



National Gallery of Canada **Musée des beaux-arts du Canada**

ELEVATOR PREVENTATIVE MAINTENANCE SERVICE CONTRACT

**National Gallery of Canada
380 Sussex Drive, Ottawa**

PREPARED BY:



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PART 1 – GENERAL

.1 Object of the Contract

- .1 In consideration of the price paid by The National Gallery of Canada, the Contractor shall supply for the term of this contract, all labour including overtime, parts, equipment and tools and furnish all other services and expenses including mileage and any truck or automobile fuel surcharges and travelling time necessary to carry out the maintenance of the elevators as described in this specification.
- .2 The Contractor agrees to accept all elevators in their present condition. There will be no allowance for any pre-maintenance work. The Owner will not be responsible for any additional charges to the monthly maintenance costs, except for malicious damage to the equipment, or damages to the elevator equipment which are the result of improper use of the elevator above and beyond normal wear and tear. All charges for additional work must be approved by the Owner and Elevator Consultant.
- .3 The cost of all Running on Arrival (ROA) call-backs during regular or overtime hours is to be included in the contract price. The Owner will not pay for ROA call-backs.

.2 Bidders Compliance

- .1 Submission of the bid will be considered as presumptive evidence that the Bidder is familiar with local facilities and conditions, requirements of these documents and of the pertinent Federal, Provincial and local codes, state of labour and material markets and has made sufficient allowances in his proposal for all difficulties.
- .2 Should Bidder's investigation of the local codes or requirements reveal stipulations contrary to these specifications, he shall advise the Consultant in writing without delay. Should a Bidder find any discrepancy in, or any omissions from the specifications or tender documents, or be in doubt as to their meaning, he shall advise the Consultant in writing, before submitting his bid.
- .3 All Bids submitted are assumed to be in complete conformance with the specifications unless notification is given in writing before the Tender closes. The Bidder acknowledges that he has the expertise, technical information, software, special tools, access to and availability to obtain all replacement parts, and engineering assistance to properly maintain all equipment identified in these specifications.
- .4 Should the Contractor require the services of the original installer of the equipment or the manufacturer in order to properly service or repair an elevator which for whatever reason the maintaining Contractor cannot fix or repair, all costs involved shall be the responsibility of the Contractor. The Owner will not pay for any costs relating to the services of another elevator contractor or the original manufacturer in order to return the elevator to service as quickly as possible.

.3 Definition of Terms

- .1 The term "Owner", as used herein, refers to "National Gallery of Canada".
- .2 The term "Contractor", as used herein refers to the corporation having signed a contract with the Owner, to furnish labour and material for the execution of the work described herein.
- .3 The term "Sub-Contractor", as used herein, refers to any person, partners, firm or Corporation having a contract with the contractor to furnish labour and materials for the execution of the work described herein.
- .4 The term "Elevator", as used herein refers to all classes of elevating devices as identified and included in this specification.
- .5 The term "Preventive Maintenance", as used herein, refers to cleaning, lubricating, adjusting and repairing or replacing, worn or defective components where necessary, to ensure that the device provides an acceptable level of service and to prevent the device from becoming unsafe.
- .6 All terms in the specifications that are not otherwise defined shall have the definitions as given in the latest edition of the CSA-B44 Safety Code for Elevators and the CSA-B355 Lifts for Persons with Physical Disabilities.
- .7 The term "Elevator Consultant", as used herein refers to Priestman Neilson & Associates Ltd., 160 Paseo Private, Ottawa, Ontario K2G 4N6 who when directed by The Owner, shall act as its agent.

.4 Reference Standards

- .1 Comply with all building codes, by-laws, regulations, directives, and ordinances as set forth and mandated by Federal, Provincial, and Municipal Authorities, in effect at the time of award of this contract.
- .2 The latest editions of the following Standards as a minimum shall apply:
 - a) ASME A17.1-2010/CSA-B44-10 Safety Code For Elevators, including latest supplements and Appendix E, Elevator Requirements For Persons with Physical Disabilities.
 - b) B355-09 Lifts for Persons with Physical Disabilities.
 - c) ASME A17.6-2010 - Standard for Elevator Suspension, Compensation and Governor Systems
 - d) The Ontario Building Code 2012 and the National Building Code of Canada 2015.
 - e) Technical Standards and Safety Act 2000 O. Reg 209/01, Elevating Devices Code Adoption Document and O.Reg.222/01 Certification and Training of Elevating Devices Mechanics.
 - f) CSA Standard C22.1 - 12 Canadian Electrical Code Part 1.
 - g) Occupational Health and Safety Act and Regulations for Construction Projects O.Reg.213/91 as amended by O. Reg. 631/94. R.R.O. 1990 Reg. 834.

.5 Assignment of Contract

- .1 The Contractor shall not assign the contract or any part thereof without the written consent of the Owner.

.6 Contract Documents

- .1 The Contract Documents are complementary and what is called for by one shall be as binding as if called for by all. The intention of the Contract Documents is to include in the contract price, the cost of all labour and materials, scaffolds, riggings, water, fuel, tools, plant equipment, light, transportation and all other services and expenses as may be necessary for and appropriately incidental to the proper execution and completion of the work unless specified otherwise.

.7 Ownership of Elevators

- .1 The elevators, in their entirety, are the property of the Owner.
- .2 The elevators may be operated in normal use and service by the Owner at any time except when other arrangements have been made with the Contractor when the elevators are signed as being under repair.

.8 Copies of Drawings and Manuals

- .1 One (1) set of wiring diagrams for each elevator installation are to be provided by the Owner and located in the machine room of each installation.
- .2 The Contractor shall maintain on site, a complete set of as-built electrical drawings, operation and maintenance manuals, when provided by the Owner, and other related reference documents, as required to maintain the equipment in proper and safe operation.
- .3 Should additional diagrams or data be required to perform the work required herein, it shall be the responsibility of the Contractor to obtain all such diagrams or data.
- .4 If during the course of the maintenance period changes are made to the wiring diagrams or circuitry by the Contractor, all changes shall be marked up in **RED** on the drawings. All wiring changes must be approved by a Registered Professional Engineer.
- .5 The Owner shall be provided with a copy of all changes as marked up on the drawings.

.9 Changes in Elevators or Controls

- .1 The Owner reserves the right to make changes to, or modernize the elevators, should any be found desirable. During any changes, this maintenance contract or any part thereof, shall be suspended or amended. The Owner reserves the right to tender such work.
- .2 No part of the elevator systems shall be altered from that shown on the drawings or presently installed, nor shall any work in the nature of additional work, or any work not contemplated by the Contract Documents be performed except on written order of the Owner.

.10 Royalties and Patents

- .1 The Contractor shall pay all royalties and license fees (not elevator license fees). He shall defend all suits and claims for infringements of any patent rights and shall save the Owner harmless from loss on account thereof.

.11 Building Regulations

- .1 The requirements of all laws, rules and regulations of city, county and provincial departments governing building construction and equipment shall be followed and all work shall be carried out in strict accordance with such requirements.
- .2 The Contractor must comply with the Owners health and safety requirements, building smoking policy, noise and dust regulations, sanitary requirements, electrical and site protocols, security requirements and NGC policies.

.12 Contract Supervision by the Owner

- .1 Supervision is for the purpose of assuring the Owner that the work is being properly executed. This shall in no manner relieve the Contractor from any responsibility for the work to be executed under this agreement.
- .2 Periodic and annual inspections as required by the Owner will be carried out by the Elevator Consultant. The Elevator Consultant shall be appointed at the Owner's discretion during the term of the Contract.
- .3 The Elevator Consultant is the agent of the Owner only to the extent provided in the Contract Documents and when in special instances, he is authorized by the Owner so to act. All of the work in the Specifications shall meet the approval of the Owner and Elevator Consultant. The Owner and Consultant are authorized to reject any work they consider not in accordance with the Specifications. They are authorized to stop the work whenever the stoppage is necessary to ensure the proper execution of the Contract.
- .4 The Owner is responsible for the costs of the Consultants initial and first re-inspection. The Owner will deduct from the Contractors monthly maintenance invoice for all Elevator Consultant fees, resulting from the failure of the Contractor to correct all outstanding deficiencies identified in the first re-inspection report.

.13 Contractor's Supervisor and Employees

- .1 The Contractor's personnel shall be experienced, competent and capable of performing the work required by the Specifications according to the standards prescribed.
- .2 The Contractor shall provide the services of a competent Supervisor who shall be at all times in charge of the work and shall represent the Contractor.
- .3 The Supervisor shall survey the elevators every **six (6) months**, check and initial the log books on site, and submit a written report to the Owner describing the condition of the elevators in relation to: the cleanliness of the machine room, hoistway, and pit equipment, the overall operation of the elevators, and provide written verification that the log books are up to date.

- .4 All employees of the Contractor shall be neatly dressed at all times, identified uniforms or coveralls are required. Courteous behaviour is mandatory at all times, unsatisfactory behaviour will not be tolerated.
- .5 Any employee of the Contractor whom the Owner or its delegate considers detrimental to the proper carrying out of the work is to be subject to discussion between the Contractor and the Owner's representative who shall try to reach agreement failing which the employee will be replaced.
- .6 The Contractor shall strictly adhere to the security requirements of the building including the building's smoking policy. The Owner has the right to dismiss any persons from the building who do not comply with the Owner's Health & Safety requirements. These requirements are subject to changes or additions throughout the term of the contract. The Owner will provide a copy of the Health & Safety Policy to the successful Elevator Contractor.
- .7 Persons performing maintenance, including repairs and replacement work, shall be supervised and have up to date training on this specific equipment, be experienced and be qualified.
- .8 All mechanics and supervisors must be in possession of a current licence certificate of the required class for the type of work for which they are engaged in. The class of licence is required by Ontario Regulation 155/97.

.14 Monthly Maintenance and Call-Back Reports

- .1 Submit on a monthly basis to the Owner, a copy of the following previous months activities as described below:
 - a) Call-back report for ALL elevators and lifts.
 - b) A copy of the regular maintenance time ticket for each elevator and lift.
- .2 The call-back reports and time tickets shall include the following information:
 - a) Elevator installation number.
 - b) Date and time that work was performed.
 - c) Details of the work performed.
 - d) Status of elevator upon departure.
 - e) Additional comments that relate to the safe and efficient operation of the elevating device.

.15 Withholding Payments

- .1 Payments due to the Contractor may be withheld by the Owner due to unsatisfactory progress of the work or defective materials or workmanship by the Contractor, which in the judgement of the Owner and or Consultant, are sufficiently serious to justify such withholding.
- .2 The monthly maintenance payments will not be due, and therefore credited to the Owner, for each month that the CAD Section 8.6 – MAINTENANCE SPECIFICATIONS, and MCP maintenance tasks and frequencies are not completed and signed off in the log book.

- .3 The monthly maintenance payments will be withheld by the Owner for each month that the call-back report for all elevators and the copy of the regular maintenance time ticket for each elevator have not been submitted to the Owner or the Owner's representative.
- .4 If the elevator is out of service for more than five (5) consecutive days due to unscheduled equipment failure, which is the responsibility of the Elevator Contractor, the monthly maintenance payment for the elevator will not be due, and therefore credited to the Owner.
- .5 Failure to keep the MCP logs, occurrence log books and the **maintenance specifications logs** up to date.
- .6 Failure to submit the maintenance Supervisor's semi-annual written reports.
- .7 The Owner has the right to reduce the monthly maintenance amount by 50% each month that the Contractor fails to meet the response times outlined in Part 1, Section 28 of these specifications on two (2) or more occasions.
- .8 Failure to achieve the same monthly Performance Indicator (as identified in Part 7) for a second time, in any given month, during the same contract year, will result in a financial penalty of 15% per deficiency on the next month's maintenance invoice.

.16 TSSA Inspection Fees

- .1 The Owner will be responsible for the cost of the annual TSSA inspection fees.
- .2 The Owner has the right to deduct from the monthly maintenance costs for any additional TSSA follow-up inspection costs relating to the failure of the Elevator Contractor to correct on time, deficiencies identified in the initial TSSA inspection report which are the responsibility of the Elevator Contractor, provided that the TSSA inspection report is forwarded to the Elevator Contractor within forty-eight (48) hours of being issued and the "Declaration of Compliance" (DC) is an option.

.17 TSSA Incident Reporting Requirements

- .1 During the term of this contract the Elevator Contractor is to fully comply with TSSA Director's Guideline Reference No. 230/09 including any revisions.
- .2 The Elevator Contractor is to provide all information to the Owner as necessary and complete the incident reporting form as required by TSSA Director's Guideline Reference No. 230/09, at no cost to the Owner.

.18 Damages

- .1 Should either party to the Contract suffer damage in any manner because of any wrongful act or neglect on the part of the other party or anyone employed by him, they will be reimbursed by the other party for such damage.
- .2 Claims under this clause shall be made in writing to the party liable within a reasonable time span from first observing such damage.

.19 Protection of Work and Property

- .1 The Contractor shall in all phases of work, continuously maintain adequate protection from damage. He shall protect the Owner's property from injury or loss arising from the contract. He shall further make good any such damage, injury or loss.
- .2 Provide and maintain adequate barricades, warning signs, **bilingual** out of order signs and all necessary safety precautions.
- .3 In the event the Contractor deems any system or device to be unsafe, remedial action shall be taken immediately and the Owner shall be notified. The Contractor shall not leave the premises until steps have been taken to protect the public and occupants from all hazards. **ANY ELEVATOR WHICH IS LEFT OUT OF SERVICE MUST BE LOCKED OUT OF SERVICE AND TAGGED ACCORDINGLY.**

.20 Workplace Safety Insurance Board

- .1 The Contractor shall submit to the Owner a certificate stating that he is fully covered by WSIB.

.21 Parking Facilities

- .1 The Contractor shall be required to arrange and pay for his own parking.

.22 Failure to Perform

- .1 In the event that the Contractor fails to perform the services contracted for, as verified by an independent Elevator Consultant and is in breach of the contract, the Owner shall advise the Contractor, in writing, to take corrective action to remedy the breach immediately.
- .2 If within thirty (30) days of the Contractor receiving notice, the Owner and the Elevator Consultant determines that corrective action did not take place or was not commenced, then the Owner, without prejudice to any other remedy he may have, has the right to terminate the contract on thirty (30) days notice.

.23 Labour Disputes

- .1 Should there be a reasonable doubt that the Contractor cannot complete the work because of labour disputes or any other cause, the Owner reserves the right, at his option, to cancel the Contract.
- .2 Prior to exercising the option, the Owner shall give the Contractor five (5) days' notice in writing of intention to cancel the contract.

.24 Alteration to Equipment

- .1 Should the Owner decide to perform an Alteration, as defined by the B44 Safety Code for Elevators, on any of the elevators covered by this contract, the Owner reserves the right to obtain competitive Tenders for this work.
- .2 In the event that the Maintaining Contractor is not successful and the work is awarded to another Contractor the Owner may cancel this portion of the contract upon thirty (30) days written notice with no penalties or further obligations.

.25 New Installations

- .1 During the term of this maintenance contract, the Owner reserves the right to award maintenance of any new installations to the successful tenderer. The decision to award a maintenance contract on any new installation, will rest with the Owner.

.26 Invoicing

- .1 Invoices for maintenance to indicate date(s) on which regular maintenance was performed and include copies of the time tickets.
- .2 Invoices for extra charges relating to improper use of the elevator, or for malicious damage, **must be accompanied by a call-back report and the time tickets** which must indicate the following as a minimum:
 - a) Date work performed;
 - b) Description of work;
 - c) Elevator Number and Installation Number;
 - d) Start and completion time of work;
 - e) Mechanics signature;
 - f) Owner's representative signature;
 - g) Indicate regular time, time and a half, double time, mechanic, crew;
 - h) Status of the elevator after the completion of work (running or shut down);
 - i) Labour and material breakdown costs;
 - j) Probable or actual cause of damage.
- .2 Invoices will not be paid unless accompanied by a copy of the Contractor's time tickets relating to the work performed.
- .3 From time to time, the Owner may request work to be carried out which is not covered by these maintenance specifications. When such work is requested by the Owner, it shall be offered to the Owner in writing indicating the cost for parts + 10% overhead + 10% profit. Labour charges shall be indicated hourly at the contracted price. Copies of the material invoice from the Contractor's supplier shall be attached to the invoice and provided to the Owner.

.27 Maintenance Intervals

- .1 The maintenance on the elevators shall be carried out **monthly** and shall be evenly spaced and performed within the same week of each month.
- .2 The maintenance on the lifts for persons with physical disabilities shall be carried out monthly and shall be evenly spaced and performed within the same week of each month.

.28 Twenty-Four Hour Call-Back Services

- .1 This service shall be provided at any hour of any day, at no cost to the Owner.

- .2 The Contractor shall provide call-back and repair service and remove any trapped persons from the confines of the equipment at any hour of the day or night without additional charges to the Owner, including electrical power failures.
- .3 Emergency response time to remove trapped persons shall be no more than **forty-five (45) minutes** during regular working hours between 7:00 a.m. to 5:00 p.m. and no more than **sixty (60) minutes** after 5:00 PM or on week-ends.
- .4 Other emergencies requiring a **sixty (60) minute** response time are considered to be the following:
 - a) Breakdown of freight elevator E6 and or E7 during the movement of art for installation and takedown of exhibitions;
 - b) Breakdown of freight elevator E4 and or E8 before and during special events.
- .5 All non-emergency call-backs require a response time within **two (2) hours** from receipt of call during regular working hours between 7:00 a.m. to 5:00 p.m.

.29 Log Book and Reporting

- .1 The Contractor shall provide an approved type MCP log book in the machine room of each elevating device. Each log book shall contain, at a minimum, the MCP required documentation, and the specifications maintenance control charts provided in Part 6 and an occurrence log.
- .2 The Log Book must be in each elevator machine room no later than one month after the award of the contract.
- .3 The amount for monthly maintenance will not be due, and therefore credited to the Owner, for any month that the **MCP** log book and the **SPECIFICATIONS MAINTENANCE CONTROL CHARTS** are not signed off for a particular elevator.
- .4 For hydraulic elevators with buried cylinders or piping provide an oil loss monitoring program and log book as per TSSA Director's Order Reference No. 212/07.
- .5 For lifts for persons with physical disabilities provide a maintenance log book as required by Supplement No. 1 of CSA-B355-09.
- .6 No elevator shall be removed from service for planned maintenance, for more than four (4) hours, without the permission of the Owner.
- .7 An **Occurrence log book** (included in the Maintenance Control Program) for each elevating device shall be maintained by the Contractor on site in each machine room. The log book shall contain records on all activities referred to herein, including, all reported call backs or complaints, and the corrective actions taken. Each entry shall indicate the person's name, time of arrival and departure.
- .8 On each visit, the Contractor **must** report to the Owners security desk and sign time in and out in the Owner's logbook.
- .9 The Contractor shall report to the Owner, in writing, any elevator deficiencies that need correction and state its criticality.
- .10 The Contractor shall inform the Owner of any elevator shutdowns.
- .11 During call-backs, the Contractor shall inform the Owner of the status of the elevating device prior to departure.

.30 Elevator Maintenance Specifications

- .1 A complete copy of the Elevator Specifications must be kept in each machine room in the **MCP** binder and readily available to the maintenance mechanics in order to properly implement this preventive maintenance program. These **Elevator Specifications must be located in the machine room no later than the end of the first month of the contract.**

.31 Hazardous Conditions

- .1 The Contractor shall notify the Owner of any hazardous condition noticed during the course of this work, which may be responsibility of the Owner.

.32 Labour Requirements

- .1 The minimum labour to be provided to perform **preventive** maintenance shall be in accordance with the following schedule. These hours are **exclusive** of all B44 Code tests, travelling time and call-backs.
- .2 For elevators ensure that no single visit is less than an average of **one (1) hour** per elevator.
- .3 For lifts for persons with physical disabilities, ensure that no single visit is less than an average of **forty-five (45) minutes** per lift.

.33 Acceptance of Equipment

- .1 The Contractor shall assess the elevator equipment as to the level of maintenance presently being carried out and shall accept the elevators in their present state.
- .2 The Contractor is to assume responsibility for the cleanliness and repair of all equipment. **There will be no allowance for pre-maintenance work.**
- .3 Should the Contractor notice any major deficiencies, unsafe conditions, excessively worn components, or any major building problems during the job showing, or at any time prior to commencement of the contract, he should immediately notify the Consultant or Owner in writing of his concerns, **before** submitting his bid.

.34 General Specifications

- .1 All equipment, including accessories, shall be maintained in a safe and clean "first class" condition.
- .2 The Contractor shall assume immediate responsibility for the cleanliness and repair of all elevating devices.
- .3 The following Specifications are designed to prolong the life of the elevators, provide trouble-free service and maintain the elevators in substantially safe condition. These Specifications are to be considered as a minimum standard reflecting satisfactory and safe conditions to which the maintaining Contractor must work and are in no way intended to limit his responsibility or duties.

- .4 The Contractor shall perform whatever routine maintenance and examinations as are required to keep the elevator operating efficiently and safely. As a minimum, examinations must not be less than monthly on all elevators.
- .5 The Contractor shall show on each call back service ticket, the division of work and detailed completed portion of that division.
- .6 The Contractor shall at no time permit the operation/use of elevators while any of the safety devices, mechanical or electrical, are inoperative. The Contractor shall lock out and tag out the equipment and immediately inform the Owner.
- .7 The Contractor shall not be responsible for the costs incurred for the repair or replacement of damaged parts caused by the malicious action of others.
- .8 In cases where it becomes necessary to remove an elevator from service, a Bilingual notice clearly advising that the elevator is under maintenance shall be posted at each floor. These notices, approved by the Owner and bearing the Maintenance Contractor's name, shall be of a permanent nature, capable of being reused at each shutdown and shall be stored in the machine room when not in use.
- .9 The Contractor shall, on each regular maintenance time ticket, identify the nature of work. An approved Occurrence log book, maintained up-to-date, shall further identify the nature of the work, date, time and name of mechanic.
- .10 Computerized type log books are not acceptable.
- .11 The maintaining Contractor shall not be liable for any loss, damage or delay caused by acts of government, strikes, lockouts, riot, civil commotion, war, malicious mischief, act of God or any cause beyond his reasonable control.
- .12 The Contractor shall maintain elevators in such condition to satisfy all existing elevator codes, in force at the time of installation established by the relevant Federal, Provincial and/or Municipal government departments. Innovations, safety devices and/or new developments not presently available or needed may be added at a later date if required by law or requested by the Owner. Such additions shall be offered to the Owner on a laid down cost for parts basis + 10% overhead + 10% profit. Labour charges shall be hourly at the contracted price.
- .13 Should any change(s) to the Technical Standards And Safety Act, 2000 O. Reg 209/01, TSSA - Elevating Device Branch Ruling(s) or Bulletin's and/or B44 Code directives, which may contribute to the safer operation of the elevators, make it necessary to modify any part of the equipment, the Contractor shall immediately notify the Owner in writing and submit to the latter a detailed list, including estimated costs, of the necessary modifications involved Contractor shall defer acting on such modifications until such time as he receives written approval from the Owner to proceed.
- .14 In view of the various safety/fire security codes applicable, Contractor shall not permit an accumulation of carbon, oil and/or grease build-up on switches or any other part to become a hazard. Should the Owner in its discretion, find that such build-up does in fact present a hazard, Contractor shall, at his own expense, immediately clean the areas in question.

- .15 All work must conform to existing Codes and regulations having jurisdiction over the safe operation of the equipment and the manufacturer's instructions for the proper maintenance of the various components. Specifications are to be considered as a minimum standard and do not limit the Contractor's responsibility.
- .16 The Contractor shall maintain the entire installation, including accessories; carry out all examinations, lubricate, adjust, clean and as conditions warrant, repair or replace any part of the installation with the exception of those items specifically mentioned as excluded items.
- .17 The Contractor shall not permit equipment to operate if any safety device is inoperative. Temporary Jumpers used for trouble-shooting or adjusting shall be of bright colour, not green.
- .18 The Contractor shall at the first scheduled examination, check lubrication, motor brushes, fusing, grounding, operation, signals, cleanliness, hoist ropes and their fastenings.
- .19 All signage shall be bilingual with the English wording appearing first. Signage shall be fabricated in such a manner for re-use and shall be stored in the machine room. They shall bear the Contractor's name and be submitted to the Owner for approval.
- .20 The Contractor shall "Lock Out and Tag Out" any equipment placed out of service.
- .21 The Contractor shall place bilingual suitable/acceptable "Out of Service" signs at each hoistway entrance of single elevators and at the lobby of group operation when equipment is placed out-of-service.
- .22 The Contractor shall carry out all work called for by enforcing authorities with minimum delay. Any work called for which is not included in these Specifications shall be referred to the Owner for approval prior to commencing same.
- .23 The Contractor shall not carry any materials on top of or under the load carrying unit except for the express purpose of maintaining the equipment.
- .24 The Contractor shall retain original fusing arrangements on all circuits. A full report on any deviation shall be referred to the Owner.
- .25 The Owner shall be responsible for the provision, testing and installation of the elevator mainline disconnect switch fuses. The Contractor will be responsible for providing access to the machine room for the Owner's Electrician.
- .26 The Contractor shall replace all burnt pit lights, including fluorescent tubes. The Owner will supply the new bulbs or fluorescent tubes. All burnt lights and fluorescent tubes shall be returned to the Owner for recycling.
- .27 The Contractor shall provide call back and repair service and remove any trapped person from the confines of the equipment at any hour of day or night without charges to the Owner, including power failures.
- .28 The Contractors Supervisory Personnel shall maintain effective communication with the Owner relevant to regular maintenance, scheduled repairs and unexpected shutdowns. No elevator may be out of order more than twenty-four (24) hours without the Owner's ongoing permission.

- .29 The Contractors Supervisory Personnel shall notify the Owner of any necessary repairs or hazardous conditions in areas relevant to the Specifications herein and which the Owner may be responsible for.
- .30 The Contractor shall provide the Owner with forty-eight (48) hours' notice prior to the arrival of a representative. The Contractor's representatives must sign in and out at the Security Desk at all times.
- .31 The Contractor shall pay particular attention to fire security. He shall have a full fire extinguisher present when using lubricants and/or flame-type tools. Protect the surrounding areas from damage by using, for instance, protective covering on carpeting, in the corridors, etc. Torches are not to be used in the hoistway. The Contractor will be responsible for all costs relating to the clean-up of the building areas which he has damaged during the course of his work. The Contractor shall comply with the Owner's Health & Safety Policy and obtain a Hot Work Permit where and when required.
- .32 The Contractor shall maintain the cleanliness of the equipment and machine room floors, including any necessary painting due to damage caused by repairs. Paint to be approved by the Owner.
- .33 The Contractor shall not leave covers off controllers, selectors, governors, motors, tanks, etc. between examinations.
- .34 The Contractor will be responsible to pay all extra or overtime costs from repair shops E.G. Machine Shops, Motor Rewind Shops relating to afterhours work required to return critical elevators to service as soon as possible. **Critical elevators are considered E1, E2, E4, E6 & E7.**
- .35 When replacing an existing control valve with a valve of the same make and model OR with a valve of a different type the speed of the elevator shall be verified with rated load and no load in both directions as per Clause 8.10.3.3.2(o) of the B44 Code. The Contractor is to submit a TSSA Minor "B" application for this work.
- .36 When a cylinder packing or seal or a pressure piping seal is replaced, the integrity of the entire hydraulic system shall be verified by operating it at relief valve pressure for not less than fifteen (15) seconds.
- .37 When a hoist motor, generator, or hydraulic pump motor is rewound, ensure that over-temperature thermal sensors are installed in the motor windings and connected to a panel mounted control module so that if the motor overheats beyond acceptable limits, the elevator will stop at the next available floor, open the doors and shut down until the problem is corrected.
- .38 When a hydraulic pump motor burns out, the oil in the tank must be replaced with new biodegradable oil as part of the maintenance contract. Filtering the existing oil will not be acceptable.
- .39 The Contractor is responsible for obtaining and paying for all Provincial Ministry or Environment permits required for the disposal of all oil and debris. The Owner shall be given a copy of all related documents.
- .40 Not less than once in every twelve (12) month period throughout the term of this contract, the Contractor agrees, that during normal working hours, at no additional charge, he will assist with the testing and verification of the smoke

- detectors located in each elevator hoistway, pit and/or machine room. The Contractor must be notified at least one (1) week in advance of the testing.
- .41 Twice per year, during normal working hours, the Contractor shall assist the window cleaners to wash all glass and chrome surfaces within the **E9 elevator hoistway**. The Owner shall provide the window cleaners. The Contractor must be notified at least one (1) week in advance of the cleaning.
- .42 The contractor shall, at no cost to the Owner, assist the TSSA Elevating Devices Branch inspector or Consultants as required by them for the performance of their inspections and tests. The Contractor will be entitled to extra charges to the contract if the assistance requires more than twenty-five (25) mechanic hours per contract year.
- .43 Where the Elevator Contractor submits for a Minor A or Minor B submission, arrange for the TSSA inspection to be carried out within two (2) weeks of the completion of the work.
- a) Forward a copy of the design submission and TSSA inspection report to the Consultant and the Owner.
- b) A copy of the TSSA inspection report must also be included in the manuals.
- c) The final payment will not be approved until the final TSSA inspection has been carried out and a clear TSSA inspection report is provided.
- d) Leave a copy of the TSSA registered design submission on site.
- .44 Where components are fastened or retained via machine threads, roll pins, C-Clips or similar, precautions must be taken to ensure that the fastenings can satisfactorily remain secure while resisting movement or vibration of the equipment.
- .45 Where the effectiveness of a fastener is rapidly degraded as a result of removal and re-installation during maintenance activities, such fasteners shall be replaced and not re-used.
- .46 Prior to using/storing any chemicals (i.e.: solvents, cleaners, etc.) onsite, the Contractor shall provide the Owner with the MSDS information. Containers must be properly labelled.
- .47 Contractor to use absorbent pads to collect oil leakage where required. Granular absorbent material will not be accepted.

.35 Technical Specifications

- .1 Repair and replacement of damaged or worn parts shall be with parts of equivalent or better material and strength compared to the original manufacturer's design. Any change in the design of components that might affect the safe operation of the equipment shall be certified for use by a Professional Engineer. A copy of the certification to be forwarded to the Owner and retained by the Contractor and recorded in the Log Book.
- .2 The Contractor shall be responsible for, but not limited to, the repair or replacement of the following:
- a) Operating Devices

- i. Hall and car push buttons and call registered lights, stop switch, alarm button, door open and close buttons, key switches, complete in-car communication systems including batteries, reprogramming telephones, position indicator lights, directional lanterns, gongs and lamps, fans, emergency light and alarm bell units (where applicable), Security room panel indicators and key switches and all other mechanical, electrical and solid state parts required for the operation of the elevators.
 - b) Control Equipment
 - i. Relays, contactors, all solid state components, fuses, resistors, condensers, transformers, contacts, leads, mechanical or electrical timing devices, selectors and all mechanical and solid state electrical drive components. The Owner will not be responsible to pay for additional costs for replacement of solid state drives which become obsolete within twelve (12) years after installation or where original drives have been upgraded by the supplier.
 - c) Door Equipment
 - i. Car and hall door interlocks and contacts, restrictors, door hangers, door pull straps, tracks, bottom door guides, car door sills, clutch rollers, closers, complete door operator, including motor and all mechanical and electrical solid state control devices.
 - ii. Car door protective devices including safety edge, light rays, standard detectors, *Panachrome* detectors and all related components. Install a new detector at no charge to the Owner if parts for the existing detector are not readily available within two days.
 - d) Hoistway Equipment
 - i. Levelling switches, vanes or encoding devices, limit switches, cloth or PVC Jacketed travelling cables, wiring and conduits, buffers, emergency lighting equipment, top of car operating device, elevator cab ventilation systems, roller guides or guide shoes and inserts.
 - e) Hydraulic Elevators and Lifts
 - ii. Pumps, valves, bearings, oil, belts, pulleys, coils, seals, packing, strainers, mufflers, motors, motor windings, rotating elements, bearings, jack unit, rupture valves, cylinder head and seals, gland packing, piston, and return to tank lines. **Lift n° 13** return to tank hose to be replaced every 5 years.
- .2 Excluded Items:
- a) The following items are not included in the contract, as such, the Contractor will not be held responsible for the maintenance of this equipment.
 - i. Car enclosure, car lighting (bulbs or fluorescent tubes), floor coverings, handrails damaged by obvious misuse or vandalism, suspended ceilings, hoistway enclosure, hoistway doors and frames, hoistway door sills, buried cylinders, and buried piping on hydraulic elevators. The Contractor shall, however, rectify any part that may become loose or misaligned due to normal use.

- ii. Any damage not caused by wear and tear including overloading beyond 110% of the posted capacity, vandalism, reckless use and power supply fluctuations.
- iii. Provision, testing and replacement of the main line disconnect fuses.

.36 Obsolescence

- .1 Should any of the major components such as, but not limited to; gear boxes and their internal components, drive sheaves, spiders, control valves, pumping units, solid state boards, car door detectors, car door operators, external rotor motors become obsolete, applicable only if replacement parts are not available or cannot be manufactured, repaired, or machined by the original manufacturer or **another supplier**, then the equipment or parts thereof shall be determined to be obsolete.
- .2 Written correspondence from the original manufacturer or his agent, must be provided to the Owner or the Consultant indicating that the said part is obsolete and can no longer be supplied or manufactured.
- .3 Payment for the new or different part **only**, shall be the responsibility of the Owner. The Elevator Contractor is responsible for the labour portion of the costs for the installation of the new component. The Contractor is to provide the Owner with a copy of the original invoice for the replacement part. The Owner will pay a 10% mark-up on the original manufacturer's invoice.
- .4 The Contractor must provide the Owner with a copy of the invoice from the parts supplier for the purchase of the new component(s).
- .5 Permission from the Owner must be provided in writing to the Contractor before the new component is ordered or installed.

.37 End of Term Obligations

- .1 Within **two (2) months** of the termination of the maintenance contract, the following tasks as a minimum must be completed.
 - a) Thoroughly clean the machine room, hoistway, car top and pit;
 - b) Ensure that the maintenance log books are completely up to date including the annual tasks;
 - c) Ensure the hydraulic oil loss monitoring log book is up to date;
 - d) Replace any badly worn, frayed, taped or spliced travelling cables;
 - e) Complete all outstanding TSSA directives;
 - f) Correct any unusual noises or vibrations;
 - g) Correct all hydraulic oil leaks in exposed piping or lines;
 - h) Ensure that all relief and overspeed valves are sealed.
- .2 The final **two (2) monthly maintenance invoices** will be held back by the Owner until the work is inspected and accepted by the Consultant. The Consultant will carry out an inspection of the equipment three (3) months prior to the expiry of the contract.

- .3 If the work is not completed by the end of the contract, the Owner has the right to obtain the services of another contractor to complete the work. All costs to complete the work will be charged to the Maintenance Contractor who has signed this contract.

PART 2 – PRODUCTS

.1 Parts and Components

- .1 The Contractor shall supply all lubricants and cleaning solvents. They will further supply a locked cabinet in each machine room for storing spare parts and clean wipers. They will further supply a metal storage can with a lid for waste and oily rags.
- .2 Lubricants shall, as a minimum, be of a grade and quality equal to or better than that recommended by the original manufacturer.
- .3 The Contractor shall maintain an adequate supply of spare parts for emergency service in each machine room at all times. A minimum list of parts is further detailed herein.
- .4 In all cases, genuine elevator manufacturer replacement parts shall be favoured for the maintenance of the elevators and used wherever possible. With the approval of the Owner, the following exceptions may apply:
 - a) Costs of genuine parts are prohibitive;
 - b) Delivery of parts is unreasonably long;
 - c) An alternate source of supply is unavailable.
- .5 The Contractor shall maintain in each machine room, or the mechanic's service vehicle, the following **minimum** acceptable inventory of spare parts.

QUANTITY	ITEM
5	Fuses of each size used in the controllers.
2	Fuses (by Owner) of each size used in the mainline disconnect.
5	Springs, stationary contacts and movable contacts for stopping switch (if used).
2	Hall and car push button switches or contacts.
2	Hall door sheaves
2	Car door sheaves
10 ft	Approximately of 1/8" galvanized air cord. (if used)
3	Hall door pick-up rollers.
2	Sets of magnetic switch contacts.
3	Hall door gibs.
3	Car door gibs.
2	Door lock beaks.
2	Sets of hall door lock contacts.
2	Of each type of controller relay electrical coils
1	Spare solid state board for each type of board which may require frequent replacement.
5	Light bulbs for each type of signals.
1	Of each type of car door operator belt
10	Gallons of hydraulic oil including biodegradable oil where required

Inventory must include an adequate supply of general purpose oil, gear oil, cleaning solvent and rags.

- .6 Maintain a locked metal cabinet in **each** machine room with a supply of parts known to require frequent replacement, acceptable lubricants and cleaning materials together with schematic wiring diagrams for each particular elevator in each machine room. Old cleaning materials are to be disposed of on completion of each inspection. Replacement parts shall be of the existing type or those normally used by original manufacturer. Any deviation must be approved by the Owner.
- .7 Maintain in local warehouse, major parts such as door motors, commonly replaced solid state boards, solid state car door reopening devices including *Panachrome* detectors, retiring cam coils and motors, magnetic and mechanical limits, replacement selector tapes, rectifiers, transformers, door hangers and guides, coils for controller switches, V-belts, chains and sprockets, clutches and rollers, magnetic valves, electronic tubes and timers, guide shoes and roller guides complete solid state motor drives. This list does not limit the stock necessary to provide efficient supply.

PART 3 – EXECUTION – HYDRAULIC ELEVATORS

.1 Performance and Tests

- .1 In accordance with safe practice, ensure full load capacity, full speed in feet per minute including smooth acceleration, deceleration, door opening and closing times.
- .2 Carry out periodic inspections and tests of the in-car communication devices. Correct any deficiencies.
- .3 Equipment shall be maintained in order to perform to the original specifications it was designed for.

.2 Systematic Maintenance – Maintenance Procedures – General

- .1 All inspections and tests are to be carried out in accordance with the latest CAD and Section 8.6, of the B44 Safety Code and any TSSA Safety Alert Bulletins or Directors Rulings. Comply with all requirements and intervals as a minimum. Comply with all current Elevator Codes and Standards, TSSA Directors Orders in effect during the term of this contract.
- .2 Workmanship
 - a) Repair and replacement shall be done in a good workman-like manner. Care should be taken during operations such as torqueing, drilling, cutting, and welding that no component of the assembly is damaged or weakened to affect the safe operation of the equipment. Rotating parts shall be properly aligned within the manufacturers design tolerances;
 - b) Where maintenance routines require checking of a specific part or device, it means that the part or device shall be checked to ensure performance and adjustment in accordance with these specifications;
 - c) Any part or device found not to be in accordance with the specifications shall be repaired, replaced, or adjusted immediately;
 - d) The Contractor must have a full fire extinguisher present when using any flammable type lubricants and or flame type tools. Torches are not to be used in the hoistway. Obtain a Hot Work Permit for any cutting, welding or grinding work;
 - e) The Contractor shall at all times protect the building carpeting and flooring when carrying out his duties. The Contractor will be responsible for all costs involved relating to cleaning and repairing damaged flooring as a result of his actions.
- .3 Actions Respecting Defective Parts and Functions
 - a) Where a defective part or function is identified during the course of performing maintenance checks, tests and/or examinations, it shall be immediately adjusted, repaired or replaced, at no cost to the Owner;
 - b) Provide the Owner with copies of any notices, technical bulletins, or memoranda, dealing with actual or potential problems or flaws in the equipment;

- c) Should a defect in the equipment or the design of the equipment become apparent based on experience with any of these installations or similar installations elsewhere, advise the Owner immediately in writing outlining the steps to be taken to correct the problem;
 - d) If for any reason action cannot be taken immediately, the elevator shall be removed from service and the plan of action shall be discussed with the Owner.
- .4 Routines and Frequencies
- a) The routines and frequencies specified herein are the minimum to be provided. Should on-site conditions or manufacturers recommendations require more frequent procedures to maintain the equipment in a safe and reliable state of operation they shall be increased accordingly.
- .5 Making Safety Related Devices Inoperative
- a) No person shall at any time make inoperative any component on which safety of users is dependent nor any electrical protective device except where necessary during tests, inspections, and maintenance;
 - b) During such tests, inspections and maintenance, the installation shall not be made available to the public. Immediately upon completion, the installation shall be restored to its normal operating condition in conformity with the applicable requirements;
 - c) Substitution of any wire or current carrying device for the proper fuse or circuit breaker in an elevator circuit is forbidden.
- .6 Out of Service Notices
- a) When an elevator is removed from service, place a notice on each floor advising that the elevator has been removed from service. Such notices shall be prepared in a permanent manner for re-use each time the elevator is shutdown, and shall be stored in the machine room. They must bear the contractors name and be submitted to the Owner for approval. **All notices must be in both official languages.**
- .7 Top of Car
- a) The top of cars shall be kept free of dirt, oil or grease, and shall not be used for storing lubricants, tools or other material not required for the operation of the elevator.
- .8 Hoistways, Pits, and Machine Rooms
- a) Rails shall be kept clean and free of lint and dirt accumulation. Where necessary, a non-flammable or highpoint solvent shall be used to remove excess lubricant, lint and dirt which may accumulate on them and present a hazard in case of fire in the hoistway;
 - b) Machine room floors shall be kept clean and free from oil or grease. Articles or materials not necessary for the maintenance or operation of the elevators shall not be stored in the machine room. Flammable liquids having a flashpoint of less than 43° C shall not be kept in such rooms. Access doors shall remain closed and locked, except during periods when a qualified person is in the machine room;

- c) There shall be no accumulation of rubbish in elevator pits. Pit floors shall be kept clean and free from oil or grease. Articles or materials not necessary for the maintenance or operation of the elevators shall not be stored in the pits. The pit drains shall be kept clear at all times;
 - d) Check mainline disconnect switch for proper operation. Should the disconnect switch be found to be faulty in any way, notify the Owner in writing immediately.
- .9 Lubrication
- a) Parts of the machinery and equipment requiring lubrication shall be lubricated at intervals no less than those recommended by the manufacturer. The use of excessive amounts shall be avoided;
 - b) Rust-preventative compounds such as paint, lubricants, graphite or oil, or similar coatings, shall not be applied unless recommended by the manufacturer;
 - c) Only elevators equipped with guiding members requiring lubrication shall have guide rails lubricated. Excessive amounts shall be avoided and means shall be provided at the base of the rails to collect the lubricant.

.3 Hydraulic Elevators – Monthly Routines

- .1 Ride each elevator and observe the operation of various components including; the levelling, car station devices, communication system, car emergency lighting, door operation and door protective devices. Check for unusual noises. Take corrective action where necessary.
- .2 Check machine room equipment and observe the operation of the various components including the pump unit, motor, and controller. Open all controllers and visually check each component for operation and cleanliness. Check for abnormal noises and vibrations. Take corrective action where necessary.
- .3 Check machine room lighting and temperature and report any problems to the Owner.
- .4 Check pit lighting and ensure no water is present. Report and problems to the Owner.
- .5 Check the complete car door operator assembly, car door tracks and hangers; clean, lubricate and adjust as required to ensure smooth, quiet and efficient operation. Do not allow doors to bang on final open or close.
- .6 Where electronic door protective devices with reduced speed closing are provided, ensure that the device disconnects after 20 seconds and that the doors close at a reduced speed.
- .7 Where light rays are provided ensure that the device disconnects after 20 seconds.
- .8 Where mechanical door protective devices are provided ensure that the device is adjusted to provide maximum sensitivity within the limitations of its design.
- .9 Check the following operating devices:
 - a) Car push buttons including alarm, phone and door open and close;

- b) Position indicators.
- .10 Check the levelling operation for accuracy, smoothness of acceleration and deceleration, and adjust as required. Ensure elevator is stopped level at the floor before the doors reach 3/4 open.
 - a) Maintain levelling accuracy to within ± 6 mm (1/4").
- .11 Check the level of oil in the oil tank and, where necessary, adjust to comply with the prescribed minimum and maximum level. Should it be necessary to add oil in excess of five gallons in any twelve month period, the reason shall be investigated and corrective action taken. Record addition of oil in Oil Loss Log Book.
- .12 Clean the hydraulic oil cooler unit filters.

.4 Hydraulic Elevators – Three Month Routines

- .1 As a minimum, check, clean, and lubricate as required, the following landing and car door components:
 - a) Interlocks, locks and contacts;
 - b) Door protective and re-opening devices;
 - c) Hoistway access devices;
 - d) Eccentrics and retainers;
 - e) Door gibs;
 - f) Pick-up rollers and assemblies;
 - g) Clutch and assemblies;
 - h) Hangers and rollers;
 - i) Interconnecting means;
 - j) Closers and cables;
 - k) Door panels and sight guards;
 - l) Car gate switch and contacts;
 - m) Car door restricted opening device.
- .2 Thoroughly clean the machine room. Replace any burnt light bulbs or tubes (bulbs and tubes provided by the Owner).
- .3 Thoroughly clean the pit. Replace any burnt light bulbs or tubes (bulbs and tubes provided by the Owner).
- .4 Thoroughly clean the car top. Replace any burnt light bulbs. Check operation of fan and car top operator and take corrective action where necessary.
- .5 Check car and hall push button stations for operation, fastening and condition of buttons.
- .6 Check packing glands of valves and cylinders and tighten or replace as necessary to prevent excessive loss of fluid. Oil leakage collected from the cylinder packing gland shall not exceed 20 L (4.5 gal) check condition and colour

of the hydraulic oil, if oil appears to be contaminated identify on time ticket and advise Supervisor. Filter any oil which is being returned to the tank.

- .7 Test all pit stop switches for proper operation. Make any repairs as necessary.

.5 Hydraulic Elevators – Six Month Routines

- .1 As a minimum, clean and check all controller components including:
- a) Proper operation of relays.
 - b) Condition of contacts, coils, resistors, fuses (sizes), and connections at terminals.
 - c) Overload relay and setting.
 - d) Vacuum and maintain clean and free from dirt.
- .2 Check fastenings, operating rollers and cams of all hoistway limits and safety operating switches.
- .3 Check roller guides for adjustment, condition of rolling surfaces and alignment with guide rails. Check slippers for wear and adjustment. Replace inserts as necessary. Ensure adequate lubrication of rails where slippers are installed.
- .4 Check V-belts for wear, fraying, or cracking. Replace belts as a full matching set when required. Maintain a very tight tension.
- .5 Check motor, bearings, and motor windings of non-submersible motors.
- .6 Test the Group Operation to ensure that all circuits and time settings are properly adjusted to suit building traffic conditions within the design capabilities of the system.
- .7 Ensure the elevator fans are operational and grills are clean.

.6 Hydraulic Elevators – Twelve Month Routines

- .1 Test the overloads, clean and adjust as required; inspect main motor connections and clean and tighten where necessary.
- .2 Test the relief valve setting by applying pressure from the pump after inching the empty car upward to engage the plunger stop ring, or by closing the main shut-off valve. Reset if necessary. Reseal the relief valve if the setting is altered or if the seal is disturbed.
- .3 Adjust the speed control to provide smooth acceleration and deceleration within the design limitations of the equipment.
- .4 Measure up and down levelling times and ensure excessive levelling times are corrected. Times should not be any longer than 5 seconds.
- .5 Test power closing force on horizontally sliding doors. Ensure maximum force does not exceed 135N (30 lbs).
- .6 Test the closing time of the elevator doors for conformance with the data tag.
- .7 Where provided, test the means to restrict hoistway or car door opening for conformance with clause 2.12.5 of the B44 Code.

- .8 Adjust car and hall door dwell times to between three (3) and five (5) seconds depending on configuration and number of elevators.
- .9 Check total length of travelling cables for wear and travelling cable hangers for tightness. Replace any badly worn travelling cables and beam protectors. If required, provide metal beam protectors if the pad protectors are wearing.
- .10 Test cylinder and buried piping for leakage. Mark position of elevator and observe for a minimum of fifteen (15) minutes. Any change in car position which cannot be accounted for by visible oil leakage or temperature change indicates a possible leak in the unexposed portion of the cylinder or piping. **Remove elevator from service until source of leak is located and repaired.** Should the test reveal or indicate leakage, the Owner shall be notified immediately in writing. The Contractor shall request direction from the Owner with regards to this issue prior to proceeding with any work.
- .11 Where provided, pressure test the PVC encapsulation to ensure no leakage and that no accumulation of liquid in the cavity between the cylinder and the PVC has occurred. If liquid is discovered, notify the Owner immediately in writing.
- .12 Clean the hoistway equipment including hoistway ledges and projections; check brackets, rail fastenings and entrance fastenings. Make any repairs as necessary.
- .13 Have competent supervisory personnel inspect the complete installation to determine if it is performing properly and that all work has been completed in accordance with the specifications. Provide a written report to the Owner detailing the inspection and findings.
- .14 When provided, test the battery operated emergency lowering feature to ensure that the elevator will not descend when the mainline disconnect switch is in the **OFF** position and that it complies with clause 3.26.10 of the B44 Code.
- .15 When provided, test standby or emergency power operation as per clause 8.6.4.19.7 of the B44 code.
- .16 When provided, test the plunger gripper as per clause 8.10.3.2.5(n) of the B44 code except that testing shall be done with NO LOAD in the elevator.
- .17 All elevators provided with firefighters' emergency operation shall be tested on Phase I and Phase II with a minimum of one (1) floor operation on Phase II. Rectify any deficiencies noted during this test. **Complete sign and date the TSSA "Maintenance Checklist for Firefighter's Emergency Operation - Record of Inspection Check"**.
- .18 Test all redundancy circuits and verify their proper operation. Record the results of the tests in the log book.
- .19 Test the pressure switch and related circuits as per clause 8.11.3.2.5 of the B44 Code.
- .20 Test the low oil protection operation for compliance with clause 3.26.9 of the B44 Code.
- .21 Where provided, test the flexible hose and fitting assemblies as per clause 8.11.3.2.4 of the B44 Code.

- .22 Test the normal terminal stopping device as per clause 8.6.4.19.5 of the B44 Code.
- .23 Test the emergency terminal speed-limiting device and emergency terminal stopping device to ensure conformity with clause 3.25.2 of the B44 Code.

.7 Hydraulic Elevators – Five Year Routines

- .1 Test the overspeed valve (where provided) as per clause 8.6.5.16.5 of the B44 Code.
- .2 Freight elevators of Class C2 loading shall sustain and level the elevator car with the maximum load shown on the freight elevator loading sign.

PART 4 – EXECUTION – LIFTS FOR PERSONS WITH PHYSICAL DISABILITIES

.1 Lifts for Persons with Physical Disabilities – Monthly Routines

- .1 Ride each lift and observe the operation of various components including; the leveling, gates, safety flaps, barriers, car station devices, communication system, car emergency lighting and door operation. Check for unusual noises and take corrective action where required.
- .2 Check tension and fastenings of all wire ropes including shackles, wire rope clips, and rods. Equalize ropes and tighten all loose fastenings. Prevent rope fastenings from rubbing against each other and wearing. Lubricate the wire ropes as per the manufacturer's recommendations.
- .3 Check and clean guide rails. Lubricate where required and ensure drip pans at the base of the rails are emptied.
- .4 Check and clean the carriage safety mechanism. Lubricate as per manufacturer's recommendations.
- .5 Check car and hall push button stations for operation, fastening and condition of buttons.
- .6 Thoroughly clean all equipment and correct any oil leaks.

.2 Lifts for Persons with Physical Disabilities – Six Month Routines

- .1 Check the runway, pit area, machine area and top of the carriage. Ensure the areas are clean, dry and free of obstructions.
- .2 Inspect, test and clean the following landing and carriage door and gate components:
 - a) Interlocks, locks and contacts for compliance with clause 5.2.4 of the B355 Code.
 - b) Vision panels for compliance with clause 5.2.1.1(d) of the B355 Code.
 - c) Unlocking devices for compliance with clause 5.2.1.1(f) of the B355 Code.
 - d) Opening force test for compliance with clause 5.2.1.1(a) of the B355 Code.
 - e) Self-closing device for compliance with clause 5.2.1.1(a) of the B355 Code.
- .3 Check the following and take corrective action where necessary:
 - a) Oil level in reservoirs and ensure compliance with prescribed minimum and maximum levels.
 - b) Valve and cylinder packing glands.
 - c) Oil leakage at cylinder.
 - d) Controller contacts and relays.
 - e) Governor rope (where provided).
 - f) Audio visual warning signal for compliance with clause 8.3 of the B355 Code.

- g) Emergency battery back-up system for compliance with clause 8.3 of the B355 Code.
- h) Automatic levelling for compliance with clause 8.2.4 of the B355 Code.
- i) Levelling tolerances for compliance with clause 8.2.4 of the B355 Code.
- j) Alarm and warning signal for compliance with clause 8.3 of the B355 Code.
- k) Sensitive edges and surfaces for compliance with clause 7.2.4 of the B355 Code.
- l) All operating devices for compliance with clause 8.2 of the B355 Code.
- m) Chair carriage rotation for compliance with clause 7.4.3 of the B355 Code.
- n) Emergency moving of carriage for compliance with clause 6.1.4 of the B355 Code.
- o) Foldable seat for compliance with clause 7.6.6 of the B355 Code.
- p) Power assisted swing doors or gates for compliance with clause 5.2.1.2 of the B355 Code.

.3 Lifts for Persons with Physical Disabilities - Twelve Month Routines

- .1 Test the overloads, clean and adjust as required; inspect main motor connections and clean and tighten where necessary.
- .2 Test the relief valve setting by applying pressure from the pump after inching the empty car upward to engage the plunger stop ring, or by closing the main shut-off valve. Reseal if necessary.
- .3 Test unexposed cylinder and buried piping for leakage. Mark position of lift and observe for a minimum of fifteen (15) minutes. Any change in car position which cannot be accounted for by visible oil leakage or temperature change indicates a possible leak in the unexposed portion of the cylinder or piping. Remove elevator from service until source of leak is located and repaired. Should the test reveal or indicate leakage, the Owner shall be notified immediately in writing. The Contractor shall request direction from the Owner with regards to this issue prior to proceeding with any work.
- .4 Test the safety device with no load on the carriage and with the carriage moving in the down direction while the tests are being carried out. Ensure that the safeties bring the carriage to rest within 60 mm. Type A governor-operated safeties shall be permitted to be engaged by tripping the governor by hand while the carriage is in motion. The governor shall be permitted to be first set by hand and the carriage lowered on to the safeties. Type A safeties without a governor shall be permitted to be engaged by obtaining the necessary slack cable to cause them to function. Other types of safety devices shall be tested in accordance with the manufacturer's instructions. Safeties of a type that cannot be tested by simulation of suspension failure or simulation of overspeed, or testing by manual means shall be closely examined to ensure all moving parts are free and well lubricated in order to ensure proper operation in the event of a failure in the suspension means or an overspeed condition.
- .5 Inspect and test the pressure switch for compliance with clause 6.6.8 of the B355 Code. Take corrective actions where necessary.

- .6 Inspect and test the speed limiting device for compliance with clause 6.6.5 of the B355 Code. Take corrective actions where necessary.
- .7 Test all circuits and parts relating to protection in the event of failure for compliance with clause 8.4.2 of the B355 Code.
- .8 Test the carriage emergency lighting for compliance with clause 4.8.3 of the B355 Code. Take corrective action where required.
- .9 Test the governor tripping speed in accordance with clause 7.2.5.4 of the B355 Code.
- .10 Inspect wire ropes for loss of diameter, corrosion and broken wires and compare against replacement criteria detailed in clause B.4.4.2 of the B355 Code. Replace wire ropes where required.
- .11 Inspect chains and sprockets for undue wear and replace where required. Lubricate chains as per manufacturer's recommendations.
- .12 Inspect and clean components of the driving machine brake.
- .13 Test driving machine brake to ensure it will gently stop the carriage at full load within 20 mm and firmly hold it in place.

.4 Lifts for Persons with Physical Disabilities – Five Year Routines

- .1 Replace the hydraulic return to tank hose on Lift E13.

PART 5 – DESCRIPTION OF EQUIPMENT

IDENTIFICATION	TYPE	CLASSIFICATION	No. OF STOPS	SPEED FPM	CAPACITY LBS	MANUFACTURER
Elevator # E1 Installation No. 37989	Inground Hydraulic	Passenger	5	150	2,500	MCE
Elevator # E2 Installation No. 37990	Inground Hydraulic	Passenger	5	150	2,500	MCE
Elevator # E3 Installation No. 37977	Inground Hydraulic	Passenger	2	100	2,000	Schindler
Elevator # E4 Installation No. 38089	Inground Hydraulic	Freight	3	100	2,500	Schindler
Elevator # E5 Installation No. 38206	Inground Hydraulic	Passenger	4	150	2,500	Schindler
Elevator # E6 Installation No. 38197	Inground Hydraulic	Freight	5	100	15,000	MCE
Elevator # E7 Installation No.38069	Inground Hydraulic	Freight	3	100	8,000	GAL/ITI
Elevator # E8 Installation No. 38070	Inground Hydraulic	Freight	2	100	2,000	Schindler
Elevator # E9 Installation No. 38091	Inground Hydraulic	Passenger	3	125	2,000	TKE/MCE
Elevator # E10 Installation No. 38031	Inground Hydraulic	Passenger	3	125	8,000	Schindler
Elevator # E11 Installation No. 38030	Inground Hydraulic	Passenger	3	125	2,500	Schindler
Elevator # E12 Installation No. 37978	Inground Hydraulic	Passenger	3	125	2,500	MCE
Lift #13 for the Disabled Installation No. 61006	Holeless Hydraulic	Hydraulic Lift for the Disabled	3	40	1,000	Capital
Chair Lift #15 for the Disabled Installation No. 67721	Rack & Pinion	Chair Lift for the Disabled	2	15	450	Garaventa

PART 6 – SPECIFICATIONS MAINTENANCE CONTROL CHART

NOTE: Elevator Contractor to provide a sheet for each elevator and each year of the contract to be included in the Maintenance Log Book in the machine room.

ELEVATOR MAINTENANCE SPECIFICATIONS SITE SPECIFIC MAINTENANCE TASKS TO BE INCLUDED AS PART OF THE MCP																	
BUILDING NAME: National Gallery of Canada BUILDING ADDRESS: 380 Sussex Drive						ELEVATOR CONTRACTOR:											
Elevator #						CONTRACT START DATE:											
TSSA #																	
CHECK ELEVATOR TYPE: <input checked="" type="checkbox"/> Hydraulic Elevator																	
Mechanic to initial each monthly box confirming inspection has been completed						MONTH AND YEAR											
MONTHLY ROUTINE						J	F	M	A	M	J	J	A	S	O	N	D
Car door reopening device disconnects after 20 seconds and doors close at reduced speed.																	
Car ride and levelling operation																	
Complete car door operator and all linkages																	
In car communication device, emergency lighting unit, alarm bell, fan and door open/close buttons																	
Car and hall push button and indicator lamps																	
Check machine room lighting and temperature. Report any problems to the Owner.																	
Check pit lighting and ensure no water is present. Report any problems to the Owner.																	
Check hydraulic oil level and adjust to comply with min and max level. Fill out oil loss log.																	
Thoroughly clean oil cooler filter																	
THREE MONTH ROUTINE						MONTH & YEAR	MONTH & YEAR	MONTH & YEAR	MONTH & YEAR								
Check, clean and lubricate car door restrictor device																	
Check, clean and lubricate door protective and re-opening device																	
Check and clean car gate switch and contacts																	
Check, clean and lubricate Car door clutch, track, rollers and eccentrics																	

THREE MONTH ROUTINE (continued)	MONTH & YEAR	MONTH & YEAR	MONTH & YEAR	MONTH & YEAR
Check and clean car and hoistway door lower guides				
All hoistway doors self-closing				
Check and clean hoistway door lock contacts and beaks				
Check, clean and lubricate hoistway door pickup rollers, hangers and rollers and eccentrics and closers				
Check and clean hoistway access devices and switches				
Check and clean hoistway door retainers and interconnecting means				
Check and clean hoistway door panels and sight guards				
Thoroughly clean the machine room, replace any burnt light bulbs or tubes (bulbs and tubes provided by the Owner)				
Thoroughly clean the pit. Replace any burnt light bulbs or tubes (bulbs and tubes provided by the Owner)				
Thoroughly clean the car top. Replace any burnt light bulbs.				
Check and clean car top fan				
Check car top operator for proper operation				
Check packing glands of valves and cylinders and tighten or replace as necessary to prevent excessive loss of fluid. Oil leakage collected from the cylinder packing gland shall not exceed 20 L (4.5 gal) check condition and colour of the hydraulic oil, if oil appears to be contaminated identify on time ticket and advise Supervisor. Filter any oil that is being returned to the tank.				
Test all pit stop switches				
Check car and hall push button stations for operation, proper fastening and condition of the buttons.				
SIX MONTH ROUTINE	MONTH AND YEAR		MONTH AND YEAR	
Clean and check all controller components including: proper operation of relays, condition of contacts, coils, resistors, fuses (sizes), connection at terminals, overload settings and oil level in dash pots and vacuum and maintain controller clean and free from dirt.				
Check roller guides and slippers for condition and alignment. Ensure proper lubrication of rails where slippers are used.				

SIX MONTH ROUTINE (continued)	MONTH AND YEAR	MONTH AND YEAR
Check V-belts for wear, fraying, or cracking. Replace belts as a full matching set when required. Maintain a very tight tension.		
Ensure the cab fans are operational and grills are clean.		
Check all hoistway limit switches and safety operating switches for proper fastening and operation		
Check motor, bearings and motor windings of non-submersible motors.		
Test the Group Operation to ensure that all circuits and time settings are properly adjusted to suit building traffic conditions within the design capabilities of the system.		
TWELVE MONTH ROUTINE	MONTH AND YEAR	
Clean the hoistway equipment including hoistway ledges, projections; check brackets, rail fastenings and entrance fastenings. Make repairs as necessary.		
Test the battery operated emergency lowering feature to ensure that the elevator will not descend when the mainline disconnect switch is in the OFF position and that it complies with clause 3.26.10 of the B44 Code.		
Check total length of ALL traveling cables for wear and travelling cable hangers for tightness. Replace any badly worn travelling cables and beam protectors. If required provide metal beam protectors if the pad protectors are wearing.		
Measure up and down levelling times and ensure excessive levelling times are corrected. Times should not be any longer than 5 seconds.		
Test the overloads, clean and adjust as required; inspect main motor connections and clean and tighten where necessary.		
Adjust car and hall door dwell times to be between three (3) and five (5) seconds depending on configuration and number of elevators.		
Test the relief valve setting by applying pressure from the pump after inching the empty car upward to engage the plunger stop ring, or by closing the main shut-off valve. Reset if necessary. Reseal relief valve if the setting is altered or if the seal is disturbed.		
TWELVE MONTH ROUTINE (continued)	MONTH AND YEAR	
Test power closing force on horizontally sliding doors. Ensure maximum force does not exceed 135 N (30 Lbs).		
Test the closing time of the elevator doors for conformance with the data tag.		
Where provided, test the means to restrict hoistway or car door opening for conformance with clause 2.12.5 of the B44 Code.		

Test cylinder and buried piping for leakage.	
Where provided, pressure test the PVC encapsulation to ensure no leakage and that no accumulation of liquid in the cavity between the cylinder and the PVC has occurred.	
When provided, test the plunger gripper as per clause 8.10.3.2.5(n) of the B44 Code except that testing shall be done with NO LOAD in the elevator.	
Test all redundancy circuits and verify their proper operation. Record the results of the tests in the log book.	
Test the firefighter's emergency operation and complete, sign and date the TSSA "Maintenance Checklist for Firefighter's Emergency Operation – Record of Inspection Check".	
Test the pressure switch and related circuits as per clause 8.11.3.2.5 of the B44 Code.	
Test the low oil protection operation for compliance with clause 3.26.9 of the B44 Code.	
Where provided, test the flexible hose and fitting assemblies as per clause 8.11.3.2.4 of the B44 Code.	
Adjust speed control to provide smooth acceleration and deceleration with the design limitations of the equipment.	
Test the normal terminal stopping device as per clause 8.6.4.19.5 of the B44 Code.	
Test the emergency terminal speed-limiting device and emergency terminal stopping device to ensure conformity with clause 3.25.2 of the B44 Code.	
Where provided, check the standby or emergency power operation as per clause 8.6.4.19.7 of the B44 Code.	
Supervisor inspection of complete installation.	
FIVE YEAR ROUTINE	MONTH AND YEAR
Where provided, test the overspeed valve as per clause 8.6.5.16.5 of the B44 Code.	
Test freight elevators of Class C2 loading to ensure that they can sustain and level the elevator car with the maximum load shown on the freight elevator loading sign.	

ELEVATOR MAINTENANCE SPECIFICATIONS																	
SITE SPECIFIC MAINTENANCE TASKS TO BE INCLUDED AS PART OF THE MCP																	
BUILDING NAME: National Gallery of Canada BUILDING ADDRESS: 380 Sussex Drive						ELEVATOR CONTRACTOR:											
Elevator #						CONTRACT START DATE:											
TSSA #																	
CHECK ELEVATOR TYPE: <input checked="" type="checkbox"/> Handicap Lift																	
Mechanic to initial each monthly box confirming inspection has been completed						MONTH AND YEAR											
MONTHLY ROUTINE						J	F	M	A	M	J	J	A	S	O	N	D
Car ride and levelling operation																	
Complete car door operator and all linkages																	
In car communication device, emergency lighting unit, alarm bell, fan and door open/close buttons																	
Car and hall push button and indicator lamps																	
Check machine room lighting and temperature. Report any problems to the Owner.																	
Check pit lighting and ensure no water is present. Report any problems to the Owner.																	
Check gates, safety flaps and barriers.																	
Check tension and fastenings of all wire ropes including shackles, wire rope clips and rods. Equalize ropes and tighten all loose fastenings. Prevent rope fastenings from rubbing against each other and wearing. Lubricate the wire ropes as per the manufacturer's recommendations.																	
Check and clean guide rails. Lubricate where required and ensure drip pans at the base of the rails are emptied.																	
Check and clean the carriage safety mechanism. Lubricate as per manufacturer's recommendations.																	
Thoroughly clean all equipment and correct any oil leaks.																	
SIX MONTH ROUTINE						MONTH AND YEAR						MONTH AND YEAR					
Check audio visual warning signal for compliance with clause 8.3 of the B355 Code.																	
Check emergency battery back-up system for compliance with clause 8.3 of the B355 Code.																	
Check automatic levelling for compliance with clause 8.2.4 of the B355 Code.																	

SIX MONTH ROUTINE	MONTH AND YEAR	MONTH AND YEAR
Check levelling tolerances for compliance with clause 8.2.4 of the B355 Code.		
Check alarm and warning signal for compliance with clause 8.3 of the B355 Code.		
Check sensitive edges and surfaces for compliance with clause 7.2.4 of the B355 Code.		
Check all operating devices for compliance with clause 8.2 of the B355 Code.		
Check chair carriage rotation for compliance with clause 7.4.3 of the B355 Code.		
Check emergency moving of carriage for compliance with clause 6.1.4 of the B355 Code.		
Check foldable seat for compliance with clause 7.6.6 of the B355 Code.		
Check power assisted swing doors or gates for compliance with clause 5.2.1.2 of the B355 Code.		
Check for oil leaks at cylinder head, oil level in reservoir, valve and cylinder packing glands, controller contacts and relays and governor rope. Take corrective action where necessary.		
Inspect, test and clean carriage door and gate interlocks, locks and contacts as per clause 5.2.4 of the B355 Code.		
Inspect, test and clean carriage door and gate vision panels as per clause 5.2.1.1(d) of the B355 Code.		
Inspect, test and clean carriage door and gate unlocking devices as per clause 5.2.1.1(f) of the B355 Code.		
Check carriage door and gate opening force test as per clause 5.2.1.1(a) of the B355 Code.		
Inspect, test and clean carriage door and gate self-closing device as per clause 5.2.1.1(a) of the B355 Code.		
Check the runway, pit area, machine area and top of the carriage. Ensure the areas are clean, dry and free of obstructions.		
TWELVE MONTH ROUTINE	MONTH AND YEAR	
Test the overloads, clean and adjust as required; inspect main motor connections and clean and tighten where necessary.		
Test the relief valve setting by applying pressure from the pump after inching the empty car upward to engage the plunger stop ring, or by closing the main shut-off valve. Reset if necessary. Reseal relief valve if the setting is altered or if the seal is disturbed.		
Test cylinder and buried piping for leakage.		

TWELVE MONTH ROUTINE (continued)	MONTH AND YEAR
Test the safety device with no load on the carriage and with the carriage moving in the down direction while the tests are being carried out. Ensure that the safeties bring the carriage to rest within 60 mm.	
Inspect and test the pressure switch for compliance with clause 6.6.8 of the B355 Code.	
Inspect and test the speed limiting device for compliance with clause 6.6.5 of the B355 Code.	
Test all circuits and parts relating to protection in the event of failure for compliance with clause 8.4.2 of the B355 Code.	
Test the carriage emergency lighting for compliance with clause 4.8.3 of the B355 Code.	
Test the governor tripping speed in accordance with clause 7.2.5.4 of the B355 Code.	
Inspect wire ropes for loss of diameter, corrosion and broken wires and compare against replacement criteria detailed in clause B.4.4.2 of the B355 Code.	
Inspect chains and sprockets for undue wear and replace where required. Lubricate chains as per manufacturer's recommendations.	
Inspect and clean components of the driving machine brake.	
Test driving machine brake to ensure it will gently stop the carriage at full load within 20 mm and firmly hold in place.	
Supervisor inspection of complete installation.	
FIVE YEAR ROUTINE	MONTH AND YEAR
Replace the hydraulic return to tank hose on Lift #13	

PART 7 – PERFORMANCE INDICATORS AND REMEDY STRUCTURE

.1 General Principles

- .1 The NGC is primarily concerned with ensuring the quality of service throughout the term of the contract and that it is consistent with that initially agreed upon. The NGC has established Performance Indicators, which are meant to assess performance and act as a management tool for addressing service deficiencies. On a monthly basis, the NGC shall evaluate the Contractor's performance based on the Performance Indicators established in section 7.3. Every month, a copy of the evaluation will be sent to the Contractor indicating a Pass, N/A or a Fail for each Performance Indicator.
- .2 The Contractor is to provide the Owner with a written report indicating their course of corrective action for each Performance Indicator which received a Fail. The report is to be submitted to The Owner within five (5) days.

.2 Remedy Structure

- .1 Failures to achieve the same monthly Performance Indicator for a second time, in any given month, during the same contract year, will result in a financial penalty of 15% per deficiency on the next month's maintenance invoice.
- .2 If the monthly maintenance was not performed on any elevating device, the NGC will receive a full credit for the monthly services of that elevating device.
- .3 The Owner has the right to reduce the monthly maintenance amount by 50% each month that the Contractor fails to meet the response times outlined in the chart below and in Part 1, Section 28 of these specifications on two (2) or more occasions.

Performance indicators on following page.

.3 Performance Indicators

ELEVATOR PERFORMANCE INDICATORS					
ELEVATOR NO: _____		YEAR: _____			
		MONTH: _____			
		PASS	N/A	FAIL	Comments
Item	Operations				
1	Monthly Preventive Maintenance completed. Elevating Device Logbook and Oil Monitoring Logbook are maintained.				
2	Occurrence Logbook is updated for all activities.				
3	Correct deficiencies regarding maintenance of mechanical rooms.				
4	Supervisor surveys Elevator/Lift and provides a written report every six (6) months.				
Item	Response Time				
1	One (1) hour response time for call-backs associated with art moves and special events.				
2	Forty-Five (45) min. response time for persons trapped inside elevators during regular working hours and 1 hour response time for after hours.				
3	Two (2) hour response time for non-emergency call-backs.				
Item	Communication				
1	The Contractor immediately informs the Project Officer of any elevator shutdowns.				
2	During call-backs and repairs, the Contractor informs the Project Officer of the status of the elevator before departure.				
3	Post bilingual signage during maintenance and repairs.				
4	Technician to sign NGC logbook at security desk upon arrival and departure.				

