

---

**Part 1            General**

**1.1                SECTION INCLUDES**

- .1 Documents and certain applicable terminology.
- .2 Associated requirements.
- .3 Work expectations.
- .4 Work by other parties.
- .5 Premises usage.

**1.2                RELATED SECTIONS**

- .1 Section 01 78 10 - Closeout Submittals.
- .2 This section describes project specific requirements applicable to all Sections within project Divisions 21 to 26.

**1.3                WORDS AND TERMS**

- .1 Additional words and terms are cited in General Conditions, Section 01 19 00, and described in Supplementary Conditions.

**1.4                COMPLEMENTARY DOCUMENTS**

- .1 Drawings, specifications, and schedules are complementary to each other and what is called for by one will be binding as if called for by all. Should any discrepancy appear between documents which leave doubt as to the intent or meaning, abide by the "Precedence of Documents" article below or obtain direction from the Contract Administrator.
- .2 Drawings indicate general location and route of conduit and wire/conductors. Install conduit or wiring/conductors and plumbing piping not shown or indicated by note, by graphic, or diagrammatically in schematic or riser diagrams to provide an operational assembly or system.
- .3 Install components to physically conserve headroom, to minimize furring spaces, to accommodate installed Work, or other obstructions.
- .4 Locate devices with primary regard for convenience of operation and usage.
- .5 Examine all discipline drawings, specifications, and schedules and related Work to ensure that Work can be satisfactorily executed. Conflicts or additional Work beyond Work described, to be brought to the attention of the Contract Administrator.

---

**1.5 DESCRIPTION OF THE WORK**

- .1 Work of this Contract comprises renovation of services, located at 25 Poseidon Bay; and identified as Pan Am Pool.
- .2 Division of the Work among subcontractors, suppliers or vendors is solely the Contractor's responsibility. Neither the City nor Contract Administrator assumes any responsibility to act as an arbiter to establish subcontract terms or disagreements between sectors or disciplines of the Work.

**1.6 CONTRACT METHOD**

- .1 Construct Work under the contract requirements in the applicable General Conditions sections.
- .2 Relations and responsibilities are between the Contractor and the City.
- .3 Provide the required bonds to ensure such specified assurances to the City.
- .4 Assigned Subcontractors are required to provide requested bonds covering faithful performance of subcontracted work, to the City plus payment of any related obligations.
- .5 Assume responsibility for assigned contracts or Subcontracts forming part of the Work.
- .6 Contract Documents were prepared by the Contract Administrator for the City. Any use which a third party makes of the Contract Documents, or any reliance on or decisions to be made based on them, are the responsibility of such third parties. The Contract Administrator and the City accepts no responsibility for any damages suffered by any third party as a result of decisions made or actions based on the Contract Documents.
- .7 For purposes of reference in these Contract Documents, the term "Contractor" shall mean the primary party or parties in contract with the City to manage and construct the Work.

**1.7 DOCUMENTS PROVIDED**

- .1 The City to supply the Contractors with two (2) sets of Contract Documents for construction purposes, which includes a set for record "As-Built" purposes.
- .2 Contractors may obtain additional sets of Contract Documents at the cost of printing, handling and shipping.
- .3 An electronic set of documents will be provided near the end of the Project for purposes of transferring changed information recorded on as-built documents, to the electronic "Record Documents".

**1.8 WORK BY OTHERS**

- .1 Work of Project executed prior to start of Work of this Contract, and which is specifically excluded from this Contract:
  - .1 Asbestos Abatement

---

**1.9 CONTRACTOR'S USE OF PREMISES**

- .1 Limit use of Site and premises to allow:
  - .1 The City occupancy.
  - .2 Work by the City.
- .2 Utility Outages and Shutdown: Must be coordinated with the City.

**1.10 THE CITY OCCUPANCY**

- .1 The City will partially occupy existing premises during entire construction period for execution of maintenance operations.
- .2 Cooperate with the City in scheduling operations to minimize conflict, utility usage, and to facilitate such the City usage.
- .3 Maintain fire and life safety systems and the City access to exits during all stages of the Work.

**END OF SECTION**

**Part 1            General**

**1.1                SECTION INCLUDES**

- .1      Connecting to existing services.
- .2      Special scheduling requirements.

**1.2                RELATED SECTIONS**

- .1      Section 01 53 00 - Temporary Construction.
- .2      Section 01 33 00 - Submittal Procedures.
- .3      This section describes requirements applicable to all Sections within Divisions 21 to 26.

**1.3                EXISTING SERVICES**

- .1      Notify the City and utility companies of intended interruption of services and obtain required permission.
- .2      Where Work involves breaking into or connecting to existing services, give forty-eight (48) hours of notice for necessary interruption of mechanical or electrical service throughout course of work.
  - .1      Keep duration of interruptions minimum.
  - .2      Perform interruptions after normal working hours of occupants, preferably on weekends.
- .3      Provide for personnel traffic.

**END OF SECTION**

**Part 1            General**

**1.1                SECTION INCLUDES**

- .1    Words and terms.
- .2    Complementary documents.
- .3    Precedence of Documents.
- .4    Specification grammar.

**1.2                RELATED DOCUMENTS**

- .1    Section 01 10 00 – Summary of Work.
- .2    This section describes requirements applicable to all sections within Divisions 21 to 26.

**1.3                COMPLEMENTARY DOCUMENTS**

- .1    Generally, drawings indicate graphically, the dimensions and location of components and equipment. Specifications indicate specific components, assemblies, and identify quality.
- .2    Drawings, specifications, diagrams and schedules are complementary, each to the other, and what is required by one, to be binding as if required by all.
- .3    Should any conflict or discrepancy appear between documents, which leaves doubt as to the intent or meaning, apply the Precedence of Documents article below or obtain guidance or direction from Contract Administrator.
- .4    Examine all discipline drawings, specifications, schedules, diagrams and related Work to ensure that Work can be satisfactorily executed.
- .5    All specification sections of the Project Manual and Drawings are affected by requirements of Division 01 sections.

**1.4                PRECEDENCE OF DOCUMENTS**

- .1    In the event of conflict within and between the Contract Documents, the order of priority within specifications and drawings for this project are - from highest to lowest:
  - .1    the Agreement and Definitions between the City and the Contractor.
  - .2    the Defined Terms.
  - .3    Supplementary Conditions.
  - .4    the General Conditions,
  - .5    Sections of Division 01 of the specifications,
  - .6    Sections of Divisions 02 through 49 of the specifications,
  - .7    Schedules and Keynotes:
    - .1    Material and finishing schedules within the specifications, then
    - .2    Material and finishing schedules on drawings, then
    - .3    Keynotes and definitions thereto, then
  - .8    Diagrams,
  - .9    Drawings:

- .1 Drawings of larger scale shall govern over those of smaller scale of the same date, then
- .2 Dimensions shown on drawings shall govern over dimensions scaled from drawings, then
- .3 Location of utility outlets indicated on architectural detail drawings takes precedence over positions or mounting heights located on mechanical or electrical drawings.
- .10 Later dated documents shall govern over earlier documents of the same type.
- .2 In the event of conflict between documents, the decision of the Contract Administrator shall be final.

## **1.5 SPECIFICATION GRAMMAR**

- .1 Specifications and terms used are written in the imperative (command) mode, in an abbreviated form, terms which are commonly used in the Canadian construction industry.
- .2 Imperative language of these technical specification sections is always directed to the City and Contractor identified as a primary constructor, and as executor of the Contract, unless specifically noted otherwise.
  - .1 This form of imperative (command) mode statement requires the primary constructor to perform such action or Work.
  - .2 Perform all requirements of the Contract Documents whether stated imperatively or otherwise. Division of the Work among subcontractors, suppliers, or others is solely the prime constructor's responsibility. The Contract Administrator(s) and specification authors assume no responsibility to function or act as an arbiter to establish subcontract scope or limits between sections or divisions of Work.

**END OF SECTION**

**Part 1            General**

**1.1                SECTION INCLUDES**

- .1      Shop drawings and product data.
- .2      Certificates and transcripts.

**1.2                RELATED SECTIONS**

- .1      Section 01 78 10 - Closeout Submittals.
- .2      This section describes requirements applicable to all Sections within Divisions 21 to 26.

**1.3                ADMINISTRATIVE**

- .1      Submit to Contract Administrator submittals listed for review. Submit with reasonable promptness and in orderly sequence so as to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for an extension of Contract Time and no claim for extension by reason of such default will be allowed.
- .2      Work affected by submittal shall not proceed until review is complete.
- .3      Present Shop Drawings, product data, samples and mock-ups in SI Metric or Imperial inch-pound units.
- .4      Where items or information is not manufactured or produced in SI Metric units, converted values within the metric measurement tolerances are acceptable.
- .5      Review submittals prior to submission to Contract Administrator. 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.
- .6      Submittals not stamped, signed, dated, identified as to specific project, and attesting to their being reviewed will be returned without being examined and shall be considered rejected.
- .7      Notify Contract Administrator, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
- .8      Verify field measurements and affected adjacent Work are coordinated.
- .9      Contractor's responsibility for errors and omissions in submission is not relieved by Contract Administrator's review of submittals.
- .10     Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Contract Administrator review.
- .11     Keep one (1) reviewed copy of each submission on site.

---

**1.4 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 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 coordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.
- .3 Allow ten (10) working days for Contract Administrator's review of each submission.
- .4 Adjustments made on Shop Drawings by Contract Administrator are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Contract Administrator prior to proceeding with Work.
- .5 Make changes in Shop Drawings as Contract Administrator may require, consistent with Contract Documents. When resubmitting, notify Contract Administrator in writing of any revisions other than those requested.
- .6 Accompany submissions with transmittal letter, 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.
- .7 Submissions shall 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 other parts of the Work.
- .8 After Contract Administrator's review, distribute copies.
- .1 Submit one (1) electronic copy of Shop Drawings for each requirement requested in specification Sections and as Contract Administrator may reasonably request.
- .2 Submit one (1) electronic copy of product data sheets or brochures for requirements requested in specification sections and as requested by Contract Administrator where Shop Drawings will not be prepared due to standardized manufacture of product.
- .3 Delete information not applicable to project.
- .4 Supplement standard information to provide details applicable to project.
- .5 If upon review by Contract Administrator, no errors or omissions are discovered or if only minor corrections are made, copies will be returned and fabrication and installation of Work may proceed. If Shop Drawings are rejected, noted copy will be returned and re-submission of corrected Shop Drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.

**1.5 CERTIFICATES AND TRANSCRIPTS**

- .1 Immediately after award of Contract, submit Workers' Compensation Board status.
- .2 Submit transcription of insurance immediately after award of Contract.

**END OF SECTION**

**Part 1 General**

**1.1 SECTION INCLUDES**

- .1 Safety requirements and compliance.

**1.2 RELATED SECTIONS**

- .1 Section 01 33 00 - Submittal Procedures.
- .2 This section describes requirements applicable to all Sections within Divisions 21 to 26.

**1.3 REFERENCES**

- .1 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations
- .2 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
  - .1 Material Safety Data Sheets (MSDS).
- .3 Province of Manitoba Occupational Health and Safety Act, Regulation and Code, current enacted version at the place of Work.

**1.4 SAFETY PLAN**

- .1 Develop written site-specific Health and Safety Plan based on hazard assessment prior to commencing any Site Work and continue to implement, maintain, and enforce plan until final demobilization from Site. Health and Safety Plan must address project specifications.
- .2 Contract Administrator may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns.
- .3 The "Prime Contractor" according applicable local jurisdiction, is responsible for health and safety of persons on within area of work of the 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.
- .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.
- .5 Should any unforeseen or peculiar safety-related factor, hazard, or condition become evident during performance of Work, and follow procedures in place for Employee's Right to Refuse Work in accordance with Acts and Regulations of Province having jurisdiction. Advise Contract Administrator verbally of such condition and follow immediately thereafter such notice-in-writing.

**1.5 SUBMITTALS**

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

- .2 Submit site-specific Health and Safety Plan: Within seven (7) 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.
- .3 Submit electronic PDF copies of Contractor's authorized representative's work site health and safety inspection reports to the City and the Contract Administrator.
- .4 Submit copies of reports or directions issued by Federal, Provincial and Territorial health and safety inspectors.
- .5 Submit copies of incident and accident reports.
- .6 Submit Material Safety Data Sheets (MSDS) to the City.
- .7 the City and Contract Administrator will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor within 7 days after receipt of plan. Revise plan as appropriate and resubmit plan to the City and Contract Administrator within 7 days after receipt of comments from Contract Administrator.
- .8 the City and Contract Administrator's review of Contractor's final Health and Safety plan should not be construed as tacit approval and does not reduce or alter the Contractor's overall responsibility for construction Health and Safety.
- .9 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 the City and Contract Administrator.
- .10 On-site Contingency and Emergency Response Plan: Address standard operating procedures to be implemented during emergency situations.
- .11 File Notice of Project with Provincial authorities prior to commencement of Work.

## **1.6 SAFETY ACTIVITIES**

- .1 Perform site specific safety hazard assessment related to project.
- .2 Perform Work in accordance with Section 01 41 00 - Regulatory Requirements and this section.

## **1.7 HEALTH AND SAFETY COORDINATOR**

- .1 Employ and assign to Work, competent and authorized representative as Health and Safety Coordinator. Health and Safety Coordinator must:
  - .1 Have site-related working experience specific to activities associated with asbestos abatement.
  - .2 Have working knowledge of occupational safety and health regulations.

- .3 Be responsible for completing Contractor's Health and Safety Training Sessions and ensuring that personnel not successfully completing required training are not permitted to enter Site to perform Work.
- .4 Be responsible for implementing, enforcing daily and monitoring site-specific Contractor's Health and Safety Plan.
- .5 Be on site during execution of Work.

**1.8 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 Contract Administrator.

**1.9 CORRECTION OF NON-COMPLIANCE**

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

**1.10 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.

**1.11 FIRE PROTECTION**

- .1 Provide and maintain temporary fire protection equipment during performance of Work required by governing codes, regulations and bylaws.
- .2 Burning rubbish and construction waste materials is not permitted on site.
- .3 Maintain placed or installed firestopping to protect the portions of the Work during construction.

**END OF SECTION**

**Part 1            General**

**1.1                SECTION INCLUDES**

- .1        Laws, notices, permits and fees.
- .2        Discovery of hazardous materials.

**1.2                RELATED SECTIONS**

- .1        This section describes requirements applicable to all Sections within Divisions 21 to 26.

**1.3                LAWS, NOTICES, PERMITS AND FEES**

- .1        The laws of the Place of the Work shall govern the Work.
- .2        The City shall obtain and pay for the building permit, permanent easements and rights of servitude. The Contractor shall be responsible for permits, licenses or certificates necessary for the performance of the Work which were in force at the date of executing the Agreement.
- .3        Give the required notices and comply with the laws, ordinances, rules, regulations or codes which are or become in force during the performance of the Work and which relate to the Work, to the preservation of the public health and to construction safety.
- .4        If the Contractor knowingly performs or allows work to be performed that is contrary to any laws, ordinances, rules, regulations or codes, the Contractor is responsible for and shall correct the violations thereof; and shall bear the costs, expenses and damages attributable to the failure to comply with the provisions of such laws, ordinances, rules, regulations or codes. Determine detailed requirements of authorities having jurisdiction.
- .6        Pay construction damage deposits levied by municipality in connection with the issuance of a building permit.

**1.4                HAZARDOUS MATERIAL DISCOVERY**

- .1        Asbestos: If material resembling asbestos is encountered in course of demolition work, immediately stop work and notify the City and Contract Administrator.

**1.5                PERSONNEL SMOKING**

- .1        Comply with regulatory and the City imposed smoking restrictions during execution of the Work within or out-of-doors to the premises.

**END OF SECTION**

---

**Part 1            General**

**1.1                SECTION INCLUDES**

- .1            Inspection and testing, administrative and enforcement requirements.
- .2            Written and electronic submitted reports.
- .3            Equipment and system adjustments and balance.

**1.2                RELATED SECTIONS**

- .1            This section describes requirements applicable to all Sections within Divisions 21 to 26.

**1.3                INSPECTION BY AUTHORITY**

- .1            Allow Authorities Having Jurisdiction access to Work. If part of the Work is in preparation at locations other than the Place of Work, allow access to such Work to view progress.
- .2            Give timely notice requesting inspection whenever portions of the Work are designated for special tests, inspections or approvals, either when described in the Contract Documents or when required by law in the Place of the Work.
- .3            If the 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.

**1.4                REVIEW BY CONTRACT ADMINISTRATOR**

- .1            Contract Administrator may order any part of the Work to be reviewed or inspected if the Work is suspected to be not in accordance with Contract Documents.
- .2            If, upon review such work is found not in accordance with Contract Documents, correct such Work and pay cost of additional review and correction.
- .3            If such Work is found in accordance with Contract Documents, the City will pay cost of review and replacement.

**1.5                ACCESS TO WORK**

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

**1.6                PROCEDURES**

- .1            Notify appropriate agency and Contract Administrator in advance of requirement for tests, in order that attendance arrangements can be made.

---

**1.7 REJECTED WORK**

- .1 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 the Contract Administrators failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents.
- .2 Make good other Contractor's work damaged by such removals or replacements promptly.
- .3 If in opinion of the Contract Administrator it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, the City may deduct from the Contract Price, the difference in value between Work performed and that called for by the Contract Documents, the amount of which shall be determined by Contract Administrator.

**1.8 REPORTS**

- .1 Submit four (4) paper copies and one (1) electronic copy of signed inspection and test reports to Contract Administrator.
- .2 Provide copies to subcontractor of work being inspected or tested and/or manufacturer or fabricator of material being inspected or tested.
- .3 Copies of inspection and test reports shall be included in the O&M Manual submission. Refer to Section 01 33 00 Submittal Procedures and Section 01 78 10 Closeout Submittals.

**1.9 EQUIPMENT AND SYSTEMS**

- .1 Submit adjustment and balancing reports for mechanical, electrical and building equipment systems.

**END OF SECTION**

**Part 1            General**

**1.1                SECTION INCLUDES**

- .1      Temporary utilities.
- .2      Salvaging products for reuse.

**1.2                RELATED SECTIONS**

- .1      Section 01 45 00 – Quality Control.
- .2      Section 01 52 00 – Construction Facilities
- .3      Section 01 53 00 – Temporary Construction.

**1.3                INSTALLATION AND REMOVAL**

- .1      Provide temporary utilities controls in order to execute work expeditiously.
- .2      Salvage and assist in recycling products for potential reuse.
- .3      Remove from Site all such work after use.
- .4      This section describes requirements applicable to all Sections within Divisions 21 to 26.

**1.4                WATER SUPPLY**

- .1      The City will provide continuous supply of potable water for construction use.
- .2      The City will pay for utility charges at prevailing rates.

**1.5                TEMPORARY HEATING AND VENTILATION**

- .1      Provide temporary ventilation in enclosed areas as required to:
  - .1      Facilitate progress of Work.
  - .2      Protect Work and products against dampness and cold.
  - .3      Prevent moisture condensation on surfaces.
  - .4      Provide ambient temperatures and humidity levels for storage, installation and curing of materials.
  - .5      Provide adequate ventilation to meet health regulations for safe working environment.
- .2      Ventilating:
  - .1      Prevent accumulations of dust, fumes, mists, vapours or gases in areas occupied during construction.
  - .2      Provide local exhaust ventilation to prevent harmful accumulation of hazardous substances into atmosphere of occupied areas.

- .3 Dispose of exhaust materials in manner that will not result in harmful exposure to persons.
- .4 Ventilate storage spaces containing hazardous or volatile materials.
- .5 Ventilate temporary sanitary facilities.
- .6 Continue operation of ventilation and exhaust system for time after cessation of work process to assure removal of harmful contaminants.
- .3 Permanent heating system of building may be used when available. Be responsible for damage to heating system if use is permitted.
- .4 Ensure date of Substantial Performance of the Work and Warranties for heating system do not commence until entire system is in as near original condition as possible and is certified by Contract Administrator.
- .5 Maintain strict supervision of operation of temporary ventilating equipment to:
  - .1 Conform with applicable codes and standards.
  - .2 Enforce safe practices.
  - .3 Prevent abuse of services.
  - .4 Prevent damage to finishes.

**1.6 TEMPORARY POWER AND LIGHT**

- .1 The City to provide and pay for temporary power during construction for temporary lighting and operating of power tools.
- .2 Provide and pay for temporary power for electric cranes and other equipment requiring temporary power in excess of above noted requirements.

**END OF SECTION**

---

**Part 1            General**

**1.1                SECTION INCLUDES**

- .1      Construction aids.
- .2      Office
- .3      Parking.
- .4      Services.

**1.2                RELATED SECTIONS**

- .1      Section 01 51 00 - Temporary Utilities.
- .2      This section describes requirements applicable to all Sections within Divisions 21 to 26.

**1.3                REFERENCES**

- .1      Canadian Standards Association (CSA International)
  - .1      CSAA23.1/A23.204, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
  - .2      CSA0121[M1978(R2003), Douglas Fir Plywood.
  - .3      CAN/CSA-S269.2-M1987(R2003), Access Scaffolding for Construction Purposes.
  - .4      Environment.CAN/CSA-Z321-96 (R2006) - Signs and Symbols for the Workplace.

**1.4                SCAFFOLDING**

- .1      Provide and maintain scaffolding, ramps, ladders, swing staging, and platforms as required.

**1.5                HOISTING**

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

**1.6                ELEVATORS/LIFTS**

- .1      Designated existing elevators/lifts may be used by construction personnel and transporting of materials. Co-ordinate use with the City.
- .2      Provide protective coverings for finish surfaces of cars and entrances.

---

**1.7 USE OF THE WORK**

- .1 Confine work and operations of employees by Contract Documents. Do not unreasonably encumber premises with Products.
- .2 Do not load or permit to load any part of Work with a weight or force that will endanger the Work.

**1.8 CONSTRUCTION PARKING**

- .1 Parking will be permitted on Site provided it does not disrupt performance of Work or continuing operation of the facility.

**1.9 OFFICES**

- .1 Site Office to be designate by the City where available.
- .2 Provide a clearly marked and fully stocked first-aid case in a readily available location.
- .3 Subcontractors may provide their own offices as necessary. Direct location of these offices.

**1.10 EQUIPMENT, TOOL AND MATERIALS STORAGE**

- .1 Provide and maintain, in a 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 a manner to cause least interference with work activities.

**1.11 SANITARY FACILITIES**

- .1 Provide sanitary facilities for work force in accordance with governing regulations and ordinances.
- .2 Post notices and take such precautions as required by local health authorities.
- .3 Specific existing permanent facilities may be used on approval of the City.
- .4 Keep sanitary facilities clean and fully stocked with the necessary supplies at all times.

**1.12 FIRE PROTECTION SYSTEMS**

- .1 During shut down of the fire protection system, provide the appropriate fire watch and coordinate shut down with monitoring agency.
- .2 Down time of the fire protection system should be coordinated with the City.

**END OF SECTION**

**Part 1            General**

**1.1                SECTION INCLUDES**

- .1        Guardrails and barriers.
- .2        Protection of applied finishes and surrounding Work.

**1.2                RELATED SECTIONS**

- .1        Section 01 51 00 - Temporary Utilities.
- .2        This section describes requirements applicable to all Sections within Divisions 21 to 26.

**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                PROTECTION OF APPLIED FINISHES**

- .1        Provide protection for finished and partially finished surfaces and equipment during performance of Work.
- .2        Provide necessary screens, covers, and hoardings.
- .3        Confirm with Contract Administrator locations and installation schedule three (3) days prior to installation.
- .4        Be responsible for damage incurred due to lack of or improper protection.

**1.5                PROTECTION OF SURROUNDING WORK**

- .1        Provide protection for finished and partially finished Work from damage.
- .2        Provide necessary cover and protection.
- .3        Be responsible for damage incurred due to lack of or improper or inappropriate protection.

**END OF SECTION**

---

**Part 1            General**

**1.1                SECTION INCLUDES**

- .1        Submittal requirements associated with connecting to new and existing facilities.
- .2        Execution requirements for all Work.

**1.2                RELATED SECTIONS**

- .1        This section describes requirements applicable to all Sections within Divisions 21 to 26.

**1.3                SUBMITTALS**

- .1        Submit written request in advance of cutting or alteration which affects:
  - .1        Structural integrity of any element of Project.
  - .2        Integrity of weather-exposed or moisture-resistant elements.
  - .3        Efficiency, maintenance, or safety of any operational element.
  - .4        Visual qualities of sight-exposed elements.
  - .5        Work of the City or separate contractor.
- .2        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        Effect on Work of the City or separate contractor.
  - .6        Written permission of affected separate contractor.
  - .7        Date and time work will be executed.

**1.4                TOLERANCES**

- .1        Monitor fabrication and installation tolerance control of Products to produce acceptable Work.
- .2        Do not permit tolerances to accumulate beyond effective or practical limits.
- .3        Comply with manufacturers' tolerances. In case of conflict between manufacturers' tolerances and Contract Documents, request clarification from Contract Administrator before proceeding.
- .4        Adjust Products to appropriate dimensions; position and confirm tolerance acceptability, before permanently securing Products in place.

**1.5                EXECUTION**

- .1        Fit several parts together, to integrate with other Work.

- 
- .2 Uncover Work to install ill-timed Work.
  - .3 Remove and replace defective or non-conforming Work.
  - .4 Remove samples of installed Work for testing, if not designated in the respective Section as remaining as part of the Work.
  - .5 Execute Work by methods to avoid damage to other Work, and which will provide proper surfaces to receive patching and finishing.
  - .6 Cut rigid materials using masonry saw or core drill. Pneumatic or impact tools not allowed on masonry or concrete work without prior approval.
  - .7 Restore work with new products in accordance with requirements of Contract Documents.
  - .8 Re-finish surfaces to match adjacent finishes: For continuous surfaces re-finish to nearest intersection; for an assembly, re-finish entire unit.

**END OF SECTION**

**Part 1            General**

**1.1                SECTION INCLUDES**

- .1      Progressive cleaning.
- .2      Cleaning prior to acceptance.

**1.2                RELATED SECTIONS**

- .1      This section describes requirements applicable to all Sections within Divisions 21 to 26.

**Part 2            Products**

**2.1                CLEANING MATERIALS**

- .1      Cleaning Agents and Materials: Low VOC content.

**Part 3            Execution**

**3.1                PROGRESSIVE CLEANING**

- .1      Maintain Work in tidy condition, free from accumulation of waste products and debris, including that caused by the City or other Contractors.
- .2      Remove waste materials from Site at regularly scheduled times or dispose of as directed by Contract Administrator. Do not burn waste materials on site, unless approved by Contract Administrator.
- .3      Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris. Containers:
  - .1      Provide on-site containers for collection of waste materials and debris.
  - .2      Provide and use clearly marked, separate bins for recycling.
- .5      Remove waste material and debris from Site at end of each working day.
- .6      Dispose of waste materials and debris off Site.
- .7      Clean interior areas prior to start of finish work, and maintain areas free of dust and other contaminants during finishing operations.
- .8      Store volatile waste in covered metal containers, and remove from premises at end of each working day.
- .9      Provide adequate ventilation during use of volatile or noxious substances. Use of enclosure ventilation systems is not permitted for this purpose.

- .10 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.
- .11 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.

### **3.2 CLEANING PRIOR TO ACCEPTANCE**

- .1 Prior to applying for Substantial Performance of the Work, remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.
- .2 Remove waste products and debris other than that caused by others, and leave Work clean and suitable for occupancy.
- .3 Prior to final review, remove surplus products, tools, construction machinery and equipment.
- .4 Remove waste products and debris including that caused by the City, or other Contractors.
- .5 Remove waste materials from Site at regularly scheduled times or dispose of as directed by Contract Administrator. Do not burn waste materials on site, unless approved by Contract Administrator. Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .7 Clean and polish glass, mirrors, hardware, wall tile, stainless steel, chrome, porcelain enamel, baked enamel, plastic laminate, and mechanical and electrical fixtures. Replace broken, scratched or disfigured glass.
- .8 Remove stains, spots, marks and dirt from decorative work, electrical and mechanical fixtures, furniture fitments, walls, floors.
- .9 Inspect finishes, fitments and equipment and ensure specified workmanship and operation.
- .10 Clean equipment and fixtures to a sanitary condition.
- .11 Remove debris and surplus materials from crawl areas and other accessible concealed spaces.

### **3.3 FINAL PRODUCT CLEANING**

- .1 Execute final cleaning prior to final project assessment.
- .2 Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.
- .3 Remove waste and surplus materials, rubbish, and construction facilities from the Site.

**END OF SECTION**

**Part 1            General**

**1.1                SECTION INCLUDES**

- .1        Inspections and declarations.
- .2        Closeout submittals
- .3        Operation and maintenance manual format.
- .4        Contents each volume.
- .5        Recording actual site conditions.
- .6        Record (as-built) documents and samples.
- .7        Record documents.
- .8        Final survey.
- .9        Warranties and bonds.

**1.2                RELATED SECTIONS**

- .1        Section 01 33 00 - Submittal Procedures.
- .2        Section 01 45 00 - Quality Control.
- .3        Section 21 05 00 - Common Works for Mechanical
- .4        Section 26 05 00 - Common Works for Electrical
- .5        This section describes requirements applicable to all Sections within Divisions 21 to 26.

**1.3                INSPECTIONS AND DECLARATIONS**

- .1        Contractor's Inspection: Contractor and all Subcontractors shall conduct an inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.
  - .1        Notify Contract Administrator in writing of satisfactory completion of Contractor's Inspection and that corrections have been made.
  - .2        Request Contract Administrator's review.
- .2        Contract Administrator and the City's Review: Contract Administrator and Contractor will perform review of Work to identify defects or deficiencies. Correct defective and deficient Work accordingly.
- .3        Completion: Submit written certificate that following have been performed:
  - .1        Work has been completed and inspected for compliance with Contract Documents.

- .2 Defects have been corrected and deficiencies have been completed.
- .3 Equipment and systems have been tested, adjusted and balanced and are fully operational.
- .4 Certificates required by authorities having jurisdiction have been submitted.
- .5 Operation of systems have been demonstrated to the City's personnel.
- .6 Work is complete and ready for Final Review.
- .4 Final Review: When items noted above are completed, request final review of Work by Contract Administrator, the City, and Contractor. If Work is deemed incomplete by Contract Administrator, the City or Contractor, complete outstanding items and request re-review.
- .5 Declaration of Substantial Performance: when Contract Administrator, the City and Contractor consider deficiencies and defects have been corrected and it appears requirements of Contract have been substantially performed, make application for Substantial Performance of the Work.
- .6 Commencement of Warranty Periods: the date of Total Performance of the Work shall be the date for commencement of the warranty period.
- .7 Commencement of Lien Periods: the date of publication of the certificate of Substantial Performance of the Work shall be the date for commencement of the lien period, unless required otherwise by the lien legislation applicable at the Place of the Work.
- .8 Final Payment: When Contract Administrator considers final deficiencies and defects have been corrected and it appears requirements of Contract have been completed, make application for final payment.

#### **1.4 CLOSEOUT SUBMITTALS**

- .1 Prepare instructions and data using personnel experienced in maintenance and operation of described products.
- .2 Copy will be returned after final review with Contract Administrator's comments.
- .3 Revise content of documents as required prior to final submittal.
- .4 Two (2) weeks prior to Substantial Performance of the Work, submit to the Contract Administrator, four (4) final copies of operating and maintenance manuals in Canadian English.
- .5 Ensure spare parts, maintenance materials and special tools provided are new, undamaged or defective, and of same quality and manufacture as products provided in Work.
- .6 If requested, furnish evidence as to type, source and quality of products provided.
- .7 Defective products will be rejected, regardless of previous reviews. Replace products at own expense.
- .8 Pay costs of transportation.

---

**1.5 OPERATION AND MAINTENANCE MANUAL FORMAT**

- .1 Organize data in the form of an instructional manual.
- .2 Binders: vinyl, hard covered, 3 'D' ring, loose leaf 219 x 279 mm (8.5 x 11 inch) with spine and face pockets.
- .3 When multiple binders are used, correlate data into related consistent groupings. 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. Bind in with text; fold larger drawings to size of text pages.
- .9 Provide 1:1 scaled CAD files in \*.dwg AutoCAD Release 2011 format on DVD.

**1.6 CONTENTS - EACH VOLUME**

- .1 Table of Contents: Provide:
  - .1 Title of project.
  - .2 Date of submission.
  - .3 Names, addresses, and telephone numbers of Contract Administrator and Contractor with name of responsible parties.
  - .4 Schedule of products and systems, indexed to content of volume.
- .2 For each product or system, 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 clearly identify specific products and component parts, and data applicable to installation; delete inapplicable information. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions specified in Section 01 45 00.
- .4 Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.
- .5 Certificate of Acceptance: Relevant certificates issued by authorities having jurisdiction, including code compliance certificate, life safety systems performance certificate, and pressure vessel acceptance.

**1.7 RECORDING ACTUAL SITE CONDITIONS**

- .1 Record information on set of black line opaque drawings, and within the Project Manual, provided by Contract Administrator or the City.
- .2 Annotate with coloured felt tip marking pens, maintaining separate colours for each major system, for recording changed information.
- .3 Record information concurrently with construction progress. Do not conceal Work of the Project until required information is accurately recorded.
- .4 Contract drawings and shop drawings: legibly 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: legibly mark each item to record actual construction, including:
  - .1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.
  - .2 Changes made by Addenda and change orders.
- .6 Other Documents: Maintain manufacturer's certifications, inspection certifications and field test records required by individual specifications sections.

**1.8 RECORD (AS-BUILT) DOCUMENTS AND SAMPLES**

- .1 In addition to requirements in General Conditions, maintain at the Site for Contract Administrator, the City and Contractor one (1) record copy of:
  - .1 Contract Drawings.
  - .2 Specifications.
  - .3 Addenda.
  - .4 Change Orders and other modifications to the Contract.
  - .5 Reviewed shop drawings, product data, and samples.
  - .6 Field test records.
  - .7 Inspection certificates.
  - .8 Manufacturer's certificates.
- .2 Store as-built documents and samples in field office apart from documents used for construction. Provide files, racks, and secure storage.

- .3 Label as-built documents and file in accordance with section number listings in List of Contents of the Project Manual. Label each document "AS-BUILT DOCUMENTS" in neat, large, printed letters.
- .4 Maintain as-built documents in clean, dry and legible condition. Do not use as-built documents for construction purposes.
- .5 Keep as-built documents and samples available for review by Contract Administrator

## **1.9 RECORD DOCUMENTS**

- .1 Prior to Substantial Performance of the Work, electronically transfer and provide on DVD the marked up information from the as-built documents to a master set of drawing and specification files provided by the Contract Administrator, as follows:
  - .1 Drawings: AutoCAD Release 2011.
  - .2 Specifications: Adobe Acrobat.
- .2 Mark revised documents as "RECORD DOCUMENTS". Include all revisions, with special emphasis on mechanical, electrical, structural steel, and reinforced concrete.
- .3 Employ a competent computer draftsman to indicate changes on the electronic set of record drawings. Provide updated record drawings in Adobe Acrobat & AutoCAD Release 2011
- .4 Employ a competent specification writer to indicate changes to the electronic set of record specifications. Provide updated record specifications in Adobe Acrobat on DVD.
- .5 Submit completed record documents to the Contract Administrator on a DVD, accompanied by three (3) hard copy sets of drawings only.

## **1.10 WARRANTIES AND BONDS**

- .1 Separate each warranty or bond with index tab sheets keyed to Table of Contents listing.
- .2 List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.
- .3 Obtain warranties and bonds, executed in duplicate by subcontractors, suppliers, and manufacturers, within ten (10) days after completion of the applicable item of work.
- .4 Except for items put into use with the City's permission, leave date of beginning of time of warranty until the Date of Substantial Performance is determined.
- .5 Verify that documents are in proper form, contain full information, and are notarized.
- .6 Co-execute submittals when required.
- .7 Retain warranties and bonds until time specified for submittals.

**END OF SECTION**

**Part 1            General**

**1.1                SECTION INCLUDES**

- .1      Equipment and systems.
- .2      Materials and finishes.
- .3      Spare parts.
- .4      Maintenance manuals.
- .5      Special tools.
- .6      Storage, handling and protection.

**1.2                RELATED SECTIONS**

- .1      Section 01 45 00 - Quality Control.
- .2      Section 21 05 00 Common Work for Mechanical.

**1.3                EQUIPMENT AND SYSTEMS**

- .1      Each Item of Equipment and Each System: include description of unit or system, and component parts.
  - .1      Give function, normal operation characteristics, and limiting conditions.
  - .2      Include performance curves, with engineering data and tests, and complete nomenclature and commercial number of replaceable parts.
- .2      Panel board circuit directories: provide electrical service characteristics, controls, and communications.
- .3      Include installed colour coded wiring diagrams.
- .4      Operating Procedures: include start-up, break-in, and routine normal operating instructions and sequences.
  - .1      Include regulation, control, stopping, shut-down, and emergency instructions.
  - .2      Include summer, winter, and any special operating instructions.
- .5      Maintenance Requirements: include routine procedures and guide for trouble-shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- .6      Provide servicing and lubrication schedule, and list of lubricants required.
- .7      Include manufacturer's printed operation and maintenance instructions.
- .8      Include sequence of operation by controls manufacturer.

- .9 Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- .10 Provide installed control diagrams by controls manufacturer.
- .11 Provide Contractor's coordination drawings, with installed colour coded piping diagrams.
- .12 Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
- .13 Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- .14 Include test and balancing reports as specified in Section 01 45 00 – Quality Control.
- .15 Additional requirements: As specified in individual specification sections.

## **Part 2 Products**

### **2.1 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.

### **2.2 SPARE PARTS**

- .1 Provide spare parts, in quantities specified in individual specification sections.
- .2 Provide items of same manufacture and quality as items in Work.
- .3 Receive and catalogue all items.
  - .1 Submit inventory listing to Contract Administrator.
  - .2 Include approved listings in Maintenance Manual.
- .4 Obtain receipt for delivered products and submit prior to final payment.

### **2.3 MAINTENANCE 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 Receive and catalogue all items.
  - .1 Submit inventory listing to Contract Administrator.
  - .2 Include approved listings in Maintenance Manual.
- .4 Obtain receipt for delivered products and submit prior to final payment.

## **2.4 SPECIAL TOOLS**

- .1 Provide special tools, in quantities specified in individual specification section.
- .2 Provide items with tags identifying their associated function and equipment.
- .3 Receive and catalogue all items.
  - .1 Submit inventory listing to Contract Administrator.
  - .2 Include approved listings in Maintenance Manual.

## **Part 3 Execution**

### **3.1 DELIVER TO SITE**

- .1 Deliver to Site; place and store.

### **3.2 STORAGE, HANDLING AND PROTECTION**

- .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 to satisfaction of Contract Administrator.

**END OF SECTION**

**Part 1            General**

**1.1                SECTION INCLUDES**

- .1        Procedures for demonstration and instruction of Products, equipment and systems to the City's personnel.
- .2        Seminars and demonstrations.

**1.2                RELATED SECTIONS**

- .1        This section describes requirements applicable to all Sections within Divisions 21 to 26.

**1.3                DESCRIPTION**

- .1        Demonstrate operation and maintenance of equipment to the City's personnel two (2) weeks prior to date of Substantial Performance.
- .2        The City will provide list of personnel to receive instructions, and will coordinate their attendance at agreed-upon times.

**1.4                COMPONENT DEMONSTRATION**

- .1        Manufacturer to provide authorized representative to demonstrate operation of equipment and systems.
- .2        Instruct the City's personnel, and provide written report that demonstration and instructions have been completed.

**1.5                SUBMITTALS**

- .1        Submit schedule of time and date for demonstration of each item of equipment and each system two (2) weeks prior to designated dates, for Contract Administrator's approval.
- .2        Submit reports within one (1) week after completion of demonstration, that demonstration and instructions have been satisfactorily completed.
- .3        Give time and date of each demonstration, with list of persons present complete with signatures.

**1.6                CONDITIONS FOR DEMONSTRATIONS**

- .1        Equipment has been inspected and put into operation:
- .2        Testing, adjusting, and balancing have been performed, and equipment and systems are fully operational.
- .3        Provide copies of completed operation and maintenance manuals for use in demonstrations and instructions.

---

**Part 2 Products**

**2.1 NOT USED**

- .1 Not used.

**Part 3 Execution**

**3.1 PREPARATION**

- .1 Verify that suitable conditions for demonstration and instructions are available.
- .2 Verify that designated personnel are present.
- .3 Prepare agendas and outlines.
- .4 Establish seminar organization.
- .5 Explain component design and operational philosophy and strategy.
- .6 Develop equipment presentations.
- .7 Present system demonstrations.
- .8 Accept and respond to seminar and demonstration questions with appropriate answers.

**3.2 PREPARATION OF AGENDAS AND OUTLINES**

- .1 Prepare agendas and outlines including the following:
- .1 Equipment and systems to be included in seminar presentations.
- .2 Name of companies and representatives presenting at seminars.
- .3 Outline of each seminar's content.
- .4 Time and date allocated to each system and item of equipment.
- .5 Provide separate agenda for each system

**3.3 SEMINAR ORGANIZATION**

- .1 Coordinate content and presentations for seminars.
- .2 Coordinate individual presentations and ensure representatives scheduled to present at seminars are in attendance.
- .3 Arrange for presentation leaders familiar with the design, operation, maintenance and troubleshooting of the equipment and systems. Where a single person is not familiar with all aspects of the equipment or system, arrange for specialists familiar with each aspect.
- .4 Coordinate proposed dates for seminars with the City and select mutually agreeable dates.

**3.4 EXPLANATION OF DESIGN STRATEGY**

- .1 Explain design philosophy of each system. Include following information:
  - .1 An overview of how system is intended to operate.
  - .2 Description of design parameters, constraints and operational requirements.
  - .3 Description of system operation strategies.
  - .4 Information to help in identifying and troubleshooting system problems.

**3.5 DEMONSTRATION AND INSTRUCTIONS**

- .1 Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, and maintenance of each item of equipment at agreed upon times, at the equipment location.
- .2 Instruct personnel in all phases of operation and maintenance using operation and maintenance manuals as the basis of instruction.
- .3 Instruct personnel on control and maintenance of sensory equipment and operational equipment associated with maintaining energy efficiency and longevity of service.
- .4 Review contents of manual in detail to explain all aspects of operation and maintenance.
- .5 Prepare and insert additional data in operations and maintenance manuals when the need for additional data becomes apparent during instructions.

**3.6 TIME ALLOCATED FOR INSTRUCTION**

- .1 Ensure amount of time required for instruction of each item of equipment or system.

**END OF SECTION**