

**DAIRY AND SWINE RESEARCH AND  
DEVELOPMENT CENTRE**

Modernization of fire alarm system and up to  
standards for audible signalling

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**SPECIFICATIONS – ELECTRICAL**

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**DAIRY AND SWINE RESEARCH AND  
DEVELOPMENT CENTRE  
2000 COLLÈGE STREET  
SHERBROOKE (QUEBEC)  
J1M 0C8**

**MODERNIZATION OF FIRE ALARM SYSTEM AND  
UP TO STANDARDS FOR AUDIBLE SIGNALLING**

**DIVISIONS 01, 26 AND 28**

**For tenders  
May 6, 2015**

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**Part 1 General****1.1 RELATED REQUIREMENTS**

- .1 All documents in the contract apply to divisions 01, 26 and 28.

**1.2 WORK COVERED BY CONTRACT DOCUMENTS**

- .1 Work of this Contract comprises modernization of the fire alarm system and a up to standard for the sound signaling

**1.3 CONTRACT METHOD**

- .1 Construct Work under stipulated price contract.
- .2 Employ subcontractors assigned pre-bid by Owner for:
  - .1 Division 26.
  - .2 Division 28.

**1.4 CONTRACTOR USE OF PREMISES**

- .1 Unrestricted use of site until Substantial Performance.
- .2 Limit use of premises for Work, to allow:
  - .1 Owner occupancy.
  - .2 Partial owner occupancy.
  - .3 Work by other contractors.
  - .4 Public usage.
- .3 Co-ordinate use of premises under direction of Departmental Representative.
- .4 Obtain and pay for use of additional storage or work areas needed for operations under this Contract.
- .5 Remove or alter existing work to prevent injury or damage to portions of existing work which remain.
- .6 Repair or replace portions of existing work which have been altered during construction operations to match existing or adjoining work, as directed by Departmental Representative.
- .7 At completion of operations condition of existing work: equal to or better than that which existed before new work started.

**1.5 OWNER OCCUPANCY**

- .1 Owner will occupy premises during entire construction period for execution of normal operations.
- .2 Co-operate with Owner in scheduling operations to minimize conflict and to facilitate Owner usage.

**1.6 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 Consultant to facilitate execution of work.
- .2 Use only elevators, existing in building for moving workers and material.
  - .1 Protect walls of passenger elevators, to approval of Departmental Representative prior to use.
  - .2 Accept liability for damage, safety of equipment and overloading of existing equipment.

**1.7 DOCUMENTS REQUIRED**

- .1 Maintain at job site, one copy 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 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 RELATED REQUIREMENTS**

- .1 All the contractual documents apply to Divisions 01, 26 and 28.

**1.2 ACCESS AND EGRESS**

- .1 Design, construct and maintain temporary "access to" and "egress from" work areas, including stairs, runways, ramps or ladders independent of finished surfaces and in accordance with relevant municipal, provincial and other regulations.

**1.3 USE OF SITE AND FACILITIES**

- .1 Execute work with least possible interference or disturbance to normal use of premises. Make arrangements with Departmental Representative to facilitate work as stated.
- .2 Maintain existing services to building and provide for personnel and vehicle access.
- .3 Where security is reduced by work provide temporary means to maintain security.
- .4 Departmental Representative will assign sanitary facilities for use by Contractor's personnel. Keep facilities clean.
- .5 Use only elevators, existing in building for moving workers and material.
  - .1 Protect walls of passenger elevators, to approval of Departmental Representative prior to use.
  - .2 Accept liability for damage, safety of equipment and overloading of existing equipment.
- .6 Closures: protect work temporarily until permanent enclosures are completed.

**1.4 ALTERATIONS, ADDITIONS OR REPAIRS TO EXISTING BUILDING**

- .1 Execute work with least possible interference or disturbance to building operations and normal use of premises. Arrange with Departmental Representative to facilitate execution of work.

**1.5 EXISTING SERVICES**

- .1 Notify, Departmental Representative and utility companies of intended interruption of services and obtain required permission.
- .2 Where Work involves breaking into or connecting to existing services, give Departmental Representative 48 hours of notice for necessary interruption of mechanical or electrical service throughout course of work. Keep duration of interruptions minimum. Carry out interruptions after normal working hours of occupants, preferably on weekends.
- .3 Provide for personnel and vehicular traffic.
- .4 Construct barriers in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.

**1.6 SPECIAL REQUIREMENTS**

- .1 Paint and carpet public or Departmental Representative occupied areas Monday to Friday from 16:00 to 23:00 hours only and on Saturdays, Sundays, and statutory holidays.
- .2 Carry out noise generating Work Monday to Friday from 18:00 to 07:00 hours and on Saturdays, Sundays, and statutory holidays.
- .3 Submit schedule in accordance with Section 01 32 16.07 - Construction Progress Schedule - Bar (GANTT) Chart.
- .4 Ensure Contractor's personnel employed on site become familiar with and obey regulations including safety, fire, traffic and security regulations.
- .5 Keep within limits of work and avenues of ingress and egress.

**1.7 SECURITY**

- .1 Where security has been reduced by Work of Contract, provide temporary means to maintain security.
- .2 Security clearances:
  - .1 Personnel employed on this project will be subject to security check. Obtain clearance, as instructed, for each individual who will require to enter premises.
  - .2 Obtain requisite clearance, as instructed, for each individual required to enter premises.
  - .3 Personnel will be checked daily at start of work shift and provided with pass which must be worn at all times. Pass must be returned at end of work shift and personnel checked out.
  - .4 Contractor's personnel will require satisfactory RCMP initiated security screening in order to complete Work in premises and on site.
- .3 Security escort:
  - .1 Personnel employed on this project must be escorted when executing work in non-public areas during normal working hours. Personnel must be escorted in all areas after normal working hours.
  - .2 Submit an escort request to Departmental Representative at least 2 days before service is needed. For requests submitted within time noted above, costs of security escort will be paid for by Departmental Representative. Cost incurred by late request will be Contractor's responsibility.
  - .3 Any escort request may be cancelled free of charge if notification of cancellation is given at least 4 hours before scheduled time of escort. Cost incurred by late request will be Contractor's responsibility.
  - .4 Calculation of costs will be based on average hourly rate of security officer for minimum of 8 hours per day for late service request and of 4 hours for late cancellations.

**1.8 BUILDING SMOKING ENVIRONMENT**

- .1 Comply with smoking restrictions. Smoking is not permitted.

**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 RELATED REQUIREMENTS**

- .1 All the contractual documents apply to Divisions 01, 26 and 28.

**1.2 PRECONSTRUCTION MEETING**

- .1 Within 15 days after award of Contract, a preconstruction meeting will be organised to discuss and resolve administrative procedures and responsibilities.
- .2 Senior representatives, Contractor, field inspectors and supervisors will be in attendance.
- .3 Agenda to include the following:
  - .1 Appointment of official representative of participants in the Work.
  - .2 Schedule of Work: in accordance with Section 01 32 16.07 - Construction Progress Schedules - Bar (GANTT) Chart.
  - .3 Schedule of submission of shop drawings, samples, and colour chips. Submit submittals in accordance with Section 01 33 00 - Submittal Procedures.
  - .4 Requirements for temporary facilities, site sign, offices, storage sheds, utilities, fences in accordance with Section 01 52 00 - Construction Facilities.
  - .5 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, administrative requirements.
  - .6 Record drawings in accordance with Section 01 33 00 - Submittal Procedures.
  - .7 Maintenance manuals in accordance with Section 01 78 00 - Closeout Submittals.
  - .8 Take-over procedures, acceptance, warranties in accordance with Section 01 78 00 - Closeout Submittals.
  - .9 Monthly progress claims, administrative procedures, photographs, hold backs.
  - .10 Appointment of inspection and testing agencies or firms.
  - .11 Insurances, transcript of policies.

**1.3 PROGRESS MEETINGS**

- .1 Ten meetings will be organised during the construction period, including the preconstruction meeting.
- .2 Agenda to include the following:
  - .1 Review, approval of minutes of previous meeting.
  - .2 Review of Work progress since previous meeting.
  - .3 Field observations, problems, conflicts.
  - .4 Problems which impede construction schedule.
  - .5 Review of off-site fabrication delivery schedules.
  - .6 Corrective measures and procedures to regain projected schedule.
  - .7 Revision to construction schedule.
  - .8 Progress schedule, during succeeding work period.
  - .9 Review submittal schedules: expedite as required.

- .10 Maintenance of quality standards.
- .11 Review proposed changes for affect on construction schedule and on completion date.
- .12 Other business.

**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 RELATED REQUIREMENTS**

- .1 All the contractual documents apply to Divisions 01, 26 and 28.

**1.2 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: Monday to Friday, inclusive, will provide five 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.

**1.3 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 ten (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.

#### **1.4 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit to Departmental Representative fifteen (15) within working days of Award of Contract Bar (GANTT) Chart as Master Plan for planning, monitoring and reporting of project progress.
- .3 Submit Project Schedule to Departmental Representative within five (5) working days of receipt of acceptance of Master Plan.

#### **1.5 MASTER PLAN**

- .1 Structure schedule to allow orderly planning, organizing and execution of Work as Bar Chart (GANTT).
- .2 Departmental Representative will review and return revised schedules within five (5) working days.
- .3 Revise impractical schedule and resubmit within five (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 Excavation.
  - .6 Backfill.
  - .7 Interior Architecture (Walls, Floors and Ceiling).
  - .8 Plumbing.
  - .9 Lighting.
  - .10 Electrical.
  - .11 Piping.
  - .12 Controls.
  - .13 Fire Systems.
  - .14 Testing and Commissioning.
  - .15 Supplied equipment long delivery items.
  - .16 Engineer supplied equipment required dates.



**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 RELATED REQUIREMENTS**

- .1 All the contractual documents apply to Divisions 01, 26 and 28.

**1.2 ADMINISTRATIVE**

- .1 Submit to Departmental 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 Where items or information is not produced in SI Metric units converted values are acceptable.
- .5 Review submittals prior to submission to Departmental 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.
- .6 Notify Departmental Representative in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
- .7 Verify field measurements and affected adjacent Work are coordinated.
- .8 Contractor's responsibility for errors and omissions in submission is not relieved by Departmental Representative's review of submittals.
- .9 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Departmental Representative review.
- .10 Keep one reviewed copy of each submission on site.

**1.3 SHOP DRAWINGS AND PRODUCT DATA**

- .1 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.
- .2 Submit drawings stamped and signed by professional engineer registered or licensed in Province of Quebec of Canada.
- .3 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.
- .4 Allow five (5) days for Departmental Representative's review of each submission.

- .5 Adjustments made on shop drawings by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with Work.
- .6 Make changes in shop drawings as Departmental Representative may require, consistent with Contract Documents. When resubmitting, notify Departmental Representative in writing of revisions other than those requested.
- .7 Accompany submissions with transmittal letter, in duplicate, 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 Departmental Representative's review, distribute copies.
- .10 Submit electronic copy of shop drawings for each requirement requested in specification Sections and as Departmental Representative may reasonably request.
- .11 Submit one (1) electronic copies of product data sheets or brochures for requirements requested in specification Sections and as requested by Departmental Representative where shop drawings will not be prepared due to standardized manufacture of product.

- .12 Submit one (1) electronic copy and six (6) prints copies of test reports for requirements requested in specification Sections and as requested by Departmental 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 three (3) years of date of contract award for project.
- .13 Submit one (1) electronic copy and six (6) prints copies of certificates for requirements requested in specification Sections and as requested by Departmental 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 one (1) electronic copy and six (6) prints copies of manufacturer's instructions for requirements requested in specification Sections and as requested by Departmental Representative.
  - .1 Preprinted material describing installation of product, system or material, including special notices and Material Safety Data Sheets concerning impedances, hazards and safety precautions.
- .15 Submit one (1) electronic copy and six (6) prints copies of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by Departmental 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 one (1) electronic copy and six (6) prints copies of Operation and Maintenance Data for requirements requested in specification Sections and as requested by Departmental Representative.
- .18 Delete information not applicable to project.
- .19 Supplement standard information to provide details applicable to project.
- .20 If upon review by Consultant, no errors or omissions are discovered or if only minor corrections are made, 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.
- .21 The review of shop drawings by Public Works and Government Services Canada (PWGSC) is for sole purpose of ascertaining conformance with general concept.
  - .1 This review shall not mean that PWGSC approves detail design inherent in shop drawings, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting requirements of construction and Contract Documents.

- .2 Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of Work of sub-trades.

#### **1.4 CERTIFICATES AND TRANSCRIPTS**

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

#### **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 RELATED REQUIREMENTS**

- .1 All the contractual documents apply to Divisions 01, 26 and 28.

**1.2 REFERENCES**

- .1 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations
- .2 Province of Quebec
  - .1 An Act Respecting Occupational Health and Safety, R.S.Q., c.S-2.1 (current edition) - Updated 2005.

**1.3 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit site-specific Health and Safety Plan: Within five (5) days 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 [found in work plan].
- .3 Submit two (2) copies of Contractor's authorized representative's work site health and safety inspection reports to weekly Departmental Representative.
- .4 Submit copies of incident and accident reports.
- .5 Departmental Representative will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor within two (2) days after receipt of plan. Revise plan as appropriate and resubmit plan to Departmental Representative within two (2) days after receipt of comments from Departmental Representative.
- .6 [Departmental Representative's] [Consultant] review of Contractor's final Health and Safety plan should not be construed as approval and does not reduce the Contractor's overall responsibility for construction Health and Safety.
- .7 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 Departmental Representative.
- .8 On-site Contingency and Emergency Response Plan: address standard operating procedures to be implemented during emergency situations.

**1.4 FILING OF NOTICE**

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

**1.5 SAFETY ASSESSMENT**

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

**1.6 MEETINGS**

- .1 Schedule and administer Health and Safety meeting with Departmental Representative prior to commencement of Work.

**1.7 REGULATORY REQUIREMENTS**

- .1 Do Work in accordance with Section 01 41 00 - Regulatory Requirements.

**1.8 PROJECT/SITE CONDITIONS**

- .1 Work at site will involve contact with radioactivity and biosecurity.
- .2 Coordinate with the facility manager to plan interventions. The Contractor must be supervised by a protocol in order to access places.

**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 Departmental Representative may respond in writing, where deficiencies or concerns are noted and may request re-submission 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 Contractor shall be the Principal Contractor as described in the Quebec Act Respecting Health and Safety code for the Construction for only their scope and areas of work as defined and described in this project specification.
- .4 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.

**1.11 COMPLIANCE REQUIREMENTS**

- .1 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 Departmental Representative verbally and in writing.



**1.13 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 Departmental Representative.

**1.14 CORRECTION OF NON-COMPLIANCE**

- .1 Immediately address health and safety non-compliance issues identified by authority having jurisdiction or by Departmental Representative.
- .2 Provide Departmental Representative with written report of action taken to correct non-compliance of health and safety issues identified.
- .3 Departmental Representative may stop Work if non-compliance of health and safety regulations is not corrected.

**1.15 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 FIRE DEPARTMENT BRIEFING**

- .1 Departmental Representative will co-ordinate arrangements for contractor for briefing on Fire Safety at pre-work conference by Fire Chief before work is commenced.

**1.2 REPORTING FIRES**

- .1 Know location of nearest fire alarm box and telephone, including emergency phone number.
- .2 Report immediately fire incidents to Fire Department as follows:
  - .1 Activate nearest fire alarm box; or
  - .2 Telephone.
- .3 When reporting fire by telephone, give location of fire, name or number of building and be prepared to verify location.

**1.3 INTERIOR AND EXTERIOR FIRE PROTECTION AND ALARM SYSTEMS**

- .1 Fire protection and alarm system will not be:
  - .1 Obstructed;
  - .2 Shut-off; and
  - .3 Left inactive at end of working day or shift without authorization from Fire Chief.
- .2 Fire hydrants, standpipes and hose systems will not be used for other than fire-fighting purposes unless authorized by Fire Chief.

**1.4 FIRE EXTINGUISHERS**

- .1 Supply fire extinguishers, as scaled by Fire Chief, necessary to protect work in progress and contractor's physical plant on site.

**1.5 INSTALLATION AND/OR REPAIR OF ROOF TO INCLUDE CONTRACTORS PHYSICAL PLANT AT SITE**

- .1 Notify Fire Chief of location of asphalt kettles and dates that kettles will be in use. Ensure personnel use and take precautions as follows:
  - .1 Use kettles equipped with thermometers or gauges in good working order.
  - .2 Locate kettles in safe place outside of building or, if approved by Fire Chief, on non-combustible roof. Locate to avoid danger of igniting combustible material below.
  - .3 Maintain continuous supervision while kettles are in operation and provide metal covers for kettles to smother flames in case of fire. Provide fire extinguishers as required in 1.4.
  - .4 Prior to start of work, demonstrate container capacities to Fire Chief.
  - .5 Use only glass fibre roofing mops.

- .6 Do not leave used roofing mops unattended on roof. Store mops away from building and combustible materials.
- .7 Store roofing materials no closer than [3] m to structures.

## **1.6 BLOCKAGE OF ROADWAYS**

- .1 Advise Fire Chief of work that would impede fire apparatus response. This includes violation of minimum overhead clearance, as prescribed by Fire Chief, erecting of barricades and digging of trenches.

## **1.7 SMOKING PRECAUTIONS**

- .1 Observe smoking regulations.

## **1.8 RUBBISH AND WASTE MATERIALS**

- .1 Keep rubbish and waste materials at minimum quantities.
- .2 Burning of rubbish is prohibited.
- .3 Removal:
  - .1 Remove rubbish from work site at end of work day or shift or as directed.
- .4 Storage:
  - .1 Store oily waste in approved receptacles to ensure maximum cleanliness and safety.
  - .2 Deposit greasy or oily rags and materials subject to spontaneous combustion in approved receptacles and remove specified.

## **1.9 FLAMMABLE AND COMBUSTIBLE LIQUIDS**

- .1 Handling, storage and use of flammable and combustible liquids governed by current National Fire Code of Canada.
- .2 Keep flammable and combustible liquids such as gasoline, kerosene and naphtha for ready use in quantities not exceeding 45 litres provided they are stored in approved safety cans bearing Underwriters' Laboratory of Canada or Factory Mutual seal of approval. Storage of quantities of flammable and combustible liquids exceeding 45 litres for work purposes requires permission of Fire Chief.
- .3 Transfer of flammable and combustible liquids is prohibited within buildings or jetties.
- .4 Transfer of flammable and combustible liquids will not be carried out in vicinity of open flames or any type of heat-producing devices.
- .5 Do not use flammable liquids having flash point below 38 degrees C such as naphtha or gasoline as solvents or cleaning agents.
- .6 Store flammable and combustible waste liquids, for disposal, in approved containers located in safe ventilated area. Keep quantities minimum and Fire Department is to be notified when disposal is required.

**1.10 HAZARDOUS SUBSTANCES**

- .1 Work entailing use of toxic or hazardous materials, chemicals and/or explosives, or otherwise creating hazard to life, safety or health, in accordance with National Fire Code of Canada.
- .2 Obtain from Fire Chief a "Hot Work" permit for work involving welding, burning or use of blowtorches and salamanders, in buildings or facilities.
- .3 When Work is carried out in dangerous or hazardous areas involving use of heat, provide fire watchers equipped with sufficient fire extinguishers. Determination of dangerous or hazardous areas along with level of protection necessary for Fire Watch is at discretion of Fire Chief. Contractors are responsible for providing fire watch service for work on scale established and in conjunction with Fire Chief at pre-work conference.
- .4 Provide ventilation where flammable liquids, such as lacquers or urethanes are used, eliminate sources of ignition. Inform Fire Chief prior to and at cessation of such work.

**1.11 QUESTIONS AND/OR CLARIFICATION**

- .1 Direct questions or clarification on Fire Safety in addition to above requirements to Fire Chief.

**1.12 FIRE INSPECTION**

- .1 Co-ordinate site inspections by Fire Chief through Departmental Representative.
- .2 Allow Fire Chief unrestricted access to work site.
- .3 Co-operate with Fire Chief during routine fire safety inspection of work site.
- .4 Immediately remedy unsafe fire situations observed by Fire Chief.

**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 RELATED REQUIREMENTS**

- .1 All the contractual documents apply to Divisions 01, 26 and 28.

**1.2 REFERENCES AND CODES**

- .1 Perform Work in accordance with National Building Code of Canada (NBC) including amendments up to tender closing date and other codes of provincial or local application provided that in case of conflict or discrepancy, more stringent requirements apply.
- .2 Meet or exceed requirements of:
  - .1 Contract documents.
  - .2 Specified standards, codes and referenced documents.

**1.3 HAZARDOUS MATERIAL DISCOVERY**

- .1 Asbestos: demolition of spray or trowel-applied asbestos is hazardous to health. Stop work immediately when material resembling spray or trowel-applied asbestos is encountered during demolition work. Notify Departmental Representative.
- .2 PCB: Polychlorinated Biphenyl: stop work immediately when material resembling Polychlorinated Biphenyl is encountered during demolition work. Notify Departmental Representative.
- .3 Mould: stop work immediately when material resembling mould is encountered during demolition work. Notify Departmental Representative and the Consultant.

**1.4 BUILDING SMOKING ENVIRONMENT**

- .1 Comply with smoking restrictions and municipal by-laws.

**1.5 NATIONAL PARKS ACT**

- .1 Perform Work in accordance with National Parks Act when projects are located within boundaries of National Park.

**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 RELATED REQUIREMENTS**

- .1 All the contractual documents apply to Divisions 01, 26 and 28.

**1.2 REFERENCES**

- .1 Canadian Construction Documents Committee (CCDC)
  - .1 CCDC 2-94, Stipulated Price Contract.

**1.3 INSPECTION**

- .1 Refer to CCDC 2, GC 2.3.
- .2 Allow Departmental Representative access to Work. If part of Work is in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress.
- .3 Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Departmental Representative instructions, or law of Place of Work.
- .4 If Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.
- .5 Departmental Representative will order part of Work to be examined if Work is suspected to be not in accordance with Contract Documents. If, upon examination such work is found not in accordance with Contract Documents, correct such Work and pay cost of examination and correction. If such Work is found in accordance with Contract Documents, Departmental Representative shall pay cost of examination and replacement.

**1.4 INDEPENDENT INSPECTION AGENCIES**

- .1 Independent Inspection/Testing Agencies will be engaged by Departmental Representative for purpose of inspecting and/or testing portions of Work. Cost of such services will be borne by Departmental Representative.
- .2 Provide equipment required for executing inspection and testing by appointed agencies.
- .3 Employment of inspection/testing agencies does not relax responsibility to perform Work in accordance with Contract Documents.
- .4 If defects are revealed during inspection and/or testing, appointed agency will request additional inspection and/or testing to ascertain full degree of defect. Correct defect and irregularities as advised by Departmental Representative at no cost to Departmental Representative. Pay costs for retesting and re-inspection.

**1.5 ACCESS TO WORK**

- .1 Allow inspection/testing agencies access to Work, off site manufacturing and fabrication plants.
- .2 Co-operate to provide reasonable facilities for such access.

**1.6 PROCEDURES**

- .1 Notify appropriate agency and Departmental Representative in advance of requirement for tests, in order that attendance arrangements can be made.
- .2 Submit samples and/or materials required for testing, as specifically requested in specifications. Submit with reasonable promptness and in orderly sequence to not cause delays in Work.
- .3 Provide labour and facilities to obtain and handle samples and materials on site. Provide sufficient space to store and cure test samples.

**1.7 REJECTED WORK**

- .1 Refer to CCDC, GC 2.4.
- .2 Remove defective Work, whether result of poor workmanship, use of defective products or damage and whether incorporated in Work or not, which has been rejected by Departmental Representative as failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents.
- .3 Make good other Contractor's work damaged by such removals or replacements promptly.
- .4 If in opinion of Departmental Representative it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, Owner will deduct from Contract Price difference in value between Work performed and that called for by Contract Documents, amount of which will be determined by.

**1.8 REPORTS**

- .1 Submit 4 copies of inspection and test reports to Departmental Representative.
- .2 Provide copies to subcontractor of work being inspected or tested.

**1.9 TESTS AND MIX DESIGNS**

- .1 Furnish test results and mix designs as requested.
- .2 Cost of tests and mix designs beyond those called for in Contract Documents or beyond those required by law of Place of Work will be appraised by Departmental Representative and may be authorized as recoverable.

**1.10 MOCK-UPS**

- .1 Prepare mock-ups for Work specifically requested in specifications. Include for Work of Sections required to provide mock-ups.
- .2 Construct in locations as specified in specific Section acceptable to Departmental Representative.
- .3 Prepare mock-ups for Departmental Representative review with reasonable promptness and in orderly sequence, to not cause delays in Work.
- .4 Failure to prepare mock-ups 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.

- .5 If requested, Departmental Representative will assist in preparing schedule fixing dates for preparation.
- .6 Remove mock-up at conclusion of Work or when acceptable to Departmental Representative.
- .7 Mock-ups may remain as part of Work.
- .8 Specification section identifies whether mock-up may remain as part of Work or if it is to be removed and when.

**1.11 MILL TESTS**

- .1 Submit mill test certificates as required of specification Sections.

**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 RELATED REQUIREMENTS**

- .1 All the contractual documents apply to Divisions 01, 26 and 28.

**1.2 REFERENCES**

- .1 Canadian Construction Documents Committee (CCDC)
  - .1 CCDC 2-1994, Stipulated Price Contract.
- .2 Canadian General Standards Board (CGSB)
  - .1 CAN/CGSB 1.189-00, Exterior Alkyd Primer for Wood.
  - .2 CGSB 1.59-97, Alkyd Exterior Gloss Enamel.
- .3 Canadian Standards Association (CSA International)
  - .1 CSA-A23.1/A23.2-04, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
  - .2 CSA-0121-M1978(R2003), Douglas Fir Plywood.
  - .3 CAN/CSA-S269.2-M1987 (R2003), Access Scaffolding for Construction Purposes.
  - .4 CAN/CSA-Z321-96 (R2001), Signs and Symbols for the Occupational Environment.
- .4 Public Works Government Services Canada (PWGSC) Standard Acquisition Clauses and Conditions (SACC)-ID: R0202D, Title: General Conditions 'C', In Effect as of: May 14, 2004.
- .5 U.S. Environmental Protection Agency (EPA) / Office of Water.
  - .1 EPA 832R92005, Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices.

**1.3 ACTION AND INFORMATIONAL SUBMITTALS**

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

**1.4 INSTALLATION AND REMOVAL**

- .1 Prepare site plan indicating proposed location and dimensions of area to be fenced and used by Contractor, number of trailers to be used, avenues of ingress/egress to fenced area and details of fence installation.
- .2 Identify areas which have to be gravelled to prevent tracking of mud.
- .3 Indicate use of supplemental or other staging area.
- .4 Provide construction facilities in order to execute work expeditiously.
- .5 Remove from site all such work after use.

**1.5 HOISTING**

- .1 Provide, operate and maintain hoists cranes required for moving of workers, materials and equipment. Make financial arrangements with Subcontractors for their use of hoists.
- .2 Hoists cranes to be operated by qualified operator.

**1.6 ELEVATORS**

- .1 Designated existing permanent elevators to be used by construction personnel and transporting of materials. Coordinate use with Departmental Representative.
- .2 Provide protective coverings for finish surfaces of cars and entrances.

**1.7 SITE STORAGE/LOADING**

- .1 Refer to CCDC 2, GC 3.12.
- .2 Confine work and operations of employees by Contract Documents. Do not unreasonably encumber premises with products.
- .3 Do not load or permit to load any part of Work with weight or force that will endanger Work.

**1.8 CONSTRUCTION PARKING**

- .1 Parking will be permitted on site, provided that this does not impair the operations of the building.
- .2 Provide and maintain adequate access to project site.
- .3 Clean runways and taxi areas where used by Contractor's equipment.

**1.9 SECURITY**

- .1 Provide and pay for responsible security personnel to guard site and contents of site after working hours and during holidays.

**1.10 OFFICES**

- .1 Provide office heated to 22°C, lighted 750 lx and ventilated, of sufficient size to accommodate site meetings and furnished with drawing laydown table.
- .2 Provide marked and fully stocked first-aid case in a readily available location.
- .3 Subcontractors to provide their own offices as necessary. Direct location of these offices.

**1.11 EQUIPMENT, TOOL AND MATERIALS STORAGE**

- .1 Provide and maintain, in clean and orderly condition, lockable weatherproof sheds for storage of tools, equipment and materials.
- .2 Locate materials not required to be stored in weatherproof sheds on site in manner to cause least interference with work activities.

**1.12 SANITARY FACILITIES**

- .1 Provide sanitary facilities for work force in accordance with governing regulations and ordinances.

- .2 Post notices and take precautions as required by local health authorities. Keep area and premises in sanitary condition.
- .3 When permanent water and drain connections are completed, provide temporary water closets and urinals complete with temporary enclosures, inside building. Permanent facilities may be used on approval of Departmental Representative.

### **1.13 CONSTRUCTION SIGNAGE**

- .1 Provide and erect project sign, within three weeks of signing Contract, in a location designated by Departmental Representative.
- .2 Construction of wood frame and plywood construction painted with exhibit lettering produced by a professional sign painter.
- .3 Indicate on sign, name of Owner, Consultant Contractor and Subcontractor, of design style as detailed established by Departmental Representative.
- .4 No other signs or advertisements, other than warning signs, are permitted on site.
- .5 Provide project identification site sign comprising foundation, framing, and one 1200 x 2400 mm signboard as detailed and as described below.
  - .1 Foundations: 15 MPa concrete to CSA-A23.1 minimum 200 mm x 900 mm deep.
  - .2 Framework and battens: SPF, pressure treated minimum 89 x 89 mm.
  - .3 Signboard: 19 mm Medium Density Overlaid Douglas Fir Plywood to CSA O121.
  - .4 Paint: alkyd enamel to CAN/CGSB-1.59 over exterior alkyd primer to CAN/CGSB 1.189.
  - .5 Fasteners: hot-dip galvanized steel nails and carriage bolts.
- .6 Locate project identification sign as directed by Departmental Representative and construct as follows:
  - .1 Build concrete foundation, erect framework, and attach signboard to framing.
  - .2 Paint surfaces of signboard and framing with one coat primer and two coats enamel. Colour white on signboard face, black on other surfaces.
  - .3 Apply vinyl sign face overlay to painted signboard face in accordance with installation instruction supplied.
- .7 Direct requests for approval to erect Consultant/Contractor signboard to Departmental Representative. For consideration general appearance of Consultant/Contractor signboard must conform to project identification site sign. Wording in both official languages.
- .8 Signs and notices for safety and instruction in both official languages Graphic symbols to CAN/CSA-Z321.
- .9 Maintain approved signs and notices in good condition for duration of project, and dispose of off-site on completion of project or earlier if directed by Departmental Representative.

### **1.14 PROTECTION AND MAINTENANCE OF TRAFFIC**

- .1 Provide access and temporary relocated roads as necessary to maintain traffic.

- .2 Maintain and protect traffic on affected roads during construction period except as otherwise specifically directed by Departmental Representative.
- .3 Provide measures for protection and diversion of traffic, including provision of watch-persons and flag-persons, erection of barricades, placing of lights around and in front of equipment and work, and erection and maintenance of adequate warning, danger, and direction signs
- .4 Protect travelling public from damage to person and property.
- .5 Contractor's traffic on roads selected for hauling material to and from site to interfere as little as possible with public traffic.
- .6 Verify adequacy of existing roads and allowable load limit on these roads. Contractor: responsible for repair of damage to roads caused by construction operations.
- .7 Construct access and haul roads necessary.
- .8 Haul roads: constructed with suitable grades and widths; sharp curves, blind corners, and dangerous cross traffic shall be avoided.
- .9 Provide necessary lighting, signs, barricades, and distinctive markings for safe movement of traffic.
- .10 Dust control: adequate to ensure safe operation at all times.
- .11 Location, grade, width, and alignment of construction and hauling roads: subject to approval by Departmental Representative.
- .12 Lighting: to assure full and clear visibility for full width of haul road and work areas during night work operations.
- .13 Provide snow removal during period of Work.
- .14 Remove, upon completion of work, haul roads designated by Departmental Representative.

#### **1.15 CLEAN-UP**

- .1 Remove construction debris, waste materials, packaging material from work site daily.
- .2 Clean dirt or mud tracked onto paved or surfaced roadways.
- .3 Store materials resulting from demolition activities that are salvageable.
- .4 Stack stored new or salvaged material not in construction facilities.

### **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 RELATED REQUIREMENTS**

- .1 All the contractual documents apply to Divisions 01, 26 and 28.

**1.2 REFERENCES**

- .1 Canadian General Standards Board (CGSB)
  - .1 CGSB 1.59-97, Alkyd Exterior Gloss Enamel.
  - .2 CAN/CGSB 1.189-00, Exterior Alkyd Primer for Wood.
- .2 Canadian Standards Association (CSA International)
  - .1 CSA-O121-M1978 (R2003), Douglas Fir Plywood.
- .3 Public Works Government Services Canada (PWGSC) Standard Acquisition Clauses and Conditions (SACC)-ID: R0202D, Title: General Conditions 'C', In Effect as Of: May 14, 2004.

**1.3 INSTALLATION AND REMOVAL**

- .1 Provide temporary controls in order to execute Work expeditiously.
- .2 Remove from site all such work after use.

**1.4 WEATHER ENCLOSURES**

- .1 Provide weather tight closures to unfinished door and window openings, tops of shafts and other openings in floors and roofs.
- .2 Close off floor areas where walls are not finished; seal off other openings; enclose building interior work for temporary heat.
- .3 Design enclosures to withstand wind pressure and snow loading.

**1.5 DUST TIGHT SCREENS**

- .1 Provide dust tight screens or insulated partitions to localize dust generating activities, and for protection of workers, finished areas of Work and public.
- .2 Maintain and relocate protection until such work is complete.

**1.6 PROTECTION OF BUILDING FINISHES**

- .1 Provide protection for finished and partially finished building finishes and equipment during performance of Work.
- .2 Provide necessary screens, covers, and hoardings.
- .3 Confirm with Departmental Representative locations and installation schedule days prior to installation.
- .4 Be responsible for damage incurred due to lack of or improper protection.

**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 RELATED REQUIREMENTS**

- .1 All the contractual documents apply to Divisions 01, 26 and 28.

**1.2 REFERENCES**

- .1 Canadian Construction Documents Committee (CCDC)
  - .1 CCDC 2-94, Stipulated Price Contract.
  - .2 DOC 14-2000, Design-Build Stipulated Price Contract.
  - .3 DOC 15-2000, Design-Builder/Consultant Contract.
- .2 Within text of each specifications section, reference may be made to reference standards. List of standards reference writing organizations is contained in ULC standards.
- .3 Conform to these reference standards, in whole or in part as specifically requested in specifications.
- .4 If there is question as to whether products or systems are in conformance with applicable standards, Consultant reserves right to have such products or systems tested to prove or disprove conformance.
- .5 Cost for such testing will be born by Departmental Representative in event of conformance with Contract Documents or by Contractor in event of non-conformance.

**1.3 QUALITY**

- .1 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.
- .2 Procurement policy is to acquire, in cost effective manner, items containing highest percentage of recycled and recovered materials practicable consistent with maintaining satisfactory levels of competition. Make reasonable efforts to use recycled and recovered materials and in otherwise utilizing recycled and recovered materials in execution of work.
- .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.

**1.4 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.

**1.5 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 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.
- .7 Remove and replace damaged products at own expense and to satisfaction of Departmental Representative.
- .8 Touch-up damaged factory finished surfaces to Departmental Representative's satisfaction. Use touch-up materials to match original. Do not paint over name plates.

**1.6 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.

**1.7 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 Departmental Representative in writing, of conflicts between specifications and manufacturer's instructions, so that Departmental Representative 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.

**1.8 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.

**1.9 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.

**1.10 CONCEALMENT**

- .1 In finished areas conceal pipes, ducts and wiring in floors, walls and ceilings, except where indicated otherwise.
- .2 Before installation inform Departmental Representative if there is interference. Install as directed by Departmental Representative.

**1.11 REMEDIAL WORK**

- .1 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.
- .2 Perform remedial work by specialists familiar with materials affected. Perform in a manner to neither damage nor put at risk any portion of Work.

**1.12 LOCATION OF FIXTURES**

- .1 Consider location of fixtures, outlets, and mechanical and electrical items indicated as approximate.
- .2 Inform [Departmental Representative of conflicting installation. Install as directed.

**1.13 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.

#### **1.14 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.

#### **1.15 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 Departmental Representative.

#### **1.16 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.
- .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 RELATED REQUIREMENTS**

- .1 All the contractual documents apply to Divisions 01, 26 and 28.

**1.2 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.

**1.3 MATERIALS**

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

**1.4 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.

**1.5 EXECUTION**

- .1 Execute cutting, fitting, and patching including excavation and fill, 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 airtight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- .11 Refinish surfaces to match adjacent finishes: Refinish continuous surfaces to nearest intersection. Refinish assemblies by refinishing entire unit.
- .12 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 RELATED REQUIREMENTS**

- .1 All the contractual documents apply to Divisions 01, 26 and 28.

**1.2 REFERENCES**

- .1 Canadian Construction Documents Committee (CCDC)
  - .1 CCDC 2-94, Stipulated Price Contract.

**1.3 PROJECT CLEANLINESS**

- .1 Maintain Work in tidy condition, free from accumulation of waste products and debris.
- .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, unless approved by Departmental Representative.
- .3 Clear snow and ice from access to building, bank/pile snow in designated areas only and remove from site.
- .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 Clean interior areas prior to start of finishing work, and maintain areas free of dust and other contaminants during finishing operations.
- .7 Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.
- .8 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.
- .9 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.

**1.4 FINAL CLEANING**

- .1 Refer to CCDC 2, GC 3.14.

**1.5 WASTE MANAGEMENT AND DISPOSAL**

- .1 At the end of each work period which corresponds the expected completion on schedule, remove all waste scrap and keep the places clean and ready to use.

**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 RELATED REQUIREMENTS**

- .1 All the contractual documents apply to Divisions 01, 26 and 28.

**1.2 REFERENCES**

- .1 Canadian Construction Documents Committee (CCDC)
  - .1 CCDC 2-2008, Stipulated Price Contract.
  - .2 DOC 14-2000, Design-Build Stipulated Price Contract.
  - .3 DOC 15-2000, Design-Builder/ Consultant Contract.
- .2 Canadian Environmental Protection Act (CEPA)
  - .1 SOR/2008-197, Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations.

**1.3 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 Departmental Representative 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 and French 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 Utility companies: submitted.
    - .5 Operation of systems: demonstrated to Owner's personnel.
    - .6 Commissioning of mechanical systems: completed in accordance with 01 91 13 - General Commissioning (Cx) Requirements and copies of final Commissioning Report submitted to Departmental Representative.
    - .7 Work: complete and ready for final inspection.

- .4 Final Inspection:
  - .1 When completion tasks are done, request final inspection of Work by Departmental Representative, and Contractor.
  - .2 When Work incomplete according to Departmental Representative, complete outstanding items and request re-inspection.
- .5 Declaration of Substantial Performance: when Departmental Representative 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 Departmental Representative and 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 Departmental Representative, 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.

#### **1.4 FINAL CLEANING**

- .1 Clean in accordance with Section 01 74 11 - 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 RELATED REQUIREMENTS**

- .1 All the contractual documents apply to Divisions 01, 26 and 28.

**1.2 REFERENCES**

- .1 Canadian Environmental Protection Act (CEPA)
  - .1 SOR/2008-197, Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations.

**1.3 ADMINISTRATIVE REQUIREMENTS**

- .1 Pre-warranty Meeting:
  - .1 Convene meeting one week prior to contract completion with Contractor's representative and Departmental Representative, in accordance with Section 01 31 19 - Project Meetings to:
    - .1 Verify Project requirements.
    - .2 Review warranty requirements installation instructions.
  - .2 Departmental Representative to establish communication procedures for:
    - .1 Notifying construction warranty defects.
    - .2 Determine priorities for type of defects.
    - .3 Determine reasonable response time.
  - .3 Contact information for bonded and licensed company for warranty work action: provide name, telephone number and address of company authorized for construction warranty work action.
  - .4 Ensure contact is located within local service area of warranted construction, is continuously available, and is responsive to inquiries for warranty work action.

**1.4 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, four final copies of operating and maintenance manuals in English and French.
- .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.

**1.5 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 on CD.

## **1.6 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 Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions specified in Section 01 45 00 - Quality Control.
- .6 Training: refer to Section 01 79 00 - Demonstration and Training.

## **1.7 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.

## **1.8 RECORDING INFORMATION ON PROJECT RECORD DOCUMENTS**

- .1 Record information on set of black line opaque drawings, and in copy of Project Manual, provided by Departmental Representative.
- .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 References 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 inspection certifications, field test records, required by individual specifications sections.
- .7 Provide digital photos, if requested, for site records.

**1.9 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 The contractor must also include a list of equipment installed by local. Write on the list the type of the equipment, its manufacturer, its model number, its serial number and its addressing. Provide an electronic version of the list with the spreadsheet Excel for a possible updating.
- .3 Panel board circuit directories: provide electrical service characteristics, controls, and communications.
- .4 Include installed colour coded wiring diagrams.
- .5 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.
- .6 Maintenance Requirements: include routine procedures and guide for trouble-shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- .7 Provide servicing and lubrication schedule, and list of lubricants required.
- .8 Include manufacturer's printed operation and maintenance instructions.
- .9 Include sequence of operation by controls manufacturer.
- .10 Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- .11 Provide installed control diagrams by controls manufacturer.
- .12 Provide Contractor's coordination drawings, with installed colour coded piping diagrams.
- .13 Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
- .14 Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- .15 Include test and balancing reports as specified in Section 01 45 00 - Quality Control and 01 91 13 - General Commissioning (Cx) Requirements.
- .16 Additional requirements: as specified in individual specification sections.

**1.10 MATERIALS AND FINISHES**

- .1 Building products, applied materials, and finishes: include product data, with catalogue number, size, composition, and colour and texture designations.
  - .1 Provide information for re-ordering custom manufactured products.

- .2 Instructions for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- .3 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.
- .4 Additional requirements: as specified in individual specifications sections.

#### **1.11 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.
- .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 Special Tools:
  - .1 Provide special tools, in quantities specified in individual specification section.
  - .2 Provide items with tags identifying their associated function and equipment.

#### **1.12 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.

### **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 RELATED REQUIREMENTS**

- .1 All the contractual documents apply to Divisions 01, 26 and 28.

**1.2 ADMINISTRATIVE REQUIREMENTS**

- .1 Demonstrate scheduled operation and maintenance of equipment and systems to Owner's personnel two weeks prior to date of final inspection interim completion.
- .2 Owner: provide list of personnel to receive instructions, and co-ordinate their attendance at agreed-upon times.
- .3 Preparation:
  - .1 Verify conditions for demonstration and instructions comply with requirements.
  - .2 Verify designated personnel are present.
  - .3 Ensure equipment has been inspected.
  - .4 Ensure testing, adjusting, and balancing has been performed in accordance with Section 01 91 13 - General Commissioning (Cx) Requirements and equipment and systems are fully operational.
- .4 Demonstration and Instructions:
  - .1 Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, and maintenance of each item of equipment at scheduled times, at the designated location.
  - .2 Instruct personnel in phases of operation and maintenance using operation and maintenance manuals as basis of instruction.
  - .3 Review contents of manual in detail to explain aspects of operation and maintenance.
  - .4 Prepare and insert additional data in operations and maintenance manuals when needed during instructions.

**1.3 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit schedule of time and date for demonstration of each item of equipment and each system two weeks prior to designated dates, for Departmental Representative's approval.
- .3 Submit reports within one week after completion of demonstration, that demonstration and instructions have been satisfactorily completed.
- .4 Give time and date of each demonstration, with list of persons present.
- .5 Provide copies of completed operation and maintenance manuals for use in demonstrations and instructions.

**1.4 QUALITY ASSURANCE**

- .1 When specified in individual Sections requiring manufacturer to provide authorized representative to demonstrate operation of equipment and systems:
  - .1 Instruct Owner's personnel.
  - .2 Provide written report that demonstration and instructions have been completed.

**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 Section Includes:
  - .1 This Section specifies roles and responsibilities of Commissioning Training.
- .2 Related Requirements
  - .1 All the contractual documents apply to Divisions 01, 26 and 28.

**1.2 TRAINEES**

- .1 Trainees: personnel selected for operating and maintaining this facility. Includes Property Manager, building operators, maintenance staff, security staff, and technical specialists as required.
- .2 Trainees will be available for training during later stages of construction for purposes of familiarization with systems.

**1.3 INSTRUCTORS**

- .1 Departmental Representative will provide:
  - .1 Descriptions of systems.
  - .2 Instruction on design philosophy, design criteria, and design intent.
- .2 Contractor and certified factory-trained manufacturers' personnel: to provide instruction on the following:
  - .1 Start-Up, operation, shut-down of equipment, components and systems.
  - .2 Control features, reasons for, results of, implications on associated systems of, adjustment of set points of control and safety devices.
  - .3 Instructions on servicing, maintenance and adjustment of systems, equipment and components.
- .3 Contractor and equipment manufacturer to provide instruction on:
  - .1 Start-up, operation, maintenance and shut-down of equipment they have certified installation, started up and carried out PV tests.

**1.4 TRAINING OBJECTIVES**

- .1 Training to be detailed and duration to ensure:
  - .1 Safe, reliable, cost-effective, energy-efficient operation of systems in normal and emergency modes under all conditions.
  - .2 Effective on-going inspection, measurements of system performance.
  - .3 Proper preventive maintenance, diagnosis and trouble-shooting.
  - .4 Ability to update documentation.
  - .5 Ability to operate equipment and systems under emergency conditions until appropriate qualified assistance arrives.

**1.5 TRAINING MATERIALS**

- .1 Instructors to be responsible for content and quality.
- .2 Training materials to include:
  - .1 "As-Built" Contract Documents.
  - .2 Operating Manual.
  - .3 Maintenance Manual.
  - .4 Management Manual.
  - .5 TAB and PV Reports.
- .3 Project Manager, Commissioning Manager and Property Manager will review training manuals.
- .4 Training materials to be in a format that permits future training procedures to same degree of detail.
- .5 Supplement training materials:
  - .1 Transparencies for overhead projectors.
  - .2 Multimedia presentations.
  - .3 Manufacturer's training videos.
  - .4 Equipment models.

**1.6 SCHEDULING**

- .1 Include in Commissioning Schedule time for training.
- .2 Deliver training during regular working hours, training sessions to be 3 hours in length.
- .3 Training to be completed prior to acceptance of facility.

**1.7 RESPONSIBILITIES**

- .1 Be responsible for:
  - .1 Implementation of training activities,
  - .2 Coordination among instructors,
  - .3 Quality of training, training materials,
- .2 Departmental Representative will evaluate training and materials.
- .3 Upon completion of training, provide written report, signed by Instructors, witnessed by Departmental Representative.

**1.8 TRAINING CONTENT**

- .1 Training to include demonstrations by Instructors using the installed equipment and systems.
- .2 Content includes:
  - .1 Review of facility and occupancy profile.
  - .2 Functional requirements.
  - .3 System philosophy, limitations of systems and emergency procedures.



- .4 Review of system layout, equipment, components and controls.
  - .5 Equipment and system start-up, operation, monitoring, servicing, maintenance and shut-down procedures.
  - .6 System operating sequences, including step-by-step directions for starting up, shut-down, operation of valves, dampers, switches, adjustment of control settings and emergency procedures.
  - .7 Maintenance and servicing.
  - .8 Trouble-shooting diagnosis.
  - .9 Inter-Action among systems during integrated operation.
  - .10 Review of O M documentation.
- .3 Provide specialized training as specified in relevant Technical Sections of the construction specifications.

## **1.9 VIDEO-BASED TRAINING**

- .1 Manufacturer's videotapes to be used as training tool with Departmental Representative's review and written approval 3 months prior to commencement of scheduled training.

### **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 REFERENCES**

- .1 Definitions:
  - .1 Electrical and electronic terms: unless otherwise specified or indicated, terms used in these specifications, and on drawings, are those defined by IEEE SP1122.
- .2 Reference Standards:
  - .1 CSA Group
    - .1 CSA C22.10-F10, Code de Construction du Québec, chapitre V – Électricité 2010 – Norme de sécurité relative aux installations électriques.
- .3 Underwriter's Laboratories of Canada (ULC)
  - .1 CAN/ULC-S524-06, Standard for the Installation of Fire Alarm Systems.
  - .2 CAN/ULC-S526-07, Visible Signal Devices for Fire Alarm Systems, Including Accessories.
  - .3 CAN/ULC-S527-99, Standard for Control Units for Fire Alarm Systems.
  - .4 CAN/ULC-S528-05, Manual Stations for Fire Alarm Systems, Including Accessories.
  - .5 CAN/ULC-S529-09, Smoke Detectors for Fire Alarm Systems.
  - .6 CAN/ULC-S530-91(R1999), Heat Actuated Fire Detectors for Fire Alarm Systems.
  - .7 CAN/ULC-S531-02, Standard for Smoke Alarms.
  - .8 CAN/ULC-S537-04, Standard for the Verification of Fire Alarm Systems.
  - .9 CAN/ULC-S561-03, Installation and services for fire signal receiving centres and systems.

**1.2 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
  - .1 Submit manufacturer's instructions, printed product literature and data sheets and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Submit for review fire alarm riser diagram, plan and zoning of building in glazed frames at fire alarm control panel and annunciator.
- .4 Shop drawings:
  - .1 Submit drawings stamped and signed by professional engineer registered or licensed in Canada.
  - .2 Submit wiring diagrams and installation details of equipment indicating proposed location, layout and arrangement, control panels, accessories, piping, ductwork, and other items that must be shown to ensure co-ordinated installation.

- .3 Identify on wiring diagrams circuit terminals and indicate internal wiring for each item of equipment and interconnection between each item of equipment.
- .4 Indicate of drawings clearances for operation, maintenance, and replacement of operating equipment devices.
- .5 If changes are required, notify Departmental Representative of these changes before they are made.
- .5 Certificates:
  - .1 Provide CSA certified equipment.
  - .2 Where CSA certified equipment is not available, submit such equipment to inspection authorities for special approval before delivery to site.
  - .3 Submit test results of installed electrical systems and instrumentation.
  - .4 Permits and fees: in accordance with General Conditions of contract.
  - .5 Submit certificate of acceptance from authority having jurisdiction upon completion of Work to Departmental Representative and Consultant.
- .6 Manufacturer's Field Reports: submit to Consultant manufacturer's written report, within 3 days of review, verifying compliance of Work and electrical system and instrumentation testing, as described in PART 3 - FIELD QUALITY CONTROL.

### **1.3 CLOSEOUT SUBMITTALS**

- .1 Submit in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Operation and Maintenance Data: submit operation and maintenance data for incorporation into manual.
  - .1 Provide for each system and principal item of equipment as specified in technical sections for use by operation and maintenance personnel.
  - .2 Operating instructions to include following:
    - .1 Wiring diagrams, control diagrams, and control sequence for each principal system and item of equipment.
    - .2 Start up, proper adjustment, operating, lubrication, and shutdown procedures.
    - .3 Safety precautions.
    - .4 Procedures to be followed in event of equipment failure.
    - .5 Other items of instruction as recommended by manufacturer of each system or item of equipment.
  - .3 Print or engrave operating instructions and frame under glass or in approved laminated plastic.
  - .4 Post instructions where directed.
  - .5 For operating instructions exposed to weather, provide weather-resistant materials or weatherproof enclosures.
  - .6 Ensure operating instructions will not fade when exposed to sunlight and are secured to prevent easy removal or peeling.

**1.4 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements or 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 dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - .2 Store and protect from nicks, scratches, and blemishes.
  - .3 Replace defective or damaged materials with new.

**Part 2 Products****2.1 DESIGN REQUIREMENTS**

- .1 Language operating requirements: provide identification nameplates for control items in English and French.
- .2 Use one nameplate for each language.

**2.2 MATERIALS AND EQUIPMENT**

- .1 Provide equipment in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Equipment to be CSA certified. Where CSA certified equipment is not available, obtain special approval from inspection authorities before delivery to site and submit such approval as described in PART 1 - ACTION AND INFORMATIONAL SUBMITTALS.
- .3 Factory assemble control panels and component assemblies.

**2.3 WIRING TERMINATIONS**

- .1 Ensure lugs, terminals, screws used for termination of wiring are suitable for either copper or aluminum conductors.

**2.4 EQUIPMENT IDENTIFICATION**

- .1 Identify electrical equipment with nameplates as follows:

- .1 Sizes as follows:

NAMEPLATE SIZES			
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

- .2 Labels: embossed plastic labels with 6 mm high letters unless specified otherwise.
- .3 Wording on nameplates to be approved by Departmental Representative prior to manufacture.
- .4 Allow for minimum of twenty-five (25) letters per nameplate.
- .5 Nameplates for terminal cabinets and junction boxes to indicate system and/or voltage characteristics.
- .6 Terminal cabinets and pull boxes: indicate system and voltage.

**2.5 WIRING IDENTIFICATION**

- .1 Identify wiring with permanent indelible identifying markings, numbered, on both ends of phase conductors of feeders and branch circuit wiring.
- .2 Maintain phase sequence and colour coding throughout.
- .3 Colour coding: to CSA C22.1.
- .4 Use colour coded wires in communication cables, matched throughout system.

**2.6 CONDUIT AND CABLE IDENTIFICATION**

- .1 Colour code conduits, boxes and metallic sheathed cables.
- .2 Code with plastic tape or paint at points where conduit or cable enters wall, ceiling, or floor, and at 15 m intervals.
- .3 Colours: 25 mm wide prime colour and 20 mm wide auxiliary colour.
- .1 Fire alarm: red.

**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 installation in accordance with manufacturer's written instructions.
  - .1 Visually inspect substrate in presence of Departmental Representative.
  - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
  - .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.

**3.2 INSTALLATION**

- .1 Do complete installation in accordance with CSA C22.1 except where specified otherwise.
- .2 Do overhead and underground systems in accordance with CAN/CSA-C22.3 No.1 except where specified otherwise.

**3.3 NAMEPLATES AND LABELS**

- .1 Ensure manufacturer's nameplates, CSA labels and identification nameplates are visible and legible after equipment is installed.

**3.4 CONDUIT AND CABLE INSTALLATION**

- .1 If plastic sleeves are used in fire rated walls or floors, remove before conduit installation.
- .2 Install cables, conduits and fittings embedded or plastered over, close to building structure so furring can be kept to minimum.

**3.5 LOCATION OF OUTLETS**

- .1 Locate outlets in accordance with Section 26 05 32 - Outlet Boxes, Conduit Boxes and Fittings.
- .2 Do not install outlets back-to-back in wall; allow minimum 150 mm horizontal clearance between boxes.
- .3 Change location of outlets at no extra cost or credit, providing distance does not exceed 3000 mm, and information is given before installation.

**3.6 MOUNTING HEIGHTS**

- .1 Mounting height of equipment is from finished floor to centreline of equipment unless specified or indicated otherwise.
- .2 If mounting height of equipment is not specified or indicated, verify before proceeding with installation.

- .3 Install electrical equipment at following heights unless indicated otherwise, relative to finite floor.
  - .1 Center control unit : not more than 2400 mm (top of the central control unit).
  - .2 Remote annunciators : not more than 1800 mm (top of annunciator).
  - .3 Fire alarm stations: 1200 mm (center of devices).
  - .4 Fire alarm bells: 2300 mm.
  - .5 Visual alarm signal devices : between 2000 and 2400 mm.
  - .6 End-of-line devices : at least 1800 mm (center of the devices).

### **3.7 CO-ORDINATION OF PROTECTIVE DEVICES**

- .1 Ensure circuit protective devices such as overcurrent trips, relays and fuses are installed to required values and settings.

### **3.8 FIELD QUALITY CONTROL**

- .1 Load Balance:
  - .1 Measure phase current to panelboards with normal loads (lighting) operating at time of acceptance; adjust branch circuit connections as required to obtain best balance of current between phases and record changes.
  - .2 Measure phase voltages at loads and adjust transformer taps to within 2% of rated voltage of equipment.
  - .3 Provide upon completion of work, load balance report as directed in PART 1 - ACTION AND INFORMATIONAL SUBMITTALS, phase and neutral currents on panelboards, dry-core transformers and motor control centres, operating under normal load, as well as hour and date on which each load was measured, and voltage at time of test.
- .2 Conduct following tests in accordance with Section 01 45 00 - Quality Control.
  - .1 Circuits originating from branch distribution panels.
  - .2 Systems: fire alarm.
  - .3 Insulation resistance testing:
    - .1 Megger circuits, feeders and equipment up to 350 V with a 500 V instrument.
    - .2 Megger 350-600 V circuits, feeders and equipment with a 1000 V instrument.
    - .3 Check resistance to ground before energizing.
- .3 Carry out tests in presence of Departmental Representative.
- .4 Provide instruments, meters, equipment and personnel required to conduct tests during and at conclusion of project.
- .5 Manufacturer's Field Services:
  - .1 Obtain written report from manufacturer verifying compliance of Work, in handling, installing, applying, protecting and cleaning of product and submit Manufacturer's Field Reports as described in PART 1 - ACTION AND INFORMATIONAL SUBMITTALS.



- .2 Provide manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.

### **3.9 SYSTEM STARTUP**

- .1 Instruct operating personnel in operation, care and maintenance of systems, system equipment and components.
- .2 Arrange and pay for services of manufacturer's factory service engineer to supervise start-up of installation, check, adjust, balance and calibrate components and instruct operating personnel.
- .3 Provide these services for such period, and for as many visits as necessary to put equipment in operation, and ensure that operating personnel are conversant with aspects of its care and operation.

### **3.10 CLEANING**

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - 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 11 - Cleaning.
  - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

**END OF SECTION**



**Part 1 General****1.1 RELATED REQUIREMENTS**

- .1 All the contractual documents apply to Divisions 01, 26 and 28.

**1.2 REFERENCES**

- .1 CSA International
  - .1 CAN/CSA-C22.2 No.18-98(R2003), Outlet Boxes, Conduit Boxes and Fittings.
  - .2 CAN/CSA-C22.2 No.65-03(R2008), Wire Connectors (Tri-National Standard with UL 486A-486B and NMX-J-543-ANCE-03).
- .2 National Electrical Manufacturers Association (NEMA)

**1.3 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
  - .1 Submit manufacturer's instructions, printed product literature and data sheets for wire and box connectors and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Sustainable Design Submittals:

**1.4 CLOSEOUT SUBMITTALS**

- .1 Submit in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Operation and Maintenance Data: submit operation and maintenance data for wire and box connectors for incorporation into manual.

**1.5 DELIVERY, STORAGE AND HANDLING**

- .1 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .2 Storage and Handling Requirements:
  - .1 Store materials off ground, indoor, in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - .2 Store and protect wire and box connectors from nicks, scratches, and blemishes.
  - .3 Replace defective or damaged materials with new.

**Part 2 Products****2.1 MATERIALS**

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

- .2 Fixture type splicing connectors to: CAN/CSA-C22.2 No.65, with current carrying parts of copper sized to fit copper conductors 10 AWG or less.
- .3 Clamps or connectors for armoured cable as required to: CAN/CSA-C22.2 No.18.

### **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 wire and box connectors installation in accordance with manufacturer's written instructions.
  - .1 Visually inspect substrate in presence of Consultant.
  - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
  - .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative and Consultant.

#### **3.2 INSTALLATION**

- .1 Remove insulation carefully from ends of conductors cables 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 CAN/CSA-C22.2 No.65.
  - .3 Install fixture type connectors and tighten to CAN/CSA-C22.2 No.65. Replace insulating cap.

#### **3.3 CLEANING**

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - 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 11 - Cleaning.
  - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

**END OF SECTION**

**Part 1 General****1.1 PRODUCT DATA**

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

**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 V insulation of cross-linked thermosetting polyethylene material rated RW90 XLPE, jacketed.

**2.2 ARMOURED CABLES**

- .1 Conductors: insulated, copper, size as indicated.
- .2 Type: AC90.
- .3 Armour: interlocking type fabricated from aluminum strip.
- .4 Connectors: anti short connectors.

**Part 3 Execution****3.1 FIELD QUALITY CONTROL**

- .1 Perform tests in accordance with Section 26 05 00 - Common Work Results for Electrical.
- .2 Perform tests using method appropriate to site conditions and to approval of Departmental Representative and local authority having jurisdiction over installation.
- .3 Perform tests before energizing electrical system.

**3.2 GENERAL CABLE INSTALLATION**

- .1 Terminate cables in accordance with Section 26 05 20 - Wire and Box Connectors (0-1 000 V).
- .2 Cable Colour Coding: to Section 26 05 00 - Common Work Results for Electrical.
- .3 Conductor length for parallel feeders to be identical.
- .4 Lace or clip groups of feeder cables at distribution centres, pull boxes, and termination points.
- .5 Wiring in walls: typically drop or loop vertically from above to better facilitate future renovations. Generally wiring from below and horizontal wiring in walls to be avoided unless indicated.
- .6 Branch circuit wiring for surge suppression receptacles and permanently wired computer and electronic equipment to be 2-wire circuits only, i.e. common neutrals not permitted.

- .7 Provide numbered wire collars for control wiring. Numbers to correspond to control shop drawing legend. Obtain wiring diagram for control wiring.

### **3.3 INSTALLATION OF BUILDING WIRES**

- .1 Install wiring as follows:
  - .1 In conduit systems in accordance with Section 26 05 34 - Conduits, Conduit Fastenings and Conduit Fittings.

### **3.4 INSTALLATION OF ARMOURED CABLES**

- .1 Group cables wherever possible on channels.

**END OF SECTION**

**Part 1 General****1.1 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
  - .1 Submit manufacturer's instructions, printed product literature and data sheets for hangers and supports and include product characteristics, performance criteria, physical size, finish and limitations.

**1.2 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 dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - .2 Store and protect hangers and supports from nicks, scratches, and blemishes.
  - .3 Replace defective or damaged materials with new.

**Part 2 Products****2.1 SUPPORT CHANNELS**

- .1 U shape, size 41 x 41 mm, 2.5 mm thick, surface mounted set in poured concrete walls and ceilings.

**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 hangers and supports installation in accordance with manufacturer's written instructions.
  - .1 Visually inspect substrate in presence of Departmental Representative.
  - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
  - .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.

**3.2 INSTALLATION**

- .1 Secure equipment to masonry, tile and plaster surfaces with nylon shields.
- .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 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.
- .7 For surface mounting of two or more conduits use channels at 3 m on centre spacing.
- .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 Departmental Representative.
- .12 Install fastenings and supports as required for each type of equipment cables and conduits, and in accordance with manufacturer's installation recommendations.

**3.3 CLEANING**

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - 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 11 - Cleaning.

**END OF SECTION**



**Part 1 General****1.1 REFERENCES**

- .1 Canadian Standards Association (CSA International)
  - .1 CSA C22.10-F10, Code de Construction du Québec, chapitre V – Électricité 2010.

**1.2 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
  - .1 Provide manufacturer's printed product literature, specifications and datasheet and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Provide shop drawings: in accordance with Section 01 33 00 - Submittal Procedures.
  - .1 Provide drawings stamped and signed by Professional Engineer registered or licensed in Canada.

**Part 2 Products****2.1 JUNCTION AND PULL BOXES**

- .1 Construction: welded steel enclosure.
- .2 Covers Flush Mounted: 25 mm minimum extension all around.
- .3 Covers Surface Mounted: screw-on flat covers.

**Part 3 Execution****3.1 JUNCTION, PULL BOXES AND CABINETS INSTALLATION**

- .1 Install pull boxes in inconspicuous but accessible locations.
- .2 Mount cabinets with top not higher than 2 m above finished floor except where indicated otherwise.
- .3 Install terminal block as indicated in Type T cabinets.
- .4 Only main junction and pull boxes are indicated. Install additional pull boxes as required by CSA C22.1.

**3.2 IDENTIFICATION**

- .1 Equipment Identification: to Section 26 05 00 - Common Work Results for Electrical.
- .2 Identification Labels: size 2 indicating voltage and phase or as indicated.

**END OF SECTION**

**Part 1 General****1.1 REFERENCES**

- .1 Canadian Standards Association (CSA International)
  - .1 CSA C22.10-F10, Code de Construction du Québec, chapitre V – Électricité 2010.

**1.2 ACTION AND INFORMATIONAL SUBMITTALS**

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

**1.3 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.

**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.
- .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 GALVANIZED STEEL OUTLET BOXES**

- .1 One-piece electro-galvanized construction.
- .2 Single gang flush device boxes for flush installation, minimum size 76 mm x 50 mm x 38 mm or as indicated. 102 mm square outlet boxes when more than one conduit enters one side with extension and plaster rings as required.
- .3 Utility boxes for outlets connected to surface-mounted EMT conduit, minimum size 102 mm x 54 mm x 48 mm.
- .4 Extension and plaster rings for flush mounting devices in finished plaster walls.

**2.3 MASONRY BOXES**

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

**2.4 CONCRETE BOXES**

- .1 Electro-galvanized 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 aluminum boxes with factory-threaded hubs and mounting feet for surface wiring of devices.

**2.6 OUTLET BOXES FOR NON-METALLIC SHEATHED CABLE**

- .1 Electro-galvanized, sectional, screw ganging steel boxes, minimum size 76 mm x 50 mm x 63 mm 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 35 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. Do not install reducing washers.
- .5 Vacuum clean interior of outlet boxes before installation of wiring devices.
- .6 Identify systems for outlet boxes as required.

**END OF SECTION**

**Part 1 General****1.1 REFERENCES**

- .1 Canadian Standards Association (CSA International)
  - .1 CAN/CSA C22.2 No. 18-98(R2003), Outlet Boxes, Conduit Boxes, Fittings and Associated Hardware, A National Standard of Canada.
  - .2 CSA C22.2 No. 45-M1981(R2003), Rigid Metal Conduit.
  - .3 CSA C22.2 No. 56-04, Flexible Metal Conduit and Liquid-Tight Flexible Metal Conduit.
  - .4 CSA C22.2 No. 83-M1985(R2003), Electrical Metallic Tubing.
  - .5 CSA C22.2 No. 211.2-M1984(R2003), Rigid PVC (Unplasticized) Conduit.
  - .6 CAN/CSA C22.2 No. 227.3-05, Nonmetallic Mechanical Protection Tubing (NMPT), A National Standard of Canada (February 2006).

**1.2 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product data: submit manufacturer's printed product literature, specifications and datasheets.
  - .1 Submit cable manufacturing data.
- .3 Quality assurance submittals:
  - .1 Test reports: submit certified test reports.
  - .2 Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
  - .3 Instructions: submit manufacturer's installation instructions.

**1.3 WASTE MANAGEMENT AND DISPOSAL**

- .1 Place materials defined as hazardous or toxic waste in designated containers.
- .2 Ensure emptied containers are sealed and stored safely for disposal away from children.

**Part 2 Products****2.1 CABLES AND REELS**

- .1 Provide cables on reels or coils.
  - .1 Mark or tag each cable and outside of each reel or coil, to indicate cable length, voltage rating, conductor size, and manufacturer's lot number and reel number.
- .2 Each coil or reel of cable to contain only one continuous cable without splices.
- .3 Identify cables for exclusively dc applications.
- .4 Reel and mark shielded cables rated 2,001 volts and above.

**2.2 CONDUITS**

- .1 Rigid metal conduit: to CSA C22.2 No. 45, galvanized steel threaded.
- .2 Epoxy coated conduit: to CSA C22.2 No. 45, with zinc coating and corrosion resistant epoxy finish inside and outside.
- .3 Electrical metallic tubing (EMT): to CSA C22.2 No. 83, with couplings.
- .4 Flexible metal conduit: to CSA C22.2 No. 56, liquid-tight flexible metal in galvanized steel.

**2.3 CONDUIT FASTENINGS**

- .1 One hole steel straps to secure surface conduits 50 mm and smaller.
  - .1 Two hole steel straps for conduits larger than 50 mm.
- .2 Beam clamps to secure conduits to exposed steel work.
- .3 Channel type supports for two or more conduits at 3 m on centre.
- .4 Threaded rods, 6 mm diameter, to support suspended channels.

**2.4 CONDUIT FITTINGS**

- .1 Fittings: to CAN/CSA C22.2 No. 18, manufactured for use with conduit specified. Coating: same as conduit.
- .2 Ensure factory "ells" where 90 degrees bends for NPS 1 25 mm and larger conduits.
- .3 Watertight connectors and couplings for EMT.
  - .1 Set-screws are not acceptable.

**2.5 EXPANSION FITTINGS FOR RIGID CONDUIT**

- .1 Weatherproof expansion fittings with internal bonding assembly suitable for 100 mm linear expansion.
- .2 Watertight expansion fittings with integral bonding jumper suitable for linear expansion and 19 mm deflection.
- .3 Weatherproof expansion fittings for linear expansion at entry to panel.

**2.6 FISH CORD**

- .1 Polypropylene.

**Part 3 Execution****3.1 MANUFACTURER'S INSTRUCTIONS**

- .1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets.

**3.2 INSTALLATION**

- .1 Install conduits to conserve headroom in exposed locations and cause minimum interference in spaces through which they pass.
- .2 Conceal conduits except in mechanical and electrical service rooms.
- .3 Surface mount conduits.
- .4 Use rigid galvanized steel threaded conduit except where specified otherwise.
- .5 Use flexible metal conduit for connection to recessed and incandescent fixtures without prewired outlet box work in movable metal partitions.
- .6 Use liquid tight flexible metal conduit for connection to motors or vibrating equipment in damp, wet or corrosive locations.
- .7 Use explosion proof flexible connection for connection to explosion proof motors.
- .8 Install conduit sealing fittings in hazardous areas.
  - .1 Fill with compound.
- .9 Bend conduit cold:
  - .1 Replace conduit if kinked or flattened more than 1/10th of its original diameter.
- .10 Mechanically bend steel conduit over 19 mm diameter.
- .11 Field threads on rigid conduit must be of sufficient length to draw conduits up tight.
- .12 Install fish cord in empty conduits.
- .13 Run 25 mm spare conduits up to ceiling space and 25 mm spare conduits down to ceiling space from each flush panel.
  - .1 Terminate these conduits in 152 mm x 152 mm x 102 mm junction boxes in ceiling space or in case of an exposed concrete slab, terminate each conduit in flush concrete type box.
- .14 Remove and replace blocked conduit sections.
  - .1 Do not use liquids to clean out conduits.
- .15 Dry conduits out before installing wire.

**3.3 SURFACE CONDUITS**

- .1 Run parallel or perpendicular to building lines.
- .2 Locate conduits behind infrared or gas fired heaters with 1.5 m clearance.
- .3 Run conduits in flanged portion of structural steel.
- .4 Group conduits wherever possible on surface channels.
- .5 Do not pass conduits through structural members except as indicated.
- .6 Do not locate conduits less than 75 mm parallel to steam or hot water lines with minimum of 25 mm at crossovers.
  - .1 Provide 50 mm of sand over concrete envelope below floor slab.

**3.4 CLEANING**

- .1 Proceed in accordance with Section 01 74 11 - Cleaning.
- .2 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

**END OF SECTION**



**Part 1 General****1.1 REFERENCES**

- .1 Treasury Board of Canada Secretariat (TBS), Occupational Safety and Health (OSH)
  - .1 Fire Protection Standard-10.
- .2 Underwriter's Laboratories of Canada (ULC)
  - .1 CAN/ULC-S524-06, Standard for the Installation of Fire Alarm Systems.
  - .2 CAN/ULC-S526-07, Visible Signal Devices for Fire Alarm Systems, Including Accessories.
  - .3 CAN/ULC-S527-99, Standard for Control Units for Fire Alarm Systems.
  - .4 CAN/ULC-S528-05, Manual Stations for Fire Alarm Systems, Including Accessories.
  - .5 CAN/ULC-S529-09, Smoke Detectors for Fire Alarm Systems.
  - .6 CAN/ULC-S530-91(R1999), Heat Actuated Fire Detectors for Fire Alarm Systems.
  - .7 CAN/ULC-S531-02, Standard for Smoke Alarms.
  - .8 CAN/ULC-S537-04, Standard for the Verification of Fire Alarm Systems.
  - .9 CAN/ULC-S561-03, Installation and services for fire signal receiving centres and systems.

**1.2 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
  - .1 Submit manufacturer's instructions, printed product literature and data sheets for multiplex fire alarm system and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Shop Drawings:
  - .1 Indicate on shop drawings:
    - .1 Detail assembly and internal wiring diagrams for control units. Consoles.
    - .2 Overall system riser wiring diagram identifying control equipment, initiating zones, signalling circuits; identifying terminations, terminal numbers, conductors and raceways.
    - .3 Details for devices.
    - .4 Details and performance specifications for control, annunciation and peripherals with item by item cross reference to specification for compliance.
    - .5 Step-by-step operating sequence, cross referenced to logic flow diagram.

**1.3 CLOSEOUT SUBMITTALS**

- .1 Submit in accordance with Section 01 78 00 - Closeout Submittals.

- .2 Operation and Maintenance Data: submit operation and maintenance data for fire alarm system for incorporation into manual.
- .3 Include:
  - .1 Instructions for complete fire alarm system to permit effective operation and maintenance.
  - .2 Technical data - illustrated parts lists with parts catalogue numbers.
  - .3 Copy of approved shop drawings with corrections completed and marks removed except review stamps.
  - .4 List of recommended spare parts for system.

#### **1.4 MAINTENANCE MATERIAL SUBMITTALS**

- .1 Submit maintenance materials in accordance with Section 01 78 00 - Closeout Submittals.

#### **1.5 DELIVERY, STORAGE AND HANDLING**

- .1 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .2 Storage and Handling Requirements:
  - .1 Store materials in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - .2 Store and protect materials from nicks, scratches, and blemishes.
  - .3 Replace defective or damaged materials with new.

#### **1.6 MIGRATION**

- .1 The migration from the existing fire alarm system to the new fire alarm system must be done progressively, without shutting the fire alarm system. However, individual shutdown of fire alarm circuit may be planned for a maximum of 8 consecutive hours with the addition a security guard for the maintain of operations. The costs for the security guard will be assumed by the Contractor. The public organism must approve the dates of the interruptions and/or shutdown.

### **Part 2 Products**

#### **2.1 DESCRIPTION**

- .1 Fully supervised, microprocessor-based, fire alarm system, utilizing digital techniques for data control and digital, and multiplexing techniques for data transmission.
- .2 System to carry out fire alarm and protection functions; including receiving alarm signals; initiating general alarm; supervising components and wiring; actuating annunciators and auxiliary functions; initiating trouble signals and signalling to monitoring agency and fire department.
- .3 Zoned, coded single stage.
- .4 Modular in design to allow for future expansion.

- .5 Operation of system shall not require personnel with special computer skills.
- .6 System to include:
  - .1 Central Control Unit in separate enclosure with power supply, stand-by batteries, central processor with microprocessor and logic interface, main system memory, input-output interfaces for alarm receiving, annunciation/display, and program control/signalling.
  - .2 Data Gathering Panels/Transponders with stand-alone capabilities.
  - .3 Power supplies.
  - .4 Initiating/input circuits.
  - .5 Output circuits.
  - .6 Auxiliary circuits.
  - .7 Wiring.
  - .8 Manual and automatic initiating devices.
  - .9 Audible and visual signalling devices.
  - .10 End-of-line resistors.
  - .11 Annunciators.
  - .12 Printer.
  - .13 Historic event recorder.
  - .14 Y2K compliancy.
- .7 Equipment and devices: ULC listed and labelled and supplied by single manufacturer.
- .8 Power supply: to CAN/ULC-S524.
- .9 Audible signal devices: to CAN/ULC-S524.
- .10 Visual signal devices: to CAN/ULC-S526.
- .11 Control unit: to CAN/ULC-S527.
- .12 Manual pull stations: to CAN/ULC-S528.
- .13 Thermal detectors: to CAN/ULC-S530.
- .14 Smoke detectors: to CAN/ULC-S529.
- .15 Smoke alarms: to CAN/ULC-S531.
- .16 Regulatory Requirements:
  - .1 To TBS Fire Protection Standard.
  - .2 Subject to Fire Commissioner of Canada (FC) approval.
  - .3 Subject to FC inspection for final acceptance.
  - .4 To Canadian Forces Fire Marshal approval.
  - .5 System components: listed by ULC and comply with applicable provisions of Provincial Building Code, and meet requirements of local authority having jurisdiction.

**2.2 SYSTEM OPERATION: SINGLE STAGE - SIGNALS ONLY**

- .1 Actuation of any alarm initiating device to:
  - .1 Cause electronic latch to lock-in alarm state at central control unit and data gathering panel/transponder.
  - .2 Indicate zone of alarm at central control unit and remote annunciator and display.
  - .3 Cause audible signalling devices to sound continuously throughout building and at central control unit.
  - .4 Transmit signal to fire department via master fire alarm box central station.
  - .5 Cause air conditioning and ventilation fans to shut down or to function to provide required control of smoke movement.
  - .6 Cause fire doors and smoke control doors, if normally held open, to close automatically.
  - .7 Cause elevators to return to floor of egress, or to alternate floor, as required.
- .2 Acknowledging alarm: indicated at central control unit.
- .3 Ensure that it is possible to silence signals by "alarm silence" switch at control unit, after 60 seconds period of operation.
- .4 Subsequent alarm, received after previous alarm has been silenced, to re-activate signals.
- .5 Actuation of supervisory devices to:
  - .1 Cause electronic latch to lock-in supervisory state at central control unit.
  - .2 Indicate respective supervisory zone at central control unit and at remote annunciator display.
  - .3 Cause audible signal at central control unit to sound.
  - .4 Activate common supervisory sequence.
- .6 Resetting alarm supervisory device not to return system indications/functions back to normal until control unit has been reset.
- .7 Trouble on system to:
  - .1 Indicate circuit in trouble at central control unit.
  - .2 Activate "system trouble" indication, buzzer and common trouble sequence. Acknowledging trouble condition to silence audible indication; whereas visual indication to remain until trouble is cleared and system is back to normal.
- .8 Trouble on system: suppressed during course of alarm.
- .9 Trouble condition on any circuit in system not to initiate alarm conditions.

**2.3 CONTROL PANEL**

- .1 Central control unit (CCU).
  - .1 Suitable for DCLB communication style: to CAN/ULC-S524.
  - .2 Features specified are minimum requirements for microprocessor-based system with digital data control and digital multiplexing techniques for data transmission.

- .3 System to provide for priority reporting levels, with fire alarm points assigned highest priority, supervisory and monitoring lower priority, and third priority for troubles. Possible to assign control priorities to control points in system to guarantee operation or allow emergency override as required.
- .4 Integral power supply, battery charger and standby batteries.
- .5 Basic life safety software: retained in non-volatile Erasable Programmable Read-Only-Memory (EPROM). Extra memory chips: easily field-installed. Random-Access-Memory (RAM) chips in panel to facilitate password-protected field editing of simple software functions (i.e. zone labels, priorities) and changing of system operation software.
- .6 Circuitry to continuously monitor communications and data processing cycles of microprocessor. Upon failure, audible and visual trouble indication to activate.
- .7 Equipped with software routines to provide Event-Initiated-Programs (EIP); change in status of one or more monitor points, may be programmed to operate any or all of system's control points.
- .8 Software and hardware to maintain time of day, day of week, day of month, month and year.
- .9 On-board, 20-column, DC strip printer, thermal head with automatic paper take-up, and silent operation; operational while system is operating on standby power. Expanded font available for selected printing conditions.

## **2.4 POWER SUPPLIES**

- .1 120 V, 60 Hz as primary source of power for system.
- .2 Voltage regulated, current limited distributed system power.
- .3 Primary power failure or power loss (less than 102 V) will activate common trouble sequence.
- .4 Interface with battery charger and battery to provide uninterruptible transfer of power to standby source during primary power failure or loss.
- .5 During normal operating conditions fault in battery charging circuit, short or open in battery leads to activate common trouble sequence and standby power trouble indicator.
- .6 Standby batteries: sealed, maintenance free.
- .7 Continuous supervision of wiring for external initiating and alarm circuits to be maintained during power failure.

## **2.5 INITIATING/INPUT CIRCUITS**

- .1 Receiving circuits for alarm initiating devices such as manual pull stations, smoke detectors, heat detectors and water flow switches, wired in DCLB configuration to central control unit.
- .2 Alarm receiving circuits (active and spare): compatible with smoke detectors and open contact devices.
- .3 Actuation of alarm initiating device: cause system to operate as specified in "System Operation".

- .4 Receiving circuits for supervisory, N/O devices. Devices: wired in DCLB configuration to central control unit.
- .5 Actuation of supervisory initiating device: cause system to operate as specified in "System Operation".

## **2.6 ALARM OUTPUT CIRCUITS**

- .1 Alarm output circuit: connected to signals, wired in class B configuration to central control unit.
  - .1 Signal circuits' operation to follow system programming; capable of sounding horns continuously at 20 spm 2 A, 24 V D.C., fuse-protected from overloading/overcurrent.
  - .2 Manual alarm silence, automatic alarm silence and alarm silence inhibit to be provided by system's common control.

## **2.7 AUXILIARY CIRCUITS**

- .1 Auxiliary contacts for control functions.
- .2 Actual status indication (positive feedback) from controlled device.
- .3 Alarm supervisory trouble on system to cause operation of programmed auxiliary output circuits.
- .4 2 sets of separate contacts for elevator capture to main floor of egress and to alternate floor of egress.
- .5 Upon resetting system, auxiliary contacts to return to normal or to operate as pre-programmed.
- .6 Fans: stagger-started upon system reset; timing circuit to separate starting of each fan or set of fans connected to auxiliary contact on system.
  - .1 Timing circuit: controlled by CCU.
- .7 Auxiliary circuits: rated at 2 A, 24 Vdc or 120 Vac, fuse-protected.

## **2.8 WIRING**

- .1 Type FAS-105 copper conductors rated 300 V in PVC insulation.
- .2 To initiating circuits: Twisted 18 AWG minimum, and in accordance with manufacturer's requirements.
- .3 To signal circuits: 16 AWG minimum, and in accordance with manufacturer's requirements.
- .4 To control circuits: 14 AWG minimum, and in accordance with manufacturer's requirements.

**2.9 MANUAL ALARM STATIONS**

- .1 Addressable manual pull station.
  - .1 Pull lever, break glass rod, surface wall mounted type, single action, single stage, electronics to communicate station's status to addressable module/transponder over 2 wires and to supply power to station. Station address to be set on station in field.

**2.10 AUTOMATIC ALARM INITIATING DEVICES**

- .1 Heat detectors, fixed temperature, rated 57°C.
- .2 Addressable thermal fire detectors, combination fixed temperature and rate of rise, non-restorable fixed temperature element, self-restoring rate of rise, fixed temperature 57 degrees C, rate of rise 8.3°C/min.
  - .1 Electronics to communicate detector's status to addressable module/transponder.
  - .2 Detector address to be set on detector in field.
- .3 Smoke detector: photo-electric type air duct type with sampling tubes with protective housing.
  - .1 Twistlock Plug-in type with fixed base.
  - .2 Wire-in base assembly with integral red alarm LED and terminals for remote relay alarm LED.
- .4 Addressable variable-sensitivity smoke detectors.
  - .1 Photo-electric type.
  - .2 Electronics to communicate detector's status to addressable module/transponder.
  - .3 Detector address to be set on detector base in field.
  - .4 Sensitivity settings: determined and operated by control panel. No shifting in detector sensitivity due to atmospheric conditions (dust, dirt) within certain parameters.
  - .5 Ability to annunciate minimum of two (2) levels of detector contamination automatically with trouble condition at control panel.

**2.11 AUDIBLE SIGNAL DEVICES**

- .1 Horn surface mounted, polarized, 24 V D.C., 90 dB at 3 m.

**2.12 VISUAL ALARM SIGNAL DEVICES**

- .1 Strobe type: red, 24 V D.C.
- .2 Unless otherwise specified, the lights intensities are:
  - .1 15 candelas: corridor and room up to 35 m².
  - .2 30 candelas: room up to 80 m².
  - .3 75 candelas: room up to 145 m².
  - .4 110 candelas: room greater than 145 m².
- .3 Designed for surface mounting on ceiling walls as indicated.

**2.13 END-OF-LINE DEVICES**

- .1 End-of-line devices to control supervisory current in alarm circuits and signalling circuits, sized to ensure correct supervisory current for each circuit. Open, short or ground fault in any circuit will alter supervisory current in that circuit, producing audible and visible alarm at main control panel and remotely as indicated.

**2.14 REMOTE ANNUNCIATORS**

- .1 Remote alphanumeric type, with designation cards to indicate zones.
- .2 Display:
  - .1 Alarms and troubles for alarm initiating circuits.
  - .2 Supervisory alarms and troubles for supervisory initiating circuits.
  - .3 Common system trouble.
- .3 Trouble buzzer:
  - .1 Acknowledging trouble at main panel to silence trouble buzzers in system.
- .4 Supervised, with LED test button and alarm trouble acknowledge button.
- .5 Minimum wiring configuration with main panel and other remote annunciators.

**2.15 REMOTE TERMINAL**

- .1 CRT screen: 120 V, 60 Hz, to incorporate 100% solid state circuitry, with 30 cm screen and front mounted controls for brightness, contrast, vertical and horizontal hold and power ON/OFF switch.

**2.16 AUXILIARY DEVICES**

- .1 Remote relay unit to initiate fan shutdown.

**Part 3 Execution****3.1 EXAMINATION**

- .1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for fire alarm installation in accordance with manufacturer's written instructions.
  - .1 Visually inspect substrate in presence of Departmental Representative.
  - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
  - .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.

**3.2 INSTALLATION**

- .1 Install systems in accordance with CAN/ULC-S524 and TB Fire Protection Standard.
- .2 Install central control unit and connect to A.C. power supply, D.C. standby power.



- .3 Install manual alarm stations and connect to alarm circuit wiring.
- .4 Locate and install detectors and connect to alarm circuit wiring. Mount detectors more than 1 m from air outlets. Maintain at least 600 mm radius clear space on ceiling, below and around detectors. Locate duct type detectors in straight portions of ducts.
- .5 Connect alarm circuits to main control panel.
- .6 Install signal and visual signal devices and connect to signalling circuits.
- .7 Connect signalling circuits to main control panel.
- .8 Install end-of-line devices at end of alarm and signalling circuits.
- .9 Install remote annunciator panels and connect to annunciator circuit wiring.
- .10 Install door releasing devices.
- .11 Install remote relay units to control fan shut down.
- .12 Sprinkler system: wire alarm and supervisory switches and connect to control panel.
- .13 Room detection system.
  - .1 Install detectors. Make necessary connections between room detection panel and main fire alarm panel.
  - .2 Locate and install audible signals and visual alarms.
  - .3 Locate and install detectors under raised floor. Fasten to steel brackets approximately 300 mm above sub-floor level to clear cables and conduits.
- .14 Connect fire suppression systems to control panel.
- .15 Splices are not permitted.
- .16 Provide necessary raceways, cable and wiring to make interconnections to terminal boxes, annunciator equipment and CCU, as required by equipment manufacturer.
- .17 Ensure that wiring is free of opens, shorts or grounds, before system testing and handing over.
- .18 Identify circuits and other related wiring at central control unit, annunciators, and terminal boxes.

### 3.3 FIELD QUALITY CONTROL

- .1 Perform tests in accordance with Section 26 05 00 - Common Work Results for Electrical and CAN/ULC-S537.
- .2 Fire alarm system:
  - .1 Test such device and alarm circuit to ensure manual stations, thermal detectors, smoke detectors transmit alarm to control panel and actuate first stage alarm, general alarm and ancillary devices.
  - .2 Check annunciator panels to ensure zones are shown correctly.
  - .3 Simulate grounds and breaks on alarm and signalling circuits to ensure proper operation of systems.

- .4 Addressable circuits system style DCLB:
  - .1 Test each conductor on all DCLB addressable links for capability of providing 3 or more subsequent alarm signals on line side of single open-circuit fault condition imposed near electrically most remote device on each link. Operate Acknowledge/Silence switch after reception of each of the 3 signals. Correct imposed fault after completion of each series of tests.
  - .2 Test each conductor on all DCLB addressable links for capability of providing 3 or more subsequent alarm signals during ground-fault condition imposed near electrically most remote device on each link. Operate Acknowledge/Silence switch after reception of each of the 3 signals. Correct imposed fault after completion of each series of tests.
- .3 Provide final PROM program re-burn for system Departmental Representative DCC Representative Consultant incorporating program changes made during construction.

### **3.4 CLEANING**

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - 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 11 - Cleaning.
  - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.
  - .2 Place materials defined as hazardous or toxic waste in designated containers.

### **3.5 PROTECTION**

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by fire alarm system installation.

### **3.6 CLOSEOUT ACTIVITIES**

- .1 Provide on-site lectures and demonstration by fire alarm equipment manufacturer to train operational personnel in use and maintenance of fire alarm system.

### **3.7 MAINTENANCE**

- .1 Provide individual price on tender form for subsequent PROM re-burns.
- .2 Provide individual price on tender form for temporary program changes during construction period, to include zone labels, control functions, system operation.

**END OF SECTION**

**APPENDIX NO. 1 – FIRE ALARM VERIFICATION  
REPORT (2014-07-17)**



### RAPPORT DE VÉRIFICATION INITIALE

#### RAPPORT D'INSPECTION ET MISE À L'ESSAI

X

Nom du projet : AGRIC. & AGRO. CAN. BÂT. # 1-2-3 St. Pomp.

rue : 2000, RUE COLLÈGE

ville : SHERBROOKE (QUÉBEC)

code postal : J1M 0C8

Responsable : M. Frédéric Tremblay

CONTRAT # : 3000515392

Date : \_\_\_\_/\_\_\_\_/\_\_\_\_ jj/mm/aa

Code du projet : F00901

Manufacturier : SIEMENS

Produit : MXL

Type de système : adressable : X non adressable : \_\_\_\_ hybride : \_\_\_\_

1 étape : X 2 étapes : \_\_\_\_

### RÉSUMÉ

OUI NON N/A

1. Chaque dispositif du réseau avertisseur d'incendie a été vérifié et mis à l'essai conformément aux exigences de la norme CAN/ULC-S537-04 et les résultats ont été enregistrés dans ce rapport. \_\_\_\_ X
2. Chaque dispositif ajouté, remplacé et/ou relocalisé du réseau avertisseur d'incendie a été vérifié conformément aux exigences de la norme CAN/ULC-S537-04 et les résultats ont été enregistrés dans ce rapport. \_\_\_\_ X
3. Numéro du CERTIFICAT DE VÉRIFICATION INITIALE (ULC-S537-04): N/A
4. Chaque dispositif du réseau avertisseur d'incendie a été inspecté conformément aux exigences de la norme CAN/ULC-S536-04 et les résultats ont été enregistrés dans ce rapport. X
5. Numéro du CERTIFICAT D'INSPECTION ET MISE À L'ESSAI (ULC-S536-04): \_\_\_\_
6. Le réseau avertisseur d'incendie est maintenant complètement en état de fonctionner. \_\_\_\_
7. Les caractéristiques observées qui peuvent nuire au fonctionnement du système sont rapportées dans la section intitulée : "Anomalies". \_\_\_\_
8. Les caractéristiques observées qui fait référence à un manquement sont rapportées dans la section intitulée : "Remarques". \_\_\_\_
9. Les caractéristiques observées pour rendre plus efficace et/ou sécuritaire l'installation du réseau avertisseur d'incendie sont rapportées dans la section intitulée : "Recommandations". \_\_\_\_
10. Une copie du présent rapport sera remis au propriétaire ou représentant du propriétaire de ce bâtiment. \_\_\_\_
11. Une période de formation a été donnée à : (Client régulier)

Ce rapport doit être conservé par le propriétaire du bâtiment.

Nombre de pages : 16

Nom du technicien: \_\_\_\_\_

Signature: \_\_\_\_\_

4375 rue Ouimet, Sherbrooke, Qué., J1L 1X5 / Tél. : (819) 569-0171 / Téléc. : (819) 569-8150

### REGISTRE DE L'ÉQUIPEMENT

Selon : \_\_\_\_\_ ULC-S537-04  
X \_\_\_\_\_ ULC-S536-04

Nom du projet : AGRIC. & AGRO. CAN. BÂT. # 1-2-3 St. Pomp.

Adresse (ville) : SHERBROOKE (QUÉBEC)

Code : F00901

Liste de matériel	Qté	Modèle	Qté	Modèle
Panneau de contrôle incendie principal	1	MXL (MMB-2)		
Logiciel	Version :	16	Date :	06-11-06
Panneau de contrôle incendie secondaire				
Panneau de centralisation				
Panneau de signalisation				
Écran terminal				
Imprimante				
Annonciateur visuel	1	RCC-1		
Module de zones	3	ALD-2I	2	XLD-1
Module de signalisation	1	CSM-4		
Carte de communication	1	NIM-1W		
Poste manuel d'incendie, 1 étape	17	MSX-1	4	XAD-52
Poste manuel d'incendie, 1 étape	1	MSM-EXP		
Poste manuel d'incendie, 2 étapes				
Avertisseur de fumée				
Détecteur de fumée	17	DI-X3	28	DP-X3
Détecteur de fumée	9	ILP-1	6	ILI-1C
Détecteur de fumée ventilation	2	DI-BX3		
Détecteurs de chaleur (R.R) / Fixe (*R)	1	CDT-135R	2	DT-3-160
Détecteurs de chaleur (R.R) / Fixe (*R)	30	DT-X3	1	CR-135
Détecteurs de chaleur (R.R) / Fixe (*R)	1	DT-X3-135	1	DT-200WP
Détecteurs de chaleur (Fixe) (*F, *A)	2	CF-135MP	6	CDT-135RX
Détecteurs de chaleur (Fixe) (*F, *A)	1	CDT-200F	2	CDT-135FMP
Détecteurs de chaleur (Fixe) (*F, *A)	1	CDT-135F		
Indicateur d'alarme système d'extinction	1	DÉBIT		
Indicateur de surveillance syst. d'extinction	1	VANNE	1	OSYSU-2
Indicateur de surveillance syst. d'extinction	6	708		
Indicateur de pression syst. d'extinction				
Indicateur alarme de température	1	T-1000		
Signalisation d'alarme audible et/ou visuelle	20	HDC-24C	1	BDC-624C
Signalisation d'alarme audible et/ou visuelle	1	BZ-54		
Signalisation d'alarme audible et/ou visuelle	1	BDC-1024C		
Haut-parleur surface				
Haut-parleur encastré				
Téléphone d'urgence (pompiers)				
Module Isolateur	1	LIM-1		
Module de relais au PAI	4	CRM-4		



# RAPPORT DE VÉRIFICATION DU RÉSEAU D'ALARME INCENDIE

## REGISTRE DE L'ÉQUIPEMENT

Selon :                      ULC-S537-04  
          X           ULC-S536-04

Nom du projet : AGRIC. & AGRO. CAN. BÂT. # 1-2-3 St. Pomp.  
Adresse (ville) : SHERBROOKE (QUÉBEC)

Code : F00901

[illegible]

4375 rue Ouimet, Sherbrooke, Qué., J1L 1X5 / Tél. : (819) 569-0171 / Téléc. : (819) 569-8150

### RÉSULTATS DES ESSAIS DES PANNEAUX

Nom du projet : AGRIC. & AGRO. CAN. BÂT. # 1-2-3 St. Pomp. Code: F00901

Adresse (ville) : SHERBROOKE (QUÉBEC)

#### PANNEAU INCENDIE : MXL

<input checked="" type="checkbox"/>	Indicateur de mise sous tension
<input checked="" type="checkbox"/>	Lampe témoin de défectuosité commune
<input type="checkbox"/>	Signal de défectuosité commune
<input type="checkbox"/>	Interrupteur d'arrêt du signal de défectuosité
<input type="checkbox"/>	Défaut d'alimentation en courant alternatif
<input checked="" type="checkbox"/>	Lampe témoin de défectuosité de fuite à la terre
<input type="checkbox"/>	Signal sonore de défectuosité dû à la fuite
<input checked="" type="checkbox"/>	Fonctionnement de l'alarme générale
<input type="checkbox"/>	Minuterie de coupure automatique de l' A.G.
	_____ minutes _____ secondes
<input type="checkbox"/>	Minuterie de déclenchement automatique de l' A.G.
	_____ minutes _____ secondes
<input type="checkbox"/>	Empêchement d'arrêt du signal sonore d' une (1) minute
<input type="checkbox"/>	Arrêt du signal sonore
<input type="checkbox"/>	Lampe d'arrêt du signal sonore d'incendie
<input checked="" type="checkbox"/>	Bâtiment protégé par gicleurs
	Cie : _____ MAC _____ Tél : _1-888-565-6505_
<input checked="" type="checkbox"/>	Circuits de déclenchement, essais individuels
<input checked="" type="checkbox"/>	Fonctionnement des lampes d'alarme individuelle
<input checked="" type="checkbox"/>	Vérification de la désignation des lampes témoins
<input checked="" type="checkbox"/>	Tous les signaux d'alarme sonores fonctionnent (C.A.)
<input checked="" type="checkbox"/>	Tous les signaux d'alarme sonores fonctionnent en A.G.
	(sur batterie ou génératrice)
<input checked="" type="checkbox"/>	Signaux d'alarme programmés selon spécifications
<input checked="" type="checkbox"/>	Fonctionnement des relais auxiliaires
<input checked="" type="checkbox"/>	Relais auxiliaires programmés selon spécifications
<input type="checkbox"/>	Fonctionnement des lampes témoins de défectuosités
	(Circuits de détection et signalisation)
<input checked="" type="checkbox"/>	Essai des lampes
<input checked="" type="checkbox"/>	Éléments enfichables bien enfoncés
<input checked="" type="checkbox"/>	Contacts électriques exposés bien propres
<input checked="" type="checkbox"/>	Identification convenable des indicateurs et contrôles
<input type="checkbox"/>	Le réarmement fonctionne
<input checked="" type="checkbox"/>	Porte, vitre et contrôles bien propres
<input checked="" type="checkbox"/>	Serrure du panneau d'alarme incendie fonctionne
<input type="checkbox"/>	Plans de localisation disponibles

#### (Exclues) BATTERIES (rempl. 26 sept. 2011)

<u>2</u>	Batteries / Type : <u>12V 18Ah</u>
	Tension des batteries (avec C.A.)
	Courant de supervision
	Courant de recharge des batteries
	Tension des batteries (veille)
	Tension des batteries (alarme)
	Courant en alarme
<input checked="" type="checkbox"/>	Inspection physique des batteries
<input checked="" type="checkbox"/>	Essai concluant

#### PANNEAU PHONIQUE : N/A

	Indicateur de mise sous tension
	Lampe témoin de défectuosité commune
	Signal de défectuosité commune
	Interrupteur d'arrêt du signal de défectuosité
	Bouton d'appel général
	Lampe témoin d'appel général
	Commutateurs de sélection des zones de haut-parleurs
	(Essai de chacune des zones)
	Indication de sélection des zones de haut-parleurs
	Lampes témoins de défectuosité des haut-parleurs
	Bouton poussoir de mise en marche du microphone
	Le fonctionnement du réseau de communication phonique
	verrouille au cours de la première minute d'alarme
	Volume sonore des haut-parleurs d'alarme suffisant
	Les h.p. d'urgence fonctionnent sur appel général (avec
	le courant de secours)
	Lampe témoin d'appel du téléphone d'urgence
	Signal sonore d'appel du téléphone d'urgence
	Commutateurs de sélection de la zone de chaque téléphone
	(Essais individuels)
	Lampes témoins de sélection de chaque zone de téléphone
	_____ Communication verbale, téléphone d'urgence
	Communication verbale, téléphone d'urgence pendant
	l'essai des haut-parleurs
	Éléments enfichables bien enfoncés
	Contacts électriques exposés bien propres
	Identification convenable des indicateurs et contrôles
	Porte, vitre et contrôles bien propres
	Serrure du panneau de communic. d'urgence fonctionne

#### LIAISON À UNE CENTRALE D'ALARME

Cie : PROTECTRON Tél : \_\_\_\_\_

Centrale : PROTECTRON Tél : 1-877-777-6911

Communicateur : DVACS

Emplacement : \_\_\_\_\_

Points transmis :

<input checked="" type="checkbox"/>	Alarme	Type :	<input type="checkbox"/>	N.F.	<input checked="" type="checkbox"/>	F.D.L.
<input checked="" type="checkbox"/>	Panne	Type :	<input checked="" type="checkbox"/>	N.F.	<input type="checkbox"/>	F.D.L.
<input type="checkbox"/>	Supervision	Type :	<input type="checkbox"/>	N.F.	<input type="checkbox"/>	F.D.L.
<input type="checkbox"/>	Supervision non disponible					

Port de communication : \_\_\_\_\_

☐ Activé ☒ Non activé

X : Équipement vérifié

A.G. : Alarme générale

N : Résultat négatif

C.A. : Courant alternatif

N/A : Non applicable

4375, rue Ouimet, Sherbrooke, Qué., J1L 1X5 / Tél. : (819) 569-0171 / Téléc. : (819) 569-8150



### RÉSULTATS DES ESSAIS DES PANNEAUX

Nom du projet : AGRIC. & AGRO. CAN. BÂT. # 1-2-3 St. Pomp. Code: F00901  
Adresse (ville) : SHERBROOKE (QUÉBEC)

#### (STATION DE POMPAGE) (PS243)

##### BATTERIES : POWER SUPPLY (Exclues)

1 Batteries / Type : 12V 7,5Ah  
Tension des batteries (avec C.A.)  
Courant de supervision  
Courant de recharge des batteries  
Tension des batteries (veille)  
Tension des batteries (alarme)  
Courant en alarme  
X Inspection physique des batteries  
X Essai concluant

##### BATTERIES :

Batteries / Type :         
Tension des batteries (avec C.A.)  
Courant de supervision  
Courant de recharge des batteries  
Tension des batteries (veille)  
Tension des batteries (alarme)  
Courant en alarme  
Inspection physique des batteries  
Essai concluant

##### BATTERIES :

Batteries / Type :         
Tension des batteries (avec C.A.)  
Courant de supervision  
Courant de recharge des batteries  
Tension des batteries (veille)  
Tension des batteries (alarme)  
Courant en alarme  
Inspection physique des batteries  
Essai concluant

##### BATTERIES :

Batteries / Type :         
Tension des batteries (avec C.A.)  
Courant de supervision  
Courant de recharge des batteries  
Tension des batteries (veille)  
Tension des batteries (alarme)  
Courant en alarme  
Inspection physique des batteries  
Essai concluant

##### BATTERIES :

Batteries / Type :         
Tension des batteries (avec C.A.)  
Courant de supervision  
Courant de recharge des batteries  
Tension des batteries (veille)  
Tension des batteries (alarme)  
Courant en alarme  
Inspection physique des batteries  
Essai concluant

##### BATTERIES :

Batteries / Type :         
Tension des batteries (avec C.A.)  
Courant de supervision  
Courant de recharge des batteries  
Tension des batteries (veille)  
Tension des batteries (alarme)  
Courant en alarme  
Inspection physique des batteries  
Essai concluant

##### BATTERIES :

Batteries / Type :         
Tension des batteries (avec C.A.)  
Courant de supervision  
Courant de recharge des batteries  
Tension des batteries (veille)  
Tension des batteries (alarme)  
Courant en alarme  
Inspection physique des batteries  
Essai concluant

##### BATTERIES :

Batteries / Type :         
Tension des batteries (avec C.A.)  
Courant de supervision  
Courant de recharge des batteries  
Tension des batteries (veille)  
Tension des batteries (alarme)  
Courant en alarme  
Inspection physique des batteries  
Essai concluant

X : Équipement vérifié  
A.G. : Alarme générale

N : Résultat négatif  
C.A. : Courant alternatif

N/A : Non applicable

### RÉSULTATS DES ESSAIS DES PANNEAUX

Nom du projet : AGRIC. & AGRO. CAN. BÂT. # 1-2-3 St. Pomp. Code: F00901

Adresse (ville) : SHERBROOKE (QUÉBEC)

#### (RÉCEPTION)

##### ANNONCIATEUR :    RCC-1

☒ Essai individuel des lampes témoins d'annonceur  
☒ Identification convenable des lampes témoins  
☒ Lampe témoin de défectuosité  
☒ Signal sonore de défectuosité  
☒ Arrêt du signal sonore de défectuosité  
☒ Lampe témoin de mise sous tension  
☒ Essai des lampes  
☐ Supervision des lampes  
☒ Arrêt du signal sonore d'alarme  
☐ Annonceur (fonctions auxiliaires)  
☒ Essai de l'affichage alfa-numérique  
☒ Éclairage de fond  
☒ Essai des boutons & contrôle  
☒ Propreté

##### ANNONCIATEUR :    N/A

☐ Essai individuel des lampes témoins d'annonceur  
☐ Identification convenable des lampes témoins  
☐ Lampe témoin de défectuosité  
☐ Signal sonore de défectuosité  
☐ Arrêt du signal sonore de défectuosité  
☐ Lampe témoin de mise sous tension  
☐ Essai des lampes  
☐ Supervision des lampes  
☐ Arrêt du signal sonore d'alarme  
☐ Annonceur (fonctions auxiliaires)  
☐ Essai de l'affichage alfa-numérique  
☐ Éclairage de fond  
☐ Essai des boutons & contrôle  
☐ Propreté

##### ANNONCIATEUR :    N/A

☐ Essai individuel des lampes témoins d'annonceur  
☐ Identification convenable des lampes témoins  
☐ Lampe témoin de défectuosité  
☐ Signal sonore de défectuosité  
☐ Arrêt du signal sonore de défectuosité  
☐ Lampe témoin de mise sous tension  
☐ Essai des lampes  
☐ Supervision des lampes  
☐ Arrêt du signal sonore d'alarme  
☐ Annonceur (fonctions auxiliaires)  
☐ Essai de l'affichage alfa-numérique  
☐ Éclairage de fond  
☐ Essai des boutons & contrôle  
☐ Propreté

##### ANNONCIATEUR :    N/A

☐ Essai individuel des lampes témoins d'annonceur  
☐ Identification convenable des lampes témoins  
☐ Lampe témoin de défectuosité  
☐ Signal sonore de défectuosité  
☐ Arrêt du signal sonore de défectuosité  
☐ Lampe témoin de mise sous tension  
☐ Essai des lampes  
☐ Supervision des lampes  
☐ Arrêt du signal sonore d'alarme  
☐ Annonceur (fonctions auxiliaires)  
☐ Essai de l'affichage alfa-numérique  
☐ Éclairage de fond  
☐ Essai des boutons & contrôle  
☐ Propreté

##### ANNONCIATEUR :    N/A

☐ Essai individuel des lampes témoins d'annonceur  
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☐ Lampe témoin de défectuosité  
☐ Signal sonore de défectuosité  
☐ Arrêt du signal sonore de défectuosité  
☐ Lampe témoin de mise sous tension  
☐ Essai des lampes  
☐ Supervision des lampes  
☐ Arrêt du signal sonore d'alarme  
☐ Annonceur (fonctions auxiliaires)  
☐ Essai de l'affichage alfa-numérique  
☐ Éclairage de fond  
☐ Essai des boutons & contrôle  
☐ Propreté

##### ANNONCIATEUR :    N/A

☐ Essai individuel des lampes témoins d'annonceur  
☐ Identification convenable des lampes témoins  
☐ Lampe témoin de défectuosité  
☐ Signal sonore de défectuosité  
☐ Arrêt du signal sonore de défectuosité  
☐ Lampe témoin de mise sous tension  
☐ Essai des lampes  
☐ Supervision des lampes  
☐ Arrêt du signal sonore d'alarme  
☐ Annonceur (fonctions auxiliaires)  
☐ Essai de l'affichage alfa-numérique  
☐ Éclairage de fond  
☐ Essai des boutons & contrôle  
☐ Propreté

X : Équipement vérifié

A.G. : Alarme générale

N : Résultat négatif

C.A. : Courant alternatif

N/A : Non applicable

4375 rue Ouimet, Sherbrooke, Qué., J1L 1X5 / Tél. : (819) 569-0171 / Téléc. : (819) 569-8150

### REGISTRE DES ESSAIS

Selon :            ULC-S537-04  
  X   ULC-S536-04

Nom du projet : AGRIC. & AGRO. CAN. BÂT. # 1-2-3 St. Pomp.

Adresse (ville) : SHERBROOKE (QUÉBEC)

Code : F00901

	Zone	Emplacement	Dispositif	I	C	M	N	A	O	S	D	Notes
1												
2		<b>PANNEAU INCENDIE PRINCIPAL</b>										
3												
4	253	CHAMBRE ÉLECTRIQUE A4	MXL (MMB-2)						X			
5												
6	253-006	EVACUATION BÂTIMENT 1	PSEUDO						X			
7	253-007	CONTOURNEMENT FONCTIONS AUX.	PSEUDO						X			
8												
9												
10		<b>ANNONCIATEUR</b>										
11												
12	251	RÉCEPTION	RCC-1						X			
13												
14												
15		<b>CARTE DE COMMUNICATION</b>										
16												
17	100	BÂT. 1 COMMUNICATION (SPHINX)	NIM-1W						X			
18												
19												
20		<b>DÉTECTION</b>										
21												
22	1	<b>DÉTECTION BOUCLE # 1</b>	ALD-2I						X			
23	1-001	R.D.C. PORTE RECEPTIONNISTE	TRI-B6R						X			
24		ENTRÉE = LIBRE	F.D.L.							X		
25												
26	2	<b>DÉTECTION BOUCLE # 2</b>	ALD-2I						X			
27		(LIBRE)										
28												
29		<b>DÉTECTION BOUCLE # 3, 4, 5, 6</b>	XLD-1						X			
30												
31	3	<b>DÉTECTION BOUCLE # 3</b>										
32	3-002	R.D.C.. SORTIE ESC. SUD-O	MSX-1					X				24
33	3-003	R.D.C.. DÉPÔT LIVRAISON 161	DT-X3					X				24
34												
35	3-004	R.D.C. PROD. CHIMIQUE 162 THERM. (PLAFOND)	TRX-1						X			
36		R.D.C. LOCAL 162	CDT-135RX					X				
37												
38	3-005	R.D.C. LIVRAISON 159 THERMIQUE	TRX-1						X			
39		R.D.C. LIVRAISON 159	CDT-135FMP					X				23
40												
41	3-006	R.D.C. LIVRAISON 159	DI-X3					X				
42	3-007	R.D.C. SORTIE LIVRAISON 159	MSX-1					X				
43	3-008	R.D.C. MAGASIN 158	DI-X3					X				
44	3-010	R.D.C. MAGASIN 158	DI-X3					X				
45	3-011	R.D.C. DÉBARCADÈRE 155	DT-X3					X				
46	3-012	R.D.C. LABORATOIRE 153	DP-X3					X				24
47	3-013	RDC ENTREPÔT DÉBARCADÈRE 151	DT-X3					X				
48												
49	3-014	R.D.C. SORTIE PRÈS ATELIER	MSX-1					X				24
50	3-015	R.D.C. ATELIER 147	DT-X3					X				24
51	3-016	R.D.C. ATELIER 147	DT-X3					X				24
52												

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	Zone	Emplacement	Dispositif	I	C	M	N	A	O	S	D	Notes
53	3-020	DÉTECTION DE GAZ VULCAIN	TRI-60						X			
54		CONTRÔLE GAZ VULCAIN A-3 (LOCAL PRÈS PAI)	CONTACT N.O.					X				1
55		(TRI DANS PAI BÂT. 1)										
56												
57		DANS PAI BÂT. 1 LOCAL A-4	TRI-B6M						X			
58	3-021	DÉTECTION MÉTHANE BÂT. 74	CONTACT N.F.					X				1
59		(REÇOIT UN SIGNAL DU RELAIS DU NET-10 SITUÉ DANS										
60		LOCAL A-4)										
61												
62	3-028	RDC ALARME GICLEURS À EAUX 159	TRX-1						X			
63		RDC ALARME GICLEURS À EAUX 159 (N.F.)	DÉBIT					X				
64		RDC ALARME GICLEURS À EAUX 159	F.D.L.							X		
65												
66	3-029	RDC VANNE FERMÉE GICLEURS 159	TRX-1						X			
67		RDC GICLEUR 159	VANNE					X				
68		RDC GICLEUR 159	F.D.L.							X		
69												
70												
71												
72	4	DÉTECTION BOUCLE # 4 (PAI)										
73	4-002	R.D.C. CHAMBRE ÉLECT. A-4	DT-X3					X				24
74	4-005	R.D.C. LABORATOIRE 154	ILP-1					X				24
75												
76	4-006	R.D.C. CAB. CROISSANCE 152	TRI-B6M						X			
77		R.D.C. CAB. CROISSANCE 152	CDT-135F					X				
78		DANS LE DETECTEUR	F.D.L.							X		
79												
80	4-007	R.D.C. CHAUFFERIE A-3 THERMIQUE	TRX-1						X			24
81		R.D.C. CHAUFFERIE A-3	DT-3-160					X				
82		R.D.C. CHAUFFERIE A-3	F.D.L.							X		
83												
84	4-008	R.D.C. CHAUFFERIE A-3 THERMIQUE	TRX-1						X			24
85		R.D.C. CHAUFFERIE A-3	DT-3-160					X				
86		R.D.C. CHAUFFERIE A-3	F.D.L.							X		
87												
88	4-009	R.D.C. CULTURE À TISSUS 144	DP-X3					X				
89	4-010	R.D.C. INCUBATION 145	ILP-1					X				
90	4-011	R.D.C. LAB. GEN. VIANDES 142	DP-X3					X				
91	4-012	R.D.C. VESTIBULE 100 ESC. SUD-E	MSX-1					X				24
92	4-013	R.D.C. MÉC. ASCENSEUR A-4	DT-X3					X				24
93	4-014	R.D.C. DÉPEÇAGE 140	ILP-1					X				
94												
95	4-016/017	R.D.C. PLAFOND PRÈS 157 THERMIQUE	TRX-2D						X			
96	4-016	R.D.C. OLFACOMÉTRIE 157 THERMIQUE	CF-135MP					X				24
97	4-017	R.D.C. DÉPÔT 156 THERMIQUE	CR-135					X				24
98												
99												
100												
101												
102												
103												
104												

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Adresse (ville) : SHERBROOKE (QUÉBEC)

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	Zone	Emplacement	Dispositif	I	C	M	N	A	O	S	D	Notes
105	<b>5</b>	<b>DÉTECTION BOUCLE # 5</b>										
106	<b>5-002</b>	ÉTAGE CONGÉLATEUR B-3	DT-X3					X				24
107	<b>5-003</b>	ÉTAGE LOCAL B-5	DT-X3					X				24
108	<b>5-004</b>	ÉTAGE BUREAU B-7	DP-X3					X				
109	<b>5-005</b>	ÉTAGE BUREAU B-8	ILP-1					X				
110	<b>5-006</b>	ÉTAGE CONGÉLATEUR B-4	DP-X3					X				24
111	<b>5-007</b>	ÉTAGE PUIT D'ESCALIER CENTRE (6200)	DI-X3					X				
112	<b>5-008</b>	ÉTAGE ESCALIER CENTRE (6200)	MSX-1					X				
113	<b>5-009</b>	ÉTAGE DÉPÔT 259	DT-X3					X				
114	<b>5-010</b>	ÉTAGE BUREAU 263	ILI-1C					X				24
115	<b>5-011</b>	ÉTAGE ENTREPOSAGE B-6	DP-X3					X				
116	<b>5-012</b>	ÉTAGE INFORMATIQUE 265	ILI-1C					X				24
117	<b>5-013</b>	ÉTAGE SERVICES 217	DT-X3					X				
118												
119	<b>5-014</b>	ÉTAGE LAVERIE 216 (THERMIQUE)	TRI-B6M						X			
120		ÉTAGE LAVERIE 216	CF-135MP					X				23
121		DANS LE DETECTEUR	F.D.L.							X		
122												
123	<b>5-015</b>	ÉTAGE LABO. MICROBIOLOGIE B-10	DT-X3					X				
124	<b>5-016</b>	ÉTAGE LAB. RADIO-ISO. HAUT 247	DP-X3					X				
125	<b>5-017</b>	ÉTAGE LOCAL P245 GAUCHE	DP-X3					X				
126	<b>5-018</b>	ÉTAGE LABORATOIRE 243	DP-X3					X				24
127	<b>5-019</b>	ÉTAGE LOCAL P245 DROITE	DP-X3					X				
128	<b>5-020</b>	ÉTAGE LABORATOIRE 239	DP-X3					X				24
129												
130	<b>5-021</b>	ÉTAGE LABO. FROID 231	TRX-1						X			
131		ÉTAGE LABO. FROID 231	CDT-135FMP					X				23
132		ÉTAGE LABO. FROID 231	F.D.L.							X		
133												
134	<b>5-022</b>	ÉTAGE TOILETTE B-1	DT-X3					X				24
135	<b>5-023</b>	ÉTAGE ATELIER (266)	DI-X3					X				
136	<b>5-024</b>	ÉTAGE SERVEURS (261)	ILI-1C					X				
137												
138												
139	<b>6</b>	<b>DÉTECTION BOUCLE # 6</b>										
140	<b>6-002</b>	R.D.C. COMMUNICATION A-6	DT-X3					X				24
141	<b>6-003</b>	R.D.C. PHOTOCOPIE 112	DT-X3					X				
142	<b>6-004</b>	R.D.C. BUREAU 113	DT-X3					X				24
143	<b>6-005</b>	R.D.C. LABORATOIRE 119	DP-X3					X				24
144	<b>6-006</b>	R.D.C. BUREAU 107	DI-X3					X				24
145	<b>6-007</b>	R.D.C. VESTIBULE 100 ESC. NORD-O	MSX-1					X				24
146	<b>6-008</b>	R.D.C. HALL/RÉCEPTION/ATTENTE	MSX-1					X				
147	<b>6-009</b>	R.D.C. VOÛTE 121 (VIA 120)	DI-X3					X				
148	<b>6-010</b>	R.D.C. DOSSIERS 120	ILI-1C					X				
149	<b>6-011</b>	R.D.C. LABORATOIRE 122	ILP-1					X				24
150	<b>6-012</b>	R.D.C. LABORATOIRE 123	DP-X3					X				24
151	<b>6-013</b>	R.D.C. LABORATOIRE 127	DT-X3					X				24
152	<b>6-014</b>	R.D.C. LABORATOIRE 126	DP-X3					X				24
153	<b>6-015</b>	R.D.C. LAVAGE-VERRE 125	DP-X3					X				
154	<b>6-016</b>	R.D.C. ENTRETIEN 135	DT-X3					X				
155	<b>6-017</b>	R.D.C. LABORATOIRE 138	DP-X3					X				24
156	<b>6-018</b>	R.D.C. LABORATOIRE 137	DP-X3					X				24

### REGISTRE DES ESSAIS

Selon :            ULC-S537-04  
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Nom du projet : AGRIC. & AGRO. CAN. BÂT. # 1-2-3 St. Pomp.

Adresse (ville) : SHERBROOKE (QUÉBEC)

Code : F00901

	Zone	Emplacement	Dispositif	I	C	M	N	A	O	S	D	Notes
157	6-019	R.D.C. LABORATOIRE 136	DP-X3					X				24
158	6-020	R.D.C. VESTIBULE 100 ESC. NORD-E	MSX-1					X				24
159												
160	6-021	R.D.C. LABORATOIRE 136	TRI-B6M						X			24
161		R.D.C. LABORATOIRE 136	CDT-135R					X				
162		DANS LE DÉTECTEUR	F.D.L.							X		
163												
164		DÉTECTION BOUCLE # 7, 8, 9, 10	XLD-1						X			
165												
166	7	DÉTECTION BOUCLE # 7										
167	7-002	ÉTAGE PUIT D'ESCALIER NORD-O	DI-X3					X				24
168	7-003	ÉTAGE PRÈS ESCALIER NORD-O	MSX-1					X				24
169	7-004	ÉTAGE BIBLIO. 203	ILI-1C					X				24
170	7-005	ÉTAGE ENTREPÔT 205	DI-X3					X				
171	7-006	ÉTAGE BIBLIOTHÈQUE 201	DI-X3					X				
172	7-007	ÉTAGE BIBLIOTHÈQUE 201	ILI-1C					X				
173	7-008	ÉTAGE BIBLIO. ORDI. 201	DI-X3					X				24
174	7-009	ÉTAGE BIBLIO. ORDI. 201	DI-X3					X				24
175	7-010	ÉTAGE ENTRETIEN 254	DT-X3					X				
176	7-011	ÉTAGE CUISINETTE 258	DT-X3					X				
177	7-012	ÉTAGE PRÈS ESCALIER SUD-O	MSX-1					X				24
178	7-013	ÉTAGE PUIT D'ESCALIER SUD-O	DI-X3					X				24
179	7-014	ÉTAGE LABORATOIRE 248	ILP-1					X				
180	7-015	ÉTAGE LABORATOIRE 242	ILP-1					X				
181	7-016	ÉTAGE SERVICES 241	DP-X3					X				
182	7-017	ÉTAGE LABORATOIRE 240	DP-X3					X				
183	7-018	ÉTAGE LABORATOIRE 238	DP-X3					X				24
184	7-019	ÉTAGE PUIT D'ESCALIER SUD-E	DI-X3					X				24
185	7-020	ÉTAGE PRÈS ESCALIER SUD-E	MSX-1					X				24
186												
187												
188	8	DÉTECTION BOUCLE # 8										
189	8-002	APPENTIS CH. MÉCANIQUE 301	MSX-1					X				
190	8-003	APPENTIS CH. MÉCANIQUE 301	DT-X3					X				
191	8-004	APP. VENT. U-1A CH. MÉCANIQUE 301	DI-BX3					X				
192	8-005	APP. VENT. U-RC-IA CH. MÉC. 301 (À l'intérieur machine)	DI-BX3					X				
193	8-006	APPENTIS CH. MÉCANIQUE 301	DT-X3					X				
194	8-007	APPENTIS CH. MÉCANIQUE 301	DT-X3					X				
195	8-008	APPENTIS CH. MÉCANIQUE 301	DT-X3					X				
196	8-009	APPENTIS CH. MÉCANIQUE 301	DT-X3					X				
197	8-010	APPENTIS CH. MÉCANIQUE 301	DT-X3					X				
198	8-011	APPENTIS CH. MÉCANIQUE 301	DT-X3					X				
199	8-012	APPENTIS CH. MÉCANIQUE 301	DT-X3					X				
200	8-013	APPENTIS PUIT D'ASCENSEUR	DI-X3					X				
201	8-014	APPENTIS CH. TÉLÉPHONE 302	DT-X3					X				
202	8-015	VIDE TECHNIQUE 003	MSX-1					X				
203	8-016	VIDE TECHNIQUE 004	MSX-1					X				
204	8-017	CH. DET. DES ACIDES 002	DT-X3					X				
205												
206	8-018	APPENTIS ARRÊT FAN HOTTE LAB 229	TRI-B6R						X			
207		(ENTRÉE = LIBRE)	F.D.L.							X		
208												

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Adresse (ville) : SHERBROOKE (QUÉBEC)

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Zone	Emplacement	Dispositif	I	C	M	N	A	O	S	D	Notes
209											
210	<b>9</b>	<b>DÉTECTION BOUCLE # 9</b>									
211	<b>9-002</b>	ÉTAGE LABORATOIRE 211					X				24
212	<b>9-003</b>	ÉTAGE LABORATOIRE 215					X				24
213	<b>9-004</b>	ÉTAGE LAB. NON-RUMINANTS 218					X				
214	<b>9-005</b>	ÉTAGE PUIT D'ESCALIER NORD-E					X				24
215	<b>9-006</b>	ÉTAGE PRÈS ESCALIER NORD-E					X				24
216	<b>9-007</b>	ÉTAGE BUREAU 224					X				24
217	<b>9-008</b>	ÉTAGE LAB. ETHOLOGIE 227					X				
218	<b>9-009</b>	ÉTAGE LAB. GENET. BOVIN 228					X				
219	<b>9-010</b>	ÉTAGE LABORATOIRE 229					X				
220	<b>9-011</b>	ÉTAGE LABORATOIRE 230					X				
221	<b>9-012</b>	ÉTAGE LABORATOIRE 229-B					X				24
222											
223											
224											
225	<b>10</b>	<b>DÉTECTION BOUCLE # 10</b>									
226	<b>10-002</b>	BÂT. 2 SUBS. DANGEREUSES P-06 (DANS P-01)						X			
227		BÂT. 2 SUBS. DANGEREUSES P-06					X				
228		BÂT. 2 SUBS. DANGEREUSES (ENTRÉE) P-06					X				
229		BÂT. 2 SUBS. DANGEREUSES (SORTIE) P-06					X				
230		BÂT. 2 SUBS. DANGEREUSES (ENTRÉE) P-06							X		
231											
232	<b>10-003</b>	BÂT. 2 SUBS. DANGEREUSES P-05 (DANS P-01)						X			
233		BÂT. 2 SUBS. DANGEREUSES P-05					X				
234		BÂT. 2 SUBS. DANGEREUSES (ENTRÉE) P-05					X				
235		BÂT. 2 SUBS. DANGEREUSES (ENTRÉE) P-05							X		
236											
237	<b>10-004</b>	BÂT. 2 SUBS. DANGEREUSES P-04 (DANS P-01)						X			
238		BÂT. 2 SUBS. DANGEREUSES (DROITE) P-04					X				26
239		BÂT. 2 SUBS. DANGEREUSES (GAUCHE) P-04					X				26
240		BÂT. 2 SUBS. DANGEREUSES (ENTRÉE) P-04					X				
241		BÂT. 2 SUBS. DANGEREUSES (DROITE) P-04							X		26
242											
243	<b>10-005</b>	BÂT. 2 SUBS. DANGEREUSES P-03 (DANS P-01)						X			
244		BÂT. 2 SUBS. DANGEREUSES P-03 (GAZ)					X				
245		BÂT. 2 SUBS. DANGEREUSES (ENTRÉE) P-03					X				
246		BÂT. 2 SUBS. DANGEREUSES (ENTRÉE) P-03							X		
247											
248	<b>10-006</b>	BÂT. 2 SUBS. DANGEREUSES P-01					X				24
249	<b>10-007</b>	BÂT. 2 SUBS. DANGEREUSES P-01					X				
250	<b>10-008</b>	BÂT. 2 SUBS. DANGEREUSES P-02					X				
251	<b>10-009</b>	BÂT. 2 SUBS. DANGEREUSES P-02					X				
252											
253	<b>10-010/011</b>	BÂT. 8 AGRO-CHIMIQUE (SALLE ÉLECTRIQUE)						X			
254	<b>10-010</b>	BÂT. 8 AGRO-CHIMIQUE ALARME (PANNEAU ENTREPÔT)					X				
255	<b>10-011</b>	BÂT. 8 AGRO-CHIMIQUE TROUBLE (PANNEAU ENTREPÔT)					X				
256											
257	<b>10-012/013</b>	BÂT. 15 PAV. SEVIGNY (P.A.I.)						X			
258	<b>10-012</b>	BÂT. 15 PAV. SEVIGNY ALARME (PANNEAU)					X				
259	<b>10-013</b>	BÂT. 15 PAV. SEVIGNY TROUBLE (PANNEAU)					X				
260											

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261												
262	10-014	DANS LE DÉTECTEUR	TRI-B6M						X			
263		BÂTIMENT 3 - GÉNÉRATRICE	DT-200WP					X				
264												
265												
266	21	DÉTECTION BOUCLE # 21	ALD-2I						X			
267												
268	21-001/002	P.A.I. BÂT. 45 BC	TRX-2D						X			
269	21-001	ALARME BÂT. 45 BC	CONTACT N.O.					X				
270	21-002	PANNE BÂT. 45 BC	CONTACT N.O.					X				
271												
272	21-003/004	P.A.I. BÂT. 45 D	TRX-2D						X			
273	21-003	ALARME BÂT. 45 D	CONTACT N.O.					X				
274	21-004	PANNE BÂT. 45 D	CONTACT N.O.					X				
275												
276	21-007/008	DANS BOÎTIER CPA-10B À LA STATION POMPAGE	TRI-B6D						X			
277	21-007	STATION DE POMPAGE (THERMIQUE)	CDT-200F					X				23
278	21-008	STA. POMPAGE (CONTRÔLE POMPE)										
279		MOTEUR EN MARCHÉ	CONTACT N.O.					X				1
280		PANNE DE L'ENGIN	CONTACT N.O.					X				1
281												
282	21-009/010	DANS BOÎTIER CPA-10B À LA STATION POMPAGE	TRI-B6D						X			
283	21-009	STATION DE POMPAGE (VANNES)	OSYSU-2					X				
284		STATION POMPAGE VANNE SECONDAIRE	708					X				
285		STATION POMPAGE VANNE SECONDAIRE	708					X				
286		STATION POMPAGE VANNE SECONDAIRE	708					X				
287		STATION POMPAGE VANNE SECONDAIRE	708					X				
288		STATION POMPAGE VANNE SEC. (ENTRÉE POMPIERS)	708 (N.F.)					X				
289		STATION POMPAGE VANNE	708					X				
290												
291	21-010	BASSE/HAUTE TEMP. STATION POMPAGE (TROUBLE)	T-1000					X				
292												
293	21-011/012	P.A.I COMPLEXE PORCIN BÂT. #7	TRI-B6D						X			
294	21-011	ALARME COMPLEXE PORCIN BÂT. 7	CONTACT N.O.					X				
295	21-012	PANNE COMPLEXE PORCIN BÂT. 7	CONTACT N.O.					X				
296												
297	21-013/014	P.A.I. ABATTOIR BÂT. 10A	TRI-B6D						X			
298	21-013	ALARME ABATTOIR BÂT. 10A	CONTACT N.O.					X				
299	21-014	PANNE ABATTOIR BÂT. 10A	CONTACT N.O.					X				
300												
301	21-015/16	DANS LE PANNEAU BÂT. 74	TRI-DC						X			
302	21-015	ALARME BÂT. 74	CONTACT N.O.					X				
303	21-016	PANNE BÂT. 74	CONTACT N.O.					X				
304												
305												
306		BÂT. 74 SALLE ÉLECTRIQUE (Pour Bât. # 76)	LIM-1						X			
307												
308	21-017/018	BÂT. 76 LOCAL 5200 (PLAFOND)	TRI-DC						X			
309	21-017	ALARME BÂT. 76	CONTACT N.O.					X				
310	21-018	PANNE BÂT. 76	CONTACT N.O.					X				
311												
312												



### REGISTRE DES ESSAIS

Selon :            ULC-S537-04

  X   ULC-S536-04

Nom du projet : AGRIC. & AGRO. CAN. BÂT. # 1-2-3 St. Pomp.

Adresse (ville) : SHERBROOKE (QUÉBEC)

Code : F00901

	Zone	Emplacement	Dispositif	I	C	M	N	A	O	S	D	Notes
313	22	DÉTECTION BOUCLE # 22										
314		(LIBRE)										
315												
316												
317		SIGNALISATION										
318												
319	11	CIRCUIT DE CLOCHES/KLAXONS	CSM-4							X		
320	11-001	CLOCHES SUBS. DANGEREUSES (BÂT. # 2)								X		
321		LOCAL #1	BDC-624C						X			
322		EXTÉRIEUR PRÈS LOCAL 04	BDC-1024C						X			
323		EXTÉRIEUR PRÈS LOCAL 04	F.D.L.							X		
324												
325	11-002	KLAXONS BÂT. ADMINISTRATIF (# 1)								X		
326		VIDE TECHNIQUE	HDC-24C						X			
327		VIDE TECHNIQUE	HDC-24C						X			
328												
329	253-004	(LIBRE)	F.D.L.							X		
330												
331	253-005	KLAXONS BÂT. ADMINISTRATIF	CSM-PAI									
332		CHAUFFERIE LOCAL A2	HDC-24C						X			
333		DÉBARCADÈRE MAGASIN	HDC-24C						X			
334		ÉTAGE CENTRE PASSAGE B	HDC-24C						X			
335		ÉTAGE PASSAGE	HDC-24C						X			
336		ÉTAGE PASSAGE	HDC-24C						X			
337		ÉTAGE PASSAGE	HDC-24C						X			
338		ÉTAGE PASSAGE	HDC-24C						X			
339		ÉTAGE PASSAGE PRÈS LAB. 229	HDC-24C						X			
340		LABORATOIRE 142	HDC-24C						X			
341		LABORATOIRE LOCAL B-10	HDC-24C						X			
342		LOCAL 247	HDC-24C						X			
343		R.D.C. PASSAGE (PRÈS DE 126)	HDC-24C						X			
344		R.D.C. PASSAGE	HDC-24C						X			
345		R.D.C. PASSAGE	HDC-24C						X			
346		R.D.C. PASSAGE PRÈS MAGASIN	HDC-24C						X			
347		SALLE MÉCANIQUE P-301	BZ-54						X			
348		SALLE MÉCANIQUE P-301 NORD	HDC-24C						X			
349		SOUS-SOL CENTRE PASSAGE B	HDC-24C						X			
350		ADMINISTRATION	HDC-24C						X			
351		F.D.L.										
352												
353												
354												
355												
356												
357												
358												
359												
360												
361												
362												
363												
364												

### REGISTRE DES ESSAIS

Selon :            ULC-S537-04

  X   ULC-S536-04

Nom du projet : AGRIC. & AGRO. CAN. BÂT. # 1-2-3 St. Pomp.

Adresse (ville) : SHERBROOKE (QUÉBEC)

Code : F00901

Zone	Emplacement	Dispositif	I	C	M	N	A	O	S	D	Notes
365											
366	<b>FONCTIONS AUXILIAIRES</b>										
367											
368	<b>1-001</b> DEVERROUILLE LA GACHE PORTE PRES	B6R						X			
369	RÉCEPTIONNISTE										
370											
371	APP. VENT. U-1A CH. MÉCANIQUE 301										
372	<b>8-004</b> RELAIS VENTILATION U1-A	DBX						X			
373	APP. VENT. U-RC-1A CH. MÉC. 301										
374	<b>8-005</b> RELAIS VENTILATION U-RC-1A	DBX						X			
375	APPENTIS MÉC. REL. ARRÊT FAN										
376	<b>8-018</b> ARRÊT FAN HOTTE LAB. 229	B6R						X			
377											
378											
379	<b>13</b> <b>DISPOSITIFS AUX.</b>	CRM-4						X			
380	<b>13-001</b> TRANS. BÂT. 2 (D'ALARME À LA CENTRALE)	CONTACT N.F.						X			
381	<b>13-002</b> TRANS. BÂT. 8 (D'ALARME À LA CENTRALE)	CONTACT N.F.						X			
382	<b>13-003</b> TRANS. BÂT. 15 (D'ALARME À LA CENTRALE)	CONTACT N.F.						X			
383	<b>13-004</b> ACTIVATION SYST. INTERVOX (LORS D'ALARME BÂT. # 1)	CONTACT N.O.						X			29
384											
385											
386	<b>14</b> <b>DISPOSITIFS AUX. (PAI)</b>	CRM-4						X			
387	<b>14-001</b> DÉVER. PORTES (PORTE MAGASIN 159, ENTRÉE PRINC.)	CONTACT N.F.						X			
388	<b>14-002</b> TRANS. ALARME BÂT. 45 BC	CONTACT N.F.						X			
389	<b>14-003</b> TRANS. ALARME BÂT. 45 D	CONTACT N.F.						X			
390	<b>14-004</b> (LIBRE)										
391											
392											
393	<b>15</b> <b>DISPOSITIFS AUX. (PAI)</b>	CRM-4						X			
394	<b>15-001</b> TRANSMISSION ALARME BÂT. 7	CONTACT N.F.						X			
395	<b>15-002</b> TRANSMISSION ALARME BÂT. 10A	CONTACT N.F.						X			
396	<b>15-003</b> TRANS. ALRM FEU STATION POMPAGE	CONTACT N.F.						X			
397	<b>15-004</b> TRANS. PANNES STATION POMPAGE	CONTACT N.F.						X			
398											
399	<b>16</b> <b>DISPOSITIFS AUX. (PAI)</b>	CRM-4						X			
400	<b>16-001</b> TRANSMISSION ALARME BÂT. 74	CONTACT N.F.						X			
401	<b>16-002</b> TRANSMISSION ALARME BÂT. 76 (Zone 45)	CONTACT N.F.						X			
402	<b>16-003</b> (LIBRE)										
403	<b>16-004</b> (LIBRE)										
404											
405	<b>253-001</b> RELAIS ALARME P.A.I.	(LIBRE)									
406	<b>253-002</b> RELAIS PANNE (DVACS)	CONTACT N.F.						X			
407	<b>253-003</b> TRANS. AL. PAI BÂTIMENT 1 (DVACS)	CONTACT N.F.						X			
408											
409											

Légende :

<b>C</b>	Installation conforme (S537)	<b>A</b>	Alarme confirmée (S536/S537)
<b>M</b>	Manquement ou réparation nécessaire	<b>O</b>	Opération confirmée (S536/S537)
<b>N</b>	Niveau de lecture	<b>S</b>	Supervision confirmée (S537)
<b>I</b>	Module Isolateur		
<b>D</b>	Date(s) d'inspection : A _____ Tech. _____ B _____ Tech. _____ C _____ Tech. _____		
	D _____ Tech. _____ E _____ Tech. _____ F _____ Tech. _____		

4375 rue Ouimet, Sherbrooke, Qué., J1L 1X5 / Tél. : (819) 569-0171 / Téléc. : (819) 569-8150

### REMARQUES (R), ANOMALIES (A), RECOMMANDATIONS (RC)

Nom du projet : AGRIC. & AGRO. CAN. BÂT. # 1-2-3 St. Pomp.

Adresse (ville) : SHERBROOKE (QUÉBEC)

Code : F00901

Notes	Observations	R	A	RC	Date
1					
2	<b>1</b> DISPOSITIF VÉRIFIÉ PAR COURT-CIRCUIT SEULEMENT. L'ÉQUIPEMENT QUI	X			15-06-10
3	ACTIVE LE CONTACT D'ALARME DOIT ÊTRE VÉRIFIÉ PAR UN AUTRE				et
4	ORGANISME. (M.H.)				07-05-14
5					
6	<b>5</b> LES SIGNAUX D'ALARME NE SONT PAS AUDIBLES DANS LES BUREAUX	X			15-06-10
7	DE L'ADMINISTRATION.				
8	DES DISPOSITIFS DE SIGNALISATION DOIVENT ÊTRE AJOUTÉS. (M.H.)				
9					
10	<b>22</b> UNE STATION MANUELLE EST REQUISE DANS LA SORTIE DE	X			26-09-11
11	SECOURS PRÈS DU LOCAL 138. (N.G.)				
12					
13	<b>23</b> DÉTECTEUR THERMIQUE NON RÉARMABLE: VÉRIFIÉ ÉLECTRIQUEMENT			X	26-09-11
14	SEULEMENT.				et 07-05-14
15					
16	<b>24</b> MESSAGES À CORRIGER DANS CSGM + SPHINX (N.G.)	X			07-05-14
17					
18	<b>26</b> DISPOSITIF TRÈS CORRODÉ PAR L'ACIDE, MAIS FONCTIONNEL.				26-09-11
19	IL EST RECOMMANDÉ DE LE REMPLACER. (N.G.)				
20	<b>OK CORRIGÉ DANS LE CADRE DU PROJET 14F0090101. (M.H.)</b>				09-07-14
21					
22	<b>29</b> UN SYSTÈME D'INTERCOM NE PEUT REMPLACER LA SIGNALISATION	X			26-09-11
23	CONVENTIONNELLE D'UN SYSTÈME D'ALARME. (JLD)				
24					
25					
26					
27					
28					
29					
30					
31					
32					
33					
34					
35					
36					
37					
38					
39	Les locaux non protégés par le système d'alarme ont été visités (aux 3 ans)				

#### LÉGENDE :

**(R) :** REMARQUES - cela fait référence à un manquement qui doit être corrigé pour répondre à la norme d'installation des réseaux avertisseurs d'incendie CAN/ULC-S524 et/ou CNB.

**(A) :** ANOMALIES - cela fait référence à un manquement qui doit être corrigé pour répondre à la norme d'installation des réseaux avertisseurs d'incendie CAN/ULC-S524 et/ou CNB et qui met en cause l'intégrité d'opération du réseau avertisseur d'incendie.

**(RC) :** RECOMMANDATIONS - pour rendre plus efficace et/ou sécuritaire l'installation du réseau avertisseur d'incendie.



## **APPENDIX NO. 2 – GENERAL SITE PLAN**



# Plan général de la station 07.2011



