Addendum No. 1

BARRY BRYAN ASSOCIATES

Project No: 25255

Date: May 22, 2026

Tender No: TDSB TR-25-0960

Project: **ACCESSIBILITY UPGRADES – WESTERN TECHNICAL COMMERCIAL SCHOOL**
Toronto District School Board

The following information supplements and/or supersedes the bid documents issued on Toronto District School Board.

This Addendum forms part of the contract documents and is to be read, interpreted, and coordinated with all other parts. The cost of all contained herein is to be included in the contract sum. The following revisions supersede the information contained in the original drawings and specifications issued for the above-named project to the extent referenced and shall become part thereof. Acknowledge receipt of this Addendum by inserting its number and date on the Tender Form. Failure to do so may subject bidder to disqualification.

SPECIFICATIONS

1.1 DIVISION 01 21 00 ‘Allowances’

.1 Add section 01 21 00. Refer to attached.

1.2 DIVISION 08 71 10 Door Hardware

.1 Replace Part 2 Products, 2.1 Materials, Sentence 5 with the following

” Provide interchangeable construction core. Keying for TDSB Medeco cylinders shall be installed separately by Others.”

DRAWINGS

1.3 ARCHITECTURAL DRAWINGS

.1 Delete the following BBA drawings entirely and replace with new drawings issued as part of this addendum. Changes are bubbled on the drawings:

a. A201 ‘KEY PLANS’ revisions 1 dated May 22, 2026.

b. A202 ‘PART DEMOLITION PLANS’ revision 1 dated May 22, 2026.

c. A203 ‘PART FLOOR PLANS’ revision 1 dated May 22, 2026.

d. A901 ‘SCHEDULE AND DETAILS’ revision 1 dated May 22, 2026.

GENERAL

1.4 Refer to the Attached MCW Consultants Ltd. Addendum #001 dated May 22, 2026.

250 Water St. Suite 201
Whitby, ON, L1N 0G5
(905) 666 – 5252
www.bba-archeng.com

1.5 The General Contractor shall coordinate with the local fire department to revise, submit, and obtain approval for the temporary fire safety and exit layout plan associated with the required closure of any means of egress during construction. The Contractor shall implement all required temporary life safety measures, maintain compliance with applicable fire and building codes at all times, and ensure that all occupants are notified of the revised exit arrangements prior to commencement of the work.

1.6 Contractor is to be aware of on-site pool permit and Summer School Program (approx. 1000 students) during specified times. Scheduling and coordination of construction activities shall be carried out in a manner as to not impede, disrupt or in any way negatively impact the daily activities or safety of the users. Work can be performed during regular hours. Where the work will impact the users, it shall be carried out outside of regular hours to maintain the schedule. Refer to attached plans identifying areas of work and permit occupancy.

QUESTIONS AND ANSWERS

1.7 Question: Specification does not indicate the gauge of doors, please advise.

Answer: Doors shall be 16 gauge.

End of Addendum No. 1

Yours very truly,

Barry Bryan Associates
Architects, Engineers, Project Managers

Crystal Gardner, M.Arch., OAA

CG/gs

Attachments:	01 21 00 Allowances	(2 pages)
	BBA Drawing A201- A203 and A901	(4 pages)
	MCW Consultants Ltd.'s Addendum #001	
	Hardware Schedule	(4 Pages)
	Western Technical CS Tenant Floor Plan	(6 pages)
	Hazardous Materials Abatement Program Specifications	(60 pages)
	Designated Substances Survey	(48 pages)

I/We hereby acknowledge receipt of this Addendum.

Signature (signing officer of firm)

Position

Name of Firm

One copy of the addendum must be signed and returned with the completed tender, or the tender submitted shall be rejected.

PART 1 GENERAL

1.1 Section Includes

.1 Cash Allowances

1.2 References

.1 Canadian Construction Documents Committee CCDC2-2020 Stipulated Price Contract including the Supplementary Conditions.

1.3 Cash Allowances

.1 Refer to General Conditions, GC4.1.

.2 Unless otherwise specified, Cash Allowances shall cover the cost of the materials and equipment delivered F.O.B. job site, and all applicable taxes, except Harmonized Sales Tax. The Contractor's handling costs on the site, labour, installation costs, overhead and profit and other expenses shall be included separately in the Stipulated Price and not in the Cash Allowance.

.3 Where it is specified that a Cash Allowances is to include both supply and installation costs, such allowances shall cover the cost of the materials and equipment delivered and unloaded at the site, all applicable taxes and the contractor’s handling costs on the site, labour and installation costs and other expenses, except overhead and profit which shall be included separately in the Stipulated Price.

.4 If the cost of the Work covered by Cash Allowances, when determined, is more or less than the allowance, the Contract Sum shall be adjusted accordingly.

.5 In the event that the cost of the work covered by Cash Allowances should exceed the cash allowance, while the Contract Sum will be adjusted in conformity therewith, there shall be no adjustment to the Contractor's fee or other expenses such as overhead or profit, it being understood and agreed that the contract sum includes the Contractor's expenses and profit for all Cash Allowances whether or not they are exceeded.

.6 Progress payments on accounts of work authorized under Cash Allowances shall be included in monthly certificate for payment.

.7 Expenditures from Cash Allowances shall be authorized by Site Instruction, Change Directive or Change Order.

.8 Cash Allowance for independent inspection and testing shall cover the cost of such services as provided by independent testing agency only. The Contractor's cost for labour, overhead and other expenses related to independent inspection and testing shall be included separately in the Stipulated Price and not in the Cash Allowance.

.9 Cause the work covered by Cash Allowances to be performed for such amounts and by such persons as the Consultant may select and direct or as required by the project drawings and specifications.

.10 Cash Allowance to include the following refer to the TPS for amounts to be carried.

.1 Independent Inspection and Testing:

PART 2 PRODUCTS

2.1 Not Used

.1 Not used

PART 3 EXECUTION

3.1 Not Used

.1 Not used

End of Section

Section 08 71 01 Door Hardware Schedule

Heading #1

1 Single door 101A, Corridor From Corridor	LHR
1 Single door 102A, Corridor From Corridor	RHR

915 x 2134 x 45 - HM DR x HM FR - 45 MIN

6	Standard Hinge	NRP-CB168 (4 1/2" x 4)	US26D
1	Exit Device	12-8813 ETL US26D/US32D - LHR	US26D/US32D
1	Exit Device	12-8813 ETL US26D/US32D - RHR	US26D/US32D
2	Electric Strike	F9600-630	630
2	Auto. Door Operator	HA8 Series	
4	36" Long Push Plate	CM-7536/4	
2	Overhead Door Stop Concealed	1020 SL to Suit Opening Size	US32D
2	Kick Plate	K10A x 200 x 2" LDW	US32D
2	Weatherstripping	W-22 x Opening Size (2xH, 1xW)	BL

NOTE: 120VDC is required at the head of the door for all handicap door operators, 15A dedicated circuit. Wall/Frame must
be reinforced for automatic operator mounting, all conduit and back boxes with pull cords are to be provided by the electrical contractor.

Heading #2

1 Pair of doors 101B, Corridor From Corridor	LHRA/RHRA
1 Pair of doors 102B, Corridor From Corridor	LHRA/RHRA

915, 915 x 2134 x 45 - HM DR x HM FR - 45 MIN

12	Standard Hinge	NRP-CB168 (4 1/2" x 4)	US26D
2	Exit Device	12-8815 ETL US26D/US32D - LHR	US26D/US32D
2	Exit Device	12-8815 ETL US26D/US32D - RHR	US26D/US32D
2	Removable Mullion	12-980 USP	USP
4	Electronic Closer	4040SE DE STDTRK 689 45 Closer To Release Upon Fire Alarm.	689
4	Kick Plate	K10A x 200 x 2" LDW	US32D
4	Weatherstripping	W-22 x Opening Size (2xH, 1xW)	BL

Heading #3

1 Single door D01, Corridor From Classroom — LHR
1 Single door D03, Corridor From Classroom — RHR

915 x 2134 x 45 - HM DR x HM FR - 45 MIN

6	Standard Hinge	NRP-CB168 (4 1/2" x 4)	US26D
1	Classroom Security Lockset	10XG38 LL / LL US26D / US26D - LHR	US26D/US26D
1	Classroom Security Lockset	10XG38 LL / LL US26D / US26D - RHR	US26D/US26D
2	Surface Closer	4040XP EDA 689	689
2	Kick Plate	K10A x 200 x 2" LDW	US32D
2	Overhead Door Stop Concealed	1020 SL to Suit Opening Size	US32D
2	Weatherstripping	W-22 x Opening Size (2xH, 1xW)	BL

Heading #4

1 Single door D02, Stair From Corridor — LHR

915 x 2134 x 45 - HM DR x HM FR - 45 MIN

3	Standard Hinge	CB168NRP (5" x 4 1/2")	US26D
1	Exit Device	12-8813 ETL US26D/US32D - LHR	US26D/US32D
1	Electronic Closer	4040SE DE STDTRK 689 45 Closer To Release Upon Fire Alarm.	689
1	Overhead Door Stop Concealed	1020 SL to Suit Opening Size	US32D
1	Kick Plate	K10A x 200 x 2" LDW	US32D
1	Weatherstripping	W-22 x Opening Size (2xH, 1xW)	BL
1	Door Sweep	W-13S x Opening Width	CA

Heading #5

1 Pair of doors 301, Corridor From Corridor LHRA/RHRA

915, 915 x 2134 x 45 - HM DR x HM FR

6	Standard Hinge	NRP-CB168 (4 1/2" x 4)	US26D
1	Exit Device	8813 ETL US26D/US32D - LHR	US26D/US32D
1	Exit Device	8813 ETL US26D/US32D - RHR	US26D/US32D
2	Removable Mullion	12-980 USP	USP
2	Auto. Door Operator	HA8 Series	
2	Electric Strike	F9600-630	630
4	36" Long Push Plate	CM-7536/4	
2	Overhead Door Stop Concealed	1020 SL to Suit Opening Size	US32D
2	Kick Plate	K10A x 200 x 2" LDW	US32D
2	Weatherstripping	W-22 x Opening Size (2xH, 1xW)	BL
2	Door Sweep	W-13S x Opening Width	CA

NOTE: 120VDC is required at the head of the door for all handicap door operators, 15A dedicated circuit. Wall/Frame must
be reinforced for automatic operator mounting, all conduit and back boxes with pull cords are to be provided by the electrical contractor.
AI Phone Buzzer / Receiver By Security.

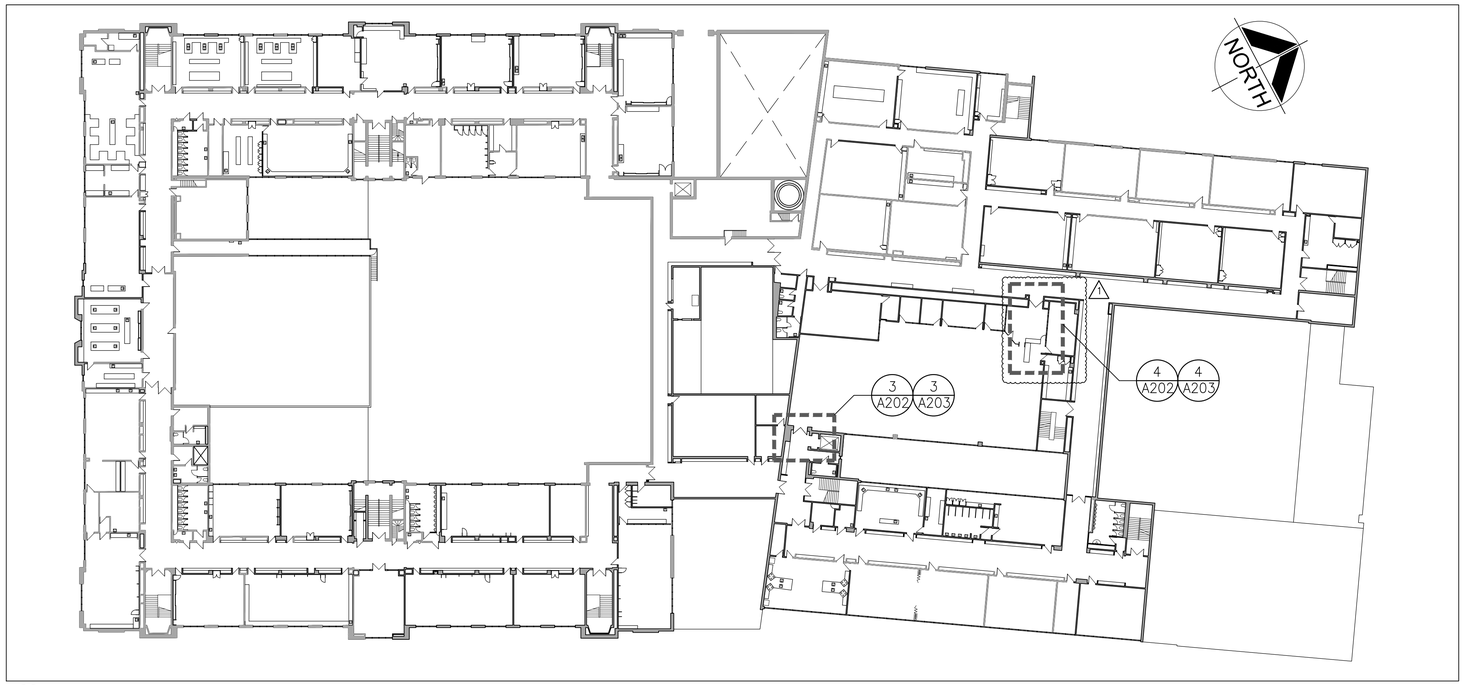
Heading #6

1 Pair of doors 302, Corridor From Corridor — LHRA/RHRA

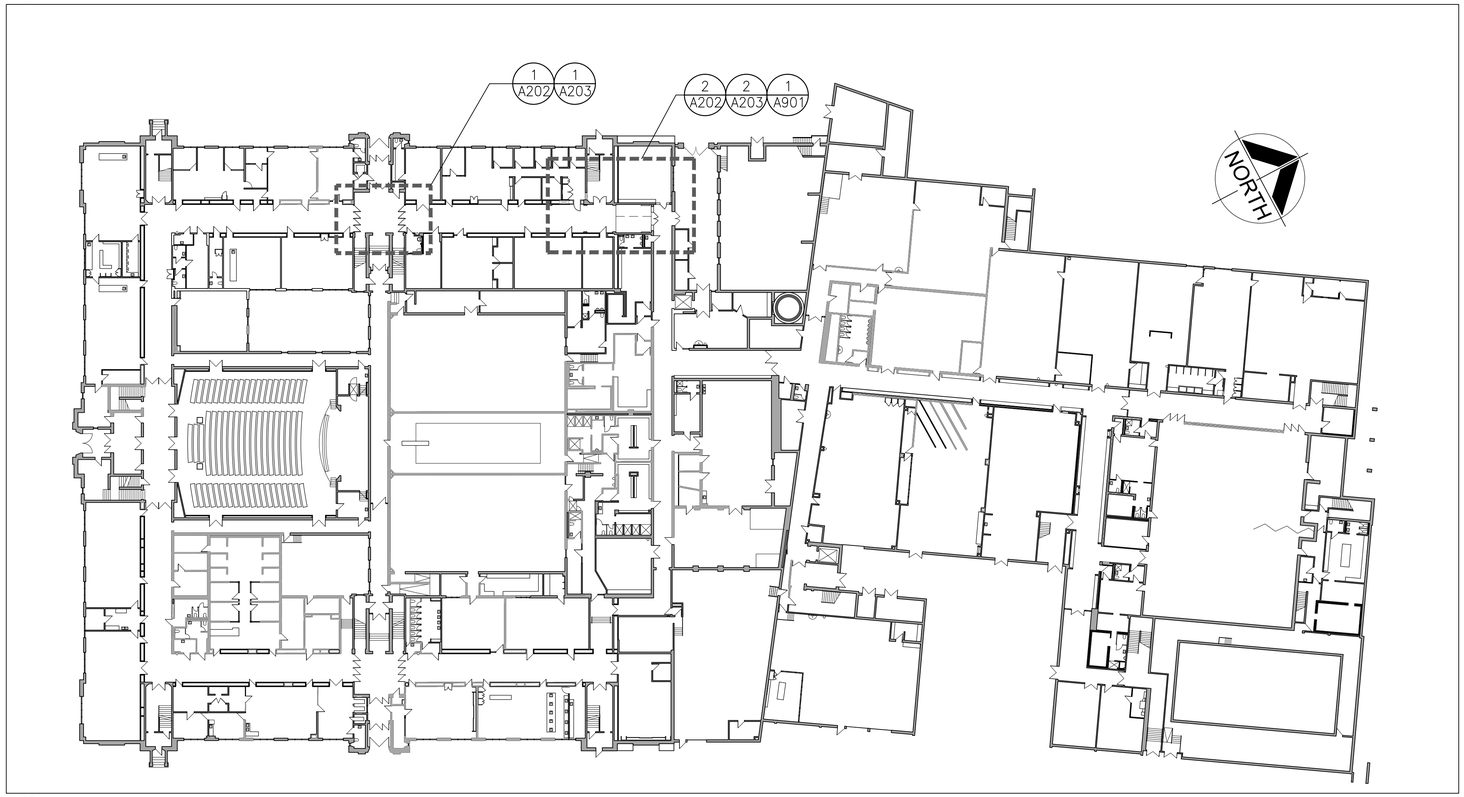
915, 915 x 2134 x 45 - HM DR x HM FR

6	Standard Hinge	NRP-CB168 (4 1/2" x 4)	US26D
1	Exit Device	8813 ETL US26D/US32D - LHR	US26D/US32D
1	Exit Device	8813 ETL US26D/US32D - RHR	US26D/US32D
2	Removable Mullion	12-980 USP	USP
2	Auto. Door Operator	HA8 Series	
2	Electric Strike	F9600-630	630
4	36" Long Push Plate	CM-7536/4	
2	Overhead Door Stop Concealed	1020 SL to Suit Opening Size	US32D
2	Kick Plate	K10A x 200 x 2" LDW	US32D
2	Weatherstripping	W-22 x Opening Size (2xH, 1xW)	BL
2	Door Sweep	W-13S x Opening Width	CA

NOTE: 120VDC is required at the head of the door for all handicap door operators, 15A dedicated circuit. Wall/Frame must
be reinforced for automatic operator mounting, all conduit and back boxes with pull cords are to be provided by the electrical contractor.
Key Switch To Be Added Beside The Push Button.



2 A201 THIRD FLOOR KEY PLAN
1:500



1 A201 FIRST FLOOR KEY PLAN
1:500

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Toronto District School Board

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3	ISSUED FOR TENDER	APR. 29, 2026	BBA
4	ISSUED FOR ADDENDUM #1	MAY 22, 2026	BBA

BBA
BARRY BRYAN ASSOCIATES

PROJECT:
ACCESSIBILITY UPGRADES
WESTERN TECHNICAL
COMMERCIAL SCHOOL
TDSB# TR-25-0960
125 EVELYN CRESCENT
TORONTO, ON M6P 3E3
TORONTO DISTRICT SCHOOL BOARD

DRAWING:
KEY PLANS

DESIGN BY: BBA	SEAL:
DRAWN BY: RR	
CHECKED BY: CM	
DATE: FEB. 2026	
SCALE: 1:500	
PROJECT NO: 25255	DRAWING NO: A201

GENERAL DEMOLITION NOTES

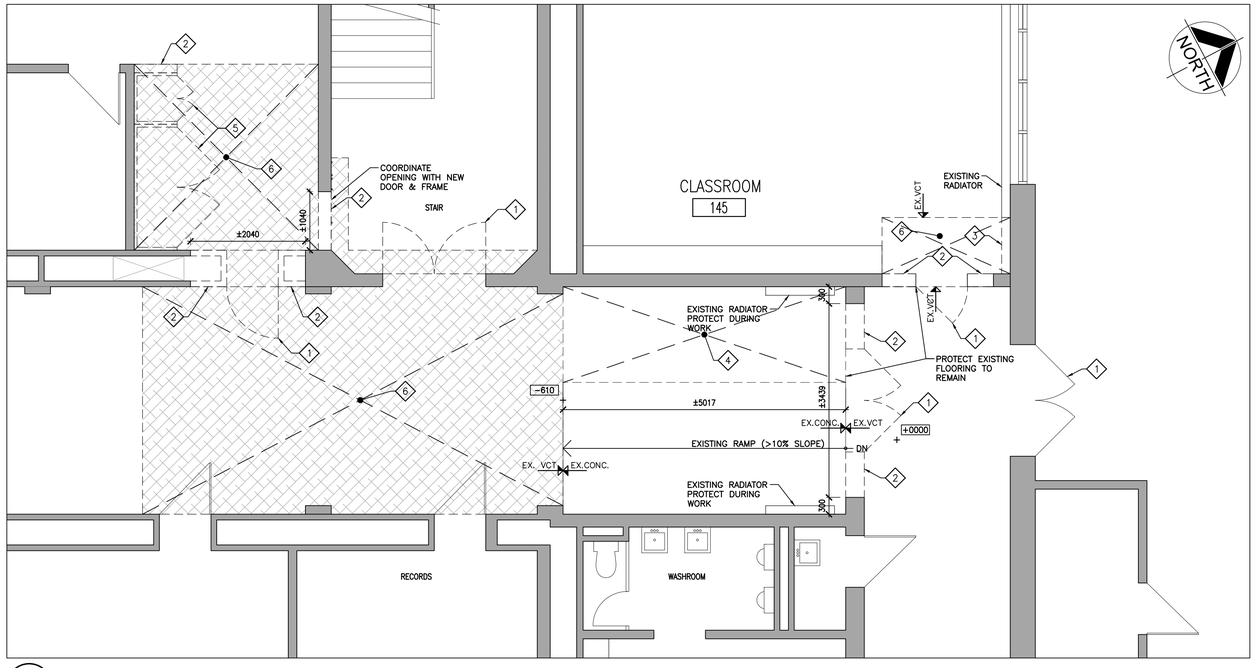
1. SITE VERIFY ALL DIMENSIONS AND CONDITIONS.
2. ALL WORK TO BE IN ACCORDANCE WITH THE ONTARIO BUILDING CODE.
3. COMPLY WITH THE OCCUPATIONAL HEALTH AND SAFETY ACT REGULATIONS FOR CONSTRUCTION PROJECTS.
3. PROVIDE PROTECTION IN LOCATIONS APPROVED BY THE OWNER AND CONSULTANT SO AS NOT TO DAMAGE EXISTING STRUCTURE, LANDSCAPE OR PART THEREOF.
4. COMPLETE ALL DEMOLITION WORK NECESSARY TO COMPLETE THE RENOVATIONS AS SHOWN AND AS REQUIRED. DEMOLITION OF BUILDING ELEMENTS INCLUDES COMPLETE REMOVAL OF ALL ASSOCIATED FIXTURES, FITTINGS, HARDWARE, FASTENERS, EQUIPMENT AND ACCESSORIES UNLESS NOTED OTHERWISE.
5. ARCHITECTURAL, STRUCTURAL, MECHANICAL AND ELECTRICAL DEMOLITION DRAWINGS ARE COMPLEMENTARY AND SHALL BE READ TOGETHER.
6. PROVIDE ALL SHORING AS REQUIRED. SHORING SHALL BE DESIGNED BY A REGISTERED PROFESSIONAL ENGINEER.
7. NOTIFY CONSULTANT OF LOAD BEARING MEMBERS OR ASSEMBLIES IDENTIFIED OR DISCOVERED DURING WORK AND NOT INDICATED ON DRAWINGS. DO NOT PROCEED WITH REMOVALS WITHOUT PRIOR REVIEW BY THE CONSULTANT.
8. PROVIDE TEMPORARY SUPPORT OF PIPES, DUCTS AND ELECTRICAL CHASES AS REQUIRED FOR SAFE REMOVAL. EXISTING AND PROPOSED SUPPORTS ARE TO BE REVIEWED BY THE CONSULTANT PRIOR TO THE REMOVAL OF ANY COMPONENTS WHICH MAY FALL. OR CAUSE OTHERS TO FALL.
9. MAINTAIN WORK AREAS AND STORAGE AREAS CLEAN AND ORDERLY AT ALL TIMES.
10. REMOVAL OF EXISTING FLOOR FINISHES IS TO INCLUDE COMPLETE REMOVAL OF BASE AND ALL MORTAR AND ADHESIVES AND PREPARATION OF EXISTING SUBSTRATES TO RECEIVE NEW FLOORING, SATISFACTORY TO THE MANUFACTURER OF NEW FLOOR FINISHES. ALLOW FOR EXCESSIVE LEVELING OF SLABS.
11. DEMOLITION INCLUDES ALL ASSOCIATED MECHANICAL AND ELECTRICAL SERVICES, EQUIPMENT, FITTINGS, FIXTURES, HANGERS, BRACKETS, TRIM AND ACCESSORIES AS REQUIRED TO COMPLETE THE WORK.
12. MAINTAIN EXISTING FIRE RATINGS.
13. REMOVAL OF DOORS AND FRAMES IS TO INCLUDE REMOVAL OF ALL HARDWARE.
14. REMOVE ALL PROTRUSIONS IN FLOOR SLAB AND GRIND DOWN TO FLOOR LEVEL.
15. CLEAN AND REPAIR ALL EXISTING SURFACES TO REMAIN, AS NECESSARY TO RECEIVE NEW FINISHES.
16. DISCONNECT AND CAP OFF ALL SERVICES PRIOR TO DEMOLITION.
17. DISPOSE OF MATERIALS OFF SITE.
18. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO THE EXISTING STRUCTURE OR FINISHES SHOWN TO REMAIN AND REPAIR / REPLACE SAME TO THE SATISFACTION OF THE OWNER AND CONSULTANT.

DEMOLITION LEGEND

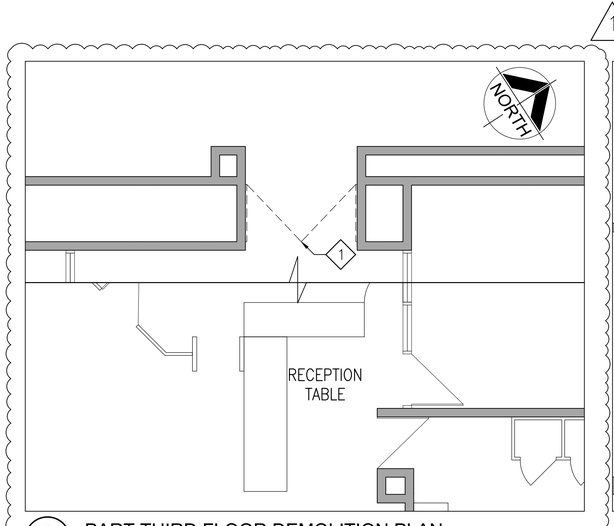
- EXISTING WALL, PARTITION OR COLUMN
- DENOTES DEMOLITION OF BUILDING ELEMENT
- EXISTING DOOR, FRAME AND TRIM TO REMAIN
- EXISTING DOOR, FRAME AND TRIM TO BE CAREFULLY REMOVED AND DISPOSED.
- HATCH DENOTES APPROXIMATE EXTENT OF EX. FLOOR SLAB TO BE CUT FOR NEW PLUMBING

DEMOLITION NOTES

1. REMOVE & DISPOSE OF EXISTING DOORS, FRAME & HARDWARE. PATCH, REPAIR & MAKE GOOD ALL SURFACES TO MATCH EXISTING AND ALLOW FOR ADJUSTMENT AS REQUIRED TO SUIT NEW DOORS/ FRAMES.
2. SAWCUT, REMOVE & DISPOSE OF PART OF EXISTING MASONRY WALL AS REQUIRED FOR NEW WORK. PATCH & MAKE GOOD WALL & FLOOR.
3. CUT AND MODIFY EXISTING WALL FIN RADIATOR. SEE ALSO MECH. DWGS.
4. PREPARE EXISTING FLOOR SURFACE FOR NEW RAMP CONSTRUCTION
5. REMOVE AND DISPOSE OF EXISTING MILLWORK UNITS. PATCH, REPAIR AND MAKE GOOD EXISTING SURFACES TO MATCH EXISTING.
6. REMOVE AND DISPOSE OF EXISTING VCT FLOORING AND ADHESIVE. PATCH, REPAIR AND MAKE GOOD EXISTING FLOOR TO RECEIVE NEW FINISHES FLUSH & LEVEL WITH EXISTING.
7. REMOVE & DISPOSE OF EXISTING TOILET TISSUE DISPENSER. PATCH, REPAIR AND MAKE GOOD EXISTING SURFACES FOR NEW WORK.
8. REMOVE AND DISPOSE OF EXISTING GRAB BAR. PATCH REPAIR AND MAKE GOOD EXISTING SURFACES FOR NEW WORK.



2 / A202 PART FIRST FLOOR DEMOLITION PLAN
1:50



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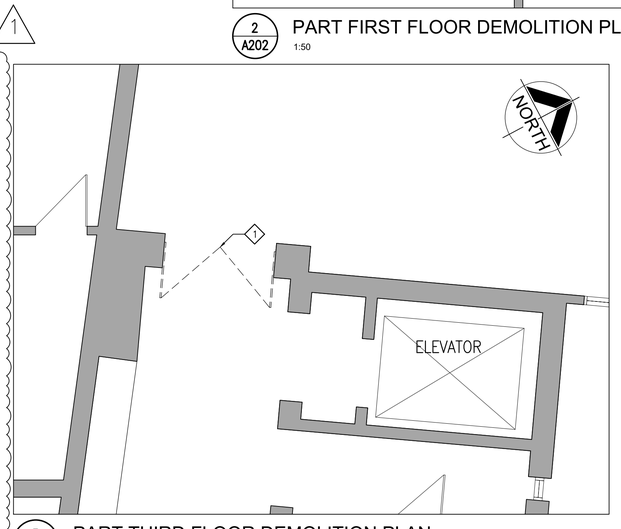

3 / A202 PART THIRD FLOOR DEMOLITION PLAN
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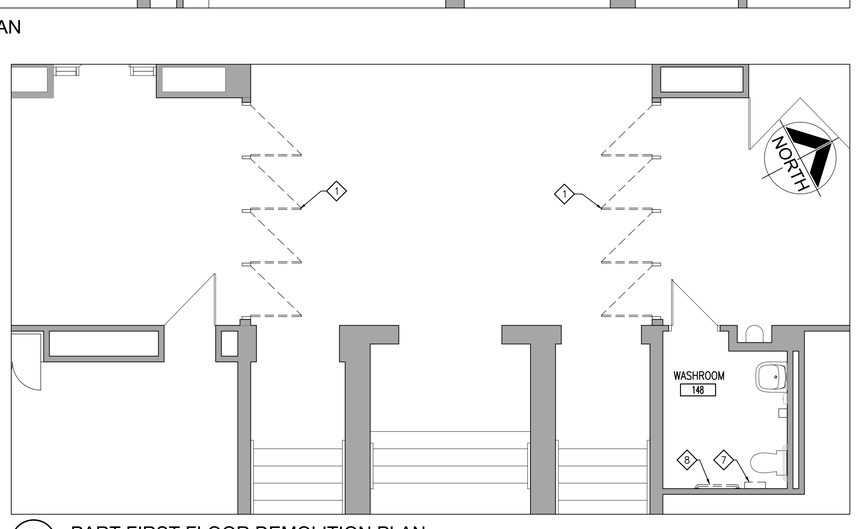

1 / A202 PART FIRST FLOOR DEMOLITION PLAN
1:50

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BBA
BARRY BRYAN ASSOCIATES

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WESTERN TECHNICAL COMMERCIAL SCHOOL
TDSB# TR-25-0960
125 EVELYN CRESCENT
TORONTO, ON M6P 3E3
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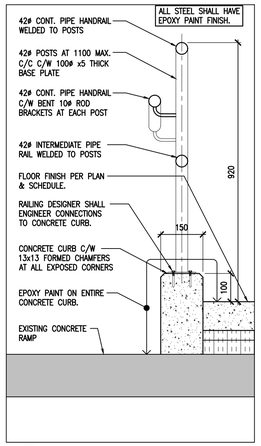
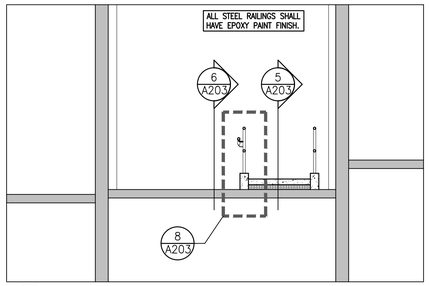
DRAWING:
PART DEMOLITION PLANS

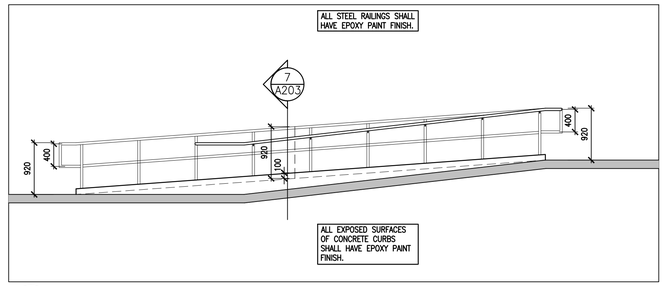
DESIGN BY: BBA	SEAL:
DRAWN BY: RR	
CHECKED BY: CC	
DATE: FEB. 2026	
SCALE: 1:50	
PROJECT NO: 25255	DRAWING NO: A202



8 A203 RAILING DETAIL
1:10



7 A203 RAMP SECTION
1:50



6 A203 RAMP SECTION
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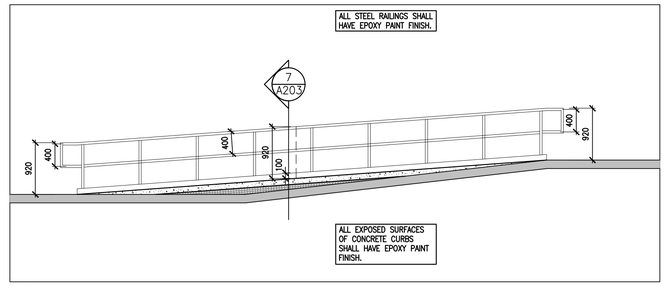


5 A203 RAMP SECTION
1:50

FLOOR PLAN LEGEND

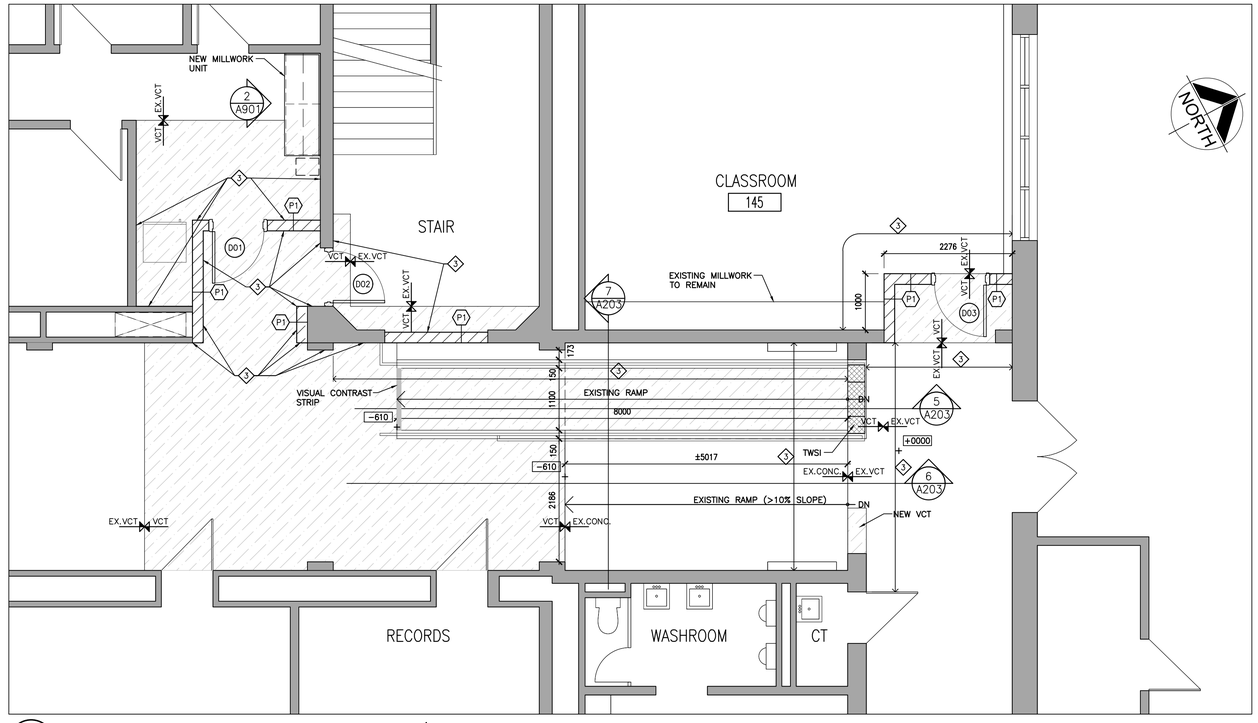
- CORRIDOR / CA — ROOM NAME & NUMBER
- PX — INTERIOR PARTITION OR FURRING TYPE
- 101 — DOOR NUMBER
- PB — BARRIER FREE DOOR OPERATOR PUSH BUTTON
- AI — AIPHONE BUZZ-IN/RECEIVER
- ADO — DOOR WITH AUTOMATIC DOOR OPERATOR
- 11 / A101 — SECTION REFERENCE
- D / C / 1 / A901 / A / B — INTERIOR ELEVATION REFERENCE NUMBER
- FF2 FF1 — FLOOR FINISH TYPE (SEE ALSO ROOM FINISH SCHEDULE)

PARTITION TYPE SCHEDULE

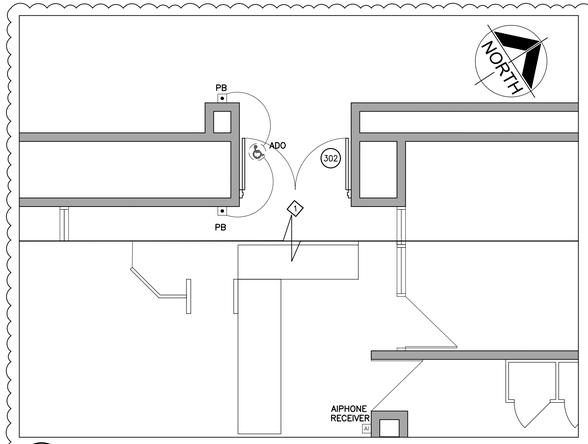
- P1 — 190 CONCRETE BLOCK

CONSTRUCTION NOTES

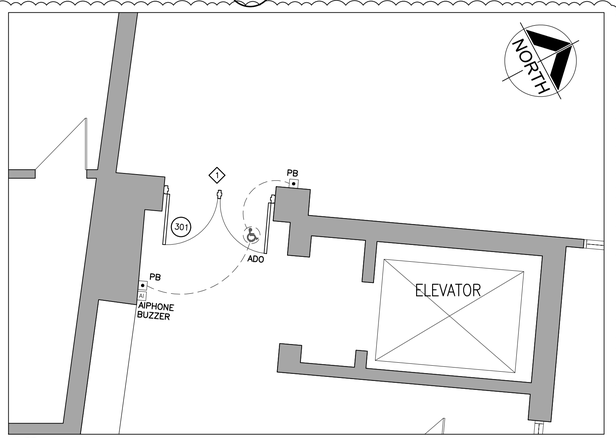
1. NEW DOORS & FRAMES IN RETROFIT OPENINGS. ALLOW FOR ADJUSTMENT AS NEEDED.
2. ALLOW FOR WORK NEEDED TO COORDINATE WITH MAGNETIC HOLD OPEN DEVICES.
3. ALLOW FOR PAINTING OF ALL WALLS IN THIS AREA ADJACENT TO NEW WORK.



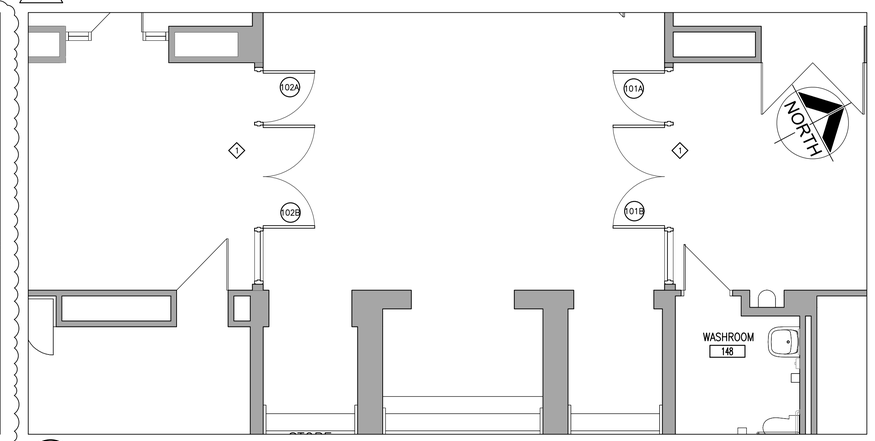
2 A203 PART FIRST FLOOR PLAN
1:50



4 A203 PART THIRD FLOOR PLAN
1:50



3 A203 PART THIRD FLOOR PLAN
1:50



1 A203 PART FIRST FLOOR PLAN
1:50

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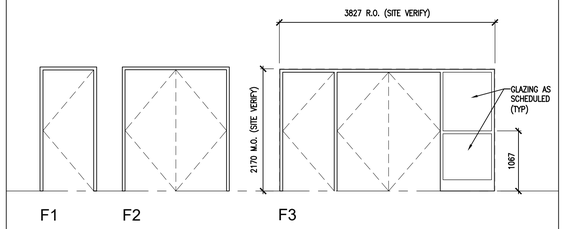
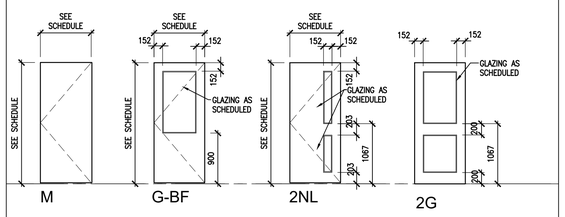
PROJECT:
ACCESSIBILITY UPGRADES
WESTERN TECHNICAL COMMERCIAL SCHOOL
TDSB# TR-25-0960
125 EVELYN CRESCENT
TORONTO, ON M6P 3E3
TORONTO DISTRICT SCHOOL BOARD

DRAWING:
PART FLOOR PLANS

DESIGN BY: BBA	SEAL:
DRAWN BY: BBA	
CHECKED BY: CC	
DATE: FEB. 2026	
SCALE: 1:75	
PROJECT NO: 25255	DRAWING NO: A203



FRAME TYPES

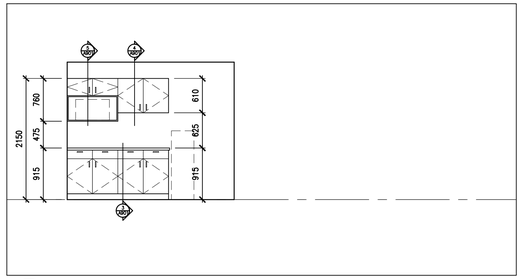


DOOR TYPES

FRAME SIZES AND OPENINGS ARE APPROXIMATE. CONFIRM ON SITE AND NOTIFY THE CONSULTANT OF ANY DISCREPANCIES.

GLAZING LEGEND

GL1	25 mm SEALED TEMPERED, DOUBLE GLAZED UNITS
FRG	FIRE RESISTANT GLAZING



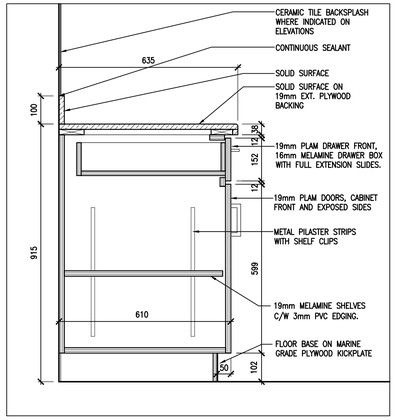
2 / A901 MILLWORK ELEVATION
1:50

DOOR AND FRAME SCHEDULE

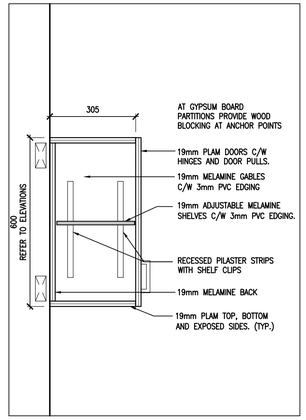
DOOR NO.	DOOR SIZE AND THICKNESS	DOOR TYPE	DOOR MATERIAL	DOOR FINISH	DOOR GLASS	FRAME TYPE	FRAME MATERIAL	FRAME FINISH	FIRE RATING	DOOR HARDWARE	REMARKS
101A	915x2134x45	2NL	HM	P	FRG	F3	PS	P	45 MIN.		
101B	2-915x2134x45	2NL	HM	P	FRG	F3	PS	P	45 MIN.		
102A	915x2134x45	2NL	HM	P	FRG	F3	PS	P	45 MIN.		
102B	2-915x2134x45	2NL	HM	P	FRG	F3	PS	P	45 MIN.		
D01	915x2134x45	M	HM	P	--	F1	PS	P	45 MIN.		
D02	915x2134x45	G-BF	HM	P	FRG	F1	PS	P	45 MIN.		
D03	915x2134x45	G-BF	HM	P	FRG	F1	PS	P	45 MIN.		
301	2-915x2134x45	G-BF	HM	P	FRG	F2	HM	P	--		
302	2-915x2134x45	G-BF	HM	P	FRG	F2	HM	P	--		

DOOR HARDWARE: BALL BEARING HOLD OPEN ARM CLOSER DOOR STOP THRESHOLD KICK PLATE WEATHER STRIPPING DEVICE MAGNETIC LATCHSET KEYPAD LOCKSET ELECTRIC STRIKE PUSH PLATE REMOVABLE MULLION HAND

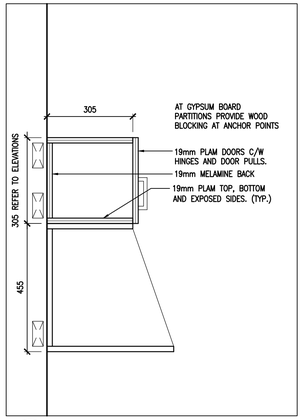
NOTE: REFER TO DOOR HARDWARE SCHEDULE FOR SPECIFICATIONS



3 / A901 BASE CABINET
1:10



4 / A901 UPPER CABINET
1:10



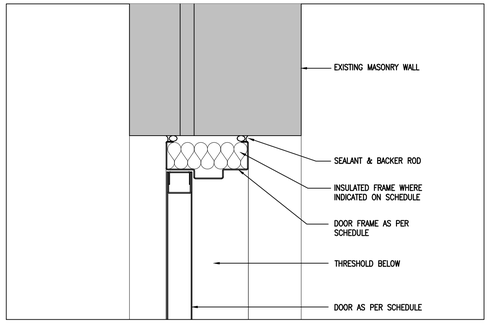
5 / A901 UPPER CABINET
1:10

FINISH ABBREVIATION LEGEND

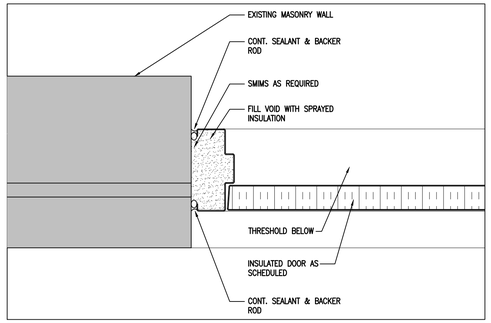
ALUM	ALUMINUM	NF	NATURAL FINISH
BR	BRICK VENEER	OH	OVERHEAD
CB	CONCRETE BLOCK	PS	PRESSED STEEL
CLG	CEILING	P	PAINT
CONC	CONCRETE	PLAM	PLASTIC LAMINATE
CT	CERAMIC TILE	P.T.	PRESSURE TREATED
DB	DASHER BOARDS	R	RUBBER
EX	EXISTING	RST	RUBBER SKATE TILE
EXP	EXPOSED STRUCTURE	SC	SEALED CONCRETE
FFE	FINISHED FLOOR ELEVATION	SEAL	SEALER
FIN	FINISHED	SF	SHEET FLOORING
FL	FLOOR	SP	SPANDREL PANEL
FRP	FIBREGLAS-RESIN PANEL	SSS	STAINLESS STEEL SINK
FRR	FIRE RESISTANCE RATING	STL	STEEL
G	GLASS	TG	TEMPERED GLASS
GB	GYPSUM BOARD	TERR	TERRAZZO
HM	HOLLOW METAL	URETH	URETHANE
LP	LINER PANEL	WD	WOOD
MTL	METAL		

GENERAL NOTES

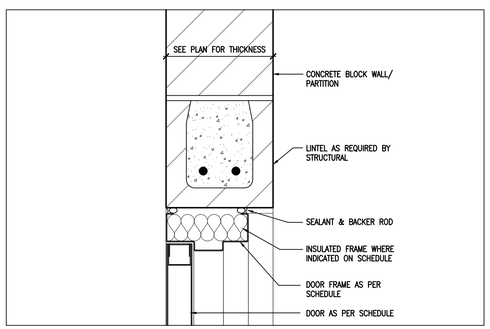
1. CONFIRM AND VERIFY ALL EXISTING DOOR OPENING SIZES AND MATERIALS.
2. ALL DOORS & FRAMES SHALL BE PAINTED.
3. PREPARE DOORS & FRAMES FOR ELECTRONIC HARDWARE, WHERE INDICATED. CONDUITS SHALL BE CONCEALED IN FRAMES.
4. GLASS PANELS IN DOORS SHALL COMPLY WITH OBC, BARRIER FREE VISIBILITY REQUIREMENTS.
5. ALL HM DOOR FRAMES SHALL BE 152mm DEEP UNLESS NOTED OTHERWISE.



HEAD DETAIL 'H2'
1:5



JAMB DETAIL 'J2'
1:5



HEAD DETAIL 'H1'
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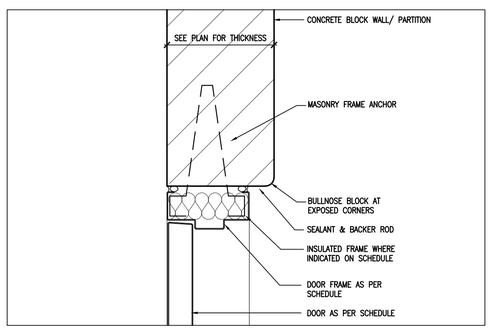
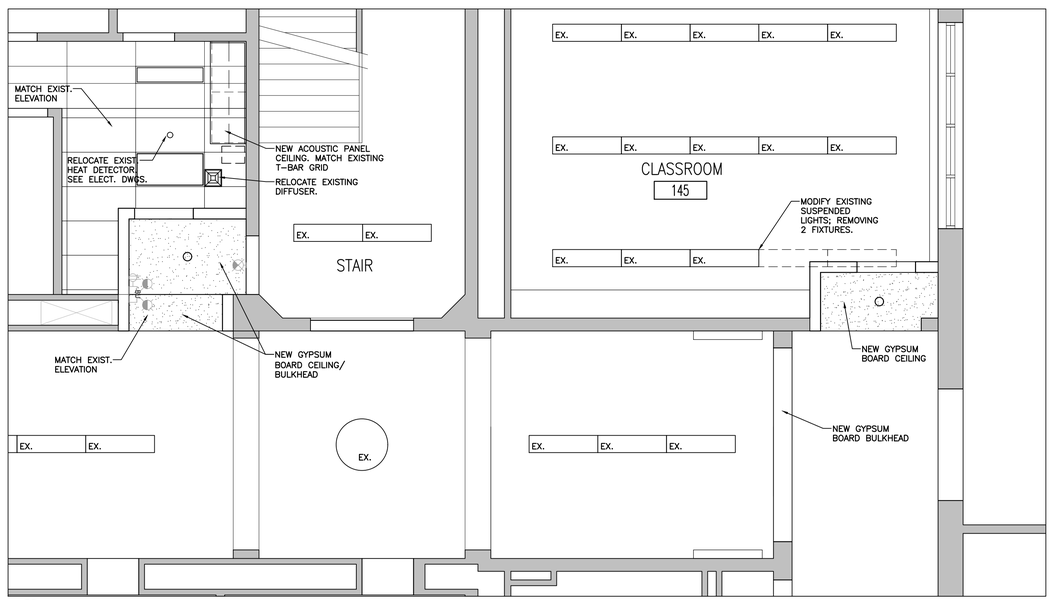


JAMB DETAIL J1
1:5



1 / A901 PART FIRST FLOOR REFLECTED CEILING PLAN
1:50

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tdsb
Toronto District School Board

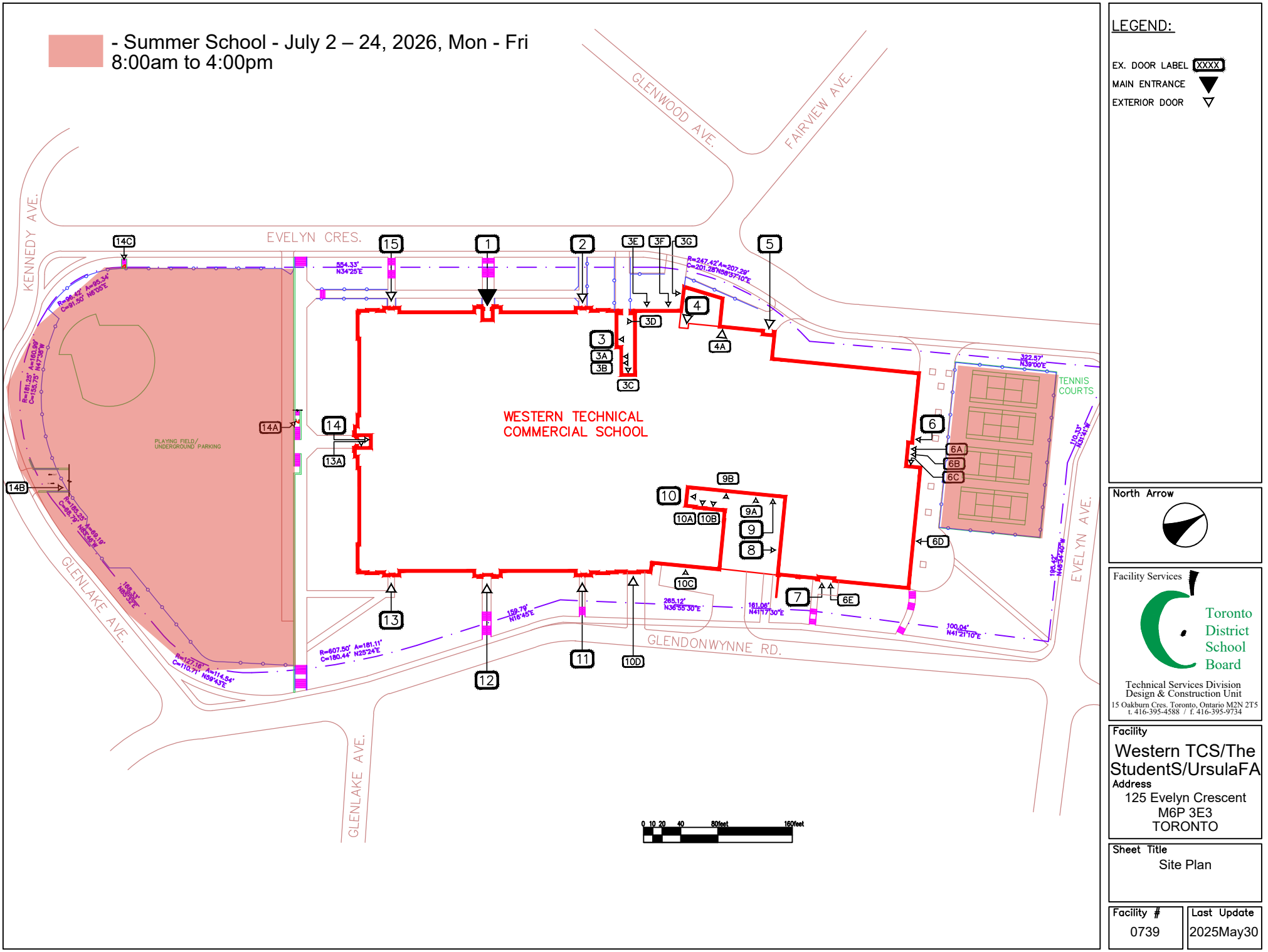
NO.	ISSUES/ REVISIONS	DATE	BY
1	ISSUED FOR CLIENT REVIEW	MAR. 6, 2026	BBA
2	ISSUED FOR PERMIT & TENDER	APR. 1, 2026	BBA
3	ISSUED FOR TENDER	APR. 29, 2026	BBA
4	ISSUED FOR ADDENDUM #1	MAY 22, 2026	BBA

BBA
BARRY BRYAN ASSOCIATES

PROJECT:
ACCESSIBILITY UPGRADES
WESTERN TECHNICAL COMMERCIAL SCHOOL
TDSB# TR-25-0960
125 EVELYN CRESCENT
TORONTO, ON M6P 3E3
TORONTO DISTRICT SCHOOL BOARD

DRAWING:
SCHEDULE AND DETAILS

DESIGN BY: BBA	SEAL:
DRAWN BY: BBA	
CHECKED BY: -	
DATE: FEB. 2026	
SCALE: AS NOTED	
PROJECT NO: 25255	DRAWING NO: A901



LEGEND:

EX. DOOR LABEL XXXX

MAIN ENTRANCE

EXTERIOR DOOR

North Arrow

Facility Services

Toronto District School Board

Technical Services Division
Design & Construction Unit
15 Oakburn Cres. Toronto, Ontario M2N 2T5
t. 416-395-4588 / f. 416-395-9734

Facility

Western TCS/The StudentS/UrsulaFA

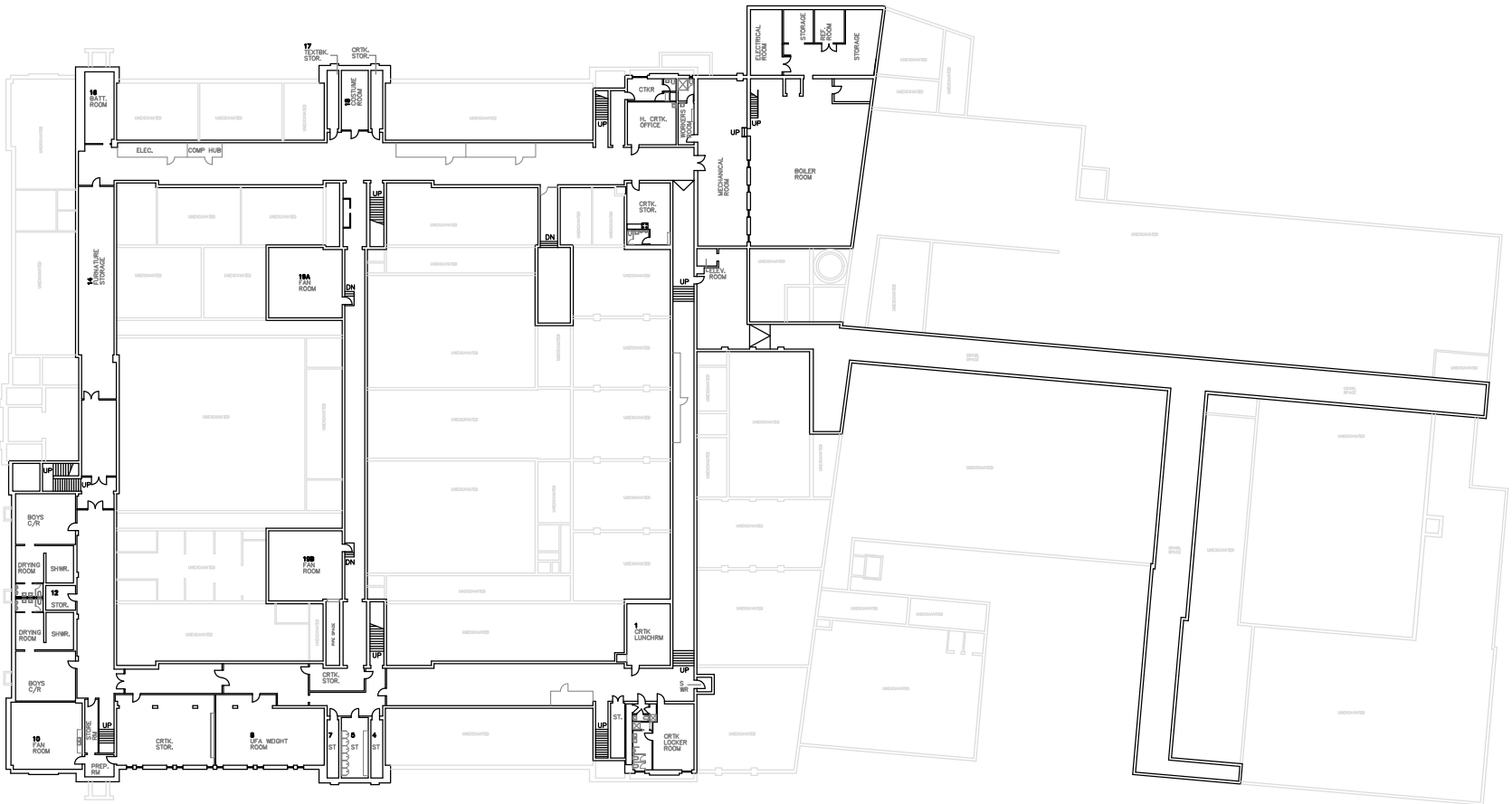
Address

125 Evelyn Crescent
M6P 3E3
TORONTO

Sheet Title

Site Plan

Facility #	Last Update
0739	2025May30



North Arrow

Facility Services

Toronto District School Board

Technical Services Division
Design & Construction Unit
15 Oakburn Cres. Toronto, Ontario M2N 2T5
t. 416-395-4588 / f. 416-395-9734

Facility

Western TCS/The StudentS/UrsulaFA

Address

125 Evelyn Crescent
M6P 3E3
TORONTO

Sheet Title

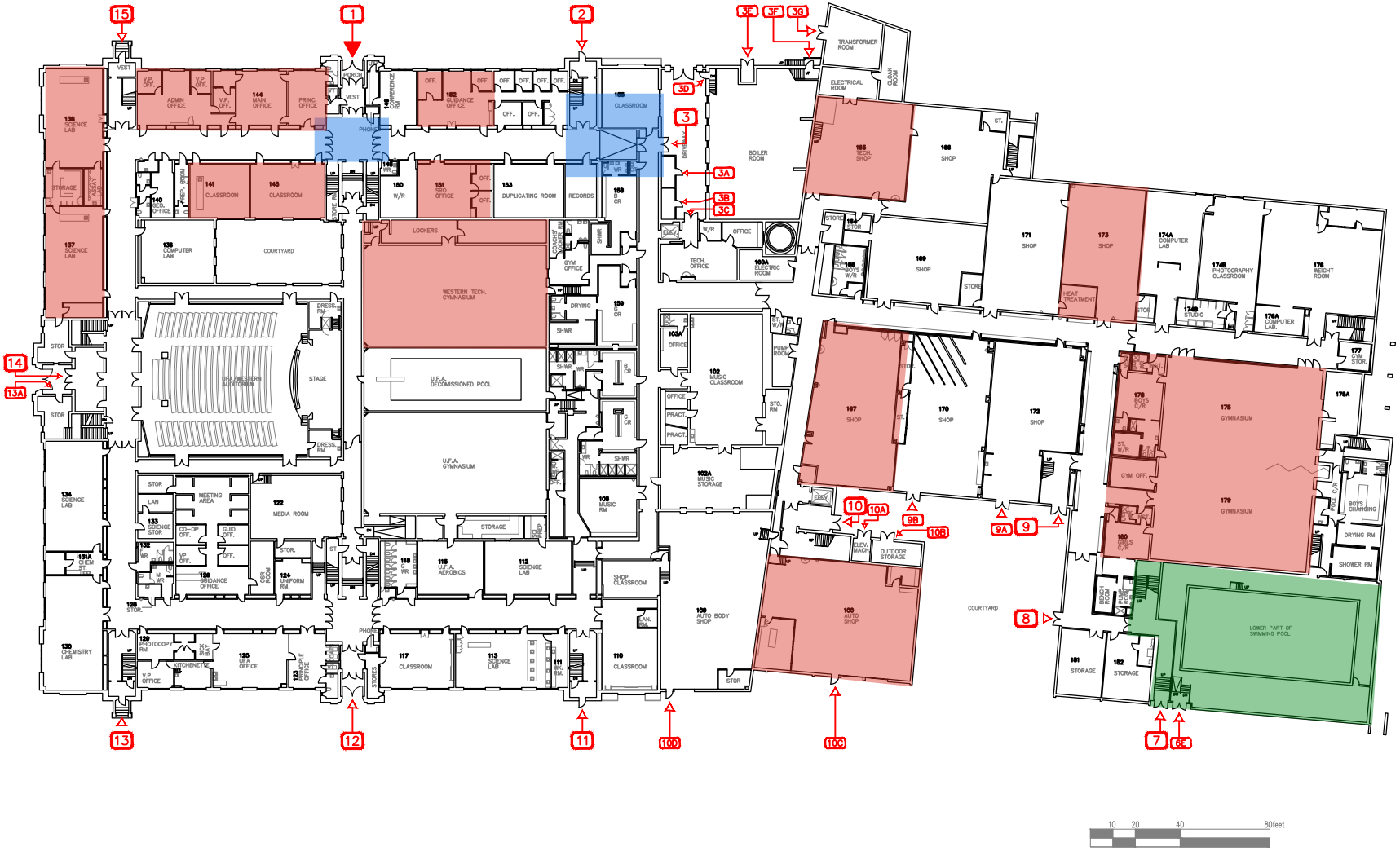
Basement

Facility #	Last Update
0739	2025may30

- General area of work. Contractor shall refer to contract documents for exact extent

- Summer School - July 2 – 24, 2026, Mon - Fri, 8:00am to 4:00pm

- Swimming Pool Permit (June 29, 2026 to August 16, 2026, hours of operation vary)



LEGEND:

EX. DOOR LABEL XXXX

MAIN ENTRANCE

EXTERIOR DOOR

North Arrow

Facility Services

Toronto District School Board

Technical Services Division
Design & Construction Unit
15 Oakburn Cres. Toronto, Ontario M2N 2T5
t. 416-395-4588 / f. 416-395-9734

Facility

Western TCS/The StudentS/UrsulaFA

Address

125 Evelyn Crescent
M6P 3E3
TORONTO

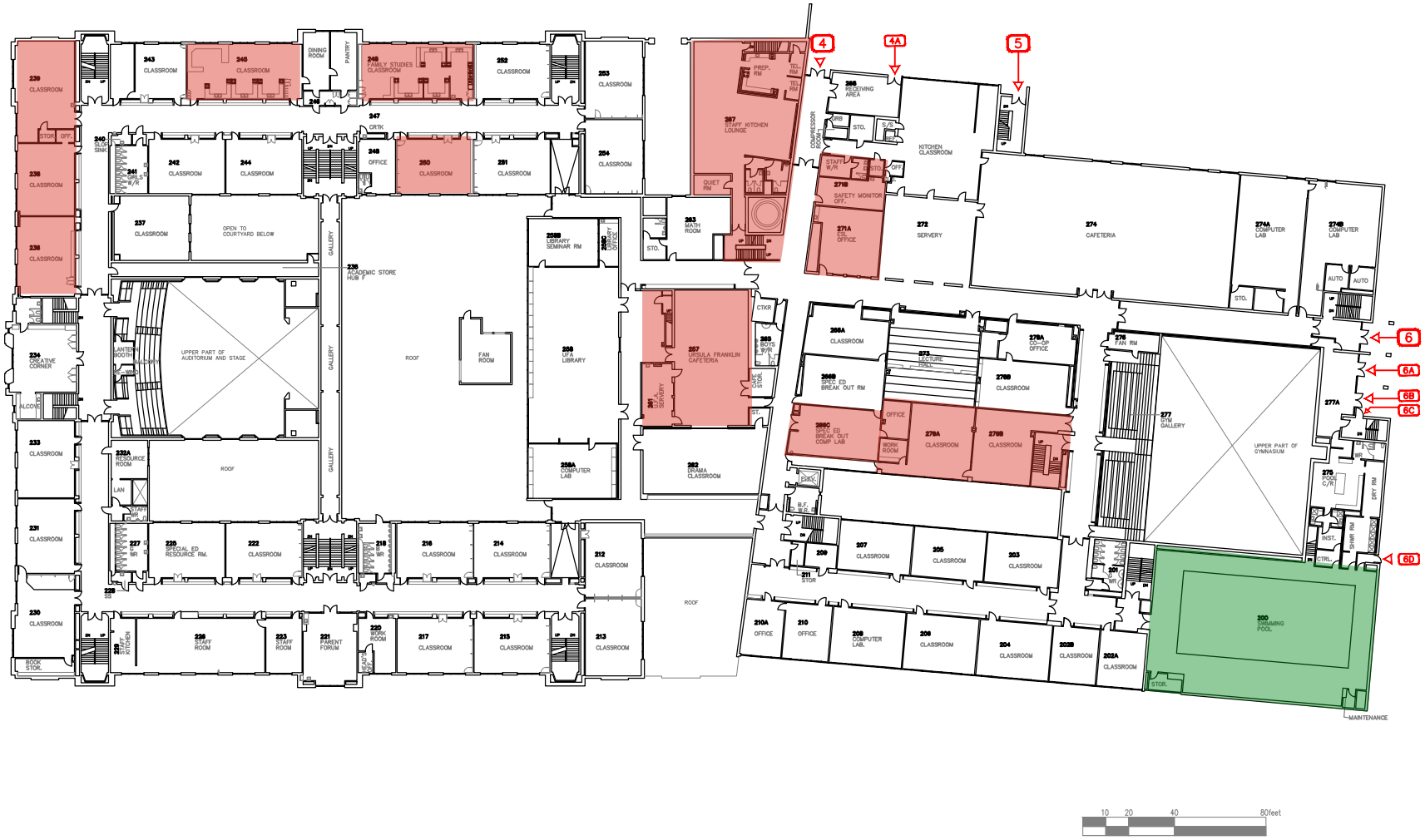
Sheet Title

1st Floor

Facility #	Last Update
0739	2025May30

- Summer School - July 2 – 24, 2026, Mon - Fri
8:00am to 4:00pm

- Swimming Pool Permit (June 29, 2026 to August 16, 2026, hours of operation vary)



LEGEND:

EX. DOOR LABEL XXXX
MAIN ENTRANCE
EXTERIOR DOOR

North Arrow

Facility Services

Toronto District School Board

Technical Services Division
Design & Construction Unit
15 Oakburn Cres. Toronto, Ontario M2N 2T5
t. 416-395-4588 / f. 416-395-9734

Facility
Western TCS/The StudentS/UrsulaFA

Address
125 Evelyn Crescent
M6P 3E3
TORONTO

Sheet Title
2nd Floor

Facility #	Last Update
0739	2025May30

- General area of work. Contractor shall refer to contract documents for exact extent

- Summer School - July 2 – 24, 2026, Mon - Fri, 8:00am to 4:00pm

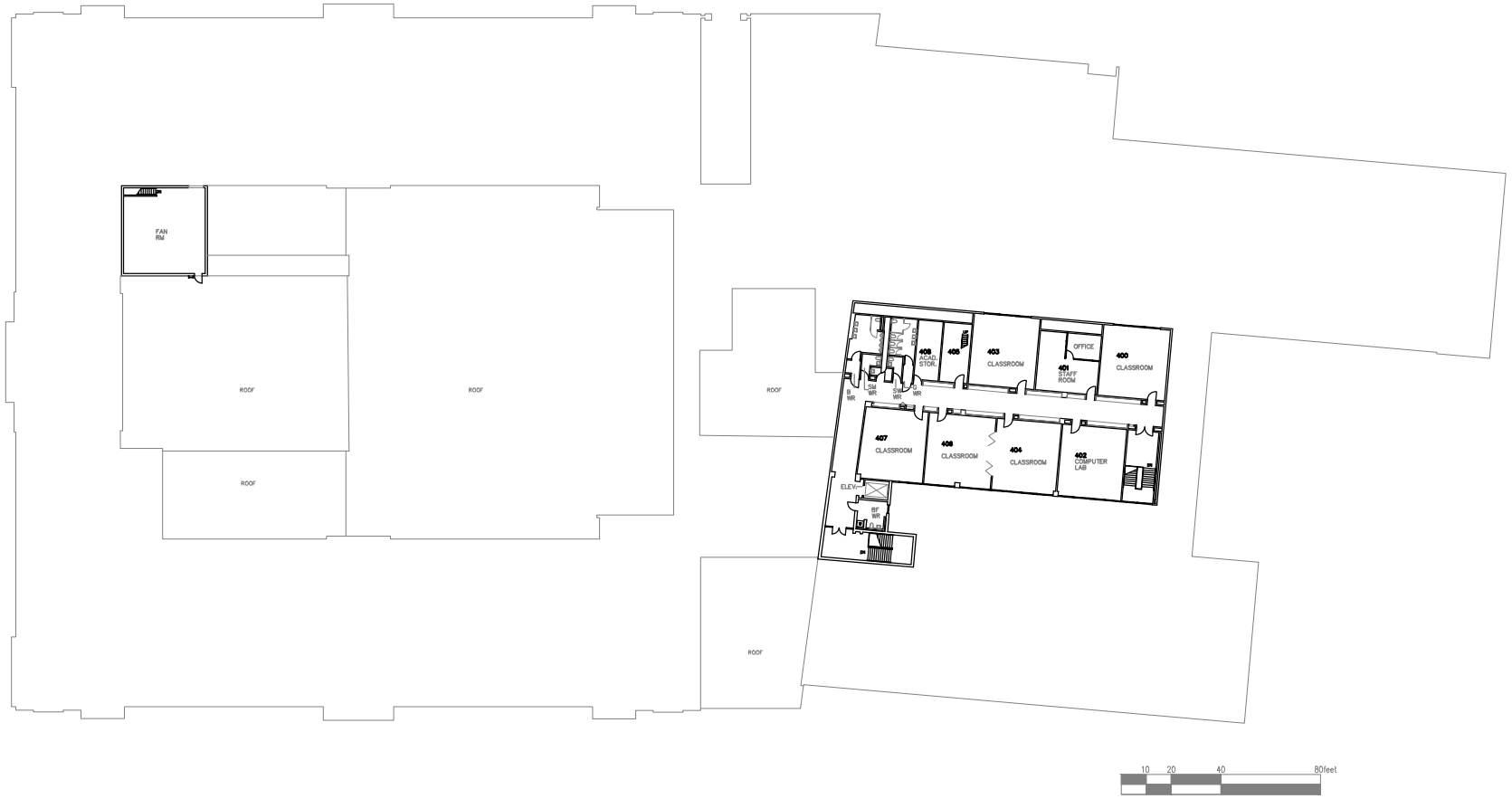
North Arrow

Facility Services
Toronto District School Board
Technical Services Division
Design & Construction Unit
15 Oakburn Cres. Toronto, Ontario M2N 2T5
t. 416-395-4588 / f. 416-395-9734

Facility
Western TCS/The StudentS/UrsulaFA
Address
125 Evelyn Crescent
M6P 3E3
TORONTO

Sheet Title
3rd Floor

Facility #	Last Update
0739	2025May30



North Arrow

Facility Services

Toronto District School Board

Technical Services Division
Design & Construction Unit
15 Oakburn Cres. Toronto, Ontario M2N 2T5
t. 416-395-4588 / f. 416-395-9734

Facility

Western TCS/The StudentS/UrsulaFA

Address

125 Evelyn Crescent
M6P 3E3
TORONTO

Sheet Title

4th Floor

Facility #

0739

Last Update

2025May30

Hazardous Materials
Abatement Program Specifications

SAP # 3739 - Western Technical Commercial School – Accessibility Project Work Locations
125 Evelyn Crescent
Toronto, Ontario

Prepared for:

Toronto District School Board
Facility Services
15 Oakburn Crescent
Toronto, Ontario
M2N 2T5

Attention:

Ms. Michelle Bullough
Assistant Architectural Design Coordinator
michelle.bullough@tdsb.on.ca

Prepared by:

RiskCheck Inc.
55 St. Clair Avenue West, Suite 205
Toronto, Ontario
M4V 2Y7

April 28, 2026
Project No. 32462

EXECUTIVE SUMMARY

RiskCheck Inc. (RiskCheck) was retained by Toronto District School Board (TDSB, Client) to perform a Pre-Renovation Designated Substances Survey (Pre-Demo DSS) within the Accessibility Project Work Locations in the institutional building known as SAP # 3739 Western Technical Commercial School located at 125 Evelyn Crescent in Toronto, Ontario (subject building).

The Pre-Demo DSS was conducted to meet the requirements of Section 30 in the Ontario Occupational Health and Safety Act (OHSA), Revised Statutes of Ontario (R.S.O.) 1990, (as amended). The DSS included a visual examination and assessment of the presence and condition of the 11 designated substances regulated under the Ontario OHSA.

The findings of the Pre-Demo DSS have been presented in separate reports entitled:

- ✓ "Designated Substances Survey, SAP # 3739 - Western Technical Commercial School – Accessibility Project Work Locations, 125 Evelyn Crescent in Toronto, Ontario", prepared for TDSB by RiskCheck and dated April 28, 2026.

RiskCheck was requested by TDSB to provide specifications (based on the findings of the Pre-Demo DSS report) for the proposed renovation activities at the subject building. The controls for demolition removal and disposal of the designated substances and hazardous materials generated prior to the renovation activities of the subject building has been provided for contractor tendering purposes.

The Request for Proposal (RFP) process is to be arranged and scheduled by TDSB.

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GLOSSARY OF TERMS

Abatement Contractor	Contractor or sub-contractor performing work of this section.
Amended Water	Water with wetting agent added for the purpose of reducing surface tension to allow thorough wetting of materials.
Asbestos	Any of the fibrous silicates defined in the provincial Occupational Health and Safety Regulations, including: actinolite, amosite, anthophyllite, chrysotile, crocidolite and tremolite.
Asbestos-Containing Materials	Material identified under Site Conditions including any debris, overspray, fallen material and settled dust.
Authorized Visitors	Building Owner, Consultant, or designated representative, and persons representing regulatory agencies.
Competent Worker	A worker who is qualified because of knowledge, training and experience to perform the work, is familiar with the Occupational Health and Safety Act, applicable guidelines and standards and has knowledge of the potential or actual danger to health and safety in the work.
Construction	Includes erection, alteration, repair, dismantling, demolition, structural maintenance, painting, land clearing, earth moving, grading, excavating, trenching, digging, boring, drilling, blasting, or concreting, the installation of any machinery or plant, and any work or undertaking in connection with a project but does not include any work or undertaking underground in a mine.
Consultant	Owner's Representative providing inspection and air monitoring services.
Contaminated Waste	Material identified under site conditions, including fallen material, settled dust, other debris and materials or equipment deemed to be contaminated by the Consultant.
Curtained Doorway	Doorway consisting of two (2) overlapping flaps of rip-proof polyethylene arranged to permit ingress and egress from one room to another while permitting minimal air movement between rooms.
Designated Substances	A biological, chemical or physical agent or combination thereof prescribed as a designated substance to which the exposure of a worker is prohibited, regulated, restricted, limited or controlled. The designated substances in Ontario are: acrylonitrile, arsenic, asbestos, benzene coke oven emissions, ethylene oxide, isocyanates, lead, mercury, silica and vinyl chloride.
DOP Test	A testing method used to determine the integrity of the Negative Pressure unit or vacuum using a Dispersed Oil Particulate (DOP) or Poly

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	Alpha Olefin (PAO) HEPA filter leak test. This test is to be conducted on site where units are to be installed. Refer to the Environmental Abatement Council of Ontario (EACO) DOP/PAO Testing Guideline 2013 or ANSI/ASME N510-2007.
Encapsulation	The application of a liquid sealant to asbestos-containing materials; the sealant may penetrate and harden the material (penetrants) or cover the surface with a protective coating (bridging sealants). Also called encasement. This is generally not advisable.
Enclosure	Enclosure of ACM means the construction of solid enclosure (walls, ceiling, bulkhead etc.) around ACM, or An Enclosure means the site isolation including hoarding walls, polyethylene sheeting and seals that isolates the Project Work Area.
Fitting	Individual segments or pieces of a mechanical service line which may include but is not limited to the hangers, tees, elbows, joints, valves, unions, etc.
Friable	Material that when dry can be crumbled, pulverized or powdered by hand pressure and includes such material that is crumbled, pulverized or powdered.
Glove Bag Removal	A method of removing friable insulation from a piping system using a prefabricated bag which isolates the section of insulation being removed. This is an asbestos Type 2 Procedure.
HEPA Filter	High Efficiency Particulate Aerosol filter that is at least 99.97 percent efficient in collecting a 0.3 micrometre aerosol.
HEPA Filtered Negative Pressure Unit	Portable air handling unit which extracts air directly from the Project Work Area and discharges the air to the exterior of the building after passing through a HEPA filter.
Lead	A naturally occurring, highly toxic soft metal that can be found in the earth's crust. Because lead is very pliable, it was a valuable resource for manufacturers and was used for many years in building products such as pipes, rods, paints and containers. If left undisturbed and in good condition, lead-based paint does not pose a health threat to building occupants.
Lead-Containing Paint	Paint containing lead, a heavy metal that was once used to create pigments in paint. Many paints manufactured prior to 1978 had lead as one of the ingredients. Lead based paint can create a health hazard through inhalation of dusts or ingestion of paint chips. This can result in damage to the nervous system, brain and reproductive systems
Lock-down Agent	Lock-down Agent: sealant for the purpose of trapping residual dust. Product must have flame spread and smoke development ratings, both less than 50. Product shall leave no stain when dry.

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MECP	Ontario Ministry of the Environment, Conservation and Parks.
Mercury	Mercury is a naturally occurring element that is found in air, water, and soil. It exists in several forms: elemental or metallic mercury, inorganic mercury compounds and organic mercury compounds. Elemental or metallic mercury is a shiny, silver-white metal and is liquid at room temperature. Elemental mercury is used in thermometers, fluorescent bulbs, and certain types of machinery and equipment, including pressure gauges, thermostats, and electrical switches.
MOECC	Ontario Ministry of the Environment and Climate Change.
MOL	Ontario Ministry of Labour.
Milestone Inspection	Inspection of the Project Work Area at a defined point in the abatement operation.
NIOSH APF	National Institute for Occupational Safety and Health Assigned Protection Factor
NOPs	Notice of Project
Negative Pressure	A reduced pressure within the Project Work Area (> 0.02 inches of water column) established by extracting air directly from the Project Work Area and discharging it to exterior of building.
Non-Friable	Material that when dry cannot be crumbled, pulverized or powdered by hand pressure.
Phase Contrast Microscopy (PCM)	A method which uses an optical microscope to determine airborne fibres, normally in an occupational setting. Particles are observed for shape and size. Results are presented as a number of fibres per cubic centimetre or millilitre of air (f/cc). The method of analysis in Ontario is based on the US National Institute for Occupational Safety and Health (NIOSH) Manual of Analytical Methods, Method 7400, issue 2, Asbestos and Other Fibres by PCM (August 15, 1994).
Silica	Is a transparent to grey odourless powder or crystal. It occurs widely in nature as sand, quartz, flint and diatomite. It is used in the manufacture of glass, ceramics, abrasives, water treatment products, cosmetics, insecticides, paint and foods as well as in the drying of glassware and as a preservative for plant samples. Crystalline silica is used in the production of concrete, cement, acoustic ceiling tiles and ceramic tiles used in construction. The routes of exposure include inhalation and skin or eye contact. Exposure may cause pneumoconiosis and irritation to the lungs, skin or eyes. Chronic inhalation can lead to silicosis.

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Transmission Electron Microscopy (TEM)	A method which uses an electron microscope to determine airborne asbestos fibres. Results are presented in fibres per cubic centimetre of air (f/cc). The method of analysis in Ontario is The U.S. National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods, Method 7402, Issue 2: Asbestos by TEM (Aug 15, 1994).
WSIB	Workplace Safety and Insurance Board

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1.0 GENERAL

1.1 Summary

Review this section in conjunction with all applicable reports, laboratory results, drawings, and all other sections of this specification so as to comply with the requirements of the general conditions of the contract for the school building known as Western Technical Commercial School located at 125 Evelyn Crescent in Toronto, Ontario (subject building).

This specification covers the removal and disposal of:

- Asbestos containing beige drywall joint compound associated with drywall walls in the 1st Floor Guidance Office (Loc# 62787) and 3rd Floor Corridor by the Library (Loc# 63201);
- Asbestos containing 9"×9" grey with white streaks vinyl floor tiles in the 1st Floor Guidance Office (Loc# 62787);
- Asbestos containing 12”x12" grey with white streaks vinyl floor tiles in the 1st Floor Classroom 155 (Loc# 62791);
- Asbestos containing 12”x12" beige with olive-green streaks vinyl floor tiles in the 3rd Floor Corridor by the Library (Loc# 63201); and
- Asbestos containing 2’x4’ pinhole swirled pattern acoustic lay-in ceiling tiles in the 3rd Floor Corridor by the Elevator (Loc# 141990). While this material may not be directly disturbed, they are located within the project work area;
- Lead containing yellow paint on plaster walls in the 1st Floor Corridor by Ramp (Loc# 62854);
- Lead containing green paint on metal door in the 1st Floor Stairs (Loc# 62790);
- Lead containing yellow paint on brick wall in the 1st Floor Stairs (Loc# 62790):
- Lead containing grey paint on concrete floor in the 1st Floor Corridor by Ramp (Loc# 62854);
- Lead containing brown/green paint on wood door frame in the 1st Floor Classroom 155 (Loc# 62791);
- Lead containing grey/brown/green paint on metal door in the 1st Floor Corridor (between Loc# 101538 and 101539);
- May included the removal mercury containing fluorescent light tubes, and
- May include the removal of or disturbance of silica containing building materials including concrete, masonry, mortar, plaster, drywall, and ceiling tiles.

Furnish all labour, materials, services, insurance and equipment, in accordance with requirements of the applicable Provincial and Federal regulations listed in each section to complete the scope of work.

This specification identifies the location, condition and estimated quantities of hazardous building materials to be removed as part of the Accessibility Project at the subject building.

Work will be subject to periodic inspection and air monitoring (when required) by RiskCheck Inc. (RiskCheck, Consultant). The key contact for this project will be Paul Theriault at RiskCheck who can be reached by telephone at (416) 315-2265, or by email at ptheriault@riskcheckinc.com.

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1.2 Abatement Consulting Services

RiskCheck has been retained by TDSB as the environmental consultant for this project as mentioned in the previous section. The Abatement Contractor is held responsible to inform and communicate to RiskCheck and TDSB of any and all issues with respect to all suspect/presumed/confirmed hazardous materials on-site and complete all work in accordance with regulatory requirements. RiskCheck is available to the Abatement Contractor in order to provide guidance with respect to this specification.

1.2.1 Inspections

1. Visual/air monitoring inspections will be performed by RiskCheck in various stages of the project. The Abatement Contractor is always to allow unencumbered access to the Project Work Area.

2. The Abatement Contractor shall ensure that asbestos dust is not spread outside of the Project Work Area. Any indication of contamination will result in the project stopping until all seals can be inspected by the Abatement Contractor and defects repaired at a no additional cost to RiskCheck or TDSB.

1.2.2 Pre-Abatement Visual Inspection

1. Inspection will focus on the integrity of the enclosures prior to disturbance of materials. 24 hours notification for the inspection shall be given to the consultant by the contractor.

1.2.3 Post-Abatement Visual Inspection

1. Following the abatement of materials and cleaning of the enclosure, the consultant shall perform a second visual inspection to ensure all materials were removed and that the area is free of visible dust and debris.

2. Following the inspection and after the consultant has deemed the area “visibly clean”, the Abatement Contractor shall precede with the application of slow drying sealant. 24 hours notification for the inspection shall be given to the consultant by the Abatement Contractor (as applicable). Note, if the building will no be entered by anyone else prior to demolition, the requirement for clearance air monitoring is waived.

1.3 Scheduling of Work

1. The Abatement Contractor shall prepare and submit the construction schedule for review by the Client and Consultant prior to the start of work. The schedule shall include milestone inspections and all other critical events relating to the work of this section and the work of others. The work schedule shall incorporate substantial performance dates, turnover dates respecting related work elsewhere and time constraints as outlined by RiskCheck and the Client.

2. The project work must comply with the general contract and the Client’s requirements with regard to working hours, phasing, access restrictions and operational requirements.

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3. The work of this specification may be conducted in multiple phases. It should be noted, the subject building are currently occupied.

4. Milestone Inspections may take place, at the Client's cost, as outlined in each related specification section.

5. Refer to the sections identified in related work for specified milestone inspections which are to take place at defined points throughout the abatement operation specific to each phase or work area.

6. Provide 24 hours written notice to the Consultant of any request for scheduling of milestone inspections.

7. The Abatement Contractor shall allow sufficient time for inspection of the current phase of work by the Consultant following site preparations and set up, and prior to the execution of the work.

8. The Abatement Contractor shall allow sufficient time for inspection of the current phase of work by the Consultant following the removal and final cleaning, and prior to demobilization from the site.

1.4 Facility Protection

1. Provide lockable doors sufficient to ensure Project Work Area security in the clean room and in the holding area of decontamination enclosure systems. Ensure building security at all other points of entry to the building including windows and doors demounted to accommodate the installation and exhaust of air movement equipment used through the project work.

2. Ensure building security, prior to leaving the facilities, by reactivating alarm systems and contacting appropriate security agencies.

3. The Abatement Contractor shall be responsible to make good all building systems and finishes damaged through the work of this section.

1.5 Inspection

RiskCheck is empowered by TDSB to periodically inspect site conditions and work procedures inside and outside of the Project Work Area(s).

1. The following Milestone Inspections may take place, at the Client's cost, as outlined in each related specification section:

   - ✓ **Milestone Inspection A** - Clean Site Preparation
   - ✓ **Milestone Inspection B** – Bulk Removal Inspection
   - ✓ **Milestone Inspection C** - Visual Clearance
   - ✓ **Milestone Inspection D** – Clearance Sampling
   - ✓ **Milestone Inspection E** – Dismantling Inspection

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1.6 General Personnel Health, Safety and Training

1. Ensure that all workers entering site are trained in accordance with specified personnel training requirements.

2. Ensure levels of protection for each worker area based on planned activity and location of activity.

3. Supply workers with appropriate personal protective equipment (PPE) and ensure that safety equipment and protective clothing is kept clean and maintained.

4. Develop protective equipment usage procedures and ensure that procedures are strictly followed by workers include the following procedures as minimum:

   - ✓ Ensure prescription eyeglasses worn are safety glasses and do not permit contact lenses on site within the Project Work Area;
   - ✓ Ensure footwear is Canadian Safety Association approved safety boots;
   - ✓ Dispose of or decontaminate PPE worn on site at end of each workday;
   - ✓ Decontaminate reusable PPE before reissuing;
   - ✓ Provide site personnel with training in usage and limitations of, and qualitative fit testing for, air purifying respirators in accordance with specified regulations;
   - ✓ Develop, implement, and maintain site respirator program;
   - ✓ Monitor, evaluate, and provide respiratory protection for site personnel;
   - ✓ Ensure levels of protection have been chosen consistent with site-specific potential airborne hazards associated with major contaminants identified on site;
   - ✓ Assess ability for site personnel to wear respiratory protection; and
   - ✓ Ensure site personnel have passed respirator fit test prior to entering potentially contaminated Project Work Areas. Ensure facial hair does not interfere with proper respirator fit.

5. Implement heat stress, cold stress monitoring program as applicable and include in the site-specific Health and Safety Plan.

6. Develop personnel hygiene and personnel decontamination procedures. Provide minimum protection as follows:

   - ✓ Suitable containers for storage and disposal of used disposable PPE;
   - ✓ Potable water and suitable sanitation facility; and
   - ✓ Emergency and First-Aid Equipment.

7. Develop a plan and locate and maintain emergency and first-aid equipment including a first-aid kit to accommodate the number of workers, portable emergency eye wash stations, and enough fire extinguishers.

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1.7 Quality Assurance

1. The removal and handling of contaminated materials shall be performed by persons experienced in the methods, procedures, and industry practices of hazardous material (i.e., asbestos, lead, mercury, etc.) abatement.

2. The Abatement Contractor is responsible to ensure that work proceeds to schedule, meeting all requirements of these specifications. The Abatement Contractor shall complete the work so that at no time shall airborne hazards, waste or hazardous waste-water runoff contaminate areas adjacent to the Project Work Area.

3. The Consultant is empowered by Toronto District School Board (TDSB) (TDSB) to inspect adherence to specified work procedures and materials and to inspect for pre, intermittent and final cleanliness and completion of the abatement activities. Additional labour or materials expended by the Abatement Contractor to provide satisfactory performance to the level specified shall be at no additional cost to TDSB or the Consultant.

4. The Consultant is empowered by TDSB to order a shutdown of work when a leakage of contaminated materials have occurred or is likely to occur. These conditions include, but are not limited to, failure of negative pressure systems, inadequate wetting, failure of critical barriers or decontamination enclosure systems, water leaks, excessive airborne hazardous fibres in areas adjacent to the Project Work Area or in clean room or holding room areas and the contamination of clean room or holding room areas by hazardous fibres and/or settled dust. Additional labour or materials to rectify these or other unsatisfactory conditions shall be at no cost to TDSB or the Consultant.

5. Any contamination of surrounding area (indicated by visual inspection or air monitoring) shall necessitate the clean-up of affected area, and in the same manner applicable to the Project Work Area(s) at no cost to the TDSB or the Consultant.

6. Inspection and potential air monitoring services performed as a result of the Abatement Contractor's failure to conform to specified procedures or level of cleanliness, as determined by the Consultant at the time of a milestone inspection, may be charged back to the Abatement Contractor at the Consultant's discretion.

7. All work involving electrical, mechanical, carpentry, glazing, etc., shall be performed by licensed persons experienced and qualified for the work required.

8. Any deviation from the requirements of the specifications or governing authorities that is not approved in writing may result in a stoppage of work, at no cost to TDSB or the Consultant.

1.8 Supervision

1. Provide on site for each work shift, a Shift Superintendent(s), who has authority regarding all aspects related to manpower, equipment and production, and take full responsibility for the health and safety of all personnel working within contaminated areas.

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2. The Abatement Contractor shall always employ at least one supervisory person within the enclosure and one outside the enclosure when enclosures are present.

3. Submit, for all supervisory personnel, Ontario Ministry of Labour, Training and Skills Development approved hazardous material worker training certification and documentation substantiating supervisory function on at least one comparable project in an occupied building.

4. At all times during work, the Shift Superintendent(s) must be on site. Failure to comply with this requirement will result in a stoppage of all work, at no cost to TDSB or the Consultant.

5. Replace supervisory personnel, with approved replacements, within three (3) working days of a written request from the Consultant. The Consultant reserves the right to request replacement of supervisory personnel without explanation.

6. Replacement of supervisory personnel cannot be undertaken without the written approval of the Consultant.

1.9 Notification

1. For asbestos related abatement work: No later than 14 days before commencing certain Type 2 and any Type 3 asbestos related abatement work, submit a Notice of Project for Asbestos (NOPA) to the Ontario Ministry of Labour Relations and Workplace Safety OHS Division.

2. Inform all trades on site of the presence and location of hazardous materials identified in the contract documents.

3. Notify the Client or Client's Representative, the Joint Occupational Health and Safety Committee and the Provincial Ministry of Labour (as applicable), if suspected hazardous materials not identified in the contract documents are discovered during the work. Stop work in these areas immediately.

4. Notify the land fill site receiving the hazardous waste per the requirements of regulation 558/00.

5. Notify the Fire Marshall, in cases where the execution of the work will result in blocking building exists or when turning off, removing or temporarily altering fire alarms.

2.0 ASBESTOS CONTAINING MATERIALS ABATEMENT

2.1 General Information

This section of the specification (*Section 2.0*) covers the removal and disposal of asbestos containing materials. Work will also include the removal of all settled dust, and debris materials.

Furnish all labour, materials, services, insurance and equipment, in accordance with requirements of Ontario Regulation (O. Reg.) 278/05 Designated Substance – Asbestos on Construction Projects and in Buildings and Repair Operations (as amended), Ontario Ministry of Labour, Ontario Ministry of the

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Environment, Conservation and Parks and other regulatory agencies (as listed in *Section 2.3 – Regulations, Codes and Guidelines*) to complete the work of this section.

Work will be subject to periodic inspection and air monitoring by RiskCheck (the Consultant).

2.2 Site Conditions

The following materials have been **confirmed to contain asbestos**:

- ✓ Beige drywall joint compound associated with drywall walls in the 1st Floor Guidance Office (Loc# 62787) and 3rd Floor Corridor by the Library (Loc# 63201);
- ✓ 9"×9" grey with white streaks vinyl floor tiles in the 1st Floor Guidance Office (Loc# 62787);
- ✓ 12”x12" grey with white streaks vinyl floor tiles in the 1st Floor Classroom 155 (Loc# 62791);
- ✓ 12”x12" beige with olive-green streaks vinyl floor tiles in the 3rd Floor Corridor by the Library (Loc# 63201); and
- ✓ 2’x4’ pinhole swirled pattern acoustic lay-in ceiling tiles in the 3rd Floor Corridor by the Elevator (Loc# 141990). While this material may not be directly disturbed, they are located within the project work area.

The following materials have been **confirmed to not contain asbestos**, based on sampling or material composition:

- ✓ Plaster finishes on ceilings and walls;
- ✓ Acoustic glue-on ceiling tiles;
- ✓ Acoustic lay-in ceiling tiles (in the other project work locations);
- ✓ 12”x12” vinyl floor tiles (in the other project work locations);
- ✓ Floor leveling compound;
- ✓ Interior concrete block mortar and paint compound (primer); and
- ✓ Interior brick mortar.

Quantities and site conditions to be confirmed by the Abatement Contractor and any discrepancies are to be reported to the Consultant.

General Building Conditions

1. Power and water will remain active for the abatement.
2. Hours of access to be confirmed by TDSB.

2.3 Regulations, Codes and Guidelines

1. Comply with Federal, Provincial, and local requirements, provided that in any case of conflict among those requirements or with these Specifications, the more stringent requirements shall apply. Work shall be performed under regulations in effect at the time work is performed.

2. Where regulations are not present, follow accepted industry standards and applicable guideline documents.

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3. Regulations and guidelines include but are not limited to the following:

   - ✓ *Ontario Occupational Health and Safety Act, R.S.O. 1990, c. O.1*
   - ✓ *Designated Substance – Asbestos on Construction Projects and in Buildings and Repair Operations, Ontario Regulation (O. Reg.) 278/05 (as amended by O. Reg. 450/19).*
   - ✓ *Environmental Abatement Council of Canada (EACC) "Technical Guideline to Asbestos Exposure Management Programs", 2018.*
   - ✓ *Ontario Regulation 490/09, Designated Substances.*
   - ✓ *Ontario General – Waste Management, R.R.O. 1990, Reg. 347 (as amended by O. Reg. 777/20)*
   - ✓ *Transportation of Dangerous Goods Act, 1992 (Canada).*
   - ✓ *CSA Standard Z94.4-M2003, Selection, Care, and Use of Respirators.*

2.4 Outline of Asbestos Abatement Program

1. Remove and place any required items to facilitate the work in an area outside of the Project Work Areas for clean waste without disturbing asbestos-containing materials.

2. Using procedures prescribed in the sections identified in related work, remove and dispose of the following:

   - ✓ Beige drywall joint compound associated with drywall walls in the 1st Floor Guidance Office (Loc# 62787) and 3rd Floor Corridor by the Library (Loc# 63201);
   - ✓ 9"×9" grey with white streaks vinyl floor tiles in the 1st Floor Guidance Office (Loc# 62787);
   - ✓ 12"x12" grey with white streaks vinyl floor tiles in the 1st Floor Classroom 155 (Loc# 62791);
   - ✓ 12"x12" beige with olive-green streaks vinyl floor tiles in the 3rd Floor Corridor by the Library (Loc# 63201); and
   - ✓ 2'x4' pinhole swirled pattern acoustic lay-in ceiling tiles in the 3rd Floor Corridor by the Elevator (Loc# 141990). While this material may not be directly disturbed, they are located within the project work area.

3. Refer to specification sections identified in the related work for specified personnel protective measures for the safe handling, removal and clean-up of ACM in each phase or work area.

4. Visit the site prior to tender close to confirm the location and extent of any ACM.

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5. Isolate the Project Work Area from adjoining occupied and non-occupied areas whether present at an interior or exterior location.

6. Maintain emergency and fire exits from the Project Work Area, or establish alternative exits satisfactory to Provincial Fire Marshall and local authorities having jurisdiction. Maintain extra routes from occupied areas. Place emergency exit signs at locations to clearly mark exit routes. Seal emergency exit doors so as not to impede the use of door during emergency evacuation.

7. Encapsulation will not be permitted where removal of building materials or structures scheduled for demolition will facilitate access to the asbestos materials in question.

8. Final clean work area to remove visible signs of asbestos and other hazardous materials, other debris or settled dust.

9. Apply lock-down agent to exposed surfaces throughout the Project Work Area and to surfaces from which any ACM have been removed.

10. Unless otherwise specified, the handling, removal, clean-up or repair of ACM or surfaces contaminated with ACM is to be performed following wet removal techniques.

11. Asbestos waste generated from this site is to be properly disposed of at a receiving landfill which is authorized and accepts ACM waste.

2.5 Submittals

1. Submit prior to starting work:

   - ✓ A copy of the NOPA;
   - ✓ Work procedures;
   - ✓ Certificate of Insurance; and
   - ✓ Workplace Safety Insurance Board (WSIB) Certificate.

2. Submit the following information regarding personnel prior to starting work:

   - ✓ Proof in the form of a certificate that supervisory personnel have attended a minimum two-day course;
   - ✓ Proof in the form of a certificate of worker training;
   - ✓ WHMIS training certificates for all personnel;
   - ✓ Certificate proving that each worker on site has been fit tested for the respirator appropriate for the work being performed;

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- ✓ Proof, satisfactory to the Consultant, that all persons involved in the transport and disposal hazardous materials have been trained in accordance with the requirements of Federal and Provincial Transportation of Dangerous Good Acts and Regulations.

3. Submit the following prior to isolating the Project Work Area:

- ✓ Safety Data Sheets for chemicals or material used during the abatement project.

4. Submit the following information regarding HEPA filtered devices prior to construction of enclosure or asbestos abatement:

- ✓ Performance data on HEPA filtered vacuums including DOP tests no more than 3 months old; and

- ✓ Performance data on negative air units including DOP tests which must be no more than 3 months old if the unit is vented outdoors or which must be performed on site immediately prior to initial usage and when HEPA filters are changed if the unit is vented indoors

5. DOP tests to be performed by an independent testing company.

- ✓ DOP testing company is required to submit a detailed technical report of testing protocol, including Introduction, Methodology, Results, Conclusions, and Recommendations, including results of the Air- Aerosol Mixing Uniformity test as per ASME N510-1989 (1995);

- ✓ DOP testing company must also provide calibration certificates from an independent calibration firm or from the manufacturer of the testing equipment for both the aerosol photometer and the pressure gauge on the aerosol generator dated within 1 calendar year from the on-site testing date;

- ✓ DOP testing company must also provide the National Sanitation Foundation (NSF) certification name and number of the on-site technician performing the testing; and

- ✓ Proof of calibration of DOP testing equipment.

6. Submit the following upon completion of the work.

- ✓ Manifests, waybills, bills of ladings etc. as applicable for each type of waste.

2.6 Instruction and Training

1. Provide instruction and training to all workers including the following:

- ✓ Hazards of asbestos;

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- ✓ Use, care and disposal of protective equipment (including but not limited to respirators and filters) and clothing that would be used and worn during abatement work, including:
  - Limitations of equipment;
  - Inspection and maintenance of equipment;
  - Proper fitting of equipment; and
  - Disinfecting and cleaning of equipment.
- ✓ Personal hygiene to be observed when performing the work; and
- ✓ Measures and procedures prescribed in the regulation and decontamination of the worker.

2. Instruction and training must be provided by a competent worker.

2.7 Worker Protection

1. Instruct workers before allowing entry to the Project Work Area. Instruction shall include training in use of respirators, dress, showering, entry and exiting from a Project Work Area, and all other aspects of work procedures and protective measures.
2. Workers shall not eat, drink, chew gum or tobacco, or smoke in the Project Work Area.
3. Workers shall be fully protected at all times when possibility of disturbance of hazardous materials exists.
4. Provide soap, towels and facilities for washing of hands and face, which shall be used by all personnel when leaving the Project Work Area.
5. Respiratory Protection:
   - ✓ Refer to each section of the specification for specified type of respiratory equipment specific to each phase or Project Work Area;
   - ✓ Respirators shall be:
     - Certified by the National Institute of Occupational Safety and Health (NIOSH) or another testing agency acceptable to the Provincial regulator;
     - Fitted so that there is an effective seal between the respirator and the worker's face. Ensure that no person required to enter a Project Work Area has facial hair which affects the seal between respirator and face;
     - Assigned to a worker for their exclusive use;
     - Maintained in accordance with manufacturer's specifications;
     - Cleaned, disinfected, and inspected by a competent worker after use on each shift, or more often if required;
     - Repaired or have damaged or deteriorated parts replaced;
     - Stored in a clean and sanitary location;
     - Provided with new filters as necessary, according to manufacturer's instructions;

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- Worn by personnel who have been fit checked by qualitative or quantitative fit-testing; and
- Instruction on proper use of respirators must be provided by a competent worker as defined by the Occupational Health and Safety Act.

6. Provide protective clothing, to all personnel which:

   ✓ Is made of a material that does not readily retain nor permit penetration of asbestos fibres;

   ✓ Consists of head covering and full body covering that fits snugly at the ankles, wrists and neck;

   ✓ Once coveralls are worn, treat and dispose of as contaminated waste; and

   ✓ Is replaced or repaired if torn or ripped.

7. Use hard hats, safety footwear and other protective equipment and apparel required by applicable construction safety regulations.

2.8 Visitor Protection

1. Provide clean protective clothing and equipment to Authorized Visitors.

2. Instruct Authorized Visitors in the use of protective clothing and Project Work Area entry and exit procedures.

3. Authorized Visitors are required to be fit tested on respirators, prior to entering the Project Work Area.

2.9 Project Work Area Signage

1. **Asbestos Abatement Signs:** Post signs at access points to the Project Work Area, stating at minimum, the following:

   ✓ There is an asbestos dust hazard; and
   ✓ Access to the Project Work Area is restricted to persons wearing protective clothing and equipment.

2. Bins and Waste Containers: Post signs on both sides of every asbestos waste container. Signs must display in large, easily legible letters that contrast in colour with the background the word “CAUTION” in letters not less than ten centimetres in height and the words:

   ✓ Contains Asbestos Fibres;
   ✓ Avoid Creating Dust and Spillage;
   ✓ Asbestos May be Harmful to Your Health;
   ✓ Wear Approved Protective Equipment; and
   ✓ Place appropriate placards (where required) in accordance with Transportation of Dangerous Goods Act.

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2.10 Air Monitoring – Airborne Asbestos Monitoring

1. Air monitoring will be performed using Phase Contrast Microscopy (PCM) following the National Institute for Occupational Safety and Health Method 7400.

2. Co-operate in the collection of air samples, including providing workers to wear sample pumps for up to full-shift periods. The Abatement Contractor will be responsible for the cost of testing equipment repairs or resampling resulting from the actions of the Abatement Contractor's forces.

3. Results of PCM samples of 0.05 fibres per cubic centimeter of air (fibre/cc) or greater, outside the Project Work Area, will indicate asbestos contamination of these areas. Respond as follows:

   - ✓ Suspend work within the adjoining Project Work Area until written authorization to resume work has been received from the Consultant;
   - ✓ Isolate and clean area in the same manner applicable to the Project Work Area;
   - ✓ Maintain Project Work Area isolation, and repeat clean-up operations until visual inspection and air monitoring results are at a level equal to that specified; and
   - ✓ At the discretion of the Consultant provide additional negative air units at locations specified in response to elevated fibre levels being detected in the Clean Change Room or Occupied Areas.

4. Results of PCM samples at or greater than 0.01 fibres per cubic centimeter of air (fibre/cc), collected within the Project Work Area enclosure after the site has passed a visual inspection, and an acceptable coat of lock-down agent has been applied, will indicate asbestos contamination of these areas. Respond as follows:

   - ✓ Maintain Project Work Area isolation and re-clean the entire Project Work Area. Then apply another acceptable coat of lock-down agent to exposed surfaces throughout the Project Work Area; and
   - ✓ Repeat above measures until visually inspected and air monitoring results are at a level equal to that specified.

5. When results exceed 50% of maximum use concentration for the respirator being used within the Project Work Area respond as follows:

   - ✓ Immediately stop work within the Project Work Area.;
   - ✓ Instruct workers to exit the Project Work Area via the Worker Decontamination Facility while observing specified personnel exiting procedures;
   - ✓ Abatement Contractor's forces shall not re-enter the Project Work Area for a period of 8 hours or until authorized by the Consultant; and

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- ✓ Upon re-entry to the Project Work Area, mist the air, any fallen debris or exposed surfaces with amended water using an airless sprayer.

6. Additional labour or materials expended by the Abatement Contractor to rectify unsatisfactory conditions and to provide performance to the level specified shall be at no additional cost to TDSB or the Consultant.

7. Cost of additional inspection and sampling performed as a result of elevated spore concentrations in areas outside the Project Work Area following completion of work, will be back-charged to the Abatement Contractor.

2.11 Products, Materials and Equipment

Deliver all materials and disposable equipment in the original packages, containers, or bundles bearing the name of the manufacturer and the brand name. The Abatement Contractor is to provide own equipment including all PPE, equipment for containment negative air and dust control, as well as additional equipment required for all scope of work activities to be completed. Material that becomes contaminated with asbestos shall be disposed of in accordance with the applicable regulations.

1. **Adhesive tape:** Suitable for sealing polyethylene to surfaces encountered and to itself under both wet and dry conditions including use of amended water.

2. **Airless Sprayer:** AC powered pressure washer that allows wetting agent to mix with water, uses no air or compressed air, and has a nozzle to regulate power and pressure.

3. **Amended Water:** Water with wetting agent added for purpose of reducing surface tension to allow thorough wetting of materials.

4. **Asbestos Waste Container:** A container acceptable to disposal site, and the provincial regulator comprised of the following:

   - ✓ Dust tight;
   - ✓ Suitable for the type of waste;
   - ✓ Impervious to asbestos; and
   - ✓ Identified as asbestos waste.

5. **Encapsulant:** an encapsulant and or lagging adhesive meeting the requirements of CAN/CGSB 1.205-94. Standard of acceptance is Bakor 120-19.

6. **HEPA Vacuum:** Vacuum with necessary fittings, tools and attachments. Discharged air must pass through a HEPA filter.

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7. **Polyethylene sheeting:** 6 mil (0.15 mm) minimum thickness unless otherwise specified, in sheet size to minimize joints.: 6 mil (0.15 mm) minimum thickness unless otherwise specified, in sheet size to minimize joints.

8. **Post Removal Sealant (or Lockdown):** Sealant that when applied to surfaces serves the function of trapping residual asbestos fibres or other dust. Product must have flame spread and smoke development ratings both less than 50. Product shall leave no stain when dry. Post Removal Sealant shall be compatible with replacement insulation or fireproofing where required and capable of withstanding service temperature of substrate. Apply to manufacturer's instructions.

9. **Protective Clothing:** Disposable coveralls complete with head covering and full body covering that fits snugly at the ankles, wrists and neck, manufactured by Dupont Tyvek, Kimberley Clarke or other approved equivalent manufacturer.

10. **Rip-Proof Polyethylene Sheeting:** 8 mil (0.20 mm) fabric made up from 5 mil (0.13 mm) weave and two (2) layers of 1.5 mil (0.05 mm) poly laminate or approved equal. In sheet size to minimize on-site seams and overlaps.

11. **Sprayer:** Garden type portable manual sprayer or water hose with spray attachment if suitable.

12. **Tape:** Duct tape or tape suitable for sealing polyethylene to surfaces under both dry and wet conditions in the presence of Amended Water.

13. **Warning labels and signs:** delineating entry and protective equipment requirements and providing warning of the potential health effects of exposure to airborne asbestos fibre.

14. **Wetting Agent:** Non-sudsing surfactant added to water to reduce surface tension and increase wetting ability.

2.12 General Asbestos Waste and Material Handling

1. Waste bins must be placed on grade or in receiving.

2. All bins for ACM and ACM-contaminated waste must be covered and locked when waste transfer is not being performed.

3. Ensure redundant non-ACM, rubble, debris, etc. is not included in the waste bin.

4. Clean, wash and apply Post Removal Sealant to metal waste prior to removal from the Project Work Area.

5. Clean, wash and apply Post Removal Sealant to non-porous materials prior to disposal as clean waste. Obtain prior written approval from the Consultant for each individual type of material.

6. Clean and wash equipment prior to removal from the Project Work Area if removed prior to completion.

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7. Place all equipment, tools and unused materials that cannot be cleaned in abatement waste containers.

8. As work progresses, and at regular intervals, transport the sealed and labelled waste containers from the Project Work Area to waste bin.

9. Removal of waste containers and decontaminated tools and materials from the Project Work Area shall be performed according to Type 1, Type 2 or Type 3 asbestos abatement procedures as per the scope of work.

10. Transport waste and materials via the predetermined routes and exits. Use a closed, covered cart to transport through Occupied Areas.

11. Use Type 1 procedures while transporting asbestos waste through the subject building.

12. Provide workers transporting waste with means to access full personal protective equipment and all tools required to properly clean up spilled material in the case of a rupture of a Waste Container.

13. Bin loading area and waste routes shall be kept clean at all times.

14. Transport hazardous waste to landfill or waste transfer station in accordance with provincial requirements.

15. Cooperate with the provincial Ministry of the Environment inspectors and immediately carry out instructions for remedial work at dump to maintain environment, at no additional cost to the Consultant or TDSB.

2.13 Asbestos – Type 1 Abatement Operations

2.13.1 Summary of Project Work Actions

1. Isolate the Project Work Area from adjoining spaces through the installation of temporary barriers and partitions as specified herein.

2. Using Type 1 asbestos abatement operations, remove and dispose of the following:

   - ✓ Off-white paint compound (primer) on concrete block walls (using non-powered tools) in the Basement Corridor (Loc# 75413), 1st Floor Corridor (Loc# 54196), 1st Floor Staff Men's Washroom (Loc# 54190), and 2nd Floor Corridor (Loc# 54299); and

   - ✓ 9"×9" tan with white streaks vinyl floor tiles (presumed asbestos containing) in the Basement Corridor Intersection by Stairs (Loc# 75251).

3. The intent of this section is to provide safe work practices and procedures to govern the handling, removal, clean-up, and disposal of ACM following Type 1 procedures, including any of the Consultant's and Client's specific requirements.

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2.13.2 Worker Personal Protection

In addition to the guidelines outlined in *Section 1.6 – General Personnel Health, Safety and Training* and *Section 2.7 - Worker Protection, the Abatement Contractor* should comply by the following:

1. Always protect all personnel when possibility of disturbance of ACM exists.

2. Provide non-powered half-face respirators with P100 high efficiency (HEPA) cartridge filters when requested by personnel.

3. Provide protective clothing to all personnel entering the Project Work Area.

4. Wear hard hats, safety shoes and other personal protective equipment required by applicable construction safety regulations.

5. Before leaving the Project Work Area, decontamination of respirator, protective clothing, hands and face shall be performed by every worker:

   - ✓ Decontaminate his or her protective clothing by using a vacuum equipped with a HEPA filter, or by damp wiping, before removing the protective clothing.

   OR

   - ✓ If the protective clothing will not be reused, place it in a container as described in *Section 2.12 – General Asbestos Waste and Material Handling*.

2.13.3 Inspection Milestones

1. The following Milestone Inspections are recommended to be scheduled:

Milestone Inspection A - Clean Site Preparation

- ✓ Inspection of preparations and set-up prior to contaminated work in the Project Work Area.

Milestone Inspection B - Bulk Removal Inspection

- ✓ Inspection during ACM removal, monitoring removal methods, site deficiencies, performing occupied air monitoring, etc.

Milestone Inspection C - Visual Clearance

- ✓ Inspection of the Project Work Area after completion of all abatement, but prior to application of an anti-fungal solution (lock-down) agents or dismantling of enclosure.

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2.13.4 Project Work Area Preparation

1. Remove and place any required items to facilitate the work in an area outside of the Project Work Area for clean waste without disturbing the ACM.

2. Remove visible dust and friable material from all surfaces in the Project Work Area including those to be worked on, using HEPA Vacuums or wet wiping.

3. Install polyethylene drop sheets below areas of work.

4. Shut down HVAC systems serving the Project Work Area.

    - ✓ Install polyethylene sheeting over openings in ducts and diffusers and seal.

5. Provide power from ground fault interrupt circuits.

6. Provide amended water for wetting ACM, and adequate method of wetting (garden sprayers, airless sprayers, etc.).

7. Ensure that all holes or openings in existing wall, ceiling and floor structures are adequately sealed.

8. Install signage in clearly visible locations in the Project Work Area, on waste containers, vehicles and bins in sufficient numbers to adequately warn of an asbestos dust hazard as per the guidelines in *Section 2.9 – Project Work Area Signage.*

9. Schedule and obtain written approval of **Milestone Inspection A** - Clean Site Preparation before proceeding.

2.13.5 Maintenance of the Project Work Area

1. Inspect polyethylene sheeting and ensure it is effectively sealed and taped.

2. Repair damage and remedy defects immediately.

3. Inspect electrical panels and ensure locks and tags are on panels prior to entering the Project Work Area.

4. Maintain Project Work Area in orderly condition.

5. Remove any standing water on polyethylene/floor at the end of every shift.

6. Turn off water supply to any hoses and reduce pressure in hose, prior to leaving the Project Work Area at end of shift.

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2.13.6 Type 1 Asbestos Removal

1. Workers shall follow and enforce the worker protection standards as listed in *Section 1.5 – General Personnel Health, Safety and Training, Section 2.7 - Worker Protection* and *Section 2.13.2 – Worker Personal Protection*.

2. A wetting agent shall be added to the water that is used to control the spread of dust and fibres.

3. Remove non-friable materials without breaking, cutting, drilling, abrading, grinding, sanding or vibrating. Removal work is to be done only by means of non-powered hand-held tools.

4. Place material immediately, without breaking into smaller pieces, into an asbestos waste receptor.

5. Clean surrounding surfaces and Project Work Area frequently with HEPA vacuum or using wet methods.

6. Specific asbestos abatement methods are listed below:

Vinyl Floor Tiles

1. Wedge a heavy-duty scraper in seam of two adjoining tiles and gradually force edge of one tile up and away from floor. Do not break off pieces of tile, but continue to force balance of tile up.
2. Place tile, without breaking into smaller pieces, into an Asbestos Waste Container.
3. Force scraper through tightly adhered areas by striking scraper handle with a hammer.
4. Heat tile thoroughly with a hot air gun until heat penetrates through tile and softens adhesive in areas where scraper will not remove tile.
5. Scrape up adhesive remaining on floor with a hand scraper until only a thin smooth film remains.
6. Use a hot air gun where deposits are heavy or difficult to scrape.
7. Deposit scrapings into asbestos waste disposal bag.
8. HEPA vacuum floor on completion of work in area.

Drywall with Asbestos Drywall Joint Compound (Removal of Less than 1 m^2)

1. Mist surface of drywall and drywall joint compound.
2. Cut drywall and remove using non-powered hand-held tools. Place directly into a 6 mil polyethylene bag.

Acoustic Lay-in Ceiling Tiles (Removal of Less than 7.5 m^2)

1. Remove the ceiling tiles one at a time, intact where possible.
2. HEPA vacuum the ceiling grid tracks.
3. Place removed tiles directly into a lined asbestos waste container. Seal with duct tape when full.
4. As filled waste containers accumulate, transfer to area lined and covered waste bin.
5. Remove contaminated material, including protective coveralls, polyethylene, etc. and package as per the above.

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2.13.7 Project Work Area Dismantling

1. Schedule and obtain written approval of **Milestone Inspection C** – Visual Clearance.

2. Wash or HEPA vacuum equipment and tools used in the contaminated Project Work Area to remove all asbestos contamination, or place in asbestos waste containers prior to being removed from the Project Work Area.

3. Place tools and equipment used in contaminated Project Work Area but not cleaned in polyethylene bags prior to removal from the Project Work Area.

4. Clean drop sheets with HEPA vacuum or wet cleaning methods at completion of work.

5. Carefully roll drop sheets toward the centre. As drop sheets are rolled away, immediately remove visible debris beneath with a HEPA vacuum.

6. Place drop sheets, tape, disposal clothing and other contaminated waste in asbestos waste containers, wet wipe and place in second asbestos waste container.

2.13.8 Type 1 Asbestos Waste and Material Handling

1. In addition to the waste handling procedures listed in *Section 2.12 – General Asbestos Waste and Material Handling*, the following Type 1 removal applications must be followed:

   - ✓ Remove any visible contamination from the surface of non-porous or cleanable waste being removed from the Project Work Area. If the item can be cleaned, remove it from the site as clean waste;
   - ✓ Place waste or item in waste container and seal closed;
   - ✓ Wet wipe outside of waste container;
   - ✓ Within decontamination facility, transfer room or at the perimeter of the Project Work Area, place in second waste container and seal closed; and
   - ✓ Remove waste containers and transport to appropriate bin.

2.14 Asbestos – Type 2 Abatement Operations

2.14.1 Summary of Project Work Actions

1. Install hoarding walls between Project Work Area boundaries as follows:

   - ✓ Install Type A hoarding walls between the Project Work Area and unoccupied area; and
   - ✓ Remove and place any required items to facilitate the work in an area outside of the Project Work Area for clean waste without disturbing the ACM.

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2.14.2 Worker Personal Protection

In addition to the guidelines outlined in *Section 1.6 – General Personnel Health, Safety and Training* and *Section 2.7 - Worker Protection, the Abatement Contractor* should comply by the following:

1. Always protect all personnel when possibility of disturbance of ACM exists.
2. Provide the following respiratory protection to all personnel:
   - ✓ Non-powered half-face respirators with P100 high efficiency (HEPA) cartridge filters.
3. The respirator must be fitted so that there is an effective seal between the worker's face and the respirator.
4. Provide protective clothing that consist of head, full body and footwear covering that fit snugly at the ankles, wrists and neck, to all personnel entering the Project Work Area.
5. Once coveralls are worn in work area, they shall be treated as asbestos contaminated waste and disposed of accordingly.
6. Wear hard hats, safety shoes and other personal protective equipment required by applicable construction safety regulations.
7. Before leaving the Project Work Area, decontamination of respirator, protective clothing, hands and face shall be performed by every worker within a decontamination facility, and protective clothing must be placed in a container as described in *Section 2.12 – General Asbestos Waste and Material Handling*.

2.14.3 Inspection Milestones

1. The following Milestone Inspections may take place, at the Client's cost, as outlined in each related specification section:

Milestone Inspection A - Clean Site Preparation

- ✓ Inspection of preparations and set-up prior to contaminated work in the Project Work Area.

Milestone Inspection B - Bulk Removal Inspection

- ✓ Inspection during ACM removal, monitoring removal methods, site deficiencies, performing occupied air monitoring, etc.

Milestone Inspection C - Visual Clearance

- ✓ Inspection of the Project Work Area after completion of all abatement, but prior to application of lock-down agents or dismantling of enclosure.

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Milestone Inspection D - Clearance Sampling

- ✓ Air monitoring performed following removal of ACM and application of slow drying post abatement adhesive sealant to ensure airborne asbestos fibres concentration levels inside the enclosure(s) are within the acceptable limits prior to the removal of polyethylene.

Milestone Inspection E – Dismantling Inspection

- ✓ Inspection after removal of Polyethylene prior to dismantling perimeter seal and decontamination facility.

2.14.4 Constructing Hoarding Walls

1. **Type A Hoarding Wall:** One layer of rip-proof polyethylene sheeting installed floor to ceiling, secured with telescopic poles, clips, or other suitable methods.

2.14.5 Decontamination Enclosures

1. **Workers' Decontamination and Transfer Facility:** A decontamination facility comprised of two linked rooms, contaminated change room, and a clean change room.

   - ✓ Rooms, occupied areas and the Project Work Areas, shall be separated by curtained doorways at each door.

2. **Contaminated Change Room:** Room between clean change room and the Project Work Area.

   - ✓ Locate adjacent to Project Work Area;
   - ✓ Install asbestos waste container for asbestos contaminated protective clothing;
   - ✓ Install storage facilities for any personal protective equipment to be reused in the Project Work Area including boots, hard hats, etc., but excluding respirators;
   - ✓ Install hooks and shelves as required for personal protective equipment; and
   - ✓ Minimum size of generally 2 m x 2 m. Increase size accordingly to accommodate number of workers.

3. **Clean Change Room:** A room between the contaminated change room and occupied areas.

   - ✓ Install hooks and shelves in clean change room for storage of respirators;
   - ✓ Install lockers or hangers for workers' street clothes and personal belongings;
   - ✓ Install a fire extinguisher, mount to wall; and
   - ✓ Minimum size of generally 2m x 2m. Increase size accordingly to accommodate number of workers.

2.14.6 Constructing Decontamination Enclosures

1. Install floor protection as follows:

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- ✓ Install one layer of rip-proof polyethylene sheeting over two layers of 6 mil polyethylene sheeting beneath entire decontamination enclosure; and
- ✓ Turn 600 mm of polyethylene up the sides of the decontamination enclosure and overlap with the polyethylene sheeting covering the walls.

2. Install walls as follows:

- ✓ Around all rooms, between all rooms, at the entrance to the Project Work Area and at the entrance to occupied areas;
- ✓ Install 38 x 89 mm wood framing at 610 mm o/c with continuous top and sill plates;
- ✓ Install one layer rip-proof polyethylene sheeting on interior walls of decontamination enclosure; and
- ✓ Install one layer rip-proof polyethylene sheeting both sides on interior dividing walls of decontamination enclosure.

3. Install ceilings as follows:

- ✓ Install joists. The size of the joists is to be determined by clear span. Consult provincial building code. For clear spans up to 2850 mm use SPF select 38 x 140 mm wood joist at 400 mm o/c with continuous 38 x 140 mm wood headers and install strapping beneath joists;
- ✓ At the contaminated change room and where the ceiling is exposed to the Project Work Area, install 19 mm plywood or OSB over joists. Caulk and tape joints and install one layer rip-proof polyethylene sheeting over 2 layers of 6 mil polyethylene sheeting;
- ✓ Where the ceiling is not exposed to the Project Work Area, install one layer rip-proof polyethylene sheeting over joists;
- ✓ Turn 600 mm of polyethylene down the sides over polyethylene on the perimeter walls;
- ✓ At the underside of joists in all rooms, install one layer of polyethylene sheeting; and
- ✓ Minimum interior clear height 2000 mm to underside of joist.

4. Install curtained doorways as follows:

- ✓ Install two flap doors, full width and height of the door opening at all doors between chambers, enclosures and the Project Work Area;
- ✓ Construct each flap door of two layers of polyethylene sheeting with all edges reinforced with tape. Use wood strapping to securely fasten flap doors to head and alternate jambs;
- ✓ Install weights attached to bottom edge of each door flap; and
- ✓ Provide direction arrows on flaps to indicate opening.

2.14.7 Clean Site – Pre-Contamination Preparation

1. Remove and place any required items to facilitate the work in an area outside of the Project Work Areas for clean waste without disturbing ACM.

2. Remove visible dust and friable material from all surfaces (including but not limited to ceiling suspension systems, mechanical ducting and vents, piping, electrical conduit and wiring and all horizontal and vertical surfaces) in the Project Work Area including those to be worked on, using HEPA Vacuums or wet wiping.

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3. Remove surface mounted fixtures required to facilitate work.

4. Install hoarding walls between the Project Work Area and occupied area.

5. Install worker decontamination enclosure.

   - ✓ Worker decontamination enclosure to be located within the Project Work Area;
   - ✓ Waste decontamination enclosure to be located within the Project Work Area; and
   - ✓ Ensure that the plastic linings provide a continuous barrier and that a seal is maintained around penetrating objects, tears and elsewhere.

6. Visually inspect enclosures regularly and at the beginning of each working period. Repair damaged barriers and remedy defects immediately upon discovery.

7. For areas with multiple ACM materials in one large location, construct a large containment utilizing rip-proof polyethylene sheeting (including flooring, walls and ceiling (as required)) where practical/reasonable, using methods described in *Section 2.14.6 – Constructing Decontamination Enclosures*.

8. Seal openings in floor using tape, caulking, polyethylene, etc. Openings in floor are to be sealed independently prior to installation of polyethylene sheeting on floor.

   - ✓ Large openings in the floor are to be covered. Construction to comply with loading requirements of Provincial Building Code and secured in place. Surround with guard rails as per the Occupational Health and Safety Act. Install one layer of rip proof polyethylene over two layers of 6 mil polyethylene over cover. Mark as opening to below. No personnel are to walk or stand on covered opening unless constructed to support live and dead load.

9. Seal openings in walls below ceiling level using polyethylene, tape, caulking, etc. including but not limited to windows, doors, vents, diffusers, etc.

10. Seal openings in ceiling, using polyethylene, tape, caulking, etc. including diffusers, grills, etc.

11. Install one layer of rip-proof polyethylene sheeting over two layers of 6 mil polyethylene sheeting, on floor surfaces in the Project Work Area.

    - ✓ Install additional layers of rip-proof polyethylene and/or plywood to protect carpeted floor surfaces; and
    - ✓ Extend floor protection a minimum of 300 mm up all vertical surfaces in the Project Work Area.

12. On walls within and forming the perimeter of the Project Work Area install two layers of 6 mil polyethylene sheeting.

    - ✓ At junction of floor and wall surface overlap floor polyethylene with wall polyethylene by a minimum of 300 mm at each layer. One layer of wall polyethylene must always overlap the top layer of floor polyethylene.

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13. Ensure that the plastic linings provide a continuous barrier and that a seal is maintained around penetrating objects, tears and elsewhere.

14. Establish negative pressure in Project Work Areas.

- ✓ Discharge HEPA filtered negative pressure machines as follows:
  - To the building exterior;
  - Use polyethylene discharge ducting or metal reinforced polyethylene discharge ducting in locations where the ducting must be protected from damage or collapse;
  - Install and make airtight all negative air discharge ducting;
  - Discharge ducting is not to be longer than required, and to be straight, so that the length of the ducting does not reduce the flow from negative pressure machines; and
  - Install in-line booster fans along the length of discharge ducting wherever site conditions require negative air unit discharge to be directed over distances greater than 12 m (40 ft.). Position booster fans so as to avoid any disruption to operations in occupied areas.

15. All electrical apparatus including vacuums shall be supplied from a ground fault system. Ensure safe installation of temporary electrical extension cables.

16. Shut down HVAC systems serving the Project Work Area.

17. Perform clean demolition of non-ACM required to facilitate work.

18. Install signage in clearly visible locations in the Project Work Area, on waste containers, vehicles and bins in sufficient numbers to adequately warn of an asbestos dust hazard as per the guidelines in *Section 2.9 – Project Work Area Signage*.

19. Post a Ministry of Labour Notice of Project in an accessible area.

20. Notify the Consultant of **Milestone Inspection A** - Clean Site Preparation. Obtain written approval for this Milestone Inspection before proceeding with bulk removal procedures.

2.14.8 Maintenance of Contaminated Project Work Area

1. Inspect the Project Work Area perimeter hoarding walls and upper perimeter seals at the beginning and end of each working period and once on each day work does not take place. The inspection must be performed by competent worker.

2. Inspect HEPA filtered negative pressure machines including discharge ducting at the beginning and end of each working period. The inspection must be performed by competent worker.

3. Perform differential pressure monitoring on a frequent basis and record pressure at start and end of shift at a minimum.

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4. Inspect polyethylene sheeting and ensure it is effectively sealed and taped. Repair damage and remedy defects immediately.

5. Maintain the Project Work Area in orderly condition.

6. Remove waste and debris frequently.

7. Remove standing water on polyethylene/floor at the end of every shift.

2.14.9 Air Monitoring During Abatement

1. Air monitoring may be performed by RiskCheck in accordance with NIOSH 7400. Air samples may be obtained as required from outside and/or inside of the Project Work Area/ enclosure(s).

2. Airborne fibre levels found, in excess of "investigative criteria", in areas adjacent to the Project Work Area or in clean room or holding room areas, shall initiate an investigation by the Abatement Contractor and RiskCheck into the source of excess airborne fibre levels.

3. Where airborne fibre levels in the Project Work Area exceed the Action Level or Maximum Use Concentration for the respiratory protective equipment observed in use, RiskCheck shall take measures outlined in *Section 1.7 – Quality Assurance*.

2.14.10 Type 2 Asbestos Removal – Wet Asbestos Removal

1. Notify the Consultant of **Milestone Inspection B** – Bulk Removal Inspection when the abatement project is underway.

2. Workers shall follow and enforce the worker protection standards as listed in *Section 1.5 – General Personnel Health, Safety and Training, Section 2.7 - Worker Protection* and *Section 2.14.2 – Worker Personal Protection*.

3. A wetting agent shall be added to the water that is used to control the spread of dust and fibres.

4. Do not use compressed air to clean or remove dust or debris.

5. Remove and dispose of remaining non-asbestos items before, during or after wet removal.

6. Remove obstructions as required to remove the ACM.

   - ✓ Notify the Consultant if an item is not specified to be removed and inhibits removal of ACM; and
   - ✓ Do not demolish any existing walls etc. that form the perimeter of the Project Work Area without prior written permission from Consultant.

7. All dislodged ACM shall be maintained in wet state until placed in asbestos waste containers for disposal.

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8. As work progresses, and at regular intervals, place waste in asbestos waste containers and remove from the Project Work Area.

9. Use specific abatement methods listed below:

Drywall with Asbestos Drywall Joint Compound (Removal of Greater Than 1 m^2)

1. Perform the abatement within an enclosure constructed using the procedures described in *Section 2.13.5 – Constructing Decontamination Enclosures*;
2. Protect drywall around area to be removed by covering with polyethylene and taping seams to wall;
3. Remove wall mounted items as required to access all drywall to be removed;
4. Cut drywall and remove using non-powered hand-held tools or a power tool equipped with a HEPA vacuum dust control attachment (**only within containment areas**). Place directly into polyethylene waste bag, or sealed container until at waste bin;
5. Remove all screws and fasteners from studs or strapping;
6. Studs and strapping to remain in place to allow for re-instatement of new drywall. Clean metal studs remaining in Project Work Area; and
7. Wet clean or HEPA vacuum the entire Project Work Area, including surfaces not covered with polyethylene sheeting. Any materials or equipment removed to access ACM that are to be reused, must be wet cleaned or vacuumed prior to reinstatement.

Acoustic Lay-in Ceiling Tiles (Removal of Greater than 7.5 m^2)

1. Remove the ceiling tiles one at a time, intact where possible.
2. HEPA vacuum the ceiling grid tracks.
3. Place removed tiles directly into a lined asbestos waste container. Seal with duct tape when full.
4. As filled waste containers accumulate, transfer to area lined and covered waste bin.
5. Remove contaminated material, including protective coveralls, polyethylene, etc. and package as per the above.

10. After completion of gross asbestos removal work, perform the following:

- ✓ Wet clean surfaces from which ACM has been removed with stiff bristle brushes, vacuums, wet-sponges etc. to remove all visible residue and asbestos-containing materials;
- ✓ Wet clean surfaces which ACM has fallen on using stiff bristle brushes, vacuums, wet-sponges etc. to remove all visible residue and ACM;
- ✓ Wet clean other surfaces in the Project Work Area, including the decontamination facilities, scaffolding, equipment, polyethylene sheeting on floor and walls surfaces etc., ducts and similar items not covered with polyethylene sheeting;
- ✓ Remove wash water as contaminated waste;
- ✓ Remove waste;
- ✓ Level of cleanliness must be acceptable to the Consultant; and
- ✓ Remove and dispose of the pre-filters from all negative air units as asbestos-contaminated waste.

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11. HEPA vacuum and wet wipe all horizontal and vertical finishes within the Project Work Area to remove dust, and fine debris that may be present following the bulk removal.

12. All HEPA filtered negative air pressure systems, air filtration, and decontamination enclosure systems shall remain in service at this time.

13. Notify the Consultant of **Milestone Inspection C** – Visual Clearance Inspection when the abatement project has been completed and is ready for air clearance monitoring.

2.14.11 Application of Post Removal Sealant

1. Wet removal:

   - ✓ Obtain Consultant's written permission to proceed;
   - ✓ Apply one coat of post removal sealant with an airless sprayer, in accordance with Manufacturer's Instructions, to cover all surfaces on all items in the Project Work Area, including but not limited to polyethylene, ACM substrate, structural steel, and surfaces scheduled for demolition; and
   - ✓ Do not apply post removal sealant to materials that will be damaged by its application.

2. Notify the Consultant to the need for **Milestone Inspection D** – Clearance Sampling.

2.14.12 Air Clearance Monitoring

1. The Project Work Area must be dry prior to air clearance monitoring.

2. The number of air clearance monitoring samples will be as follows:

3. One sample for every 250 square metres of enclosure volume, minimum of one.

4. Restrict access to the Project Work Area and operate negative air units for a 12-hour period prior to **Milestone Inspection D** – Clearance Sampling.

5. The HEPA filtered negative pressure machines shall be in operation during clearance air monitoring.

6. PCM samples will be collected as per the requirements noted in O. Reg. 278/05 (as amended).

7. Airborne fibre levels found, in excess of the "shut down criteria", in areas adjacent to the Project Work Area or in clean room or holding room areas, shall indicate asbestos contamination of these areas. Such areas shall be isolated and cleaned in a manner similar to the Project Work Area, at no additional cost to the Client or the Consultant. Such areas shall be considered to be contaminated until acceptable airborne fibre levels are established in the area.

2.14.13 Project Work Area Dismantling

1. Continue to restrict access by other trades, unauthorized personnel, etc., to the Project Work Area, until approval of **Milestone Inspection E** – Dismantling Inspection is obtained.

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2. Maintain hoardings, decontamination facilities and negative air unit(s) fully functional during teardown and removal of asbestos contaminated polyethylene, tape, etc.

3. Depending on the project specific details, use Type 2 precautions during dismantling.

4. Operate negative air units during dismantling.

5. Phase the removal of polyethylene, tape, polyurethane foam, caulking and enclosures from the Project Work Area so as to maintain perimeter isolation as long as possible.

6. Polyethylene, tape, cleaning material, etc. to be treated as asbestos waste.

7. Wash remaining equipment and tools used in contaminated Project Work Area to remove all asbestos contamination, or place in Asbestos Waste Containers prior to being removed from the Project Work Area.

8. Clean the Project Work Area, equipment and access area, washing/showering room.

9. Remove top layer of polyethylene on walls, finishes, and equipment.

10. Remove remaining polyethylene sheeting.

11. Remove water hoses and shut off at source.

12. Remove signs, hoarding walls, decontamination facilities, equipment enclosures, tunnels, platforms.

13. Seal vacuum hoses and fittings, flexible ductwork and all tools used in contaminated work site in 6 mil polyethylene bags prior to removal from the Project Work Area.

14. Remove temporary lights.

15. Remove negative air unit prefilters. Dispose of as asbestos contaminated waste.

16. Remove HEPA filtered negative pressure machines and discharge ducting.

17. Immediately upon shutting down negative air units, seal air inlet grill and exhaust vent with polyethylene and tape.

18. Notify the Consultant of **Milestone Inspection E** – Dismantling Inspection when all containments have been dismantled and the Project Work Area is ready for clearance.

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3.0 LEAD CONTAINING MATERIALS ABATEMENT

3.1 General Information

This section of the specification (Section 3.0) covers the identification, removal, transportation, and permanent disposal or recycling of lead products.

Furnish all labour, materials, services, insurance and equipment, in accordance with requirements of Ministry of Labour (MOL) Guideline – Lead on Construction Projects, April 2011 (MOL Lead Guideline) and other regulatory agencies (as listed in *Section 3.3 – Regulations, Codes and Guidelines*) to complete the work of this section.

Work will be subject to periodic inspection and air monitoring by RiskCheck (the Consultant).

3.2 Site Conditions

The following lead containing paint/materials have been **confirmed to be present at the Project Work Areas:**

- ✓ Yellow paint on plaster walls in the 1st Floor Corridor by Ramp (Loc# 62854).
- ✓ Green paint on metal door in the 1st Floor Stairs (Loc# 62790).
- ✓ Yellow paint on brick wall in the 1st Floor Stairs (Loc# 62790)
- ✓ Grey paint on concrete floor in the 1st Floor Corridor by Ramp (Loc# 62854).
- ✓ Brown/green paint on wood door frame in the 1st Floor Classroom 155 (Loc# 62791).
- ✓ Grey/brown/green paint on metal door in the 1st Floor Corridor (between Loc# 101538 and 101539).

Quantities and site conditions to be confirmed by the Abatement Contractor and any discrepancies are to be reported to the Consultant.

General Building Conditions

1. Power and water will remain active for the abatement.
2. Hours of access to be confirmed by TDSB.

3.3 Regulations, Codes and Guidelines

1. Comply with Federal, Provincial, and local requirements, provided that in any case of conflict among those requirements or with these Specifications, the more stringent requirements shall apply. Work shall be performed under regulations in effect at the time work is performed.

2. Where regulations are not present, follow accepted industry standards and applicable guideline documents.

3. Regulations and guidelines include but are not limited to the following:

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- ✓ *Ministry of Labour (MOL) Guideline – Lead on Construction Projects, April 2011 (MOL Lead Guideline).*
- ✓ *Environmental Abatement Council of Canada (EACC) "EACC Lead Guideline for Construction, Renovation, Maintenance or Repair", October 2014.*
- ✓ *Environmental Protection Act, 1999 (Canada).*
- ✓ *Transportation of Dangerous Goods Act, 1992 (Canada).*
- ✓ *Ontario Regulation (O. Reg.) 347: General – Waste Management.*
- ✓ Other legislation and regulations which apply to the performance of the work of this section.

3.4 Classification of Work

1. **Type 1** lead operations will be implemented if abatement consists of the following:

- ✓ Removal of paint coatings containing lead is done using a power tool that has an effective dust collection system equipped with a HEPA filter; and
- ✓ Removal of paint coatings containing lead using non-powered hand tools, other than manual scraping or sanding.

2. **Type 2a** lead operation will be implemented if abatement consists of the following:

- ✓ Removal of paint coatings containing lead by scrapping or sanding using non-powered hand tools; and
- ✓ Manual demolition of paint coatings containing lead by striking a wall with a sledgehammer or similar tool.

3.5 Instruction and Training

1. Provide instruction and training to all workers including the following:

- ✓ Hazards of lead;
- ✓ Use, care and disposal of protective equipment (including but not limited to respirators and filters) and clothing that would be used and worn during abatement work, including:
  - Limitations of equipment;
  - Inspection and maintenance of equipment;
  - Proper fitting of equipment; and
  - Disinfecting and cleaning of equipment.
- ✓ Personal hygiene to be observed when performing the work; and
- ✓ Measures and procedures prescribed in the regulation and decontamination of the worker.

2. Instruction and training must be provided by a competent worker.

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3.6 Worker Protection

1. Instruct workers before allowing entry to the Project Work Area. Instruction shall include training in use of respirators, dress, showering, entry and exiting from the Project Work Area, and all other aspects of work procedures and protective measures.

2. Workers shall not eat, drink, chew gum or tobacco, or smoke in the Project Work Area.

3. Workers shall be fully protected at all times when possibility of disturbance of hazardous materials exists.

4. Lead-specific soaps and hygiene indicators are to be provided for shower and hand-wash stations which shall be used by all personnel when leaving the Project Work Area.

5. Respiratory Protection:

   - ✓ Refer to each section of the specification for specified type of respiratory equipment specific to each phase or Project Work Area;
   - ✓ Respirators shall be:
     - Certified by the National Institute of Occupational Safety and Health (NIOSH) or another testing agency acceptable to the Provincial regulator;
     - Fitted so that there is an effective seal between the respirator and the worker's face. Ensure that no person required to enter the Project Work Area has facial hair which affects the seal between respirator and face;
     - Assigned to a worker for their exclusive use;
     - Maintained in accordance with manufacturer's specifications;
     - Cleaned, disinfected, and inspected by a competent worker after use on each shift, or more often if required;
     - Repaired or have damaged or deteriorated parts replaced;
     - Stored in a clean and sanitary location;
     - Provided with new filters as necessary, according to manufacturer's instructions;
     - Worn by personnel who have been fit checked by qualitative or quantitative fit-testing; and
     - Instruction on proper use of respirators must be provided by a competent worker as defined by the Occupational Health and Safety Act.

6. Provide protective clothing, to all personnel which:

   - ✓ Is made of a material that does not readily retain nor permit penetration of lead dust;
   - ✓ Consists of head covering and full body covering that fits snugly at the ankles, wrists and neck;
   - ✓ Dust impermeable gloves appropriate for the work being completed;
   - ✓ Once coveralls are worn, treat and dispose of as contaminated waste; and
   - ✓ Is replaced or repaired if torn or ripped.

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7. Use hard hats, safety footwear and other protective equipment and apparel required by applicable construction safety regulations.

3.7 Visitor Protection

1. Provide clean protective clothing and equipment to Authorized Visitors.

2. Instruct Authorized Visitors in the use of protective clothing and Project Work Area entry and exit procedures.

3. Authorized visitors are required to be fit tested on respirators, prior to entering the Project Work Area.

3.8 Project Work Area Signage

1. **Lead Abatement Signs:** Post signs at access points to the Project Work Area, stating at minimum, the following:

   - ✓ There is a lead dust hazard; and
   - ✓ Access to the Project Work Area is restricted to persons wearing protective clothing and equipment.

2. Bins and Waste Containers: Post signs on both sides of every lead waste container. Signs must display thereon in large, easily legible letters that contrast in colour with the background the word "CAUTION" in letters not less than ten centimetres in height and the words:

   - ✓ Contains Lead Dust;
   - ✓ Avoid Creating Dust and Spillage;
   - ✓ Lead May be Harmful to Your Health;
   - ✓ Wear Approved Protective Equipment; and
   - ✓ Place appropriate placards (where required) in accordance with Transportation of Dangerous Goods Act.

3.9 Products, Materials and Equipment

Deliver all materials and disposable equipment in the original packages, containers, or bundles bearing the name of the manufacturer and the brand name. The Abatement Contractor is to provide own equipment including all PPE, equipment for containment negative air and dust control, as well as additional equipment required for all scope of work activities to be completed. Material that becomes contaminated with lead shall be cleaned or disposed of in accordance with the applicable regulations.

1. **Adhesive tape:** Suitable for sealing polyethylene to surfaces encountered and to itself under both wet and dry conditions including use of amended water.

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2. **Airless Sprayer:** AC powered pressure washer that allows wetting agent to mix with water, uses no air or compressed air, and has a nozzle to regulate power and pressure.

3. **Amended Water:** Water with wetting agent added for purpose of reducing surface tension to allow thorough wetting of materials.

4. **Lead Waste Container:** A container acceptable to disposal site, and the provincial regulator comprised of the following:

   - ✓ Dust tight;
   - ✓ Suitable for the type of waste;
   - ✓ Impervious to lead; and
   - ✓ Identified as lead waste.

5. **HEPA Vacuum:** Vacuum with necessary fittings, tools and attachments. Discharged air must pass through a HEPA filter.

6. **Polyethylene sheeting:** 6 mil (0.15 mm) minimum thickness unless otherwise specified, in sheet size to minimize joints.: 6 mil (0.15 mm) minimum thickness unless otherwise specified, in sheet size to minimize joints.

7. **Protective Clothing:** Disposable coveralls complete with head covering and full body covering that fits snugly at the ankles, wrists and neck, manufactured by Dupont Tyvek, Kimberley Clarke or other approved equivalent manufacturer.

8. **Rip-Proof Polyethylene Sheeting:** 8 mil (0.20 mm) fabric made up from 5 mil (0.13 mm) weave and two (2) layers of 1.5 mil (0.05 mm) poly laminate or approved equal. In sheet size to minimize on-site seams and overlaps.

9. **Sprayer:** Garden type portable manual sprayer or water hose with spray attachment if suitable.

10. **Tape:** Duct tape or tape suitable for sealing polyethylene to surfaces under both dry and wet conditions in the presence of Amended Water.

11. **Warning labels and signs:** delineating entry and protective equipment requirements and providing warning of the potential health effects of exposure to airborne lead dust.

12. **Wetting Agent:** Non-sudsing surfactant added to water to reduce surface tension and increase wetting ability.

3.10 Lead Waste and Material Handling

1. Compressed air or dry sweeping cleaning methods are not to be used.

2. Lead-containing batteries are to be transported in suitable rigid containers and sent for recycling or proper disposal.

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3. Paint samples are to be submitted for toxic characteristics leachate procedure (TCLP) testing as per O. Reg. 347, as amended. A representative sample of the bulk debris will be sent to an accredited laboratory for TCLP analysis for waste stream identification validation.

4. Conform to requirements outlined in General Waste Management, Ontario Regulation 347, amended to 297/17 for waste management, transporting and disposal of hazardous waste.

5. Carrier of hazardous wastes shall have successfully completed a Transportation of Dangerous Goods course acceptable to the authority having jurisdiction within the past three years.

6. Transport waste lead products in accordance with the Provincial and Federal legislation and regulations.

7. Ensure that all materials are properly packaged and labelled prior to transportation.

8. Provide RiskCheck and TDSB a copy of each waste manifest and/or a letter from the recycling agency acknowledging receipt of the materials.

3.11 Lead – Type 1 Abatement Operations

3.11.1 Summary of Project Work Actions

1. Isolate the Project Work Area from adjoining spaces through the installation of temporary barriers and partitions as specified herein.

2. Use Type 1 lead abatement operations in the Project Work Areas that require removal of paint coatings containing lead or installation of fasteners done using a power tool that has an effective dust collection system equipped with a HEPA filter.

3. The intent of this section is to provide safe work practices and procedures to govern the handling, removal, clean-up, and disposal of lead following Type 1 procedures, including any of the Consultant's and Client's specific requirements.

3.11.2 Worker Personal Protection

In addition to the guidelines outlined in *Section 1.6 – General Personnel Health, Safety and Training* and *Section 3.6 - Worker Protection*, the Abatement Contractor should comply by the following:

1. Always protect all personnel at all times when the exposure to lead dust exists.

2. Provide non-powered half-face respirators with P100 high efficiency (HEPA) cartridge filters when requested by personnel.

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3.11.3 Inspection Milestones

1. The following Milestone Inspections are recommended to be scheduled:

Milestone Inspection A - Clean Site Preparation

- ✓ Inspection of preparations and set-up prior to contaminated work in the Project Work Area.

Milestone Inspection B - Bulk Removal Inspection

- ✓ Inspection during lead removal, monitoring removal methods, site deficiencies, performing occupied air monitoring, etc.

Milestone Inspection C - Visual Clearance

- ✓ Inspection of the Project Work Area after completion of all abatement, but prior to the dismantling of enclosure (if present).

3.11.4 Project Work Area Preparation and Maintenance

1. Provide washing facilities consisting of a wash basin, clean water, soap and towels.
   - ✓ Workers are to use washing facilities each time leaving the Project Work Area.
2. Remove and place any required items to facilitate the work in an area outside of the Project Work Areas for clean waste without creating or disturbing lead dust.
3. Drop sheets shall be placed directly below each work area to control fallen dust and debris if no enclosure is required.
4. Install signage in clearly visible locations and in sufficient numbers to adequately warn of a lead dust hazard.
5. Shut down HVAC systems serving the Project Work Area.
   - ✓ Install polyethylene sheeting over openings in ducts and diffusers and seal.
6. Remove visible dust and friable material from all surfaces in the Project Work Area including those to be worked on, using HEPA Vacuums or wet wiping.
7. Do not use compressed air to clean or remove dust or debris.
8. Provide amended water for wetting materials, and adequate method of wetting (garden sprayers, airless sprayers, etc.).
9. Provide power from ground fault interrupt circuits.

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10. Ensure that all holes or openings in existing wall, ceiling and floor structures are adequately sealed.

11. Schedule and obtain written approval of **Milestone Inspection A** - Clean Site Preparation before proceeding.

12. Maintain the Project Work Area in orderly condition.

13. Remove waste and debris frequently.

14. Remove standing water on polyethylene/floor at the end of every shift.

15. Turn off water supply to hoses and reduce pressure in hose, prior to leaving the Project Work Area at end of shift.

3.11.5 Type 1 Lead Removal

1. Notify the Consultant of **Milestone Inspection B** – Bulk Removal Inspection when the abatement project is underway.

2. Workers shall follow and enforce the worker protection standards as listed in *Section 1.5 – General Personnel Health, Safety and Training, Section 3.6 - Worker Protection* and *Section 3.11.2 – Worker Personal Protection*.

3. Removal methods minimizing dust generation should be used wherever possible:

   - ✓ Wet methods are to be used to reduce dust generation;
   - ✓ Wetting agents should be used where possible; and
   - ✓ Wet methods are not to be used if it creates a hazard or cause damage to equipment or to project.

4. Wastewater from cleaning or removal operations must be contained, for treatment or disposal.

5. Remove lead-containing paint in small sections and pack as it is being removed in sealable lead waste containers.

6. Waste generated should be maintained wet until cleaned and packaged.

7. Follow manufacturer's instructions for all use of chemical gels, strippers and pastes:

   - ✓ Ensure agent neutralizers, were required, are applied; and
   - ✓ Do not use chemical gels, strippers or pastes on surfaces where they are scheduled to be repainted, and the material affect the new paint application.

8. After completion of stripping work, use a wire brush and wet sponge on the surface which lead based paint has been removed to remove visible material while keeping the surfaces wet.

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9. After wire brushing and wet sponging to remove visible lead-containing paint, wet clean the entire Project Work Area including the equipment used in the lead removal process:

   ✓ Do not use compressed air to clean or remove lead-containing dust or debris; and
   ✓ Ensure all waste is cleaned and packaged.

10. Locate and remove lead-containing emergency light batteries.

11. Seal filled containers and clean external surfaces thoroughly by wet sponging. Remove from the immediate working area to the staging area. Clean external surfaces thoroughly again by wet sponging. Wash containers thoroughly pending removal to outside.

3.11.6 Project Work Area Dismantling

1. Remove polyethylene sheet by rolling it away from walls to the centre of the Project Work Area. Vacuum visible lead containing particles observed during cleanup, immediately, using HEPA vacuum.

2. Place polyethylene sheets, tape, cleaning material, clothing, and contaminated waste in plastic bags and sealed labelled waste containers for transport.

3. Conduct final check to ensure no dust or debris remains on surfaces as result of dismantling operations.

4. Notify the Consultant of **Milestone Inspection C** - Visual Clearance.

3.11.7 Inspection

1. Perform **Milestone Inspection C** - Visual Clearance inspection of work area following the removal of lead products.

3.12 Lead – Type 2a Abatement Operations

3.12.1 Summary of Project Work Actions

1. Isolate the Project Work Area from adjoining spaces through the installation of containments (if required) as specified herein.

2. Using Type 2a lead abatement operations, remove lead paint from the Project Work Areas that require removal of paint coatings containing lead by manual scraping, or manual demolition of building finishes with lead containing paint.

3. The intent of this section is to provide safe work practices and procedures to govern the handling, removal, clean-up, and disposal of lead following Type 1 procedures, including any of the Consultant's and Client's specific requirements.

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3.12.2 Worker Personal Protection

In addition to the guidelines outlined in *Section 1.6 – General Personnel Health, Safety and Training* and *Section 3.6 - Worker Protection*, the Abatement Contractor should comply by the following:

1. Always protect all personnel at all times when the exposure to lead dust exists.

2. Provide non-powered half-face respirators with P100 high efficiency (HEPA) cartridge filters when requested by personnel.

3.12.3 Inspection Milestones

1. The following Milestone Inspections are recommended to be scheduled:

Milestone Inspection A - Clean Site Preparation

- ✓ Inspection of preparations and set-up prior to contaminated work in the Project Work Area.

Milestone Inspection B - Bulk Removal Inspection

- ✓ Inspection during lead removal, monitoring removal methods, site deficiencies, performing occupied air monitoring, etc.

Milestone Inspection D – Clearance Sampling

- ✓ Lead wipe sampling should be within acceptable limits prior to the dismantling of enclosure (if present).

3.12.4 Project Work Area Preparation and Maintenance

1. Provide washing facilities consisting of a wash basin, clean water, soap and towels.

   - ✓ Workers are to use washing facilities each time leaving the Project Work Area.

2. Remove and place any required items to facilitate the work in an area outside of the Project Work Areas for clean waste without creating or disturbing lead dust.

3. Drop sheets shall be placed directly below each work area to control fallen dust and debris if no containment is required.

4. Install signage in clearly visible locations and in sufficient numbers to adequately warn of a lead dust hazard.

5. Shut down HVAC systems serving the Project Work Area.

   - ✓ Install polyethylene sheeting over openings in ducts and diffusers and seal.

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6. Remove visible dust and friable material from all surfaces in the Project Work Area including those to be worked on, using HEPA Vacuums or wet wiping.

7. Do not use compressed air to clean or remove dust or debris.

8. Provide amended water for wetting materials, and adequate method of wetting (garden sprayers, airless sprayers, etc.).

9. Provide power from ground fault interrupt circuits.

10. Ensure that all holes or openings in existing wall, ceiling and floor structures are adequately sealed.

11. Schedule and obtain written approval of **Milestone Inspection A** - Clean Site Preparation before proceeding.

12. Maintain the Project Work Area in orderly condition.

13. Remove waste and debris frequently.

14. Remove standing water on polyethylene/floor at the end of every shift.

15. Turn off water supply to hoses and reduce pressure in hose, prior to leaving the Project Work Area at end of shift.

3.12.5 Containment Construction

If a containment is required, construct the following:

1. Construct a Transfer Room as follows:

   - ✓ Transfer Room to be generally 2000 mm x 2000 mm x 2200 mm high. Increase size accordingly to accommodate number of workers;
   - ✓ Install walls as follows:
     - Install 38 x 89 mm wood framing at 610 mm o/c with continuous top and sill plates; and
     - Install one layer rip-proof polyethylene sheeting on interior walls of the Transfer Room.
   - ✓ Install one layer of rip-proof polyethylene sheeting over two layers of 6 mil polyethylene sheeting beneath the entire Transfer Room;
   - ✓ Install one layer rip-proof polyethylene sheeting over roof;
   - ✓ Turn 600 mm of polyethylene down the sides over polyethylene on the perimeter walls; and
   - ✓ Install a fire extinguisher, mount to wall.

2. Construct curtained doorways as follows:

   - ✓ Install two flap doors, full width and height of door opening at all doors to the Project Work Area and both ends of the Transfer Room;

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- ✓ Construct each flap door of two layers of polyethylene sheeting with all edges reinforced with tape. Use wood strapping to securely fasten flap doors to head and alternate jambs;
- ✓ Install weights attached to bottom edge of each door flap; and
- ✓ Provide direction arrows on flaps to indicate opening.

3. Inspect polyethylene sheeting and ensure it is effectively sealed and taped. Repair damage and remedy defects immediately.

4. Schedule and obtain written approval of **Milestone Inspection A** - Clean Site Preparation before proceeding.

3.12.6 Type 2a Lead Removal – No Containment Required

1. Notify the Consultant of **Milestone Inspection B** – Bulk Removal Inspection when abatement project is underway.

2. Workers shall follow and enforce the worker protection standards as listed *in Section 1.5 – General Personnel Health, Safety and Training, Section 3.6 - Worker Protection* and *Section 3.12.2 – Worker Personal Protection*.

3. A containment is not required to perform the following lead removal procedures:

   - ✓ Removal of lead containing paint using power tools with an effective dust collection system equipped with HEPA filter.

4. Removal methods minimizing dust generation should be used wherever possible:

   - ✓ Wet methods are to be used to reduce dust generation;
   - ✓ Wetting agents should be used where possible; and
   - ✓ Wet methods are not to be used if it creates a hazard or cause damage to equipment or to project.

5. Wastewater from cleaning or removal operations must be contained, for treatment or disposal.

6. Remove lead-containing paint in small sections and pack as it is being removed in sealable lead waste containers.

7. Waste generated should be maintained wet until cleaned and packaged.

8. Follow manufacturer's instructions for all use of chemical gels, strippers and pastes:

   - ✓ Ensure agent neutralizers, were required, are applied; and
   - ✓ Do not use chemical gels, strippers or pastes on surfaces where they are scheduled to be repainted, and the material affect the new paint application.

9. After completion of stripping work, use a wire brush and wet sponge on the surface which lead based paint has been removed to remove visible material while keeping the surfaces wet.

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10. After wire brushing and wet sponging to remove visible lead-containing paint, wet clean the entire Project Work Area including the equipment used in the lead removal process:

    - ✓ Do not use compressed air to clean or remove lead-containing dust or debris; and
    - ✓ Ensure all waste is cleaned and packaged.

11. Locate and remove lead-containing emergency light batteries.

12. Seal filled containers and clean external surfaces thoroughly by wet sponging. Remove from the immediate working area to the staging area. Clean external surfaces thoroughly again by wet sponging. Wash containers thoroughly pending removal to outside.

3.12.7 Type 2a Lead Removal – Containment Required

1. Notify the Consultant of **Milestone Inspection B** – Bulk Removal Inspection when abatement project is underway.

2. Workers shall follow and enforce the worker protection standards as listed in *Section 1.5 – General Personnel Health, Safety and Training, Section 3.6 - Worker Protection* and *Section 3.12.2 – Worker Personal Protection*.

3. In addition to the procedures in *Section 13.12.6 – Type 2a Lead Removal – No Containment Required*, perform the following lead removal procedures **within a containment**:

    - ✓ Removal of lead-containing surface coatings or materials by scraping or sanding (including wet sanding) using non-powered hand tools; and
    - ✓ Demolition of plaster or other building components that crumble, pulverize or powder and are covered with lead-containing surface coating.

4. Notify the Consultant of **Milestone Inspection D** – Clearance Sampling.

3.12.8 Inspection

1. Perform **Milestone Inspection D** – Clearance Sampling inspection using lead wipe sampling of work area following the removal of lead products and prior to the dismantling of the Project Work Area.

3.12.9 Project Work Area Dismantling

1. Following specified cleaning procedures, and when lead wipe sampling is below acceptable concentrations proceed with final cleanup.

2. Remove polyethylene sheet by rolling it away from walls to centre of the Project Work Area. Vacuum visible lead containing particles observed during cleanup, immediately, using HEPA vacuum.

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3. Place polyethylene sheets, tape, cleaning material, clothing, and contaminated waste in plastic bags and sealed labelled waste containers for transport.

4. Clean the Project Work Area and Transfer Room, where present.

5. Remove sealed waste containers and equipment used in work and remove from the Project Work Area at appropriate time in cleaning sequence.

6. Conduct final check to ensure no dust or debris remains on surfaces as result of dismantling operations.

4.0 MERCURY CONTAINING MATERIALS ABATEMENT

4.1 General Information

This section includes requirements for identification, removal, transportation, and permanent disposal of mercury-containing fluorescent lamps and thermostat switches.

Furnish all labour, materials, services, insurance and equipment, in accordance with requirements of General – Waste Management, R.R.O. 1990, Reg. 347 (as amended by O. Reg. 324/22) and other regulatory agencies (as listed in *Section 4.3 – Regulations, Codes and Guidelines*) to complete the work of this section.

Work will be subject to inspection by RiskCheck (the Consultant).

4.2 Site Conditions

The following mercury-containing products have been **confirmed to be present at the Project Work Areas**:

- ✓ Mercury-containing fluorescent lamps.

Quantities and site conditions to be confirmed by the Abatement Contractor and any discrepancies are to be reported to the Consultant.

4.3 Regulations, Codes and Guidelines

1. Comply with Federal, Provincial, and local requirements, provided that in any case of conflict among those requirements or with these Specifications, the more stringent requirements shall apply. Work shall be performed under regulations in effect at the time work is performed.

2. Where regulations are not present, follow accepted industry standards and applicable guideline documents.

3. Regulations and guidelines include but are not limited to the following:

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- ✓ *Environmental Protection Act, Revised Statutes of Ontario 1990, Chapter E. 19.*
- ✓ *Canadian Environmental Protection Act, Revised Statutes of Canada 1999, Chapter C. 33.*
- ✓ *Ministry of Environmental Regulations for the disposal of mercury waste, including R. R. O. 1990, Regulation 347 as amended.*
- ✓ *Transportation of Dangerous Goods Act, 1992 (Canada).*
- ✓ *General Waste Management, Ontario Regulation 347, as amended.*
- ✓ Other legislation and regulations which apply to the performance of the work of this section.

4.4 Instruction and Training

1. Ensure that all workers likely to handle mercury-containing items are trained in the use of Mercury Spill Kit and are trained in the handling of mercury.
2. Removal Abatement Contractor Qualifications: Use qualified electrician to isolate the power for removal of fluorescent light tubes or other mercury-containing equipment.
3. Disposal Abatement Contractor Qualifications: Carrier of hazardous wastes shall have successfully completed a Transportation of Dangerous Goods course acceptable to the authority having jurisdiction within the past three years.
4. Workers must have training on the hazards of mercury.

4.5 Worker Protection

1. The Abatement Contractor is to provide all necessary skin, eye and respiratory protective equipment for the safe handling of mercury as per regulatory requirements.
2. Workers shall not eat, drink, smoke or chew gum in work area.

4.6 Products, Materials and Equipment

1. **Cardboard Containers:** New or used cardboard boxes suitable for packaging of fluorescent light tubes, compact fluorescent bulbs and thermostats to prevent breakage.

4.7 Inspection Milestones

1. The following Milestone Inspection may take place, at the Client's cost, as outlined in each related specification section:

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Milestone Inspection C - Visual Clearance

- ✓ Inspection of the Project Work Area after removal of all mercury-containing items and waste.

4.8 Packaging of Mercury-Containing Fluorescent Tubes and Bulbs

1. Locate and carefully remove designated fluorescent light tubes/bulbs from fixtures and place in cardboard or other container to prevent breakage.

2. Place the tubes/bulbs immediately as they are removed from fixtures ensuring that items are packaged in a manner to prevent breakage. Avoid rough handling of the tubes/bulbs to avoid breakage. When containers are full, store in a secure location on site until removed.

4.9 Packaging of Other Mercury-Containing Items

1. Place polyethylene drum liner in Containment Drum. Pour a minimum of 200 mm layer of vermiculite into the liner. Place smaller mercury items in Containment Drum in a manner to prevent breakage. Avoid rough handling of mercury items to avoid damage. When full or all items are placed in Drum, seal liner bag with duct tape and place completed label on outside of Containment Drum. Store Containment Drums in a secure location.

4.10 Mercury Waste and Material Handling and Disposal

1. Transport mercury-containing materials in accordance with the Provincial and Federal legislation and regulations.

2. Ensure that all mercury-containing materials are properly packaged and labelled prior to transportation.

3. Use an approved recycling company for permanent disposal of mercury-containing materials.

4.11 Appropriate Documentation

1. Provide RiskCheck and TDSB a copy of each waste manifest and/or a letter from the recycling agency acknowledging receipt of the materials.

4.12 Inspection

1. Perform **Milestone Inspection C** – Visual Clearance inspection of the Project Work Area following the removal of mercury.

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5.0 SILICA ABATEMENT

5.1 General Information

This section covers the identification, removal, transportation, and permanent disposal or recycling of silica products.

Furnish all labour, materials, services, insurance and equipment, in accordance with requirements of Section 4.4 of the Ministry of Labour Guideline - Silica on Construction Projects, April 2011 and other regulatory agencies (as listed in *Section 7.3 – Regulations, Codes and Guidelines*) to complete the work of this section.

Work will be subject to periodic inspection by RiskCheck (the Consultant).

5.2 Site Conditions

The following materials in the Project Work Areas have been **confirmed to contain silica in crystalline form:**

- ✓ Concrete, masonry, drywall, plaster, ceiling tiles, mortar, and ceramic products.

Quantities and site conditions to be confirmed by the Abatement Contractor and any discrepancies are to be reported to the Consultant.

General Building Conditions

1. Power and water will remain active for the abatement.
2. Hours of access to be confirmed by TDSB.

5.3 Regulations, Codes and Guidelines

1. Comply with Federal, Provincial, and local requirements, provided that in any case of conflict among those requirements or with these Specifications, the more stringent requirements shall apply. Work shall be performed under regulations in effect at the time work is performed.

2. Where regulations are not present, follow accepted industry standards and applicable guideline documents.

3. Regulations and guidelines include but are not limited to the following:

   - ✓ *Section 4.4 of the Ministry of Labour Guideline - Silica on Construction Projects, April 2011).*
   - ✓ *Environmental Protection Act, 1999 (Canada).*
   - ✓ *Transportation of Dangerous Goods Act, 1992 (Canada).*

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5.4 Classification of Work

Type 1 and Type 3 silica abatement operations will not apply during the abatement operations.

1. **Type 2** silica operation will be implemented if abatement consists of the following:

   - ✓ The use of a power tool to cut, grind, or polish concrete, masonry, terrazzo or refractory materials; and
   - ✓ The use of a power tool to remove silica-containing materials.

5.5 Instruction and Training

1. Workers involved with the disturbance of silica-containing materials should be trained in preventing silica exposure as outline in Section 4.4 of the Ministry of Labour Guideline - Silica on Construction Projects, April 2011.

2. Workers must have training on the hazards of silica.

5.6 Worker Protection

1. The Abatement Contractor is to provide all necessary skin, eye and respiratory protective equipment for the protection against silica as per regulatory requirements.

2. Workers shall not eat, drink, smoke or chew gum in the Project Work Area.

3. Washing facilities, including clean water, soap and towels, should be provided to the workers involved and personal decontamination procedures should be conducted when leaving the Project Work Area and prior to eating, drinking, smoking, etc. Silica-containing dust on personal protective clothing and equipment should be removed by damp wiping or HEPA vacuuming and handled with care to prevent disturbing the silica dust and the generation of airborne silica dust.

4. Respiratory Protection in the form of one of the following:

   - ✓ Full-facepiece air-purifying respirator with any 100-series particulate filter;
   - ✓ Tight-fitting powered air-purifying respirator with any 100-series particulate filter;
   - ✓ Full-facepiece supplied-air respirator operated in demand mode; and
   - ✓ Half-mask or full-facepiece supplied air respirator operated in continuous-flow mode.

5. Respirators shall be:

   - ✓ Certified by the National Institute of Occupational Safety and Health (NIOSH) or another testing agency acceptable to the Provincial regulator;
   - ✓ Fitted so that there is an effective seal between the respirator and the worker's face. Ensure that no person required to enter the Project Work Area has facial hair which affects the seal between respirator and face;
   - ✓ Assigned to a worker for their exclusive use;

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- ✓ Maintained in accordance with manufacturer's specifications;
- ✓ Cleaned, disinfected, and inspected by a competent worker after use on each shift, or more often if required;
- ✓ Repaired or have damaged or deteriorated parts replaced;
- ✓ Stored in a clean and sanitary location;
- ✓ Provided with new filters as necessary, according to manufacturer's instructions;
- ✓ Worn by personnel who have been fit checked by qualitative or quantitative fit-testing; and
- ✓ Instruction on proper use of respirators must be provided by a competent worker as defined by the Occupational Health and Safety Act.

6. Provide protective clothing, to all personnel which:

- ✓ Is made of a material that does not readily retain nor permit penetration of silica dust;
- ✓ Includes but is not limited to coveralls or full body work clothing; gloves, hats, and footwear or disposable coverlets;
- ✓ Safety glasses, face shields or goggles.
- ✓ All clothing that has been worn in a silica-contaminated area must be removed at the end of each shift and be decontaminated. Clothing should not be taken home; and
- ✓ Is replaced or repaired if torn or ripped.

7. Use hard hats, safety footwear and other protective equipment and apparel required by applicable construction safety regulations.

5.7 Inspection Milestones

1. The following Milestone Inspection may take place, at the Client's cost, as outlined in each related specification section:

Milestone Inspection C - Visual Clearance

- ✓ Inspection of the Project Work Area after removal of all silica-containing items and waste.

5.8 Containment Requirements

1. Workers not involved with the silica abatement operations and who do not have appropriate PPE should remain at least 10 metres away from the Project Work Area.

2. Ropes or barriers should be set up to prevent unauthorized personnel from entering the Project Work Area.

3. If ropes and barriers are not possible and there are workers within the 10-metre limit, the Project Work Area should be enclosed (in the form of a partial enclosure, or full enclosure) to prevent the escape of airborne silica-containing dust

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5.8.1 Barriers

1. Use ropes or barriers to restrict access of workers who are not adequately protected with proper PPE.

2. If this is not achievable, warning signs should be posted at the distance where the silica-containing dust settles (i.e., at least 10 metres away from the Project Work Area).

5.8.2 Partial Enclosures

1. Partial enclosures allow some level of emission to the atmosphere outside of the enclosure.

2. Partial enclosures may consist of vertical tarps and floor tarps so long as the tarps are overlapped and securely fixed together at the seams.

3. A partial enclosure is not a recommended containment system if significant dust is being generated.

5.8.3 Full Enclosures

1. Full enclosures are tight enclosures (with tarps that are generally impermeable and fully sealed joints and entryways). Full enclosures allow minimal or no fugitive emissions to reach the outside environment.

5.9 Silica – Type 2 Abatement Operations

1. Signs should be posted in enough numbers to warn of the silica hazard. The signs should display there is a silica dust hazard, restriction of the Project Work Area to authorized personnel, and that respirators must be worn in the Project Work Area.

2. Drop sheets shall be placed directly below each work area to control fallen dust and debris.

3. Drop sheets shall be disposed of following the completion of each project and new drop sheets shall be placed at each new work area.

4. Material should be misted with water prior to disturbance to help control the spread of dust.

5. At frequent intervals throughout the project, efforts to clean the Project Work Area should be made to help control the spread of dust and include damp wiping and HEPA vacuuming.

6. Conduct final check to ensure no dust or debris remains on surfaces as result of dismantling operations.

7. Notify the Consultant of **Milestone Inspection C** - Visual Clearance.

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5.10 Silica Waste and Material Handling

1. Compressed air or dry sweeping cleaning methods are not to be used.

2. Conform to requirements outlined in General Waste Management, Ontario Regulation 347 (as amended) for waste management, transporting and disposal of hazardous waste.

5.11 Inspection

1. Perform **Milestone Inspection C** - Visual Clearance inspection of the Project Work Area following the removal of silica products, dust and debris.

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Designated Substances Survey

SAP # 3739 -Western Technical Commercial School - Accessibility Project Work Locations
125 Evelyn Crescent
Toronto, Ontario

Prepared for:

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April 28, 2026
Project No. 32462

EXECUTIVE SUMMARY

RiskCheck Inc. (RiskCheck) was retained by Toronto District School Board, (TDSB, Client) to conduct a limited intrusive Designated Substances Survey (DSS) within the accessibility project work locations (as defined by the drawings provided with the Bundle 7 RFP) in the school building known as Western Technical Commercial School located at 125 Evelyn Crescent in Toronto, Ontario (subject building).

The DSS was conducted to meet the requirements of Section 30 in the Ontario Occupational Health and Safety Act (OHSA), Revised Statutes of Ontario (R.S.O.) 1990, (as amended). The DSS included a visual examination and assessment of the presence and condition of the 11 designated substances regulated under the Ontario OHSA. In addition to the 11 regulated designated substances, RiskCheck also visually inspected the accessibility project work locations for the possibility of suspect mould growth.

Furthermore, RiskCheck understands that the DSS was requested by TDSB for their due diligence purposes in preparation for an upcoming renovation of the proposed locations.

Fieldwork was conducted on March 27, 2026, and included the collection of bulk samples from building materials suspected to contain asbestos, and paint suspected to contain lead, along with a visual inspection for other designated substances and suspect mould growth.

Summary of Findings:

The following hazardous materials were identified to be present in the accessibility project work locations:

Asbestos:

Asbestos-containing materials (ACM) were identified in the accessibility project work locations as follows:

- Beige drywall joint compound associated with drywall walls in the 1st Floor Guidance Office (Loc# 62787) and 3rd Floor Corridor by the Library (Loc# 63201);
- 9"×9" grey with white streaks vinyl floor tiles in the 1st Floor Guidance Office (Loc# 62787)
- 12”x12" grey with white streaks vinyl floor tiles in the 1st Floor Classroom 155 (Loc# 62791);
- 12”x12" beige with olive-green streaks vinyl floor tiles in the 3rd Floor Corridor by the Library (Loc# 63201); and
- 2’x4’ pinhole swirled pattern acoustic lay-in ceiling tiles in the 3rd Floor Corridor by the Elevator (Loc# 141990).

All asbestos containing materials were observed to be in good condition. Refer to Appendix A for details regarding quantities and specific locations of ACM.

ACM may also be present in building materials that were inaccessible to sample as listed in Appendix F of this report.

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Lead:

The following paint samples were determined to have a lead concentration exceeding the 0.009% limit as noted by the Federal Surface Coating Materials Regulation, SOR/2016-193 made under the Canada Consumer Product Safety Act:

- Yellow paint (Sample No. LS-03) on plaster walls in the 1st Floor Corridor by Ramp (Loc# 62854);
- Green paint (Sample No. LS-04) on metal door in the 1st Floor Stairs (Loc# 62790);
- Yellow paint (Sample No. LS-05) on brick wall in the 1st Floor Stairs (Loc# 62790);
- Grey paint (Sample No. LS-06) on concrete floor in the 1st Floor Corridor by Ramp (Loc# 62854);
- Brown/green paint (Sample No. LS-07) on wood door frame in the 1st Floor Classroom 155 (Loc# 62791); and
- Grey/brown/green paint (Sample No. LS-09) on metal door in the 1st Floor Corridor (between Loc# 101538 and 101539).

- Lead-acid batteries are presumed to be present in emergency light fixtures; and
- Lead may also be present in electronic components (e.g., wiring connections, wire bundles, etc.), plumbing solder, and cast-iron piping gaskets (e.g., bell & spigots).

Mercury:

- Mercury as a vapour may be present in fluorescent light tubes and high intensity discharge bulbs and compact fluorescent light bulbs; and
- Mercury may also be present in batteries, and some modern technologies including LCD screens, laptop computers.

Silica:

- Crystalline silica is presumed to be present in building materials including concrete, cinder block, mortar, brick, drywall, ceiling tiles, plaster, and ceramic products.

Water Damage and / or Visible Suspect Mould:

- Visible suspect mould growth and water damage were not identified in visually accessible areas of project work areas.

Summary of Recommendations:

Based on the results of the DSS, the following conclusions and recommendations are provided:

1) Additional ACM may be present outside the accessible areas and materials of the subject building. If concealed materials are observed during renovation/demolition activities, it is recommended to sample the materials and submit for analysis of asbestos content.

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2) It is recommended that asbestos containing beige drywall joint compound associated with drywall walls in the 1st Floor Guidance Office (Loc# 62787) and 3rd Floor Corridor by the Library (Loc# 63201) be removed following Type 1 (less than 1 m2) or Type 2 (greater than 1 m2) asbestos work procedures as per O. Reg. 278/05 (as amended) where such materials are to be disturbed or impacted by the accessibility project work.

3) It is recommended that presumed asbestos containing 9"×9" grey with white streaks vinyl floor tiles in the 1st Floor Guidance Office (Loc# 62787), 12”x12" grey with white streaks vinyl floor tiles in the 1st Floor Classroom 155 (Loc# 62791), and 12”x12" beige with olive-green streaks vinyl floor tiles in the 3rd Floor Corridor by the Library (Loc# 63201) be removed following Type 1 asbestos work procedures as per O. Reg. 278/05 (as amended) where such materials are to be disturbed or impacted by the accessibility project work.

4) It is recommended that asbestos containing 2’x4’ pinhole swirled pattern acoustic lay-in ceiling tiles in the 3rd Floor Corridor by the Elevator (Loc# 141990) be removed following Type 1 (less than 10 tiles) or Type 2 (greater than 10 tiles) asbestos work procedures as per O. Reg. 278/05 (as amended) where such materials are to be disturbed or impacted by the accessibility project work.

5) Any disturbance or removal of ACM must be completed by trained and qualified personnel following appropriate asbestos abatement work procedures as defined in O. Reg. 278/05 (as amended).

6) It is recommended that known ACM that not affected by the accessibility project work, continue to be managed through the onsite Asbestos Management Program (AMP) for the subject building. The AMP should be inclusive of asbestos and regulatory background, asbestos records, procedures to notify building occupants and contractors, work procedures, and training requirements for workers.

7) Appropriate worker protection (e.g., respiratory protection), as outlined in the Ontario Ministry of Labour *Guideline – Lead on Construction Projects*, April 2011, should be employed when conducting demolition or renovation work that will create lead dust.

8) It is recommended that disposal of out-of-service fluorescent light tubes or any other mercury containing materials or equipment be completed in accordance with *General – Waste Management* Reg. 347 (as amended).

9) Appropriate worker protection (e.g., respiratory protection), as outlined in the Ontario MOL *Guideline – Silica on Construction Projects*, April, 2011, should be utilized when conducting renovation/demolition activities that may disturb or create silica dust.

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APPENDICES

Appendix A – Summary of Suspect, Presumed, and Confirmed Asbestos Containing Materials
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1.0 INTRODUCTION AND SCOPE

RiskCheck Inc. (RiskCheck) was retained by Toronto District School Board, (TDSB, Client) to conduct a limited intrusive Designated Substances Survey (DSS) within the accessibility project work locations (as defined by the drawings provided with the Bundle 7 RFP) in the school building known as Western Technical Commercial School located at 125 Evelyn Crescent in Toronto, Ontario (subject building).

The DSS was conducted to meet the requirements of Section 30 in the Ontario Occupational Health and Safety Act (OHSA), Revised Statutes of Ontario (R.S.O.) 1990, (as amended). The DSS included a visual examination and assessment of the presence and condition of the 11 designated substances regulated under the Ontario OHSA. In addition to the 11 regulated designated substances, RiskCheck also visually inspected the accessibility project work locations for the possibility of suspect mould growth.

Furthermore, RiskCheck understands that the DSS was requested by TDSB for their due diligence purposes in preparation for an upcoming renovation of the proposed locations.

The DSS was performed by Mr. Paul Theriault of RiskCheck on March 27, 2026. Access to the subject building was provided by the on-duty caretaker of TDSB. The RiskCheck Representative was unaccompanied during the DSS site visit.

1.1 Scope of Work

The limited intrusive DSS was completed to determine the presence and/or absence of potentially hazardous building materials that may be present within the proposed locations for phased service or construction and to document their locations, and condition.

The following list are substances currently considered Designated Substances by the Ontario Ministry of Labour (MOL), as defined by O. Reg. 490/09 (as amended):

- Acrylonitrile
- Arsenic
- Asbestos
- Benzene
- Coke Oven Emissions
- Ethylene Oxide
- Isocyanates
- Lead
- Mercury
- Silica
- Vinyl Chloride

The following Designated Substances may be identified in an industrial / manufacturing type facility and are not typically identified in the building construction type for this DSS:

- Acrylonitrile
- Arsenic
- Benzene
- Coke Oven Emissions
- Ethylene Oxide
- Isocyanates
- Vinyl Chloride

For the purposes of this report, these other Designated Substances are not included in this assessment or discussed further unless they have been visually identified and / or are suspected to be present based on the site-specific findings.

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The DSS conducted by RiskCheck consisted of the following:

- Review of previous environmental reports (including previous surveys, drawings, abatement reports etc.) pertaining to the subject building provided to RiskCheck by the Client;
- A visual inspection and/or inquiry with the site contact as to the possible presence of suspect or known Designated Substances and confirmation of content by review of available background information or analytical testing (e.g., for asbestos and lead);
- A visual examination of all accessible areas of the accessibility project work locations for the presence of building materials known or suspected to contain Designated Substances;
- Collection and submission of bulk and paint samples of selected building materials for laboratory analysis of asbestos and lead respectively;
- Obtain representative site photographs of the accessibility project work locations conditions; and
- Preparation of a report summarizing the findings of items above and providing recommendations as necessary regarding the ongoing management of Designated Substances identified at the accessibility project work locations.

2.0 BACKGROUND INFORMATION

2.1 Building Description

Component	Subject Building Features	
Building Use:	Institutional Building (Secondary School).	
Number of Buildings	One (1)	
Number of Levels:	Four storeys above grade with a basement level partially below grade, and mechanical penthouses.	
Approximate Building Area:	Square Metres (m^2): 44367	Square Feet (ft^2): 477,567
Year of Construction:	1927	Known Additions / Renovations: Unknown
Flooring Finishes (Accessibility Project Work Locations):	Ceramic tile, concrete, laminate interlocking flooring, terrazzo, and vinyl floor tiles.	
Wall Finishes (Accessibility Project Work Locations):	Brick, ceramic tile, concrete block, drywall, and plaster.	
Ceiling Finishes (Accessibility Project Work Locations):	Acoustic lay-in ceiling tiles, drywall, and plaster.	

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Component	Subject Building Features
Building Structure:	Floor: Concrete
	Wall Frame: Concrete block and structural steel (e.g., columns).
	Ceiling Frame: Concrete (e.g., beam, deck) and structural steel (e.g., beam, deck, joist).
Building Exterior Facade:	Aluminum flashing, brick, concrete, glazing, and stone.
Roofing Type:	Not assessed (outside scope of work)
Heating, Ventilation and Air Conditioning (HVAC):	Not assessed (outside scope of work)

The subject building was occupied by Western Technical Commercial School at the time of the site visit.

2.2 Accessible Areas

All accessibility project work locations within the subject building were accessible at the time of the Designated Substances Survey.

2.3 Previous Environmental Records Review

As part of the DSS, RiskCheck reviewed the following reports:

- "ASBESTOS BUILDING MATERIALS REASSESSMENT SURVEY, Western Technical Commercial School, 125 Evelyn Crescent, Toronto, Ontario, SAP # 3739 (SW)" report, prepared for TDSB by ECOH Management Inc., dated November, 2019.

Designated Substances previously observed in the subject building include:

- Asbestos containing Aircell pipe straight insulation;
- Asbestos containing cellulose and tar paper (sweatwrap) pipe straight insulation;
- Asbestos containing parging cement insulation on pipe fittings;
- Asbestos containing pre-formed block insulation on pipe straight;
- Asbestos containing exterior texture coat;
- Asbestos containing window sealant;
- Asbestos containing 9" x 9" vinyl floor tile;
- Asbestos containing 12" x12" vinyl floor tile;
- Asbestos containing 2' x 4' length wise fissure ceiling tiles;
- Asbestos containing plaster;
- Presumed asbestos containing drywall joint compound on walls and bulkheads;
- Presumed asbestos containing vinyl sheet flooring;
- Presumed asbestos containing asbestos cement (Transite) countertops and fumehoods;
- Presumed asbestos containing fire door;

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- Presumed asbestos containing cloth flexible joint at duct connections;
- Presumed asbestos containing heat shield in incandescent light;
- Presumed asbestos containing bell and spigot joints;
- Presumed asbestos containing gaskets;
- Presumed asbestos containing exterior expansion joints; and
- Presumed asbestos containing roof materials.

3.0 FINDINGS

The following section summarizes the findings of the DSS and provides a general description of the building materials identified, along with their locations. For details on approximate quantities and locations of building materials, please refer to the Summary of Suspect and Confirmed Asbestos Containing Materials in Appendix A.

3.1 Asbestos

3.1.1 Spray Applied Fireproofing

Spray applied fireproofing was not observed within the visually accessible areas of the accessibility project work locations.

3.1.2 Textured Finishes

Textured finishes were not observed within the visually accessible areas of the accessibility project work locations.

3.1.3 Plaster Finishes

Plaster finishes were observed on walls of the accessibility project work locations and were sampled as follows.

Sample No.	Locations	Material Description (Colour)	Asbestos Result
PLA-01a-c	1st Floor Corridor at Ramp (Loc# 62854)	Plaster Finishes on Interior Wall / Grey	None Detected

3.1.4 Drywall Joint Compound

Drywall finishes with drywall joint compound were observed on walls and ceilings of the accessibility project work locations and were sampled as follows.

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Sample No.	Locations	Material Description (Colour)	Asbestos Result
DJC-01a-c	1st Floor Universal Washroom (Loc# 62894)	Drywall Wall / White, Joint Compound	None Detected
DJC-02a	**1st Floor Guidance Office (Loc# 62787)**	**Drywall Wall / Beige, Joint Compound**	**1% Chrysotile**
DJC-02b-c			Not Analyzed
DJC-03a	**3rd Floor Corridor by Library (Loc# 63201)**	**Drywall Wall / Beige, Joint Compound**	**1% Chrysotile**
DJC-03b-c			Not Analyzed

3.1.5 Acoustic Lay-in Ceiling Tiles

Five (5) visually distinct types of acoustic lay-in ceiling tiles were observed in the accessibility project work locations and were previously sampled or visually identified as follows:

Sample No.	Locations	Material Description (Size, Pattern, Date Code)	Asbestos Result
3739-1-3006-041-01 to 03 and 3739-1-3006-073-01 to 03 Previously Sampled	1st Floor Guidance Office	Acoustic Glue-on Ceiling Tiles / 1'x1' Medium and Large Holes	Non-ACM
3739-1-3008-016-01 to 03 Previously Sampled	3rd Floor Corridor (Loc# 63171 and 63201)	Acoustic Lay-in Ceiling Tiles / 2'x4' Wavy Pinhole and Small Hole	Non-ACM
3739-1-3008-020-01 to 03 Previously Sampled		Acoustic Lay-in Ceiling Tiles / 2'x4' Small Hole and Pinhole	Non-ACM
-		Acoustic Lay-in Ceiling Tiles / 2'x4' Random Fissures and Pinholes (Date Stamp 02/06/2012)	Visually identified as non-asbestos
ACT-01a	**3rd Floor Corridor by Elevator (Loc# 141990)**	**Acoustic Lay-in Ceiling Tiles / 2'x4' Pinhole Swirled Pattern, Pink Back**	**1% Chrysotile**

3.1.6 Mechanical Equipment and Pipe Insulation

Suspect asbestos-containing mechanical insulation (e.g., boiler units, chiller units, hot water tanks, generator exhaust etc.) were not observed within the visually accessible areas of the accessibility project work locations.

All piping within the visually accessible areas of the accessibility project work locations was observed to be uninsulated or insulated with fibreglass jacketed with All Service Jacketing (ASJ), canvas, or foil.

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3.1.7 Duct Insulation and Mastic

All ductwork within the visually accessible areas of the accessibility project work locations was observed to be uninsulated.

3.1.8 Asbestos Cement (Transite) Products

Asbestos-containing cement products (such as cement piping and/or panels) were not observed within the visually accessible areas of the accessibility project work locations.

3.1.9 Vinyl Floor Tiles

Vinyl floor tiles that were observed in the visually accessible areas of the accessibility project work locations and were previously sampled as follows:

Sample No.	Locations	Material Description (Size, Colour, Pattern)	Asbestos Result
VFT-01a-c-A	1st Floor Elevator Cab (Loc# 145038)	12”x12” White with Grey Fleck Vinyl Floor Tiles	None Detected
Previously Sampled by ECOH (2019) 3739-052019-3009-40A	1st Floor Guidance Office (Loc# 62787)	9"×9" Grey with White Streaks Vinyl Floor Tiles	1% Chrysotile
Visually Similar to ECOH (2019) 3739-052019-3009-40A	1st Floor Classroom 155 (Loc# 62791	12”x12” Grey with White Streaks Vinyl Floor Tiles	Presumed ACM
Previously Sampled in 2018, Sample No. A40845-1	3rd Floor Corridor by Library (Loc# 63201)	12"x12" Beige with Olive-Green Streaks Vinyl Floor Tiles	1% Chrysotile

3.1.10 Vinyl Sheet Flooring

Vinyl sheet flooring was not observed within the visually accessible areas of the accessibility project work locations.

3.1.11 Vermiculite

Loose fill vermiculite insulation was not observed within the visually accessible areas of the accessibility project work locations.

3.1.12 Caulking, Putty, and Tars

Caulking, putty, and tars was not observed within the visually accessible area of the accessibility project work locations.

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3.1.13 Miscellaneous Building Materials

The following miscellaneous building materials that were observed in the visually accessible areas of the accessibility project work locations and were suspected to contain asbestos, are summarized as follows:

Sample No.	Locations	Material Description (Colour)	Asbestos Result
PC-01a-c-A	1st Floor Corridor (Loc# 101786)	White Paint Compound (Primer) on Concrete Block Wall	None Detected
PC-01a-c-B		Grey Cementitious Mortar under White Paint Compound (Primer) on Concrete Block Wall	None Detected
LC-01a-c	1st Floor Corridor at Ramp (Loc# 62854)	Grey Cementitious Leveling Compound	None Detected
MT-01a-c	1st Floor Universal Washroom (Loc# 62894)	Off-White Cementitious Ceramic Tile Grout	None Detected
MT-02a-c-A	1st Floor Guidance Office (Loc# 62787)	Off-White Joint Compound around Door Frame	None Detected
MT-02a-c-B		White Cementitious Material around Door Frame	None Detected
MT-02a-b-C		Grey Cementitious Material around Door Frame	None Detected
IBM-01a-c-A	1st Floor Corridor at Ramp (Loc# 62854)	White Cementitious Interior Brick Mortar	None Detected
IBM-01a-c-B		Grey Cementitious Interior Brick Mortar	None Detected
IBM-01a-c-C		Off-White Cementitious Interior Brick Mortar	None Detected

All visually similar building materials in other areas of the accessibility project work locations should be presumed to contain asbestos.

Based on the reported age of the subject building and visual observations noted during the DSS, no other building materials suspected to contain asbestos were identified in the visually accessible areas of the accessibility project work locations.

3.2 Lead

The following table summarizes the locations, surfaces and analytical results of the various paint samples at the accessibility project work locations.

Sample No.	Description of Room	Description of Paint / Substrate	Condition (Good/Fair/Poor)	Lead Content (% Lead by Dry Weight)
LS-01	1st Floor Elevator Machine Room / Loc# 62840-1	Yellow Paint on Concrete Block Wall	Good	0.0034%

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Sample No.	Description of Room	Description of Paint / Substrate	Condition (Good/Fair/Poor)	Lead Content (% Lead by Dry Weight)
LS-02	1st Floor Universal Washroom / Loc# 64894	Yellow Paint on Drywall Wal	Good	<0.0005%
LS-03	**1st Floor Corridor by Ramp / Loc# 62854**	**Yellow Paint on Plaster Wall**	**Good**	**0.0816%**
LS-04	**1st Floor Stairs / Loc# 62790**	**Green Paint on Metal Door**	**Good**	**0.113%**
LS-05	**1st Floor Stairs / Loc# 62790**	**Yellow Paint on Brick Wall**	**Good**	**0.245%**
LS-06	**1st Floor Corridor by Ramp / Loc# 62854**	**Grey Paint on Concrete Floor**	**Good**	**0.117%**
LS-07	**1st Floor Classroom 155 / Loc# 62791**	**Brown/Green Paint on Wood Door Frame**	**Good**	**0.206%**
LS-08	3rd Floor Corridor / between Loc# 63171 and 63201	Green/Orange Paint on Metal Door	Good	0.0061%
LS-09	**1st Floor Corridor / between Loc# 101538 and 101539**	**Grey/Brown/Green on Metal Door**	**Good**	**0.112%**

As indicated in the table provided above and the attached Laboratory Certificate of Analysis, lead concentrations exceeding 0.009% (or 90 ppm or 90 mg/kg) by dry weight were detected in six (6) of the nine (9) samples analyzed.

Paints with a detectable concentration of lead below the Federal Surface Coating Materials Regulation, SOR/2016-193 limit (defined as having a lead content of 0.009% (or 90 ppm or 90 mg/kg) by dry weight or greater) should still be considered lead-containing.

3.2.1 Potential Lead Containing Products

Lead may be present in several materials which were not assessed and/or sampled. The following materials, where found, should be presumed to contain lead.

- Lead-acid batteries are presumed to be present in emergency light fixtures;
- Electrical components, including wiring connectors, grounding conductors, and solder,
- Solder on pipe connections, and
- Cast-iron piping gaskets (e.g., bell & spigots).

3.3 Mercury

Mercury in the form of vapour may be present within the fluorescent light tubes throughout the accessibility project work locations. At the time of the site visit, fluorescent light tubes were noted to be intact.

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Liquid mercury containing thermostats were not observed in the accessibility project work locations

3.3.1 Potential Mercury Containing Products

Mercury may be present in several materials which were not assessed and/or sampled. The following materials, where found, should be presumed to contain mercury.

- Fluorescent light tubes, compact fluorescent light bulbs and lamps,
- Batteries, and
- Some modern technologies including LCD screens, and laptop computers.

3.4 Silica

Crystalline silica is a presumed component of the following materials:

- Poured or pre-cast concrete,
- Masonry and mortar,
- Ceramic products and grout,
- Plaster,
- Drywall, and
- Ceiling tiles.

3.5 Water Damage and / or Visible Suspect Mould Growth

Apparent water staining and visible suspect mould growth was not identified in visually accessible areas of the accessibility project work locations.

4.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the results of the DSS, the following conclusions and recommendations are provided:

1) Additional ACM may be present outside the accessible areas and materials of the subject building. If concealed materials are observed during renovation/demolition activities, it is recommended to sample the materials and submit for analysis of asbestos content.

2) It is recommended that asbestos containing beige drywall joint compound associated with drywall walls in the 1st Floor Guidance Office (Loc# 62787) and 3rd Floor Corridor by the Library (Loc# 63201) be removed following Type 1 (less than 1 m2) or Type 2 (greater than 1 m2) asbestos work procedures as per O. Reg. 278/05 (as amended) where such materials are to be disturbed or impacted by the accessibility project work.

3) It is recommended that presumed asbestos containing 9"×9" grey with white streaks vinyl floor tiles in the 1st Floor Guidance Office (Loc# 62787), 12”x12" grey with white streaks vinyl floor tiles in the 1st Floor Classroom 155 (Loc# 62791), and 12”x12" beige with olive-green streaks vinyl floor tiles in the 3rd Floor Corridor by the Library (Loc# 63201) be removed following Type 1 asbestos

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work procedures as per O. Reg. 278/05 (as amended) where such materials are to be disturbed or impacted by the accessibility project work.

4) It is recommended that asbestos containing 2'x4' pinhole swirled pattern acoustic lay-in ceiling tiles in the 3rd Floor Corridor by the Elevator (Loc# 141990) be removed following Type 1 (less than 10 tiles) or Type 2 (greater than 10 tiles) asbestos work procedures as per O. Reg. 278/05 (as amended) where such materials are to be disturbed or impacted by the accessibility project work.

5) Any disturbance or removal of ACM must be completed by trained and qualified personnel following appropriate asbestos abatement work procedures as defined in O. Reg. 278/05 (as amended).

6) It is recommended that known ACM that not affected by the accessibility project work, continue to be managed through the onsite Asbestos Management Program (AMP) for the subject building. The AMP should be inclusive of asbestos and regulatory background, asbestos records, procedures to notify building occupants and contractors, work procedures, and training requirements for workers.

7) Appropriate worker protection (e.g., respiratory protection), as outlined in the Ontario Ministry of Labour *Guideline – Lead on Construction Projects*, April 2011, should be employed when conducting demolition or renovation work that will create lead dust.

8) It is recommended that disposal of out-of-service fluorescent light tubes or any other mercury containing materials or equipment be completed in accordance with *General – Waste Management* Reg. 347 (as amended).

9) Appropriate worker protection (e.g., respiratory protection), as outlined in the Ontario MOL *Guideline – Silica on Construction Projects*, April, 2011, should be utilized when conducting renovation/demolition activities that may disturb or create silica dust.

5.0 TERMS AND LIMITATIONS

This report was prepared for the exclusive use of Toronto District School Board (TDSB, Client). The report may not be relied upon by any other person or entity without the express written consent of RiskCheck Inc. (RiskCheck) and TDSB. Any use that a party makes of this report, or any reliance on decisions made based on it, is the sole responsibility of such parties. RiskCheck accepts no responsibility for damages, if any, suffered by any party as a result of decisions made or actions based on this report.

The information and conclusions contained in this report are based upon work undertaken by trained professional and technical staff in accordance with generally accepted engineering and scientific practices current at the time the work was performed.

RiskCheck makes no other representation whatsoever, including those concerning the legal significance of its findings, or as to the other legal matters addressed incidentally in this report, including but not limited to the application of any law to the facts set forth herein. With respect to regulatory compliance issues, regulatory statutes are subject to interpretation. These interpretations may change over time,

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thus TDSB should review such issues with appropriate legal counsel. The asbestos containing materials locations and conclusions provided are based on information obtained from visual inspection and limited sampling carried out, at the specific test locations, and information obtained from the building personnel. The results can only be extrapolated to an undefined area around the test locations. It is possible that additional, concealed hazardous building materials may become evident during demolition/renovation activities.

Any quantities or areas (including but not limited to damaged areas, mould affected areas, asbestos or lead containing materials) provided in this report are order-of-magnitude values or estimates and should not be considered as exact values. Should there be a requirement for abatement (e.g., asbestos, lead, or mould), the estimated quantities or areas noted are not to be used for tender documents or providing quotations or for any other business decisions without prior consent from RiskCheck. A more detailed site investigation may be required to verify the quantity and/or areas of materials and site conditions that may affect the overall project cost. Furthermore, it is important to note that the conditions of the potential hazardous building materials may have changed since the time of the RiskCheck site visit or investigation. RiskCheck will not be held responsible for any deviations in the estimated quantities or areas documented.

The conclusions presented represent the best judgement of the assessor based on the limited intrusive sampling carried out. Due to the nature of the material investigated and the limited data available, the assessor cannot warrant against undiscovered asbestos containing materials that may still exist behind solid walls or ceilings, concealed by other enclosures/barriers, or under stored/heavy items, which would not have been visible during the inspection activities.

A copy of our Limitations, Terms and Conditions of Retainer is appended to this report as Appendix G and applies to all work performed.
We trust this report meets your current requirements. Should you have any questions or require clarification or additional information, please do not hesitate to contact the undersigned.

Respectfully submitted,

RISKCHECK INC.

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APPENDIX A

SUMMARY OF SUSPECT, PRESUMED, AND CONFIRMED ASBESTOS CONTAINING MATERIALS

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Table 1 - Summary of Suspect, Presumed and Confirmed ACM Sample Results

SAP # 3739 - Western Tech-Comm School - Accessibility Project Work Locations, 125 Evelyn Cres., Toronto, Ontario

RiskCheck

Table Notes

Accessibility

A - Accessible to all occupants of the subject building to approx. 2.5 m (arms reach) above floor level. Includes specific activities that may disturb material that is not normally within reach.

B - Areas of the subject building restricted to operations and maintenance staff and accessible to approx. 2.5 m (arms reach) above floor level.

C_1 - Visible from floor level and accessible only with a ladder or other elevating devices.

C_2 - Concealed from floor level and accessible only with a ladder or other elevating devices and by moving a non-fixed building component (i.e., ceiling tile or access hatch)

D - Not accessible without demolition or removal of fixed building components or building systems.

A_A - D_A with Air Movement - Areas with ACM inside a supply or return air plenum or with airflow directed at the ACM.

Action Levels

1 - Action dealing with the immediate cleanup of ACM debris likely to be disturbed.

2 - Action dealing with Type 2 isolation of an area and performing asbestos removal for regulatory compliance.

3 - Action dealing with Type 2 asbestos procedures for ceiling entry where friable ACM debris is present on the top side of a ceiling system.

4 - Action dealing with the removal of asbestos that goes beyond compliance but simplifies the asbestos management.

5 - Action dealing with the repair of asbestos.

6 - Action dealing with ACM surveillance requirements of the regulation.

Additional Information

ACM = Asbestos Containing Materials

N/E = Not Estimated

EA = Each

"Not Analyzed" indicates sample not analyzed due to positive result from homogenous sampling group.

Confirmed or Presumed ACM

General Description			Material Description			Hazard Rating & Risk Assessment						Sample Collection & Analysis				
													Analytical Results			
Floor No.	Location / Room Name	Sample Date	Building System	Component	Material Description (Size, Colour, Pattern, etc.)	Condition (G / F / P / D)	Accessibility	Visible	Friability Type	Approximate Quantity	Action Level	Sample No.	Percentage	Type	Figure Reference	Comments
1	Loc# 62854 / Corridor at Ramp	27-Mar-26	Wall	All	Grey Plaster	Good	A	Y	Non-Friable	N/E	-	PLA-01a	None Detected		1	Material was determined to be non-asbestos containing.
1	Loc# 62854 / Corridor at Ramp	27-Mar-26	Wall	All	Grey Plaster	Good	A	Y	Non-Friable	-	-	PLA-01a	None Detected		1	Material was determined to be non-asbestos containing.
1	Loc# 62854 / Corridor at Ramp	27-Mar-26	Wall	All	Grey Plaster	Good	A	Y	Non-Friable	-	-	PLA-01c	None Detected		1	Material was determined to be non-asbestos containing.
1	Loc# 62894 / Universal Washroom	27-Mar-26	Wall	All	White Drywall Joint Compound	Good	C_1	Y	Non-Friable	N/E	-	DJC-01a	None Detected		1	Material was determined to be non-asbestos containing.
1	Loc# 62894 / Universal Washroom	27-Mar-26	Wall	All	White Drywall Joint Compound	Good	C_1	Y	Non-Friable	-	-	DJC-01b	None Detected		1	Material was determined to be non-asbestos containing.
1	Loc# 62894 / Universal Washroom	27-Mar-26	Wall	All	White Drywall Joint Compound	Good	C_1	Y	Non-Friable	-	-	DJC-01c	None Detected		1	Material was determined to be non-asbestos containing.
1	**Loc# 62787 / Guidance Office**	**27-Mar-26**	**Wall**	**All**	**Beige Drywall Joint Compound**	**Good**	**A**	**Y**	**Non-Friable**	**80 ft²**	**-**	**DJC-02a**	**1%**	**Chrysotile**	**1**	**Manage in place or remove following Type 1 (less than 1 m2) or Type 2 (greater than 1 m2) asbestos procedures.**
1	Loc# 62787 / Guidance Office	27-Mar-26	Wall	All	Beige Drywall Joint Compound	Good	A	Y	Non-Friable	-	-	DJC-02b	Not Analyzed		1	Based on homogenous groupings with Sample No. DJC-02a, the material is considered asbestos-containing.
1	Loc# 62787 / Guidance Office	27-Mar-26	Wall	All	Beige Drywall Joint Compound	Good	A	Y	Non-Friable	-	-	DJC-02c	Not Analyzed		1	Based on homogenous groupings with Sample No. DJC-02a, the material is considered asbestos-containing.
1	Loc# 62787 / Guidance Office	-	Floor	All	9"x9" Grey with White Streaks Vinyl Floor Tiles	Good	A	Y	Non-Friable	24 ft²	-	Previously Sampled by ECOH (2019) 3739-052019-3009-40A	2%	Chrysotile	1	Visually similar to previously sampled vinyl floor tiles. Remove following Type 1 asbestos procedures.
1	Loc# 62791 / Classroom 155	-	Floor	All	12"x12" Grey with White Streaks Vinyl Floor Tiles	Good	A	Y	Non-Friable	24 ft²	-	-	Presumed ACM		1	Visually similar to other ACM vinyl floor tiles and presumed to be asbestos containing. Remove following Type 1 asbestos procedures.
3	**Loc# 63201 / Corridor by Library**	**27-Mar-26**	**Wall**	**All**	**Beige Drywall Joint Compound**	**Good**	**A**	**Y**	**Non-Friable**	**80 ft²**	**-**	**DJC-03a**	**1%**	**Chrysotile**	**2**	**Manage in place or remove following Type 1 (less than 1 m2) or Type 2 (greater than 1 m2) asbestos procedures.**
3	Loc# 63201 / Corridor by Library	27-Mar-26	Wall	All	Beige Drywall Joint Compound	Good	A	Y	Non-Friable	-	-	DJC-03b	Not Analyzed		2	Based on homogenous groupings with Sample No. DJC-03a, the material is considered asbestos-containing.
3	Loc# 63201 / Corridor by Library	27-Mar-26	Wall	All	Beige Drywall Joint Compound	Good	A	Y	Non-Friable	-	-	DJC-03c	Not Analyzed		2	Based on homogenous groupings with Sample No. DJC-03a, the material is considered asbestos-containing.
3	Loc# 63201 / Corridor by Library	-	Floor	All	12"x12" Beige with Olive-Green Streaks Vinyl Floor Tiles	Good	A	Y	Non-Friable	42 ft²	-	Previously Sampled in 2018, Sample No. A40845-1	1%	Chrysotile	2	Visually similar to previously sampled vinyl floor tiles. Remove following Type 1 asbestos procedures.
3	**Loc# 141990 / Corridor by Elevator**	**27-Mar-26**	**Ceiling**	**Lay-in Ceiling Tile**	**2'x4' Pinhole Swirled Pattern Acoustic Lay-in Ceiling Tile**	**Good**	**C_1**	**Y**	**Non-Friable**	**120 ft²**	**-**	**ACT-01a**	**1%**	**Chrysotile**	**2**	**Manage in place or remove following Type 1 (less than 10 tiles) or Type 2 (greater than 10 tiles) asbestos procedures.**
3	Loc# 141990 / Corridor by Elevator	27-Mar-26	Ceiling	Lay-in Ceiling Tile	2'x4' Pinhole Swirled Pattern Acoustic Lay-in Ceiling Tile	Good	C_1	Y	Non-Friable	-	-	ACT-01b	Not Analyzed		2	Based on homogenous groupings with Sample No. ACT-01a, the material is considered asbestos-containing.
3	Loc# 141990 / Corridor by Elevator	27-Mar-26	Ceiling	Lay-in Ceiling Tile	2'x4' Pinhole Swirled Pattern Acoustic Lay-in Ceiling Tile	Good	C_1	Y	Non-Friable	-	-	ACT-01c	Not Analyzed		2	Based on homogenous groupings with Sample No. ACT-01a, the material is considered asbestos-containing.
1	Loc# 145038 / Elevator Cab	27-Mar-26	Floor	All	12"x12" White with Grey Fleck Vinyl Floor Tiles	Good	A	Y	Non-Friable	40 ft²	-	VFT-01a-A	None Detected		1	Material was determined to be non-asbestos containing.
1	Loc# 145038 / Elevator Cab	27-Mar-26	Floor	All	Yellow Mastic	Good	D	N	Non-Friable	40 ft²	-	VFT-01a-B	None Detected		1	Material was determined to be non-asbestos containing.
1	Loc# 145038 / Elevator Cab	27-Mar-26	Floor	All	12"x12" White with Grey Fleck Vinyl Floor Tiles	Good	A	Y	Non-Friable	-	-	VFT-01b	None Detected		1	Material was determined to be non-asbestos containing.
1	Loc# 145038 / Elevator Cab	27-Mar-26	Floor	All	12"x12" White with Grey Fleck Vinyl Floor Tiles	Good	A	Y	Non-Friable	-	-	VFT-01c-A	None Detected		1	Material was determined to be non-asbestos containing.
1	Loc# 145038 / Elevator Cab	27-Mar-26	Floor	All	Yellow Mastic	Good	D	N	Non-Friable	-	-	VFT-01c-B	None Detected		1	Material was determined to be non-asbestos containing.
1	Loc# 101786 / Corridor	27-Mar-26	Wall	All	White Paint Compound (Primer) on Concrete Block Wall	Good	A	Y	Non-Friable	N/E	-	PC-01a-A	None Detected		1	Material was determined to be non-asbestos containing.
1	Loc# 101786 / Corridor	27-Mar-26	Wall	All	Grey Cementitious Mortar under White Paint Compound (Primer) on Concrete Block Wall	Good	D	N	Non-Friable	N/E	-	PC-01a-B	None Detected		1	Material was determined to be non-asbestos containing.
1	Loc# 101786 / Corridor	27-Mar-26	Wall	All	White Paint Compound (Primer) on Concrete Block Wall	Good	A	Y	Non-Friable	-	-	PC-01b-A	None Detected		1	Material was determined to be non-asbestos containing.
1	Loc# 101786 / Corridor	27-Mar-26	Wall	All	Grey Cementitious Mortar under White Paint Compound (Primer) on Concrete Block Wall	Good	D	N	Non-Friable	-	-	PC-01b-B	None Detected		1	Material was determined to be non-asbestos containing.
1	Loc# 101786 / Corridor	27-Mar-26	Wall	All	White Paint Compound (Primer) on Concrete Block Wall	Good	A	Y	Non-Friable	-	-	PC-01c-A	None Detected		1	Material was determined to be non-asbestos containing.
1	Loc# 101786 / Corridor	27-Mar-26	Wall	All	Grey Cementitious Mortar under White Paint Compound (Primer) on Concrete Block Wall	Good	D	N	Non-Friable	-	-	PC-01c-B	None Detected		1	Material was determined to be non-asbestos containing.
1	Loc# 62854 / Corridor at Ramp	27-Mar-26	Floor	All	Grey Cementitious Leveling Compound	Good	A	Y	Non-Friable	N/E	-	LC-01a	None Detected		1	Material was determined to be non-asbestos containing.
1	Loc# 62854 / Corridor at Ramp	27-Mar-26	Floor	All	Grey Cementitious Leveling Compound	Good	A	Y	Non-Friable	-	-	LC-01b	None Detected		1	Material was determined to be non-asbestos containing.
1	Loc# 62854 / Corridor at Ramp	27-Mar-26	Floor	All	Grey Cementitious Leveling Compound	Good	A	Y	Non-Friable	-	-	LC-01c	None Detected		1	Material was determined to be non-asbestos containing.

Table 1 - Summary of Suspect, Presumed and Confirmed ACM Sample Results

SAP # 3739 - Western Tech-Comm School - Accessibility Project Work Locations, 125 Evelyn Cres., Toronto, Ontario

RiskCheck

Table Notes

Accessibility

A - Accessible to all occupants of the subject building to approx. 2.5 m (arms reach) above floor level. Includes specific activities that may disturb material that is not normally within reach.

B - Areas of the subject building restricted to operations and maintenance staff and accessible to approx. 2.5 m (arms reach) above floor level.

C_1 - Visible from floor level and accessible only with a ladder or other elevating devices.

C_2 - Concealed from floor level and accessible only with a ladder or other elevating devices and by moving a non-fixed building component (i.e., ceiling tile or access hatch)

D - Not accessible without demolition or removal of fixed building components or building systems.

A_A - D_A with Air Movement - Areas with ACM inside a supply or return air plenum or with airflow directed at the ACM.

Action Levels

1 - Action dealing with the immediate cleanup of ACM debris likely to be disturbed.

2 - Action dealing with Type 2 isolation of an area and performing asbestos removal for regulatory compliance.

3 - Action dealing with Type 2 asbestos procedures for ceiling entry where friable ACM debris is present on the top side of a ceiling system.

4 - Action dealing with the removal of asbestos that goes beyond compliance but simplifies the asbestos management.

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Additional Information

ACM = Asbestos Containing Materials

N/E = Not Estimated

EA = Each

"Not Analyzed" indicates sample not analyzed due to positive result from homogenous sampling group.

Confirmed or Presumed ACM

General Description			Material Description			Hazard Rating & Risk Assessment						Sample Collection & Analysis				Comments
Floor No.	Location / Room Name	Sample Date	Building System	Component	Material Description (Size, Colour, Pattern, etc.)	Condition (G / F / P / D)	Accessibility	Visible	Friability Type	Approximate Quantity	Action Level	Sample No.	Analytical Results: Percentage	Analytical Results: Type	Figure Reference	
1	Loc# 62894 / Universal Washroom	27-Mar-26	Wall	All	Off-White Cementitious Ceramic Tile Grout	Good	A	Y	Non-Friable	N/E	-	MT-01a	None Detected		1	Material was determined to be non-asbestos containing.
1	Loc# 62894 / Universal Washroom	27-Mar-26	Wall	All	Off-White Cementitious Ceramic Tile Grout	Good	A	Y	Non-Friable	-	-	MT-01b	None Detected		1	Material was determined to be non-asbestos containing.
1	Loc# 62894 / Universal Washroom	27-Mar-26	Wall	All	Off-White Cementitious Ceramic Tile Grout	Good	A	Y	Non-Friable	-	-	MT-01c	None Detected		1	Material was determined to be non-asbestos containing.
1	Loc# 62787 / Guidance Office	27-Mar-26	Other	Door Frame	Off-White Joint Compound around Door Frame	Good	A	Y	Non-Friable	N/E	-	MT-02a-A	None Detected		1	Material was determined to be non-asbestos containing.
1	Loc# 62787 / Guidance Office	27-Mar-26	Other	Door Frame	White Cementitious Material around Door Frame	Good	A	Y	Non-Friable	N/E	-	MT-02a-B	None Detected		1	Material was determined to be non-asbestos containing.
1	Loc# 62787 / Guidance Office	27-Mar-26	Other	Door Frame	Grey Cementitious Material around Door Frame	Good	A	Y	Non-Friable	N/E	-	MT-02a-C	<0.5%	Chrysotile	1	While the material does contain asbestos it is considered a non-asbestos material under O. Reg. 278/05.
1	Loc# 62787 / Guidance Office	27-Mar-26	Other	Door Frame	Off-White Joint Compound around Door Frame	Good	A	Y	Non-Friable	-	-	MT-02b-A	None Detected		1	Material was determined to be non-asbestos containing.
1	Loc# 62787 / Guidance Office	27-Mar-26	Other	Door Frame	White Cementitious Material around Door Frame	Good	A	Y	Non-Friable	-	-	MT-02b-B	None Detected		1	Material was determined to be non-asbestos containing.
1	Loc# 62787 / Guidance Office	27-Mar-26	Other	Door Frame	Grey Cementitious Material around Door Frame	Good	A	Y	Non-Friable	-	-	MT-02b-C	<0.5%	Chrysotile	1	While the material does contain asbestos it is considered a non-asbestos material under O. Reg. 278/05.
1	Loc# 62787 / Guidance Office	27-Mar-26	Other	Door Frame	White Cementitious Material around Door Frame	Good	A	Y	Non-Friable	-	-	MT-02c-A	None Detected		1	Material was determined to be non-asbestos containing.
1	Loc# 62787 / Guidance Office	27-Mar-26	Other	Door Frame	Grey Cementitious Material around Door Frame	Good	A	Y	Non-Friable	-	-	MT-02c-B	None Detected		1	Material was determined to be non-asbestos containing.
1	Loc# 62854 / Corridor at Ramp	27-Mar-26	Wall	All	White Cementitious Interior Brick Mortar	Good	A	Y	Non-Friable	N/E	-	IBM-01a-A	None Detected		1	Material was determined to be non-asbestos containing.
1	Loc# 62854 / Corridor at Ramp	27-Mar-26	Wall	All	Grey Cementitious Interior Brick Mortar	Good	A	Y	Non-Friable	N/E	-	IBM-01a-B	None Detected		1	Material was determined to be non-asbestos containing.
1	Loc# 62854 / Corridor at Ramp	27-Mar-26	Wall	All	Off-White Cementitious Interior Brick Mortar	Good	A	Y	Non-Friable	N/E	-	IBM-01a-C	None Detected		1	Material was determined to be non-asbestos containing.
1	Loc# 62854 / Corridor at Ramp	27-Mar-26	Wall	All	White Cementitious Interior Brick Mortar	Good	A	Y	Non-Friable	-	-	IBM-01b-A	None Detected		1	Material was determined to be non-asbestos containing.
1	Loc# 62854 / Corridor at Ramp	27-Mar-26	Wall	All	Grey Cementitious Interior Brick Mortar	Good	A	Y	Non-Friable	-	-	IBM-01b-B	None Detected		1	Material was determined to be non-asbestos containing.
1	Loc# 62854 / Corridor at Ramp	27-Mar-26	Wall	All	Off-White Cementitious Interior Brick Mortar	Good	A	Y	Non-Friable	-	-	IBM-01b-C	None Detected		1	Material was determined to be non-asbestos containing.
1	Loc# 62854 / Corridor at Ramp	27-Mar-26	Wall	All	White Cementitious Interior Brick Mortar	Good	A	Y	Non-Friable	-	-	IBM-01c-A	None Detected		1	Material was determined to be non-asbestos containing.
1	Loc# 62854 / Corridor at Ramp	27-Mar-26	Wall	All	Grey Cementitious Interior Brick Mortar	Good	A	Y	Non-Friable	-	-	IBM-01c-B	None Detected		1	Material was determined to be non-asbestos containing.
1	Loc# 62854 / Corridor at Ramp	27-Mar-26	Wall	All	Off-White Cementitious Interior Brick Mortar	Good	A	Y	Non-Friable	-	-	IBM-01c-C	None Detected		1	Material was determined to be non-asbestos containing.

APPENDIX B

REPRESENTATIVE SITE PHOTOGRAPHS

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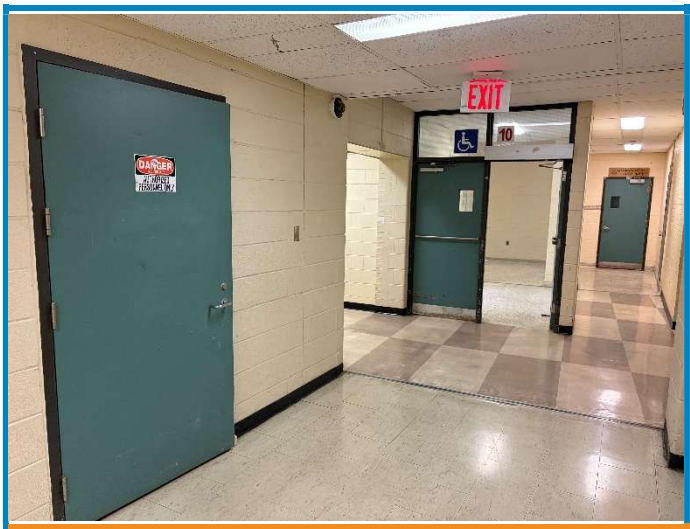

Photo 1: Partial view of the 1st Floor Corridor outside the Elevator (Loc# 101786). The green paint on metal door was determined to contain a lead concentration exceeding the 0.009% limit as outlined in the federal surface coating regulation..

Photo 2: View into the Elevator, the 12”x12” white with grey fleck vinyl floor tiles and mastic are non asbestos.

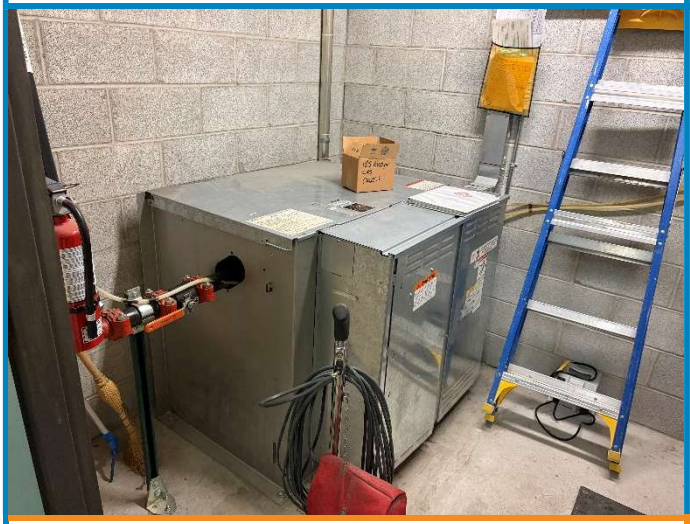

Photo 3: Partial view of the 1st Floor Elevator Machine Room. There are asbestos containing parging cement pipe fittings at the ceiling deck.

Photo 4: Partial view of the exterior doors by the 1st Floor Elevator. The paint compound and block wall mortar is non asbestos.

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Photo 5: Partial view of the 1st Floor Universal Washroom (Loc# 62894). The drywall joint compound is asbestos containing.

Photo 6: Partial view of the 1st Floor Corridor looking towards the ramp (Loc# 62854). Flooring, plaster, and brick mortar are non-asbestos.

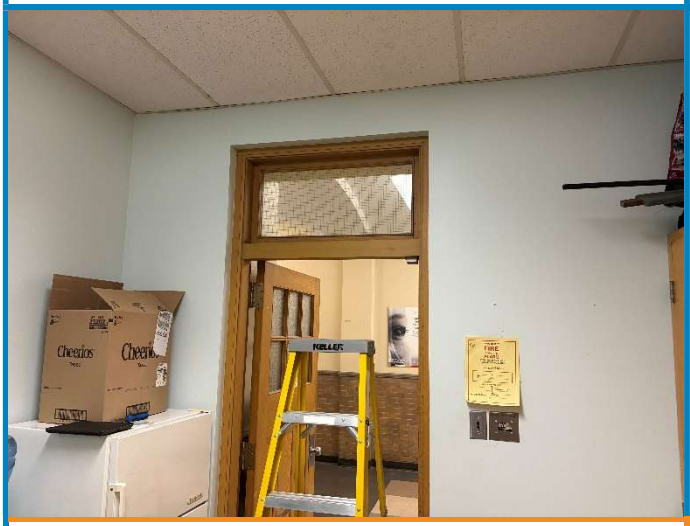

Photo 7: Partial view of the 1st Floor Guidance Office (Loc# 62787). Drywall joint compound around the door and 9”x9” vinyl floor tiles in the office are asbestos containing.

Photo 8: Partial view at the top of the 1st Floor ramp looking towards Classroom 155 (Loc# 62791). The brown/green paint on wood door frame was determined to contain a lead concentration exceeding the 0.009% limit as outlined in the federal surface coating regulation.

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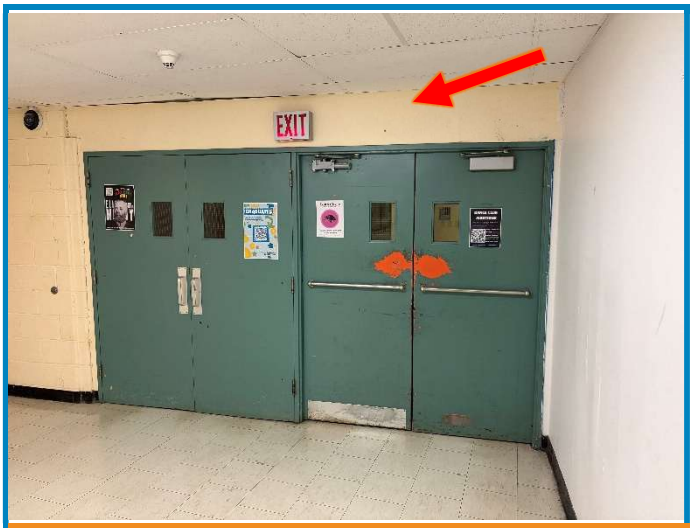

Photo 9: Partial view of the 3rd Floor Corridor (Loc# 63171 and 63201). The drywall joint compound (see arrow) is asbestos containing and the 12”x12” beige with olive-green streaks vinyl floor tiles are asbestos containing.

Photo 10: Partial view of the 3rd Floor Corridor by Elevator (Loc# 141990). The 2’x4’ pinhole swirled pattern acoustic lay-in ceiling tiles (see arrow) are asbestos containing.

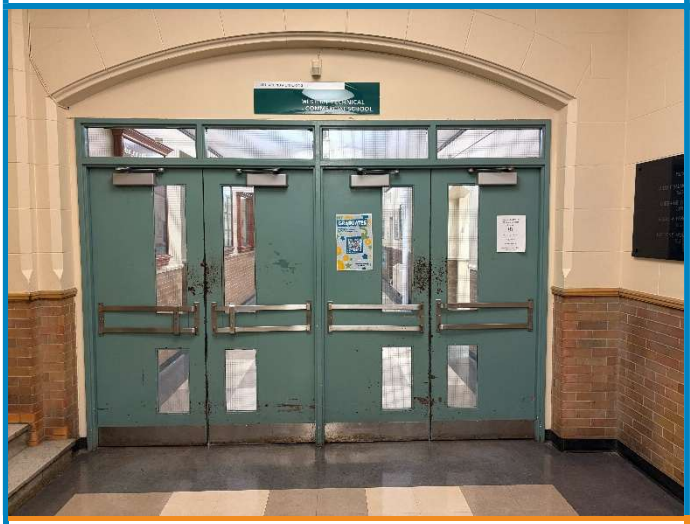

Photo 11: Typical view of doorways in the 1st Floor. The grey/brown/green paint on metal doors was determined to contain a lead concentration exceeding the 0.009% limit as outlined in the federal surface coating regulation. Plaster is non-asbestos.

Photo 12: Another view of doorways in the 1st Floor.

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APPENDIX C

SITE FIGURES

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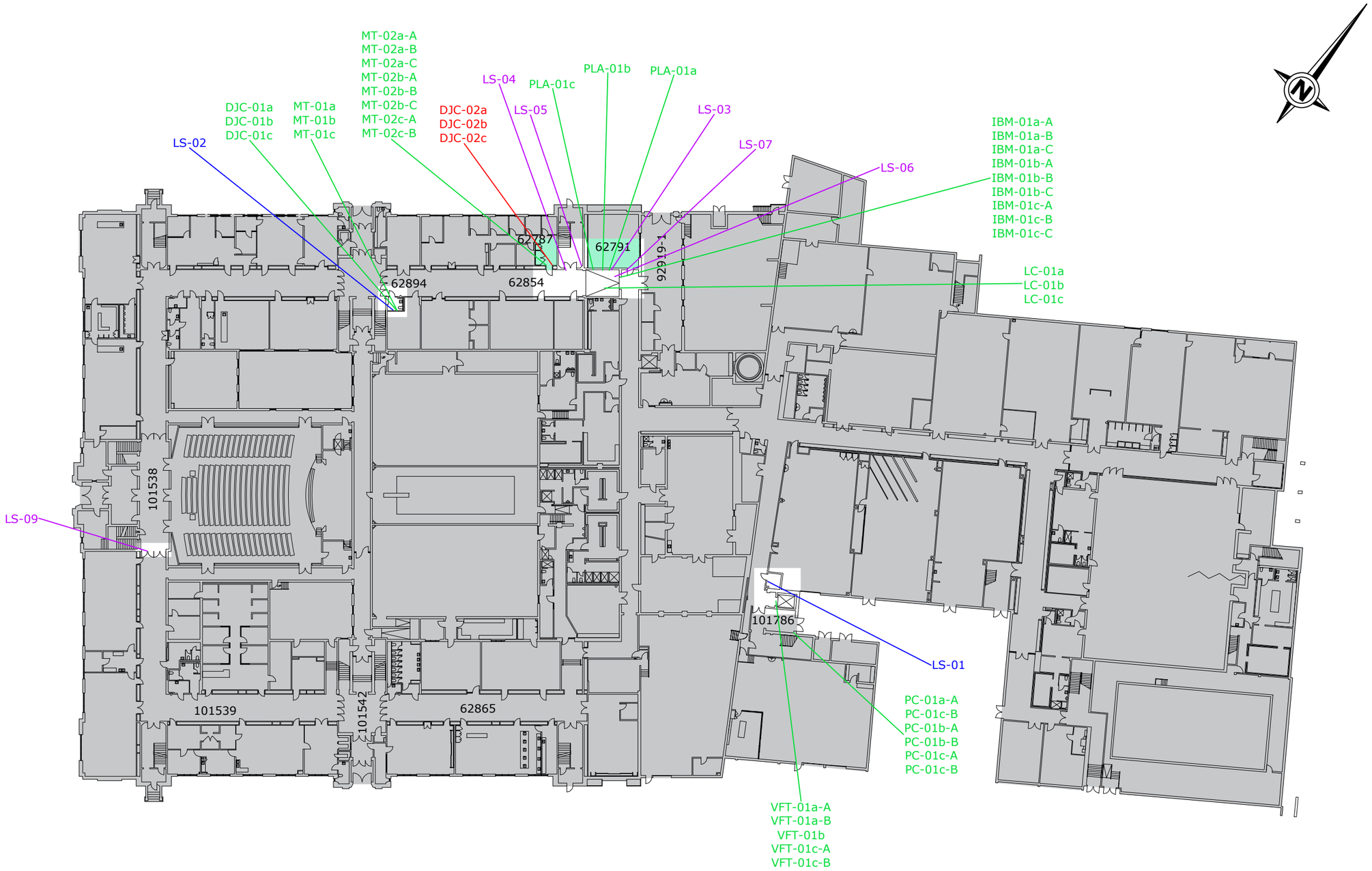


ALL SAMPLE LOCATIONS AND HAZARDOUS MATERIALS HATCHING/SYMBOL LOCATIONS ARE APPROXIMATE. DRAWING NOT TO SCALE.

RiskCheck

LEGEND

- XX-01a — NON-ASBESTOS CONTAINING MATERIAL SAMPLE LOCATION
- XX-01a — ASBESTOS CONTAINING MATERIAL SAMPLE LOCATION
- LS-XX — NON-LEAD CONTAINING MATERIAL SAMPLE LOCATION
- LS-XX — LEAD CONTAINING MATERIAL SAMPLE LOCATION
- ASBESTOS CONTAINING VINYL FLOOR TILES
- AREA NOT IN SCOPE OF WORK

THE FOLLOWING ASBESTOS CONTAINING MATERIALS MAY BE PRESENT IN THE ASSESSED AREAS BUT HAVE NOT BEEN HATCHED ON THE DRAWING:

- DRYWALL JOINT COMPOUND

NOT ALL KNOWN OR SUSPECTED HAZARDOUS BUILDING MATERIALS HAVE BEEN DEPICTED ON THE DRAWING. PLEASE REFER TO THE REPORT AND PREVIOUS REPORTS FOR A COMPLETE LIST OF KNOWN AND SUSPECTED HAZARDOUS BUILDING MATERIALS.

PROJECT NAME:

DESIGNATED SUBSTANCES SURVEY -FIRST FLOOR

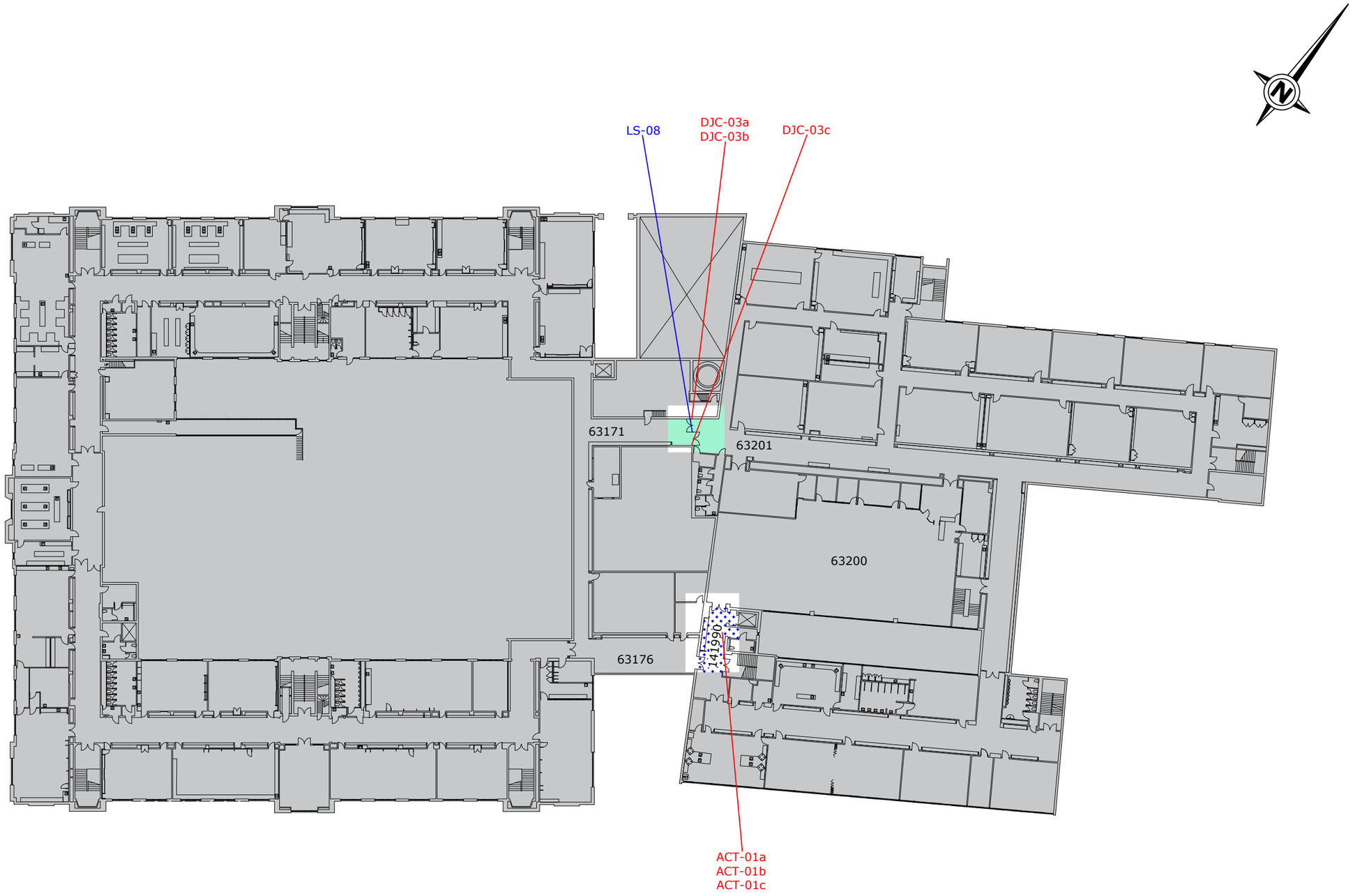
PROJECT ADDRESS:

WESTERN TECHNICAL COMMERCIAL SCHOOL, 125 EVELYN CRESCENT, TORONTO, ONTARIO

CLIENT NAME AND ADDRESS:

TORONTO DISTRICT SCHOOL BOARD, 15 OAKBURN CRESCENT, TORONTO, ONTARIO

PROJECT NUMBER:	DATE:
32462	03.27.2026
DRAWN BY: J.KELBERT	FIGURE: 1
REVIEWED BY: P.THERIAULT	
SCALE: NTS	



RiskCheck

LEGEND

XX-01a — ASBESTOS CONTAINING MATERIAL SAMPLE LOCATION

LS-XX — NON-LEAD CONTAINING MATERIAL SAMPLE LOCATION

ASBESTOS CONTAINING VINYL FLOOR TILES

ASBESTOS CONTAINING ACOUSTIC CEILING TILES

AREA NOT IN SCOPE OF WORK

THE FOLLOWING ASBESTOS CONTAINING MATERIALS MAY BE PRESENT IN THE ASSESSED AREAS BUT HAVE NOT BEEN HATCHED ON THE DRAWING:

- DRYWALL JOINT COMPOUND

NOT ALL KNOWN OR SUSPECTED HAZARDOUS BUILDING MATERIALS HAVE BEEN DEPICTED ON THE DRAWING. PLEASE REFER TO THE REPORT AND PREVIOUS REPORTS FOR A COMPLETE LIST OF KNOWN AND SUSPECTED HAZARDOUS BUILDING MATERIALS.

PROJECT NAME:

DESIGNATED SUBSTANCES SURVEY -THIRD FLOOR

PROJECT ADDRESS:

WESTERN TECHNICAL COMMERCIAL SCHOOL, 125 EVELYN CRESCENT, TORONTO, ONTARIO

CLIENT NAME AND ADDRESS:

TORONTO DISTRICT SCHOOL BOARD, 15 OAKBURN CRESCENT, TORONTO, ONTARIO

PROJECT NUMBER:	DATE:
32462	03.27.2026
DRAWN BY: J.KELBERT	FIGURE: 2
REVIEWED BY: P.THERIAULT	
SCALE: NTS	

ALL SAMPLE LOCATIONS AND HAZARDOUS MATERIALS HATCHING/SYMBOL LOCATIONS ARE APPROXIMATE. DRAWING NOT TO SCALE.

APPENDIX D

LABORATORY CERTIFICATES OF ANALYSIS

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Laboratory Analysis Report

To:

Paul Theriault
RiskCheck Inc.
55 St. Clair Avenue West, Suite 205
Toronto, Ontario
M4V 2Y7

EMC LAB REPORT NUMBER: A133090
Job/Project Name: 3739 – Western Technical Commercial School
Analysis Method: Polarized Light Microscopy – EPA 600
Date Received: Apr 7/26 **Date Analyzed:** Apr 16/26
Analyst: Jayoda Perera
Reviewed By: Malgorzata Sybydlo

Job No: 32462
Number of Samples: 33
Date Reported: Apr 16/26

Client's Sample ID	Lab Sample No.	Description/Location	Sample Appearance	SAMPLE COMPONENTS (%)			
				Asbestos Fibres		Non-asbestos Fibres	Non-fibrous Material
PLA-01a	A133090-1	Plaster Interior Wall / 1st Floor Corridor at Ramp / 62854	Grey, plaster	**ND**		1	99
PLA-01b	A133090-2	Plaster Interior Wall / 1st Floor Corridor at Ramp / 62854	Grey, plaster	**ND**		1	99
PLA-01c	A133090-3	Plaster Interior Wall / 1st Floor Corridor at Ramp / 62854	Grey, plaster	**ND**		1	99
DJC-01a	A133090-4	Drywall Joint Compound / 1st Floor Universal WR / 62894	White, joint compound	**ND**			100
DJC-01b	A133090-5	Drywall Joint Compound / 1st Floor Universal WR / 62894	White, joint compound	**ND**			100
DJC-01c	A133090-6	Drywall Joint Compound / 1st Floor Universal WR / 62894	White, joint compound	**ND**			100
DJC-02a	A133090-7	Drywall Joint Compound / 1st Floor Guidance Office / 62767	Beige, joint compound	**Chrysotile**	**1**		99
DJC-02b	A133090-8	Drywall Joint Compound / 1st Floor Guidance Office / 62767	NA	**NA**			
DJC-02c	A133090-9	Drywall Joint Compound / 1st Floor Guidance Office / 62767	NA	**NA**			
DJC-03a	A133090-10	Drywall Joint Compound / 3rd Floor Corridor by Library / 63201	Beige, joint compound	**Chrysotile**	**2**		98
DJC-03b	A133090-11	Drywall Joint Compound / 3rd Floor Corridor by Library / 63201	NA	**NA**			
DJC-03c	A133090-12	Drywall Joint Compound / 3rd Floor Corridor by Library / 63201	NA	**NA**			

emcscientific INCORPORATED

Laboratory Analysis Report

EMC LAB REPORT NUMBER: A133090
Client's Job/Project Name/No.: 32462
Analyst: Jayoda Perera

Client's Sample ID	Lab Sample No.	Description/Location	Sample Appearance	SAMPLE COMPONENTS (%)			
				Asbestos Fibres		Non-asbestos Fibres	Non-fibrous Material
ACT-01a	A133090-13	2'x4' Pinhole Swirled Pattern and Pink Back / 3rd Floor Corridor by Elevator / 141990	Grey, ceiling tile	**Chrysotile**	**1**	75	24
ACT-01b	A133090-14	2'x4' Pinhole Swirled Pattern and Pink Back / 3rd Floor Corridor by Elevator / 141990	NA	**NA**			
ACT-01c	A133090-15	2'x4' Pinhole Swirled Pattern and Pink Back / 3rd Floor Corridor by Elevator / 141990	NA	**NA**			
VFT-01a	A133090-16	12"x12" White with Grey Fleck VFT / Elevator Cab / 145038	2 Phases: a) White, vinyl floor tile b) Yellow, mastic	 **ND** **ND**			 100 100
VFT-01b	A133090-17	12"x12" White with Grey Fleck VFT / Elevator Cab / 145038	White, vinyl floor tile	**ND**			100
VFT-01c	A133090-18	12"x12" White with Grey Fleck VFT / Elevator Cab / 145038	2 Phases: a) White, vinyl floor tile b) Yellow, mastic	 **ND** **ND**			 100 100
PC-01a	A133090-19	Paint Compound on Concrete Block Wall / 1st Floor Corridor / 101786	2 Phases: a) White, primer b) Grey, cementitious material	 **ND** **ND**			 100 100
PC-01b	A133090-20	Paint Compound on Concrete Block Wall / 1st Floor Corridor / 101786	2 Phases: a) White, primer b) Grey, cementitious material	 **ND** **ND**			 100 100
PC-01c	A133090-21	Paint Compound on Concrete Block Wall / 1st Floor Corridor / 101786	2 Phases: a) White, primer b) Grey, cementitious material	 **ND** **ND**			 100 100

emcscientific INCORPORATED

Laboratory Analysis Report

EMC LAB REPORT NUMBER: A133090
Client's Job/Project Name/No.: 32462
Analyst: Jayoda Perera

Client's Sample ID	Lab Sample No.	Description/Location	Sample Appearance	SAMPLE COMPONENTS (%)			
				Asbestos Fibres		Non-asbestos Fibres	Non-fibrous Material
LC-01a	A133090-22	Leveling Compound / 1st Floor Corridor at Ramp / 62854	Grey, cementitious material	**ND**			100
LC-01b	A133090-23	Leveling Compound / 1st Floor Corridor at Ramp / 62854	Grey, cementitious material	**ND**			100
LC-01c	A133090-24	Leveling Compound / 1st Floor Corridor at Ramp / 62854	Grey, cementitious material	**ND**			100
MT-01a	A133090-25	Ceramic Tile Mortar / 1st Floor Universal WR / 62894	Off white, cementitious material	**ND**			100
MT-01b	A133090-26	Ceramic Tile Mortar / 1st Floor Universal WR / 62894	Off white, cementitious material	**ND**			100
MT-01c	A133090-27	Ceramic Tile Mortar / 1st Floor Universal WR / 62894	Off white, cementitious material	**ND**			100
MT-02a	A133090-28	Mortar around Wood Door Frame / 1st Floor Guidance Office / 62787	3 Phases: a) Off white, joint compound b) White, cementitious material c) Grey, cementitious material	 **ND** **ND** **Chrysotile**	 **<0.5**		 100 100 100
MT-02b	A133090-29	Mortar around Wood Door Frame / 1st Floor Guidance Office / 62787	3 Phases: a) Off white, joint compound b) White, cementitious material c) Grey, cementitious material	 **ND** **ND** **Chrysotile**	 **<0.5**		 100 100 100
MT-02c	A133090-30	Mortar around Wood Door Frame / 1st Floor Guidance Office / 62787	2 Phases: a) Off white, joint compound b) White, cementitious material	 **ND** **ND**			 100 100
IBM-01a	A133090-31	Brick Mortar Interior Wall / 1st Floor Corridor at Ramp / 62854	3 Phases: a) White, cementitious material b) Grey, cementitious material	 **ND** **ND**			 100 100

EMC LAB REPORT NUMBER: A133090
Client's Job/Project Name/No.: 32462
Analyst: Jayoda Perera

Client's Sample ID	Lab Sample No.	Description/Location	Sample Appearance	SAMPLE COMPONENTS (%)			
				Asbestos Fibres		Non-asbestos Fibres	Non-fibrous Material
			c) Off white, cementitious material	**ND**			100
IBM-01b	A133090-32	Brick Mortar Interior Wall / 1st Floor Corridor at Ramp / 62854	3 Phases: a) White, cementitious material b) Grey, cementitious material c) Off white, cementitious material	 **ND** **ND** **ND**			 100 100 100
IBM-01c	A133090-33	Brick Mortar Interior Wall / 1st Floor Corridor at Ramp / 62854	3 Phases: a) White, cementitious material b) Grey, cementitious material c) Off white, cementitious material	 **ND** **ND** **ND**			 100 100 100

Note:
1. Bulk samples are analyzed using Polarized Light Microscopy (PLM) and dispersion staining techniques. The analytical procedures are in accordance with App. E to Sub. E of 40 CFR Part 763 and EPA/600/R-93/116
2. The results are only related to the samples analyzed. **ND** = None Detected (no asbestos fibres were observed), **NA** = Not Analyzed (analysis stopped due to a previous positive result).
3. This report may not be reproduced, except in full without the written approval of EMC Scientific Inc. This report may not be used by the client to claim product endorsement by NVLAP or any other agency of the U.S. Government.
4. The Ontario Regulatory Threshold for asbestos is 0.5%. The limit of quantification (LOQ) is 0.5%.

CADUCEON ENVIRONMENTAL LABORATORIES
Client committed. Quality assured. Proudly Canadian.

CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: -

REPORT No: 26-008583 - Rev. 0

Report To:
EMC Scientific Inc.
5800 Ambler Dr. #100
Mississauga, ON L4W 4J4

CADUCEON Environmental Laboratories
2378 Holly Lane
Ottawa, ON K1V 7P1

Attention: Alister Haddad

DATE RECEIVED: 2026-Apr-07
DATE REPORTED: 2026-Apr-08
SAMPLE MATRIX: Paint Chips

CUSTOMER PROJECT: 3739 - Western Technical Comme
P.O. NUMBER: 32462

Analyses	Qty	Site Analyzed	Authorized	Date Analyzed	Lab Method	Reference Method
ICP/OES (Solid)	9	OTTAWA	SGORMAN	2026-Apr-08	D-ICP-02	EPA 6010

R.L. = Reporting Limit
NC = Not Calculated
Test methods may be modified from specified reference method unless indicated by an *

Client I.D.	Sample I.D.	Date Collected	Parameter: Lead
		Units	%
		R.L.	0.0005
LS-01 Yellow conc blck elev mach rm 62840-1	26-008583-1	2026-Mar-27	0.0034
LS-02 Yellow drywall wall / univers WR / 54190	26-008583-2	2026-Mar-27	<0.0005
LS-03 Yellow plaster wall / corr ramp 62854	26-008583-3	2026-Mar-27	0.0816
LS-04 Green metal door / stairs / 62790	26-008583-4	2026-Mar-27	0.113
LS-05 Yellow brick wall / stairs / 62790	26-008583-5	2026-Mar-27	0.245
LS-06 Grey concrete floor / corr ramp / 62854	26-008583-6	2026-Mar-27	0.117
LS-07 Brown/green wood door fram / classrm 155 / 62791	26-008583-7	2026-Mar-27	0.206
LS-08 Green orange metal door / corr betw 63171, 63201	26-008583-8	2026-Mar-27	0.0061
LS-09 Grey/brown/green metal door corr betw 101538, 101539	26-008583-9	2026-Mar-27	0.112

M. Dubien

Michelle Dubien
Data Specialist

The analytical results reported herein refer to the samples as received and relate only to the items tested. Reproduction of this analytical report in full or in part is prohibited without prior consent from Caduceon Environmental Laboratories.

APPENDIX E

APPLICABLE LEGISLATION, GUIDELINES

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ASBESTOS

Ontario Regulation (O. Reg.). 278/05 – *Designated Substance – Asbestos on Construction Projects and in Buildings and Repair Operation*s (as amended by O. Reg. 450/19), stipulates additional requirements regarding materials that are known or suspected to contain asbestos. Under O. Reg. 278/05, Asbestos Containing Materials (ACM) must be identified, documented, and maintained in good condition at a property. ACM must be re-inspected annually to determine the condition of the materials. Prior to any construction or renovation work, a document summarizing the presence of all ACM must be made available to contractors and subcontractors. The regulation applies to all constructors, employers and workers engaged in construction, repair, and maintenance.

According to O. Reg. 278/05, any material that contains 0.5% or more asbestos by dry weight is an ACM.

O. Reg. 278/05 – *Designated Substance – Asbestos on Construction Projects and in Buildings and Repair Operations* (as amended) governs the disturbance of ACM during construction related projects (e.g., renovation or demolition activities) and is enforceable through the Ontario Ministry of Labour (MOL). O. Reg. 278/05 categorizes all ACM abatements under Type 1, Type 2, Type 3, or glove-bag operations depending on the location, quantity, type, and friability of the ACM that may be disturbed. Each abatement operation is governed under stringent requirements and procedures to appropriately work with and handle known ACM. The MOL must be notified in writing of any project involving Type 3 asbestos abatement.

LEAD

The concentration of lead in surface coating materials (e.g., paint) is controlled by the *Federal Surface Coating Materials Regulation*, SOR/2016-193 made under the Canada Consumer Product Safety Act. This regulation classifies Lead-Containing Paint (LCP) as having a lead content of 0.009% (90 ppm) or greater. Furthermore, the MOL has published guidance documentation regarding the handling of lead on construction projects entitled *Guideline – Lead on Construction Projects* and dated April 2011.

MERCURY

The disposal of common mercury wastes (e.g., thermostats or fluorescent light tubes) is controlled by *General – Waste Management*, R.R.O. 1990, Reg. 347 (as amended by O. Reg. 324/22) made under the *Environmental Protection Act*, R.S.O. 1990.

SILICA

The Ontario MOL has published guidance documentation regarding the handling of silica on construction projects entitled *Guideline – Silica on Construction Projects* and dated April 2011. Although silica is not regulated, the guidance provided in the above noted MOL document is enforceable via the OHSA.

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MOULD

Although mould is not explicitly regulated in Ontario; Section 25 of the OHSA places duties on employers to take reasonable precautions to ensure that the health and safety of workers is adequately protected. The Canadian Construction Association's (CCA) *Mould Guidelines for the Canadian Construction Industry* (dated 2018) and the Environmental Abatement Council of Canada's (EACC) *Mould Abatement Guidelines Edition 3*, (2015) are generally utilized during the waste management, remediation measures, and transfer of mould impacted building materials.

WASTE DISPOSAL

General – Waste Management, R.R.O. 1990, Reg. 347 (as amended) made under the *Environmental Protection Act*, R.S.O. 1990, is the applicable regulation encompassing hazardous waste management in Ontario. This regulation also includes various requirements such as hazardous waste registration, manifests, storage, transport, and record keeping.

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APPENDIX F

PROJECT METHODOLOGY

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GENERAL

RiskCheck conducts a room-by-room evaluation (e.g., building common areas, tenant areas, mechanical rooms, building exterior, etc.) to identify potential hazardous building materials as defined by the scope of work. All work is conducted in accordance with RiskCheck internal Standard Operating Procedures.

During the fieldwork, the RiskCheck representative takes detailed notes via a standardized checklist form (tailored specifically for this project) along with photographs as required, to document the presence and condition of potential hazardous building materials identified at the accessibility project work locations.

RiskCheck reviews previous environmental reports (including previous assessments, drawings, abatement reports, etc.) pertaining to the accessibility project work locations, provided to RiskCheck by the Client. Existing sampling data is relied upon where it complies with the requirements of Ontario Regulation (O. Reg.) 278/05 – *Designated Substance – Asbestos on Construction Projects and in Buildings and Repair Operations* (as amended by O. Reg. 450/19).

LIMITATIONS OF PROJECT SCOPE OF WORK

The scope of work for this project is limited to the terms and limitations outlined within the proposal for this project.

ASBESTOS

Asbestos is a general name for several varieties of highly fibrous naturally occurring minerals. Commercially significant types include Chrysotile, Amosite, and Crocidolite. Asbestos is a naturally occurring mineral that was widely manufactured into products for home and industrial applications due to its physical and chemical properties (e.g., thermal, chemical, and electrical resistance, flexibility, and strength). Asbestos presents a health risk when it is inhaled and has been associated to various respiratory diseases.

It should be noted that the general use of friable (breakable by hand) ACM (including pipe insulation, boiler/tank insulation and spray applied fireproofing) in construction applications generally ceased in the mid to late 1970s. However, some building materials with asbestos content are recognized to exist in buildings constructed as late as 1986. In addition, it should be noted that asbestos is still utilized in the development of some non-friable materials including asbestos containing cement products (e.g., Transite rainwater leaders and Transite panels). Therefore, RiskCheck utilized valuable information including the accessibility project work locations construction date and known renovation areas/periods to determine the sampling strategy for the site.

Representative sample locations of potential ACM were identified based on determining the reported age of the accessibility project work locations and specific renovation time periods and locations within the accessibility project work locations and associated components, if available. Suspect ACM bulk samples were obtained in compliance with the requirements of O. Reg. 278/05, which states a minimum number of samples are to be obtained and analyzed (1, 3, 5, or 7 depending on quantity, application, and friability)

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from each area of homogeneous material for the material to be considered non-asbestos. This protocol is further outlined in the table below.

A homogeneous sampling area is defined by the United States Environmental Protection Agency (USEPA) as containing material that is uniform in texture and appearance, was installed at one time and is unlikely to consist of more than one type or formulation of material. The surveyor used information obtained on site by visual examination, available information on the phases of the construction and information on renovations to the accessibility project work locations obtained from the Client to determine the extent of each homogeneous area and the number of samples required.

ASBESTOS BULK MATERIAL SAMPLING REQUIREMENTS
(ADOPTED FROM O. REG. 278/05 (AS AMENDED))

Item	Type of material	Size of area of homogeneous material	Minimum number of bulk samples to be collected
1.	Surfacing material, including without limitation material that is applied to surfaces by spraying, by troweling or otherwise, such as acoustical plaster on ceilings and fireproofing materials on structural members	Less than 90 m^2	3
		90 or more m^2, but less than 450 m^2	5
		450 or more m^2	7
2.	Thermal insulation, except as described in item 3 (O. Reg. 278/05)	Any size	3
3.	Thermal insulation patch	Less than 2 linear m or 0.5 m^2	1
4.	Other material	Any size	3

Asbestos-cement products such as exterior siding/panels/soffits and piping for rainwater leaders generally referred to as Transite are identifiable through visual observation by an experienced and trained individual. Transite materials are challenging to sample because of their tendency to easily break into pieces or cause unnecessary damage to a building material. In addition, sampling of rainwater leader may result in significant damage to the accessibility project work locations. Therefore, Transite materials identified in the visually accessible areas of the accessibility project work locations are quantified and "presumed to contain asbestos" only.

Areas above accessible suspended ceiling systems were observed by removing ceiling tiles. Drywall or plaster ceiling or wall spaces were accessed via existing access panels only. Further information was obtained through review of design drawings, system schematic drawings and consultations about the building history with maintenance and service staff, where available. Quantities of suspect ACM have been estimated by site observation.

The suspect bulk ACM samples were obtained using appropriate wetting techniques (where applicable) and sampling tools, placed in sealable plastic bags, labelled, and couriered to an analytical laboratory under Chain-of-Custody protocol for laboratory analysis of type and percentage of asbestos.

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POTENTIAL FOR ASBESTOS-CONTAINING MATERIALS IN INACCESSIBLE AREAS

Due to the limited intrusive nature of the assessment, concealed ACM is potentially present under multiple layers of floor, wall, or ceiling finishes; under heavy or fixed objects (e.g., safes, HVAC units, cabinets, shelves, etc.); inside void spaces (e.g., pipe chases, fire barriers, etc.); or in areas of low visual accessibility (e.g., limited wall or ceiling hatches in solid finishes).

Sampling of materials suspected to contain asbestos was limited to those materials where sampling would not produce a risk to building occupants, where it would not be destructive to the function of the material, and where it would not be aesthetically damaging.

Ceiling spaces/areas above accessible suspended ceiling systems (e.g., reachable using a 6-foot step ladder) were inspected by removing ceiling tiles (where possible). The wall and ceiling cavities associated with drywall, plaster and other fixed systems were accessed via existing access panels (where possible). It should be noted that only those areas and building materials accessible from a 6-foot step ladder were inspected and sampled during the site visit.

Furthermore, the materials listed below are generally excluded during an assessment due to the potential for irreparable damage to the building components from sampling and due to accessibility issues. The presence of asbestos is presumed in the materials noted below.

- Components or wiring within motors or lights
- Exterior cladding, soffit and fascia boards on building
- Mechanical packing, ropes and gaskets
- Vermiculite above solid ceilings, inside masonry or other wall assemblies
- Concrete levelling compound (for floors)
- Fire-door cores
- Refractory brick in boilers or incinerators
- Asbestos cement (Transite) pipe and panels
- Dust in ductwork
- High voltage wiring
- Underground services or piping
- Roofing materials

Where present in the accessibility project work locations, the above-listed items should be presumed to contain asbestos until proven otherwise by bulk sampling and laboratory analysis.

ASBESTOS CONTAINING MATERIAL EVALUATION CRITERIA

The condition of confirmed and suspect ACM as well as the potential of disturbance of the ACM was evaluated throughout the DSS. These evaluations were based on the interpretations of published studies, existing asbestos regulations, and RiskCheck's experience involving buildings that contain friable ACM.

An ACM is considered damaged if it is sprayed material that is delaminating, mechanical insulation with damaged/missing insulation or jacketing, exposed under pad on vinyl sheet flooring, a non-friable material that has been pulverized which causes it to become friable, etc. The precedence for remedial action is based not solely on the evaluation of condition but is also based on several other factors which include:

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- Accessibility or potential for direct contact and disturbance which can cause release of asbestos to the air;
- Practicality of repair (for example will damage to the ACM continue even if it is repaired); and
- Efficiency of the work (for example if a damaged ACM is to be removed in an area, it may be most practical to remove all ACM in the area even if it is in good condition).

CLASSIFICATION OF FRIABLE AND NON-FRIABLE ASBESTOS MATERIAL

ACM are divided into two comprehensive categories, friable and non-friable. The primary difference between these two categories relates to how easily the material can be broken down to release airborne fibres. As part of this DSS, confirmed and presumed ACM identified in the accessibility project work locations were evaluated based on its friability. Buildings constructed post 1990s were not suspected to contain friable ACM. The criteria used to assess the friability of a material are summarized in the table below.

Friability Type	Description of Friability
Friable	Are materials that when dry, can be crumbled, pulverized, or reduced to a powder by hand or moderate pressure. ACM that are friable have a much greater potential than non-friable ACM to release airborne asbestos fibres when disturbed. The most common friable ACM used in the past are surfacing materials (usually sprayed fireproofing, texture, decorative or acoustic plaster) and thermal insulations on mechanical systems.
Non-Friable	Are materials that when dry, cannot easily be crumbled, pulverized, or reduced to a powder by hand or moderate pressure. The most common non-friable materials include vinyl floor tiles, gasket materials, Transite rainwater leader or panel, caulking tars and adhesive mastics.

CONDITION OF MATERIAL (CONFIRMED OR PRESUMED ACM)

As part of this DSS, confirmed and presumed ACM identified in the accessibility project work locations were also evaluated based on its condition. The criteria used to assess the condition of a material are summarized in the table below.

Condition Rating	Description of Material Condition
Good	**Mechanical Insulation:** Insulation on fittings, tanks, valves, boilers, ducts, and other mechanical equipment, which is completely enclosed (e.g., no ACM insulation is exposed).
	Spray or Trowel-Applied Material: Sprayed fireproofing or texture coat showing no signs of delaminating or fall-out.
	Non-Friable Material: Non-friable materials not exhibiting significant damage or extensive wear.

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Condition Rating	Description of Material Condition
Fair	**Mechanical Insulation:** Pipe insulation showing some signs of physical damage or shrinkage cracks along pipe runs, or undamaged insulation that is not covered.
	Non-Friable Material: Materials that show signs of physical deterioration (e.g., worn down) or breakage (e.g., cracks) but remain non-friable.
Poor (Damaged)	**Mechanical Insulation:** General damage to mechanical insulation or water damage exposing asbestos directly. The absence of jacketing (e.g., canvas wrap, foil tape) around mechanical insulation.
	Spray or Trowel-Applied Material: In areas of sprayed fireproofing or texture coat: delaminating and the presence of fallen material on horizontal surfaces.
	Non-Friable Material: Non-friable ACM severely damaged to the extent that asbestos fibres may be released.

ACCESSIBILITY OF MATERIAL

ACM are evaluated based on the ease of which they can be reached and physically disturbed. The accessibility of ACM is rated according to the criteria presented below in the following table which defines the various classifications of accessibility (e.g., Low, Moderate, High) that were utilized during the DSS:

Accessibility Rating	Description of Material Accessibility
Access (A)	Accessible to all occupants of the subject building to approximately 2.5 metres (arms-reach) above floor level. Includes specific areas where occupant activities may disturb material that is not normally within reach (e.g., sports in gymnasiums and lifting in warehouses).
Access (B)	Areas of the subject building restricted to operations and maintenance staff and accessible to approximately 2.5 metres (arms-reach) above floor level.
Access (C_1) Visible	Visible from floor level and accessible only with a ladder or other elevating device.
Access (C_2) Concealed	Concealed from floor level and accessible only with a ladder or other elevating device and by moving a non-fixed building component (e.g., ceiling tile or access hatch).
Access (D)	Not accessible without demolition or removal of fixed building components or building system.
Access (A_A – D_A)	Areas with air movement inside of an air plenum or with air flow directed at ACM.

ACTION RESPONSE LEVELS

Confirmed or presumed ACM identified in the accessibility project work locations are assigned a specific response action level which is based on the condition and accessibility rating. These actions levels are based on a spectrum of risk from poor condition materials that are readily accessible posing the utmost risk to good condition materials in inaccessible areas posing the least risk. Response actions levels range from immediate clean-up of friable ACM and debris to ongoing routine inspections of non-friable material in good condition.

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Action levels are provided for compliance and management of the known (confirmed or presumed) or suspect ACM within a building. The following table defines the various actions levels to appropriately work with confirmed or presumed ACM.

Action Level Ratings	Description of Action Levels
Action Level (1)	Action dealing with the immediate cleanup of ACM debris likely to be disturbed.
Action Level (2)	Action dealing with Type 2 isolation of an area and performing asbestos removal for regulatory compliance.
Action Level (3)	Action dealing with Type 2 asbestos procedures for ceiling entry where friable ACM debris is present on the top side of a ceiling system.
Action Level (4)	Action dealing with the removal of asbestos that goes beyond compliance but simplifies the asbestos management.
Action Level (5)	Action dealing with the repair of asbestos.
Action Level (6)	Action dealing with ACM surveillance requirements of the regulation.

ACTION RESPONSE LEVELS MATRIX

Based on a thorough review and consideration of the ACM evaluation ratings presented above (e.g., accessibility, condition, and action response levels), RiskCheck has provided the following Action Response Level Matrix to be utilized as a guide for operational procedures when working with ACM.

The following table outlines suitable actions for confirmed or presumed ACM identified in the accessibility project work locations.

Accessibility Rating	Condition of Material			ACM Debris
	Good	Fair	Poor (Damaged)	
Access (A)	**Action Level (6)**	**Action Level (5)**	**Action Level (1)**	**Action Level (1)**
Access (B)	**Action Level (6)**	**Action Level (5)**	**Action Level (2)**	**Action Level (1)**
Access (C_1) Visible	**Action Level (6)**	**Action Level (5)**	**Action Level (2)**	**Action Level (1)**
Access (C_2) Concealed	**Action Level (6)**	**Action Level (5)**	**Action Level (3)**	**Action Level (3)**
Access (D)	**Action Level (6)**	**Action Level (4)**	**Action Level (4)**	**Action Level (2)**
Access (All) with Air Movement	**Action Level (6)**	**Action Level (5)**	**Action Level (2)**	**Action Level (1)**

Low Risk Moderate Risk High Risk

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LEAD

Lead is a soft metallic element that is stable, ductile, and resistant to corrosion. It has historical widespread use in building materials because it is easy to extract/smelt and is highly malleable. Lead was commonly added to paint as a pigment, and to increase durability, resist corrosion and increase pliability. Lead can pose a health risk to humans if ingested or inhaled.

Samples of distinctive paint finishes, and surface coatings present in more than a limited application, where removal of the paint is possible are collected. The samples are collected by scraping the painted finish to include base and covering applications.

Representative samples of suspect Lead Containing Paint (LCP) are obtained and submitted to an AIHA or NVLAP accredited laboratory for analysis for analysis of lead paint content by Flame Atomic Absorption Spectroscopy EPA SW-846 3rd Ed. Method No. 3050B/Method No. 7420 or Inductively Coupled Plasma Atomic Emission Spectrometry EPA SW-846 3rd Ed. Method No. 6010C.

For this report, all paints containing lead at a concentration of 0.009% (90 ppm) or greater are considered lead containing paints. The condition of paint and surface coatings are evaluated for condition such as flaking, chipping, or delaminating.

Other lead building products (e.g., wiring connections, wire bundles, plumbing solder, roof flashing, batteries, noise baffles, cast iron piping gaskets (e.g., bell & spigots), and as radiation shielding in the walls of medical/dental tenants) are identified by visual observation only.

MERCURY

Building materials known to contain mercury (e.g., thermostats, pressure gauges, fluorescent light tubes, dental amalgam separators, batteries, etc.) is identified by visual inspection only. Dismantling of equipment suspected of containing mercury is not performed. RiskCheck does not perform sampling of these materials for laboratory analysis of mercury content.

SILICA

Building materials known to contain crystalline silica (e.g., concrete, cement, tile, brick, masonry, mortar, etc.) is identified by visual inspection only. RiskCheck does not perform sampling of these materials for laboratory analysis of crystalline silica content.

ACRYLONITRILE

Acrylonitrile is utilized in the production of rubber and polymers. It is also used to make other chemicals such as plastics, synthetic rubber, and acrylic fibres for clothing, blankets, carpeting and rugged plastics for computer and TV housings. It is also used in the manufacture of automotive parts and gaskets.

Acrylonitrile is released into the environment by the chemical and plastic products industries. Occupational exposure to acrylonitrile occurs during production and its use in the manufacture of other

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products. Since 1972, acrylonitrile has not been produced in Canada; however, a small portion is still imported.

ARSENIC

Arsenic compounds are utilized in pigments, glass making, animal poisons, insecticides, paints, wallpaper, pyrotechnics and ceramics. Arsenic is also added to germanium in the production of semiconductor devices such as integrated circuits and transistors. Arsenic is naturally found in the environment and is widely distributed throughout the earth's crust. The combustion of fossil fuels, mining and the disposal of domestic and industrial waste is a source of arsenic poisoning in the environment.

BENZENE

Benzene is a flammable, clear, colourless, sweet-smelling liquid used in the production of plastics, paints, rubber, resins, detergents, lubricants, drugs, pesticides, and synthetic fabrics. It can be found in crude oil, cigarette smoke, and many petroleum hydrocarbons (e.g., gasoline).

COKE OVEN EMISSIONS

Coke oven emissions are complex mixtures of coal and coke particles, various vapours, gases, and tars that include various substances including, benzene, naphthylamine, cadmium, arsenic, beryllium, and chromium.

The primary use of coke (pure carbon) is in the extraction of metals from their ores, especially for the manufacture of iron and steel. Coke is also used to synthesize calcium carbide and to manufacture graphite and electrodes. Chemicals recovered from coke oven emissions are used to produce plastics, solvents, dyes, drugs, waterproofing, paints, pipe coating, roads, roofing, insulation, and as pesticides and sealants.

ETHYLENE OXIDE

Ethylene Oxide is utilized in the production of various chemicals including textiles, detergents, polyurethane foam, antifreeze, solvents, medicinal products, adhesives, and other related products. Ethylene Oxide is also used as a fumigant in certain agricultural products and as a sterilizing agent for food (spices), cosmetics, medical equipment's, as well as for the sterilization of surgical tool and plastic devices in hospitals that cannot be sterilized by steam.

ISOCYANATES

Isocyanates are a cluster of low molecular weight aromatic and aliphatic compounds containing the isocyanate group (-NCO). They are utilized in the production of polyurethane products. It is also used to produce flexible and rigid foams, fibres, paints and varnishes, and elastomers. Di isocyanates are used in the automobile industry, auto body repair and building insulation materials.

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Trades that may involve production or exposure to isocyanates may include painting, foam-blowing, and the production of various products including chemicals, polyurethane foam, insulation materials, surface coatings, car seats, furniture, foam mattresses, under-carpet padding, packaging materials, shoes, laminated fabrics, polyurethane rubber, adhesives, and other polyurethane products.

VINYL CHLORIDE

Vinyl chloride is utilized in the production of polyvinyl chloride (PVC), a plastic resin for many consumer or industrial products, wrapping film, flooring, windows, compact discs, credit cards, latex paints, and vinyl siding for homes. PVC is also used to make pipes, wire and cable coatings, medical supplies, industrial and household equipment, furniture, and automobile upholstery.

VISIBLE MOULD

The presence of mould is determined by visual inspection of exposed building surfaces. If any mould growth is concealed within building cavities it is not addressed in this assessment. RiskCheck does not perform sampling of these materials for laboratory analysis of suspect mould growth and will make a recommendation for a mould assessment if extensive suspect mould growth is observed.

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APPENDIX G

LIMITATIONS, TERMS AND CONDITIONS OF RETAINER

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RISKCHECK INC.
LIMITATIONS, TERMS AND CONDITIONS OF RETAINER

1. **Our Standard of Care** - RiskCheck Inc. (RiskCheck) will conduct/has conducted the work as specified in the scope of work, contained in the RiskCheck proposal and/or the engagement letter, and perform/performed the environmental investigations requested by the Client according to the standards of a reasonable environmental consultant ("Retainer"). Any work performed by RiskCheck is conducted in accordance with generally accepted engineering or scientific or environmental practices current in the location and at the time the work is performed. No other warranty, expressed or implied is made.

2. **Our Sources of Information** - RiskCheck will/has sought to obtain relevant information, statements, documents and analytical test results concerning the subject property from our Client, third party sources, government or regulatory publications, databases and officials, and other persons to the extent covered by our Retainer. The accuracy of the findings, opinions and conclusions expressed in the RiskCheck report and/or any deliverables ("Deliverables") are subject to any errors or omissions in, or refusals to provide, information. RiskCheck shall not be responsible for any deficiency, misstatement, or inaccuracy contained in the Deliverables as a result of relying on the above information or lack thereof.

3. **Site Inspections** - RiskCheck will complete/has completed the inspection(s) of the subject property in the manner covered by our Retainer. The purpose of our inspection is to identify obvious visible evidence of potential and/or actual sources of environmental contamination and patent irregularities in waste management practices at the subject property. Our findings during the site inspection(s) are subject to any restrictions placed upon our free access to all aspects of the subject property, and neighbouring properties, including but not limited to snow coverage and material storage. A reasonable site inspection may not identify latent or hidden contamination, evidence of potential environmental concerns or irregularities.

4. **Sample and Testing Procedures** - The sample and testing procedures described in the Deliverables, are performed at specific point locations, by experienced personnel using equipment and techniques appropriate for our Retainer. Based upon available data, RiskCheck provides expressed opinion as to the conditions, which may exist between the points investigated, and is based on the location and time of sample collection, and the type of media and parameters analyzed. As actual conditions may vary significantly between sample or test points, and with time, our Client assumes the inherent risk that some conditions may not be detected. RiskCheck shall not be responsible for any cross-contamination resulting from subsurface investigations.

5. **Legal Issues** - The Deliverables are intended to direct our Client's attention to potential and/or actual sources of environmental contamination, including but not limited to, irregular waste management practices at the subject property. Nothing in the Deliverables are intended to express any legal opinion upon environmental liabilities relating to the subject property or whether site operations legally conform with relevant legislative requirements. RiskCheck makes no other representations or warranties whatsoever, including those concerning the legal significance of our findings, or as to other legal matters noted in the Deliverables, including but not limited to, ownership of any property, or the application of any law, to the facts set forth herein.

6. **Confidentiality of Client Information** – RiskCheck agrees to hold all information obtained in the course of our Retainer and the contents of the Deliverables in strict confidence, except where disclosure is directed by our Client's expressed written consent with instructions, or by compulsion of law.

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7. **Working Information/Documents** – The Deliverables shall be the property of RiskCheck's Client. All other data, sample and test results, working sheets, draft reports or other papers, documents, information or records prepared or collected by us in the course of our Retainer, shall remain the property of RiskCheck Inc. and/or successors. Our Client agrees that we shall be entitled to retain a copy of the Deliverables for RiskCheck's own files.

8. **Use of the Deliverables** – The information and opinions expressed in the Deliverables are prepared for the sole benefit of our Client. No other party may use or rely upon the Deliverables, or any portion thereof, without the express written consent of RiskCheck Inc. and/or successors. We accept no responsibility for the accuracy of the Deliverables to other parties. We give no warranty, representation, or assurance to other parties, that the findings, statements, opinions or conclusions expressed in the Deliverables are accurate or valid. RiskCheck, at its discretion, will consent to any reasonable request by our Client to approve the use of the Deliverables by other parties as "Approved Users" within one year from the date of the Deliverables.

9. **Copyright** – RiskCheck owns copyright of the Deliverables. We authorize our Client and "Approved Users" to make copies of the Deliverables only in such quantities as are reasonably necessary for its use by those parties. Our Client and Approved Users may not give, lend, sell, or otherwise make available our Deliverables, or any portion or copy thereof, to any party, without our express written consent. No person may alter or modify the Deliverables.

10. **Personal Liability** – The Client and/or “Approved User” expressly agrees that RiskCheck employees shall have no personal liability to the Client and/or “Approved User” with respect to a claim, whether in contract, tort and/or any other cause of action in law. Furthermore, the Client and/or “Approved User” agrees that it will bring no proceedings, nor take any action in any court of law, against RiskCheck employees in their personal capacity.

11. **Professional Liability** – RiskCheck will not be responsible for any consequential or indirect losses incurred by the Client and/or "Approved Users", including but not limited to, loss of income, business opportunities, business interruptions, personal injury or death.

12. **Subconsultant and Contractor Liability** – RiskCheck on certain investigations/assessments (including but not limited to subsurface investigations, laboratory services, remediation, risk assessments, abatements) will require hiring the services of individuals and companies with special expertise and/or services, which are not provided by RiskCheck. RiskCheck may retain these services on behalf of the Client, as part of the overall project, as a convenience to the Client. RiskCheck shall not be responsible for errors, omissions or negligence by those parties in carrying out their work. These will be the responsibility of the subconsultant and contractors retained for completion of the project. The Client indemnifies RiskCheck from all such claims associated with the work carried out by subconsultant and contractors.

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Addendum

MCW Consultants Ltd.

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Toronto, Ontario M5J 1A7
Phone 416-598-2920 Fax 416-598-5394
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Date: May 22, 2026

Project Name: TDSB - Accessibility Upgrades at Western Technical CS
Client: BBA
To: BBA
Attention: Crystal Gardner
From: Dung Ta
Paula Terry
Amir Mansour
Distribution:

Project #: 25301-27
ADD #: 001
Page #: 1 of 2
+ Attachment

In accordance with the drawings and specifications, provide in the tender all costs required to complete the work including items as listed below.

Title: Addendum
Reason for Change: Revisions to suit TDSB comments and add seismic restraint to the specifications.

Specifications:

Drawing #	Revisions
Mechanical Specifications	• Add Part 8 – Seismic Control and Restraint to the mechanical specifications.
Electrical specification section #5	• Add Seismic Restraints to electrical specification.

Mechanical Drawings:

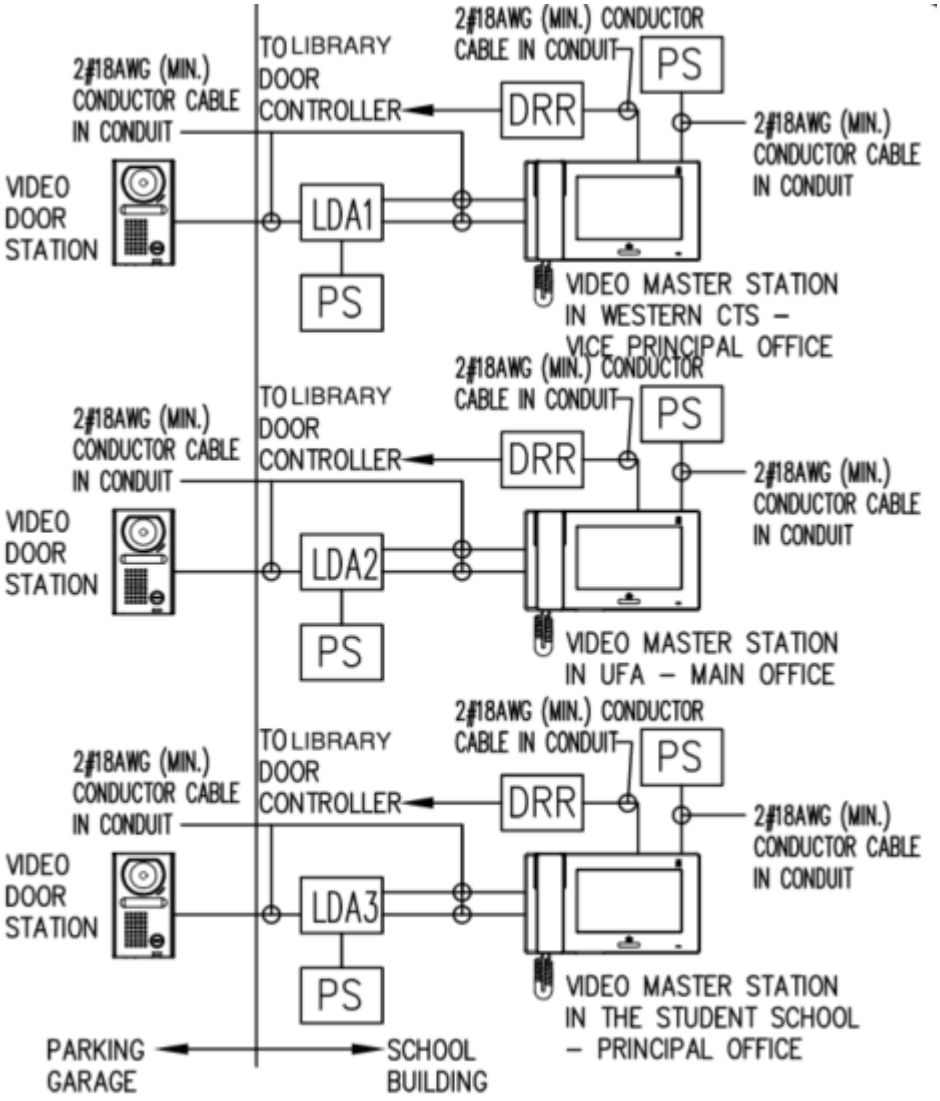
Drawing #	Revisions
M0-00	• Add note referencing seismic restraint.

Electrical Drawings:

Drawing #	Revisions
E0-01	• Add electrical general note #8 for Seismic Restraints.
E2-01	• Revise electrical keynote #8 as indicated. • Add electrical keynotes # 9 as indicated. • Add door hardware table. • Revise emergency battery unit connection.

Electrical Drawings:

Drawing #	Revisions
N/A	• Provide AiPhone Buzzer and Receiver inside library. • Schematic diagram of Aiphone system as follows:



AIPHONE SYSTEM SCHEMATIC DIAGRAM

End of ADD # 001

MCW Consultants Ltd.

A member of the MCW Group of Companies
www.mcw.com

207 Queen's Quay West, Suite 615
Toronto, Ontario
M5J 1A7

MECHANICAL SPECIFICATIONS

FOR

ACCESSIBILITY UPGRADE

WESTERN TECHNICAL-COMMERCIAL SCHOOL

125 Evelyn Crescent,

Toronto, ON, M6P 3J7

TO

TORONTO DISTRICT SCHOOL BOARD

TR-25-0960

DATED

MAY 22, 2026

ISSUED FOR ADD-001

Contact Person: Can Le
Phone: (416) 598-2920 ext:245
Email: canle@mcw.com

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PART 1 - GENERAL PROVISIONS

1.01 GENERAL REQUIREMENTS

.1 Conform to requirements of the Ontario Building Code, City of Toronto and the Authorities Having Jurisdiction (AHJs); note that there may be more than one AHJ.

.2 Applicable Codes, Standards and Bylaws shall be strictly adhered to. Obtain necessary permits, approvals, and inspections from the Authorities Having Jurisdiction (AHJs).

.3 Perform all mechanical work detailed in the Documents to provide a complete and fully functional operating system to the satisfaction of the Consultant.

.4 The most rigorous of these Specifications and the Base Building Standards shall form the basis for acceptance of the Work.

1.02 DEFINITIONS

.1 The word "provide" shall mean "supply, install, connect, test and commission".

.2 The term "work" means all equipment, permits, materials and labor to provide a complete mechanical installation as required and detailed in the drawings and specifications.

1.03 SUBMITTALS

.1 Submit shop drawings, unless otherwise specified, for each major item of equipment such as plumbing fixtures, pumps, air handling units, radiation, coils, and special systems.

.2 Shop drawings shall be complete with contractors reviewed stamp. Allow five (5) days for Mechanical Sub-consultant review.

.3 Resubmit shop drawings returned for correction until ‘reviewed’ or ‘reviewed as noted’ status has been achieved.

.4 Documentation and systems acceptance: Provide the following on substantial performance of the work:

.1 As-built drawings: Record accurately installed (as-built) Mechanical Work as “red-line” mark-ups on white prints. Mechanical Trade’s “red-line” as-built drawings shall be transferred to an editable AutoCAD format “as-built drawing” by the Mechanical Trade Contractor. Submit both copies for review. Keep one up-to-date set on site.

.2 Operating and Maintenance (O&M) Manuals

.1 O&M Manuals shall be submitted to the Consultant for review.

.2 O&M Manuals shall include Reviewed shop drawings, Testing, Adjusting and Balancing (TAB) Reports, equipment data sheets, written warranty, operating instructions, and maintenance procedures.

.3 Provide piping pressure tests (fire protection, domestic water, HVAC piping) indicating system tested, pressure held, time of test and date, and certified by the Consultant.

.4 O&M Manuals shall be separated with dividers in appropriate sections.

.3 Make all corrections requested by the Consultant and resubmit for review.

.4 Air balancing report: the Work of Division 23 will not be considered totally performed until completion of air balancing even if undertaken by separate contract from the Work of Division 23.

1.04 Permits, Fees, and Inspections

.1 Apply for, obtain, and pay for all permits, licenses, inspections, examinations, and fees required for the work prior to commencement of construction. Include all sales taxes and the GST.

.2 Arrange for inspection of all work by the authorities having jurisdiction over the work.

.3 In case of conflict, the codes take precedence over the contract documents. In no instance reduce the standard or scope of work or intent established by the drawings and specifications by applying any of the codes referred to herein.

.4 Request in writing for a completed rough-in and final inspection of the mechanical systems. When the final inspection request is made all deficiencies must be complete, balancing reports submitted, systems ready for operation, equipment has been commissioned, operating and maintenance manuals submitted, all tags, charts and nameplates completed, all fixtures and equipment cleaned, spare parts provided, record drawings complete, control systems operational and the Owner's staff instructed in all phases of the system operation.

1.05 CONTRACT DRAWINGS

.1 The drawings for mechanical work are performance drawings, diagrammatic, intended to convey the scope of work and indicate general arrangement and approximate location of equipment, fixtures and systems runs. The drawings do not intend to show architectural, interior design and structural details.

.2 Do not scale drawings. Obtain information involving accurate dimensions from dimensions shown on architectural and structural drawings, and by site measurement.

.3 Make, at no additional cost, any changes, or additions to materials, and/or equipment necessary to accommodate structural conditions (ducts around beams, columns, etc.)

.4 Alter, at no additional cost, the locations of materials and/or equipment as directed that do not necessitate additional material.

.5 Confirm on the site the exact location and mounting elevation of fixtures as related to architectural and structural details.

.6 Record set of drawings to be always kept on site and changes to piping, ductwork and equipment shall be recorded on same.

1.06 EXAMINATION OF SITE AND DOCUMENTATION

.1 Existing site conditions affecting the work of this trade shall be reviewed prior to Bid submission. Failure to do so shall not relieve Mechanical Trades of full contract responsibility. Include for any alternate routing of new or rerouting of existing services to accommodate all site conditions in the Bid Price. Determine exact dimensions and other restrictive conditions on site, not from drawings.

.2 Prior to submitting Bid, the Mechanical Trades shall report all discrepancies to the Consultant and verify the locations of all existing services that are being extended and the routing of new services. Report any ambiguities, discrepancies, departures from building by-laws and/or from good practice. Additional payments will not be made for extra labour or material necessary due to location or nature of beams, joists, walls, furred ceilings, or finishes with which Contractor should be familiar.

.3 Reuse existing materials and equipment wherever possible. Provide new materials and equipment as required to ensure a complete installation.

1.07 PHASING AND SCHEDULING OF WORK

.1 Comply with the General Contractor's construction schedule. Include the cost of premium time in the Bid Price for work provided during nights, weekends, or other times outside normal working hours, necessary to maintain all mechanical services in operation and to meet the project schedule.

.2 Where project phasing is required, refer to the phasing plan(s) included with the Documents. Include all costs associated with completing the Work in sequential phases as outlined in the phasing plan(s).

1.08 COORDINATION DRAWINGS

.1 Prepare drawings in conjunction with all trades concerned, showing sleeves and openings for passage through structure, and all inserts, equipment bases, and supports, and relate these to suitable grid lines and elevation datum.

.2 When requested, provide weights of major items of equipment.

.3 Prepare interference and co-ordination drawings for all areas where the work of this division could conflict with and/or obstruct the work of other trades and/or other sections of this division. Submit drawings for review by the Consultant.

1.09 COORDINATION

.1 Co-ordinate installation of new ductwork, sprinkler, and plumbing lines to suit installation of all other components being installed in ceiling space or extending into ceiling space. Review mechanical, electrical, and architectural drawings to become familiar with installation requirements of these components. Problems with installation of these components due to installation of new ductwork, sprinkler and plumbing lines will result in the Contractor having to relocate new ductwork, sprinkler, and plumbing lines at their own cost.

.2 Co-ordinate arrangement, mounting, and support of mechanical equipment to allow right of way for piping and conduit installed at required slope.

.3 Co-ordinate location of access panels and doors for mechanical items that are behind finished surfaces or otherwise concealed. Provide access doors and panels to suit the finish that it will be installed onto.

.4 Co-ordinate sleeve selection and application with selection and application of firestopping.

.5 Co-ordinate sizes and locations of required concrete pads and bases to support mechanical equipment.

1.10 PRODUCT STANDARDS AND ALTERNATIVES

.1 Use only new materials, capitals and code approved in accordance with all laws, regulations, and Authorities Having Jurisdiction (AHJs).

.2 All material and equipment shall meet or exceed base building standards and have Landlord/Owner's approval before ordering.

.3 Base Bid Price on equipment specified. Show alternative equipment and itemized cost savings with Bid submission.

.4 Equipment substitutions proposed following award of contract will not be considered without written explanation.

.5 The quality and performance characteristics of substituted product shall be equivalent in all respects to the specified product. Substitution of any product other than specified must assure no deviation below the stated capacities, air flow rate, heat transfer rate, filtration efficiency and air mixing quality. Power requirements must not be exceeded and, where specifically defined, sound power levels must not be exceeded. Equipment weight and space requirements shall not be in excess of those allowed in the design. Applications for "equal" or "alternate" must address these factors.

.6 Where no other acceptable manufacturers are indicated, provide the exact make specified. Requests for acceptance of manufacturers not listed must be submitted not less than seven working days prior to closing date of the tender and submissions must bear proof of acceptance by the Consultant if used in the tender.

.7 All substitute products shall be reviewed by the Consultants; do not proceed with substituted equipment without Consultant's written authorization. Revise Record Drawings, incorporating alternates and/or substitutes and all related changes.

.8 Any additional costs incurred by affected Trades for substituted equipment shall be borne by the Mechanical Trades without additional compensation.

1.11 RIGHTS RESERVED

.1 Rights are reserved to furnish any additional detail drawings, which in the judgement of the Consultant may be necessary to clarify the work, and such drawings shall form a part of this contract.

1.12 EXPEDITING AND DELIVERY

.1 Provide new material and equipment as specified and to the acceptance of the Consultant. Manufacturer’s names are listed to set a standard of quality, performance, capacity, appearance, and serviceability.

.2 Where no other acceptable manufacturers are indicated, provide the exact make specified. Requests for acceptance of manufacturers not listed must be submitted not less than seven working days prior to closing date of the tender and submissions must bear proof of acceptance by the Consultant if used in the tender.

1.13 SUPERINTENDENCE

.1 Maintain at the job site, at all times, qualified personnel and supporting staff, with proven experience in erecting, supervising, testing and adjusting projects of comparable nature and complexity.

1.14 SKILLFULNESS

.1 Install equipment, piping, ductwork, and cables in a skillful manner to present a neat appearance to function properly to the satisfaction of the Consultant. Install runs parallel and perpendicular to building lines, in chases, behind furring or above ceilings, where such concealment is possible. In areas where systems are to be exposed install neatly and group to present a tidy appearance.

.2 Install equipment and apparatus requiring maintenance, adjustment or eventual replacement with due allowance therefore.

.3 Include in the work all requirements of manufacturers shown on the shop drawings or manufacturers installation instructions.

.4 Replace work unsatisfactory to the Consultant without extra cost.

.5 Make provision to accommodate future plant and equipment indicated on drawings.

.6 Protect from damage all equipment delivered to the site and during installation. Any damage or marking of finished surfaces shall be made good to the satisfaction of the Consultant.

.7 The Contractor and all sub-trades are responsible to repair or replace any item damaged while performing work outlined in this contract.

1.15 NOISE AND VIBRATION

.1 Mechanical equipment is to operate without objectionable noise or vibration. If, in the opinion of the Consultant, the equipment operates with excessive noise or vibration, then the equipment must be replaced, or noise or vibration eliminated.

.2 Connections to noise-producing and vibrating equipment must be made with flexible connection. Refer to details for more information.

.3 Vibration isolators are to be provided where indicated or required.

1.16 INTERRUPTION OF SERVICES

.1 Comply with Landlord/Owner's requirements for system planned interruption to existing services. Interruption of service must occur at the times and for the duration stipulated by the Landlord/Owner. Carry out all preparatory work, measurements, and similar, without interruptions of existing services.

.2 Arrange with Landlord/Owner for necessary shutdowns of all systems and include all overtime costs in the Bid Price for tie-ins and work within other tenant spaces to be completed on weekends and at other times suitable to Landlord/Owner and other occupants.

1.17 CLEANING

.1 During construction, keep site reasonably clear of rubbish and waste material resulting from work. Clean the Work area on a daily basis.

.2 After completion of the Work, remove rubbish and debris from the site, arrange and pay for disposal of all waste materials. Repair any damage caused. Clean all polished, painted and make plated work bright.

.3 Leave systems operating and premises in good order working. Clean areas to acceptance of the Landlord/Owner.

.4 Carry out additional cleaning operating of systems as specified in other sections of the specification.

1.18 COMPLETION

.1 Consultant's Final Inspection is imperative. Contractor shall contact the Consultant and the Landlord/Owner's Representative to arrange for a final inspection at substantial completion of mechanical work.

.2 Should mechanical work be covered up at the time of the Final Inspection, including services enclosed behind finished drywall, above finished ceilings, or concealed by finished millwork, the Mechanical Trades shall arrange for the Work to be exposed to complete the inspection.

.3 When the final inspection request is made all deficiencies must be complete, balancing reports submitted, systems ready for operation, equipment has been commissioned, operating and maintenance manuals submitted, all tags, charts and nameplates completed, all fixtures and equipment cleaned, spare parts provided, record drawings complete, control systems operational and the Landlord/Owner's staff instructed in all phases of the system operation.

.4 The Mechanical Work will not be considered Substantially Performed until completion of air and water balancing, even if undertaken by separate contract from the Mechanical Trades.

.5 On completion of work, present to the Landlord/Owner a final unconditional certificate of approval from the Authorities Having Jurisdiction (AHJs).

1.19 INSTRUCTION TO OWNER

.1 Instruct the owner's representatives in all aspects of the operation of systems and equipment.

.2 Arrange for and pay for services of service engineers and other manufacturers' representatives required for instruction on specialized portions of the installation.

.3 Submit to the Consultant at the time of final inspection a complete list of systems stating for each system:

.1 Date instructions were given to the owner's staff.
.2 Duration of instruction.
.3 Name of persons instructed.
.4 Other parties present (manufacturer's representative, Consultants, etc.).

.4 Signatures of the owner's staff stating that they properly understood the system installation, operation, and maintenance requirements.

1.20 ADDITIONAL WORK

.1 Before proceeding with any changes, submit for review and approval by the Consultant; approval shall come in the form of a Change Order signed by the Landlord/Owner.

.2 Change quotations shall be submitted complete with an itemized cost breakdown of all materials, equipment and labour costs associated with each submission for additional or deleted work. Failure to provide will result in rejection.

.3 All Mechanical Change Notices shall be priced using mechanical labour unit costs in accordance with Mechanical Contractors Association of America (MCAA) Labor Estimating Manual.

.4 It is understood that each change may have a variety of non-typical or abnormal factors that will require adjustments. Under no circumstances shall the cumulative total of additional factors exceed 20% of the hours established using Base Labour units.

.5 Provide copies of the Allpricer published list prices used to estimate material and equipment costs, less discount of 20%.

.6 The mark-up for overhead and profit shall be limited to and be calculated per Division 1 specifications

1.21 COMMISSIONING

.1 Contractor shall provide commissioning for all the new and modified equipment as part of the Work.

.2 Test and demonstrate all automatic equipment is operating as per sequence of operation (example: test boiler controls package and associated circulating pump interface as an integrated system).

.3 Provide on-site training instruction to the Owner of the proper operation and maintenance of all Mechanical Equipment installed for a minimum of two 4-hour sessions (total 8 hours).

.4 Pressure Testing:

.1 Do not insulate piping systems until pressure testing has been completed, and proven tight. Should leaks develop in any part of the piping system, remove, and replace defective sections, fittings, and other piping system ancillaries.
.2 Flushing and testing shall be completed prior to connection into building system.
.3 Hydrostatically test piping at not less than 1.5 times working pressure of final system, but not less than 75 psi (520 kPa), for a period of not less than 12 hours without pumping.
.4 Test piping system in sections as required by the progress of work.
.5 Test gas piping in accordance with CGA standard and Authorities Having Jurisdiction (AHJs).

.5 Existing Equipment:

.1 Verify with building property manager that existing equipment and controls are maintained and operating as originally designed.

.6 Terminal Units:

.1 Verify that filters, coils, and nozzles are clean, air is balanced,
.2 Calibrate and check all Terminal Unit controls and ensure they are operating as intended.
.3 Repair and clean all Terminal Units.

.7 VAV Boxes:

.1 Verify that dampers, actuators, and thermostats are operating as intended.

.8 Life Safety Integrated Systems Testing (IST):

.1 Integrated Systems Testing (IST) is required by the Ontario Building Code (OBC) test verify the functionality of all life safety systems provided by multiple design consultant and construction trade disciplines; successful completion of IST is required prior to certification for building occupancy.
.2 IST shall include confirmation of integrated systems operation proving fire alarm signaling, fire suppression, smoke control (pressurization), smoke exhaust, or other life safety measures as may be required by the design in response to a fire condition.
.3 IST must be conducted in accordance with the requirements of ULC-S1001 “Integrated Systems Testing of Fire Protection and Life Safety Systems.”

.9 Commissioning Report:

.1 Provide a Commissioning Report that includes a description of all Commissioning Activities undertaken and the results thereof. Commissioning Report shall be in a format acceptable to the Consultant.

.10 Provide record data of test results to the Consultant for review. Include a copy of all the test results in the Commissioning Report.

1.22 WARRANTY

.1 Submit written warranty to Landlord/Owner covering remedy of defects in work at completion of work. Submit similar written warranty for one (1) year from date of Substantial Performance for any part of work accepted by Landlord/Owner.

.2 Repair and/or replace any such defects which appear in work within warranty period without additional expense to owner; ordinary wear and tear and wilful damage by, or carelessness of owner's staff or agents excepted. Where such defects occur, be responsible for costs incurred in making defective work good, includes repair or replacement of building finishes, other materials, or damage to other equipment caused by such defects, or by subsequent replacement or repairs.

.3 During the one-year warranty period, the Mechanical Trades shall respond to the site on a 24 hour "call out" period whereby at any time of day or night appropriate Trades shall attend to all faults and complaints, remedy all defects, replace all malfunctioning items, and maintain the complete installation in a clean and tidy condition to the satisfaction of the Consultant.

PART 2 - DEMOLITION

.1 Demolition work will be executed in accordance with the latest edition of:

.1 CAN/CSA-S350-M1980 Code of Practice for Safety in Demolition of Structures;
.2 Occupational Health & Safety Act;
.3 Ontario Building Code;
.4 Ontario Fire Code.

.2 Visit the site, examine the existing conditions, and become familiar with the extent of the necessary removal, relocation, reconnecting, and rerouting of mechanical equipment and services as necessary for the completion of the project. The drawings indicate the approximate locations of services as far as these are known. Immediately advise Consultant in writing when unknown services are encountered.

.3 Review and confirm with the architect/designer's drawings for the complete extent of demolition and alteration.

.4 Ensure that all mechanical, life safety services, and services for existing equipment in areas outside the areas of this work are required to remain in service, unless otherwise approved by the Owner.

.5 Use only those existing entrances and stairs designated by the Owner for access to the egress from the existing buildings and various floors when work of this contract is to be carried out. No traffic through other areas of the building will be permitted without the prior consent of the Owner. Protect walls of passenger elevators to approval of Owner prior to use. Accept liability for damage, safety of equipment and overloading of existing equipment.

.6 Remove and replace any mechanical equipment on walls or ceilings that will be demolished and rebuilt.

.7 Disconnect, capping and make-safe all gas, water, sewer, storm and other services affected by the Work being demolished.

.8 Package and turn-over any Owner supplied existing equipment, materials and associated controls that is removed or unused under this contract.

.9 Be responsible and pay for any damage to the Base Building incurred by work of this division, or repair to the satisfaction of the Consultant.

.10 Carry out the work with minimum of noise, dust, and disturbance.

.11 Ensure that all existing equipment which are to be reused and/or relocated is thoroughly inspected and refurbished to ensure correct operation when put back into service.

.12 Include in the Bid Price for all shipping and placement in a designated on-site storage location.

PART 3 - BASIC MATERIALS AND METHODS

3.01 EXISTING AND NEW EQUIPMENT

.1 Reuse existing materials and equipment wherever possible. Provide new materials and equipment as required to ensure a complete installation. All existing equipment, materials and associated controls not used in this contract shall be packaged and turned over to the Owner. Include in the tender for all shipping and placement in a designated on-site storage location. Remove any equipment or material not wanted by the Owner from the site.

.1 Do not reuse flexible ductwork.

.2 All existing mechanical equipment (VAV boxes, dampers, heat pumps, valves, etc.) to be relocated out of new drywall ceiling areas.

.3 Existing Equipment: Verify with building property manager that existing equipment and controls are maintained and operating as originally designed.

.1 Induction Units: Verify that filters, nozzles, and coils are clean, air is balanced, control valves and thermostats are operating, etc.
.2 VAV Boxes: Verify that dampers, actuators, and thermostats are operating, etc.

.4 All existing external duct insulation to be inspected and repaired as required.

.5 Repair and clean all induction units. Calibrate and check all induction unit controls.

.6 Where specified, install all equipment provided by the Tenant. Receive, store, install equipment, and accept full responsibility for its correct operation.

.7 Prior to operating any existing or new equipment during any stage of construction, approval from the Owner and Consultant must be received in writing.

.8 All power wiring and equipment starters for mechanical equipment and associated devices including connections shall be provided under the Electrical Contract, Division 26, unless noted otherwise in the specification. Confirm the power characteristics on site prior to processing shop drawings and ordering equipment. All control wiring, line, or low voltage shall be by this Contractor.

.9 Where the drawings indicated equipment to be furnished by the Owner, or by Trades outside of this Contract, provide mechanical rough-in for each unit pursuant to its shop drawings, and make final connections and other mechanical facilities for a complete installation.

.10 Provide all rigging as may be required for all system materials and equipment. Provide all required supplementary steel supports necessary for mounting or hanging equipment. Equipment being suspended from the floor structure, or supported from or on the roof, with a weight greater than 500 pounds, shall have supports reviewed by a structural Consultant. All required structure as recommended by the Consultant, shall be included in the tender.

3.02 MATERIALS AND CONNECTIONS TO EQUIPMENT FURNISHED BY OTHERS

.1 Where materials are furnished by others for installation under this division, the sub-Contractor shall notify the supplier of dates they will be ready for delivery as specified in the general conditions. The sub-Contractor shall receive, unload, handle, store, protect and insure the material until ready for actual installation. Upon receipt of material furnished by others, the sub-Contractor shall spot-check or check the entire shipment and promptly advise the Consultant in writing of any damage and/or missing components. Any material which is subsequently lost or damaged due to negligence on the part of the sub-Contractor shall be promptly replaced (or repaired to the satisfaction of the owner) at the sub-Contractor's expense.

.2 Where the drawings indicated equipment to be furnished by others, provide mechanical rough-in for each unit pursuant to its shop drawings, and make final connections and other mechanical facilities for a complete installation.

3.03 TEMPORARY FILTERS

.1 Cover open end of all base building return air openings including registers, return or exhaust air ducts which are to remain operational during construction with 1” (25mm) thick filter media secured by metal band pulled tight around duct.

.2 Filters shall be replaced weekly.

.3 Remove filters upon construction completion.

.4 Maintain this condition until plastering, drywall and other finishing operations are complete.

3.04 EQUIPMENT HANGERS AND SUPPORTS

.1 Provide any additional structural steel channels, angles, inserts, beam champs and similar accessories required for hanging or supporting equipment. All new and relocated existing services and equipment must be supported from the building structure. Design steel to support and distribute operating and static loads. All drilling, approved type inserts and hangers shall be included.

.2 Support suspended equipment from the bottom or from manufacturer's designated suspension points. Support tanks and similar equipment with adequate beam strength by saddles with curvature to match the equipment. Continuously support all other equipment.

.3 Auxiliary structural members shall be included and installed where required to accommodate hangers.

.4 Provide base supports for all pipe risers.

.5 Fabricate steel supports in contact with water or humidity conditions from materials having approved corrosion resistance or galvanize after fabrication or brush welds clean and apply a prime coat of rust inhibiting paint.

.6 All supports shall be connected to the top of joists and beams where applicable.

.7 Suspension from metal deck is not allowed.

.8 Suspending one hanger from another is not permitted.

3.05 PIPE HANGERS AND SUPPORTS

.1 All new and relocated existing services must be supported from the building structure. All drilling, approved type inserts and hangers shall be included.

3.06 SEALANT, INSERTS, AND SLEEVES

.1 All new penetrations through floors to be sealed with approved non-shrink, waterproof, and fireproof sealant.

.2 Mechanical service penetrations of required fire separations shall be fire stopped using a ULC listed fire stopping assembly. Repair and/or provide all spay fire-proofing affected by the Mechanical Work to maintain required ratings.

.3 Seal to be airtight around all ductwork and piping penetrations through partitions, baffles above ceilings, and through floors that are not fire rated.

.4 Provide sleeves for all new piping passing through floor and roof slabs, beams, concrete walls, and slab-to-slab partitions, etc.

3.07 CUTTING, PATCHING, AND CORE DRILLING

.1 Any required cutting, patching and core drilling required to perform the Mechanical Work shall be included by the Mechanical Trades. Perform cutting in neat and true fashion, with proper tools and equipment to owner's approval. Patch surfaces to exactly match existing finishes. Utilize tradespeople skilled in particular trade or application worked on to Landlord/Owner's approval.

.2 X-Ray concrete structure in accordance with Landlord/Owner structural engineer's requirements. Verify exact location of core drilling to check for existence of any services (example: electrical conduit, structural re-bar) with Landlord/Owner and Landlord/Owner's structural engineer.

.3 Provide details of new openings through structural components for engineer's approval. Incur all related costs to obtain structural engineer’s approval.

.4 For exterior and/or underground penetrations, provide waterproof, weather-tight, fire rated materials in compliance with local governing authority and code requirements to seal openings.

.5 Patch fire rated partitions and floor to maintain ULC listing for rating upon removal of mechanical services originally spanning fire rated assembly.

.6 Ensure areas of both sides of surface being cut are protected from debris. Be responsible for damage done to existing building and services caused by cutting or drilling.

3.08 GENERAL REQUIREMENTS FOR ALL VALVES

.1 Generally, valve locations are indicated or specified on drawings or specified in Sections of the Specification, however, regardless of locations shown or specified, following requirements shall apply:

.1 Provide shut-off valves to isolate systems, at base of vertical risers, in branch take-offs at mains and risers on floors, to isolate equipment, to permit work phasing as required, and wherever else required for proper system operation and maintenance;
.2 Install shut-off valves with handles upright or horizontal, not inverted, and located for easy access;
.3 Unless otherwise specified, provide a check valve in discharge piping of each pump;
.4 Valve sizes are to be same as connecting pipe size;
.5 Valves are to be permanently identified with size, manufacturer's name, valve model or figure number and pressure rating, and wherever possible, valves are to be a product of the same manufacturer;

.2 For valves in insulated piping, design of valve stem, handle and operating mechanism is to be such that insulation does not have to be cut or altered in any manner to permit valve operation.

3.09 FLASHING AND COUNTER FLASHING

.1 Flashing and counter flashing for exterior mechanical service penetrations or penetrations of water-proofed floors shall be provided by Mechanical Trades.

.2 Flash all mechanical parts passing through, or built into a roof, outside wall or waterproof floor.

.3 Use prefabricated aluminum or PVC flashings for roof, and membrane or copper for walls and floors.

.4 Ensure all openings are weather, water and fireproof, using an approved flexible sealant.

3.10 ACCESS DOORS

.1 Access doors shall be provided for all inaccessible mechanical equipment and services requiring inspection or service. Finish shall suit architect/designer's requirements.

.2 All access doors shall be 12"x12" (300mm x 300mm), except provide 24"x24" (600mm x 600mm) where personnel entry is required.

.3 Provide to the appropriate trade for installation co-ordinate exact location with other trades and architect. Provide for plaster surfaces, recessed 16-gauge prime painted steel door and welded metal lath, ready to take plaster. Provide with concealed hinge and stainless-steel studs with brass sleeves.

.4 Provide to suit wall surface or type of construction, other factory prime coated access doors of welded 12-gauge steel, flush type with concealed hinges, lock, and anchor straps.

.5 Provide fire rated access doors in fire rated partitions. Provide hinged access doors equal to fire rating of wall or ceiling in which installed.

.6 Lay-in type ceiling tiles, properly marked, may serve as access panels. Provide stick-on circular tab (approximately ¼" diameter), located on a tee supporting ceiling tile used as access panel, for all new equipment located in ceiling space. (example: VAV terminals)

3.11 RIGGING AND HOISTING

.1 Mechanical Trades shall be responsible for all lifting, hoisting and transportation of all equipment on site from the point of delivery to the point of installation.

.2 Provide all rigging and hoisting as may be required for all system materials and equipment.

.3 Provide all required supplementary steel supports necessary for mounting or hanging equipment. Equipment being suspended from the floor structure, or supported from or on the roof, with a weight greater than 500 lb. (227 kg), shall have supports reviewed by a Structural Engineer.

.4 All required supplementary structure as recommended by the Consultant, shall be included in the Bid Price.

3.12 CONCRETE WORK

.1 Provide minimum 4" (100 mm) concrete housekeeping pads, unless noted otherwise, complete with reinforcing steel under all floor mounted mechanical equipment and supports. Extend pads over the full equipment base and isolator area.

3.13 MECHANICAL WIRING

.1 All power wiring for mechanical equipment shall be provided by Electrical Trades unless noted otherwise. Confirm the voltage and phase characteristics on site with the Electrical Trades prior to producing shop drawings and ordering equipment.

.2 All control wiring, line or low voltage, shall be by Mechanical Trades; follow Electrical Trades wiring specifications.

3.14 CHEMICAL TREATMENT

.1 Perform piping system cleaning and water treatment services under the supervision of the Base Building Water Treatment Specialist.

.2 Clean and degrease the piping systems prior to connection to the base building system. Clean strainer baskets as often as necessary during cleaning and degreasing. Verify chemical treatment and antifreeze concentrations with the Base Building Water Treatment Specialist.

.3 Add chemical solution to system, circulate for periods required, drain and refill. Repeat chemical treatment rinse. Refill the system, and connect to base building condenser water system.

.4 Maintain chemical levels from the time the system is filled after cleaning, up to Substantial Performance of the Contract.

.5 Provide service visits during Warranty period as required to stabilize and commission the systems. Perform corrosion tests to verify performance requirements are being achieved. Document recommendations and submit a written report to the Owner's representative after each visit.

.6 Pipes intended to carry potable water shall be flushed and disinfected before being placed in service.

.1 Disinfection procedures shall conform to AWWA C601 and AWWA C651, and the requirements of the Authorities Having Jurisdiction (AHJs).

.7 Where stainless steel piping is used for domestic water applications, piping systems shall be annealed, de-greased and pickled and will be subject to formal cleaning and disinfecting along with all other parts and components of the domestic water system as per ASTM A-380.

3.15 METERING

.1 Provide digital meters to match the Base Building standard except as noted otherwise.

PART 4 - AIR DISTRIBUTION

4.01 GENERAL REQUIREMENTS

.1 Provide ductwork and hangers in accordance with SMACNA and ASHRAE standards.

.2 Fabricate ductwork from galvanized sheet metal with a minimum coating of 0.60 oz/sq. ft. (1.83 grams/sq. m) (G60 coating) unless other materials are specifically named.

.3 Seal all transverse joints in supply, return and exhaust ductwork with high velocity duct sealer (Bakelite 530-09 or equivalent). Duct tape not acceptable.

4.02 FLEXIBLE DUCTWORK

.1 At the inlet of each VAV terminal control unit, provide a minimum of three (3) diameters of straight flex duct. Maximum length 4’-0” (1200mm).

.2 Flexible ducts serving diffusers shall be installed as one continuous piece and shall not exceed 10'-0" (3m) lengths.

.3 Connect flexible ductwork to with a minimum of three (3) self-tapping screws, seal with duct sealer and wrap with glass fab tape.

.4 Flexible ductwork to be supported from building structure where it is not self-supporting and must not be allowed to lie on ceiling or other equipment.

.5 Externally insulated flex duct to be Thermaflex type M-KE, Flexmaster Low Pressure Acoustic or approved equal.

.6 Uninsulated flex duct to be Flexmaster T/L spun aluminum or approved equal. Ducting such as aluminum foil, PVC, Mylar, fibreglass mesh and other fibre type will not be accepted.

4.03 BALANCING DAMPERS:

.1 Provide air balancing damper for each branch duct tee-off.

.2 Provide splitter dampers as shown on drawings. Construct of not less than 22-gauge material. Where installed in ducts up to 12” (300mm) deep, provide single blade, and in ducts greater than 12” (300mm) provide multi-blade with linkages, each blade being not wider than 9” (228mm).

.3 Provide spin-on connectors complete with balancing damper at take-off for grilles and diffusers from main duct.

4.04 GRILLES, DIFFUSERS AND REGISTERS

.1 As manufactured by Nailor, E.H. Price or equal as accepted by the Consultant. Refer to Equipment Schedules.

4.05 LINED DUCTWORK

.1 Provide internally lined ductwork as indicated on the drawings. Lining to be 1” (25mm) thick, 1.5 lb/cu. ft (25 kg/cu.m) density fibreglass with neoprene coating. Seal all cut edges of insulation with Bakelite 200-32 or equivalent to ensure fibreglass does not come into contact with air stream.

.2 Duct sizes to increase accordingly to maintain equivalent free area.

.3 All transfer air ductwork to be internally lined.

4.06 FIRE DAMPERS

.1 Provide fire dampers as per wall type layout requirements. ULC listed and labelled type B or C, non-asbestos. Provide latched access doors in ductwork for access to all fire dampers. Minimum 12"x12" (300mm x 300mm) access required.

4.07 SMOKE DAMPERS

.1 To be installed at locations shown on drawing ULC listed and labeled. All smoke damper units to be equipped with linkages for mounting of actuators for smoke control operation. Unit to be positive seal and able to maintain smoke barrier in lobby and corridor. Provide all electric actuators. Actuators to be mounted outside duct. Supply voltage of actuators shall be 120V, 1 phase. Control voltage of actuators shall be 24 Vdc; to facilitate actuator upon fire alarm. Contractor to provide all necessary hardware to achieve this operation.

4.08 CEILING DAMPERS

.1 ULC listed and labeled. For diffusers, damper to be complete with thermal blanket.

4.09 VARIABLE AIR VOLUME (VAV) / CONSTANT AIR VOLUME (CAV) TERMINALS

.1 Install new VAV/CAV terminals with a minimum of four duct diameters of straight ductwork upstream of terminal.

4.10 EXPOSED RETURN AIR OPENINGS

.1 All services above return air grilles to be painted flat black.

4.11 TRANSFER AIR OPENINGS

.1 Provide transfer air openings as indicated without ductwork extension shall be the responsibility of the Mechanical Trades to advise size and location required to General Trades.

4.12 FLEXIBLE CONNECTIONS

.1 ULC listed and labelled, neoprene coated, glass fabric, factory fabricated as approved by local authorities. Connection must not be under tension.

PART 5 - IDENTIFICATION OF EQUIPMENT AND PIPING

5.01 EQUIPMENT

.1 Identify all automatic control devices and motor driven equipment with 3 mm (1/8") lamacoid plastic plates with bevelled edges having engraved white letter on black background giving the nature of equipment service and its number, i.e. "Washroom Exhaust E1", and similar. Provide plates with 6 mm (1/4") lettering for motor starters and 12 mm (1/2") lettering for equipment.

.2 Fix to equipment using sheet metal screws or brass chain.

.3 Where equipment is locally switched, (e.g. Room exhaust fans) provide suitable label at switch. Co-ordinate with architect on site for labelling the switches in an aesthetically pleasing manner.

.4 Coordinate with controls Sub-Contractor and obtain list of automatically operated equipment and provide warning identification on lamacoid plate for each item as follows:

"Warning: This equipment may start at any time. Do not service without disconnecting power."

5.02 PIPING

.1 Provide all major valves with brass or plated plastic numbered tags, 16 mm (5/8") diameter with stamped numbers. Secure by brass chains to the valve. Valves adjacent to plumbing fixtures, convectors, unit heaters and entrance heaters need not be tagged. Prepare an approved list detailing the valve location, tag numbers and purpose it serves. Mount one (1) copy of this list in a glazed frame where advised by the Owner and provide additional copies for the manuals.

.2 Identify the following piping as to service and direction of flow using stencils and black lettering behind each access door, in each room, and/or every 12 m (40 ft.)

.1 Domestic hot, cold, recirculation
.2 Heating system supply and return
.3 Condenser water
.4 Gas (identify to code requirements).
.5 Sprinkler system.
.6 Standpipe system
.7 Supply air and fan system identification
.8 Return air and fan system identification.

PART 6 - TRIAL USAGE AND TESTS

6.01 AIR BALANCING

.1 The mechanical Contractor shall carry the cost of the Air and Water Balancing Company in their tender submission.

.2 Prior to operating any existing or new equipment during any stage of construction, approval from the Landlord and Consultant must be received in writing. Provide assistance to the Consultant for on-site spot verifications of air and water balance report.

.3 Air Balance Report: Air balancing shall be performed by an independent company normally employed in this field. All air quantities to be balanced with a tolerance of +/-5%. Issue a report and certificate covering the following:

.1 Nameplate and actual motor loading in amperes at actual voltage and installed overload heater size and manufacturer.
.2 Specified and achieved air quantities per outlet complete with supporting schematic diagram.
.3 Specified and actual fan total static pressures with breakdown showing inlet and discharge pressures.
.4 Temperature at diffuser farthest from source of air supply.
.5 Supply air quantity and temperature where main duct enters space.
.6 Return air quantity and temperature where air leaves space.

.4 Fan sheaves, belts and pulleys shall be adjusted or replaced as required to obtain design air quantities. Coordinate this Work with Owner/Landlord.

.5 Balance all supply, exhaust and fresh air quantities noted on drawing or in specification.

.6 Provide assistance to the Consultant for on site spot verifications of air balance report.

.7 Submit one copy of report to each: Owner, Tenant, and Consultants.

6.02 TRIAL USAGE

.1 The Landlord/Owner has the privilege of trial usage of Mechanical Systems, or parts thereof, for the purpose of testing.

.2 Assist in trial usage over a length of time as deemed reasonable by the Consultant at no extra cost, and do not waive any responsibility because of trial usage.

.3 Temporary trial usage and testing shall not be construed as “beneficial use” when making an application for Substantial Completion of the Work.

6.03 TESTS

.1 Provide and pay for all testing required on the system components where, in the opinion of the Consultant the manufacturer's ratings or specified performance is not being achieved.

.2 Test and demonstrate all automatic equipment is operating as per sequence of operation. (I.e., Test boiler controls package and circ pump interface, etc.)

.3 Piping system tests: Do not insulate piping systems until completed, perfected, and proven tight. Should leaks develop in any part of the piping system, remove, and replace defective sections, fittings, etc.

.1 Test piping system in sections as required by the progress of work.
.2 Test all hot and chilled water, condenser water and domestic water piping hydraulically to a pressure of 1100 kPa (150 psi) and prove tight for a period of 8 hours with nitrogen is also acceptable provided a pressure of 1380 kPa (200 psi) is used. Test natural gas piping as required by codes and authorities.

.4 All tests must be recorded. Submit recorded data to the Consultant.

.5 Test gas piping in accordance with CGA standard and authorities having jurisdiction. Provide record data of test results to the Consultant for review.

.6 Include a copy of all the test results in the maintenance manuals.

PART 7 - BUILDING AUTOMATION AND CONTROLS

7.01 GENERAL REQUIREMENTS

.1 Control Work shall be completed by Owner's approved contractor. The Mechanical Trades shall carry the cost of the Control Work in their Bid Price.

.2 Provide a complete and fully functioning system operating in accordance with the sequence of operations.

.3 Align all access doors, unit access locations and piping/duct connections to ensure future serviceability of all system.

7.02 CONTROL WIRING AND DEVICES

.1 All control wiring and devices shall be provided by the Controls contractors.

7.03 THERMOSTATS

.1 Thermostats to be located at same mounting height as light switches. Final mounting height and location of the thermostat to be coordinated on site with Interior Designer.

.2 Add and relocate thermostats and revise control wiring as indicated on drawing.

.3 Thermostats to be located a minimum 300 mm (12") away from, but never above, dimmer switches.

.4 New thermostats must be submitted for approval to the consultant.

7.04 ACTUATORS

.1 Electric/Electronic sized to provide adequate power for opening, closing and modulating dampers or valves in specified time.

.2 Provide each actuator with a bracket or attaching to ductwork, building structure, or equipment. Do not install actuators in ducts or fresh air intakes.

.3 Provide electric low temperature protected actuators in unheated areas such as parking garages, ventilation shafts and transformer rooms and on any equipment located outdoors.

.4 All damper and valve actuators to be provided with spring return to normal position.

.5 Unless noted otherwise on drawing Sequence of Operations, actuators are to be provided and set up such that all heating valves and return air dampers are normally open and cooling valves, exhaust and outdoor air dampers are normally closed.

.6 Provide all interlocks, safeties, sensors, and all materials required to achieve the sequence of operation described below.

.7 Program existing automation system to accommodate new VAV terminals, and any other changes, in a manner similar to existing. BAS to sense and control supply air temperature, space temperature, valve position and damper position for all VAV terminals.

7.05 SEQUENCE OF OPERATION

.1 Control dampers modulate to suit thermostat set point.

PART 8 - SEISMIC CONTROL AND RESTRAINT

8.01 WORK PERFORMED BY THIS SECTION

Provide approved seismic restraints for all new equipment, ductwork, and piping covered by divisions 20, 21, 22, 23 and 25. provide positive seismic and wind restraints on systems and components required by the applicable building code and by the local authority having jurisdiction

8.02 REFERENCE STANDARDS

.1 Ontario Building Code

.2 NFPA 13, Standard for the Installation of Sprinkler Systems.

.3 SMACNA "Guidelines for Seismic Restraints of Mechanical Systems and Plumbing Pipe Systems". Each trade shall maintain a copy of this manual on site, for regular reference during construction.

.4 Federal Emergency Management Agency (FEMA) manuals 412, Installing Seismic Restraints for Mechanical Equipment and 414, Installing Seismic Restraints for Ductwork and Pipe.

.5 American Society for Heating, Refrigerating and Air-conditioning Engineers' (ASHRAE) A Practical Guide to Seismic Restraint.

.6 Manufacturers Standardization Society of the Valve and Fittings Industry MSS SP-127-2001, Bracing for Piping Systems, Seismic – Wind – Dynamic, Design, Selection, Application.

8.03 QUALITY ASSURANCE

.1 Seismic Consultant

.1 Provide services of an experienced Seismic Consultant who is a registered Professional Engineer licensed in the jurisdiction of the work and a member in good standing of a Professional Engineers Association in the jurisdiction of the work.

.2 Seismic Consultant is to:

.1 determine proper seismic hazard level, design, recommend, and review proposed mechanical work seismic restraint shop, placement and securing drawings, and sign and stamp drawings prior to submittal for review.

.2 Periodically visit the site to supervise the installation of mechanical work seismic restraint and, when work is complete, certify in writing that seismic restraint work has been installed in accordance with signed, stamped and reviewed drawings.

.2 Installer Qualifications:

.1 A firm experienced in installing seismic/wind, noise and vibration isolation equipment similar to materials, design, and extent to that specified for this project, whose work has a record of successful in-service performance.

.2 Installer is to have a minimum ten (10) years continuous experience in successful installation of seismic/wind, noise and vibration isolation equipment of type and quality specified herein. Installer is to be trained and certified to do this type of work. Submit proof of experience and certification.

.3 A senior, qualified representative is to be at the project site to direct the various stages of operation at all times. Installer's representative is to have a minimum five (5) years' experience.

.3 Seismic and wind control/restraint systems are to be fully integrated into and compatible with noise and vibration controls in accordance with Section 20 05 20 Mechanical Vibration Control.

.4 Acceptable seismic / wind restraint manufacturers are: Kinetics Noise Control, Vibro-Acoustics, Isotech Industries.

.5 Use a single manufacturer to provide and certify seismically rated isolators and restraints.

8.04 SUBMITTALS

.1 Obtain required equipment information and submit manufacturer's shop drawings/product data sheets for restraining devices and steel bases. Include placement data, calculations, and details of attachment to both equipment and structure meeting requirements of forces involved. Product data sheets and drawings are to be signed and stamped by Seismic Consultant referred to above.

.2 Stamped submittal drawings are to be project and product specific. Generic stamped calculations are not acceptable.

.3 Submittal drawings shall be stamped and signed by the Seismic Consultant as defined in section 1.04.1.

.4 At the completion of the project, provide a sealed written report and completion letter certifying that the installations have been completed in accordance with the specified design(s) and shop drawing(s).

8.05 ENGINEERING PERFORMANCE REQUIREMENTS

.1 Specified design criteria for seismic and vibration for elements and components are to be designed to accommodate these specific calculation components factors as indicated on structural drawings. Refer to structural drawing S101 and coordinate with Structural Engineer.

importance 1.3 uls
seismic data: sa(0.2) = 0.391 / sa(0.5) = 0.328 / sa (1.0) = 0.187 / sa (2.0) = 0.0872
site data; site class d; seismic category sc3; les(0.2)=0.5083

8.06 COORDINATION

.1 Coordinate size, shape, reinforcement and attachment of all housekeeping pads supporting vibration/seismically rated equipment. Concrete is to have a minimum compressive strength as specified by the seismic consultant.

.2 Coordinate with vibration/seismic restraint manufacturer and the structural engineer of record to locate and size structural supports underneath vibration/seismically restrained equipment (e.g. roof curbs, cooling towers and other similar equipment).

8.07 SEISMIC RESTRAINTS APPLICATION

.1 General

.1 All equipment, piping and ductwork shall be restrained to resist seismic forces per the applicable building code. Additional requirements specified herein are included specifically for this project; as needed basis.

.2 Install seismic restraint devices per the manufacturer's submittals. Any deviation from the manufacturer's instructions shall be reviewed and approved by the manufacturer.

.3 Attachment to structure for suspended equipment, pipe and duct: If specific attachment is not indicated, anchor bracing to structure at flanges of beams, at upper truss chords of bar joists, or at concrete members.

.4 Provide hanger rod stiffeners where indicated or as required to prevent buckling of rods due to seismic forces.

.5 Where rigid restraints are used on equipment, ductwork or piping, the support rods for the equipment, ductwork or piping at restraint locations must be supported by anchors rated for seismic use. Post-installed concrete anchors must be in accordance with ACI 355.2.

.2 Equipment Restraints

.1 Install fasteners, straps and brackets as required to secure the equipment.

.2 Install seismic snubbers on HVAC equipment supported by floor-mounted, non-seismic vibration isolators. Position snubbers as necessary and attach to equipment base and supporting structure as required.

.3 Install neoprene grommet washers or fill the gap with epoxy on equipment anchor bolts where clearance between anchor and equipment support hole exceeds 3 mm (1/8").

.4 Suspended Equipment: All suspended equipment that meets any of the following conditions requires seismic restraints as specified by the supplier:

.1 Rigidly attached to pipe or duct that is 75 lbs. and greater.

.2 Items hung independently or with flexible connections greater than 20 lbs. For importance factors greater than **[1.0]** all suspended equipment requires seismic restraints regardless of the above notes.

.3 Wall mounted equipment weighing more than 20 lbs. with an importance factor of **[1.0]**.

.4 The 300mm (12") rule does not apply to suspended equipment.

.5 Roof Mounted Equipment: Needs to be installed on a structural frame, seismically rated roof curb, or structural curb frame mechanically connected to the structure. Items shall not be mounted onto sleepers or pads that are not mechanically and rigidly attached to the structure. Restraint must be adequate to resist both seismic and wind forces.

.6 Rigid Mounted Equipment:

.1 Anchor floor and wall mounted equipment to the structure as per the stamped seismic certifications / drawings.

.2 Suspended equipment shall be restrained using seismic cable restraints, or struts, and hanger rods as per the stamped seismic certifications / drawings.

.7 Vibration Isolated Equipment:

.1 Seismic control shall not compromise the performance of noise control, vibration isolation or fire stopping systems.

.2 equipment supported by vibration-isolation hangers shall be detailed and installed with approximately a 3mm (1/8") gap between the isolation hangers and the structure. isolators at restraint locations must be fitted with uplift limit stops

.3 Piping and Ductwork Systems

.1 Provide seismic control measures with spacing and anchorage engineered for the specific project.

.2 All piping and duct systems are to be restrained to meet code requirements.

.1 All piping associated with "Life Safety Systems" shall always have an importance factor of **[1.5]**. Seismic restraint requirements / exemptions vary with code and seismic acceleration – see specific code and comply with applicable restraint requirements.

.2 All piping systems (regardless of type of pipe) assigned a component importance factor of **[1.5]** shall require seismic restraints. Seismic restraint requirements / exemptions vary with code and seismic acceleration – see specific code and comply with applicable restraint requirements.

.3 Piping associated with an importance factor of **[1.0]** may not require seismic restraint; see specific code for requirements.

.4 Seismically restrain / brace all pipes 65 mm (2-½") in nominal diameter and larger.

.5 Seismically restrain / brace all piping in boiler rooms, mechanical rooms and refrigeration mechanical rooms 32 mm (1-¼") in nominal diameter and larger.

.6 Seismically restrain / brace all gas (i.e.: natural gas, medical gas, vacuum, petroleum based liquid, compressed air, etc.) piping 25 mm (1") in nominal diameter and larger.

.7 Branch lines may not be used to brace main lines.

.3 Restraint Spacing for Piping:

.1 For ductile piping: Transverse supports a maximum of 12 m (40') o.c.

.2 For ductile piping: Longitudinal supports a maximum of 24 m (80') o.c.

.3 For non-ductile piping (e.g., cast iron, PVC) space transverse supports a maximum of 6 m (20') o.c., and longitudinal supports a maximum of 12 m (40') o.c. Differential spacing can be designed depending upon pipe size and length(s) of run (design will be indicated on drawings of approved method).

.4 For pipe risers, restrain the piping at floor penetrations using the same spacing requirements as above.

.4 Seismically restrain per specific code requirements, all ductwork listed below (unless otherwise indicated on the drawings), using seismic cable restraints (ductwork not meeting listed below criteria is to be "exempt"):

.1 All ducts with cross sectional area equal to or greater than 0.55 m2 (6 ft2).

.2 All round ducts with diameters equal to or greater than 700mm (28").

.3 Any ductwork, pipe or equipment, which if it were to fail would result in damage to a piece of equipment or building function that has a component importance factor of **[1.5]**.

.4 All ductwork weighing more than 25 kg/m (17 lb/ft).

.5 Restraint Spacing For Ductwork:

.1 Transverse supports a maximum of 9 m (30') o.c.

.2 Longitudinal supports a maximum of 18 m (60') o.c.

.6 Brace a change of direction longer than 3.7 m (12').

.7 This specification does not allow the use of the "12-inch rule" where the piping and duct may be exempted from seismic restraint based on the length of the support rods provided that the rods are not subjected to bending moments.

.8 Install restraint cables so they do not bend across edges of adjacent equipment or building structure. Tie back to structure at 45 degrees to the structure.

.9 Longitudinal restraints for single pipe supports shall be attached rigidly to the pipe, not to the pipe hanger.

.10 Adjust restraint cables so that they are not visibly slack. Cable not to support weight during normal operation.

.11 Seismic systems are to be compatible with requirements for anchoring and guiding of systems.

.12 Drilled or power driven anchors or fasteners shall not be permitted for use with seismic control measures.

.13 Friction due to gravity does not constitute a seismic attachment.

.14 Seismic restraint connections are not to be connected to the bottom chord of steel joists or the bottom flange of steel beams.

.15 Standard beam clamps can be used to support restrained components; they cannot be used to connect the seismic restraint to the structure, only for the hanger rods.

.16 Brace remaining piping and ductwork to code requirements or in conformance with SMACNA "seismic restraint manual guidelines for mechanical systems", latest edition.

8.08 INSPECTION AND CERTIFICATION

.1 Notify the local representative of the seismic restraint manufacturer prior to installing any seismic restraint devices. Seek the representative's guidance in any installation procedures

.2 Upon completion of the installation, arrange for the Seismic Consultant to visit the site to verify the proper installation of all seismic restraint devices herein specified. The local representative of the vibration manufacturer shall be present as well to support the Seismic Consultant in the inspection of the completed system. A written report citing any installation errors, improperly selected devices, or other fault in the system which could affect the performance of the system is to be generated by the Seismic Consultant. Also, the local representative shall verify that isolators are adjusted, with spring's perpendicular to bases or housing, adjustment bolts are tightened up on equipment mountings, and hangers are not cocked.

.3 Submit a report including the manufacturer's representative's final report, indicating that all seismic restraint material has been properly installed, or steps that are to be taken by the contractor to properly complete the seismic restraint work as per the specifications and approved shop drawings with which he/she is unfamiliar

MCW Consultants Ltd.

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ELECTRICAL SPECIFICATIONS

FOR

ACCESSIBILITY UPGRADE

WESTERN TECHNICAL-COMMERCIAL SCHOOL

125 Evelyn Crescent,

Toronto, ON, M6P 3J7

TO

TORONTO DISTRICT SCHOOL BOARD

TR-25-0960

DATED

MAY 22, 2026

ISSUED FOR ADD-001

Contact Person: Ryan Lien
Phone: (416) 598-2920 ext:293
Email: rlien@mcw.com

ELECTRICAL SPECIFICATIONS

1. **General Provisions:**

1.1 Codes, Regulations, Permits

1.1.1 Work shall conform to the latest edition of the Canadian Electrical Safety Code.

1.1.2 All equipment and material shall be CSA and ULC approved and so labelled.

1.1.3 Obtain permit, pay all fees and present final unconditional approval certificate from Hydro Inspection and authority having jurisdiction.

1.1.4 Refer to and comply with the general conditions as indicated in the Architects specification.

1.1.5 Existing and new services penetrating floor slab or fire rated walls to be sealed with ULC listed and labelled 3.0 hr “F” rated fire retardant sealant.

1.2 Examination of Site:

1.2.1 Before tendering, examine site and all applicable drawings so that the tender price includes for everything necessary for completion of work. Failure to visit the site or adequately review all the required interfacing details will not entitle this sub contractor to any additional compensation.

1.3 Work in Existing Building:

1.3.1 Refer to architectural and structural drawings for details of building renovation.

1.3.2 Base building redundant equipment and materials: To be turned over to the Landlord.

1.3.3 Existing base building mullions, ceiling grid and curtain wall: Do not make any penetrations under any conditions.

1.3.4 Execute all work using materials and methods to provide system operation, quality and appearance equal to or better than the existing base building.

1.3.5 X-Ray all locations where openings are required in the floor slab to ensure that post tension cables are not damaged. Coordinate with the project supervisor prior to proceeding.

1.3.6 Co-ordination of the installation, phasing, working conditions, and time schedules is to be carefully co-ordinated to allow the present business to continue during the renovation period.

1.3.7 Where existing services presently mounted on and/or concealed behind existing finishes become exposed during the renovation work, and where these services will not be concealed behind or mounted on new finishes, include for relocating the service so as to be concealed behind new or existing finishes. Co-ordinate new locations with the Architect.

1.3.8 Maintain all parts of the existing building in operation during normal working hours.

1.3.9 Where disruptions of existing services are required co-ordinate the shut-downs with the Owner and carry out the work at a time and in a manner acceptable to them. Carefully schedule all disruptions and/or shut-downs and ensure that the duration of same is kept to the absolute minimum. Submit for approval a written concise schedule of each disruption at least 72 hours in advance of performing work and obtain Owner's written consent prior to implementing.

1.3.10 Where disruptions of life safety systems are required comply with paragraph 1.3.9 above and also provide continuous monitoring during shut-down period and ensure all systems are reactivated prior to leaving the site at the end of each working day.

1.3.11 Assume full responsibility for any disruption or damage to existing services or systems. Should any temporary connections be required to maintain services during work in the existing building, supply and install all necessary material and equipment and provide all labour at no extra cost. Should any existing system or device be damaged in the course of work by this Division, make full repairs without extra cost and to the satisfaction of the Owner.

1.4 Owner's Right to Relocate Electrical Items:

1.4.1 The Owner reserves the right to relocate electrical items at a later date, but prior to installation, without cost, assuming that the relocation of each item does not exceed 10 feet from it's original location.

1.5 Shop Drawings

1.5.1 Provide seven copies of manufacturer's shop drawings for approval. Shop drawings shall include, all distribution equipment, light fixtures, emergency battery units, electrical heating units and other special equipment.

1.6 Cutting and Patching:

1.6.1 Be responsible for all cutting and patching necessary for completion of your work.

1.7 Identification

1.7.1 Identify electrical work as specified herein:

1) For each piece of electrical distribution equipment from the electrical source of supply up to and including panelboards and motor systems, for special control panels and cabinets, and for any other piece of equipment where specified in this Section, provide engraved lamacoid identification nameplates.

2) Nameplates shall generally be black-white-black with bevelled edges, secured to apparatus with stainless steel screws. Generally lettering shall be 6mm high but equipment in the main electrical room shall be provided with lettering 13mm high.

3) Warning signs, if and when required, shall be red with white lettering.

4) Equip large multiple cell or component apparatus such as switchboards and distribution panels with main nameplates identifying the equipment, voltage characteristics and capacity, and with sub-nameplates clearly identifying each cell or component and its service.

5) Panelboard nameplates shall identify the panelboard numbers designated on the drawings, unless otherwise instructed. Nameplates for disconnect switches, control panels and cabinets shall outline their service.
6) Motor starters, magnetic and manual, shall identify the piece of motorized equipment being serviced.

7) Exact nameplate wording and sizes must be approved by and confirmed by the Consultant prior to manufacture.

8) Directories for branch circuit panelboards shall be clearly and neatly typewritten, accurately identifying the type, location and wattage of the connected load for each circuit breaker. Directories shall be secured to the rear of the cabinet door under protective plastic. Incorporate copies of all panel board directories in each copy of operating and instruction manuals.

9) Clearly identify each branch circuit breaker in a permanent manner to correspond with directories. Glued paper identification will not be acceptable.

10) Clearly identify main pull or junction boxes (excluding obvious outlet boxes) by painting the outside of the covers. Paint colours shall be in accordance with the following schedule:

Lighting	-	Yellow
Power	-	Blue
Emergency Power	-	Orange
Fire Alarm	-	Red
Telephone	-	Cream
Miscellaneous Signals	-	Brown

11) In addition to painting miscellaneous signal boxes clearly identify the specific system in which the box is installed.

12) Colour code empty conduit capped and terminated for future use as specified above and clearly identify its intended use by means of securely attached tags.

13) Colour code conductors throughout, to identify phases, neutrals and grounds, by means of coloured conductor insulation. Colours shall be as follows:

Phase A	-	Red
Phase B	-	Black
Phase C	-	Blue
Ground	-	Green
Neutral	-	White

14) Control conductors, in addition, shall be numbered with Brady Ltd., or Electrovert Ltd., Z-type markers. Colour code conductors, for special component per manufacturer's recommendations.

15) Use dymo tape to label each receptacle with its circuit number (e.g., UA-27).

1.8 Documentation and systems acceptance

1.8.1 Provide three (3) CDs of electronic copies and one (1) copy three-ring binder of hard copy of closeout documentation and as-built PDF copy and autocad files.

1.8.2 Each manual shall contain the following data:

- A set of as-built mark-up print for Consultant to prepare autocad as-built files
- Letters of Owner's Instructions
- Final ESA certificate.
- A copy of each "reviewed" shop drawing.
- Complete explanation of operation principles and sequences.
- Complete part lists with numbers.
- Recommended maintenance practices and precautions.
- Complete wiring and connections diagrams.
- Certificate of warranty.
- Emergency Lighting Verification Report.
- Representative certificates for Fire Alarm System verification.

1.8.3 Ensure that operating and maintenance instructions are specific and apply to the models and types of equipment provided.

1.9 Testing and commissioning

1.9.1 Perform, in conjunction with the consultant, testing and verification of all following systems as discussed hereinafter. This testing and verification shall be provided after, and in addition to, the standard manufacturers' testing and verification procedures.

- Major distribution equipment and components;
- Wiring;
- Emergency lighting;
- Fire alarm system;
    - **Ensure door holders are properly integrated with the smoke detectors and fire alarm system**
- Lighting control system.
- Dimming system.

1.9.2 Test and verify that all equipment is installed within and operating within manufactures' guidelines and in accordance with the contract document requirements, to ensure the systems can be safely energized and operated.

1.9.3 Obtain and have available the necessary reference document for review during the testing period.

1.9.4 Execute Work of this section only by personnel that have taken part in the construction program of this project and manufacturer appointed qualified technical staff capable of setting-up, adjusting, balancing and calibrating all equipment, components and systems.

1.10 Instruction to owners

1.10.1 Instruct the Owner's representatives in all aspects of the operation of systems and equipment.

1.10.2 Arrange for and pay for services of service engineers and other manufacturers' representatives required for instruction on specialized portions of the installation.

1.10.3 Submit to the Consultant at the time of final inspection a complete list of systems stating for each system:

A. Date instructions were given to the Owner's staff.
B. Duration of instruction.
C. Name of persons instructed.
D. Other parties present (manufacturer's representative, consultants, etc.).

1.10.4 Signatures of the Owner's staff stating that they properly understood the system installation, operation and maintenance requirements.

1.11 Extra work

1.11.1 In case where extra work of any kind is required, obtain written instruction from the architect / design consultant before proceeding. Payments will be made for authorized changes only.

1.11.2 Quotation with breakdown of material, labour, overhead, profit, etc., shall be submitted for each change. Labour units shall be based on the latest National Electrical Contractors Association (NECA) labour column one for the complete duration of the project. Material prices shall be based on the current National Price System with trade discounts. Hourly labour rate shall include all rated changes for supervision, Hydro inspection, hand tools, parking, clean-up, as-built drawings and additional bonding.

2 Basic Material and Methods:

2.1 Wiring Methods:

2.1.1 All building wires and cables shall be copper thermoplastic type RW90 degrees C rated and installed in conduit. Minimum size shall be #12 AWG. For final connections to lighting fixtures use type GTF wire. For final connections to heating equipment use silicone insulated type wire, suited for this purpose. All conduit shall be EMT type galvanized steel utilizing compression type, factory-installed insulated throats and gland watertight and compression type couplings (cast fittings/ set-screws not acceptable) to be forged steel. All conduit shall be concealed except in unfinished areas. Paint exposed conduit to match existing wall/ ceiling finish.

2.1.2 Branch circuit wiring exceeding 100 feet to the furthest outlet from a panelboard shall be #10 AWG.

2.1.3 Armoured cable (BX) may be used for fixture tails and wall mounted outlets maximum length 5 feet.

2.1.4 Provide VFD rated cabling for all VFD equipment.

2.1.5 All conduit shall be run parallel to walls and ceilings. Provide a nylon fish wire in all empty conduit. All connectors shall be Ideal wing nut type. Refer to clause 2.1.4, Include for 'Where EMT conduit is required, provide compression type EMT couplings (cast fitting and set-screw not acceptable) and glan watertight EMT connector with factory insulated throats and to be forged steel. Paint exposed conduit to match existing finish'

2.1.6 In areas with drywall ceilings, contractor shall locate/relocate all new/existing junction boxes, pull boxes, disconnects, etc. to accessible areas; as required by the Canadian Electrical Code. Where it is no possible to relocate/install existing/new services in accessible areas, Contractor shall provide access panels c/w fire ratings as required. Exact location of access panels shall be co-ordinated with the Architect.

2.1.7 Where conduit penetrate through the fire rated wall, seal up air gap with ULc fire rated material.

2.1.8 Support all conduit independent of ceiling system.

2.2 Outlet Boxes and Junction Boxes:

2.2.1 Provide an outlet box for each lighting fixture, wiring device, data outlet, telephone outlet, etc. Boxes shall be suitable for the application.

2.2.2 Support boxes independent of conduit.

2.2.3 All boxes shall be installed so as to be accessible after work is complete. Provide pull boxes on all conduit runs on the basis of not more than two right angle bends or their equivalent or a distance not to exceed 100 feet between boxes.

2.3. Devices:

2.3.1. Devices shall be stainless steel, unless otherwise specified.

2.3.2. Decorator duplex receptacles (15A, 250V max.) shall be Pass & Seymour Tamper-Resistant Cat. #885TRW, mounted 18" AFF or 8" above counter tops.

2.3.3. Decorator switches (15A, 120/277V max.) shall be Pass & Seymour #2601 (Single Pole), #2603 (Three Way), mounted 4'-0" AFF.

2.3.4. Coverplates shall be Pass & Seymour SS series smooth stainless steel, for flush mounted service boxes.

2.3.5. Receptacles located within 3 metre of washbasins or similar facilities shall be Pass & Seymour #1595. (Receptacles c/w GFI protection.)

2.3.6. Receptacles located in kitchens and installed within 1.5 metre of kitchen sink along the wall behind counter work surfaces shall be protected by ground fault interrupter.

2.3.7. Receptacles located in bathrooms, washrooms or similar location within 3 metres of washbasin, bathtub or shower stalls shall be protected by ground fault interrupter.

2.3.8. Flush mounted floor boxes shall be HUBBELL. Refer electrical legend drawing E-01.

2.3.9. Isolated ground receptacles shall be Pass & Seymour Cat. #IG26262-HG.

2.3.10. Decorator exhaust fan switches (20A max.) shall be Pass & Seymour Cat. #2629, illuminated when on.

2.3.11. Decorator variable speed exhaust fan switches shall be Pass & Seymour Lumaspec non-preset series, wattage as required.

2.3.12. Wall mounted lighting dimmers shall be white, Lutron NT series, wattage as required.

2.3.13. Variable speed exhaust fan switches shall be Lutron NTF Series, wattage as required.

3. **Distribution:**

3.1. Extend and modify the existing base building distribution system as indicated on the drawings.

3.2. Provide new switches and breakers in existing distribution equipment as detailed. New equipment shall, in all respects, be compatible with existing equipment.

3.3. Balance the loading on feeders so that unbalanced load is less than 10%.

3.4. Provide updated all affected panel typewritten directories, hand written are not acceptable.

3.5. New Equipment:

3.5.1. Safety switches shall be Eaton Canada Ltd. HNF series, quick make, quick break type. Where outdoor switches shall be CEMA-3 or equal.

3.5.2. Panelboard shall be Eaton Canada type PRL1A, ratings as indicated on the drawings. Provide a clearly typed directory with each panelboard. Breakers shall be thermal magnetic, bolt on type, copper tinted bus, full neutral and 10,000 Amp symmetrical interrupting capacity or equal.

3.5.3. Manual starters shall be Allan Bradley Bulletin 600, with pilot light and on/off toggle switch.

3.5.4. Fuses shall be Gould Shawmut HRC 1, Class J series CJ for constant running equipment and series AJT for equipment that cycles on and off.

3.5.5. The enclosure for all distribution equipment shall be sprinklered proof with an extended top cover located on the front of the unit.

3.5.6. Accept manufacturers: Eaton, Schneider Electric and Siemens Canada.

3.5.7. General purpose transformer – dry type

- Transformer shall be sized as shown on plans, 3 phase, 3 coils with a common core construction, 60 Hz.
- Primary winding shall be 600 volts, 3 phase, delta connected, complete with two full capacity 4.5% adjustment taps, 1 below (FCBN) and 1 above (FCAN) the rated voltage for 10 kVA and less, and four full capacity 2.5% adjustment taps, 2 below (FCBN) and 2 above (FCAN) the rated voltage for more than 10 kVA.
- Secondary winding shall be 208Y/120 volts, 3 phase, wye connected, with a 30° angular displacement (lagging) with respect to the primary winding.
- All winding conductors shall be of copper.
- Temperature rise at full load shall not exceed 80°C with a class 220 insulation system.
- Windings shall be wound with the secondary winding nearest to the core and shall be round coils.
- The core shall be constructed of high grade, grain oriented silicon steel laminations.
- The impregnation process for the core-and-coil assembly shall include a period under vacuum, followed by pressure impregnation using epoxy resin (EVI process).
- The transformer shall be isolated from the enclosure to reduce noise and vibration by means of anti-vibration pads.
- The transformer enclosure shall be fabricated from sheet steel and shall be of Type 4 (totally enclosed), Sprinkler-proof.

- The enclosure coating shall be grey ASA 61, color option available and suitable for indoor/outdoor use.

3.5.8. General purpose Step-Up Transformer – dry type

- Step-up Transformer shall be sized as shown on plans, 3 phase, 3 coils with a common core construction, 60 Hz.
- Step-up transformer should be a purpose built step-up transformer rather than a reverse fed step-down transformer.
- Primary winding shall be 208V volts, 3 phase, DELTA connected, complete with two full capacity 4.5% adjustment taps, 1 below (FCBN) and 1 above (FCAN) the rated voltage for 10 kVA and less, and four full capacity 2.5% adjustment taps, 2 below (FCBN) and 2 above (FCAN) the rated voltage for more than 10 kVA.
- Secondary winding shall be 480/277 volts, 3 phase, wye connected, with a 30° angular displacement (lagging) with respect to the primary winding.
- All winding conductors shall be of copper.
- Temperature rise at full load shall not exceed 80°C with a class 220 insulation system.
- Windings shall be wound with the secondary winding nearest to the core and shall be round coils.
- The core shall be constructed of high grade, grain oriented silicon steel laminations.
- The impregnation process for the core-and-coil assembly shall include a period under vacuum, followed by pressure impregnation using epoxy resin (EVI process).
- The transformer shall be isolated from the enclosure to reduce noise and vibration by means of anti-vibration pads.
- The transformer enclosure shall be fabricated from sheet steel and shall be of Type 4 (totally enclosed), Sprinkler-proof.
- The enclosure coating shall be grey ASA 61, color option available and suitable for indoor/outdoor use.

3.5.9. Provide arc flash study for all new panels. The arc flash study will be performed by an equipment manufacturer or Enkompass Power and Energy Corp.

3.5.10. Grounding and Bonding:

Provide a complete grounding and bonding system throughout the entire electrical system in accordance with the requirements of the O.E.S.C. and to the satisfaction of the local inspector.

4. Fire Alarm System:

4.1. The building presently has an existing Chubb Edwards fire alarm system.

4.2. Provide new fire alarm devices as noted. Devices shall match existing system and connect to control and annunciator panels.

4.3. Obtain the services of the system manufacturer to perform any and all modifications required to base building control and annunciator equipment.

4.4. All wiring for the system shall be installed in conduit and shall comply with requirements of the system manufacturer.

4.5. Upon completion of the modifications to the fire alarm system the system manufacturer shall provide and inspection and verification report on all devices and wiring.

4.6. Upon completion of the modifications to the fire alarm system the system manufacturer shall provide an updated fire alarm schedule to reflect the changes made during the course of this project.

5. Seismic Restraints

5.1. GENERAL

5.1.1. SUMMARY

5.1.1.1. Provide approved seismic restraints for all equipment, conduits, panels, cable trays and light fixture covered by Division 26.

5.1.1.2. Design seismic restraint systems to conform to the Ontario Building Code for the project location.

5.1.1.3. Submit test certificates for each seismic restraint device, identifying maximum tested load capacities.

5.1.1.4. Submit calculations for each piece of restrained equipment, and conduit, including seismic forces, restraint selection, and selection data.

5.1.1.5. Provide adequate attachment to structure in accordance with drawings and specifications.

5.1.1.6. Ensure housekeeping pads for all electrical equipment are reinforced to withstand seismic loading and that housekeeping pad is rigidly fastened to support structure.

5.1.2. REFERENCES

5.1.2.1. Ontario Building Code

5.1.3. SUBMITTALS

5.1.3.1. Submit manufacturer's instructions, printed product literature and data sheets and include product characteristics, performance criteria, physical size, finish and limitations.

5.1.3.2. Submit operation and maintenance data for incorporation into manual.

5.2. PRODUCTS

5.2.1. MANUFACTURERS

5.2.1.1. Acceptable Products: Product shall be provided by a single manufacturer. Products and manufacturers specified are to establish a standard of quality for design, function, materials, and appearance. Products shall be modified as necessary by the manufacturer for compliance with requirements. Provide the following specified product and manufacturer without exception, unless approved as a substitute by addendum to the Contract Documents prior to the bid date:

5.2.1.1.1. Kinetics Noise Control Inc.
5.2.1.1.2. BVA
5.2.1.1.3. Vibration Mountings & Controls, Inc.
5.2.1.1.4. Tecoustics
5.2.1.1.5. Hilti

5.3. EXECUTION

5.3.1. INSTALLATION

5.3.1.1. Provide all directional seismic snubber for floor mounted dry type transformers.

5.3.1.2. Provide slack seismic restraint cables for platform mounted assemblies.

5.3.1.3. All equipment shall meet the requirements of the OBC and all equipment shall have seismically acceptable attachment points.

5.3.1.4. Seismic restraints may be omitted from the following installations:

5.3.1.4.1. Conduits in electrical and mechanical rooms less than 1 1/4" (32mm) inside diameter.
5.3.1.4.2. All other conduits less than 2 1/2" (65mm) inside diameter.
5.3.1.4.3. All conduits suspended by individual hangers where top of conduit are suspended 12" (300mm) or less from the supporting structure member.

5.3.1.5. Unless indicated otherwise, seismic restraints shall be capable to withstand a horizontal force equal to 2g in any direction.

5.3.1.6. All conduit supported on either side of a building expansion joint shall have provision for building motion, i.e. flexible conduit.

5.3.1.7. Ensure equipment is sufficiently rigid for seismic restraint point loading.

5.3.1.8. Light fixtures shall not be supported solely by suspended ceilings. Provide independent supporting system to carry weight of fixtures (minimum 2 corners).

5.3.1.9. Provide transverse and longitudinal bracing to conduits as required by this specification.

5.3.1.10. Maximum spacing for transverse bracing shall be 20 ft. (6 m) and longitudinal restraints at 40 ft. (12 m).

5.3.1.11. Vary adjacent spacing of restraints runs by 10% to 30% to avoid coincident resonance.

5.3.1.12. At vertical risers, wherever possible, support the weight of the riser at a point or points above the centre of gravity of the riser. Provide lateral guides at the top and bottom of the riser and at intermediate points not to exceed the transverse spacing discussed on item .7.

5.3.1.13. Restraints shall be installed at least 2" (50mm) clear of all other equipment, services and any other anchors or supports.

5.3.1.14. Provide transverse and axial restraints within 12 ft. (3.6 m) of all vertical bend.

5.3.1.15. At steel trusses, connect to top chords and follow truss manufacturer's instructions.

5.3.1.16. Select the anchors in the concrete slab for a minimum load equal to twice the weight of the equipment.

5.3.1.17. Equipment manufacturer shall be responsible for ensuring that all integral components are capable of withstanding a lateral force of 2g.

5.3.1.18. Restraining devices shall be placed on all sides of equipment with the exception of light fixtures.

5.3.1.19. Provide additional steel brackets, inserts, bolts, cable, etc. to provide seismic restraints.

5.3.1.20. The installation of seismic restraints shall not compromise vibration isolation capabilities.

5.3.1.21. Install seismic snubbers at the corner of the transformer core and coil assembly, to prevent the assembly from sliding on the vibration isolation pads.

5.3.1.22. For non-vibrating equipment, secure the equipment to the structure by:

5.3.1.22.1. Bolting directly to the structure.
5.3.1.22.2. Use rigid seismic restraints.
5.3.1.22.3. Use taught cable restraints - not slack.
5.3.1.22.4. Rigid restraints are preferable to cable restraints as cables have no compression load capabilities.

5.3.1.23. Install bolts and tighten in accordance with manufacturer's torque recommendations.

5.3.1.24. Prior to the installation of any seismic restraints, review with the Structural Consultant the methods of attachment to the building structure and equipment loads.

5.3.2. SLACK CABLE REQUIREMENTS

5.3.2.1. Provide slack cable restraints systems, or other approved systems.

5.3.2.2. Other approved systems are: rigid restraint where the conduits pass through a block or concrete wall, or cable strap and spacer piece attached to the structure, used where the conduit is adjacent to a wall and conventional slack cable restraints cannot be used.

5.3.2.3. Connect slack cable restraints to ceiling hung equipment in such a way that the axial projection of the wires passes through the centre of gravity of the equipment.

5.3.2.4. Orient restraint wires on ceiling hung equipment at approximately 90ø to each other (in plan), and tie back to the ceiling slab at an angle not exceeding 45ø to the slab.

5.3.2.5. Install cables using appropriate grommets, shackles, and other hardware to ensure alignment of the restraints and to avoid bending the cable at connection points.

5.3.2.6. Adjust restraint cables such that they are not visibly slack, or that the flexibility is approximately 1 1/2" (40mm) under thumb pressure for 5 ft. (1.5m) cable length (equivalent ration for other cable lengths). Adjust the clearance at cable strap/spacer piece restraint to not exceed 1/4" (6mm).

LEGEND (NOT ALL SYMBOLS SHOWN ON THIS LEGEND ARE NECSSARILY USED ON THIS PROJECT)

VALVES

NEW

- GATE VALVE
- BALL VALVE
- BUTTERFLY VALVE
- GLOBE VALVE (TOP / SIDE)
- CIRCUIT BALANCING VALVE
- HORIZONTAL VALVE
- ANGLE GLOBE VALVE
- AUTO-FLOW BALANCING VALVE
- TWO-WAY CONTROL VALVE
- TERMINAL CONTROL AND BALANCE VALVE
- PRESSURE INDEPENDENT CONTROL VALVE (PICV)
- THREE-WAY CONTROL VALVE
- SOLENOID OPERATED VALVE
- PLUG VALVE
- SHUTOFF COCK
- MANUAL THREE-WAY VALVE
- HAND WHEEL - RISING STEM (OS&Y)
- HAND WHEEL - NON-RISING STEM
- SV HAND WHEEL - SUPERVISED
- GEAR OPERATED MANUAL VALVE
- PINCH VALVE
- NEEDLE VALVE
- QUICK OPEN VALVE
- QUICK CLOSE VALVE
- BACK FLOW PREVENTER
- SWING CHECK VALVE
- SPRING TYPE CHECK VALVE
- INLINE MULTIPURPOSE VALVE
- ANGLE MULTIPURPOSE VALVE
- REDUCED PRESSURE BACKFLOW PREVENTER
- DOUBLE CHECK VALVE ASSEMBLY
- DIFFERENTIAL PRESSURE CONTROL VALVE
- DIFFERENTIAL PRV REGULATOR
- REDUCING REGULATOR
- PRV GAS PRV
- SAFETY OR RELIEF VALVE
- HOSE BIBB VALVE

STEAM TRAPS

- IB INVERTED BUCKET
- F&T FLOAT AND THERMOSTATIC
- T THERMOSTATIC
- TD THERMODYNAMIC (DISK)
- VARIABLE ORIFICE (PITON)
- FIXED ORIFICE

PIPE FITTINGS

- 90 DEGREE ELBOW
- 45 DEGREE ELBOW
- ELBOW UP
- ELBOW DOWN
- PIPE CAP
- TEE
- TEE UP
- TEE DOWN
- BOTTOM BRANCH
- TOP BRANCH
- FLANGE
- SCREWED UNION
- CONCENTRIC REDUCER
- FOB ECCENTRIC REDUCER (FLAT ON BOTTOM)
- FOT ECCENTRIC REDUCER (FLAT ON TOP)
- QUICK CONNECT
- SIGHT GLASS

PIPE ACCESSORIES

- SIGHT GLASS
- VACUUM BREAKER
- GM GAS METER
- WM WATER METER
- M MAGNETIC FLOW METER
- FLEXIBLE CONNECTION
- INS HEAT TRACE (INSULATED)
- HEAT TRACE (NON-INSULATED)
- THRUST BLOCK
- PIPE ANCHOR
- PIPE GUIDES
- EXPANSION COMPENSATOR
- AV AUTO VENT
- MV MANUAL VENT
- AIR SEPARATOR
- PIPE SPRING HANGER
- PUMP SUCTION DIFFUSER
- BASKET STRAINER
- PIPE STRAINER
- PIPE STRAINER - WITH BLOWDOWN
- PIPE STRAINER - WITH BALL VALVE BLOWDOWN AND HOSE CONNECTION

MULTI-LINE VALVE SYMBOLS

- PIPE CAP
- REDUCER: CONCENTRIC
- REDUCER: ECCENTRIC
- TEE
- PIPE
- PIPE HANGER
- PIPE SLEEVE
- FLANGES: SLIP ON
- FLANGES: WELD NECK
- FLANGES: BLIND
- ELBOW DOWN (90°)
- ELBOW UP (90°)
- 11.25° ELBOW
- 22.5° ELBOW
- 45° ELBOW
- 90° ELBOW
- BUTTERFLY VALVE (WITH WELDNECK FLANGES)
- BUTTERFLY VALVE (WITH BLIND FLANGES)

PLUMBING & DRAINAGE

- SHOWER HEAD
- SINGLE / DOUBLE GAS SUPPLY VALVE
- FUNNEL FLOOR DRAIN / SQUARE FLOOR DRAIN
- FLOOR DRAIN / FLOOR DRAIN WITH TRAP
- HUB DRAIN / WITH TRAP
- ROOF DRAIN
- CLEAN OUT PLUG / FLOOR
- P-TRAP / P-TRAP BELOW GRADE
- SINK TRAP
- HW CW HOT / DRAIN / COLD CONNECTIONS
- WATER HAMMER ARRESTOR
- PLUMBING EQUIPMENT - INTERCEPTOR
- PLUMBING EQUIPMENT - WATER HEATER

PIPE INSTRUMENTS

- FLOW MEASUREMENT PORT
- INSTRUMENT WELL
- PRESSURE GAUGE
- TEMPERATURE OR PRESSURE TAP
- TEMPERATURE GAUGE

FIRE PROTECTION

NOTE: DEMOLISHED ITEMS WITH "R" DENOTES "SAVE FOR REINSTALLATION IN NEW LOCATION"

- PENDANT
- PENDANT (EXISTING TO REMAIN)
- D PENDANT (DEMOLISHED)
- R PENDANT (REMOVE AND REINSTALL IN NEW LOCATION)
- RECESSED
- UPRIGHT
- CONCEALED
- DRY PENDANT
- DRY PENDANT (EXISTING)
- PRE-ACTION
- SIDEWALL
- CONCEALED SIDEWALL
- RECESSED SIDEWALL
- FIRE HOSE CABINET
- FIRE HOSE CABINET WITH HOSE REEL
- FIRE VALVE CABINET
- FE FIRE EXTINGUISHER
- FE FIRE EXTINGUISHER (EXISTING)
- SURFACE MOUNTED F.E. CABINET
- SEMI-RECESSED F.E. CABINET
- FULLY RECESSED F.E. CABINET
- FIRE DEPARTMENT CONNECTION
- FIRE DEPARTMENT TEST CONNECTION
- WET ALARM VALVE
- DRY ALARM VALVE
- PRE-ACTION ALARM VALVE
- FIRE HAZARD LEVEL

SITE ELEMENTS:

- SPLASH PAD
- CATCH BASIN
- CATCH BASIN (HALF)
- MANHOLE
- FIRE HYDRANT (SINGLE OUTLET)
- FIRE HYDRANT (DOUBLE OUTLET)
- FIRE HYDRANT (TRIPLE OUTLET)
- FIRE HYDRANT (QUAD OUTLET)

CONTROLS AND CONTROL POINTS

- CONTROL WIRE
- T THERMOSTAT / SPACE TEMPERATURE SENSOR
- T THERMOSTAT WITH GUARD
- H HUMIDISTAT / HUMIDITY SENSOR
- CO2 CO2 SENSOR
- $ SWITCH
- PUSH BUTTON
- FS FLOW SWITCH
- PS PRESSURE SWITCH
- AI CONTROL POINT - ANALOG INPUT
- AO CONTROL POINT - ANALOG OUTPUT
- DI CONTROL POINT - DIGITAL INPUT
- DO CONTROL POINT - DIGITAL OUTPUT
- COM CONTROL POINT - BACNET COMMUNICATIONS
- VFD VARIABLE FREQUENCY DRIVE
- ES END SWITCH
- DM DAMPER MOTOR
- TP TEMPERATURE PROBE
- FT FLOW TRANSMITTER
- HP HUMIDITY PROBE
- DP DIFFERENTIAL PRESSURE
- FZ FREEZE STAT
- OAT OUTSIDE AIR TEMPERATURE SENSOR
- VFD VARIABLE FREQUENCY DRIVE
- PS PRESSURE SENSOR
- BTU BTU METER

EXISTING/DEMOLISHED PIPING:

- [TYPE] EXISTING PIPEWORK TO BE DEMOLISHED
- [TYPE] EXISTING PIPEWORK TO REMAIN
- DCW EXISTING DOMESTIC COLD WATER
- DHW EXISTING DOMESTIC HOT WATER
- DHWR EXISTING DOMESTIC HOT WATER RECIRC.

PLUMBING:

- CA COMPRESSED AIR PIPE
- CV CENTRAL VAC - DRY MOP
- CV-W CENTRAL VAC - WET
- DCW DOMESTIC COLD WATER
- DHW DOMESTIC HOT WATER
- DHWR DOMESTIC HOT WATER RECIRC.
- PB DOMESTIC COLD WATER - PRESSURE BOOSTED
- SW SOFTENED DOMESTIC WATER
- TW DOMESTIC TEMPERED WATER
- NPW NON-POTABLE WATER PIPE
- SAN SANITARY DRAINAGE
- SAN↓ SANITARY DRAINAGE (BELOW)
- V SANITARY VENT
- STW STORM WATER DRAINAGE
- STW↓ STORM WATER DRAINAGE (BELOW)
- AW ACID WASTE DRAINAGE PIPE
- AV ACID VENT PIPE
- GW GREY WATER DRAIN
- WT WEEPING TILE

FUEL PIPING:

- G NATURAL GAS - LOW PRESSURE
- MG NATURAL GAS - MEDIUM PRESSURE
- HG NATURAL GAS - HIGH PRESSURE
- P PROPANE
- FOF FUEL OIL SUPPLY
- FOS FUEL OIL SUPPLY
- FOR FUEL OIL RETURN
- FOV FUEL VENT

HEATING/COOLING PIPING:

- HWS HEATING WATER SUPPLY
- HWR HEATING WATER RETURN
- HGS HEATING GLYCOL SUPPLY
- HGR HEATING GLYCOL RETURN
- DTWS DUAL TEMPERATURE WATER SUPPLY
- DTWR DUAL TEMPERATURE WATER RETURN
- CWS CHILLED WATER SUPPLY
- CWR CHILLED WATER RETURN
- CS CONDENSER WATER SUPPLY
- CR CONDENSER WATER RETURN
- GWS GROUND WATER SUPPLY
- GWR GROUND WATER RETURN
- CGS CHILLED GLYCOL SUPPLY
- CGR CHILLED GLYCOL RETURN
- BS BRINE SUPPLY
- BR BRINE RETURN
- BV BRINE VENT
- RL REFRIGERANT LIQUID SUPPLY
- RV REFRIGERANT VAPOUR RETURN
- LPS LOW PRESSURE STEAM
- LPC LOW PRESSURE CONDENSATE
- MV MEDIUM PRESSURE STEAM
- MV MEDIUM PRESSURE CONDENSATE
- HPS HIGH PRESSURE STEAM
- HPC HIGH PRESSURE CONDENSATE

LAB GAS:

- LCA LAB COMPRESSED AIR
- CO2 LAB CARBON DIOXIDE GAS
- H2 LAB HYDROGEN GAS
- LN2 LIQUID NITROGEN
- N2 LAB NITROGEN GAS
- O2 LAB OXYGEN GAS
- VAC LAB VACUUM PIPING

MEDICAL GAS:

- MA MEDICAL AIR
- CO2 MEDICAL CO2
- N2 MEDICAL NITROGEN
- N2O MEDICAL NITROUS OXIDE
- O2 MEDICAL OXYGEN
- MGS MEDICAL GAS SCAVENGING
- MV MEDICAL VACUUM

MEDICAL GAS VALVES

- MEDICAL GAS ZONE VALVE
- MEDICAL GAS OUTLET (TYPE INDICATED)
- MEDICAL GAS - NON RETURN VALVE

SPRINKLER AND FIRE PROTECTION

- FIRE PROTECTION ZONE
- FIRE PROTECTION RATING
- F XXXØ FIRE PROTECTION PIPE
- SP XXXØ SPRINKLER MAIN
- XXXØ SPRINKLER BRANCH PIPING
- DSP XXXØ DRY SPRINKLER PIPING
- PA XXXØ PRE-ACTION SPRINKLER PIPING
- IG XXXØ INERT GAS (CLEAN AGENT) PIPE

VENTILATION:

- TERMINAL BOX / WITH ATTENUATOR / AND REHEAT COIL
- DNDP RISE [TYPE] EXISTING DUCT TO REMAIN (TYPE INDICATED)
- EXISTING DUCT TO BE DEMOLISHED
- S/A SUPPLY AIR DUCT
- R/A RETURN AIR DUCT
- T/A TRANSFER AIR DUCT
- O/A OUTDOOR AIR DUCT
- G/E GENERAL EXHAUST DUCT
- W/E WASHROOM EXHAUST DUCT
- K/E KITCHEN EXHAUST DUCT
- F/E FUME HOOD EXHAUST DUCT
- RECTANGULAR DUCTS UP: (SUPPLY / RETURN / EXHAUST)
- RECTANGULAR DUCTS DOWN: (SUPPLY / RETURN / EXHAUST)
- MOTORIZED DAMPER / BALANCING DAMPER
- FD SD FIRE DAMPER / SMOKE DAMPER / COMBINATION FIRE-SMOKE DAMPER
- ROUND ELBOWS - 45°: R1.0 / R1.5 / R2.0
- ROUND ELBOWS - 90°: R1.0 / R1.5 / R2.0
- RECTANGULAR ELBOWS - 45°: R1.0 / R1.5
- RECTANGULAR ELBOWS - 90°: R1.0 / R1.5
- RECTANGULAR ELBOWS WITH TURNING VANES: (90° R1.0 / 45° R1.0 / 90° SQUARE)
- ACOUSTICALLY LINED DUCT
- GRILLES AND DIFFUSERS: SUPPLY / RETURN / EXHAUST
- SUPPLY DIFFUSERS: SQUARE / ROUND PLAQUE OR CONE
- HORIZONTAL OR WALL GRILLES / DIFFUSER: SUPPLY / RETURN OR EXHAUST.

- PIPEWORK SHORTENED FOR CLARITY
- PIPEWORK CONTINUED ELSEWHERE
- PIPEWORK SHORTENED FOR CLARITY (ALTERNATE SYMBOL)
- PIPE FLOW ARROW (SMALL)
- PIPE FLOW ARROW (LARGE)

EQUIPMENT:

- PUMP
- FIN TUBE RADIATION
- FIN TUBE RADIATION IN CABINET
- RADIANT PANEL
- UNIT HEATER (HORIZONTAL)
- UNIT HEATER (VERTICAL)

MECHANICAL ACRONYMS:

ACD	AUTOMATIC CONTROL DAMPER
AD	ACCESS DOOR
AP	ACCESS PANEL
AS	AIR SEPARATOR
BD	BALANCING DAMPER
BDD	BACKDRAFT DAMPER
FD	FIRE DAMPER
FSD	FIRE/SMOKE DAMPER
FT	FLASH TANK
FTR	FINNED TUBE RADIATOR
H	HUMIDIFIER
MD	MOTORIZED DAMPER
OBD	OPPOSED BLADE DAMPER
PRV	PRESSURE REDUCING VALVE
SA	SOUND ATTENUATOR
SD	SMOKE DAMPER
SRV	SAFETY RELIEF VALVE

EQUIPMENT ACRONYMS:

ACU-	AIR CONDITIONING UNIT
AHU-	AIR HANDLING UNIT
CAV-	CONSTANT AIR VOLUME TERMINAL UNIT
CH-	CHILLER
CP-	CONDENSATE PUMP
CU-	CONDENSING UNIT
CSG-	CLEAN STEAM GENERATOR
CUH-	CABINET UNIT HEATER
EAHU-	EXHAUST AIR HANDLING UNIT
EFC-	EVAPORATIVE FAN COOLER
ERV-	ENERGY RECOVERY VENTILATOR
ET-	EXPANSION TANK
EX-	EXHAUST FAN
FCU-	FAN COIL
HRC-	HEAT RECOVERY COIL
HVU-	HEATING/VENTILATING UNIT
HX-	HEAT EXCHANGER
UH-	UNIT HEATER
VAV-	VARIABLE AIR VOLUME TERMINAL BOX
VFD-	VARIABLE FREQUENCY DRIVE
P-	PUMP
HC-	HEATING COIL
CC-	COOLING COIL
RHC-	REHEAT COIL
SC-	STEAM COIL
PF-	PRE-FILTER
FF-	FINAL FILTER
EF-	EXHAUST FAN
SF-	SUPPLY FAN
RF-	RETURN FAN
SAV-	SUPPLY AIR VALVE
EAV-	RETURN AIR VALVE

PIPE RISE / DROPS

- UP FROM BELOW / UP TO ABOVE
- DOWN TO BELOW / DOWN FROM ABOVE
- VENT UP FROM BELOW / UP TO ABOVE
- VENT UP FROM BELOW / UP TO VENT CAP

TAGS

- SCHEMATIC INLET/OUTLET
- TYPE PLUMBING FIXTURE TYPE TAG
- TYPE / SIZE / FLOW GRILLE / DIFFUSER TAG
- TYPE / EN LENGTH / OUTPUT FIN TUBE RADIATION TAG
- TYPE / OUTPUT RADIANT PANEL TAG
- XXXX EQUIPMENT IDENTIFICATION TAG
- TP / # TIE-IN POINT

DRAWING LIST:

DRAWING:	DESCRIPTION:	SCALE:
M0-00	MECHANICAL DRAWING LIST, LEGEND, & GENERAL NOTES	N.T.S.
M1-00	MECHANICAL KEY PLAN	1:500
M2-00	MECHANICAL PLAN	AS NOTED

GENERAL NOTES:

NOTE:	DESCRIPTION:
1.	THIS DRAWING SET SHALL BE READ IN CONJUNCTURE WITH ARCHITECTURAL DRAWINGS.
2.	THIS DRAWING SET SHALL BE READ IN CONJUNCTURE WITH THE MECHANICAL SPECIFICATIONS PROVIDED.
3.	THESE DRAWINGS DO NOT REPRESENT A FULLY COORDINATED INFORMATION PACKAGE FOR THE PURPOSES OF CONSTRUCTION, AND DO NOT RELIEVE THE CONTRACTOR OF THE REQUIREMENT TO COORDINATE THE WORK IN ALL RESPECTS.
4.	IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE THE WORK OF ALL TRADES AND SUPPLIERS TO ACHIEVE COMPLETE AND OPERATIONAL BUILDING SYSTEMS.
5.	DO NOT SCALE DRAWINGS. LOCATIONS OF ITEMS ARE APPROXIMATE AND ARE INTENDED TO BE USED FOR COORDINATION. EXACT LOCATIONS ARE DEPENDANT UPON SITE CONDITIONS. REVIEW ANY REVISIONS WITH CONSULTANT.
6.	ALL EXISTING EQUIPMENT TO REMAIN SHALL BE INSPECTED AND TESTED FOR PROPER OPERATIONS. REPORT RESULTS OF INSPECTION AND TESTING TO CONSULTANT.

THIS BUILDING IS RATED AS SEISMIC CATEGORY SC3. AS SUCH SEISMIC RESTRAINT IS REQUIRED FOR MECHANICAL SYSTEMS. REFER TO THE SEISMIC CONTROL AND RESTRAINT SECTION OF THE MECHANICAL SPECIFICATIONS.

DO NOT SCALE THE DRAWINGS.
CHECK AND VERIFY ALL DIMENSIONS AT THE SITE.

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DRAWINGS ARE NOT TO BE USED FOR CONSTRUCTION UNTIL SIGNED AND SEALED BY THE CONSULTANT.

tdsb Toronto District School Board

NO.	ISSUES/ REVISIONS	DATE	BY
01	ISSUED FOR PERMIT / TENDER	2026 04 01	DT/AM
02	ISSUED FOR TENDER	2026 04 29	DT/AM

NO.	REVISIONS	DATE	BY
01	ADDENDUM 001	2026 05 22	AM

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BARRY BRYAN ASSOCIATES

PROJECT:
ACCESSIBILITY UPGRADES
WESTERN TECHNICAL COMMERCIAL SCHOOL
TDSB# TR-25-0960
125 EVELYN CRESCENT
TORONTO, ON M6P 3E3
TORONTO DISTRICT SCHOOL BOARD

DRAWING:
MECHANICAL LEGEND, GENERAL NOTES AND DRAWING LIST

DESIGN BY:	AM
DRAWN BY:	AM
CHECKED BY:	PT
DATE:	2026-04-29
SCALE:	N.T.S
SEAL:	
PROJECT NO:	25301-27
DRAWING NO:	M0-00

ELECTRICAL SYMBOL LEGEND

NOTE:

SYMBOLS SHOWN ON THIS LEGEND ARE NOT NECESSARILY USED ON THIS PROJECT.

LIGHTING

- RECESSED 2'X4'LIGHTING FIXTURES
- DOUBLE SURFACE MOUNTED EMERGENCY LIGHTING - REMOTE HEADS
- CEILING MOUNTED EMERGENCY LIGHTING REMOTE HEAD
- EMERGENCY LIGHTING BATTERY UNIT C/W DUPLEX RECEPTACLE AND DOUBLE REMOTE HEADS. EXIT LIGHTING: SHADED AREAS DENOTE DIRECTION OF FACE OF EXIT SIGN. DIRECTIONAL ARROWS AS INDICATED.
- WALL MOUNTED DOUBLE FACED EXIT LIGHT
- WALL MOUNTED SINGLE FACED EXIT LIGHT
- CEILING MOUNTED DOUBLE FACED EXIT LIGHT
- CEILING MOUNTED SINGLE FACED EXIT LIGHT

COMMUNICATIONS

- TELEVISION OUTLET - WALL MOUNTED
- TELEVISION OUTLET - FLUSH CEILING MOUNTED
- DATA OUTLET - WALL MOUNTED OR MOUNTED ABOVE COUNTER
- DATA OUTLET - FLUSH CEILING MOUNTED
- DATA OUTLET - FLUSH FLOOR MOUNTED
- PUBLIC ADDRESS SPEAKER REFER TO SCHOOLBOARD STANDARD SPECIFICATION

FIRE ALARM SYSTEM

- PULL STATION
- FLUSH / SURFACE MOUNTED HORN
- STROBE - CEILING / WALL MOUNTED
- SMOKE DETECTOR - WALL OR CEILING MOUNTED
- AUTOMATIC COMBINATION FIXED TEMPERATURE/RATE OF RISE HEAT DETECTOR - CEILING / WALL MOUNTED
- DOOR HOLDER

SECURITY SYSTEM

- ACCESS CONTROL CARD READER
- ACCESS CONTROL DOOR CONTACT
- ACCESS CONTROL ELECTRIC STRIKE
- VIDEO SURVEILLANCE CAMERA
- PUSHBUTTON DOOR OPERATOR

EQUIPMENT CONNECTIONS & CONTROLS

- DIRECT CONNECTION - 120 OR 208V C/W UNFUSED DISCONNECT SWITCH AS SPECIFIED
- DIRECT CONNECTION - 347 OR 600V C/W UNFUSED DISCONNECT SWITCH AS SPECIFIED
- MOTOR CONNECTION AS SPECIFIED
- MOTOR CONNECTION C/W UNFUSED DISCONNECT SWITCH
- MOTOR CONNECTION C/W FUSED DISCONNECT SWITCH
- MOTOR CONNECTION C/W LOOSE STARTER
- MOTOR STARTER AS SPECIFIED
- UNFUSED DISCONNECT SWITCH
- DIRECT CONNECTION - 120 OR 208V AS SPECIFIED
- DIRECT CONNECTION - 374 OR 600V AS SPECIFIED
- RECESS MOUNTED ELECTRICAL PANEL
- SURFACE MOUNTED ELECTRICAL PANEL

GENERAL POWER

- 15A, U-GROUND DUPLEX RECEPTACLE
- (5-20RA) T-SLOT U-GROUND DUPLEX RECEPTACLE
- 15A, U-GROUND SPLIT WIRED DUPLEX RECEPTACLE - STANDARD MOUNTING HEIGHT OR MOUNTED ABOVE COUNTER
- 15A, U-GROUND DUPLEX RECEPTACLE C/W GROUND FAULT CIRCUIT INTERRUPTER - STANDARD MOUNTING HEIGHT OR MOUNTED ABOVE COUNTER
- (5-20RA) T-SLOT U-GROUND DUPLEX RECEPTACLE C/W GROUND FAULT CIRCUIT INTERRUPTER
- 15A, U-GROUND DUPLEX RECEPTACLE - FLUSH FLOOR MOUNTED UNLESS NOTED OTHERWISE
- (5-20RA) T-SLOT U-GROUND DUPLEX RECEPTACLE - FLUSH FLOOR MOUNTED UNLESS NOTED OTHERWISE

LIGHTING CONTROL

- ONE, TWO, THREE AND FOUR GANG SINGLE POLE TOGGLE SWITCHES
- OCCUPANCY SENSOR SWITCH
- F $ FAN CONTROL SWITCH
- FV $ VARIABLE SPEED FAN CONTROL SWITCH
- T $ MANUAL TIMER SWITCH
- D DIMMER SWITCH
- TC PROGRAMMABLE TIME CLOCK
- OS CEILING MOUNTED OCCUPANCY SENSOR

MISCELLANEOUS

- E INDICATES EXISTING DEVICE TO REMAIN
- RL INDICATES EXISTING DEVICE IN RELOCATED POSITION
- BK INDICATES BLACK COVER PLATE
- (1) ELECTRICAL DRAWING KEY NOTES
- R/R REMOVE & RE-INSTALL

GENERAL NOTES:

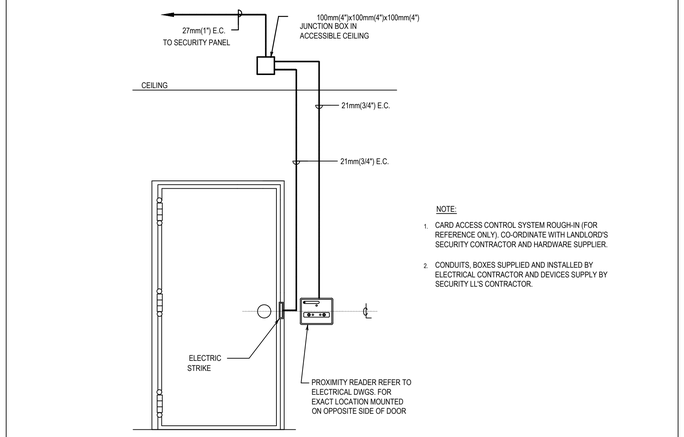
NOTE:	DESCRIPTION:
1.	THE ELECTRICAL DRAWINGS ARE GENERALLY DIAGRAMMATIC. THE ELECTRICAL INSTALLATION SHALL BE COORDINATED WITH OTHER TRADES SO THAT INTERFERENCES BETWEEN THE ELECTRICAL INSTALLATION AND ARCHITECTURAL, STRUCTURE, MECHANICAL, PLUMBING, FIRE PROTECTION AND EQUIPMENT INSTALLATION WILL BE AVOIDED.
2.	REFER TO ARCHITECTURAL DRAWINGS FOR DIMENSIONS, ROOM AND AREA FINISHES, CEILING PLANS, DOOR SWINGS, FIRE RELATED PARTITIONS, CABINET AND CASE WORK AND BUILT-IN DETAILS.
3.	ALL THE FINAL CONNECTIONS SHOWN ON THE DRAWINGS ARE ACTUAL REQUIREMENTS OF THE EQUIPMENT AND ARE SHOWN IN THEIR APPROXIMATE LOCATION. CO-ORDINATE WITH MECHANICAL AND ARCHITECTURAL DRAWINGS FOR EXACT LOCATION.
4.	ELECTRICAL SYSTEM EQUIPMENTS AND COMPONENTS SHALL BE CERTIFIED BY A RECOGNIZED TESTING AGENCY PER THE SCC.
5.	ALL WIRING TO BE SIZE #12 AWG UNLESS NOTED OTHERWISE.
6.	CIRCUIT NUMBERS SHOWN ARE GROUPING ONLY. REFER ON JOB-SITE FOR EXACT CIRCUIT USED.
7.	PROVIDE UPDATED TYPED PANEL DIRECTORY TO REPLACE EXISTING DIRECTORY
8.	THIS BUILDING IS RATED AS SEISMIC CATEGORY SC3. AS SUCH SEISMIC RESTRAINT IS REQUIRED FOR ELECTRICAL SYSTEMS. REFER TO THE SEISMIC RESTRAINTS SECTION OF THE ELECTRICAL SPECIFICATIONS.

DRAWING LIST:

DRAWING:	DESCRIPTION:	SCALE:
E0-01	ELECTRICAL LEGEND, GENERAL NOTES, DRAWING LIST AND KEY PLANS	N.T.S.
E1-01	ELECTRICAL DEMOLITION PLANS	1:50
E2-01	ELECTRICAL PLANS	1:50

LIGHTING FIXTURE SCHEDULE

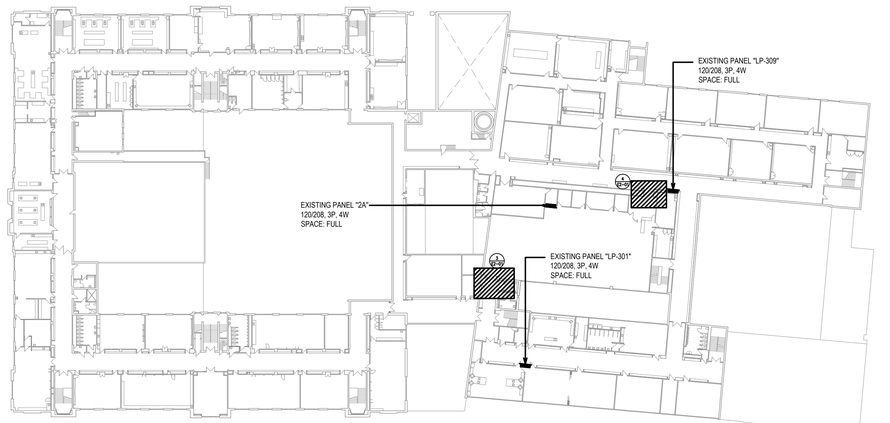
SYMBOLS	BASE MANUFACTURER (AS SPECIFIED)	MODEL NO.	CEILING TYPE: SURFACE	CEILING TYPE: RECESSED	CEILING TYPE: SUSPENDED	WALL TYPE: SURFACE	WALL TYPE: RECESSED	WALL TYPE: BRACKET	No. OF LAMPS	WATTAGE	BALLAST VOLTAGE: 120 V.	BALLAST VOLTAGE: 347 V.	BALLAST VOLTAGE: 24 VDC.	REMARKS
L4	PRECOLITE	RECESSED DOWNLIGHTING CAT#LFCR-6D-MN-25-40K-9-WD-DM1 / LFCR-6RD-T-WD-S-WT			●					21.8W LED	●			CONTACT: RICK ARDENTE CELL: 905.706.9789 rardente@omnilumen.com
B01	EMERGI-LITE	EMERGENCY BATTERY UNIT 24V, 200WATT CAT# 24ESL200 WITH 10MIN TURN OFF DELAY				●					●		●	
	EMERGI-LITE	EMERGENCY REMOTE HEAD CAT.# EF9-D-M-LM	●			●				6W LED	●	●	●	
	EMERGI-LITE	GREEN RUNNING MAN EMERGENCY EXIT SIGN CAT# EA-X-A-U C/W ACCESSORIES (X DENOTES FOR FACES/ARROWS AS INDICATED ON DRAWING)	●			●				6W LED	●	●	●	



NOTE:

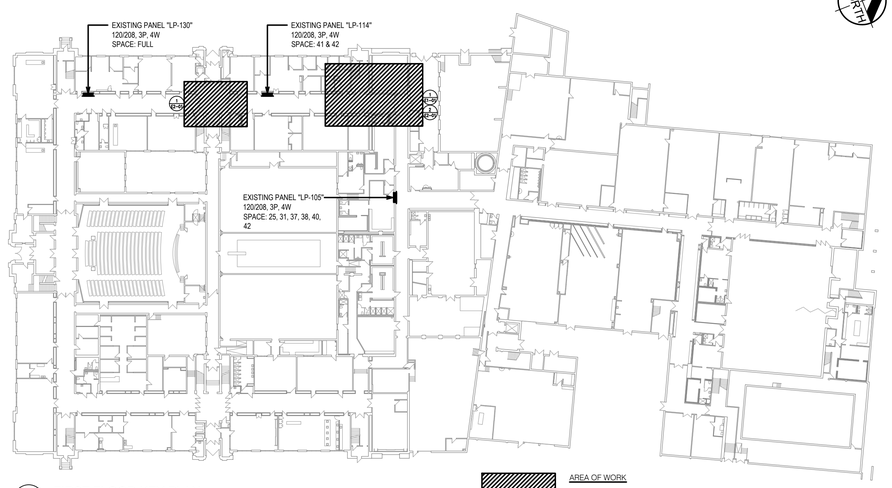
1. CARD ACCESS CONTROL SYSTEM ROUGH-IN (FOR REFERENCE ONLY). CO-ORDINATE WITH LANDLORD'S SECURITY CONTRACTOR AND HARDWARE SUPPLIER.
2. CONDUITS, BOXES SUPPLIED AND INSTALLED BY ELECTRICAL CONTRACTOR AND DEVICES SUPPLY BY SECURITY LL'S CONTRACTOR.

3 / E0-01 DOOR ACCESS CONTROL DETAIL
N.T.S.



2 / E0-01 THIRD FLOOR KEY PLAN
1:500

AREA OF WORK



1 / E0-01 FIRST FLOOR KEY PLAN
1:500

AREA OF WORK

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Toronto District School Board

NO.	ISSUES/ REVISIONS	DATE	BY
01	ISSUED FOR PERMIT / TENDER	2026 04 01	DT/AM
02	ISSUED FOR TENDER	2026 04 29	DT/AM

NO.	REVISIONS	DATE	BY
01	ADDENDUM 001	2026 05 22	DT

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www.mcw.com

BARRY BRYAN ASSOCIATES

PROJECT:
ACCESSIBILITY UPGRADES
WESTERN TECHNICAL COMMERCIAL SCHOOL
TDSB# TR-25-0960
125 EVELYN CRESCENT
TORONTO, ON M6P 3E3
TORONTO DISTRICT SCHOOL BOARD

DRAWING:
ELECTRICAL LEGEND, GENERAL NOTES, DRAWING LIST AND KEY PLANS

DESIGN BY:	DT
DRAWN BY:	RL
CHECKED BY:	DT
DATE:	2026-01-22
SCALE:	N.T.S
SEAL:	
PROJECT NO:	25301-27
DRAWING NO:	E0-01

EXISTING PANEL "LP-144"

☐ ✱ VIA TIME SWITCH
☐ ✱✱ PROVIDE BREAKER LOCKING DEVICES

■ 225 A, 120/208 V, 3 ϕ, 4 W. MAINS
☐ A, V, ϕ, W. MAINS
☐ RECESSED ■ SURFACE MOUNTED
☐ DOUBLE LUGS

DESCRIPTION	LOAD	BKR	CCT		CCT	BKR	LOAD	DESCRIPTION
EXISTING SERVICES			1		2			EXISTING SERVICES
			3		4			
			5		6			
			7		8			
			9					
			23		24			
			25		26			
			27		28			
			29		30			
			31		32			
			33		34			
			35		36			
			37		38			
DOOR OPERATORS	500	15A	39		40			
DOOR HOLDERS	50	15A **	41		42	20A **	200	BU-1

TOTAL CONNECTED LOAD = 250 WATT + EXISTING SERVICES

EXISTING PANEL "LP-105"

☐ ✱ VIA TIME SWITCH
☐ ✱✱ PROVIDE BREAKER LOCKING DEVICES

■ 225 A, 120/208 V, 3 ϕ, 4 W. MAINS
☐ A, V, ϕ, W. MAINS
☐ RECESSED ■ SURFACE MOUNTED
☐ DOUBLE LUGS

DESCRIPTION	LOAD	BKR	CCT		CCT	BKR	LOAD	DESCRIPTION
EXISTING SERVICES			1		2			EXISTING SERVICES
			3		4			
			5		6			
			7		8			
			9					
			31		32			
			33		34			
			35		36			
			37		38	15A	250	DOOR OPERATOR
			39		40			SPACE
			41		42			
			35					EXISTING SERVICES
			55		56			
			57		58			
			59		60			

TOTAL CONNECTED LOAD = 250 WATT + EXISTING SERVICES

EXISTING PANEL "2A"

☐ ✱ VIA TIME SWITCH
☐ ✱✱ PROVIDE BREAKER LOCKING DEVICES

■ 225 A, 120/208 V, 3 ϕ, 4 W. MAINS
☐ A, V, ϕ, W. MAINS
☐ RECESSED ■ SURFACE MOUNTED
☐ DOUBLE LUGS

DESCRIPTION	LOAD	BKR	CCT		CCT	BKR	LOAD	DESCRIPTION
DOOR OPERATORS	500	15A	1A		2			EXISTING SERVICES
EXISTING SERVICES		15A	1B					
			3		4			
			5		6			
			7		8			
			9					
			55		56			
			57		58			
			59		60			

TOTAL CONNECTED LOAD = 250 WATT + EXISTING SERVICES

DOOR HARDWARE NOTE

CARD READERS:
BOX MOUNT CARD READER - HID-5395CG100 THINLINE II
MULLION CARD READER - HID-5365EGP00 MINIPROX

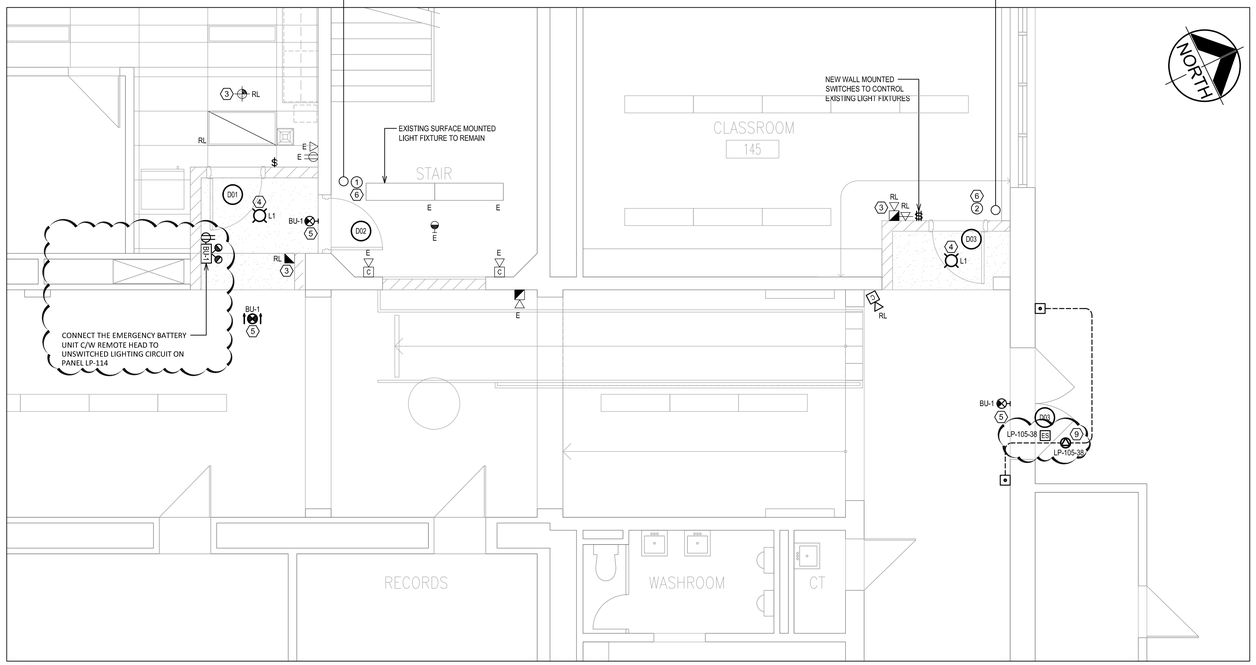
STRIKE POWER SUPPLY:
12/24VDC 2.5A STRIKE - AX-EFL3N

ELECTRIC STRIKES:
1/2 SURFACE STRIKE - HES 9400
3/4 SURFACE STRIKE - HES 9600

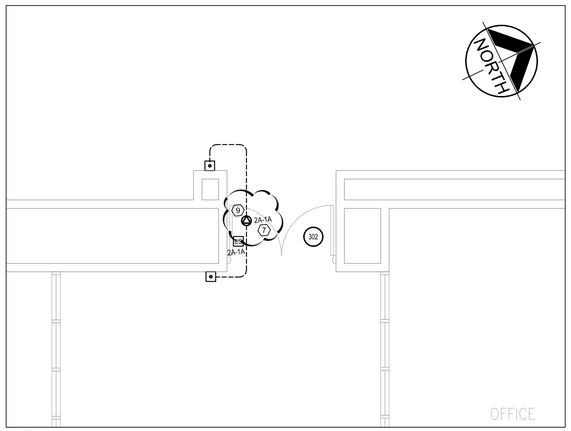
DOOR OPERATORS:
SINGLE DOOR - CAMDEN CD-CX-12PLUS
DOUBLE DOOR - CAMDEN CD-CX-33

LIGHTING KEY NOTES:

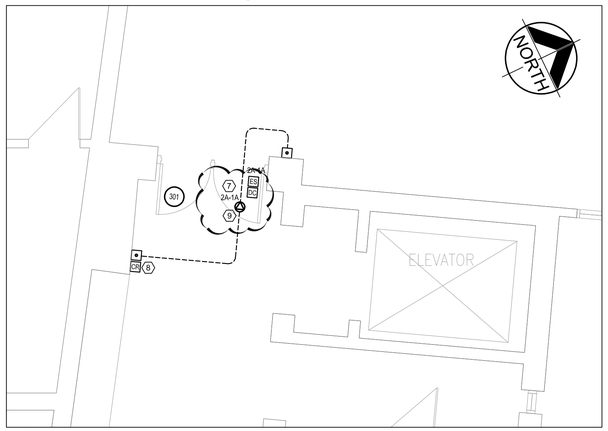
KEYNOTE:	DESCRIPTION:
1	CONNECT NEW SMOKE DETECTOR TO FIRE ALARM INITIATING ZONE AND RELEASE DOOR HOLDER UPON ACTIVATION OF THESE SMOKE DETECTORS AND FIRE ALARM SYSTEM C/W FIRE ALARM CONTROL MODULE
2	NEW DOOR HOLD OPEN DEVICES INTER LOCK WITH SMOKE DETECTOR AS SHOWN. UPON ACTIVATION OF SMOKE DETECTORS BESIDE THIS DOOR, DOOR HOLD OPEN DEVICES SHALL BE DE-ENERGIZED AND RELEASE DOORS.
3	RELOCATE EXISTING FIRE ALARM DEVICES TO NEW LOCATION AS SHOWN. EXTEND WIRE AND CONDUIT TO SUIT.
4	CONNECT NEW LIGHT FIXTURE TO THE EXISTING LIGHTING CIRCUIT C/W NEW WIRE AND CONDUIT TO THE NEAREST JUNCTION BOX SERVING THE LIGHTING CIRCUIT. PROVIDE SUPPORT INDEPENDENT OF THE CEILING SYSTEM STRUCTURE AS REQUIRED.
5	CONNECT NEW RUNNING MAN EXIT LIGHT TO EXISTING EXIT LIGHT CIRCUIT.
6	RELOCATE ALL EXISTING CONDUITS, BACK BOXES, AND ASSOCIATED ELECTRICAL COMPONENTS WITHIN DEMOLITION WALLS TO NEW LOCATIONS AS REQUIRED; VERIFY EXACT LOCATIONS ON SITE PRIOR TO DISCONNECTION AND COORDINATE WITH SITE CONDITIONS TO MAINTAIN SYSTEM CONTINUITY.
7	INSTALL TANDEM BREAKER (CUTLER-HAMMER PRL1) IN EXISTING PANEL TO FACILITATE CONNECTION OF BOTH NEW AND EXISTING CIRCUITS, AS REQUIRED.
8	CONTRACTOR TO PROVIDE NEW SECURITY CARD READER, ELECTRIC STRIKE AND DOOR CONTACT, CONNECT NEW SECURITY DEVICES TO EXISTING SECURITY CONTROL PANEL. FINAL CABLE TERMINATION, TEST AND COMMISSION BY TDSB IN-HOUSE , REFER TO DOOR HARDWARE NOTE FOR DEVICE PART NUMBERS.
9	NEW DOOR OPERATOR TO BE SUPPLIED BY GC (DOOR HARDWARE CONTRACTOR) AND INSTALLED AND WIRED BY THIS ELECTRICAL CONTRACTOR , REFER TO DOOR HARDWARE NOTE FOR DEVICE PART NUMBERS.



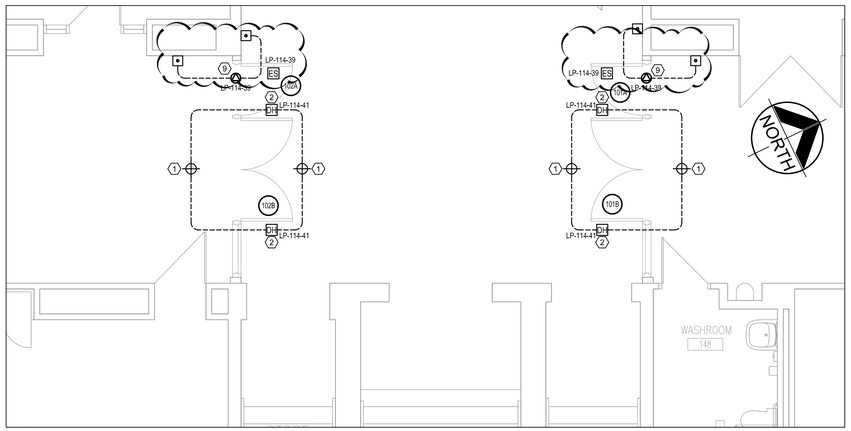
2 E2-01 PART FIRST FLOOR PLAN
1:50



4 E2-01 PART THIRD FLOOR PLAN
1:50



3 E2-01 PART THIRD FLOOR PLAN
1:50



1 E2-01 PART FIRST FLOOR PLAN
1:50

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DRAWING:
PART ELECTRICAL PLANS

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