

Part 1 General

1.1 WORK COVERED BY CONTRACT DOCUMENTS

- .1 The work covered under this project consists of the furnishing of all plant, labour, equipment and materials for the upgrading of the Springhill Institution sewage treatment plant. Site of Work is at Springhill Institution, 330 McGee Street, Springhill, Nova Scotia. All work under this contract will be constructed in strict accordance with specifications and accompanying drawings subject to all terms and condition of this contract.
- .2 Mobilization and Demobilization of all equipment necessary to make work progress for the entire contract.
- .3 Only items in the Unit Price Table will be measured for payment. All other work necessary to complete the Contract will be considered incidental to the project and will not be measured separately for payment.

1.2 DESCRIPTION OF WORK

- .1 The work will include but will not be limited to the following:
 - .1 Completion and submission of submittals listed for review and acceptance by the Departmental Representative prior to undertaking the work effected by the submittal. This includes submittal of a Health and Safety Plan, including provision for Covid-19 protection and its implementation (refer also to Section 01 35 29.06 - Health and Safety Requirements).
 - .2 Site erosion and sediment control measures, including silt fencing, silt curtain, hay/straw bales, vegetative stabilization and other measures as required, maintained for the duration of the project.
 - .3 Supply and operation of traffic control for the duration of the project including phasing.
 - .4 Dust control.
 - .5 Removal and disposal of existing features within limit of contract including, existing aeration system, existing buildings as indicated on Drawings, existing piping and structures.
 - .6 Clearing, Grubbing and stripping of organic materials.
 - .7 Rehabilitation of existing aerated lagoon No.1.
 - .8 On-site management of sludge within existing Cell #3 footprint.
 - .9 Construction of new aerated lagoon No.2.
 - .10 Construction of new operations building.
 - .11 Supply and installation of new fine screening system, including washer-compactor.
 - .12 Supply and installation of new aeration system and blowers.
 - .13 Supply and installation of new UV effluent disinfection system.
 - .14 Supply and installation of new site piping and structures.
 - .15 Sanitary sewer upgrades and replacement of security manhole.

- .16 Construction / re-construction of dikes and parking areas, including asphalt pavement.
- .17 Property Restoration.
- .18 Quality Management and Quality Control.
- .19 Survey layout and as-built collection.
- .20 Commissioning of new equipment and systems, all necessary testing, and on-site training of the Owner's personnel.

1.3 PERMIT CERTIFICATES AND FEES

- .1 Obtain and pay for all permits and certificates, licenses as required by Municipal, Provincial, Federal and other Authorities.
- .2 Provide appropriate notifications of project to municipal and provincial inspection authorities.
- .3 Submit to Departmental Representative, copy of application submissions and approval documents received for above referenced authorities.
- .4 Comply with all requirements, recommendations and advise by all regulatory authorities unless otherwise agreed in writing by Departmental Representative. Make requests for such deviations to these requirements sufficiently in advance to related work.

1.4 INSPECTION OF SITE

- .1 Before submitting a bid, it is suggested that bidders visit the site to review and verify the form, nature and extent of the work, materials needed, the means of access and the temporary facilities required to perform the work.
- .2 Obtain permission for the Departmental Representative before carrying out such a site inspection. Non mandatory bidders site visit will be held. Departmental Representative will confirm date and time.
- .3 No claims will be entertained for tenderers' misunderstanding of the site conditions or work requirements resulting from their unfamiliarity with existing conditions.
- .4 Review specification Section 01 35 29.06 - Health and Safety Requirements before visiting site. Take all appropriate safety measures for any visit to site, either before or after acceptance of bid. The Contractor must submit a Safety Plan prior to the pre-construction meeting.

1.5 DATUM

- .1 Datum and Control Point are as shown on the Drawings.

1.6 EXISTING SUB-SURFACE CONDITIONS

- .1 For geotechnical and borehole information, refer to reports prepared by Conquest Engineering, dated December 20, 2017, (Ref. No. 071-223) and by AMEC Power & Process dated March 25, 2014 (Ref. No. TV143002), attached in Appendix A.
- .2 Promptly notify Departmental Representative if subsurface conditions differ materially from those indicated in Contract Documents or a reasonable assumption of probable conditions based on thereon.
- .3 The above documents have been made available for review, however are intended to provide general site information only. Any interpolation and/or assumptions made relative to any previous investigations is the Contractor's responsibility.

1.7 CODES AND STANDARDS

- .1 Perform work in accordance with the latest edition of the National Building Code of Canada, and any other Federal, Provincial and Municipal Laws, Acts, Regulations, Bylaws, Codes, etc. provided that in any case of conflict or discrepancy, the more stringent requirements shall apply.
- .2 These requirements may affect methods of installation, construction methods, disposal of materials and may require written notifications and/or permits of the appropriate authority prior to commencement of the contract. Where written notification and/or permit of the above authorities are required a copy of the said notification and/or permit shall be submitted to the Departmental Representative, prior to commencement of work.

.1 BUILDING SMOKING ENVIRONMENT

- .1 Comply with smoking restrictions.
- .3 Meet or exceed requirements of: Contract documents, Specified standards, codes and referenced documents.

1.8 LAYOUT OF WORK

- .1 Departmental Representative will provide only survey control points. Give Departmental Representative reasonable notice of requirements for such control points.
- .2 Set grades and lay out work from control points established by Departmental Representative.
- .3 Assume full responsibility for and execute complete layout of work to locations, lines and elevations indicated.
- .4 Provide devices needed to lay out and construct work.
- .5 Supply such devices as straight edges and templates required to facilitate Departmental Representative's inspection of work.
- .6 Supply stakes and other survey markers required for laying out work.

- .7 Employ a certified surveyor to mark out work. All surface modifications are restricted to the identified construction limits.
- .8 Departmental Representative will provide points file and 3D AutoCAD drawings for layout.
- .9 Provide the Departmental Representative a copy of co-ordinates and elevations of field control.
- .10 Provide coordinates, elevations and dimensions in the field, as required by the Departmental Representative.

1.9 WORK SCHEDULE

- .1 Submit within 5 work days of notification of acceptance of bid, a construction schedule showing commencement and completion of all work within the time period required by Contract Documents and as specified herein. Refer to Section 01 32 16.19 Construction Progress Schedule.
- .2 Provide sufficient details in schedule to clearly illustrate entire implementation plan, depicting efficient coordination of tasks and resources, to achieve completion of work on time and permit effective monitoring of work progress in relation to established milestones.
- .3 As a minimum, work schedule is to be prepared and submitted in the form of Bar (GANNT) Charts, indicating work activities, tasks and other project elements, their anticipated durations and planned dates for achieving key activities and major project milestones provided in sufficient details and supported by narratives to demonstrate a reasonable plan for completion of project within designated time. Generally Bar Charts derived from commercially available computerized project management system are preferred but not mandatory.
- .4 Submit Schedule updates on a minimum monthly basis, and more often when requested by Departmental Representative, due to frequent changing project conditions. Provide a narrative explanation of necessary changes and schedule revisions at each update.
- .5 The Schedule, including updates, shall be to Departmental Representative's approval. Take necessary measures to complete work within approved time. Do not change schedule without Departmental Representative's approval.
- .6 Interim reviews of work progress based on work schedule will be conducted as decided by Departmental Representative and schedule updated by Contractor in conjunction with and to approval of the Departmental Representative.
- .7 All work on the project will be completed within the time indicated on the Bid and Acceptance Form.

1.10 ABBREVIATIONS

- .1 Following abbreviations of standard specifications have been used in this specification and on the drawings:
CGSB - Canadian Government Specifications Board
CSA - Canadian Standards Association
NLGA - National Lumber Grades Authority

ASTM - American Society for Testing and Materials

- .2 Where these abbreviations and standards are used in this project, latest edition in effect on date of bid call will be considered applicable.

1.11 TERM ENGINEER

- .1 Unless specifically stated otherwise, the term Engineer where used in the Specifications and on the Drawings shall mean the Departmental Representative as defined in the General Conditions of the Contract.

1.12 CONTRACTORS'S USE OF SITE

- .1 The work shall be performed within the site limits shown on the drawings. Any damage or disturbance caused by the Contractor outside these limits shall be reinstated at his cost and to the satisfaction of the Departmental Representative.
- .2 The Contractor shall execute this work with as little damage to existing properties and existing infrastructure as is possible. Existing culverts, fences, shrubs, trees, water wells, utilities, etc. shall be protected by the Contractor. Any repairs or reconstruction required as the result of the Contractor's failure to provide required protection shall be incidental to the work and acceptable to the Departmental Representative.
- .3 It is the Contractor's responsibility to examine the site and determine any other restrictions which may affect the work, as no claim will be entertained for any additional costs caused by site conditions or restrictions.
- .4 Access to the work area, including the construction and maintenance of an access road if required, shall be the responsibility of the Contractor. Location of access to the Construction zone, must be pre-approved by the Departmental Representative prior to mobilization.
- .5 All structures, roadways, ditching, trees, piping systems, etc. which are to remain shall be protected through the course of the work, and the Contractor shall be responsible for the acceptable and timely repair of any damages. This includes existing driveway culverts, cross culverts, headwalls, manholes, valves, catch basins, etc., which will be required to be protected during the course of the work. The contractor will be responsible for repairing or replacing damaged during construction, incidental to the work.
- .6 The Contractor shall maintain the site in a tidy condition free from the accumulation of waste products and debris, and keep it graded smooth as work progresses, to the satisfaction of the Departmental Representative. All garbage is to be picked up and removed from the site on a daily basis. Snow/ice shall be removed as necessary for the performance and inspection of the Work. Upon substantial performance of the work, remove surplus products, tools, machinery and equipment from the site. Completion of clean-up is required for total performance of the work.
- .7 Maintaining all streets/roadways in a clean condition will not be measured for payment but is considered incidental to the work. It will not be permitted that the cleaning/sweeping equipment leaves the site during the construction. If the Contractor removes the cleaning equipment during the

work, the Owner will hire others to clean the work site on a daily basis, or as required (to be determined by the Departmental Representative). Related costs will be deducted from monies due to the Contractor. All streets affected by construction activities shall be swept on a daily basis or as directed by the Departmental Representative.

- .8 Contractor to obtain all necessary permits to perform work and to comply with all permit requirements and conditions.

1.13 PROTECTION

- .1 All materials, equipment, tools or plant brought by the Contractor upon site or land occupied by the Contractor in connection with execution and carrying out of the works upon arrival on site shall be deemed to be the property of the Owner; and will not be removed from site except on the completion of the works for which they are required or with the permission of the Departmental Representative. This Clause will not in any way diminish the liability of the Contractor nor will the Owner be in any way accountable for any loss or damage which may happen to or in respect of any such materials, equipment, tools, plant or work, either by the same being lost, stolen, injured or destroyed by fire, tempest or otherwise.
- .2 Unless noted, it is the Contractor's responsibility to order and arrange for delivery of all materials necessary for completion of this contract. Failure to have any materials on site at the time that they are required for construction will be the Contractor's responsibility and will not be considered as justification for an extension to completion date.
- .3 Material and Labour Origin
 - .1 Canadian materials and labour shall be used to the full extent they are procurable and consistent with proper economy and the expeditious performance of the project.
- .4 Repair or replace all materials or equipment damaged in transit or storage to the satisfaction of Departmental Representative and at no cost to Canada.
- .5 Additional Requirements: as specified in individual specification sections and in Section 01 61 00 Common Product Requirements.

1.14 PAYMENT

- .1 Before submitting first progress claim submit breakdown of Contract Amount in detail as directed by Departmental Representative and aggregating contract amount. Required forms will be provided for application of progress payment.
- .2 List items of work numerically following the same division/section number system of the specification manual and thereafter sub-divide into major work components and building systems as directed by Departmental Representative.
- .3 Upon approval, cost breakdown will be used as basis for progress payment.

1.15 INSPECTION AND TESTING

- .1 Refer to Section 01 45 00 Quality Control.

1.16 DISPOSAL OF DEBRIS

- .1 Debris, including construction materials not incorporated in the work, oil products and containers, and other materials of this nature will be disposed of in suitable locations off the site. Disposal is the responsibility of the Contractor.
- .2 Material from the work will not be permitted to go adrift to otherwise become a menace to navigation.

1.17 DIMENSIONS OF EQUIPMENT

- .1 The equipment shall have the characteristics and dimensions appropriate to the places where they will be installed. The Contractor must notify the Departmental Representative before proceeding with the installation of equipment that does not meet these conditions.

1.18 PROJECT MEETINGS

- .1 The Contractor will be required to attend bi-weekly scheduled project meetings.
- .2 The Contractor shall make available a site meeting facility for regular scheduled project meetings.

1.19 ACCEPTANCE

- .1 Prior to the issuance of the Certificate of Substantial Performance, in Company with Departmental Representative, make a check of all work. Correct all discrepancies before final inspection and acceptance.
- .2 Before Work can be accepted, the Contractor must clean up the site and leave it in a condition which is acceptable to the Departmental Representative.

1.20 WORKS COORDINATION BY CONTRACTOR

- .1 The Contractor shall be responsible for coordinating the work of the various trades.
- .2 Convene meetings between trades whose work interfaces and ensure that they are fully aware of the areas and the extent of where interfacing is required. Provide each trade with the plans and specifications of the interfacing trade, as required, to assist them in planning and carrying out their respective work.
- .3 Canada will not be responsible for or held accountable for any extra costs incurred as a result of the failure to carry out coordination work. Disputes between the various trades as a result of their not being informed of the areas and extent of interface work shall be the sole responsibility of the General Contractor and shall be resolved at no extra cost to Canada.
- .4 Contractor will cooperate with other contractors on site.

1.21 BILINGUAL NOTATIONS

- .1 Any items supplied and installed under this contract which have operating instructions on them must have such operating instructions in bilingual format - English and French.
- .2 Factory embossed or recessed symbols illustrating equipment operation is an acceptable alternate to lettering.
- .3 Items supplied with factory - embossed or recessed lettering in one official language with an applied sticker or decal representing the second official language is not acceptable unless the Departmental Representative gives prior approval before any such items are ordered.
- .4 Internationally recognized colour coding such as red and blue center pieces for plumbing brass is acceptable.
- .5 No extra costs will be paid for re-stocking or re-ordering of materials and equipment due to Contractor's failure to fully meet bilingual signage requirements specified herein.
- .6 Ensure that all trades are made aware of above requirements.

1.22 INTERPRETATION OF DOCUMENTS

- .1 Supplementary to GC1.1 of the General Conditions, the technical specification sections of the specifications take precedence over Division 01 of the specifications.
- .2 Departmental Representative may furnish additional drawings for clarification. These additional drawings have same meaning and intent as if they were included with plans referred to in the Contract Documents.

1.23 HIGHWAY SPRING WEIGHT RESTRICTIONS

- .1 Comply with Provincial regulations for spring weight restrictions on Provincial Highway.

1.24 WORK COMMENCEMENT

- .1 Mobilization to project site is to commence immediately after acceptance of bid and submission of Site Specific Safety Plan, unless otherwise agreed by Departmental Representative.
- .2 Project work on site is to commence as soon as possible, with a continuous reasonable work force, unless otherwise agreed by Departmental Representative.
- .3 Weather conditions, short construction season, delivery challenges and the location of the work site may require the use of longer working days and additional work force to complete the project within the specified completion time. No additional costs shall be considered for this.
- .4 Make every effort to ensure that sufficient material and equipment is delivered to site at the earliest possible date after acceptance of bid and replenished as required.

1.25 PROTECTION OF SERVICES

- .1 Before commencing work, establish location and extent of service lines and all buried utilities and submit findings for review and approval by Departmental Representative. It will be the responsibility of the Contractor to ensure that there is no damage to these facilities, including ensuring that all hydro poles are supported during the work.
- .2 No claim will be entertained for any damage or any slowdown of work due to the location and protection of the aforementioned utilities. Further, the Contractor will be fully responsible for the costs of repairs required to any of these utilities, including incidental damages resulting from the work
- .3 Submit schedule to and obtain approval from Departmental Representative for any shut-down or closure of active service or facility. Adhere to approved schedule and provide notice to affected parties.
- .4 Provide temporary services when directed by Departmental Representative to maintain critical facility systems.
- .5 Where unknowns services are encountered, immediately advise Departmental Representative and confirm findings in writing.
- .6 The Contractor will immediately restore any existing services disrupted as a result of his operations at no cost to the Departmental Representative.

1.26 SEWAGE BYPASS AND PUMPING REQUIREMENTS

- .1 In no case shall existing sanitary sewers be removed from service during the course of the work. The Contractor shall provide all required temporary pumping or vacuum trucks should a facility have to be temporarily shut down for connection to the existing system.

1.27 STANDARD HOURS

- .1 The Contractor must maintain existing site hours for the work unless otherwise authorized by Departmental Representative. Work that involves temporary disruption of services will be scheduled through the Departmental Representative. Provide Departmental Representative with minimum of 72 hours' notice of any disruption of services.
- .2 Normal site hours at the lagoon site (outside of secure fenced perimeter) of operation will be considered between 7:00 am and 7:00pm, Monday to Friday, unless there is a statutory holiday. Refer also to Section 01 35 59 Security Requirements at Correctional Service Canada Facilities.

1.28 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' notice for necessary interruption of mechanical or electrical service throughout course of work. Minimize duration of interruptions. Carry out work at times as directed by governing authorities with minimum disturbance to Users.

- .3 Establish location and extent of service lines in area of work before starting Work. Notify Departmental Representative of findings.
- .4 The Contractor shall confirm all locations, inverts and critical elevations in the field prior to construction.
- .5 Submit schedule to and obtain approval from Departmental Representative for any shut-down or closure of active service or facility. Adhere to approved schedule and provide notice to affected parties
- .6 Where unknown services are encountered, immediately advise Departmental Representative and confirm findings in writing.
- .7 Protect, relocate or maintain existing active services. When inactive services are encountered, cap off in manner approved by authorities having jurisdiction.
- .8 Record locations of maintained, re-routed and abandoned service lines.

1.29 DOCUMENTS REQUIRED

- .1 Maintain at job site, one copy each document as follows:
 - .1 Permits.
 - .2 Contract Drawings.
 - .3 Specifications.
 - .4 Addenda.
 - .5 Reviewed Shop Drawings and List of Outstanding Shop Drawings.
 - .6 Change Orders.
 - .7 Other Modifications to Contract.
 - .8 Field Test and Quality Control Reports.
 - .9 Copy of Approved Work Schedule.
 - .10 Health and Safety Plan and Other Safety Related Documents.
 - .11 Manufacturers' installation and/or application instructions.
 - .12 Bonds (when applicable).
 - .13 Other documents as specified.
- .2 Store record documents and samples in the Contractor's field office apart from documents used for construction. Provide files, racks, and secure storage.
- .3 Maintain record documents in clean, dry and legible conditions. Do not use record documents for construction purposes.
- .4 Keep record documents and samples available for inspection by Departmental Representative.

1.30 CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

- .1 Temporary Heating
 - .1 Provide temporary heating required during construction period, temporary heat as required for proper protection and drying out of the work up to the date of completion including attendance, constant monitoring, maintenance and fuel.
 - .2 Construction heaters used inside building must be vented to outside or be flameless type. Solid fuel salamanders are not permitted.
 - .3 Maintain temperatures of minimum 10 °C in areas where construction is in progress, unless indicated otherwise in specifications.
 - .4 Ventilate heated areas and keep building free of exhaust or combustion gases.
 - .5 Provide for other weather requirements as indicated in specific specification sections.
- .2 Temporary Power
 - .1 Provide and pay for temporary power required during construction for temporary lighting and operating of power tools.
 - .2 Arrange for connection with appropriate utility company. Pay costs for installation, maintenance and removal.
- .3 Water Supply
 - .1 Provide a continuous supply of potable water for construction use.
 - .2 Existing potable water supply as designated may be used during construction period, if written permission is granted by Owner (when applicable).
- .4 Site office
 - .1 It is mandatory for the Contractor to provide construction offices for this job as follows, to the approval of the Departmental Representative and for the entire duration of this project:
 - .1 Contractor's Office (as required by the Contractor)
 - .2 Departmental Representative's Office
 - .3 Commissaire's office
 - .2 Construction offices must be installed securely at a site provided by the Contractor and approved by the Departmental Representative. The construction office must provide sufficient area for meetings of 6 – 8 people. Construction offices shall include at least the following:
 - .1 1 desk
 - .2 3 Chairs
 - .3 Telephone
 - .4 Hi-speed internet connection
 - .5 Heating, air conditioning and lights
 - .6 At least one (1) opening window with security grate and bug screening
 - .7 Lockable and secure door with two (2) sets of keys, opening to and accessible from the outside of the office building, including stairs and a landing as required.
 - .3 Supply of the Contractor's, Departmental Representative's and Commissionaire's offices, including all telecommunications, power, heating, furnishings, installation and removal, and related costs, will not be measured for payment, but shall be considered incidental to the contract.
 - .4 This can be part of the Contractor's construction offices, but must have a separate outside

entrance and be separated from the Contractor's office by a secure wall. The office must be located in an area of the site where parking is conveniently adjacent to the office.

- .5 Temporary Facilities
 - .1 Provide temporary enclosures for the protection of materials, equipment and tools subject to damage by weather exposure.
 - .2 Provide sufficient sanitary facilities for workers in accordance with local health authorities. Maintain in clean conditions.
- .6 Dewatering:
 - .1 Treat all storm water and subsurface water to prevent contamination of waterways and adjacent properties.

1.31 TEMPORARY FACILITIES FOR UNPLANNED AND PLANNED SERVICE DISRUPTIONS

- .1 The contractor will be responsible to maintain the sanitary facilities in accordance with governing regulations and keep area and premises in a sanitary condition for the duration of the disruption.

1.32 DEWATERING

- .1 Keep excavations and site free of water while work is in progress.
- .2 Submit for Departmental Representative's review details of proposed dewatering or heave prevention methods.
- .3 Excavations shall be dewatered and maintained dewatered so that the material is excavated in its natural state and construction and piping is completed in the dry. The bottom of the excavation shall be kept free from excessive moisture and free-flowing water.
- .4 Underwater excavation will not be allowed other than as directed by the Departmental Representative under extreme conditions where the ingress of water from the bottom of the excavation is impossible to stop. All efforts to reduce water to be attempted prior to authorization.
- .5 Pumping from the interior of any excavation shall be done so that the water is diverted from the footing base or pipe base. The level of any water inside of the excavation shall be below the bottom of the footing or pipe elevation so that the foundations and pipes are placed in the dry. Pumping water from the excavation shall not be discontinued until the structure is completed and backfilled unless otherwise allowed by the Departmental Representative.
- .6 Protect open excavations against flooding and damage due to surface run-off.
- .7 Water shall be disposed of so as not to be injurious to public health or safety, property, the environment, fisheries, or any part of the work completed or under construction. Dewatering operations shall be directed to a sediment control device or natural attenuation area prior to discharge to watercourses. If a natural attenuation area is used, a minimum 15 m setback shall be maintained from the receiving watercourse. When water is discharged to a watercourse, the water discharged shall be done in a manner that does not cause erosion or other damage to adjacent lands.

- .8 Provide and maintain temporary drainage ditches and other diversions outside of excavation limits.
- .9 Contractor is responsible for all required environmental permits.
- .10 To protect against adverse impacts resulting from erosion and sedimentation, surface drainage from dewatering operations shall be intercepted and controlled using properly designed filtering or impoundment methods or both.

1.33 PERMITS

- .1 The Contractor shall obtain and pay for all licenses and permits, which may be required to comply fully with laws, ordinances and regulations of the proper public authorities, in connection with the performance of this work.
- .2 The Contractor shall be responsible for all damages and shall indemnify and save the Owner harmless from and against all damages and liability, which may arise out of the failure of the Contractor to obtain and pay for such licenses and permits and to comply fully with any and all applicable laws, ordinances and regulations.
- .3 Proof of Contractor's or Subcontractor's license or qualifications, i.e. electrical, plumbing and refrigeration shall be provided upon demand by any authorized person or agency.

1.34 ITEMS TO BE SUPPLIED BY THE OWNER

- .1 The Owner shall supply only the site as it exists at time of tendering.

1.35 ITEMS TO BE SUPPLIED BY THE CONTRACTOR

- .1 The Contractor shall supply everything necessary to complete the work shown on the drawings and detailed in these specifications. This includes minor details, work, equipment, labour or services not specifically mentioned on the drawings or in the specifications but obviously necessary for the proper completion and performance of the work.

1.36 BARRICADES AND WARNING SIGNS

- .1 The Contractor will provide, erect and maintain all necessary barricades, suitable and sufficient warning lights, danger signals and other signs, provide a sufficient number of flagmen and watchmen and take all necessary precautions for the protection of the work and the safety of the public.
- .2 The entire work is at the Contractor's risk and he will be held responsible for all accidents or injury that may happen to working individuals until the job is formally taken over by the Owner.
- .3 All necessary warning signs will be maintained in legible condition at all locations where the need exists. Only approved Department of Transportation signs will be used. Signs will be located as required by the 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 GENERAL

- .1 The Form of Tender includes one lump sum priced item and several unit priced items.
- .2 The total tendered price shall be the sum of the lump sum item plus the amounts calculated from the unit priced items based on the approximate quantities identified for each of the unit priced items.
- .3 The Contractor in submitting their Tender for the project understand that they will only be entitled to payment under the unit priced items when prior written authorization has been received from the Departmental Representative for utilization and then only to the extent of the work authorized by the Departmental Representative.
- .4 Additional instructions for measurement and/or payment for items of the work may be contained in specific sections of the Technical Specifications. In the case of a conflict between the instructions for measurement and payment contained in this section with that of any other section, the requirement of this section shall apply.
- .5 The submitted tender prices will be inclusive of all costs for the complete supply and installation of all materials, labour and equipment required to complete the work. No separate payment will be made for any testing, inspections and approvals required by Contractor.
- .6 All measurement shall be along a horizontal plane unless otherwise indicated.

1.2 LUMP SUM ITEM

- .1 No separate measurement for payment shall be made for any work completed under this item.
- .2 The work of the lump sum item shall include:
 - .1 All Quality Control requirements in accordance with section 01 45 00 "Quality Control" Throughout the duration of the project.
 - .2 All environmental protection, including erosion controls, sedimentation controls, de-watering and dust control. Dust prevention and erosion measures shall be in effect until such works are restored to original condition or upon issuance of the "Certificate of Final Completion".
 - .3 Field surveys for layout of the construction work items and quantity for collection of as-built condition information.
 - .4 Cleaning of work site, including removal of waste, debris, and recyclable materials.
 - .5 Removal of all surplus materials from the site at completion of work.
 - .6 All contract requirements such as bonds, insurance, etc.
 - .7 Testing, inspections and permits from all regulatory agencies and groups required to complete the work
 - .8 All lighting, additional resources, safety requirements, and scheduling to complete project specific work outside of normal operating hours, if approved by the departmental representative.

- .9 Design, construction, and maintenance of all temporary structures (temporary sewer by-passes, pumping, temporary aeration, temporary access roads, shoring, bracing, underpinning, working platforms, scaffolding, stability bracing, supports, etc.) required to complete the work.
- .10 Preparation and submission of all close-out submittals, maintenance manuals, and as-built drawings.
- .11 All and any items not specifically included in the unit price items are considered incidental to the work and are to be included in the lump sum portion of the work.
- .12 All other works, personnel and items which are required for completion of the project exclusive of those covered by the unit priced items.

1.3 UNIT PRICE ITEMS

- .1 Clearing and Grubbing
 - .1 Unit of payment: hectare
 - .2 Method of Payment: Actual area measured in hectares and approved by the Departmental Representative.
 - .3 This item includes: supply and transportation of all labour, equipment and material, clearing, grubbing, cutting, loading, and transportation of all cleared and grubbed material from the site, removal and disposal of all stumps, roots, root mat, humus and debris, provision of an acceptable disposal location, environmental protection, silt fence and erosion controls including maintenance, surface preparation, clean-up and all work incidental thereto, all as specified or as shown on the Drawings or as laid out by the Departmental Representative
- .2 Stripping and Material Disposal
 - .1 Unit of payment: Lump Sum
 - .2 This item includes: supply and transportation of all labour, equipment and material, stripping, stock-piling and material re-used at the specified thickness (if approved), disposal off site of any excess material, environmental protection including silt fencing and erosion control structures needed as a result of the stripping operation and as shown on the drawings. This also includes grading of existing areas, maintenance and repairs, screening, removal of rocks and debris and all work incidental thereto, all as specified or as shown on the drawings or as laid out by the Departmental Representative.
- .3 Common Excavation
 - .1 Unit of measurement: Lump Sum
 - .2 This item includes: the supply and transportation of all labour, equipment and material, excavation, lagoon excavation, ditching, dewatering, stockpiling of suitable material for re-use, reuse of material, removal and disposal of unsuitable and excess material, environmental protection including dust prevention/control, compaction, grading and fine grading, environmental protection, clean-up and all work incidental thereto as shown on the drawings or as specified herein or as laid out by the Departmental Representative
 - .3 Common excavation shall include excavation for roadway, site and dike construction, lagoon cells, building excavation, ditching or other excavation not incidental to its item, but exclude any excavation related to trenches. There shall be no separate payment for ditching.

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- .4 Concrete Pad
 - .1 Unit of measurement: Each
 - .2 This item includes: All labour, materials, and equipment to supply and place concrete pad of each size and type, including excavation, formwork and concrete, to construct joints, to provide and place joint filler, curing, protection from traffic, provision of suitable bridging, removal of forms, shouldering exposed edges with acceptable material.
 - .5 Removals - complete
 - .1 Unit of measurement: Lump Sum
 - .2 This item includes: supply and transportation of all labour, equipment and material, excavation, cutting of pipes, removal of structures including light poles, manholes, existing buildings, culverts, decommissioning and capping of existing watermains, caps, disposal of debris, delivery of material to owner location, backfilling, fill concrete, clean-up and all work incidental thereto, all as specified or as shown on the drawings, or as directed by the Departmental Representative.
 - .3 This shall also include all other related work and services including end caps, fittings, thrust blocks, thrust restraints.
 - .4 This shall include the supply of all labour, equipment and materials for proper removal and delivery of the equipment inside the existing grinder building and UV building. This equipment shall remain the owner and shall be delivered to their storage location at the institution. No additional payment will be made for the delivery of the above stated equipment.
 - .6 Lagoon Decommissioning and Sludge management
 - .1 Unit of measurement: Lump Sum
 - .2 This item includes: The supply and transportation of all materials, labour and equipment required for decommissioning and removal of existing aeration system including disposal off-site, pumping / management of wastewater and sludge from the existing lagoon, management of sludge including pumps, supply and discharge piping/hoses, power source (incl. fuel for generator), temporary connections, by-pass pumping, temporary security measures, manpower to continuously monitor the pump operation, boat or floating platform, and all related items.
 - .7 Bollards
 - .1 Unit of measurement: Each
 - .2 This item includes: All labour, equipment and materials required to properly supply and install these units. Payment shall include supply, concrete, painting, bollard guard, reflective strip(s), excavation, dewatering, bedding, installation, backfilling and all other incidental work.
 - .8 Security Fence
 - .1 Unit of measurement: Linear metre (m)

- .2 Method of measurement: Actual length of fence installed and accepted by the Departmental Representative including gates, following the contour of the ground. Measurement will continue horizontally through all post and chain fence gate openings.
 - .3 This item includes: the supply of all necessary materials, labour, and equipment for the supply and installation of all fencing, posts, chain, barbed wire, brackets, braces, access gates, latch, padlock and keying, grading (cuts or fills), foundation excavation, and concrete footings whether in rock or common material
- .9 C2 Clear Stone
- .1 Unit of measurement: metric tonnes (t)
 - .2 Method of measurement: scale tickets approved by the Departmental Representative.
 - .3 This item includes: supply, placement, hauling, compaction and non-woven geotextile fabric. There shall be no payment for extra thickness of materials placed outside of limits. Whenever in the opinion of the Departmental Representative there is extra thickness, the appropriate weight will be deducted.
- .10 Imported Borrow Material
- .1 Unit of measurement: metric tonnes (t)
 - .2 This item includes: the supply and transportation of all labour, equipment and materials, testing, loading, trucking, moving, stockpiling, placing, spreading, shaping, compaction, adjustment of moisture content, traffic control, dust control, clean up and all work incidental thereto, all as specified or as shown on the Drawings or as directed by the Engineer.
 - .3 No separate payment will be made for overhaul.
- .11 Aggregate Base – Granular Type 1
- .1 Unit of measurement: metric tonnes (t)
 - .2 Method of measurement: Scale tickets signed by Departmental Representative.
 - .3 This item includes: Supply, sourcing, testing, loading, weighing, placing, spreading, shaping, compaction of granular type 1 base materials for top of lagoon dikes and parking areas, for under pavement, or other locations as indicated. It also includes adjustment of moisture content, proof rolling, clean up and all work incidental thereto. This item additionally includes grading and compaction of existing materials below, prior to its installation, to provide required grades. Granular type 1 material used under the building footprint will not be measured for payment and is included in the payment item for “New Operation Building – Foundation – complete”
 - .4 There shall be no payment for extra thickness of granular Type 1 material placed outside of specified limits. Whenever in the opinion of the Departmental Representative there is extra thickness, the appropriate weight will be deducted.
- .12 Granular Sub-Base – Granular Type 2
- .1 Unit of measurement: metric tonnes (t)
 - .2 Method of measurement: Scale tickets signed by Departmental Representative.
 - .3 This item includes: Supply, sourcing, testing, loading, weighing, placing, spreading, shaping, compaction of granular type 2 sub-base materials for lagoon construction, under

pavement, or other locations as indicated. It also includes adjustment of moisture content, proof rolling, clean up and all work incidental thereto. This item additionally includes grading and compaction of existing sub-grade below granular materials prior to their installation to provide required sub-grades. Granular type 2 material used under the building footprint will not be measured for payment and is included in the payment item for “New Operation Building – Foundation – complete”

- .4 There shall be no payment for extra thickness of granular Type 2 material placed outside of specified limits. Whenever in the opinion of the Departmental Representative there is extra thickness, the appropriate weight will be deducted.
- .13 Asphalt Paving
- .1 Unit of measurement: metric tonnes (t) of each pavement type
 - .2 Method of measurement: Scale tickets signed by Departmental Representative, except as provided below.
 - .3 This item includes: supply and transportation of all equipment, labour and materials including testing, tack coat, placement, compaction, construction joints, temporary striping, protection of structures, water for asphalt cooling when required, clean-up and all work incidental thereto, all as specified or as shown on the Drawings.
 - .4 There shall be no payment for extra thickness or extra width of asphalt placed. Wherever in the opinion of the Departmental Representative there is extra thickness, the appropriate weight will be deducted.
- .14 Lagoon #2 Sub-drain System – complete
- .1 Unit of measurement: Lump Sum
 - .2 This item includes: The supply and transportation of all labour, equipment and materials, excavation, dewatering, non-woven geotextile fabric, supply, installation and joining of the pipe, couplings, fittings, clear stone, backfilling, compaction, temporary pumping chamber, pumping, removal and disposal of excess materials, clean-up and all work incidental thereto, all as specified or as shown on the Drawings or as laid out by the Departmental Representative.
- .15 Lagoon #2 Working Platform – complete
- .1 Unit of measurement: Lump Sum
 - .2 This item includes: the supply and transportation of all labour, equipment and materials, testing, geotextile fabric, weighing, granular material, placing, spreading, compaction, dewatering, clean-up and all work incidental thereto, all as specified or as shown on the Drawings or as laid out by the Departmental Representative.
- .16 60mil Aesthetic Liner (Lagoon #1)
- .1 Unit of measurement: Lump Sum
 - .2 This item includes: This includes preparation, placement, compaction and approval of type 1 granular material where indicated, surface prior to placement of Liner material, supply and transportation of all equipment, labour and material including lapping and joining, welding of material, lock trench, pipe boots and stainless steel straps or clamps, bottom chain and anchoring, boat launch areas, liner testing and quality control and testing report, maintaining

the site in a condition suitable for liner placement including dewatering as required, services of the supplier's representative and crew during installation, and removal and disposal of excess materials off site.

- .17 60mil HDPE Impervious Liner (Lagoon #2)
 - .1 Unit of measurement: Lump Sum
 - .2 This item includes: This includes preparation, placement, compaction and approval of the 100mm crusher dust surface prior to placement of Liner material, supply and transportation of all equipment, labour and material including lapping and joining, welding of material, lock trench, pipe boots and stainless steel straps or clamps, bottom chain, boat launch areas, liner testing and quality control and testing report, maintaining the site in a condition suitable for liner placement including dewatering as required, services of the supplier's representative and crew during installation, and removal and disposal of excess materials off site.
- .18 Bentonite Liner Repair
 - .1 Unit of measurement: Lump Sum
 - .2 This item includes: This includes supply and transportation of all equipment, labour and material, surface preparation, liner, granular bentonite, liner protection collar, type 1 granular for dike restoration, joining adjacent lengths of liner, liner testing and quality control and testing report, maintaining the site in a condition suitable for liner placement including dewatering as required, lock trench backfill and compaction, liner protection, clean up and all work incidental thereto, all as specified or as shown on the drawings, or as laid out by the Departmental Representative.
- .19 50 mm Water Service Pipe
 - .1 Unit of measurement: Linear metre (m).
 - .2 Method of measurement: Horizontal, along centerline of pipe through fittings.
 - .3 This item includes: supply and installation of all labour, equipment, pipe, connections to fittings and water mains, connection to existing services, dewatering, environmental protection, bedding, backfilling, marker tape, compaction, testing, flushing and disinfection, de-chlorination, and reinstatement.
- .20 Storm Manhole
 - .1 Unit of measurement: Each
 - .2 Method of measurement: Measure manholes in units installed of the appropriate size.
 - .3 This item includes: Supply and transportation of all labour, equipment and material, excavation, installation, manhole, flat-top section, frame and cover, access hatch, cutting of pipes, gaskets, couplings, fittings including plugs and caps, grout, connections, dewatering, bedding, compaction, backfilling, leakage testing, protective membrane, concrete benching, inside drop (including drop bowl assembly with pipe), supports, adjustments, chamber insulation (when required, as shown on the drawings), trench restoration and maintenance, environmental protection, clean-up and all work incidental thereto, all as specified or as shown on the drawings, or as laid out by the Departmental Authority.
- .21 Storm Utility Sewerage Gravity Piping

- .1 Unit of measurement: linear metre (m)
 - .2 Method of Measurement: Measure new pipe of each size horizontally along centreline, as laid and accepted by the Departmental Representative.
 - .3 This item includes supply and installation of pipe and accessories, including delivery to site, labour, materials and equipment. It also includes dewatering, removal of existing storm utility sewerage gravity piping, excavation, pumping, disposal of unsuitable material, bedding and backfill, polyethylene wrap, marker tape, connections to manholes or other structures including all appurtenances, connection to existing piping or structures including all appurtenances, testing, and all other costs not included with other units in the contract.
- .22 Sanitary Sewer Manholes
- .1 Unit of measurement: Each
 - .2 Method of measurement: Measure manholes in units installed of the appropriate size.
 - .3 This item includes: Supply and transportation of all labour, equipment and material, excavation, installation, manhole, flat-top section, frame and cover, access hatch, cutting of pipes, gaskets, couplings, fittings including plugs and caps, grout, connections, dewatering, bedding, compaction, backfilling, leakage testing, protective membrane, concrete benching, inside drop (including drop bowl assembly with pipe), supports, adjustments, chamber insulation (when required, as shown on the drawings), trench restoration and maintenance, environmental protection, clean-up and all work incidental thereto, all as specified or as shown on the drawings, or as laid out by the Departmental Authority.
- .23 Precast Concrete Flow Control Chambers
- .1 Unit of measurement: Each
 - .2 Method of measurement: Measure flow control chambers in units installed of the appropriate size and type.
 - .3 This item includes: supply and transportation of all labour, equipment and material, excavation, installation, chamber, flat top section, access hatch, cutting of pipes, gaskets, couplings, grout, connections, dewatering, bedding, compaction, backfilling, leakage testing, protective membrane, adjustments, benching, inside drop bowl assembly with pipe, sluice gates c/w gate operator, extensions and valve operator key, gate valve, stop log assemblies, anchors, supports, chamber insulation (when required, as shown on the drawings), log lifting assembly, trench restoration and maintenance, clean-up and all work incidental thereto, all as specified or as shown on the drawings, or as laid by the Departmental Representative
- .24 UV By-Pass Metering Chamber - CH-02, Complete
- .1 Unit of measurement: Each
 - .2 This item includes: Supply and transportation of all labour, equipment and material, excavation, dewatering, bedding, installation, chamber, flat top section, access hatch and frame, Parshall flume flow metering system, cutting of pipes, gaskets, couplings, grout, connections, backfilling, compaction, leakage testing, adjustments, anchors, supports, adjustments, chamber insulation (when required, as shown on the drawings), surface restoration and maintenance, clean-up and all work incidental thereto, all as specified or as shown on the drawings, or as laid by the Departmental Representative.

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- .25 Manual By-Pass Bar Screen Chamber - CH-01, complete with bar screen
- .1 Unit of measurement: Each
 - .2 This item includes: Supply and transportation of all labour, equipment and material, excavation, dewatering, bedding, installation, chamber, flat top section, access hatch and frame, cutting of pipes, gaskets, couplings, grout, connections, backfilling, compaction, leakage testing, adjustments, bar screen and rake, anchors, supports, adjustments, chamber insulation (when required, as shown on the drawings), surface restoration and maintenance, clean-up and all work incidental thereto, all as specified or as shown on the drawings, or as laid by the Departmental Representative.
- .26 Security Chamber – SAMH-C, complete with bar screen
- .1 Unit of measurement: Each
 - .2 This item includes: Supply and transportation of all labour, equipment and material, excavation, dewatering, bedding, installation, chamber, flat top section, access hatches and frame, bar screen and rake, high-water alarm system, cutting of pipes, gaskets, couplings, grout, connections, backfilling, compaction, leakage testing, adjustments, benching, anchors, supports, adjustments, chamber insulation (when required, as shown on the drawings), aluminium rake, surface restoration and maintenance, clean-up and all work incidental thereto, all as specified or as shown on the drawings, or as laid by the Departmental Representative.
- .27 Pre-cast Concrete Headwall
- .1 Unit of measurement: Each
 - .2 This item includes: Supply and transportation of all labour, equipment and material, excavation, dewatering, bedding, installation, rip-rap apron, supply, installation of headwalls, connection of the headwall to the culvert pipe, flap gate, grout, connections, dewatering, compaction, backfilling, trench restoration and maintenance, environmental protection, clean-up and all work incidental thereto, all as specified or as shown on the drawings, or as laid out by the Departmental Representative.
- .28 Sanitary Service Piping, Including all Appurtenances, Complete
- .1 Unit of measurement: Each.
 - .2 This item includes: supply and installation of all labour, equipment, service pipe, service saddle, backflow preventer where indicated, dewatering, environmental protection, bedding, connections to sanitary mains, backfilling, compaction, testing, and reinstatement and all work incidental thereto, all specified or as shown on the drawings, or as directed by the Departmental Representative.
- .29 Sanitary Utility Sewerage Gravity Piping – Open Trench
- .1 Unit of measurement: linear metre (m)
 - .2 Method of Measurement: Measure new pipe of each size horizontally along centreline excluding distance across manhole, as laid and accepted by the Departmental Representative.
 - .3 This item includes: Supply and installation of all labour, sanitary pipe and accessories, including delivery to site, labour, materials and equipment. It also includes jointing, fusing

where required, insulation, video inspection and reporting, testing, dewatering, removal of existing sanitary utility sewerage gravity piping, excavation, sanitary sewer by-pass, pumping, disposal of unsuitable material, bedding and backfill, polyethylene wrap, marker tape, bends, tees and reducers, connections to manholes or other structures including all appurtenances, connection to existing piping or structures including all appurtenances, connection to buildings including all appurtenances, video inspection and reporting, testing, and all other costs not included with other units in the contract.

.30 Sanitary Utility Sewerage Gravity Piping – Directional Drilling

- .1 Unit of measurement: linear metre (m)
- .2 Method of Measurement: Measure new pipe of each size horizontally along centreline, as laid and accepted by the Departmental Representative.
- .3 This item includes: supply and transportation of all labour, equipment and materials, location of utilities in the work area, verification of soil conditions, installation of the pipe by horizontal directional drilling technique, bore pits, back-reaming, lubricants, pulling of the pipe, connections including joining of pipe sections fusing operations including adaptor flanges to PVC piping, excavation and backfilling as required, trimming and removal of pipe lengths not required in the installation, flushing, connection to existing pipes, capture and disposal of lubricants, testing of the sewer main, correction of deficiencies, removal and disposal of excess materials, grading of the surface including restoration of ditches disturbed by the pipe installation, surface maintenance, environmental protection, shop drawings, clean-up and all work incidental thereto, all as specified or as shown on the Drawings or as laid out by the Departmental Representative.

.31 Pipe Culvert

- .1 Unit of measurement: linear metre (m)
- .2 Method of Measurement: Measure new culvert of each size along centreline, from end to end of new culvert installed, as laid and accepted by the Departmental Representative.
- .3 This item includes: Supply and installation of culvert pipe and accessories, including delivery to site, labour, materials and equipment. Dewatering, removal of existing culvert, excavation, disposal of unsuitable material, bedding and backfill, connections to catch basins, testing, and all other costs not included with other units in the contract.

.32 Safety Rope System, Complete

- .1 Unit of measurement: Lump Sum
- .2 This item includes: supply of all material, transportation, rope, anchors, buoys, cleanup, and all work incidental thereto, as specified/shown on the drawings, or as laid out by the Departmental Representative.

.33 Floating Baffle Curtains and Anchor Posts, Complete

- .1 Unit of measurement: Lump Sum
- .2 This item includes: supply and transportation of all labour, materials and equipment, baffle curtain with flotation collar, flow through windows, stainless steel cables and fasteners, anchoring devices, concrete, post cover, protection of the liner, clean-up, adjustments,

transportation, and all work incidental thereto, as specified/shown on the drawings, or as laid out by the Departmental Representative.

- .34 Boat and trailer, c/w Electric Motor and Accessories
 - .1 Unit of measurement: Lump Sum
 - .2 This item includes: Supply and transportation of equipment, fibreglass boat, motor, galvanized trailer to suit boat, safety equipment, winches, blocks and other equipment and fittings as specified.
- .35 Concrete Splash Pad
 - .1 Unit of measurement: Each
 - .2 This item includes: All labour, materials, and equipment to supply and place concrete pad including, excavation, formwork and concrete, curing, protection from traffic and elements, removal of forms, and all incidental works.
- .36 Aeration System – HDPE Piping (Buried Main Air Header)
 - .1 Unit of measurement: Linear metre (m)
 - .2 This item includes: supply and transportation of all labour, materials and equipment, pipe, removal of existing aeration piping, excavation, dewatering, bedding, fusing of the pipes and fittings, backfilling, compaction, fittings, fusing operations, restrainers, drilling, testing, flushing and water supply for flushing, marker tape, clean-up and all work incidental thereto, all as specified or as shown on the drawings or as laid out by the Departmental Representative. Where pipes and assemblies are fused in the factory, no extra payment will be made to the Contractor for any discrepancy between actual site configuration and what is shown on the plan. The cost of flushing must be included in the tendered price for air pipes. The Contractor must provide his own water as this will not be provided by the Owner, incidental to the work. Where pipes and assemblies are fused in the factory, no extra payment will be made for discrepancies between actual site configuration and what is shown on the plan.
- .37 Air Piping System – Blow-off Connection
 - .1 Unit of measurement: Each
 - .2 This item includes: supply and transportation of all labour, materials and equipment, pipe, excavation, dewatering, bedding, backfilling, compaction, fittings, restrainers, anchor posts, transition piping (buried to above ground), fused fittings, two pieces flange assembly for valves, including flange assemblies and stainless steel flanges, pipe, stainless steel bolts and supports (with non corrosive chemical anchor), above ground butterfly valves with leavers, drilling, testing, flushing, marker tape, clean-up and all work incidental thereto, all as specified or as shown on the drawings or as laid out by the Departmental Representative.
- .38 Air Piping System - Buried to Above Ground Piping and Valve
 - .1 Unit of measurement: Each
 - .2 This includes the supply and transportation of all labour, materials and equipment, pipe, excavation, dewatering, bedding, backfilling, compaction, fittings, restrainers, transition piping (buried to above ground), fused fittings, two pieces flange assembly for valves,

including flange assemblies and stainless steel flanges, pipe, stainless steel bolts and supports (with non corrosive chemical anchor), above ground butterfly valves with leavers, drilling, testing, flushing, marker tape, clean-up and all work incidental thereto, all as specified or as shown on the drawings or as laid out by the Departmental Representative.

- .39 Floating Aeration System – Complete
- .1 Unit of measurement: Lump Sum
 - .2 Method of measurement: payment will be made for the complete design, supply and installation of the floating lateral and fine bubble submerged diffuser aeration system and related components.
 - .3 This item includes: the supply and transportation of all labour, materials, equipment, design including the Stamped (by an Engineer licensed to practice in Nova Scotia) Design Brief, supply and installation of the system as specified with all components, delivery and off-loading, floating lateral diffusers (complete system), free-end self-adjusting lateral tension assemblies and anchor posts, stainless steel lateral anchor cable, diffuser bottom ballast blocks, fittings, stainless steel hardware and wires, connection to the air supply header, testing, pipe fusion operations where required (by the pipe manufacturer), testing, flushing, shop drawings, Operation and Maintenance Manuals, system commissioning and start-up assistance, training, guarantee/warranty, clean-up, on-site system verification, and all work incidental thereto, as specified or as shown on the Drawings or as directed by the Departmental Representative.
 - .4 Payment milestones for this work shall be as described below, subject to the Departmental Representative's approval that the required conditions have been met:
 - .1 Submission of the acceptable aeration system stamped Design Brief and shop drawings: twenty percent (20%).
 - .2 Delivery of acceptable O & M Manuals: ten percent (10%)
 - .3 Delivery of floating lateral and submerged diffuser systems: thirty five percent (35%)
 - .4 Installation aeration system floating laterals and diffusers systems and commissioning, training: thirty five percent (35%)
 - .5 NOTE: Any payments made at the milestones indicated will be subject to the holdback requirements that apply to this Contract, as well as other clauses that may become applicable such as the right of set-off. Also, these payments will be made on the same schedule as for normal progress payments, generally on a monthly basis.
 - .6 As described in these specifications and on the drawings, the aeration system was based on a typical floating lateral system. Any other components required for a complete installation of one of the approved system shall be included in this item, and no extra payment will be made to the Contractor for omissions in the tendered price for floating laterals or any item required for a complete installation of the aeration system, as required by the Manufacturer and as shown on the drawings and in these specifications.
- .40 Topsoil, Hydroseed and Hay Mulch
- .1 Unit of measurement: square metre (m²)

- .2 Method of Measurement: The actual application area from within the limits identified by the Departmental Representative, will be measured in square metres, rounded to the nearest whole number. The surface area shall be measured jointly with the Departmental Representative using a measuring wheel or approved alternative method.
 - .3 This item includes: all labour, materials and equipment for the preparation of the ground to be treated with hydroseeding and hay mulch and the supply and placement of hydroseed mix, together with such watering and maintenance as may be required over a one-year establishment period from date of initial acceptance. An additional application of fertilizer is required the following Spring after initial application. No additional payment will be made for maintenance over the establishment period or the extra application of fertilizer.
- .41 Supply and Installation of Blowers - Complete
- .1 Unit of Measurement: Each
 - .2 This Item Includes: The supply and installation of blower units. This includes the supply and installation of all materials, all labour and equipment required, blower and motor assembly including blower, motor, V-belt, pulleys, sheaves, frame, electrical wiring to terminal/junction box, expansion joints, check valves, intake filter/silencer, discharge silencer, gauges, temperature switches, pressure switches, temperature indicator, acoustic enclosure including cooling fan and acoustic intake hood and transition duct, louvre, sheet metal, acoustic foam, painting, fasteners, wiring, connections and installation of blower assembly on skid, spare parts, shipping and off-loading, shop drawings, Installation Manuals, Operating and Maintenance Manuals, commissioning, verification of performance, on-site technical assistance, training, guarantee/ warranty, final inspection, and all work incidental thereto, all as specified or as directed by the Departmental Representative.
 - .3 Payment milestones for this work shall be as described below, subject to the approval of the Departmental Representative that these conditions have been met:
 - .1 Submission of the acceptable blower unit shop drawings and Installation Manuals: twenty five percent (25%)
 - .2 Delivery of blowers, accessories, Operating and Maintenance Manuals and all related items to the site: fifty percent (50%)
 - .3 System commissioning to confirm acceptable operation of the blowers, system start-up and training: twenty-five percent (25%)
 - .4 NOTE: Any payments made at the milestones indicated will be subject to the holdback requirements that apply to this contract, as well as other clauses that may become applicable such as the right of set-off. Also, these payments will be made on the same schedule as for normal progress payments, generally on a monthly basis.
- .42 UV Disinfection System - complete
- .1 Unit of measurement: Each
 - .2 This item includes: The supply and transportation, installation and testing. This includes the supply and construction of all materials, equipment, and labour, packing and transportation, UV disinfection system, UV modules, supporting racks, lamps, sleeves, control and power panel, effluent level controller, maintenance racks, portable UVT field meter, spare parts, performance data, shop drawings, installation and operating and maintenance manuals, clear

water for testing of equipment, commissioning and start-up, training, on-site technical assistance, warranty, and all work incidental thereto, all as specified or as directed by the Departmental Representative.

- .43 Supply and installation of Fine Screen System and washer compactor – complete
 - .1 Unit of measurement: Each
 - .2 This item includes: The supply and transportation of all labour, equipment, material required for the installation of the fine screen system and washer compactor unit, including, but not limited to, structural frame, frame pivot, screening removal mechanism, chain driving system, self adjusting cleaning brush, wash water system, valves, solenoid valves, strainer, fittings, drive unit, screw, screw housing, collection through, inlet hopper, washing system, discharge duct, roller bearing housing, bagging system, waste disposal containers, fine screen and washer compactor main control system, fine screen and washer compactor local station and appurtenances, programming, wiring and connections, supply of spare parts as mentioned in section 10 85 00, shipping and off-loading, shop drawings, Installation Manuals, Operating and Maintenance Manuals, commissioning, verification of performance, on-site technical assistance, training, guarantee/ warranty, final inspection, clean-up and all work incidental thereto, all as specified or as shown on the drawings or as laid out by the Departmental Representative.
- .44 New Operation Building – Foundation - complete
 - .1 Unit of measurement: Each
 - .2 This item includes: supply and transportation of all labour, materials and equipment required to properly construct the building foundation including excavation and backfilling, trucking material off site and stockpiling of material for re-use, dewatering, site work, crushed rock for backfilling and under concrete floor slab, concrete form work, reinforced concrete work, thrust block, concrete, foundation, concrete slab, concrete equipment pads, rigid foundation wall insulation, fibre expansion joint, expansion joint protector, flexible sealant, installation of materials (pipe penetration sleeves, etc.) supplied by other trades, clean-up, and all work incidental thereto, all as specified or as shown on the drawings or as laid out by the Departmental Representative.
- .45 New Operation Building – Structural and Architectural - complete
 - .1 Unit of measurement: Each
 - .2 This item includes: supply and transportation of all labour, materials and equipment required to properly complete the building architectural and structural work including rough carpentry, wall and attic insulation, gypsum board, roof system, trusses, strapping, doors and hardware, eavestrough, brick veneer and accessories, outside finishes, various exterior/interior metal work, shelving unit, reinforced concrete floor complete with epoxy, floor insulation, paint, rubber base board, clean-up, and all work incidental thereto, all as specified or as shown on the drawings or as laid out by the Departmental Representative.
- .46 New Operation Building – Building Mechanical - complete
 - .1 Unit of measurement: Each
 - .2 This item includes: Supply and transportation of all materials and labour, including exhaust fans, ductwork, louvers, dampers, actuators, grilles and diffusers, ventilation controls and

accessories, all domestic water and waste piping, backflow preventers, valves, fittings, & accessories testing, start-up, commissioning, O&M manuals, clean-up and all work incidental thereto, all as specified or as shown on the drawings or as laid out by the Departmental Representative.

.47 WWTP Mechanical – Complete

.1 Unit of measurement: Each

.2 This item includes: supply and transportation of all materials and labour, pipe and fittings, valves, gauges, air flow meters, Parshall flume flow metering systems (except Parshall Flume system in UV By-pass chamber), composite sampler, spare parts, testing, start-up, commissioning, O & M manuals, clean-up, and all work incidental thereto, all as specified or as shown on the drawings or as laid out by the Departmental Representative.

.48 Electrical - Complete

.1 Unit of measurement: Each

.2 This item includes: supply and transportation of all labour, material, tools, appliances and equipment to entirely complete and provide the operation of the electrical, communications and control systems including, but not limited to electrical hardware and services, installation of, electrical equipment, wiring, conduits, excavation, bedding material, backfilling, connectors, seals, junction boxes, fittings, installation of lights, heating, electrical equipment and control panel system, wiring and programming of level controllers, wiring and programming of PLC and HMI, control cables, padlocks, remote I/O VFDs, wiring and programming of VFDs, cover plates, electrical commissioning, demolition, clean-up all other items shown on drawings or as specified by the 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 DEFINITIONS

- .1 Activity: An element of Work performed during course of Project. An activity normally has an expected duration, an expected cost and expected resource requirements. Activities can be subdivided into tasks.
- .2 Bar Chart (GANNT Chart). A 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 (5) day work week and define schedule calendar working days as part of Bar (GANNT) Chart submission. Only upon approval by the departmental representative, shall workdays beyond this be considered.
- .5 Duration: Number of work periods (not including holidays or other nonworking periods) required to complete an activity or other Project element. Usually expressed as workdays or workweeks.
- .6 Master Plan: A summary-level schedule that identifies major activities and key milestones.
- .7 Milestone: A significant event in Project, usually completion of major deliverable.
- .8 Project Schedule: The planned dates for performing activities and the planned dates for meeting milestones. A dynamic, detailed record of tasks or activities that must be accomplished to satisfy Project objectives. Monitoring and control process involves using Project Schedule in executing and controlling activities and is used as basis for decision making throughout project life cycle.
- .9 Project Planning, Monitoring and Control System: Overall system operated by Departmental Representative to enable monitoring of project work in relation to established milestones.

1.2 REQUIREMENTS

- .1 Ensure Master Plan and Detail Schedules are practical and remain within specified Contract duration.
- .2 Plan to complete Work in accordance with prescribed milestones and time frame.
- .3 Ensure that it is understood that Award of Contract or time of beginning, rate of progress, Interim Certificate and Final Certificate as defined times of completion are of essence of this contract.

1.3 SUBMITTALS

- .1 Submit to Departmental Representative within 5 working days of Award of Contract Bar (GANTT) Chart as Master Plan for planning, monitoring and reporting of project progress.
- .2 Submit Detailed Project Schedule to Departmental Representative within 5 working days of receipt of acceptance of Master Plan.

1.4 PROJECT MILESTONES

- .1 Project milestones form targets for Project Schedule:

ITEM	DESCRIPTION	MILESTONE DATE (Completed by)
1.	Contract Award	September 19, 2022
2.	Mobilization to the site and environmental site control.	September 26, 2022
3.	Order materials, submit all shop drawings and aeration Design Brief.	October 03, 2022
4.	Tree Clearing (must not begin until September 1 st , 2022)	October 03, 2022
5.	Grubbing, stripping and stockpiling within contract limits.	October 10, 2022
6.	Operations building construction Weather tight.	December 19, 2022
7.	Operations building construction.	May 01, 2023
8.	Sludge management.	May 15, 2023
9.	Construction of new aerated lagoon No.2.	August 07, 2023
10.	Re-construction of aerated lagoon No.1.	October 09, 2023
11.	Completion of site restoration.	October 16, 2023
12.	Installation of floating aeration system and baffle curtain walls.	October 30, 2023
13.	Commissioning of new operations building and systems.	November 01, 2023
14.	Substantial Completion	November 03, 2023
15.	Substantial Completion Inspection	November 03, 2023
16.	Final clean up, completion of deficiencies and demobilization.	November 10, 2023
19.	10 month warranty inspection	September 10, 2024

20.	Certificate of completion	November 10, 2024
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- .2 The successful Contractor will be required to prepare and submit a detailed construction sequence to the Departmental Representative for approval prior to the start of construction. This shall include any key milestones noted in the specifications or on the Drawings.

1.5 COMPLETION DATE

- .1 From the date of notification to proceed to substantial completion including commissioning and clean-up, shall be completed no later than 287 working days (Monday – Friday), excluding holidays, after the award of Contract.
- .2 The Contractor is to provide and schedule sufficient crews, plant, etc. to ensure these completion requirements are met. If the Contractor's original schedule is affected by weather or other factors, he shall be required to provide additional personnel and/or equipment as necessary to ensure this completion date is met, and this is to be done at no additional cost to the Owner.

1.6 MASTER PLAN

- .1 Structure schedule to allow orderly planning, organizing and execution of Work as Bar Chart (GANTT).
- .2 Departmental Representative will review and provide comment within 5 working days.
- .3 Revise impractical schedule and resubmit within 5 working days.
- .4 Accepted revised schedule will become Master Plan and be used as baseline for updates.

1.7 PROJECT SCHEDULE

- .1 Develop detailed Project Schedule derived from Master Plan.
- .2 Ensure detailed Project Schedule includes as minimum milestone and activity types as indicated in Project Milestones Table above.

1.8 PROJECT SCHEDULE REPORTING

- .1 Update Project Schedule every 2 weeks or as requested by Departmental Representative, 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.
- .3 Present and review with attendees updated schedule at each project meeting.

1.9 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.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 ADMINISTRATIVE

- .1 Submit to Departmental Representative 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 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 coordinated 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 shall be 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.
- .11 Make any changes in submissions which Departmental Representative may require consistent with Contract Documents and resubmit as directed by Departmental Representative.
- .12 Notify Departmental Representative, in writing, when resubmitting of any revisions other than those requested by Departmental Representative.
- .13 Allow 10 working days for Departmental Representative's review of each submission.
- .14 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.
- .15 Make changes in shop drawings as Departmental Representative may require, consistent with Contract Documents. When resubmitting, notify Departmental Representative in writing of any revisions other than those requested.
- .16 After Departmental Representative's review, distribute copies.
- .17 Delete information not applicable to project.

- .18 Supplement standard information to provide details applicable to project.
- .19 If upon review by Departmental Representative, no errors or omissions are discovered or if only minor corrections are made, copies will be returned and fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.

1.2 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 that are specific to project requirements.
- .2 Submit for review detailed shop drawings of all equipment and all material required for the completion of the project. No material or equipment may be delivered to the job site or installed until the Contractor has in his possession the "reviewed" shop drawings for the particular material or equipment. The shop drawings shall be complete as described herein. Colour samples or other details which cannot be properly represented as a PDF shall be physically submitted to the Departmental Representative.
- .3 Shop drawings with Engineering content must bear the stamp and signature of the Engineer licensed to practice in the Province of Nova Scotia responsible for their preparation.
- .4 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been coordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.
- .5 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.
- .6 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 Relationship to adjacent work.
- .7 Submit electronic of shop drawings for each requirement requested in the Specification sections and as Departmental Representative may reasonably request.
- .8 Submit 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.
- .9 Submit electronic 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 3 years of date of contract award for project.
- .10 Submit electronic 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.
- .11 Submit electronic copies of manufacturer's instructions to indicate special handling criteria, installation details and sequence, repair procedures and any requirements requested in specification Sections and as requested by Departmental Representative.
- .1 Pre-printed material describing installation of product, system or material, including special notices and Material Safety Data Sheets concerning impedances, hazards and safety precautions.
- .12 Submit electronic copies of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by Departmental Representative.
- .13 Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.
- .14 Submit electronic copies of Operation and Maintenance Data for requirements requested in specification Sections and as requested by Departmental Representative.
- .15 Catalogues, pamphlets, or other documents submitted to describe items on which review is being requested, shall be specific and identification in catalogue, pamphlet, etc. of item submitted shall be clearly made in ink. **Data of a general nature will not be accepted.**
- .16 Review rendered on shop drawings shall not be considered as a guarantee of measurements or building conditions. Where drawings are reviewed, said review does not mean that drawings have

been checked in detail; said review does not in any way relieve the Contractor from his responsibility or necessity of furnishing material or performing work as required by the contract drawings and specifications.

- .17 Shop drawings are to be submitted for all supplied items and other items which may be required by the Contract documents.
- .18 If any product is installed prior to approval, the removal cost and any related cost is not covered by the Owner.
- .19 Delay claims nor any related costs will not be paid for non-conforming submissions.
- .20 Payments may be held back until proper submission is provided.
- .21 The review of shop drawings is for sole purpose of ascertaining conformance with general concept. This review shall not mean approval of 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 all requirements of construction and Contract Documents. 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 all sub-trades.

1.3 SAMPLES

- .1 Samples: examples of materials, equipment quality, finishes, workmanship.
- .2 Submit for review samples as requested in respective specification Sections. Label samples with origin and intended use.
- .3 Deliver samples prepaid to Departmental Representative's business address.
- .4 Notify Departmental Representative in writing, at time of submission of deviations in samples from requirements of Contract Documents.
- .5 Adjustments made on samples 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 samples which Departmental Representative may require, consistent with Contract Documents.
- .7 Reviewed and accepted samples will become standard of workmanship and material against which installed Work will be verified.

1.4 PROGRESS PHOTOGRAPHS

- .1 Submit electronic and hard copy of colour digital photographs in "jpg" format.
- .2 Identification: name and number of project and date of exposure indicated.

- .3 Number of view points: locations of view points determined by Departmental Representative.
- .4 Frequency: monthly and at completion excavation and services before concealment.

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.

1.6 WORK SCHEDULE

- .1 Provide within 5 working days after contract award, schedule showing anticipated progress stages and final completion of work within time period required by Contract Documents.
- .2 Interim reviews of work progress based on work schedule will be conducted as decided by Departmental Representative and schedule updated by Contractor in conjunction with and to approval of 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 DEFINITIONS

- .1 COSH: Canada Occupational Health and Safety Regulations made under Part II of the Canada Labour Code.
- .2 Competent Person: means a person who is:
 - .1 Qualified by virtue of personal knowledge, training and experience to perform assigned work in a manner that will ensure the health and safety of persons in the workplace, and;
 - .2 Knowledgeable about the provisions of occupational health and safety statutes and regulations that apply to the Work and;
 - .3 Knowledgeable about potential or actual danger to health or safety associated with the Work.
- .3 Medical Aid Injury: any minor injury for which medical treatment was provided and the cost of which is covered by Workers' Compensation Board of the province in which the injury was incurred.
- .4 PPE: personal protective equipment including measures for protection against Covid-19.
- .5 Work Site: where used in this section shall mean areas, located at the premises where Work is undertaken, used by Contractor to perform all of the activities associated with the performance of the Work.
- .6 Comply with Section 01 35 59 Security Requirements at Correctional Service Canada Facilities

1.2 SUBMITTALS

- .1 Make submittals in accordance with Section 01 33 00.
- .2 Submit site-specific Health and Safety Plan prior to commencement of Work. Provide 1 electronic copy.
 - .1 Submit within 7 days of notification of Bid Acceptance 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 Contractor's protocols for COVID-19. This shall include Health and Safety Requirements to protect workers and the project site including precautions and mitigation related to the hazard of contracting or spreading Covid-19 disease. A source of advice can be found in the Canadian Construction Association Covid-19 Standardized Protocols for All Canadian Construction Sites.
 - .2 Departmental Representative will review Health and Safety Plan and provide comments.
 - .3 Revise the Plan as appropriate and resubmit within 5 work days after receipt of comments.
 - .4 Departmental Representative's review and comments made of the Plan shall not be construed as an endorsement, approval or implied warranty of any kind by Canada and does

not reduce Contractor's overall responsibility for Occupational Health and Safety of the Work.

- .5 Submit revisions and updates made to the Plan during the course of Work.
- .3 Submit name of designated Health & Safety Site Representative and support documentation specified in the Safety Plan.
- .4 Submit building permit, compliance certificates and other permits obtained.
- .5 Submit copy of Letter in Good Standing from Provincial Workers Compensation or other department of labour organization.
 - .1 Submit update of Letter of Good Standing whenever expiration date occurs during the period of Work.
- .6 Submit copies of reports or directions issued by Federal, Provincial and Territorial health and safety inspectors.
- .7 Submit copies of incident reports.
- .8 Submit WHMIS MSDS - Material Safety Data Sheets.
- .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 Departmental Representative.
- .10 On-site Contingency and Emergency Response Plan: Address standard operating procedures to be implemented during emergency situations.
- .11 Submit other data, information and documentation upon request as stipulated elsewhere in this section.

1.3 COMPLIANCE REQUIREMENTS

- .1 Comply with Occupational Health and Safety Act for Province of Nova Scotia, and Regulations made pursuant to the Act.
- .2 Comply with Canada Labour Code - Part II (entitled Occupational Health and Safety) and the Canada Occupational Health and Safety Regulations (COSH) as well as any other regulations made pursuant to the Act.
- .3 Observe construction safety measures of:
 - .1 Part 8 of National Building Code;
 - .2 Provincial Worker's compensation Board;
 - .3 Municipal by-laws and ordinances.
- .4 In case of conflict or discrepancy between above specified requirements, the more stringent shall apply. Should a dispute arise in determining the most stringent requirement, Departmental Representative will advise on the course of action to be followed.
- .5 Maintain Workers Compensation Coverage in good standing for duration of Contract. Provide proof of clearance through submission of Letter in Good Standing.

- .6 Medical Surveillance: Where prescribed by legislation or regulation, obtain and maintain worker medical surveillance documentation.
- .7 A copy of the Canada Labour Code Part II may be obtained by contacting:
 - Canadian Government Publishing
 - Public Works & Government Services Canada
 - Ottawa, ON, K1A 0S9
 - Tel: (819) 956-4800 or 1-800-635-7943

1.4 RESPONSIBILITY

- .1 Be responsible for health and safety of persons on site, safety of property on site and for protection of persons and environment adjacent to the site to extent that they may be affected by conduct of Work.
- .2 Comply with and enforce compliance by all workers, sub-contractors and other persons granted access to Work Site with safety requirements of Contract Documents, applicable federal, provincial, and local by-laws, regulations, and ordinances, and with site-specific Health and Safety Plan.

1.5 SITE CONTROL AND ACCESS

- .1 Control the Work and entry points to Work Site. Approve and grant access only to workers and authorized persons. Immediately stop and remove non-authorized persons from within construction areas.
- .2 Implement procedures for granting permission to enter into work site to all persons who require access. Procedures to include the provision of a site safety orientation session.
- .3 Delineate and isolate Work Site from other areas of the premises by use of appropriate means.
 - .1 Erect fences, hoarding, barricades and temporary lighting as required to effectively delineate the Work Site, stop non-authorized entry, and to protect pedestrians and vehicular traffic around and adjacent to the Work and create a safe environment.
 - .2 Erect signage at entry points and at other strategic locations around site, clearly identifying construction area(s) as being "off limits" to unauthorized persons.
 - .3 Use professionally made signs with bilingual message in the 2 official languages or international known graphic symbols.
- .4 Provide safety orientation session to persons granted access to Work Site. Advise of hazards and safety rules to be observed while on site.
- .5 Ensure persons granted site access wear appropriate PPE. Supply PPE to inspection authorities who require access to conduct tests or perform inspections.
- .6 Secure Work Site against entry at night, and when inactive or unoccupied and to protect persons against harm. Provide security guard where adequate protection cannot be achieved by other means.

1.6 PROTECTION

- .1 Provide temporary facilities for protection and safe passage of public pedestrians and vehicular traffic around adjacent work site.

- .2 Provide safety barricades, lights and signage on work site as required to provide a safe working environment for workers.
- .3 Carry out work placing emphasis on health and safety of public, site personnel and protection of the environment.
- .4 Should unforeseen or peculiar safety related hazard or condition become evident during performance of work, immediately take measures to rectify the situation and prevent damage or harm. Advise Departmental Representative verbally and in writing.

1.7 FILING OF NOTICE

- .1 File Notice of Project with pertinent provincial health and safety authorities prior to beginning of Work.
 - .1 Upon request, Departmental Representative will provide name and mailing address of provincial department to whom the Notice of Project shall be sent.

1.8 PERMITS

- .1 Obtain permits, licenses and compliance certificates, at appropriate times and frequency as stipulated by authorities having jurisdiction. Post at Work Site.
- .2 Where a particular permit or compliance certificate cannot be obtained, notify Departmental Representative in writing and obtain approval to proceed before carrying out applicable portion of work.

1.9 HAZARD ASSESSMENTS

- .1 Implement and carry out a health and safety hazard assessment program as part of the work. Program to include:
 - .1 Initial hazard assessment carried out immediately upon notification of contract award prior to commencement of Work.
 - .2 Ongoing hazard assessments performed during the progress of work identifying new or potential health risks and safety hazards not previously known. As a minimum, hazard assessments shall be carried out when:
 - .1 New sub-trade work, new subcontractor(s) or new workers arrive at the site to commence another portion of the work.
 - .2 The scope of the work has been changed by Change Order.
 - .3 Potential hazard or weakness in current health and safety practices are identified by Departmental Representative or by an authorized safety representative.
 - .3 Hazard assessments to be project and site specific, based on review of contract documents, site and weather conditions.
 - .4 Each hazard assessment to be made in writing. Keep copies of assessments on site for duration of work. Upon request, make available to Departmental Representative for inspection.

1.10 PROJECT/SITE CONDITIONS

- .1 Following are potential health, environmental and safety hazards at the site for which Work may involve contact with:
 - .1 Known latent site and environmental conditions:
 - .1 Working in Traffic.
 - .2 Working adverse Weather Conditions.
 - .3 Working near wildlife.
 - .4 Working around multiple construction operations at the same time
 - .5 Open excavation and large construction equipment.
 - .6 Working around live sewage.
 - .2 Covid-19 measures to protect contractor, employees, consultants, Departmental Representative. Update these measures as required. Discuss any concerns throughout the contract with the Departmental Representative.
 - .1 Include measures put in place for physical distancing to and from site, during breaks, lunch, supper and hotels.
- .2 Above items shall not be construed as being complete and inclusive of potential health and safety hazards encountered during Work.
- .3 Include above items in the hazard assessment of the Work.
- .4 MSDS Data sheets of pertinent hazardous and controlled products stored on site can be obtained from Departmental Representative.

1.11 MEETINGS

- .1 Schedule and administer Health and Safety meeting with Departmental Representative prior to commencement of Work. Have Contractor's Site Superintendent in attendance. Departmental Representative will advise of time and location.
- .2 Provide site safety orientation session to all workers and other authorized persons prior to granting them access to work site. Brief persons on site conditions and on the minimum site safety rules in force at the site.
- .3 Conduct site-specific occupational health and safety meetings during the entire work as follows:
 - .1 Formal meetings on a minimum monthly basis.
 - .2 Informal "tool box" meetings on a regular basis from a predetermined schedule.
- .4 Keep workers informed of anticipated hazards, on safety practices and procedures to be followed and of other pertinent safety information related to:
 - .1 Progress of work;
 - .2 New sub-trades arriving on site, and;
 - .3 Changes in site and project conditions.
- .5 Record and post minutes of meeting. Make copies available to Departmental Representative upon request.

1.12 HEALTH AND SAFETY PLAN

- .1 Prior to commencement of Work, develop written Health and Safety Plan specific to the Work. Implement, maintain, and enforce Plan for entire duration of Work and until final demobilization from site. Health and Safety Plan must address project specifications.
- .2 Health and Safety Plan shall include the following components:
 - .1 List of health risks and safety hazards identified by hazard assessment.
 - .2 Control measures used to mitigate risks and hazards identified. Describe the engineering controls, personnel protective equipment and safe work practices to be implemented and followed when performing work related to each identified hazard or risk.
 - .3 On-site Contingency and Emergency Response Plan as specified below.
 - .4 On-site Communication Plan as specified below.
 - .5 Name of Contractor's designated Health & Safety Site Representative and information showing proof of his/her competence and reporting relationship in Contractor's company.
 - .6 Names, competence and reporting relationship of other supervisory personnel used in the Work for occupational health and safety purposes.
- .3 On-site Contingency and Emergency Response Plan shall include:
 - .1 Operational procedures, evacuation measures and communication process to be implemented in the event of an emergency. Procedures to be specific and relevant to identified hazards. Measures to complement and be integrated with the facility and tenants Emergency Response Plans in place at site.
 - .2 Evacuation Plan: layouts showing escape routes, marshalling areas, details on alarm notification methods, and other related data.
 - .3 Name, duties and responsibilities of persons designated as Emergency Warden(s) and deputies.
 - .4 Emergency Contacts: name and telephone number of officials from:
 - .1 General Contractor and subcontractors.
 - .2 Pertinent Federal and Provincial Departments and Authorities having jurisdiction.
 - .3 Local emergency resource organizations.
 - .5 Harmonize Plan with Facility's Emergency Response and Evacuation Plan. Obtain information on existing emergency and evacuation plans from Departmental Representative and incorporate appropriate data.
- .4 On-site Communication Plan:
 - .1 List of names and telephone numbers of designated officials, to be contacted should an incident or emergency situation occur, including the following:
 - .1 General Contractor and all Subcontractors.
 - .2 Federal and Provincial Departments and local emergency resources organizations, as resources organizations, as applicable laws and regulations.
 - .3 Officials from PWGSC and Correctional Services Canada. Departmental Representative will provide list of names to be included.

- .2 Procedures for sharing of work related safety information to workers and subcontractors, including emergency and evacuation measures.
- .3 List of critical work activities to be communicated with Facility Manager which have a risk of endangering health and safety of their employees and to the general public. Develop list in consultation with the Departmental Representative.
- .5 Address all activities of the Work including those of subcontractors.
- .6 Review Health and Safety Plan regularly during the Work. Update as conditions warrant to address emerging risks and hazards, such as whenever new trade or subcontractor arrive at Work Site.
- .7 Departmental Representative may respond in writing, where deficiencies or concerns are noted and may request re-submission of the Plan with correction of deficiencies or concerns.
- .8 Submission of the Health and Safety Plan, and updates to the Departmental Representative is for review and information purposes only. Its submission shall not be construed to imply approval by Departmental Representative, be interpreted as a warranty of being complete, accurate and legislate compliant and shall not relieve the Contractor of his legal obligations for the provision Health and Safety of the Construction Project.
- .9 Post copy of the Plan, and updates, prominently on Work Site.

1.13 HEALTH AND SAFETY CO-COORDINATOR

- .1 Employ and assign to Work Health & Safety Coordinator responsible for daily supervision of health and safety of the Work. Health and Safety Coordinator must:
 - .1 Be qualified and a competent person in occupational health and safety having a minimum 2 years' site-related working experience specific to activities.
 - .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 at all times during execution of Work and report directly to and be under direction of site supervisor.
- .2 Health & Safety Coordinator shall be assigned the responsibility and authority to:
 - .1 Implement, monitor and enforce daily compliance with health and safety requirements of the Work.
 - .2 Monitor and enforce Contractor's site-specific Health and Safety Plan.
 - .3 Conduct site safety orientation session to persons granted access to Work Site.
 - .4 Ensure that persons allowed site access are knowledgeable and trained in health and safety pertinent to their activities at the site or are escorted by a competent person while on the Work Site.
 - .5 Stop the Work as deemed necessary for reasons of health and safety.

- .3 All supervisory personnel assigned to the Work shall also be competent persons.
- .4 Inspections:
 - .1 Conduct regularly scheduled safety inspections of the Work on a minimum bi-weekly basis. Record deficiencies and remedial action taken.
 - .2 Conduct Formal Inspections on a minimum monthly basis. Use standardized safety inspection forms. Distribute to subcontractors.
 - .3 Follow-up and ensure corrective measures are taken.
- .5 Cooperate with Facility's Occupational Health and Safety representative should one be designated by Departmental Representative.
- .6 Keep inspection reports and supervision related documentation on site.

1.14 TRAINING

- .1 Use only skilled workers on Work Site who are effectively trained in occupational health and safety procedures and practices pertinent to their assigned task.
- .2 Maintain employee records and evidence of training received. Make data available to Departmental Representative upon request.
- .3 When unforeseen or peculiar safety-related 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.

1.15 MINIMUM SITE SAFETY RULES

- .1 Notwithstanding requirement to abide by federal and provincial health and safety regulations; ensure the following minimum safety rules are obeyed by all persons granted access to Work Site:
 - .1 Wear appropriate PPE pertinent to the Work or assigned task; minimum being hard hat, safety footwear, safety vest. Wear safety glasses and hearing protection when appropriate.
 - .2 Immediately report unsafe condition at site, near-miss accident, injury and damage.
 - .3 Maintain site and storage areas in a tidy condition free of hazards causing injury.
 - .4 Obey warning signs and safety tags.
- .2 Brief persons of on site safety rules, and on the disciplinary measures to be taken for violation or non-compliance of such rules. Post such information on site.

1.16 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 will stop Work if non-compliance of health and safety regulations is not corrected in a timely manner.

1.17 INCIDENT REPORTING

- .1 Investigate and report incidents and accidents as outlined in Provincial Occupational Safety and Health Act and Regulations.
- .2 Investigate and report the following incidents to Departmental Representative:
 - .1 Incidents requiring notification to Provincial WorkSafe NB, Workers Compensation Board or to other regulatory Agency.
 - .2 Medical aid injuries.
 - .3 Property damage in excess of \$5,000.00.
- .3 Submit report in writing.

1.18 HAZARDOUS PRODUCTS

- .1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS).
- .2 Keep MSDS data sheets for all products delivered to site.
 - .1 Post on site, in a common area, visible to workers.
 - .2 Submit copy to Departmental Representative.

1.19 BLASTING

- .1 Blasting or other use of explosives is not permitted on site without prior receipt of written permission and instructions from Departmental Representative.

1.20 POWDER ACTUATED DEVICES

- .1 Powder actuated devices are not permitted unless approved by Warden and CSC Security.

1.21 CONFINED SPACES

- .1 Abide by occupational health and safety regulations regarding work in confined spaces.
- .2 Obtain an Entry Permit in accordance with Part XI of the Canada Occupational Health and Safety Regulations for entry into an existing identified confined space located at the Facility or premises of Work.
 - .1 Obtain permit from Facility Manager
 - .2 Keep copy of permit issued.
- .3 Safety for Inspectors:
 - .1 Provide PPE and training to Departmental Representative and other persons who require entry into confined space to perform inspections.
 - .2 Be responsible for efficacy of equipment and safety of persons during their entry and occupancy in the confined space.

1.22 SITE RECORDS

- .1 Maintain on Work Site copy of safety related documentation and reports stipulated to be produced in compliance with Acts and Regulations of authorities having jurisdiction and of those documents specified herein.
- .2 Upon request, make available to Departmental Representative or authorized Safety Officer for inspection.

1.23 POSTING OF DOCUMENTS

- .1 Ensure applicable items, articles, notices and orders are posted in conspicuous location on Work Site in accordance with Acts and Regulations of Province having jurisdiction.
- .2 Post all permits on site. Submit copies to Departmental Representative.
- .3 Post other documents as specified herein, including:
 - .1 Site specific Health and Safety Plan
 - .2 WHMIS data sheets
 - .3 Fire and Safety Requirements
 - .4 Special Procedures on Lockout Requirements

1.24 UNFORESEEN HAZARDS

- .1 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 Departmental Representative verbally and in writing.

1.25 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.

1.26 TOOLS AND EQUIPMENT SAFETY

- .1 Implement and follow a scheduled tool and equipment inspection/maintenance program at work site. Regularly check tools, equipment and machinery for safe operation and perform maintenance at pre-established time and frequency intervals as recommended by manufacturer. Include subcontractor's equipment as part of the inspection process.
- .2 Use standardized checklists to ensure established safety checks are stringently followed.
- .3 Immediately tag and remove items found faulty or defective off site.
- .4 Maintain written documentation on each inspection. Make available to Departmental Representative upon request.

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 National Fire Code 2015
- .2 National Building Code 2015

1.2 DEFINITIONS

- .1 Hot Work defined as:
 - .1 Welding work.
 - .2 Cutting of materials by use of torch or other open flame devices.
 - .3 Grinding with equipment which produces sparks.
 - .4 Use of open flame torches such as for roofing work.

1.3 FIRE SAFETY REQUIREMENTS

- .1 Implement and follow fire safety measures during Work. Comply with following:
 - .1 National Fire Code 2015.
 - .2 National Building Code 2015.
 - .3 Federal and Provincial Occupational Health and Safety Acts and Regulations.
- .2 In event of conflict between any provisions of above authorities the most stringent provision will apply. Should a dispute arise in determining the most stringent requirement, Departmental Representative will advise on the course of action to be followed.

1.4 FIRE SAFETY PLAN

- .1 Provide to Departmental Representative a Fire Safety Plan for review and acceptance. Maintain the Fire Safety Plan at all times. Provide also when directed by Departmental Representative a copy to the authorities having jurisdiction.
- .2 Work shall not commence until Fire Safety Plan is considered acceptable by Departmental Representative.
- .3 Fire Safety Plan shall include but not be limited to the following:
 - .1 Schedule, determine and indicate when and where construction activities will take place.
 - .2 Hazardous tasks shall only take place as scheduled and be coordinated with all parties.
 - .3 Advise all involved of any and all work scheduled each day prior to commencing of work.
 - .4 Delegate key tasks to employees who will be in charge of making sure that these duties are carried out. Some of these fire duties would include fire watch, who will perform it and at what time, verification of equipment like fire extinguishers, nearest telephone in case of emergency.
 - .5 Determine and indicate measures to control fire hazards around construction area.

- .6 Assess all possible fire hazards such as the use of propane torches, construction heaters, chop saws, grinders, etc. Evaluate use of all equipment and their possibility to cause fire. Use equipment with caution. Refer also to National Fire Code for additional information.

1.5 FIRE DEPARTMENT BRIEFING

- .1 Coordinate arrangements for the contractor's employees to be briefed on Fire Safety at their pre-work conference by authority having jurisdiction before any work is commenced.

1.6 REPORTING FIRES

- .1 Know the location of nearest telephone, including the emergency phone number.
- .2 Report immediately all fire incidents to the Fire Department as follows:
 - .1 Report by telephone (911).
 - .2 Alert all parties on-site and commence the evacuation procedures immediately as per evacuation plan. Safety is the priority.
- .3 Person reporting the fire will exit the affected area and stand by to direct Fire Department to scene of fire.
- .4 When reporting a fire by telephone, give location of fire and site, and be prepared to verify the location.

1.7 EXTERIOR FIRE PROTECTION

- .1 Fire hydrants, standpipes and hose systems will not be used for other than fire-fighting purposes unless authorized by the authority having jurisdiction.

1.8 FIRE EXTINGUISHERS

- .1 Supply fire extinguishers, as called by the authority having jurisdiction, necessary to protect the work in progress and the Contractors physical plant on site.
- .2 Fire extinguishers specified in other sections of this specification are in addition to those required by the authority having jurisdiction.
- .3 Know the location of the fire extinguishers and know how to use them properly.

1.9 BLOCKAGE OF ROADWAYS

- .1 Advise the authority having jurisdiction of any work that would impede fire apparatus response. This includes violation of minimum overhead clearance, as prescribed by the authority having jurisdiction, erecting of barricades and the digging of trenches.

1.10 SMOKING PRECAUTIONS

- .1 Observe smoking regulations and requirements of Section 01 35 59 - Security Requirements at Correctional Facilities.

1.11 RUBBISH AND WASTE MATERIALS

- .1 Rubbish and waste materials are to be kept to a minimum.
- .2 The burning of rubbish is prohibited.
- .3 Removal:
 - .1 Remove all rubbish from the work site at the end of the 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 an approved receptacles and remove as required in item 1.11.3.1 of "Rubbish and Waste Materials" article.

1.12 FLAMMABLE AND COMBUSTIBLE LIQUIDS

- .1 The handling, storage and use of flammable and combustible liquids are to be governed by the current National Fire Code of Canada.
- .2 Flammable and combustible liquids such as gasoline, kerosene and naphtha will be kept for ready use in quantities not exceeding 45 litres provided they are stored in approved safety cans bearing the Underwriter's Laboratory of Canada or Factory Mutual seal of approval. Storage of quantities of flammable and combustible liquids exceeding 45 litres for work purposes, requires the permission of the authority having jurisdiction.
- .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 the vicinity of open flames or any type of heat-producing devices.
- .5 Flammable liquids having a flash point below 38°C such as naphtha or gasoline will not be used as solvents or cleaning agents.
- .6 Flammable and combustible waste liquids, for disposal, will be stored in approved containers located in a safe ventilated area. Quantities are to be kept to a minimum and the Fire Department is to be notified when disposal is required.

1.13 HAZARDOUS SUBSTANCES

- .1 Work entailing the use of toxic or hazardous materials, chemicals and/or explosives, otherwise creates a hazard to life, safety or health, will be in accordance with the National Fire Code of Canada.
- .2 Notify the authority having jurisdiction of work involving welding, burning or the use of blow torches 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 the level of protection necessary for Fire Watch is at the discretion of the authority having jurisdiction. Contractors are responsible for providing fire watch service for work on a scale established and in conjunction with the authority having jurisdiction at the pre-work conference.

- .4 Where flammable liquids, such as lacquers or urethanes are to be used, proper ventilation will be assured and all sources of ignition are to be eliminated. The authority having jurisdiction is to be informed prior to and at the cessation of such work.

1.14 QUESTIONS AND/OR CLARIFICATION

- .1 Direct any questions or clarification on Fire Safety in addition to above requirements to the authority having jurisdiction.

1.15 FIRE INSPECTION

- .1 Contractor to advise the Departmental Representative within 24 hours of any site inspections performed by the authority having jurisdiction.
- .2 Contractor to advise Departmental Representative within 24 hours of any site instructions and/or directives given by the authority having jurisdiction.
- .3 Allow the authority having jurisdiction unrestricted access to the work site.
- .4 Co-operate with the authority having jurisdiction during routine fire safety inspection of the work site.
- .5 Immediately remedy all unsafe fire situations observed by the authority having jurisdiction.

1.16 FIRE WATCH

- .1 Where required, the fire watch shall consist of the following:
 - .1 The dedicated person(s) whose only job function is providing the fire watch.
 - .2 The dedicated person(s) shall have a means to immediately contact 911 services.
 - .3 The dedicated person(s) shall have a means of contacting and shall be responsible to notify the affected parties.
 - .4 The dedicated person(s) shall be familiar with the construction fire safety plan and understand his/her responsibilities.
 - .5 The dedicated person(s) shall, on an hourly basis, patrol the area(s) and record on a sign off sheet that the patrol was done and the time of the patrol.
 - .6 The dedicated person(s) shall be trained in the use of a fire extinguisher.

1.17 HOT WORK AUTHORIZATION

- .1 Obtain Departmental Representative's written "Authorization to Proceed" before conducting any form of Hot Work on site.
- .2 To obtain authorization submit to Departmental Representative:
 - .1 Contractor's typewritten Hot Work Procedures to be followed on site as specified below.
 - .2 Description of the type and frequency of Hot Work required.
 - .3 Sample Hot Work Permit to be used.

- .3 Upon review and confirmation that effective fire safety measures will be implemented and followed during performance of hot work, Departmental Representative will give authorization to proceed as follows:
 - .1 Issue one written "Authorization to Proceed" covering the entire project for duration of work or;
 - .2 Subdivide the work into pre-determined, individual activities, each activity requiring a separately written authorization to proceed.
- .4 Requirement for individual authorization will be based on:
 - .1 Nature or phasing of work;
 - .2 Risk to Facility operations;
 - .3 Quantity of various trades needing to perform hot work on project or;
 - .4 Other situation deemed necessary by Departmental Representative to ensure fire safety on premises.
- .5 Do not perform any Hot Work until receipt of Departmental Representative's written "Authorization to Proceed" for that portion of work.
- .6 In tenant occupied Facility, coordinate performance of Hot Work with Facility Manager through the Departmental Representative. When directed, perform Hot Work only during non-operative hours of the Facility. Follow Departmental Representative's directives in this regard.

1.18 HOT WORK PROCEDURES

- .1 Develop and implement safety procedures and work practices to be followed during the performance of Hot Work.
- .2 Hot Work Procedures to include:
 - .1 Requirement to perform hazard assessment of site and immediate work area beforehand for each hot work event in accordance with Safety Plan specified in Section 01 35 29.06.
 - .2 Use of a Hot Work Permit system with individually issued permit by Contractor's Superintendent to worker or subcontractor granting permission to proceed with Hot Work.
 - .3 Permit required for each Hot Work event.
 - .4 Designation of a person on site as a Fire Safety Watcher responsible to conduct a fire safety watch for a minimum duration of 30 minutes immediately following the completion of the Hot Work.
 - .5 Compliance with fire safety codes, standards and occupational health and safety regulations specified.
 - .6 Site specific rules and procedures in force at the site as provided by the Facility Manager.
- .3 Generic procedures, if used, must be edited and supplemented with pertinent information tailored to reflect specific project conditions. Label document as being the Hot Work Procedures for this contract.
- .4 Procedures shall clearly establish responsibilities of:

- .1 Worker performing hot work,
- .2 Person issuing the Hot Work Permit,
- .3 Fire Safety Watcher,
- .4 Subcontractor(s) and Contractor.
- .5 Brief all workers and subcontractors on Hot Work Procedures and of Permit system. Stringently enforce compliance.
- .6 Welding, Cutting, Burning, Soldering, Grinding, Torching.
 - .1 The intent of this procedure is to assure that all staff and contractors take appropriate steps to assure a safe environment for themselves, all affected parties and the property where the work is being carried out.
 - .2 Before starting any work, check the work area for any flammable and combustible materials. Remove all these materials from the affected work area(s).
 - .3 Have a list of persons with contact information and means of contacting in case of an emergency.
 - .4 Maintain for a minimum of two hours, after any hot work is performed, a fire and sparks watch.
 - .5 Warn all personnel if work including sparks or slag creates a hazard.
 - .6 Coordinate and review all work procedures with authority having jurisdiction.
 - .7 Carry out welding in ventilated area. Where required in poor ventilated areas, provide mechanical ventilation.
 - .8 Use spark and fire watches where sparks cannot be contained and there is a possibility of contact with combustible materials.
 - .9 Place compressed gas cylinders so that they are not in contact with falling sparks or slag. Shielding gases used for arc welding can displace air and cause injury or death. Always use enough ventilation, especially in confined areas, to ensure breathing air is safe.
 - .10 Complete a site evaluation and authorization form for each work day and/or each separate work site where hot work is scheduled to occur. Make copies available to Departmental Representative at all times.
 - .11 Contain as much as practical all spark and slag with fire blankets or other similar devices approved by the authority having jurisdiction.
 - .12 Maintain all fire extinguishers within 20 ft. of all hot work. These fire extinguishers shall be easily accessible at all times, keep pathways clear of any materials, products or debris. All fire extinguishers must be dated correctly for operation and be operational and in place before any work may commence.
- .7 Refer also to National Building Code for hot work procedures for all work.
- .8 Refer also to fire safety plan of article 1.4 of this section.

1.19 HOT WORK PERMIT

- .1 Hot Work Permit to include the following:
 - .1 Project name and project number;

- .2 Building name and specific room or area where hot work will be performed;
 - .3 Date of issue;
 - .4 Description of hot work type needed;
 - .5 Special precautions to be followed, including type of fire extinguisher needed;
 - .6 Name and signature of permit issuer.
 - .7 Name of worker to which the permit is issued.
 - .8 Permit validity period not to exceed 8 hours. Indicate start time/date and termination time/date.
 - .9 Worker's signature with time/date of hot work completion.
 - .10 Stipulated time period of safety watch.
 - .11 Fire Safety Watcher's signature with time/date.
- .2 Permit to be typewritten form. Industry Standard forms shall only be used if all data specified above is included on form.
- .3 Each Hot Work Permit to be completed in full, signed and returned to Contractor's Superintendent for safe keeping on site.

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 APPROVALS

- .1 Carry out the work in compliance with the various federal, provincial and municipal acts, regulations, and policies involving protection of the environment, and any approvals or permits issued.

1.2 FIRES

- .1 Fires and burning of rubbish on site are not permitted.

1.3 SITE SET-UP AND USE

- .1 All site activities related to construction are to be confined within the defined project boundaries.
- .2 Work sites will be equipped with appropriate and properly maintained sanitary facilities.
- .3 Garbage must be collected and removed daily from the work site. All material must be removed, transported and disposed of in accordance with existing federal, provincial, and municipal solid waste disposal guidelines and/or regulations.
- .4 Littering is prohibited.
- .5 Temporary storage, parking areas, and turn-a-round facilities for contractor-related equipment and vehicles will be limited to those areas agreed to and designated by the Departmental Representative.
- .6 Fires and burning of rubbish on site are not permitted.

1.4 DISPOSAL OF WASTES

- .1 Do not bury rubbish and waste materials on site.
- .2 Do not dispose of waste or volatile materials, such as mineral spirits, oil or paint thinner into waterways, storm or sanitary sewers.

1.5 DRAINAGE, EROSION AND SEDIMENT CONTROL

- .1 Develop and submit Erosion and Sediment Control Plan (ESC) identifying type and location of erosion and sediment controls provided. Methodology proposed shall be in accordance with the Province of Nova Scotia Erosion and Sedimentation Control, Handbook for Construction Sites. Such a plan shall incorporate necessary silt fences, and erosion and sedimentation control measures as approved by the Departmental Representative. Plan to include monitoring and reporting requirements to assure that control measures are in compliance with erosion and sediment control plan, Federal, Provincial, and Municipal laws and regulations.
- .2 The Contractor shall install and maintain all sedimentation and erosion control features for the duration of the project, in accordance with the approved plan. The Contractor shall remove all sedimentation and erosion control upon completion of the work and when requested by the Departmental Representative.

- .3 Provide temporary drainage and pumping as necessary to keep excavations and site free from water.
- .4 Ensure pumped water into waterways, sewer or drainage systems is free of suspended materials.
- .5 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authority requirements.
- .6 Inspect erosion and sediment control measures on a daily basis and maintain as necessary.

1.6 SITE CLEARING AND PLANT PROTECTION

- .1 Protect trees and plants on site and adjacent properties as indicated.
- .2 Protect trees and shrubs adjacent to construction work, storage areas and trucking lanes, and encase with protective snow fencing from grade level to height of 2 m minimum.
- .3 Protect roots of designated trees to dripline during excavation and site grading to prevent disturbance or damage.
 - .1 Avoid unnecessary traffic, dumping and storage of materials over root zones.
- .4 Minimize stripping of topsoil and vegetation.
- .5 Restrict tree removal to areas designated by Departmental Representative.

1.7 WORK ADJACENT TO WATERWAYS

- .1 Take all precautions necessary as determined by the appropriate regulating authorities for protection of watercourses affected directly or indirectly by work on the contract.
- .2 Construction equipment to be operated on land only.
- .3 The Contractor shall not use waterway beds for borrow material.
- .4 Waterways to be kept free of excavated fill, waste material, debris, or substance that could cause pollution. Assume responsibility for all costs and/or penalties related to the clean-up and removal of any pollution which does occur, at no cost to the Owner.
- .5 Design and construct temporary crossings to minimize erosion to waterways.
- .6 Do not skid logs or construction materials across waterways.
- .7 Avoid indicated spawning beds when constructing temporary crossings of waterways.
- .8 Blasting is not permitted.

1.8 POLLUTION CONTROL

- .1 Maintain temporary erosion and pollution control features installed under this Contract.
- .2 Control emissions from equipment and plant in accordance with local authorities' emission requirements.
- .3 Provide temporary enclosures as required to prevent sandblasting and other extraneous materials from contaminating air and waterways beyond application area.

- .4 Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads.

1.9 HISTORICAL/ARCHAEOLOGICAL CONTROL

- .1 If, at any time during construction, objects of potential historical or archaeological value are uncovered, or if any suspected endangered plant or animal species or any contaminated soils are identified during the work, cease work until the site has been reviewed by representatives of the appropriate agencies and the Departmental Representative has approved resumption of the work.

1.10 NOTIFICATION

- .1 Departmental Representative will notify Contractor in writing of observed noncompliance with Federal, Provincial or Municipal environmental laws or regulations, permits, and other elements of environmental protection.
- .2 Contractor: after receipt of such notice, inform Departmental Representative of proposed corrective action and take such action for approval by Departmental Representative.
- .3 Departmental Representative will issue stop order of work until satisfactory corrective action has been taken.
- .4 No time extensions will be granted or equitable adjustments allowed to Contractor for such suspensions.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 SILT FENCE AND EROSION CONTROL

- .1 Install sediment control fence and erosion control structures as per manufacturer's instructions prior to the start of any construction work on site, as indicated on the drawings and as directed by the Departmental Representative.
- .2 The sediment control fence and erosion control structures shall remain effectively on site for the period prior to any grubbing, stripping or excavation until work is completed and all exposed surfaces have a dense growth that will control silt run-off. They are not to be removed until authorized by the Departmental Representative.
- .3 Install additional sediment control fence when required by specific activities such as stockpiling of materials for reuse in the work in order to control silt runoff from these areas that may reach ditching that drains to adjacent watercourses.
- .4 In areas of potential runoff where construction activity may cause the drainage runoff to transport sediment(s), and the contract documents do not provide for sediment control in these areas, ensure

- that sediment control fences or erosion control structures are properly located for effective runoff control.
- .5 Acceptably dispose of sediment removed from the fences or erosion control structures off the site.
 - .6 Maintain sediment control fence and erosion control structures until they are authorized to be removed. This includes but is not limited to replacement of torn or damaged sections, replacement of broken supports, reattachment of fabric to supports, re-anchoring of washed out fabric, replacement of washed out or broken bales, and cleaning out of accumulated silt that reduces the effectiveness of any of these structures.
 - .7 When the sediment control fence and erosion control devices have been authorized for removal, promptly remove them from the site and reinstate the surfaces and ditches to the Departmental Representative's satisfaction.
 - .8 Ensure that at no time during construction activities, or warranty and maintenance period, will activities create conditions conducive to mosquito breeding, through the formation of ground depression, holes, ruts, ponds, swales and ditches, other than those intended by virtue of the approved construction and drainage plans. Any natural drainage will not be altered so as to cause water accumulation on vacant or adjacent lands.
 - .9 Ensure that any water running off any exposed soils created as a result of the project, or pumped from any excavation to a watercourse, or a ditch leading to a watercourse, is pumped to a settling pond or filtered through a vegetated area or through a sediment control system.

END OF SECTION

Part 1 General

1.01 WORK COVERED BY CONTRACT DOCUMENTS

- .1 Work of this Contract must not disrupt the daily operations of the Institution and shall be carried out in such a way to ensure that security at the Institution is maintained at all times.
- .2 Abide by all rules and procedures specified herein and with all directives given by the Director.

1.02 DEFINITIONS

- .1 Where used, the following terms shall be deemed to have the meaning stated herein.
- .2 Institution: means the Penitentiary or Correctional Facility where the Work will be carried out.
- .3 Director: means the person in charge of the Correctional Institution where the Work will be carried out and includes any authorized person at the Facility, as designated by the Director, to provide directions on his/her behalf.
- .4 Contraband: means any of the following:
 - .1 An intoxicant, including alcoholic beverages, drugs and narcotics;
 - .2 A weapon or a component thereof, ammunition for a weapon, and any other object that is designed to kill, injure or disable a person or that is altered so as to be capable of killing, injuring or disabling a person, when possessed without prior authorization;
 - .3 An explosive or a bomb or a component thereof;
 - .4 Currency over the prescribed limit of 50.00 dollars and;
 - .5 Any other item, as deemed by the Director, to pose a risk to the security of a Penitentiary or to the safety of persons, when that item is possessed without prior authorization from the Director.
- .5 **Smoking is not permitted on Institutional property. Unauthorized smoking items: means all smoking items including, but not limited to, cigarettes, cigars, tobacco, chewing or snuffing tobacco, cigarette making machines, matches and lighters.**
- .6 Commercial vehicle: means any motor vehicle used to transport materials, equipment and tools to the site as required for construction purposes.
- .7 CSC: means the Department of Correctional Service Canada.
- .8 Construction employee: means any person working for the General Contractor or subcontractor(s), commercial vehicle or equipment operator, material supplier and personnel from testing, inspection or regulatory agencies who needs to circulate on the Institution's property as part of the Work.
- .9 Departmental Representative: means the person as defined in the General Conditions of the Contract for projects managed by Public Works and Government Services Canada (PWGSC) or the Project Manager for projects that are managed by Correctional Service Canada (CSC).

1.03 PRELIMINARY PROCEEDINGS

- .1 The Departmental Representative will coordinate a pre-construction meeting between Contractor, the Director and Facility security personnel who will provide details on site security requirements.
- .2 The Contractor shall:
 - .1 Ensure that all construction employees are aware of the CSC security requirements.
 - .2 Ensure that a copy of the CSC security requirements is prominently displayed at the work site at all times.
 - .3 Co-operate with Institutional staff in ensuring that security requirements and procedures are stringently followed by all construction employees.
- .3 Any infraction of site security requirements by the Contractor or by a construction employee could result in the immediate removal of the offending party or person from the site.

1.04 CONSTRUCTION EMPLOYEES

- .1 CPIC security clearance is no longer required for Construction Employees who need to circulate on the Institution's property during the course of the Work.
- .2 Each construction employees shall provide a recent picture identification, such as a provincial driver's license upon entering the Institution. No person will be admitted inside the Institution without a valid proof of identification.
- .3 For the duration of the contract, the names of each construction employee shall be registered in advance to the front desk. Upon entering the institution and during the sign-in process. If the name of an employee is not registered in the system, that employee may not be admitted inside the Institution for that working day. The general contractor is responsible to provide a list of names of all employees including sub-contractors to the Departmental Representative for coordination.
- .4 Entry into the Institution will be refused to any person which the Director has reason to believe may be a security risk to the facility's operation.
 - .1 Also, a person will be subject to the immediate removal from the Institution if he/she:
 - .1 Appears to be under the influence of alcohol, drugs or narcotics.
 - .2 Behaves in an unusual or disorderly manner.
 - .3 Is found in possession of contraband.
- .5 Smoking is prohibited anywhere on CSC property.
- .6 Construction employees will be escorted at all times by a member of the Canadian corps of commissionaires provided by the client.

1.05 VEHICLES

- .1 All unattended vehicles on the Institution's property shall have their windows, doors and trunks closed and locked at all times. Keys must be removed and kept securely in the possession of the vehicle's owner or with an employee of the Contractor or subcontractor who owns the vehicle.

- .2 The Director may limit at any time the number and type of vehicles allowed within the Institution.
- .3 Drivers of vehicles simply delivering materials to the site do not require security clearance but shall remain inside their vehicle for the entire duration that the vehicle is on the Institution's property. This is of particular importance for vehicles entering the Institution's secure perimeter area in which case the vehicle must be escorted by Institutional staff or Commissionaires while in that area.
- .4 If the Director allows office and/or storage trailers to be left inside the secure perimeter area of the Institution, their exterior doors shall be kept locked at all times and windows securely locked when trailer is unoccupied. Additionally, windows shall be covered with expanded metal mesh secured in place. All storage trailers, whether inside and outside of the secure perimeter area must be kept locked when not in use.

1.06 PARKING OF VEHICLES and CONSTRUCTION TRAILERS

- .1 Parking area is limited and shall be coordinated with the departmental representative at the start-up meeting.

1.07 SHIPMENTS

- .1 Contractor shall have designated employee(s) on site to receive and take possession of all deliveries and shipments.
- .2 **Under no circumstances will personnel of the Institution accept delivery of materials, equipment and tools designated for use by the Contractor in the Work.**

1.08 TELEPHONES

- .1 Computers with internet connections are not permitted within the secure perimeter of the Institution unless prior approval is obtained from the Director.
- .2 If approved, computers with internet connections only where designated by the Director and in such location where they are not accessible to offenders.
 - .1 Equip all computers with approved password protection features which will block internet connection to unauthorized computer users.
- .3 Wireless cellular and digital telephones, including but not limited to device for telephone messaging, pagers, cell phones, telephone used as 2-way radios, are not permitted within the secure perimeter of the Institution unless prior approval is obtained from the Director.
 - .1 Should wireless cellular telephones be permitted, the owner/user of such device shall not permit its use by any offender.
- .4 The Director may approve but limit the use of two way radios.

1.09 WORK HOURS

- .1 Within Secure Perimeter:
 - .1 Be aware that for operational requirements the days and hours which Contractor will be

permitted to perform work at the site are limited to:

- .1 Weekdays only from Monday to Friday and between the hours of 7:30 and 16:00.
- .2 Work will **not be permitted during weekends and on statutory holidays without the permission of the Director. A minimum of two days (48 hours) advance notice will be required to obtain the necessary permission.**
- .2 Outside Secure Perimeter (i.e. at Lagoon Site):
 - .1 Normal work hours shall be 7:00am to 7:00pm.
 - .2 Work will not be permitted during evenings, night time, weekends and statutory holidays without the permission of the Departmental Representative. A minimum of seven days advance notice will be required to obtain the required permission. In case of emergencies or other special circumstances, this advance notice may be waived by the Departmental Representative.

1.10 OVERTIME WORK

- .1 No overtime work will be allowed at the end of a work shift.
- .2 Where overtime work is deemed necessary at the end of a work shift to complete a critical component of the work, it shall be planned and requested a minimum of 48 hours beforehand for approval by the Director.
- .3 Should unplanned overtime work occur due to an emergency situation, such as to complete a concrete pour or to make the work site safe and secure, the Contractor shall immediately advise the Director of this pending situation and stringently follow all directions given by the Director.
- .4 Extra Costs: Note that when overtime work or off-hour work on weekends and statutory holidays is approved by the Director, be aware that extra CSC security staff or commissionaires may need to be posted at the Institution to maintain security surveillance. The costs for such service will be charged to the Contractor in the form of a financial assessment to the Contract.

1.11 TOOLS AND EQUIPMENT

- .1 Make a complete list of all tools and equipment brought on site for use in the work. Provide copy of the list to the Director and to Departmental Representative.
- .2 Maintain and update list during the entire duration of the Work.
- .3 Keep all tools and equipment under constant supervision. This is of particular importance for power-driven and cartridge-driven tools, cartridges, files, saw blades, rod saws, wire, rope, ladders as well as all types of jacking devices.
- .4 Store all tools and equipment in lockable tool boxes and place in approved and secure locations.
- .5 Lock tool boxes when not in use. Keys shall remain in the possession of employees designated by Contractor.

- .6 Scaffolding: Store and securely lock scaffolding components when not erected. When erected, secure against unauthorized dismantling in manner approved by the Director.
- .7 Immediately report to the Director any missing tools and equipment.
- .8 Tool Check: Be aware that CSC security personnel will conduct tool/equipment checks during the course of the Work against the list provided by Contractor. Frequency of checks to be as follows:
 - .1 At commencement and completion of the project.
 - .2 Weekly basis when the construction period is greater than 1 week.
- .9 Controlled items: entry and use of certain tools and equipment, such as cartridges and hacksaw blades, are highly controlled at the Institution. The Director will determine and advise which items are to be controlled.
 - .1 Controlled items will be given to the Contractor at the beginning of each workday in quantities as required for 1 day's work.
 - .2 All controlled items must be returned to CSC security personnel at the end of each day including used blades, cartridges etc.
- .10 When propane or natural gas is used as fuel for construction heaters, the Contractor shall provide an employee to supervise that work site during non-working hours.
All security keys must always remain with the security escort.

1.12 SECURITY HARDWARE

- .1 Turn over to Director all security hardware removed as part of the work. This includes all items intended for disposal as well as those for temporary safekeeping until ready for reinstallation as part of the work.

1.13 PRESCRIPTION DRUGS

- .1 Construction employees who are required to take prescription drugs during the workday shall obtain approval from the Director beforehand and shall only bring on site a one days supply each day.

1.14 SMOKING RESTRICTIONS

- .1 Contractor and construction employees are not permitted to:
 - .1 Smoke inside the Institution or outdoors within the secure perimeter of the Facility and;
 - .2 Must not possess unauthorized smoking items within the secure perimeter of the Institution.
- .2 All persons found in violation of this directive shall immediately cease smoking and dispose of any unauthorized smoking items. If violation persist, such persons will be removed from the Institution's property.
- .3 Smoking on the Institution's property is only permitted outdoors, outside of the secure perimeter of the Institution and in a location designated by the Director.

1.15 CONTRABAND

- .1 Weapons, ammunition, explosives, alcoholic beverages, drugs and narcotics are considered

contraband by the Institution and are strictly prohibited on the Institution's property.

- .2 The discovery of contraband on the construction site and the identification of the person(s) responsible for the contraband shall be reported immediately to the Director.
- .3 Contractor shall be vigilant with all construction employees and suppliers in ensuring that no contraband items are brought on site. Advise all persons that the discovery of contraband will result in the cancellation of their security clearance and their immediate removal from the site. Serious infractions may result in the removal of the Contractor or subcontractor from the Institution's property for the duration of the Contract.
- .4 Presence of arms and ammunition found in vehicles owned by Contractor, subcontractors, suppliers and construction employees will result in the immediate cancellation of security clearance for the driver of that vehicle.

1.16 SEARCHES

- .1 All vehicles and persons entering Institutional property may be subject to search.
- .2 When the Director suspects, on reasonable grounds, that a construction employee is in possession of contraband, he/she may order that person to be searched.
- .3 Be aware that persons entering the Institution may be subject to screening of personal effects for traces of contraband drug residue.

1.17 OFF-HOURS SITE ACCESS

- .1 Construction personnel and commercial vehicles will not be permitted access to the Institution outside of the stipulated work hours specified in article 1.9, page 4 of this section, unless approved by the Director.

1.18 MOVEMENT OF VEHICLES

- .1 Contractor shall provide 24 hours advance notice to the Director of the arrival of heavy equipment such as excavator, cranes, concrete trucks etc. to the site.
- .2 Vehicles being loaded with soil or other debris at site, or any vehicle considered impossible to search, must be under continuous supervision by Institutional staff or Commissionaires working under the authority of the Director.
- .3 Subject to prior approval from the Director, certain construction equipment may be permitted to remain in the work areas during night time or weekend provided such equipment is securely locked and has its battery removed. The Director may also require that the equipment be tied by chain and padlocked to a solid unmovable object.

1.19 MOVEMENT OF PERSONS AT THE INSTITUTION

- .1 Subject to the requirements of good security, the Director will permit the Contractor and construction employees as much freedom of action and movement in the work areas of the site as is

possible.

- .2 Notwithstanding the above clause, the Director will:
 - .1 Prohibit or restrict access to certain parts of the Institution.
 - .2 Require that access to certain areas of the Institution, (either for the entire duration of the work or for certain specific time periods be only allowed under escort by a member of CSC security staff or a commissionaire.

1.20 SURVEILLANCE AND INSPECTION

- .1 Construction activities and all related movement of personnel and vehicles will be subject to surveillance and inspections by the Institution's security staff to ensure that established security requirements and procedures are followed.
- .2 CSC staff members will ensure that an understanding of the need to carry out surveillance and inspections, as specified above, is established among construction employees and maintained throughout the duration of the entire work.

1.21 STOPPAGE OF WORK

- .1 The director may, at any given time during the course of this contract, stop contractor and workers from entering the institution or order their immediate departure from the site due to an emergency security situation occurring at the Institution.
 - .1 Should this occur, contractor's superintendent shall obtain the name of the staff member issuing the order, note the date and time the notification was given and immediately obey the order as quickly as possible.
- .2 The contractor shall advise the departmental representative within 24 hours of receipt of such notification from the Institution.

1.22 CONTACT WITH PAROLEES

- .1 Unless specifically authorized, it is forbidden to come in contact with offenders, to talk with them, to receive objects from them or to give them objects. Any construction employee doing any of the above will be removed from the site and his security clearance revoked.
- .2 Note that cameras are not allowed on CSC property.
- .3 Notwithstanding the above clause if the director approves the use of cameras, it is strictly forbidden to take pictures of offenders, staff members or any part of the Institution other than those areas under renovations as part of the work.

1.23 COMPLETION OF THE WORK

- .1 Upon completion of the work and/or to takeover and occupancy of the facility, remove all materials, waste, tools and equipment that are not part of the 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 QUALITY CONTROL

- .1 The Departmental Representative will assume responsibility for the quality control and material testing for this project.
- .2 The Departmental Representative will retain the services of an approved Independent Geotechnical Engineering Firm to perform regular quality inspections and material testing.

1.2 INSPECTION

- .1 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.
- .2 Inspections or testing by the Departmental Representative does not relieve the Contractor of his responsibility for quality.
- .3 Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Departmental Representative.
- .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. No approval by an Inspector shall be taken as, or construed to be, an acceptance of defective or improper work or material, which must, in every case be removed and properly replaced whenever discovered at any stage of the work.
- .5 Departmental Representative may order any 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.
- .6 Independent Inspection Agencies
 - .1 Independent Inspection/Testing Agencies will be engaged by Departmental Representative for purpose of quality control, 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.

1.3 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.

1.4 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 Departmental Representative as 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 Departmental Representative it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, Owner may deduct from Contract Price difference in value between Work performed and that called for by Contract Documents, amount of which shall be determined by Departmental Representative.

1.5 TESTS AND MIX DESIGNS

- .1 Furnish test results and mix designs as requested.

1.6 MILL TESTS

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

1.7 EQUIPMENT AND SYSTEMS

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

1.8 CONTROL OF NONCONFORMING PRODUCT

- .1 The Contractor shall ensure that nonconforming material and product is prevented from unintended use or installation by identifying, documenting, evaluating, segregating (where practical), and disposition the nonconforming product, and promptly notifying the Departmental Representative by way of a Non-Conformance Report (NCR).
- .2 It is the responsibility of the Contractor to document and implement appropriate procedures, practices, quality control, and Management Procedures for their operations. All non-conforming product reports shall be accompanied by the Contractor's preferred approval method for correction of these non-acceptable works.
- .3 Nonconforming product may be dispositioned as follows:
 - .1 Reworked (remedial action) to meet the specified requirements.

- .2 Accepted with or without repair (use as is) by concession, requires Owner's approval.
- .3 Rejected or scrapped.
- .4 The proposed use or repair of nonconforming product must be reported to the Departmental Representative by the Contractor. A log of all NCR's issued is to be maintained by the Contractor, and is to include the following information:
 - .1 NCR number, brief description of the non-conformance, proposed remedial action and responsibility for action, validation date, description for disposition, reference documents, sign-off for disposition by Departmental Representative and Date Remedial action completed and sign-offs.
- .4 It is the Contractor's responsibility to take corrective action to eliminate the causes of an existing non-conformity, defect or other undesirable situation in order to prevent recurrence.
- .5 Preventive action is also to be taken by the Contractor to eliminate the causes of a potential non conformity, defect or other undesirable situation in order to prevent occurrence.
- .6 Both corrective and preventive actions may involve changes in procedures and systems to achieve quality improvement, and may apply to material or product failures, work not done to specification, or management system failures.
- .7 It will be the Contractor's responsibility to log any corrective actions in progress in the NCR log and to ensure that any related reports and memos are filed so that the Departmental Representative may review.

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 GENERAL

- .1 Use new material and equipment unless otherwise specified.
- .2 Within 7 days of written request by Departmental Representative, submit following information for any materials and products proposed for supply:
 - .1 Name and address of manufacturer.
 - .2 Trade name, model and catalogue number.
 - .3 Performance, descriptive and test data.
 - .4 Compliance to specified standards.
 - .5 Manufacturer's installation or application instructions.
 - .6 Evidence of arrangements to procure.
 - .7 Evidence of manufacturer delivery problems or unforeseen delays.
- .3 Provide material and equipment of specified design and quality, performing to published ratings and for which replacement parts are readily available.
- .4 Use products of one manufacturer for equipment or material of same type or classification unless otherwise specified.
- .5 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.

1.2 REFERENCES

- .1 Within text of each specifications section, reference may be made to reference standards.
- .2 Conform to these reference standards, in whole or in part as specifically requested in specifications.

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.
- .7 All equipment provided under this Contract shall be designed to withstand corrosion for at least five (5) years, either by the nature of the materials used in manufacturing it, by the application of a proven protective coating, or by covering it with a proven sturdy material. The protection system must be designed to allow the equipment to withstand corrosion under the intended operating conditions (non-submerged, wet, or submerged environment).

1.4 ACCEPTABLE MATERIALS AND ALTERNATIVES

- .1 Acceptable Materials: When materials specified include trade names or trade marks or manufacturer's or supplier's name as part of the material description, select and only use one of the names listed for incorporation into the Work.
- .2 Alternative Materials: Submission of alternative materials to trade names or manufacturer's names specified must be done during the bidding period following procedures indicated in the Instructions to Bidders.
- .3 Substitutions: After contract award, substitution of a specified material will be dealt with as a change to the Work in accordance with the General Conditions of the Contract.

1.5 STORAGE, HANDLING AND PROTECTION

- .1 The Contractor will arrange for timely deliveries of materials necessary to the execution of the work and will have them on hand well in advance of the time they are actually required. The Contractor shall provide and store all construction materials in a location as approved by the Departmental Representative. The Contractor shall be completely responsible for the material he supplies and shall make up any deficiencies in the material occasioned by loss, theft or other reasons at his own expense. All material will be stored in strict accordance with the manufacturer's requirements.
- .2 Handle and store products in manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions when applicable.
- .3 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.
- .4 Store products subject to damage from weather in weatherproof enclosures.
- .5 Store cementitious products clear of earth or concrete floors, and away from walls.
- .6 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.
- .7 Store sheet materials, lumber on flat, solid supports and keep clear of ground. Slope to shed moisture.

- .8 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.
- .9 Remove and replace damaged products at own expense and to satisfaction of Departmental Representative.
- .10 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 CONSTRUCTION EQUIPMENT AND PLANT

- .1 On request, prove to the satisfaction of Departmental Representative that the construction equipment and plant are adequate to manufacture, transport, place and finish work to quality and production rates specified. If inadequate, replace or provide additional equipment or plant as directed.
- .2 Maintain construction equipment and plant in good operating order.

1.7 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.

1.8 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.

1.9 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 of 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.

1.10 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.

1.11 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.

1.12 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.

1.13 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.

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

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 01 77 00 - Closeout Procedures.

1.2 PROJECT CLEANLINESS

- .1 Maintain Work in tidy condition, free from accumulation of waste products and debris, including that caused by Owner or other Contractors.
- .2 Remove waste materials from site at regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site.
- .3 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .4 Provide on-site containers for collection of waste materials and debris.
- .5 Provide and use clearly marked separate bins for recycling.
- .6 Remove waste material and debris from site and deposit in waste container at end of each working day.
- .7 Store volatile waste in covered metal containers, and remove from premises at end of each working day.
- .8 Dispose of waste materials, and debris off site at approved facilities.
- .9 Refer to Section 01 35 29.06 Health and Safety Requirements for details on Contractor's Site Specific Safety Plan and COVID-19 protocols.

1.3 FINAL CLEANING

- .1 When Work is Substantially Performed, 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 other than that caused by Owner or other Contractors.
- .5 Remove waste materials from site at regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site.
- .6 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of

waste and debris.

Part 1 Products

1.1 NOT USED

.1 Not Used.

Part 2 Execution

2.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 01 33 00 - Submittal Procedures.

1.2 DEFINITIONS

- .1 Materials Source Separation Program (MSSP): Consists of series of ongoing activities to separate reusable and recyclable waste material into material categories from other types of waste at point of generation.
- .2 Recyclable: Ability of product or material to be recovered at end of its life cycle and re-manufactured into new product for reuse by others.
- .3 Recycle: Process by which waste and recyclable materials are transformed or collected for purpose of being transferred into new products.
- .4 Recycling: Process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for purpose of using in altered form. Recycling does not include burning, incinerating, or thermally destroying waste.
- .5 Reuse: Repeated use of product in same form but not necessarily for same purpose. Reuse includes:
 - .1 Salvaging reusable materials from re-modelling projects, before demolition stage, for resale, reuse on current project or for storage for use on future projects.
 - .2 Returning reusable items including pallets or unused products to vendors.
- .6 Salvage: Removal of structural and non-structural materials from deconstruction/disassembly projects for purpose of reuse or recycling.
- .7 Separate Condition: Refers to waste sorted into individual types.
- .8 Source Separation: Acts of keeping different types of waste materials separate beginning from first time they became waste.

1.3 DOCUMENTS

- .1 Maintain at job site, one copy of following documents:
 - .1 Material Source Separation Plan.

1.4 SUBMITTALS

- .1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Prepare and submit following prior to project start-up:
 - .1 Submit 2 copies of Materials Source Separation Program (MSSP) description.

1.5 WASTE REDUCTION WORKPLAN (WRW)

- .1 Prepare Waste Reduction Work plan.
- .2 Structure WRW to prioritize actions and follow as first priority Reuse, then followed by Recycle.
- .3 Describe management of waste.
- .4 Post workplan or summary where workers at site are able to review its content.

1.6 MATERIALS SOURCE SEPARATION PROGRAM (MSSP)

- .1 Prepare MSSP and have ready for use prior to project start-up. The DWA with related weight bills and/or receipt must be submitted on a monthly basis with the Contractor's monthly Progress claim.
- .2 Implement MSSP for waste generated on project in compliance with approved methods and as reviewed by Departmental Representative.
- .3 Provide on-site facilities for collection, handling, and storage of anticipated quantities of reusable and recyclable materials.
- .4 Provide containers to deposit reusable and recyclable materials.
- .5 Locate containers in locations, to facilitate deposit of materials without hindering daily operations.
- .6 Locate separated materials in areas which minimize material damage.
- .7 Collect, handle, store on-site, and transport off-site, salvaged materials in separate condition.
 - .1 Transport to approved and authorized recycling facility.

1.7 STORAGE, HANDLING AND PROTECTION

- .1 Store, materials to be reused, recycled and salvaged in locations as specified in MSSP.
- .2 Unless specified otherwise, materials for removal become Contractor's property.
- .3 Protect, stockpile, store and catalogue salvaged items.
- .4 Separate non-salvageable materials from salvaged items. Transport and deliver non-salvageable items to licensed disposal facility.
- .5 Protect structural components not removed for demolition from movement or damage.
- .6 Support affected structures. If safety of road is endangered, cease operations and immediately notify Departmental Representative.
- .7 Protect surface drainage and electrical from damage and blockage.
- .8 Separate and store materials produced during dismantling of structures in designated areas.

- .9 Prevent contamination of materials to be salvaged and recycled and handle materials in accordance with requirements for acceptance by designated facilities.
 - .1 On-site source separation is recommended.
 - .2 Remove co-mingled materials to off-site processing facility for separation.
 - .3 Provide waybills for separated materials.

1.8 DISPOSAL OF WASTES

- .1 Do not bury rubbish or waste materials.
- .2 Do not dispose of waste, volatile materials, mineral spirits, or oil into waterways, storm, or sanitary sewers.
- .3 Keep records of construction waste including:
 - .1 Number and size of bins.
 - .2 Waste type of each bin.
 - .3 Total weight generated.
 - .4 Weight reused or recycled.
 - .5 Reused or recycled waste destination.
- .4 Remove materials from deconstruction as deconstruction/disassembly Work progresses.
- .5 Prepare project summary to verify destination and quantities on a material-by-material basis as identified in pre-demolition material audit.

1.9 USE OF SITE AND FACILITIES

- .1 Execute work with least possible interference or disturbance to normal use of premises.
- .2 Maintain security measures established by CSC and Departmental Representative.

1.10 SCHEDULING

- .1 Coordinate Work with other activities at site to ensure timely and orderly progress of Work.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 APPLICATION

- .1 Do Work in compliance with WRW.

- .2 Handle waste materials not reused, salvaged, or recycled in accordance with appropriate regulations and codes.

3.2 CLEANING

- .1 Remove tools and waste materials on completion of Work, and leave work area in clean and orderly condition.
- .2 Clean-up work area as work progresses.
- .3 Source separate materials to be reused/recycled into specified sort areas.

END OF SECTION

Part 1 General

1.1 INSPECTION AND DECLARATION

- .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 Departmental Representative in writing of satisfactory completion of Contractor's Inspection and that corrections have been made.
 - .2 Request Departmental Representative's Inspection.
- .2 Departmental Representative's Inspection: Departmental Representative and Contractor will perform inspection of Work to identify obvious defects or deficiencies.
 - .1 Contractor shall correct Work accordingly.
 - .2 Advise Departmental Representative when all deficiencies identified have been rectified.
- .3 Note that Departmental Representative will not issue a Certificate of Substantial Performance of the work until such time that Contractor performs following work and turns over the specified documents:
 - .1 Project record as-built documents;
 - .2 Final Operations and Maintenance manuals;
 - .3 Maintenance materials, parts and tools;
 - .4 Compliance certificates from applicable authorities;
 - .5 Reports resulting from designated tests;
 - .6 Demonstration and training complete with user manuals;
 - .7 Manufacturer's Guarantee certificates.
 - .8 Testing, adjusting and balancing of equipment and systems complete with submission of test reports.
 - .9 Commissioning of equipment and systems specified.
 - .10 Work has been completed and inspected for compliance with Contract Documents.
 - .11 Defects have been corrected and deficiencies have been completed. Work is complete and ready for Final Inspection.
- .4 Final Inspection: when items noted above are completed, request final inspection of Work by Departmental Representative, and Contractor. If Work is deemed incomplete by Owner and Departmental Representative, complete outstanding items and request reinspection.
- .5 Correct all discrepancies before Departmental Representative will issue the Certificate of Completion.

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 SUBMISSION

- .1 Five (5) weeks prior to Substantial Completion of the Work, submit to the Departmental Representative, three (3) draft copies of the operating and maintenance manual in English.
- .2 Prepare instructions and data using personnel experienced in maintenance and operation of described products.
- .3 One (1) copy will be returned with Departmental Representative's comments.
- .4 Revise content of documents as required prior to final submittal.
- .5 Submit to the Departmental Representative, one (1) final hard copy and three (3) final digital copies of the operating and maintenance manual in English.
- .6 If requested, furnish evidence as to type, source and quality of products provided.
- .7 Pay costs of transportation.

1.2 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 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 dxf or dwg format via PSPC's File Transfer Protocol (FTP) site.

1.3 CONTENTS – OPERATION AND MAINTENANCE MANUAL - EACH VOLUME

- .1 Cover:
 - .1 Project title and project number;
 - .2 Date submitted;

- .3 Project location.
- .2 Table of Contents in accordance with specification sections;
- .3 Names, addresses, and telephone numbers of Consultant and Contractor with name of responsible parties;
- .4 For each product or system, list names, addresses, and telephone numbers of Contractors, Subcontractors, Suppliers, Distributors and Installers, including local source of supplies and replacement parts.
- .5 Schedule of products and systems, indexed to content of volume.
- .6 For each product or system:
 - .1 list names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.
- .7 Product Data: mark each sheet to clearly identify specific products and component parts, and data applicable to installation; delete inapplicable information.
- .8 Drawings: supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Bind in with text; fold larger drawings to size of text pages.
- .9 Typewritten Operation and Maintenance Instructions: as required to supplement product data.
 - .1 Prepare instructions as a systems manual applicable solely to the equipment supplied to these specifications.
 - .2 Provide description of, and logical operating and maintenance instructions for each component in all intended modes of operation, incorporating manufacturer's instructions, cleaning and maintenance schedules, required adjustments, and similar information, including complete list of equipment and detailed parts list.
 - .3 Indicate name plate information such as make, model, size, capacity and serial number.
- .10 Signed and sealed guarantees, warranties and bonds showing name and address of projects, guarantee commencement date and duration, clear indication of what is being guaranteed and what remedial action will be taken under guarantee.
- .11 Complete set of reviewed Shop Drawings.
- .12 Training materials and DVD: refer also to Section 01 79 00 - Demonstration and Training.
- .13 Operation and maintenance instructions shall be specific to the equipment supplied in accordance with these specifications. Instruction manuals applicable to many different configurations, and which require the operator to selectively read portions of the instructions, shall not be acceptable.
- .14 Equipment and Systems
 - .1 Each Item of Equipment and Each System: include description of unit or system, and component parts. Give function, normal operation characteristics, and limiting conditions. Include performance curves, with engineering data and tests, and complete nomenclature and commercial number of replaceable parts.

- .2 Operating Procedures: include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.
- .3 Maintenance Requirements: include routine procedures and guide for trouble-shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- .4 Provide servicing and lubrication schedule, and list of lubricants required.
- .5 Include manufacturer's printed operation and maintenance instructions.
- .6 Include sequence of operation by controls manufacturer.
- .7 Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- .8 Provide installed control diagrams by controls manufacturer.
- .9 Provide Contractor's coordination drawings, with installed colour coded piping diagrams.
- .10 Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
- .11 Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- .12 Include test and balancing reports.
- .13 Additional requirements: As specified in individual specification sections.

1.4 PROJECT RECORD DOCUMENTS

- .1 Maintain at the site for Departmental Representative one 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.
 - .9 Permits.
 - .10 Set of documents for recording changes or deviation from drawings.
 - .11 Copy of approved work schedule.
 - .12 Bonds (when applicable).
- .2 Store record documents and samples in field office apart from documents used for construction. Provide files, racks, and secure storage.
- .3 Record information on set of opaque drawings, provided by Departmental Representative.
- .4 Using RED INK, accurately and neatly record deviations from Contract Documents caused by site conditions and changes ordered by Departmental Representative.

- .5 Record locations of concealed components of mechanical and electrical services.
- .6 Record information concurrently with construction progress. Do not conceal Work until required information is recorded.
- .7 Label record documents and file in accordance with Section number listings in List of Contents of this Project Manual. Label each document "PROJECT RECORD" in neat, large, printed letters.
- .8 Maintain record documents in clean, dry and legible condition. Do not use record documents for construction purposes.
- .9 Keep record documents and samples available for inspection by Departmental Representative.
- .10 Record following information:
 - .1 Depths of various elements of foundations in relation to existing finish floor level.
 - .2 Horizontal and vertical location of underground utilities and appurtenances referenced to permanent surface improvements.
 - .3 Location of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of structure.
 - .4 Field changes of dimension and detail.
 - .5 Changes made by Change Order or Site Instruction.
 - .6 Details not on original Contract Drawings.
 - .7 References to related shop drawings and modifications.
- .11 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.
- .12 Other Documents: maintain manufacturer's certifications, inspection certifications, field test records, required by individual specifications sections.
- .13 Submit to Departmental Representative one (1) hard copy of red line drawings and two (2) digital copies.

1.5 FINAL SURVEY

- .1 Submit final site survey certificate, certifying that elevations and locations of completed Work are in conformance, or non-conformance with Contract Documents.

1.6 WARRANTIES AND BONDS

- .1 All work and equipment to include a 12 month warranty after the Date of Substantial Completion unless otherwise specified in other sections.

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

1.7 MAINTENANCE MATERIALS

- .1 Spare Parts:
 - .1 Provide spare parts, in quantities specified in individual specification sections.
 - .2 Tag all items with associated function or equipment.
 - .3 Provide all spare parts necessary for the routine maintenance of the facility and/or that are subject to replacement during the first year of operation.
 - .4 Provide items of same manufacturer and quality as items in Work.
 - .5 Deliver to site; place and store.
 - .6 Receive and catalogue items.
 - .1 Submit inventory listing to Departmental Representative.
 - .2 Include approved listings in Maintenance Manual.
 - .7 Obtain receipt for delivered products and submit prior to final payment.
- .2 Extra Stock Materials:
 - .1 Provide maintenance and extra materials, lubricants, filters, etc. in quantities specified in individual specification sections.
 - .2 Provide items of same manufacture and quality as items in Work.
 - .3 Deliver to site; place and store.
 - .4 Receive and catalogue items.
 - .1 Submit inventory listing to Departmental Representative.
 - .2 Include approved listings in Maintenance Manual.
 - .5 Obtain receipt for delivered products and submit prior to final payment.
- .3 Special Tools:
 - .1 Provide special tools, in quantities specified in individual specification section.
 - .2 Provide items with tags identifying their associated function and equipment.
 - .3 Deliver to site; place and store.

- .4 Receive and catalogue items.
 - .1 Submit inventory listing to Departmental Representative.
 - .2 Include approved listings in Maintenance Manual.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 ADMINISTRATIVE REQUIREMENTS

- .1 Following testing and commissioning, the Contractor shall, through its various suppliers or subcontractors, provide training to the Owner's personnel. During this training, the Contractor shall demonstrate operation and maintenance of all equipment and systems. All training materials shall be included in the operating and maintenance manuals.
- .2 The Owner will 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 and put into operation.
 - .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 agreed upon 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; include such materials in manuals.
 - .5 Training shall be provided by competent personnel, and representatives of the Contractor and its various Suppliers must be present during testing and commissioning.
 - .6 Unless otherwise stated, representatives of each equipment supplier shall devote a minimum of eight (8) hours per equipment, to review the operation of the equipment with operating personnel. This eight (8) hours shall be in addition to the time required for testing and commissioning.
 - .7 All training shall be filmed, and a DVD copy must be included in each operation manual.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit detailed schedule stating time and date for demonstration of each item of equipment and each system two weeks prior to designated dates, for Departmental Representative's approval. Include copy of training materials for review by Departmental Representative.

- .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.

1.3 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 Acronyms:
 - .1 AFD - Alternate Forms of Delivery, service provider.
 - .2 BMM - Building Management Manual.
 - .3 Cx - Commissioning.
 - .4 EMCS - Energy Monitoring and Control Systems.
 - .5 O & M - Operation and Maintenance.
 - .6 PI - Product Information.
 - .7 PV - Performance Verification.
 - .8 TAB - Testing, Adjusting and Balancing.

1.2 GENERAL

- .1 Cx is a planned program of tests, procedures and checks carried out systematically on systems and integrated systems of the finished Project. Cx is performed after systems and integrated systems are completely installed, functional and Contractor's Performance Verification responsibilities have been completed and approved. Objectives:
 - .1 Verify installed equipment, systems and integrated systems operate in accordance with contract documents and design criteria and intent.
 - .2 Ensure appropriate documentation is compiled into the BMM.
 - .3 Effectively train O & M staff.
- .2 Contractor assists in Cx process, operating equipment and systems, troubleshooting and making adjustments as required.
 - .1 Systems to be operated at full capacity under various modes to determine if they function correctly and consistently at peak efficiency. Systems to be interactively with each other as intended in accordance with Contract Documents and design criteria.
 - .2 During these checks, adjustments to be made to enhance performance to meet environmental or user requirements.
- .3 Design Criteria: as per client's requirements or determined by designer. To meet Project functional and operational requirements.

1.3 COMMISSIONING OVERVIEW

- .1 Cx activities supplement field quality and testing procedures described in relevant technical sections.
- .2 Cx is conducted in concert with activities performed during stage of project delivery. Cx identifies issues in Planning and Design stages which are addressed during Construction and Cx stages to ensure the built facility is constructed and proven to operate satisfactorily under weather,

environmental and occupancy conditions to meet functional and operational requirements. Cx activities include transfer of critical knowledge to facility operational personnel.

- .3 Departmental Representative will issue Certificate of Substantial Completion when:
 - .1 Completed Cx documentation has been received, reviewed for suitability and approved by Departmental Representative.
 - .2 Equipment, components and systems have been tested and commissioned.
 - .3 O & M training has been completed.

1.4 NON-CONFORMANCE TO PERFORMANCE VERIFICATION REQUIREMENTS

- .1 Should equipment, system components, and associated controls be incorrectly installed or malfunction during Cx, correct deficiencies, re-verify equipment and components within the unfunctional system, including related systems as deemed required by Departmental Representative, to ensure effective performance.
- .2 Costs for corrective work, additional tests, inspections, to determine acceptability and proper performance of such items to be borne by Contractor. Above costs to be in form of progress payment reductions or hold-back assessments.

1.5 PRE-CX REVIEW

- .1 Before Construction:
 - .1 Review contract documents, confirm by writing to Departmental Representative.
 - .1 Adequacy of provisions for Cx.
 - .2 Aspects of design and installation pertinent to success of Cx.
- .2 During Construction:
 - .1 Co-ordinate provision, location and installation of provisions for Cx.
- .3 Before start of Cx:
 - .1 Have completed Cx Plan up-to-date.
 - .2 Ensure installation of related components, equipment, sub-systems, systems is complete.
 - .3 Fully understand Cx requirements and procedures.
 - .4 Have Cx documentation shelf-ready.
 - .5 Understand completely design criteria and intent and special features.
 - .6 Submit complete start-up documentation to Departmental Representative.
 - .7 Have Cx schedules up-to-date.
 - .8 Ensure systems have been cleaned thoroughly.
 - .9 Complete TAB procedures on systems, submit TAB reports to Departmental Representative for review and approval.
 - .10 Ensure "As-Built" system schematics are available.
- .4 Inform Departmental Representative in writing of discrepancies and deficiencies on finished works.

1.6 CONFLICTS

- .1 Report conflicts between requirements of this section and other sections to Departmental Representative before start-up and obtain clarification.
- .2 Failure to report conflict and obtain clarification will result in application of most stringent requirement.

1.7 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submittals: in accordance with Section 01 33 00 - Submittal Procedures.
 - .1 Submit no later than 2 weeks after award of Contract:
 - .1 Name of Contractor's Cx agent.
 - .2 Draft Cx documentation.
 - .3 Preliminary Cx schedule.
 - .2 Request in writing to Departmental Representative for changes to submittals and obtain written approval at least 2 weeks prior to start of Cx.
 - .3 Submit proposed Cx procedures to Departmental Representative where not specified and obtain written approval at least 2 weeks prior to start of Cx.
 - .4 Provide additional documentation relating to Cx process required by Departmental Representative.

1.8 COMMISSIONING DOCUMENTATION

- .1 Contractor to prepare his own Commissioning (Cx) Forms and shall include at least the following: Installation Check Lists and Product Information (PI) / Performance Verification (PV) Forms for requirements and instructions for use.
- .2 Departmental Representative to review and approve Cx documentation.
- .3 Provide completed and approved Cx documentation to Departmental Representative.

1.9 COMMISSIONING SCHEDULE

- .1 Provide detailed Cx schedule as part of construction schedule.
- .2 Provide adequate time for Cx activities prescribed in technical sections and commissioning sections including:
 - .1 Approval of Cx reports.
 - .2 Verification of reported results.
 - .3 Repairs, retesting, re-commissioning, re-verification.
 - .4 Training.

1.10 COMMISSIONING MEETINGS

- .1 Convene Cx meetings following project meetings and as specified herein.
- .2 Purpose: to resolve issues, monitor progress, identify deficiencies, relating to Cx.

- .3 Continue Cx meetings on regular basis until commissioning deliverables have been addressed.
- .4 At 75% construction completion stage Departmental Representative to call a separate Cx scope meeting to review progress, discuss schedule of equipment start-up activities and prepare for Cx. Issues at meeting to include:
 - .1 Review duties and responsibilities of Contractor and subcontractors, addressing delays and potential problems.
 - .2 Determine the degree of involvement of trades and manufacturer's representatives in the commissioning process.
- .5 Thereafter Cx meetings to be held until project completion and as required during equipment start-up and functional testing period.
- .6 Meeting will be chaired by Departmental Representative, who will record and distribute minutes.
- .7 Ensure subcontractors and relevant manufacturer representatives are present at 75% and subsequent Cx meetings, as required.

1.11 STARTING AND TESTING

- .1 Contractor assumes liabilities and costs for inspections, including disassembly and re-assembly after approval, starting, testing and adjusting, including supply of testing equipment.

1.12 WITNESSING OF STARTING AND TESTING

- .1 Provide 14 days notice prior to commencement.
- .2 Departmental Representative to witness of start-up and testing.
- .3 Contractor's Cx Agent to be present at tests performed and documented by sub-trades, suppliers and equipment manufacturers.

1.13 MANUFACTURER'S INVOLVEMENT

- .1 Factory testing: manufacturer to:
 - .1 Coordinate time and location of testing.
 - .2 Provide testing documentation for approval by Departmental Representative.
 - .3 Arrange for Departmental Representative to witness tests.
 - .4 Obtain written approval of test results and documentation from Departmental Representative before delivery to site.
- .2 Obtain manufacturers installation, start-up and operations instructions prior to start-up of components, equipment and systems and review with Departmental Representative
 - .1 Compare completed installation with manufacturer's published data, record discrepancies, and review with manufacturer.
 - .2 Modify procedures detrimental to equipment performance and review same with manufacturer before start-up.
- .3 Integrity of warranties:

- .1 Use manufacturer's trained start-up personnel where specified elsewhere in other divisions or when required to maintain integrity of warranty.
- .2 Verify with manufacturer that testing as specified will not void warranties.
- .4 Qualifications of manufacturer's personnel:
 - .1 Experienced in design, installation and operation of equipment and systems.
 - .2 Ability to interpret test results accurately.
 - .3 To report results in clear, concise, logical manner.

1.14 PROCEDURES

- .1 Verify that equipment and systems are complete, clean, and operating in normal and safe manner prior to conducting start-up, testing and Cx.
- .2 Conduct start-up and testing in following distinct phases:
 - .1 Included in delivery and installation:
 - .1 Verification of conformity to specification, approved shop drawings and completion of PI report forms.
 - .2 Visual inspection of quality of installation.
 - .2 Start-up: follow accepted start-up procedures.
 - .3 Operational testing: document equipment performance.
 - .4 System PV: include repetition of tests after correcting deficiencies.
 - .5 Post-substantial performance verification: to include fine-tuning.
- .3 Correct deficiencies and obtain approval from Departmental Representative after distinct phases have been completed and before commencing next phase.
- .4 Document require tests on approved PV forms.
- .5 Failure to follow accepted start-up procedures will result in re-evaluation of equipment by an independent testing agency selected by Departmental Representative. If results reveal that equipment start-up was not in accordance with requirements, and resulted in damage to equipment, implement following:
 - .1 Minor equipment/systems: implement corrective measures approved by Departmental Representative.
 - .2 Major equipment/systems: if evaluation report concludes that damage is minor, implement corrective measures approved by Departmental Representative.
 - .3 If evaluation report concludes that major damage has occurred, Departmental Representative shall reject equipment.
 - .1 Rejected equipment to be remove from site and replace with new.
 - .2 Subject new equipment/systems to specified start-up procedures.

1.15 START-UP DOCUMENTATION

- .1 Assemble start-up documentation and submit to Departmental Representative for approval before commencement of commissioning.

- .2 Start-up documentation to include:
 - .1 Factory and on-site test certificates for specified equipment.
 - .2 Pre-start-up inspection reports.
 - .3 Signed installation/start-up check lists.
 - .4 Start-up reports,
 - .5 Step-by-step description of complete start-up procedures, to permit Departmental Representative to repeat start-up at any time.

1.16 OPERATION AND MAINTENANCE OF EQUIPMENT AND SYSTEMS

- .1 After start-up, operate and maintain equipment and systems as directed by equipment/system manufacturer.
- .2 With assistance of manufacturer develop written maintenance program and submit Departmental Representative for approval before implementation.
- .3 Operate and maintain systems for length of time required for commissioning to be completed.
- .4 After completion of commissioning, operate and maintain systems until issuance of certificate of interim acceptance.

1.17 TEST RESULTS

- .1 If start-up, testing and/or PV produce unacceptable results, repair, replace or repeat specified starting and/or PV procedures until acceptable results are achieved.
- .2 Provide manpower and materials, assume costs for re-commissioning.

1.18 START OF COMMISSIONING

- .1 Notify Departmental Representative at least 21 days prior to start of Cx.
- .2 Start Cx after elements of building affecting start-up and performance verification of systems have been completed.

1.19 INSTRUMENTS / EQUIPMENT

- .1 Submit to Departmental Representative for review and approval:
 - .1 Complete list of instruments proposed to be used.
 - .2 Listed data including, serial number, current calibration certificate, calibration date, calibration expiry date and calibration accuracy.
- .2 Provide the following equipment as required:
 - .1 2-way radios.
 - .2 Ladders.
 - .3 Equipment as required to complete work.

1.20 COMMISSIONING PERFORMANCE VERIFICATION

- .1 Carry out Cx:
 - .1 Under actual operating conditions, over entire operating range, in all modes.
 - .2 On independent systems and interacting systems.
- .2 Cx procedures to be repeatable and reported results are to be verifiable.
- .3 Follow equipment manufacturer's operating instructions.
- .4 EMCS trending to be available as supporting documentation for performance verification.

1.21 WITNESSING COMMISSIONING

- .1 Departmental Representative to witness activities and verify results.

1.22 AUTHORITIES HAVING JURISDICTION

- .1 Where specified start-up, testing or commissioning procedures duplicate verification requirements of authority having jurisdiction, arrange for authority to witness procedures so as to avoid duplication of tests and to facilitate expedient acceptance of facility.
- .2 Obtain certificates of approval, acceptance and compliance with rules and regulation of authority having jurisdiction.
- .3 Provide copies to Departmental Representative within 5 days of test and with Cx report.

1.23 EXTENT OF VERIFICATION

- .1 100% of supplied equipment shall be verified.
- .2 Perform additional commissioning until results are acceptable to Departmental Representative.

1.24 REPEAT VERIFICATIONS

- .1 Assume costs incurred by Departmental Representative for third and subsequent verifications where:
 - .1 Verification of reported results fail to receive Departmental Representative's approval.
 - .2 Repetition of second verification again fails to receive approval.
 - .3 Departmental Representative deems Contractor's request for second verification was premature.

1.25 SUNDRY CHECKS AND ADJUSTMENTS

- .1 Make adjustments and changes which become apparent as Cx proceeds.
- .2 Perform static and operational checks as applicable and as required.

1.26 DEFICIENCIES, FAULTS, DEFECTS

- .1 Correct deficiencies found during start-up and Cx to satisfaction of Departmental Representative.
- .2 Report problems, faults or defects affecting Cx to Departmental Representative in writing. Stop Cx until problems are rectified. Proceed with written approval from Departmental Representative.

1.27 COMPLETION OF COMMISSIONING

- .1 Upon completion of Cx leave systems in normal operating mode.
- .2 Except for warranty and seasonal verification activities specified in Cx specifications, complete Cx prior to issuance of Interim Certificate of Completion.
- .3 Cx to be considered complete when contract Cx deliverables have been submitted and accepted by Departmental Representative.

1.28 ACTIVITIES UPON COMPLETION OF COMMISSIONING

- .1 When changes are made to baseline components or system settings established during Cx process, provide updated Cx form for affected item.

1.29 TRAINING

- .1 In accordance with Section 01 79 00 - Demonstration and training and Section 01 91 41 - Commissioning (Cx) - Training.

1.30 MAINTENANCE MATERIALS, SPARE PARTS, SPECIAL TOOLS

- .1 Supply, deliver, and document maintenance materials, spare parts, and special tools as specified in contract.

1.31 OCCUPANCY

- .1 Cooperate fully with Departmental Representative during stages of acceptance and occupancy of facility.

1.32 INSTALLED INSTRUMENTATION

- .1 Use instruments installed under Contract for TAB and PV if:
 - .1 Accuracy complies with these specifications.
 - .2 Calibration certificates have been deposited with Departmental Representative.
- .2 Calibrated EMCS sensors may be used to obtain performance data provided that sensor calibration has been completed and accepted.

1.33 PERFORMANCE VERIFICATION TOLERANCES

- .1 Application tolerances:
 - .1 Specified range of acceptable deviations of measured values from specified values or specified design criteria.
- .2 Instrument accuracy tolerances:
 - .1 To be of higher order of magnitude than equipment or system being tested.
- .3 Measurement tolerances during verification:
 - .1 Unless otherwise specified actual values to be within +/- 2 % of recorded values.

1.34 OWNER'S PERFORMANCE TESTING

- .1 Performance testing of equipment or system by Departmental Representative will not relieve Contractor from compliance with specified start-up and testing procedures.

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 TRAINEES

- .1 Trainees: personnel selected for operating and maintaining this facility. Includes Operator and Manager, building operators, maintenance staff, security staff, technical specialists and management personnel as required.
- .2 Trainees will be available for training during later stages of construction for purposes of familiarization with systems. Training sessions are to be scheduled through the Owner for a time convenient for its staff.

1.2 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.

1.3 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.

1.4 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.
 - .6 Specific training materials prepared by Contractor.
- .3 Project Manager and Commissioning 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 (ie Powerpoint) presentations.
 - .3 Manufacturer's training videos.
 - .4 Equipment models.

1.5 SCHEDULING

- .1 Include in Commissioning Schedule time for training.
- .2 Deliver training during regular working hours. Unless otherwise specified, representatives of each equipment supplier shall devote a minimum of eight (8) hours per equipment supplied.
- .3 Training to be completed prior to acceptance of facility.
- .4 Training to be scheduled for a time convenient to the Owner and Owner's personnel.

1.6 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.

1.7 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.
- .11 Communication systems training including (but not limited to):
 - .1 PK and RTU
 - .2 SCADA systems
 - .3 UV System
 - .4 Aeration System and Blowers, including monitoring process performance
 - .5 Fine Screening System
 - .6 Flow Monitoring Systems
 - .7 Building Controls
- .3 Provide specialized training as specified in relevant Technical Sections of the construction specifications.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION