Purchasing and
Central Services
191 Carlton Street,
St. Catharines, ON
L2R 7P4
(905) 641-1550

INSTRUCTION TO BIDDERS

REQUEST FOR TENDER # 23157

Pre-qualified DSBN General Contractors only are invited to provide stipulated price bids for the following work.

1. Project Description and Location.

   DSBN Education Centre Elevator Modernization:
   191 Carlton Street, St. Catharines ON L2R 7P4

2. Contract Documents:

   The following documents are attached and form the contract documents for this Tender and Project.

   - Instruction to Bidders
   - Bid Form for Tenders
   - Appendix A – List of Sub-contractors
   - Appendix B – Policies regarding Bid Irregularities
   - General Conditions and Liability Insurance Requirements
   - Specifications (separate pdf file)
   - Asbestos Report (separate pdf file)
   - Addenda issued prior to closing

3. Documents for Bidding

   3.1 Documents for bidding purposes are posted to www.biddingo.com/dsbn. The total stipulated price submitted on the Bid Form is intended to cover the cost of the complete work at the schools.

   3.2 Any addenda issued during the Bidding Period will be posted to www.biddingo.com/dsbn.

   3.3 Bidders shall be responsible for acquiring all the bid documents from www.biddingo.com/dsbn and for studying all the Bid Documents before submitting a Tender.

   3.4 Bidders are responsible to check that they reviewed and incorporated all addenda. Normally addenda will be posted to www.biddingo.com/dsbn a minimum of 48 hours before bid close.

4. Examination

4.1 Before submitting Tender, Bidders shall carefully examine Drawings, Specifications, Addenda and site(s), fully inform themselves of all existing conditions and limitations and shall include in the Tender, sums to cover the cost of all items included in the Contract.

4.2 The Contractor shall accept sole responsibility for any error or neglect on his part in respect to this Article.

5. Site Inspection

5.1 Bidders are invited to visit the site(s) during Tendering Period to ascertain the extent of the work involved.

5.2 A site visit can be arranged through Dave Boyd (dave.boyd@dsbn.org) on an individual basis.

6. Discrepancies and Clarification

6.1 Bidders finding errors, discrepancies or duplications, or omissions of items which are obviously an intended component of the completed project, from Tender Documents, or having any doubts as to meaning or intent thereof, shall notify **Karen Dinning, Buyer at karen.dinning@dsbn.org** for clarification.

The deadline for asking questions is Wednesday, March 15, 2023 at 2:00 PM. Questions received after this date will not be answered.

6.2 No employee or agent of the DSBN is authorized to verbally amend or waive the requirements of this bid document in any way. Under no circumstances shall the Bidder rely upon any information or instructions from the DSBN, its employees, or its agents unless the information or instructions are provided in writing in the form of an official Addendum.

6.3 Addenda issued during Bidding Period and before signing of Contract will be incorporated in the Bid and will become part of the Contract Documents.

7. Proposals

7.1 No oral, telephonic or telegraphic proposals or modifications will be accepted.

8. Tender Instructions

8.1 Tenders shall be by Bidder.

8.2 Tenders which contain any omission, erasure, interlineation, alteration, addition, condition, limitation or which show any irregularity may be rejected as informal.

8.3 Tenders which are late, or do not contain completed Bid Forms, or do not acknowledge the addenda, or otherwise fail to comply with the requirements of Tender Documents will be considered incomplete or informal and will be rejected.

8.4 Tenders must be returned on this form before 2:00:00 p.m. local time on **Tuesday, March 21, 2023** and MUST be **emailed** to **FacilityTenders@dsbn.org.**

8.5 The Purchaser shall only accept Electronic Tender Submissions in the form of One (1) PDF file and submitted to the email address above. Tender submissions submitted and/or received by any other method shall be rejected, unless the Purchaser has instructed otherwise by published Addendum.

8.6 Bidders are cautioned that the timing of their Tender Submission is based on when the Bid is received by the Purchaser at the email address above, not when a Bid is submitted by a Bidder, as Bid transmissions can be delayed in an "Internet Traffic Jam" due to file transfer size, transmission speed, etc.

8.7 For the above reasons, the Purchaser recommends that Bidders allow sufficient time to email their Tender Submission and attachment(s) (if any) and to resolve any issues that may arise. The closing time and date shall be determined by the Purchaser's internal server clock.

8.8 There will be no public opening for this tender.

8.9 All required information including the Bid Form shall be submitted via email as stipulated in Section 8.5.

8.10 Bidders that are not selected are entitled to a debriefing. Such request must be made within 60 business days following the date of notification.

8.11 The bid dispute resolution process is intended to ensure that any dispute is handled in an ethical, fair, reasonable, and timely fashion. This bid dispute resolution procedure complies with bid protest or dispute resolution procedures set out in the BPS procurement directives and applicable trade agreements.

Where a supplier wishes to dispute the outcome of a bid, subsequent to a debriefing with Purchasing Services, the process outlined below is to be followed:

8.11.1 The aggrieved party (aggrievor) is to file their bid protest with the Manager of Purchasing & Central Services in writing, within 7 business days of the debriefing meeting. The aggrievors filing should include:

- Their name and address
- Identification of the contract or bid solicitation being protested
- Detailed and factual statement of the grounds for protest
- Supporting documentation
- Desired relief, action or ruling

8.11.2 The Manager of Purchasing & Central Services will respond to the aggrievor within 7 business days of receiving the bid protest notice.

8.11.3 If the aggrievor is not satisfied with the resolution, the aggrievor must contact the Superintendent of Business and copy the Manager of Purchasing & Central Services, by registered mail, within 7 business days of receiving the first response from the Manager of Purchasing & Central Services.

8.11.4 The Superintendent of Business will respond to the aggrievor, by registered mail, within 10 business days of receiving the bid protest notice.

8.11.5 The final decision on the issue will be made by the Superintendent of Business and will be resolved within 10 business days of receiving the bid protest.

9. Contingency Allowance

In the Bid Form a sum has been identified for unforseen work which may arise. Payment from this sum will be paid only for work requested and approved by the owner. For work completed by the General Contractor or Prime Contractor, mark-up will be 10%. In the case where the work is done by a subcontractor of the General or Prime contractor, the subcontractor will be allowed to mark up the amount by up to 10% to allow for overhead and profit, and the general contractor will be permitted 5% mark up on that portion of the work. If multiple levels of subcontractors are involved, only the contractor performing the work is entitled to 10% mark up, and other contractors through whom payment flows including the general or prime contractor will be entitled to 5% mark up.

10. Cash Allowances

In the Bid Form amounts have been included for cash allowances. The bid price, and not the cash allowances, are to include overhead and profit for the work connected with the cash allowances. Payment from the cash allowance will only be paid for work requested and approved by the owner. Where the value of the cash allowance is exceeded, the money will be paid from the contingency allowance and the contractor will be eligible for overhead and profit on the portion exceeding the cash allowance. If the actual cost of the work under any cash allowance is less than the amount of the allowance, the owner will be credited the amount of the unexpended portion of the allowance, but not the contractors overhead and profit.

11. Alternate Materials, Plant and Equipment

11.1 The bidder is required to verify prior to bidding that all specified items will be available in time for installation to ensure orderly and timely progress of the work.

11.2 In the event any specified item will not be available, notify the DSBN during the Bidding Period.

11.3 Tendering Contractors, their Sub-Contractors, Suppliers and Manufacturers may submit with Tender alternative prices of products, materials and equipment which, in their opinion, are equivalent to those specified; and it shall be understood that approval may be given by the DSBN after Bid Closing to the substitution of a similar material or item of plant and equipment subject to the following:

The Contractor shall compile full documentation and forward for evaluation of the proposed alternate.

Any alternate considered by the DSBN to be of equal quality and value to that specified and suitable for the purpose intended may be accepted as a substitute.

Alternates considered by the DSBN to be suitable for the purpose intended but which, in their opinion, are of lessor value and quality, will only be allowed as substitutes if reasonable credits are allowed for their use.

It should be noted that in some cases specified products may be DSBN Standards and may not be considered for substitution.

12. Errors in Tender

12.1 DSBN will not entertain requests for gratuitous payments arising from error alleged to have been made in Bid which the DSBN has accepted.

13. Award of Contract

13.1 The lowest or any bid may not necessarily be accepted due to school requirements, the contractor's ability to meet the schedule, budget considerations or other reasons that are in the best interest of the DSBN.

13.2 Not withstanding Section 13.1 and 11.3 above, award shall be based on the total bid price on the Form of Tender Section 1, which will incorporate all products, materials and equipment as specified.

13.3 The bidder, at the time of starting the work, shall submit evidence that all Workplace Safety and Insurance Board dues, in accordance with the laws of the Province of Ontario, have been paid.

13.4 Where tie bids are received by competing contractors and the bids are low and compliant, the tie will be settled by the flip of a coin in the presence of the two bidders. The bidder whose email has the earliest submission time may call the coin toss. The winner of the coin toss will be considered the low bid.

13.5 The issue of a Purchase Order by the DSBN based on a bidder's response to this Request for Tender gives rise to a Contract between the DSBN and the successful Bidder in accordance with the terms and conditions set out in the documents listed in Section 2. Contract Documents.

13.6 It is DSBN practice to publish the name of the successful Bidder(s) and the total contract price. The DSBN shall make every effort to safeguard the confidentiality of other information included in each submission, however, all submissions are subject to the provisions of the *Municipal Freedom of Information and Privacy Act* and the *Personal Information Protection and Electronic Documents Act.*

14. Scheduling

The following schedule applies:

All work should be completed during the summer between July 1st and Sept 1st of 2023. Flexibility should be accounted for in tender if supply cannot not be met. DSBN will work with awarded contractor on schedule suitable for both parties if outside the schedule proposed.

14.1 Prior to commencing the project, the contractor must provide confirmation of delivery of all materials required to complete the work or portion of the project and make the school safe and suitable for regular school operations. No work shall commence on the project or portion of the project without assurance that the delivery of critical materials to complete the project are in place.

14.2 It is the expectation of the District School Board of Niagara (DSBN) that the Contractor will order the necessary materials upon award of the Contract.

14.3 If the Contractor is delayed in the performance of the Work by:

any cause beyond the Contractors control other than one resulting from a default or breach of Contract by the Contractor, then the Contract Time shall be extended for such reasonable time as the Consultant or DSBN representative may recommend in consultation with the Contractor. The extension of time shall not be less than the time lost as the result of the event causing the delay, unless the Contractor agrees to a shorter extension. The Contractor shall not be entitled to payment for costs incurred by such delays unless such delays result from actions by the Owner, Consultant or anyone employed or engaged by them directly or indirectly.

15. Progress Payments

The progress payments allowed as outlined in General Conditions, Section 16, are subject to a 10% holdback. The requirements of the Construction Act (latest revision) in effect at the time of establishing the pre-qualified contractor list apply to this contract.

Purchasing and
Central Services
191 Carlton Street,
St. Catharines, ON
L2R 7P4
(905) 641-1550

FORM OF TENDER

BIDDER /COMPANY NAME: _____

ADDRESS: _____

DSBN Education Centre Elevator Modernization:
191 Carlton Street, St. Catharines ON L2R 7P4

TENDER NO: **#23157**

CLOSING DATE AND TIME: **Tuesday, March 21, 2023 before 2:00:00 P.M.**

TO: **FacilityTenders@dsbn.org**

1. I/We the undersigned, are duly authorized to bind the company and declare that we have carefully examined the Contract Documents and investigated the sites and examined all conditions effecting this Work; and if notified in writing of the acceptance of this Bid within sixty (60) days of the date above, we agree to provide all materials and perform all Work shown and described in these documents, in lawful money of Canada; included in which are all Excise taxes, customs, duties, freight, exchange, and all other charges are included. **Prices quoted shall EXCLUDE Harmonized Sales Tax (HST).**

   We hereby acknowledge that we have read and understood the Addenda numbered _____ to _____ which form part of the contract documents.

   Bid Price, DSBN Education Centre (HST extra): $_____

   Contingency Allowance, (HST extra): $ 30,000.00

   Total Price, (Including Contingency – HST extra): $_____

   AS PER SECTION 13 OF THE INSTRUCTIONS TO BIDDERS THE LOWEST BID OR ANY BID NOT NECESSARILY ACCEPTED.

2. Voluntary Alternates

We submit the following voluntary alternate prices for consideration. We hereby agree to amend the Total Price by the following amounts (HST excluded), should the alternates be accepted.

Alternate Description	Add	Deduct
_____	$ _____	$ _____
_____	$ _____	$ _____
_____	$ _____	$ _____

3. Mandatory Alternates – N/A to this tender

We submit the following pricing as a mandatory alternate. We hereby agree to amend the Total Price by the following amounts (HST excluded), should the alternate be selected.

The Total Price should not include the Mandatory Alternate pricing below. The Total Price for this project is exclusive of any alternates. The Total Price will be adjusted accordingly if the alternates are selected.

Alternate Description	Add	Deduct
_____	$ _____	$ _____
_____	$ _____	$ _____
_____	$ _____	$ _____

4. The undersigned hereby declares that we have carefully examined the site of the proposed Work and existing conditions; the requirements of the construction schedule; and have satisfied ourselves that the Subcontractors, material suppliers and equipment suppliers on which this Bid is based are capable of meeting all requirements of the schedule, and of executing the Work in accordance with the Drawing and Specifications, the Instructions to Bidders, Bid Form, together with Addenda listed in paragraph 1, of this Bid Form.

5. The undersigned hereby agrees that the contract schedule as stated in the Specifications will be met.

6. The undersigned agrees that this Bid is valid and subject to acceptance by the DSBN for a period of sixty (60) days from the date of Bid receipt, and that if notified of award of the contract we will:

   a) furnish the DSBN, Certificates of Insurance as required by the General Conditions of the Contract

   b) furnish the DSBN evidence that all Workplace Safety and Insurance Board dues, in accordance with the laws of the Province of Ontario, have been paid.

7. **We have submitted with this Bid Form the following document:**

    a) Subcontractor list – Appendix A

8. We the undersigned agree if notified of award of a Contract, to immediately commence work actively and to complete work as per schedule indicated in Section 14 of Instructions to Bidders and to pay all extra wages and premiums necessary for overtime work, daily and on weekends for all trades required to complete the work as scheduled without extra compensation, barring strikes and Acts of God for which extra time will be allowed.

9. Upon award of tender the following WSIB and liability insurance certificates will be required for this tender:

√	WSIB
√	Commercial Liability $2,000,000
√	Automobile Liability $2,000,000
√	Non-owned automobile $2,000,000

10. _____

Signature of Bidder

_____

Name of Bidder (Print)

_____ This _____ day of _____ 20 _____

(*Dated at)*

_____ _____

(Name of Firm) *(Address of Firm)*

_____ _____ _____

(Postal Code) *(Phone Number)* *(Fax Number)*

APPENDIX 'A'

TENDER #23157 DSBN Education Centre Elevator Modernization

NAME OF CONTRACTOR: _____

(a) The following are the Subcontractors whose quotations we have employed in the preparations of this tender and whose use we propose should this tender be accepted. We agree not to change subcontractors without the expressed and written approval of the Client and the Architect.

(b) Should more than one name be entered beside any category, the Owner shall have the option to choose either trade without a change in the tendered price. (Please note that all Subcontractors must be provided or the tender may be declared void. PLEASE PRINT LEGIBLY OR TYPE).

(c) List each Subcontractor by the firm's proper legal designation.

(d) The undersigned hereby agrees that in proposing the undermentioned subcontractors they have consulted each and have ascertained to their complete satisfaction that those named are fully acquainted with the extent and nature of the work involved and of the proposed construction and that they will execute the work to conform to the requirements of the Contract Documents.

(e) The phrase "own forces", which may appear, will be used in those categories which are generally accepted as being done by the General Contractor and providing the capability exists within the General Contractor's organization.

(f) The phrase "own forces" will only be accepted if the Contractor has his own qualified staff for the trade involved.

LIST OF CONTRACTORS - APPENDIX 'A'

Licensed Elevator Contractor _____

Signature of Bidder: _____

APPENDIX B - POLICIES REGARDING BID IRREGULARITIES

Major Irregularity: A deviation which relates to information that is material to the Contract. If the deviation is permitted, the Bidder could gain an unfair advantage over competitors. The DSBN may reject any bid submission which contains a major irregularity.

Minor Irregularity: A deviation which affects form rather than substance. The effect is not material to the Contract or causes an ambiguity that can be categorized as a clerical error where information was inadvertently not included in the submission. If the deviation is permitted or corrected the Bidder would not gain an unfair advantage over competitors. The DSBN may / may not accept or waive, at the discretion of the Purchasing Manager or Administrator, a minor irregularity or permit the Bidder to correct minor irregularity items of noncompliance which do not strictly comply or are incomplete or ambiguous with the provisions and requirements of this Contract. All Bidders agree to provide all such additional information as, and when requested, within 48 hours, at their own expense, provided no Bidder in supplying such information shall be allowed, in any way materially, to alter or add to the submission originally submitted.

Late bids	Major irregularity
Response sent to incorrect email address	Minor irregularity
Response sent to incorrect email address where bid is opened in error prior to bid closing	Minor irregularity
Unsigned bids (does not apply to bids submitted electronically)	Minor irregularity
Unsealed envelopes	Minor irregularity
Bids that are not completed in full, or are not typewritten, printed or in legible writing (in ink)	Minor or Major irregularity depending on extent
Bids received on documents other than those provided by DSBN, when required to do so	Minor irregularity
Bids received by method stated as unacceptable on bid form. i.e. faxed when statement that no faxed bids will be accepted.	Major irregularity
Partial bids (i.e. for less than all of the items required to be included in a bid) except where the document permits partial bids.	Minor or Major irregularity depending on extent
Qualified or conditional bids (i.e. bids which are submitted subject to a caveat added to the Bid Form or under a covering letter or alterations to the Bid Form)	Minor or Major irregularity depending on extent
Where an Addendum is not acknowledged on the Bid Form, and there are no financial implications, or it is clearly evident, in the absolute discretion of the Purchasing Manager or Administrator, that the Addendum has been factored into the quoted prices.	Minor irregularity
Where an Addendum is not acknowledged on the Bid Form, and there are financial implications.	Major irregularity
The DSBN may, at its discretion, reject any bid where the Bid Form or related document contains any erasure, change, over-writing, white-out, cross-out or strike-out, where the same has not been initialed by the Bidder, or where (in the absolute discretion of the Purchasing Manager or Administrator) the effect of that amendment is ambiguous or otherwise unclear	Minor irregularity

DISTRICT SCHOOL BOARD OF NIAGARA
FACILITY SERVICES DEPARTMENT
GENERAL CONDITIONS FOR ALL PROJECTS
Last Review – November 2020

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1. The Contractor must be able to and is required to produce to the DSBN, prior to commencing work, Certificates of Insurance, certifying compliance to the attached insurance requirements.

2. The Contractor MUST provide to the DSBN, before commencing the Work, a certificate from the Workplace Safety and Insurance Board indicating clearance for the period of the Work or the maximum allowable period as appropriate. This certification shall be kept current and be sent with each monthly draw. Where the Work extends beyond the maximum coverage period, proof of renewal is required.

3. The Contractor MUST provide to the DSBN, before commencing the Work, copies of Safety Data Sheets (SDS) for all products covered under the Ontario Health and Safety Act and Regulations, and WHMIS regulations which are to be used on or in conjunction with the Work, together with information as to how and where they are to be used.

4. The Work for which these General Conditions are issued is governed by the Occupational Health and Safety Act and regulations for Construction Projects, Revised Statutes of Ontario, 1980 Chapter 321 as amended (Ontario reg. 213/91). The successful tenderer, upon award of a purchase order number for the work outlined, shall assume full responsibility under this legislation as the "Constructor" as defined therein. The owner will notify contractors at the time of tender if the scope of work will be covered under a Notice of Project filed by the owner or another contractor**.**

5. Where the contractor is in a direct contract with the District School Board of Niagara, they are deemed to be a "Constructor" under the Occupational Health and Safety Act. The Constructor shall file a "Notice of Project" as may be required with the Ministry of Labour prior to commencing work. A copy of this Notice of Project as well as the contractors Health and Safety Policy must be provided to the District School Board of Niagara, Facility Services Department Representative prior to work commencing on site. The contractor will also appoint a Safety Representative as required by the Occupational Health and Safety Act. For the *Owner's* own forces and for other contractors, the contractor shall assume overall responsibility for compliance with all aspects of the applicable health and safety legislation in force at the *Place of the Work*, including all of the responsibilities of the "constructor", pursuant to the *Occupational Health and Safety Act* (Ontario).

6. The Contractor shall ensure that the staff for which they are responsible are adequately trained and kept up to date on relevant health and safety legislation as per the Occupational Health and Safety Act and Regulations for Construction Projects. This could include but is not limited to the following: Personal Protective Equipment, Working at Heights, Overhead Protection, Fire Safety, Confined Space Entry, Ladders, Scaffolding, Elevated Work Platforms, Cranes, Hoists, Rigging, Cables, Slings, Explosive Fastening Tools, Electrical Hazards, Lock Out & Tag Out, Roofing and Excavations.

7. The contractor will be given a copy of the Asbestos survey, or access to the asbestos survey database by the District School Board of Niagara for the facilities they will be working in. The contractor will ensure that all the materials identified in the survey as containing asbestos will not be disturbed. If the contractor requires asbestos materials to be removed as a result of their work, they shall notify the owner's representative by phone and in writing one week in advance of requiring the removal of asbestos containing materials.

If materials are discovered which the contractor suspects may contain asbestos, all work in the vicinity shall be stopped and the contractor will immediately notify the owner's representative of where the material was found. At no time will a contractor undertake the removal of Asbestos containing material unless they have been contracted in writing to do so.

8. The Contractor, prior to commencing the Work, shall liaise directly with the Facility Services Department to determine timing of the Work, access to the site, and all other factors which may impact on the progress of the work, the continuing use of the school for its primary function, or both, including the siting of any barriers and/or fences, posting of signs, etc.

9. Provide and install safety barriers, fences, signs, etc., required to prevent the access of unauthorized personnel upon the construction site. In addition to staff authorized by the Contractor, restrict access to the defined area of work to those designated as "authorized". Unless notified otherwise in writing, authorized personnel shall be limited to the following:

Controller of Facility Services	Manager of Operations
Senior Manager of Construction	Manager of Maintenance
Capital Project Manager	Supervisor of Operations
Supervisor of Facility Services	Supervisor of Contracted Services
Health and Safety Officer	Energy Coordinator
Caretaking Staff	Environmental Services Coordinator
Principal	Superintendent

Consultants hired by DSBN to provide services for the owner related to the contract

10. Cooperate with the principal, caretaker or other designated school staff member in the siting of vehicles, equipment and materials so as to minimize disruption of regular pedestrian and vehicular traffic.

11. Provide protective covering acceptable to the DSBN over all existing building surfaces and/or items of furniture and equipment not affected by, or connected with, the work. Such covering should be impervious to the migration of all dust particles, e.g. plastic sheet and secured in place for the duration of the work. Where additional work by DSBN custodial personnel is necessary through failure to comply the contractor shall be subject to a back charge for custodial cleaning time.

12. Where the work involves the use of water, ensure complete drainage and mopping up of standing water at the end of each day's operations.

13. Where existing fixtures, fittings or finishes have to be disturbed in order to effect the work they shall be replaced or restored to match their original state unless it is specifically noted otherwise.

14. Asphalt play areas around the exterior of the school building are not constructed to handle heavy vehicles. Contractors will be held responsible for any damage to asphalt as a result of using them for access by heavy equipment and vehicles.

15. "Make good" shall mean the restoration of areas or surfaces to a condition matching existing adjacent areas. Making good of grass or asphalt areas that are damaged in the course of the work shall be to the original (new) condition irrespective of their condition prior to commencement of the work, or the condition of the adjacent unaffected areas.

16. Where the work is extensive or of a protracted nature, progress payments may be invoiced monthly, on the basis of the percentage of the Work completed. Requests for final payment shall be submitted only after Work has been reviewed by the DSBN's representative and accepted. The contractor is responsible for timely notification of completion of the Work for the purpose of arranging inspection. All work is subject to a ten (10) per cent holdback as per the *Construction Act* which the contractor shall ensure is shown deducted from each progress payment. After the lien period has expired, the contractor must submit an invoice requesting payment for the amounts held back under the *Construction Act*.
    All invoices must also indicate the DSBN's purchase order number.

17. The contractor shall warrant all work performed, for a period of not less than twelve (12) months from the date of acceptance for the Work as outlined above, against all defects in materials or workmanship. The Warranty shall be on company letterhead under seal, and delivered to the DSBN, addressed to the project manager. The final payment shall be conditional upon receipt of the Warranty and all project documentation.

18. All work shall be carried out in a manner to minimize disruptions to the school. Any work carried out on a school day shall be done in a manner as not to interrupt the school's normal operation nor create any health or safety concerns to the school staff or students. Should the work be of a nature which the DSBN deems to interrupt regular operation of the school, the work shall be carried out after school hours, at no additional cost to the DSBN.

19. No charges for work in excess of the original contract amount will be permitted without the prior written approval from the District School Board of Niagara's project manager. For work completed by the General Contractor or Prime Contractor, mark up will be 10%. In the case where the work is done by a subcontractor of the General or Prime contractor, the subcontractor will be allowed to mark up the amount by up to 10% to allow for overhead and profit, and the general contractor will be permitted 5% mark up on that portion of the work. If multiple levels of subcontractors are involved, only the contractor performing the work is entitled to 10% mark up, and other contractors through whom payment flows including the general or prime contractor will be entitled to 5% mark up. The Contractor will provide supplier invoices for all parts, equipment and materials including quantity of each material, unit cost of each material, man hours involved, cost per hour, and mark up.

20. The DSBN shall have the right to enter or occupy the *Work* area in whole or in part for the purpose of placing fittings and equipment, or for other use before *Substantial Performance of the contract Work*, if, in the opinion of the *Consultant*, such entry and occupation does not prevent or substantially interfere with the *Contractor* in the performance of the *Contract* within the *Contract Time.* Such entry or occupation shall neither be considered as acceptance of the *Work*, nor in any way relieve the *Contractor* from its responsibility to complete the *Contract*.

21. The DSBN reserves the right to establish a deficiency holdback, at the time of project review for *Substantial Performance,* based on a 200% dollar value of the deficiencies listed by the *Consultant or Owner*. The value of work outstanding for the calculation of *Substantial Performance of the Work* under the *Construction Act* (Ontario) shall utilize the 100% dollar value. No individual deficiency will be valued at less than two hundred dollars ($200.00). The *DSBN* shall retain the entire deficiency holdback amount until completion of all of the deficiencies listed by the *Consultant* or Owner to the satisfaction of the *Consultant or Owner*. Close out documents including record drawings and operation and maintenance manuals will be valued at 5% of the total contract value as a deficiency if they are incomplete or not submitted.

DISTRICT SCHOOL BOARD OF NIAGARA
191 Carlton Street
St. Catharines, ON L2R 7P4

LIABILITY INSURANCE REQUIREMENTS
CONSTRUCTION OR SERVICE PROJECTS
Last Review – November 2019

1. PROPERTY COVERAGE – not applicable to this project

Builders Risk comprehensive naming both the contractor and District School Board of Niagara in an amount adequate, reflecting the scope of work and the value of the contract.

2. PUBLIC LIABILITY AND PROPERTY DAMAGE INSURANCE LIABILITY

The Contractor shall maintain individual positions in regard to requirements and provisions of law and no liability shall attach to the Owner due to any act or omission on the part of the General Contractor, sub-contractor(s) or any of their agents or employees. The Contractor shall maintain and pay for insurance as follows for the protection against claims directly arising as a result of the Contractor's operations under this Contract:

(a) Comprehensive General Public Liability and Property Damage Insurance with Bodily Injury and Property Damage Limits of not less than $2,000,000.00 inclusive on any one accident or occurrence.

The Policy must incorporate at least the following features:

- the Owner, the General Contractor and all Sub-Contractors as named insured;
- Cross Liability Clauses;
- both Bodily Injury and Property Damage coverage on an "Occurrence" basis;
- complete operations coverage during the performance of the work and for a period of twelve (12) months after the final certificate;
- Contractual Liability coverage, including Liability assumed by the contractor under indemnity agreement hereinafter set forth;
- Contractor's Protective Liability; and
- Coverage for demolition of any building or structure, blasting and excavation below the surface of the ground, whether such work be done by the Contractor or by the Sub-Contractor.

(b) Automobile, Public Liability and Property Damage Insurance on owned automobiles and vehicles used upon or in connection with the work with Bodily Injury and Property Damage Limits of not less than $2,000,000.00 inclusive any one accident.

(c) Non-owned Automobile Public Liability and Property Damage Insurance on non-owned auto-mobiles and vehicles and hired automobiles and vehicles, used upon or in connection with the work with Bodily Injury and property Damage Limits of not less than $2,000,000.00 inclusive any one accident.

(d) Certificate of Insurance

At least 10 days before commencing the work, the contractor shall furnish the Owner with certificates of all insurance coverage required under this article. The term of coverage shall include the guarantee period. No Policy may be changed or terminated during the term mentioned therein, without 30 days written notice to the Owner.

(e) Where contractor employs or uses marine equipment during the performance of the work, he shall provide evidence of Protection and Indemnity insurance in amounts acceptable to the owner.

(f) Where the contractor employs or uses cranes or hoist during the performance of the work, he shall provide evidence of Hook Insurance in amounts acceptable to the Owner.

HYDRAULIC ELEVATOR
SPECIFICATION
Section 14 20 06

191 Carlton Street
St. Catharines, ON

Prepared By:

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Contents

PART 1 - GENERAL

1.1 SCOPE OF WORK

1. The Work described herein includes for all labour and material, including overtime, required to meet the agreed project schedule, to modernize two (2) hydraulic elevators located at 191 Carlton Street, St. Catharines, Ontario, Provincial Number 65220, 65221. Provide all work required for a completed project, accepted by the Authority Having Jurisdiction, including:

2. A completed system with an engineered design lifespan of 25 years.

3. New non-proprietary, microprocessor-based, solid-state electrical controller.

4. New pumping unit.

5. New valve.

6. New motor.

7. New oil storage tank.

8. Base price: Retain and refurbish existing piston and cylinder.

9. Alternate Price: Supply and install new PVC-protected buried cylinder and piston. The scope of work requires the removal of the existing cylinder and reinsertion of new cylinder, with increased circumference and length arising from the provision of PVC. Within the tendered price include, all labour, material and subcontractor prices as required to accomplish cylinder removal and reinstallation. Carry subcontractor costs only by subcontractor’s license and skilled to the task including vacuum truck, high-pressure water, licensed waste removal and hole drilling.

10. New landing door locks, pick up assemblies, relating system, door closers and related hardware.

11. Completely refurbish the cab interior finishes.

12. New stainless steel illuminated car and hall push buttons to comply with accessibility requirements.

13. New signals, including car direction and position indicators and lobby position indicators.

14. New heavy-duty car door operator, clutch assembly, and related hardware.

15. Provision of manual emergency recall and in-car emergency service.

16. A battery-powered safety system to move the car in the event of power failure.

17. Full parts, labour, and all associated code-required preventive maintenance, including all system shutdown callbacks on all elevator components for a subsequent twelve (12) month period after the final inspection certificate has been signed by the Consultant.

18. Provide required demolition and removal and disposal of existing elevator system and all redundant elevator equipment, including machine room, hoistway, and hall fixtures. Salvage and retain for use by the owner of elevator components that will be useful for servicing the balance of the elevators on site, particularly circuit boards.

19. Provide required engineering and coordination of various elements and suppliers to provide a complete Code-compliant project.

20. Provide equipment guarding in accordance with MOL O. Reg 851 and TSSA document: Elevator Machine Room Equipment Guarding – Best Practices.

21. Above is a brief description only. The following specifications detail the complete Work.

1.2 RELATED WORK – INCLUDED AS ELEVATOR CONTRACTOR'S RESPONSIBILITY

.1 Include subcontracts and all coordination and supervision of related work usually covered off by other trades to accomplish a working elevator system, accepted by Provincial authorities and suitable for intended use, including:

.2 Electrical:
.1 Provide new three-phase disconnect switches to accommodate elevator motor power with properly sized new fusing and including for any required auxiliary contacts.

.2 Provide new lighting in the elevator machine room, operated by new switch. Lighting to provide 200 lux ambient lighting measured across at the machine room floor level employing a minimum of two dual 1220 mm (48") high efficiency T8 equivalent LED type fixtures at 4100 K per new fixture installed. Provide metal mechanical guarding of all existing and new lights.

.3 Provide a minimum of one (1) 120 V 15 amp duplex GFCI receptacle in the machine room, pit, and car top.

.4 Internet feed required. Arrange for connection of the Owner's emergency cab communication system to the new telephone provided in the elevator cab. Include for any required assistance by communications contractor to make system functional.

.5 Provide new vapour-proof guarded LED lighting in the pit. Guard with substantial, rust-proof metal cages over polycarbonate lens. Lighting to provide 100 lux ambient at the pit floor level employing a minimum of one dual 610 mm (24") high efficiency T8 equivalent LED type fixtures at 4100 K per new fixture installed. Provide instant start, ballast factor greater than 0.9, and 85% reflector. Provide illuminated light switches in the hoistway.

.6 Engage fire alarm subcontractor to disable fire detectors as required during course of work – respecting the Owner's fire regulations.

.7 Include electrician subcontract to accomplish all required conductor and conduit runs. Run new grounds as required.

.8 Retain and make operative any related elevator fixtures not covered elsewhere in this document.

.9 Provide stainless steel drip pans with drainage where new equipment is installed directly under a sprinkler line, roof drain, or any other existing pipes containing liquid.

.10 Provide new switches and conductors for all lighting and new heavy-duty pit stop buttons.

.11 Remove existing cathodic protection and disconnect switch.

.3 General:

.1 Include complete removal of redundant elevator components while working in an occupied building.

.2 Include for any required hoarding outside each elevator entrance to provide a working area while keeping the adjacent corridor free for tenant movement.

.3 Include for exterior storage container if site storage is limited.

.4 Include for any required toilet rental to accommodate elevator crew.
.5 Include full costs of material movement – new materials in and redundant materials out, including crane costs, permits, and removals of walls (to be made good afterward). Include for overtime costs of disruptive work.
.6 Include for required protection of work area - signage, dust control, floor protection, and barricades – to accomplish elevator modernization in an occupied building.
.7 Carry out all noisy and disruptive work after hours between the hours of 6:00 PM – 7:30 AM Monday to Friday, including any work audible at more than 30 dB over ambient, measured 1 meter on the tenant’s side of barricades.
.8 Supply any required garbage dumpster. Keep building cleared of rubbish.
.9 Paint the machine room floor grey at the completion of project. Paint machine room walls. Use a minimum of two (2) coats of latex white semi-gloss paint to Engineer's approval.
.10 Patch all redundant holes in machine room walls and ceilings prior to painting.
.11 Provide required cutting, patching, and making good of new fixtures.
.12 Provide any required hoistway repairs, including patching of holes, fire-stopping, and bevelling of ledges or setbacks 100 mm or greater.
.13 Provide all required supervision, coordination, and safety meetings as required by multiple trades on site. The Division 14 contract will be the General Contractor. Include for required Municipal and Provincial work permits.
.14 Prior to fastening to, or carrying out any modifications to, the building structure (i.e., for hoisting of equipment), written approval must be obtained from a structural engineer. Provide a copy of this approval. Cost to be the responsibility of the Contractor.
.15 Provide hoisting plan to the Owner with shop drawings. Before moving the new machine and/or controller to the elevator machine room, provide the Project Manager with a written plan of how the equipment will be transported to the machine room. No work is to proceed until approval has been given by the Project Manager.
.16 Remove ABS drain pipe located in pit back to pit wall. Permanently cap the end.

1.3 RELATED WORK BY OWNER

.1 Arrange for live internet connection to the elevator machine room if none exists or existing is not compatible with new telephone. Phone line to be dedicated and monitored 24/7.

1.4 REFERENCE STANDARDS

.1 Perform work to the following minimum standards:
.1 ASME A17-2019/CSA-B44-19 Safety Code for Elevators and Escalators.
.2 CSA C22 No. 77 Motors with Inherent Overheating Protection.
.3 CSA C22 No. 141 Unit Equipment for Emergency Lighting.
.4 Technical Standards and Safety Act 2000 and Ontario Regulation 209/01, Ontario Regulation 209/01 and Ontario Regulation 223/01.
.5 C22.1 Canadian Electrical Code, particularly Section 38.
.6 National Building Code.
.7 CAN/CSA B651 Barrier-Free Design Guidelines.
.8 CAN/CSA Z320 Building Commissioning Standards.
.9 Canada Labour Code, Part 2, Occupational and Health and Safety Regulations including Section 13.13.
.10 Occupational Health and Safety Act including Section 109 of Ontario Regulation 213/91.
.11 CSA Z432-04 Safeguarding of Machinery.
.12 TSSA document: Elevator Machine Room Equipment Guarding – Best Practices.
.13 TSSA Code Adoption Document Amendment 295-22 or latest amendment.
.14 Addendum to ANSI/ASHRAE/IESNA Standard 90.1-2007, Energy Standard for Buildings.

.2 Supply appropriate guards - compliant with Occupational Health and Safety Regulations with respect to physical and electrical hazards to persons in the elevator machine rooms.

.3 In case of discrepancy, the above standards take precedence over details elsewhere in this specification.

1.5 POWER SUPPLY

.1 Make all necessary modifications to the electrical services relating to the elevator, such as supplementary disconnect devices and connections to the controller.

.2 Design equipment to operate using the existing 3-phase power supply.

.3 Provide necessary grounding, shielding, or bonding required to accommodate the new elevator equipment.

.4 Carry out any electrical modifications outside of the hoistway and machine room by a Licensed Electrician and arrange and pay for inspection by hydro utility as required. Provide a copy of utility permit to the Owner.

1.6 PERMITS AND INSPECTIONS

.1 Complete Design Submission and related research necessary for regulatory approval of Work. Make submission to province within two (2) weeks of approved General Arrangement Drawings.

.2 Obtain and pay for necessary Municipal or Provincial inspections and permits, and make such tests as are called for by the regulations of such authorities. Make tests in the presence of the authorized representatives of authorities.

.3 Provide the Owner with copies of inspection reports the same day they are received from authorities.

1.7 TAXES

.1 Pay all taxes properly levied by law, including Federal, Provincial and Municipal. HST to be invoiced as an identified extra.

1.8 MEASUREMENTS

.1 Before the execution of the work, verify all dimensions with the actual site conditions.

1.9 QUALITY OF WORK

.1 Perform Work by mechanics skilled in the installation of elevators and with a minimum of five (5) years' documented experience in installing the control system to be used. Provide adequate supervision.

.2 Comply with all applicable provisions of all Federal, Provincial, and local labour laws.

1.10 SAMPLES

.1 Submit to the Owner for approval, upon request, samples of any visible elevator finishes, including:

.1 Cab wall finishes;
.2 Cab ceilings;
.3 Cab doors;
.4 Hoistway entrance doors and frames;

.5 Signal and operating fixtures;
.6 Buttons;
.7 Fixture faceplates.

1.11 GENERAL ARRANGEMENT DRAWINGS, SHOP DRAWINGS, AND PRODUCT DATA

.1 Before beginning work, prepare all drawings to show the general arrangement of the elevator equipment and other data which is called for and are to be submitted for review. Provide these drawings within three (3) weeks of notification of award of contract.

.2 Drawing review is for the sole purpose of ascertaining conformance with the general design concept and does not constitute approval of the design details inherent in the shop drawings, responsibility for which shall remain with the Contractor. Such review shall not relieve the Contractor of responsibility for errors or omissions in the shop drawings or of their responsibility for meeting all requirements of the Contract documents, including this specification.

.3 Provide soft version in AutoCAD format and submit three (3) copies of each shop drawing for review. Format for printing as 280 mm x 432 mm (11" x 17").

.4 Indicate to scale on General Arrangement Drawings, stamped by a Professional Engineer registered in the province and knowledgeable and experienced in elevator engineering and design:
.1 Plan view of power unit, controller, and all other components in machine room.
.2 Location of circuit breaker, switchboard panel or disconnect switch, light switch, and feeder extension points in machine room.
.3 Location in hoistway or machine room for connection of travelling cables for car light and communication system.
.4 Locations and size of trap doors and access doors and load on hoist beam and location of trolley beams.
.5 Location and size of car, hoisting beam, guide rails, and other components in hoistway as required.
.6 Buffer and pit channel location include spring size, load, compression, and capacity.
.7 Signal and operating fixtures.
.8 Heat generation of elevator equipment in machine room.
.9 Location of equipment guarding/fencing.

.5 Indicate on shop drawings:

.1 Details on pumping unit components, including:
- .1 Pump and pump motor.
- .2 Valve.
- .3 Drain location.
- .4 Oil line diameter and location.
- .5 Ball valve.
- .6 Muffler.

.2 Detailed drawing showing all fixtures, position indicators, push buttons, car operating stations, corridor control panels, and any other special fixtures pertaining to the project.
.3 Include catalogue illustrations of operating and signal fixtures.
.4 Cab interior drawings.

.6 Do not commence manufacture or order of materials before shop drawings are reviewed and approved as well as stamped by a Professional Engineer in the province of work and submitted to the Provincial safety authority.

.7 Provide product data for:
.1 Signal and operating fixtures, operating panels, and indicators.
.2 Cab design and components.

1.12 PROJECT RECORD DOCUMENTS

.1 On-site documentation required: before any work commences on site, provide the following information, and leave it in the machine room at all times until the completion of the project.
.1 A complete copy of the elevator specifications.
.2 A copy of a detailed progress schedule demonstrating daily progress required to achieve completion on time.

.2 Before final acceptance of equipment, provide three (3) sets of reproducible as-built wiring diagrams, as well as three (3) sets of all final issue shop drawings, including General Arrangement Drawings - machine room plan, hoistway plan, and hoistway section. All drawings to be laminated or enclosed in plastic protectors and marked "as-built". Provide all drawings stamped as "as-built" by a Professional Engineer registered in the province.

.3 Record actual locations of equipment, names of equipment manufacturers and suppliers, concealed conduit and boxes, concealed devices, and disconnects.

.4 Provide one (1) soft copy of the above information in AutoCAD format.

.5 Mark up all field changes or additions to original wiring diagrams in red.

.6 Submit drawings and data in accordance with General Requirements specification, if distributed with this tender.

1.13 OPERATION AND MAINTENANCE DATA

.1 Provide one (1) hard copy and one (1) soft copy of the Operation and Maintenance manuals including complete Maintenance Control Program (MCP). Include copy of the registered Design Submission and TSSA inspection reports in manual.

.2 Bind data in vinyl hard cover 3D ring type loose leaf binders for 212 x 275 mm size paper. Binders must not exceed 75 mm thick or be more than 2/3 full.

.3 Enclose title sheet labelled "Operation Data and Maintenance Manual", project name, date, and list of contents. Show project name on binder face and spine.

.4 Organize contents into applicable sections of work to parallel project specifications breakdown. Mark each section by labelled tabs protected with celluloid covers fastened to hard paper dividing sheets.

.5 Include the following maintenance data:

.1 Description of elevator system's method of operation and control, including but not restricted to motor control system, door operation, emergency power operation, emergency recall operation, and special or non-standard features provided.

.2 Consolidated replacement parts list.

.3 Include all as-built wiring diagrams for all equipment on controllers.

.4 Maintenance: Use clear drawings, diagrams, or manufacturers' literature which detail the following:

- .1 Lubrication products and schedules
- .2 Trouble-shooting procedures
- .3 Adjustment techniques
- .4 Operational checks
- .5 Maintenance of special finishes
- .6 Planned maintenance tasks and their frequencies

.5 Spare Parts:

.1 List recommended spares to be maintained on site to ensure optimum efficiency.
.2 List all special tools and appropriate unique applications.
.3 Detail manufacturer and supplier names and addresses.

.6 Include in the manuals a copy of the registered design submission and safety authority design submission and inspection reports.

.7 Provide further information that is required for the safe and efficient maintenance of the elevator equipment, including any solid-state equipment or devices supplied under these specifications.

1.14 MAINTENANCE SERVICE - INTERIM AND WARRANTY

.1 Proponents acknowledge that this bid process can lead to the out-of-term cancellation of the maintenance contract with 60 days' notice, and that acceptance of the proponent's tender does not necessarily mean the acceptance of a long-term maintenance contract on the offered terms.

.2 Include at no extra cost complete interim maintenance of existing equipment covered under this project from the day of start of site work and continue maintenance for an additional period of twelve (12) months from the date of the Final Certificate of Completion of the project.

.3 As a minimum, provide monthly visits with maintenance inspections, tests, and maintenance procedures carried out in accordance with Provincial regulations, Section 8.6 of the ASME 17.1/CSA B44-19 Safety Code for Elevators and Escalators, active rulings from the AHJ, the Maintenance Control Program and the Owner’s maintenance form, and the Owner’s Elevating Devices Maintenance Specification.

.4 Any separate price for long-term maintenance requested with the tender is for the purposes of owner’s information and represents an option included with the elevator supply and does not commit the owner to acting on a long-term maintenance contract with the elevator supplier.

.5 Systematically clean, lubricate, and adjust all the equipment as required.

.6 Repair or replace electrical and mechanical parts of any equipment as required, whether due to defect or normal wear-and-tear.

.7 Use only genuine standard parts of manufacturer of equipment.

.8 Perform work by competent personnel under supervision and in direct employ of manufacturer, or manufacturer's licensed agent.

.9 Schedule work during regular Elevator Trade working hours with the Owner.

.10 Maintain locally an adequate stock of parts for replacement or emergency purposes and have qualified staff available to ensure fulfilment of parts requirements in a timely fashion.

.11 Include 24-hour callback service required by equipment stoppage or malfunction at all times at no additional cost. Provide staffing to ensure 30-minute response to emergency calls throughout interim and warranty maintenance. Provide full coverage of monitoring system including modem and internet elements with 48-hour deadline to restore system to full operation.

.12 Ensure that no unit is out of service longer than twelve (12) hours - keep the Owner completely informed of equipment malfunctions on a continuing basis.

.13 Provide a logbook in the machine room and record all callbacks and repairs as work is carried out. Provide an "acknowledgement of inspection" form at each inspection. Do not employ a computerized logbook.

1.15 LAYOUT

.1 Design equipment to suit existing space or space as modified by this Division’s work, including hoistway cross-sections, overhead dimensions, pit depth, machine room dimensions, and machine room location.

.2 In the event that design changes are proposed by the Contractor with respect to any of the above-noted dimensions, required either for convenience or by physical necessity, notify Owner in writing without delay.

1.16 WARRANTY

.1 Provide a warranty that the materials and workmanship of the apparatus installed under these specifications are first-class in every respect and make good any defects not due to improper use or care which may develop within one (1) year from the date of acceptance.

.2 All retained equipment is to be covered under the same warranty as equipment that is refurbished or provided new.

.3 Provide an extended warranty of an additional two (2) years for finished surfaces visible to elevator passengers. Warranty coverage to include imperfections that may develop on painted and architectural steel surfaces, as well as shifting, delamination, bending, or other imperfections of joints, panels, and skins. Warranty does not cover damage by misuse.

.4 Commence warranty of work at date of certification of Final Completion, as certified by the Consultant.

1.17 FIRE AND SAFETY REQUIREMENTS

.1 Comply with Ontario Building Code (Part 8, Health and Safety Measures at Construction and Demolition Sites) and Provincial Regulations for Construction Projects.

.2 Where work requires interruption of fire alarms or fire suppression, extinguishing or protection systems retain services of manufacturer for fire protection systems on daily basis or as approved by the Owner, to isolate and protect all devices relating to modification of fire alarms, fire suppression, extinguishing or protection systems and/or cutting, welding, soldering or other construction activities which might activate fire protection systems.

.3 Immediately upon completion of work, restore fire protection systems to normal operation and verify that all devices are fully operational.

.4 Inform fire alarm system monitoring agency immediately prior to isolation and immediately upon restoration of normal operation.

.5 Comply with requirements of the Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials, and regarding labelling and the provision of material safety data sheets acceptable to Labour Canada.

.6 Comply with the Owner’s site security and safety regulations.

.7 Comply with the Owner’s "Hot Works" policy as required.

1.18 POWDER-ACTUATED FASTENING DEVICES

.1 Do not use powder-actuated tools using explosives, unless permitted expressly by the Consultant; comply with requirement of CAN3-Z166.2 (Use and Handling of Powder Actuated Tools).

1.19 CUTTING, PATCHING AND MAKING GOOD

.1 Cut existing surfaces as required to accommodate new work.

.2 Patch and make good surface cuts, damaged or disturbed, to the Consultant's approval. Match existing material, colour, finish, and texture.

1.20 SCHEDULING

.1 Within two (2) weeks after award of contract, submit bar chart construction schedule for work, indicating anticipated progress stages within time of completion. When schedule has been reviewed by the Consultant, take necessary measures to complete work within scheduled time. Do not change schedule without notifying the Consultant. Comply with all lead times set out in the Tender documents.

.2 Include, in this schedule, the following information:
- .1 Shop drawing submission lead time.
- .2 Material lead time.
- .3 Material delivery to site and mobilization.
- .4 Modernization construction time (per car).
- .5 Adjustment and finish-up time.

.3 Provide a detailed cost breakdown schedule for invoicing purposes.

1.21 BARRIER-FREE ACCESSIBILITY

.1 Meet all requirements of Appendix E of the CAN/CSA-B44-19 Safety Code for Elevators.

.2 Provide flush-mounted Arabic numerals 16 mm in height raised 0.8 mm immediately to left of floor buttons to identify floor buttons.

.3 Provide tactile indications (Arabic), 50 mm floor numerals raised 0.8 mm, on the hoistway door panel jambs. Locate 1.5 metres above finished floor.

.4 Locate uppermost button in elevator cab control panel at less than 1220 mm above floor level.

.5 Include braille markings on car operating panel fixtures.

.6 Provide new vandal-resistant hall lanterns at each floor. Lanterns to illuminate/chime, green/once for UP direction, and red/twice for DOWN.

.7 Provide 50 mm OD cylindrical, solid aluminium on all non-access sides of cab with space of 40 mm between rail and cab wall. Mount at 900 mm above floor. Return ends to wall.

.8 Provide voice annunciation indication of each floor when served, and of car direction. Provide volume control adjustable from behind car station. Provide high-power speakers, minimum of two (2) per car, so no distortion is readily noticeable to passengers. Provide sample of annunciations, to be in English and in a female voice, with shop drawings.

1.22 MARKINGS

.1 Make identifications and instructions in English, or alternatively with international symbols.

1.23 TRADEMARKS AND LABELS

.1 Do not place permanent labels, trademarks, or nameplates on materials.

1.24 STORAGE AND HANDLING

.1 Store materials in elevator machine room or other space authorized by the Owner.

1.25 NON-PROPRIETARY GUARANTEE

.1 Provide a written guarantee from the manufacturer of the equipment, including controller, that the equipment is non-proprietary. This includes:
.1 Extra spare parts are available for purchase, not just exchange. Parts may be purchased by anyone, not just the Owner. A price list of parts, including all circuit boards, is to be supplied with shop drawings.

.2 All diagnostics are on board. All wiring diagrams, documentation, and special tools required for maintenance are supplied with the elevator as the Owner's property.

.3 The elevator programming does not expire, self-alter, or degrade in any way.

1.26 GENERAL CONDITIONS

.1 General requirements section and all other conditions apply to all the Work and are part of this section. Read in full all sections included in the specification document. Adapt this Work to that of the other trades.

.2 Perform the erection of this equipment by certified Elevating Device Mechanics skilled in the installation of the qualified elevator machinery and associated equipment. Provide adequate supervision of this work. Dress all construction personnel in company uniforms or coveralls identified with the Contractor’s name and logo.

.3 Remove rubbish daily as it accumulates. Keep the building and premises clean during the progress of the work.

.4 Be responsible for all equipment, products, tools, and material not turned over for use by the Owner, whether equipment, products, tools, or materials have been certified or paid for by either or both the Owner and/or the Consultant.

.5 Expect that The Work may be viewed by the Consultant at any time during construction.

.6 Submission of bid will be considered presumptive evidence that bidder is conversant with local facilities and conditions, requirements of the documents and of pertinent local codes, state of labour and material markets, and has made due allowance in their proposal for all difficulties. Should bidder's investigation of local codes or rules reveal stipulations contrary to the specifications, they shall advise the Engineer without delay. Should a bidder find any discrepancy in, or omissions from, any of the specifications, or be in doubt as to their meaning, they shall advise the Engineer. Bidder shall state their bid is in accordance with the specifications.

.7 Maintain adequate protection of work from damage and protect the Owner's property from injury or loss arising out of this contract. Make good any such damage, injury, or loss, except such as may be directly caused by agents or employees of the Owner.

.8 Provide materials and equipment new, the best of their respective kinds, and installed in a neat, accurate, workmanlike manner. Furnish for approval all samples as directed and provide materials conforming to approved samples.

1.27 CERTIFICATION OF PAYMENT

.1 The Owner will certify progress payments for work only after it has been satisfactorily completed.

.2 Certification will be:

- 15% upon fully completed engineered drawings;
- 45% on full equipment delivery;
- 30% on completed labour, calculated monthly;
- 5% on achieving acceptance from the AHJ;
- 5% of completion of final deficiencies and completion of submittals.

.3 The above is subject to construction lien holdback.

.4 Progress payments may be withheld, whether or not certified by the Owner, for any of the following:
.1 Defective work or deficiencies not corrected.
.2 Failure of Contractor to make payments properly to Sub-Contractor(s) or for material and labour.
.3 Failure to work to schedule.
.4 Damage to the building or another contractor's work.
.5 Failure to meet specifications or performance criteria.

1.28 DEFINITION OF TERMS

.1 The term "Contractor" as used herein refers to any person, partners, firm, or corporation having a contract with the Owner to furnish labour and material for the execution of the work described therein.

.2 The term "Sub-Contractor" as used herein refers to any person, partners, firm, or corporation having a contract with the Contractor to furnish labour and materials for the execution of the work described herein.

.3 All of the terms in the specifications have the definitions given in the CSA-B44-19 Safety Code for Elevators.

.4 The term "provide" or "furnish" where used means to supply and install new equipment.

.5 The term "refurbish" where used means the provision of necessary labour, modifications, parts, etc., which will result in returning the component to "like new" operating condition. Bidders should state any assumptions where the extent of refurbishment required is not clear.

1.29 ELEVATOR PERFORMANCE

.1 With equipment adjusted to the required parameters, operate elevator with smooth acceleration and provide a comfortable and agreeable ride to the passengers.

.2 Meet required parameters in conjunction with dependable, consistent elevator operation, and without undue wear or excessive maintenance over the life of the elevator installation.

.3 Provide floor-to-floor time of 8.5 sec. (120 fpm car speed) based on typical 11-foot floor heights.

.4 Set 42" center-opening doors to safely open in 1.7 seconds and close in 2.4 seconds.

.5 Provide adjustable dwell times and independent dwell settings for car and hall calls. Set the dwell times to 2 seconds for car, and 3 seconds for hall initially.

.6 Maintain floor levelling accuracy of 5 mm or better.

.7 Set door detector interrupt and nudging time to 20 seconds. Set door to close at reduced speed in nudging mode. Disable detector when in nudging mode.

.8 Provide quiet power unit operation not to exceed 82 dB as measured one metre from the centre of mass of the power unit, set on the 'A' scale with an 'F' response.

.9 Limit cab noise levels to 60 dB when moving and 68 dB during a door operation cycle, as measured by a sound meter located in the centre of the cab and set on the 'A' scale with an 'F' response.

.10 Limit horizontal vibrations in both the post-to-post and front-to-back axis to 20 milli- g in the 2 to 10 Hz range.

.11 Limit vertical vibrations to 20 milli-g.

.12 Adjust typical acceleration rate to 0.04 g.

.13 Limit jerk rate (change in rate of acceleration) to 2.44 m/s_3 (10 f/s_3).

.14 Provide car speed to within 10% of contract speed in up direction and within 15% of contract speed in down direction.

PART 2 - PRODUCTS

2.1 DESCRIPTION OF ELEVATOR

.1 Modernize existing hydraulic elevator.

.2 Elevator numbers 2 and 1

.3 Provincial number: 65220, 65221

.4 Class: Passenger

.5 Capacity: 1,133 kg (2,500 lb)

.6 Speed: 0.610 m/s (120 fpm)

.7 Control: Simplex, selective collective

.8 Doors: 1067 mm (42") wide, 2134 mm (84") high
One-speed, centre-parting

.9 Landings: Car 1: B, M*,2,3 Car 2: B, M, 2

.10 Travel: Per existing site conditions

.11 Overhead: Per existing site conditions

.12 Pit Depth: Per existing site conditions

Special Features: Independent service operation;
Manual FEO operation, Phase I and Phase II;

Battery lowering;

Signals: DUPAR US91 buttons or equivalent;
Car position indicator;
Hall position indicator at each landing;
New hall lanterns at all floors with new electronic chime and LED illumination;
Out of service indicators;
Full compliance with Appendix "E" of CAN/CSA-B44 Safety Code for Elevators;
All signals to be LED-illuminated.

2.2 COMPONENTS

.1 Use major elevator components from standard product line of one manufacturer unless otherwise approved in writing or unless product is specifically named in this document.

.2 Use components only which have performed satisfactorily together under conditions of normal use in not less than three (3) other elevator installations of similar design and for a period of at least two (2) years. Furnish names and addresses of owners or managers of buildings in which proposed combination of major components has so performed.

.3 Major components are defined to include power unit and controller.

.4 Furnish materials and equipment new, the best of their respective kinds, and installed in a neat, accurate, workmanlike manner.

.5 Provide only system designs field -tested for the application, with adequate capacity to meet all performance criteria and to provide long-term, reliable operation.

.6 Provide stainless steel to ASTM A480M, type 304, no. 4 satin finish.

.7 Provide elevator control equipment manufactured by one of the following:
.1 Automatisation JRT Inc.
.2 GAL Manufacturing
.3 Motion Control Engineering (MCE)
.4 Smartrise

.8 Other manufacturers are not acceptable unless approved in writing by tender-issuing authority.

2.3 ELECTRICAL COMPONENTS

.1 Furnish and install all new insulated wiring to connect all parts of the equipment, including travelling cable, all wiring in hoistway, new components on car top, and new wiring from disconnect switch to controllers and motors.

.2 Use steel set screw type fittings where electrical metallic tubing is used.

.3 Provide a communication system junction box on the outside of the controller appropriately identified. Provide shielded wiring from the assistance button in the car and the speaker in the car to a junction box located at controller in machine room.

.4 Provide new wiring and conduit from the main line and car lighting disconnect switches to the terminal blocks in the controllers.

.5 Provide a separately identified box for the fire alarm connection.

.6 Include at least 10% spare conductors in each cable. Tape and legibly identify all spare wires.

.7 In travelling cable and terminating at controller and car station, include at least six (6) pairs of 18 gage twisted/shielded wires for audio or other electronic equipment. Include one (1) co-ax RG-59 for video signal.

.8 Do not parallel conductors to increase current-carrying capacity unless individually fused.

.9 Install a separate green bond wire in all raceways, including EMT and flexible conduit.

.10 Provide additional disconnect switches and wiring if required by Code to suit new machine room layout.

.11 Include wiring and connections to elevator devices remote from hoistway and between elevator machine rooms.

.12 Limit use of flexible conduit to items that require movement or periodic adjustment.

.13 Provide insulated wiring having a flame-retarding and moisture-resisting outer cover. Run all wiring in metal conduit, metallic tubing, or wire ducts.

.14 When using conduits or troughs through floor, extend conduit or trough at least 100 mm above floor.

.15 Do not run conduit or wiring along the pit floor. Install all conduit and wiring a minimum of 150 mm above pit floor.

.16 Use type ETT travelling cables.

.17 Suitably suspend the travelling cables to relieve strain in the individual conductors.

.18 Install travelling cables with a continuous run from the controller to the elevator cab. Do not terminate or couple the travelling cables under the car or in the hoistway.

.19 Protect travelling cables from damage where they make contact with the hoistway, hoistway equipment or trimmer beams including replacing existing pads.

.20 Run high voltage wiring in electrical metallic tubing or other galvanized steel raceway. Include a covered ground wire same size as feeders in the raceway.

.21 Fabricate wiring that is run in conduit or tubing to Table 6 of CEC Part 1.

.22 Do not use metal wiring conduit as a grounding conductor.

.23 Any existing conduit or trough in acceptable condition may be retained and refurbished to "like-new" condition.

2.4 CYLINDER AND PLUNGER

Alternate Price

.1 Remove the existing jack unit and install a complete new jack unit. Size jack unit accordingly to allow easy access in to the existing hoistway. Do not perform any hoisting from the suspended car cab.

.2 Construct piston of selected steel tubing machined true and finished to surface finish of 0.0008 mm roughness height rating or better. Telescopic plungers are not acceptable.

.3 At top of cylinder include stuffing box and packing gland with seal or self-adjusting packing which does not require external adjustment.

.4 Include means to automatically return oil which leaks past packing to storage tank. Filter oil if exposed to atmosphere.

.5 Include safety bulkhead on cylinder in accordance with B44 code.

.6 Design and install cylinder and plunger plumb. Operate with minimum friction.

.7 Do not use a plunger follower guide.

.8 Provide cylinder of steel pipe, factory tested for 600 pounds per square inch working pressure. Sandblast or wire brush outside of cylinder to remove rust and scale. Paint with heavy coat of epoxy.

.9 Provide plunger of seamless steel pipe or tubing. Plunger shall be no more than 0.254 mm (0.010 inch) out of round and straight within 1.59 mm (1/16"). Protect during shipping and installation to avoid damage. Isolate plunger top from car frame.

.10 Provide watertight seal at pit floor between cylinder and PVC and between PVC and steel casing using waterproof resin sealer.

2.5 CYLINDER PROTECTION

Alternate Price

.1 Protect cylinder from corrosion by a protective plastic casing immune to galvanic or electrolytic action, salt water and other know underground conditions.

.2 Provide a schedule 40 PVC casing 254 mm (10") in diameter greater than the wrapped diameter of the protected cylinders 609.6 mm (24") deeper than the jack assembly with watertight sealed couplings and bottom end caps.

.3 Cap the plastic casing at the bottom. All joints shall be solvent or heat welded to ensure water tightness.

.4 Provide PVC watertight with sealed couplings and bottom end caps.

.5 Extend PVC above pit floor to fit snug against cylinder head or pit channels.

.6 Seal top of PVC and provide a 50.8 mm (2") diameter, 4-in. long PVC inspection port with threaded cap.

.7 Provide with means of inspection for the presence of oil or water.

2.6 BURIED CYLINDER

Base Price

.1 Retain existing buried cylinder. Report any defects in writing within 30 days of contract award.

.2 Adjust piston for smooth and quiet operation.

.3 Provide new gland packing and if required, subsequent packing within 12 months of project completion.

.4 Repair/replace existing cathodic protection system.

2.7 PUMPING UNIT

.1 Provide a complete new submerged, pumping unit.

.2 Design pumping unit as an integral unit, combining motor, pump, valves, and reservoir in one enclosure.

.3 Prevent lateral displacement of pumping unit.

.4 Reduce airborne noise with sound-deadening material.

.5 Provide swing panels or panels equipped with quick release fasteners for convenient access to parts of equipment requiring adjustment.

.6 Use positive displacement screw-type pump with direct connection between drive motor and pump through flexible coupling, specially designed for quiet service.

.7 Where necessary, install oil-tight drip pan beneath unit to retain leakage of hydraulic fluid.

.8 Install thermostatically controlled fluid viscosity control by recirculating oil within the reservoir.

2.8 CONTROL VALVE

.1 Provide unit body control valve with high efficiency solenoids manufactured for the elevator industry. Valve to provide smooth elevator operation and reliable speed control and leveling under the full range of expected oil viscosity conditions. Include:
- .1 Externally adjustable relief.
- .2 Externally adjustable up start.
- .3 Check valve rated to support full load.
- .4 Externally adjustable up-level.
- .5 Externally adjustable down.
- .6 Manual lowering.

.2 Include appropriate strainers to avoid valve damage in case of oil contaminants or particulate.

2.9 MOTOR

.1 Provide new pump motor. Do not exceed existing horsepower. If a change in horsepower is required, clearly note the change on the submitted shop drawings for the Consultant's approval.

.2 Do not exceed EEMAC Design B locked rotor current.

.3 Design for minimum locked rotor torque of 150% and minimum breakdown torque 200% at normal voltage.

.4 Provide data plate on motor showing motor connections.

.5 Limit starting current of elevator motor to not more than four (4) times full load running current.

.6 Include Class B motor insulation.

.7 Include manually reset integral overheating protection to CSA C22.2.

.8 Design motor for 80 starts per hour minimum.

2.10 MOTOR CONTROLLER

.1 Provide a CSA-approved modular microcomputer controller to provide solid-state soft starting.

.2 Provide the following protection during the starting and running modes.
- .1 Start fault.
- .2 Line fault.
- .3 Temperature fault.
- .4 Stall motor.

.3 Provide LED indicators for advisory status and fault annunciation.

.4 Design controller to be capable of delivering its rated current and ambient temperatures ranging from 5°C and 34°C.

2.11 OIL STORAGE TANK

.1 Provide oil storage tank capacity equal to volume of oil required to lift elevator to top terminal plus reserve of not less than 10% or 40 litres, whichever is greater. Provide all new elevator hydraulic fluid as approved by manufacturer of power unit: biodegradable synthetic and not vegetable based. Provide Viscosity Index of 190 with Flash point of 200 degrees C or better. Include permanent signage on reservoir indicating the type of oil required and viscosity index.

.2 Clearly and permanently indicate minimum permissible oil level.

.3 Include gauge glasses to indicate oil level if top of tank is more than 1.5 metres above floor level.

.4 Provide filtering screen mounted over the suction inlet.

.5 Provide a drain connection.

2.12 LOW OIL CONTROL

.1 Provide low oil control feature to automatically cause UP-travelling car to descend to main landing if reservoir oil level is insufficient.

.2 Arrange control so that oil reservoir must be refilled before elevator can be returned to service.

.3 Open car and hoistway doors automatically at lower landing. Inactivate control buttons in car operating panel except door open button.

2.13 SOUND ISOLATION

.1 Include resilient pads to effectively isolate power unit from machine room flooring. Design for transmissivity of less than 10%. Use a minimum of 37 mm thick pads. Do not use built-up pads.

.2 Provide sound isolation between plunger platen and car frame.

.3 Provide sound isolation between pumping unit and controller, motor and pump, and building supports.

.4 Provide sound isolation coupling in pipeline between pump and cylinder.

.5 Hang or support oil-line so that it is sound-isolated, by use of non-rigid material, from all elements of building structure.

.6 Provide flexible connection in all EMT or other rigid conduit which leads to components mounted on the machine room walls, such as battery lowering units.

2.14 SILENCER

.1 Provide new MEI heavy-duty muffler/silencer for power unit pulsation and noise suppression.

.2 Provide threaded or grouped connection to suit new oil line.

.3 Utilize system of baffles and bladder charged with air to approximately 42% of hydraulic working pressure.

.4 Provide all related connections, adaptations, and interfaces.

2.15 PIPING

.1 Provide new piping from machine room to cylinder. Remove existing oil lines.

.2 Include required coring and fire stopping around hydraulic oil lines.

.3 Use threaded couplings or mechanical couplings which mechanically prevent separation of adjoining members.

.4 Welding is permitted providing interior of pipe is thoroughly cleaned after welding or where welding method prohibits introduction of foreign material into interior of pipe.

.5 Provide two (2) shut-off valves in the line to facilitate maintenance and adjustment of the elevator, one in the machine and one in the pit. Provide full-bore ball valve.

.6 Locate piping where it can be serviced. Buried piping is not acceptable.

.7 Remove all redundant oil from existing piping.

.8 Provide overspeed valve within 300 mm (12") of the hydraulic jack. Activate on pressure drop - not electrical connection. Provide adjustable flow initially set to activate at 125% of contract speed.

2.16 CAR GUIDES

.1 Equip car with heavy-duty sliding guides.

.2 Maintain each guide on its respective guide in uniform contact with rail surface at all times.

.3 Provide guide operation, which is inaudible to passengers in car or outside hoistway with car operating at rated speed and car fan turned off.

.4 Install guides so that passenger movement within cab does not cause noticeable cab sway.

2.17 GUIDE RAILS AND BRACKETS

.1 Realign rails and smooth out joints to achieve durable ride quality to the standards of this specification.

.2 Align and file all joints.

.3 Adjust guide rails to plumb and parallel within maximum deviation of 1.6 mm per any 6,000 mm section and 0.1 mm per any 25 mm section.

.4 Include steel reinforcement for car and counterweight guide rails where necessary.

.5 Correct any defects, including loose fasteners.

.6 Include steel reinforcement for car and counterweight guide rails where necessary.

2.18 BUFFERS

.1 Retain and refurbish existing spring type buffers.

.2 Wire brush and thoroughly examine existing buffers, fastenings and steel channels.

.3 Include buffer extensions where necessary to suit pit depth.

.4 Be responsible for all pit equipment.

.5 Mount any conduit approximately 300 mm (12") above pit floor. Suitably support this conduit.

.6 Provide final coat of paint for all pit equipment.

.7 Provide data plates on all buffers to Code.

2.19 CONTROLLER AND CABINET

.1 Enclose the controller in enamelled, ventilated, sheet steel cabinet, with swing-type doors at front.

.2 Provide LED strip lighting at top of cabinet interior.

.3 Provide robust equipment capable of reliable operation with ambient temperature between 5°C and 34°C.

.4 Provide air conditioning system integrated into the elevator controller cabinet to cool controller interior to below 26°C, with elevator under heavy use, and ambient machine room temperature of 38°C. Include all electrical connections and related work for a working system. Include for drain.

.5 Provide relays and contactors particularly designed for elevator duty.

.6 Provide separate plexiglass cover over high voltage sections, including 600 V elements, to allow working on the controller with the main doors open.

.7 Mechanically fasten all conductors in controller. Do not employ plastic adhesive clips or brackets.

.8 Provide battery backup for all circuits containing volatile memory.

.9 Provide a suitable communication system junction box on the outside of the controller and identify it accordingly. Provide a separate identified box for the fire alarm connection and emergency power signal.

.10 Cord all field wiring and insulate from metal contact.

.11 Permanently label all switches, fuses, and relays.

.12 Provide protection against reverse and open phasing of main feeders.

.13 Provide a solid-state controller equipped with programmable logic microprocessor controls and self-diagnostic features.

.14 Provide permanently marked junction studs in a designated area in the controller connecting all field wiring.

.15 Include properly sized primary and secondary fuses for each transformer used in the controller.

.16 Govern car motion control by means of real position of car in hoistway. Do not employ stepper relays.

.17 Arrange that accidental grounding in the control system will not defeat the safety circuits.

.18 Provide fully non-proprietary version of all control equipment, including:

.1 All required diagnostics are "on-board".

.2 All programming and diagrams required for long-term maintenance are provided. All elements required for unrestricted access to all parameters, levels of adjustment, monitoring, and flags necessary for long-term maintenance are provided. This includes suspension belt monitoring devices.

.3 The controller will not shut down or alter its functionality in any way after a pre-determined increment of time or use.

.4 Any elevator contractor shall be allowed to purchase parts, supplies, diagrams, support, or training directly from the factory at the same cost level as the original installer. A published price list shall be supplied with the controller - and no single board is to cost more than $2,000 based on 2021 pricing (to be inflated with CPI).

.5 Parts including circuit boards shall be available for direct purchase from the factory in quantities and not on a one-for-one "exchange only" basis. Parts to be stocked to allow for overnight shipment.

.6 All circuit boards shall be available for purchase at the published price they sell to their own workforce or local manufacturing representatives as to be demonstrated by a comprehensive parts list supplied with shop drawings.

.7 Manufacturer offers a support telephone hotline.

.8 Manufacturer will provide factory training to the Owner and their Representative in regularly scheduled events, at no fee to attend.

.9 Replacement of documentation, manuals, wiring diagrams, and any diagnostic elements are available for purchase at price level reflecting only their printing and shipping costs.

.10 Manufacturer offers engineering support and technician training directly to the Owner, their Representative, and any service contractor at no

costs during the installation period and during the warranty period. Manufacturer offers engineering support and technician training directly to the Owner, their Representative, and any service contractor at fair cost subsequently.

.11 Controller and associated equipment must be approved by the Owner and their Representative.

.12 At the sole discretion of the Owner, at time of bidding if there is any question on compliance to the above, attestation to these aspects will be required by a Professional Engineer registered in any province, in the employ of the manufacturer.

2.20 CONTROL AND OPERATION

.1 Provide microprocessor-based simplex selective collective automatic control optimized to minimize passenger waiting times. Submit a full description of proposed control systems, including their features, the conditions of which bring these into operation and response time.

.2 Provide dispatching programs in read-only-memory (ROM), with a minimum of 40% spare capacity.

.3 In the event of failure of the automatic dispatch system, provide alternate dispatching means to ensure service to all landings and for both travel directions.

.4 In the controller, include absolute floor encoding which, upon power-up, shall move the car to the closest floor to identify the position of the elevator.

.5 Arrange elevator so that momentary pressure of one or more of its car buttons causes car to start.

.6 Provide a time delay to hold the car for an adjustable interval at landings at which stops are made to enable passengers to enter or leave the car.

.7 Do not start car unless the car door is in the closed position and all hoistway doors are locked in the closed position.

.8 If down landing buttons are pressed while the car is travelling up, the car shall not stop at these landings, but shall allow these calls to remain registered.

.9 After the highest car and landing calls have been answered and the door interlock circuit is established, the car shall automatically reverse and respond to down car and landing calls.

.10 Cause the car to start before registration of a car button for another landing.

.11 Permit car to be registered to establish direction of travel when car has answered the furthest call, even if other landing calls are registered.

.12 When the car has been started, either in response to its own car button calls or to landing calls, respond to its own car button calls and to landing calls registered for direction in which car is travelling in the order in which landings are reached, irrespective of sequence in which calls were registered. When travelling down the car will not respond to up calls, but these will remain registered and be answered on the next up trip.

.13 If no car buttons are pressed and a car starts up in response to several down calls, it shall proceed first to the highest down call and reverse to collect other down calls. Similarly, up calls shall be collected when the car starts down in response to such calls.

.14 If the car stops for a landing call and a car button is pressed within a pre-determined interval thereafter, corresponding to the direction in which the car is travelling, the car shall proceed in the same direction regardless of other landing calls registered.

.15 Provide the elevator with a self-levelling feature that will automatically bring the car to the floor landings. Self-levelling shall, within its zone, be entirely automatic and independent of the operating device, shall correct for over-travel or under-travel, and shall maintain the car within 10 mm of the landing irrespective of load and direction of travel.

2.21 AUTOMATIC BATTERY LOWERING

.1 Provide battery-based inverter system to automatically sense building power outage and release passengers in the elevator cabs through lowering to an available floor and opening doors.

.2 Utilize maintenance-free, sealed batteries, appropriately rated for the duty encompassing

controller, door operator, and pumping unit.

.3 Provide fully rated means of disconnecting from main power source during battery operation.

.4 Provide onboard LED diagnostic signals.

.5 Provide an auxiliary contact in the mainline disconnect switch to accommodate this feature.

2.22 FEO - PHASE I EMERGENCY RECALL OPERATION

.1 Provide emergency recall service which will be initiated manually by any recall switch. When recall has been initiated:

.1 The elevator controlled by the recall switch and on automatic operation, including independent service operation, shall return directly to the recall level where the doors shall open and remain open. The elevator shall not respond to the landing or car call buttons. Travelling to a terminal landing first and then reversing to travel to the recall level is not acceptable.

.2 The elevator that is stopped with the doors closed, or is travelling towards the recall level, shall proceed non-stop to the recall level.

.3 The elevator travelling away from the recall level shall reverse at or before the next available landing without opening its doors.

.4 A car stopped at a landing shall have its emergency stop switch rendered inoperative as soon as the doors are closed, and the car starts to move. A moving car shall have its emergency stop switch rendered inoperative.

.5 All call registered lights and directional lanterns shall be extinguished and remain inoperative. Position indicators, in the car and at the recall level, should remain in service.

.6 The car shall be provided with a visual and audible signal system which shall be activated to alert passengers that the car is on the emergency recall operation and at least the visual signal shall remain operative until the car reaches the recall level.

.7 An elevator stopped at a floor other than the recall level with doors open shall close its doors and proceed non-stop to the recall level.

.8 Door reopening devices that may be affected by smoke or hot gases shall be rendered inoperative.

.9 If the elevator is on inspection operation, a signal shall warn the inspector to return the car to the recall level. The elevator shall remain under the control of the inspector.

.2 The recall operation shall be terminated when both switches at the main control panel and lobby panel are in the "RESET" or "OFF" position, as is appropriate.

.3 Include for connecting the fire alarm signal through the recall switch.

2.23 FEO - PHASE II EMERGENCY IN-CAR OPERATION

.1 Provide in-car emergency service initiated by a key switch located in the car. The switch shall be marked "OFF - HOLD - ON" and the key shall be removable in the "OFF" and "HOLD" positions. The switch shall become effective in initiating in-car emergency operation when in the "ON" position, provided that the emergency recall operation is in effect and the car has returned to the recall level. During emergency in-car operation, the elevator shall operate as follows:

.1 The elevator shall be operable only by a person in the elevator.

.2 The elevator shall not respond to elevator landing calls.

.3 The opening of power-operated doors shall be controlled only by continuous pressure on the "DOOR OPEN" button. If the "DOOR OPEN" button is released during the "OPEN" motion, the door shall reclose immediately. When doors are fully open, they shall remain open until closed.

.4 Door reopening devices for power-operated doors shall be rendered inoperative.

.5 The doors shall be closed, and the car started by registering a car call and constant pressure on the "DOOR CLOSE" button or on any car call button.

.6 Momentary operation of the in-car emergency service switch to the "HOLD" position shall cancel registered car calls.

.7 When the car is at a landing and the key switch in the car is turned to the "HOLD" position, the doors shall remain open and car calls cannot be registered.

.8 When the car is at a landing and the key switch in the car is turned to the "OFF" position, the car shall automatically return to the recall level as on emergency recall operation regardless of the position of the emergency recall switch.

.9 The elevator shall be returned from in-car operation only when the car is at the recall level and the in-car switch is in the "OFF" position.

2.24 INDEPENDENT SERVICE

.1 Include independent service by means of key-operated switch in car service panel to allow removal of a car from group service and to operate independently in response to car calls only and as follows:

.1 Render the hall lanterns and/or car riding lanterns inoperative.

.2 Cause the car to park with the doors open. Arrange the controls so that the car responds to any car calls registered if a button is held until the doors are closed and the interlocks are made-up.

.3 Cause the doors to reopen if the button is released at any time up to the point at which the elevator starts to move. Render inoperative the normal door protective devices.

2.25 ACCESS TO PIT, HOISTWAY AND TOP OF CAR INSPECTION

.1 At the top landings, provide keyed access to car top.

.1 Provide between car crosshead and hoistway door a single operating fixture containing the following: 120 V 15-amp duplex GFCI receptacle, an emergency stop switch, continuous pressure buttons for operating the car, and a switch for making the buttons on top of the car operable. Operation from top of the car shall be obtained by simultaneous, continuous pressure of the appropriate direction button and a safety operating button after these buttons have been made effective.

.2 Operation from top of the car shall not be possible unless all electric door contacts are closed.

.3 Means shall also be provided so that when the car is to be operated from the top of the car, automatic levelling, power door operation and the normal operating devices are made ineffective.

.4 Arrange circuits to prevent car moving away, when on top of car operation, by any other means.

.5 Limit the speed of the elevator to be not more than .76 m/s and not less than 0.25 m/s.

.6 Provide appropriate circuitry so that top of car operation accomplishes smooth start and stop when operated by any sequence of car top buttons.

.2 At all landings provide a hoistway door unlocking device. Provide a stainless steel collar for holes.

.3 Retain and reuse car top guard rail if code compliant. Otherwise provide new on all non-access sides of the elevator car top except where the distance to a wall does not exceed 356 mm.

.1 Include for an intermediate rail and toe board.

.2 Weigh the elevator before and after installation.
.3 On the crosshead data plate, record the pre-alteration weight, weight added to elevator and/or counterweight, current weight, installation date, contactor name, and alteration type.
.4 Provide an alteration data plate on the controller and record work performed in the maintenance logbook.
.5 Where overhead does not allow standard railings, provide collapsible railings including all safety switches.
.6 Paint the railing and toe board white.
.7 Provide an outline of the top of car refuge area.

.4 Provide a new knife- or fused-type heavy-duty stop switch located in the elevator pit in the vicinity of the pit ladder and accessible from the landing entrance and pit floor. Provide additional switches as required. Switch to be red in colour.

2.26 WORK LIGHTS AND RECEPTACLES

.1 Provide suitable protection for all light fixtures. Use only non-combustible guarding.

.2 Supply and install all wiring and conduit required.

.3 Provide two (2) permanently wired guarded metal light fixtures on car top. One light to be a moveable unit to be used as a hand-held light.

.4 Provide new dual 1220 mm (48") high efficiency T8 equivalent LED type fixtures at 4100 K in each elevator pit, producing 100 lux light level measured at the pit floor.

.5 Provide 120 V 15-amp duplex GFCI receptacles on car top and in the pit.

2.27 EMERGENCY LIGHTING

.1 Include emergency in-car lighting, with a minimum of two (2) fixtures.

.2 Use dry cell-type battery-operated emergency lighting equipment, to CSA C22.2 No.141, to provide general illumination in car and 10 lux minimum illumination at operating panels measured at any point 1225 mm and 890 mm above the car floor and approximately 300 mm in front of a car operating panel for 4-hour minimum.

.3 Include means for convenient manual operation and testing of the unit from within car. Testing means to be spring-loaded or self-centering key switch.

.4 Arrange battery unit as a source of power for alarm bell during power failure.

.5 Emergency light unit is to be an integral part of the car station.

2.28 CAR PLATFORM AND FRAME

.1 Provide a new aluminum car sill to accept flooring thickness chosen by the Owner.

.2 Existing car, frame, and steel platform may be retained if compatible to specified new equipment and refurbished, including the correction of all deficiencies such as broken welds.

.3 Install a subfloor made of plywood as required for class of loading.

.4 Ensure clearance between the car and all hall sills is within code requirements. Make any necessary adjustments.

2.29 CAR INTERIOR

.1 Remove existing finishes from side walls and light coves.

.2 Provide suspended ceiling system fabricated in #4 stainless steel. Totally enclose and conceal all wiring from view within the car. Maximize clear height in cab under suspended ceiling for elevators.

.3 Provide a six (6) MR16 fixtures with LED lamps (5W/60 deg/warm white) c/w satin aluminum trim ring and directional gimbal. Design for light intensity measured at car sill of 100 lux minimum.

.4 If provided as new, fabricate cab shell ceiling with sheet steel, minimum of 12 gauge, smooth and free from defects. Emergency exit to be of same fabrication and finish.

.5 Provide pad hooks around entire perimeter of cab including return panels. Provide one set of protective pads to cover all walls including the front return panel (provide cut-out to accommodate car operating station).

.6 Skin entrance return panels, header, entrance columns/door jambs, above glass on rear wall and car doors of matching, integral brushed stainless steel, 20 gauge. Run grain vertically.

.7 Install new appropriately fire-rated, raised, plastic laminate panels on all non-accessible sides of car cab and below the handrail on the rear wall. Install plastic laminate using two (2) coats of solvent-based contact cement and "J-channel" trim fastening. Provide separate panels above and below the handrail. Provide panels of equal width on each wall and provide stainless steel reveals between panels. Provide stainless steel trim to protect edges of panels on all sides. Provide choice of the laminate colour and finish to standard range of Formica or Wilsonart 1.6 mm (1/16") thick.

.8 Provide 50 mm OD cylindrical-type handrail, solid aluminum on all non-access sides of cab with space of 40 mm between rail and cab wall. Mount at current mounting height floor. Return ends to wall.

.9 Retain existing rear wall glass back feature.

.10 Provide single-sheet luxury LVT flooring to the Owner's choice of pattern and colour of Marmoleum by Forbo, 3.2 mm. Provide a minimal and even seam at perimeter.

.11 Provide new stainless steel licence holders in cabs sized to fit standard Provincial licenses as issued at time of project completion.

.12 Provide emergency exit on top of the car of suitable size, equipped with an electrical device which will prevent operation of the elevator if the exit cover is open more than 50 mm and designed to comply with elevator code.

.13 Ventilate by an exhaust air handling unit through roof and through concealed perforations at base. Limit total fan noise to 55 dBA, measured on an 'S' response scale, measured 0.9 m above floor with fan on high speed. Include two-speed operation of ventilation system. Fan air movement to be approximately 350 CFM on high speed and 200 CFM on low speed.

.14 Take possession of any existing cab signage and reinstall in a permanent and aesthetically pleasing manner in completed elevator.

.15 Provide rigid structure to cab walls capable of resisting 20 lb of force horizontally at any point without noticeable (temporarily) deflecting and 100 lb of force without permanently deforming.

.16 Use bolts fitted with washers and lock washers and fabric separators, if necessary, to assemble and guarantee entire structure to operate entirely free from squeaks and metallic sounds.

.17 Provide an aesthetically pleasing finished product, including square joints, flush surfaces, even finishes, and firm bonding/fastening throughout.

.18 Automatically extinguish cab lighting and fan after approximately 120 seconds has elapsed with elevator dormant, when sitting with doors closed. Turn on lights automatically as soon as a hall call or call is registered for the elevator with lights extinguished. Provide a master override switch for the automatic extinguishing of cab lighting within the elevator cab. Arrange circuits so that any malfunction rendering the elevator inoperable will disable this feature entirely.

.19 At shop drawing review, provide CAD-generated cab approval drawing, one-file drawing covering all surfaces, to scale and in colour. Provide any necessary samples at this time.

2.30 CAR DOORS

.1 Provide flush, steel-clad in stainless steel to match car front, horizontal-slide doors. Do not use binder angles.

.2 Provide two (2) steel pins per door panel extending from the door into the centre of the threshold grooves to prevent the door swinging into the hoistway should the lower guides become dislodged.

.3 Adjust car doors for smooth and quiet operation. Do not employ felt-covered gibs.

.4 Install main guides, one at each end of each door panel.

.5 Existing hangers and tracks may be retained and refurbished if compatible with the new equipment. Provide thorough cleaning and wire brush of existing tracks and hangers.

2.31 HOISTWAY DOOR HANGERS, LOCKS, TRACKS AND CLOSING DEVICES

.1 Existing hangers and tracks may be retained and refurbished if compatible with the new equipment. Provide thorough cleaning and wire brush of existing tracks and hangers. Include provision of new hanger rollers. Use self-lubricating ball or roller bearings sealed to retain grease lubrication, and wipers to maintain rollers and track in clean condition. Provide thorough cleaning of hall headers to remove grease and dirt.

.2 Provide spring-type, sill-mounted closing devices or alternatively heavy-duty spirator devices.

.3 Provide new positive electric interlocks and pick-up roller assemblies. Provide new wiring to door locks including a separate green ground wire back to controller.

.4 Provide new low-friction lower guides. Provide door safety retainers to prevent door panel displacement should the replaceable primary guiding means fail.

.5 Dowel all hoistway door pick-up roller assemblies after final adjustments have been made.

.6 Replace any astragals. Adjust any loose sight guards.

.7 Absorb upthrust with adjustable eccentric rollers equipped with ball or roller bearings.

.8 Design for replacement of gibs without removing door from hanger tracks.

.9 Adjust the hoistway door equipment so that a manual force of 20 lb exerted in a direction forcing the door panels apart will not allow a gap in excess of 7 mm (1/4") to appear between the door panels.

.10 Provide retainers top and bottom to requirements of authority having jurisdiction.

2.32 CAR AND HOISTWAY DOOR OPERATOR

.1 Provide a heavy-duty door operator to open and close the car and hoistway doors quietly and smoothly. Provide high-speed electric door operator with solid-state feedback (closed loop) control. Use only ECI/GAL VFE2500 H (heavy-duty), ½ HP or approved equal. Provide door open speed of at least 0.61 m/s.

.2 Provide all-new car door clutch system. Operate the car door and hoistway doors simultaneously.

.3 Provide a new heavy-duty mechanical door restrictor, as recommended by the manufacturer of the door operator for the application, to resist opening of the car door unless the car is in the unlocking zone as described by applicable Code.

.4 Provide electrical cushioning at each end of travel.

.5 Provide a gate switch operated by a roller attached to each door panel (two per door on centre-parting doors).

2.33 CAR DOOR PROTECTIVE DEVICES

.1 Provide a three-dimensional sensing, solid-state door reversal device on the leading edge(s) of car door panel(s). The device shall contain systems specifically designed for the application and enclosed in an insulated chassis. Arrange the device to:

.1 Provide long-term reliable operation, include no moving parts;

.2 Upon failure of the device, shut the car down at the next available floor, with doors in the fully open position;

.3 Provide totally silent operation;

.4 Include visible diagnostics on the device to permit verification that the unit is functioning;

.5 Have all components installed behind the door jamb, so as to provide a clear opening and present a clean architectural appearance.

.2 Design the device to provide a zone of detection a minimum of 80 mm in advance of the leading edge of each car door and arrange the operation as follows:

.1 Trigger the protection system when any object is located in the entrance and cause the door to reopen without engaging the object;

.2 Permit the protection system to be active over the full travel of the doors;

.3 After elapse of the normal door open dwell time, provide a limited door reversal operation. Arrange the operation so that the door retracts sufficiently to permit only the immediate entering passenger to pass. Continue closing of the door after the passenger leaves detection zone.

2.34 FIRE-RATED ELEVATOR ENTRANCES

.1 Entrance frames and doors may be retained and refurbished if compatible to specified new equipment.

.2 Examine existing entrances and repair any defects. For stainless steel finishes, include for complete cleaning and polishing.

.3 Polish all existing stainless steel.

.4 Install 50 mm high stainless steel Arabic numerals on both sides of entrance frame and provide appropriate braille markings. Centreline of numerals to be 1524 mm above finished floor.

2.35 FLUSH-TYPE HOISTWAY DOORS

.1 Install new lower guides on all hoistway doors; two guides per door panel equally spaced to prevent excessive movement during travel at speed.

.2 Adjust all hoistway doors for smooth and quiet operation.

.3 Adjust all hoistway doors to fully clear the elevator entrance when fully opened.

.4 Cushion opening doors and closing doors with rubber astragals. Replace any worn astragals.

.5 Equip landing door with safety retainers as required in the jurisdiction. Design retainers to secure the closed door panel in position should the primary guiding means fail, including resisting detaching or permanently deforming under upwards force or force into the hoistway, as described by applicable Code.

2.36 HALL SILLS

.1 Retain existing sills. Wire brush and thoroughly clean the full length of all sills.

.2 Examine existing hall sills and repair defects.

2.37 FASCIAS AND TOE GUARDS

.1 Provide fascia and extended toe guard to full width of entrance plus overlap.

.2 Reinforce to walls where necessary to prevent deflection of fascia and securely fasten to entrance arrangement.

.3 Provide final coat of paint on fascia – White to match existing rear of hall doors. Paint floor characters 100 mm on fascias approximately 150 mm below landing sill.

.4 Ensure apron plates comply with current Code requirements (size and fastening).

2.38 IDENTIFICATION

.1 Provide 100 mm (4") numerals corresponding to floor level on hoistway side to fascia plates and locate numerals as required by Code.

.2 Provide 50 mm (2") numerals on all elevator equipment.

.3 Provide all bilingual engraving on faceplates in Helvetica medium, upper and lower case.

.4 Identify elevator(s) at the recall level. Use formed metal or aluminium-coloured plastic numerals 75 mm in height and 10 mm thick. Final location and form to be confirmed at time of shop drawing review.

.5 Provide six (6) keys of each type used with key rings and engraved Gravoply discs, identifying use of key. List each key type used and function in MCP document.

2.39 LANTERNS

.1 Provide new combination hall lantern and position indicator above each hoistway entrance.

.2 Provide Lexan diffusers and LED-illuminated bulbs.

.3 Provide new electronic chimes to sound with the illumination of direction arrows. Chime to sound once to indicate UP direction and twice for DOWN. Provide clear tone at 30 dBA approximately 8 feet from fixture. Chime volume to be adjustable.

.4 Provide new green illumination for up and red for down by LED.

.5 Provide new faceplates in stainless steel to match adjacent finishes.

.6 Provide illuminated fixture of diameter not less than 70 mm (2.75") with stainless steel faceplates.

2.40 HALL BUTTON FIXTURES

.1 Provide one new riser of blue LED-illuminated stainless steel buttons and faceplates at all landings. Faceplate size and finish to match existing. LEDs to be rated for 100,000 hours illumination. Use DUPAR US91 buttons or equivalent.

.2 Illuminate each button in the hall fixture when pressed to indicate that a call has been registered and maintain illumination until the call has been answered.

.3 Provide at height compliant with Appendix E of CSA B44.

.4 Provide new faceplates of stainless steel to match adjacent finishes. Faceplate to completely cover existing cut-out. Flush-mounted fixtures are preferred.

.5 Include for any cutting, patching, and refinishing of walls to pre-mod condition.

.6 Provide "UP" pushbuttons at lowest landing and "DOWN" pushbutton at top floor and "UP and DOWN" buttons at typical floors.

.7 Provide an Out of Service indicator in each fixture. Whenever service is denied to the elevator for any reason, the "OUT OF SERVICE" sign shall illuminate automatically. This includes top of car inspection operation and an opening in the safety circuit.

2.41 SPECIAL HALL FIXTURE AT MAIN FLOOR

.1 Provide at the recall level a surface-mounted stainless steel fixture containing a recall switch with pilot light.

.2 The key switch shall be a three (3) position switch; "RESET - OFF – ON" for the emergency recall service.

.3 Provide at recall level near elevator hoistway a box conspicuously located and identified containing the emergency recall service keys.

.4 Provide an audible and illuminated visual signal adjacent to the "FIRE RECALL" switch labelled "ELEVATOR COMMUNICATIONS FAILURE" in red letters a minimum of 5 mm in height. Include a key switch to reset the alarm.

.5 Include for cutting and patching of lobby wall to accommodate these fixtures.

2.42 POSITION INDICATORS AND VOICE ANNUNCIATION

.1 Install new digital display position indicator(s) in the car station(s).

.2 Use characters at least 50 mm high. Provide blue LED illumination. LEDs to be rated for 100,000 hours illumination.

.3 Provide matching new digital display hall position indicators at the each floor. Locate new position indicators in location approved by the Owner.

.4 Provide voice annunciation indication of each floor when served, and of car direction. Provide volume control adjustable from behind car station. Provide high-power speakers, minimum of two (2) per car, so no distortion is readily noticeable to passengers. Provide sample of annunciations, to be in English, with shop drawings.

2.43 CAR OPERATING STATION

.1 Provide one (1) new car operating station in the cab. Provide a new stainless steel faceplate.

.2 Provide a separate lockable "Firefighter's Operation" cabinet located at the top of the car operating panel (no higher than 1800 mm from finished cab floor). The following shall be located in the cabinet:

.1 "FIRE OPERATION" key switch
.2 "CALL CANCEL" button
.3 "STOP" switch
.4 "DOOR OPEN" and "DOOR CLOSE" buttons
.5 Additional indicator light
.6 Operating instructions
.7 Buzzer for emergency recall.

.3 Incorporate a lockable service cabinet into the car operating station. Service panel shall be located at bottom of the car operating panel. Provide the following key operated switches in the service cabinet:

.1 Car lighting
.2 2-speed fan
.3 Emergency light test
.4 Independent service
.5 Hoistway access enable
.6 Run/Stop switch
.7 Spare key switch with temporary label.

.4 Engrave the following on the service cabinet faceplate:

.1 Elevator number/designation in Arabic numerals (e.g., "2"), number to be 25 mm high.

.2 Provincial Installation number.
.3 Capacity, include the wording "MAXIMUM CAPACITY".

.5 Provide DUPAR US91 blue LED-illuminated stainless steel floor buttons, one for each floor served. Provide flush-mounted tactile identification at side of button. Stainless steel finish and button type to match hall stations. Include the following additional buttons:
.1 Door Open
.2 Door Close
.3 Alarm
.4 Phone activation

.6 Include a flush mounted and durable fixture in the cab for video and messaging to CSA B44 2019 2.27.1 including camera and display. Include and all wiring required to be connected to the internet source in the machine room.
.1 Provide live video of elevator interior and real time two way messaging.
.2 Allow non verbal passengers to message “yes” and “no” through door open and door close buttons.
.3 Activate two-way communication through assistance button located on the car operating station faceplate
.4 Provide end-to-end encryption
.5 Include uninterrupted telephone wiring within elevator hoistway, from car cab to a labelled box located on the outside of controller.

.7 Locate all buttons between 890 mm and 1220 mm or as permitted by Appendix E of ASME 17.1/CSA B44.

.8 Engrave all characters on plate and fill with enamel. Make all identification engraved in upper or lower case, Helvetica medium, minimum 10 mm filled with red or black enamel, as required.

.9 Use international symbols wherever possible.

2.44 TERMINAL STOPPING DEVICES

.1 Provide an automatic stopping device, arranged to bring car to a stop at the terminal landings independent of the regular operating device in the car.

.2 Final limit switches to be provided in the hoistway, operated by the car and arranged to stop the car and prevent normal operation should it travel beyond the zone of the normal stopping device.

.3 Dowel final limits to main rails.

2.45 SIGNAL ILLUMINATION

.1 Illuminate signal fixtures with intensity which produces distinct and well-defined indications.

2.46 FIXTURE FASTENING

.1 Fasten all fixture faceplates, including car-operating station, with tamper-proof screws.

2.47 OCCUPATIONAL HEALTH AND SAFETY REGULATIONS

.1 Meet Occupational Health and Safety Regulations - finished elevator installations are to have appropriate guards and be compliant with Occupational Health and Safety Regulations with respect to physical and electrical hazards to persons in the elevator machine rooms.

.2 Retain railing at the car top perimeter conforming to CSA B44 2.10.
.1 Finish and paint entire railing with two coats of white epoxy.

.2 Provide equipment guarding as per Ontario Reg. 851 Section 24 & 25, Ont. Reg 209/1 and CSA Z432.
.1 Provide engineered approval drawings for guarding.

PART 3 - EXECUTION

3.1 PROCEDURE

.1 Notify the Owner and Consultant in writing at least two (2) weeks prior to removing the elevator from service.

.2 Make allowances for the existing building access and storage limitations, including allowing for phased delivery of equipment.

.3 Do not remove an elevator from service until the new components are delivered to the site.

.4 Arrange for inspection by the Authority Having Jurisdiction one week prior to completion of the elevator.

.5 Place only one (1) elevator at a time out of service during the modernization project unless otherwise advised.

.6 If it becomes necessary to remove more than one (1) car from service for any reason, undertake at a time which is suitable to the Owner. Include for any overtime for this work.

.7 Undertake work on elevators consecutively and not concurrently. No more than one elevator to be out of service at a time at a minimum. Arrange for fire testing, button switchover, and any other aspect of the project requiring more than one elevator out of service to be done in building off-hours, costs included by this Division.

.8 If a remaining elevator stops operating, or a person becomes trapped in the elevator, utilize on-site mechanic to return elevator to operation.

3.2 INSPECTION

.1 Before fabrication of equipment, survey the hoistway, pit, overhead, and machine room.

.2 Confirm that electrical power is available and of correct characteristics.

.3 Report defects or discrepancies in writing to the Owner prior to fabrication of equipment.

3.3 REMOVAL OF EQUIPMENT

.1 Remove and dispose of all redundant elevator equipment from the site. Engage a licensed handler of hazardous materials to remove and dispose of power unit oil.

.2 Alternate price: Include all related work and subcontracts for extraction of buried jack and reinsertion of new PVC-protected jack, including drilling, pressurized water service, and waste disposal. Account that new PVC-clad cylinder will be of greater width and depth.

.3 Alternate price: Verify ordered PVC and cylinder immediately as old PVC and cylinder it is exposed at the start of the construction process.

3.4 WEIGHING OF CAR

.1 Carry out work to TSSA Code Adoption Document Amendment 295-22, latest revision.

.2 Prior to the ordering of equipment and within 3 weeks of contract award, weigh each. Record the weight and provide the Consultant with a digital image (photos) of the scale showing the car hanging weight. Provide the same weighing test photos at project completion.

3.5 WELDING

.1 Where welding is used, prepare joints and weld in approved manner using welders fully qualified to the requirements of CSA Standard W47.1.

.2 Identify field welds with welder's identification stamp.

3.6 INSTALLATION

.1 Provide all necessary fastenings, bearing plates, and transfer arrangement to accomplish appropriate tie-down of machines to the machine room layout.

.2 Arrange equipment in machine room such that functioning equipment and other equipment can be removed for repairs or replacement without dismantling or removing other equipment components. Arrange for clear passage to access door.

.3 Erect guide rails using metal shims with lock washers under nuts and threaded bolts. Compensate for expansion and contraction of guide rails.

.4 Use splice plates and guide rails with contact surfaces accurately machined to form smooth joints.

.5 Provide inserts for placement in concrete form work or self-drilling expansion shell bolt anchors that will perform to four times the rated pull-out load.

.6 Mount copy of master schematic wiring diagrams in framed glass or plastic enclosure on machine room wall. If number of wiring drawings exceeds five (5), then mount drawings protected with clear plastic on rack permanently attached to machine room wall.

.7 Cut existing surfaces as required to accommodate new work. Patch and make good surface cuts, damaged or disturbed, to the Owner's reasonable approval. Match existing material, colour, finish, and texture.

.8 Provide smooth acceleration and deceleration of car without perceptible steps so adjusted as not to cause passenger discomfort.

.9 Set PVC casing plumb within 6.35 mm (1 /4").

.10 Set jack assembly plumb within 3.17 mm (1/8").

.11 Provide watertight seal at pit floor between cylinder and PVC and between PVC and steel casing using waterproof resin sealer.

.12 With the control adjusted to give the required time, provide smooth acceleration and retardation and provide a comfortable and agreeable ride to the passengers.

.13 Adjust elevator to travel at contract speed in both directions.

.14 Maintain floor levelling accuracy of 9 mm or better.

.15 Test stop ring and hydraulic system by operating elevator with rated load in UP direction against stop ring at inspection speed.

3.7 STORAGE

.1 Coordinate delivery and storage of materials with the Owner’s site Representative.

3.8 OCCUPIED BUILDING

.1 Make allowances for the Work being carried out in an occupied building, including the possibility of persons with impaired judgement near the work area.

.2 Take proper care to avoid unnecessary noise, clutter, or obstruction in the corridors, and arrange for storage of materials and tools where they will cause minimum inconvenience.

.3 Do not use solvents or other products in quantity that is objectionable to building tenants.

.4 Normal working hours to be 8:00 AM - 4:00 PM each Monday through Friday other than International Union of Elevator Constructors (IEUC) holidays. Staff the Work with a minimum of two employees each day for the duration of the project, except as explicitly directed otherwise by these Specifications or by the Owner or Consultant.

.5 Where excessive noise, odour, or obstruction as determined by the Owner is unavoidable, make arrangements with the Owner at a mutually agreed-upon time and include for overtime costs. Overtime work will be required where, in the reasonable judgement of the Consultant, building operations are being affected, including:
.1 Noisy work that is clearly audible outside of the workspace.
.2 Work generating fumes or noxious odours such as may arise from welding, painting, and PVC glue.
.3 Disruptive work involving moving large materials through the common areas.

.6 Disconnect any elevator being worked on when personnel leave the premises.

.7 Protect building wall and floor finishes from damage where access is required throughout the entirety of the project.

.8 Dust control: Provide dust-tight screens or partitions to localize dust-generating activities, and for protection of workers, finished areas of work, and public.
.1 Maintain and relocate protection until such work is completed.
.2 Protect the Owner’s property adjacent to work area with fire-resistant tarps or screens during construction. Remove protection during non-construction hours and leave premises in clean, unencumbered, and safe manner for normal daytime function.

.9 Protection of hoistway and work area: Comply with Canadian Code for Construction Safety and the Provincial Construction Safety Act.

.1 Erect hoarding at each floor where there is an unlocked elevator hoistway door. Install plywood hoarding at landing entranceways from floor to ceiling. Plywood to be a minimum of 1/2" (13 mm) thick. Hoarded workspace to be at least as wide as the elevator entrance opening and should create a workspace inside hoardings of at least 48" (1220 mm) deep. Securely fasten hoarding to wall.

.2 Upon removal of hoardings and partition, make good all damage to surfaces of walls, floors, and ceilings.

.3 Use hoarded entranceways, and not the in-service elevator, for removal of redundant material and delivery of new equipment.

.4 Protect existing floors by covering with 1/2" (13 mm) plywood and tarpaulins at a minimum when removing or delivering materials.

.5 Confirm that any existing structural beams are safe and suitable before lifting loads.

.6 Do not remove partition or hoarding until Work is complete and approval is given by the Owner.

.7 Upon completion of the project, clean and make good, all work areas, hallways, and stairwells where used.

3.9 FIELD QUALITY CONTROL

.1 Perform and meet tests required by CAN/CSA-B44-19 Safety Code for Elevators Section 8.10.2.2, providing a check-off list with name of qualified inspector and date completed for each applicable item. Supply instruments and carry out these and other tests specified herein.

.2 Supply instruments and carry out full load tests.

.3 Provide two (2) days' written notice to the Owner of date and time of tests.

.4 Have a copy of the Specifications and approval drawings on site and available to the installation mechanic.

.5 Provide the Owner with copy of all speeds and current readings taken at the time of the Provincially mandated inspection.

.6 Provide a copy of any Provincial Electrical Safety Authority inspection reports.

.7 Before turn-over for customer use, test elevators as following:
.1 Working pressure in UP direction with 100% carload.
.2 Door timings and dwell settings.
.3 Operating speed, full load, up.
.4 Operating speed, empty car, down.
.5 Door close force.
.6 Door detector interrupt setting.
.7 Relief pressure setting - through pushing elevator on to stop ring.
.8 Testing of the integrity of the PVC

3.10 CLEANING AND DISPOSAL

.1 Completely remove protective coverings from finished surfaces and components.

.2 Clean surfaces and components before project completion. Clean down elevator hoistway from top-down to remove dirt from all hoistway equipment (trimmer beams, back of hall sills, rails, pit, hall door hangers). Protect all electrical equipment appropriately and will be responsible for any cost incurred should an electric failure occur as a consequence of this cleaning.

.3 Provide complete cleaning of all retained components, including hoistway interiors.

.4 Remove and dispose of all redundant elevator equipment, including electrical controllers, selectors, and generators. Removal to be coordinated with Engineer to ensure that no service disruptions to the daily operation of the building occur. Equipment removal may be required during silent hours.

.5 Remove all redundant wiring in elevator hoistway and machine room completely back to its source.

.6 Adequately protect interior of elevator when moving equipment.

.7 All oil to be removed and disposed of by a licensed handler of hazardous materials. Arrange for site generator number and pay for application cost.

.8 Apply environmentally friendly degreaser to entire pit - walls and floor. Power wash elevator pit (using electric power washer). Power flush sump drain and clean in-floor drain trenches to renew access to sump drain. Scrape and clean calcification off walls and floor. Vacuum, clean, and dry pit area to make ready for painting.

3.11 PAINTING AND PATCHING

.1 Thoroughly clean and paint the following equipment:
.1 Car tops and crossheads.
.2 Rails and strut angles and fascia plates.
.3 Machine room floors and walls.
.4 Pit floor and walls to the level of the lowest entrance sill.

.2 Use paint materials listed on the CGSB qualified products list only.

.3 Utilize only low volatile organic compound paint. Content of lead in the paint is not to exceed 500 mg per kg.

.4 Provide professional patching and refinishing of any visible services where equipment is removed, including around any removed fixtures.

.5 Paint materials for each coating formulae to be products of a single manufacturer.

3.12 HOISTWAY PROJECTIONS AND FASCIA

.1 Provide required fascia above and below passed floors, or alternatively car door interlock to the requirements of the Provincial Authority having jurisdiction.

3.13 BURNING TORCHES

.1 Do not employ burning torches in the work. Work with burnt-out holes will be rejected.

3.14 FIELD TESTING AND COMMISSIONING

.1 Furnish competent personnel to assist the Engineer during the inspection and testing of the systems should they be required.

.2 The inspections shall be carried out to ensure document compliance.

.3 Prior to Engineer's testing, the Elevator Contractor shall test all systems to ensure proper operation.

.4 Upon completion of each elevator provide all personnel and necessary testing equipment to perform the following:
.1 Test operating times to verify performance requirements.
.2 Test door operating equipment to verify performance requirements.
.3 Test the ride to verify performance requirements.
.4 Test the equipment under full load and no load to verify speed variation performance requirements.
.5 Perform all electrical readings and complete technical data forms required by the specifications.

.5 Upon completion of the group of elevators, furnish technicians, adjusters or engineers fully trained in the equipment installed to test all operating systems included but not limited to, emergency power operation, special emergency service and operation of the group control system to verify the specification requirements.

.6 Attend at job site meetings pertaining to the Work.

.7 After Provincial inspection of each elevator and before turn-over for customer use, test each elevator in simulated automatic operation without passenger access:
.1 Test for three (3) consecutive hours with no load operating from floor to floor, with or without door operation.
.2 Test for three (3) consecutive hours with 100% load operating from floor to floor, with or without door operation.
.3 Test for three (3) consecutive hours operating from floor to floor with door operation. Provide barricades and signage to indicate that an elevator test is in progress.

.8 Before turn-over for customer use, test elevators as following:
.1 Operating pressure in up direction with full load.
.2 Relief pressure by running car on to stop ring.
.3 Door timings and dwell settings.
.4 Operating speed up and down.
.5 Door close force.
.6 Door detector interrupt setting.

.9 During warranty maintenance period closely monitor equipment for malfunctions and track reliability.

Achieve a reliability rate of less than 0.6 malfunctions per elevator per month. Not achieving a reliability rate of 1.0 malfunction per elevator per month during the three-month period preceding the expiration of the warranty maintenance period will extend the warranty maintenance, including full parts and labour, on the malfunctioning elevator(s) only until the (moving window) 90-day reliability target has been achieved.

3.15 ELEVATOR CONSULTANT

.1 The Consultant will carry out one (1) final inspection and one (1) reinspection. Other inspections required due to the Elevator Contractor's failure to completely correct deficiencies previously listed may be deducted from the contract value by the Owner.

.2 Furnish competent and cooperative mechanics for inspections and acceptance tests as the Consultant reasonably requires. Allow up to 8 hours of on-site assistance. Expect to have work briefly interrupted during progress inspections by the Consultant.

.3 The Consultant is retained for the convenience of the Owner and/or the Architect, and the work of the Consultant shall not relieve the Contractor of any of their duties or responsibilities.

.4 Copy all communication regarding the project to the Consultant.

3.16 NOTIFICATION TO CONSULTANT

.1 Notify the Consultant as follows:
.1 One week prior to commencement of work.
.2 On delivery of materials to site.
.3 Start of removal of buried cylinder.
.4 Successful reinsertion of new cylinder.
.5 On placing of machine and controllers.
.6 On booking of each Provincial inspection.
.7 On successful completion of each Provincial inspection.
.8 On completion of all deficiencies.
.9 Upon removal of an elevator from service.

3.17 DEMONSTRATION OF OPERATION

.1 In the presence of the Owner, during silent hours of the building, prepare site-specific procedures to properly demonstrate and train site O&M personnel on the operation of:
.1 Independent service operation;
.2 Emergency power operation;

.3 FEO Phase I and II;
.4 Audio equipment;
.5 Dispatching features;
.6 Car door nudging;
.7 Any special features provided for the elevator (i.e., voice annunciation, anti-nuisance, etc.).

.2 Train the Owner’s forces on operation of system in one (1) half-day session, conducted by a mechanic or adjuster who has worked on the project and is thoroughly familiar with the elevator control system and its operation.

APPENDICES

TABLE 1 -
COMMISSIONING DATA

TO BE SUBMITTED BY ELEVATOR CONTRACTOR UPON COMPLETION OF EACH CAR

PARAMETER	Elevator 1	Elevator 2
Car speed UP 125% load (fpm)		
Car speed DOWN empty (fpm)		
Start to stop UP (sec)		
Start to stop DOWN (sec)		
Operating pressure UP (psi)		
Relief Pressure (psi)		
Door open (sec)		
Door close (sec)		
Car call dwell (sec)		
Hall call dwell (sec)		
Door stall force (lb)		
Door timeout (sec)		

TABLE 2 - FIRE SIGNAL VERIFICATION

TO BE SUBMITTED BY ELEVATOR CONTRACTOR

Recall Test Date:		
Elevator Contractor:		
Fire Alarm Testing Contractor:		
Test Performed By:		
Signature:		
DEVICES ACTIVATED:	**B44 CODE REQUIREMENT**	**B44 CODE COMPLIANT**
Hoistway Detector	All cars in the hoistway returned to the designated level with fire hats flashing inside the car.	YES / NO
Machine/Control Room Detector	All cars returned to the designated level with fire hats flashing inside the car.	YES / NO
General Fire Alarm Activation Devices from Hall Lobbies	All cars returned to the designated level - fire hats in cars stay illuminated but did not flash.	YES / NO
Dedicated Detector at Designated Level	All cars returned to the alternate floor - fire hats in cars stay illuminated but did not flash.	YES / NO
Recall Switch at the Main Floor and Remote Switch (if applicable)	Indicator light Illuminated on automatic or manual recall.	YES / NO

- END OF DOCUMENT -

Solutions for a Working World

LEX Project # 01110075

2011 HAZARDOUS MATERIALS ASSESSMENT
DISTRICT SCHOOL BOARD OF NIAGARA - EDUCATION CENTRE
191 CARLTON STREET
ST. CATHARINES, ONTARIO

Prepared for: District School Board of Niagara
191 Carlton Street
St. Catharines, Ontario
L2R 7P4

Attention: Ailene Fournier
Environmental Services Coordinator

Date: January 25, 2012

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Solutions for a Working World

SOLUTIONS
FOR A WORKING WORLD

2011 HAZARDOUS MATERIALS ASSESSMENT
DISTRICT SCHOOL BOARD OF NIAGARA - EDUCATION CENTRE
191 CARLTON STREET
ST. CATHARINES, ONTARIO

LEX Project # 01110075

January 25, 2012

Ailene Fournier
Environmental Services Coordinator
District School Board of Niagara
191 Carlton Street
St. Catharines, Ontario
L2R 7P4

Dear Ms. Fournier:

On December 28, 2011, LEX Scientific Inc. conducted an assessment to determine the presence of hazardous material(s) including asbestos and mercury in the Education Centre located at 191 Carlton Street in St. Catharines, Ontario. Lead-based paint and Polychlorinated Biphenyls (PCBs) were deemed not necessary to include in the assessment by the District School Board of Niagara.

The assessment has been completed and the results are contained in this report. All work was performed according to the Regulation respecting Asbestos on Construction Projects and in Buildings and Repair Operations (Ontario Regulation 278/05); Designated Substances (Ontario Regulation 490/09) - made under the Occupational Health and Safety Act.

On behalf of LEX Scientific, we would like to thank you for the opportunity to serve you. If you have any questions regarding this report, please call us at (519) 824-7082.

Yours sincerely,

Alex Brett,
Occupational Hygiene Technologist

Michael Hoffbauer,
Director, Occupational Hygiene & EHS Services

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TABLE OF CONTENTS

1.0 INTRODUCTION

LEX Scientific Inc. (LEX) conducted a survey on December 28, 2011, to assess the presence and condition of hazardous material(s) including asbestos and mercury in the Education Centre located at 191 Carlton Street in St. Catharines, Ontario.

The assessment has been completed and the results are contained in this report. All work was performed according to the Regulation respecting Asbestos on Construction Projects and in Buildings and Repair Operations (Ontario Regulation 278/05); Designated Substances (Ontario Regulation 490/09) - made under the Occupational Health and Safety Act.

2.0 SURVEY METHODOLOGY

2.1 Building Surveyed

Table 1: Information Regarding Building Inspected for Hazardous Materials

Building Name	Building Address	Area Inspected	Inaccessible Areas or Areas Not Inspected
Education Centre	191 Carlton Street, St. Catharines, Ontario	Interior and Exterior of Building	- Rooftop - Fixed / Inaccessible Ceiling Spaces - Trench Headers & Crawl Spaces - Fixed Bulkheads, Wall Spaces & Pipe chases - Padlocked Closets

2.2 Method

A walk through visual inspection (non-invasive) was performed to determine the condition of asbestos containing materials **(ACM)** and the presence of mercury. Materials of interest included, but were not limited to:

- Thermal System Insulation (TSI) including pipe insulation, pipefittings, boiler insulation, and duct insulation.
- Surfacing materials including spray-on fireproofing, trawled-on material and decorative coatings.
- Miscellaneous materials including vibration cloth, transite board or pipes, asbestos cement composite, ceiling tiles, and floor tiles.
- Mercury containing electrical switches, lights and thermostats.

When a suspect ACM was identified, its current condition was noted as good, fair, or poor. The overall potential for disturbance of the ACM was evaluated based on the friability, potential for disturbance (physical, mechanical), and potential for asbestos fibres to become airborne. Representative bulk samples were collected for suspect materials present in the building.

Materials not sampled or inspected as part of this assessment, which may contain asbestos, include: fire doors, chairs, roofing membrane and other materials as identified in Section 3.1 (if applicable). Cinderblock walls (if present) were not inspected for vermiculite due to the non-invasive nature of this inspection.

Visual identification of mercury containing materials such as electrical switches and thermostats was conducted during the assessment. This assessment does not identify locations of mercury contamination if present (e.g. drain traps of laboratory sinks).

2.3 Laboratory Analysis

Each bulk ACM sample was analyzed as per EPA method 600/R-93/116 by LEX and was performed in compliance with the Code for the Determination of Asbestos from Bulk Samples found in the Regulation respecting Asbestos on Construction Projects and in Buildings and Repair Operations - made under the Occupational Health and Safety Act, Ontario Regulation 278/05. Please refer to Appendices A and B for the laboratory report and sample locations of materials collected for analysis using PLM, respectively.

LEX is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP) and by the National Institute of Standards and Technology. The National Voluntary Laboratory Accreditation Program is a United States based laboratory accreditation for analyzing bulk materials for asbestos content. Our NVLAP Lab Code number is 101949.

2.4 Definition of Hazardous Materials and Guidelines

2.4.1 Asbestos-Containing Material (ACM)

Ontario Regulation 278/05 Section 1 and 3 (4) defines an ACM as being a material that contains 0.5 percent or more asbestos by dry weight.

Ontario Regulation 490/09 limits asbestos workplace occupational exposures to 0.1 fibres/cc time weighted average exposure value (TWAEV 8-hour).

Ontario Regulation 278/05 requires that final clearance air monitoring be conducted following all Type III Asbestos Removal Operations to ensure the work enclosure is clean and is suitable for worker/tenant re-occupancy. The Type III work enclosure “passes the clearance test only if every

air sample collected has a concentration of fibres that does not exceed 0.01 fibres per cubic centimetre of air[1]".

2.4.2 Mercury

Mercury is prescribed as a designated substance according to Regulation, R.R.O. 1990/844. Mercury has adverse effects on the central nervous system, kidneys and reproductive system. The disposal of mercury and other hazardous waste is controlled by Regulation, R.R.O. 1990/347, General –Waste Management Regulation as amended by O.Reg. 558/00, made under the Environmental Protection Act.

Ontario Regulation 844 limits occupational exposures to mercury to 0.025 mg/m^3 TWAEV (8 hour).

3.0 RESULTS AND DISCUSSION

All room names/numbers mentioned in this report correspond to the floor plans of the Education Centre as supplied by the District School Board of Niagara. Refer to Appendix B for the floor plans. Appendix B is based on the Age & Area summaries provided by the District School Board of Niagara. The accuracy of Appendix B has not been verified by LEX; however, in cases where an obvious error or omission was observed, the Age & Area Summary was modified. All room names/numbers mentioned in this report were arbitrarily assigned by LEX.

3.1 Asbestos-Containing Materials

Appendix C contains a listing and quantification of all ACM observed in the Education Centre.

3.1.1 Bulk Sampling Results

Table 2 summarizes the analytical laboratory results for all homogenous materials collected inside the Education Centre. Appendix C contains a complete listing and quantification of asbestos observed in the Education Centre. Appendix D and Appendix E contain summaries and locations of asbestos containing materials, respectively.

[1] Occupational Health and Safety Act, O.Reg 278/05 Section 18 (6) 5

Table 2: Summary of Homogenous Materials Collected December 28, 2011, at the Education Centre, St. Catharines, Ontario.

Sample No.	Sample Location or Type	Description of Homogenous Material	Friable?	Figure	Fibrous Asbestos Content
1228-06^	Flooring Material	1' x 1' VFT – Blue with Navy Blue and White Flecks	No	N/A	None Detected
		Black Mastic under 1' x 1' VFT – Blue with Navy Blue and White Flecks	No	N/A	None Detected
1228-07^		1' x 1' VFT – Cream with Brown and Beige Flecks	No	N/A	None Detected
		Brown Mastic under 1' x 1' VFT – Cream with Brown and Beige Flecks	No	N/A	None Detected
1228-14^		Blue Carpet Underpad – Black Coloured	No	N/A	None Detected
1228-01^	Ceiling Material	2' x 4' CT – Patterned Medium Dots with Small Dots	No	N/A	None Detected
1228-03^		Sprayed-on Fireproofing – Grey Coloured	Yes	N/A	None Detected
1228-04^		Mixed Material on Fireproofing – White Coloured		N/A	None Detected
1228-05^		2' x 4' CT – Textured with Small Dots	No	N/A	None Detected
1228-08^		Sprayed-on Fireproofing – White Coloured	Yes	N/A	None Detected
1228-12^		2' x 4' CT – Small Dots with Random Fissures	No	N/A	None Detected
1228-13^	Ceiling Material	Caulking between Pre-Cast Concrete Ceiling	No	Fig. #1	**0.5% Chrysotile**
1228-16^		2' x 2' CT – Small Fissures with Few Small Dots	No	N/A	None Detected
1228-02+	Miscellaneous Material	DJFC – Basement Level		N/A	None Detected
1228-09^		Window Putty – Grey Coloured	No	N/A	None Detected
1228-10^		Window Putty – Black Coloured	No	N/A	None Detected
1228-15+		DJFC – 1st, 2nd and 3rd Floor		N/A	None Detected
1228-17^		Acoustic Coating on Underside of Sink – White Coloured		N/A	None Detected
1228-18^	Building Exterior	Exterior Caulking – Grey Coloured	No	N/A	None Detected

Table 2: Summary of Homogenous Materials Collected December 28, 2011, at the Education Centre, St. Catharines, Ontario.

Sample No.	Sample Location or Type	Description of Homogenous Material	Friable?	Figure	Fibrous Asbestos Content
1228-19^	Building Exterior	Exterior Caulking – White Coloured between Blue Sheeting	No	N/A	None Detected
1228-20^		Expansion Joint Compound from Exterior Outbuilding	No	N/A	None Detected

Refer to Appendix A for the Analytical Laboratory Report
Definition of Terms: **VFT** – Vinyl Floor Tile **DJFC** – Drywall Joint Filling Compound **CT** – Ceiling Tile
^ Homogenous material was analyzed three times as per O.Reg. 278/05.
+ Homogenous material was analyzed seven times as per O.Reg. 278/05.

Key Observations:

- **Deck –** The caulking between the pre-cast concrete deck is **asbestos containing**. All other deck materials are non-asbestos containing.

- **Carpet Mastic –** Carpet mastic layer for carpeting in this building was not sampled due to the number of different installations present. Before removing any carpets, the required number of carpet mastic samples should be analyzed for the carpet layering in each individual room.

- **False Ceilings –** All false ceilings at the Education Centre are non-asbestos containing.

- **DJFC –** Drywall joint filling compound for all drywall structures at the Education Centre are non-asbestos containing.

- **Roofing Materia**l – The roofing material for this building was not sampled due to the non-invasive nature of the assessment. Until the roofing material/membrane can be sampled and analyzed, it is assumed to contain asbestos.

3.1.1 Quantity of Asbestos Containing Materials

Appendix C contains a listing and quantification of all ACM observed in the Education Centre. Appendix E identifies the locations of asbestos ceiling material in the building,. Appendix D contains photographs of the asbestos containing materials.

3.2 Mercury-Containing Materials

All fluorescent light tubes are assumed to contain mercury vapour. Fluorescent lights were observed throughout the Education Centre. Mercury containing switches were not observed in the building. Table 3 summarizes the locations and quantity of mercury-containing thermostats in the Education Centre. Please note that this may not be a comprehensive list.

Table 3: Mercury-Containing Thermostats Located at the the Education Centre in St. Catharines, Ontario.

Floor	Location	Approximate Quantity
0	Rooms 5, 11, 22, 24, 25, 44, 45	9
1	Rooms 58, 82, 83, 85, 88, 93, 94, 97A,100, 101	12
2	Rooms 141, 142, 151, 156, 157, 124	7
3	Room 184	1

3.3 Other Hazardous Materials

The following designated substances were not observed inside the Education Centre during the inspection: acrylonitrile, arsenic, benzene, coke oven emissions, ethylene oxide, isocyanates and vinyl chloride.

4.0 CONCLUSIONS

1. The Education Centre contains non-friable asbestos in good condition, which may be damaged in the future by external disturbances (water, wind, vibration, and physical). The potential for airborne asbestos fibre release due to this material is low.

2. The Education Centre may contain asbestos within inaccessible areas and/or in the roofing membrane.

3. The Education Centre contains carpeting in which the mastic layer may contain asbestos.

4. The Education Centre contains plumbing, in which lead containing solder is assumed to be present between joints and valves.

5. The Education Centre contains fluorescent tube lights in which mercury vapour is present.

6. The Education Centre contains thermostats with vials of liquid mercury.

5.0 RECOMMENDATIONS

1. It is recommended that all Management/Abatement Options in the last column of 6 be followed.

2. It is recommended that prior to demolition or renovation activities, invasive sampling be conducted for asbestos on building materials not collected during this non-invasive asbestos inspection (e.g. roofing membrane(s), suspect materials inside inaccessible wall/ceiling spaces etc.).

3. It is recommended that prior to disturbing or removing any carpets, the required number of samples for the carpet mastic be collected and analyzed for asbestos content.

4. It is recommended that all ACMs (regardless of the condition) that may be disturbed by future renovation/demolition activities be removed (as per O.Reg. 278/05 6(1)).

5. It is recommended that if ACMs are still present following renovations, an asbestos re-assessment of the building be conducted to determine the presence and condition of all remaining ACM.

6. It is recommended that an asbestos re-assessment be conducted in the building at least once in each 12-month period (as per O. Reg. 278/05 Section 7 (5) (a)).

7. It is recommended that fluorescent light tubes be disposed as per O. Reg. 347 - General Waste Management, as amended by Ontario Regulation 558/00. When disposing of fluorescent light tubes, they should be packaged in rigid containers with packing material to prevent accidental breakage and worker exposure or an environmental release of mercury.

8. It is recommended that the results of the hazardous materials assessment presented in this report be used as part of the hazardous material management program for this building.

9. It is recommended that a copy of this report be provided to occupants at this building if requested.

10. It is recommended that a copy of this report be provided to the Joint Health and Safety Committee or the Health and Safety Representative for this building.

6.0 DISCLAIMER

This report is prepared exclusively for the purposes, project and site location outlined in the report. The report is based on information provided to, or collected and/or obtained by LEX as indicated in the report, and applies solely to site conditions existing at the time of sampling. LEX's report represents a reasonable analysis and interpretation of available information within an agreed scope of work, schedule and budget.

LEX prepared this report for the sole benefit of the District School Board of Niagara; it reflects LEX's best judgement in light of the information available at the time of preparation. Any use which a third party makes of this report, or any reliance on or decisions made based on it, are the responsibilities of such third parties. LEX accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions taken based on this report.

LEX Scientific Inc. can be of assistance in providing air monitoring and inspection services during the course of an abatement project. On behalf of LEX Scientific, we would like to thank you for the opportunity to serve you. If you have any questions regarding this report, please call us at (519) 824-7082.

Sincerely,

Alex Brett,
Occupational Hygiene Technologist

Michael Hoffbauer,
Director, Occupational Hygiene & EHS Services

APPENDICES

Appendix A Laboratory Report - Asbestos in Bulk Samples

LEX SCIENTIFIC INC.

SOLUTIONS
FOR A WORKING WORLD

CERTIFICATE OF ANALYSIS

Company:	LEX Scientific Inc.	**Report Date:**	11-Jan-12
Contact:	Mr. Alex Brett	**Analysis Date:**	10-Jan-12
Client Address:	2 Quebec Street, Suite 204, Guelph, ON	**Received Date:**	06-Jan-12
Client Reference:	01110075 - DSBN Reassessment	**LEX Project Number:**	09120018
Sampling Date:	28-Dec-11	**Number of Analyses:**	69

Analysis Requested **Bulk Asbestos by PLM**

Analysis was performed in accordance with the method EPA/600/R-93/116, Method for the Determination of Asbestos in Bulk Building Materials adopted in Designated Substance - Asbestos on Construction Projects and in Buildings and Repair Operations - made under the Occupational Health and Safety Act Ontario Regulation 278/05. LEX Scientific Inc. is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP 101949) by the National Institute of Standards and Technology for analysis of bulk materials for asbestos.

German Leal, B.Sc.
Laboratory Manager

			Fibrous Asbestos Content %	Other Materials Content %
Client Sample:	1228-01A	**Asbestos Detected?**	**No**	
LEX Sample:	01	**Chrysotile:**	None Detected	**Cellulose:** 40
Layers Analyzed:	Sample Homogenized	**Amosite:**	None Detected	**MMVF:** 40
Colour:	Grey/White	**Crocidolite:**	None Detected	**Other Fibres:** None Detected
Description:	2'x4' Ceiling Tile - Patterned medium dots with small dots	**Other Amphiboles:**	None Detected	**Non Fibrous:** 20
		Comments:		

Other Amphiboles: ac=actinolite, a=anthophyllite, t-tremolite, u=unidentified
MMVF: Man Made Vitreous Fibres: Fibreglass, Min. Wool, Rockwool, Glasswool
PLM - method detection limit is 0.1%

Z. Sawusch

Analyst

2 Quebec Street, Suite 204 Guelph, Ontario N1H 2T3
Phone: 519.824.7082 Fax: 519.824.5784 Toll Free: 1.800.824.7082
e-mail: admin@lexscientific.com Website: www.lexscientific.com

		Fibrous Asbestos Content %	Other Materials Content %
Client Sample: 1228-01B	**Asbestos Detected?**	**No**	
LEX Sample: 02	**Chrysotile:**	None Detected	**Cellulose:** 40
Layers Analyzed: Sample Homogenized	**Amosite:**	None Detected	**MMVF:** 40
Colour: Grey/White	**Crocidolite:**	None Detected	**Other Fibres:** None Detected
Description: 2'x4' Ceiling Tile - Patterned medium dots with small dots	**Other Amphiboles:**	None Detected	**Non Fibrous:** 20
	Comments:		
Client Sample: 1228-01C	**Asbestos Detected?**	**No**	
LEX Sample: 03	**Chrysotile:**	None Detected	**Cellulose:** 40
Layers Analyzed: Sample Homogenized	**Amosite:**	None Detected	**MMVF:** 40
Colour: Grey/White	**Crocidolite:**	None Detected	**Other Fibres:** None Detected
Description: 2'x4' Ceiling Tile - Patterned medium dots with small dots	**Other Amphiboles:**	None Detected	**Non Fibrous:** 20
	Comments:		
Client Sample: 1228-02A	**Asbestos Detected?**	**No**	
LEX Sample: 04	**Chrysotile:**	None Detected	**Cellulose:** None Detected
Layers Analyzed: Sample Homogenized	**Amosite:**	None Detected	**MMVF:** None Detected
Colour: White/Cream	**Crocidolite:**	None Detected	**Other Fibres:** None Detected
Description: Drywall Joint Filling Compound - Basement Level	**Other Amphiboles:**	None Detected	**Non Fibrous:** 100
	Comments:		
Client Sample: 1228-02B	**Asbestos Detected?**	**No**	
LEX Sample: 05	**Chrysotile:**	None Detected	**Cellulose:** None Detected
Layers Analyzed: Sample Homogenized	**Amosite:**	None Detected	**MMVF:** None Detected
Colour: White/Violet	**Crocidolite:**	None Detected	**Other Fibres:** None Detected
Description: Drywall Joint Filling Compound - Basement Level	**Other Amphiboles:**	None Detected	**Non Fibrous:** 100
	Comments:		

Other Amphiboles: ac=actinolite, a=anthophyllite, t-tremolite, u=unidentified
MMVF: Man Made Vitreous Fibres: Fibreglass, Min. Wool, Rockwool, Glasswool
PLM - method detection limit is 0.1%

Z. Samsewicz

Analyst

			Fibrous Asbestos Content %		Other Materials Content %
Client Sample:	1228-02C	**Asbestos Detected?**	**No**		
LEX Sample:	06	**Chrysotile:**	None Detected	**Cellulose:**	None Detected
Layers Analyzed:	Sample Homogenized	**Amosite:**	None Detected	**MMVF:**	None Detected
Colour:	White/Violet	**Crocidolite:**	None Detected	**Other Fibres:**	2
Description:	Drywall Joint Filling Compound - Basement Level	**Other Amphiboles:**	None Detected	**Non Fibrous:**	98
		Comments:			
Client Sample:	1228-02D	**Asbestos Detected?**	**No**		
LEX Sample:	07	**Chrysotile:**	None Detected	**Cellulose:**	None Detected
Layers Analyzed:	Sample Homogenized	**Amosite:**	None Detected	**MMVF:**	None Detected
Colour:	White/Tan	**Crocidolite:**	None Detected	**Other Fibres:**	None Detected
Description:	Drywall Joint Filling Compound - Basement Level	**Other Amphiboles:**	None Detected	**Non Fibrous:**	100
		Comments:			
Client Sample:	1228-02E	**Asbestos Detected?**	**No**		
LEX Sample:	08	**Chrysotile:**	None Detected	**Cellulose:**	None Detected
Layers Analyzed:	Sample Homogenized	**Amosite:**	None Detected	**MMVF:**	None Detected
Colour:	White/Tan	**Crocidolite:**	None Detected	**Other Fibres:**	1
Description:	Drywall Joint Filling Compound - Basement Level	**Other Amphiboles:**	None Detected	**Non Fibrous:**	99
		Comments:			
Client Sample:	1228-02F	**Asbestos Detected?**	**No**		
LEX Sample:	09	**Chrysotile:**	None Detected	**Cellulose:**	None Detected
Layers Analyzed:	Sample Homogenized	**Amosite:**	None Detected	**MMVF:**	None Detected
Colour:	White/Tan	**Crocidolite:**	None Detected	**Other Fibres:**	None Detected
Description:	Drywall Joint Filling Compound - Basement Level	**Other Amphiboles:**	None Detected	**Non Fibrous:**	100
		Comments:			

Other Amphiboles: ac=actinolite, a=anthophyllite, t-tremolite, u=unidentified
MMVF: Man Made Vitreous Fibres: Fibreglass, Min. Wool, Rockwool, Glasswool
PLM - method detection limit is 0.1%

Z. Samsewicz

Analyst

			Fibrous Asbestos Content %		Other Materials Content %
Client Sample:	1228-02G	**Asbestos Detected?**	**No**		
LEX Sample:	10	**Chrysotile:**	None Detected	**Cellulose:**	None Detected
Layers Analyzed:	Sample Homogenized	**Amosite:**	None Detected	**MMVF:**	None Detected
Colour:	White/Violet	**Crocidolite:**	None Detected	**Other Fibres:**	None Detected
Description:	Drywall Joint Filling Compound - Basement Level	**Other Amphiboles:**	None Detected	**Non Fibrous:**	100
		Comments:			
Client Sample:	1228-03A	**Asbestos Detected?**	**No**		
LEX Sample:	11	**Chrysotile:**	None Detected	**Cellulose:**	None Detected
Layers Analyzed:	Sample Homogenized	**Amosite:**	None Detected	**MMVF:**	60
Colour:	Grey	**Crocidolite:**	None Detected	**Other Fibres:**	None Detected
Description:	Sprayed-on Fireproofing - Grey Coloured	**Other Amphiboles:**	None Detected	**Non Fibrous:**	40
		Comments:			
Client Sample:	1228-03B	**Asbestos Detected?**	**No**		
LEX Sample:	12	**Chrysotile:**	None Detected	**Cellulose:**	None Detected
Layers Analyzed:	Sample Homogenized	**Amosite:**	None Detected	**MMVF:**	60
Colour:	Grey	**Crocidolite:**	None Detected	**Other Fibres:**	None Detected
Description:	Sprayed-on Fireproofing - Grey Coloured	**Other Amphiboles:**	None Detected	**Non Fibrous:**	40
		Comments:			
Client Sample:	1228-03C	**Asbestos Detected?**	**No**		
LEX Sample:	13	**Chrysotile:**	None Detected	**Cellulose:**	None Detected
Layers Analyzed:	Sample Homogenized	**Amosite:**	None Detected	**MMVF:**	60
Colour:	Grey	**Crocidolite:**	None Detected	**Other Fibres:**	None Detected
Description:	Sprayed-on Fireproofing - Grey Coloured	**Other Amphiboles:**	None Detected	**Non Fibrous:**	40
		Comments:			

Other Amphiboles: ac=actinolite, a=anthophyllite, t-tremolite, u=unidentified
MMVF: Man Made Vitreous Fibres: Fibreglass, Min. Wool, Rockwool, Glasswool
PLM - method detection limit is 0.1%

Z. Samsewicz

Analyst

			Fibrous Asbestos Content %		Other Materials Content %
Client Sample:	1228-04A	**Asbestos Detected?**	**No**		
LEX Sample:	14	**Chrysotile:**	None Detected	**Cellulose:**	None Detected
Layers Analyzed:	Sample Homogenized	**Amosite:**	None Detected	**MMVF:**	50
Colour:	White/Grey	**Crocidolite:**	None Detected	**Other Fibres:**	None Detected
Description:	Mixed Material on Fireproofing - White Coloured	**Other Amphiboles:**	None Detected	**Non Fibrous:**	50
		Comments:			
Client Sample:	1228-04B	**Asbestos Detected?**	**No**		
LEX Sample:	15	**Chrysotile:**	None Detected	**Cellulose:**	None Detected
Layers Analyzed:	Sample Homogenized	**Amosite:**	None Detected	**MMVF:**	50
Colour:	White/Grey	**Crocidolite:**	None Detected	**Other Fibres:**	None Detected
Description:	Mixed Material on Fireproofing - White Coloured	**Other Amphiboles:**	None Detected	**Non Fibrous:**	50
		Comments:			
Client Sample:	1228-04C	**Asbestos Detected?**	**No**		
LEX Sample:	16	**Chrysotile:**	None Detected	**Cellulose:**	None Detected
Layers Analyzed:	Sample Homogenized	**Amosite:**	None Detected	**MMVF:**	50
Colour:	White/Grey	**Crocidolite:**	None Detected	**Other Fibres:**	None Detected
Description:	Mixed Material on Fireproofing - White Coloured	**Other Amphiboles:**	None Detected	**Non Fibrous:**	50
		Comments:			
Client Sample:	1228-05A	**Asbestos Detected?**	**No**		
LEX Sample:	17	**Chrysotile:**	None Detected	**Cellulose:**	50
Layers Analyzed:	Sample Homogenized	**Amosite:**	None Detected	**MMVF:**	30
Colour:	White/Grey	**Crocidolite:**	None Detected	**Other Fibres:**	None Detected
Description:	2'x4' Ceiling Tile - Textured with Small Dots	**Other Amphiboles:**	None Detected	**Non Fibrous:**	20
		Comments:			

Other Amphiboles: ac=actinolite, a=anthophyllite, t-tremolite, u=unidentified
MMVF: Man Made Vitreous Fibres: Fibreglass, Min. Wool, Rockwool, Glasswool
PLM - method detection limit is 0.1%

Z. Samsewicz

Analyst

		Fibrous Asbestos Content %	Other Materials Content %
Client Sample: 1228-05B	**Asbestos Detected?**	**No**	
LEX Sample: 18	**Chrysotile:**	None Detected	**Cellulose:** 50
Layers Analyzed: Sample Homogenized	**Amosite:**	None Detected	**MMVF:** 30
Colour: White/Grey	**Crocidolite:**	None Detected	**Other Fibres:** None Detected
Description: 2'x4' Ceiling Tile - Textured with Small Dots	**Other Amphiboles:**	None Detected	**Non Fibrous:** 20
	Comments:		
Client Sample: 1228-05C	**Asbestos Detected?**	**No**	
LEX Sample: 19	**Chrysotile:**	None Detected	**Cellulose:** 50
Layers Analyzed: Sample Homogenized	**Amosite:**	None Detected	**MMVF:** 30
Colour: White/Grey	**Crocidolite:**	None Detected	**Other Fibres:** None Detected
Description: 2'x4' Ceiling Tile - Textured with Small Dots	**Other Amphiboles:**	None Detected	**Non Fibrous:** 20
	Comments:		
Client Sample: 1228-06A	**Asbestos Detected?**	**No**	
LEX Sample: 20.1	**Chrysotile:**	None Detected	**Cellulose:** None Detected
Layers Analyzed: Tile	**Amosite:**	None Detected	**MMVF:** None Detected
Colour: Blue	**Crocidolite:**	None Detected	**Other Fibres:** None Detected
Description: 1'x1' Vinyl Floor Tile - Blue with Navy Blue and White Flecks	**Other Amphiboles:**	None Detected	**Non Fibrous:** 100
	Comments:		
Client Sample: 1228-06A	**Asbestos Detected?**	**No**	
LEX Sample: 20.2	**Chrysotile:**	None Detected	**Cellulose:** 5
Layers Analyzed: Mastic	**Amosite:**	None Detected	**MMVF:** None Detected
Colour: Black	**Crocidolite:**	None Detected	**Other Fibres:** None Detected
Description: 1'x1' Vinyl Floor Tile - Blue with Navy Blue and White Flecks	**Other Amphiboles:**	None Detected	**Non Fibrous:** 95
	Comments:		

Other Amphiboles: ac=actinolite, a=anthophyllite, t-tremolite, u=unidentified
MMVF: Man Made Vitreous Fibres: Fibreglass, Min. Wool, Rockwool, Glasswool
PLM - method detection limit is 0.1%

Z. Samsewicz

Analyst

			Fibrous Asbestos Content %		Other Materials Content %
Client Sample:	1228-06B	**Asbestos Detected?**	**No**		
LEX Sample:	21.1	**Chrysotile:**	None Detected	**Cellulose:**	None Detected
Layers Analyzed:	Tile	**Amosite:**	None Detected	**MMVF:**	None Detected
Colour:	Blue	**Crocidolite:**	None Detected	**Other Fibres:**	None Detected
Description:	1'x1' Vinyl Floor Tile - Blue with Navy Blue and White Flecks	**Other Amphiboles:**	None Detected	**Non Fibrous:**	100
		Comments:			
Client Sample:	1228-06B	**Asbestos Detected?**	**No**		
LEX Sample:	21.2	**Chrysotile:**	None Detected	**Cellulose:**	5
Layers Analyzed:	Mastic	**Amosite:**	None Detected	**MMVF:**	None Detected
Colour:	Black	**Crocidolite:**	None Detected	**Other Fibres:**	None Detected
Description:	1'x1' Vinyl Floor Tile - Blue with Navy Blue and White Flecks	**Other Amphiboles:**	None Detected	**Non Fibrous:**	95
		Comments:			
Client Sample:	1228-06C	**Asbestos Detected?**	**No**		
LEX Sample:	22.1	**Chrysotile:**	None Detected	**Cellulose:**	None Detected
Layers Analyzed:	Tile	**Amosite:**	None Detected	**MMVF:**	None Detected
Colour:	Blue	**Crocidolite:**	None Detected	**Other Fibres:**	None Detected
Description:	1'x1' Vinyl Floor Tile - Blue with Navy Blue and White Flecks	**Other Amphiboles:**	None Detected	**Non Fibrous:**	100
		Comments:			
Client Sample:	1228-06C	**Asbestos Detected?**	**No**		
LEX Sample:	22.2	**Chrysotile:**	None Detected	**Cellulose:**	2
Layers Analyzed:	Mastic	**Amosite:**	None Detected	**MMVF:**	None Detected
Colour:	Black	**Crocidolite:**	None Detected	**Other Fibres:**	None Detected
Description:	1'x1' Vinyl Floor Tile - Blue with Navy Blue and White Flecks	**Other Amphiboles:**	None Detected	**Non Fibrous:**	98
		Comments:			

Other Amphiboles: ac=actinolite, a=anthophyllite, t-tremolite, u=unidentified
MMVF: Man Made Vitreous Fibres: Fibreglass, Min. Wool, Rockwool, Glasswool
PLM - method detection limit is 0.1%

Z. Samsevich

Analyst

		Fibrous Asbestos Content %		**Other Materials Content %**	
Client Sample:	1228-07A	**Asbestos Detected?**	**No**		
LEX Sample:	23.1	**Chrysotile:**	None Detected	**Cellulose:**	None Detected
Layers Analyzed:	Tile	**Amosite:**	None Detected	**MMVF:**	None Detected
Colour:	Cream	**Crocidolite:**	None Detected	**Other Fibres:**	None Detected
Description:	1'x1' Vinyl Floor Tile - Cream with Brown and Beige Flecks	**Other Amphiboles:**	None Detected	**Non Fibrous:**	100
		Comments:			
Client Sample:	1228-07A	**Asbestos Detected?**	**No**		
LEX Sample:	23.2	**Chrysotile:**	None Detected	**Cellulose:**	None Detected
Layers Analyzed:	Mastic	**Amosite:**	None Detected	**MMVF:**	None Detected
Colour:	Yellow	**Crocidolite:**	None Detected	**Other Fibres:**	None Detected
Description:	1'x1' Vinyl Floor Tile - Cream with Brown and Beige Flecks	**Other Amphiboles:**	None Detected	**Non Fibrous:**	100
		Comments:			
Client Sample:	1228-07B	**Asbestos Detected?**	**No**		
LEX Sample:	24.1	**Chrysotile:**	None Detected	**Cellulose:**	None Detected
Layers Analyzed:	Tile	**Amosite:**	None Detected	**MMVF:**	None Detected
Colour:	Cream	**Crocidolite:**	None Detected	**Other Fibres:**	None Detected
Description:	1'x1' Vinyl Floor Tile - Cream with Brown and Beige Flecks	**Other Amphiboles:**	None Detected	**Non Fibrous:**	100
		Comments:			
Client Sample:	1228-07B	**Asbestos Detected?**	**No**		
LEX Sample:	24.2	**Chrysotile:**	None Detected	**Cellulose:**	None Detected
Layers Analyzed:	Mastic	**Amosite:**	None Detected	**MMVF:**	None Detected
Colour:	Yellow	**Crocidolite:**	None Detected	**Other Fibres:**	None Detected
Description:	1'x1' Vinyl Floor Tile - Cream with Brown and Beige Flecks	**Other Amphiboles:**	None Detected	**Non Fibrous:**	100
		Comments:			

Other Amphiboles: ac=actinolite, a=anthophyllite, t-tremolite, u=unidentified
MMVF: Man Made Vitreous Fibres: Fibreglass, Min. Wool, Rockwool, Glasswool
PLM - method detection limit is 0.1%

Z. Samsewicz

Analyst

		Fibrous Asbestos Content %	Other Materials Content %
Client Sample: 1228-07C	**Asbestos Detected?**	**No**	
LEX Sample: 25.1	**Chrysotile:**	None Detected	**Cellulose:** None Detected
Layers Analyzed: Tile	**Amosite:**	None Detected	**MMVF:** None Detected
Colour: Cream	**Crocidolite:**	None Detected	**Other Fibres:** None Detected
Description: 1'x1' Vinyl Floor Tile - Cream with Brown and Beige Flecks	**Other Amphiboles:**	None Detected	**Non Fibrous:** 100
	Comments:		
Client Sample: 1228-07C	**Asbestos Detected?**	**No**	
LEX Sample: 25.2	**Chrysotile:**	None Detected	**Cellulose:** None Detected
Layers Analyzed: Mastic	**Amosite:**	None Detected	**MMVF:** None Detected
Colour: Yellow	**Crocidolite:**	None Detected	**Other Fibres:** None Detected
Description: 1'x1' Vinyl Floor Tile - Cream with Brown and Beige Flecks	**Other Amphiboles:**	None Detected	**Non Fibrous:** 100
	Comments:		
Client Sample: 1228-08A	**Asbestos Detected?**	**No**	
LEX Sample: 26	**Chrysotile:**	None Detected	**Cellulose:** 95
Layers Analyzed: Sample Homogenized	**Amosite:**	None Detected	**MMVF:** None Detected
Colour: White	**Crocidolite:**	None Detected	**Other Fibres:** None Detected
Description: Sprayed-on Fireproofing - White Coloured	**Other Amphiboles:**	None Detected	**Non Fibrous:** 5
	Comments:		
Client Sample: 1228-08B	**Asbestos Detected?**	**No**	
LEX Sample: 27	**Chrysotile:**	None Detected	**Cellulose:** 95
Layers Analyzed: Sample Homogenized	**Amosite:**	None Detected	**MMVF:** None Detected
Colour: White	**Crocidolite:**	None Detected	**Other Fibres:** None Detected
Description: Sprayed-on Fireproofing - White Coloured	**Other Amphiboles:**	None Detected	**Non Fibrous:** 5
	Comments:		

Other Amphiboles: ac=actinolite, a=anthophyllite, t-tremolite, u=unidentified
MMVF: Man Made Vitreous Fibres: Fibreglass, Min. Wool, Rockwool, Glasswool
PLM - method detection limit is 0.1%

Z. Samsewicz

Analyst

		Fibrous Asbestos Content %	Other Materials Content %
Client Sample: 1228-08C	**Asbestos Detected?**	**No**	
LEX Sample: 28	**Chrysotile:**	None Detected	**Cellulose:** 95
Layers Analyzed: Sample Homogenized	**Amosite:**	None Detected	**MMVF:** None Detected
Colour: White	**Crocidolite:**	None Detected	**Other Fibres:** None Detected
Description: Sprayed-on Fireproofing - White Coloured	**Other Amphiboles:**	None Detected	**Non Fibrous:** 5
	Comments:		
Client Sample: 1228-09A	**Asbestos Detected?**	**No**	
LEX Sample: 29	**Chrysotile:**	None Detected	**Cellulose:** None Detected
Layers Analyzed: Sample Homogenized	**Amosite:**	None Detected	**MMVF:** None Detected
Colour: Grey	**Crocidolite:**	None Detected	**Other Fibres:** None Detected
Description: Window Putty - Grey Coloured	**Other Amphiboles:**	None Detected	**Non Fibrous:** 100
	Comments:		
Client Sample: 1228-09B	**Asbestos Detected?**	**No**	
LEX Sample: 30	**Chrysotile:**	None Detected	**Cellulose:** None Detected
Layers Analyzed: Sample Homogenized	**Amosite:**	None Detected	**MMVF:** None Detected
Colour: Grey	**Crocidolite:**	None Detected	**Other Fibres:** None Detected
Description: Window Putty - Grey Coloured	**Other Amphiboles:**	None Detected	**Non Fibrous:** 100
	Comments:		
Client Sample: 1228-09C	**Asbestos Detected?**	**No**	
LEX Sample: 31	**Chrysotile:**	None Detected	**Cellulose:** None Detected
Layers Analyzed: Sample Homogenized	**Amosite:**	None Detected	**MMVF:** None Detected
Colour: Grey	**Crocidolite:**	None Detected	**Other Fibres:** None Detected
Description: Window Putty - Grey Coloured	**Other Amphiboles:**	None Detected	**Non Fibrous:** 100
	Comments:		
Client Sample: 1228-10A	**Asbestos Detected?**	**No**	
LEX Sample: 32	**Chrysotile:**	None Detected	**Cellulose:** None Detected
Layers Analyzed: Sample Homogenized	**Amosite:**	None Detected	**MMVF:** None Detected
Colour: Black	**Crocidolite:**	None Detected	**Other Fibres:** None Detected
Description: Window Putty - Black Coloured	**Other Amphiboles:**	None Detected	**Non Fibrous:** 100
	Comments:		

Other Amphiboles: ac=actinolite, a=anthophyllite, t-tremolite, u=unidentified
MMVF: Man Made Vitreous Fibres: Fibreglass, Min. Wool, Rockwool, Glasswool
PLM - method detection limit is 0.1%

Z. Samsewicz

Analyst

		Fibrous Asbestos Content %	Other Materials Content %
Client Sample: 1228-10B	**Asbestos Detected?**	**No**	
LEX Sample: 33	**Chrysotile:**	None Detected	**Cellulose:** None Detected
Layers Analyzed: Sample Homogenized	**Amosite:**	None Detected	**MMVF:** None Detected
Colour: Black	**Crocidolite:**	None Detected	**Other Fibres:** None Detected
Description: Window Putty - Black Coloured	**Other Amphiboles:**	None Detected	**Non Fibrous:** 100
	Comments:		
Client Sample: 1228-10C	**Asbestos Detected?**	**No**	
LEX Sample: 34	**Chrysotile:**	None Detected	**Cellulose:** None Detected
Layers Analyzed: Sample Homogenized	**Amosite:**	None Detected	**MMVF:** None Detected
Colour: Black	**Crocidolite:**	None Detected	**Other Fibres:** None Detected
Description: Window Putty - Black Coloured	**Other Amphiboles:**	None Detected	**Non Fibrous:** 100
	Comments:		
Client Sample: 1228-12A	**Asbestos Detected?**	**No**	
LEX Sample: 35	**Chrysotile:**	None Detected	**Cellulose:** 30
Layers Analyzed: Sample Homogenized	**Amosite:**	None Detected	**MMVF:** 50
Colour: Grey/White	**Crocidolite:**	None Detected	**Other Fibres:** None Detected
Description: 2'x4' Ceiling Tile - Small Dots with Random Fissures	**Other Amphiboles:**	None Detected	**Non Fibrous:** 20
	Comments:		
Client Sample: 1228-12B	**Asbestos Detected?**	**No**	
LEX Sample: 36	**Chrysotile:**	None Detected	**Cellulose:** 30
Layers Analyzed: Sample Homogenized	**Amosite:**	None Detected	**MMVF:** 50
Colour: Grey/White	**Crocidolite:**	None Detected	**Other Fibres:** None Detected
Description: 2'x4' Ceiling Tile - Small Dots with Random Fissures	**Other Amphiboles:**	None Detected	**Non Fibrous:** 20
	Comments:		
Client Sample: 1228-12C	**Asbestos Detected?**	**No**	
LEX Sample: 37	**Chrysotile:**	None Detected	**Cellulose:** 30
Layers Analyzed: Sample Homogenized	**Amosite:**	None Detected	**MMVF:** 50
Colour: Grey/White	**Crocidolite:**	None Detected	**Other Fibres:** None Detected
Description: 2'x4' Ceiling Tile - Small Dots with Random Fissures	**Other Amphiboles:**	None Detected	**Non Fibrous:** 20
	Comments:		

Other Amphiboles: ac=actinolite, a=anthophyllite, t-tremolite, u=unidentified
MMVF: Man Made Vitreous Fibres: Fibreglass, Min. Wool, Rockwool, Glasswool
PLM - method detection limit is 0.1%

Z. Samsewicz

Analyst

			Fibrous Asbestos Content %	Other Materials Content %	
Client Sample:	1228-13A	**Asbestos Detected?**	**Yes**		
LEX Sample:	38	**Chrysotile:**	0.5	**Cellulose:**	None Detected
Layers Analyzed:	Sample Homogenized	**Amosite:**	None Detected	**MMVF:**	None Detected
Colour:	Grey	**Crocidolite:**	None Detected	**Other Fibres:**	None Detected
Description:	Caulking between Pre-Cast Concrete Ceiling	**Other Amphiboles:**	None Detected	**Non Fibrous:**	99.5
		Comments:			
Client Sample:	1228-14A	**Asbestos Detected?**	**No**		
LEX Sample:	41	**Chrysotile:**	None Detected	**Cellulose:**	None Detected
Layers Analyzed:	Carpet underpad	**Amosite:**	None Detected	**MMVF:**	None Detected
Colour:	Black	**Crocidolite:**	None Detected	**Other Fibres:**	None Detected
Description:	Blue Carpet Underpad - Black Coloured	**Other Amphiboles:**	None Detected	**Non Fibrous:**	100
		Comments:			
Client Sample:	1228-14B	**Asbestos Detected?**	**No**		
LEX Sample:	42	**Chrysotile:**	None Detected	**Cellulose:**	None Detected
Layers Analyzed:	Carpet underpad	**Amosite:**	None Detected	**MMVF:**	None Detected
Colour:	Black	**Crocidolite:**	None Detected	**Other Fibres:**	None Detected
Description:	Blue Carpet Underpad - Black Coloured	**Other Amphiboles:**	None Detected	**Non Fibrous:**	100
		Comments:			
Client Sample:	1228-14C	**Asbestos Detected?**	**No**		
LEX Sample:	43	**Chrysotile:**	None Detected	**Cellulose:**	None Detected
Layers Analyzed:	Carpet underpad	**Amosite:**	None Detected	**MMVF:**	None Detected
Colour:	Black	**Crocidolite:**	None Detected	**Other Fibres:**	None Detected
Description:	Blue Carpet Underpad - Black Coloured	**Other Amphiboles:**	None Detected	**Non Fibrous:**	100
		Comments:			
Client Sample:	1228-15A	**Asbestos Detected?**	**No**		
LEX Sample:	44	**Chrysotile:**	None Detected	**Cellulose:**	None Detected
Layers Analyzed:	Sample Homogenized	**Amosite:**	None Detected	**MMVF:**	None Detected
Colour:	White/Violet	**Crocidolite:**	None Detected	**Other Fibres:**	None Detected
Description:	Drywall Joint Filling Compound - 1st, 2nd and 3rd Floor	**Other Amphiboles:**	None Detected	**Non Fibrous:**	100
		Comments:			

Other Amphiboles: ac=actinolite, a=anthophyllite, t-tremolite, u=unidentified
MMVF: Man Made Vitreous Fibres: Fibreglass, Min. Wool, Rockwool, Glasswool
PLM - method detection limit is 0.1%

Z. Samsewicz

Analyst

			Fibrous Asbestos Content %		Other Materials Content %
Client Sample:	1228-15B	**Asbestos Detected?**	**No**		
LEX Sample:	45	**Chrysotile:**	None Detected	**Cellulose:**	None Detected
Layers Analyzed:	Sample Homogenized	**Amosite:**	None Detected	**MMVF:**	None Detected
Colour:	White/Violet	**Crocidolite:**	None Detected	**Other Fibres:**	None Detected
Description:	Drywall Joint Filling Compound - 1st, 2nd and 3rd Floor	**Other Amphiboles:**	None Detected	**Non Fibrous:**	100
		Comments:			
Client Sample:	1228-15C	**Asbestos Detected?**	**No**		
LEX Sample:	46	**Chrysotile:**	None Detected	**Cellulose:**	None Detected
Layers Analyzed:	Sample Homogenized	**Amosite:**	None Detected	**MMVF:**	None Detected
Colour:	White/Violet	**Crocidolite:**	None Detected	**Other Fibres:**	None Detected
Description:	Drywall Joint Filling Compound - 1st, 2nd and 3rd Floor	**Other Amphiboles:**	None Detected	**Non Fibrous:**	100
		Comments:			
Client Sample:	1228-15D	**Asbestos Detected?**	**No**		
LEX Sample:	47	**Chrysotile:**	None Detected	**Cellulose:**	None Detected
Layers Analyzed:	Sample Homogenized	**Amosite:**	None Detected	**MMVF:**	None Detected
Colour:	White/Pink	**Crocidolite:**	None Detected	**Other Fibres:**	None Detected
Description:	Drywall Joint Filling Compound - 1st, 2nd and 3rd Floor	**Other Amphiboles:**	None Detected	**Non Fibrous:**	100
		Comments:			
Client Sample:	1228-15E	**Asbestos Detected?**	**No**		
LEX Sample:	48	**Chrysotile:**	None Detected	**Cellulose:**	3
Layers Analyzed:	Sample Homogenized	**Amosite:**	None Detected	**MMVF:**	None Detected
Colour:	White/Brown	**Crocidolite:**	None Detected	**Other Fibres:**	None Detected
Description:	Drywall Joint Filling Compound - 1st, 2nd and 3rd Floor	**Other Amphiboles:**	None Detected	**Non Fibrous:**	97
		Comments:			

Other Amphiboles: ac=actinolite, a=anthophyllite, t-tremolite, u=unidentified
MMVF: Man Made Vitreous Fibres: Fibreglass, Min. Wool, Rockwool, Glasswool
PLM - method detection limit is 0.1%

Z. Samsewicz

Analyst

			Fibrous Asbestos Content %		Other Materials Content %
Client Sample:	1228-15F	**Asbestos Detected?**	**No**		
LEX Sample:	49	**Chrysotile:**	None Detected	**Cellulose:**	None Detected
Layers Analyzed:	Sample Homogenized	**Amosite:**	None Detected	**MMVF:**	None Detected
Colour:	White/Brown	**Crocidolite:**	None Detected	**Other Fibres:**	None Detected
Description:	Drywall Joint Filling Compound - 1st, 2nd and 3rd Floor	**Other Amphiboles:**	None Detected	**Non Fibrous:**	100
		Comments:			
Client Sample:	1228-15G	**Asbestos Detected?**	**No**		
LEX Sample:	50	**Chrysotile:**	None Detected	**Cellulose:**	None Detected
Layers Analyzed:	Sample Homogenized	**Amosite:**	None Detected	**MMVF:**	None Detected
Colour:	White/Violet	**Crocidolite:**	None Detected	**Other Fibres:**	None Detected
Description:	Drywall Joint Filling Compound - 1st, 2nd and 3rd Floor	**Other Amphiboles:**	None Detected	**Non Fibrous:**	100
		Comments:			
Client Sample:	1228-16A	**Asbestos Detected?**	**No**		
LEX Sample:	51	**Chrysotile:**	None Detected	**Cellulose:**	40
Layers Analyzed:	Sample Homogenized	**Amosite:**	None Detected	**MMVF:**	40
Colour:	White/Grey	**Crocidolite:**	None Detected	**Other Fibres:**	None Detected
Description:	2'x2' Ceiling Tile - Small Fissures with Few Small Dots	**Other Amphiboles:**	None Detected	**Non Fibrous:**	20
		Comments:			
Client Sample:	1228-16B	**Asbestos Detected?**	**No**		
LEX Sample:	52	**Chrysotile:**	None Detected	**Cellulose:**	40
Layers Analyzed:	Sample Homogenized	**Amosite:**	None Detected	**MMVF:**	40
Colour:	White/Grey	**Crocidolite:**	None Detected	**Other Fibres:**	None Detected
Description:	2'x2' Ceiling Tile - Small Fissures with Few Small Dots	**Other Amphiboles:**	None Detected	**Non Fibrous:**	20
		Comments:			

Other Amphiboles: ac=actinolite, a=anthophyllite, t-tremolite, u=unidentified
MMVF: Man Made Vitreous Fibres: Fibreglass, Min. Wool, Rockwool, Glasswool
PLM - method detection limit is 0.1%

Z. Samsewicz

Analyst

			Fibrous Asbestos Content %		Other Materials Content %
Client Sample:	1228-16C	**Asbestos Detected?**	**No**		
LEX Sample:	53	**Chrysotile:**	None Detected	**Cellulose:**	40
Layers Analyzed:	Sample Homogenized	**Amosite:**	None Detected	**MMVF:**	40
Colour:	White/Grey	**Crocidolite:**	None Detected	**Other Fibres:**	None Detected
Description:	2'x2' Ceiling Tile - Small Fissures with Few Small Dots	**Other Amphiboles:**	None Detected	**Non Fibrous:**	20
		Comments:			
Client Sample:	1228-17A	**Asbestos Detected?**	**No**		
LEX Sample:	54	**Chrysotile:**	None Detected	**Cellulose:**	None Detected
Layers Analyzed:	Sample Homogenized	**Amosite:**	None Detected	**MMVF:**	None Detected
Colour:	White	**Crocidolite:**	None Detected	**Other Fibres:**	None Detected
Description:	Acoustic Coating on Underside of Sink - White Coloured	**Other Amphiboles:**	None Detected	**Non Fibrous:**	100
		Comments:			
Client Sample:	1228-17B	**Asbestos Detected?**	**No**		
LEX Sample:	55	**Chrysotile:**	None Detected	**Cellulose:**	None Detected
Layers Analyzed:	Sample Homogenized	**Amosite:**	None Detected	**MMVF:**	None Detected
Colour:	White	**Crocidolite:**	None Detected	**Other Fibres:**	None Detected
Description:	Acoustic Coating on Underside of Sink - White Coloured	**Other Amphiboles:**	None Detected	**Non Fibrous:**	100
		Comments:			
Client Sample:	1228-17C	**Asbestos Detected?**	**No**		
LEX Sample:	56	**Chrysotile:**	None Detected	**Cellulose:**	None Detected
Layers Analyzed:	Sample Homogenized	**Amosite:**	None Detected	**MMVF:**	None Detected
Colour:	White	**Crocidolite:**	None Detected	**Other Fibres:**	None Detected
Description:	Acoustic Coating on Underside of Sink - White Coloured	**Other Amphiboles:**	None Detected	**Non Fibrous:**	100
		Comments:			

Other Amphiboles: ac=actinolite, a=anthophyllite, t-tremolite, u=unidentified
MMVF: Man Made Vitreous Fibres: Fibreglass, Min. Wool, Rockwool, Glasswool
PLM - method detection limit is 0.1%

Z. Samsevich

Analyst

		Fibrous Asbestos Content %	Other Materials Content %
Client Sample: 1228-18A	**Asbestos Detected?**	**No**	
LEX Sample: 57	**Chrysotile:**	None Detected	**Cellulose:** None Detected
Layers Analyzed: Sample Homogenized	**Amosite:**	None Detected	**MMVF:** None Detected
Colour: Grey	**Crocidolite:**	None Detected	**Other Fibres:** None Detected
Description: Exterior Caulking - Grey Coloured	**Other Amphiboles:**	None Detected	**Non Fibrous:** 100
	Comments:		
Client Sample: 1228-18B	**Asbestos Detected?**	**No**	
LEX Sample: 58	**Chrysotile:**	None Detected	**Cellulose:** None Detected
Layers Analyzed: Sample Homogenized	**Amosite:**	None Detected	**MMVF:** None Detected
Colour: Grey	**Crocidolite:**	None Detected	**Other Fibres:** None Detected
Description: Exterior Caulking - Grey Coloured	**Other Amphiboles:**	None Detected	**Non Fibrous:** 100
	Comments:		
Client Sample: 1228-18C	**Asbestos Detected?**	**No**	
LEX Sample: 59	**Chrysotile:**	None Detected	**Cellulose:** None Detected
Layers Analyzed: Sample Homogenized	**Amosite:**	None Detected	**MMVF:** None Detected
Colour: Grey	**Crocidolite:**	None Detected	**Other Fibres:** None Detected
Description: Exterior Caulking - Grey Coloured	**Other Amphiboles:**	None Detected	**Non Fibrous:** 100
	Comments:		
Client Sample: 1228-19A	**Asbestos Detected?**	**No**	
LEX Sample: 60	**Chrysotile:**	None Detected	**Cellulose:** None Detected
Layers Analyzed: Sample Homogenized	**Amosite:**	None Detected	**MMVF:** None Detected
Colour: Grey	**Crocidolite:**	None Detected	**Other Fibres:** None Detected
Description: Exterior Caulking - White Coloured between Blue Sheeting	**Other Amphiboles:**	None Detected	**Non Fibrous:** 100
	Comments:		
Client Sample: 1228-19B	**Asbestos Detected?**	**No**	
LEX Sample: 61	**Chrysotile:**	None Detected	**Cellulose:** None Detected
Layers Analyzed: Sample Homogenized	**Amosite:**	None Detected	**MMVF:** None Detected
Colour: Grey	**Crocidolite:**	None Detected	**Other Fibres:** None Detected
Description: Exterior Caulking - White Coloured between Blue Sheeting	**Other Amphiboles:**	None Detected	**Non Fibrous:** 100
	Comments:		

Other Amphiboles: ac=actinolite, a=anthophyllite, t-tremolite, u=unidentified
MMVF: Man Made Vitreous Fibres: Fibreglass, Min. Wool, Rockwool, Glasswool
PLM - method detection limit is 0.1%

Z. Samsevich

Analyst

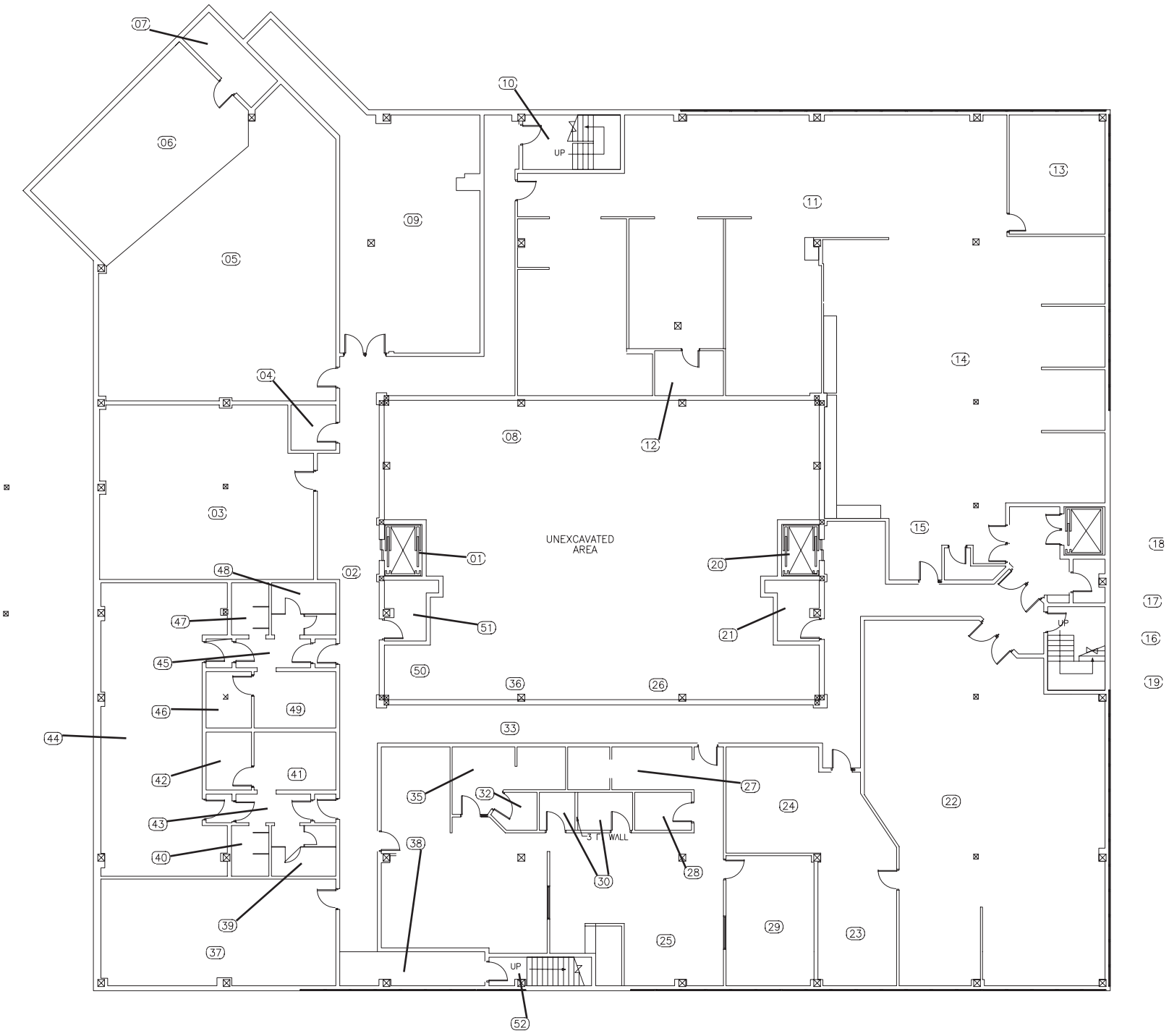
			Fibrous Asbestos Content %		Other Materials Content %
Client Sample:	1228-19C	**Asbestos Detected?**	**No**		
LEX Sample:	62	**Chrysotile:**	None Detected	**Cellulose:**	None Detected
Layers Analyzed:	Sample Homogenized	**Amosite:**	None Detected	**MMVF:**	None Detected
Colour:	Grey	**Crocidolite:**	None Detected	**Other Fibres:**	None Detected
Description:	Exterior Caulking - White Coloured between Blue Sheeting	**Other Amphiboles:**	None Detected	**Non Fibrous:**	100
		Comments:			
Client Sample:	1228-20A	**Asbestos Detected?**	**No**		
LEX Sample:	63	**Chrysotile:**	None Detected	**Cellulose:**	None Detected
Layers Analyzed:	Sample Homogenized	**Amosite:**	None Detected	**MMVF:**	None Detected
Colour:	Grey	**Crocidolite:**	None Detected	**Other Fibres:**	None Detected
Description:	Expansion Joint Compound from Exterior Hutt	**Other Amphiboles:**	None Detected	**Non Fibrous:**	100
		Comments:			
Client Sample:	1228-20B	**Asbestos Detected?**	**No**		
LEX Sample:	64	**Chrysotile:**	None Detected	**Cellulose:**	None Detected
Layers Analyzed:	Sample Homogenized	**Amosite:**	None Detected	**MMVF:**	None Detected
Colour:	Grey	**Crocidolite:**	None Detected	**Other Fibres:**	None Detected
Description:	Expansion Joint Compound from Exterior Hutt	**Other Amphiboles:**	None Detected	**Non Fibrous:**	100
		Comments:			
Client Sample:	1228-20C	**Asbestos Detected?**	**No**		
LEX Sample:	65	**Chrysotile:**	None Detected	**Cellulose:**	None Detected
Layers Analyzed:	Sample Homogenized	**Amosite:**	None Detected	**MMVF:**	None Detected
Colour:	Grey	**Crocidolite:**	None Detected	**Other Fibres:**	None Detected
Description:	Expansion Joint Compound from Exterior Hutt	**Other Amphiboles:**	None Detected	**Non Fibrous:**	100
		Comments:			

Other Amphiboles: ac=actinolite, a=anthophyllite, t-tremolite, u=unidentified
MMVF: Man Made Vitreous Fibres: Fibreglass, Min. Wool, Rockwool, Glasswool
PLM - method detection limit is 0.1%

Z. Samsevich

Analyst

Appendix B Age & Area of Building Phases



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Appendix B: Age & Area of Building Phases

Education Centre
191 Carlton Street
St. Catharines, Ontario

BASEMENT FLOOR

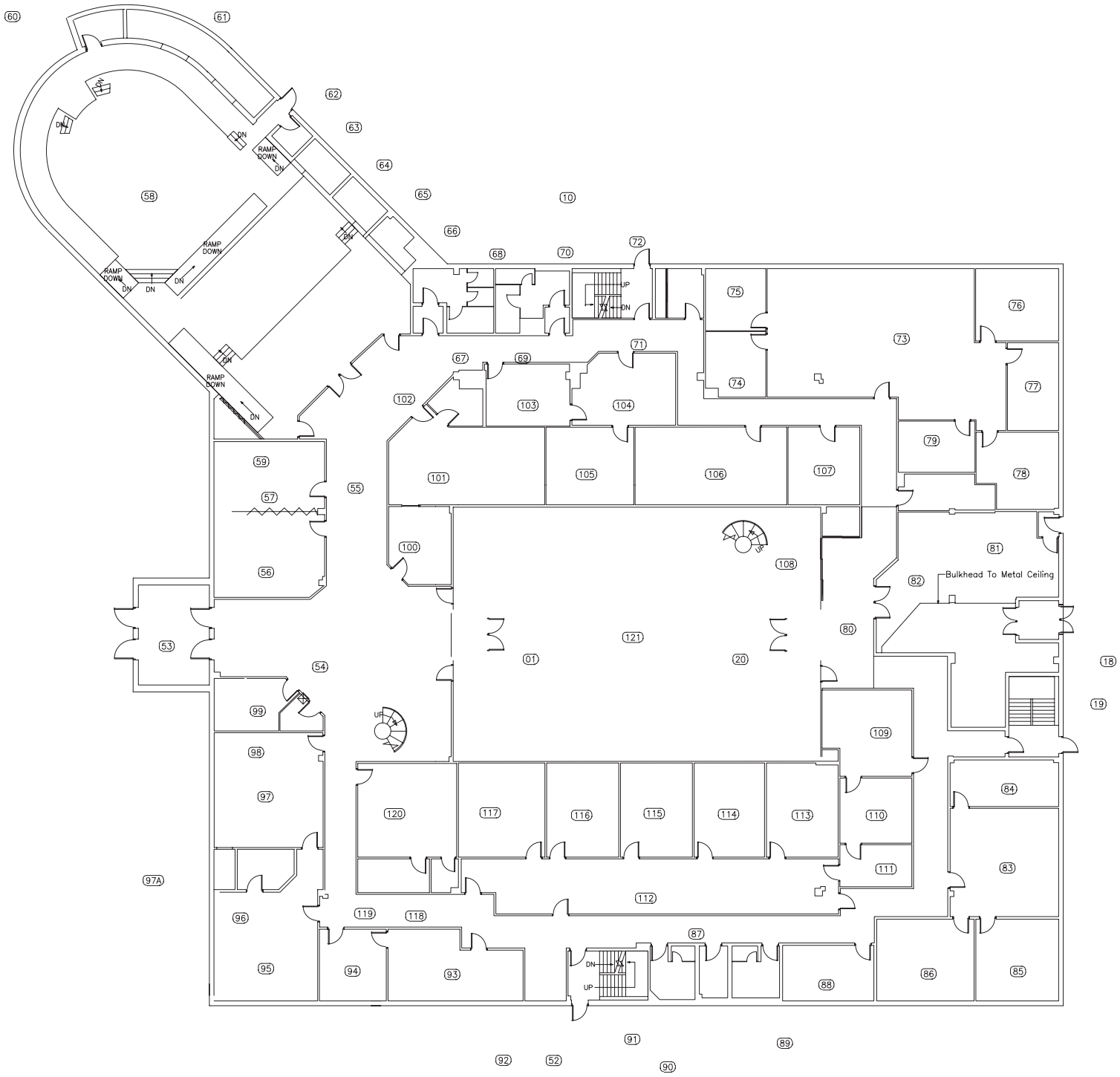
LEGEND

- 1991 Original Building Construction

Drawings Provided By:

District School Board of Niagara

Scale:	Drawing #	Date
NTS	1.1	Jan 2012



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Appendix B: Age & Area of Building Phases

Education Centre
191 Carlton Street
St. Catharines, Ontario

FIRST FLOOR

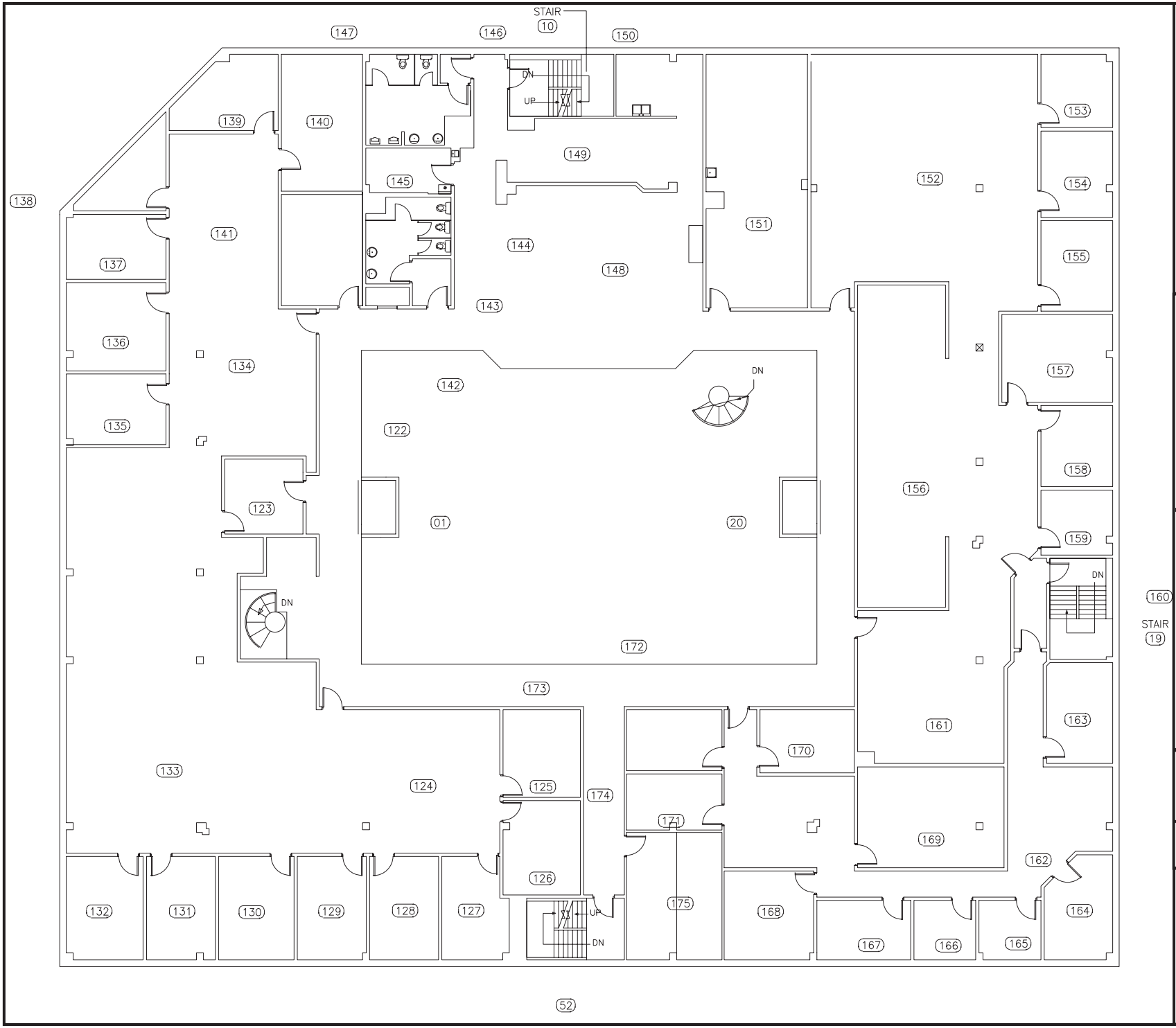
LEGEND

- 1991 Original Building Construction

Drawings Provided By:

District School Board of Niagara

Scale:	Drawing #	Date
NTS	1.2	Jan 2012



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Appendix B: Age & Area of Building Phases

Education Centre
191 Carlton Street
St. Catharines, Ontario

SECOND FLOOR

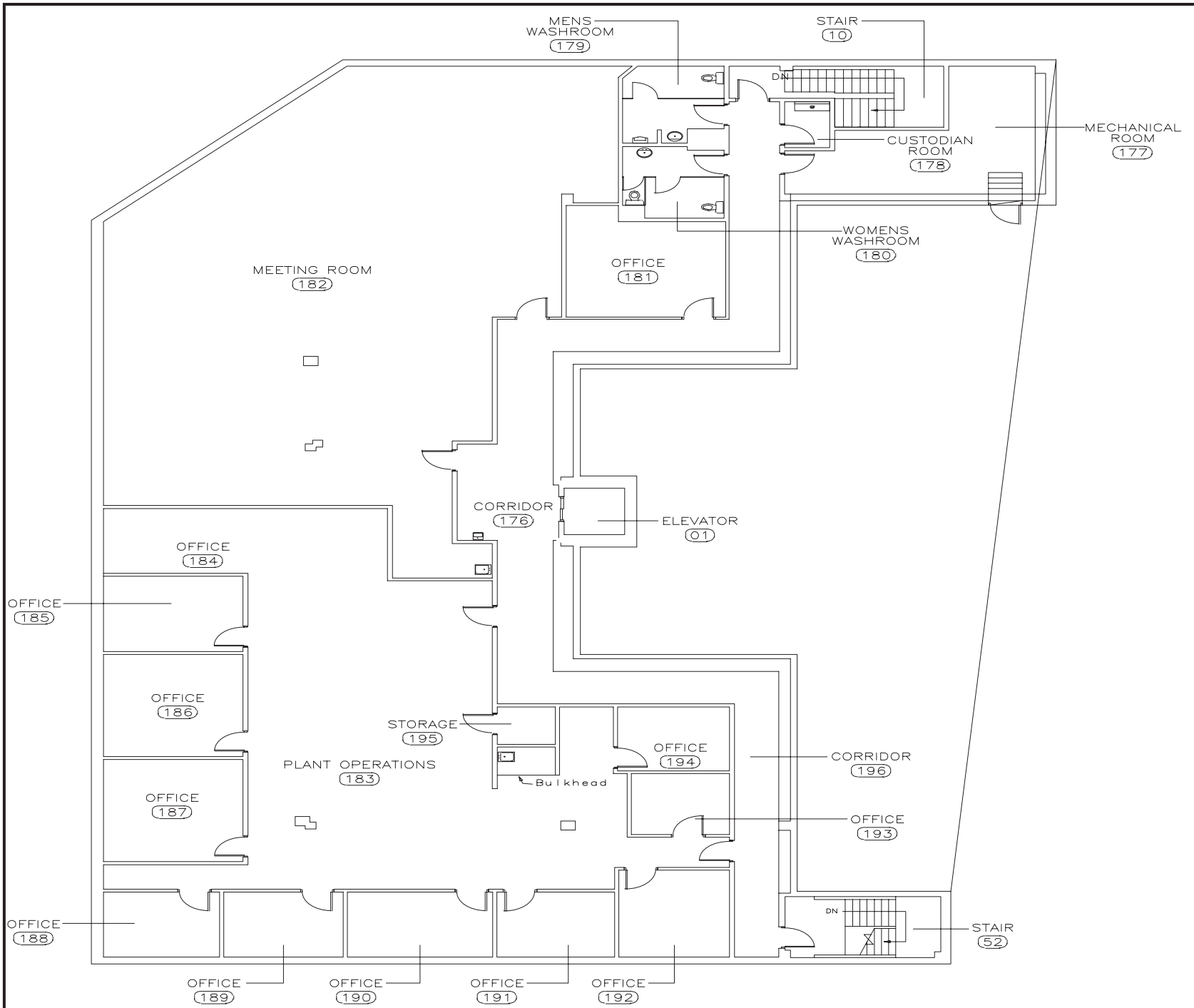
LEGEND

- 1991 Original Building Construction

Drawings Provided By:

District School Board of Niagara

Scale:	Drawing #	Date
NTS	1.3	Jan 2012



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Appendix B: Age & Area of Building Phases

Education Centre
191 Carlton Street
St. Catharines, Ontario

THIRD FLOOR

LEGEND

- 1991 Original Building Construction

Drawings Provided By:

District School Board of Niagara

Scale:	Drawing #	Date
NTS	1.4	Jan 2012

Appendix C Asbestos Quantification and Management Summary

Notes Regarding Appendix C

Description of Codes used in this Appendix:

AC *Access Code*

1. High Accessibility - Worker, Staff, and/or Student activities may disturb material causing potential exposure
2. Moderate Accessibility - Custodial Staff activities may disturb material causing potential exposure
3. Low Accessibility - Renovation and/or Demolition activities may disturb material causing potential exposure

PC *Priority Code*

1. High Priority - Recommendation should be followed as soon as possible
2. Moderate Priority - Recommendation should be followed as soon as feasible
3. Low Priority - Recommendation should be followed before next annual assessment
4. Monitor Regularly to Prevent Damage - Material can be managed in place. No further recommendations.

Description of Terms:

Term	Description	Term	Description
ACM	- Asbestos Containing Material	WBR	Woman's Bathroom
Approx. Qty.	- Approximate Quantity	FTBR	- Female Teacher's Bathroom
BBR	- Boy's Bathroom	FP	- Fireproofing
BH	- Bulkhead	Ft2	- Square Feet
Cond'n	- Condition of Material	Lght Fix	- Light Fixture
CT	- Ceiling Tile	Lin Ft	- Linear Feet
CS	- Ceiling Space	NQ	- Not Quantified
CW	- Cardboard Wrap Pipe Insulation	MBR	- Men's Bathroom
DJFC	- Drywall Joint Filling Compound	MTBR	- Male Teacher's Bathroom
DW	- Drywall	Stair	- Stairwell
EWI	- Electrical Wire Insulation	Spl#	- Sample Number
FC	- False Ceiling	VFS	- Vinyl Floor Sheeting
FF	- False Floor	VFT	- Vinyl Floor Tile
FF	- False Floor	BSMT	- Basement

- The assessment performed was non-invasive. The table below identifies various materials that, if present in this building, would not have been sampled as part of this assessment. Before disturbing the areas / materials identified below (if applicable), it is recommended that the appropriate number of samples be collected (as per O. Reg. 278/05) to determine if asbestos is present. Please note that the list below is not a comprehensive list of materials not sampled during the non-invasive assessment.

Materials not Sampled for this Assessment

Design	Description	Potential Asbestos Containing Material to be Sampled using Invasive Methods
Deck	Surface Coatings	Grout along upper side of roof deck to provide smooth surface for roof membrane
Floor	Ceramic	Mortar / grouting adhering ceramic tile to subsurface
	Heated Floor	Insulated coating for heating element (under terazzo, ceramic, floor tile, etc.)
	Carpet	Carpet glue / mastic adhering carpet to subsurface
	Flooring Materials	Sub floor under the existing floor (e.g. Sublayer of ceramic, floor tile, floor sheeting, etc.)
		Floor levelling compound
		Floor tiles and sheeting
Equipment	Process Instrumentation / Equipment	Gaskets for pumps, flanges, compressors etc.
		Packing material for pumps, compressors etc.
Roof	Roofing Membrane	Felt material
		Tar material
		Other types of roofing membranes
Walls	Ceramic	Glue / grouting adhering ceramic tile to subsurface
	Block	Block fill insulation (e.g. Vermiculite)
	Wall Space between Two walls (e.g. Drywall)	Thermal insulation
		Acoustic panelling / insulation

ACM Quantification & Management Form

Education Centre

191 Carlton Street, St. Catharines, Ontario

Level	Spl#	Building Design	Material Description	Comments	Photo	Contains Asbestos	Friable?	Visible?	Approx. Qty (f^2)	Cond'n	AC	PC	Recommendations
Basement:													
Room 03	1228-13	Deck	Caulking between Pre-Cast Concrete Ceiling		#1	Yes	No	Yes	NQ	Good	3	4	
Room 04								Yes		Good	3	4	
Room 09								Yes		Good	3	4	
Room 37								Yes		Good	3	4	
Room 41								Yes		Good	3	4	
Room 42								No		Good	3	4	
Room 44								Yes		Good	3	4	
Room 45								No		Good	3	4	
Room 46								Yes		Good	3	4	
Room 48								No		Good	3	4	
Room 49								No		Good	3	4	

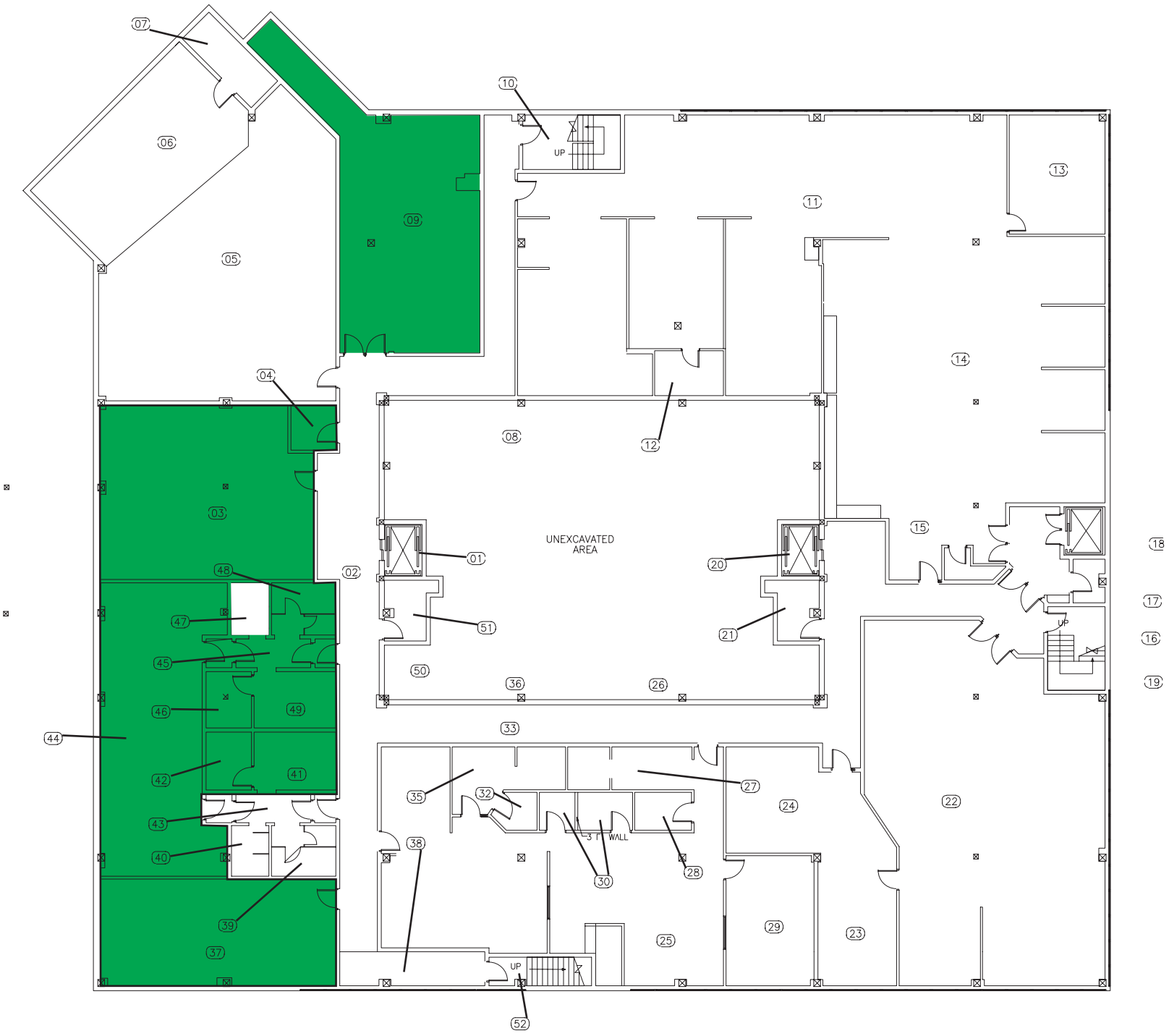
Appendix D Summary of Homogenous Materials

APPENDIX D: SUMMARY OF HOMOGENOUS MATERIALS

Sample #	Sample Description	Fibrous Asbestos Content
1228-13	Caulking between Pre-Cast Concrete Ceiling	0.5% Chrysotile

Location(s) of Sampled Material
Basement
Rooms 03, 04, 09, 37, 41, 42, 44, 45, 46, 48, 49

Appendix E Location of Asbestos Ceiling Materials



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Appendix E: Locations of Asbestos Ceiling Materials

Education Centre
191 Carlton Street
St. Catharines, Ontario

BASEMENT FLOOR

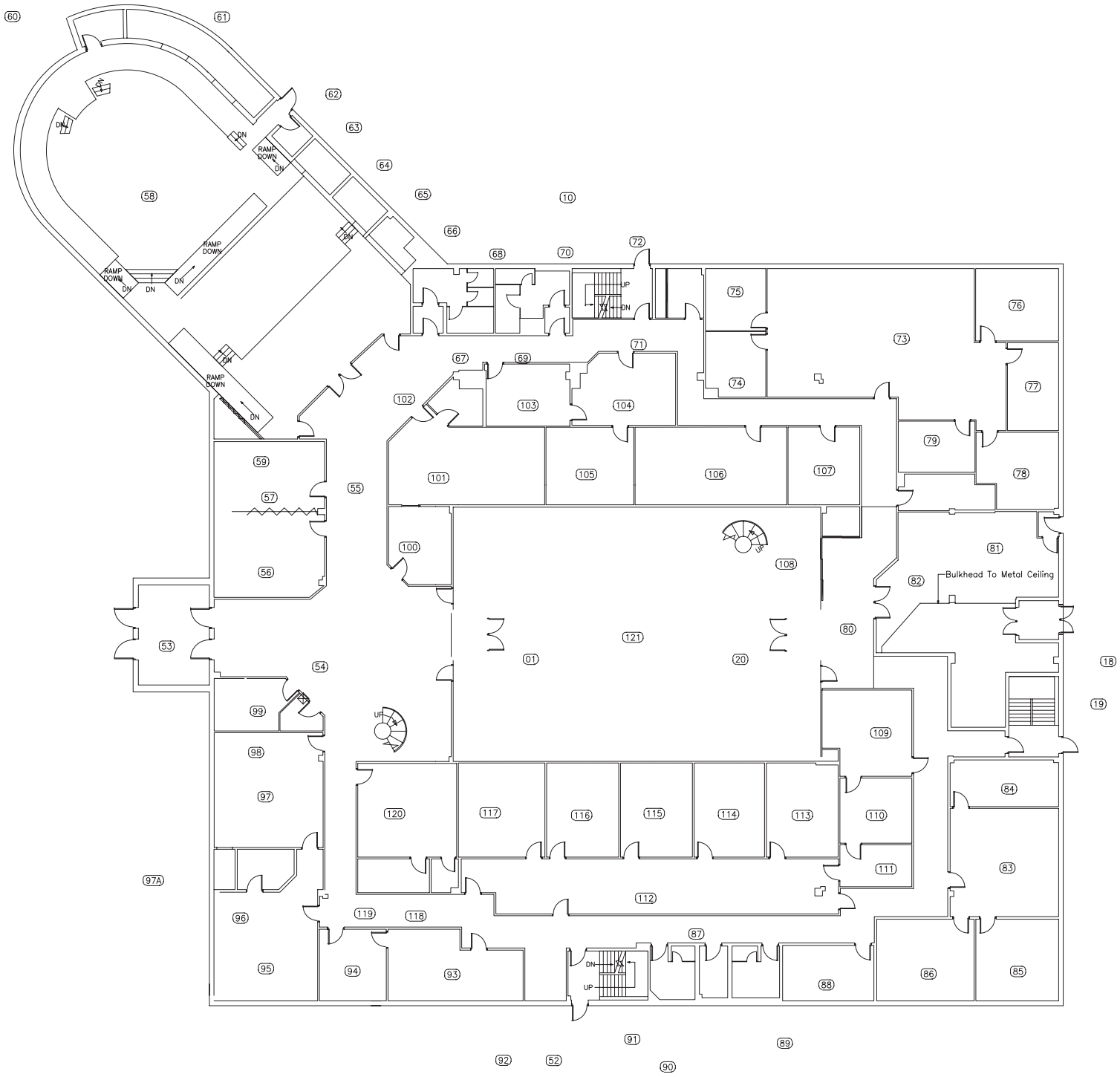
LEGEND

- Caulking between Pre-Cast Concrete Ceiling

Drawings Provided By:

District School Board of Niagara

Scale:	Drawing #	Date
NTS	1.1	Jan 2012



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Appendix E: Locations of Asbestos Ceiling Materials

Education Centre
191 Carlton Street
St. Catharines, Ontario

FIRST FLOOR

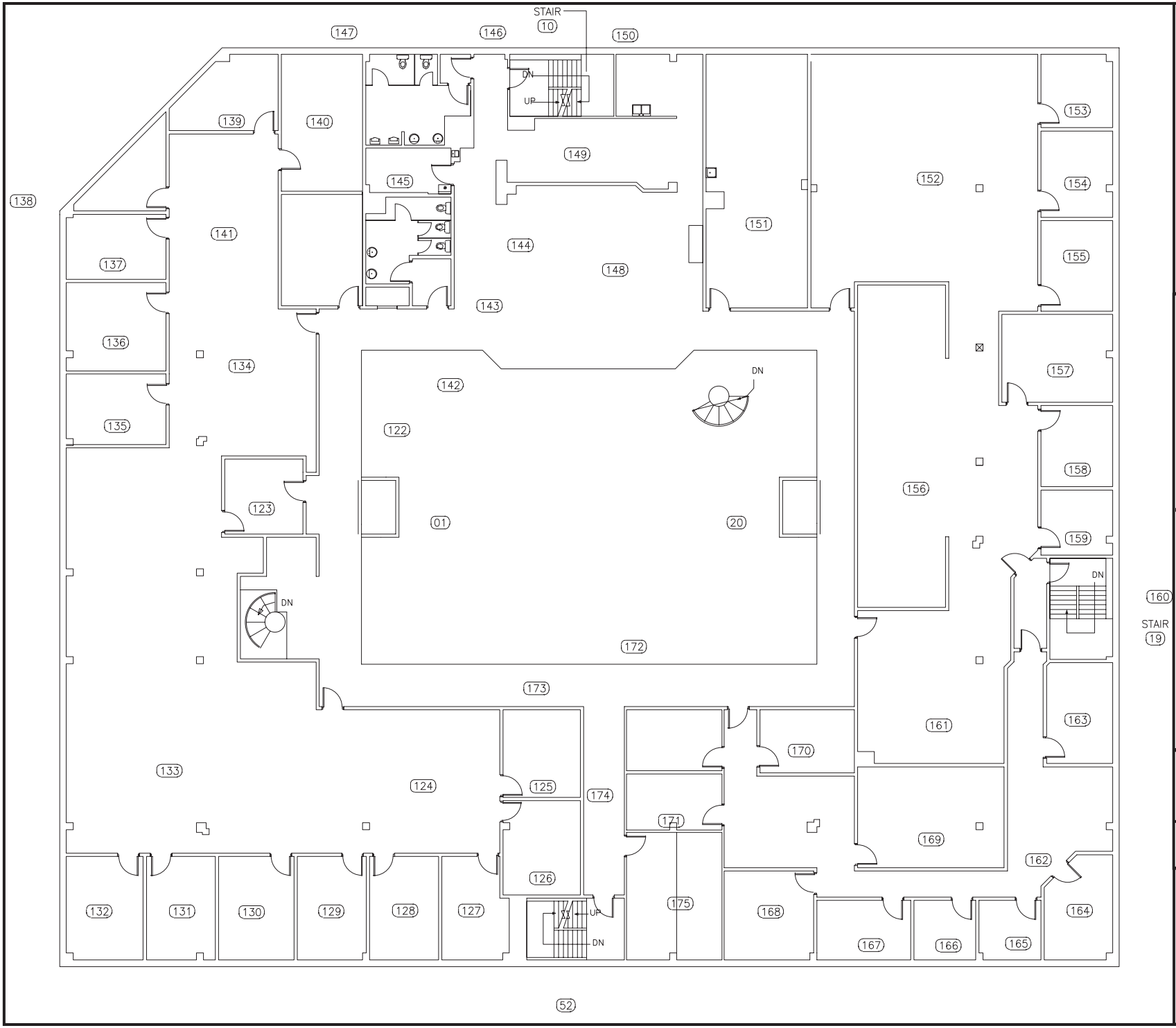
LEGEND

- Caulking between Pre-Cast Concrete Ceiling

Drawings Provided By:

District School Board of Niagara

Scale:	Drawing #	Date
NTS	1.2	Jan 2012



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Appendix E: Locations of Asbestos Ceiling Materials

Education Centre
191 Carlton Street
St. Catharines, Ontario

SECOND FLOOR

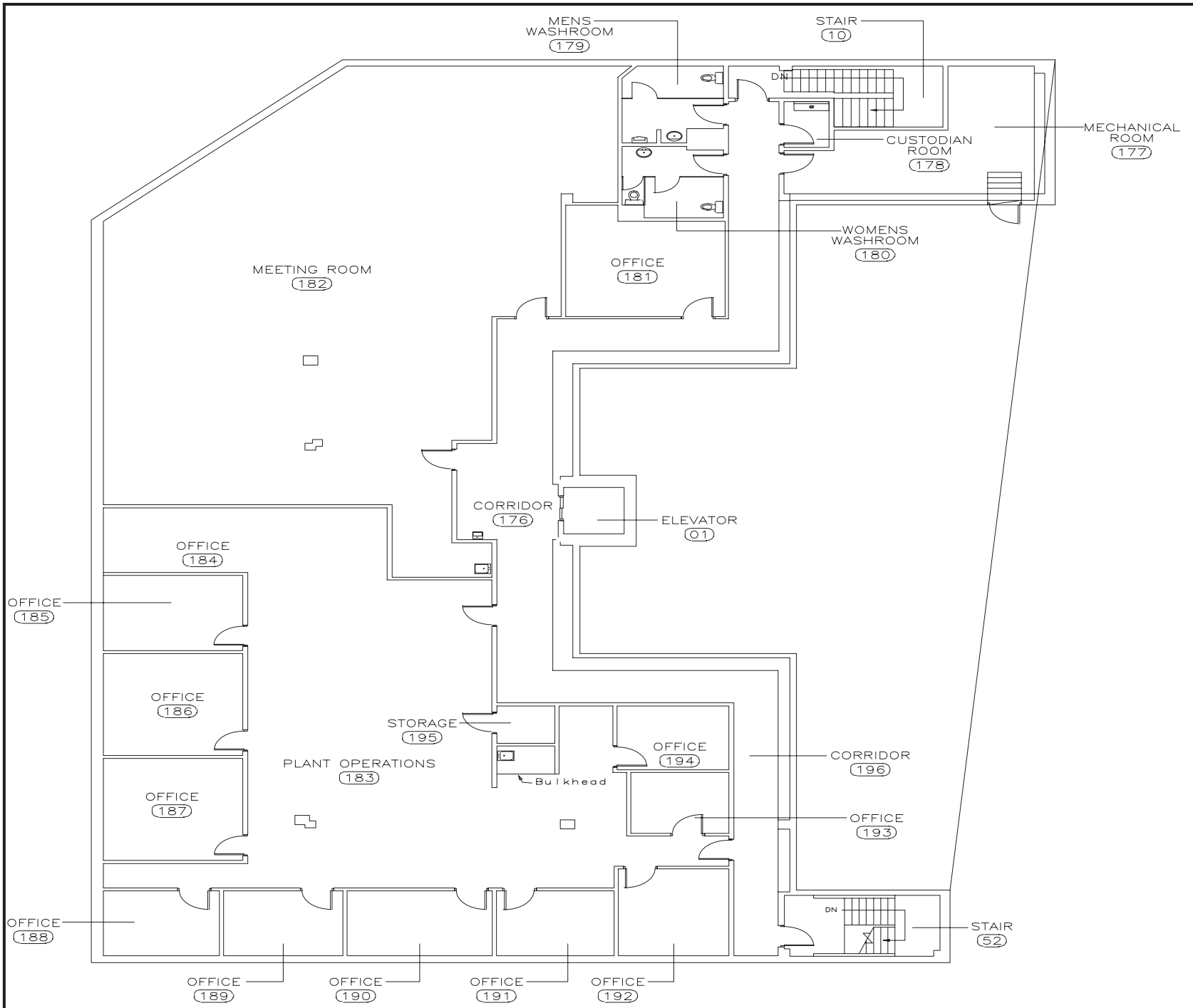
LEGEND

- Caulking between Pre-Cast Concrete Ceiling

Drawings Provided By:

District School Board of Niagara

Scale:	Drawing #	Date
NTS	1.3	Jan 2012



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Appendix E: Locations of Asbestos Ceiling Materials

Education Centre
191 Carlton Street
St. Catharines, Ontario

THIRD FLOOR

LEGEND

- Caulking between Pre-Cast Concrete Ceiling

Drawings Provided By:

District School Board of Niagara

Scale:	Drawing #	Date
NTS	1.4	Jan 2012

Appendix F Locations of Sampled Materials

Appendix F: Locations of Sampled Materials

Education Centre - 191 Carlton Street, St. Catharines, Ontario

Sample ID	Room Number	Level	Building Design	Sample Description
1228-01				
A	Room 11	0	False Ceiling	2' x 4' Ceiling Tile – Patterned Medium Dots with Small Dots
B	Room 33 (Hallway)			
C	Room 24			
1228-02				
A	Room 11 East Wall	0	Wall	Drywall Joint Filling
B	Room 17 West Wall			
C	Room 25 Pillar		Pillar	
D	Room 35		Wall	
E	Room 37			
F	Room 44			
G	Room 03			
1228-03				
A	Room 11	0	Deck	Sprayed on Fireproofing – Grey Coloured
B	Room 22			
C	Room 24			
1228-04				
A-C	Room 11	0	Deck	Mixed Material on Fireproofing – White Coloured
1228-05				
A	Room 11	0	False Ceiling	2' x 4' Ceiling Tile – Texture with Small Dots
B-C	Room 33 (Hallway)			
1228-06				
A-C	Room 17	0	Floor	1' x 1' Vinyl Floor Tile – Blue with Navy Blue and White Flecks
1228-07				
A-C	Room 17	0	Floor	1' x 1' Vinyl Floor Tile – Cream with Brown and Beige Flecks
1228-08				
A-B	Room 17	0	Deck	Sprayed on Fireproofing – White Coloured
C	Room 16			
1228-09				
A	Room 23	0	Window	Window Putty – Grey Coloured
B	Room 22			
C	Room 11			
1228-10				
A	Room 23	0	Window	Window Putty – Black Coloured
B	Room 22			
C	Room 11			

Appendix F: Locations of Sampled Materials

Education Centre - 191 Carlton Street, St. Catharines, Ontario

Sample ID	Room Number	Level	Building Design	Sample Description
1228-12				
A-C	Room 25	0	False Ceiling	2' x 4' Ceiling Tile – Small Dots with Random Fissures
1228-13				
A-C	Room 37	0	Deck	Caulking between Pre-Cast Concrete Ceiling
1228-14				
A-C	Room 55	1	Floor	Blue Carpert underpad – Black Coloured
1228-15				
A	Room 56	1	Wall	Drywall Joint Filling Compound
B	Room 61			
C	Room 133	2		
D	Room 52			
E	Room 173			
F	Room 182	3		
G	Room 177			
1228-16				
A-C	Room 58	1	False Ceiling	2' x 2' Ceiling Tile – Small Fissures with Few Small Dots
1228-17				
A-C	Room 151	2	Miscellaneous	Acoustic Coating on Underside of Sink – White Coloured
1228-18				
A-C	Building Exterior	1	Exterior Wall	Exterior Caulking – Grey Coloured
1228-19				
A	Exterior North Wall	1	Exterior Wall	Exterior Caulking – White Coloured Between Blue Sheeting
B	Exterior East Wall			
C	Exterior West Wall			
1228-20				
A	Exterior Hutt North Side	1	Exterior Hutt	Expansion Joint Compound from Exterior Hutt
B	Exterior Hutt East Side			
C	Exterior Hutt West Side			