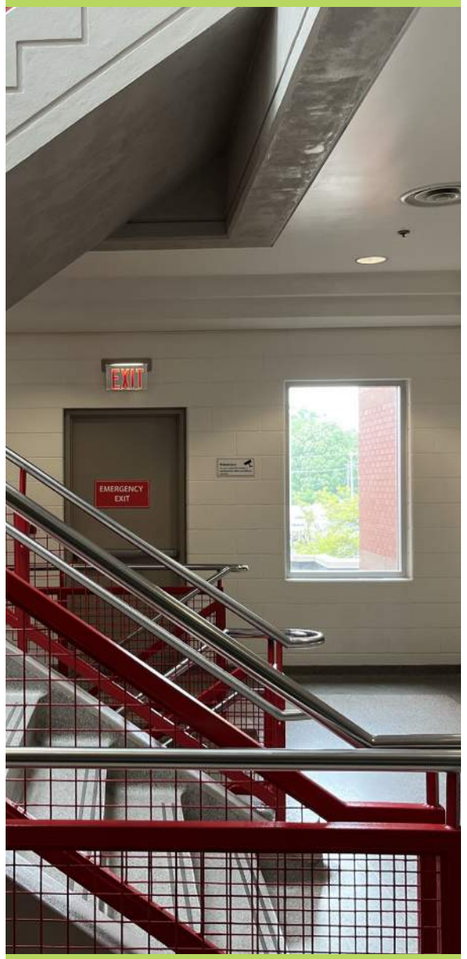
Stairs appear to just have tactile nosing at top step and nothing at bottom landings.

Possible resolution: *Add tactile warning surfaces as required.*



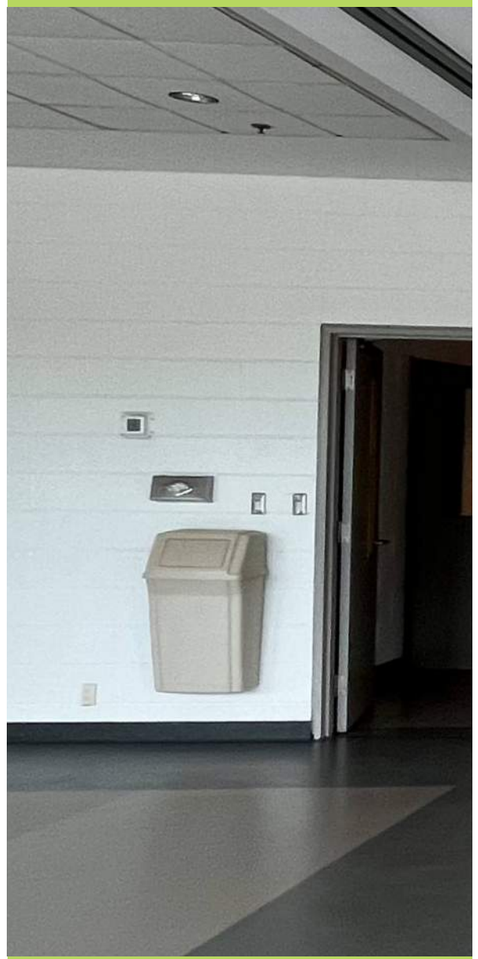
Level 1

Level 2

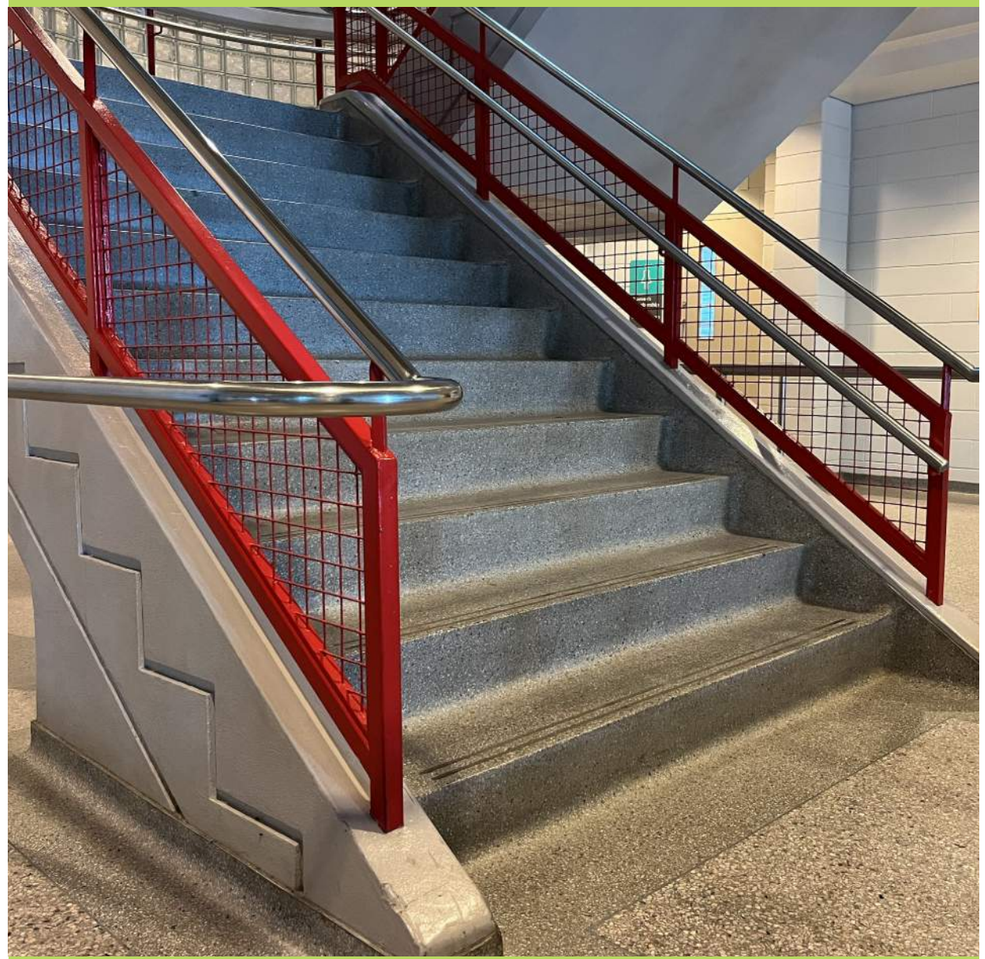


4.4.1 Emergency Exits, Fire Evacuation and Areas of Rescue Assistance

4.4.2 Controls and Operating Mechanisms



4.4.2 Controls and Operating Mechanisms



4.4.8 Detectable Warning Surfaces

4.4.12 Glare and Light Sources

Requirement: Extensive high gloss floor and wall finishes are not acceptable and monolithic floor surfaces such as terrazzo, vinyl and tile shall have matte, honed or satin finishes.
Paint, wood, plastic laminate, etc. on vertical surfaces shall have matte or satin finishes.
Appears to be non-compliant

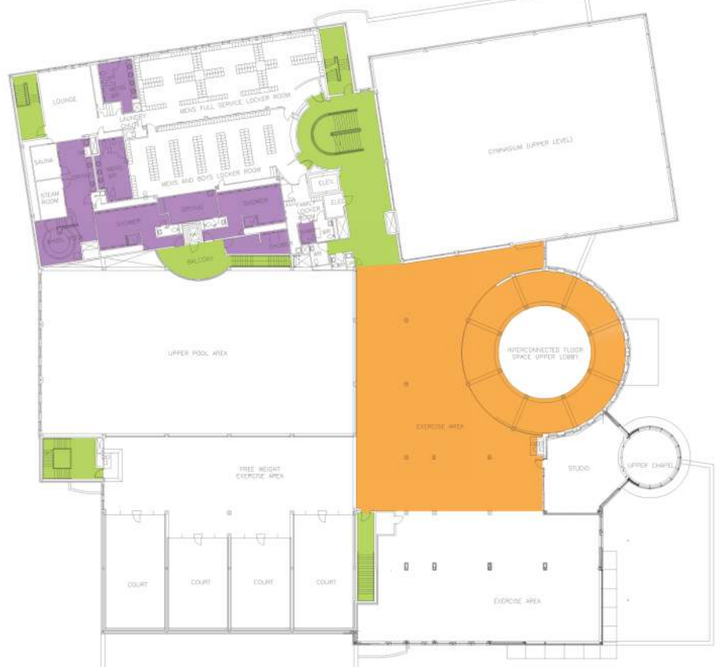
Refer to colour coded plans

Example 1
Main area has terrazzo flooring and extensive natural light which creates glare.
Possible resolution: *Install shading devices on exterior windows, investigate cleaning methods for terrazzo flooring.*

Example 2
Other areas including Level 2 running track and multi-purpose rooms have sheet flooring with shinier finish.
Possible resolution: *Install shading devices on exterior windows or replace flooring.*

Example 3
Wall tile in some washrooms, some kitchenette backsplashes, showers and change rooms is shiny, not matte.
Possible resolution: *Replace shiny tiles with matte tile.*

Level 1



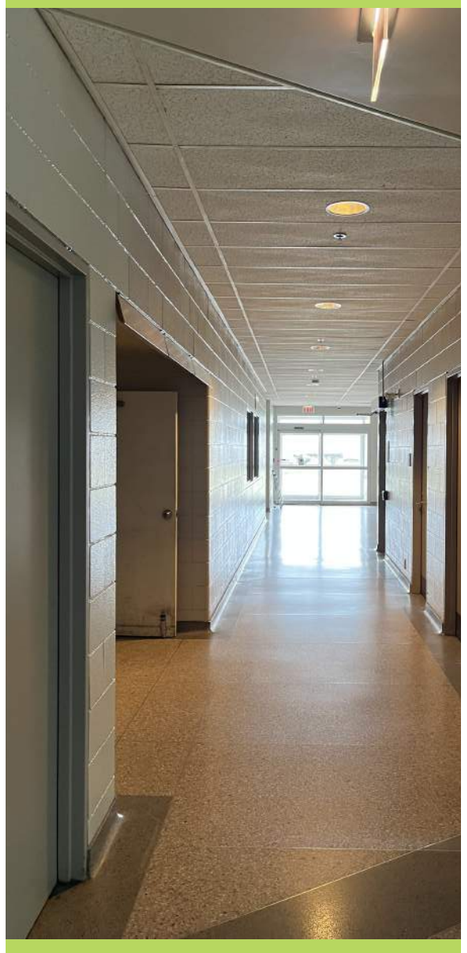
Level 2

4.4.15 Texture and Colour

Requirement: Colour used consistenty to identify distinctive objects.
Appears to be non-compliant
Not all doors and frames are painted the same.
Not all flooring is the same per zone.
Not all wall tile in showers, change rooms or washrooms is the same.
Possible resolution: *Repaint doors and frames to be consistent.*
Replace flooring to match zones (same flooring in all childcare, same flooring in all washrooms, etc.)
Replace wall tile to be consistent in all areas or to identify washrooms vs showers, etc.

Refer to photos on following page

Requirement: End of walls in long corridors in contrasting colour.
Appears to be non-compliant
Most walls appear to be white.
Possible resolution: *Paint walls accordingly.*

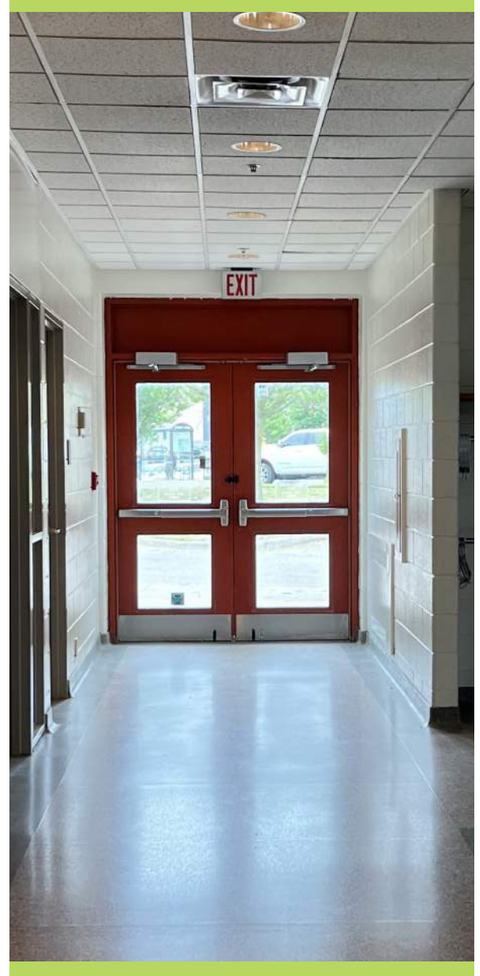


4.4.12 Glare and Light Sources
4.4.15 Texture and Colour

4.4.12 Glare and Light Sources

4.4.12 Glare and Light Sources

4.4.15 Texture and Colour



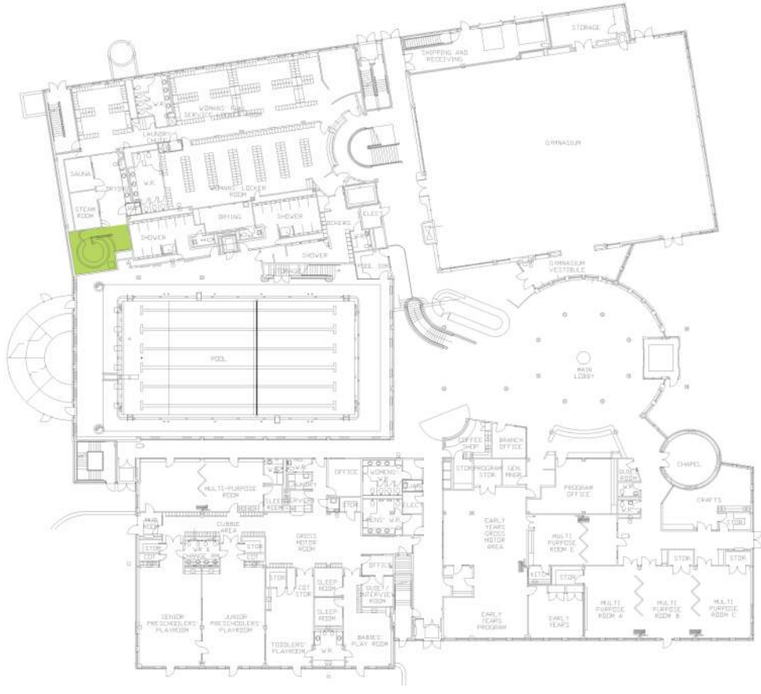
4.4.12 Glare and Light Sources
4.4.15 Texture and Colour

4.5.3 Swimming Pools, Therapeutic Pools/Public Spas and Spray Pads

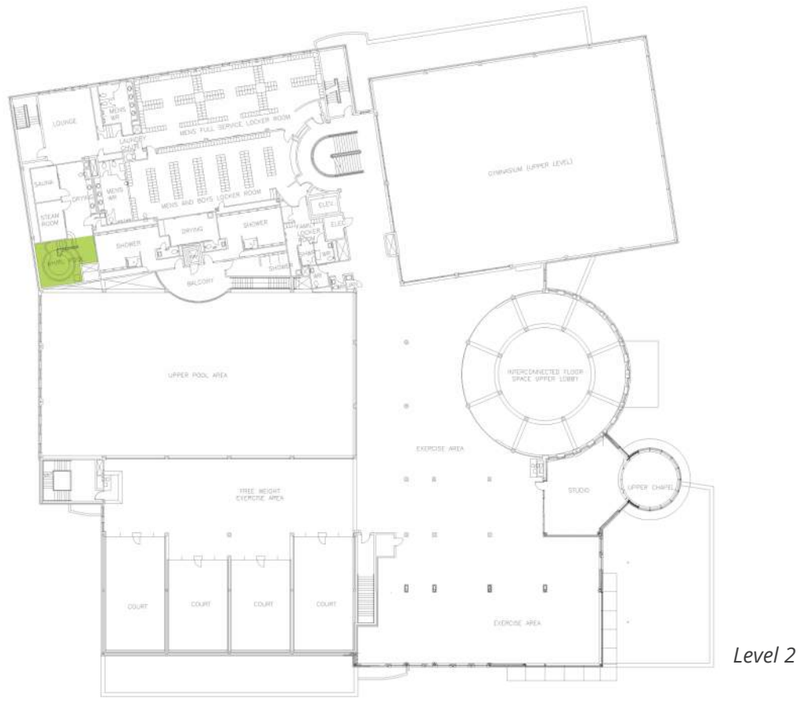
Requirement: At least 1 accessible access point via ramp or a transfer wall with a height of 405 - 485 mm x 300 - 400 mm depth. Have min 1 grab bar perpendicular to the spa that extends the full depth of the transfer wall, located 100 - 150 mm above transfer wall with 610 mm clearance on both sides.
Have adjacent clear deck area for lateral transfer to the transfer wall outside of path of travel with 900 x 2200 mm clear space.
Appears to be non-compliant

There is no apparent transfer wall, but there are adjacent walls with horizontal grab bars at 2 heights leading to the spa, with room for a mobility device.

Possible resolution: *Add grab bar perpendicular to spa as per heights above. Ensure adequate clear space on deck.*



Level 1



Level 2

4.5.14 Child Care/Minding

Requirement: Kitchens/kitchenettes to comply with 4.3.18.
Appears to be non-compliant
Refer to section 4.3.18 for break down.
Possible resolution: *Replace millwork and appliances accordingly.*

Requirement: Cubbies and coat storage to comply with 4.3.9.
Appears to be non-compliant
Coat hooks are non-collapsable and are above benches.
Possible resolution: *Install non-collapsable coat hooks adjacent to benches.*

Level 1

4.5.3 Swimming Pools, Therapeutic Pools/Public Spas and Spray Pads

4.5.14 Child Care/Minding

4.5.14 Child Care/Minding

25 YMCA Drive

Accessibility Audit Draft - Full Review

4.1.1 Space and Reach Requirements
- 2440 mm diameter turning circle
- 2440 x 2000 mm 3 point turning space for wheelchair
- 1220 x 760 mm clear space for wheelchair
- 1370 x 760 mm parallel approach
- 1370 x 760 mm forward reach
- 1370 mm max side reach
- 1200 mm max forward reach

Appears to comply to all, refer to break down below

4.1.2 Ground and Floor Surfaces
- Avoid patterned floors

Appears to comply: Poured terrazzo, grey and darker grey at perimeter; resilient tile floors in solid colours, some with contrasting perimeter colour

- Be stable, firm, slip-resistant and glare-free

Firm floors but some photos show glare on the shiny floor from lights and windows above
Wood look sheet floor in Gross Motor Room is bubbling at doors and is a trip hazard; some seams appear to be lifting in Playrooms
Free Weight Exercise Area has a resilient tile floor with pronounced seams that appear lifting and possible trip hazards

- 6 mm max height change in surface (non-bevelled) and 12 mm max height change in surface (bevelled)

Various different floor types appear to comply with the bevelled transition

4.1.3 Protruding and Overhead Objects
- Between 680 - 2100 mm objects can protrude 100 mm max

Does not comply: The waste bins in the change rooms appear to protrude well over 100 mm

- 300 mm max overhang between 680 - 2100 mm and at or below 680 mm can protrude any amount
- 2100 mm min headroom

Appears to comply: Headroom at all stairs, doors, ceilings appear to exceed this and a guardrail below the main lobby stairs protects accidents

4.1.4 Accessible Routes, Paths & Corridors
- Strong colour contrasts or tactile pathways to assist

There are not strong colour contrasts but main corridors have grey terrazzo with darker border

- Accessible route at all normally occupiable floor areas
- 1830 mm clear for two wheelchairs
- If accessible route is less than 1830 mm there must be an unobstructed passing space 1830 x 1830 mm not more than 30 m apart
- 1100 mm min clear width
- Provide directional signage where direction changes

Appears to comply with all above

4.1.5 Entrances
- All entrances by staff and public to be accessible and served by an accessible route

Appears to comply

4.1.6 Doors
- Power door operators to be located at entrances, washrooms and change rooms with accessible stall, universal washroom, intermediate doorways along primary circulation
  Appears to comply: Main entrances have automatic doors, intermediate doorways along primary circulation, universal washrooms and change rooms have push buttons
- Hinged door, front approach: 1525 D x 1600 W clear space pull side w/ 600 mm clear at latch; 1370 D x 1250 W w/ 300 clear at latch on push side
- Hinged door, latch side approach: 1370 D x 1600 W clear space pull side w/ 600 mm clear at latch; 1370 D x 1525 W w/ 600 clear at latch on push side
- Hinged door, hinge side approach: 2440 D x 2440 W clear space pull side w/ 600 mm clear at latch; 1370 D x 1830 W w/ 450 clear at latch on push side
  Appears to comply
- 950 mm min clear opening of doorwards; can be 860 mm in retrofit
  Some of the door clear openings can only achieve 860 mm clear opening (Men's Locker Room, Men's Showers)
- Mats to be sunk into floor or have gently bevelled edge to prevent tripping
  Appears to comply
- Push buttons located on latch side of door, located 600 - 1525 mm beyond door swing and at 1000 - 1100 mm AFF
  Appears to comply
- When doors do not have closing device, edge of door to be colour contrasting to door face
  Doors do not have contrasting paint at edges
- Door frame colour to contrast with door leaf colour
  Painted doors match the painted frame colour; some doors are wood and contrast with the painted frames but it is not consistent throughout

4.1.8 Windows, Glazed Screens and Sidelights
- Fully glazed doors and sidelights need opaque vision strip, 50 mm wide at 1350 - 1500 mm high
  Full height glazing in Lobby, childcare area and full height glazing in Level 2 weight room and racketball areas are not compliant
- Where etched or patterned glass is used, need decals or stripes in highly contrasting colour
  Does not comply: There is fluted glass in Level 1 administrative area without decals
- Viewing windows sill height 760 mm AFF
  Appears to comply
- Transoms cannot be located between 1060 - 1220 mm AFF
  Appears to comply

4.1.11 Stairs
- Uniform riser heights and tread depths; 125 - 180 mm rise and 280 - 355 mm run
  Appears to comply
- Have detectable warning surfaces
  Does not comply: No detectable warning surface at top of stairs but appears tactile nosing is added on the top step
- Non-slip treads and no open risers
  Appears to comply

4.1.12 Handrails
- Extend beyond tread for depth of one tread; height of 865 - 920 mm
- 30 - 40 mm diameter with 50 - 60 mm clear space at wall
  Appears to comply with all

4.1.14 Elevators
- Minimum dimensions of 1725 x 1525 mm with 950 mm wide door opening but can be 900 mm wide in a retrofit
- In an accessible route and identified with signage
- Have slip resistant flooring
- Handrails at 800 - 920 mm
- Floor identification in Arabic and Braille on both jambs
  Appears to comply with dimension and signage but anything inside the elevator would need to be confirmed

4.2.1 Toilet Facilities
- Located on an accessible route and identified with signage
- Have a clear space for 180 degree turn
- Doors cannot swing within clear floor space of fixtures
- Min 1700 mm clear space in front of stall to face of door
- Min 1400 mm clear space in front of stall and anything else (1524mm preferred)

Appears to comply with all above, except note the protruding waste bins that interfere with clear space in front of accessible stalls in multi-stall washrooms

4.2.2 Toilet Stalls
- 1-6 stalls = 1 must be accessible

Appears to comply
- Accessible toilet stall 460 mm to centre of toilet with 1500 mm turning circle and 920 x 1500 mm clear transfer space

Appears to comply
- Stall 1830 x 1830 mm min with 900 mm door opening, swinging outward (door to align with transfer space)

Stalls measure 1524 x 1524 mm and doors measure 813 mm, they swing outward and align with transfer space
- Collapsable coat hook and grab bars

Not collapsable hooks but hooks and grab bars are present
- Colour contrasting stalls and D-type pulls

Beige stalls not contasting much with white walls but they do contrast with the colourful wall tile

4.2.3 Toilets
- Lever style handles on transfer side but automatic flush is preferred

Does not comply: Lever not on transfer side in most accessible multi-stalls
- Top of toilet 460 mm AFF, without spring activated seat, but include back support if no tank is present

Top of toilets appear in line with heights but are missing back support, though no spring activated seat is present
- Nothing can impede in clear transfer space (sanitary napkin disposal max 100 mm)

Appears to comply

4.2.4 Lavatories
- 460 mm to centre of sink

Appears to comply
- 820 - 840 mm to top of counter with knee space of 920 mm wide x 735 mm high clearance at front edge, refer to other clearances
- 760 x 1370 mm clear space, 480 mm underneath counter

Appears to comply via counter apron cut out at the barrier-free sink
- Exposed pipes insulated

Pipes not insulated in multi-stall or single washrooms
- Lever faucet 485 mm back from front of counter

Appears to comply and operable with 1 hand, but 2 handles are less ideal than 1 lever in multi-stall washrooms

4.2.5 Urinals
- 430 mm to elongated rim, 460 mm to centreline from wall and 345 mm deep
- 810 x 1370 mm clear floor space

Appears to comply with all
- 460 mm to centre for screens if present, colour contrasting
- Grab bars on each side that are 600 mm long, vertically mounted 380 - 400 mm from centre of urinal and 1000 mm to centre AFF

Does not comply: No grab bars or screens present

4.2.6 Washroom Accessories *- All would require site verification*
- 600 mm to u/s of toilet paper, located below the grab bar
  Does not comply: Dispensers are shown above the grab bar and appear to be mounted too high, they also appear to protrude deeper than 100 mm in all washrooms
- 750 mm to centreline of L-shaped grab bar and 840 - 920 mm to centreline of straight grab bar
  Heights appear too high or low in some areas, would need to confirm
- 900 - 1100 mm to soap and paper towels (colour contrasting and operable with 1 hand, not having to reach over sink)
  Does not comply: Paper towel dispensers appear mounted above 1220 mm to operating height in all washrooms, they also appear to stick out further than 100 mm
  Does not comply: Garbages appear to stick out further than 100 mm but appear to be mounted at the correct height
  Does not comply: Soap dispensers require reach over the sink/counter in some washrooms and appear mounted on the higher end in the multi-stall washrooms
  Appears to comply: Sanitary napkin disposals are recessed in all washrooms and appear mounted within range
- 1000 mm to u/s of mirror (no tilt mirrors)
  Does not comply: U/S of mirror appears slightly higher than 1000 mm AFF in multi-stall washrooms and appear too high in some single room washrooms (it varies)

4.2.7 Universal Washrooms
- Min 1 universal washroom on every floor in assembly buildings where the floor incorporates public use washrooms with 4 or more toilets, min 1 for 1-3 floors
  Appears to comply
- Service animal tie offs in practical locations in washrooms, change rooms, shower areas, pool decks, etc.
  Does not comply: Appear to not be located anywhere in the building
- Directional signage if not visible from public use
  Appears to comply
- 920 x 1370 mm clear space at sink, 460 mm from wall
  Appears to comply
- 1830 mm x 810 mm space for change table with 900 mm deep clear floor space
  Appears to comply
- Collapsable coat hook, mirror and accessories that comply
  Coat hook not captured in photos, would need to confirm
  Accessories appear to comply but toilet paper dispenser appears mounted too far away from toilet
- Toilet 460 mm from wall, grab bars and clear toilet transfer space
  Appears to comply
- 2440 mm diameter turning circle (2130 mm if retrofit)
  2130 mm diameter appears to comply
- Power door operator and emergency call switch, audable and visual signals inside and outside room, clear signage
  Appears to comply

4.2.9 Showers
- 1-7 showers = at least 1 shower must be barrier-free and 1 more for every increment of 7
  Does not comply: Total 52 showers, 6 are accessible, there should be 8 accessible or 4 per floor
- 920 x 1525 mm with clear floor space of 920 x same width as shower, slip-resistant floor and max 13 mm bevelled threshold
  Appears to comply
- Folding shower seat, not spring loaded that is 450 mm W x 400 mm D mounted 430 - 485 mm AFF and within 500 mm of shower controls; and recessed soap dispenser reachable from seat
  Bench appears to comply but surface mounted soap dispensers are mounted too far from seat in some showers
- Min 760 x 760 mm L-shaped grab bar at 850 mm AFF, overlapping the seat by 300 mm and between shower head and controls
  Does not comply: Length is good but does not overlap shower seat and is not between controls and shower head
- Min 760 mm long vertical grab bar on each end wall 80 - 120 mm from front edge and 700 - 800 mm AFF
  Does not comply: There is one vertical grab bar on shower head wall of some units, but not on all 3 walls
- Pressure-equalizing or thermostatic mixing valve 1000 mm AFF max 865 mm from seat and shower head with 1525 mm L hose reachable from seat, can locate at 1400 - 1825 mm AFF
  Appears to comply

4.2.10 Grab Bars
- 35 - 40 mm diameter, free of sharp edges, colour contrasting to wall, and have a slip-resistant surface
- 50 mm clearance from wall and not adjacent to abrasive elements
  Appears to comply with all

4.3.1 Drinking Fountains
- At least 1 fountain to be accessible per floor, if more than 1 = 50% to be accessible
- Located on accessible route of travel with clear floor space of 810 x 1370 mm
- If cantilevered, have knee space of 810 mm W x 500 mm D x 735 mm H (recessed is preferred) and 350 mm H toe space
- If no knee space, have clear floor space of 1370 x 810 mm in front of unit for parallel approach
- Detectable by cane at level at or below 680 mm AFF
- Controls at front of unit or on both sides and spout between 760 - 915 mm AFF
- Water bottle filling station should be considered

Appears to comply with all

4.3.4 Change/Dressing Rooms
- In a retrofit, never less than 1 dressing room will be barrier-free and should be located on an accessible route, labelled with accessible signage
- Ability to make 180 degree turn in change rooms with hinged doors and door cannot overlap turning circle; outward swinging doors cannot pose a hazard

There are Drying Rooms and Locker Rooms, no individual Change Rooms; on accessible route and there are several 1525 mm diameter turning circles, outward swinging doors do not appear to impede clear circulation paths
- 810 x 1830 mm bench mounted 450 - 500 mm AFF with 760 mm clear transfer space beside

There are no benches
- Collapsable coat hooks x 2 max 1200 mm AFF adjacent to bench, not over the bench

There are no coat hooks visible and are likely located inside lockers
- Min 760 x 760 mm L-shaped grab bar at 850 mm AFF, overlapping the seat by 300 mm and min 760 mm long vertical grab bar on each end wall 80 - 120 mm from frontedge and 700 - 800 mm AFF

Does not comply: Horizontal grab bars are provided in Drying Rooms at adult and child height, there are no grab bars in the Locker Rooms or by benches
- Change rooms in conjunction with showers to have slip-resistant flooring and bench seat

Appears to comply: Floors are non-slip resilient sheet in Locker Rooms and tile in Drying Rooms, but some of the coved resilient base appears to be peeling and will pose a tripping hazard
- Full length mirror 460 x 1370 mm

Does not comply: Mirrors are not full height but are standard 610 x 915 mm above convenience countertops

4.3.5 Offices, Work Areas and Meeting Rooms
- Be located on accessible route and equipped with door complying with 4.1.6, and space for 180 degree turn at door

They are located on accessible routes and door clear widths appear to comply, however workstations in the Program Office impede the door latch side clearances and ability for a 180 degree turning circle, and there are no push buttons
- Knee clearances at work surfaces

Appears to comply
- Access route to all activity elements, storage, etc.

Appears to comply with access route requirements however upper storage is mounted higher than accessible requirements

4.3.7 Tables, Counters and Worksurfaces
- Accessible counters to be located on accessible route
- Have clear floor space of 810 x 1370 mm with no more than 480 mm under counter and 685 - 735 mm high clear; and clear toe space for frontal approach
- Or clear floor space of 810 x 1370 mm for parallel approach
- Countertop between 710 - 865 mm AFF

Appears to comply

Locker Rooms have convenience counters that appear to comply with all however the height of the countertops and knee clearance below would need to be confirmed

4.3.8 Information, Reception and Service Counters
- Min 1 section with counter between 710 - 865 mm AFF, 920mm W and max depth of 1270 mm
- Knee space on both sides of counter of 810 mm W x 480 mm D x 685 mm H
- Have at least 1 assistive speaking device such as speech transfer intercom, gooseneck or cordless mic or telephone system; speaking ports 1060 mm AFF max

Both info desks appear to comply with all though speaking devices would need to be confirmed

4.3.10 Lockers and Baggage Storage

- At least 10% but not less than 1 locker should be accessible (identified with symbol) and located on an accessible route
  Accessible locker not identified
- Advisable to provide a bench in close proximity to accessible lockers with grab bars
  There are no benches or grab bars
- Operating mechanism operable with one hand and at 1060 mm AFF
  Operating mechanisms appear slightly too high as lockers are on a raised base; they are padlock style
- Numbers or names in clear raised or recessed lettering
  Appears to comply
- Aisles in front of lockers 1370 mm D x 810 mm W
  Appears to comply

4.3.18 Kitchens and Kitchenettes

- Storage elements to be located on accessible route and at 1200 mm max AFF
  Does not comply
- Sinks located on accessible route with clear space for forward approach and knee space of 810 mm W x 480 mm D x 685 mm H (parallel approach allowed if there is no range/cooktop)
  Does not comply: No knee space underneath sink and clear space overlaps with dishwasher and range clear space
- Counter height between 710 - 856 mm AFF
  Does not comply: Appears at 915 mm
- Insulated pipes under sink and no sharp edges
  No open space beneath sink
- Clear floor space adjacent to a dishwasher and when door is open it cannot obstruct clear space at dishwasher or sink
  Does not comply: There is clear floor space but dishwasher door opens to obstruct clear space at sink
- Ranges/cooktops with controls at front to avoid reaching over surface
  Does not comply: Controls are at rear
- Forward approach at range with knee space of 810 mm W x 480 mm D x 685 mm H
  Does not comply: Typical range with no space for a parallel approach
- Ovens with front controls no higher than 1400 mm AFF and have adjacent work surface to one side of door
  Does not comply: Controls are within range but there is no adjacent worksurface
- If for childrens' programs, ranges and ovens need a safety switch to de-activate appliance controls
  Does not appear to comply, would need to confirm
- Refrigerator/freezer to have min 50% freezer space max 1370 mm AFF and have clear floor space for parallel approach
  Appears to comply
- Incorporate colour contrast to differentiate cabinets and appliances from walls and floors
  Cabinets are too close in colour to walls
- D-shaped hardware on cabinets
  Appears to comply

4.4.1 Emergency Exits, Fire Evacuation and Areas of Rescue Assistance
- Where required exits are not accessible, areas of rescue assitance shall be provided in number equal to required exits on accessible route
  Appears to comply
- Area of refuge to measure 850 x 1370 mm, be separated with fire resistance rating equal to exit, be served by firefighters' elevator and have 2-way voice communication
  Appears to comply with size and rating but does not appear to comply with firefighter elevator access and would need to confirm if 2-way voice communication exists
- Every level above first storey to be served by elevator with protection features in OBC or divided into at least 2 zones by fire separations
  Appears to comply
- Emergency warning systems to be both audible and visual
  Would need to confirm
- Accessible means of egress identified with signage in compliance with 4.4.7 and designated on plan within the facility
  Emergency exits identified but no specific signage for area of refuge

4.4.2 Controls and Operating Mechanisms
- Clear floor area of 760 x 1370 mm at controls such as dispensers and receptacles
  Does not comply everywhere, some light switches are above countertops and some outlets are too close to adjacent surfaces to allow for clear floor area
- Mounted between 900 - 1100 mm for all switches and at 1200 mm for thermostats and pull stations
  Appears to comply: Light switches throughout appear mounted at 915 mm AFF and thermostats at 1200 mm AFF
- Outlets mounted no lower than 400 mm
  Does not comply: Appear mounted closer to 305 mm AFF
- Hand operated faucets operable with closed fist without tight grasping, pinching or twisting
  Appears to comply
- Controls to have colour contrast from surrounding environment
  Does not comply: White on white

4.4.4 Visual Alarms
- Lamps to be Xenon strobe or equal and colour to be clear or white; pulse duration 2/10th of a second; 75 candelda, 1-3 Hz flash rate
  Would need to confirm
- Placed 2100 mm AFF or 150 mm below ceiling; devices placed in large spaces 30 m apart all other spaces including corridors cannot be further than 15 m from signal
  Appears to comply

4.4.7 Signage
- Signs that designate permanent rooms or spaces to be wall mounted with tactile characters and numbers, installed on wall adjacent to latch side of door between 1370 - 1500 mm AFF
- Accessible entrances, toilet or bathing facilities, elevators, areas of rescue to be identified with the International Symbol of Accessibility
- Letters and numbers to be sans serif, have Arabic numbers, have a width to height ratio between 3:5 - 1:1 and stroke width between 1:5 - 1:10, mix upper and lower case
- All components to be matte or glare-free finish and characters to have high tonal contrast with background
- Tactile letters to be raised 0.8 mm
- Pictograms to also have visual and tactile description below
  Appears to comply with all except the International Symbol of Accessibility is not present where required

4.4.8 Detectable Warning Surfaces
- All textured surfaces as detectable warning surfaces must be detectable by walking on them (not paint), must contrast visually and be slip-resistant
- Provided at the top of stairs and at landings with entry points, extending for width of stair and depth of 920 mm, commencing one tread depth back
- Flat topped domes to be 4-5 mm high and comply with diameter and spacing in Table 4.4.8
  Does not comply: Stairs appear to just have tactile nosing at top step

4.4.12 Glare and Light Sources
- Extensive high gloss floor and wall finishes are not acceptable and monolithic floor surfaces such as terrazzo, vinyl and tile shall have matte, honed or satin finishes
  Does not comply: Main area has terrazzo flooring and extensive natural light which creates glare
  Other areas including Level 2 running track have sheet flooring with shinier finish, and it is undetermined which windows, if any, have roller shades
- Paint, wood, plastic laminate, etc. on vertical surfaces shall have matte or satin finishes
  Painted walls comply but wall tile in washrooms and change rooms is shiny, not matte
- Blinds or sunscreening provided at windows where sunlight can adversely affect lighting level and/or glare
  Appears to comply in some areas
- Light fixtures to have diffusers, lens or recessed to prevent glare
  Appears to comply

4.4.13 Interior Lighting
- Lighting selected to minimize glare on reflective surfaces and provide even distribution of light
- Leading edge of stairs to be evenly lit; emergency lighting over stairs or exit path at least 100 lux
- Lighting level in lobbies, washrooms and change rooms similar to an elevator cab to prevent tripping; and at least 200 lux at signage or information counters
- Lighting level in workstations to be greater than lobbies and washrooms (300 lux)
  All lighting levels would need to be confirmed

4.4.14 Interior Materials and Finishes
- Low-level loop carpet if selected
- Hard surfaces to be non-slip and non-glare
- Grout lines no wider than 6 mm at floor tile
- Wall surfaces in corridors to be non-abrasive from floor to 2000 mm AFF
  Appears to comply with all

4.4.15 Texture and Colour
- Signs to incorporate glare-free colour contrast (white or yellow on black or other dark background); and colour used consistently to identify distinctive objects
  Appears to comply: White lettering on darker backgrounds but both teal and red are used in different spots for wayfinding, would be better if consistent colour used
- Colour contrast to define boundaries and edges such as stair nosing, doors, handrails, detectable warning surfaces at potential hazards
  Appears to comply: Darker boundary at leading edge of stairs and tactile nosing
- Tones to differentiate boundaries of a room
  Appears to comply
- Colour used consistenty to identify distinctive objects
  Does not comply: Not all doors and frames painted the same, not all zones have the same flooring type, not all wall tile in change rooms or washrooms is the same
- End of walls in long corridors in contrasting colour
  Does not comply
- Textural cues to identify main and secondary circulation but used consistently throughout
  Appears to comply: Always terrazzo flooring in main lobby and circulation, resilient flooring in secondary corridors and rooms, tile floor in washrooms and showers

4.4.16 Acoustics
- Floor, wall and ceiling finishes selected to not amplify noise
  Appears to comply: Areas that must have hard surface walls and floors have dropped ceilings (washrooms, change rooms, weight room) and wall panels in pool area
  Might consider more dropped ceilings or acoustic wall panels at Level 2 running track
- At accessible routes in large facilities, finish materials should aurally differentiate major and secondary paths of travel
  Appears to comply: Main lobby spaces have open double height ceilings and corridors have acoustic ceiling tile, dropped bulkheads over info desks
- In meeting rooms, room shall include adequate sound insulation
  Appears to comply: There is carpet tile, dropped ceilings and acoustic wall panels

4.5.1 Arenas, Halls and Other Indoor Recreational Facilities
- Provide accessible route to facility floor
- Comply with stairs noted in 4.1.11
- Comply with dressing facilties in 4.3.4, lockers in 4.3.9 and toilet and bathing facilities in 4.2.1
- Comply with concessions and service counters in 4.1.3 and 4.3.8
- Comply with swimming pools and hot pools in 4.5.3
- Comply with staff support areas in 4.1 to 4.4

Refer to individual sections for compliance

4.5.3 Swimming Pools, Therapeutic Pools/Public Spas and Spray Pads
- Have a direct accessible route in compliance with 4.1.4 from lobby to change rooms and from pool to deck

Appears to comply
- Access from pool deck into the water by ramp with handrail on either side between 865 - 965 mm AFF, clear width of 1100 mm, curb or other means to prevent wheelchair falling off side, slip-free and cleanable surface
- Mechanical pool lift to not be installed where water level exceeds 1220 mm, seat centreline 400 mm over the deck when raised, have a clear space of 915 x 1220 mm behind the seat and be capable of unassisted use

No ramp but there is a mechnical pool lift/chair that appears to comply
- Steps marked with colour-contrasting strip 50 mm wide at both riser and tread and have colour contrasting handrails on both sides extending 300 mm into the pool
- Curbed edge between 200 - 400 mm H
- Pool boundaries defined in textural and colour contrast to both water and surrounding area; perimeter of pool deck delineated by tactile surface
- Firm, slip-resistant finishes that are easy to clean and adequate drainage on deck
- Shallow End and Deep End indicated in high contrast markings
- Highly contrasting colour of lanes and tie off devices positioned to not create a tripping hazard and safety equipment and other accessories stored to not present a tripping hazard

Appears to comply with all
- Lifeguard chairs and other pool related structures in highly contrasting colour

Everything is in white and stainless steel, not a high contrast but still contrasts slightly with light blue
- Public spa water temp between 33-34 degrees C with temperature and other controls meeting 4.4.2

Would need to confirm water temperature but control heights appear to comply
- Max depth of seat or bench to be 600 mm

Appears to comply
- Spa to be surrounded by hard surfaced deck not less than 1800 mm at entrance point and 900 mm on all sides unless the spa is less than 6 m2

Spa is less than 6 m2 so deck clearances null
- Steps to the spa to be equipped with a handrail, have non-slip surface and have band of contrasting colour along side and top of edges

Appears to comply
- At least 1 accessible access point via ramp or a transfer wall with a height of 405 - 485 mm x 300 - 400 mm depth, have min 1 grab bar perpendiculat to the pool that extends the full depth of the transfer wall, 100 - 150 mm above transfer wall with 610 mm clearance on both sides
- Have adjacent clear deck area for lateral transfer to the transfer wall outside of path of travel with 900 x 2200 mm clear space

Does not appear to comply (no apparent transfer wall) but there are adjacent walls with horizontal grab bars at 2 heights leading to the spa, with room for a mobility device

4.5.14 Child Care/Minding
- Entry vestibule large enough for a triple stroller and person with clear space for door swing
- Adjacent to entry/lobby, universal washroom and corridor

Appears to comply
- Tables and counters in accessible route

Appears to comply
- Kitchens/kitchenettes to comply with 4.3.18

Does not comply
- Cubbies and coat storage to comply with 4.3.9

Does not comply: Coat hooks are non-collapsable and are above benches
- Sleeping rooms to comply with path of travel and turn circle to all coats and transfer space for children with disabilities for not less than 1 cot

Would need to confirm
- Power door operators to have secure access so children cannot operate them

Would need to confirm

APPENDIX

C

ARCHITECTURAL DESIGN BRIEF, OUTLINE SPECIFICATION & ALTERNATIVE USES OUTLINE (BY STUDIO CANOO)

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Outline Specification and Design Brief

YMCA St. Catharines – Feasibility Study

June 13, 2024

Table of Contents:

- Architectural Design Brief, Outline Specification and Alternaitve Uses Scope of Work Outline

Architectural Design Brief, Outline Specification and Scope of Work Outline

Introduction:

- This document summarizes the design intent at the ***FEASIBILITY STAGE*** as embodied in the diagrams.
- In part, these materials describe the level of quality that the developer anticipates.
- Ontario Building Code, current edition, and the Accessibility for Ontarians with Disabilities Act as well as the City of St. Catharines FADS document have been applied to the analysis

Existing Conditions Overview:

The existing building area is m2 - The 3 storey building was designed as a YMCA branch with gym, pool, squash courts, exercise and training areas, and a day care along with accessory program areas to support the main uses. The building has been unoccupied for at least 3 years. A previous Building Condtion Assessment was completed in 2021. This assessment was undertaken to confirm the previous conclusions, review any further deterioration to the building and present possible alternative uses that might be considered. By and large the alternative uses we were asked to consider were limited to interior renovations tat could be undertaken in a cost effective manner.

Refer to Structural, mechanical, electrical and aquatic engineering reviews for any scope related to those disciplpines

Deliverables included

1. Existing Architectural plans with comments and markups based on our site visit of June 3, 2024
2. Outline Specification & Architectural Scope of Work *(this document)*

OUTLINE SPECIFICATION

Division 1 – General Requirements

- n/a

Division 2 – Sitework

Site Improvements / Landscaping:

- existing asphalt parking lot is serviceable but coming to the ned of it's service life. New asphalt pavement wil be required at some point in the coming years. No change from recommendations in previous BCA

- Landscaping has not been maintained. Playground areas for daycare will need refurbishment but suggested that this is left to a daycare operator who might lease the facility from the City

Division 3 – Concrete

Foundations
- No leaking observed in basement walls that were exposied

Concrete
- Concrete repair of pool area to be covered by structural and aquatics reports

Division 4 – Masonry

Masonry units and veneer:
- Interior masonry is in reasonable shape. There were no visible signs of damage or areas indicating any structural problems in the building.
- Exterior masonry has some areas with cracked grout joints, discoloured masonry and staining. No serious defects were observed. The masonry repairs can be investigated and undertaken as general maintenance issues in the course of operations.
- Areas identified in the original report were in the masonry along the third floor exterior wall between the running track and roof where precast block window surrounds were combined with brick veneer above. (Original BCA)
- There was also discolouration of the brick masonry at the second floor shelf angle of the exterior pool wall (west side)
- We also noted discolouration and staining around the brick veneer above the main entrance. Possible sign of incorrect drainage from front entry vestibule. We were not able to gain access to this area of the roof and it is not visible from indoors.

Division 5 – Metals

Structural Framing:
- Refer to structural review

Metal Fabrications:
- guards and handrails: at exit stairs were all in good shape and meet current codes
- Mechanical roof top unit enclosures; steel siding on HSS frame we in good shape. No issues detected at roof connections
- Miscellaneous interior millwork items at washrooms. No issues observed

Division 6 – Wood and Plastics

Architectural Woodwork:
- In reasonable shape. Front entry desk is in reasonable condition although plastic laminate has delaminated in a couple of minor areas.
- Cubbies and kitchenettes in day care area showing signs of wear but recommend that any repairs be left to the discretion of an independent operator who might lease the facility from the City

Division 7 – Thermal and Moisture Protection

Insulation:
- Existing level of roof insulation is unknown although a few details on the architectural set available do show some layers of rigid insulation above roof deck. It is likely around R20. Unknown whether the deck sheathing and insulation can be salvaged depending on the level of damage done when removing the existing membrane. Assume all new roof assembly from the deck up including new roof drains.

Roofing:

- Existing roof is a 1 ply EPDM roof membrane over the insulation and ballasted by river rock (according to the 2021 BCA). A small area of the roof (2400 sf out of the 46,000 sf roof area) was replaced roughly 5 years ago when new RTU were replaced in the area identified on the roof diagram. The roof has exceeded its service life indicated by excessive wear of the membrane where visible and multiple areas of minor leakage observed on the interior. The roof can be replaced with the same assembly as previously spec'd and the small reroofed area can be maintained. Additional insulation levels should be considered. The roof parapet appears to have enough height to accommodate extra insulation thickness.
- Other roof membrane assemblies should be considered as well. A 3 ply modified bitumen system should considered as well. Less prone to leaking than single ply systems. A complete system by Soprema or equal should be priced.
- Although green roofs are being considered to assist with storm water management and to address heat island effects in urban areas they add significant cost and also require that the roof structure has been specifically design to carry loads. Unlikely that the roof has capacity to carry additional loads. (The City is also investigating roof top solar panels as part of a net zero operational strategy which would require significant area on the roof and would conflict with a green roof strategy)

Wall Assemblies:

- Exterior walls – Appear to be 190 CMU walls, cavity insulation and brick veneer for the most part. No significant issues observed.

Flashing & Cornice:

- Provide new pre-finished aluminum flashings at all exposed locations during roof replacement
- Provide through-wall flashings appear to be in good shape no issues observed
- Metal decorative cornices at main entry and chapel roof areas appeared to be in fair condition. Will likely require repainting at some point.

Exterior Soffits:

- n/a

Division 8 – Doors and Windows

Interior Metal Doors, Frames and Screens:

- Interior doors – no issues observed. Door hardware tested randomly.
- Interior aluminum screens – no issues observed

Exterior Metal Doors, Frames and Screens:

- Doors were locked during our site visit but we did not observe any issues.

Exterior aluminum windows and doors:

- Exterior windows appeared to be in reasonable condition. We did not observe any failed glazing units or any damage of significant wear of the anodized aluminum finishes.
- Roof skylights were in reasonable condition but we did observe tow cracked glazing units in the skylights (as reported in the original BCA). Roof top flashing around base should be redone when roof is done. Some flashing are missing or have come loose

Hardware:

- No deficiencies observed.
- Auto door operners could not be tested as door were locked during site visit

Glazing:

- Interior glass screens:
  - No deficiencies observed
- Curtainwall:
  - No deficiencies observed

Curtain Wall:

- No deficiencies observed

Division 9 – Finishes

Flooring:

- Public areas, Lobby – terrazzo in good condition
- Washrooms – porcelain tile – in reasonable condition
- Offices Floors – carpet in day care area. In fair condition. Recommend that this area is left for a future operator to retrofit at their discretion
- Exercise area – carpet flooring is in fair condition but likely at the end of its service life. Option to replace with carpet tile
- Weights area – rubberized matt floor tiles are in bad shape and showing wear. Surface is uneven for walking. Consider removal and replacement with resilient flooring.
- Squash/racquet ball courts – hardwood in reasonable shape but excessive squeaking when walked on. Option to replace

Ceilings:

- Exposed ceiling in good conditon for the most part. Minor roof leaks have peeled paint and show minor water damage. Carry allowance for minor repoainting once roof has been repaored
- T-bar ceilings are in fair shape and still serviceable for the most part. The ceiling tiles in the Men's and Women's change areas showed signs of sagging (likely due to increase humidity levels from pool and showers) Ceiling tiles in these areas should be replaced
- Drywall ceilings – in limited areas. No issues observed

Ceramic Tile:

- Tile in pool area is in reasonable condition although it will need to be removed and replaced if the waterproofing of the pool is being considered. Refer to report by aquatics engineers
- Ceramic tiles in washroom areas were in reasonable condition. No issues observed

Painting: (all paints to be low V.O.C.)

- Majority of interior surfaces are painted and in reasonable shape although showing signs of wear after 30 years of use. Repainting should be considered as part of an ongoing facility upgrade during regular maintenance.

Division 10 – Specialties

Toilet Specialties:

Way-finding Signage

Division 11 – Equipment

- Pool equipment – refer to report from aquatics engineering report

Division 12 – Furnishings

- n/a

.-

Division 13 – Special Construction

- n/a

Division 14 – Conveying Systems

- Passenger elevator – was operable when tested at our site visit. Site personnel advised that the elevator had not been serviced in several years and should not be used until it has passed inspection.

Alternative Uses

Option 1 Ground Floor

Infill existing pool to convert into an additional gym space.

- Remove all ceramic tile pool deck finishes.
- Pool deck infilled with joists and OWSJ's using the existing concrete walls of the pool as foundations.
- Provide ledgers at edge to support the beams/joists.
- Provide a steel deck with concrete topping to bring the floor level with the existing concrete deck around the pool.
- Provide resilient flooring suitable for gym type uses thoughout the area.
- Provide court lines for basketball court, badminton courts and/or pickleball courts.
- Provide a climbing wall and associated safety apparatus at the east end of the area.

Option 1 Second Floor

Convert a portion of the existing exercise area to multi-purpose rooms.

- Remove all floor and ceiling finishes.
- Provide new drywall partitions to underside of deck
- 16 mm drywall on 150 - 26 ga steel studs @ 400 mm o.c. with sound batts between studs (No fire rating required)
- Provide carpet tile flooring on underlayment with rubber base
- Paint all new partitions
- Provide new 600x1200 acoustic tile ceiling with new LED light fixtures. Provide new S/A and R/A grilles per mechanical revised layout
- Provide aluminum doors and interior screens in north wall per diagram. Provide kitchenette areas with fridge, sink and dishwasher and microwave for minor snack prep.
- Provide associated plumbing and revised mechanical distribution to suite new layout. Modify sprinkler head layout as required to match new layout. No structural modifications required
- Provide optional allowance to reconfigure washroom area at Men's change room into additional washrooms for multi-purpose use.
- Allow for electrical and data distribution to be connect with base building systems
- Provide audio/visual systems and screens suitable for presentations
- Furnishings (stacking chairs/tables not included)

Option 2 Second Floor

Convert a portion of the existing second floor exercise area to administrative offices

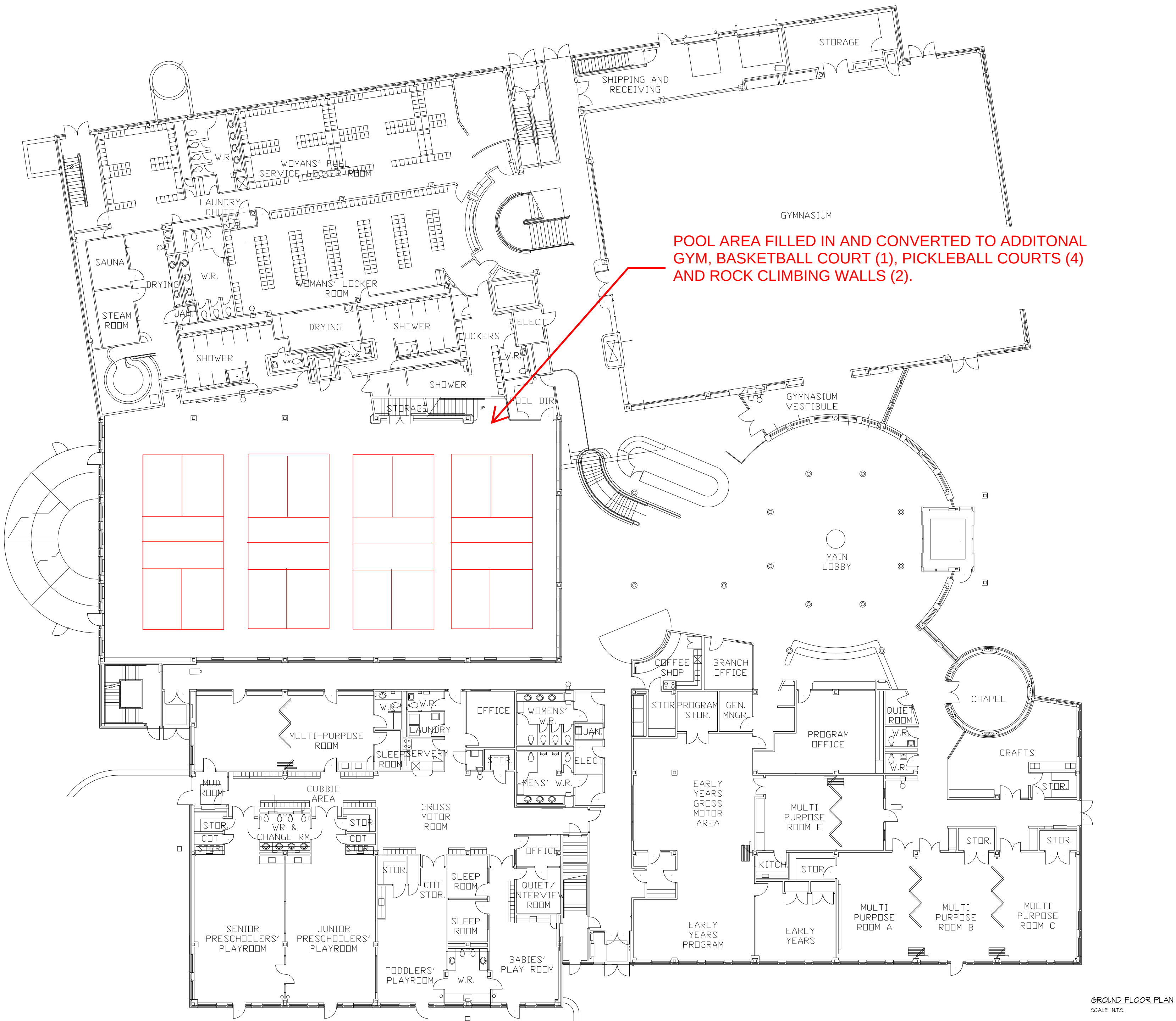
- Remove all floor and ceiling finishes.
- Provide new drywall partitions to underside of deck per attached diagram
- 16 mm drywall on 150 26 ga steel studs @ 400 mm o.c. with sound batts between studs (No fire rating required)
- Provide carpet tile flooring on underlayment with rubber base
- Paint all new partitions
- Provide new 600x1200 acoustic tile ceiling with new LED light fixtures. Provide new S/A and R/A grilles per mechanical revised layout
- Provide aluminum doors and interior screens office and conference room walls per diagram. Provide staff kitchen area with fridge, sink and dishwasher and microwave.
- Provide associated plumbing and revised mechanical distribution to suite new layout. Modify sprinkler head layout as required to match new layout. No structural modifications required
- Provide optional allowance to reconfigure washroom area at Men's change room into additional washrooms for office use.
- Allow for electrical and data distribution to be connect with base building systems
- Furnishings (office desks, chairs, meeting room tables not included)

END OF OUTLINE SPECIFICATION

APPENDIX

D

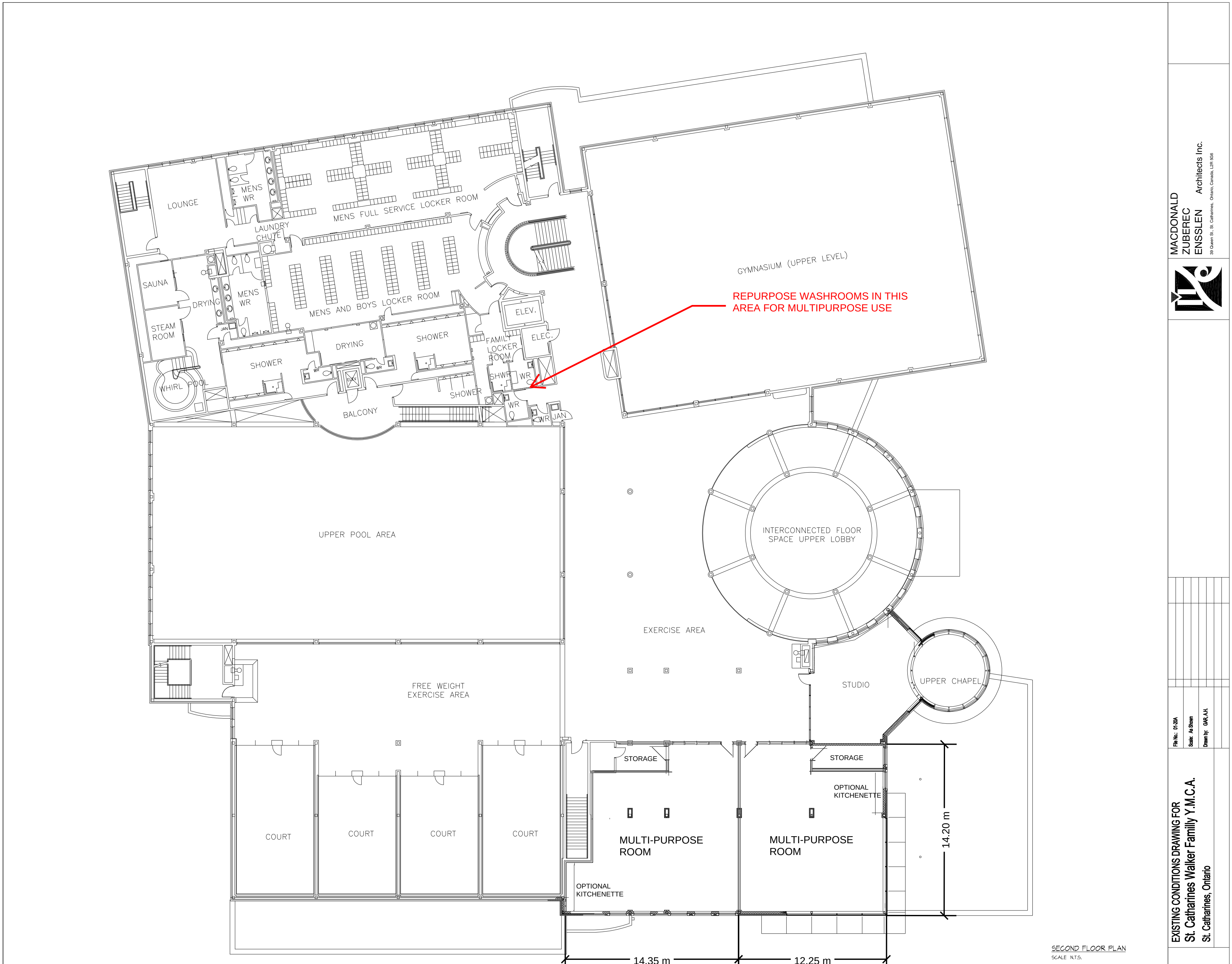
ALTERNATIVE USES SKETCHES



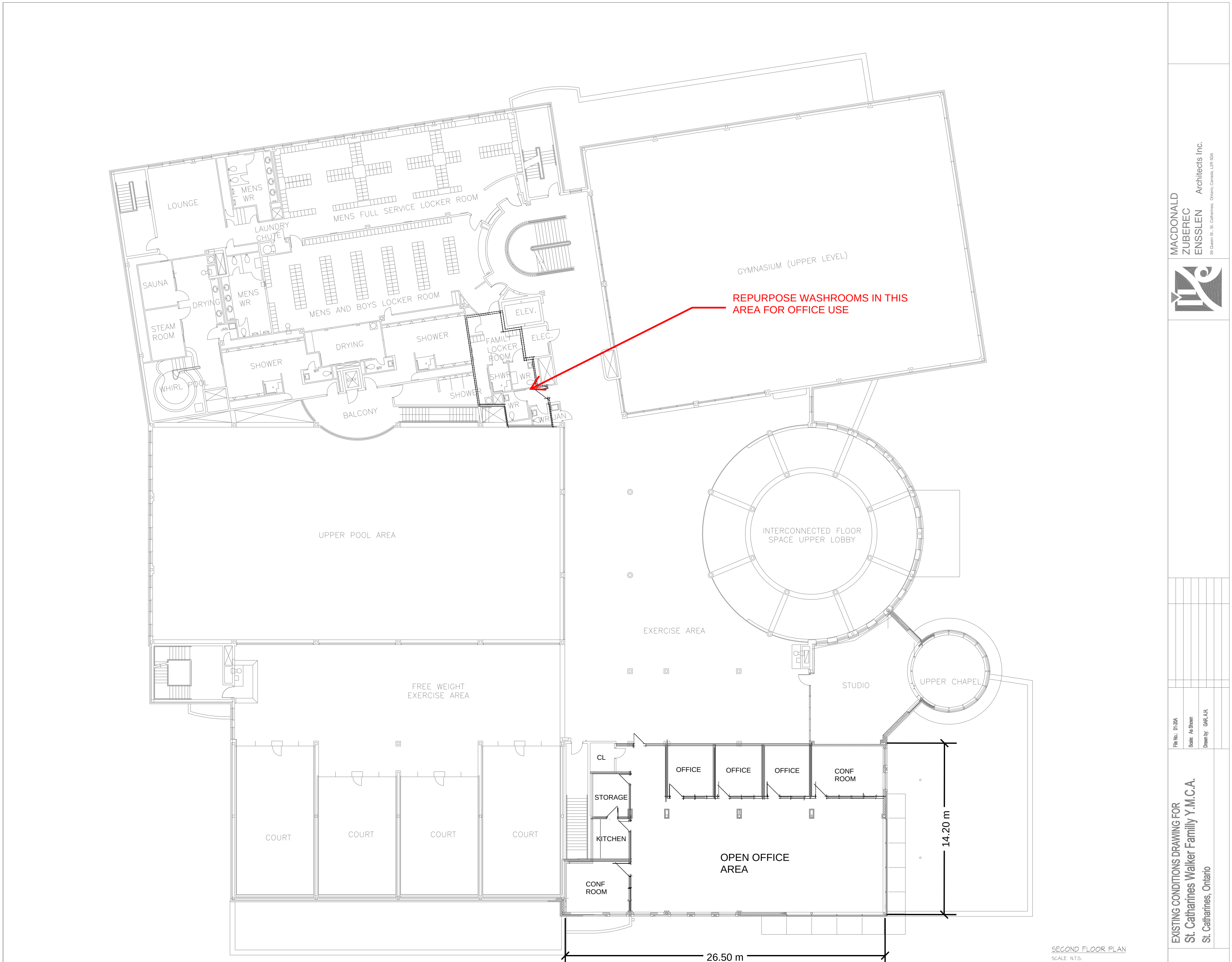
ALTERNATIVE USES: GROUND FLOOR OPTION 1

MACDONALD ZUBEREC ENSSLEN Architects Inc.

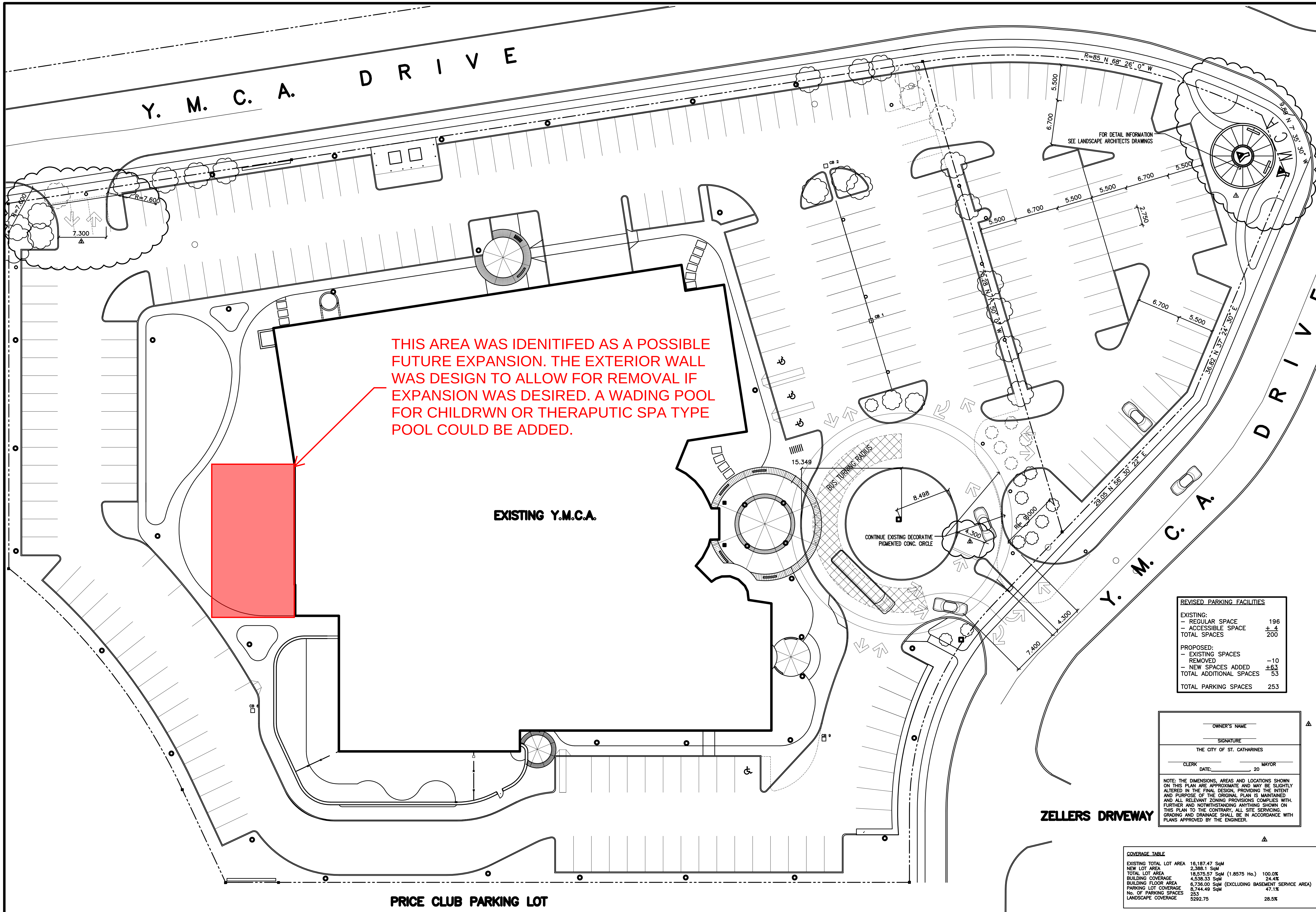
EXISTING CONDITION DRAWING FOR
St. Catharines Walker Familly Y.M.C.A.
St. Catharines, Ontario


LOUNGE
MENS WR
MENS FULL SERVICE LOCKER ROOM
LAUNDRY CHUTE
SAUNA
DRYING
MENS WR
STEAM ROOM
MENS AND BOYS LOCKER ROOM
SHOWER
DRYING
SHOWER
ELEV.
FAMILY LOCKER ROOM
ELEC.
SHWR
WR
WHIRL POOL
SHOWER
WR
WR
JAN
BALCONY
GYMNASIUM (UPPER LEVEL)
REPURPOSE WASHROOMS IN THIS AREA FOR MULTIPURPOSE USE
UPPER POOL AREA
INTERCONNECTED FLOOR SPACE UPPER LOBBY
EXERCISE AREA
FREE WEIGHT EXERCISE AREA
STUDIO
UPPER CHAPEL
STORAGE
STORAGE
OPTIONAL KITCHENETTE
COURT
COURT
COURT
COURT
MULTI-PURPOSE ROOM
MULTI-PURPOSE ROOM
OPTIONAL KITCHENETTE
14.20 m
14.35 m
12.25 m
SECOND FLOOR PLAN
SCALE N.T.S.
MACDONALD ZUBEREC ENSSLEN Architects Inc.
EXISTING CONDITIONS DRAWING FOR
St. Catharines Walker Familly Y.M.C.A.
St. Catharines, Ontario

ALTERNATIVE USES: SECOND FLOOR OPTION 1


LOUNGE
MENS WR
MENS FULL SERVICE LOCKER ROOM
LAUNDRY CHUTE
SAUNA
DRYING
MENS WR
MENS AND BOYS LOCKER ROOM
STEAM ROOM
SHOWER
DRYING
SHOWER
ELEV.
ELEC.
FAMILY LOCKER ROOM
SHWR
WR
WR
JAN
SHOWER
WHIRL POOL
BALCONY
GYMNASIUM (UPPER LEVEL)
REPURPOSE WASHROOMS IN THIS AREA FOR OFFICE USE
UPPER POOL AREA
INTERCONNECTED FLOOR SPACE UPPER LOBBY
EXERCISE AREA
FREE WEIGHT EXERCISE AREA
STUDIO
UPPER CHAPEL
COURT
COURT
COURT
COURT
CL
STORAGE
KITCHEN
CONF ROOM
OFFICE
OFFICE
OFFICE
CONF ROOM
OPEN OFFICE AREA
14.20 m
26.50 m
SECOND FLOOR PLAN
SCALE N.T.S.
MACDONALD ZUBEREC ENSSLEN Architects Inc.
EXISTING CONDITIONS DRAWING FOR
St. Catharines Walker Familly Y.M.C.A.
St. Catharines, Ontario

ALTERNATIVE USES: SECOND FLOOR OPTION 2



REVISED PARKING FACILITIES

EXISTING:
- REGULAR SPACE 196
- ACCESSIBLE SPACE + 4

TOTAL SPACES 200

PROPOSED:
- EXISTING SPACES REMOVED −10
- NEW SPACES ADDED +63

TOTAL ADDITIONAL SPACES 53

TOTAL PARKING SPACES 253

OWNER'S NAME

SIGNATURE

THE CITY OF ST. CATHARINES

CLERK MAYOR

DATE:________, 20

NOTE: THE DIMENSIONS, AREAS AND LOCATIONS SHOWN ON THIS PLAN ARE APPROXIMATE AND MAY BE SLIGHTLY ALTERED IN THE FINAL DESIGN, PROVIDING THE INTENT AND PURPOSE OF THE ORIGINAL PLAN IS MAINTAINED AND ALL RELEVANT ZONING PROVISIONS COMPLIES WITH. FURTHER AND NOTWITHSTANDING ANYTHING SHOWN ON THIS PLAN TO THE CONTRARY, ALL SITE SERVICING. GRADING AND DRAINAGE SHALL BE IN ACCORDANCE WITH PLANS APPROVED BY THE ENGINEER.

COVERAGE TABLE

EXISTING TOTAL LOT AREA	16,187.47 SqM	
NEW LOT AREA	2,388.1 SqM	
TOTAL LOT AREA	18,575.57 SqM (1.8575 Ha.)	100.0%
BUILDING COVERAGE	4,538.33 SqM	24.4%
BUILDING FLOOR AREA	6,736.00 SqM (EXCLUDING BASEMENT SERVICE AREA)	
PARKING LOT COVERAGE	8,744.49 SqM	47.1%
No. OF PARKING SPACES	253	
LANDSCAPE COVERAGE	5292.75	28.5%

ALTERNATE USES: ADDITON OPTION 3

YMCA SITE PARKING

SCALE: 1:200

MACDONALD ZUBEREC ENSSLEN Architects Inc.

No.	Revisions:	Date:
1	Landscaping @ intersection	7/19/02
2	Adjusted driveway widths	9/5/02

File No.: 01-208

Scale: AS SHOWN

Drawn by: GAR

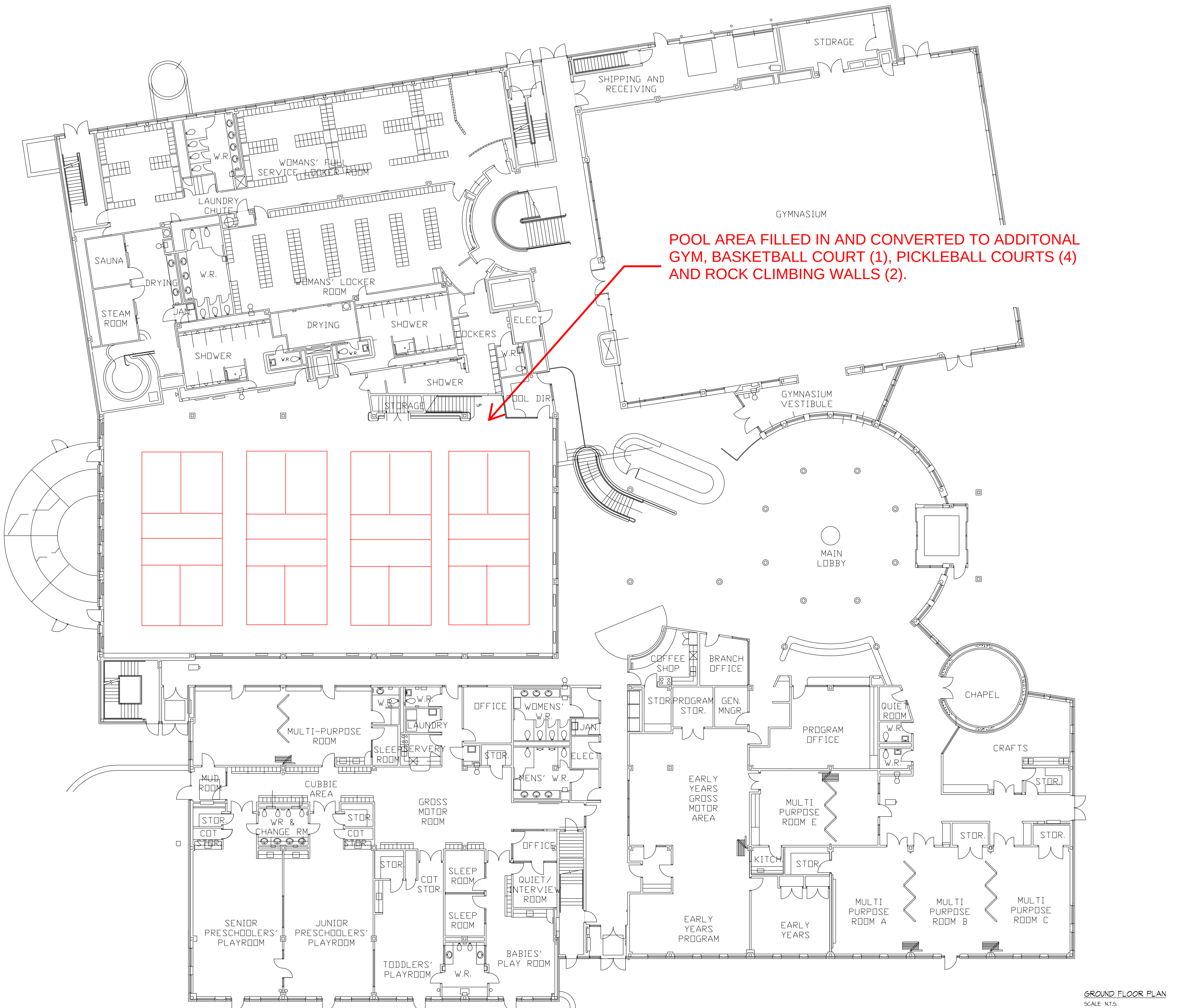
Date: June 28, 2002

FACILITIES EXPANSION STUDY

for the St.Catharines Walker Family Y.M.C.A.

SITE PARKING & GROUND FLOOR PLAN

A1



ALTERNATIVE USES: GROUND FLOOR OPTION 4

MACDONALD ZUBEREC ENSSLEN Architects Inc.
39 Queen St., St. Catharines, Ontario, Canada, L2R 5G6

File No.: 01-30A
Scale: As Shown
Drawn by: GAR, A.H.

EXISTING CONDITION DRAWING FOR
St. Catharines Walker Familly Y.M.C.A.
St. Catharines, Ontario

APPENDIX

E

CB AND MH LOCATION PLAN IDENTIFIES THE INFERRED LOCATION OF TWO BURIED MHS

PLAN OF SURVEY OF
PART OF LOTS 17 & 18
CONCESSION 4
GEOGRAPHIC TOWNSHIP OF GRANTHAM
AND
PART OF LOT 103
REGISTERED PLAN 330 (AMENDED BY R013627)
IN THE
CITY OF ST. CATHARINES

SCALE 1:200
0 5 10 metres
NICHOLAS P. MUTH O.L.S.

F-1: CB AND MH LOCATION PLAN

NOTE:
ALL BUILDING TIES TAKEN TO BRICK

NOTE:
PLASTIC BARS PLANTED DUE TO PRESENCE OF UNDERGROUND UTILITIES

LEGEND

SIGN THUS □	DENOTES A SURVEY MONUMENT PLANTED
SIGN THUS ■	DENOTES A SURVEY MONUMENT FOUND
SIB	DENOTES STANDARD IRON BAR
PB	DENOTES PLASTIC BAR
CP	DENOTES CONCRETE PIN
CC	DENOTES CUT CROSS
(OU)	DENOTES ORIGIN UNKNOWN
(744)	DENOTES R. J. MATTHEWS, O.L.S.
(WIT)	DENOTES WITNESS
(MEAS)	DENOTES MEASURED
P1	DENOTES PLAN 30R-7523
P2	DENOTES PLAN 30R-7539
P3	DENOTES PLAN 30R-8302
P4	DENOTES PLAN 30R-6841
BW	DENOTES BOTTOM OF WALL
℄	DENOTES CENTRELINE
BPED	DENOTES BELL PEDESTAL
CB	DENOTES CATCH BASIN
HH	DENOTES HANDHOLE
HYD	DENOTES HYDRANT
HP	DENOTES HYDRO POLE
LS	DENOTES LIGHT STANDARD
MHW	DENOTES WATER MANHOLE
BCC	DENOTES BACK OF CONCRETE CURB
TC	DENOTES TOP OF CONCRETE
SAMH	DENOTES SANITARY MANHOLE
STMH	DENOTES STORM MANHOLE
TW	DENOTES TOP OF WALL
WV	DENOTES WATER VALVE
200⌀	DENOTES 200mm DIAMETER
213.80	DENOTES ELEVATION (METRES)
✿	DENOTES DECIDUOUS TREE
✹	DENOTES CONIFEROUS TREE

BENCHMARK
MONUMENT No. 0011963U3519
LOCATED IN ST. CATHARINES
MONUMENT TYPE: TABLET

LOCATION: CHURCH OF ST. MARY, A RED STONE BUILDING ON SOUTH SIDE OF ST. PAUL CRESCENT AT INTERSECTION WITH ST. PAUL STREET WEST (HIGHWAY No. 8), 1.8km SOUTHWEST OF COURTHOUSE, 0.2km EAST OF HIGHWAY No. 8 OVERPASS OVER C.N.R., TABLET IN EAST FACE OF BELL TOWER IN FIRST COURT OF STONE ABOVE GROUND, 25cm SOUTH OF NORTHEAST CORNER, 13cm ABOVE GROUND LEVEL.

ELEVATION: 111.885m CGVD 28:78

NOTES:
- P.I.N. 46236-0023 IS NOT SUBJECT TO ANY EASEMENTS OR INTERESTS
- P.I.N. 46236-0024 IS SUBJECT TO AN EASEMENT AS IN INST. No. R0715095. FOR THE SPECIFIC LOCATION OF THE EASEMENT, REFER TO THE FACE OF THE PLAN.
- THE TITLE INFORMATION FOR P.I.N. 46236-0024 SUGGESTS THAT IT IS SUBJECT TO AN EASEMENT AS IN INST. No. R0637435 & INST. No. R0637393 IN FAVOUR OF ST. CATHERINES HYDRO-ELECTRIC COMMISSION AND THE CORPORATION OF THE CITY ST. CATHERINES, RESPECTIVELY. ACCORDING TO THE TITLE DOCUMENTS THE EASEMENTS WERE NEVER RELEASED OR ABANDONED. PHYSICAL FEATURES FOUND ON SITE SHOW A HYDRO LINE WITHIN THE LIMITS OF THE EASEMENT AND LOCATIONS OF MANHOLES SUGGESTS THAT THERE MAY BE MUNICIPAL SERVICES INSTALLED WITHIN THE LIMITS. FOR THE SPECIFIC LOCATION OF THE EASEMENT, REFER TO THE FACE OF THE PLAN
- FOR THE SPECIFIC LOCATION OF ANY PERMANENT FEATURES WITH RESPECT TO THE BOUNDARY LIMITS, PLEASE REFER TO THE FACE OF THE PLAN

BEARING NOTE:
BEARINGS ARE ASTRONOMIC AND ARE REFERRED TO THE SOUTHERLY LIMIT OF Y.M.C.A DRIVE AS SHOWN ON PLAN 30R-7539, HAVING A BEARING OF N84°08'25"W.

METRIC:
DISTANCES AND ELEVATIONS SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048

ASSOCIATION OF ONTARIO LAND SURVEYORS
PLAN SUBMISSION FORM
2177333
THIS PLAN IS NOT VALID UNLESS IT IS AN EMBOSSED ORIGINAL COPY ISSUED BY THE SURVEYOR In accordance with Regulation 1026, Section 29(3).

SURVEYOR'S CERTIFICATE:
I CERTIFY THAT:
1. THIS SURVEY AND PLAN ARE CORRECT AND IN ACCORDANCE WITH THE SURVEYS ACT, THE SURVEYORS ACT AND THE LAND TITLES ACT AND THE REGULATIONS MADE UNDER THEM.
2. THE SURVEY WAS COMPLETED ON THE 19th DAY OF OCTOBER, 2021

NOVEMBER 8, 2021
DATE

NICHOLAS P. MUTH
ONTARIO LAND SURVEYOR

A. J. Clarke and Associates Ltd.
SURVEYORS • ENGINEERS • PLANNERS
25 MAIN STREET WEST, SUITE 300
HAMILTON, ONTARIO, L8P 1H1
TEL. 905-528-8761 FAX 905-528-2289
email: ajc@ajclarke.com

PROJECT No. 218228D

H:\30\GRANTHAM\CON04\LOT18\25 YMCA Drive (218228D)\CURRENT\T-3326.dwg

T-3326

APPENDIX

F

PROPOSED ROOF LAYOUT OF DECARBONIZATION / MECHANICAL UNITS

F-2: PROPOSED ROOF LAYOUT

EXISTING COOLING TOWER TO BE REPLACED WITH FLUID COOLER, SAME LOCATION, WILL HAVE LARGER FOOTPRINT AS SHOWN AND NEW OPERATING WEIGHT IS 3,125 KG

NEW SPLIT OUTDOOR CONDENSING UNIT FOR POOL DEHUMIDIFIER

EXISTING RTU-2 AND RTU-3 TO BE REPLACED WITH LARGER UNITS WITH BUILT-IN HRV AND DX COOLING. THE UNITS WILL NEED TO BE SHIFTED TO THE WEST TO MAKE SPACE FOR THE NEW FLUID COOLER AND ASHP BOILERS

POTENTIAL AREA FOR SOLAR PANELS

NEW ASHP BOILERS TO BE MOUNTED ON NEW RAISED STRUCTURAL PLATFORM (TYPICAL OF 4)

NEW EXHAUST DUCT PENETRATIONS THROUGH EXTERIOR WALL OF MECHANICAL ROOM

NEW EXHAUST DUCT PENETRATION THROUGH ROOF OF MECHANICAL ROOM AND RUN ACROSS ROOF TO CONNECT TO NEW ERV

POTENTIAL AREA FOR SOLAR PANELS

RTU-1 SPLIT INTO TWO SMALLER UNITS, RTU-1A AND RTU-1B. GENERALLY SHOULD BE ABLE TO RE-USE EXISTING ROOF OEPNINGS

POTENTIAL AREA FOR SOLAR PANELS

POTENTIAL AREA FOR SOLAR PANELS

NEW RTU-4, WITH BUILT-IN ERV WHEEL, ELECTRIC HEATER, NO COOLING

NEW RTU-5A, RE-USE EXISTING OPENING THROUGH ROOF FOR RETURN AIR

POTENTIAL AREA FOR SOLAR PANELS

NEW LOCATION OF RTU-5B POSSIBILITY TO RE-USE EXISTING OPENING THROUGH ROOF FOR RETURN AIR

POTENTIAL AREA FOR SOLAR PANELS

NEW RTU-6 LOCATION ON ROOF, WITH NEW RETURN AIR DUCT OPENING THROUGH ROOF

EXISTING LOCATION OF RTU-7 TO REMAIN, UNIT REPLACED WITH ASHP MODEL

Notes:

1. DUCTS TO BE FIXED TO ROOF AT MAXIMUM OF 2000mm ON CENTRE.
2. HORIZONTAL DUCTS TO BE 600 CLEAR OF FINISH ROOFING.
3. GAS LINES ON ROOF TO BE SUPPORTED ON 150X150X600 PRESSURE TREATED WOOD SLEEPERS.

Last Edit: 7/14/93 at 8:56 AM

STIMZ Project No. 9013 Drawing No. M204

Smith and Andersen Consulting Engineers Toronto / Ontario / 487-8151

LICENSED PROFESSIONAL ENGINEER MECHANICAL W. G. FINES 9111 PROVINCE OF ONTARIO

No.	Revision	Date
2.	ISSUED FOR TENDER	JULY 17, 1992
1.	ISSUED FOR BUILDING PERMIT	JUNE 22, 1992

Drawn by: T.H.
Checked by: W.G.F.
Date: JUNE 22, 1992

ST. CATHARINES WALKER FAMILY Y.M.C.A.

ST. CATHARINES ONTARIO

Drawing Title: THIRD FLOOR PLAN MECHANICAL

Scale: 1:100

SHORE TILBE IRWIN & PARTNERS
MACDONALD & ZUBEREC ARCHITECTS INC
Architects in Joint Venture for the St. Catharines Walker Family YMCA
36 QUEEN ST. SUITE 402 ST. CATHARINES ONTARIO L2R 5G5 TEL (416) 685-8467 FAX (416) 685-8652
Toronto Office 20 DUNCAN STREET SUITE 300 TORONTO ONTARIO M5H 3G8 TEL (416) 971-6060 FAX (416) 971-8763

STIMZ

STIMZ Project No. 9013 Drawing No. M204

APPENDIX

G

COST FEASIBILITY REPORT (BY XGC)

YMCA St. Catharines

25 YMCA Drive

St. Catharines, ON

Cost Feasibility Report

For: WSP Canada Inc.

Revision 2
July 31, 2024

XGC Consulting Inc.

PRECONSTRUCTION SPECIALISTS

COSTING | TENDERING | MANAGEMENT

Kim McCarthy
(365) 888-2878
kmccarthy@xgcconsulting.ca

Tara Myers
(226) 938-7788
tmyers@xgcconsulting.ca

1. INTRODUCTION

Instructions Received

XGC was retained by WSP Canada Inc. ((WSP) the ”Client”) to provide a Cost Feasibility report to support the “Potential Owner” in understanding the feasibility of the potential purchase supporting the cost structure for rehabilitation, recommissioning, decarbonization options and alternate programs.

This Cost Feasibility Report (“Report”) has been prepared by XGC Consulting Inc (“XGC”). This Report is intended to provide a general overview of the elemental features of the assessment as outlined by the Client and the Owner, including assumptions made to establish the costing based on current market standard unit rates.

Reporting Qualifications

XGC has completed a cost feasibility review of the information provided associated with the Building Condition Assessment, Alternative Use Options and Decarbonization/Future Decarbonization requirements for the potential site located at 25 YMCA Dr., in St. Catharines, Ontario.

XGC does not make any representation or warranty as to the factual accuracy of the information provided to us on behalf of the Client, its subcontractors or agents and/or the Owner, upon which this Report is based. XGC does not accept accountability for information that has not been provided to us or is not available at the time of preparing this report. We note that a site visit was not completed nor were pictures available for viewing of the existing spaces.

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2. EXECUTIVE SUMMARY

The intent of this Cost Feasibility Report developed for WSP is to identify project feasibility requirements from a cost perspective on the identified construction scopes of work.

This Cost Plan is indicative of a Rough Order of Magnitude (ROM) estimate at a "Concept" stage – it is generally expected to be within +/-35% of the actual tendering projections. This is provided to you in an elemental cost analysis format based upon existing documents provided and consultant reportings which include design brief/description regarding the project requirements. XGC has identified our understanding of the work and our assumptions herewith.

The Cost Feasibility Report is priced using current rates and reflects present market conditions. XGC has not included price escalation for any works and has costed this budget using Q2-2024 rates unless otherwise noted.

This Cost Plan presented is an opinion of probable costs which are based on normal competitive conditions and is intended as a snapshot of current tendering situations. Adverse market conditions, proprietary specifications or lack of sub-contractor pricing may cause it to vary from reasonable estimates based on normal conditions. Please note that escalation should be monitored on a regular basis throughout the remainder of the design process.

The overall plan consists of the following:

- **Building Condition Assessment Costing (Immediate)**
  - Pavement replacement
  - Leveling/rework of sidewalks and unit pavers
  - Addition of exterior tactile warning strips
  - Repairs to site services, flush and clean systems
  - Groom existing landscaping
  - Minor casework repairs
  - Remove/replace roof system
  - Ceiling repairs due to water leaks
  - Flooring replacement
  - Painting as required
  - Refurbishment and commissioning of pool/whirlpool equipment, decking and tanks
  - Addition of accessibility ramp and handrails into existing lane pool
  - Watertightness testing allowance
  - Immediate mechanical system replacements, existing equipment servicing and commissioning of systems. Replace existing control system with new.
  - Remove/replace immediate end of life electrical components, exit signage, emergency lighting, security/PA systems, data/communication system and fire alarm. Replace existing lighting with LED retrofit or full fixture replacement.

- **Decarbonization Costing for Immediate Works** *(Note: Scope of work items listed will replace or add to the Building Condition Assessment Costing as noted within the line items of the costing)*
  - Addition of solar panel system (optimized based on roof plan provided) and associated structural reinforcement and electrical requirements

  - Additional R-Value added to roof replacement (Increased R-Value from R20 budgeted in BCA to R30)
  - Mechanical equipment replacement options

- ***Optional Decarb Costing: Increase R-Value Insulation at All Existing Walls***
  - *Add insulation outboard of existing brick veneer, install new lightweight panel siding system, associated support requirements and rework to window jambs/sills and roof parapets to suit*

- **Decarbonization Costing for Future Works (10-15 yrs)** *(Note: An escalation allowance has been placed on the budget for a 15yr time span)*
  - Structural roof reinforcement/platforms for new mechanical equipment with associated roofing scope of work.
  - Remove/replace all existing double-glazed window units with triple-glazed (including frames)
  - Mechanical equipment replacements for end of life conditions with associated electrical scope of work.

- **Accessibility Costing Report**
  - Floor and wall finish replacements
  - Millwork replacements
  - Signage, toilet partition and washroom accessory replacements
  - Plumbing rework and replacement requirements
  - Associated electrical scope of work

- **Alternative Use: Option 1 - Convert Existing 2nd Floor Exercise Area to New Multipurpose Space**
  - Demolition of existing finishes to support new scope of work plan
  - Kitchenette millwork
  - Full height PC350 Glazing and door system along frontage of each Multipurpose Room
  - New partitions, ceiling, flooring and painting requirements
  - Mechanical and electrical systems to support new scope of work plan

- **Alternative Use: Option 2 - Convert Existing 2nd Floor Exercise Area to New Office Space**
  - Demolition of existing finishes to support new scope of work plan
  - Kitchenette millwork
  - Full height PC350 Glazing and door system along frontage of each Multipurpose Room
  - New partitions, ceiling, flooring and painting requirements
  - Mechanical and electrical systems to support new scope of work plan

- **Alternative Use: Option 3 - New Building Addition to House Therapy Pool or Children's Pool**
  - Site Clearing and miscellaneous demolition
  - Excavation/backfill, foundations and slab on grade
  - Associated curbs, sidewalk and landscaping
  - Millwork allowance
  - Building envelope (walls and roofing) to match existing
  - Doors and window allowance

  - Partitions, ceiling, flooring, finishes allowance
  - Mechanical and electrical systems to support new scope of work plan

- **Alternative Use: Option 4 - Convert Existing Pool to New Sports Court Zone**
  - Demolition of existing pool deck and associated curbing/gutters
  - Infill pool tank with suspended structural floor composite deck system
  - Prepare area for new gym resilient flooring system with court lines
  - Supply and install climbing wall and associated safety apparatus
  - Demolish all pool mechanical systems. Install new dedicated air handling unit with new ductwork system and controls. Associated electrical system to support new scope of work plan.

The following Contingencies have been incorporated and is consistent with CIQS standards for this class of budget:

- Construction Contingency - 10%
- Design Contingency - 10%

The Rough Order of Magnitude +/- Delta for this project is identified as +35% / -35% due to stage and status of documents and scope of work.

An Owner's Anticipated Soft Cost Budget, however the following contingency has been included for this class of budget:

Design & Engineering - 20%

3. FEASIBILITY COSTINGS

The project design briefs and existing documentation for this report are at concept stage and do not necessarily provide relevant or proper dimensions of any specific element. General conversations were held with the consultants on the project to discuss potential scope of work scenarios and to confirm basic presumptions.

Calculations and exact representations of elements are not available at this time and costing assumptions will be subject to change as progress in the definition of scope is made.

The following is a summary of the total projected rough order of magnitude costs for all prescribed budget categories.

	Total ROM Project Costs ($)	Project Cost Variance +/- % ($)	
		-35%	+35%
Building Condition Assessment Costing (Immediate)	**$13,230,011**	$8,599,507	$17,860,515
Decarbonization Costing (Immediate)	**$5,286,069**	$3,435,944	$7,136,193
• Optional Decarb Costing: Additional Exterior Wall Insulation	**$3,865,835**	$2,512,792	$5,218,877
Decarbonization Costing (Future - 10-15yrs)	**$9,947,666**	$6,465,982	$13,429,349
Accessibility Costing	**$1,009,825**	$656,386	$1,363,263
Alternative Use: Option 1 - Convert Existing 2nd Floor Exercise Area to New Multipurpose Space	**$680,998**	$442,649	$919,347
Alternative Use: Option 2 - Convert Existing 2nd Floor Exercise Area to New Office Space	**$878,516**	$571,035	$1,185,996
Alternative Use: Option 3 - New Building Addition to House Therapy Pool or Children's Pool	**$2,552,320**	$1,659,008	$3,445,632
Alternative Use: Option 4 - Convert Existing Pool to New Sports Court Zone	**$2,577,286**	$1,675,235	$3,479,336

For comparative purposes, the costs associated with the pool recommissioning and the Alternative Use - Option 4 to convert the existing pool areas into a new sports court zone have been summarized below.

	Total Net Construction Costs ($)	Contingencies & Fees ($)	Total ROM Project Costs ($)	Project Cost Variance +/- % ($)	
				-35%	+35%
Existing Pool Recommissioning	$1,293,590	$870,948	**$2,165,538**	$1,406,950	$2,923,476
Alt Use - Option 4: Convert Existing Pool Areas to New Sports Court Zone	$1,540,260	$1,037,026	**$2,368,612**	$1,539,598	$3,197,626

3.1. Building Condition Assessment ROM Costing, Immediate

St Catharines YMCA - City of St. Catharines
Building Condition Assessment - Short Term
Class D/Feasibility Costing

Project name 24-046 - WSP St Catharines YMCA - Building Condition Assessment - Short Term

Notes GFA - 109,600sf

Feasability/Class D Budget - (+/- 35% Variance)

This estimate is completed in Elemental Format at a Class D stage.
XGC has not included any additional market condition and/or inflation and/or escalation allowances.

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	Element Level 1	Element Level 2	Element Level 3	Phase	Description	Takeoff Quantity	Total Cost/Unit	Total Amount	Notes
1	**A**				**SHELL**				
2		A3			Exterior Enclosure				
3			A32		Walls Above Grade				
4			A33		Windows and Entrances			10,000	
5			A34		Roof Covering			1,222,000	
6			A35		Projections			151,000	
					A3 Exterior Enclosure			1,383,000	
7		C1			Mechanical				
8			C13		HVAC			20,000	
					C1 Mechanical			20,000	
					A SHELL			1,403,000	
9	**B**				**INTERIORS**				
10		B2			Finishes				
11			B21		Floor Finishes			357,590	
12			B22		Ceiling Finishes			118,118	
13			B23		Wall Finishes			55,562	
					B2 Finishes			531,269	
14		B3			Fittings & Equipment				
15			B31		Fittings & Fixtures			5,000	
16			B32		Equipment			1,293,590	
17			B33		Conveying Systems			8,000	
					B3 Fittings & Equipment			1,306,590	
					B INTERIORS			1,837,859	
18	**C**				**SERVICES**				
19		C1			Mechanical				
20			C11		Plumbing & Drainage			159,000	
21			C13		HVAC			1,266,440	
22			C14		Controls			787,200	
					C1 Mechanical			2,212,640	
23		C2			Electrical				
24			C21		Service and Distribution			115,200	
25			C22		Lighting, Devices & Heating			650,000	
26			C23		Systems & Ancillaries			1,150,800	
					C2 Electrical			1,916,000	
					C SERVICES			4,128,640	
27	**D**				**SITE & ANCILLARY WORK**				
28		D1			Site Work				
29			D11		Site Development			860,946	
30			D12		Mechanical Site Services			31,700	
					D1 Site Work			892,646	
					D SITE & ANCILLARY WORK			892,646	

	Element Level 1	Element Level 2	Element Level 3	Phase	Description	Takeoff Quantity	Total Cost/Unit	Total Amount	Notes
1	**A**				**SHELL**				
2		A3			Exterior Enclosure				
3			A32		Walls Above Grade				
4					**Architectural Brick**				
5				***042110***	***Exterior Masonry Cracked Grout Joints, Discoloured Masonry & Staining Repair***	***0.00 sf***	***0.00 /sf***	***0***	***Repairs to be undertaken as general maintenance items during course of operations.***
6			A33		Windows and Entrances				
7					**Glass Glazing**				
8				088100	Skylights - Replace Cracked Glazing Units	2.00 no	5,000.00 /no	**10,000**	
					Glass Glazing			**10,000**	
					A33 Windows and Entrances			**10,000**	
9			A34		Roof Covering				
10					**Modified Bituminous Membrane Roofing**				
11				075200	Remove/Replace All Roof Drains, Allowance	27.00 no	1,000.00 /no	**27,000**	
12				075200	Remove/Replace 1-Ply EPDM System (Ballast, Membrane, Insulations, Vapour Retarder/Sheathing)	46,000.00 sf	25.00 /sf	**1,150,000**	
13				075200	New Patio Stones, Allowance	1.00 ls	5,000.00 /ls	**5,000**	
					Modified Bituminous Membrane Roofing			**1,182,000**	
14					**Sheet Metal Flashing & Trim**				
15				076200	Roof Metal Misc. Flashing & Trims, Allowance	1.00 ls	30,000.00 /ls	**30,000**	Includes Skylights
					Sheet Metal Flashing & Trim			**30,000**	
16					**Joint Sealants**				
17				079200	Misc. Caulking Allowance - Roof	1.00 ls	10,000.00 /ls	**10,000**	
					Joint Sealants			**10,000**	
					A34 Roof Covering			**1,222,000**	
18			A35		Projections				
19					**Roof Specilties**				
20				077100	Flat Roof Parapet/Roof Works - Carpentry/Flashings	2,500.00 lf	60.00 /lf	**150,000**	
21				077100	Roof Top Curb Allowance for New Split Outdoor Condensing Unit for Pool Dehumidifier	1.00 ls	1,000.00 /ls	**1,000**	
					Roof Specilties			**151,000**	
					A35 Projections			**151,000**	
					A3 Exterior Enclosure			**1,383,000**	
22		C1			Mechanical				
23			C13		HVAC				
24					**HVAC**				
25				155000	Full Servicing & Refurbishment of Ex. LAARS Boilers #2/#3 Serving Hydronic Heating Loop System	2.00 no	10,000.00 /no	**20,000**	Model No. NTH1000NCX1
					HVAC			**20,000**	Expected Life after Service : 9 Years
					C13 HVAC			**20,000**	
					C1 Mechanical			**20,000**	
					A SHELL			**1,403,000**	
26	**B**				**INTERIORS**				
27		B2			Finishes				
28			B21		Floor Finishes				
29					**Resilient Flooring**				
30				096500	Weights Area - Remove Existing Rubberized Matt Floor Tiles/Replace with Resilient Sheet Flooring	3,449.00 sf	18.00 /sf	**62,082**	
31				096500	Remove/Replace Bubbling Resilient Sheet Flooring - Daycare (Prior to Lease)	3,526.00 sf	18.00 /sf	**63,468**	
32				096500	Resilient Flooring In Gross Motor Room - Remove/Replace Due to Bubbling	1,480.00 sf	18.00 /sf	**26,640**	
					Resilient Flooring			**152,190**	
33					**Carpeting**				
34				***096800***	***Carpet - Daycare Office (Remove/Replace)***	***0.00 sf***	***0.00 /sf***	***0***	***Future daycare operator to replace if/as necessary***
35				096800	Carpet - Exercise Area (Remove Sheet Carpet, Replace with Carpet Tile)	9,895.00 sf	20.00 /sf	**197,900**	

	Element Level 1	Element Level 2	Element Level 3	Phase	Description	Takeoff Quantity	Total Cost/Unit	Total Amount	Notes
					Carpeting			**197,900**	
36					**High-Performance Coatings**				
37				099600	Rusted Steel Roof Members Due to Roof Leaks to be Protected, Allowance	1.00 ls	7,500.00 /ls	**7,500**	Area Qty To be Determined
					High-Performance Coatings			**7,500**	
					B21 Floor Finishes			**357,590**	
38			B22		**Ceiling Finishes**				
39					**Gypsum Board**				
40				092900	Gypsum Board - Ceilings, Repairs Due to Water Leaks, Allowance (Assume 10% of Second Floor)	3,695.00 sf	9.00 /sf	**33,255**	Area of Drywall Ceiling vs ACT Ceiling Unknown, Allowances Taken
					Gypsum Board			**33,255**	
41					**Acoustical Ceilings**				
42				095100	Remove/Replace ACT Due to Roof Leakage, Allowance (Assume 10% of Second Floor)	3,695.00 sf	7.50 /sf	**27,713**	Area of Drywall Ceiling vs ACT Ceiling Unknown, Allowances Taken
43				095100	Standard ACT Ceiling - Men's & Women's Change Area - Remove Existing, Replace with New	7,620.00 sf	7.50 /sf	**57,150**	
					Acoustical Ceilings			**84,863**	
					B22 Ceiling Finishes			**118,118**	
44			B23		**Wall Finishes**				
45					**Wall Coverings**				
46				097200	Laundry Rm - Repair Finishes from Water Leak, Allowance	1.00 ls	5,000.00 /ls	**5,000**	Assume 10' x 10' Repair Area
					Wall Coverings			**5,000**	
47					**Painting**				
48				099100	Paint - Metal Decorative Cornices at Main Entry & Chapel Roof (Exterior)	1.00 ls	20,000.00 /ls	**20,000**	
49				099100	Patch/Paint - Existing Paritions (Refresh), Allowance	1.00 ls	20,000.00 /ls	**20,000**	
50				099100	Patch/Paint - Existing Ceilings (Refresh), Allow 10% Per Floor	9,105.00 sf	1.16 /sf	**10,562**	
					Painting			**50,562**	
					B23 Wall Finishes			**55,562**	
					B2 Finishes			**531,269**	
51		B3			**Fittings & Equipment**				
52			B31		**Fittings & Fixtures**				
53					**Architectural Wood Casework**				
54				064100	Reception Desk - Remove/Replace Plam Countertop with Solid Surface, Allowance	1.00 ls	5,000.00 /ls	**5,000**	
55				***064100***	***Daycare Cubbies & Kitchenette Repairs***	***0.00 ls***	***0.00 /ls***	***0***	***Repairs to be completed by independant daycare operator who might lease the facility***
					Architectural Wood Casework			**5,000**	
					B31 Fittings & Fixtures			**5,000**	
56			B32		**Equipment**				
57					**Special Construction**				
58				130001	Whirlpool - Replacement of Horizontal Sand Filters	2.00 no	50,000.00 /no	**100,000**	Cost Provided by Consultant
59				130001	New Main Pool Filtration System - New Filters	1.00 ls	250,000.00 /ls	**250,000**	Cost Provided by Consultant
60				130001	New Main Pool Filtration System - New Filter Pump	1.00 ls	17,000.00 /ls	**17,000**	
61				130001	New Main Pool Filtration System - New Associated Piping, Fittings Etc.	1.00 ls	100,000.00 /ls	**100,000**	
62				130001	Sanitation System - Chemical Tank Vents to Atmosphere	2.00 no	850.00 /no	**1,700**	
63				130001	Main Pool/Men's & Women's Whirlpool Decks - Replacement of Tile and/or Grout, New Membrane, c/w Tactile Walking Surface Indicator Tiles	4,326.00 sf	65.00 /sf	**281,190**	
64				130001	Main Pool Tank - Replacement of Tile and/or Grout (At Shallow to Deep End Transition)	40.00 sf	65.00 /sf	**2,600**	Small Area Denoted in Aquatic D&E Report, area approximated
65				130001	Main Pool Tank - Replacement of Tile and/or Grout (2" Wide Contrasting Band at All Main Drains for Code)	3.00 no	1,000.00 /no	**3,000**	
66				130001	Main Pool Tank - Remove/Replace New Main Drain Sumps and/or Covers	3.00 no	500.00 /no	**1,500**	
67				130001	Men's & Women's Whirlpool Tank - Replacement of Tile and/or Grout	1,100.00 sf	65.00 /sf	**71,500**	

	Element Level 1	Element Level 2	Element Level 3	Phase	Description	Takeoff Quantity	Total Cost/Unit	Total Amount	Notes
					Special Construction				
68				130001	Pool/Whirlpool Public Notices and Safety Signage, Allowance	1.00 ls	3,000.00 /ls	**3,000**	
69				130001	Main Pool - Emergency Stop Button c/w Audible and Visual Alarm & Wiring	1.00 no	6,000.00 /no	**6,000**	
70				130001	Main Pool/Men's & Women's Whirlpools - Emergency Telephone	3.00 ls	5,000.00 /ls	**15,000**	
71				130001	Piping Accessories - Replacement of Valves, Hangers & Supports, Allowance	1.00 ls	10,000.00 /ls	**10,000**	
72				130001	Remove/Replace Pool & Whirlpool Drain Covers (OBC Compliance)	7.00 no	750.00 /no	**5,250**	
73				130001	Main Pool Gutter Grilles (Bronze) - Grind, Polish and Refinish with Protective Coating	24.00 no	150.00 /no	**3,600**	
74				130001	Whirlpools (Men's/Women's) - Replace Skimmer Suction Piping, Add Additional Skimmer to Accomodate Existing Flow Rate	2.00 no	5,000.00 /no	**10,000**	
75				130001	Main Pool - Additional Wall Return Fittings Required to Accomodate Flow Rate	1.00 ls	3,000.00 /ls	**3,000**	
76				130001	Whirlpools (Men's/Women's) - Additional Wall Return Fittings Required to Accomodate Flow Rate	1.00 ls	1,000.00 /ls	**1,000**	
77				130001	Main Pool - Remove & Dispose of Vacuum Fittings (4) with Associated Piping & Equipment	1.00 ls	10,000.00 /ls	**10,000**	
78				130001	Whirlpools (Men's/Women's) - Remove & Dispose of Vacuum & Equalizer Fittings (4) with Associated Piping & Equipment	1.00 ls	3,000.00 /ls	**3,000**	
79				130001	Main Pool - Replace Deteriorated Cup Anchors for Lane Ropes	1.00 ls	1,000.00 /ls	**1,000**	
80				130001	Whirlpools (Men's/Women's) - Supply and Install Transfer Rails or Pool Lifts for Accessibility, Allowance	1.00 ls	20,000.00 /ls	**20,000**	
81				130001	Clean & polish all Stainless Steel Components & Accesories, Allowance	1.00 ls	5,000.00 /ls	**5,000**	
82				130001	Supply & Install CO2 Monitoring System in Pool Mechanical Rm	1.00 ls	10,000.00 /ls	**10,000**	
83				130001	Upgrade of Splash Pad Return Piping Gear Clamps and Hose Barbs	1.00 ls	1,000.00 /ls	**1,000**	
84				130001	Supply & install UV System to Main Pool Filtration System (Conservative Sizing Allowance)	1.00 no	30,000.00 /no	**30,000**	
85				130001	Supply & install UV System to Whirlpool Filtration System	2.00 no	18,000.00 /no	**36,000**	
86				130001	Supply & install Variable Frequency Drives on All Pool Filter Pumps (2 - Main Pool, 1 ea. Whirlpool, Splashpad)	5.00 no	10,000.00 /no	**50,000**	
87				130001	Clean Splash Pad Vertical Interconnected Balance Tanks	3.00 no	750.00 /no	**2,250**	
88				130001	new concrete ramp c/w waterproofing, railings, rework mechanical and tile finish	1.00 ls	220,000.00 /ls	**220,000**	
89				130001	water tightness testing pool and whirlpool tank including all pipes etc.	1.00 ls	20,000.00 /ls	**20,000**	
					Special Construction			**1,293,590**	
					B32 Equipment			**1,293,590**	
90			B33		**Conveying Systems**				
91					**Elevators**				
92				142000	Passenger Elevator - Inspection/Minor Repair Allowance	1.00 ls	8,000.00 /ls	**8,000**	
					Elevators			**8,000**	
					B33 Conveying Systems			**8,000**	
					B3 Fittings & Equipment			**1,306,590**	
					B INTERIORS			**1,837,859**	
93	**C**				**SERVICES**				
94		C1			**Mechanical**				
95			C11		**Plumbing & Drainage**				
96					**Mechanical Demolition**				
97				150020	Remove Ex. 1500 Gallon Horizontal Storage Tanks	2.00 no	3,000.00 /no	**6,000**	Rm to be Utilized for Mech Equipment.
					Mechanical Demolition			**6,000**	
98					**Mechanical Civil**				
99				150100	Remove & Reinstate Dr Frame to Delivery Storage Tanks to Mech Rm.	1.00 ls	500.00 /ls	**500**	
100				150100	Allowance for Additional Reinforcement Below New Vert Storage Tanks, Allowance	6.00 no	2,500.00 /no	**15,000**	
101				150100	Allowance for Additional Reinforcement At New Pool Dehumidifier, Allowance	1.00 ls	8,000.00 /ls	**8,000**	Includes Associated Ceiling Repair Work
					Mechanical Civil			**23,500**	
102					**Plumbing**				
103				154100	528 Gallon Vertical Cement Lined Storage Tanks	6.00 no	16,000.00 /no	**96,000**	Equal to Lochinvar Lock-Temp Bare Storage Tanks (Model TVC528), 36" Dia, Delivery Through Single Door From Roof. Tanks Insulated Onsite.

	Element Level 1	Element Level 2	Element Level 3	Phase	Description	Takeoff Quantity	Total Cost/Unit	Total Amount	Notes
					Plumbing				
103									(To Replace Ex. 1500 Gallon Horiz. Tanks)
104				154100	Full Servicing of DHW Plate & Frame Heat Exchanger	1.00 ls	6,000.00 /ls	**6,000**	Includes Cleaning & Replacing Worn Plates/Gaskets
105				154100	Full Servicing & Re-Build of Ex. DHW Circulator Pump Btwn HE & Storage Tanks	1.00 no	3,000.00 /no	**3,000**	
106				154100	Provide New Strainer & DDC 2-Way Control Valve on Hydronic Heating Side of DHW HE	1.00 no	3,000.00 /no	**3,000**	
107				154100	Replace Ex. DHWR Pump Like-for-Like	1.00 no	5,000.00 /no	**5,000**	
108				154100	Full Servicing of all Sump Pumps, Allowance	7.00 no	1,500.00 /no	**10,500**	
109				***154100***	***Update Plumbing Fixtures to Comply w/ Accessibility Standard (To Be Considered)***	***0.00 ls***	***/ls***		***Not Included in BCA Costing. See Accessibility Costing for Specific Requirement.***
110				***154100***	***Localized Plumbing Repair Requirements***	***0.00 ls***	***/ls***		***Not Included in BCA Costing. Localized Repair Costs to be Allowed for In Operation/Maintenance Annual Budget.***
111				154100	Backflow Preventor on Main Incoming Service After Water Meter & At Sprinkler Incoming Service	2.00 no	3,000.00 /no	**6,000**	
					Plumbing			**129,500**	
					C11 Plumbing & Drainage			**159,000**	
112			C13		**HVAC**				
113					**Mechanical Demolition**				
114				150020	Demo Exhaust System in Laundry Rm & Associated AHU Located in Basement Mech Rm.	1.00 ls	10,000.00 /ls	**10,000**	Rm to be Utilized for Mech Equipment.
					Mechanical Demolition			**10,000**	
115					**Mechanical Civil**				
116				150100	Crane Allowance for Equipment Lifts	1.00 ls	15,000.00 /ls	**15,000**	
					Mechanical Civil			**15,000**	
117					**HVAC**				
118				155000	Remove/Replace Existing WSHP Fan Coil Units Throughout, Like for Like	47.00 no	5,000.00 /no	**235,000**	Includes Adding Isolation Valves, Stariner & 2-Way Control Valves for each. Reconnect to Existing Supply Duct. Note: Does Not Include New Pumps. Expected Median Life : 19 Years
119				155000	Flush & Clean Condenser Loop Piping, Local Repair Allowance, Assume 20% Replacement	1.00 ls	17,500.00 /ls	**17,500**	
120				155000	Replace Ex Condenser Water Pumps w/ New Duplex Pump Set w/ Built-in VFD's	2.00 no	8,320.00 /no	**16,640**	Provide New DP Sensor Across Most Hydraulically Remote Heat Pump Fan Coil Unit for Control of Pump Speed (Pumps 6 & 5) Expected Median Life : 20 Years
121				155000	Remove Boiler #1 & Heat Exchanger HX-2, Replace w/Qty 2 HE Condensing Boilers	1.00 ls	100,200.00 /ls	**100,200**	New Boilers Sized for 1500 MBH, equal to LAARS NeoTherm XTR Model 1500 c/w Dedicated Cirulator Pumps for each Boiler. Pipe New Boilers to Condenser/Heating Loops Serving WSHP's. See Decarbonization Budget for Optional Pricing. Expected Median Life : 25 Years
122				155000	Refurbishment of Ex. Cooling Tower, Including Replacement of Fill Media, Allowance	1.00 ls	35,000.00 /ls	**35,000**	Sizing Unknown Remaining Life : 9 Years
123				155000	Full Servicing of Cooling Tower Plate & Frame HE, Including Cleaning & Replacement of Plates &/or Gaskets, Allowance	1.00 ls	15,000.00 /ls	**15,000**	Defined Requirements To Be Determined.
124				155000	Full Service & Re-build of Ex Cooling Tower Pumps (Pumps 9 & 10)	2.00 no	3,000.00 /no	**6,000**	
125				155000	Replace Ex. Hydronic Heating Loop Pumps w/ New Duplex Pumps (Built It VFD's	2.00 no	10,000.00 /no	**20,000**	New DP Sensor for Pump Control Across Most Hydraulically Remote Major Heating Equipment for Control of Pump Speed. Expected Median Life : 20 Years
126				155000	Provide New 2-way Pressure Independent Control Valves for All Wall Fin Heaters, Ceiling Radiant Panels & Unit Heaters	1.00 ls	25,000.00 /ls	**25,000**	Allowance, qty TBD
127				155000	Flush/Clean Ex. Hydronic Heating Loop Piping, Local Repairs, Assume 20% Replacement	1.00 ls	17,500.00 /ls	**17,500**	Expected Median Life : 15 Years
128				155000	Full Servicing of Ex. RTU-1, RTU-5 & RTU-6	3.00 no	1,200.00 /no	**3,600**	Expected Median Life : 4-5 Years
129				155000	Replace Ex. RTU-7 - New RTU w/ DX Cooling & Gas Heating, Like for Like	1.00 ls	80,000.00 /ls	**80,000**	Equal to Trane Precedent High Efficiency w/

	Element Level 1	Element Level 2	Element Level 3	Phase	Description	Takeoff Quantity	Total Cost/Unit	Total Amount	Notes
					HVAC				
129									25-tons Cooling (Model No. THJ300 c/w Hot Gas Reheat, Comparative Enthalpy Economizer w/ Barometric Relief). See Decarbonization Budget for Optional Pricing. Expected Median Life : 15 Years
130				155000	Heat Recovery Pumps P1, P2 & P3 to be Overhauled & Commissioned	3.00 no	3,000.00 /no	**9,000**	Flush, Clean, Refill & Pressure Test Heat Recovery Loop Piping Expected Life after overhaul: 9 Years
131				155000	When Replacing WSHP Fan Coils Units, Add New VAV Boxes to Ventilation Duct Connections to All WSHP Units	47.00 no	3,000.00 /no	**141,000**	Expected Median Life : 20 Years
132				155000	Full Servicing of Steam Boilers Serving Men's & Women's Steam Rooms	2.00 no	10,000.00 /no	**20,000**	Expected Remaining Life : 20 Years
133				155000	Swimming Pool AHU-1 to be Replaced by Mech Dehumidification Unit w/ Remote Condensor	1.00 ls	500,000.00 /ls	**500,000**	Unit to Provide Hydronic Heating Auxillary Heating, DX Cooling, Ventilation, Dehumidification & Pool Water Heating. Expected Median Life : 15 Years
					HVAC			**1,241,440**	
					C13 HVAC			**1,266,440**	
134			C14		**Controls**				
135					**Mechanical Demolition**				
136				150020	Remove Ex. Air Compressor & Associated Pneumatic Tubing (Where Accessible)	1.00 ls	20,000.00 /ls	**20,000**	Existing Controls System
					Mechanical Demolition			**20,000**	
137					**Controls**				
138				159500	Replace Ex. Controls System Entirely w/ New DDC BAS	109,600.00 sf	7.00 /sf	**767,200**	Existing System Pneumatic Based.
					Controls			**767,200**	Expected Median Life : 15 Years
					C14 Controls			**787,200**	
					C1 Mechanical			**2,212,640**	
139		C2			**Electrical**				
140			C21		**Service and Distribution**				
141					**Service & Distribution**				
142				***164000***	***Electrical Service & Modification Requirements for New UV Pool/Whirlpool Filtration System***	***0.00 ls***	***0.00 /ls***	***0***	***Assumed Capacity is Sufficient***
143				164000	Replace Rusted Conduit in Basement Due to Water Leaks, Allowance	1.00 ls	5,000.00 /ls	**5,000**	
144				164000	Replacement of Step Down Transformers, Splitters, Disconnect Switches & Distribution Panels for Receptacles, Lighting & Appliance Circuits	1.00 ls	65,000.00 /ls	**65,000**	
145				164000	Replacement of MCC-1 & MCC-2	1.00 ls	25,000.00 /ls	**25,000**	MCC-1 (3rd Flr Mech Rm) - 600V, 800A, 3Ph, 42kA (Klockner Moeller), MCC-2 (Basement Mech Rm) - 600V, 600A, 3 Ph, 42 kA (Klockner Moeller)
146				164000	Mech Equipment Replacement Power & Low Voltage, Allowance	1.00 ls	20,200.00 /ls	**20,200**	
					Service & Distribution			**115,200**	
					C21 Service and Distribution			**115,200**	
147			C22		**Lighting, Devices & Heating**				
148					**Interior Lighting**				
149				165100	All Base Building Fixtures/Tubes Retrofitted w/ New LED Retrofit Kits OR Replaces w/ New LED Fixtures, Allowance	1.00 ls	450,000.00 /ls	**450,000**	Qty's Not Available
150				165100	All Exit Signs to be Replaced w/ New "Green Running Man", Remove/Replace New, Allowance	1.00 ls	100,000.00 /ls	**100,000**	Qty's Not Available
151				165100	Replace All Existing Emergency LIghting Battery Units & Remote Heads Replaced w/ New, Allowance	1.00 ls	100,000.00 /ls	**100,000**	Qty's Not Available
					Interior Lighting			**650,000**	
					C22 Lighting, Devices & Heating			**650,000**	
152			C23		**Systems & Ancillaries**				
153					**Security Systems**				

	Element Level 1	Element Level 2	Element Level 3	Phase	Description	Takeoff Quantity	Total Cost/Unit	Total Amount	Notes
					Security Systems				
154				166200	Security System to be Removed/Replaced, Allowance	109,600.00 sf	3.00 /sf	**328,800**	
155				166200	PA System to be Replaced	109,600.00 sf	1.00 /sf	**109,600**	
					Security Systems			**438,400**	
156					**Data & Communications**				
157				167000	Main IT Rack, Supplement Rack & Server, Data Voice Drops, System to be Replaced, Allowance	109,600.00 sf	3.50 /sf	**383,600**	
					Data & Communications			**383,600**	
158					**Fire Alarm**				
159				167050	Remove/Replace Existing Fire Alarm System w/ New Equipment, Allowance	109,600.00 sf	3.00 /sf	**328,800**	
					Fire Alarm			**328,800**	
					C23 Systems & Ancillaries			**1,150,800**	
					C2 Electrical			**1,916,000**	
					C SERVICES			**4,128,640**	
160	**D**				**SITE & ANCILLARY WORK**				
161		**D1**			**Site Work**				
162			**D11**		**Site Development**				
163					**Paving**				
164				025050	Paving - Remove & Dispose of Asphalt	107,640.00 sf	1.60 /sf	**172,224**	
165				025050	Paving - Milling of Asphalt	107,640.00 sf	0.65 /sf	**69,966**	
166				025050	Paving - Granular A Replacement (Assume 50mm)	107,640.00 sf	0.35 /sf	**37,674**	
167				025050	Paving - Subbase Repair	107,640.00 sf	0.15 /sf	**16,146**	
168				025050	Paving - Base Coat Binder Course (HL8)	107,640.00 sf	1.90 /sf	**204,516**	
169				025050	Paving - Top Cost (HL3)	107,640.00 sf	1.85 /sf	**199,134**	
170				025050	Paving - Tack Coat	107,640.00 sf	0.10 /sf	**10,764**	
171				025050	Line Painting	4,482.00 lf	4.60 /lf	**20,617**	
172				025050	Line Painting - Accessibility Symbols	8.00 no	250.00 /no	**2,000**	
173				025050	Line Painting - Directional Arrows	17.00 no	150.00 /no	**2,550**	
174				025050	Line Painting - "No Parking"	3.00 no	1,000.00 /no	**3,000**	
175				025050	Line Painting - Cross Hatching	3.00 no	125.00 /no	**375**	
					Paving			**738,966**	
176					**Cubrs, Gutters, Sidewalks**				
177				025210	Levelling of Concrete Sidewalks (around perimeter of building), Allow 25% - Foam Method	1,312.00 sf	20.00 /sf	**26,240**	Site specific quantity provided by consultants.
178				025210	Remove/Replace Curbing (qty 26, 3m sections)	256.00 lf	45.00 /lf	**11,520**	Site specific quantity provided by consultants.
179				025210	Remove/Replace Broken Precast Curbs	3.00 no	300.00 /no	**900**	Site specific quantity provided by consultants.
180				025210	Remove/Replace Concrete Sidewalk	216.00 sf	200.00 /sf	**43,200**	Site specific quantity provided by consultants.
181				025210	Tactile Strips	20.00 no	200.00 /no	**4,000**	Site specific quantity provided by consultants.
					Cubrs, Gutters, Sidewalks			**85,860**	
182					**Site Furnishings**				
183				***028710***	***Daycare Playground Area Requires Refurbishment***	***0.00 ls***	***0.00 /ls***	***0***	***By Daycare Operator that may Lease Facility from City***
184					**Landscaping**				
185				029010	Re-set Interlocking block (east & north entrances) due to settlement, Allow 25%	996.00 sf	30.00 /sf	**29,880**	
186				029010	General Clean Up of Softscaped Areas Due to Lack of Maintenance, Allowance	1.00 ls	6,240.00 /ls	**6,240**	Crew of 6 for 2 Days
					Landscaping			**36,120**	
					D11 Site Development			**860,946**	
187			**D12**		**Mechanical Site Services**				
188					**Site Services**				
189				026000	Repairs to Catch Basins	10.00 no	1,200.00 /no	**12,000**	Site specific quantity provided by consultants.
190				026000	Repairs to Manholes	6.00 no	1,200.00 /no	**7,200**	Site specific quantity provided by consultants.
191				026000	Flush Mainline Storm Sewers, Clean CB's and Disposal, Allowance	1.00 ls	12,500.00 /ls	**12,500**	

Element Level 1	Element Level 2	Element Level 3	Phase	Description	Takeoff Quantity	Total Cost/Unit	Total Amount	Notes
				Site Services			**31,700**	
				D12 Mechanical Site Services			**31,700**	
				D1 Site Work			**892,646**	
				D SITE & ANCILLARY WORK			**892,646**	

Estimate Totals

Description	Amount	Totals	Rate	Percent of Total	
Labor	1,111,001			9.16%	
Material	1,111,001			9.16%	
Subcontract	3,818,142			31.48%	
Equipment	1,111,001			9.16%	
Other	1,111,001			9.16%	
	8,262,146	**8,262,146**		**68.13%**	**68.13%**
General Requirements	826,215		10.000 %	6.81%	
Bonding & Insurances	99,146		1.200 %	0.82%	
	925,361	**9,187,507**		**7.63%**	**75.76%**
Design Allowance	918,751		10.000 %	7.58%	
Construction Allowance	918,751		10.000 %	7.58%	
	1,837,502	**11,025,009**		**15.15%**	**90.91%**
Permits/Municipal Costs					
Design & Engineering	2,205,002		20.000 %	9.09%	
ROM Construction Budget (+/-35%)	**2,205,002**	**13,230,011**		**9.09%**	**100.00%**
Total		***13,230,011***			

3.2. Decarbonization ROM Costing, Immediate

St Catharines YMCA - City of St.Catharines
Decarbonization
Class D/Feasibility

Project name	24-046 - WSP - St Catharines YMCA - Decarbonization
Notes	GFA - 109,600sf Feasability/Class D Budget - (+/- 35% Variance) This estimate is completed in Elemental Format at a Class D stage. XGC has not included any additional market condition and/or inflation and/or escalation allowances. XGC does not make any representation or warranty as to the factual accuracy of the information provided to us on behalf of the client, its subcontractors or agents and/or the owner upon which this Report is based. XGC does not accept accountability for inforamtion that has not been provided to us or is not available at the time of preparing this report. We note that a site visit was not completed nor were pictures available for viewing of the existing space. This Report contains confidential information and shall not be reproduced or distributed to any party other those listed in the report.

	Element Level 1	Element Level 2	Element Level 3	Phase	Description	Takeoff Quantity	Total Cost/Unit	Total Amount	Notes
1	**A**				**SHELL**				
2		A2			Structure				
3			A22		Upper Floor Construction			661,000	
					A2 Structure			661,000	
4		A3			Exterior Enclosure				
5			A34		Roof Covering			690,000	
					A3 Exterior Enclosure			690,000	
					A SHELL			1,351,000	
6	**B**				**INTERIORS**				
7		B2			Finishes				
8			B22		Ceiling Finishes			79,380	
9			B23		Wall Finishes			10,231	
					B2 Finishes			89,611	
					B INTERIORS			89,611	
10	**C**				**SERVICES**				
11		C1			Mechanical				
12			C13		HVAC			1,026,500	
					C1 Mechanical			1,026,500	
13		C2			Electrical				
14			C21		Service and Distribution			683,860	
					C2 Electrical			683,860	
					C SERVICES			1,710,360	

	Element Level 1	Element Level 2	Element Level 3	Phase	Description	Takeoff Quantity	Total Cost/Unit	Total Amount	Notes
1	**A**				**SHELL**				
2		A2			Structure				
3			A22		Upper Floor Construction				
4					**Steel Joist Framing**				
5				052100	Open Web Steel Joists - Reinforcement at Solar Panel Locations	17,640.00 sf	25.00 /sf	**441,000**	
6				052100	Open Web Steel Joists - Reinforcement at New Mechanical	1.00 ls	10,000.00 /ls	**10,000**	
					Steel Joist Framing			**451,000**	
7					**Miscellaneous Steel**				
8				055000	Steel Framing Above Roof for Solar Panels, Allowance per Section	6.00 no	35,000.00 /no	**210,000**	
					Miscellaneous Steel			**210,000**	
					A22 Upper Floor Construction			**661,000**	
					A2 Structure			**661,000**	
9		A3			Exterior Enclosure				
10			A34		Roof Covering				
11					**Modified Bituminous Membrane Roofing**				
12				075200	Increase R-Value of Roof System from R20 to R30	46,000.00 sf	15.00 /sf	**690,000**	Additional Insulations Only to Upgrade Roof R-Value. 1-ply Mod Bit Roof, R20 System Replacement Incld in BCA Budget
					Modified Bituminous Membrane Roofing			**690,000**	
					A34 Roof Covering			**690,000**	
					A3 Exterior Enclosure			**690,000**	
					A SHELL			**1,351,000**	
13	**B**				**INTERIORS**				
14		B2			Finishes				
15			B22		Ceiling Finishes				
16					**Gypsum Board**				
17				092900	Gypsum Board - Ceilings - Remove/Replace Due to OWSJ Reinforcement for Solar Panels (Allow 50%)	8,820.00 sf	9.00 /sf	**79,380**	
					Gypsum Board			**79,380**	
					B22 Ceiling Finishes			**79,380**	
18			B23		Wall Finishes				
19					**Painting**				
20				099100	Paint GB Ceilings - Area of OWSJ Reinforcement for Solar Panels	8,820.00 sf	1.16 /sf	**10,231**	
					Painting			**10,231**	
					B23 Wall Finishes			**10,231**	
					B2 Finishes			**89,611**	
					B INTERIORS			**89,611**	
21	**C**				**SERVICES**				
22		C1			Mechanical				
23			C13		HVAC				
24					**HVAC**				
25				155000	Remove Boiler #1 & Heat Exchanger HX-2, Replace w/New ASHP Boilers w/ Remote Condenser	2.00 no	350,000.00 /no	**700,000**	Equal to Advanced Industrial Refrigeration Model ASB-50 ASHP Boilers (qty 2). Remote Condenser HE Located in 2nd Fr Mech Rm.
26				155000	Provide 2 New Electric Boiler (300kW). Pipe to Existing Condenser Loop.	2.00 no	78,500.00 /no	**157,000**	Provide 2 New LAARS 300kW Electric Boilers.
27				155000	Add Hydronic Baseboard Heaters at Perimeter of Addition Served by RTU-7 (Associated w/ RTU-7 Replacement)	180.00 ft	275.00 /ft	**49,500**	Includes Extention of Hydronic Heating Piping Capped in Ceiling Below.
28				155000	Remove RTU-7, Replace w/New ASHP RTU, Equal to Trane Prescedent HE Heat Pump 25 ton Unit	1.00 ls	120,000.00 /ls	**120,000**	Model No. WHJ300 c/w Hot Gas Re-Heat, 72kW Electric Back-Up Heating, Economizer w/

	Element Level 1	Element Level 2	Element Level 3	Phase	Description	Takeoff Quantity	Total Cost/Unit	Total Amount	Notes
					HVAC				
28									Barometric Relief & Comparative Enthalpy Control.
					HVAC			**1,026,500**	
					C13 HVAC			**1,026,500**	
					C1 Mechanical			**1,026,500**	
29		**C2**			**Electrical**				
30			**C21**		**Service and Distribution**				
31					**Special Construction**				
32				130001	Solar Panels - Roof Over OWSJ	17,640.00 sf	36.50 /sf	**643,860**	
					Special Construction			**643,860**	
33					**Service & Distribution**				
34				164000	Power & Distribution for Solar Power Panels, Allowance	1.00 ls	40,000.00 /ls	**40,000**	
					Service & Distribution			**40,000**	
					C21 Service and Distribution			**683,860**	
					C2 Electrical			**683,860**	
					C SERVICES			**1,710,360**	

Estimate Totals

Description	Amount	Totals	Rate	Percent of Total	
Labor	492,194			10.16%	
Material	492,194			10.16%	
Subcontract	1,182,194			24.40%	
Equipment	492,194			10.16%	
Other	492,194			10.16%	
	3,150,970	**3,150,970**		**65.03%**	**65.03%**
General Requirements	315,097		10.000 %	6.50%	
Fee	157,549		5.000 %	3.25%	
Bonding & Insurances	47,265		1.500 %	0.98%	
	519,911	**3,670,881**		**10.73%**	**75.76%**
Design Allowance	367,088		10.000 %	7.58%	
Escalation Allownce					
Construction Allowance	367,088		10.000 %	7.58%	
	734,176	**4,405,057**		**15.15%**	**90.91%**
Permits/Municipal Costs					
Design & Engineering	881,012		20.000 %	9.09%	
ROM Construction Budget (+/-35%)	**881,012**	**5,286,069**		**9.09%**	**100.00%**
Total		***5,286,069***			

3.3. Decarbonization ROM Costing,Immediate

OPTIONAL DECARB COSTING:

ADDITIONAL EXTERIOR WALL INSULATION

St Catharines YMCA - City of St. Catharines
Decarb Option to Increase Wall R-Value
Class D/Feasibility Costing

Project name 24-046 - WSP - St Catharines YMCA - Decarb Option to Increase Wall R-Value

Notes GFA - 109,600sf

Feasability/Class D Budget - (+/- 35% Variance)

This estimate is completed in Elemental Format at a Class D stage.
XGC has not included any additional market condition and/or inflation and/or escalation allowances.

XGC does not make any representation or warranty as to the factual accuracy of the information provided to us on behalf of the client, its subcontractors or agents and/or the owner upon which this Report is based. XGC does not accept accountability for inforamtion that has not been provided to us or is not available at the time of preparing this report. We note that a site visit was not completed nor were pictures available for viewing of the existing space.
This Report contains confidential information and shall not be reproduced or distributed to any party other those listed in the report.

	Element Level 1	Element Level 2	Element Level 3	Phase	Description	Takeoff Quantity	Total Cost/Unit	Total Amount	Notes
1	**A**				**Shell**				
2		**A3**			**Exterior Enclosure**				
3			**A32**		**Walls Above Grade**			**2,100,575**	
4			**A34**		**Roof Coverings**			**168,960**	
					A3 Exterior Enclosure			**2,269,535**	
					A Shell			**2,269,535**	
5	**D**				**Site & Ancillary Work**				
6		**D1**			**Site Work**				
7			**D11**		**Site Development**			**25,000**	
					D1 Site Work			**25,000**	
					D Site & Ancillary Work			**25,000**	

	Element Level 1	Element Level 2	Element Level 3	Phase	Description	Takeoff Quantity	Total Cost/Unit	Total Amount	Notes
1	**A**				**Shell**				
2		**A3**			**Exterior Enclosure**				
3			**A32**		**Walls Above Grade**				
4				**055018**	**Misc Steel @ Wood Framing**				
5					misc steel closure angles at bottom of new siding envelope	2,200.00 lf	25.00 /lf	**55,000**	
					Misc Steel @ Wood Framing		**/ls**	**55,000**	
6				**070001**	**Thermal Allowance**				
7					rework exterior projections to suit	1.00 ls	50,000.00 /ls	**50,000**	
					Thermal Allowance		**/ls**	**50,000**	
8				**071955**	**Air Barrier-Siding**				
9					allowance for miscellaneous lap transitions	1.00 ls	24,999.98 /ls	**25,000**	
					Air Barrier-Siding		**/sf**	**25,000**	
10				**072115**	**Insulation At Siding**				
11					2" rigid insulation	47,500.00 sf	2.65 /sf	**125,875**	
12					allowance for miscellaneous gap insulations	1.00 ls	14,999.99 /ls	**15,000**	
					Insulation At Siding		**/sf**	**140,875**	
13				**074660**	**Aluminum Siding**				
14					alum siding - composite panel	47,500.00 sf	25.00 /sf	**1,187,500**	
15					steel girts attached to masonry veneer	47,500.00 sf	12.00 /sf	**570,000**	
					Aluminum Siding		**/sf**	**1,757,500**	
16				**075050**	**Roof Removal**				
17					remove perimeter flashing to accept new envelope thickness	2,200.00 lf	1.00 /lf	**2,200**	
					Roof Removal		**/sf**	**2,200**	
18				**076200**	**Metal Flashing & Trim**				
19					extend window and door jambs with metal flashings/caulking	1.00 ls	25,000.00 /ls	**25,000**	
					Metal Flashing & Trim		**/lf**	**25,000**	
20				**110001**	**Owner's Equipment**				
21					remove/replace existing signage, exterior elements - allowance	1.00 ls	10,000.00 /ls	**10,000**	
					Owner's Equipment		**/no**	**10,000**	
22				**150001**	**Mechanical Allowance**				
23					remove/replace exterior mechanical vents/louvres, etc - allowance	1.00 ls	10,000.00 /ls	**10,000**	
					Mechanical Allowance		**/ls**	**10,000**	
24				**160001**	**Electrical Allowance**				
25					remove/replace exterior electrical items (lighting, security etc.) - allowance	1.00 ls	25,000.00 /ls	**25,000**	
					Electrical Allowance		**/ls**	**25,000**	
					A32 Walls Above Grade			**2,100,575**	
26			**A34**		**Roof Coverings**				
27				**061010**	**Wood Blocking Roof**				
28					buildout existing parapet w/ new blocking	2,200.00 lf	17.00 /lf	**37,400**	
29					1/2" plywood roof curb	17,600.00 sf	3.85 /sf	**67,760**	
					Wood Blocking Roof		**/lf**	**105,160**	
30				**075110**	**Patch Existing Roofing**				
31					New lap flashings over built out parapets	2,200.00 lf	17.00 /lf	**37,400**	
					Patch Existing Roofing		**/sf**	**37,400**	
32				**076200**	**Metal Flashing & Trim**				
33					new metal parapet flashings	2,200.00 lf	12.00 /lf	**26,400**	
					Metal Flashing & Trim		**/lf**	**26,400**	
					A34 Roof Coverings			**168,960**	
					A3 Exterior Enclosure			**2,269,535**	

	Element Level 1	Element Level 2	Element Level 3	Phase	Description	Takeoff Quantity	Total Cost/Unit	Total Amount	Notes
					A Shell			**2,269,535**	
34	**D**				**Site & Ancillary Work**				
35		D1			**Site Work**				
36			D11		**Site Development**				
37				029010	**Landscaping**				
38					landscaping repair allowance	1.00 ls	25,000.00 /ls	**25,000**	
					Landscaping		**/ls**	**25,000**	
					D11 Site Development			**25,000**	
					D1 Site Work			**25,000**	
					D Site & Ancillary Work			**25,000**	

Estimate Totals

Description	Amount	Totals	Rate	Cost per Unit	Percent of Total	
Labor	190,062				5.36%	
Material	1,977,033				55.79%	
Subcontract	42,480				1.20%	
Equipment	42,480				1.20%	
Other	42,480				1.20%	
Net Construction Cost	**2,294,535**	**2,294,535**			**64.75%**	**64.75%**
General Conditions	229,454		10.000 %		6.48%	
Fee	114,727		5.000 %		3.24%	
Insurance and Bonding	45,891		2.000 %		1.30%	
Sub-Total with GC's/Fee/Insurance and Bonding	**390,072**	**2,684,607**			**11.01%**	**75.76%**
Contingency Allowance - Construction 10%	268,461		10.000 %		7.58%	
Contingency Allowance - Design - 10%	268,461		10.000 %		7.58%	
Sub-Total with Contingencies	**536,922**	**3,221,529**			**15.15%**	**90.91%**
Design and Engineering	644,306		20.000 %		9.09%	
Permits and Approvals						
ROM Construction Budget (+/-35%)	**644,306**	**3,865,835**			**9.09%**	**100.00%**
Total		***3,865,83***				

3.4. Decarbonization ROM Costing, Future

St Catharines YMCA - City of St. Catharines
Future Decarbonization Work
Class D/Feasibility Costing

Project name 24-046 - WSP - St Catharines YMCA - Future Decarbonization Work

Notes GFA - 109,600sf

Feasability/Class D Budget - (+/- 35% Variance)

This estimate is completed in Elemental Format at a Class D stage. XGC has not included any additional market condition and/or inflation and/or escalation allowances.

XGC does not make any representation or warranty as to the factual accuracy of the information provided to us on behalf of the client, its subcontractors or agents and/or the owner upon which this Report is based. XGC does not accept accountability for inforamtion that has not been provided to us or is not available at the time of preparing this report. We note that a site visit was not completed nor were pictures available for viewing of the existing space.
This Report contains confidential information and shall not be reproduced or distributed to any party other those listed in the report.

	Element Level 1	Element Level 2	Element Level 3	Phase	Description	Takeoff Quantity	Total Cost/Unit	Total Amount	Notes
1	**A**				**SHELL**				
2		A2			Structure				
3			A23		Roof Construction			87,764	
					A2 Structure			87,764	
4		A3			Exterior Enclosure				
5			A33		Windows and Entrances			717,600	
6			A35		Projections			37,500	
					A3 Exterior Enclosure			755,100	
					A SHELL			842,864	
7	**B**				**INTERIORS**				
8		B2			Finishes				
9			B22		Ceiling Finishes			8,631	
10			B23		Wall Finishes			1,112	
					B2 Finishes			9,743	
					B INTERIORS			9,743	
11	**C**				**SERVICES**				
12		C1			Mechanical				
13			C11		Plumbing & Drainage			2,400	
14			C13		HVAC			3,816,000	
					C1 Mechanical			3,818,400	
15		C2			Electrical				
16			C21		Service and Distribution			85,000	
					C2 Electrical			85,000	
					C SERVICES			3,903,400	

	Element Level 1	Element Level 2	Element Level 3	Phase	Description	Takeoff Quantity	Total Cost/Unit	Total Amount	Notes
1	**A**				**SHELL**				
2		A2			Structure				
3			A23		Roof Construction				
4					**Steel Joist Framing**				
5				052100	Open Web Steel Joists - Reinforcement New HRV-1 & HRV-2 Locations	419.00 sf	25.00 /sf	**10,475**	
6				052100	Open Web Steel Joists - Reinforcement Larger Cooling Tower Unit	101.00 sf	25.00 /sf	**2,525**	
7				052100	Open Web Steel Joists - Reinforcement New RT-4 w/ ERV-3	193.00 sf	25.00 /sf	**4,825**	
8				052100	Open Web Steel Joists - Reinforcement New RTU-6 Location	75.00 sf	25.00 /sf	**1,875**	
9				052100	W Beam Reinforcement New ASHP Boilers/Platforms	171.00 sf	60.00 /sf	**10,260**	
10				052100	Edge Frame C-Channels (C150x12) Btwn Members to Support Edge of all Units	1.94 mton	6,600.00 /mton	**12,804**	
					Steel Joist Framing			**42,764**	
11					**Miscellaneous Steel**				
12				055000	New Larger Cooling Tower Frame	1.00 ls	5,000.00 /ls	**5,000**	
13				055000	Raised Platforms for New ASHP Boilers	4.00 no	10,000.00 /no	**40,000**	
					Miscellaneous Steel			**45,000**	
					A23 Roof Construction			**87,764**	
					A2 Structure			**87,764**	
14		A3			Exterior Enclosure				
15			A33		Windows and Entrances				
16					**Glass Glazing**				
17				088100	Aluminum Window	150.00 ea	4,000.00 /ea	**600,000**	window counts are assumed
18				088100	Glazed Curtain Wall	840.00 sf	140.00 /sf	**117,600**	window counts are assumed
					Glass Glazing			**717,600**	
					A33 Windows and Entrances			**717,600**	
19			A35		Projections				
20					**Roof Specilties**				
21				077100	New Roof Requirements for Shifted HRV-1 & HRV-2 (From Ex. RTU-2 & 3 Locations), Allowance	1.00 ls	10,000.00 /ls	**10,000**	
22				077100	New Roof Requirements for Shifted/Added RTU-1A & RTU-1B, Allowance	1.00 ls	5,000.00 /ls	**5,000**	
23				077100	New Roof Requirements New Mech Rm Opening for Duct Penetration for New RT4/ERV-3 Connection	1.00 ls	1,500.00 /ls	**1,500**	
24				077100	Roofing Allowance for Replacement of Units Where Maintaining Openings (RTU-4,RTU-5B/5A,RTU-7)	1.00 ls	8,000.00 /ls	**8,000**	
25				077100	New Roofing & Curb Requirements New RTU-6 Location	1.00 ls	5,000.00 /ls	**5,000**	
26				077100	New Roofing HHS Pentrations from New ASHP Boilers	16.00 no	500.00 /no	**8,000**	
					Roof Specilties			**37,500**	
					A35 Projections			**37,500**	
					A3 Exterior Enclosure			**755,100**	
					A SHELL			**842,864**	
27	**B**				**INTERIORS**				
28		B2			Finishes				
29			B22		Ceiling Finishes				
30					**Gypsum Board**				
31				092900	Gypsum Board - Ceilings - Remove/Replace Due to OWSJ Reinforcement for Mech Equipment	959.00 sf	9.00 /sf	**8,631**	
					Gypsum Board			**8,631**	
					B22 Ceiling Finishes			**8,631**	
32			B23		Wall Finishes				
33					**Painting**				
34				099100	Paint GB Ceilings - Area of OWSJ Reinforcement for Mech Equipment	959.00 sf	1.16 /sf	**1,112**	
					Painting			**1,112**	
					B23 Wall Finishes			**1,112**	
					B2 Finishes			**9,743**	
					B INTERIORS			**9,743**	
35	**C**				**SERVICES**				
36									

	Element Level 1	Element Level 2	Element Level 3	Phase	Description	Takeoff Quantity	Total Cost/Unit	Total Amount	Notes
36		C1			**Mechanical**				
37			C11		**Plumbing & Drainage**				
38					**Mechanical Civil**				
39				150100	New Concrete Supports for New Cooling Tower with Larger Footprint, Allow 8 Supports	8.00 no	300.00 /no	**2,400**	
					Mechanical Civil			**2,400**	
					C11 Plumbing & Drainage			**2,400**	
40			C13		**HVAC**				
41					**Mechanical Civil**				
42				150100	New Exhaust Duct Penetrations Through Exterior Wall of Mech Rm for New HRV-1 & HRV-2	2.00 no	750.00 /no	**1,500**	
43				150100	New Roof Opening In Mech Rm for Duct Penetration for New RT4/ERV-3 Connection	1.00 no	1,500.00 /no	**1,500**	
44				150100	New Roof Opening in Main Roof for New RTU-6 Location	1.00 no	1,500.00 /no	**1,500**	
					Mechanical Civil			**4,500**	Expected Median Life : 19Years
45					**HVAC**				
46				155000	Replace Existing LAARS Boilers (#1, #2) w/ WSHP's Connected to Condenser Loop	4.00 no	250,000.00 /no	**1,000,000**	Aermec Model WWB-0900 Water to Water HP's
47				155000	Add ASHP Boiler Modules	2.00 no	350,000.00 /no	**700,000**	Equal to AIR Model ASB-50 ASHP, Connected to Condenser Loop. Expected Median Life : 15Years
48				155000	Add 300kW Capacity Electric Boiler to Supplement ASHP Boilers	2.00 no	78,500.00 /no	**157,000**	Equal to LAARS 300KW Commercial Electric Boiler. Connection to Heating Loop Included.
49				155000	Replace Existing Cooling Tower w/ Closed Circuit Adiabatic Fluid Cooler (Equal Capacity to Existing)	1.00 ls	140,000.00 /ls	**140,000**	Evapco EAW-VD9106PJ Fluid Cooler
50				155000	Remove Ex. HE Btwn Cooling Tower & Condenser Loop	1.00 ls	10,000.00 /ls	**10,000**	
51				155000	Remove Existing Cooling Tower Pumps	1.00 ls	10,000.00 /ls	**10,000**	Expected Median Life : 20 Years
52				155000	Connect Condenser Loop Directly to Fluid Cooler c/w Isolation Valves	1.00 ls	35,000.00 /ls	**35,000**	
53				155000	Replace Ex. RTU-6 w/ New ASHP RTU, 72kW Electric Back-Up Heating	1.00 ls	250,000.00 /ls	**250,000**	Equal to Trane Precedent HE Heat Pump w/ 20-tons Cooling. Model No. WHJ300 c/w Hot Gas Re-Heat, Economizer w/ Barometric Relief & Comparative Enthalpy Control.Expected Median Life : 15Ye
54				155000	Replace Ex. RTU-1 & RTU-5 to Each Be Split into (2) New ASHP RTU's w/HE DX Cooling	4.00 no	250,000.00 /no	**1,000,000**	RTU-1A/1B - Equal to Trane Precedent HE HP, 20-ton Unit (Model No. WHJ240 w/ Hot Gas Reheat, 72kW Electric Back-Up Heating, , Economizer w/ Barometric Relief & Comparative Enthalpy Control) RTU-5A/5B - Equal to Trane Precedent HE HP, 25-ton Unit (Model No. WHJ300 w/ Hot Gas Re-Heat, 72kW Electric Back-Up Heating, Economizer w/ Barometric Relief & Comparative Enthalpy Control) Re-Work Existing Supply & Return Ductwork to Connect to New Units. Expected Median Life : 15Years
55				155000	Replace RTU-2 & 3 w/ HRV-1 & HRV-2	2.00 no	125,000.00 /no	**250,000**	Equiped w/ Electric Pre-Heat, Heat Recovery Cores & DX Cooling w/ Hot-Gas Re-Heat. Extend Exhaust Duct Approx. 50m2) from 2nd Flr Mech Room to New HRV's Expected Median Life : 15Years
56				155000	Remove HRU-1,2 & 3 & All Associated Pump's, Piping & Accessories	3.00 no	6,500.00 /no	**19,500**	For Replacement of MAU RT-2, 3 & 4
57				155000	Replace RT-4 w/ ERV-3 Equiped w/ Reverse Flow Energy Recovery Cores	1.00 ls	200,000.00 /ls	**200,000**	Re-Route Existing Exhaust Ductwork Connected to HRU-3 to Connect to New ERV-3 on Roof. Equal to Tempeff or Engineered Air Reverse Flow. New Duct Connection (32" x 32", L = 134lf Across Roof) Expected Median Life : 15Years
58				155000	Ex. Steam Boilers Servicing Men's Women's Steam Rms, Replace w/ New Electric Steam Boilers w/ Same Capacity	2.00 no	20,000.00 /no	**40,000**	Use Capacity of Existing Boiler - 208MBH Expected Median Life : 15 Years

	Element Level 1	Element Level 2	Element Level 3	Phase	Description	Takeoff Quantity	Total Cost/Unit	Total Amount	Notes
					HVAC			**3,811,500**	
					C13 HVAC			**3,816,000**	
					C1 Mechanical			**3,818,400**	
59		C2			**Electrical**				
60			C21		**Service and Distribution**				
61					**Service & Distribution**				
62				164000	Replace Switchboard & Service Entrance Equipment	1.00 ls	65,000.00 /ls	**65,000**	Main Switchboard 'AAA' - 1200 Amperes, 347/600 Volts, 3 Phase, 4 Wire, 35kA (Siemens) Main Disconnect Switch - 1200A/1000AT/3Ph
63				164000	Mech Equipment Replacement Power & Low Voltage, Allowance	1.00 ls	20,000.00 /ls	**20,000**	
					Service & Distribution			**85,000**	
					C21 Service and Distribution			**85,000**	
					C2 Electrical			**85,000**	
					C SERVICES			**3,903,400**	

Estimate Totals

Description	Amount	Totals	Rate	Percent of Total	
Labor	907,181			9.95%	
Material	907,181			9.95%	
Subcontract	1,127,285			12.36%	
Equipment	907,181			9.95%	
Other	907,181			9.95%	
	4,756,009	**4,756,009**		**52.16%**	**52.16%**
General Requirements	475,601		10.000 %	5.22%	
Fee	237,800		5.000 %	2.61%	
Bonding & Insurances	57,072		1.200 %	0.63%	
	770,473	**5,526,482**		**8.45%**	**60.61%**
Design Allowance	552,648		10.000 %	6.06%	
Escalation Allowance	1,657,944		30.000 %	18.18%	
Construction Allowance	552,648		10.000 %	6.06%	
	2,763,240	**8,289,722**		**30.30%**	**90.91%**
Permits/Municipal Costs					
Design & Engineering	1,657,94		20.00 %	9.09%	
ROM Construction Budget (+/-35%)	**1,657,94**	**9,947,66**		**9.09%**	**100.00%**
Total		***9,947,666***			

3.5. Accessibility Costing

St Catharines YMCA - City of St. Catharines
Accessibility Upgrades
Class D/Feasibility Report

Project name	24-046 - St Catharines YMCA - Accessibility
Notes	GFA - 109,600sf Feasability/Class D Budget - (+/- 35% Variance) This estimate is completed in Elemental Format at a Class D stage. XGC has not included any additional market condition and/or inflation and/or escalation allowances. XGC does not make any representation or warranty as to the factual accuracy of the information provided to us on behalf of the client, its subcontractors or agents and/or the owner upon which this Report is based. XGC does not accept accountability for inforamtion that has not been provided to us or is not available at the time of preparing this report. We note that a site visit was not completed nor were pictures available for viewing of the existing space. This Report contains confidential information and shall not be reproduced or distributed to any party other those listed in the report.

	Element Level 1	Element Level 2	Element Level 3	Phase	Description	Takeoff Quantity	Total Cost/Unit	Total Amount	Notes
1	**B**				**INTERIORS**				
2		B1			Partitions & Doors				
3			B11		Partitions			714	
					B1 Partitions & Doors			714	
4		B2			Finishes				
5			B21		Floor Finishes			47,625	
6			B23		Wall Finishes			60,850	
					B2 Finishes			108,475	
7		B3			Fittings & Equipment				
8			B31		Fittings & Fixtures			204,685	
					B3 Fittings & Equipment			204,685	
					B INTERIORS			313,874	
9	**C**				**SERVICES**				
10		C1			Mechanical				
11			C11		Plumbing & Drainage			249,900	
					C1 Mechanical			249,900	
12		C2			Electrical				
13			C22		Lighting, Devices & Heating			39,725	
					C2 Electrical			39,725	
					C SERVICES			289,625	
14	**D**				**SITE & ANCILLARY WORK**				
15		D2			Ancillary Work				
16			D21		Demolition				

	Element Level 1	Element Level 2	Element Level 3	Phase	Description	Takeoff Quantity	Total Cost/Unit	Total Amount	Notes
1	**B**				**INTERIORS**				
2		B1			Partitions & Doors				
3			B11		Partitions				
4					**Glass Glazing**				
5				088100	Vision Strip Required at Fully Glazed Drs/Sidelights, Fluted Glass	357.00 lf	2.00 /lf	**714**	
					Glass Glazing			**714**	
					B11 Partitions			**714**	
					B1 Partitions & Doors			**714**	
6		B2			Finishes				
7			B21		Floor Finishes				
8					**Maintenance of Flooring**				
9				090160	De-Gloss Shiny Floors Due to Lights & Windows Above	15,250.00 sf	0.50 /sf	**7,625**	Investigate Cleaning Options Through Operations
					Maintenance of Flooring			**7,625**	
10					**Resilient Flooring**				
11				***096500***	***Resilient Flooring In Gross Motor Room (Daycare) - Remove/Replace Due to Bubbling***	***0.00 sf***	***0.00 /sf***	***0***	***Included in Building Condition Assessment Costing Report***
12				***096500***	***Resilient Flooring In Playroom (Daycare) - Remove/Replace Due to Seams Lifting***	***0.00 sf***	***0.00 /sf***	***0***	***Included in Building Condition Assessment Costing Report***
13				***096500***	***Resilient Flooring In Free Weights Area - Remove/Replace Due to Seams Lifting***	***0.00 sf***	***0.00 /sf***	***0***	***Included in Building Condition Assessment Costing Report***
14				096500	Tactile Warning Strips at Top/Bottom/Landings of Stairs	40.00 no	1,000.00 /no	**40,000**	
					Resilient Flooring			**40,000**	
					B21 Floor Finishes			**47,625**	
15			B23		Wall Finishes				
16					**Ceramic Tiling**				
17				093013	Reduce Depth of Multi-Stall Vanity Backsplash to Lower Mirror Height, Allowance	175.00 sf	50.00 /sf	**8,750**	
18				093013	Remove/Replace Washroom/Kitchen Backsplashes/Shower & Changeroom Walls with Non-Shiny Tiles, Allowance	1.00 ls	25,000.00 /ls	**25,000**	Qty Not Yet Defined
					Ceramic Tiling			**33,750**	
19					**Painting**				
20				099100	Paint - Edge of Dr with Contrasting Colour, Allowance (Qty Unkown)	1.00 ls	1,250.00 /ls	**1,250**	Required when drs do not have closing device, Allow 25 drs
21				099100	Paint - Dr Frame to Contrast with Door Leaf Colour, Allowance (Qty Unknown)	1.00 ls	2,000.00 /ls	**2,000**	Allow 25 Drs
22				099100	Paint - Existing Toilet Partitions Contrasting Colour (Qty 20)	20.00 no	250.00 /no	**5,000**	
23				099100	Patch/Paint Holes at Relocated TP Dispensers	37.00 ea	50.00 /ea	**1,850**	
24				099100	Patch/Paint Holes at Relocated PT Dispensers	21.00 ea	50.00 /ea	**1,050**	
25				099100	Patch/Paint Holes at Relocated Soap Dispensers	31.00 ea	50.00 /ea	**1,550**	
26				099100	Patch/Paint Holes at Relocated Grab Bars	7.00 ea	50.00 /ea	**350**	
27				099100	Patch/Paint Holes at Relocated Tilt & Full Height Mirrors	22.00 ea	50.00 /ea	**1,100**	
28				099100	Patch/Caulk Holes at Relocated Shower Soap Dispensers	52.00 ea	25.00 /ea	**1,300**	
29				099100	Patch/Caulk Holes at Relocated Shower Grab Bars	6.00 ea	25.00 /ea	**150**	
30				099100	Patch/Paint from Relocated Light Switches (Allowance, Qty Unkown)	1.00 ls	2,000.00 /ls	**2,000**	
31				099100	Patch/Paint from Relocated Receptacles Installed Too Low (Allowance, Qty Unkown)	1.00 ls	2,000.00 /ls	**2,000**	
32				099100	Paint End Walls of Long Corridors a Contrasting Colour, Allowance	1.00 ls	7,500.00 /ls	**7,500**	
					Painting			**27,100**	
					B23 Wall Finishes			**60,850**	
					B2 Finishes			**108,475**	
33		B3			Fittings & Equipment				
34			B31		Fittings & Fixtures				
35					**Architectural Wood Casework**				
36				064100	Lower Storage Cabinetry within Accessible Height (Office, Work Area & Meeting Rm) - Allowance	1.00 ls	25,000.00 /ls	**25,000**	Scope to be further defined.
37				064100	Remove/Replace Kitchens/Kitchenettes in Daycare	73.00 lf	750.00 /lf	**54,750**	

	Element Level 1	Element Level 2	Element Level 3	Phase	Description	Takeoff Quantity	Total Cost/Unit	Total Amount	Notes
					Architectural Wood Casework				
38				064100	Remove/Replace Kitchens/Kitchenettes in Coffee Shop, Multi Purpose Rm, Crafts Rm	55.00 lf	750.00 /lf	**41,250**	
					Architectural Wood Casework			**121,000**	
39					**Specialties**				
40				100001	Supply & Install Service Animal Tie-Offs	1.00 no	500.00 /no	**500**	
41				***100001***	***Reconfigure Shower Layout to Provide Additional Accessibile Shower Locations***	***0.00 ls***	***0.00 /ls***	***0***	***Not Included in Costing - Reconfigurations of shower layout unknown, may not be able to achieve compliance.***
					Specialties			**500**	
42					**Signage**				
43				101400	Accessibility Symbol to Accessible Lockers, Allowance	1.00 ls	500.00 /ls	**500**	
44				101400	Area of Refuge - Specific and Directional signage, Allowance	1.00 ls	750.00 /ls	**750**	
45				101400	International Symbol of Accessibility Signage - At Accessible Entrances, Toilet/Showers/Elevators/Areas of Refuge), Allowance	1.00 ls	1,000.00 /ls	**1,000**	
					Signage			**2,250**	
46					**Toilet Partitions**				
47				***101510***	***Toilet Partitions - Reconfigure Stalls (qty 6)***	***0.00 ls***	***0.00 /ls***	***0***	***No cost assigned, reconfiguration of washroom layout to be further investigated.***
48				101510	Toilet Partitions - Remove Existing Door Pulls/Replace with D-Type Pulls	20.00 ea	50.00 /ea	**1,000**	
					Toilet Partitions			**1,000**	
49					**Lockers**				
50				105100	New Benches (810 x 1830 mm) - Change/Dressing Rms, Allowance (Qty Unknown)	1.00 ls	10,000.00 /ls	**10,000**	
					Lockers			**10,000**	
51					**Washroom Accessories**				
52				108010	Remove & Replace Protruding Wall Mounted Waste Bins with Compliant Bins	21.00 ea	300.00 /ea	**6,300**	
53				108010	Remove/Replace Coat Hooks to Collapsible Type	6.00 ea	65.00 /ea	**390**	
54				108010	New Grab Bars at Urinals	4.00 ea	85.00 /ea	**340**	
55				108010	Remove Existing TP Dispenser, Replace with New TP Dispenser at Proper Height	37.00 ea	100.00 /ea	**3,700**	
56				108010	Relocate Existing Grab Bars to Correct Height	7.00 ea	50.00 /ea	**350**	
57				108010	Replace & Relocate New Paper Towel Dispensers	21.00 ea	150.00 /ea	**3,150**	
58				108010	Replace & Relocate New Soap Dispensers	31.00 ea	50.00 /ea	**1,550**	
59				108010	Replace & Relocate New Tilt Mirrors	13.00 ea	250.00 /ea	**3,250**	
60				108010	Replace & Relocate New Full Height Mirrors (Sizing Unknown)	9.00 ea	2,500.00 /ea	**22,500**	
61				108010	Relocate & Install New Soap Dispensers Closer to Shower Bench Seating	52.00 ea	50.00 /ea	**2,600**	
62				108010	Relocate Existing Grab Bars Closer to Shower Bench Seating	6.00 ea	50.00 /ea	**300**	
63				108010	New Vertical Grab Bars at Shower Head Walls	3.00 ea	85.00 /ea	**255**	
64				108010	New Collapsable Cost Hooks Adjacent to Bench - Change/Dressing Rms, Allowance (Qty Unknown)	1.00 ls	750.00 /ls	**750**	
65				108010	New Grab Bars at Benches - Change/Dressing Rms, Allowance (Qty Unknown)	1.00 ls	1,500.00 /ls	**1,500**	
66				108010	New Full Height Mirrors - Change/Dressing Rms, Allowance (Qty Unknown)	1.00 ls	8,000.00 /ls	**8,000**	
67				***108010***	***Add Grab Bar Perpendicular to Whirlpool***	***0.00 ea***	***0.00 /ea***	***0***	***Included in Building Condition Assessment Costing Report***
					Washroom Accessories			**54,935**	
68					**Window Blinds**				
69				122100	Install Shading Devices on Exterior Windows to Reduce Glare on Flooring, Allowance (Qty Unknown)	1.00 ls	15,000.00 /ls	**15,000**	
					Window Blinds			**15,000**	
					B31 Fittings & Fixtures			**204,685**	
					B3 Fittings & Equipment			**204,685**	

	Element Level 1	Element Level 2	Element Level 3	Phase	Description	Takeoff Quantity	Total Cost/Unit	Total Amount	Notes
					B INTERIORS			**313,874**	
70	**C**				**SERVICES**				
71		C1			Mechanical				
72			C11		Plumbing & Drainage				
73					**Plumbing**				
74				154100	Remove/Replace Toilets w/ New Automatic Flush Valve - Adult	31.00 no	2,800.00 /no	**86,800**	
75				154100	Remove/Replace Toilets w/ New Automatic Flush Valve - Child	6.00 no	3,200.00 /no	**19,200**	
76				154100	Replace Existing Toilets with Tank Model to Add Back Support	7.00 no	2,800.00 /no	**19,600**	
77				154100	Exposed Piping at Lavatories to be Insulated	41.00 no	100.00 /no	**4,100**	
78				154100	Remove Existing Lavatory Sink Faucets and Replace with Single Lever Type	41.00 no	2,200.00 /no	**90,200**	
79				154100	Plumbing Rework for Replacement of Kitchens/Kitchenettes in Daycare, Allowance	1.00 ls	15,000.00 /ls	**15,000**	
80				154100	Plumbing Rework for Replacement of Kitchens/Kitchenettes in Coffee Shop, Multi Purpose Rm, Crafts Rm, Allowance	1.00 ls	15,000.00 /ls	**15,000**	
					Plumbing			**249,900**	
					C11 Plumbing & Drainage			**249,900**	
					C1 Mechanical			**249,900**	
81		C2			Electrical				
82			C22		Lighting, Devices & Heating				
83					**Electrical Civil**				
84				160100	Patch/Paint for New Automatic Flush Valve	37.00 no	75.00 /no	**2,775**	
					Electrical Civil			**2,775**	
85					**Interior Power**				
86				160120	Power for Automatic Flush Toilets	37.00 no	350.00 /no	**12,950**	
87				160120	Relocate Light Switches Above Countertops & Where Too Close to Adjacent Surfaces (Allowance - Qty Unknown)	1.00 ls	10,000.00 /ls	**10,000**	
88				160120	Relocate Receptacles Installed Below 400mm (Allowance - Qty Unknown)	1.00 ls	10,000.00 /ls	**10,000**	
89				160120	Relocate Light Switch Plates & Receptacle Covers with Contrasting Colour (Allowance - Qty Unknown)	1.00 ls	4,000.00 /ls	**4,000**	
					Interior Power			**36,950**	
					C22 Lighting, Devices & Heating			**39,725**	
					C2 Electrical			**39,725**	
					C SERVICES			**289,625**	
90	**D**				**SITE & ANCILLARY WORK**				
91		D2			Ancillary Work				
92			D21		Demolition				
93					**Demolition**				
94				***020600***	***Demolition Raised Base of Lockers to Lower Height of Lock***	***0.00 ls***	***0.00 /ls***	***0***	***Not included in costing report, confirmation of lock height within accessible range - TBD***

Estimate Totals

Description	Amount	Totals	Rate	Percent of Total	
Labor	109,450			11.82%	
Material	109,450			11.82%	
Subcontract	165,700			17.90%	
Equipment	109,450			11.82%	
Other	109,450			11.82%	
	603,500	**603,500**		**65.20%**	**65.20%**
General Requirements	60,350		10.000 %	6.52%	
Fee	30,175		5.000 %	3.26%	
Bonding & Insurances	7,242		1.200 %	0.78%	
	97,767	**701,267**		**10.56%**	**75.76%**
Design Allowance	70,127		10.000 %	7.58%	
Escalation Allownce					
Construction Allowance	70,127		10.000 %	7.58%	
	140,254	**841,521**		**15.15%**	**90.91%**
Permits/Municipal Costs					
Design & Engineering	168,304		20.000 %	9.09%	
Class D Construction Budget (+/-35%)	**168,304**	**1,009,825**		**9.09%**	**100.00%**
Total		***1,009,825***			

3.6. Alternative Use: Option 1 - Convert Existing 2nd Floor Exercise Area to New Multipurpose Space

St Catherines YMCA - City of St.Catharines
Alternative Use Option 1
Class D/Feasibility Costing

Project name 24-046 - WSP - St Catherines YMCA - Alternative Use Option 1

Notes GFA - 109,600sf

Feasability/Class D Budget - (+/- 35% Variance)

This estimate is completed in Elemental Format at a Class D stage. XGC has not included any additional market condition and/or inflation and/or escalation allowances.

XGC does not make any representation or warranty as to the factual accuracy of the information provided to us on behalf of the client, its subcontractors or agents and/or the owner upon which this Report is based. XGC does not accept accountability for inforamtion that has not been provided to us or is not available at the time of preparing this report. We note that a site visit was not completed nor were pictures available for viewing of the existing space.
This Report contains confidential information and shall not be reproduced or distributed to any party other those listed in the report.

	Element Level 1	Element Level 2	Element Level 3	Phase	Description	Takeoff Quantity	Total Cost/Unit	Total Amount	Notes
1	**B**				**INTERIORS**				
2		B1			Partitions & Doors				
3			B11		Partitions			22,400	
4			B12		Doors			3,700	
					B1 Partitions & Doors			26,100	
5		B2			Finishes				
6			B21		Floor Finishes			79,443	
7			B22		Ceiling Finishes			20,345	
8			B23		Wall Finishes			47,507	
					B2 Finishes			147,295	
9		B3			Fittings & Equipment				
10			B31		Fittings & Fixtures			19,500	
					B3 Fittings & Equipment			19,500	
					B INTERIORS			192,895	
11	**C**				**SERVICES**				
12		C1			Mechanical				
13			C11		Plumbing & Drainage			6,000	
14			C12		Fire Protection			9,248	
15			C13		HVAC			100,840	
16			C14		Controls			10,000	
					C1 Mechanical			126,087	
17		C2			Electrical				
18			C22		Lighting, Devices & Heating			48,588	
19			C23		Systems & Ancillaries			18,699	
					C2 Electrical			67,287	
					C SERVICES			193,374	
20	**D**				**SITE & ANCILLARY WORK**				
21		D2			Ancillary Work				
22			D21		Demolition			20,714	
					D2 Ancillary Work			20,714	
					D SITE & ANCILLARY WORK			20,714	

	Element Level 1	Element Level 2	Element Level 3	Phase	Description	Takeoff Quantity	Total Cost/Unit	Total Amount	Notes
1	**B**				**INTERIORS**				
2		B1			Partitions & Doors				
3			B11		Partitions				
4					**Entrances & Storefronts**				
5				084100	Glazed (Full Height) PC 350 Screen - New 2nd Flr Multipurpose Rms	280.00 sf	80.00 /sf	**22,400**	
					Entrances & Storefronts			**22,400**	
					B11 Partitions			**22,400**	
6			B12		Doors				
7					**Entrances & Storefronts**				
8				084100	Glazed (Full Height) PC 350 Door - New 2nd Flr Multipurpose Rms	2.00 no	850.00 /no	**1,700**	
9				084100	Aluminum Door Hardware - New 2nd Flr Multipurpose Rms	2.00 ea	1,000.00 /ea	**2,000**	
					Entrances & Storefronts			**3,700**	
					B12 Doors			**3,700**	
					B1 Partitions & Doors			**26,100**	
10		B2			Finishes				
11			B21		Floor Finishes				
12					**Maintenance of Flooring**				
13				090160	Floor Patch/Repair for New 2nd Flr Multipurpose Rm Flooring	3,699.00 sf	1.00 /sf	**3,699**	
					Maintenance of Flooring			**3,699**	
14					**Resilient Flooring**				
15				096500	Rubber Base - 2nd Flr Multipurpose Rm	425.00 lf	4.15 /lf	**1,764**	
					Resilient Flooring			**1,764**	
16					**Carpeting**				
17				096800	Carpet Tile w/ Underlayment - New 2nd Flr Multipurpose Rm	3,699.00 sf	20.00 /sf	**73,980**	
					Carpeting			**73,980**	
					B21 Floor Finishes			**79,443**	
18			B22		Ceiling Finishes				
19					**Acoustical Ceilings**				
20				095100	Standard ACT Ceiling - New 2nd Flr Multipurpose Rm	3,699.00 sf	5.50 /sf	**20,345**	
					Acoustical Ceilings			**20,345**	
					B22 Ceiling Finishes			**20,345**	
21			B23		Wall Finishes				
22					**Gypsum Board**				
23				092900	Gypsum Board - Walls - For New 2nd Flr Multipurpose Rm to U/S of Deck	1,620.00 sf	24.75 /sf	**40,095**	16mm GWB on 150mm - 26 ga Steel Studs @ 400mm o.c., Sound Batts, No FR
					Gypsum Board			**40,095**	
24					**Painting**				
25				099100	Paint - Partitions at New 2nd Flr Multipurpose Rm	6,390.00 sf	1.16 /sf	**7,412**	
					Painting			**7,412**	
					B23 Wall Finishes			**47,507**	
					B2 Finishes			**147,295**	
26		B3			Fittings & Equipment				
27			B31		Fittings & Fixtures				
28					**Architectural Wood Casework**				
29				064100	Lower/Upper Cabinetry w/ Countertops - Kitchenette - New 2nd Flr Multipurpose Rm	26.00 lf	750.00 /lf	**19,500**	
					Architectural Wood Casework			**19,500**	
					B31 Fittings & Fixtures			**19,500**	
					B3 Fittings & Equipment			**19,500**	
					B INTERIORS			**192,895**	
30	**C**				**SERVICES**				
31		C1			Mechanical				
32									

	Element Level 1	Element Level 2	Element Level 3	Phase	Description	Takeoff Quantity	Total Cost/Unit	Total Amount	Notes
32			C11		Plumbing & Drainage				
33					**Plumbing**				
34				154100	Kitchenette Appliance Connection (Dishwasher)	2.00 no	1,500.00 /no	**3,000**	
35				154100	Kitchenette Faucet/Sink/Drain - 2nd Flr Multipurpose Rm	2.00 no	1,500.00 /no	**3,000**	
					Plumbing			**6,000**	
					C11 Plumbing & Drainage			**6,000**	
36			C12		Fire Protection				
37					**Sprinklers**				
38				153100	Relocate Sprinkler Heads to Suit New Layout - New 2nd Flr Multipupose Rm	3,699.00 ls	2.50 /ls	**9,248**	
					Sprinklers			**9,248**	
					C12 Fire Protection			**9,248**	
39			C13		HVAC				
40					**Mechanical Demolition**				
41				150020	Mechanical Demolition - Existing 2nd Floor Exercise Area	3,699.00 sf	3.00 /sf	**11,097**	
					Mechanical Demolition			**11,097**	
42					**HVAC**				
43				155000	Add WSHP's, Extending off of Existing Condenser Loop	2.00 no	6,000.00 /no	**12,000**	Expected Median Life : 19Years
44				155000	Extension of Ductwork w/ New VAV Boxes, Allowance	1.00 ls	50,000.00 /ls	**50,000**	
45				155000	Minor Rework of Ducting for New 2nd Flr Multipurpose Rm	3,699.00 sf	7.50 /sf	**27,743**	
					HVAC			**89,743**	
					C13 HVAC			**100,840**	
46			C14		Controls				
47					**Controls**				
48				159500	Rework BAS for New 2nd Flr Multipurpose Rm to Central System	1.00 ls	10,000.00 /ls	**10,000**	Expected Median Life : 15 Years
					Controls			**10,000**	
					C14 Controls			**10,000**	
					C1 Mechanical			**126,087**	
49		C2			Electrical				
50			C22		Lighting, Devices & Heating				
51					**Electrical Demolition**				
52				160002	Electrical Demolition - Existing 2nd Flr Exercise Area	3,699.00 sf	2.00 /sf	**7,398**	
					Electrical Demolition			**7,398**	
53					**Interior Power**				
54				160120	Power to Refrigerator, Dishwasher, Microwave at Kitchenettes - 2nd Flr Multipurpose Rm	6.00 no	700.00 /no	**4,200**	
55				160120	New Receptacle/Power Locations - New 2nd Flr Multipurpose Rm, Allowance	3,699.00 sf	4.00 /sf	**14,796**	
					Interior Power			**18,996**	
56					**Interior Lighting**				
57				165100	LED Light Fixtures in New 2nd Flr Multipurpose Rm	3,699.00 sf	6.00 /sf	**22,194**	
					Interior Lighting			**22,194**	
					C22 Lighting, Devices & Heating			**48,588**	
58			C23		Systems & Ancillaries				
59					**Special Systems**				
60				166000	Allowance for Audio/Visual Systems - New 2nd Flr Multipurpose Rms	1.00 ls	15,000.00 /ls	**15,000**	
					Special Systems			**15,000**	
61					**Data & Communications**				
62				167000	Data & Communication Allowance - New 2nd Flr Multipurpose Rms	3,699.00 sf	1.00 /sf	**3,699**	
					Data & Communications			**3,699**	
					C23 Systems & Ancillaries			**18,699**	
					C2 Electrical			**67,287**	
					C SERVICES			**193,374**	
63	**D**				**SITE & ANCILLARY WORK**				
64									

	Element Level 1	Element Level 2	Element Level 3	Phase	Description	Takeoff Quantity	Total Cost/Unit	Total Amount	Notes
64		D2			Ancillary Work				
65			D21		Demolition				
66					**Demolition**				
67				020600	Demo 2nd Floor Flooring Finishes - Existing Exercise Area	3,699.00 sf	2.80 /sf	**10,357**	
68				020600	Demo 2nd Floor Ceiling Finishes - Existing Exercise Area	3,699.00 sf	2.80 /sf	**10,357**	
					Demolition			**20,714**	
					D21 Demolition			**20,714**	
					D2 Ancillary Work			**20,714**	
					D SITE & ANCILLARY WORK			**20,714**	

Estimate Totals

Description	Amount	Totals	Rate	Percent of Total	
Labor	39,415			6.31%	
Material	39,415			6.31%	
Subcontract	249,325			39.94%	
Equipment	39,415			6.31%	
Other	39,415			6.31%	
	406,985	**406,985**		**65.20%**	**65.20%**
General Requirements	40,698		10.000 %	6.52%	
Fee	20,349		5.000 %	3.26%	
Bonding & Insurances	4,884		1.200 %	0.78%	
	65,931	**472,916**		**10.56%**	**75.76%**
Design Allowance	47,291		10.000 %	7.58%	
Escalation Allownce					
Construction Allowance	47,291		10.000 %	7.58%	
	94,582	**567,498**		**15.15%**	**90.91%**
Permits/Municipal Costs					
Design & Engineering	113,500		20.000 %	9.09%	
ROM Construction Budget (+/-35%)	**113,500**	**680,998**		**9.09%**	**100.00%**
Total		***680,998***			

3.7. Alternative Use: Option 2 - Convert Existing 2nd Floor Exercise Area to New Office Space

24-046 - WSP - St Catharines YMCA
Alternative Use Option 2
Class D/Feasibility Costing

Project name	24-046 - WSP - St Catharines YMCA - Alterntaive Use Option 2
Notes	GFA - 109,600sf Feasability/Class D Budget - (+/- 35% Variance) This estimate is completed in Elemental Format at a Class D stage. XGC has not included any additional market condition and/or inflation and/or escalation allowances. XGC does not make any representation or warranty as to the factual accuracy of the information provided to us on behalf of the client, its subcontractors or agents and/or the owner upon which this Report is based. XGC does not accept accountability for inforamtion that has not been provided to us or is not available at the time of preparing this report. We note that a site visit was not completed nor were pictures available for viewing of the existing space. This Report contains confidential information and shall not be reproduced or distributed to any party other those listed in the report.

	Element Level 1	Element Level 2	Element Level 3	Phase	Description	Takeoff Quantity	Total Cost/Unit	Total Amount	Notes
1	**B**				**INTERIORS**				
2		B1			Partitions & Doors				
3			B12		Doors			62,650	
					B1 Partitions & Doors			62,650	
4		B2			Finishes				
5			B21		Floor Finishes			79,920	
6			B22		Ceiling Finishes			20,345	
7			B23		Wall Finishes			96,622	
					B2 Finishes			196,887	
8		B3			Fittings & Equipment				
9			B31		Fittings & Fixtures			7,500	
					B3 Fittings & Equipment			7,500	
					B INTERIORS			267,037	
10	**C**				**SERVICES**				
11		C1			Mechanical				
12			C11		Plumbing & Drainage			3,000	
13			C12		Fire Protection			9,248	
14			C13		HVAC			144,840	
15			C14		Controls			15,000	
					C1 Mechanical			172,087	
16		C2			Electrical				
17			C22		Lighting, Devices & Heating			46,488	
18			C23		Systems & Ancillaries			18,699	
					C2 Electrical			65,187	
					C SERVICES			237,274	
19	**D**				**SITE & ANCILLARY WORK**				
20		D2			Ancillary Work				
21			D21		Demolition			20,714	
					D2 Ancillary Work			20,714	
					D SITE & ANCILLARY WORK			20,714	

	Element Level 1	Element Level 2	Element Level 3	Phase	Description	Takeoff Quantity	Total Cost/Unit	Total Amount	Notes
1	**B**				**INTERIORS**				
2		B1			Partitions & Doors				
3			B12		Doors				
4					**Metal Doors & Frames**				
5				081100	Hollow Metal Door/Frame/Hardware - Single, 1524mm x 2135mm - New 2nd Flr Office Area	5.00 ea	1,800.00 /ea	**9,000**	
					Metal Doors & Frames			**9,000**	
6					**Entrances & Storefronts**				
7				084100	Glazed (Full Height) PC 350 Door - New Open Office Area	5.00 no	850.00 /no	**4,250**	
8				084100	Glazed (Full Height) PC 350 Screen - New Open Office Area	530.00 sf	80.00 /sf	**42,400**	
9				084100	Aluminum Door Hardware - New 2nd Flr Office Area	5.00 ea	1,000.00 /ea	**5,000**	
					Entrances & Storefronts			**51,650**	
10					**Glass Glazing**				
11				088100	Door Lite - New 2nd Flr Office Area, Allowance	2.00 ea	1,000.00 /ea	**2,000**	
					Glass Glazing			**2,000**	
					B12 Doors			**62,650**	
					B1 Partitions & Doors			**62,650**	
12		B2			Finishes				
13			B21		Floor Finishes				
14					**Maintenance of Flooring**				
15				090160	Floor Preparation for New Carpet Tile - New 2nd Flr Office Area	3,699.00 sf	1.00 /sf	**3,699**	
					Maintenance of Flooring			**3,699**	
16					**Resilient Flooring**				
17				096500	Rubber Base - New 2nd Flr Office Area	540.00 lf	4.15 /lf	**2,241**	
					Resilient Flooring			**2,241**	
18					**Carpeting**				
19				096800	Carpet Tile c/w Underlayment - New 2nd Flr Office Area	3,699.00 sf	20.00 /sf	**73,980**	
					Carpeting			**73,980**	
					B21 Floor Finishes			**79,920**	
20			B22		Ceiling Finishes				
21					**Acoustical Ceilings**				
22				095100	Standard ACT Ceiling - New 2nd Flr Office Area	3,699.00 sf	5.50 /sf	**20,345**	
					Acoustical Ceilings			**20,345**	
					B22 Ceiling Finishes			**20,345**	
23			B23		Wall Finishes				
24					**Gypsum Board**				
25				092900	Gypsum Board - Walls - New 2nd Flr Office Area, To U/S Deck	3,435.00 sf	24.75 /sf	**85,016**	16mm GB on 150mm GA Steel Studs @ 400mm o.c., Sound Batts, No FR
					Gypsum Board			**85,016**	
26					**Painting**				
27				099100	Paint - Partitions - New 2nd Flr Office Area	10,005.00 sf	1.16 /sf	**11,606**	
					Painting			**11,606**	
					B23 Wall Finishes			**96,622**	
					B2 Finishes			**196,887**	
28		B3			Fittings & Equipment				
29			B31		Fittings & Fixtures				
30					**Architectural Wood Casework**				
31				064100	Lower/Upper Cabinetry w/ Countertops - Kitchenette - New 2nd Flr Office Area	10.00 lf	750.00 /lf	**7,500**	
					Architectural Wood Casework			**7,500**	
					B31 Fittings & Fixtures			**7,500**	
					B3 Fittings & Equipment			**7,500**	

	Element Level 1	Element Level 2	Element Level 3	Phase	Description	Takeoff Quantity	Total Cost/Unit	Total Amount	Notes
					B INTERIORS			**267,037**	
32	**C**				**SERVICES**				
33		C1			**Mechanical**				
34			C11		**Plumbing & Drainage**				
35					**Plumbing**				
36				154100	Kitchenette Appliance Connection (Dishwasher) - New 2nd Office Area	1.00 no	1,500.00 /no	**1,500**	
37				154100	Kitchenette Faucet/Sink/Drain - New 2nd Office Area	1.00 no	1,500.00 /no	**1,500**	
					Plumbing			**3,000**	
					C11 Plumbing & Drainage			**3,000**	
38			C12		**Fire Protection**				
39					**Sprinklers**				
40				153100	Relocate Sprinkler Heads to Suit New Layout - New 2nd Office Area	3,699.00 sf	2.50 /sf	**9,248**	
					Sprinklers			**9,248**	
					C12 Fire Protection			**9,248**	
41			C13		**HVAC**				
42					**Mechanical Demolition**				
43				150020	Mechanical Demolition - Existing 2nd Floor Exercise Area	3,699.00 sf	3.00 /sf	**11,097**	
					Mechanical Demolition			**11,097**	
44					**HVAC**				
45				155000	Rework Duct Distribution for New 2nd Office Area	3,699.00 sf	7.50 /sf	**27,743**	
46				155000	Add WSHP's, Extending off of Existing Condenser Loop	6.00 no	6,000.00 /no	**36,000**	Expected Median Life : 19Years
47				155000	Extension of Ductwork w/ New VAV Boxes, Allowance	1.00 ls	70,000.00 /ls	**70,000**	Expected Median Life : 20Years
					HVAC			**133,743**	
					C13 HVAC			**144,840**	
48			C14		**Controls**				
49					**Controls**				
50				159500	Rework BAS for New 2nd Office Area to Central System	1.00 ls	15,000.00 /ls	**15,000**	Expected Median Life : 15Years
					Controls			**15,000**	
					C14 Controls			**15,000**	
					C1 Mechanical			**172,087**	
51		C2			**Electrical**				
52			C22		**Lighting, Devices & Heating**				
53					**Electrical Demolition**				
54				160002	Electrical Demolition - Existing 2nd Flr Exercise Area	3,699.00 sf	2.00 /sf	**7,398**	
					Electrical Demolition			**7,398**	
55					**Interior Power**				
56				160120	Power to Refrigerator, Dishwasher, Microwave at Kitchenette - New 2nd Office Area	3.00 no	700.00 /no	**2,100**	
57				160120	New Receptacle/Power Locations - New 2nd Office Area	3,699.00 sf	4.00 /sf	**14,796**	
					Interior Power			**16,896**	
58					**Interior Lighting**				
59				165100	LED Light Fixtures in New 2nd Office Area	3,699.00 sf	6.00 /sf	**22,194**	
					Interior Lighting			**22,194**	
					C22 Lighting, Devices & Heating			**46,488**	
60			C23		**Systems & Ancillaries**				
61									
62				166000	Allowance for Audio/Visual Systems - New 2nd Office Area	1.00 ls	15,000.00 /ls	**15,000**	
								15,000	
63					**Data & Communications**				
64				167000	Data & Communication Allowance - New 2nd Office Area	3,699.00 sf	1.00 /sf	**3,699**	
					Data & Communications			**3,699**	

	Element Level 1	Element Level 2	Element Level 3	Phase	Description	Takeoff Quantity	Total Cost/Unit	Total Amount	Notes
					C23 Systems & Ancillaries			18,699	
					C2 Electrical			65,187	
					C SERVICES			237,274	
65	D				SITE & ANCILLARY WORK				
66		D2			Ancillary Work				
67			D21		Demolition				
68					Demolition				
69				020600	Demo 2nd Floor Flooring Finishes - Existing Exercise Area	3,699.00 sf	2.80 /sf	10,357	
70				020600	Demo 2nd Floor Ceiling Finishes - Existing Exercise Area	3,699.00 sf	2.80 /sf	10,357	
					Demolition			20,714	
					D21 Demolition			20,714	
					D2 Ancillary Work			20,714	
					D SITE & ANCILLARY WORK			20,714	

Estimate Totals

Description	Amount	Totals	Rate	Percent of Total	
Labor	48,195			5.98%	
Material	48,195			5.98%	
Subcontract	332,247			41.26%	
Equipment	48,195			5.98%	
Other	48,195			5.98%	
	525,027	**525,027**		**65.20%**	**65.20%**
General Requirements	52,503		10.000 %	6.52%	
Fee	26,251		5.000 %	3.26%	
Bonding & Insurances	6,300		1.200 %	0.78%	
	85,054	**610,081**		**10.56%**	**75.76%**
Design Allowance	61,008		10.000 %	7.58%	
Escalation Allownce					
Construction Allowance	61,008		10.000 %	7.58%	
	122,016	**732,097**		**15.15%**	**90.91%**
Permits/Municipal Costs					
Design & Engineering	146,419		20.000 %	9.09%	
Class D Construction Budget (+/-35%)	**146,419**	**878,516**		**9.09%**	**100.00%**
Total		***878,516***			

3.8. Alternative Use: Option 3 - New Building Addition to House Therapy Pool or Children's Pool

WSP St Catherines YMCA - City of St.Catharines
Alternative Use - Option 3
Class D/Fasibility Costing

Project name 24-046 - WSP St Catherines YMCA - Alternative Use - Option 3

Notes GFA - 109,600sf

Feasability/Class D Budget - (+/- 35% Variance)

This estimate is completed in Elemental Format at a Class D stage. XGC has not included any additional market condition and/or inflation and/or escalation allowances.

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	Element Level 1	Element Level 2	Element Level 3	Phase	Description	Takeoff Quantity	Total Cost/Unit	Total Amount	Notes
1	**A**				**SHELL**				
2		A1			Substructure				
3			A11		Foundations			81,310	
					A1 Substructure			81,310	
4		A2			Structure				
5			A21		Lowest Floor Construction			79,404	
6			A22		Upper Floor Construction			228,040	
					A2 Structure			307,444	
7		A3			Exterior Enclosure				
8			A32		Walls Above Grade			323,400	
9			A33		Windows and Entrances			55,000	
10			A34		Roof Covering			87,100	
11			A35		Projections			23,505	
					A3 Exterior Enclosure			489,005	
					A SHELL			877,760	
12	**B**				**INTERIORS**				
13		B1			Partitions & Doors				
14			B12		Doors			17,000	
					B1 Partitions & Doors			17,000	
15		B2			Finishes				
16			B21		Floor Finishes			13,376	
17			B22		Ceiling Finishes			19,657	
18			B23		Wall Finishes			121,910	
					B2 Finishes			154,943	
19		B3			Fittings & Equipment				
20			B31		Fittings & Fixtures			40,000	
21			B32		Equipment			200,000	
					B3 Fittings & Equipment			240,000	
					B INTERIORS			411,943	
22	**C**				**SERVICES**				
23		C1			Mechanical				
24			C13		HVAC			100,380	
					C1 Mechanical			100,380	
25		C2			Electrical				
26			C23		Systems & Ancillaries			66,920	
					C2 Electrical			66,920	
					C SERVICES			167,300	
27	**D**				**SITE & ANCILLARY WORK**				
28		D1			Site Work				
29			D11		Site Development			36,706	
30			D12		Mechanical Site Services			19,930	
					D1 Site Work			56,636	
31		D2			Ancillary Work				
32			D21		Demolition			11,700	
					D2 Ancillary Work			11,700	
					D SITE & ANCILLARY WORK			68,336	

	Element Level 1	Element Level 2	Element Level 3	Phase	Description	Takeoff Quantity	Total Cost/Unit	Total Amount	Notes
1	**A**				**SHELL**				
2		A1			Substructure				
3			A11		Foundations				
4					**Excavation / Backfill**				
5				022200	Excavation Haul Off Site	72.00 cy	16.25 /cy	**1,170**	
6				022200	Supply Backfill Material - Assume Engineered Fill	217.26 mt	26.00 /mt	**5,649**	
					Excavation / Backfill		**/m3**	**6,819**	
7					**Reinforcement Bars**				
8				032100	Supply Rebar	2.35 mt	4,500.00 /mt	**10,575**	
9				032100	Install Rebar Footing	0.71 mt	1,200.00 /mt	**852**	
10				032100	Install Rebar Wall	1.64 mt	1,200.00 /mt	**1,968**	
					Reinforcement Bars			**13,395**	
11					**Structural Concrete**				
12				033100	Concrete Supply, 25 MPa	134.67 cy	230.90 /cy	**31,095**	
13				033100	Forming, Pour, Finish, Strip - Strip Footings	243.00 lf	35.00 /lf	**8,505**	
14				033100	Forming, Pour, Finish, Strip - Walls	972.00 sf	18.00 /sf	**17,496**	
15				033100	Foundation Layout/Equipment	1.00 ls	1,000.00 /ls	**1,000**	
16				033100	Concrete Placing Equipment	1.00 ls	3,000.00 /ls	**3,000**	
					Structural Concrete			**61,096**	
					A11 Foundations			**81,310**	
					A1 Substructure			**81,310**	
17		A2			Structure				
18			A21		Lowest Floor Construction				
19					**Excavation / Backfill**				
20				022200	Backfill - Standard Foundations	306.00 cy	92.20 /cy	**28,213**	
21				022200	Place SOG Sub - Base	125.00 cy	18.83 /cy	**2,354**	
22				022200	Supply SOG Sub - Base	88.75 mt	26.00 /mt	**2,308**	
23				022200	Slab On Grade Vapour Barrier	3,384.00 sf	0.60 /sf	**2,030**	
					Excavation / Backfill		**/m3**	**34,905**	
24					**Reinforcement Bars**				
25				032100	Supply WWM	3,384.00 sf	0.75 /sf	**2,538**	
26				032100	Install WWM - SOG	3,384.00 sf	0.25 /sf	**846**	
					Reinforcement Bars			**3,384**	
27					**Structural Concrete**				
28				033100	Labour to Place Rebar, Pour & Finish - Slabs	3,384.00 sf	8.00 /sf	**27,072**	
					Structural Concrete			**27,072**	
29					**Thermal Insulation**				
30				072100	Perimeter and Underslab Insulation	3,384.00 sf	4.15 /sf	**14,044**	
					Thermal Insulation			**14,044**	
					A21 Lowest Floor Construction			**79,404**	
31			A22		Upper Floor Construction				
32					**Steel Joist Framing**				
33				052100	Steel Framing with OWSJ, Deck, Fasteners	3,384.00 sf	60.00 /sf	**203,040**	
					Steel Joist Framing			**203,040**	
34					**Miscellaneous Steel**				
35				055000	Misc Steel Allowance	1.00 ls	10,000.00 /ls	**10,000**	
36				055000	New Structural Support for Opening at Existing Wall to New Addition	1.00 ls	15,000.00 /ls	**15,000**	
					Miscellaneous Steel			**25,000**	
					A22 Upper Floor Construction			**228,040**	
					A2 Structure			**307,444**	
37		A3			Exterior Enclosure				
38									

	Element Level 1	Element Level 2	Element Level 3	Phase	Description	Takeoff Quantity	Total Cost/Unit	Total Amount	Notes
38			A32		Walls Above Grade				
39					**Architectural Brick**				
40				042110	Brick Exterior to Match Existing	4,200.00 sf	35.00 /sf	**147,000**	
					Architectural Brick			**147,000**	
41					**Structural Metal Stud Framing**				
42				054100	Metal Stud Infill, 6" - Exterior Wall	4,200.00 sf	15.00 /sf	**63,000**	
					Structural Metal Stud Framing			**63,000**	
43					**Wood Framing**				
44				061600	Exterior Grade Sheathing	4,200.00 sf	15.00 /sf	**63,000**	
					Wood Framing			**63,000**	
45					**Thermal Insulation**				
46				072100	Insulation at Envelope, Semi Rigid	4,200.00 sf	7.00 /sf	**29,400**	
					Thermal Insulation			**29,400**	
47					**Air/Vapor Retarders**				
48				072600	Air Barrier - Envelope	4,200.00 sf	5.00 /sf	**21,000**	
					Air/Vapor Retarders			**21,000**	
					A32 Walls Above Grade			**323,400**	
49			A33		Windows and Entrances				
50					**Metal Doors & Frames**				
51				081100	Hollow Metal Exit Door/Frame/Hardware - Single, Allowance	1.00 ls	8,000.00 /ls	**8,000**	
					Metal Doors & Frames			**8,000**	
52					**Entrances & Storefronts**				
53				084100	Aluminum Entrance Door, Double/Transom and Sidelight	2.00 ea	5,000.00 /ea	**10,000**	
54				084100	Aluminum Door Hardware	4.00 ea	3,000.00 /ea	**12,000**	
					Entrances & Storefronts			**22,000**	
55					**Glass Glazing**				
56				088100	Aluminum Punch Window, Allowance	1.00 ls	25,000.00 /ls	**25,000**	
					Glass Glazing			**25,000**	
					A33 Windows and Entrances			**55,000**	
57			A34		Roof Covering				
58					**Modified Bituminous Membrane Roofing**				
59				075200	1 Ply EPDM	3,384.00 sf	25.00 /sf	**84,600**	
					Modified Bituminous Membrane Roofing			**84,600**	
60					**Roof Accessories**				
61				077200	Roof Hatch	1.00 ea	2,500.00 /ea	**2,500**	
					Roof Accessories			**2,500**	
					A34 Roof Covering			**87,100**	
62			A35		Projections				
63					**Wood Blockings**				
64				061010	Wood Blocking - Roof, Allowance	1.00 ls	5,000.00 /ls	**5,000**	
65				061010	Wood Blocking - Misc Interior, Allowance	1.00 ls	10,000.00 /ls	**10,000**	
					Wood Blockings			**15,000**	
66					**Roof Specilties**				
67				077100	Flat Roof Parapet/Roof Works - Carpentry/Flashings	243.00 lf	35.00 /lf	**8,505**	
					Roof Specilties			**8,505**	
					A35 Projections			**23,505**	
					A3 Exterior Enclosure			**489,005**	
					A SHELL			**877,760**	
68	**B**				**INTERIORS**				
69		B1			Partitions & Doors				
70			B12		Doors				
71									

	Element Level 1	Element Level 2	Element Level 3	Phase	Description	Takeoff Quantity	Total Cost/Unit	Total Amount	Notes
71					**Door Hardware**				
72				087100	Auto Operator	4.00 ea	3,500.00 /ea	**14,000**	
					Door Hardware			**14,000**	
73					**Glass Glazing**				
74				088100	Door Lite, Allowance	1.00 ls	3,000.00 /ls	**3,000**	
					Glass Glazing			**3,000**	
					B12 Doors			**17,000**	
					B1 Partitions & Doors			**17,000**	
75		B2			**Finishes**				
76			B21		**Floor Finishes**				
77					**Resilient Flooring**				
78				096500	Resilient Sheet Flooring (25%)	836.00 sf	16.00 /sf	**13,376**	
					Resilient Flooring			**13,376**	
					B21 Floor Finishes			**13,376**	
79			B22		**Ceiling Finishes**				
80					**Gypsum Board**				
81				092900	Gypsum Board - Ceilings (25%)	836.00 sf	7.00 /sf	**5,852**	
					Gypsum Board			**5,852**	
82					**Acoustical Ceilings**				
83				095100	Standard ACT Ceiling (75%)	2,510.00 sf	5.50 /sf	**13,805**	
					Acoustical Ceilings			**13,805**	
					B22 Ceiling Finishes			**19,657**	
84			B23		**Wall Finishes**				
85					**Joint Sealants**				
86				079200	Misc. Caulking	1.00 ls	10,000.00 /ls	**10,000**	
					Joint Sealants			**10,000**	
87					**Gypsum Board**				
88				092900	Gypsum Board - Walls - Interior, Allowance	1.00 ls	40,000.00 /ls	**40,000**	
					Gypsum Board			**40,000**	
89					**Ceramic Tiling**				
90				093013	Ceramic Tile - Floor (75%)	2,510.00 sf	18.00 /sf	**45,180**	
					Ceramic Tiling			**45,180**	
91					**Wall Coverings**				
92				097200	Feature Wall Decorative, Allowance	1.00 ls	10,000.00 /ls	**10,000**	
					Wall Coverings			**10,000**	
93					**Painting**				
94				099100	Painting, Walls/Ceilings	3,346.00 sf	5.00 /sf	**16,730**	
					Painting			**16,730**	
					B23 Wall Finishes			**121,910**	
					B2 Finishes			**154,943**	
95		B3			**Fittings & Equipment**				
96			B31		**Fittings & Fixtures**				
97					**Architectural Wood Casework**				
98				064100	Millwork Allowance	1.00 ls	25,000.00 /ls	**25,000**	
					Architectural Wood Casework			**25,000**	
99					**Specialties**				
100				100001	Specialties Allowance	1.00 ls	15,000.00 /ls	**15,000**	
					Specialties			**15,000**	
					B31 Fittings & Fixtures			**40,000**	
101			B32		**Equipment**				
102					**Special Construction**				

	Element Level 1	Element Level 2	Element Level 3	Phase	Description	Takeoff Quantity	Total Cost/Unit	Total Amount	Notes
					Special Construction				
103				130001	Therapy Pool/Children's Pool Allowance	1.00 ls	200,000.00 /ls	**200,000**	
					Special Construction			**200,000**	
					B32 Equipment			**200,000**	
					B3 Fittings & Equipment			**240,000**	
					B INTERIORS			**411,943**	
104	**C**				**SERVICES**				
105		C1			**Mechanical**				
106			C13		**HVAC**				
107					**Mechanical**				
108				150001	Mechanical	3,346.00 sf	30.00 /sf	**100,380**	
					Mechanical			**100,380**	
					C13 HVAC			**100,380**	
					C1 Mechanical			**100,380**	
109		C2			**Electrical**				
110			C23		**Systems & Ancillaries**				
111					**Electrical**				
112				160001	Electrical	3,346.00 sf	20.00 /sf	**66,920**	
					Electrical			**66,920**	
					C23 Systems & Ancillaries			**66,920**	
					C2 Electrical			**66,920**	
					C SERVICES			**167,300**	
113	**D**				**SITE & ANCILLARY WORK**				
114		D1			**Site Work**				
115			D11		**Site Development**				
116					**Site Clearing**				
117				022050	Site Clearing for New Addition	3,384.00 sf	4.00 /sf	**13,536**	
					Site Clearing			**13,536**	
118					**Excavation / Backfill**				
119				022200	Excavate - Standard Foundations	378.00 cy	15.00 /cy	**5,670**	
					Excavation / Backfill		**/m3**	**5,670**	
120					**Cubrs, Gutters, Sidewalks**				
121				025210	Concrete Sidewalks, Allowance Around Addition	1.00 ls	7,500.00 /ls	**7,500**	
					Cubrs, Gutters, Sidewalks			**7,500**	
122					**Landscaping**				
123				029010	Landscaping Allowance Around New Addition	1.00 ls	10,000.00 /ls	**10,000**	
					Landscaping			**10,000**	
					D11 Site Development			**36,706**	
124			D12		**Mechanical Site Services**				
125					**Site Services**				
126				026000	Water Connection, Allowance	1.00 ls	5,000.00 /ls	**5,000**	
127				026000	Storm Connection, Allowance	1.00 ls	5,000.00 /ls	**5,000**	
128				026000	Sanitary Connection, Allowance	1.00 ls	7,500.00 /ls	**7,500**	
129				026000	Weeping Tile - Foundations	243.00 lf	10.00 /lf	**2,430**	
					Site Services			**19,930**	
					D12 Mechanical Site Services			**19,930**	
					D1 Site Work			**56,636**	
130		D2			**Ancillary Work**				
131			D21		**Demolition**				
132					**Demolition**				
133				020600	Demolition of Existing Exterior Wall to Provide Connection to New Addition	780.00 sf	15.00 /sf	**11,700**	Assume Ceiling H = 20'

Element Level 1	Element Level 2	Element Level 3	Phase	Description	Takeoff Quantity	Total Cost/Unit	Total Amount	Notes
				Demolition			**11,700**	
				D21 Demolition			**11,700**	
				D2 Ancillary Work			**11,700**	
				D SITE & ANCILLARY WORK			**68,336**	

Estimate Totals

Description	Amount	Totals	Rate	Percent of Total	
Labor	102,903			4.40%	
Material	102,903			4.40%	
Subcontract	1,113,728			47.60%	
Equipment	102,903			4.40%	
Other	102,903			4.40%	
	1,525,340	**1,525,340**		**65.20%**	**65.20%**
General Requirements	152,534		10.000 %	6.52%	
Fee	76,267		5.000 %	3.26%	
Bonding & Insurances	18,304		1.200 %	0.78%	
	247,105	**1,772,445**		**10.56%**	**75.76%**
Design Allowance	177,244		10.000 %	7.58%	
Escalation Allownce					
Construction Allowance	177,244		10.000 %	7.58%	
	354,488	**2,126,933**		**15.15%**	**90.91%**
Permits/Municipal Costs					
Design & Engineering	425,387		20.000 %	9.09%	
ROM Construction Budget (+/-35%)	**425,387**	**2,552,320**		**9.09%**	**100.00%**
Total		***2,552,320***			

3.9. Alternative Use: Option 4 - Convert Existing Pool to New Sports Court Zone

St Catharines YMCA - City of St. Catharines
Alternative Use Option 4
Class D/Feasibility Costing

Project name 24-046 - WSP - St Catherines YMCA - Alternative Use Option 4

Notes GFA - 109,600sf

Feasability/Class D Budget - (+/- 35% Variance)

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	Element Level 1	Element Level 2	Element Level 3	Phase	Description	Takeoff Quantity	Total Cost/Unit	Total Amount	Notes
1	**A**				**SHELL**				
2		A2			Structure				
3			A21		Lowest Floor Construction			446,000	
					A2 Structure			446,000	
					A SHELL			446,000	
4	**B**				**INTERIORS**				
5		B2			Finishes				
6			B21		Floor Finishes			174,539	
					B2 Finishes			174,539	
7		B3			Fittings & Equipment				
8			B32		Equipment			70,000	
					B3 Fittings & Equipment			70,000	
					B INTERIORS			244,539	
9	**C**				**SERVICES**				
10		C1			Mechanical				
11			C13		HVAC			421,100	
12			C14		Controls			20,000	
					C1 Mechanical			441,100	
13		C2			Electrical				
14			C22		Lighting, Devices & Heating			115,000	
15			C23		Systems & Ancillaries			40,000	
					C2 Electrical			155,000	
					C SERVICES			596,100	
16	**D**				**SITE & ANCILLARY WORK**				
17		D2			Ancillary Work				
18			D21		Demolition			253,620	
					D2 Ancillary Work			253,620	
					D SITE & ANCILLARY WORK			253,620	

	Element Level 1	Element Level 2	Element Level 3	Phase	Description	Takeoff Quantity	Total Cost/Unit	Total Amount	Notes
1	**A**				**SHELL**				
2		A2			Structure				
3			A21		Lowest Floor Construction				
4					**Reinforcement Bars**				
5				032100	Supply/Install WWM - SOD - Infill Pool Tank	3,800.00 sf	1.00 /sf	**3,800**	
					Reinforcement Bars			**3,800**	
6					**Concrete FInishing**				
7				033500	Concrete Pour/Supply/Finish SOD - Infill Pool Tank	3,800.00 sf	20.00 /sf	**76,000**	
8				033500	Infill Supply Grille Openings Around Deck Perimeter, Allowance	1.00 ls	10,000.00 /ls	**10,000**	
					Concrete FInishing			**86,000**	
9					**Structural Steel Framing**				
10				051200	Steel Ledgers at Inside Perimeter of Pool Tank to Suppor Joists/Beams, Connections	261.00 lf	200.00 /lf	**52,200**	
11				051200	Structural Steel Framing at Pool Tank (Joists/Beams)	3,800.00 sf	60.00 /sf	**228,000**	
					Structural Steel Framing			**280,200**	
12					**Steel Decking**				
13				053100	Steel Deck - CD1 - Infill Pool Tank	3,800.00 sf	20.00 /sf	**76,000**	
					Steel Decking			**76,000**	
					A21 Lowest Floor Construction			**446,000**	
					A2 Structure			**446,000**	
					A SHELL			**446,000**	
14	**B**				**INTERIORS**				
15		B2			Finishes				
16			B21		Floor Finishes				
17					**Maintenance of Flooring**				
18				090160	Pool Deck Floor Preparation for New Resilient Flooring	3,933.00 sf	1.50 /sf	**5,900**	
					Maintenance of Flooring			**5,900**	
19					**Resilient Flooring**				
20				096500	Gym Resilient Flooring Throughout Existing Main Pool Area	7,610.00 sf	18.00 /sf	**136,980**	
21				096500	Resilient Base in Existing Main Pool Area	400.00 lf	4.15 /lf	**1,660**	
22				096500	Supply & Install Court Lines (Basketball/Badminton and/or Pickle Ball Courts)	4.00 no	7,500.00 /no	**30,000**	
					Resilient Flooring			**168,640**	
					B21 Floor Finishes			**174,539**	
					B2 Finishes			**174,539**	
23		B3			Fittings & Equipment				
24			B32		Equipment				
25					**Gym Equipment**				
26				114900	Climbing Wall & Associated Safety Apparatus (East End of New Gym Space), Allowance - Qty Unknown	2,000.00 sf	35.00 /sf	**70,000**	
					Gym Equipment			**70,000**	
					B32 Equipment			**70,000**	
					B3 Fittings & Equipment			**70,000**	
					B INTERIORS			**244,539**	
27	**C**				**SERVICES**				
28		C1			Mechanical				
29			C13		HVAC				
30					**Mechanical Demolition**				
31				150020	Demo Pool Associated Mechanical Systems As Required	1.00 ls	45,000.00 /ls	**45,000**	
					Mechanical Demolition			**45,000**	
32					**HVAC**				
33				155000	Replace Existing Pool RTU w/ Air Handling Unit	1.00 ls	300,000.00 /ls	**300,000**	Expected Median Life : 20Years
34				155000	New Ductwork Arrangement, Allowance	7,610.00 sf	10.00 /sf	**76,100**	Expected Median Life : 30Years

	Element Level 1	Element Level 2	Element Level 3	Phase	Description	Takeoff Quantity	Total Cost/Unit	Total Amount	Notes
					HVAC			**376,100**	
					C13 HVAC			**421,100**	
35			C14		**Controls**				
36					**Controls**				
37				159500	Rework Associated Controls	1.00 ls	20,000.00 /ls	**20,000**	
					Controls			**20,000**	
					C14 Controls			**20,000**	
					C1 Mechanical			**441,100**	
38		C2			**Electrical**				
39			C22		**Lighting, Devices & Heating**				
40					**Electrical Demolition**				
41				160002	Demo Pool Associated Electrical Systems As Required	1.00 ls	15,000.00 /ls	**15,000**	
					Electrical Demolition			**15,000**	
42					**Interior Power**				
43				160120	Electrical Power for Courts, Allowance	1.00 ls	50,000.00 /ls	**50,000**	
					Interior Power			**50,000**	
44					**Interior Lighting**				
45				165100	Supplement Lighting Requirements for Court, Allowance	1.00 ls	50,000.00 /ls	**50,000**	
					Interior Lighting			**50,000**	
					C22 Lighting, Devices & Heating			**115,000**	
46			C23		**Systems & Ancillaries**				
47					**Special Systems**				
48				166000	Allowance for Audio/Visual Systems - Court	1.00 ls	30,000.00 /ls	**30,000**	
					Special Systems			**30,000**	
49					**Data & Communications**				
50				167000	Data & Communication Allowance - Court	1.00 ls	10,000.00 /ls	**10,000**	
					Data & Communications			**10,000**	
					C23 Systems & Ancillaries			**40,000**	
					C2 Electrical			**155,000**	
					C SERVICES			**596,100**	
51	**D**				**SITE & ANCILLARY WORK**				
52		D2			**Ancillary Work**				
53			D21		**Demolition**				
54					**Demolition**				
55				020600	Demolition all Ceramic Pool Tile Deck/Tank Finishes	5,453.00 sf	40.00 /sf	**218,120**	
56				020600	Chip Hammer Pool Deck to Prepare for Pool Tank Infill	520.00 sf	40.00 /sf	**20,800**	
57				020600	Chip Hammer Pool Concrete Perimeter Curb (Housing Grilles)	84.00 lf	175.00 /lf	**14,700**	
					Demolition			**253,620**	
					D21 Demolition			**253,620**	
					D2 Ancillary Work			**253,620**	
					D SITE & ANCILLARY WORK			**253,620**	

Estimate Totals

Description	Amount	Totals	Rate	Percent of Total	
Labor	185,380			7.85%	
Material	185,380			7.85%	
Subcontract	798,740			33.81%	
Equipment	185,380			7.85%	
Other	185,380			7.85%	
	1,540,260	**1,540,260**		**65.20%**	**65.20%**
General Requirements	154,026		10.000 %	6.52%	
Fee	77,013		5.000 %	3.26%	
Bonding & Insurances	18,483		1.200 %	0.78%	
	249,522	**1,789,782**		**10.56%**	**75.76%**
Design Allowance	178,978		10.000 %	7.58%	
Escalation Allownce					
Construction Allowance	178,978		10.000 %	7.58%	
	357,956	**2,147,738**		**15.15%**	**90.91%**
Permits/Municipal Costs					
Design & Engineering	429,547		20.000 %	9.09%	
ROM Construction Budget (+/-35%)	**429,547**	**2,577,286**		**9.09%**	**100.00%**
Total		***2,577,286***			

4. LISTING OF DOCUMENTS

Consultant Design Briefs

• Civil Site Condition Assessment	June 24, 2024	Draft
• Architectural Building Condition Assessment Studio Canoo Architecture	June 21, 2024	Draft
• Accessibility Audit Report McCallum Sather Architects	June 21, 2024	Draft
• Structural Building Condition Assessment WSP Canada Inc.	June 21, 2024	Draft
• Mechanical Building Condition Assessment WSP Canada Inc.	June 28, 2024	Draft
• Electrical Building Condition Assessment WSP Canada Inc.	June 21, 2024	Draft
• Aquatics Condition Assessment DEI Consulting Engineers	June 21, 2024	Draft

Pre-Existing Reports

• Designated Substance Survey Report Soil Eng	April 30, 2024	R0
• Property Condition Assessment McIntosh Perry	April 5, 2021	R0
• Structural Review DKWatson Consulting	May 7, 2021	R0

Pre-Existing Drawings

• A1 - Site Parking & Ground Floor Plan MacDonald Zuberec Ensslen Architects Inc.		Sept 5, 2002	R2
• Basement Floor Plan	Received:	May 30, 2024	N/A
• Ground Floor Plan MacDonald Zuberec Ensslen Architects Inc.	Received:	May 30, 2024	N/A
• Second Floor Plan MacDonald Zuberec Ensslen Architects Inc.	Received:	May 30, 2024	N/A
• Third Floor Plan MacDonald Zuberec Ensslen Architects Inc.	Received:	May 30, 2024	N/A

5. STANDARD EXCLUSIONS

Allowances

The following allowances have been excluded from this report for all projects defined within the documentation:

- Special Market Conditions Allowances
- Contingency allowance for owner desired change orders

Standard Exclusions

Below is a listing of additional exclusions that are applied to all projects defined within the documentation:

- Hazardous Abatement/Soils Removals
- Upgrading of any existing electrical systems
- Irrigation
- Fire Fighting Water Requirements
- Legal Fees and Expenses
- Third Party Project Management Fees, if any
- Furniture, Furnishing and Equipment, unless otherwise noted
- Administration Expenses
- Moving/Relocation Costs
- Premiums associated with “single sourcing” if any
- After hours or premium time works
- “Acceleration” premiums if required
- Staging or Phasing of works unless specified otherwise
- Maintenance Equipment
- Municipal and or Regional Costs and/or Fees, unless otherwise noted
- Architectural, Engineering and Other Consultant Fees, unless otherwise noted
- Covid 19/Recession/Other impacts related to labour, material and/or equipment costs and/or availability