TOWN OF FORT FRANCES

OPERATIONS AND FACILITIES DIVISION

52 CANADIANS ARENA ELECTRICAL SYSTEM REPLACEMENT

TENDER NO. 2023-OF-02

TENDER NO. 2023-OF-02

52 CANADIANS ARENA ELECTRICAL SYSTEM REPLACEMENT

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Section I

TOWN OF FORT FRANCES

OPERATIONS AND FACILITIES

CALL FOR TENDER

52 CANADIANS ARENA ELECTRICAL SYSTEM REPLACEMENT

Sealed Tenders clearly marked **Tender No. 2023-OF-02** will be received by the Corporation of the Town of Fort Frances (the "Town") up to but not later than:

2:00 p.m. Local Fort Frances Time
Tuesday, **March 7, 2023.**

After which time such Tenders will be opened publicly and read aloud at the Fort Frances Civic Centre, 320 Portage Avenue, Fort Frances, Ontario.

Certain Tender Forms ("Tender Forms") are required to be submitted. Please submit such completed Tender Forms to:

The Corporation of the Town of Fort Frances
Attention: Mr. Fasial Anwar, CAO
320 Portage Avenue
Fort Frances, Ontario
P9A 3P9
Fax: 1-807-274-8479

Detailed tender specifications will be available beginning Monday February 13, 2023. Please direct any questions regarding this tender to: Travis Rob, Manager of Operations and Facilities (807)274-9893 ext. 1316, trob@fortfrances.ca.

There will be a MANDATORY site visit held starting at Town of Fort Frances Memorial Sports Centre at 11:00am on Tuesday February 28, 2023. All potential bidders must be in attendance.

Lowest or any Tender not necessarily accepted. The Corporation of the Town of Fort Frances (the "Town") reserves the right to reject any or all Tenders, to waive irregularities and informalities therein, and to award the contract in the best interest of the Town in its sole and unfettered discretion. Tender award has to be approved by Council. See Tender information, Tender Forms and other Tender documents, for all terms, conditions and requirements.

SECTION 2

TENDER INFORMATION

2.1 The Tenderer acknowledges that the Town shall have the right to reject any, or all, Tenders for any reason, or to accept any Tender which the Town in its sole unfettered discretion deems most advantageous to itself. The lowest, or any, Tender will not necessarily be accepted, and the Town shall have the unfettered right to:

(a) accept any regular, irregular, unbalanced, informal or qualified Tender;

(b) disqualify Tenders not submitted in accordance with the requirements of any Tender documents;

(c) accept a Tender which is not the lowest Tender; and

(d) reject a Tender that is the lowest Tender (and even if it is the only Tender received).

2.2 The Town reserves the right to consider, during the evaluation of Tenders:

(a) information provided in the Tender document itself;

(b) information provided in response to enquiries of credit and industry references set out in the Tender;

(c) information received in response to enquiries made by the Town of third parties apart from those disclosed in the Tender in relation to the reputation, reliability, experience and capabilities of the Tenderer,

(d) the manner in which the Tenderer provides services to others;

(e) the experience and qualification of the Tenderer's senior management, and project management;

(f) the compliance of the Tenderer with the Town's requirements and specifications, and

(h) any other thing or matter which the Town, in its sole unfettered discretion, deems appropriate.

2.3 By submitting a Tender, the Tenderer acknowledges the Town's rights under this section 2 and absolutely waives any right, or cause of action against the Town and its consultants, by reason of the Town's failure to accept the Tender submitted by the Tenderer, whether such right or cause of action arises in contract, negligence, or otherwise.

2.4 (a) The following schedules are attached to and form an integral part hereof:

(i) Schedule 1 - Tender Forms (the "Tender Forms");

(ii) Schedule 2 - Standard Form of Agreement (the "Agreement");

(iii) Schedule 3 - Occupational Health and Safety Agreement (the "OH&S Agreement"); and

(iv) Schedule 4 - Specifications and Other Provisions (the "Specifications and Other Provisions").

(b) In this Tender, the Tender Information, Tender Forms, Addenda (as defined in section 2.5), the Agreement, and the Specifications and Other Provisions, are collectively referred to as the "Tender Documents".

2.5 Tenderers may, up to the three (3) business days prior to Closing Time, be advised by Addenda of, without limitation, additions to, deletions from, alterations in, or other changes to, the Tender Documents. All such changes shall become an integral part of the Tender Documents and allowed for by the Tenderer in its Tender and Tender pricing. The Tender Forms provide for an acknowledgement by the Tenderer of receipt by the Tenderer of any and all Addenda.

2.6 All Tenders are to be submitted upon the Tender forms.

2.7 This Tender closes at 2:00 p.m. Local (Fort Frances) time, **Tuesday March 7, 2023** (herein sometimes referred to as the "Closing Time"), after which time Tenders received will be opened publicly and read aloud at the Fort Frances Civic Centre, 320 Portage Avenue, Fort Frances, Ontario.

Two (2) sets of originally signed Tender Forms fully completed, sealed and marked "**Tender No. 2023-OF-07**" must be received by the Town Administrator or designee up to but not later than the Closing Time.

2.8 The Tenderer shall examine the Tender Documents as soon as possible, and immediately notify the Town Administrator or designee of any errors, omissions or conflicts discovered.

2.9 Tenders received prior to the Closing Time may be withdrawn by the Tenderer only upon, and by, written notice of withdrawal, which written notice of withdrawal

must be received by the Town Administrator no later than the Closing Time. If such written notice of withdrawal is not so received by the Town Administrator, such Tender shall be deemed as being open for the Town to consider and/or accept. The last Tender received shall invalidate all previous Tenders received from the same Tenderer.

2.10 Tender award has to be approved by Council of the Town ("Council"). No Tender will be awarded except after approval of Council.

2.11 Tenderers are advised to review the Tender Documents for all terms, conditions and requirements. For general informational purposes only, Tenderers are advised that:

the Town is requesting Tenders for the supply and delivery of materials and labour for the complete removal and replacement of the 52 Canadians Arena Electrical System.

2.13 As it is the responsibility of the Tenderer to determine levy and collection of the Harmonized Sales Tax (HST), the Tenderer is requested to ensure that it provides its HST number (or alternatively cite the basis for exemption in lieu thereof), and that the amounts bid show the HST separately where and as required by the Tender Documents.

2.14 In a case where a successful Tenderer is not an Ontario resident contractor/Tenderer, such Tenderer is required to either:

(a) provide a copy of a valid Retail Sales Tax Vendor Permit; or
(b) file with the Town a copy of the letter of compliance issued by the Ontario Retail Sales Tax Branch.

Failure to comply will result in such portion, as prescribed by law, of any payment made or to be made by the Town to the Tenderer to be withheld for remittance as required.

2.15 The Town is governed by the Municipal Freedom of Information and Protection of Privacy Act. Tenderers shall and do hereby consent that Tenders and Tender contents may made public as a condition of the Tendering process.

2.16 A deposit (in the Tender Documents sometimes referred to as the "Deposit") by way of certified cheque, bid bond, or equivalent, in the amount of **10%** of the Total Tender Price payable to the Town shall accompany each Tender submitted.

2.17 Forthwith upon the Town notifying a Tenderer that such Tenderer has been awarded the Tender, such Tenderer shall:

(a) execute the Agreement;

(b) deliver, to the Town, bid bonds, proof of insurance, the OH&S Agreement, Workers' Safety Insurance Board ("WSIB") clearance certificate, and otherwise, as required in and by the Tender Forms and elsewhere in the other Tender Documents; and

(c) be ready to supply and deliver the materials and labour for the completion of certain construction works in accordance with the Tender Documents as successfully tendered for.

If the Tenderer fails to deliver to the Town the Agreement and the OH&S Agreement properly executed by the Tenderer or to supply the specified bid bonds and insurance documents, within two weeks of the date of acceptance of the Tender, or to start the supply and delivery when directed:

(i) the Town shall be entitled, without prejudice to any other right or remedy it may have, to deem the Tenderer to have abandoned the Tender made by the Tenderer, and the Town shall be entitled to retain the Deposit as liquidated damages (and not as a penalty); and

(ii) the Tenderer shall pay to the Town the difference between, the Total Tender Price set out in its Tender and any other Tender which the Town accepts (if such other Tender is for a larger amount) and, in addition thereto, any costs which the Town may incur by reason of the Town re-Tendering, and, further, the Tenderer shall fully indemnify and save harmless the Town, its officers, employees, and agents from all loss, damage, liability, cost, charge and expense whatever which it, they or any of them may suffer, incur or be put to by reason of such default or failure of the Tenderer.

2.18 Deposits of unsuccessful Tenderers will be returned not later than three weeks following the Tender award. Except as otherwise provided for herein, the Deposit of the successful Tenderer will be returned with the first progress certificate.

2.19 The successful tenderer(s) shall take out and keep in force, throughout and for the duration of such tenderer's obligations to and/or contract with the Town but in any event no less than the all the year(s) for which the tenderer is awarded the tender for the expansion of the Fort Frances Seniors Centre the following policies:

Commercial General Liability

The Proponent shall, at their expense obtain and keep in force during the term of the Agreement, Commercial General Liability Insurance satisfactory to the Town of Fort Frances and underwritten by an insurer licensed to conduct business in the Province of Ontario. The policy shall provide coverage for Bodily Injury, Property Damage and Personal Injury and shall include but not be limited to:

a. A limit of liability of not less than $2,000,000/occurrence with an aggregate of not less than $2,000,000

b. Add the Town of Fort Frances as an additional insured with respect to the operations of the Named Insured
c. The policy shall contain a provision for cross liability and severability of interest in respect of the Named Insured
d. Non-owned automobile coverage with a limit not less than $2,000,000 and shall include contractual non-owned coverage (SEF 96)
e. Products and completed operations coverage
f. Broad Form Property Damage
g. Contractual Liability
h. Work performed on Behalf of the Named Insured by Sub-Contractors
i. The policy shall provide 30 days prior notice of cancellation

Automobile Insurance

Standard Form Automobile Liability Insurance that complies with all requirements of the current legislation of the Province of Ontario, having an inclusive limit of not less than $2,000,000 per occurrence for Third Party Liability, in respect of the use or operation of vehicles owned, operated or leased by the Proponent.

Primary Coverage

The proponent's insurance shall be primary coverage and not additional to and shall not seek contribution from any other insurance policies available to the municipality.

Certificate of Insurance

The proponent shall provide a Certificate of Insurance evidencing coverage in force at least 10 days prior to contract commencement.

The Supplier shall defend, indemnify and save harmless the Town of Fort Frances its elected officials, officers, employees and agents from and against any and all claims of any nature, actions, causes of action, losses, expenses, fines, costs (including legal costs), interest or damages of every nature and kind whatsoever, including but not limited to bodily injury, sickness, disease or death or to damage to or destruction of tangible property including loss of revenue or incurred expense resulting from disruption of service, arising out of or allegedly attributable to the negligence, acts, errors, omissions, misfeasance, nonfeasance, fraud or willful misconduct of the Supplier, its directors, officers, employees, agents, contractors and subcontractors, or any of them, in connection with or in any way related to the delivery or performance of this Contract. This indemnity shall be in addition to and not in lieu of any insurance to be provided by the Supplier in accordance with this Contract and shall survive this Contract.

The Supplier agrees to defend, indemnify, and save harmless the Town of Fort Frances from and against any and all claims of any nature, actions, causes of action, losses, expenses, fines, costs (including legal costs), interest or damages

of every nature and kind whatsoever arising out of or related to the Supplier's status with WSIB. This indemnity shall be in addition to and not in lieu of any proof of WSIB status and compliance to be provided by the Supplier in accordance with this Contract and shall survive this Contract.

2.20 Tenders may be submitted via facsimile to the Town office (807-274-8479) provided that:

(a) the original of such Tenders shall be received by the Town within 5 business days of the Closing Time; and

(b) the Town shall not be liable, and assumes no responsibility whatsoever, for proper receipt of such alternative transmittals.

2.21 In the Tender Documents, the singular, or masculine, or personal, pronouns herein shall be construed as meaning the plural, or feminine, or neuter, as the context requires.

SCHEDULE 1

TENDER FORMS

Tender No. 2023-OF-02

52 CANADIANS ARENA ELECTRICAL SYSTEM REPLACEMENT

The following Tender is hereby submitted to

THE CORPORATION OF THE TOWN OF FORT FRANCES
(the "Town")

1. This Tender is submitted by _____ (hereinafter sometimes referred to as the "Tenderer").

2. In the Tender Documents "Work" means the total provision of all labour, materials, plant, equipment, services, and otherwise, necessary for the proper execution and completion, in accordance with the Tender Documents, of the supply and delivery to and for the benefit and satisfaction of the Town, of:

   (a) the supply and delivery of the materials and labour for the completion of certain construction works, if the Town awards the Tender for the supply and delivery of the materials and labour for the completion of certain construction works to the Tenderer; or

   (b) those Type(s) of materials and labour for the completion of certain construction works for which the Tenderer submits, and is awarded, the Tender.

3. The Tenderer acknowledges and agrees that:

   (a) the items and quantities set out in, the Schedules of Unit Prices below (which shall be deemed to be attached to and form part of these Tender Forms) or elsewhere in the Tender Documents, are not to be and shall not be taken as a guarantee of actual quantities required.

   (b) the Town reserves the right to increase, decrease or delete quantities of any or all items set out in, the Schedules of Unit Prices below or elsewhere in the Tender Documents, and no claim resulting from any increase, decrease or deletion in items and/or quantities will be considered.

   (c) the Total Unit Price(s) given or set out by the Tenderer in this Tender:

(i) shall and does include all costs, expenses, and charges whatsoever for the performance and completion of the Work by the Tenderer, including, without limitation, for all labour, materials, plant, equipment, services, duties, taxes, patent royalties, insurance, transportation, and otherwise; and

(ii) shall apply for the purpose of progress payments and shall apply throughout the time period of Years or part thereof for which the Tenderer may be awarded a Tender except that any increase or decrease in taxes such as HST after the date of the awarding of the Tender shall increase or decrease the Total Unit Price accordingly by the amount of such increase or decrease in tax.

4. The undersigned Tenderer:

(a) confirms that the Tenderer has examined the Tender Documents and ascertained all necessary particulars of and with regard to the Work to the Tenderer's satisfaction;

(b) submits the following Tender and agrees, if such Tender is accepted, to:

(i) enter into the Agreement and the OH&S Agreement and provide same to the Town duly executed; and

(ii) perform and complete the Work for the respective Total Unit Price(s) and Total Prices quoted by the Tenderer herein except as may be increased or decreased by increase or decrease in taxes (such as HST) as set out in paragraph 3 hereof.

5. The Tenderer encloses herewith the Deposit.

6. The undersigned acknowledges receipt of the following addenda:

No.	Date Issued	Date Received
_____	_____	_____
_____	_____	_____

7. The Tenderer shall, forthwith upon request of the Town, provide a "Statement of Good Standing" and/or clearance certificate and/or such other evidence of compliance (with regard to workers' compensation insurance, including payments due thereunder) satisfactory to the Town, from the WSIB of Ontario.

Dated at _____ this _____ day of _____, 2023.

SIGNATURE OF TENDERER:

_____

Witness to signature of Tenderer

_____

If a corporation, the person signing has authority to bind such corporation

Print name of Witness:

_____

PRINT NAME AND TITLE OF PERSON SIGNING:

_____

IF A CORPORATION, PRINT PROPER NAME OF CORPORATION:

_____

Address of Witness:

_____

_____

Address of Tenderer:

_____

_____

Phone Number of Witness:

_____

Phone Number of Tenderer:

_____

Fax Number: _____

Cell Number: _____

Item	Item Description	Estimated Quantity	Units	Price Per unit	Total Price
1	**Removals**				
1.0	Removals of materials and equipment from existing transformer vault	1	L.S.		
1.2	Removal of panels and equipment from North Electrical Room	1	L.S.		
2	**New Installation**				
2.1	Installation of new service run from IFK	1	L.S.		
2.2	Installation of new panels in North Electrical Room	1	LS		
2.2	Bleacher Panel Replacement	1	L.S.		
1.1g	Auditorium Kitchen Panel Replacement	1	L.S.		
1.2	Auditorium Light Panel Replacement	1	L.S		
1.2	Panel A & B Replacement south electrical room	1	L.S.		
				TOTAL:	
2	**General Conditions**				
2.1	Mobilization/Demobilization	1	L.S.		
2.2	Contingency Allowance	1	L.S.	$20,000.00	$20,000.00
				TOTAL:	
				Subtotal Tender Prices:	
				HST:	
				TOTAL TENDER BID:	

SCHEDULE 2

AGREEMENT

THIS AGREEMENT made this _____ day of _____, 2023.

BETWEEN:

_____
(herein sometimes referred to as the “Tenderer” or the “Contractor")

- and -

The Corporation of the Town of Fort Frances
(the "Town”)

Whereas the Contractor has represented to the Town that the Contractor is well able to perform the Work described in the Tender Documents for the respective Total Unit Price(s), Total Prices, and for the Year(s) quoted by the Tenderer in the Tender.

Now therefore the Contractor and the Town (herein sometimes referred to as the “Parties”) undertake and agree as follows:

1. The Tenderer shall perform and complete the Work:

   (a) to, and for, the benefit and satisfaction of the Town, in accordance with the Tender Documents;

   (b) for the respective Total Unit Price(s) and Total Prices quoted by the Tenderer in the Tender Forms except as may be increased or decreased by increase or decrease in taxes (such as HST) as set out in paragraphs 3 and 4 of the Tender Forms.

2. The Tender Documents shall collectively be and the whole shall constitute the Contract between the Parties.

3. The Town agrees to pay to the Contractor in lawful money of Canada for the performance of the Work with the amounts to be paid on account thereof being

determined by actual measured quantities in accordance with the Specifications and Other Provisions and subject to adjustments, additions, deductions and deletions as provided in and by the Tender Documents. The Town shall pay on account thereof upon the approval of the Manager of Operations and Facilities (in the Tender Documents the sometimes referred to as the “Manager”). Upon receipt of invoices, any adjustments to monies owing will be made with notification to the Contractor.

4. If the Town fails to make payments to the Contractor as they become due under the terms of the Tender Documents, interest equal to the current bank prime rate + 2% per annum on such unpaid amounts shall become due and payable until payment.

5. If:

   (a) the Contractor should be adjudged bankrupt, or becomes insolvent, or makes a general assignment for the benefit of creditors, or if a receiver is appointed of the Tenderer or the Tenderer’s business or any part thereof; or

   (b) a petition in bankruptcy for liquidation, reorganization, or other proceeding, is filed by or against the Tenderer;

   (c) the Contractor fails or neglects to properly perform or complete the Work or otherwise fails to comply with the requirements of the Tender Documents (including, without limitation, failure to meet gradation specifications, or to meet delivery dates, or otherwise)

   the Town may, without prejudice to any other right or remedy it may have, terminate this Agreement by giving the Contractor written notice.

   The Contractor's obligation under the Tender Documents as to quality, correction and warranty of the work performed by him up to the time of termination shall continue in force after such termination.

6. Time shall in all respects be of the essence.

7. Neither this Agreement nor any rights or entitlements under it shall be assignable or transferable by the Contractor without the prior written consent of the Town.

8. Any notice required or permitted to be given hereunder shall be in writing and shall be effectively given if:

   (a) delivered personally;

   (b) sent by prepaid courier service or mail; or

(c) sent prepaid by telecopier, telex or other similar means of electronic communication (confirmed on the same or following day by prepaid mail) addressed,

(i) in case of notice to the Town, as follows:

320 Portage Avenue
FORT FRANCES, Ontario
P9A 3P9
Attention: Administrator

(ii) in case of the Contractor, as follows:

_____
_____
_____
_____

Any notice so given shall be deemed conclusively to have been given and received when so personally delivered or sent by telex, telecopier or other electronic communication or on the second day following the sending thereof by private courier or mail. Any Party hereto or others mentioned above may change any particulars of its address for notice by notice to the others in the manner aforesaid.

IN WITNESSETH WHEREOF the Parties hereto have executed this Agreement.

SIGNATURE OF CONTRACTOR:

_____ _____

Witness to signature of Tenderer

If a corporation, the person signing has the authority to bind such corporation

Print name of Witness:

PRINT NAME AND TITLE OF PERSON SIGNING:

_____ _____

IF A CORPORATION, PRINT PROPER NAME OF CORPORATION:

_____

Address of Witness:

_____

_____

Address of Contractor:

_____

_____

Phone Number of Witness:

_____

Phone Number of Contractor:

_____

Fax Number: _____

Cell Number: _____

The Corporation of the Town of Fort Frances

per:
_____

per:
_____

I/we have authority to bind the Town

SCHEDULE 3

OCCUPATIONAL HEALTH AND SAFETY AGREEMENT

The undersigned Tenderer, _____
shall and does hereby agree and confirm that:

1. it is aware that the Town places great importance on the compliance with and adherence to the Occupational Health and Safety Act (the "Act") and the safety standards and policies of all authorities having jurisdiction;

2. all Work performed by the Tenderer or on its behalf shall be in conformity with the Act and the construction, health, and safety standards and policies of all authorities having jurisdiction;

3. the Tenderer and its employees, personnel, contractors, subcontractors, agents and/or representatives are knowledgeable and well versed in and with the requirements of, the Act and the safety procedures required for during the performance and completion of the Work;

4. all persons involved with the Work shall be required to wear proper safety equipment at all times; and

5. the Tenderer shall be solely responsible for, and the Tenderer shall not hold nor seek to hold the Town responsible in any way for, any violations of the Act or the failure of the Tenderer to comply with and adhere to the safety standards and policies of any and all authorities having jurisdiction.

SIGNATURE OF CONTRACTOR:

_____	_____
Witness to signature of Tenderer	If a corporation, the person signing has authority to bind such corporation
Print name of Witness:	PRINT NAME AND TITLE OF PERSON SIGNING:
_____	_____

IF A CORPORATION, PRINT PROPER NAME OF CORPORATION:

_____

Address of Witness:

_____

_____

Address of Contractor:

_____

_____

Phone Number of Witness:

_____

Phone Number of Contractor:

_____

Fax Number: _____

Cell Number: _____

The Corporation of the Town of Fort Frances
per:

_____

per:

_____

I/we have authority to bind the Town

Date: _____, 2023.

SCHEDULE 4

SPECIFICATIONS AND OTHER PROVISIONS

1. Tenderer agrees to commence the work as specified, to proceed continuously to completion, and complete the work as follows:

   Commencement Date: _____

   Completion Date: _____

2. The Tenderer is advised that the Town intends to award the work no later than **March 31, 2023.**

3. The Tenderer is responsible to submit schedule for all work **PRIOR** to commencement date. Site has scheduled rental date(s) and time(s) for the public and cannot be interrupted by work. The Town will work diligently with the contractor to minimize impacts to both the operations of the site and progress of the contractor.

4. It is the responsibility of the Tenderer to obtain and post, all applicable permits and arrange inspections required on behalf of the Town. Cost for Building permits will not be the responsibility of the contractor.

5. Electrical shutdowns are to be minimized wherever possible. All shutdowns are to be confirmed with the Town prior to commencement. No shutdowns will be allowed until the ice has been taken out of the 52 Canadians Arena and facility bookings have been coordinated. There can not be any power disruptions around events currently scheduled May 8 – 21 and June 26 – 30.

6. Any damage to the grounds surrounding the facilities will be the responsibility of the contractor to repair to the satisfaction of the Town.

7. The successful contractors must obtain a business license from the Town of Fort Frances Information Desk at the Civic Centre unless they already possess one.

8. Listing of Subcontractors:

Listing of similar work

Date	Project	Est. Const. Value

9. All measurements are deemed approximate and are to be confirmed by the Contractor prior to ordering of materials.

10. The Town reserves the right to include or exclude any portions of the tender works as listed below depended on tender pricing.

Appendix A – Contract Specifications

52 Canadians Arena
740 Scott Street
Fort Frances, Ontario

Electrical Distribution Upgrade

TENDER SPECIFICATIONS

2023

TBT Engineering Ltd.
1918 Yonge St
Thunder Bay, Ontario P7E 6T9
Tel: (807) 624-5160

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 All other sections are forming part of the contract documentation.

1.2 SCOPE OF WORK

.1 52 Canadians Arena is an ice rink within the Fort Frances Memorial Sports Complex. 52 Canadians Arena currently has a separate electrical service than the rest of the sport complex. Most of the electrical panels and other electrical equipment at 52 Canadians Arena are original to the construction of the building and are in poor condition. The existing service entrance transformers are approaching the end of their useful service life and do not meet code requirements of local authorities having jurisdiction. The scope of work for this project involves replacing the aging electrical distribution with new equipment and combining the 52 Canadians Arena electrical service with the rest of the Fort Frances Memorial Sports complex such that the 52 Canadians Arena electrical service adheres to the guidelines of local authorities having jurisdiction and the overall electrical distribution organization within the facility is improved.

.2 Provide stainless steel (SS) vanity plates on all abandoned junction boxes.

.3 Patch and paint affected surface walls from removal of old devices to match existing wall finish.

1.3 CONTRACT METHOD

.1 Construct Work under single contract.

.2 Relations and responsibilities between Contractor and Owner are as defined in Conditions of Contract. Assigned Subcontractors must, in addition: Furnish to Contractor bonds covering faithful performance of subcontracted work and payment of obligations there under when Contractor is required to furnish such bonds to Consultant.

.3 Purchase and maintain liability insurance to protect Contractor from claims for not less than limits of liability which Contractor is required to provide to Consultant.

1.4 WORK BY OTHERS

.1 Co-operate with other Contractors in carrying out their respective works and carry out instructions from Consultant.

.2 Co-ordinate work with that of other Contractors; If any part of work under this Contract depends for its proper execution or result upon work of another Contractor, report promptly to Consultant in writing, any defects which may interfere with proper execution of Work.

.3 Work of this Project must include provisions for coordinating additional work, identified in Contract Documents, for following principal items.

.4 Abatement of designated substances.

1.5 WORK SEQUENCE

.1 Co-ordinate Progress Schedule and co-ordinate with Owner Occupancy during construction.

.2 Maintain fire access/control.

.3 Protect workers and public safety.

1.6 CONTRACTOR USE OF PREMISES

.1 Limit use of premises for Work, for storage and for access to allow:

1. Owner occupancy
2. Partial owner occupancy
3. Work by other contractors
4. Public usage

.2 Co-ordinate use of premises under direction of Owner’s representative,

.3 Obtain and pay for use of additional storage or work areas needed for operations under this Contract.

.4 Remove or alter existing work to prevent injury or damage to portions of existing work which remain.

.5 Repair or replace portions of existing work which have been altered during construction operations to match existing or adjoining work, as directed by Consultant.

.6 At completion of operations condition of existing work shall be equal to or better than that which existed before new work started.

1.7 OWNER OCCUPANCY

.1 Co-operate with Owner in scheduling operations to minimize conflict and to facilitate Owner usage.

1.8 PARTIAL OWNER OCCUPANCY

.1 Schedule and substantially complete designated portions of Work for Owner's occupancy prior to Substantial Performance of entire Work.

.2 Owner will occupy designated areas for purpose of storage of furnishings and equipment.

.3 Execute Certificate of Substantial Performance for each designated portion of Work prior to Owner occupancy. Contractor shall allow:

1. Access for Owner personnel
2. Use of parking facilities
3. Operation of HVAC and electrical systems

1.9 ALTERATIONS, ADDITIONS OR REPAIRS TO EXISTING BUILDING

.1 Execute work with least possible interference or disturbance to building operations, occupants, and normal use of premises. Arrange with Owner’s representative to facilitate execution of work.

.2 Use only elevators existing in building for moving workers and material.

.1 Investigate the status of existing elevators if they are functional and safe for moving workers and materials before the Work starts.

.2 Protect walls of passenger elevators, to approval of Owner prior to use.

.3 Accept liability for damage, safety of equipment and overloading of existing equipment.

1.10 EXISTING SERVICES

.1 Where Work involves breaking into or connecting to existing services, give the Owner a minimum of 2 weeks notice for necessary interruption of mechanical or electrical service throughout course of work.

.2 Minimize duration of interruptions. Carry out work at times as directed by governing authorities with minimum disturbance to building operations.

.3 Provide alternative routes for personnel, pedestrian and vehicular traffic, as deemed necessary by the Consultant or Owner.

.4 Establish location and extent of service lines in area of work before starting Work. Notify Consultant of findings.

.5 Submit schedule to and obtain approval from Consultant for any shut-down or closure of active service or facility including power and communications services. Adhere to approved schedule and provide notice to affected parties.

.6 Where unknown services are encountered, immediately advise [Consultant] and confirm findings in writing.

.7 Protect, relocate or maintain existing active services. When inactive services are encountered, cap off in manner approved by authorities having jurisdiction.

.8 Record locations of maintained, re-routed and abandoned service lines.

.9 Construct barriers, in accordance with the applicable standards, as required for execution of this project.

1.11 DOCUMENTS REQUIRED

.1 Maintain at job site, one copy of each document as follows:

1. Contract Drawings.
2. Specifications.
3. Addenda.
4. Reviewed Shop Drawings.
5. List of Outstanding Shop Drawings.
6. Change Orders.
7. Other Modifications to Contract.
8. Field Test Reports.
9. Copy of Approved Work Schedule.
10. Health and Safety Plan and Other Safety Related Documents.
11. Other documents as specified.

Part 1 Products

1.1 NOT USED

.1 Not Used.

Part 2 Execution

2.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 DEFINITIONS

.1 Activity: element of Work performed during course of Project. Activity normally has expected duration, and expected cost and expected resource requirements. Activities can be subdivided into tasks.

.2 Bar Chart (GANTT Chart): graphic display of schedule-related information. In typical bar chart, activities or other Project elements are listed down left side of chart, dates are shown across top, and activity durations are shown as date-placed horizontal bars. Generally Bar Chart should be derived from commercially available computerized project management system.

.3 Baseline: original approved plan (for project, work package, or activity), plus or minus approved scope changes.

.4 Construction Work Week: As scheduled with owner, will provide 7 day work week and define schedule calendar working days as part of Bar (GANTT) Chart submission.

.5 Duration: number of work periods (not including holidays or other nonworking periods) required to complete activity or other project element. Usually expressed as workdays or workweeks.

.6 Master Plan: summary-level schedule that identifies major activities and key milestones.

.7 Milestone: significant event in project, usually completion of major deliverable.

.8 Project Schedule: planned dates for performing activities and the planned dates for meeting milestones. Dynamic, detailed record of tasks or activities that must be accomplished to satisfy Project objectives. Monitoring and control process involves using Project Schedule in executing and controlling activities and is used as basis for decision making throughout project life cycle.

.9 Project Planning, Monitoring and Control System: overall system operated by Departmental Representative to enable monitoring of project work in relation to established milestones.

1.2 REQUIREMENTS

.1 Ensure Master Plan and Detail Schedules are practical and remain within specified Contract duration.

.2 Plan to complete Work in accordance with prescribed milestones and time frame.

.3 Limit activity durations to maximum of approximately 10 working days, to allow for progress reporting.

.4 Ensure that it is understood that Award of Contract or time of beginning, rate of progress, Interim Certificate and Final Certificate as defined times of completion are of essence of this contract.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

.1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit Project Schedule to Departmental Representative within 5 working days of receipt of acceptance of Master Plan.

1.4 PROJECT MILESTONES

.1 Project milestones form interim targets for Project Schedule.

.1 Refer to instruction to bidders.

1.5 MASTER PLAN

.1 Structure schedule to allow orderly planning, organizing and execution of Work as Bar Chart (GANTT).

.2 BGIS and Consultant will review and return revised schedules within 5 working days.

.3 Revise impractical schedule and resubmit within 5 working days.

.4 Accepted revised schedule will become Master Plan and be used as baseline for updates.

1.6 PROJECT SCHEDULE

.1 Develop detailed Project Schedule derived from Master Plan.

.2 Ensure detailed Project Schedule includes as minimum milestone and activity types as follows:

.1 Award.
.2 Shop Drawings, Samples.
.3 Permits.
.4 Mobilization.
.5 Electrical.
.6 Testing and Commissioning.
.7 Supplied equipment long delivery items.

1.7 PROJECT SCHEDULE REPORTING

.1 Update Project Schedule on weekly basis reflecting activity changes and completions, as well as activities in progress.

.2 Include as part of Project Schedule, narrative report identifying Work status to date, comparing current progress to baseline, presenting current forecasts, defining problem areas, anticipated delays and impact with possible mitigation.

1.8 PROJECT MEETINGS

.1 Discuss Project Schedule at regular site meetings, identify activities that are behind schedule and provide measures to regain slippage. Activities considered behind schedule are those with projected start or completion dates later than current approved dates shown on baseline schedule.

.2 Weather related delays with their remedial measures will be discussed and negotiated.

Part 2 Products

2.1 NOT USED

.1 Not used.

Part 3 Execution

3.1 NOT USED

.1 Not used.

END OF SECTION

Part 1 General

1.1 ADMINISTRATIVE

.1 Submit to Consultant and Department Representative submittals listed for review. Submit promptly and in orderly sequence to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.

.2 Do not proceed with Work affected by submittal until review is complete.

.3 Present shop drawings, product data, samples and mock-ups in SI Metric units.

.4 Review submittals prior to submission to Consultant and Department Representative. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and co-ordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.

.5 Notify Consultant and Department Representative, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.

.6 Verify field measurements and affected adjacent Work are co-ordinated.

.7 Contractor's responsibility for errors and omissions in submission is not relieved by Consultant and Department Representative review of submittals.

.8 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Consultant and Department Representative review.

.9 Keep one reviewed copy of each submission on site.

1.2 SHOP DRAWINGS AND PRODUCT DATA

.1 Refer to CCDC 2 GC 3.11

.2 The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.

.3 Submit drawings stamped and signed by professional engineer registered or licensed in Ontario, Canada.

.4 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been co-ordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.

.5 Allow review of each submission by Consultant and Department Representative. Adjustments made on shop drawings by Consultant are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Consultant and Department Representative prior to proceeding with Work.

.6 Make changes in shop drawings as Consultant and Department Representative may require, consistent with Contract Documents. When resubmitting, notify Consultant and Department Representative in writing of revisions other than those requested.

.7 Accompany submissions with transmittal letter, in containing:

- .1 Date.
- .2 Project title and number.
- .3 Contractor's name and address.
- .4 Identification and quantity of each shop drawing, product data and sample.
- .5 Other pertinent data.

.8 Submissions include:

- .1 Date and revision dates.
- .2 Project title and number.
- .3 Name and address of:
  - .1 Subcontractor.
  - .2 Supplier.
  - .3 Manufacturer.
- .4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
- .5 Details of appropriate portions of Work as applicable:
  - .1 Fabrication.
  - .2 Layout, showing dimensions, including identified field dimensions, and clearances.
  - .3 Setting or erection details.
  - .4 Capacities.
  - .5 Performance characteristics.
  - .6 Standards.

.7 Operating weight.

.8 Wiring diagrams.

.9 Single line and schematic diagrams.

.10 Relationship to adjacent work.

.9 After Consultant and Department Representative review, distribute copies.

.10 Submit electronic copy of shop drawings for each requirement requested in specification Sections and as Consultant and Department Representative may reasonably request.

.11 Submit electronic copies of product data sheets or brochures for requirements requested in specification Sections and as requested by Consultant and BGIS where shop drawings will not be prepared due to standardized manufacture of product.

.12 Submit electronic copies of test reports for requirements requested in specification Sections and as requested by Consultant and Department Representative.

.1 Report signed by authorized official of testing laboratory that material, product or system identical to material, product or system to be provided has been tested in accord with specified requirements.

.2 Testing must have been within 3 years of date of contract award for project.

.13 Submit electronic copies of certificates for requirements requested in specification Sections and as requested by Consultant and Department Representative.

.1 Statements printed on manufacturer's letterhead and signed by responsible officials of manufacturer of product, system or material attesting that product, system or material meets specification requirements.

.2 Certificates must be dated after award of project contract complete with project name.

.14 Submit electronic copies of manufacturers instructions for requirements requested in specification Sections and as requested Consultant and Department Representative.

.1 Pre-printed material describing installation of product, system or material, including special notices and Material Safety Data Sheets concerning impedances, hazards and safety precautions.

.15 Submit electronic copies of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by Consultant and Department Representative.

.16 Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.

.17 Submit electronic copies of Operation and Maintenance Data for requirements requested in specification Sections and as requested by Consultant and Department Representative.

.18 Supplement standard information to provide details applicable to project.

.19 If upon review by Consultant, no errors or omissions are discovered or if only minor corrections are made, copies will be returned and fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.

1.3 CERTIFICATES AND TRANSCRIPTS

.1 Immediately after award of Contract, submit Workers' Compensation Board status.

.2 Submit transcription of insurance immediately after award of Contract.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 GENERAL

1.1 SECTION INCLUDES

.1 Health and safety considerations required to ensure that Contractors show due diligence towards health and safety on construction sites and meet the requirements laid out in the Occupational Health and Safety Act.

1.2 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures

1.3 REFERENCES

.1 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations.

.2 Health Canada/Workplace Hazardous Materials Information System (WHMIS).

.1 Material Safety Data Sheets (MSDS).

.3 Province of Ontario

.1 Occupational Health and Safety Act and Regulations for Construction Projects, R.S.O. Latest Edition.

.2 O. Reg 278/05 Designated Substances – Asbestos on Construction Projects and in Buildings and Repair Operations

.4 Ontario Ministry of Labour (MOL)

.1 Silica on Construction Projects

.5 Public Services and Procurement Canada (PSPC)

.1 Asbestos Management Directive and Standard, 2017

1.4 SUBMITTALS

.1 Make submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit site-specific Health and Safety Plan: After date of Notice to Proceed and prior to commencement of Work. Health and Safety Plan must include:

.1 Results of site-specific safety hazard assessment.

.2 Results of safety and health risk or hazard analysis for site tasks and operation

.3 Submit copies of reports or directions issued by Provincial health and safety inspectors.

.4 Submit copies of incident and accident reports.

.5 Medical Surveillance: where prescribed by legislation, regulation or safety program, submit certification of medical surveillance for site personnel prior to commencement of Work, and submit additional certifications for any new site personnel to Consultant.

1.5 FILING OF NOTICE

.1 File Notice of Project with Provincial authorities prior to beginning of Work.

1.6 SAFETY ASSESSMENT

.1 Perform site specific safety hazard assessment related to project.

1.7 MEETINGS

.1 Schedule and administer Health and Safety meeting with Owners Representative and Consultant prior to commencement of Work.

1.8 PROJECT/SITE CONDITIONS

.1 A Designated Substance Survey(s) is available, refer to following:

.1 Project Specific Designated Substance Survey

1.9 GENERAL REQUIREMENTS

.1 Develop written site-specific Health and Safety Plan based on hazard assessment prior to beginning site Work and continue to implement, maintain, and enforce plan until final demobilization from site. Health and Safety Plan must address project specifications.

.2 Owners Representative and/or Consultant may respond in writing, where deficiencies or concerns are noted and may request resubmission with correction of deficiencies or concerns.

1.10 RESPONSIBILITY

.1 Be responsible for health and safety of persons on site, safety of property on site and for protection of persons adjacent to site and environment to extent that they may be affected by conduct of Work.

.2 Contractor will be responsible and assume the role Constructor as described in the Ontario Occupational Health and Safety Act and Regulations for Construction Projects.

.3 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.

1.11 COMPLIANCE REQUIREMENTS

.1 Comply with Ontario Occupational Health and Safety Act, R.S.O. 1990, c. 0.1 and Ontario Regulations for Construction Projects, O. Reg. 213/91.

.2 Comply with Occupational Health and Safety Regulations, 1996.SPEC NOTE: Use the following paragraph for projects in Yukon Territory.

.3 Comply with Occupational Health and Safety Act, General Safety Regulations, O.I.C.

.4 Comply with Canada Labour Code, Canada Occupational Safety and Health Regulations.

1.12 UNFORSEEN HAZARDS

.1 When unforeseen or peculiar safety-related factor, hazard, or condition occur during performance of Work, follow procedures in place for Employee's Right to Refuse Work in accordance with Acts and Regulations of Province having jurisdiction and advise Consultant verbally and in writing.

.2 In the case any unexpected hazards are encountered, contractor is to stop work and immediately notify the Department Representative.

1.13 HEALTH AND SAFETY CO-ORDINATOR

.1 Employ and assign to Work, competent and authorized representative as Health and Safety Co-ordinator. Health and Safety Co-ordinator must:

.1 Have minimum 2 years' site related working experience specific to activities associated with construction projects.

.2 Have working knowledge of occupational safety and health regulations.

.3 Be responsible for completing Contractor's Health and Safety Training Sessions and ensuring that personnel not successfully completing required training are not permitted to enter site to perform Work.

.4 Be responsible for implementing, enforcing daily and monitoring site-specific Contractor's Health and Safety Plan.

.5 Be on site during execution of Work and report directly to and be under direction of or be site supervisor.

1.14 POSTING OF DOCUMENTS

.1 Ensure applicable items, articles, notices and orders are posted in conspicuous location on site in accordance with Acts and Regulations of Province having jurisdiction, and in consultation with Owners Representative.

1.15 CORRECTION OF NON-COMPLIANCE

.1 Immediately address health and safety non-compliance issues identified by authority having jurisdiction or by Owners Representative or Consultant.

.2 Provide Owners Representative and Consultant with written report of action taken to correct non-compliance of health and safety issues identified.

.3 Owners Representative may stop Work if non-compliance of health and safety regulations is not corrected.

1.16 POWDER ACTUATED DEVICES

.1 Use powder actuated devices only after receipt of written permission from Owners Representative.

1.17 WORK STOPPAGE

.1 Give precedence to safety and health of public and site personnel and protection of environment over cost and schedule considerations for Work.

Part 2 PRODUCTS

2.1 NOT USED

.1 Not used.

Part 3 EXECUTION

3.1 NOT USED

.1 Not used.

END OF SECTION

Part 1 General

1.1 REFERENCE STANDARDS

.1 Canadian Construction Documents Committee (CCDC)

.1 CCDC 2-94, Stipulated Price Contract.

1.2 QUALITY

.1 Refer to CCDC 2.

.2 Products, materials, equipment and articles incorporated in Work shall be new, not damaged or defective, and of best quality for purpose intended. If requested, furnish evidence as to type, source and quality of products provided.

.3 Defective products, whenever identified prior to completion of Work, will be rejected, regardless of previous inspections. Inspection does not relieve responsibility, but is precaution against oversight or error. Remove and replace defective products at own expense and be responsible for delays and expenses caused by rejection.

.4 Should disputes arise as to quality or fitness of products, decision rests strictly with Departmental Representative based upon requirements of Contract Documents.

.5 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.

.6 Permanent labels, trademarks and nameplates on products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

1.3 AVAILABILITY

.1 Immediately upon signing Contract, review product delivery requirements and anticipate foreseeable supply delays for items. If delays in supply of products are foreseeable, notify Departmental Representative of such, in order that substitutions or other remedial action may be authorized in ample time to prevent delay in performance of Work.

.2 In event of failure to notify Departmental Representative at commencement of Work and should it subsequently appear that Work may be delayed for such reason, Departmental Representative reserves right to substitute more readily available products of similar character, at no increase in Contract Price or Contract Time.

1.4 STORAGE, HANDLING AND PROTECTION

.1 Handle and store products in manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions when applicable.

.2 Store packaged or bundled products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work.

.3 Store products subject to damage from weather in weatherproof enclosures.

.4 Store cementitious products clear of earth or concrete floors, and away from walls.

.5 Keep sand, when used for grout or mortar materials, clean and dry. Store sand on wooden platforms and cover with waterproof tarpaulins during inclement weather.

.6 Store sheet materials, lumber on flat, solid supports and keep clear of ground. Slope to shed moisture.

.7 Store and mix paints in heated and ventilated room. Remove oily rags and other combustible debris from site daily. Take every precaution necessary to prevent spontaneous combustion.

.8 Remove and replace damaged products at own expense and to satisfaction of Departmental Representative.

.9 Touch-up damaged factory finished surfaces to Departmental Representative's satisfaction. Use touch-up materials to match original. Do not paint over name plates.

1.5 TRANSPORTATION

.1 Pay costs of transportation of products required in performance of Work.

.2 Transportation cost of products supplied by Owner will be paid for by Departmental Representative. Unload, handle and store such products.

1.6 MANUFACTURER'S INSTRUCTIONS

.1 Unless otherwise indicated in specifications, install or erect products in accordance with manufacturer's instructions. Do not rely on labels or enclosures provided with products. Obtain written instructions directly from manufacturers.

.2 Notify Consultant in writing, of conflicts between specifications and manufacturer's instructions, so that Consultant will establish course of action.

.3 Improper installation or erection of products, due to failure in complying with these requirements, authorizes Departmental Representative to require removal and re-installation at no increase in Contract Price or Contract Time.

1.7 QUALITY OF WORK

.1 Ensure Quality of Work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed. Immediately notify Departmental Representative if required Work is such as to make it impractical to produce required results.

.2 Do not employ anyone unskilled in their required duties. Departmental Representative reserves right to require dismissal from site, workers deemed incompetent or careless.

.3 Decisions as to standard or fitness of Quality of Work in cases of dispute rest solely with Departmental Representative, whose decision is final.

1.8 CO-ORDINATION

.1 Ensure co-operation of workers in laying out Work. Maintain efficient and continuous supervision.

.2 Be responsible for coordination and placement of openings, sleeves and accessories.

1.9 CONCEALMENT

.1 In finished areas conceal pipes, ducts and wiring in floors, walls and ceilings, except where indicated otherwise.

.2 Before installation inform Consultant if there is interference. Install as directed by Consultant.

1.10 REMEDIAL WORK

.1 Refer to CCDC 2 and Section 01 73 00 - Execution Requirements.

.2 Perform remedial work required to repair or replace parts or portions of Work identified as defective or unacceptable. Co-ordinate adjacent affected Work as required.

.3 Perform remedial work by specialists familiar with materials affected. Perform in a manner to neither damage nor put at risk any portion of Work.

1.11 LOCATION OF FIXTURES

.1 Consider location of fixtures, outlets, and mechanical and electrical items indicated as approximate.

.2 Inform Consultant of conflicting installation. Install as directed.

1.12 FASTENINGS

.1 Provide metal fastenings and accessories in same texture, colour and finish as adjacent materials, unless indicated otherwise.

.2 Prevent electrolytic action between dissimilar metals and materials.

.3 Use non-corrosive hot dip galvanized steel fasteners and anchors for securing exterior work, unless stainless steel or other material is specifically requested in affected specification Section.

.4 Space anchors within individual load limit or shear capacity and ensure they provide positive permanent anchorage. Wood, or any other organic material plugs are not acceptable.

.5 Keep exposed fastenings to a minimum, space evenly and install neatly.

.6 Fastenings which cause spalling or cracking of material to which anchorage is made are not acceptable.

1.13 FASTENINGS - EQUIPMENT

.1 Use fastenings of standard commercial sizes and patterns with material and finish suitable for service.

.2 Use heavy hexagon heads, semi-finished unless otherwise specified. Use No. 304 stainless steel for exterior areas.

.3 Bolts may not project more than one diameter beyond nuts.

.4 Use plain type washers on equipment, sheet metal and soft gasket lock type washers where vibrations occur. Use resilient washers with stainless steel.

1.14 PROTECTION OF WORK IN PROGRESS

.1 Prevent overloading of parts of building. Do not cut, drill or sleeve load bearing structural member, unless specifically indicated without written approval of Consultant.

1.15 EXISTING UTILITIES

.1 When breaking into or connecting to existing services or utilities, execute Work at times directed by local governing authorities, with minimum of disturbance to Work, and/or building occupants and pedestrian and vehicular traffic.

.2 Protect, relocate or maintain existing active services. When services are encountered, cap off in manner approved by authority having jurisdiction. Stake and record location of capped service.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submittals: in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit written request in advance of cutting or alteration which affects:

- .1 Structural integrity of elements of project.
- .2 Integrity of weather-exposed or moisture-resistant elements.
- .3 Efficiency, maintenance, or safety of operational elements.
- .4 Visual qualities of sight-exposed elements.
- .5 Work of Owner or separate contractor.

.3 Include in request:

- .1 Identification of project.
- .2 Location and description of affected Work.
- .3 Statement on necessity for cutting or alteration.
- .4 Description of proposed Work, and products to be used.
- .5 Alternatives to cutting and patching.
- .6 Effect on Work of Owner or separate contractor.
- .7 Written permission of affected separate contractor.
- .8 Date and time work will be executed.

1.2 MATERIALS

.1 Required for original installation.

.2 Change in Materials: Submit request for substitution in accordance with Section 01 33 00 - Submittal Procedures.

1.3 PREPARATION

.1 Inspect existing conditions, including elements subject to damage or movement during cutting and patching.

.2 After uncovering, inspect conditions affecting performance of Work.

.3 Beginning of cutting or patching means acceptance of existing conditions.

.4 Provide supports to assure structural integrity of surroundings; provide devices and methods to protect other portions of project from damage.

.5 Provide protection from elements for areas which are to be exposed by uncovering work; maintain excavations free of water.

1.4 EXECUTION

.1 Execute cutting, fitting, and patching to complete Work.

.2 Fit several parts together, to integrate with other Work.

.3 Uncover Work to install ill-timed Work.

.4 Remove and replace defective and non-conforming Work.

.5 Provide openings in non-structural elements of Work for penetrations of mechanical and electrical Work.

.6 Execute Work by methods to avoid damage to other Work, and which will provide proper surfaces to receive patching and finishing.

.7 Employ original installer to perform cutting and patching for weather-exposed and moisture-resistant elements, and sight-exposed surfaces.

.8 Cut rigid materials using masonry saw or core drill. Pneumatic or impact tools not allowed on masonry work without prior approval.

.9 Restore work with new products in accordance with requirements of Contract Documents.

.10 Fit Work to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.

.11 Provide firestopping in accordance to maintain the integrity of fire separations, including:

.1 Protecting penetrations at fire-resistance rated wall, ceiling or floor construction.

.2 Using construction joint fire stops and building perimeter fire stops to protect gaps at fire separations and between fire separations and other construction assemblies.

.12 Refinish surfaces to match adjacent finishes: Refinish continuous surfaces to nearest intersection. Refinish assemblies by refinishing entire unit.

.13 Conceal pipes, ducts and wiring in floor, wall and ceiling construction of finished areas except where indicated otherwise.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 REFERENCE STANDARDS

.1 Canadian Construction Documents Committee (CCDC)

.1 CCDC 2, Stipulated Price Contract.

1.2 PROJECT CLEANLINESS

.1 Maintain Work in tidy condition, free from accumulation of waste products and debris, other than that caused by Owner or other Contractors.

.2 Remove waste materials from site at daily regularly scheduled times or dispose of as directed by Departmental Representative Do not burn waste materials on site.

.3 Clear snow and ice from access to building, bank/pile snow in designated areas only.

.4 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.

.5 Provide on-site containers for collection of waste materials and debris.

.6 Provide and use marked separate bins for recycling.

.7 Dispose of waste materials and debris off site.

.8 Clean interior areas prior to start of finishing work, and maintain areas free of dust and other contaminants during finishing operations.

.9 Store volatile waste in covered metal containers, and remove from premises at end of each working day.

.10 Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.

.11 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.

.12 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.

1.3 FINAL CLEANING

.1 Refer to CCDC 2, GC 3.14.

.2 When Work is Substantially Performed remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.

.3 Remove waste products and debris other than that caused by others, and leave Work clean and suitable for occupancy.

.4 Prior to final review remove surplus products, tools, construction machinery and equipment.

.5 Remove waste products and debris other than that caused by Owner or other Contractors.

.6 Remove waste materials from site at regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site.

.7 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.

.8 Clean and polish glass, mirrors, hardware, wall tile, stainless steel, chrome, porcelain enamel, baked enamel, plastic laminate, and mechanical and electrical fixtures. Replace broken, scratched or disfigured glass.

.9 Remove stains, spots, marks and dirt from decorative work, electrical and mechanical fixtures, furniture fitments, walls, and floors.

.10 Clean lighting reflectors, lenses, and other lighting surfaces.

.11 Vacuum clean and dust building interiors, behind grilles, louvres and screens.

.12 Wax, seal, shampoo or prepare floor finishes, as recommended by manufacturer.

.13 Inspect finishes, fitments and equipment and ensure specified workmanship and operation.

.14 Broom clean and wash exterior walks, steps and surfaces; rake clean other surfaces of grounds.

.15 Remove dirt and other disfiguration from exterior surfaces.

.16 Clean and sweep roofs, gutters, areaways, and sunken wells.

.17 Sweep and wash clean paved areas.

.18 Clean equipment and fixtures to sanitary condition; clean or replace filters of mechanical equipment.

.19 Clean roofs, downspouts, and drainage systems.

.20 Remove debris and surplus materials from crawl areas and other accessible concealed spaces.

.21 Remove snow and ice from access to building.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 REFERENCE STANDARDS

.1 Canadian Construction Documents Committee (CCDC)

.1 CCDC 2 Stipulated Price Contract.

1.2 ADMINISTRATIVE REQUIREMENTS

.1 Acceptance of Work Procedures:

.1 Contractor's Inspection: Contractor: conduct inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.

.1 Notify Departmental Representative in writing of satisfactory completion of Contractor's inspection and submit verification that corrections have been made.

.2 Request Consultant's inspection.

.2 Consultant's Inspection:

.1 Consultant and Contractor to inspect Work and identify defects and deficiencies.

.2 Contractor to correct Work as directed.

.3 Completion Tasks: submit written certificates in English that tasks have been performed as follows:

.1 Work: completed and inspected for compliance with Contract Documents.

.2 Defects: corrected and deficiencies completed.

.3 Equipment and systems: tested, and fully operational.

.4 Certificates required by Local Authorities: submitted.

.5 Operation of systems: demonstrated to Owner's personnel.

.6 Work: complete and ready for final inspection.

.4 Final Inspection:

.1 When completion tasks are done, request final inspection of Work by Consultant, and Contractor.

.2 When Work incomplete according to Consultant, complete outstanding items and request re-inspection.

.5 Declaration of Substantial Performance: when Consultant considers deficiencies and defects corrected and requirements of Contract substantially performed, make application for Certificate of Substantial Performance.

.6 Commencement of Lien and Warranty Periods: date of Owner's acceptance of submitted declaration of Substantial Performance to be date for commencement for warranty period and commencement of lien period unless required otherwise by lien statute of Place of Work.

.7 Final Payment:

.1 When Consultant considers final deficiencies and defects corrected and requirements of Contract met, make application for final payment.

.2 Refer to CCDC 2: when Work deemed incomplete by Consultant, complete outstanding items and request re-inspection.

.8 Payment of Holdback: after issuance of Certificate of Substantial Performance of Work, submit application for payment of holdback amount in accordance with contractual agreement.

1.3 FINAL CLEANING

.1 Clean in accordance with Section 01 74 00 - Cleaning.

.1 Remove surplus materials, excess materials, rubbish, tools and equipment.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 ACTION AND INFORMATIONAL SUBMITTALS

.1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Two weeks prior to Substantial Performance of the Work, submit to the Departmental Representative final copies of operating and maintenance manuals in English.

.3 Provide spare parts, maintenance materials and special tools of same quality and manufacture as products provided in Work.

.4 Provide evidence, if requested, for type, source and quality of products supplied.

1.2 FORMAT

.1 Organize data as instructional manual.

.2 Binders: vinyl, hard covered, 3 'D' ring, loose leaf [219 x 279] mm with spine and face pockets.

.3 When multiple binders are used correlate data into related consistent groupings.

.1 Identify contents of each binder on spine.

.4 Cover: identify each binder with type or printed title 'Project Record Documents'; list title of project and identify subject matter of contents.

.5 Arrange content by systems under Section numbers and sequence of Table of Contents.

.6 Provide tabbed fly leaf for each separate product and system, with typed description of product and major component parts of equipment.

.7 Text: manufacturer's printed data, or typewritten data.

.8 Drawings: provide with reinforced punched binder tab.

.1 Bind in with text; fold larger drawings to size of text pages.

.9 Provide 1:1 scaled CAD files in dwg format.

1.3 CONTENTS - PROJECT RECORD DOCUMENTS

.1 Table of Contents for Each Volume: provide title of project;

.1 Date of submission; names.

.2 Addresses, and telephone numbers of Consultant and Contractor with name of responsible parties.

.3 Schedule of products and systems, indexed to content of volume.

.2 For each product or system:

.1 List names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.

.3 Product Data: mark each sheet to identify specific products and component parts, and data applicable to installation; delete inapplicable information.

.4 Drawings: supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.

.5 Typewritten Text: as required to supplement product data.

1.4 AS -BUILT DOCUMENTS AND SAMPLES

.1 Maintain, at site for Departmental Representative one record copy of:

.1 Contract Drawings.

.2 Specifications.

.3 Addenda.

.4 Change Orders and other modifications to Contract.

.5 Reviewed shop drawings, product data, and samples.

.6 Field test records.

.7 Inspection certificates.

.8 Manufacturer's certificates.

.2 Store record documents and samples in field office apart from documents used for construction.

.1 Provide files, racks, and secure storage.

.3 Label record documents and file in accordance with Section number listings in List of Contents of this Project Manual.

.1 Label each document "PROJECT RECORD" in neat, large, printed letters.

.4 Maintain record documents in clean, dry and legible condition.

.1 Do not use record documents for construction purposes.

.5 Keep record documents and samples available for inspection by Departmental Representative.

1.5 RECORDING INFORMATION ON PROJECT RECORD DOCUMENTS

.1 Record information on set of drawings, provided by Consultant.

.2 Use felt tip marking pens, maintaining separate colours for each major system, for recording information.

.3 Record information concurrently with construction progress.

.1 Do not conceal Work until required information is recorded.

.4 Contract Drawings and shop drawings: mark each item to record actual construction, including:

.1 Measured depths of elements of foundation in relation to finish first floor datum.

.2 Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.

.3 Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.

.4 Field changes of dimension and detail.

.5 Changes made by change orders.

.6 Details not on original Contract Drawings.

.7 Referenced Standards to related shop drawings and modifications.

.5 Specifications: mark each item to record actual construction, including:

.1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.

.2 Changes made by Addenda and change orders.

.6 Other Documents: maintain manufacturer's certifications, inspection certifications, and field test records, required by individual specifications sections.

.7 Provide digital photos, if requested, for site records.

1.6 EQUIPMENT AND SYSTEMS

.1 For each item of equipment and each system include description of unit or system, and component parts.

.1 Give function, normal operation characteristics and limiting conditions.

.2 Include performance curves, with engineering data and tests, and complete nomenclature and commercial number of replaceable parts.

.2 Panel board circuit directories: provide electrical service characteristics, controls, and communications.

.3 Include installed colour coded wiring diagrams.

.4 Operating Procedures: include start-up, break-in, and routine normal operating instructions and sequences.

.1 Include regulation, control, stopping, shut-down, and emergency instructions.

.2 Include summer, winter, and any special operating instructions.

.5 Maintenance Requirements: include routine procedures and guide for trouble-shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.

.6 Provide servicing and lubrication schedule, and list of lubricants required.

.7 Include manufacturer's printed operation and maintenance instructions.

.8 Include sequence of operation by controls manufacturer.

.9 Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.

.10 Provide installed control diagrams by controls manufacturer.

.11 Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.

.12 Additional requirements: as specified in individual specification sections.

1.7 MATERIALS AND FINISHES

.1 Instructions for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.

.2 Moisture-protection and weather-exposed products: include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.

.3 Additional requirements: as specified in individual specifications sections.

1.8 MAINTENANCE MATERIALS

.1 Spare Parts:

.1 Provide spare parts, in quantities specified in individual specification sections.

.2 Provide items of same manufacture and quality as items in Work.

.3 Deliver to site; place and store.

.4 Receive and catalogue items.

.1 Submit inventory listing to Departmental Representative

.2 Include approved listings in Maintenance Manual.

.5 Obtain receipt for delivered products and submit prior to final payment.

.2 Extra Stock Materials:

.1 Provide maintenance and extra materials, in quantities specified in individual specification sections.

.2 Provide items of same manufacture and quality as items in Work.

.3 Deliver to site; place and store.

.4 Receive and catalogue items.

.1 Submit inventory listing to Departmental Representative

.2 Include approved listings in Maintenance Manual.

.5 Obtain receipt for delivered products and submit prior to final payment.

.3 Special Tools:

.1 Provide special tools, in quantities specified in individual specification section.

.2 Provide items with tags identifying their associated function and equipment.

.3 Deliver to site; place and store.

.4 Receive and catalogue items.

.1 Submit inventory listing to Departmental Representative.

.2 Include approved listings in Maintenance Manual.

1.9 DELIVERY, STORAGE AND HANDLING

.1 Store spare parts, maintenance materials, and special tools in manner to prevent damage or deterioration.

.2 Store in original and undamaged condition with manufacturer's seal and labels intact.

.3 Store components subject to damage from weather in weatherproof enclosures.

.4 Store paints and freezable materials in a heated and ventilated room.

.5 Remove and replace damaged products at own expense and for review by Departmental Representative.

1.10 WARRANTIES AND BONDS

.1 Develop warranty management plan to contain information relevant to Warranties.

.2 Submit warranty management plan to Departmental Representative for approval.

.3 Warranty management plan to include required actions and documents to assure that Departmental Representative receives warranties to which it is entitled.

.4 Provide plan in narrative form and contain sufficient detail to make it suitable for use by future maintenance and repair personnel.

.5 Submit, warranty information made available during construction phase, to Departmental Representative for approval prior to each monthly pay estimate.

.6 Assemble approved information in binder, submit upon acceptance of work and organize binder as follows:

.1 Separate each warranty or bond with index tab sheets keyed to Table of Contents listing.

.2 List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.

.3 Obtain warranties and bonds, executed in duplicate by subcontractors, suppliers, and manufacturers, within ten days after completion of applicable item of work.

.4 Verify that documents are in proper form, contain full information, and are notarized.

.5 Co-execute submittals when required.

.6 Retain warranties and bonds until time specified for submittal.

.7 Except for items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial Performance is determined.

.8 Include information contained in warranty management plan as follows:

.1 Roles and responsibilities of personnel associated with warranty process, including points of contact and telephone numbers within the organizations of Contractors, subcontractors, manufacturers or suppliers involved.

.2 Provide list for each warranted equipment, item, feature of construction or system indicating:

.1 Name of item.

.2 Model and serial numbers.

.3 Location where installed.

.4 Name and phone numbers of manufacturers or suppliers.

.5 Names, addresses and telephone numbers of sources of spare parts.

.6 Warranties and terms of warranty: include one-year overall warranty of construction. Indicate items that have extended warranties and show separate warranty expiration dates.

.7 Cross-reference to warranty certificates as applicable.

.8 Starting point and duration of warranty period.

.9 Summary of maintenance procedures required to continue warranty in force.

.10 Cross-Reference to specific pertinent Operation and Maintenance manuals.

.11 Organization, names and phone numbers of persons to call for warranty service.

.12 Typical response time and repair time expected for various warranted equipment.

.3 Procedure and status of tagging of equipment covered by extended warranties.

.4 Post copies of instructions near selected pieces of equipment where operation is critical for warranty and/or safety reasons.

.9 Respond in timely manner to oral or written notification of required construction warranty repair work.

.10 Written verification to follow oral instructions.

.1 Failure to respond will be cause for the Departmental Representative to proceed with action against Contractor.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 SUMMARY

.1 Acronyms:

.1 BMM - Building Management Manual.

.2 Cx - Commissioning.

.3 HVAC - Heating, Ventilation and Air Conditioning.

.4 PI - Product Information.

.5 PV - Performance Verification.

.6 TAB - Testing, Adjusting and Balancing.

.7 WHMIS - Workplace Hazardous Materials Information System.

1.2 GENERAL REQUIREMENTS

.1 Standard letter size paper [216] mm x [279] mm.

.2 Methodology used to facilitate updating.

.3 Drawings, diagrams and schematics to be professionally developed.

.4 Electronic copy of data to be in a format accepted and approved by Departmental Representative.

1.3 APPROVALS

.1 Prior to commencement, co-ordinate requirements for preparation, submission and approval with Consultant and Departmental Representative.

1.4 GENERAL INFORMATION

.1 Provide Departmental Representative the following for insertion into appropriate Part and Section of BMM:

.1 Complete list of names, addresses, telephone and fax numbers of contractor, sub-contractors that participated in delivery of project - as indicated in Section 1.2 of BMM.

.2 Summary of fire protection installed and commissioned - as indicated in Section 1.4 of BMM.

.1 Including sequence of operation as finalized after commissioning is complete as indicated in Section 2.0 of BMM.

.3 Information on operation and maintenance of fire protection and life safety systems and equipment installed and commissioned - Section 2.0 of BMM.

.4 Operating and maintenance manual - Section 3.2 of BMM.

.5 Final commissioning plan as actually implemented.

.6 Completed commissioning checklists.

.7 Commissioning test procedures employed.

.8 Completed Product Information (PI) and Performance Verification (PV) report forms, approved and accepted by Consultant.

.9 Commissioning reports.

1.5 CONTENTS OF OPERATING AND MAINTENANCE MANUAL

.1 For detailed requirements refer to Section 01 78 00 - Closeout Submittals.

.2 Consultant review and approve format and organization within 12 weeks of award of contract.

.3 Include original manufactures brochures and written information on products and equipment installed on this project.

.4 Record and organize for easy access and retrieval of information contained in BMM.

.5 Include completed PI report forms, data and information from other sources as required.

.6 Inventory directory relating to information on installed systems, equipment and components.

.7 Approved project shop-drawings, product and maintenance data.

.8 Manufacturer's data and recommendations relating: manufacturing process, installation, commissioning, start-up, O&M, shutdown and training materials.

.9 Inventory and location of spare parts, special tools and maintenance materials.

.10 Warranty information.

.11 Inspection certificates with expiration dates, which require on-going re-certification inspections.

.12 Maintenance program supporting information including:

.1 Recommended maintenance procedures and schedule.

.2 Information to removal and replacement of equipment including, required equipment, points of lift and means of entry and egress.

1.6 SUPPORTING DOCUMENTATION FOR INSERTION INTO SUPPORTING APPENDICES

.1 Provide Consultant supporting documentation relating to installed equipment and system, including:

.1 General:

.1 Finalized commissioning plan.

.2 WHMIS information manual.

.3 Approved "as-built" drawings and specifications.

.4 Procedures used during commissioning.

.5 Cross-Reference to specification sections.

.2 Electrical:

.1 Installation permits, inspection certificates.

.2 Assist contractor with preparation of BMM.

1.7 LANGUAGE

.1 English and French Language to be in separate binders.

1.8 USE OF CURRENT TECHNOLOGY

.1 Use current technology for production of documentation. Emphasis on ease of accessibility at all times, maintain in up-to-date state, compatibility with user's requirements.

.2 Obtain Departmental Representative’s approval before starting Work.

Part 2 Products

2.1 NOT USED

.1 Not used.

Part 3 Execution

3.1 NOT USED

.1 Not used.

END OF SECTION

Part 1 General

1.1 MISCELLANEOUS

.1 Conform to Sections of Division 01, as applicable.

.2 Section 26 05 00 shall apply to and govern work of all Sections of Division 26 as applicable.

.3 Provide a complete electrical system including all materials, equipment, services and labour necessary as shown or implied for a complete installation.

1.2 RELATED SECTIONS

.1 Canadian Electrical Code (latest edition).

.2 Ontario Electrical Safety Code (latest edition).

.3 Painting and finishing for electrical work: as specified.

.4 Firestopping and smoke seals: as specified.

.5 Flashings for electrical work located on or passing through roof: as specified.

.6 Temporary sheet steel covers: as specified.

.7 Excavating, Backfilling and Rough Grading for electrical work: as specified.

.8 Concrete for electrical work: as specified.

.9 Base courses and paving over backfilled and graded electrical work: as specified.

1.3 SYSTEM DESCRIPTION

.1 Existing 52 Canadians Arena electrical service is a combination of 120/240 volts, 60 Hz, 1 phase, 3 wire and 230 volts, 60hz, 3 phase, 3 wire. Existing IFK Arena electrical service is 347/600 volts, 60hz, 3 phase, 4 wire.

.2 Coordinate ratings and characteristics of all pertinent electrical equipment to ensure safe and satisfactory operations.

1.4 SHOP DRAWINGS

.1 Submit shop drawings in accordance with the General Conditions of the Contract and as specified in each section of Division 26.

.2 When equipment and apparatus of one system must be coordinated with or installed in a given area with equipment and apparatus of other system(s), prepare and submit necessary coordinated composite drawings for checking interferences.

1.5 AS-BUILT DRAWINGS

.1 Submit "as built" drawings in accordance with the specifications.

.2 For underground installations, dimension location with respect to building walls and mark levels with respect to elevation of finished floor below where wiring is buried.

.3 Colour code changes using red for additions, and green for deletions.

1.6 OPERATION AND MAINTENANCE DATA

.1 Submit operation and maintenance data in accordance with the specifications. Make changes or submit additional information if required.

.2 Review instructions with Owner’s Designee to ensure a thorough understanding of equipment and its operation.

1.7 REGULATORY REQUIREMENTS

.1 Materials and workmanship shall be in accordance with requirements and recommendations of applicable rules, regulations, standards and codes as specified hereunder. All products shall bear certification label of CSA, ULC, The Electrical Safety Authority, as applicable.

The Electrical Safety Code (OESC)-publication containing Canadian Electrical Code and The Electrical Safety Authority Supplements.

Canadian Standards Association (CSA)

Underwriter's Laboratories of Canada (ULC)

Electrical and Electronic Manufacturers Association of Canada (EEMAC)

Joint Industrial Council (JIC)

Ontario Building Code (0BC)

Ontario Fire Code (OFC)

Association of Edison Illuminating Companies (AEIC)

American Society for Testing and Materials (ASTM)

Insulated Power Cable Engineers Association (ICEA)

Boards, Service Companies or other Authorities having jurisdiction.

.2 Permits, Fees and Certificates: Except as provided in the General Conditions of the Contract, give notices, obtain permits, pay fees required for work of Division 26. Before final certificate of payment is issued by Owner, furnish certificates as evidence that work installed conforms with laws and regulations of all governing authorities. Determine detailed requirements of local authorities having jurisdiction and conform to those requirements.

1.8 QUALIFICATIONS

.1 Work shall be executed by Electrical Contractor or his designated sub-contractor, holding a valid Contractors' license (Master License).

.2 Work shall be performed by qualified Electricians holding valid Ontario certificates of qualifications.

.3 Work on signal, communication, related control and other similar systems shall be performed by relevant competent tradesmen.

1.9 PROJECT/SITE CONDITIONS

.1 Examine Site and Contract Documents in accordance with Instructions to Bidders.

.2 Electrical installations in areas classified as hazardous locations, corrosive environments, and other special area application, shall be governed by relevant Industry Standards and Regulatory Requirements.

Part 2 Products

2.1 MATERIALS

.1 **Inserts:** Supply and deliver inserts, anchors, bolts, sleeves, ferrules and other items to be built into work of other Divisions, with necessary templates, adequate instructions and assistance for locating and installing.

.2 **Access Panels:** For ceilings and/or masonry walls, 12 gauge steel, size 460 mm x 460 mm unless indicated on Drawings, concealed hinges, key-locked type, prime coated, to match ceiling and/or wall finish.

.3 **"Lamacoid" Nameplates:** 3 mm thick, white capitalized inscribed letterings against black background, sized to accommodate specified nomenclature, as described in other Sections of Division 26, or as indicated on Drawings.

Nameplate sizes shall be as follows;

Size 1	10 x 50 mm	1 line	3 mm high letters
Size 2	12 x 70 mm	1 line	5 mm high letters
Size 3	12 x 70 mm	2 lines	3 mm high letters
Size 4	20 x 90 mm	1 line	8 mm high letters
Size 5	20 x 90 mm	2 lines	5 mm high letters
Size 6	25 x 100 mm	1 line	12 mm high letters
Size 7	25 x 100 mm	2 lines	6 mm high letters

All lamacoid plates identified herein shall be complete with the following information:

- Equipment name
- Amperage of Feeder (Breaker/Fuse Size)
- Voltage
- Phase
- ‘Fed from’ location

For specific panelboard identification requirements for Panelboards refer to Specification 26 24 17 – Panelboards.

Transformers: Indicate capacity, primary and secondary voltages.

.4 **Duplex Receptacle Identification:** Identify panel and circuit number on all duplex receptacles face plates with black printed lettering on clear labelling tabs (P-tabs).

.5 **Wall Mounting Panels:** 19 mm thick minimum, "Fir" plywood panel, good 1-side painted with 2-coats standard equipment grey colour, cut size to suit, for group-mounting any combinations of surface wall-mounted enclosed disconnect switches and/or circuit breakers, motor starters and/or contractors, small control cabinets or control panels, utility metering cabinets, panelboards and other similar device enclosures.

Part 3 Execution

3.1 EXAMINATION

.1 Where any parts of systems and/or pieces of equipment are located by dimensions on Drawings, check and verify such dimensions at Site.

.2 Notify Owner's Designee before proceeding further if any discrepancy or interference with other equipment is found which will necessitate revision in or deviation from Work as indicated or specified.

.3 Location of conduit, raceways, wiring and other equipment shall be altered without charge to Owner if so directed by Owner's Designee provided change is ordered before installation, and does not necessitate additional labour and material.

3.2 CUTTING AND PATCHING

.1 Cutting of holes up to 200 mm (8") in diameter and related patching shall be done under Division 26.

.2 Holes and other openings larger than 200 mm (8") in diameter, chases, bulkheads, furring and related patching will be done under Sections whose work is to cut and patched.

.3 Supply measurements of equipment to other Sections to allow for necessary openings to be left in work of other Sections.

3.3 FIRESTOPPING AND SMOKE SEAL

.1 Be responsible for installation of Firestopping and smoke seal inside electrical assemblies (i.e. inside bus ducts).

.2 Firestopping and smoke seals around outside of electrical assemblies, where they penetrate fire rated separations, and Penetration Firestopping shall be carried out under supervision of this Division.

.3 Be responsible for any additional cost incurred as a result of over sizing of openings during cutting and patching operation of openings to be fire stopped up to 200 mm (8") in diameter.

.4 Install sheet steel covers and Miscellaneous Metals over temporarily unused sleeves provided in fire separations for future electrical installations.

3.4 INSTALLATION

.1 Verify dimensions of equipment to be installed.

.2 Each room containing electrical equipment and each working space around equipment shall have unobstructed means of egress per OESC Rule 2-310.

.3 Maintain a minimum working space of 1 meter with secure footing about electrical equipment such as switchboards, panelboards, control panels and motor control centers which are enclosed in metal per OESC Rule 2-308.

.4 Protect existing work and equipment during construction.

.5 Co-ordinate electrical requirements for all equipment supplied by owner or other trades. Notify engineer of any conflicts prior to installation.

.6 Instruct and supervise other Sections doing related work.

.7 Electrical products and methods of installation shall be in accordance with relevant Sections of Division 26, and applicable requirements of other Divisions.

.8 Correct installed work as directed by authorized inspector of such authorities.

.9 Notwithstanding the General Conditions of the Contract, no increase to Contract Price shall apply for electrical items relocated from location indicated and prior to installation requiring extra labour and material up to 3 meters (10’-0”) from original location, nor will decrease to Contract Price apply where relocation up to 3 meters (10’-0”) reduces materials and labour.

3.5 EQUIPMENT IDENTIFICATIONS

.1 Electrical equipment and auxiliaries shall be identified in accordance with designations indicated on Drawings or as specified in other Sections of Division 26.

.2 Identify electrical equipment, control cabinets, panels, enclosures, switchboards, switchgears, motor control centres, starters, designated boxes, and other similar items, using Lamacoid plates.

.3 Fasten Lamacoid nameplates using self-tapping screws for metal sheet enclosures or glued to PVC or fibreglass construction.

.4 Panelboards shall have Lamacoid plates mounted on top outside trim of door indicating function and voltage of panelboard.

.5 Disconnect switches and motor starters shall have Lamacoid nameplates mounted on front cover indicating name of equipment, horsepower, voltage, and phase.

.6 Terminal boards, blocks, and strips shall have group marker and indexed markers, as applicable.

.7 Mark clearly and permanently all feeder phase identifications at both ends, using standard colour or letter designations.

.8 Identify wiring, as required, using standard indelible wire markers at each termination, in accordance with schematic and/or connection wiring diagrams.

3.6 PAINTING WORK SUPPLIED UNDER DIVISION 26

.1 Touch up minor chips or damage to electrical equipment, installed in this Division, with standard, factory supplied, enamel finish.

.2 Colour code, as specified herein, outlet boxes, pull boxes, junction boxes by applying a small dab of paint to inside of each item during installation.

.3 Colour code, as specified herein, all exposed ducts, conduits, outlet boxes, and similar items by applying a 25 mm (1") wide band of paint around ducts and conduits adjacent to boxes described in above paragraph and on both sides of wall penetration.

.4 Use following paint colour-code:

- Red: Fire Detection and Alarm System
- Blue: Communication System (Voice, Data, Electronics, etc.)
- Yellow: Emergency Power System
- Purple: Security System
- Green: Life Communications System

3.7 PAINTING WORK

.1 Priming and finish painting of exposed unfinished raceways, fitting, outlet boxes, junction boxes, pull boxes and similar items.

.2 Division 26 shall assist in form of supervision, painting works by other project specifications.

3.8 SYMBOLS

.1 Electrical work is indicated generally on Drawings using standard symbols.

.2 For lighting layout Drawings, letters in a circle indicate type of fixture to be supplied. Letters and numbers outside and adjacent to circle indicate panel and circuit number.

3.9 MOUNTING HEIGHTS

.1 Measure mounting height dimension from operator's working floor level (finish) to centre-line of electrical device or enclosure, unless otherwise indicated or specified herein.

.2 Heights are subject to change to suit structural requirements, and other Site conditions, and therefore as work progresses, and before installing equipment, obtain instructions or directions from Owner's Designee for alternative heights or relocation.

.3 Mounting heights shall be as follows, unless otherwise indicated or specified as directed on site:

Lighting Switches	1200mm
Wall Receptacles	400mm
Voice/Data Outlets	400mm
Exit Lights	2100mm
Panelboards	1980mm to top (maximum 1700mm to highest breaker handle)

3.10 MOUNTING OF EQUIPMENT

.1 Lighting panels, power panels, annunciators, control panels and cabinets, electrical enclosures, boxes, and other similar items, indicated to be installed in areas with finished walls, shall be flush-mounted and fitted with suitable flush trim and doors.

.2 Lighting panels, power panels, annunciators, control panels and cabinets, electrical enclosures, boxes, and other similar items indicated to be installed in pipe spaces or other areas where an exposed type of wiring is specified shall be surface mounted.

.3 Use wall mounting panel for surface wall group-mounting of electrical control equipment, enclosures, and similar devices as indicated in Drawings, specified herein, or as directed on Site by Owner's Designee.

3.11 GROUNDING

.1 Ground electrical equipment in accordance with requirements of The Electrical Safety Authority Electrical Safety Code.

.2 Arrange grounds so that under normal operating conditions, no injurious amount of current will flow in any grounding conductor. Connect single phase loads so that there is least possible unbalance of supply.

.3 Grounding equipment to CSA C22.2 No. 41.

.4 Copper grounding conductors to: CSA 22.2 Section 10 latest edition.

.5 For standard duplex receptacles provide insulated ground conductor, size for equipment ground in accordance with electrical code minimum conductor size #12 with green insulation. Ground conductor to be connected under a bonding screw to outlet box(es) and panelboard.

.6 Install separate "green" ground conductor in same conduit with circuit (power wiring) conductors. Bond securely to ground screw in each outlet, junction, pull box, and equipment enclosure ground conductor equal in ampacity to size of circuit ampacity or in accordance with code for equipment grounding.

.7 Bond single conductor, metallic armoured cables to cabinet at supply end, and provide non-metallic entry plate at load end.

3.12 COORDINATION

.1 Co-ordinate all work with Fort Frances Power Corporation, ESA, the engineer and the owner.

.2 Co-ordinate all work with the utilities.

.3 ESA to inspect work as required.

.4 Necessary service interruptions to perform work shall be co-ordinated with the owner, engineer, ESA and Fort Frances Power Corporation. Service interruptions shall be planned to be of minimum duration. All parties involved shall be contacted 72 hours in advance of the service interruption.

3.13 FIELD QUALITY CONTROL

.1 Trial Usage

.1 Trial usage by Owner’s Designee of any electrical device, machinery, apparatus, equipment and other work supplied under this Division before final completion and written acceptance by Owner’s Designee is not to be construed as evidence of acceptance by Owner.

.2 Owner shall have privilege of such trial usage as soon as Contractor claims that said work is completed, in accordance with Drawings and specifications for such reasonable length of time as Owner’s Designee deems sufficient for making a complete test.

.3 No claim for damage shall be made for injury to or breaking of any parts of such tested work, whether caused by weakness or inaccuracy of structural parts or by defective materials or workmanship of any kind whatsoever.

.2 Tests

.1 At completion of installation, conduct grounding resistance test, voltage test, and empty conduit test in presence of Owner's Designee and make corrections where necessary and as directed.

.2 Resistance of ground electrodes shall not exceed maximum permissible values for each type of installation or equipment concerned and if necessary change arrangement until satisfactory results are obtained.

.3 Voltage provided to equipment in installation shall not exceed minimum and maximum permissible limits for equipment.

.4 Perform insulation tests for installed wiring and equipment with appropriate "Megger" testing equipment. Megger lighting and power circuit feeders and if resistance to ground is less than recommendations on any lighting or power circuit, consider such circuit defective and replace it.

.5 Test performance of equipment for mechanical and electrical defects. Make adjustments necessary for such equipment. When equipment has been placed in permanent operation give to operating personnel all necessary tuition and instructions for its operation and maintenance.

.6 Test conduits which are required to be installed but left empty for clear bore, using ball mandrel, brushes and snake. Use lignum vitae ball of diameter equal to approximately 85% of conduit inside diameter. Clear any conduit which rejects ball mandrel in an approved manner and without damage thereto.

.7 Furnish labour, materials, instruments and bear other costs in connection with all tests, obtain required certificates of approval, acceptance, and compliance with regulations of agencies having jurisdiction and as specified. Work shall not be deemed complete and final certificate of acceptance will not be issued, until such certificates have been delivered to Owner's Designee.

3.14 CLEANING

.1 Before starting and commissioning operations, installed new electrical enclosures, equipment and control devices, open-frame motors shall be air-blown and/or vacuum-cleaned.

.2 Ensure no foreign objects, tools, and materials are left inside switchgears, cabinets, panelboards, control panels and similar enclosures before such equipment is energized.

.3 Refer to specifications for other applicable final clean-up requirements.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Materials and installation for wire and box connectors.

1.2 RELATED SECTIONS

.1 Section 26 05 01 – Common Work Results - Electrical

1.3 REFERENCES

.1 Canadian Standards Association (CSA International)

.1 CAN/CSA-C22.2 No.18 - 92 (R2003), Outlet Boxes, Conduit Boxes, Fittings and Associated Hardware.

.2 CSA C22.2No.65 -13 Wire Connectors.

.2 Electrical and Electronic Manufacturers' Association of Canada (EEMAC)

.1 EEMAC 1Y-2, 1961 Bushing Stud Connectors and Aluminum Adapters (1200 Ampere Maximum Rating).

.3 National Electrical Manufacturers Association (NEMA)

Part 2 Products

2.1 MATERIALS

.1 Pressure type wire connectors to: CSA C22.2 No.65, with current carrying parts of copper and aluminum sized to fit copper and aluminum conductors as required.

.2 Fixture type splicing connectors to: CSA C22.2 No.65, with current carrying parts of copper sized to fit copper conductors 10 AWG or less.

.3 Bushing stud connectors: to EEMAC 1Y-2 to consist of:

.1 Connector body and stud clamp for copper and aluminum conductors.
.2 Clamp for copper conductors.
.3 Clamp for stranded aluminum conductors.
.4 Stud clamp bolts.
.5 Bolts for copper conductors.
.6 Bolts for aluminum conductors.
.7 Sized for conductors as indicated.

.4 Clamps or connectors for armoured cable, aluminum sheathed cable, mineral insulated cable, flexible conduit, non-metallic sheathed cable as required to: CAN/CSA-C22.2 No.18.

Part 3 Execution

3.1 INSTALLATION

.1 Remove insulation carefully from ends of conductors and:

.1 Apply coat of zinc joint compound on aluminum conductors prior to installation of connectors.

.2 Install mechanical pressure type connectors and tighten screws with appropriate compression tool recommended by manufacturer. Installation shall meet secureness tests in accordance with CSA C22.2 No.65.

.3 Install fixture type connectors and tighten. Replace insulating cap.

.4 Install bushing stud connectors in accordance with EEMAC 1Y-2.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 26 05 00 – Common Work Results for Electrical.

.2 Section 26 05 20 - Wire and Box Connectors - 0 - 1000 V.

1.2 REFERENCES

.1 CSA C22.2 No .0.3 – 09 (R2014), Test Methods for Electrical Wires and Cables.

.2 CAN/CSA-C22.2 No. 131-14, Type TECK 90 Cable.

Part 2 Products

2.1 BUILDING WIRES

.1 Conductors: stranded for 10 AWG and larger. Minimum size: 12 AWG.

.2 Copper conductors: size as indicated, with 600 or 1000 V insulation of chemically cross-linked thermosetting polyethylene material rated RW90 or RWU90 as indicated.

2.2 TECK CABLE

.1 Cable: to CAN/CSA-C22.2 No. 131.

.2 Single or multi-conductor Teck 90 cables, 1000V insulation, aluminum sheath and overall PVC jacket. Insulation to be 1000V cross-linked polyethylene suitable for installation at a temperature down to minus 40 degrees Celsius. Teck 90 cables to be copper unless otherwise indicated.

.3 Fastenings:

.1 One hole steel straps to secure surface cables 50 mm and smaller. Two hole steel straps for cables larger than 50 mm.

.4 Connectors:

.1 Watertight approved for TECK cable.

2.3 ARMOURED CABLES

.1 Conductors: insulated, copper size as indicated.

.2 Type: AC90 - lead sheath over cable assembly and under armour.

Part 3 Execution

3.1 INSTALLATION OF BUILDING WIRES

.1 15 amp, 120 volt receptacle branch circuit home runs shall be minimum #12 AWG. Home runs over 22 meters shall be minimum #10 AWG. Maximum length of branch circuit feeder from panel to furthest receptacle shall be 36 meters.

.2 Ensure voltage drop does not exceed 2 percent.

.3 Conductors required for the operation of life safety systems, as described in OESC Rule 46-002, shall be kept entirely independent of all other conductors and equipment and shall not enter luminaire, raceway, box, cabinet or unit equipment occupied by other conductors except where necessary in generator transfer switches, exit signs and emergency lights supplied by two sources, as detailed in OESC Rule 46-108(4).

3.2 INSTALLATION OF TECK CABLE 0 -1000 V

.1 Group cables wherever possible on channels.

.2 Terminate cables in accordance with Section 26 05 20 - Wire and Box Connectors - 0 - 1000 V.

3.3 INSTALLATION OF ARMOURED CABLES

.1 Group cables wherever possible.

.2 Install only in concealed ceiling space for final connection from a junction box or distribution box to luminaries, receptacles and all other electrical devices to a maximum length of 5 meters. AC90 cable shall not be used from distribution or junction boxes to a second junction box.

.3 Terminate cables in accordance with Section 26 05 20 - Wire and Box Connectors - 0 - 1000 V.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 26 05 00 - Common Work Results - Electrical.

Part 2 Products

2.1 SUPPORT CHANNELS

.1 **Power wiring support channels**: U shape, size 41 x 41 mm, 2.5 mm thick, surface mounted, suspended or set in poured concrete walls and ceilings.

.2 **Communications wiring support channels**: Wide-base “J” hook fasteners.

Part 3 Execution

3.1 INSTALLATION – Power Wiring

.1 Secure equipment to hollow or solid masonry, tile, and plaster surfaces with lead anchors.

.2 Secure equipment to poured concrete with expandable inserts.

.3 Secure equipment to hollow masonry walls or suspended ceilings with toggle bolts.

.4 Secure surface mounted equipment with twist clip fasteners to inverted T bar ceilings. Ensure that T bars are adequately supported to carry weight of equipment specified before installation.

.5 Support equipment, conduit or cables using clips, spring loaded bolts, cable clamps designed as accessories to basic channel members.

.6 Fasten exposed conduit or cables to building construction or support system using straps.

- .1 One-hole steel straps to secure surface conduits and cables 50 mm and smaller.
- .2 Two-hole steel straps for conduits and cables larger than 50 mm.
- .3 Beam clamps to secure conduit to exposed steel work.

.7 Suspended support systems.

- .1 Support individual cable or conduit runs with 6 mm diameter threaded rods and spring clips.

.2 Support 2 or more cables or conduits on channels supported by 6 mm diameter threaded rod hangers where direct fastening to building construction is impractical.

.8 Provide metal brackets, frames, hangers, clamps and related types of support structures where indicated or as required to support conduit and cable runs.

.9 Ensure adequate support for raceways and cables dropped vertically to equipment where there is no wall support.

.10 Do not use wire lashing or perforated strap to support or secure raceways or cables.

.11 Do not use supports or equipment installed for other trades for conduit or cable support except with permission of other trade and approval of Engineer.

.12 Install fastenings and supports as required for each type of equipment cables and conduits, and in accordance with manufacturer's installation recommendations.

END OF SECTION

Part 1 General

1.1 GENERAL REQUIREMENTS

.1 Conform to Section 26 05 00 – Common Work Results-Electrical, as applicable.

.2 Products described herein shall be suitable for dry indoor, non-hazardous area application, unless noted otherwise.

1.2 REFERENCES

CSA C22.2 No. 40 - M1989 (R2014) – Cutout, Junction and Pull Boxes

CSA C22.2 No. 94 - M91 (R2011) - Special Purpose Enclosures

1.3 SUBMITTALS

.1 Submit shop drawings for splitters, pull boxes, and other special enclosures used for mounting control devices and instruments, showing dimensional outline, details of cutouts if required, and mounting lugs or feet and accessories.

Part 2 Products

2.1 FABRICATIONS

.1 **Special Purpose Enclosures**: CSA C22.2 No. 94, classified in accordance with EEMAC, JIC, and CSA Standards.

.2 **Box Covers**: Types and sizes to match respective boxes, as required. Provide screwed covers, unless noted otherwise.

.3 Provide approved neoprene gaskets, or applicable sealing materials, in boxes specified for damp, wet, weatherproof/tight, outdoor application, and other areas classified by OESC and other Authorities having jurisdiction.

Part 3 Execution

3.1 INSTALLATION

.1 Size and install boxes, splitters, and enclosures in accordance with applicable section(s) of Ontario Electrical Safety Code (OESC) and manufacturer's recommended installation procedures.

.2 Fasten and support boxes and enclosures independent from raceway supports and ensure rigid installation.

.3 Cut and drill entrance holes into boxes and enclosures for raceways and cutouts as per approved shop drawings on specified special boxes and enclosures.

.4 Install boxes and enclosures so as to be accessible after building is complete, set flush with finished surface where recessed, aligned and levelled where surface mounted.

.5 Use bushing and double locknuts to terminate conduits in metallic sheet boxes with conduit knockouts or drilled holes.

.6 Provide approved hole plugs in unused conduit openings and holes.

.7 Furnish boxes and enclosures with corrosion resistant machine screws.

.8 Boxes and enclosures embedded in concrete for flush-mounting, shall be secured properly with connecting conduits and related works set in place before concrete is poured. Forms, when used, shall be able to be removed without disturbing installed boxes or enclosures.

.9 In general, install boxes and enclosures to suit raceway installation, and location of communication, signal, and electrical equipment, luminaires, and operational requirement, as shown on Drawings.

.10 Provide correct size of openings in boxes for conduit, armoured and non-metallic sheathed cables and terminate with approved connectors or clamps. Do not use reducing washers.

.11 Openings in all electrical metal boxes shall be punched or cut. Burring of holes is not permitted.

.12 Identify source, voltage and load on all junction boxes. Use of indelible marker for these locations is acceptable.

3.2 TESTING AND INSPECTION

.1 Test overall installation using megger instrument for ground continuity after boxes and raceways are completely installed.

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 CSA C22.1-2015, Canadian Electrical Code, Part 1.

Part 2 Products

2.1 OUTLET AND CONDUIT BOXES GENERAL

.1 Size boxes in accordance with CSA C22.1.

.2 102 mm square or larger outlet boxes as required for special devices.

.3 Gang boxes where wiring devices are grouped.

.4 Blank cover plates for boxes without wiring devices.

.5 Combination boxes with barriers where outlets for more than one system are grouped.

2.2 SHEET STEEL OUTLET BOXES

.1 Electro-galvanized steel single and multi-gang flush device boxes for flush installation. 102 mm square outlet boxes when more than one conduit enters one side with extension and plaster rings as required.

.2 Electro-galvanized steel utility boxes for outlets connected to surface-mounted EMT conduit.

.3 102 mm square or octagonal outlet boxes for lighting fixture outlets.

.4 102 mm square outlet boxes with extension and plaster rings for flush mounting devices in finished walls.

2.3 MASONRY BOXES

.1 Electro-galvanized steel masonry single and multi-gang boxes for devices flush mounted in exposed block walls.

2.4 CONCRETE BOXES

.1 Electro-glavanized sheet steel concrete type boxes for flush mount in concrete with matching extension and plaster rings as required.

2.5 CONDUIT BOXES

.1 Cast FS or FD aluminum boxes with factory-threaded hubs and mounting feet for surface wiring of switches and receptacle.

2.6 OUTLET BOXES FOR NON-METALLIC SHEATHED CABLE

.1 Electro-galvanized, sectional, screw ganging steel boxes with two double clamps to take non-metallic sheathed cables.

2.7 FITTINGS - GENERAL

.1 Bushing and connectors with nylon insulated throats.

.2 Knock-out fillers to prevent entry of debris.

.3 Conduit outlet bodies for conduit up to 32 mm and pull boxes for larger conduits.

.4 Double locknuts and insulated bushings on sheet metal boxes.

Part 3 Execution

3.1 INSTALLATION

.1 Support boxes independently of connecting conduits.

.2 Fill boxes with paper, sponges or foam or similar approved material to prevent entry of debris during construction. Remove upon completion of work.

.3 For flush installations mount outlets flush with finished wall using plaster rings to permit wall finish to come within 6 mm of opening.

.4 Provide correct size of openings in boxes for conduit, mineral insulated and armoured cable connections. Reducing washers are not allowed.

END OF SECTION

Part 1 General

.1 Conform to Sections of Division 01, as applicable.

.2 Conform to Section 26 05 00 – Common Work Results - Electrical, as applicable.

.3 Conform to Section 26 05 32 – Outlet Boxes, Conduit Boxes and Fittings, as applicable.

1.2 REFERENCES

CSA C22.2 No. 18-92 (R2003)	Outlet Boxes, Conduit Boxes, and Fittings
CSA C22.2 No. 26-1952	Construction and Test of Wireways, Auxiliary Gutters and Associated Fittings
CSA C22.2 No. 40-M1989 (R2009)	Cutout, Junction and Pull Boxes
CSA C22.2 No. 45-M1981 (R2012)	Rigid Metal Conduit
CSA C22.2 No. 56-04	Flexible Metal Conduit and Liquid-Tight Flexible Metal Conduit
CSA C22.2 No. 62-93	Surface Raceway Systems
CSA C22.2 No. 83-M1985 (R2013)	Electrical Metallic Tubing
CAN/CSA C22.2 No. 85-M89	Rigid PVC Boxes and Fittings
CSA C22.2 No. 211.2-06 (R2011)	Rigid PVC (Unplasticized) Conduit
CSA C22.2 No. 227.1-06 (R2011)	Electrical Non-Metallic Tubing

1.3 SUBMITTALS

.1 Product Data

.2 Ensure that raceway system manufacturers provide complete information regarding raceway assembly requirements. Owner will not be responsible for added cost of raceways and changes due to additional manufacturer's requirements.

1.4 QUALITY ASSURANCE

.1 Use only products of one manufacturer for any or combination of packaged-type system such as surface raceways assembly, wireway system, cable trough for tray system.

Part 2 Products

2.1 MATERIALS

.1 Electrical Metallic Tubing (EMT), Couplings and Connectors: CSA C22.2 No. 83.

.2 Rigid Metal Conduits and Fittings: Steel, galvanized heavy wall, CSA C22.2 No. 45.

.3 Flexible Metallic Conduits: CSA C22.2 No. 56.

.4 Liquid-Tight Flexible Metal Conduits: CSA C22.2 No. 56.

.5 Rigid Poly Vinyl Chloride (PVC) Conduits: CSA C22.2 No. 211.2, unplasticized, schedule (40) (80), and Rigid PVC Boxes and Fittings: CAN/CSA C22.2 No. 85.

.6 Outlet Boxes and Fittings: CSA C22.2 No. 18, electro-galvanized sheet steel, sizes and types in accordance with OESC requirement.

.7 Conduit Boxes and Fittings: CSA C22.2 No. 18, cast-type feraloy, type ‘FS’ 50mm (2") deep or type ‘FD’ 70mm (2-3/4") deep, standard factory-threaded hubs or EMT-to-conduit adapters ,as required.

.8 Junction Boxes: C22.2 No. 40, galvanized sheet steel construction, with screwed- on covers, and standard knockouts.

.9 Rigid PVC Boxes and Fittings: CAN/CSA C22.2 No. 85.

.10 Box Covers: Types and sizes to match respective boxes and wiring devices as required. Provide screwed covers, unless noted otherwise.

.11 Sizes indicated on Drawings are minimum. Do not reduce without written approval of Owner’s Designee.

.12 Use only products of one manufacturer for any or combination of assembled system such as surface raceways assembly, wireway system, and cable tray system.

2.2 ACCESORIES

.1 Pulling cord, polypropylene, 800lb - 2700lb tensile strength, Ideal “Pro-Pull”.

.2 Expansion Fittings, weatherproof, with integral bonding assembly.

Part 3 Execution

3.1 EXAMINATION

.1 Raceway runs are indicated diagrammatically on Drawings. Co-ordinate with other Divisions concerned and field-verify routing to check for possible obstruction or interference.

3.2 INSTALLATION

.1 General

.1 Install raceways system and boxes complete with appropriate fittings such as connectors, bushings, elbows, couplings, locknuts, expansion fittings, fasteners and supports and accessories supplied as necessary to comply with OESC and other Regulatory Authorities requirements.

.2 Neatly install exposed raceway running parallel to and at right angles to building lines and equally spaced in groups.

.3 Keep raceway ends parallel and on proper spacing to suit knockouts or raceway openings in equipment or enclosure.

.4 Keep raceways at least 150 mm clear of steam pipes, flues and hot item surfaces. Locate conduits behind infrared or gas fire heaters with 1.5 meter clearance.

.5 Conceal raceways in floor, wall and ceiling construction unless otherwise specified or indicated. Raceways may run exposed in crawl spaces, fan rooms, penthouses, electrical and mechanical rooms. Do not install horizontal runs in masonary walls. Obtain approval from the Owner’s Designee prior to installation of any surface raceway in locations other than above specified areas.

.6 Provide expansion couplings, with bonding jumper and ground clamps where raceways cross building control joints.

.7 Use only metallic, enclosed raceway on installation that required shielding of electrical cables or where installed in ceiling used as return air plenum, as specified or indicated on Drawings.

.8 Raceways shall have established positive low resistance paths to ground and effectively isolate conductors so that any short-circuit arc is confined.

.9 Select appropriate fittings, such as grounding bushings, bonding and grounding straps, to maintain continuity and effectiveness of grounding of raceway system.

.10 Provide necessary fasteners and supports acceptable for type and size of raceways and boxes, to ensure rigid and complete assembly.

.11 Provide suitable inserts or expansion type machine bolts for fastening raceways, fittings, boxes and equipment to concrete surfaces. Do not use wood screws, lag screws, expansion shields, rawl plugs and nylon inserts.

.12 Secure raceway and other associated work on tile and concrete block walls with approved toggle bolts.

.13 Thoroughly clean raceway and dry clear obstructions before pulling cable or wire.

.14 Install conduits to conserve headroom in exposed locations and cause minimum interference in spaces through which they pass.

.2 Conduits and Tubing

.1 In general, install power, control, lighting and signal wirings in EMT, unless otherwise specified herein or indicated on Drawings.

.2 EMT and fittings: Use within the interior of the building for exposed and concealed surface installation not subject to mechanical stress or injury. Use concrete-tight type fittings where used in cast concrete. Provide ground wire for sizes over 50 mm (2").

.3 Rigid metal conduits and fittings: Use where exposed installation is subject to mechanical injury, and other installation as permitted by Authorities having jurisdiction. Use rigid galvanized steel conduit for exterior use.

.4 Flexible metallic conduits: Use for connection to motors, recessed light fixtures, in indoor, dry locations, to maximum lengths as allowed by OESC and other regulatory standards.

.5 Liquid-tight flexible metal conduits: Use for connection to motors, in damp or wet location.

.6 Electrical non-metallic tubing: Use only when specified herein or shown on Drawings, in accordance with OESC and other regulatory standards.

.7 Do not use smaller than 13 mm (1/2") trade size, tubing, conduits and fittings.

.8 Properly ream conduit ends. Provide necessary fittings, couplings, locknuts and bushings.

.9 Use only concentric bends. Do not use angle fittings together with bends. Bends improperly formed not accepted. Do not bend over sharp objects.

.10 Do not install conduits in terrazzo or in concrete toppings.

.11 Concrete-encased conduit connections shall be made concrete tight.

.12 Locate conduit to clear reinforcing steel when installing conduits in cast-in-place concrete.

.13 Protect conduits from damage where they stub out of concrete.

.14 Provide oversized sleeve for conduits passing through waterproof membrane, before membrane is installed. Use cold mastic between sleeve and conduit.

.15 Install nylon or propylene fish cord in empty tubing or conduits, fasten cord at both ends and cap.

.16 Bend conduit cold. Replace conduit if kinked or flattened more than 1/10th of its original diameter.

.17 Mechanically bend steel conduit over 19 mm diameter.

.18 Field threads on rigid conduit must be of sufficient length to draw conduits up tight.

.19 Remove and replace blocked conduit sections. Do not use liquids to clean out conduits.

.20 Dry conduits out before installing wire.

.21 Conduit identification: Code with plastic tape or paint at points where conduits enter walls, ceilings or floors. Apply in 3.0 meter intervals. Refer to Section 26 05 01 – Common Works.

.3 Boxes and Covers

.1 Install boxes and accessories in accordance with applicable sections of OESC and box manufacturers' recommended installation methods.

.2 Fasten and support boxes and similar enclosures independent from raceway supports.

.3 Set boxes flushed when recessed in finished surface and aligned and levelled when surface mounted. Boxes shall be made accessible after completion of work.

.4 Use bushing and double locknuts to terminate conduit in metallic sheet boxes.

.5 Provide approved hole plugs in unused conduit openings and knockouts.

.6 Supply corrosion-resistant machine screws for boxes and mounting accessories.

.7 Flush-mounted boxes embedded in concrete: Set in-place and secure boxes and respective conduits before pouring concrete. Forms, when used, shall be removable without disturbing installed boxes and raceways.

.8 Surface-mount boxes to suit EMT installation.

.9 Use conduit boxes for surface installation on unfinished wall.

.10 Ensure boxes mounted in ceiling cavities do not interfere with laying-in or removal of ceiling tiles.

.11 Provide correct box opening sizes for conduits and sheathed cables to be terminated with approved clamps or connectors. Do not use reducing washers.

.12 Use square outlet boxes for more than 1 conduit entering one side, and for outlets intended for luminaires.

.13 Use masonry boxes for flush-mounting in block walls; concrete boxes for flush-mounting in concrete walls.

.14 Provide neoprene gaskets in boxes installed outdoor.

.4 Surface Metallic Raceway

.1 Use surface metallic raceway assembly for accessible, dry, exposed wiring having not more than #6 AWG, maximum of 10 conductors, 300V and below.

.2 Install each type and size with complementary fittings barriers and accessories, along walls, inside ceiling, as required for power wiring, light, telephone, signal and/or instrumentation system.

.3 Boxes, covers, fittings, receptacles and other wiring devices shall be integrally supplied and installed with multi-outlet type distribution system as specified or indicated on Drawings.

.4 Insert protective bushings at raceway entrances.

.5 Use appropriate cover removal tool for each type of surface raceway.

.6 Mount raceway base to wall using raceway manufacturers recommended drive pin fasteners.

.7 Use overfloor pancake type raceway to extend floor or wall-mounted wiring system across open spaces only, where ceiling cavities are not available.

.8 Do not combine power and communications in one raceway, unless provided with barrier for this purpose.

.9 Ceiling cavity distribution type raceways may be combined with pole type vertical raceway for power and telephone communication systems. Use only one manufacturer's products.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 26 05 00 - Common Work Results - Electrical.

1.2 REFERENCES

.1 Canadian Standards Association, (CSA International)

.2 Insulated Cable Engineers Association, Inc. (ICEA)

Part 2 Products

2.1 CABLE PROTECTION

.1 Pressure treated planks with water repellent preservative.

2.2 MARKERS

.1 150mm red “Caution Tape”.

Part 3 Execution

3.1 TRENCHING

.1 Excavate trench with suitable machinery to depths and dimensions shown in trench details. Trench details are provided as a guide only. Confirm all depths are compliant with Section 12-012 and Table 53 of the Ontario Electrical safety code.

.2 The minimum cover requirements for electrical cables may be permitted to be reduced by 150mm where mechanical protection is placed in the trench over the underground installation (OESC section 12-012(2)).

.3 Cut and trim sides of trenches evenly and as near vertical as possible and shore as required to prevent cave-in.

.4 Keep bottom of trenches clean and clear of loose material and slope or grade as required.

.5 Sandfill shall be uniformly graded clean sand with a maximum aggregate size of 2.00 mm and maximum of 8% passing the number of 200 sieve.

.6 No covering up or backfilling of electrical equipment shall be performed until the ESA inspector has been notified and permission to cover has been granted as per OESC Rule 2-310.

.7 Backfill trench to the satisfaction of the owner.

3.2 DIRECT BURIAL OF CABLES

.1 Direct buried cables shall be installed so that they run adjacent to each other and do not cross over each other and with a layer of screened sand with a maximum particle size of 4.75mm or screened earth at least 75mm deep both above and below the conductors.

.2 After sand bed is in place, lay cables maintaining 75 mm clearance from each side of trench to nearest cable. Do not pull cable into trench.

.3 Provide offsets for thermal action and minor earth movements. Offset cables 150 mm for each 60 m run, maintaining minimum cable separation and bending radius requirements.

.4 Minimum permitted radius at cable bends for rubber, plastic or lead covered cables, 8 times diameter of cable; for metallic armoured cables, 12 times diameter of cables or in accordance with manufacturer's instructions.

.5 Cable separation:

.1 Maintain 190 mm minimum separation between cables of different circuits.

.2 Maintain 300 mm vertical or horizontal separation between high voltage cables and communication cables.

.3 When low voltage cables cross high voltage cables maintain 300 mm vertical separation with low voltage cables in upper position.

.4 At crossover, maintain 75 mm minimum vertical separation between low voltage cables and 150 mm between high voltage cables.

.5 Maintain 300 mm minimum lateral and vertical separation for communication cables crossing other cables, with communication cables in upper position.

.6 Install treated planks on lower cables 0.6 m in each direction at crossings.

3.3 CABLE INSTALLATION IN DUCTS

.1 Install cables as indicated in ducts. Do not pull spliced cables inside ducts.

.2 Install multiple cables in duct simultaneously.

.3 Use CSA approved lubricants of type compatible with cable jacket to reduce pulling tension.

.4 To facilitate matching of colour coded multiconductor control cables reel off in same direction during installation.

.5 Before pulling cable into ducts and until cables are properly terminated, seal ends of lead covered cables with wiping solder; seal ends of non-leaded cables with moisture seal tape.

.6 After installation of cables, seal duct ends with duct sealing compound.

3.4 MARKERS

.1 Provide 150mm red “caution tape” buried halfway between cable installation and grade level covering the width of cables and or raceways installed. Refer to OESC Rule 12-012(11) and Bulletin 12-2-15.

.2 Mark underground splices.

.3 Where markers are removed to permit installation of additional cables, reinstall existing markers.

3.5 FIELD QUALITY CONTROL

.1 Perform tests in accordance with Section 26 05 01 - Common Work Results - Electrical.

.2 Perform tests using qualified personnel. Provide necessary instruments and equipment.

.3 Check phase rotation and identify each phase conductor of each feeder.

.4 Check each feeder for continuity, short circuits and grounds. Ensure resistance to ground of circuits is not less than 50 megohms.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Materials and components for dry type transformers up to 600 V primary, equipment identification and transformer installation.

1.2 RELATED SECTIONS

.1 Section 26 05 00 - Common Work Results - Electrical.

1.3 REFERENCES

.1 Canadian Standards Association (CSA International)

.1 CSA C9-02 (R2016), Dry-Type Transformers.

.2 National Electrical Manufacturers Association (NEMA)

1.4 PRODUCT DATA

.1 Submit shop drawings.

.2 Include:

.1 Dimensioned drawing showing enclosure, mounting devices, terminals, taps, internal and external component layout.

.2 Technical data:

.1 kVA rating.

.2 Primary and secondary voltages.

.3 Frequency.

.4 K-rating.

.5 Single phase or three phase.

.6 Polarity or angular displacement.

.7 Full load efficiency.

.8 Regulation at unity pf.

.9 BIL.

.10 Insulation type.

.11 Sound rating.

Part 2 Products

2.1 TRANSFORMERS

.1 Use transformers of one manufacturer throughout project in accordance with C22.2 No.47.

.2 Design 1.

.1 Type: ANN, copper wound only.
.2 K-Factor rating of K-13.
.3 3 phase, 600V input, 120/208 V output, 60 Hz.
.4 Voltage taps: standard.
.5 Insulation: Class H, 150 degrees C temperature rise.
.6 Basic Impulse Level (BIL): 10kV.
.7 Hipot: standard.
.8 Average sound level: 225 kVa, 55 dBa maximum; 75 kVa and below, 45 dBa maximum.
.9 Impedance: above 75 kVa, 3% to 4%.
.10 Enclosure: EEMAC; removable metal front panel.
.11 Mounting: floor or wall as indicated.
.12 Finish: in accordance with Section 26 05 00 - Common Work Results - Electrical.
.13 Drip shield
.14 Approved manufacturers Hammond, Square D, Eaton.

2.2 EQUIPMENT IDENTIFICATION

.1 Provide equipment identification in accordance with Section 26 05 00 - Common Work Results - Electrical.

.2 Equipment labels: Nameplate Size 7, labelled as follows (refer to drawings for transformer number and kVA rating number);

TR# - ### kVA

600 – 120/208V 3-PHASE

Part 3 Execution

3.1 INSTALLATION

.1 Locate, install and ground transformer(s) in accordance with manufacturer's instructions. Install transformers in a level upright position.

.2 Mounting of dry type transformers up to 75 kVA as indicated.

.3 Mount dry type transformers above 75 kVA on floor on 4" concrete housekeeping pad unless otherwise noted.

.4 Ensure adequate clearance around transformer for ventilation as per OESC Section 26-248.

.5 Remove shipping supports only after transformer is installed and just before putting into service.

.6 Loosen isolation pad bolts until no compression is visible.

.7 Make primary and secondary connections in accordance with wiring diagram.

.8 Energize transformers after installation is complete.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Materials and installation for standard and custom breaker type panelboards.

1.2 RELATED SECTIONS

.1 Section 26 05 00 - Common Work Results - Electrical.

1.3 REFERENCES

.1 Canadian Standards Association (CSA International).

.1 CSA C22.2 No.29 -15, Panelboards and enclosed Panelboards.

1.4 SHOP DRAWINGS

.1 Submit shop drawings as noted.

.2 Drawings to include electrical detail of panel, branch breaker type, quantity, ampacity and enclosure dimension.

Part 2 Products

2.1 PANELBOARDS

.1 Panelboards: to CSA C22.2 No.29 and product of one manufacturer.

.1 Install circuit breakers in panelboards before shipment.

.2 In addition to CSA requirements manufacturer's nameplate must show fault current that panel including breakers has been built to withstand.

.2 600 V and 208 V panelboards: bus and breakers rated for the following minimum (symmetrical) interrupting capacity;

.1 All 600 Volt panelboards are to have main (if applicable) and distribution circuit breakers fully rated for 14 kA.

.2 208 Volt panelboards are to be rated either 22kA or 10kA as indicated on the single line diagram.

.3 Sequence phase bussing with odd numbered breakers on left and even on right, with each breaker identified by permanent number identification as to circuit number and phase.

.4 Panelboards: mains, number of circuits, and number and size of branch circuit breakers as indicated.

.5 Two keys for each panelboard and key panelboards alike.

.6 Aluminum bus with rating as indicated.

.7 Neutral of same ampere rating as mains.

.8 Mains: suitable for bolt-on breakers.

.9 Ground Bar: Standard bolted aluminum, aluminum or copper cable.

.10 Trim with concealed front bolts and hinges.

.11 Trim and door finish: baked grey enamel.

.12 All surface mounted panelboards are to be complete with a drip shield (sprinkler proof).

.13 NEMA Type 1 enclosure.

.14 Free standing, dead front, mounted on concrete pad as indicated.

.15 Surface wall mount as indicated.

.16 Recessed wall mount as indicated.

.17 Panelboard fronts to be code-gauge steel, ASA61 light grey painted finish. Panelboard boxes to be code-gauge galvanized steel.

2.2 BREAKERS GENERAL

.1 Bolt-on moulded case circuit breaker: quick- make, quick-break type, for manual and automatic operation with temperature compensation for 40 degrees C ambient.

.2 Common-trip breakers: with single handle for multi-pole applications.

.3 Magnetic instantaneous trip elements in circuit breakers to operate only when value of current reaches setting.

.1 Trip settings on breakers with adjustable trips to range from 3-8 times current rating.

.4 Circuit breakers with interchangeable trips as indicated.

.5 347/600 volt circuit breakers to have minimum 14,000A symmetrical rms interrupting capacity rating.

.6 120/208 volt circuit breakers to have a minimum of either 22,000A or 10,000A symmetrical rms interrupting capacity rating as indicated on the single line diagram.

2.3 THERMAL MAGNETIC BREAKERS

.1 Moulded case circuit breaker to operate automatically by means of thermal and magnetic tripping devices to provide inverse time current tripping and instantaneous tripping for short circuit protection.

2.4 BREAKERS

.1 Breakers with thermal and magnetic tripping in panelboards except as indicated otherwise.

.2 Main breaker: separately mounted on top or bottom of panel to suit cable entry. When mounted vertically, down position should open breaker.

.3 Lock-on devices for emergency lighting and fire alarm circuits.

2.5 EQUIPMENT IDENTIFICATION

.1 Provide equipment identification in accordance with Section 26 05 01 - Common Work Results - Electrical.

.2 Nameplate for each panelboard Size 7 engraved. Nameplate to include;

- Panel identifier
- Fed From
- Voltage

.3 Nameplate for each circuit in distribution panelboards size 2 engraved as indicated.

.4 Complete circuit directory with typewritten legend showing location and load of each circuit.

Part 3 Execution

3.1 INSTALLATION

.1 Locate panelboards as indicated and mount securely, plumb, true and square, to adjoining surfaces.

.2 Install surface mounted panelboards on plywood backboards. Where practical, group panelboards on common backboard.

.3 Mount panelboards to height specified in Section 26 05 00 - Common Work Results - Electrical or as indicated.

.4 Connect loads to circuits.

.5 Connect neutral conductors to common neutral bus with respective neutral identified.

.6 Provide two empty 32mm conduits from each recessed mounted panelboard stubbed into the accessible ceiling space for future wiring.

.7 For multiple section panelboards, provide interconnecting cables from the through-feed lugs in first section to main lugs in 2nd section and terminate. Provide conduit nipple for cross wiring between panelboards as required.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 26 05 00 - Common Work Results for Electrical

1.2 REFERENCE STANDARDS

.1 CSA Group (CSA)

.1 CSA C22.2 No.42, General Use Receptacles, Attachment Plugs and Similar Devices.

.2 CAN/CSA C22.2 No.42.1, Cover Plates for Flush-Mounted Wiring Devices (Bi-national standard, with UL 514D).

.3 CSA C22.2 No.55, Special Use Switches.

.4 CSA C22.2 No.111, General-Use Snap Switches (Bi-national standard, with UL 20).

1.3 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00 - Submittal Procedures.

1.4 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with manufacturer's written instructions.

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.3 Storage and Handling Requirements:

.1 Store materials in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

.2 Store and protect wiring devices from nicks, scratches, and blemishes.

.3 Replace defective or damaged materials with new.

Part 2 Products

2.1 RECEPTACLES

.1 Duplex receptacles, CSA type 5-15 R, 125 V, 15 A, U ground, to: CSA C22.2 No.42 with following features:

.1 White urea moulded housing.

.2 Suitable for No. 10 AWG for back and side wiring.

.3 Break-off links for use as split receptacles.

.4 Eight back wired entrances, four side wiring screws.

.5 Triple wipe contacts and rivetted grounding contacts.

.2 Other receptacles with ampacity and voltage as indicated.

.3 Receptacles of one manufacturer throughout project.

2.2 COVER PLATES

.1 Cover plates for wiring devices to: CSA C22.2 No.42.1.

.2 Sheet steel utility box cover for wiring devices installed in surface-mounted utility boxes.

.3 Stainless steel cover plates, for wiring devices mounted in flush-mounted outlet box.

.4 Cast cover plates for wiring devices mounted in surface-mounted FS or FD type conduit boxes.

.5 Weatherproof double lift spring-loaded cast aluminum cover plates, complete with gaskets for duplex receptacles as indicated.

.6 Weatherproof spring-loaded cast aluminum cover plates complete with gaskets for single receptacles or switches.

2.3 SOURCE QUALITY CONTROL

.1 Cover plates from one manufacturer throughout project.

Part 3 Execution

3.1 EXAMINATION

.1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for wiring devices installation in accordance with manufacturer's written instructions.

3.2 INSTALLATION

.1 Switches:

.1 Install single throw switches with handle in "UP" position when switch closed.

.2 Install switches in gang type outlet box when more than one switch is required in one location.

.3 Mount toggle switches at height in accordance with Section 26 05 00 - Common Work Results for Electrical.

.2 Receptacles:

.1 Install receptacles in gang type outlet box when more than one receptacle is required in one location.

.2 Mount receptacles at height in accordance with Section 26 05 00 - Common Work Results for Electrical.

.3 Where split receptacle has one portion switched, mount vertically and switch upper portion.

.4 Install GFI type receptacles as indicated.

.3 Cover plates:

.1 Install suitable common cover plates where wiring devices are grouped.

.2 Do not use cover plates meant for flush outlet boxes on surface-mounted boxes.

3.3 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.

.1 Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.

3.4 PROTECTION

.1 Protect installed products and components from damage during construction.

.2 Protect stainless steel cover plate finish with paper or plastic film until painting and other work is finished.

.3 Repair damage to adjacent materials caused by wiring device installation.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Materials and installation for fused and non-fused 600 volt, 208 volt and 120 volt disconnect switches.

1.2 RELATED SECTIONS

.1 Section 26 05 00 - Common Work Results - Electrical.

1.3 REFERENCES

.1 Canadian Standards Association (CSA International).

.1 CAN/CSA C22.2 No.4-04 (R2014), Overcurrent Protection, Enclosed Switches.

.2 CSA C22.2 No.39-13, Overcurrent Protection, Fuseholder Assemblies.

Part 2 Products

2.1 DISCONNECT SWITCHES - GENERAL

.1 Fusible and non-fusible, horsepower rated as required disconnect switch in CSA Enclosure, to CAN/CSA C22.2 No.4, size as indicated.

.2 Provision for padlocking in “OFF” switch position by one lock.

.3 Mechanically interlocked door to prevent opening when handle in “ON” position.

.4 Fuses: size as indicated.

.5 Fuseholders: to CSA C22.2 No.39 for type and size of fuse indicated.

.6 Quick-make, quick-break action.

.7 ON-OFF switch position indication on switch enclosure cover.

.8 CSA enclosure to be NEMA 4X stainless steel unless noted otherwise.

2.2 DISCONNECT SWITCHES – VFD’S

.1 Fusible and non-fusible, horsepower rated as required disconnect switch in CSA Enclosure, to CAN/CSA C22.2 No.4, size as indicated.

.2 Provision for padlocking in “OFF” switch position by one lock.

.3 Mechanically interlocked door to prevent opening when handle in “ON” position.

.4 Fuses: size as indicated.

.5 Fuses for elevator motor to be dual element time delay fuses.

.6 Fuseholders: to CSA C22.2 No.39 for type and size of fuse indicated.

.7 Quick-make, quick-break action.

.8 ON-OFF switch position indication on switch enclosure cover.

.9 CSA enclosure to be NEMA 4X stainless steel unless note otherwise.

.10 Control pole kit providing one normally open contact, late-make, early-break operation.

2.3 EQUIPMENT IDENTIFICATION

.1 Provide equipment identification in accordance with Section 26 05 00 - Common Work Results - Electrical.

.2 Indicate name of load controlled on size 4 nameplate.

Part 3 Execution

3.1 INSTALLATION

.1 Install disconnect switches complete with fuses if applicable.

END OF SECTION

Appendix B – Asbestos Reports – Memorial Sports Centre

Asbestos Containing Materials Survey Report

Fort Frances Memorial Sports Centre

740 Scott Street, Fort Frances, Ontario

Prepared for:

The Town of Fort Frances
320 Portage Avenue,
Fort Frances, Ontario
P9A 3P9

DST File No.: BE-TB-009814

June 15, 2009

DST Consulting Engineers Inc.
605 Hewitson Street, Thunder Bay, Ontario, P7B 5N1
Tel.: (807) 623-2929 Fax: (807) 623-1792 E-mail: thunderbay@dstgroup.com

Executive Summary

DST Consulting Engineers Inc. (DST) was retained by the town of Fort Frances to conduct an asbestos containing materials survey at the Fort Frances Memorial Sports Centre, located at 740 Scott Street in Fort Frances, Ontario. The goal of this survey was to identify asbestos-containing materials (ACMs) within the building, and to provide recommendations for the management, repair or removal of identified ACMs. The survey meets the building owner's legal obligations to maintain a record of asbestos-containing materials, as required by Ontario Regulation (O.Reg.) 278/05 – Designated Substance: Asbestos on Construction Projects and in Buildings and Repair Operations.

ACMs were identified as being present or suspected to be present within the building in the following materials:

Friable ACMs:

- Friable ACMs were not identified in the building.

Non-friable ACMs:

- Vinyl Sheet Flooring;
- Stored Transite Pipe sections;
- Roofing Material (suspected); and,
- Caulking (suspected).

Materials assumed to contain asbestos (e.g. roofing, caulking, etc.) must be treated as asbestos-containing unless laboratory analysis proves otherwise. DST did not perform destructive sampling of roof assemblies or window caulking materials as this can result in subsequent water infiltration, causing damage to building finishes and mould proliferation.

The following recommendations apply to all observed ACMs and suspected ACMs:

- Materials must be maintained in good condition;
- Appropriate work procedures and precautionary measures must be used, as outlined in O.Reg. 278/05, when performing work that may disturb ACMs or suspected ACMs;
- The material(s) identified in this report must be inspected at least annually to verify condition, and this record must be updated accordingly; and,
- If ACMs or suspected ACMs become damaged and worker exposure to the material is likely to occur, the damaged material must be repaired or removed following work procedures outlined in O.Reg. 278/05.
- Prior to future construction or renovation projects, additional intrusive investigations will be required to assess site conditions in concealed areas, such as above solid ceilings, in pipe chases, in column enclosures and within shafts, as applicable. Additional sampling and laboratory analysis may also be required for building materials that were concealed or were assumed to contain asbestos and therefore were not sampled during this assessment.

Table of Contents

1.0 Introduction

DST Consulting Engineers Inc. (DST) was retained by the town of Fort Frances to conduct an asbestos containing materials survey at the Fort Frances Memorial Sports Centre, located at 740 Scott Street in Fort Frances, Ontario. The goal of this survey was to identify asbestos-containing materials (ACMs) within the building, and to provide recommendations for the management, repair or removal of identified ACMs. The survey meets the building owner's legal obligations to maintain a record of asbestos-containing materials, as required by Ontario Regulation (O.Reg.) 278/05 – Designated Substance: Asbestos on Construction Projects and in Buildings and Repair Operations.

1.1. Scope of Work

The major tasks of the survey were to:

- Conduct an ACM survey for the building with survey sheets for individual rooms or homogenous groups of rooms;
- Collect and analyze the required number of suspect ACM samples to satisfy the requirements of O.Reg. 278/05;
- Provide a summary of findings and recommendations including:
    - prioritized recommendations for remediation work;
    - digital photographs illustrating the location and current condition of representative ACMs (principally those for which high priority recommendations are provided);
    - floor plans illustrating locations of samples collected; and
    - recommendations for the remediation of any deficient or degraded condition ACMs and other designated substances.

1.2. Background Information

Asbestos is a naturally occurring form of fibrous silicate minerals. Asbestos has historically been added to a wide variety of building materials due to several beneficial properties, such as durability, flexibility, high tensile strength, and resistance to heat, wear and corrosion. Historically, asbestos has been added to the following materials: spray-on or trowel-applied fireproofing and acoustic plaster, drywall joint compound, thermal insulation, gaskets, flooring, ceiling tiles, roofing, coatings, cement products (transite), and various other miscellaneous materials.

ACMs are commonly divided into two types, friable and non-friable. Friable materials can be easily crushed by hand pressure and readily release fibres when disturbed. Friable materials include such things as thermal insulation on pipes and other mechanical equipment, and spray-applied fireproofing. The regulations include materials that are crumbled, pulverized or powdered (i.e., asbestos-containing debris) as friable. Non-friable materials generally release fibres when they are cut or shaped, and include such products as floor tiles, intact hard plaster

finishes, and asbestos cement products. Some non-friable materials may become friable when damaged, such as by water infiltration or weathering.

Asbestos fibres can become airborne when ACMs are disturbed. Inhalation of airborne asbestos fibres in significant quantities poses health risks and can cause asbestosis (a scarring of the lungs which makes breathing difficult), mesothelioma (a rare cancer of the lining of the chest or abdominal cavity) or lung cancer.

1.3. Regulatory Requirements

Asbestos is a designated substance regulated under the Ontario Occupational Health and Safety Act (OHSA), R.S.O. 1990, Chapter O.1, as amended. In Ontario, a material is defined as an asbestos-containing material if the material has an asbestos content of 0.5% or more.

The disturbance of asbestos-containing materials on construction projects is controlled by the O.Reg. 278/05, *Designated Substance – Asbestos on Construction Projects and in Buildings and Repair Operations*. This Regulation classifies all asbestos work procedures as Type 1, Type 2, or Type 3, each of which has defined precautionary measures. All ACMs are subject to specific handling and disposal precautions, and must be removed before partial or full demolition, or prior to performing work that may disturb the ACMs. The Ministry of Labour must be notified of any project involving removal of more than a minor amount of friable asbestos material.

In Ontario, the time-weighted average exposure limit for a worker to airborne asbestos is 0.1 fibres per cubic centimeter (f/cc) of air, as defined in O.Reg. 837, *Designated Substance – Asbestos,* as amended.

Disposal of asbestos waste is controlled by the Ontario Environmental Protection Act, R.R.O., 1990, Regulation 347, *General – Waste Management* as amended by O.Reg. 395/07. This regulation requires that asbestos waste be sealed in double containers resistant to puncture and tears, and appropriately labeled. The waste must be disposed at a licensed waste disposal site. Proper notification must be issued to the site representative prior to transportation of waste. The transport of the waste to the disposal site is controlled by the federal Transportation of Dangerous Goods Act, 1992.

2.0 Survey Methodology

2.1. Survey and Sampling Methodology

DST conducted the ACM survey and sampling in accordance with general health and safety requirements, and quality assurance/quality control (QA/QC) protocol to ensure the collection of high quality data.

The assessment of ACMs was performed for ongoing management, and may be used for future construction or renovation purposes. Where assumed ACMs have been identified in this report, or where ACMs may be present within concealed spaces, additional intrusive investigation, sampling and laboratory analysis of samples may be required.

The objective of the survey was to complete an inspection of the designated section of the building's interior components (e.g. mechanical systems, floors, ceilings and walls) within each room that were accessible using non-destructive techniques.

The inspection team performed the following tasks as part of the surveys:

- The completion of survey sheets for each room or group of similar rooms within each building;
- An evaluation of the suspected ACM building materials (e.g. condition and friability);
- The collection of bulk material samples for the purpose of confirmatory laboratory analysis, where required. Samples were not collected where sampling would have caused excessive damage or posed a potential safety concern to building occupants and/or the public;
- Submitting bulk samples of building materials for asbestos analysis to an accredited laboratory
- The preparation of floor plans showing the location of rooms surveyed and marking sample collection locations.

Details regarding the location of ACMs and condition can be found in the database provided in Appendix A. Laboratory certificates of analysis are presented in Appendix B. Sample locations are indicated on floor plans in Appendix C. Photographs are provided in Appendix D.

2.2. Quality Control

A quality assurance quality control (QA/QC) program was implemented for the project to help manage the office and fieldwork programs. All project documentation was maintained and controlled under each specific project QA file with unique project file identifiers.

Bulk ACM samples were delivered to a NVLAP (National Voluntary Laboratory Accreditation Program) certified laboratory for analysis using Polarized Light Microscopy (PLM). A copy of the NVLAP Certificate is attached. All building material samples analyzed that were found to contain less than 1% asbestos were further analyzed utilizing a PLM Stratified Point Count (PC) method. This analytical method can obtain a reliable quantification limit of 0.25%. The laboratory certificates of analysis can be found appended to this report, as applicable.

All samples were labeled with unique sample identification numbers. Sample identification numbers were composed of a sequential numeric identifier for each sample. A single letter suffix was added, corresponding to a duplicate sample collected from a visually homogenous building material as per the requirements of O.Reg. 278/05, Building Material Condition Assessment.

2.3. Asbestos-Containing Material Condition Assessment

The condition of suspected ACMs was assessed using the following criteria:

GOOD Condition – Material is completely encapsulated (covered by a jacketing material) and/or shows no signs or evidence of damage or deterioration. No asbestos-containing material is exposed. Includes conditions where the encapsulating material may have minor surface damage (i.e., scuffed or stained), but has not been penetrated (i.e., ripped, torn or punctured). No missing material is evident.

FAIR Condition – Minor damage or penetration of the encapsulating material (i.e., cut, ripped or torn), or trowelled friable ACM that has never been covered or jacketed. Small amount of ACM is visible; however the material has not experienced any major deterioration or damage. The extent of missing ACM should be minor or none.

POOR Condition – Original encapsulating or jacketing material is missing or has been damaged (i.e., large cuts or rips). ACM is exposed and the amount of missing material is moderate to severe.

DEBRIS – Presence of fallen ACM material is noted separately from the conditions Good, Fair and Poor. Debris includes major damage to ACMs, which has resulted in ACM that has fallen and is no longer attached to the original substrate.

3.0 Findings

3.1. Site Description

The Fort Frances Memorial Sports Centre is located at 740 Scott Street in Fort Frances, Ontario. The building has been constructed in various stages with periodic renovation.

- 1952 era Arena, major 2002 renovation;
- 1974 swimming pool and changing rooms;
- Early 80's Squash Courts;
- 1992 Squash Court, weight room and Pool viewing area; and,
- 2000 era Arena.

Each area was treated as separate for purposes of sampling potential ACMs.

3.2. Survey and Laboratory Results

DST performed an asbestos survey of the Memorial Sports Centre on March 26 and March 27, 2009. A total of one hundred and twenty-five samples were collected and analyzed. The number of samples analyzed may differ from the number of samples collected during the survey, as the laboratory was instructed to stop analysis of similar materials once a positive result was obtained (as per O.Reg. 278/05), and some materials analyzed may have had multiple layers (i.e., vinyl floor tiles with mastic, paper pipe insulation impregnated with tar, etc.).

Details regarding the location of ACMs and condition can be found in the database provided in Appendix A. Laboratory certificates of analysis are presented in Appendix B. Sample locations are indicated on floor plans in Appendix C. Photographs are provided in Appendix D. A general summary is provided below:

ACMs were identified as being present within the building in the following materials:

1952 era Arena

Friable ACMs

- No friable ACM's are suspected to be in these rooms

Non-Friable ACMs

- Vinyl Sheet Floor, Tile pattern, Rm. 42 (Press Box);
- Vinyl Sheet Floor, Off White Mosaic pattern, Rm. 47 (Arena Concession/Servory);
- Transite Pipe sections, stored in Rm 33 (Arena underseating crawlspace);
- Roofing Material (suspected); and,
- Caulking (suspected).

Sampled Non-Asbestos Materials

- Various Ceiling Tiles;
- Various non ACM Vinyl Sheet floors;

- Rubber/Vinyl cut resistant flooring;
- Duct Mastic;
- Textured Finishing Cement; and
- Drywall Joint Compound

1974 Era Swimming Pool and Changing rooms

Friable ACMs

- No friable ACM's are suspected to be in these rooms

Non-Friable ACMs

- Roofing Material (suspected); and,
- Caulking (suspected).

Sampled Non-Asbestos Materials

- Various Ceiling Tiles;
- Various Vinyl Sheet floors;
- Parged Canvas Duct covering;
- Parged Canvas Pipe covering; and
- Blown fibrous acoustic/thermal insulation.

Early 1980's Squash Courts and Weight Room

Friable ACMs

- No friable ACM's are suspected to be in these rooms

Non-Friable ACMs

- Roofing Material (suspected); and,
- Caulking (suspected).

Sampled Non-Asbestos Materials

- Various Ceiling Tiles;
- Various Vinyl Sheet floors;
- Weight room flooring;
- Parged Canvas Duct covering;
- Parged Canvas Pipe covering; and
- Drywall Joint Compound.

1992 era Squash Court, Weight Room, and Pool Viewing area

Friable ACMs

- No friable ACM's are suspected to be in these rooms

Non-Friable ACMs

- Roofing Material (suspected); and,
- Caulking (suspected).

Sampled Non-Asbestos Materials

- Ceiling Tiles;
- Vinyl Sheet floor;
- Weight room flooring;
- Parged Canvas Duct covering;
- Parged Canvas Pipe covering; and
- Drywall Joint Compound.

2000 era Arena

Friable ACMs

- No friable ACM's are suspected to be in these rooms

Non-Friable ACMs

- Roofing Material (suspected); and,
- Caulking (suspected).

Sampled Non-Asbestos Materials

- Various Ceiling Tiles;
- Various Vinyl Sheet floors;
- Rubber/Vinyl cut resistant flooring;
- Duct mastic; and
- Drywall Joint Compound.

Although every attempt was made to look above ceilings and into wall cavity hatches, some ACMs may be concealed and not observed at the time of the survey. Should any previously unidentified suspect ACMs be encountered as part of future work, these materials are to be treated as ACMs and handled accordingly, unless sampling proves otherwise. Materials that have not been analyzed, but that are visibly similar to other materials identified as asbestos-containing, must be considered asbestos-containing unless proven otherwise by laboratory analysis.

Old floor finishes may exist under current floor finishes; however, these finishes may not have been accessible or visible at the time of the site visit. If old floor finishes are encountered during future work, these materials should be assumed to contain asbestos unless laboratory sampling proves otherwise.

4.0 Conclusions and Recommendations

DST Consulting Engineers Inc. (DST) was retained by the town of Fort Frances to conduct an asbestos containing materials survey at the Fort Frances Memorial Sports Centre, located at 740 Scott Street in Fort Frances, Ontario.

Based on the results of the survey and laboratory analysis of bulk material samples, ACMs were identified as being present or suspected to be present within the building in the following materials:

Friable ACMs:

- Friable ACMs were not identified in the building.

Non-friable ACMs:

- Vinyl Sheet Flooring;
- Stored Transite Pipe sections;
- Roofing Material (suspected); and,
- Caulking (suspected).

Detailed survey results and recommendations for all identified ACMs are provided within the Asbestos Database included in Appendix A.

Materials assumed to contain asbestos (e.g. roofing, window caulking, etc.) must be treated as asbestos-containing unless laboratory analysis proves otherwise. DST did not perform destructive sampling of roof assemblies or window caulking materials as this can result in subsequent water infiltration, causing damage to building finishes and mould proliferation.

The following recommendations also apply to all observed ACMs and suspected ACMs:

- Materials must be maintained in good condition.
- Appropriate work procedures and precautionary measures must be used, as outlined in O.Reg. 278/05, when performing work that may disturb ACMs or suspected ACMs.
- The condition of material(s) identified in this report must be inspected at least annually, and this record must be updated accordingly.
- If ACMs or suspected ACMs become damaged and worker exposure to the material is likely to occur, the damaged material must be repaired or removed following work procedures outlined in O.Reg. 278/05.
- Prior to future construction or renovation projects, additional intrusive investigations will be required to assess site conditions in concealed areas, such as above solid ceilings, in pipe chases, in column enclosures and within shafts, as applicable. Additional sampling and laboratory analysis may also be required for building materials that were concealed or were assumed to contain asbestos and therefore were not sampled during this assessment.

5.0 Limitations of Report

This report is intended for client use only. Any use of this document by a third party, or any reliance on or decisions made based on the findings described in this report, are the sole responsibility of such third parties, and DST Consulting Engineers Inc. accepts no responsibility for damages, suffered by any third party as a result of decisions made or actions conducted based on this report. No other warranties are implied or expressed.

The data, conclusions and recommendations which are presented in this report, and the quality thereof, are based on a scope of work authorized by the Client. The sampling program included the collection and analysis of bulk material samples with a frequency compliant with current regulatory standards. There is a practical limitation on the number of bulk samples collected and analyzed in any building. This requires the surveyor to extrapolate observations and analytical results between sample collection locations. The uncertainty, and inherent risk, associated with this necessity increases with the distance between sampling locations. The survey did not include selective demolition of floors, floor finishes, ceilings, or walls to examine concealed conditions. Similarly, window caulking and/or roofing materials may not have been subjected to destructive sampling if it was concluded that this may compromise the integrity of the building envelope components. Note, however, that no scope of work, no matter how exhaustive, can identify all potential contaminants. This report therefore cannot warranty that all conditions on or off the site are represented by those identified at specific locations.

Any recommendations and conclusions provided that are based on conditions or assumptions reported herein will inherently include any uncertainty associated with those conditions or assumptions.

Note also that standards, guidelines and practices related to environmental investigations may change with time. Those which were applied at the time of this investigation may be obsolete or unacceptable at a later date.

Any comments given in this report on potential abatement problems and possible methods are intended only for the guidance of the designer. The scope of work may not be sufficient to determine all of the factors that may affect construction, clean-up methods and/or costs. Contractors bidding on this project or undertaking clean-ups should, therefore, make their own interpretation of the factual information presented and draw their own conclusions as to how the conditions may affect their work.

Any results from an analytical laboratory or other subcontractor reported herein have been carried out by others, and DST Consulting Engineers Inc. cannot warranty their accuracy. Similarly, DST cannot warranty the accuracy of information supplied by the client.

6.0 Closure

We trust the information herein meets your requirements. Should you have any questions, please do not hesitate to contact the undersigned.

For DST Consulting Engineers Inc.

James Harding, Site Surveyor.
Building Environments

Ken Simi, P. Eng., Sector Head
Building Environments, Associate

Appendix A

Database of Asbestos-Containing Materials

Fort Frances, Memorial Sports Centre - Asbestos Database

Building Section	Floor	Room	Specific Location	Equipment Type	Friability	Asbestos Type	% Present	Accessibility	Condition Rating	Remedial Action Required (Y/N)	Recommeded Action and Comments	Quantity	Inspection Date
Arena , 1952 era Under seating crawlspace	1	33	Stored items	Stored pipe sections	Non-Friable	Chrysotile, Crocodilite	20%, 5.1%	Maintenance staff	Good	No	Ongoing Management	approx. 900 feet	March, 2009
Arena , 1952 era, Press Box	2	42	Floor	Vinyl Sheet Floor, Tile Pattern	Non-Friable	Chrysotile	30%	All Building Occupants	Good	No	Ongoing Management	approx. 150 sq. ft.	March, 2009
Arena , 1952 era, Concession/servery area	2	47	Floor	Vinyl Sheet Floor, Off-White Mosaic Pattern	Non-Friable	Chrysotile	20%	All Building Occupants	Good	No	Ongoing Management	approx. 500 sq. ft.	March, 2009
Exterior	ext	ext	Windows	Window Caulking	Non-Friable	Suspect		All Building Occupants	Good	No	Ongoing Management		March, 2009
Exterior	ext	ext	Roof	Roofing Material	Non-Friable	Suspect		Maintenance Staff with Ladder	Good	No	Ongoing Management		March, 2009

Appendix B

Laboratory Certificates of Analysis

TABLE 1.0 - SUMMARY OF ASBESTOS SAMPLES

Sample No.	Material		Bldg.	Floor	Room	Asbestos
1A	Gypsum Drywall	Drywall Joint Compound	B6			none detected
1B	Gypsum Drywall	Drywall Joint Compound	B6			none detected
1C	Gypsum Drywall	Drywall Joint Compound	B6			none detected
1D	Gypsum Drywall	Drywall Joint Compound	B6			none detected
1E	Gypsum Drywall	Drywall Joint Compound	B6			none detected
2A	Ceiling Tile	2x4 pinholed	B6			none detected
2B	Ceiling Tile	2x4 pinholed	B6			none detected
2C	Ceiling Tile	2x4 pinholed	B6			none detected
3A	Vinyl Sheet Floor	Beige/ red,blue dots	B6			none detected
3B	Vinyl Sheet Floor	Beige/ red,blue dots	B6			none detected
3E	Vinyl Sheet Floor	Beige/ red,blue dots	B6			none detected
4A	Vinyl Sheet Floor	Purple cut mat	B6			none detected
4B	Vinyl Sheet Floor	Purple cut mat	B6			none detected
4C	Vinyl Sheet Floor	Purple cut mat	B6			none detected
5A	Ceiling Tile	2x4 fissured, pinhole	B6			none detected
5B	Ceiling Tile	2x4 fissured, pinhole	B6			none detected
5C	Ceiling Tile	2x4 fissured, pinhole	B6			none detected
6A	Vinyl Sheet Floor	Off white sand	B6			none detected
6B	Vinyl Sheet Floor	Off white sand	B6			none detected
6C	Vinyl Sheet Floor	Off white sand	B6			none detected
7A	Vinyl Sheet Floor	Elevator	B6			none detected
8A	Floor Tile	1'x4' Cut Mat	B6			none detected
8B	Floor Tile	1'x4' Cut Mat	B6			none detected
8C	Floor Tile	1'x4' Cut Mat	B6			none detected
9A	Duct Mastic	Grey	B6			none detected
10A	Textured Cement		B6			none detected
10B	Textured Cement		B6			none detected
10C	Textured Cement		B6			none detected
10D	Textured Cement		B6			none detected
10C	Textured Cement		B6			none detected
11A	Vinyl Sheet Floor	Purple Arena Seating	B6			none detected
11B	Vinyl Sheet Floor	Purple Arena Seating	B6			none detected
11C	Vinyl Sheet Floor	Purple Arena Seating	B6			none detected
12A	Vinyl Sheet Floor	Tile Patt	B6			**30% Chrysotile**
12B	Vinyl Sheet Floor	Tile Patt	B6			sample not analyzed
12C	Vinyl Sheet Floor	Tile Patt	B6			sample not analyzed

Sample No.	Material		Bldg.	Floor	Room	Asbestos
13A	Ceiling Tile	2x4 fissured, pinhole	B6			none detected
13B	Ceiling Tile	2x4 fissured, pinhole	B6			none detected
13C	Ceiling Tile	2x4 fissured, pinhole	B6			none detected
14A	Ceiling Tile	2x4 pinholed	B6			none detected
14B	Ceiling Tile	2x4 pinholed	B6			none detected
14C	Ceiling Tile	2x4 pinholed	B6			none detected
15A	Vinyl Sheet Floor	Marbled	B6			none detected
15B	Vinyl Sheet Floor	Marbled	B6			none detected
15C	Vinyl Sheet Floor	Marbled	B6			none detected
16A	Vinyl Sheet Floor	Grey	B6			none detected
16B	Vinyl Sheet Floor	Grey	B6			none detected
16C	Vinyl Sheet Floor	Grey	B6			none detected
17A	Ceiling Tile	1x2 stapled	B6			none detected
17B	Ceiling Tile	1x2 stapled	B6			none detected
17C	Ceiling Tile	1x2 stapled	B6			none detected
18A	Vinyl Sheet Floor	Kitchen	B6			none detected
18B	Vinyl Sheet Floor	Kitchen	B6			none detected
18C	Vinyl Sheet Floor	Kitchen	B6			none detected
19A	Ceiling Tile	2x4 fissured, pinhole	B6			none detected
19B	Ceiling Tile	2x4 fissured, pinhole	B6			none detected
19C	Ceiling Tile	2x4 fissured, pinhole	B6			none detected
20A	Vinyl Sheet Floor	Mosaic, offwhite	B4			**20% Chrysotile**
20B	Vinyl Sheet Floor	Mosaic, offwhite	B4			sample not analyzed
20C	Vinyl Sheet Floor	Mosaic, offwhite	B4			sample not analyzed
22A	Gypsum Drywall	Drywall Joint Compound	B6			none detected
22B	Gypsum Drywall	Drywall Joint Compound	B6			none detected
22C	Gypsum Drywall	Drywall Joint Compound	B6			none detected
22D	Gypsum Drywall	Drywall Joint Compound	B6			none detected
22E	Gypsum Drywall	Drywall Joint Compound	B6			none detected
23A	Pipe Insulation	Parged cloth over f.g.	B6			none detected
23B	Vinyl Sheet Floor	Parged cloth over f.g.	B6			none detected
23C	Vinyl Sheet Floor	Parged cloth over f.g.	B6			none detected
24A	Duct	Parged Cloth	B6			none detected
24B	Duct	Parged Cloth	B6			none detected
24C	Duct	Parged Cloth	B6			none detected
25A	Ceiling Tile	2x4 fissured, pinhole	B6			none detected

Sample No.	Material		Bldg.	Floor	Room	Asbestos
25B	Ceiling Tile	2x4 fissured, pinhole	B6			none detected
25C	Ceiling Tile	2x4 fissured, pinhole	B6			none detected
26A	Gypsum Drywall	Drywall Joint Compound	B6			none detected
26B	Gypsum Drywall	Drywall Joint Compound	B6			none detected
26C	Gypsum Drywall	Drywall Joint Compound	B6			none detected
26D	Gypsum Drywall	Drywall Joint Compound	B6			none detected
26E	Gypsum Drywall	Drywall Joint Compound	B6			none detected
27A	Vinyl Sheet Floor	Mosaic, beige	B6			none detected
27B	Vinyl Sheet Floor	Mosaic, beige	B6			none detected
27C	Vinyl Sheet Floor	Mosaic, beige	B6			none detected
28A	Vinyl Sheet Floor	Rattan Patt	B6			none detected
28B	Vinyl Sheet Floor	Rattan Patt	B6			none detected
28C	Vinyl Sheet Floor	Rattan Patt	B6			none detected
29A	Spray On	fibrous	B6		237	none detected
29B	Spray On	fibrous	B6		237	none detected
29C	Spray On	fibrous	B6		237	none detected
30A	Vinyl Tile	3'x3', Grey/Blue	B6			none detected
30B	Vinyl Tile	3'x3', Grey/Blue	B6			none detected
30C	Vinyl Tile	3'x3', Grey/Blue	B6			none detected
31A	Gypsum Drywall	Drywall Joint Compound	B6			none detected
31B	Gypsum Drywall	Drywall Joint Compound	B6			none detected
31C	Gypsum Drywall	Drywall Joint Compound	B6			none detected
32A	Pipe Insulation	parged f.g. Large Dia	B6			none detected
32B	Pipe Insulation	parged f.g. Large Dia	B6			none detected
32C	Pipe Insulation	parged f.g. Large Dia	B6			none detected
33A	Pipe Insulation	parged f.g. 80's	B6			none detected
33B	Pipe Insulation	parged f.g. 80's	B6			none detected
33C	Pipe Insulation	parged f.g. 80's	B6			none detected
40A	Duct Mastic	Red	B6			none detected
41A	Ceiling Tile	2x4 pinholed	B6			none detected
41B	Ceiling Tile	2x4 pinholed	B6			none detected
41C	Ceiling Tile	2x4 pinholed	B6			none detected
43A	Duct	Parged Cloth	B6			none detected
43B	Duct	Parged Cloth	B6			none detected
43C	Duct	Parged Cloth	B6			none detected
44A	Pipe Insulation	parged f.g	B6			none detected

Sample No.	Material		Bldg.	Floor	Room	Asbestos
44B	Pipe Insulation	parged f.g.	B6			none detected
44C	Pipe Insulation	parged f.g.	B6			none detected
45A	Textured Plaster	Pool Duct	B6			none detected
45B	Textured Plaster	Pool Duct	B6			none detected
45C	Textured Plaster	Pool Duct	B6			none detected
46A	Gypsum Drywall	Drywall Joint Compound	B6			none detected
46B	Gypsum Drywall	Drywall Joint Compound	B6			none detected
46C	Gypsum Drywall	Drywall Joint Compound	B6			none detected
47A	Ceiling Tile	1x1 stapled	B6			none detected
47B	Ceiling Tile	1x1 stapled	B6			none detected
47C	Ceiling Tile	1x1 stapled	B6			none detected
48A	Ceiling Tile	2x2 pinhole suspended	B6			none detected
48B	Ceiling Tile	2x2 pinhole suspended	B6			none detected
48C	Ceiling Tile	2x2 pinhole suspended	B6			none detected
49A	Pipe	Transite	B6			**20% Chrysotile, 5.1% Crocodilite**
49B	Pipe	Transite	B6			sample not analyzed
49C	Pipe	Transite	B6			sample not analyzed

IATL International Asbestos Testing Laboratories

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CERTIFICATE OF ANALYSIS

Client: DST Consulting Engineers Inc.
605 Hewitson St.
Thunder Bay ON P7B5V5
Memorial Arena

Report Date: 4/15/2009
Project: Fort Frances Municipal
Project No.: BE-TB-009814

BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 3580851 **Description / Location:** White Joint Compound
Client No.: B6-1A Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	None Detected	None Detected	100

Lab No.: 3580852 **Description / Location:** White Joint Compound
Client No.: B6-1B Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	None Detected	None Detected	100

Lab No.: 3580853 **Description / Location:** White Joint Compound
Client No.: B6-1C Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	None Detected	None Detected	100

Lab No.: 3580854 **Description / Location:** White Joint Compound
Client No.: B6-1D Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	None Detected	None Detected	100

NIST-NVLAP No. 101165-0 **NY-DOH No. 11021** **AIHA Lab No. 100188**

Analysis Method: EPA 600/R-93/116

Comments: (PC) Indicates Stratified Point Count Method performed. Method not performed unless stated. Quantification at <0.25% by volume is possible with this method. (PC–Trace) represents this limit of quantitation. (PC-Trace) means that asbestos was detected but is not quantifiable under the Point Counting regimen. Analysis includes all distinct separable layers in accordance with EPA 600 Method. If not reported or otherwise noted, layer is either not present or the client has specifically requested that it not be analyzed. Small asbestos fibers may be missed by PLM due to resolution limitations of the optical microscope. Therefore, negative PLM results cannot be guaranteed. Electron Microscopy can be used as a confirming technique. Regulatory Limit is based upon the sample matrix.

Analysis Performed By: T. Fisher

Approved By: Frank E. Ehrenfeld, III
Laboratory Director

Date: 4/15/2009

IATL International Asbestos Testing Laboratories

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CERTIFICATE OF ANALYSIS

Client: DST Consulting Engineers Inc.
605 Hewitson St.
Thunder Bay ON P7B5V5

Report Date: 4/15/2009
Project: Fort Frances Municipal
Project No.: BE-TB-009814

BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 3580855 **Description / Location:** White Joint Compound
Client No.: B6-1E Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	None Detected	None Detected	100

Lab No.: 3580856 **Description / Location:** Tan Ceiling Tile; 2x4
Client No.: B6-2A Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	55	Cellulose	10
		35	Fibrous Glass	

Lab No.: 3580857 **Description / Location:** Tan Ceiling Tile; 2x4
Client No.: B6-2B Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	55	Cellulose	10
		35	Fibrous Glass	

Lab No.: 3580858 **Description / Location:** Tan Ceiling Tile; 2x4
Client No.: B6-2C Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	55	Cellulose	10
		35	Fibrous Glass	

NIST-NVLAP No. 101165-0 **NY-DOH No. 11021** **AIHA Lab No. 100188**

Analysis Method: EPA 600/R-93/116

Comments: (PC) Indicates Stratified Point Count Method performed. Method not performed unless stated. Quantification at <0.25% by volume is possible with this method. (PC--Trace) represents this limit of quantitation. (PC-Trace) means that asbestos was detected but is not quantifiable under the Point Counting regimen. Analysis includes all distinct separable layers in accordance with EPA 600 Method. If not reported or otherwise noted, layer is either not present or the client has specifically requested that it not be analyzed. Small asbestos fibers may be missed by PLM due to resolution limitations of the optical microscope. Therefore, negative PLM results cannot be guaranteed. Electron Microscopy can be used as a confirming technique. Regulatory Limit is based upon the sample matrix.

Analysis Performed By: T. Fisher

Date: 4/15/2009

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CERTIFICATE OF ANALYSIS

Client: DST Consulting Engineers Inc.
605 Hewitson St.
Thunder Bay ON P7B5V5

Report Date: 4/15/2009
Project: Fort Frances Municipal
Project No.: BE-TB-009814

BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 3580859 **Description / Location:** Grey Vinyl Sheet Flooring
Client No.: B6-3A Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	10	Cellulose	85
		5	Fibrous Glass	

Lab No.: 3580860 **Description / Location:** Grey Vinyl Sheet Flooring
Client No.: B6-3B Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	10	Cellulose	85
		5	Fibrous Glass	

Lab No.: 3580861 **Description / Location:** Grey Vinyl Sheet Flooring
Client No.: B6-3C Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	10	Cellulose	85
		5	Fibrous Glass	

Lab No.: 3580862 **Description / Location:** Blue/Purple Floor Tile
Client No.: B6-4A Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	None Detected	None Detected	100

NIST-NVLAP No. 101165-0 **NY-DOH No. 11021** **AIHA Lab No. 100188**

Analysis Method: EPA 600/R-93/116

Comments: (PC) Indicates Stratified Point Count Method performed. Method not performed unless stated. Quantification at <0.25% by volume is possible with this method. (PC–Trace) represents this limit of quantitation. (PC-Trace) means that asbestos was detected but is not quantifiable under the Point Counting regimen. Analysis includes all distinct separable layers in accordance with EPA 600 Method. If not reported or otherwise noted, layer is either not present or the client has specifically requested that it not be analyzed. Small asbestos fibers may be missed by PLM due to resolution limitations of the optical microscope. Therefore, negative PLM results cannot be guaranteed. Electron Microscopy can be used as a confirming technique. Regulatory Limit is based upon the sample matrix.

Analysis Performed By: T. Fisher

Date: 4/15/2009

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CERTIFICATE OF ANALYSIS

Client: DST Consulting Engineers Inc.
605 Hewitson St.
Thunder Bay ON P7B5V5

Report Date: 4/15/2009
Project: Fort Frances Municipal
Project No.: BE-TB-009814

BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 3580863 **Description / Location:** Blue/Purple Floor Tile
Client No.: B6-4B Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	None Detected	None Detected	100

Lab No.: 3580864 **Description / Location:** Blue/Purple Floor Tile
Client No.: B6-4C Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	None Detected	None Detected	100

Lab No.: 3580865 **Description / Location:** Tan Ceiling Tile; 2x4
Client No.: B6-5A Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	90	Cellulose	10

Lab No.: 3580866 **Description / Location:** Tan Ceiling Tile; 2x4
Client No.: B6-5B Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	90	Cellulose	10

NIST-NVLAP No. 101165-0 **NY-DOH No. 11021** **AIHA Lab No. 100188**

Analysis Method: EPA 600/R-93/116

Comments: (PC) Indicates Stratified Point Count Method performed. Method not performed unless stated. Quantification at <0.25% by volume is possible with this method. (PC–Trace) represents this limit of quantitation. (PC-Trace) means that asbestos was detected but is not quantifiable under the Point Counting regimen. Analysis includes all distinct separable layers in accordance with EPA 600 Method. If not reported or otherwise noted, layer is either not present or the client has specifically requested that it not be analyzed. Small asbestos fibers may be missed by PLM due to resolution limitations of the optical microscope. Therefore, negative PLM results cannot be guaranteed. Electron Microscopy can be used as a confirming technique. Regulatory Limit is based upon the sample matrix.

Analysis Performed By: T. Fisher

Date: 4/15/2009

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Thunder Bay ON P7B5V5

Report Date: 4/15/2009
Project: Fort Frances Municipal
Project No.: BE-TB-009814

BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 3580867 **Description / Location:** Tan Ceiling Tile; 2x4
Client No.: B6-5C Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	90	Cellulose	10

Lab No.: 3580868 **Description / Location:** Tan Vinyl Sheet Flooring
Client No.: B6-6A Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	20	Cellulose	70
		10	Synthetic	

Lab No.: 3580869 **Description / Location:** Tan Vinyl Sheet Flooring
Client No.: B6-6B Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	20	Cellulose	70
		10	Synthetic	

Lab No.: 3580870 **Description / Location:** Tan Vinyl Sheet Flooring
Client No.: B6-6C Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	20	Cellulose	70
		10	Synthetic	

NIST-NVLAP No. 101165-0 **NY-DOH No. 11021** **AIHA Lab No. 100188**

Analysis Method: EPA 600/R-93/116

Comments: (PC) Indicates Stratified Point Count Method performed. Method not performed unless stated. Quantification at <0.25% by volume is possible with this method. (PC–Trace) represents this limit of quantitation. (PC-Trace) means that asbestos was detected but is not quantifiable under the Point Counting regimen. Analysis includes all distinct separable layers in accordance with EPA 600 Method. If not reported or otherwise noted, layer is either not present or the client has specifically requested that it not be analyzed. Small asbestos fibers may be missed by PLM due to resolution limitations of the optical microscope. Therefore, negative PLM results cannot be guaranteed. Electron Microscopy can be used as a confirming technique. Regulatory Limit is based upon the sample matrix.

Analysis Performed By: B. Faulseit

Date: 4/15/2009

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CERTIFICATE OF ANALYSIS

Client: DST Consulting Engineers Inc.
605 Hewitson St.
Thunder Bay ON P7B5V5

Report Date: 4/15/2009
Project: Fort Frances Municipal
Project No.: BE-TB-009814

BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 3580871 **Description / Location:** Tan Floor Tile
Client No.: B6-7A Bldg.B6; Elevator

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	None Detected	None Detected	100

Lab No.: 3580872 **Description / Location:** Black Tar
Client No.: B6-8A Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	10	Cellulose	90

Note: Different material than indicated on Sample Log / Description.

Lab No.: 3580873 **Description / Location:** Black Tar
Client No.: B6-8B Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	10	Cellulose	90

Note: Different material than indicated on Sample Log / Description.

Lab No.: 3580874 **Description / Location:** Black Tar
Client No.: B6-8C Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	10	Cellulose	90

Note: Different material than indicated on Sample Log / Description.

NIST-NVLAP No. 101165-0 **NY-DOH No. 11021** **AIHA Lab No. 100188**

Analysis Method: EPA 600/R-93/116

Comments: (PC) Indicates Stratified Point Count Method performed. Method not performed unless stated. Quantification at <0.25% by volume is possible with this method. (PC-Trace) represents this limit of quantitation. (PC-Trace) means that asbestos was detected but is not quantifiable under the Point Counting regimen. Analysis includes all distinct separable layers in accordance with EPA 600 Method. If not reported or otherwise noted, layer is either not present or the client has specifically requested that it not be analyzed. Small asbestos fibers may be missed by PLM due to resolution limitations of the optical microscope. Therefore, negative PLM results cannot be guaranteed. Electron Microscopy can be used as a confirming technique. Regulatory Limit is based upon the sample matrix.

Analysis Performed By: B. Faulseit

Date: 4/15/2009

IATL International Asbestos Testing Laboratories

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CERTIFICATE OF ANALYSIS

Client: DST Consulting Engineers Inc.
605 Hewitson St.
Thunder Bay ON P7B5V5

Report Date: 4/15/2009
Project: Fort Frances Municipal
Project No.: BE-TB-009814

BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 3580875 **Description / Location:** Grey Duct Mastic
Client No.: B6-9A Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	None Detected	None Detected	100

Lab No.: 3580876 **Description / Location:** Grey Cementitious
Client No.: B6-10A Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	None Detected	None Detected	100

Lab No.: 3580877 **Description / Location:** Grey Cementitious
Client No.: B6-10B Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	None Detected	None Detected	100

Lab No.: 3580878 **Description / Location:** Grey Cementitious
Client No.: B6-10C Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	None Detected	None Detected	100

NIST-NVLAP No. 101165-0 **NY-DOH No. 11021** **AIHA Lab No. 100188**

Analysis Method: EPA 600/R-93/116

Comments: (PC) Indicates Stratified Point Count Method performed. Method not performed unless stated. Quantification at <0.25% by volume is possible with this method. (PC–Trace) represents this limit of quantitation. (PC-Trace) means that asbestos was detected but is not quantifiable under the Point Counting regimen. Analysis includes all distinct separable layers in accordance with EPA 600 Method. If not reported or otherwise noted, layer is either not present or the client has specifically requested that it not be analyzed. Small asbestos fibers may be missed by PLM due to resolution limitations of the optical microscope. Therefore, negative PLM results cannot be guaranteed. Electron Microscopy can be used as a confirming technique. Regulatory Limit is based upon the sample matrix.

Analysis Performed By: B. Faulseit

Date: 4/15/2009

IATL International Asbestos Testing Laboratories

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CERTIFICATE OF ANALYSIS

Client: DST Consulting Engineers Inc.
605 Hewitson St.
Thunder Bay ON P7B5V5

Report Date: 4/15/2009
Project: Fort Frances Municipal
Project No.: BE-TB-009814

BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 3580879 **Description / Location:** Grey Cementitious
Client No.: B6-10D Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	None Detected	None Detected	100

Lab No.: 3580880 **Description / Location:** Grey Cementitious
Client No.: B6-10C Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	None Detected	None Detected	100

Lab No.: 3580881 **Description / Location:** Red/Grey Non Fibrous
Client No.: B6-11A Bldg.B6; Purple Arena Seating

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	None Detected	None Detected	100

Lab No.: 3580882 **Description / Location:** Red/Grey Non Fibrous
Client No.: B6-11B Bldg.B6; Purple Arena Seating

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	None Detected	None Detected	100

NIST-NVLAP No. 101165-0 **NY-DOH No. 11021** **AIHA Lab No. 100188**

Analysis Method: EPA 600/R-93/116

Comments: (PC) Indicates Stratified Point Count Method performed. Method not performed unless stated. Quantification at <0.25% by volume is possible with this method. (PC–Trace) represents this limit of quantitation. (PC-Trace) means that asbestos was detected but is not quantifiable under the Point Counting regimen. Analysis includes all distinct separable layers in accordance with EPA 600 Method. If not reported or otherwise noted, layer is either not present or the client has specifically requested that it not be analyzed. Small asbestos fibers may be missed by PLM due to resolution limitations of the optical microscope. Therefore, negative PLM results cannot be guaranteed. Electron Microscopy can be used as a confirming technique. Regulatory Limit is based upon the sample matrix.

Analysis Performed By: B. Faulseit

Date: 4/15/2009

IATL International Asbestos Testing Laboratories

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CERTIFICATE OF ANALYSIS

Client: DST Consulting Engineers Inc.
605 Hewitson St.
Thunder Bay ON P7B5V5

Report Date: 4/15/2009
Project: Fort Frances Municipal
Project No.: BE-TB-009814

BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 3580883 **Description / Location:** Red/Grey Non Fibrous
Client No.: B6-11C Bldg.B6; Purple Arena Seating

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	None Detected	None Detected	100

Lab No.: 3580884 **Description / Location:** Tan Vinyl Sheet Flooring
Client No.: B6-12A Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
30	Chrysotile	20	Cellulose	50

Lab No.: 3580885 **Description / Location:** Sample Not Analyzed
Client No.: B6-12B

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
Sample Not Analyzed		Sample Not Analyzed		

Lab No.: 3580886 **Description / Location:** Sample Not Analyzed
Client No.: B6-12C

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
Sample Not Analyzed		Sample Not Analyzed		

NIST-NVLAP No. 101165-0 **NY-DOH No. 11021** **AIHA Lab No. 100188**

Analysis Method: EPA 600/R-93/116

Comments: (PC) Indicates Stratified Point Count Method performed. Method not performed unless stated. Quantification at <0.25% by volume is possible with this method. (PC–Trace) represents this limit of quantitation. (PC-Trace) means that asbestos was detected but is not quantifiable under the Point Counting regimen. Analysis includes all distinct separable layers in accordance with EPA 600 Method. If not reported or otherwise noted, layer is either not present or the client has specifically requested that it not be analyzed. Small asbestos fibers may be missed by PLM due to resolution limitations of the optical microscope. Therefore, negative PLM results cannot be guaranteed. Electron Microscopy can be used as a confirming technique. Regulatory Limit is based upon the sample matrix.

Analysis Performed By: B. Faulseit

Date: 4/15/2009

IATL International Asbestos Testing Laboratories

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Telephone: 856-231-9449 Fax: 856-231-9818

CERTIFICATE OF ANALYSIS

Client: DST Consulting Engineers Inc.
605 Hewitson St.
Thunder Bay ON P7B5V5

Report Date: 4/15/2009
Project: Fort Frances Municipal
Project No.: BE-TB-009814

BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 3580887 **Description / Location:** Tan Floor Tile; 2x4
Client No.: B6-13A Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	40	Cellulose	20
		40	Fibrous Glass	

Lab No.: 3580888 **Description / Location:** Tan Floor Tile; 2x4
Client No.: B6-13B Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	40	Cellulose	20
		40	Fibrous Glass	

Lab No.: 3580889 **Description / Location:** Tan Floor Tile; 2x4
Client No.: B6-13C Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	40	Cellulose	20
		40	Fibrous Glass	

Lab No.: 3580890 **Description / Location:** Tan Floor Tile; 2x4
Client No.: B6-14A Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	40	Cellulose	20
		40	Fibrous Glass	

NIST-NVLAP No. 101165-0 **NY-DOH No. 11021** **AIHA Lab No. 100188**

Analysis Method: EPA 600/R-93/116

Comments: (PC) Indicates Stratified Point Count Method performed. Method not performed unless stated. Quantification at <0.25% by volume is possible with this method. (PC–Trace) represents this limit of quantitation. (PC-Trace) means that asbestos was detected but is not quantifiable under the Point Counting regimen. Analysis includes all distinct separable layers in accordance with EPA 600 Method. If not reported or otherwise noted, layer is either not present or the client has specifically requested that it not be analyzed. Small asbestos fibers may be missed by PLM due to resolution limitations of the optical microscope. Therefore, negative PLM results cannot be guaranteed. Electron Microscopy can be used as a confirming technique. Regulatory Limit is based upon the sample matrix.

Analysis Performed By: B. Faulseit

Date: 4/15/2009

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Project No.: BE-TB-009814

BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 3580891 **Description / Location:** Tan Floor Tile; 2x4
Client No.: B6-14B Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	40	Cellulose	20
		40	Fibrous Glass	

Lab No.: 3580892 **Description / Location:** Tan Floor Tile; 2x4
Client No.: B6-14C Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	40	Cellulose	20
		40	Fibrous Glass	

Lab No.: 3580893 **Description / Location:** Tan Vinyl Sheet Flooring
Client No.: B6-15A Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	30	Cellulose	70

Lab No.: 3580894 **Description / Location:** Tan Vinyl Sheet Flooring
Client No.: B6-15B Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	30	Cellulose	70

NIST-NVLAP No. 101165-0 **NY-DOH No. 11021** **AIHA Lab No. 100188**

Analysis Method: EPA 600/R-93/116

Comments: (PC) Indicates Stratified Point Count Method performed. Method not performed unless stated. Quantification at <0.25% by volume is possible with this method. (PC--Trace) represents this limit of quantitation. (PC-Trace) means that asbestos was detected but is not quantifiable under the Point Counting regimen. Analysis includes all distinct separable layers in accordance with EPA 600 Method. If not reported or otherwise noted, layer is either not present or the client has specifically requested that it not be analyzed. Small asbestos fibers may be missed by PLM due to resolution limitations of the optical microscope. Therefore, negative PLM results cannot be guaranteed. Electron Microscopy can be used as a confirming technique. Regulatory Limit is based upon the sample matrix.

Analysis Performed By: B. Faulseit

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Project No.: BE-TB-009814

BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 3580895 **Description / Location:** Tan Vinyl Sheet Flooring
Client No.: B6-15C Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	30	Cellulose	70

Lab No.: 3580896 **Description / Location:** Grey Vinyl Sheet Flooring
Client No.: B6-16A Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	None Detected	None Detected	100

Lab No.: 3580897 **Description / Location:** Grey Vinyl Sheet Flooring
Client No.: B6-16B Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	None Detected	None Detected	100

Lab No.: 3580898 **Description / Location:** Grey Vinyl Sheet Flooring
Client No.: B6-16C Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	None Detected	None Detected	100

NIST-NVLAP No. 101165-0 **NY-DOH No. 11021** **AIHA Lab No. 100188**

Analysis Method: EPA 600/R-93/116

Comments: (PC) Indicates Stratified Point Count Method performed. Method not performed unless stated. Quantification at <0.25% by volume is possible with this method. (PC–Trace) represents this limit of quantitation. (PC-Trace) means that asbestos was detected but is not quantifiable under the Point Counting regimen. Analysis includes all distinct separable layers in accordance with EPA 600 Method. If not reported or otherwise noted, layer is either not present or the client has specifically requested that it not be analyzed. Small asbestos fibers may be missed by PLM due to resolution limitations of the optical microscope. Therefore, negative PLM results cannot be guaranteed. Electron Microscopy can be used as a confirming technique. Regulatory Limit is based upon the sample matrix.

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Project No.: BE-TB-009814

BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 3580899 **Description / Location:** Tan Ceiling Tile; 1x2
Client No.: B6-17A Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	100	Cellulose	None Detected

Lab No.: 3580900 **Description / Location:** Tan Ceiling Tile; 1x2
Client No.: B6-17B Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	100	Cellulose	None Detected

Lab No.: 3580901 **Description / Location:** Tan Ceiling Tile; 1x2
Client No.: B6-17C Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	100	Cellulose	None Detected

Lab No.: 3580902 **Description / Location:** White Vinyl Sheet Flooring
Client No.: B6-18A Bldg.B6; Kitchen

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	30	Cellulose	60
		10	Synthetic	

NIST-NVLAP No. 101165-0 **NY-DOH No. 11021** **AIHA Lab No. 100188**

Analysis Method: EPA 600/R-93/116

Comments: (PC) Indicates Stratified Point Count Method performed. Method not performed unless stated. Quantification at <0.25% by volume is possible with this method. (PC–Trace) represents this limit of quantitation. (PC-Trace) means that asbestos was detected but is not quantifiable under the Point Counting regimen. Analysis includes all distinct separable layers in accordance with EPA 600 Method. If not reported or otherwise noted, layer is either not present or the client has specifically requested that it not be analyzed. Small asbestos fibers may be missed by PLM due to resolution limitations of the optical microscope. Therefore, negative PLM results cannot be guaranteed. Electron Microscopy can be used as a confirming technique. Regulatory Limit is based upon the sample matrix.

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Project No.: BE-TB-009814

BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 3580903 **Description / Location:** White Vinyl Sheet Flooring
Client No.: B6-18B Bldg.B6; Kitchen

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	30	Cellulose	60
		10	Synthetic	

Lab No.: 3580904 **Description / Location:** White Vinyl Sheet Flooring
Client No.: B6-18C Bldg.B6; Kitchen

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	30	Cellulose	60
		10	Synthetic	

Lab No.: 3580905 **Description / Location:** Tan Ceiling Tile; 2x4
Client No.: B6-19A Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	40	Cellulose	20
		40	Fibrous Glass	

Lab No.: 3580906 **Description / Location:** Tan Ceiling Tile; 2x4
Client No.: B6-19B Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	40	Cellulose	20
		40	Fibrous Glass	

NIST-NVLAP No. 101165-0 **NY-DOH No. 11021** **AIHA Lab No. 100188**

Analysis Method: EPA 600/R-93/116

Comments: (PC) Indicates Stratified Point Count Method performed. Method not performed unless stated. Quantification at <0.25% by volume is possible with this method. (PC–Trace) represents this limit of quantitation. (PC-Trace) means that asbestos was detected but is not quantifiable under the Point Counting regimen. Analysis includes all distinct separable layers in accordance with EPA 600 Method. If not reported or otherwise noted, layer is either not present or the client has specifically requested that it not be analyzed. Small asbestos fibers may be missed by PLM due to resolution limitations of the optical microscope. Therefore, negative PLM results cannot be guaranteed. Electron Microscopy can be used as a confirming technique. Regulatory Limit is based upon the sample matrix.

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BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 3580907 **Description / Location:** Tan Ceiling Tile; 2x4
Client No.: B6-19C Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	40	Cellulose	20
		40	Fibrous Glass	

Lab No.: 3580908 **Description / Location:** Tan Vinyl Sheet Flooring
Client No.: B4-20A Bldg.B4

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
20	Chrysotile	10	Cellulose	70

Lab No.: 3580909 **Description / Location:** Sample Not Analyzed
Client No.: B4-20B

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
Sample Not Analyzed		Sample Not Analyzed		

Lab No.: 3580910 **Description / Location:** Sample Not Analyzed
Client No.: B4-20C

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
Sample Not Analyzed		Sample Not Analyzed		

NIST-NVLAP No. 101165-0 **NY-DOH No. 11021** **AIHA Lab No. 100188**

Analysis Method: EPA 600/R-93/116

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BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 3580911 **Description / Location:** White Joint Compound
Client No.: B6-22A Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	None Detected	None Detected	100

Lab No.: 3580912 **Description / Location:** White Joint Compound
Client No.: B6-22B Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	None Detected	None Detected	100

Lab No.: 3580913 **Description / Location:** White Joint Compound
Client No.: B6-22C Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	None Detected	None Detected	100

Lab No.: 3580914 **Description / Location:** White Joint Compound
Client No.: B6-22D Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	None Detected	None Detected	100

NIST-NVLAP No. 101165-0 **NY-DOH No. 11021** **AIHA Lab No. 100188**

Analysis Method: EPA 600/R-93/116

Comments: (PC) Indicates Stratified Point Count Method performed. Method not performed unless stated. Quantification at <0.25% by volume is possible with this method. (PC–Trace) represents this limit of quantitation. (PC-Trace) means that asbestos was detected but is not quantifiable under the Point Counting regimen. Analysis includes all distinct separable layers in accordance with EPA 600 Method. If not reported or otherwise noted, layer is either not present or the client has specifically requested that it not be analyzed. Small asbestos fibers may be missed by PLM due to resolution limitations of the optical microscope. Therefore, negative PLM results cannot be guaranteed. Electron Microscopy can be used as a confirming technique. Regulatory Limit is based upon the sample matrix.

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BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 3580915 **Description / Location:** White Joint Compound
Client No.: B6-22E Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	None Detected	None Detected	100

Lab No.: 3580916 **Description / Location:** White Pipe Insulation
Client No.: B6-23A Bldg.B6; Parged Cloth Over F.G.

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	60	Cellulose	40

Lab No.: 3580917 **Description / Location:** White Pipe Insulation
Client No.: B6-23B Bldg.B6; Parged Cloth Over F.G.

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	50	Cellulose	40
		10	Fibrous Glass	

Lab No.: 3580918 **Description / Location:** White Pipe Insulation
Client No.: B6-23C Bldg.B6; Parged Cloth Over F.G.

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	20	Cellulose	40
		40	Fibrous Glass	

NIST-NVLAP No. 101165-0 **NY-DOH No. 11021** **AIHA Lab No. 100188**

Analysis Method: EPA 600/R-93/116

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BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 3580919 **Description / Location:** White Fibrous
Client No.: B6-24A Bldg.B6; A/W Duct; Parged Cloth

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	50	Synthetic	50

Lab No.: 3580920 **Description / Location:** White Fibrous
Client No.: B6-24B Bldg.B6; A/W Duct; Parged Cloth

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	50	Synthetic	50

Lab No.: 3580921 **Description / Location:** White Fibrous
Client No.: B6-24C Bldg.B6; A/W Duct; Parged Cloth

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	50	Synthetic	50

Lab No.: 3580922 **Description / Location:** Off-White Ceiling Tile; 2x4
Client No.: B6-25A Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	30	Cellulose	10
		60	Fibrous Glass	

NIST-NVLAP No. 101165-0 **NY-DOH No. 11021** **AIHA Lab No. 100188**

Analysis Method: EPA 600/R-93/116

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Analysis Performed By: T. Fisher

Date: 4/15/2009

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BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 3580923 **Description / Location:** Off-White Ceiling Tile; 2x4
Client No.: B6-25B Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	30	Cellulose	10
		60	Fibrous Glass	

Lab No.: 3580924 **Description / Location:** Off-White Ceiling Tile; 2x4
Client No.: B6-25C Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	30	Cellulose	10
		60	Fibrous Glass	

Lab No.: 3580925 **Description / Location:** White Joint Compound
Client No.: B6-26A Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	None Detected	None Detected	100

Lab No.: 3580926 **Description / Location:** White Joint Compound
Client No.: B6-26B Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	None Detected	None Detected	100

NIST-NVLAP No. 101165-0 **NY-DOH No. 11021** **AIHA Lab No. 100188**

Analysis Method: EPA 600/R-93/116

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BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 3580927 **Description / Location:** White Joint Compound
Client No.: B6-26C Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	None Detected	None Detected	100

Lab No.: 3580928 **Description / Location:** White Joint Compound
Client No.: B6-26D Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	None Detected	None Detected	100

Lab No.: 3580929 **Description / Location:** White Joint Compound
Client No.: B6-26E Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	None Detected	None Detected	100

NIST-NVLAP No. 101165-0 **NY-DOH No. 11021** **AIHA Lab No. 100188**

Analysis Method: EPA 600/R-93/116

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Report Date: 4/15/2009
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BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 3580930 **Description / Location:** Tan Vinyl Sheet Flooring
Client No.: B6-27A Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	15	Cellulose	80
		5	Fibrous Glass	

Lab No.: 3580930 **Description / Location:** Tan Mastic **Layer No.: 2**
Client No.: B6-27A Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	None Detected	None Detected	100

Lab No.: 3580931 **Description / Location:** Tan Vinyl Sheet Flooring
Client No.: B6-27B Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	15	Cellulose	80
		5	Fibrous Glass	

Lab No.: 3580931 **Description / Location:** Tan Mastic **Layer No.: 2**
Client No.: B6-27B Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	None Detected	None Detected	100

NIST-NVLAP No. 101165-0 **NY-DOH No. 11021** **AIHA Lab No. 100188**

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Analysis Method: EPA 600/R-93/116

Comments: (PC) Indicates Stratified Point Count Method performed. Method not performed unless stated. Quantification at <0.25% by volume is possible with this method. (PC–Trace) represents this limit of quantitation. (PC-Trace) means that asbestos was detected but is not quantifiable under the Point Counting regimen. Analysis includes all distinct separable layers in accordance with EPA 600 Method. If not reported or otherwise noted, layer is either not present or the client has specifically requested that it not be analyzed. Small asbestos fibers may be missed by PLM due to resolution limitations of the optical microscope. Therefore, negative PLM results cannot be guaranteed. Electron Microscopy can be used as a confirming technique. Regulatory Limit is based upon the sample matrix.

Analysis Performed By: T. Fisher

Date: 4/15/2009

IATL International Asbestos Testing Laboratories

9000 Commerce Parkway Suite B Mt. Laurel, NJ 08054
Telephone: 856-231-9449 Fax: 856-231-9818

CERTIFICATE OF ANALYSIS

Client: DST Consulting Engineers Inc.
605 Hewitson St.
Thunder Bay ON P7B5V5

Report Date: 4/15/2009
Project: Fort Frances Municipal
Project No.: BE-TB-009814

BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 3580932 **Description / Location:** Tan Vinyl Sheet Flooring
Client No.: B6-27C Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	15	Cellulose	80
		5	Fibrous Glass	

Lab No.: 3580932 **Description / Location:** Tan Mastic **Layer No.: 2**
Client No.: B6-27C Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	None Detected	None Detected	100

Lab No.: 3580933 **Description / Location:** Tan Vinyl Sheet Flooring
Client No.: B6-28A Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	10	Fibrous Glass	40

Lab No.: 3580933 **Description / Location:** Tan Mastic **Layer No.: 2**
Client No.: B6-28A Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	None Detected	None Detected	100

NIST-NVLAP No. 101165-0 **NY-DOH No. 11021** **AIHA Lab No. 100188**

Analysis Method: EPA 600/R-93/116

Comments: (PC) Indicates Stratified Point Count Method performed. Method not performed unless stated. Quantification at <0.25% by volume is possible with this method. (PC–Trace) represents this limit of quantitation. (PC-Trace) means that asbestos was detected but is not quantifiable under the Point Counting regimen. Analysis includes all distinct separable layers in accordance with EPA 600 Method. If not reported or otherwise noted, layer is either not present or the client has specifically requested that it not be analyzed. Small asbestos fibers may be missed by PLM due to resolution limitations of the optical microscope. Therefore, negative PLM results cannot be guaranteed. Electron Microscopy can be used as a confirming technique. Regulatory Limit is based upon the sample matrix.

Analysis Performed By: T. Fisher

Date: 4/15/2009

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Report Date: 4/15/2009
Project: Fort Frances Municipal
Project No.: BE-TB-009814

BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 3580934 **Description / Location:** Tan Vinyl Sheet Flooring
Client No.: B6-28B Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	10	Fibrous Glass	90

Lab No.: 3580934 **Description / Location:** Tan Mastic **Layer No.: 2**
Client No.: B6-28B Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	None Detected	None Detected	100

Lab No.: 3580935 **Description / Location:** Tan Vinyl Sheet Flooring
Client No.: B6-28C Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	10	Fibrous Glass	90

Lab No.: 3580935 **Description / Location:** Tan Mastic **Layer No.: 2**
Client No.: B6-28C Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	None Detected	None Detected	100

NIST-NVLAP No. 101165-0 **NY-DOH No. 11021** **AIHA Lab No. 100188**

Analysis Method: EPA 600/R-93/116

Comments: (PC) Indicates Stratified Point Count Method performed. Method not performed unless stated. Quantification at <0.25% by volume is possible with this method. (PC–Trace) represents this limit of quantitation. (PC-Trace) means that asbestos was detected but is not quantifiable under the Point Counting regimen. Analysis includes all distinct separable layers in accordance with EPA 600 Method. If not reported or otherwise noted, layer is either not present or the client has specifically requested that it not be analyzed. Small asbestos fibers may be missed by PLM due to resolution limitations of the optical microscope. Therefore, negative PLM results cannot be guaranteed. Electron Microscopy can be used as a confirming technique. Regulatory Limit is based upon the sample matrix.

Analysis Performed By: T. Fisher

Date: 4/15/2009

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Report Date: 4/15/2009
Project: Fort Frances Municipal
Project No.: BE-TB-009814

BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 3580936 **Description / Location:** Off-White Insulation
Client No.: B6-29A Bldg.B6; Spray On

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	60	Fibrous Glass	40

Lab No.: 3580937 **Description / Location:** Off-White Insulation
Client No.: B6-29B Bldg.B6; Spray On

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	60	Fibrous Glass	40

Lab No.: 3580938 **Description / Location:** Off-White Insulation
Client No.: B6-29C Bldg.B6; Spray On

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	60	Fibrous Glass	40

NIST-NVLAP No. 101165-0 **NY-DOH No. 11021** **AIHA Lab No. 100188**

Analysis Method: EPA 600/R-93/116

Comments: (PC) Indicates Stratified Point Count Method performed. Method not performed unless stated. Quantification at <0.25% by volume is possible with this method. (PC–Trace) represents this limit of quantitation. (PC-Trace) means that asbestos was detected but is not quantifiable under the Point Counting regimen. Analysis includes all distinct separable layers in accordance with EPA 600 Method. If not reported or otherwise noted, layer is either not present or the client has specifically requested that it not be analyzed. Small asbestos fibers may be missed by PLM due to resolution limitations of the optical microscope. Therefore, negative PLM results cannot be guaranteed. Electron Microscopy can be used as a confirming technique. Regulatory Limit is based upon the sample matrix.

Analysis Performed By: L. Solebello

Date: 4/15/2009

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Report Date: 4/15/2009
Project: Fort Frances Municipal
Project No.: BE-TB-009814

BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 3580939 **Description / Location:** Grey/Black Rubber Tile; 3x3
Client No.: B6-30A Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	None Detected	None Detected	100

Lab No.: 3580939 **Description / Location:** Yellow Mastic **Layer No.: 2**
Client No.: B6-30A Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	None Detected	None Detected	100

Lab No.: 3580940 **Description / Location:** Grey/Black Rubber Tile; 3x3
Client No.: B6-30B Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	None Detected	None Detected	100

NIST-NVLAP No. 101165-0 **NY-DOH No. 11021** **AIHA Lab No. 100188**

Analysis Method: EPA 600/R-93/116

Comments: (PC) Indicates Stratified Point Count Method performed. Method not performed unless stated. Quantification at <0.25% by volume is possible with this method. (PC–Trace) represents this limit of quantitation. (PC-Trace) means that asbestos was detected but is not quantifiable under the Point Counting regimen. Analysis includes all distinct separable layers in accordance with EPA 600 Method. If not reported or otherwise noted, layer is either not present or the client has specifically requested that it not be analyzed. Small asbestos fibers may be missed by PLM due to resolution limitations of the optical microscope. Therefore, negative PLM results cannot be guaranteed. Electron Microscopy can be used as a confirming technique. Regulatory Limit is based upon the sample matrix.

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Report Date: 4/15/2009
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Project No.: BE-TB-009814

BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 3580941 **Description / Location:** Grey/Black Rubber Tile; 3x3
Client No.: B6-30C Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	None Detected	None Detected	100

Lab No.: 3580941 **Description / Location:** Yellow Mastic **Layer No.:** 2
Client No.: B6-30C Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	None Detected	None Detected	100

Lab No.: 3580942 **Description / Location:** White Joint Compound
Client No.: B6-31A Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	None Detected	None Detected	100

Lab No.: 3580943 **Description / Location:** White Joint Compound
Client No.: B6-31B Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	None Detected	None Detected	100

NIST-NVLAP No. 101165-0 **NY-DOH No. 11021** **AIHA Lab No. 100188**

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Analysis Method: EPA 600/R-93/116

Comments: (PC) Indicates Stratified Point Count Method performed. Method not performed unless stated. Quantification at <0.25% by volume is possible with this method. (PC–Trace) represents this limit of quantitation. (PC-Trace) means that asbestos was detected but is not quantifiable under the Point Counting regimen. Analysis includes all distinct separable layers in accordance with EPA 600 Method. If not reported or otherwise noted, layer is either not present or the client has specifically requested that it not be analyzed. Small asbestos fibers may be missed by PLM due to resolution limitations of the optical microscope. Therefore, negative PLM results cannot be guaranteed. Electron Microscopy can be used as a confirming technique. Regulatory Limit is based upon the sample matrix.

Analysis Performed By: L. Solebello

Date: 4/15/2009

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Report Date: 4/15/2009
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Project No.: BE-TB-009814

BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 3580944 **Description / Location:** White Joint Compound
Client No.: B6-31C Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	None Detected	None Detected	100

Lab No.: 3580945 **Description / Location:** White/Pink Pipe Wrap/Insulation
Client No.: B6-32A Bldg.B6; Parged F.G. Large Dia

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	25	Cellulose	25
		50	Fibrous Glass	

Lab No.: 3580946 **Description / Location:** White/Pink Pipe Wrap/Insulation
Client No.: B6-32B Bldg.B6; Parged F.G. Large Dia

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	50	Cellulose	30
		20	Fibrous Glass	

Lab No.: 3580947 **Description / Location:** White/Pink Pipe Wrap/Insulation
Client No.: B6-32C Bldg.B6; Parged F.G. Large Dia

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	20	Cellulose	40
		40	Fibrous Glass	

NIST-NVLAP No. 101165-0 **NY-DOH No. 11021** **AIHA Lab No. 100188**

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Analysis Method: EPA 600/R-93/116

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Analysis Performed By: L. Solebello

Date: 4/15/2009

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Report Date: 4/15/2009
Project: Fort Frances Municipal
Project No.: BE-TB-009814

BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 3580948 **Description / Location:** White Pipe Wrap
Client No.: B6-33A Bldg.B6; Parged F.G. 80's

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	70	Cellulose	30
		Trace	Fibrous Glass	

Lab No.: 3580949 **Description / Location:** White Pipe Wrap
Client No.: B6-33B Bldg.B6; Parged F.G. 80's

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	70	Cellulose	30
		Trace	Fibrous Glass	

Lab No.: 3580950 **Description / Location:** White Pipe Wrap
Client No.: B6-33C Bldg.B6; Parged F.G. 80's

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	80	Cellulose	20

Lab No.: 3580951 **Description / Location:** Red/Brown Duct Caulk
Client No.: B6-40A Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	5	Wollastonite	95

NIST-NVLAP No. 101165-0 **NY-DOH No. 11021** **AIHA Lab No. 100188**

Analysis Method: EPA 600/R-93/116

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Analysis Performed By: L. Solebello

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Report Date: 4/15/2009
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BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 3580952 **Description / Location:** White/Tan Ceiling Tile; 2x4
Client No.: B6-41A Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	35	Cellulose	30
		35	Fibrous Glass	

Lab No.: 3580953 **Description / Location:** White/Tan Ceiling Tile; 2x4
Client No.: B6-41B Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	35	Cellulose	30
		35	Fibrous Glass	

Lab No.: 3580954 **Description / Location:** White/Tan Ceiling Tile; 2x4
Client No.: B6-41C Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	35	Cellulose	30
		35	Fibrous Glass	

Lab No.: 3580955 **Description / Location:** White Duct Wrap
Client No.: B6-43A Bldg.B6; Parged Cloth

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	80	Cellulose	20

NIST-NVLAP No. 101165-0 **NY-DOH No. 11021** **AIHA Lab No. 100188**

Analysis Method: EPA 600/R-93/116

Comments: (PC) Indicates Stratified Point Count Method performed. Method not performed unless stated. Quantification at <0.25% by volume is possible with this method. (PC–Trace) represents this limit of quantitation. (PC-Trace) means that asbestos was detected but is not quantifiable under the Point Counting regimen. Analysis includes all distinct separable layers in accordance with EPA 600 Method. If not reported or otherwise noted, layer is either not present or the client has specifically requested that it not be analyzed. Small asbestos fibers may be missed by PLM due to resolution limitations of the optical microscope. Therefore, negative PLM results cannot be guaranteed. Electron Microscopy can be used as a confirming technique. Regulatory Limit is based upon the sample matrix.

Analysis Performed By: B. Faulseit

Date: 4/15/2009

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Report Date: 4/15/2009
Project: Fort Frances Municipal
Project No.: BE-TB-009814

BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 3580956 **Description / Location:** White Duct Wrap
Client No.: B6-43B Bldg.B6; Parged Cloth

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	80	Cellulose	20

Lab No.: 3580957 **Description / Location:** White Duct Wrap
Client No.: B6-43C Bldg.B6; Parged Cloth

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	80	Cellulose	20

Lab No.: 3580958 **Description / Location:** Tan Fibrous; A/W Pipe
Client No.: B6-44A Bldg.B6; Parged F.G.

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	20	Cellulose	60
		20	Fibrous Glass	

Lab No.: 3580959 **Description / Location:** Tan Fibrous; A/W Pipe
Client No.: B6-44B Bldg.B6; Parged F.G.

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	20	Cellulose	60
		20	Fibrous Glass	

NIST-NVLAP No. 101165-0 **NY-DOH No. 11021** **AIHA Lab No. 100188**

Analysis Method: EPA 600/R-93/116

Comments: (PC) Indicates Stratified Point Count Method performed. Method not performed unless stated. Quantification at <0.25% by volume is possible with this method. (PC–Trace) represents this limit of quantitation. (PC-Trace) means that asbestos was detected but is not quantifiable under the Point Counting regimen. Analysis includes all distinct separable layers in accordance with EPA 600 Method. If not reported or otherwise noted, layer is either not present or the client has specifically requested that it not be analyzed. Small asbestos fibers may be missed by PLM due to resolution limitations of the optical microscope. Therefore, negative PLM results cannot be guaranteed. Electron Microscopy can be used as a confirming technique. Regulatory Limit is based upon the sample matrix.

Analysis Performed By: B. Faulseit

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BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 3580960 **Client No.:** B6-44C
Description / Location: Tan Fibrous; A/W Pipe Bldg.B6; Parged F.G.

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	10	Cellulose	70
		20	Fibrous Glass	

Lab No.: 3580961 **Client No.:** B6-45A
Description / Location: White Texture Bldg.B6; Pool Duct

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	2	Fibrous Glass	98

Lab No.: 3580962 **Client No.:** B6-45B
Description / Location: White Texture Bldg.B6; Pool Duct

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	1	Fibrous Glass	99

Lab No.: 3580963 **Client No.:** B6-45C
Description / Location: White Texture Bldg.B6; Pool Duct

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	None Detected	None Detected	100

NIST-NVLAP No. 101165-0 **NY-DOH No. 11021** **AIHA Lab No. 100188**

Analysis Method: EPA 600/R-93/116

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Analysis Performed By: B. Faulseit

Date: 4/15/2009

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BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 3580964 **Description / Location:** White Joint Compound
Client No.: B6-46A Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	None Detected	None Detected	100

Lab No.: 3580965 **Description / Location:** White Joint Compound
Client No.: B6-46B Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	None Detected	None Detected	100

Lab No.: 3580966 **Description / Location:** White Joint Compound
Client No.: B6-46C Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	None Detected	None Detected	100

Lab No.: 3580967 **Description / Location:** Tan Ceiling Tile; 1x1
Client No.: B6-47A Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	100	Cellulose	None Detected

NIST-NVLAP No. 101165-0 **NY-DOH No. 11021** **AIHA Lab No. 100188**

Analysis Method: EPA 600/R-93/116

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Analysis Performed By: B. Faulseit

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Report Date: 4/15/2009
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Project No.: BE-TB-009814

BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 3580968 **Description / Location:** Tan Ceiling Tile; 1x1
Client No.: B6-47B Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	100	Cellulose	None Detected

Lab No.: 3580969 **Description / Location:** Tan Ceiling Tile; 1x1
Client No.: B6-47C Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	100	Cellulose	None Detected

Lab No.: 3580970 **Description / Location:** Tan Ceiling Tile; 2x2
Client No.: B6-48A Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	100	Cellulose	None Detected

Lab No.: 3580971 **Description / Location:** Tan Ceiling Tile; 2x2
Client No.: B6-48B Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	100	Cellulose	None Detected

NIST-NVLAP No. 101165-0 **NY-DOH No. 11021** **AIHA Lab No. 100188**

Analysis Method: EPA 600/R-93/116

Comments: (PC) Indicates Stratified Point Count Method performed. Method not performed unless stated. Quantification at <0.25% by volume is possible with this method. (PC–Trace) represents this limit of quantitation. (PC-Trace) means that asbestos was detected but is not quantifiable under the Point Counting regimen. Analysis includes all distinct separable layers in accordance with EPA 600 Method. If not reported or otherwise noted, layer is either not present or the client has specifically requested that it not be analyzed. Small asbestos fibers may be missed by PLM due to resolution limitations of the optical microscope. Therefore, negative PLM results cannot be guaranteed. Electron Microscopy can be used as a confirming technique. Regulatory Limit is based upon the sample matrix.

Analysis Performed By: B. Faulseit

Date: 4/15/2009

IATL International Asbestos Testing Laboratories

9000 Commerce Parkway Suite B Mt. Laurel, NJ 08054
Telephone: 856-231-9449 Fax: 856-231-9818

CERTIFICATE OF ANALYSIS

Client: DST Consulting Engineers Inc.
605 Hewitson St.
Thunder Bay ON P7B5V5

Report Date: 4/15/2009
Project: Fort Frances Municipal
Project No.: BE-TB-009814

BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 3580972 **Description / Location:** Tan Ceiling Tile; 2x2
Client No.: B6-48C Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	100	Cellulose	None Detected

Lab No.: 3580973 **Description / Location:** Tan Transite Pipe
Client No.: B6-49A Bldg.B6

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
20	Chrysotile	None Detected	None Detected	PC 74.9
5.1	Crocidolite			

Lab No.: 3580974 **Description / Location:** Sample Not Analyzed
Client No.: B6-49B

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
Sample Not Analyzed		Sample Not Analyzed		

Lab No.: 3580975 **Description / Location:** Sample Not Analyzed
Client No.: B6-49C

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
Sample Not Analyzed		Sample Not Analyzed		

NIST-NVLAP No. 101165-0 **NY-DOH No. 11021** **AIHA Lab No. 100188**

Analysis Method: EPA 600/R-93/116

Comments: (PC) Indicates Stratified Point Count Method performed. Method not performed unless stated. Quantification at <0.25% by volume is possible with this method. (PC–Trace) represents this limit of quantitation. (PC-Trace) means that asbestos was detected but is not quantifiable under the Point Counting regimen. Analysis includes all distinct separable layers in accordance with EPA 600 Method. If not reported or otherwise noted, layer is either not present or the client has specifically requested that it not be analyzed. Small asbestos fibers may be missed by PLM due to resolution limitations of the optical microscope. Therefore, negative PLM results cannot be guaranteed. Electron Microscopy can be used as a confirming technique. Regulatory Limit is based upon the sample matrix.

Analysis Performed By: B. Faulseit

Date: 4/15/2009

ASBESTOS SAMPLING LOG

Client: DST Consulting Engineers Inc.
605 Hewitson Street
Thunder Bay, Ontario, P7V 5V5
Phone: (807)626-1311
Fax: (807)623-1792

Project No. BE-TB-0978-4

Contact: James Harding
Analysis: Asbestos Bulk PLM -EPA 600

Special Instructions:

Analyze to Ontario Regulations. (O.Reg.278/05) to 0.5% detection limit
For each homogenous sample group (e.g. 1A, 1B, 1C etc.)
stop analysing after the first positive result in the group, starting at A, then B etc.
email resuts to jharding@dstgroup.com

TABLE 1.0 - SUMMARY OF ASBESTOS SAMPLES
DST Consulting Engineers Inc., 605 Hewitson Street, Thunder Bay, ON. Tel: (807)-623-2929 Fax: (807)-623-1792

Sample No.	LAB Sample No	Material		Bldg.	Floor	Room
1A	3580851	Gypsum Drywall	Drywall Joint Compound	B6		
1B	3580852	Gypsum Drywall	Drywall Joint Compound	B6		
1C	3580853	Gypsum Drywall	Drywall Joint Compound	B6		
1D	3580854	Gypsum Drywall	Drywall Joint Compound	B6		
1E	3580855	Gypsum Drywall	Drywall Joint Compound	B6		
2A	3580856	Ceiling Tile	2x4 pinholed	B6		
2B	3580857	Ceiling Tile	2x4 pinholed	B6		
2C	3580858	Ceiling Tile	2x4 pinholed	B6		
3A	3580859	Vinyl Sheet Floor	Beige/ red,blue dots	B6		
3B	3580860	Vinyl Sheet Floor	Beige/ red,blue dots	B6		
labeled 3C 3E	3580861	Vinyl Sheet Floor	Beige/ red,blue dots	B6		
4A	3580862	Vinyl Sheet Floor	Purple cut mat	B6		
4B	3580863	Vinyl Sheet Floor	Purple cut mat	B6		
4C	3580864	Vinyl Sheet Floor	Purple cut mat	B6		
5A	3580865	Ceiling Tile	2x4 fissured, pinhole	B6		
5B	3580866	Ceiling Tile	2x4 fissured, pinhole	B6		
5C	3580867	Ceiling Tile	2x4 fissured, pinhole	B6		
6A	3580868	Vinyl Sheet Floor	Off white sand	B6		
6B	3580869	Vinyl Sheet Floor	Off white sand	B6		
6C	3580870	Vinyl Sheet Floor	Off white sand	B6		
7A	3580871	Vinyl Sheet Floor	Elevator	B6		
8A	3580872	Floor Tile	1'x4' Cut Mat	B6		
8B	3580873	Floor Tile	1'x4' Cut Mat	B6		
8C	3580874	Floor Tile	1'x4' Cut Mat	B6		
9A	3580875	Duct Mastic	Grey	B6		
10A	3580876	Textured Cement		B6		
10B	3580877	Textured Cement		B6		
10C	3580878	Textured Cement		B6		
10D	3580879	Textured Cement		B6		
10C	3580880	Textured Cement		B6		

ASBESTOS SAMPLING LOG

Client: DST Consulting Engineers Inc.
605 Hewitson Street
Thunder Bay, Ontario, P7V 5V5
Phone: (807)626-1311
Fax: (807)623-1792

Project No. BE-TB-0098XXXX 0984

Contact: James Harding
Analysis: Asbestos Bulk PLM -EPA 600

Special Instructions:
Analyze to Ontario Regulations. (O.Reg.278/05) to 0.5% detection limit
For each homogenous sample group (e.g. 1A, 1B, 1C etc.)
stop analysing after the first positive result in the group, starting at A, then B etc.
email resuts to jharding@dstgroup.com

TABLE 1.0 - SUMMARY OF ASBESTOS SAMPLES
DST Consulting Engineers Inc., 605 Hewitson Street, Thunder Bay, ON. Tel: (807)-623-2929 Fax: (807)-623-1792

Sample No.	LAB Sample No	Material		Bldg.	Floor	Room
1A	3580851	Gypsum Drywall	Drywall Joint Compound	B6		
1B	3580852	Gypsum Drywall	Drywall Joint Compound	B6		
1C	3580853	Gypsum Drywall	Drywall Joint Compound	B6		
1D	3580854	Gypsum Drywall	Drywall Joint Compound	B6		
1E	3580855	Gypsum Drywall	Drywall Joint Compound	B6		
2A	3580856	Ceiling Tile	2x4 pinholed	B6		
2B	3580857	Ceiling Tile	2x4 pinholed	B6		
2C	3580858	Ceiling Tile	2x4 pinholed	B6		
3A	3580859	Vinyl Sheet Floor	Beige/ red,blue dots	B6		
3B	3580860	Vinyl Sheet Floor	Beige/ red,blue dots	B6		
Labeled 3C 3E	3580861	Vinyl Sheet Floor	Beige/ red,blue dots	B6		
4A	3580862	Vinyl Sheet Floor	Purple cut mat	B6		
4B	3580863	Vinyl Sheet Floor	Purple cut mat	B6		
4C	3580864	Vinyl Sheet Floor	Purple cut mat	B6		
5A	3580865	Ceiling Tile	2x4 fissured, pinhole	B6		
5B	3580866	Ceiling Tile	2x4 fissured, pinhole	B6		
5C	3580867	Ceiling Tile	2x4 fissured, pinhole	B6		
6A	3580868	Vinyl Sheet Floor	Off white sand	B6		
6B	3580869	Vinyl Sheet Floor	Off white sand	B6		
6C	3580870	Vinyl Sheet Floor	Off white sand	B6		
7A	3580871	Vinyl Sheet Floor	Elevator	B6		
8A	3580872	Floor Tile	1'x4' Cut Mat	B6		
8B	3580873	Floor Tile	1'x4' Cut Mat	B6		
8C	3580874	Floor Tile	1'x4' Cut Mat	B6		
9A	3580875	Duct Mastic	Grey	B6		
10A	3580876	Textured Cement		B6		
10B	3580877	Textured Cement		B6		
10C	3580878	Textured Cement		B6		
10D	3580879	Textured Cement		B6		
10C	3580880	Textured Cement		B6		

6/4/19

11A	3580881	Vinyl Sheet Floor	Purple Arena Seating	B6
11B	3580882	Vinyl Sheet Floor	Purple Arena Seating	B6
11C	3580883	Vinyl Sheet Floor	Purple Arena Seating	B6
12A	3580884	Vinyl Sheet Floor	Tile Patt	B6
12B	3580885	Vinyl Sheet Floor	Tile Patt	B6
12C	3580886	Vinyl Sheet Floor	Tile Patt	B6
13A	3580887	Ceiling Tile	2x4 fissured, pinhole	B6
13B	3580888	Ceiling Tile	2x4 fissured, pinhole	B6
13C	3580889	Ceiling Tile	2x4 fissured, pinhole	B6
14A	3580890	Ceiling Tile	2x4 pinholed	B6
14B	3580891	Ceiling Tile	2x4 pinholed	B6
14C	3580892	Ceiling Tile	2x4 pinholed	B6
15A	3580893	Vinyl Sheet Floor	Marbled	B6
15B	3580894	Vinyl Sheet Floor	Marbled	B6
15C	3580895	Vinyl Sheet Floor	Marbled	B6
16A	3580896	Vinyl Sheet Floor	Grey	B6
16B	3580897	Vinyl Sheet Floor	Grey	B6
16C	3580898	Vinyl Sheet Floor	Grey	B6
17A	3580899	Ceiling Tile	1x2 stapled	B6
17B	3580900	Ceiling Tile	1x2 stapled	B6
17C	3580901	Ceiling Tile	1x2 stapled	B6
18A	3580902	Vinyl Sheet Floor	Kitchen	B6
18B	3580903	Vinyl Sheet Floor	Kitchen	B6
18C	3580904	Vinyl Sheet Floor	Kitchen	B6
19A	3580905	Ceiling Tile	2x4 fissured, pinhole	B6
19B	3580906	Ceiling Tile	2x4 fissured, pinhole	B6
19C	3580907	Ceiling Tile	2x4 fissured, pinhole	B6
20A	3580908	Vinyl Sheet Floor	Mosaic, offwhite	B4
20B	3580909	Vinyl Sheet Floor	Mosaic, offwhite	B4
20C	3580910	Vinyl Sheet Floor	Mosaic, offwhite	B4
22A	3580911	Gypsum Drywall	Drywall Joint Compound	B6
22B	3580912	Gypsum Drywall	Drywall Joint Compound	B6
22C	3580913	Gypsum Drywall	Drywall Joint Compound	B6
22D	3580914	Gypsum Drywall	Drywall Joint Compound	B6
22E	3580915	Gypsum Drywall	Drywall Joint Compound	B6
23A	3580916	Pipe Insulation	Parged cloth over f.g.	B6
23B	3580917	Vinyl Sheet Floor	Parged cloth over f.g.	B6
23C	3580918	Vinyl Sheet Floor	Parged cloth over f.g.	B6
24A	3580919	Duct	Parged Cloth	B6
24B	3580920	Duct	Parged Cloth	B6
24C	3580921	Duct	Parged Cloth	B6

4/16/19

25A	3580922	Ceiling Tile	2x4 fissured, pinhole	B6	
25B	3580923	Ceiling Tile	2x4 fissured, pinhole	B6	
25C	3580924	Ceiling Tile	2x4 fissured, pinhole	B6	
26A	3580925	Gypsum Drywall	Drywall Joint Compound	B6	
26B	3580926	Gypsum Drywall	Drywall Joint Compound	B6	
26C	3580927	Gypsum Drywall	Drywall Joint Compound	B6	
26D	3580928	Gypsum Drywall	Drywall Joint Compound	B6	
26E	3580929	Gypsum Drywall	Drywall Joint Compound	B6	
27A	3580930	Vinyl Sheet Floor	Mosaic, beige	B6	
27B	3580931	Vinyl Sheet Floor	Mosaic, beige	B6	
27C	3580932	Vinyl Sheet Floor	Mosaic, beige	B6	
28A	3580933	Vinyl Sheet Floor	Rattan Patt	B6	
28B	3580934	Vinyl Sheet Floor	Rattan Patt	B6	
28C	3580935	Vinyl Sheet Floor	Rattan Patt	B6	
29A	3580936	Spray On	fibrous	B6	237
29B	3580937	Spray On	fibrous	B6	237
29C	3580938	Spray On	fibrous	B6	237
30A	3580939	Vinyl Tile	3'x3', Grey/Blue	B6	
30B	3580940	Vinyl Tile	3'x3', Grey/Blue	B6	
30C	3580941	Vinyl Tile	3'x3', Grey/Blue	B6	
31A	3580942	Gypsum Drywall	Drywall Joint Compound	B6	
31B	3580943	Gypsum Drywall	Drywall Joint Compound	B6	
31C	3580944	Gypsum Drywall	Drywall Joint Compound	B6	
32A	3580945	Pipe Insulation	parged f.g. Large Dia	B6	
32B	3580946	Pipe Insulation	parged f.g. Large Dia	B6	
32C	3580947	Pipe Insulation	parged f.g. Large Dia	B6	
33A	3580948	Pipe Insulation	parged f.g. 80's	B6	
33B	3580949	Pipe Insulation	parged f.g. 80's	B6	
33C	3580950	Pipe Insulation	parged f.g. 80's	B6	
40A	3580951	Duct Mastic	Red	B6	
41A	3580952	Ceiling Tile	2x4 pinholed	B6	
41B	3580953	Ceiling Tile	2x4 pinholed	B6	
41C	3580954	Ceiling Tile	2x4 pinholed	B6	
43A	3580955	Duct	Parged Cloth	B6	
43B	3580956	Duct	Parged Cloth	B6	
43C	3580957	Duct	Parged Cloth	B6	
44A	3580958	Pipe Insulation	parged f.g	B6	
44B	3580959	Pipe Insulation	parged f.g.	B6	
44C	3580960	Pipe Insulation	parged f.g.	B6	
45A	3580961	Textured Plaster	Pool Duct	B6	
45B	3580962	Textured Plaster	Pool Duct	B6	

25A	3580922	Ceiling Tile	2x4 fissured, pinhole	B6	
25B	3580923	Ceiling Tile	2x4 fissured, pinhole	B6	
25C	3580924	Ceiling Tile	2x4 fissured, pinhole	B6	
26A	3580925	Gypsum Drywall	Drywall Joint Compound	B6	
26B	3580926	Gypsum Drywall	Drywall Joint Compound	B6	
26C	3580927	Gypsum Drywall	Drywall Joint Compound	B6	
26D	3580928	Gypsum Drywall	Drywall Joint Compound	B6	
26E	3580929	Gypsum Drywall	Drywall Joint Compound	B6	
27A	3580930	Vinyl Sheet Floor	Mosaic, beige	B6	
27B	3580931	Vinyl Sheet Floor	Mosaic, beige	B6	
27C	3580932	Vinyl Sheet Floor	Mosaic, beige	B6	
28A	3580933	Vinyl Sheet Floor	Rattan Patt	B6	
28B	3580934	Vinyl Sheet Floor	Rattan Patt	B6	
28C	3580935	Vinyl Sheet Floor	Rattan Patt	B6	
29A	3580936	Spray On	fibrous	B6	237
29B	3580937	Spray On	fibrous	B6	237
29C	3580938	Spray On	fibrous	B6	237
30A	3580939	Vinyl Tile	3'x3', Grey/Blue	B6	
30B	3580940	Vinyl Tile	3'x3', Grey/Blue	B6	
30C	3580941	Vinyl Tile	3'x3', Grey/Blue	B6	
31A	3580942	Gypsum Drywall	Drywall Joint Compound	B6	
31B	3580943	Gypsum Drywall	Drywall Joint Compound	B6	
31C	3580944	Gypsum Drywall	Drywall Joint Compound	B6	
32A	3580945	Pipe Insulation	parged f.g. Large Dia	B6	
32B	3580946	Pipe Insulation	parged f.g. Large Dia	B6	
32C	3580947	Pipe Insulation	parged f.g. Large Dia	B6	
33A	3580948	Pipe Insulation	parged f.g. 80's	B6	
33B	3580949	Pipe Insulation	parged f.g. 80's	B6	
33C	3580950	Pipe Insulation	parged f.g. 80's	B6	
40A	3580951	Duct Mastic	Red	B6	
41A	3580952	Ceiling Tile	2x4 pinholed	B6	
41B	3580953	Ceiling Tile	2x4 pinholed	B6	
41C	3580954	Ceiling Tile	2x4 pinholed	B6	
43A	3580955	Duct	Parged Cloth	B6	
43B	3580956	Duct	Parged Cloth	B6	
43C	3580957	Duct	Parged Cloth	B6	
44A	3580958	Pipe Insulation	parged f.g	B6	
44B	3580959	Pipe Insulation	parged f.g.	B6	
44C	3580960	Pipe Insulation	parged f.g.	B6	
45A	3580961	Textured Plaster	Pool Duct	B6	
45B	3580962	Textured Plaster	Pool Duct	B6	

45C	3580963	Textured Plaster	Pool Duct	B6
46A	3580964	Gypsum Drywall	Drywall Joint Compound	B6
46B	3580965	Gypsum Drywall	Drywall Joint Compound	B6
46C	3580966	Gypsum Drywall	Drywall Joint Compound	B6
47A	3580967	Ceiling Tile	1x1 stapled	B6
47B	3580968	Ceiling Tile	1x1 stapled	B6
47C	3580969	Ceiling Tile	1x1 stapled	B6
48A	3580970	Ceiling Tile	2x2 pinhole suspended	B6
48B	3580971	Ceiling Tile	2x2 pinhole suspended	B6
48C	3580972	Ceiling Tile	2x2 pinhole suspended	B6
49A	3580973	Pipe	Transite	B6
49B	3580974	Pipe	Transite	B6
49C	3580975	Pipe	Transite	B6

IATL International Asbestos Testing Laboratories

9000 Commerce Parkway Suite B Mt. Laurel, NJ 08054
Telephone: 856-231-9449 Fax: 856-231-9818

BATCH / SAMPLE MANAGEMENT REPORT

Customer No.: DST574

Customer: DST Consulting Engineers Inc.
605 Hewitson St.
Thunder Bay ON P7B5V5

Customer Rep: SC

Batch Number: 166609

Project: Fort Francis

Project Number: BE-TB-09814

TAT: 3 Day ~~5 Day~~

Date/Time Rec'd: 4/10/2009

# of Samples: 271 **Analysis:** PLM

Time/Date Due: 4/15 ~~4/17/2009~~

Special Instructions:

Admin Notes:

Shipping Error:

_____ Samples were not received in a sealed container. Bulk samples not double bagged.
_____ Air Cassettes received open in bag… sample integrity compromised, possible contamination.
_____ Samples received wet.
_____ Samples received covered with dust… possible cross contamination.
_____ Sample containers damaged, contents spilled… possible cross contamination.
_____ Paperwork received in the same bag as samples possible contamination.
_____ No / Incomplete Chain of Custody Received.
_____ No / Incomplete Sample Log Received.
_____ Sample container IDs do not match the client's sample log.
_____ No Turnaround Time indicated.
_____ PCM Re-prep for TEM NIOSH 7402. Cassettes previously opened and portion of filter removed.
_____ Blank(s) not submitted as required by the requested analytical method.
_____ Minimum shipping requirements not attained. See attached Carrier Air Bill.
_____ Other: _____

Batch Error:

_____ Wrong Client ID Listed: _____
_____ Wrong Client Location Listed: _____
_____ Wrong Project ID Listed: _____
_____ Wrong TurnAround Time Listed: _____
_____ Wrong Due Date Listed: _____
_____ Wrong Date/Time Received Listed: _____
_____ Wrong Analysis Method Listed: _____
_____ Wrong Number of Samples Listed: _____

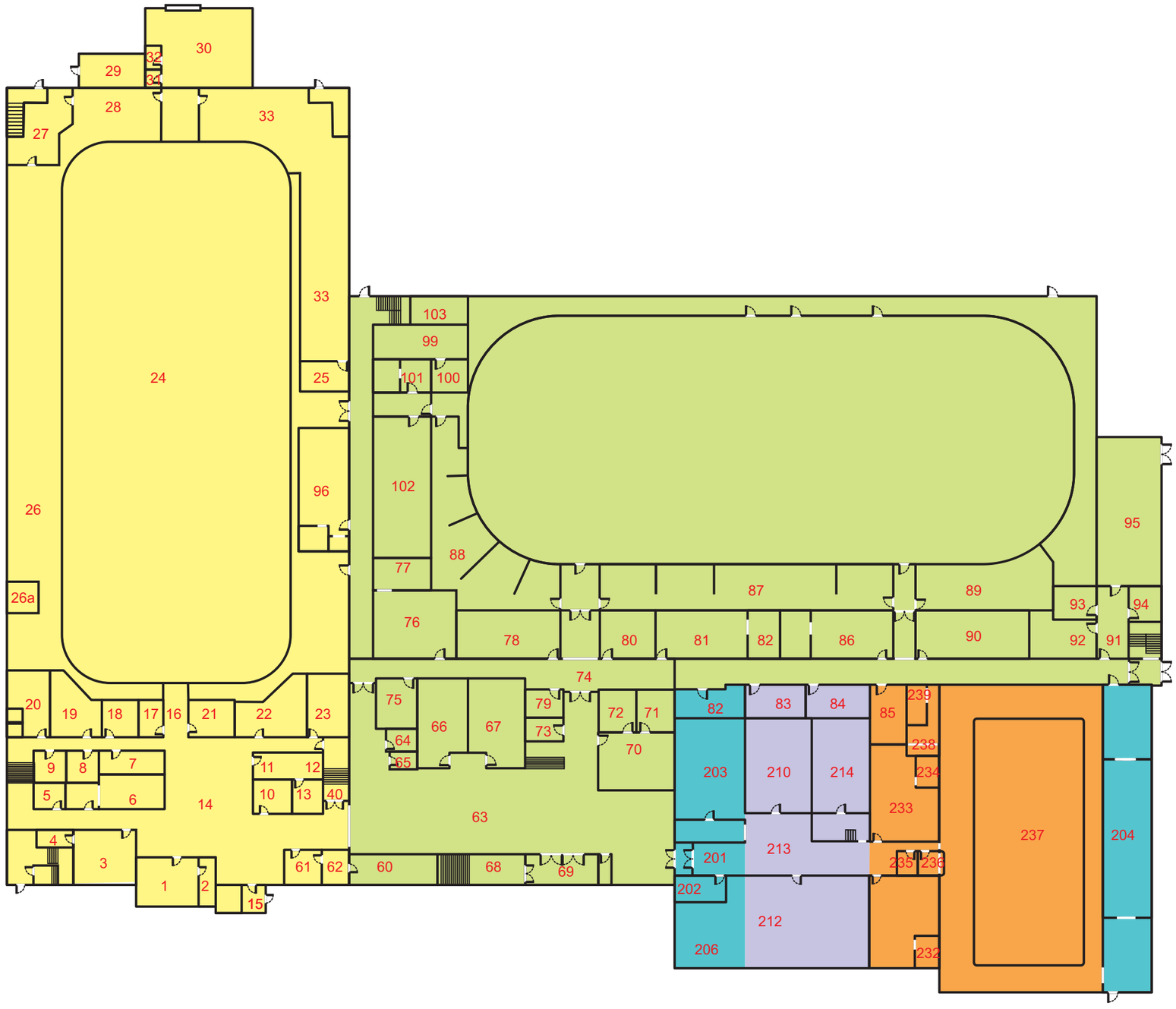
Login Error:

_____ Sample Log Stamped Incorrectly: _____
_____ Sample Containers Mislabelled: _____
_____ Duplicate / Extra Samples Not Stamped: _____
_____ Analyst Bench Sheet Error: _____

Copy: FE, JN, RS, SC

Appendix C

Floor Plans



LEGEND

- 1952 Construction (2002 Major Renovation)
- 2000 Construction
- 1992 Construction
- 1980's Construction
- 1974 Construction

DWG TITLE: CONSTRUCTION ERA - MEMORIAL ARENA-MAIN FLOOR

DST CONSULTING ENGINEERS
THUNDER BAY, ONTARIO

PROJECT: ACM SURVEY
FORT FRANCES MUNICIPAL BUILDINGS

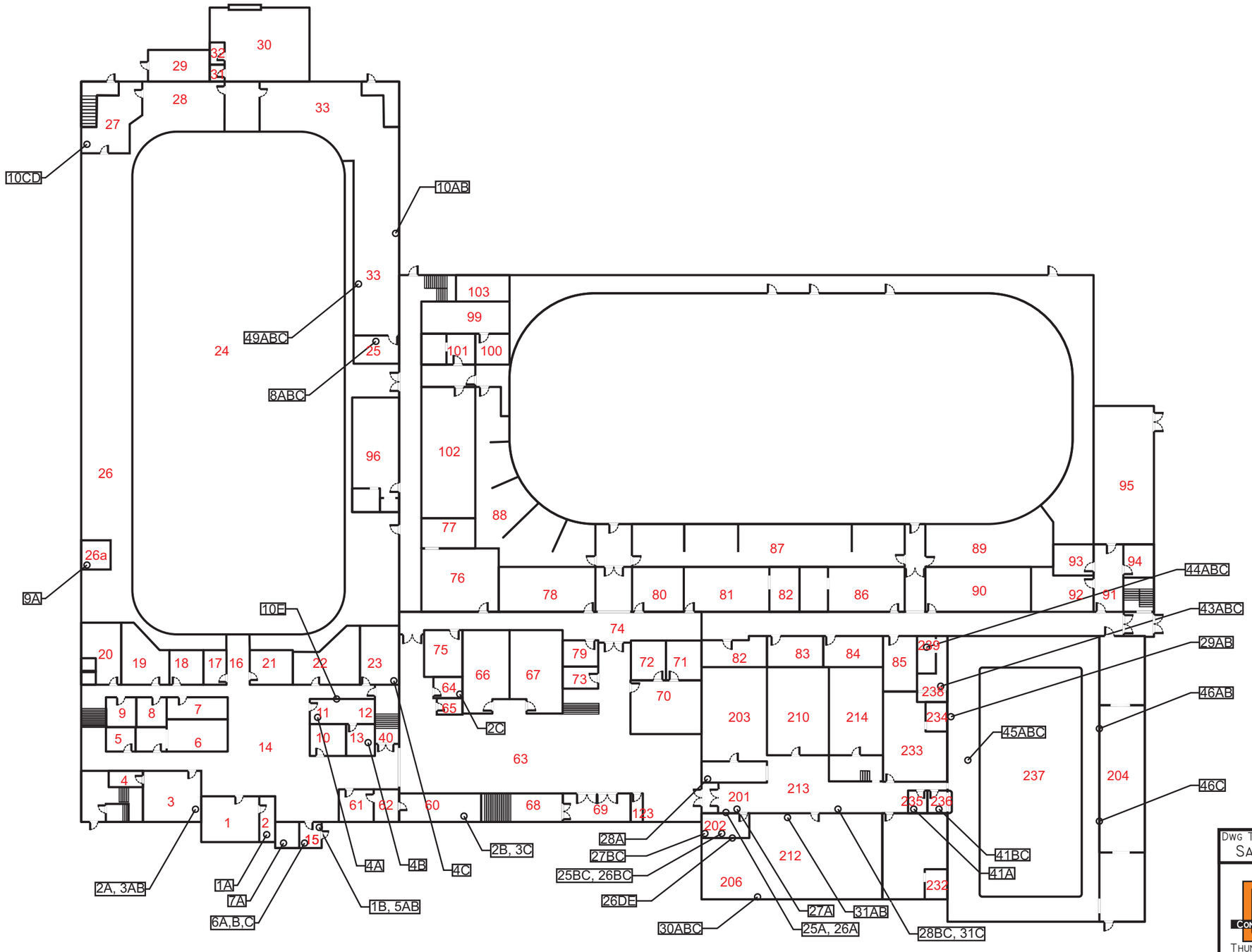
CLIENT: MUNICIPALITY OF FORT FRANCES

PROJECT NO.: BE-TB-009814

DATE: APRIL 2009

ENCLOSURE 1

DWG. REFERENCE: BE-TB-009814 ACM SURVEY



LEGEND

B1-3A,B,C
Sampling Locations

1 Survey Reference

Dwg Title:
SAMPLE LOCATION PLAN - MEMORIAL ARENA-MAIN FLOOR

DST CONSULTING ENGINEERS
THUNDER BAY, ONTARIO

Project:
ACM SURVEY
FORT FRANCES MUNICIPAL BUILDINGS

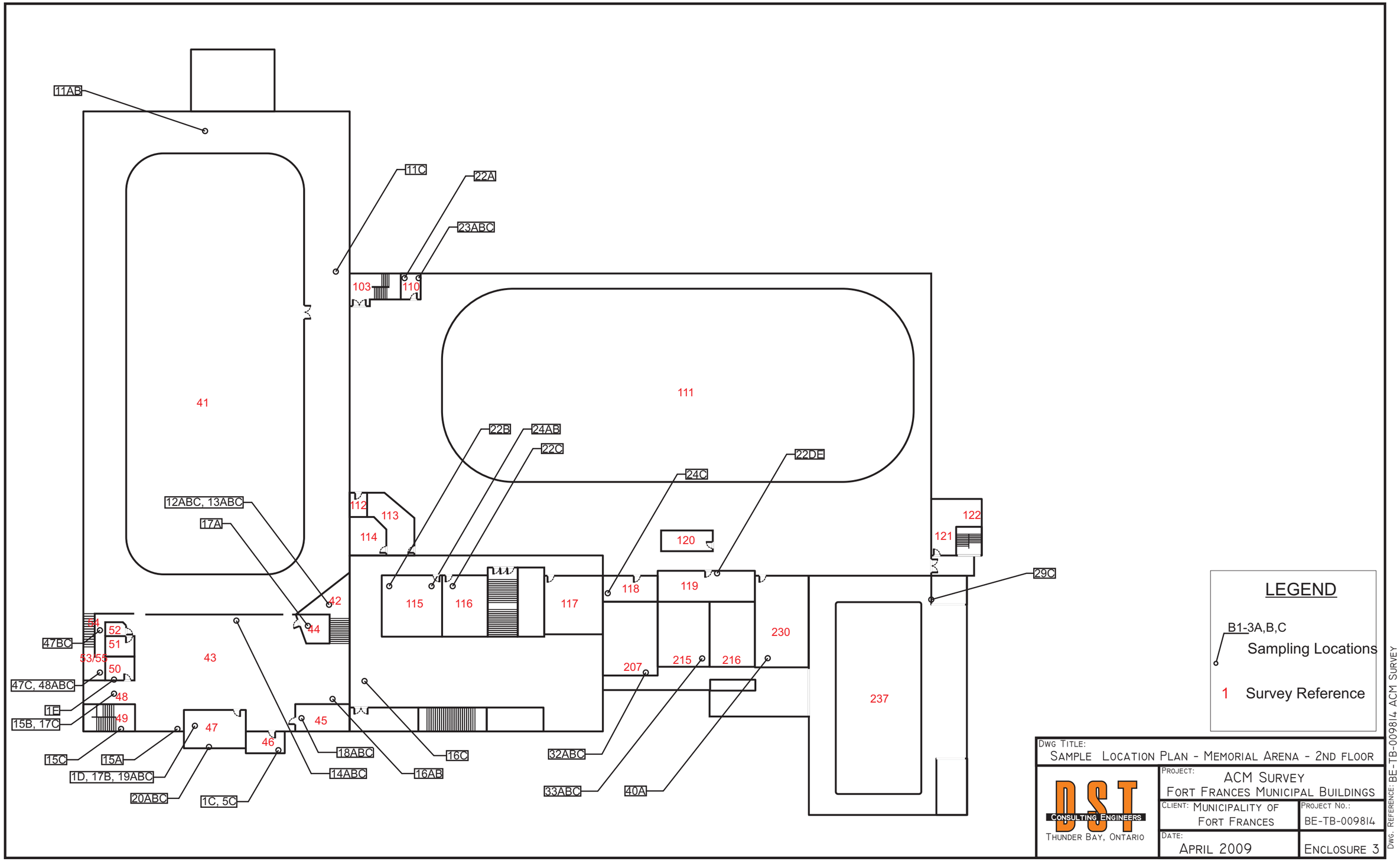
Client: MUNICIPALITY OF FORT FRANCES

Project No.: BE-TB-009814

Date: APRIL 2009

ENCLOSURE 2

Dwg. Reference: BE-TB-009814 ACM SURVEY



LEGEND

B1-3A,B,C Sampling Locations

1 Survey Reference

DWG TITLE: SAMPLE LOCATION PLAN - MEMORIAL ARENA - 2ND FLOOR

DST CONSULTING ENGINEERS
THUNDER BAY, ONTARIO

PROJECT: ACM SURVEY
FORT FRANCES MUNICIPAL BUILDINGS

CLIENT: MUNICIPALITY OF FORT FRANCES

PROJECT NO.: BE-TB-009814

DATE: APRIL 2009

ENCLOSURE 3

DWG. REFERENCE: BE-TB-009814 ACM SURVEY

Appendix D

Photographs

Photo 1: Memorial Sports Centre, 740 Scott Street

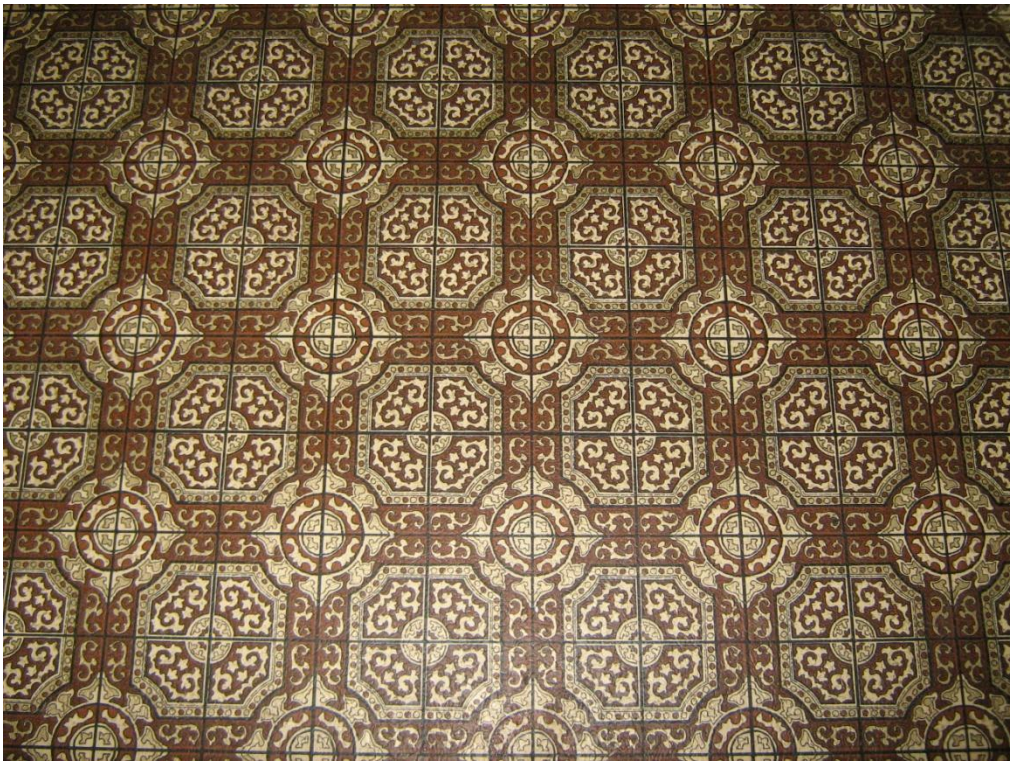


Photo 2: ACM Vinyl sheet floor, (Rm. 42). 1952 era Press Box.

Photo 3: Stored ACM Transite pipe sections, (Rm. 33). 1952 era underseat crawlspace.

Photo 4: Non ACM blown fibrous insulation in Pool Area, (Rm. 237)

ASBESTOS MANAGEMENT PLAN

Fort Frances Memorial Sports Centre

Asbestos Containing Materials Survey Report Reference: BE-TB-009814

Prepared for:

The Town of Fort Frances
320 Portage Avenue,
Fort Frances, Ontario
P9A 3P9

DST File No.: BE-TB-009814

July 2009

DST Consulting Engineers Inc.
605 Hewitson Street, Thunder Bay, Ontario, P7B 5N1
Tel.: (807) 623-2929 Fax: (807) 623-1792 E-mail: thunderbay@dstgroup.com

PREFACE

The Asbestos Management Plan is required in order to comply with regulations governing the safe work environment for employees, public and contractors visiting or working at the Town of Fort Frances municipal buildings referenced in DST Asbestos Containing Materials (ACM)s Survey Report BE-TB-009814.

The Asbestos Management Plan (AMP) will perform several functions:

- To act as a common term of reference for the safe operation of building systems that contain asbestos materials;
- To be a central depository of asbestos related information;
- To act as a control mechanism to promote regulatory compliance;
- To communicate roles and responsibilities of those required to work with or around asbestos materials; and,
- To communicate the accepted procedures for working with asbestos materials.

This document provides information, procedures, and work practices necessary for the Asbestos Management Plan (AMP) to be functional. The AMP sets guidelines for all facility maintenance, alteration, repair or other activities that may disturb asbestos; and provides criteria for the ongoing re-assessment of friable asbestos materials. If continuing disturbance or severe deterioration of friable asbestos is indicated, the material will be removed. Major renovations will be preceded by total removal of friable asbestos materials in the project area.

The AMP describes work practices for minor disturbance of friable asbestos materials (Type 2 work), and removal or installation of non-friable materials (Type 1 work). This document is divided so that specific sections can be copied and provided to the worker or contractor performing the work. The AMP includes policies for inspection of work, air monitoring, and worker training.

The AMP does not describe work procedures for major asbestos removal. Such removals are classified as Type 3. These procedures generally require an experienced contractor to execute and therefore are not detailed within this AMP document. This type of work usually requires a “project specific approach” and therefore should be coordinated and monitored by an Asbestos Consultant.

DEFINITIONS

Abatement: control or attend to.

Amended Water: water which has been treated with a chemical agent to enhance the wetting of asbestos material prior to removal.

Amosite: "brown asbestos", a type of asbestos from the amphibole group.

Asbestos: naturally occurring mineral silicates which are capable of being separated into fibres. Asbestos comes from the Greek word "indestructible".

Asbestos-Containing Material (ACM): any material found to contain asbestos at or above a concentration of 0.5% as determined by Polarized Light Microscopy.

Crocidolite: "blue asbestos", a type of asbestos from the amphibole group.

Chrysotile: "white asbestos", a type of asbestos from the serpentine group.

Friable: can be crushed, crumbled, or reduced to a powder by hand pressure when dry.

Generic survey: spot check type survey where a small number of random samples are done at different locations of similar or non-similar materials to get a localized perspective as to where asbestos-containing materials may be located. This type of survey would be good in areas such as boiler rooms where high concentrations of most materials are suspect to contain asbestos in localized areas such as boiler jacketing, pipe lagging, and exhaust breaching.

PCM: Phase contrast microscopy approved method for measurement of airborne particulate matter.

PLM: Polarized light microscopy method of detection for asbestos in bulk samples.

Room by room survey: survey of individual rooms where each plane within the room is sampled visually and scientifically tested for the presence of asbestos-containing material.

Serpentine and amphiboles: the two groups within which all types of asbestos are classified.

TEM: method of detection used for positive identification of airborne asbestos fibres via the use of an electron microscope.

Owner: Town of Fort Frances

CONTACT LIST

Town of Fort Frances Municipal buildings referenced in DST ACM Survey Report BE-TB-009814		
Name	Contact Name	Number
Owner"s Prime Contact Designate	Rick Hallam	Phone (807) 274-5323 Fax (807) 274-8479
Alternate Contacts	Doug Brown, Mgr. Operations & Facilities Division George Bell, Mgr Community Services Division	Phone (807) 274 9893 Fax (807) 274 7360 Phone (807) 274 4561 Fax (807) 274 3799
Asbestos Consultant	Ken Simi, P. Eng. James Harding B.Sc. DST Consulting Engineers	Phone (807) 623-2929 Fax (807) 623-1792 ksimi@dstgroup.com jharding@dstgroup.com
Standing Offer Asbestos Contractor		

EMERGENCY PROCEDURES

If Type 2 procedures cannot be strictly observed due to the urgency, some judgement will be required of the person responsible for the work, and other staff or contractors responding to the emergency. The general principle of emergency response work is to protect the workers performing the repair and to minimize the exposure of others to airborne asbestos. The procedures given below should be followed to the extent possible in the circumstances of the emergency.

VACATE the area of unnecessary personnel.

CONTACT the Owner for guidance on contamination; or, the standing offer asbestos consultant or the standing offer asbestos contractor.

LIMIT the asbestos contamination.
Construct enclosure around area if time permits.
Shut down ventilation system serving area.
Use drop sheet under work to minimize clean-up if possible.

Worker performing repair shall wear protective respirator and disposable suit. If normal work clothes are worn they must be disposed of if visibly contaminated.

Perform emergency repair with minimum disturbance of asbestos.

Obtain asbestos equipment and perform clean-up of visible material before allowing unprotected personnel to enter area. Use HEPA filtered vacuum or wet cleaning. Dispose of all cleaning supplies as contaminated waste.

The worker should wipe off or vacuum disposable clothing and footwear. Proceed to washroom to wash face and hands.

Notify the Owner regarding the asbestos disturbance. The Owner will contact the standing offer asbestos contractor to arrange for removal, clean-up or repair of the asbestos material.

Before removing an enclosure, monitor the air to confirm acceptable levels and document readings. Use the standing offer asbestos consultant, if available.

Arrange for a Qualified Person to **INSPECT** the work as soon as possible and, in conjunction with the regulatory bodies, to **OVERSEE** the work and **APPROVE** the corrective work required.

DOCUMENT the disposal of the asbestos and the procedures used.

EMERGENCIES - GENERAL INFORMATION

Most asbestos emergencies are unique, but basic procedures apply in all cases:

- handle emergencies as quickly as possible;
- follow standard procedures as much as possible; and,
- notify regulatory agencies and the Owner at once.

The main goal is to limit contamination; decontaminate and/or enclose problem areas with polyethylene. Shut off air-handling units to affected areas; post warning signs.

In a minor emergency, decontamination may be handled by trained in-house personnel or by a reputable asbestos contractor.

The asbestos emergency situation is under control when the asbestos relating to the emergency is enclosed.

Before removing an enclosure, monitor the air to confirm acceptable levels and document readings. Use the standing offer asbestos consultant, if available.

PART 1

ASBESTOS INVENTORY AND ASSESSMENT

1 INTRODUCTION TO THE PROGRAM

1.1 Objectives

The Asbestos Management Plan (AMP) is formulated to meet the following objectives:

- To identify all asbestos materials present within the Town of Fort Frances municipal buildings referenced in DST ACM Survey Report BE-TB-009814. Friable asbestos materials are defined in the Program.
- To maintain all accessible asbestos materials in good condition.
- To prevent unintended asbestos exposures to staff, visitors, and contractors.
- To manage all construction and maintenance activities that might disturb asbestos materials.
- To promote compliance with all relevant federal and provincial regulatory requirements for asbestos.

1.2 Regulatory Requirements

The Owner has responsibilities related to proper asbestos management as building owner, landlord, and employer, under the following regulations and statutes:

- Ontario Occupational Health and Safety Act, R.S.O. 1990, Chapter O.1.
- O. Reg. 278/05, Designated Substance – Asbestos on Construction Projects and in Buildings and Repair Operations.
- O. Reg. 347/90, General – Waste Management, as amended.

2 ASBESTOS POLICIES

2.1 Definition of Friable Asbestos Products

For the purposes of the AMP, a friable asbestos material is a material that when dry can be crumbled, pulverized or powdered by hand pressure, and includes dust or debris arising from non-friable materials that is or will become crumbled, pulverized or powdered (such as asbestos-containing plaster disturbed by demolition).

Friable materials that might potentially contain asbestos include, but are not limited to:

- Sprayed asbestos products (fireproofing, thermal insulation, acoustic insulation, or decorative products) applied in 1974 or earlier.
- Acoustic or texture plaster applied in 1983 or earlier.
- Mechanical insulation installed in 1983 or earlier, whether or not jacketed.
- Compressed mineral fibre ceiling tiles installed in 1983 or earlier.

2.2 Detection Limit of Bulk Analysis

Asbestos-Containing Material (ACM) is defined as any material found to contain asbestos at or above a concentration of 0.5% as determined by Polarized Light Microscopy.

2.3 Staff Involvement

Staff will not directly perform the following types of asbestos related work:

- Type 3 work
- Non-emergency Type 2 work

2.4 Manage in Place Philosophy

The Owner will manage asbestos materials in place until the removal of specific installations of asbestos is required to accommodate maintenance, renovation, construction or demolition activity. When renovation, construction or demolition activity is planned for a specific location within the Town of Fort Frances municipal buildings referenced in DST ACM Survey Report BE-TB-009814, the Owner will evaluate the long term benefits of removing all asbestos materials within the project area to eliminate the need to manage asbestos materials at that location in the future.

3 ASBESTOS INVENTORY AND ASSESSMENT

The Owner will arrange for a comprehensive survey and assessment of asbestos materials at the Town of Fort Frances municipal buildings included in this Asbestos Management Plan.

This survey to provide the Asbestos Inventory and Assessment will be performed on a room-by-room basis. The inventory information will be stored in Part 2 – Asbestos Inventory and Assessment, of this document. This inventory will allow for easy retrieval for reports to be submitted as and when required. The survey will address all of the friable asbestos materials, as defined in the Asbestos Management Plan (AMP), plus non-friable asbestos applications.

The evaluation of the condition of friable asbestos materials will follow the criteria given in Appendix A.

The analysis of bulk samples will be performed by a laboratory accredited by one of the following organizations:

- National Voluntary Laboratory Accreditation Program (NVLAP) of the U.S. National Institute of Science and Technology (NIST); or,
- Canadian Association for Environmental Analytical Laboratories (CAEAL).

The Owner will arrange for removal or repair of damaged or deteriorated friable asbestos materials identified by the Asbestos Inventory and Assessment.

4 RE-ASSESSMENT

The Owner will arrange for an annual re-assessment of all asbestos materials in exposed accessible locations and will arrange for removal or repair of damaged or deteriorated friable asbestos materials identified by the annual re-assessments.

Copies of the re-assessment reports, including any associated laboratory reports, will be inserted into Part 3 – Supplemental Information, of this document.

The Owner will utilize the services of the Standing Offer Asbestos Consultant to arrange for removal or repair of damaged or deteriorated asbestos materials identified by the yearly re-assessments and when Type 3 removal and repairs are required.

5 NOTIFICATION

The Owner has a legal responsibility to provide notification to various parties of the presence of asbestos-containing materials within the building. To comply with this requirement, the Owner will provide a written notice of the presence of asbestos materials, as known at the time the Asbestos Management Plan (AMP) comes into effect to the following groups:

- Joint Health and Safety Committee;
- Town of Fort Frances Operations Group employees;
- Contractors with standing agreements who may enter parts of buildings where asbestos materials may be present, i.e., telecommunications firms, boiler maintenance contractors.

Refer to Appendix I for a contractor notification and acknowledgement form.

Occupiers of leased space within Town of Fort Frances municipal buildings referenced by DST Asbestos Survey report BE-TB-009814, as defined by the *Occupiers Liability Act,* will be provided with written notice of the presence of asbestos materials within their space.

Copies of these notices will be maintained in Appendix I of this document.

6 TRAINING

All personnel who have responsibilities under the Asbestos Management Plan must be trained on asbestos. The training will be made available in modules, so that staff can receive the training necessary for their particular duties. This is also to prevent duplication with previous training. Copies of the training records will be maintained both in the employee"s personnel file and in Appendix H of this document.

6.1 Asbestos Awareness Training

Training will be provided to all maintenance and operations personnel who may work around asbestos materials, but who are not expected to disturb asbestos materials as part of their normal work activities. The training will introduce the Asbestos Inventory and Assessment reports, health hazards of asbestos exposure, the Asbestos Management Plan, and emergency procedures.

6.2 Asbestos Procedures Training

Training will be provided to maintenance workers who will perform Type 1 or emergency Type 2 disturbance of asbestos products. The training will include an introduction to the Asbestos Inventory and Assessment reports, health hazards of asbestos exposure, regulations, the Asbestos Management Plan, Type 1 and Type 2 work practices, and disposal procedures.

Respirator training will be provided to all those who will perform Type 2 work, and all those who will perform Type 1 work and request a respirator. The training will cover limitations of use, facial hair, fitting, and maintenance of respirators. Persons provided with a respirator will be fit-tested with the assigned respirator, using the CSA irritant smoke method. Appendix E gives notes on respirator fitting and maintenance. Persons who will wear tight-fitting respirators will be required to be clean-shaven where the respirator seals to the face. Reference should be made to the new CSA Z94.4, Selection, Care and Use of Respirators.

7 CLASSIFICATION OF ASBESTOS WORK

Asbestos work at the Town of Fort of Frances municipal buildings referenced in DST ACM Survey Report BE-TB-009814 will be classified as Type 1, Type 2 or Type 3 according to the following criteria established by O. Reg. 278/05. Any personnel attempting to classify asbestos work must be familiar with these classifications. Work on ceiling tiles, drywall or friable asbestos-containing material is classified according to the total area on which work is done consecutively in a room or enclosed area, even if the work is divided into smaller jobs.

7.1 Type 1 Work

The following are Type 1 operations:

Installing or removing ceiling tiles that are asbestos-containing material, if the tiles cover an area less than 7.5 square metres and are installed or removed without being broken, cut, drilled, abraded, ground, sanded or vibrated.

Installing or removing non-friable asbestos-containing material, other than ceiling tiles, if the material is installed or removed without being broken, cut, drilled, abraded, ground, sanded or vibrated.

Breaking, cutting, drilling, abrading, grinding, sanding or vibrating non-friable asbestos-containing material if, the material is wetted to control the spread of dust or fibres, and
the work is done only by means of non-powered hand-held tools.

Removing less than one square metre of drywall in which joint-filling compounds that are asbestos-containing material have been used.

7.2 Type 2 Work

The following are Type 2 operations:

Removing all or part of a false ceiling to obtain access to a work area, if asbestos-containing material is likely to be lying on the surface of the false ceiling.

The removal or disturbance of one square metre or less of friable asbestos-containing material during the repair, alteration, maintenance or demolition of all or part of machinery or equipment or a building, aircraft, locomotive, railway car, vehicle or ship.

Enclosing friable asbestos-containing material.

Applying tape or a sealant or other covering to pipe or boiler insulation that is asbestos-containing material.

Installing or removing ceiling tiles that are asbestos-containing material, if the tiles cover an area of 7.5 square metres or more and are installed or removed without being broken, cut, drilled, abraded, ground, sanded or vibrated.

Breaking, cutting, drilling, abrading, grinding, sanding or vibrating non-friable asbestos-containing material if, the material is not wetted to control the spread of dust or fibres, and, the work is done only by means of non-powered hand-held tools.

Removing one square metre or more of drywall in which joint filling compounds that are asbestos-containing material have been used.

Breaking, cutting, drilling, abrading, grinding, sanding or vibrating non-friable asbestos-containing material if the work is done by means of power tools that are attached to dust-collecting devices equipped with HEPA filters.

Removing insulation that is asbestos-containing material from a pipe, duct or similar structure using a glove bag.

Cleaning or removing filters used in air handling equipment in a building that has sprayed fireproofing that is asbestos-containing material.

An operation that,is not mentioned in any of paragraphs 1 to 10, may expose a worker to asbestos, and is not classified as a Type 1 or Type 3 operation.

7.3 Type 3 Work

The following are Type 3 operations:

The removal or disturbance of more than one square metre of friable asbestos-containing material during the repair, alteration, maintenance or demolition of all or part of a building, aircraft, ship, locomotive, railway car or vehicle or any machinery or equipment.

The spray application of a sealant to friable asbestos-containing material.

Cleaning or removing air handling equipment, including rigid ducting but not including filters, in a building that has sprayed fireproofing that is asbestos-containing material.

Repairing, altering or demolishing all or part of a kiln, metallurgical furnace or similar structure that is made in part of refractory materials that are asbestos-containing materials.

Breaking, cutting, drilling, abrading, grinding, sanding or vibrating non-friable asbestos-containing material, if the work is done by means of power tools that are not attached to dust-collecting devices equipped with HEPA filters.

Repairing, altering or demolishing all or part of any building in which asbestos is or was used in the manufacture of products, unless the asbestos was cleaned up and removed before March 16, 1986.

8 IDENTIFICATION AND CONTROL OF ASBESTOS-RELATED WORK

8.1 Maintenance Work

The Owner is responsible to review all maintenance work for the possibility of disturbance to asbestos materials.

If there are asbestos materials in the area of maintenance, but the Owner judges that the materials will not likely be disturbed by the maintenance work, the maintenance staff or the contractor must still be advised of the presence of the asbestos materials and cautioned to avoid disturbance.

If there is friable or non-friable asbestos materials in the area of maintenance, and this will be disturbed by the intended work, the Owner will classify the work as Type 1, Type 2, or Type 3.

At the completion of any maintenance work which involves asbestos removal or repair, a report will be provided to the Owner. The Asbestos Inventory and Assessment Report must be updated to reflect any changes in the condition or quantity of ACMs.

8.2 Asbestos-Related Work Record

The supervisors of staff performing any emergency Type 2 work will be responsible to ensure that an Asbestos Work Report is completed for each period of work (i.e., annually and at termination of employment). Copies of these records shall be:

- Provided to the employee;
- Placed in the employee's employment file;
- Placed in Appendix G of this document; and,
- Forwarded to the Provincial Physician, Ontario Ministry of Labour.

8.3 Renovations and Construction Work

The Owner will review the Asbestos Inventory and Assessment Report prior to all renovation and construction work for the possible impact on asbestos materials. If the Asbestos Inventory and Assessment Report does not provide sufficient information, the Standing Offer Asbestos Consultant will be contacted to prepare a project specific assessment for the presence of asbestos materials. This information will be collected and provided to the Owner in a format that facilitates ease of updating the Asbestos Inventory and Assessment Report.

Prior to projects that include the demolition of plaster or the removal of drywall finishes installed prior to 1983, testing of the plaster or drywall joint compound for asbestos will be undertaken unless previous comprehensive testing in the building has shown this plaster or drywall joint compound to be asbestos-free. Destructive testing to examine concealed conditions will also be undertaken if the proposed renovation and construction work will might potentially expose previously concealed asbestos materials (i.e., pipe chases, inaccessible service shafts, etc.).

If there are asbestos materials in the renovation area, but the Owner judges that the asbestos materials will not likely be disturbed by the renovation work, the Owner must still notify, in writing, the maintenance staff or the contractor of the presence of the asbestos materials.

The Owner will provide a Designated Substance report (a prescribed listing of asbestos, lead, silica, and other hazardous materials) prior to tendering the work.

The Owner must classify the disturbance of asbestos materials as Type 1, Type 2, or Type 3. Technical specifications for all Type 3 work will be prepared by the Standing Offer Asbestos Consultant.

At the completion of project work which alters the quantity or condition of asbestos materials, the Owner will update the Asbestos Survey and Assessment Report to reflect any changes in the condition and quantity of ACMs.

8.4 Type 1, Type 2 and Glove Bag Procedures

Appendices B, C, and D, give standard practices for performing Type 1, Type 2, and glove bag asbestos work, respectively. Copies of the appendices can be provided to contractors performing routine asbestos work (i.e., maintenance, repairs, etc.) within the Town of Fort Frances Municipal buildings referenced in DST ACM Survey Report BE-TB-009814.

8.5 Type 3 Procedures

Procedures for Type 3 asbestos work are beyond the scope of this document. These procedures tend to be project specific and require professional advice from the Standing Offer Asbestos Consultant.

8.6 Project Inspection and Air Monitoring

Type 1 and most Type 2 work will be subject to the normal maintenance or project inspection provided to non-asbestos work by the Owner. Asbestos specific air monitoring or inspection will not be mandatory.

The Owner will arrange for inspection and air monitoring for all Type 3 asbestos projects and for all Type 2 asbestos projects that involve work on air handling units. This inspection and air monitoring will be provided on a daily basis.

Type 3 removal projects will be subject to final clearance air testing. The clearance criteria will be a maximum fibre concentration of 0.01 fibre/ml of air, as determined using PCM analysis in accordance with NIOSH Method 7400, Issue 2, „A" Counting Rules.

8.7 Emergency Asbestos Work

Procedures for immediate response to floods, pipe breaks, ceiling collapses, or other emergencies that could potentially affect asbestos materials, are provided in Appendix F. The general principles of emergency asbestos work are to protect the responder and prevent occupants and visitors from asbestos exposure.

9 AIR MONITORING AND BULK ANALYSIS

9.1 Air Monitoring for Hazard Assessment

Air monitoring will not be used as the primary resource for the assessment of hazard from asbestos materials. If air monitoring is performed under normal conditions of building use (i.e., away from asbestos work) the measurements will be made by the Transmission Electron Microscopy (TEM) analytical method.

9.2 Air Monitoring during Asbestos Work Procedures

The Owner may arrange for discretionary air monitoring during asbestos work, to confirm the safety of work practices and the effectiveness of work area isolation. These measurements would be made by the Phase Contrast Microscopy (PCM) in accordance with NIOSH Method 7400, Issue 2, „A" Rules.

9.3 Bulk Sample Collection and Analysis

Appendix J gives procedures for collection and labelling of bulk samples for asbestos analysis.

Analyses of materials to determine asbestos content will be performed by private laboratories accredited by one of the following organizations:

- National Voluntary Laboratory Accreditation Program (NVLAP) of the U.S. National Institute of Science and Technology (NIST); or,
- Canadian Association for Environmental Analytical Laboratories (CAEAL).

10 FACILITIES AND WASTE DISPOSAL

10.1 Equipment and Supplies

The Owner will maintain a stock of the necessary asbestos-related equipment, as required for Type 1 and Type 2 work, for use by staff who perform asbestos work.

10.2 Waste Disposal

When staff perform asbestos work, asbestos debris will be packaged in double-bagged containers or other suitable air tight containers, by staff completing the project. These containers will be held at a secure location in the building. The Owner will arrange for periodic collection and disposal.

APPENDIX A

EVALUATION AND RECOMMENDATION CRITERIA FOR CONTROL OF ASBESTOS-CONTAINING MATERIALS (ACMs)

EVALUATION AND RECOMMENDATION CRITERIA FOR CONTROL OF ASBESTOS-CONTAINING MATERIALS (ACMs)

11 ASSESSMENT OF CONDITION

11.1 Spray Applied Fireproofing, Insulation and Texture Finishes

To evaluate the condition of ACM spray applied as fireproofing, thermal insulation, or texture, decorative or acoustic finishes, the following criteria are applied:

GOOD
Surface of material shows no significant signs of damage, deterioration or delamination. Up to 1 percent visible damage to surface is allowed within range of GOOD. Evaluation of sprayed fireproofing requires the surveyor to be familiar with the irregular surface texture typical of sprayed asbestos products. GOOD condition includes unencapsulated or unpainted fireproofing or texture finishes, where no delamination or damage is observed, and encapsulated fireproofing or texture finishes where the encapsulation has been applied after the damage or fallout occurred.

POOR
Sprayed materials show signs of damage, delamination or deterioration. More than 1 percent damage to surface of ACM spray.

In observation areas where damage exists in isolated locations, both GOOD and POOR condition may be reported. The extent or percentage of each condition will be recorded on the survey or re-assessment form. FAIR condition is not utilized in the evaluation of the sprayed fireproofing, sprayed insulation, or texture coat finishes.

The evaluation of ACM spray applied as fireproofing, non-mechanical thermal insulation, or texture, decorative or acoustic finishes which are present above ceilings, may be limited by the number of observations made, and by building components such as ducts or full height walls that obstruct the above ceiling observations. Persons entering the ceiling are advised to be watchful for ACM DEBRIS prior to accessing or working above ceilings in areas of buildings with ACM regardless of the reported condition.

11.2 Mechanical Insulation

The evaluation of the condition of mechanical insulation (on boilers, breaching, ductwork, piping, tanks, equipment etc.) utilizes the following criteria:

GOOD
Insulation is completely covered in jacketing and exhibits no evidence of damage or deterioration. No insulation is exposed. Includes conditions where the jacketing has minor surface damage (i.e., scuffs or stains), but the jacketing is not penetrated.

FAIR
Minor penetrating damage to jacketed insulation (cuts, tears, nicks, deterioration or delamination) or undamaged insulation that has never been jacketed. Insulation is exposed but not showing surface disintegration. The extent of missing insulation ranges should be minor to none.

POOR
Original insulation jacket is missing, damaged, deteriorated or delaminated. Insulation is exposed and significant areas have been dislodged. Damage cannot be readily repaired.

The evaluation of mechanical insulation may be limited by the number of observations made and building components such as ducts or full height walls that obstruct observations. It is not possible to observe each foot of mechanical insulation from all angles.

11.3 Non-friable and Potentially Friable Materials

Non-friable materials generally have a lower potential to release airborne fibres, even when damaged by mechanical breakage. However, some non-friable materials, i.e., exterior asbestos cement products, may have deteriorated so that the binder no longer effectively contains the asbestos fibres. In such cases of significantly deteriorated non-friable material, the material should be treated as a friable product.

12 EVALUATION OF ACCESSIBILITY

The accessibility of building materials known or suspected of being ACM is rated according to the following criteria:

ACCESS (A)
Areas of the building within reach (from floor level) of all building users. Includes areas such as stages, workshops, and storage areas where activities of the building users may result in disturbance of ACM not normally within reach from floor level. *Also includes ACM inside air handling units since damage to this material could potentially result in airborne asbestos fibre dispersal throughout the building.*

ACCESS (B)
Frequently entered maintenance areas within reach of maintenance staff, without the need for a ladder. Includes:

- areas within reach from a fixed ladder or catwalk, i.e., tops of equipment, mezzanines.
- frequently entered pipe chases, tunnels and service areas.

ACCESS (C) EXPOSED
Areas of the building above 2.4 metres where use of a ladder is required to reach the ACM. Only refers to ACM that is exposed to view, from the floor or ladder, without the removal or opening of other building components such as ceiling tiles, or service access door or hatch. Does not include infrequently accessed service areas of the building.

ACCESS (C) CONCEALED
Areas of the building which require the removal of a building component, including lay-in ceilings and access panels into solid ceiling systems. Includes rarely entered crawl spaces, attic spaces, etc. Observations will be limited to the extent visible from the access points.

ACCESS (D)
Areas of the building behind inaccessible solid ceiling systems, walls or mechanical equipment, etc. where demolition of the ceiling, wall or equipment, etc. is required to reach the ACM. Evaluation of condition and extent of ACM is limited or impossible, depending on the surveyor"s ability to visually examine materials in ACCESS D.

13 ACM DEBRIS

13.1 DEBRIS from Friable ACM

The presence of fallen ACM should be noted separately from the presumed friable ACM source (sprayed fireproofing, thermal insulation, texture, decorative or acoustic finishes or mechanical insulation) and is referred to as DEBRIS.

13.2 DEBRIS from Damaged Non-Friable ACM

The presence of fallen ACM from damaged non-friable ACM is also reported separately from the non-friable ACM source. Only fallen non-friable ACM that has become friable is reported as DEBRIS.

The identification of the exact location or presence of DEBRIS on the top of ceiling tiles is limited by the number of observations made and the presence of building components such as ducts or full height walls that obstruct observations. Workers are advised to be watchful for the presence of DEBRIS prior to accessing or working in proximity to mechanical insulation or above ceilings in areas of buildings with ACM regardless of the reported presence or absence of DEBRIS.

14 ACTION MATRIX AND DEFINITIONS

The Asbestos Management Plan requires the following responses:

- Immediately clean-up of DEBRIS that is likely to be disturbed.
- Remove, repair or enclose friable ACM in POOR or FAIR condition whose continued deterioration will result in DEBRIS that is likely to be disturbed.

The following factors are also considered in making site-specific recommendations for compliance with the regulation and the practical implementation of the Asbestos Management Plan:

- ACM in POOR condition is not routinely repairable.

If an abatement action is necessary, removal is typically the recommended action (enclosure is only a viable option in certain circumstances).

- Mechanical insulation in FAIR condition can be repaired or removed based on the following general recommendations applied on a case by case basis (Note: Either repair or removal are legally acceptable options for the treatment of ACM found in FAIR condition):
    - Repair ACM mechanical insulation found in FAIR condition in ACCESS (B) or ACCESS (C EXPOSED) areas.
    - Remove ACM mechanical insulation found in FAIR condition in ACCESS (B) and ACCESS (C EXPOSED) areas, where future damage to the ACM is likely to occur.
    - Remove ACM mechanical insulation found in FAIR condition with ACCESS (A) to eliminate the potential for re-damaging ACM by all building users.

- ACM in GOOD condition present in ACCESS (A) can be managed by surveillance, as long as it is not disturbed by future renovation, maintenance or demolition. However, pro-active removal of the ACM in ACCESS (A) should be considered where damage is possible by ongoing occupant activity (accidental or intentional).

- Non-friable or manufactured products are considered in the action matrix as follows:

Non-friable or manufactured products reported in POOR condition or friable DEBRIS resulting from the deterioration of non-friable ACM are treated as friable materials and the appropriate Action, depending on accessibility, is determined from the Action Matrix for friable ACM.

For non-friable or manufactured products reported in GOOD condition, Action 7 (surveillance) is recommended regardless of Accessibility.

- Remove all ACM from a particular area where small quantities of asbestos are present and removal will negate the need for the use of the Asbestos Management Plan in that area.

14.1 Action Matrix Table

With these principles in mind the following Action Matrix Table outlines the recommended asbestos control action for friable asbestos materials. Note that factors not included in the above discussion, such as an Owner policy decision to remove material, knowledge of upcoming maintenance, etc., may result in a recommendation that differs from this table. The ACTIONS are described in full following the tables

ACM ACTION MATRIX TABLE

ACCESS	CONDITION			DEBRIS
	GOOD	FAIR	POOR	
ACCESS (A) Areas of the building within reach (from floor level) of all building users. Includes areas such as stages, workshops, and storage areas where activities of the building users may result in disturbance of ACM not normally within reach from floor level. *Also includes ACM inside air handling units since damage to this material could potentially result in airborne asbestos fibre dispersal throughout the building.*	ACTION 5[1] Proactive ACM Removal	ACTION 5[2] Proactive ACM Removal	ACTION 3 ACM Removal Required for Compliance	ACTION 1 Immediate Clean-Up of DEBRIS that is Likely to Be Disturbed
ACCESS (B) Frequently entered maintenance areas within reach of maintenance staff, without the need for a ladder. Includes: • areas within reach from a fixed ladder or catwalk, i.e., tops of equipment, mezzanines. • frequently entered pipe chases, tunnels and service areas. •	ACTION 7 Routine Surveillance	ACTION 6[3] ACM Repair	ACTION 3 ACM Removal Required for Compliance	ACTION 2 Type 2 Precautions for Entry into Areas with ACM DEBRIS
ACCESS (C) EXPOSED Areas of the building above 2.4 metres where use of a ladder is required to reach the ACM. Only refers to ACM that is exposed to view, from the floor or ladder, without the removal or opening of other building components such as ceiling tiles, or service access door or hatch. Does not include infrequently accessed service areas of the building.	ACTION 7 Routine Surveillance	ACTION 6 ACM Repair	ACTION 4 Type 2 Precautions for Access into Areas Where ACM is Present and Likely to be Disturbed by Access	ACTION 2 Type 2 Precautions for Entry into Areas with ACM DEBRIS
ACCESS (C) CONCEALED Areas of the building which require the removal of a building component, including lay-in ceilings and access panels into solid ceiling systems. Includes rarely entered crawl spaces, attic spaces, etc. Observations will be limited to the extent visible from the access points.	ACTION 7 Routine Surveillance	ACTION 7 Routine Surveillance	ACTION 4 Type 2 Precautions for Access into Areas Where ACM is Present and Likely to be Disturbed by Access	ACTION 2 Type 2 Precautions for Entry into Areas with ACM DEBRIS
ACCESS (D) Areas of the building behind inaccessible solid ceiling systems, walls or mechanical equipment, etc. where demolition of the ceiling, wall or equipment, etc. is required to reach the ACM. Evaluation of condition and extent of ACM is limited or impossible, depending on the surveyor"s ability to visually examine materials in ACCESS D.	ACTION 7 Routine Surveillance	ACTION 7 Routine Surveillance	ACTION 7 Routine Surveillance	ACTION 7 Routine Surveillance

1 If material in ACCESS (A)/GOOD condition is not removed ACTION 7 is required.
2 If material in ACCESS(A)/FAIR condition is not removed ACTION 6 is required.
3 Remove ACM in ACCESS (B)/FAIR condition if ACM is likely to be disturbed.

Action Definitions

ACTION 1 – Immediate Clean-Up of DEBRIS that is Likely to Be Disturbed
Restrict access that is likely to cause a disturbance of the ACM DEBRIS and clean up ACM DEBRIS immediately. Utilize correct asbestos procedures. This action is required for compliance with regulatory requirements. The surveyor should immediately notify the Owner or designate of this condition.

ACTION 2 – Type 2 Precautions for Entry into Areas with ACM DEBRIS
At locations where ACM DEBRIS can be isolated in lieu of removal or cleaned up, use appropriate means to limit entry to the area. Restrict access to the area to persons utilizing Type 2 asbestos precautions. The precautions will be required until the ACM DEBRIS has been cleaned up, and the source of the DEBRIS has been stabilized or removed.

ACTION 3 – ACM Removal Required for Compliance
Remove ACM for compliance with regulatory requirements. Utilize asbestos procedures appropriate to the scope of the removal work.

ACTION 4 – Type 2 Precautions for Access into Areas Where ACM is Present and Likely to be Disturbed by Access
Use Type 2 asbestos precautions when entry or access into an area is likely to disturb the ACM. ACTION 4 must be used until the ACM is removed (Use ACTION 1 or 2 if DEBRIS is present).

ACTION 5 – Proactive ACM Removal
Remove ACM in lieu of repair, or at locations where the presence of asbestos in GOOD condition is not desirable.

ACTION 6 – ACM Repair
Repair ACM found in FAIR condition, and not likely to be damaged again or disturbed by normal use of the area or room. Upon completion of the repair work treat ACM as material in GOOD condition and implement ACTION 7. If ACM is likely to be damaged or disturbed, during normal use of the area or room, implement ACTION 5.

ACTION 7 – Routine Surveillance
Institute routine surveillance of the ACM. Trained workers or contractors must use appropriate asbestos precautions (Type 1, Type 2 or Type 3) during disturbance of the remaining ACM.

APPENDIX B

TYPE 1 WORK PROCEDURES

TYPE 1 WORK PROCEDURES

For locations of non-friable asbestos materials, refer to the current version of the Asbestos Inventory and Assessment Report.

NOTE: These Type 1 procedures assume the non-friable material can be removed with relatively little loose dry dust released. Generation of debris is permissible as long as the debris can be well wetted before being removed. If the work will release more than a trivial amount of dry loose dust, do not proceed. The Standing Offer Asbestos Consultant will determine which of Type 1, Type 2 or Type 3 procedures are appropriate.

15 EQUIPMENT

All equipment must be on site before proceeding.

15.1 Vacuum

Use of a vacuum is optional. Wet cleaning methods may be used in place of a vacuum. If a vacuum is used it must be equipped with a high efficiency particulate (HEPA) filter and all brushes, fittings, etc. The vacuum must only be opened in an enclosure following Type 2 procedures, or in a laboratory exhaust hood. The vacuum exterior should be carefully wet cleaned after emptying.

15.2 Respirators

Use of a respirator is optional. However, a respirator is strongly advised for work on sheet flooring, any type of ceiling tile, any other work performed overhead. The Owner will supply, at the workers request, a half face respirator with HEPA filters, with training on use and qualitative fit-testing. Respirator must be used according to written use procedures provided to worker as per training procedures. Filters must be changed after 24 hours of wear or sooner if breathing resistance increases. No person using respirator shall wear facial hair which affects the seal between respirator and face.

15.3 Protective Clothing

Reusable or disposable clothing may be used. Non-disposable clothing with visible asbestos contamination shall be cleaned with a HEPA vacuum and laundered as asbestos contaminated. Disposable clothing and respirator filters to be disposed of as asbestos waste.

15.4 Other Equipment

- plastic sheet (6 mil polyethylene) – to serve as a drop sheet.
- pump sprayer with mister nozzle or alternative method to wet material.
- labelled yellow asbestos waste bags (6 mil) – for all asbestos waste, disposable equipment, plastic, etc.
- small tools and cleaning supplies – e.g., scouring pads, sponges, brushes, buckets, etc.

16 OTHER PROTECTIVE MEASURES

Do not eat, drink or smoke in the work area.

On leaving work area, proceed to washroom and wash all exposed skin on hands and face.

17 PREPARATION

Before disturbing non-friable asbestos materials, wherever practical cover floor and surfaces below work with polyethylene sheeting to catch debris.

Wherever dust on a surface is likely to be disturbed remove with HEPA vacuum or damp cloth.

18 EXECUTION

18.1 Removal of Vinyl Asbestos Floor Tile

Do not use electric powered scrapers.

Start removal by wedging a heavy duty scraper in seam of two adjoining tiles and gradually force edge of one tile up and away from floor. Do not break off pieces of tile, but continue to force balance of tile up.

Continue removal of tiles using hand tools, removing tiles intact wherever possible. When adhesive is spread heavily or is quite hard, it may prove easier to force scraper through tightly adhered areas by striking scraper handle with a hammer using blows of moderate force while maintaining scraper at 25^{o} to 30^{o} angle to floor. When even this technique cannot loosen tile, removal can be simplified by heating tile thoroughly with a hot air gun until heat penetrates through tile and softens the adhesive.

When tiles are removed, place into asbestos waste receptor. Do not break into smaller pieces.

After removal of small area scrape up adhesive remaining on floor with a hand scraper until only a thin smooth film remains. Where deposits are heavy or difficult to scrape, a hot air gun may be used. Deposit scrapings in the asbestos waste disposal bag. Do not dry scrape surface of adhering pieces of tile. Do not use powered electric scrapers.

On completion of area, vacuum clean floor with HEPA vacuum or wet mop. Dispose of the mop head as contaminated waste.

18.2 Removal of Asbestos-containing Sheet Flooring

Remove binding strips or other restrictive mouldings. Workers shall wear air purifying respirator fitted with high efficiency filter, and coveralls at all times.

Make series of cuts 100 mm to 200 mm (4” to 8”) apart through top layers and about halfway through felt backing, parallel to wall.

Start at end of room furthest from door and pry up corner of strip, separating top sheet from backing layer. Pull top layer back upon itself slowly and evenly, and half backing and top layers should pull free. After it is removed, roll up strip face out into tight roll, tape or tie securely, and place into asbestos waste receptor. Wet the asbestos felt underlay remaining on floor as soon as exposed.

Continue with successive strips. Avoid walking on exposed asbestos felt. Seal asbestos waste receptors when filled. Remove maximum of three strips before wet scraping exposed felt underlay.

Remove remaining adhered underlay by wet scraping. Soak area with water applied by sprayer. Allow water to penetrate felt. Scrape off remaining material. Maintain material wet by applying more water. Place scrapings in asbestos waste receptor.

Continue this procedure alternately removing top sheets and then wet scraping felt, three strips at a time. Be careful not to walk on stripped floor.

When whole floor has been cleaned of asbestos felt, allow it to dry and vacuum up any dirt with a HEPA vacuum or wet mop. Do not dry sweep. Dispose of the mop head as contaminated waste.

Thoroughly clean tools and equipment with a damp cloth before being put back into regular service. Dispose of cloth as contaminated waste.

18.3 Installing, Cutting or Drilling Non-friable Asbestos Materials

Work using power tools not fitted with a HEPA filter dust collector, must not be performed as Type 1 work.

Where possible wet all materials to be disturbed.

Immediately place waste in asbestos waste receptor. Clean area frequently during work with HEPA vacuum or by wet methods.

At completion of work, clean drop sheets to be reused with HEPA vacuum or by wet methods.

Drop sheets shall be disposed of as asbestos waste.

18.4 Removal of Other Non-friable Asbestos Materials

The Type 1 procedures apply only to materials which can be removed intact, or in sections, without producing a pulverized or powdered waste. This method is most applicable to asbestos-cement board products, acoustic ceiling tiles, gaskets, etc.

Where possible wet all material to be disturbed.

Undo fasteners necessary to remove material. Whenever possible remove asbestos cement panels intact. Break only if unavoidable. If broken, wet freshly exposed edges.

Where sections are adhered to the substrate, wet material and use hand scraping to remove adhering material.

Place removed material into asbestos waste receptor. Clean surrounding surfaces and asbestos work area frequently with HEPA vacuum or with wet methods. Damp cloth disposed of as asbestos waste after cleaning.

Drop sheets shall be disposed of as asbestos waste.

19 WASTE TRANSPORT AND DISPOSAL

Place waste into asbestos labelled disposal bag, seal with tape, clean the exterior of the bag with a clean cloth, and place into a second clean bag, also to be sealed with tape. Use a barrel, fibre drum, or cardboard or wooden box in place of the second bag when the asbestos waste material is likely to tear the inner bag. Seal the outer container.

Provide storage area for holding minor amounts of asbestos waste in sealed containers. Garbage containers shall be labelled and assigned exclusively for asbestos waste.

Dispose of the waste in compliance with provincial regulations.

APPENDIX C

TYPE 2 WORK PROCEDURES

TYPE 2 WORK PROCEDURES

For locations of asbestos materials, refer to the current version of the Asbestos Inventory and Assessment Report.

20 EQUIPMENT

Equipment required for the work must be on-site before proceeding.

20.1 Vacuum

An asbestos-approved vacuum (HEPA filtered), equipped with brushes, fittings, etc. Vacuum must not be opened except by a fully protected worker within a Type 2 enclosure.

20.2 Respirators

Workers within the work area shall wear approved respirator. Respirators and filters will be provided by the employer, and individually assigned to workers. Respirator shall be a half-face piece respirator with high efficiency filters. Respirators must be kept in position throughout the entire time the worker is in the area of the work from first disturbance of the ceiling tile or asbestos material until the final cleaning of the area and bagging of waste is complete. Change filters after 24 hours of wear or sooner if breathing resistance increases. No person using respirator shall wear facial hair which affects seal between respirator and face.

20.3 Protective Clothing

All workers shall wear disposable coveralls with attached elasticized hood. Coveralls should be worn with the hood in place at all times. Coveralls may be vacuumed or wet wiped clean for re-use, for a maximum of 8 hours cumulative wear. Suit and head cover shall remain in place until worker leaves work area or the enclosure is dismantled. Boot covers or dedicated boots are recommended.

20.4 Other Equipment

- plastic sheet (6 mil polyethylene) – to erect a total enclosure or to serve as drop sheet
- wood framing or clips to support polyethylene sheeting, as appropriate to work area
- tape – to fasten plastic enclosure to ceiling or to tape drop sheet to floor; ¾" double-sided tape recommended for attaching polyethylene to T-bar ceiling
- labelled asbestos waste bag (6 mil) – for all asbestos waste, disposable suit, plastic for disposal, etc.
- pump sprayer containing water with wetting agent to wet asbestos as necessary; dilute wetting agent 2 oz per gallon of water
- asbestos warning signs
- cleaning supplies – e.g., scouring pads, sponges, brushes, buckets, etc.
- insulation repair supplies (lagging compound, cloth, PVC covers)
- encapsulating sealer, for brush or airless spray application

21 OTHER PROTECTIVE MEASURES

Do not eat, drink or smoke in the work area.

On completing clean-up of work area, use vacuum or wet cloth to clean hands, face, respirator and boots. Remove protective equipment and proceed to nearest washroom to wash exposed skin on hands and face.

22 SCHEDULING OF WORK

Schedule work when occupants are absent. If persons are present, do not start work.

If work above ceiling is required on an emergency basis when area is occupied, the Owner shall advise occupants to vacate area until work is complete and clearance is given to return.

23 PREPARATION

Shut down ventilation systems to and from the work area. Seal over all ventilation openings, diffusers, grilles, etc., with plastic and tape.

Where practical, clear areas of movable furnishings or equipment. This should include anything which occupants may wish to use during work period. Any furnishings or equipment not removed shall be adequately covered and sealed using 6 mil polyethylene and tape. The intent of the protection is to provide an airtight envelope to protect the articles from airborne dust or splashed debris.

Post signs or barrier tape to indicate asbestos hazard and requirement for protective clothing for anyone entering the space.

For small rooms, cover walls with plastic such that the complete room becomes the work area. For larger rooms, erect enclosure of 6 mil polyethylene of suitable dimensions to enclose the work area and scaffolds and ladders required to gain access. If a suspended ceiling is present, the enclosure shall extend to the ceiling line. The enclosure shall be as airtight as conditions permit including the provision of a double overlapping flap at the entrance. The floor of the work area shall be a layer of 6 mil polyethylene sealed to the plastic walls of the enclosure.

Don protective clothing and respirator prior to removing ceiling tile or disturbing pipe jacketing or sprayed fireproofing.

24 EXECUTION

To remove fireproofing or texture plaster, saturate using amended water solution, by use of a pump sprayer. Do not remove the asbestos material until the material is thoroughly wetted to the substrate. Do not use water where electrical hazard exists.
To remove pipe insulation, first wet any area of damage, then carefully cut jacket. Keep insulation surface wetted by mist of water with wetting agent. Remove insulation in large sections and place immediately in disposal bag. After large pieces have been removed, saturate debris on mechanical equipment and clean all exposed surfaces with abrasive pads, sponges, cloths, etc.

To repair pipe insulation, use drop sheet under area of work to aid clean-up of any dislodged material. Plastic enclosure is not required. Mist any exposed insulation to wet surface and apply lagging paint and canvas or PVC jacketing as required.

For removal of suspended ceiling tiles (where asbestos debris is present on top of tiles or equipment to be accessed), remove the first tile carefully and vacuum all surfaces. Vacuum the upper surface of each subsequent tile prior to removal. Store tiles in the work area.

Remove dust and loose friable material likely to be disturbed in the process of doing the work, with a HEPA vacuum or by damp wiping.

When asbestos material is removed, all pieces should be placed directly into 6 mil polyethylene bags as they are removed. Avoid dropping material to floor wherever possible. After bulk removal is complete, wet wash the exposed surface.

Frequently, and at regular intervals during the work, clean up dust and waste in the work area by wet mopping, placing in disposal bags, or by HEPA vacuuming.

After completion of removal, seal exposed ends of fireproofing, texture plaster, or mechanical insulation with heavy layer of encapsulating sealer. Apply sealer coat to surfaces from which asbestos material was removed.

At completion of work, decontaminate equipment, tools and materials used in the work area by wet cleaning or HEPA vacuum.

Dispose of drop sheets and enclosures by wetting the polyethylene, then folding into disposal bags. Do not reuse drop sheets or enclosures.

Before leaving work area, decontaminate shoes and protective clothing by using HEPA vacuum or damp wiping. When protective clothing is to be disposed of, it shall be decontaminated as above and placed in labelled disposal bags. Workers shall vacuum all exposed skin, suit and respirator, and proceed to nearest washroom to wash hands and face.

25 WASTE TRANSPORT AND DISPOSAL

Place waste into asbestos labelled disposal bag, seal with tape, clean the bag, and place into a second clean bag, also to be sealed with tape. Use a barrel, fibre drum, or cardboard or wooden box in place of the second bag when the asbestos waste material is likely to tear the inner bag. Seal the rigid outer container.

Provide storage area for holding minor amounts of asbestos waste in sealed containers. Containers shall be labelled and assigned exclusively for asbestos waste.

Dispose of waste in compliance with provincial regulations.

APPENDIX D

GLOVE BAG WORK PROCEDURES

GLOVE BAG WORK PROCEDURES

26 EQUIPMENT

All equipment must be on site before proceeding with the work. Note that these procedures are primarily based on the use of Safe-T-Strip polyvinyl chloride movable glove bags. Only the Safe-T-Strip glove bag is allowed for use at multiple locations. If the single use polyethylene glove bag permitted are used, it should be understood that they are for use at one location only, and cannot be moved or used elsewhere.

26.1 Glove Bag

Prefabricated, 0.25 mm (10 mil) minimum thickness polyvinyl-chloride bag with integral 0.25 mm (10 mil) thick polyvinyl-chloride gloves and elasticized port. Bag shall be equipped with reversible double-pull double throw zipper on top. Bag must incorporate internal closure strip if it is to be removed from pipe for re-use elsewhere.

Prefabricated polyethylene glove bag, single use, not movable.

Provide size and configuration appropriate for insulation to be removed. Once filled bag must be disposed of. Bag shall not be emptied and reused.

26.2 Securing Straps

Reusable nylon straps at least 1" wide with metal buckle for sealing ends of bags around pipe and/or insulation.

26.3 Water Sprayer

Garden reservoir type, low velocity, capable of producing mist or fine spray with water containing wetting agent. Wetting agent shall be diluted 2 oz. per gallon of water.

26.4 Respirators

Workers using glove bag must wear approved respiratory protection. Respiratory protection must be equal to or exceed protection of half-face respirator with high efficiency filters. Respirators must be kept in position from the time the worker attaches the glove bag to the pipe until final cleaning of the pipe and bagging of waste is completed. Filters shall be changed after 24 hours of wear or sooner if breathing resistance increases. No person using respirator shall wear facial hair which affects the seal between respirator and face.

26.5 Other Equipment

- labelled asbestos waste bags (6 mil) – for all asbestos waste in glove bag, disposable suit, cleaning materials, etc.
- asbestos warning signs
- wire saw – saw with flexible serrated wire blade and handles to allow use inside glove bag
- knife with fully retractable blade for use inside glove bag
- plastic sheet (4 mil polyethylene minimum) to cover exposed or damaged section of pipe prior to attaching glove bag
- tape – to fasten plastic to pipe if required
- cleaning supplies, e.g., scouring pads, sponges, brushes, buckets, etc.
- HEPA vacuum, for evacuating air from bag prior to removing bag from pipe

26.6 Protective Clothing

Workers shall wear disposable suit with attached head cover. Suit and head cover shall remain in place until worker completes cleaning of pipe. Suit may be cleaned for re-use or disposed of as asbestos waste.

27 OTHER PROTECTIVE MEASURES

Do not eat, drink or smoke in the work area.

On completing clean-up of work area, use HEPA vacuum or wet cloth to clean hands, face, respirator and boots. Remove protective equipment and proceed to nearest washroom to wash all exposed skin on hands and face.

28 SCHEDULING OF WORK

Schedule work when occupants are absent. If persons are present, do not start work.

29 PREPARATION

Where practical, clear area below pipe of moveable furnishing or equipment. Provide scaffold as required to reach pipe.

Post an asbestos warning sign at all entrances to room in which the procedure is being used. Use rope or tape barriers to separate work area.

Segregate the area of asbestos work from other parts of the building required to remain in use using polyethylene walls or barrier tape.

Shut off and seal all diffusers, vents and other openings to ventilation and exhaust systems in the room with polyethylene secured with tape.

Cover all items or equipment located in the designated work area with polyethylene if the items or equipment cannot be cleaned in the case of a spill. Tape the polyethylene in place. The polyethylene should cover a width equal to the height of the pipe from the floor, with a minimum width of 12 feet, where required.

Seal all openings or voids in the vicinity of the glove bag operation with one layer of polyethylene secured with tape.

Check condition of pipe insulation where work will be performed. If the pipe insulation has minor isolated damage, mist surface and patch with tape. If damage is more extensive, wrap pipe with plastic and “candy stripe” it with duct tape first. If pipe insulation is severely damaged and cannot be simply repaired, glove bag is not appropriate. (See Type 2 Procedures.)

Pre-clean with HEPA vacuum or wet methods any loose material on surface of pipe or any material on the floor. If significant amount of material is on floor, Type 2 procedures may be required for clean-up (See Type 2 Procedures).

Place necessary tools in bottom of glove bag.

30 EXECUTION

Zip the bag onto the pipe and seal each end to the pipe with the securing straps. Do not pull the bag tightly to the ends – a small amount of slack allows better room to work within the bag. If a vertical bag is in use, ensure lower strap passes through plastic grommet and cloth tab on zipper.

Place hands into gloves and use necessary tools (wire saw, utility knife, wire cutters) to remove insulation from pipe. Arrange insulation in bottom of bag to obtain full capacity of bag. Roll jacketing carefully to minimize the possibility of ripping or puncturing the bag.

Insert nozzle of spray pump into bag through valve and wash pipe and interior of upper section of bag thoroughly. Use one hand to aid washing process. Wet surface of insulation in lower section of bag and any exposed ends of asbestos insulation remaining on pipe.

Prior to removing the bag from the pipe, wash the top section of the bag and tools thoroughly. Insert nozzle of HEPA filtered vacuum into bag through elasticized valve and evacuate air from bag. Seal the closure strip, remove the vacuum nozzle and straps, and remove the bag. Re-install and seal in new location before reopening closure.

If bag is to be moved along the same pipe, loosen securing straps, move bag, re-seal to pipe using double-pull zipper to pass hangers. Repeat insulation removal operation.

If during use the glove bag is ripped, cut or opened in any way, cease work and repair opening before continuing work. All spilled material must be cleaned up and removed with a HEPA vacuum or wet cleaning.

To remove tools after completion of insulation removal, thoroughly wash top section of bag and tools. Place tools in one glove, pull hand out inverted, twist to create a separate pouch, tape inside-out glove at two separate locations 1” apart to seal pouch. Remove inside-out glove and tools by cutting between the tape seals.

Place glove pouch and tools into the next clean glove bag to be used. Alternately, place the tool pouch into water bucket, open pouch underwater and clean tools, then allow to dry.

Prior to disposal of bag, evacuate the bag with a HEPA vacuum. Pull a 6 mil polyethylene bag over glove bag before removing from pipe. Remove securing straps. Unfasten zipper. Seal glove bag and seal 6 mil polyethylene bag.

After removal of bag ensure pipe is clean of all residue. If necessary, after removal of each section of asbestos, vacuum all surfaces of pipe, using HEPA filtered vacuum equipment or wipe with wet cloth.

Seal all surfaces of freshly-exposed pipe with encapsulating sealer to tack-down any residual dust. Cover exposed ends of any remaining asbestos insulation with lagging cloth or tape.

Before leaving work area, decontaminate shoes and protective clothing by using HEPA vacuum or damp wiping. When protective clothing is to be disposed of, it shall be decontaminated as above and placed in labelled disposal bags. Workers shall vacuum all exposed skin, suit, respirator and hair (after removing hood) and proceed to nearest washroom to wash hands and face.

31 WASTE TRANSPORT AND DISPOSAL

Provide storage area for holding minor amounts of asbestos waste in sealed containers. Containers shall be labelled and assigned exclusively for asbestos waste.

Dispose of waste in compliance with provincial regulations.

APPENDIX E

RESPIRATOR FITTING, INSPECTION, CLEANING AND DISINFECTION

RESPIRATOR FITTING, INSPECTION, CLEANING AND DISINFECTION

NOTES FOR AIR PURIFYING HALF FACEPIECE RESPIRATORS

WARNING: This respirator does not supply oxygen. It must not be used in oxygen deficient atmospheres (less than 19.5%); in poorly ventilated areas or enclosed spaces such as tanks or small rooms; for abrasive blasting or firefighting; or for protection against contaminants excluded or not covered by the applicable Approval Label.

Respirators must be approved for protection against asbestos. Check for NIOSH certification. Please refer to the new CSA Z94.4, Selection, Care and Use of Respirators.

32 RESPIRATOR FITTING

Persons required to wear respirators must first pass a qualitative fit-test administered according to the current version of CSA standard Z-94.4. The fit-test should be repeated yearly.

The respirator wearer must be clean-shaven along all the seal points for proper protection. Even stubble growth may be sufficient to reduce the seal of the face piece, and therefore the protection. The respirator approval is voided for users with facial hair which interferes with the seal.

33 INSPECTION ITEMS PRIOR TO EACH USE:

Examine face piece for:

- dirt
- cracks, tears or holes
- distortion and inflexibility
- crack or breaks in filter holders, worn threads and missing gaskets

Examine head straps for:

- breaks or tears
- loss of elasticity
- broken or malfunctioning buckles and attachments

Examine valves for:

- detergent residue, dust or other material on valves or valve seats
- cracks, tears or distortion in the valve material
- missing or defective valves or valve covers

Examine filter for:

- proper filter for protection against asbestos (High Efficiency Particulate)
- incorrect installation, loose connections, missing or worn gaskets or cross threading
- cracks or dents in filter housing

Leak-checks:

Perform the following tests on each donning:

- negative pressure test: cover inlets to filters, breathe in and hold breath; respirator should be drawn to face for minimum of 10 seconds (if not, check exhalation valve and fit)
- positive pressure test: cover exhalation valve cover and puff out slightly and hold breath; respirator should slightly pressurize and still hold seal (if not, check inhalation valves and fit)

34 RESPIRATOR CLEANING AND DISINFECTION

Remove filters and disassemble face piece. Discard or repair defective parts.

Wash components in warm water (50^{o}C – 60^{o}C) with mild detergent, using a brush. Cleaning and disinfectant solutions are available from respirator manufacturers.

Thoroughly rinse components in clean, warm water.

Air dry or hand dry components with a clean, lint-free cloth.

Reassemble respirator and test to ensure that all components are working properly (see above). Be careful to check that valves are not lost in the cleaning.

35 FILTER CARTRIDGE HANDLING AND REPLACEMENT

Filter cartridges should be sealed on the inlet side with tape once used.

Filters can be re-used until an increase in breathing resistance is noted. Under typical Type 2 conditions, filter cartridges should last a minimum of 24 hours.

APPENDIX F

PROCEDURES FOR EMERGENCY ASBESTOS WORK

PROCEDURES FOR EMERGENCY ASBESTOS WORK

If Type 2 procedures cannot be strictly observed due to the urgency, some judgement will be required of the person responsible for the work, and other staff or contractors responding to the emergency. The general principle of emergency response work is to protect the workers performing the repair and to minimize the exposure of others to airborne asbestos. The procedures given below should be followed to the extent possible in the circumstances of the emergency.

1. Clear area of all occupants.

2. Construct enclosure around area if time permits.

3. Shut down ventilation system serving area.

4. Worker performing repair shall wear protective respirator and disposable suit. If normal work clothes are worn they must be disposed of if visibly contaminated.

5. Use drop sheet under work to minimize clean-up if possible.

6. Perform emergency repair with minimum disturbance of asbestos.

7. Obtain asbestos equipment and perform clean-up of visible material before allowing unprotected personnel to enter area. Use HEPA filtered vacuum or wet cleaning. Dispose of all cleaning supplies as contaminated waste.

8. The worker should wipe off or vacuum disposable clothing and footwear. Proceed to washroom to wash face and hands.

Notify the Owner regarding the asbestos disturbance. The Owner will contact the Standing Offer Asbestos Consultant and Standing Offer Asbestos Contractor to arrange for removal, clean-up or repair of the asbestos material, and air sampling in the area(s) of concern.

APPENDIX G

ASBESTOS-RELATED WORK RECORD

APPENDIX H

CERTIFICATES OF TRAINING FOR ASBESTOS WORK

APPENDIX I

CONTRACTOR NOTIFICATION AND ACKNOWLEDGEMENT

APPENDIX J

BULK SAMPLE COLLECTION PROCEDURES

BULK SAMPLE COLLECTION PROCEDURES

9. Sample the material when the area is not in use. Only those persons needed for sampling should be present in the immediate area.

10. Spray the material with a light mist of water to prevent fibre release during sampling. Do not disturb the material any more than necessary.

11. Materials of different appearance should be sampled separately. Mechanical insulation must be sampled separately on all systems, tanks, vessels, etc. Sample both the straight sections of pre-formed insulation and the insulating cement typically present at elbows, fittings, etc. (unless visually identified as fibreglass).

12. Collect the sample by penetrating the entire depth of the material, as the insulation may have been applied in more than one layer or covered with paint or other protective coating.

13. Depending on the condition of the material, significant amounts of airborne fibres can be generated during sampling. The use of a respirator is recommended for all sampling.

14. If pieces of material break off during sampling, the contaminated area must be cleaned up with a HEPA vacuum cleaner or by wet cleaning. Any debris generated must be placed in plastic bags, labelled, sealed and disposed of as asbestos waste.

15. Place samples in labelled plastic bags with a zip-lock closure or in sealed plastic vials. Samples shall be identified with the following information:
    -
    - Sample Number
    - Room Number/Name
    - Date of Sampling
    - Name of Sampler
    - Source of sample, e.g., Cold Water Pipe, Cold Water Fitting, etc.

16. Temporarily seal any openings created to collect the sample, for example, with metal foil tape wrapped completely around the pipe.

Analysis must be performed by a laboratory accredited by the National Voluntary Laboratory Accreditation Program (NVLAP) or the Canadian Association for Environmental Analytical Laboratories (CAEAL). Contact the Standing Offer Asbestos Consultant for a list of acceptable laboratories.

APPENDIX K

ROLES AND RESPONSIBILITIES

ROLES AND RESPONSIBILITIES

36 Owner

Implement and promote awareness of this Asbestos Management Plan.

Arrange for the preparation of the Asbestos Inventory and Assessment Report.

Issue the written notifications of the presence of asbestos materials to the Joint Health and Safety Committee, Operations Group personnel within the Town of Fort Frances Municipal buildings referenced in DST ACM Survey Report BE-TB-009814, and to "occupiers" of Town of Fort Frances provided with written notice of the presence of asbestos materials within their space .

Maintain a technical competency related to asbestos within the Operations Groups associated with Town of Frances Municipal buildings referenced in DST ACM Survey Report BE-TB-009814.

Develop and maintain standing offer contracts for asbestos related services.

Issue the written notifications of the presence of asbestos materials to Contractors with standing agreements who may enter parts of the building where asbestos materials may be present.

Update the Asbestos Inventory and Assessment Report, at least annually, and after any maintenance or project work that results in a change in the quantity or condition of asbestos materials.

Consult with the Standing Offer Asbestos Consultant to develop training packages for various groups of staff involved with asbestos.

Review all maintenance work for the potential to disturb asbestos materials.

Classify all maintenance disturbance of asbestos materials as Type 1, Type 2 or Type 3.

Complete the Asbestos Work Reports (at least annually and immediately upon termination of employment) for all Town of Fort Frances Operations Group employees who perform asbestos related work, associated with municipal buildings referenced in DST ACM Survey Reports BE-TB-009814 employees.

To maintain the registry of trained personnel and the level of training provided.

Maintain a stock of the necessary asbestos-related equipment, as required for Type 1 and emergency Type 2 work, for use by staff who perform asbestos work.

Consult the Asbestos Inventory and Assessment Report prior to all project work for the potential to disturb asbestos materials.

Arrange for a Designated Substance Survey of the project area prior to tendering any work.

Conduct the quality assurance evaluations of Type 1 or Type 2 removal and repair work, when not performed by the Standing Offer Asbestos Consultant.

37 All Contractors

This includes any individual, any firm, and employees of any firm contracted to do work on the interior or exterior of the Town of Fort Frances Municipal buildings referenced in DST ACM Survey Report BE-TB-009814. Their responsibilities are:

To review the appropriate portion(s) of the Asbestos Inventory and Assessment Report, as provided by the Owner, prior to all renovation and construction work for the possible impact on asbestos.

To complete the "Contractor Notification and Acknowledgement" form and return to the Owner.

To avoid disturbing asbestos materials during the performance of their work. The disturbance of asbestos building materials may only be undertaken by contractors who have received training in asbestos-related precautions.

As a condition of their contract to provide services and materials to the Owner, their company will not disturb asbestos-containing materials without prior notification to the Owner. These firms and their employees, while working within the Town of Fort Frances Municipal buildings referenced in DST ACM Survey Report BE-TB-009814, will follow all procedures specified by the Asbestos Management Plan.

38 Asbestos Abatement Contractors

This includes any individual, any firm, and employees of any firm contracted to do work on the interior or exterior of the Town of Fort Frances Municipal buildings referenced in DST ACM Survey Report BE-TB-009814 involving asbestos. Their responsibilities are:

To ensure they follow all procedures specified by the Asbestos Management Program.

To ensure that they complete all the required documentation required by the Asbestos Management Program.

APPENDIX L

ASBESTOS WORK LOG

ASBESTOS WORK LOG

Town of Fort Frances municipal buildings referenced in DST ACM Survey Reports BE-TB-009814			
Location / Item Worked On	Performed By	Type of Operation	Date
Example: Memorial Arena, Broadcast Booth (Rm. 42), Vinyl Sheet Floor, Removal	Example: John Doe, ACME Asbestos Company	Example: Type 1	Example: January 20, 2010