Part 1 GENERAL

1.1 SCOPE

.1 Includes general project description, drawing list, project schedule, and date for substantial performance.

1.2 SECTION INCLUDES

.1 Related Requirement.

.2 Summary of Work.

.3 Drawings

.4 Project Coordination

.5 Furnishing Documents

.6 Construction Records

.7 Time

.8 Completion Date

.9 Schedule

.10 Hours of Work

.11 Conduct of The Work

.12 Oral Agreements

.13 Contract Method

.14 Contractor Use of The Premises

.15 Owner Occupancy

.16 Documents Required

1.3 SUMMARY OF WORK

.1 Title and Description of Work:

.1 Upgrade of the Landfill Gas Control Plant and Flare at the Nanaimo Regional Landfill (Site), located at 1105 Cedar Road, approximately 5 kilometres south of downtown Nanaimo and 500 metres east of the Trans-Canada Highway.

.2 The works of this project involve the upgrade and replacement of the landfill gas control plant components and flare at the Site for the Regional District of Nanaimo (Owner).

.3 The upgrade and replacement of the Landfill Gas Control Plant and Flare will generally consist of supply and installation of all control plant components, flare, and tie-in to existing infrastructure.

.4 Work includes:

.1 Replacement of Electric Actuated Isolation Valves (XV-101 and XV140).

.2 Decommissioning Actuated Isolation Valve (XV-105).

.3 Decommissioning of utilization facility discharge line and installation of blind flanges.

.4 Decommissioning of Blower recirculation pipe and replacement with discharge spool.

.5 Decommissioning of actuated bypass valve XV-105.

.6 Replacement of Flare, flare control panel, flare pilot valve and regulator assembly stand.

.7 Supply and install new programmable logic controller.

.8 Supply and install SCADA radio system.

.9 Supply and install SCADA software on Owner supplied computer system.

.10 Supply and install new blower VFDs.

.11 Commission system.

1.4 DRAWINGS

.1 Drawings issued with and forming part of the contract documents are as follows:

DRAWING NO.	TITLE	DATE	REV.
	COVER PAGE	OCTOBER 2023	0
M101	PLAN – EXISTING CONDITIONS	OCTOBER 2023	0
M102	PLAN – DECOMMISIONING	OCTOBER 2023	0
M103	PLAN – PROPOSED CONDITIONS	OCTOBER 2023	0
M104	EMERGENCY STOP BUTTON LOCATIONS	OCTOBER 2023	0
M105	PROFILE – PROPOSED CONDITIONS	OCTOBER 2023	0
M106	DETAILS – (1/2)	OCTOBER 2023	0
M107	DETAILS – (2/2)	OCTOBER 2023	0
E01	PLANT AREA CLASSIFICATION	OCTOBER 2023	0
E02	FLARE COMPOUND AREA – ELECTRICAL PLAN	OCTOBER 2023	0
E03	PLC PANEL LAYOUT	OCTOBER 2023	0
E04	PLC PANEL EQUIPMENT SCHEDULE	OCTOBER 2023	0
E05	PLC PANEL 12OV DISTRIBUTION	OCTOBER 2023	0
E06	PLC PANEL 24V DISTRIBUTION	OCTOBER 2023	0
E07	DISCRETE INPUT MODULE #1 WIRING DETAILS	OCTOBER 2023	0
E08	DISCRETE INPUT MODULE #2 WIRING DETAILS	OCTOBER 2023	0
E09	DISCRETE INPUT MODULE #3 WIRING DETAILS	OCTOBER 2023	0
E10	DISCRETE OUTPUT MODULE #1 WIRING DETAILS	OCTOBER 2023	0
E11	ANALOG INPUT MODULE #1 WIRING DETAILS	OCTOBER 2023	0
E12	ANALOG INPUT MODULE #2 WIRING DETAILS	OCTOBER 2023	0

DRAWING NO.	TITLE	DATE	REV.
E13	ANALOG INPUT MODULE #3 WIRING DETAILS	OCTOBER 2023	0
E14	ANALOG OUTPUT MODULE #1 WIRING DETAILS	OCTOBER 2023	0
E15	INSTRUMENTATION BLOCK DIAGRAM	OCTOBER 2023	0
E16	INTRINSIC BARRIERS WIRING DETAILS	OCTOBER 2023	0
E17	BLOWER VFD TYPICAL WIRING DIAGRAM	OCTOBER 2023	0
E18	COMMUNICATION BLOCK DIAGRAM	OCTOBER 2023	0
E19	EXISTING PIPE & INSTRUMENTATION DIAGRAM	OCTOBER 2023	0
E20	PROPOSED PIPE & INSTRUMENTATION DIAGRAM	OCTOBER 2023	0

1.5 PROJECT COORDINATION

.1 Coordinate progress of the work, progress schedules, submittals, use of site, temporary utilities and construction facilities and controls.

.2 Maintain at job site, one copy each of the following:

.1 Contract drawings and specifications.

.2 Addenda.

.3 Reviewed shop drawings.

.4 Change orders/instructions.

.5 Other modifications to contract.

.6 Field test reports.

.7 Approved work schedule.

.8 Manufacturer's installation and application instructions.

.9 Records of site safety meetings in compliance with the workplace safety and health act.

1.6 FURNISHING OF DOCUMENTS

.1 The Consultant on behalf of the Owner will provide to the Contractor without charge, two (2) copies of the Contract documents, exclusive of those required by jurisdictional authorities and the executed Contract documents. Additional copies can be purchased by the Contractor.

1.7 CONSTRUCTION RECORDS

.1 Construction records shall be the responsibility of the Contractor.

.2 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.

.3 Maintain record documents in clean, dry and legible condition. Do not use record documents for construction purposes.

.4 Further to the general conditions, record actual site conditions on a set of marked up contract drawings. Identify the drawings containing the Contractor’s records of changes as the "project record copy".

.5 Record information concurrently with construction progress. Do not conceal work until required information is recorded and has been verified by the Consultant.

.6 Contract drawings and shop drawings: accurately and legibly mark each item to record actual construction, including:

.1 All deviations from contract documents caused by site conditions.

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

.3 Locations of all pipes, valves and fittings to be buried.

.4 Field changes of dimension and detail.

.5 Changes made by change orders or ordered by the Consultant, including a full description of the change, date of the approved change, and reason for deviation from original design.

.6 Details not on original contract drawings.

.7 References to related shop drawings and modifications.

.7 Project record copy of 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.

.3 Other documents: maintain manufacturer's certifications, inspection certifications, field test records, required by individual specifications sections.

.4 Make record documents and project record copies available for inspection on site by the Consultant at all times.

1.8 TIME

.1 Time is of the essence for this work.

1.9 SCHEDULE

.1 Schedules Required

.1 Construction progress schedule will be completed by the Contractor and submitted to the Consultant within fourteen (14) days after Execution of Contract.

.2 Format

.1 Prepare schedules in form of horizontal bar chart.

.2 Provide separate bar for each trade or operation.

.3 Provide horizontal time scale identifying first workday of each week.

.4 Format for listings: chronological order of start of each item of work.

.5 Indicate the following:

.1 Commencement and completion of work of each section of the specification conforming to the project milestones and daily operation requirements.

.2 The major items of work for this contract are as follows:

.3 Award.

.4 Shop Drawings.

.5 Mobilization.

.6 Control Plant Upgrade.

.7 Flare Replacement.

.8 PLC Installation.

.9 VFDs Installation.

.10 Commissioning.

.11 Demobilization.

.6 Final completion date within time period required by contract documents.

1.10 HOURS OF WORK

.1 The Contractor can carry out the work during the hours identified in the City of Nanaimo's Noise Control Bylaw 1994.

.2 Not used

.3 The Contractor shall obtain the necessary permission and permits from the governing body to work outside of the hours, identified in the City of Nanaimo's Noise Control Bylaw 1994, if this is necessary.

1.11 CONDUCT OF THE WORK

.1 Protection and Safety Precautions.

.1 Comply with all requirements of provincial occupational health and safety regulations.

.2 The Contractor shall provide the necessary precautions to safeguard against any fire or explosion hazards during construction. The Contractor shall further provide adequate safety protection for personnel engaged on this work and for all others who are exposed to the work environment under this contract.

.3 Adequate and sufficient guards for the prevention of accidents shall be installed and maintained by the Contractor at the construction site. The Contractor shall further provide adequate and sufficient safety lighting at night and during periods of poor visibility.

.4 The Contractor shall assume full responsibility for, and be liable for, any loss, injury or damage incurred to abutting property, structures, vehicles, pedestrians and animals caused through neglect by the Contractor or his employees during construction operations.

.2 Cooperation with Others

.1 The Contractor's attention is directed to the fact that other Contractors and landfill personnel may be working in the areas on or adjoining the site.

.2 The activities of these entities may coincide with the Contractor's execution of the work, and it will be the Contractor's responsibility to cooperate to the fullest extent with personnel working in the area, and such cooperation is an obligation of the Contractor under the terms of this contract.

.3 The Contractor must be respectful of area residents with respect to not working outside the hours of work and minimizing noise.

.3 Existing Services and Utilities

.1 No responsibility will be assumed by the Owner or the Consultant for correctness or completeness of the drawings with respect to the existing utilities, pipes or other objects either underground or on the surface, and neither the Owner nor the Consultant shall be liable for the incorrectness and inadequacy thereof. It shall be the responsibility of the Contractor to determine the location of all such utilities, pipes and other objects and to make good any damage done to them.

.4 Contractor to Notify Utilities and Other Authorities

.1 Make timely application to authorities for required permits before starting work on a public right-of-way.

.2 Obtain utility clearances for underground plant in the vicinity of the work before starting construction.

.3 Arrange with utilities to provide safety watch where required during construction.

.5 Existing Trees, Shrubbery, Naturalized Plants Etc.

.1 No trees whatsoever shall be cut down without the written permission of the Consultant. Trees, shrubbery, fences, poles and all other private property and surface structures shall be protected unless their removal is shown on the drawings or authorized by the Consultant. When it is necessary to cut roots and tree branches, such cutting shall be done under the supervision and direction of the Consultant.

.6 Damage to Roads and Structures

.1 Other than required to be done by the Contractor under the work of this contract, all necessary precautions shall be exercised by the Contractor so as not to remove, disturb, or damage any existing pavements, streets, roads, boulevards, poles, hydrants, water pipes, gas pipes, electrical wires, cables, conduits, sewers or other existing facilities and equipment at the site of the work. For all damage incurred thereto in the performance of the work, the Contractor shall upon instructions from and to the satisfaction of the Consultant and the Owners thereof, either replace or repair such damage, whichever may be deemed necessary in the opinion of, and acceptable to, the Consultant and the Owners thereof and the costs of which shall be borne entirely by the Contractor. The Contractor shall also indemnify and save harmless the Owner from all claims made directly or indirectly against it in respect to any such damage.

.2 Damage by the Contractor to existing utilities in the performance of the work, the Owners of the utilities gas pipes, electrical wires, communication cables, conduits will carry out the replacement or repairs owned of the utility. The Contractor shall still be responsible for the costs of the repairs.

.7 Surface Restoration Following Underground Works

.1 Unless otherwise specified, the Contractor shall be responsible for all surface restoration equal to or better than the original condition.

.2 The Contractor shall make himself fully aware of the conditions in the work area prior to submitting his tender and no payment will be made for any work required as per this item.

.3 Arrangements shall be made by the Contractor with the authority concerned regarding restoration of surfaces, where such surface restoration is not specifically detailed herein. The Contractor shall bear the full expense involved in replacing the surfaces to the satisfaction of the authority having jurisdiction.

.4 It shall be the Contractor's responsibility to maintain all surfaces over the pipe trench, including pavement, boulevards, curbs, sidewalks, culverts, etc., to the satisfaction of the authorities until permanent repairs have been made.

.5 All ditches damaged during construction shall be graded and restored upon completion of the installation to conditions equal or better prior to construction. All costs for restoration are incidental to the works performed.

.6 The Contractor will also be responsible to maintain the drainage of the existing ditches during the construction period. Surface restoration and clean-up shall be done in a timely matter of two weeks behind the installation crews.

.8 Protection of Survey Bars

.1 The Contractor shall not disturb, deface, alter, destroy or remove any survey post, monument or bar and if the same shall occur, then, and in every such case, the Consultant shall have such post, monument or bar replaced at the expense of the Contractor. The Contractor shall pay all costs and expenses incurred in connection therewith.

.2 If the Contractor is in doubt about the location of the bars in the field, he will contact the Consultant before doing any work in the area. Other survey posts, monuments, or bars may exist and the Contractor shall exercise care at intersections and other places where such survey posts, monuments or bars may exist.

.3 Where a survey bar lies in the line of the proposed work and must be disturbed, the Contractor shall provide the Consultant with seventy-two (72) hours notice to have the survey bar referenced and relocated. The survey bar shall be referenced and replaced at no cost to the Contractor.

.9 Continued Facility Operation

.1 The Landfill shall remain operational throughout the duration of this contract.

.2 Keep temporary interruptions to roadways and site infrastructure to an absolute minimum. Make such interruptions at the convenience of the occupants and obtain the approval of the Consultant, as to the time and duration.

.3 Any temporary roadway closures shall be coordinated with the Consultant and shall not impede access to the site by the public or operations staff. Any temporary road closures shall be undertaken outside of the landfill's normal operating hours or by providing temporary alternative site access as approved by the Consultant.

1.12 ORAL AGREEMENTS

.1 In the case of misunderstandings, disputes, or interpretation of the contract documents, oral agreements will not be considered.

1.13 CONTRACT METHOD

.1 Construct Work under CCDC 4 Unit Price contract.

.2 Submit Shop Drawings in accordance with Section 01 33 00 - Submittal Procedures.

.3 Submit Project construction progress schedule in accordance with Section 01 32 16 Construction Progress Schedule.

.4 Submit Site Specific Health and Safety Work Plan in accordance with Section 01 35 29 – Health and Safety Requirements.

1.14 CONTRACTOR USE OF PREMISES

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

.1 Owner occupancy.

.2 Partial Owner occupancy.

.3 Work by other Contractors.

.4 Public usage.

.2 Co-ordinate use of premises under direction of Consultant.

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

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

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

.6 Ensure that operations conditions of existing work at completion are still the same, equal to or better than that which existed before new work started.

1.15 OWNER OCCUPANCY

.1 Owner will occupy premises during entire construction period for execution of normal operations.

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

1.16 DOCUMENTS REQUIRED

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

.1 Contract Drawings.

.2 Specifications.

.3 Addenda.

.4 Reviewed Shop Drawings.

.5 List of Outstanding Shop Drawings.

.6 Change Orders.

.7 Other Modifications to Contract.

.8 Field Test Reports.

.9 Copy of Approved Work Schedule.

.10 Health and Safety Plan and Other Safety Related Documents.

.11 Other documents as specified.

Part 2 PRODUCTS

2.1 NOT USED

.1 Not used.

Part 3 EXECUTION

3.1 NOT USED

.1 Not used.

Part 4 MEASUREMENT AND PAYMENT

4.1 NOT USED

.1 Not used.

END OF SECTION

PART 1 GENERAL

1.1 SECTION INCLUDES

.1 Reference Standards

.2 Measurement

.3 Rejected Products

.4 Applications of Progress Payment

.5 Weather Delays

.6 Damages for Late Completion

.7 Completion and Liquidated Damages

.8 Schedule of Values

.9 Preparing Schedule for Unit Price Table Items

.10 Progress Payment

.11 Substantial Performance of Work

.12 Payment of Holdback Upon Substantial Performance Of Work

.13 Progressive Release of Holdback

.14 Final Payment

1.2 REFERENCE STANDARDS

.1 Canadian Construction Documents Committee (CCDC)

.2 Owner/Contractor Agreement.

1.3 MEASUREMENT

.1 Measurement for Unit Price Work: As specified in individual Sections. Quantities indicated in the Schedule of Prices are for bidding and contract purposes only and are approximate. Quantities of material furnished and/or Work performed as verified by Engineer to determine payment.

1.4 REJECTED PRODUCTS

.1 Non-payment for rejected products: Payment will not be made for any of the following:

.1 Products determined as unacceptable before or after placement.

.2 Products not completely unloaded from the transporting vehicle.

.3 Products placed beyond the lines and levels of the required works.

.4 Products remaining after completion of the works.

.5 Loading, hauling, and disposing of rejected products.

1.5 APPLICATIONS FOR PROGRESS PAYMENT

.1 Refer to CCDC 4 Unit Price Contract.

.2 Make applications for payment on account monthly as Work progresses.

.3 Date applications for payment for last day of agreed monthly payment period and ensure amount claimed is for value, proportionate to amount of Contract, of Work performed and Products delivered to Place of Work at that date.

.4 Submit to Consultant, at least 14 days before first application for payment, Schedule of values for parts of Work, aggregating total amount of Contract Price, to facilitate evaluation of applications for payment.

1.6 WEATHER DELAYS

.1 The Contractor should anticipate that rain will occur based on typical weather experienced in Nanaimo. No extension will be given to compensate for rain days experienced below the historical average, as determined by the Consultant.

.2 Extensions to the project Substantial Performance Date may be granted if the number of project rain days in any given month is greater than the historical number of rain days. The Contractor shall apply for an extension to receive an extension to the Substantial Performance Date.

.3 The historical number of rain days in any given month will be rounded up to the next whole day.

.4 The amount of rain for any calendar day shall be based on the precipitation data available from Environment Canada’s National Climate Data and Information Archives which will be used to determine the historical average for number of precipitation days in each month. The information is available from Environment Canada’s website at: http://climate.weatheroffice.gc.ca/ under “Climate Normals and Averages”. The Nanaimo A station will be used for the purpose of the Consultant’s analysis above.

.5 Rain days are still to be considered as a calendar day for Substantial Performance of the Work. Project rain days will be determined by the Consultant. Daily classification of each day will be required between the Consultant and the Contractor in writing, the classification will be noted on the Consultant’s daily inspection report. At the completion of the Work, only the rain days which result in the Contractor being unable to perform the Work will be compared with the historical rain days for the duration of the project to determine if additional days will be allowed.

1.7 COMPLETION DATE

.1 The unrestricted use of the Works (landfill gas collection system including the well field, control plant, and flare) is required by August 31, 2024 based on a site availability date of April 1, 2024.

1.8 SCHEDULE OF VALUES

.1 Refer to CCDC 4 Unit Price Contract, and Supplementary Provisions.

.2 Provide schedule of values supported by evidence as Owner may reasonably direct and when accepted by Consultant, be used as basis for applications for payment.

.3 Include statement based on schedule of values with each application for payment.

.4 Support claims for products delivered to Place of Work but not yet incorporated into Work by such evidence as Consultant may reasonably require to establish value and delivery of products.

1.9 PREPARING SCHEDULE OF UNIT PRICE TABLE ITEMS

.1 Submit separate schedule of unit price items of Work requested in Bid form.

.2 Make form of submittal parallel to Schedule of Values, with each line item identified same as line item in Schedule of Values. Include in unit prices only:

.1 Cost of material.

.2 Delivery and unloading at site.

.3 Sales taxes.

.4 Installation, overhead and profit.

.3 Ensure unit prices multiplied by quantities given equal material cost of that item in Schedule of Values.

1.10 PROGRESS PAYMENT

.1 Refer to CCDC 4 Unit Price Contract, and Supplementary Provisions.

.2 Consultant will issue to Owner, no later than 10 days after receipt of an application for payment, certificate for payment in amount applied for or in such other amount as Consultant determines to be due. If Consultant amends application, Consultant will give notification in writing giving reasons for amendment.

1.11 SUBSTANTIAL PERFORMANCE OF WORK

.1 Refer to CCDC 4 Unit Price Contract, Supplementary General Conditions and Section 01 11 00 Summary of Work.

.2 Prepare and submit to Consultant a comprehensive list of items to be completed or corrected and apply for a review by Consultant to establish Substantial Performance of Work or Substantial Performance of designated portion of Work, if permitted by lien legislation applicable to Place of Work, in designated portion which Owner

agrees to accept separately, when work is substantially performed. Failure to include items on list does not alter responsibility to complete Contract.

.3 No later than 10 days after receipt of list and application, Consultant will review Work to verify validity of application, and no later than 7 days after completing review, will notify Contractor if Work or designated portion of Work is substantially performed.

.4 Consultant to state date of Substantial Performance of Work or designated portion of Work in certificate.

.5 Immediately following issuance of certificate of Substantial Performance of Work, in consultation with Consultant, establish reasonable date for finishing Work.

1.12 PAYMENT OF HOLDBACK UPON SUBSTANTIAL PERFORMANCE OF WORK

.1 Refer to CCDC 4 Unit Price Contract and Supplementary Provisions.

.2 After issuance of certificate of Substantial Performance of Work:

.3 Submit application for payment of holdback amount.

.1 Submit sworn statement that accounts for labour, subcontracts, products, construction machinery and equipment, and other indebtedness which may have been incurred in Substantial Performance of Work and for which Owner might in be held responsible have been paid in full, except for amounts properly retained as holdback or as identified amount in dispute.

.2 After receipt of application for payment and sworn statement, Consultant will issue certificate for payment of holdback amount.

.4 Amount authorized by certificate for payment of holdback amount is due and payable on day following expiration of holdback period stipulated in lien legislation applicable to Place of Work. Where lien legislation does not exist or apply, holdback amount is due and payable in accordance with other legislation, industry practice, or provisions which may be agreed to between parties. Owner may retain out of holdback amount sums required by law to satisfy liens against Work or, if permitted by lien legislation applicable to Place of Work, other third party monetary claims against Contractor which are enforceable against Owner.

1.13 PROGRESSIVE RELEASE OF HOLDBACK

.1 Where legislation permits, if Consultant has certified that work of subcontractor or supplier has been performed prior to substantial performance of work, Owner will pay holdback amount retained for such subcontract work, or products supplied by such supplier, on day following expiration of holdback period for such work stipulated in lien legislation applicable to Place of Work.

.2 In addition to provisions of preceding paragraph, and certificate wording, ensure that such subcontract work or products is protected pending issuance of final certificate for payment and be responsible for correction of defects or work not performed regardless of whether or not such was apparent when such certificates were issued

1.14 FINAL PAYMENT

.1 Refer to CCDC 4 Unit Price Contract.

.2 Submit application for final payment when Work is completed.

.3 Consultant will, no later than 10 days after receipt of application for final payment, review Work to verify validity of application. Consultant will give notification that application is valid or give reasons why it is not valid, no later than 7 days after reviewing Work.

.4 Consultant will issue final certificate for payment when application for final payment is found valid.

PART 2 PRODUCTS

.1 Not Used

PART 3 EXECUTION

.1 Not Used

PART 4 MEASUREMENT AND PAYMENT

.1 No separate payment will be made for work under this Section.

END OF SECTION

PART 1 GENERAL

1.1 SCOPE OF WORK

.1 This Section defines the requirements for meetings for this Contract.

.2 Arrange and conduct meetings to communicate vital information between the Owner, Consultant, Contractor and Major Subcontractors.

1.2 SECTION INCLUDES

.1 Administrative.

.2 Preconstruction Meetings.

.3 Progress Meetings.

1.3 ADMINISTRATIVE

.1 Schedule and administer project meetings throughout the progress of the work at the call of the Consultant.

.2 Consultant shall prepare agenda for meetings, record the minutes of progress meetings, include significant proceedings and decisions and identify "action by" parties and date for completion of duty.

.3 Consultant shall distribute written notice of each meeting 5 days in advance of meeting date to Contractor.

.4 The Contractor shall provide physical space, table and chairs for all participants.

.5 Representatives of Contractor, Subcontractor and suppliers attending meetings must be qualified and authorized to act on behalf of the party each represents.

1.4 PRECONSTRUCTION MEETING

.1 Consultant will schedule and administer a preconstruction meeting at the Site after the date of the Notice to Proceed and prior to start of construction.

.2 Consultant will make arrangements for meeting, prepare agenda with copies for participants, and preside at meeting. Provide data required to Consultant and be prepared to discuss all items on the agenda.

.3 Minimum Attendance Required: Contractor, Contractor’s health and safety officer, and major Subcontractors.

.4 Establish time and location of meeting and notify parties concerned minimum 5 days before meeting.

.5 Agenda will include, but will not necessarily be limited to, the following:

.1 Appointment of official representative of participants in the Work.

.2 Schedule of Work.

.3 Schedule of submission of shop drawings, submittals and construction schedule.

.1 Project risks identified by Owner, Consultant, and Contractor.

.2 Mitigation Measures for safety and project Risks.

.4 Requirements for temporary facilities.

.5 Site security.

.6 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, administrative requirements.

.7 Owner provided products.

.8 Monthly progress claims, administrative procedures, photographs, hold backs.

.9 Appointment of inspection and testing agencies or firms.

.10 Insurances, transcript of policies.

.11 Designation of responsible personnel.

.12 Lines of authority and communication.

.13 Health and safety.

.1 Site orientation and safety requirements needed for contractor and subcontractors.

.2 Safety risks identified by Owner, Consultant, and Contractor.

.3 Mitigation Measures.

.14 Use of the Site for storage, vehicle parking, access routes, and other Site requirements.

.15 Coordination with Owner.

.16 Procedures for processing field decisions, submittals, substitutions, applications for payments, proposal requests, Field Orders, Work Change Directives, Change Orders, and closeout procedures

1.5 PROGRESS MEETINGS

.1 Unless specifically waived by the Consultant or modified elsewhere in the contract documents, a progress meeting will be held at approximate weekly intervals (4 meetings per month) during the course of the contract. The time and location of these meetings will be determined by the Consultant.

.2 Where the Consultant determines that a meeting is needed at the place of work, the Contractor is responsible for providing a suitable facility for the meeting.

.1 The agenda of each progress meeting will generally be as follows:

.1 Review of minutes of previous meeting and review of action items.

.2 Review of work progress since the previous meeting and adherence to the construction schedule.

.3 New business such as field observations, construction problems, work sequence conflicts, product delivery status and potential change orders.

.3 The Consultant will chair all meetings and record all minutes**.**

PART 2 PRODUCTS

2.1 NOT USED

.1 Not Used.

PART 3 EXECUTION

3.1 NOT USED

.1 Not Used.

PART 4 MEASUREMENT AND PAYMENT

.1 No separate payment will be made for work under this Section.

END OF SECTION

PART 1 GENERAL

1.1 SECTION INCLUDES

.1 Schedule.

.2 Progress Reports.

.3 Manpower/Overtime.

1.2 SCHEDULE

.1 Within fourteen (14) days after acceptance of Tender, prepare and submit a detailed schedule for review to the Consultant.

.2 Schedule shall show dates of commencement and completion of various parts of the Work, ordering and delivery dates of Products, phasing and timing for various subcontracts and all other detailed information to the satisfaction of the Consultant.

.3 All orders for materials shall be placed in ample time for adherence to the schedule.

.4 Make special note of those times when extra work shifts are required to complete the Work.

.5 Prepare definitive schedules for the following specific items:

.1 Product delivery.
.2 Schedule of all shop drawings required.
.3 Schedule of all samples required.
.4 Schedule of material deliveries.
.5 Schedule of construction phases.
.6 Requirements for special site instructions, colour schedules, etc.

.6 Revise and update schedule and submit to Consultant every two (2) weeks.

1.3 PROGRESS REPORTS

.1 Maintain an accurate record of the progress of the Work.

.2 Records shall state dates of commencement and percentage of Work completed by trades for the different parts of the Work and include particulars regarding daily weather conditions, number of workers for each trade, percentage of Work completed weekly by trades and shall relate to the Schedule. Make records available to Consultant upon request.

1.4 MANPOWER/OVERTIME

.1 Should the Work fail to progress according to the approved progress schedule, work such additional time (including weekends and holidays), employ additional

workers, or both, as may be required to bring the Work back on schedule, at no additional cost to the Owner.

.2 Night work will be permitted only with written permission of the Consultant and in accordance with existing municipal regulations. Provide sufficient lighting to permit night work to be performed safely and satisfactorily.

.3 If this Contractor causes delay to another Contractor or Owner, this Contractor shall bear all costs of expediting the Work of such other Contractor or the Owner.

PART 2 PRODUCTS

2.1 NOT USED

.1 Not Used

PART 3 EXECUTION

3.1 NOT USED

.1 Not Used

PART 4 MEASUREMENT AND PAYMENT

.1 No separate payment will be made for work under this Section.

END OF SECTION

PART 1 GENERAL

1.1 SCOPE

.1 This section covers procedures and requirements for submission of documents, data, drawings and samples related to the works.

1.2 SECTION INCLUDES

.1 Related Requirements.

.2 Reference Standards.

.3 Administrative.

.4 Construction Progress Schedule.

.5 Shop Drawings and Product Data.

.6 Shop Drawing Review Stamp.

.7 Samples.

.8 Pre-Contract Submittals

1.3 RELATED REQUIREMENTS

.1 CCDC 4 – Unit Price Contract

.2 Section 01 29 00 – Payment Procedures

.3 Section 01 32 16 – Construction Progress Schedule

.4 Section 01 35 29 – Health and Safety Requirements

1.4 REFERENCE STANDARDS

.1 Not Used.

1.5 ADMINISTRATIVE

.1 Submit to Consultant submittals listed for review sufficiently in advance of the scheduled incorporation of the items into the Work. Allow the Consultant up to 14 calendar days to carry out review and return the submittals. 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 Do not proceed with Work affected by submittal until review is complete.

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

.4 Where items or information is not produced in SI Metric units converted values are acceptable.

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

.6 Notify Consultant, 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 co-ordinated.

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

.9 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Consultant’s review.

.10 Keep one reviewed copy of each submittal on site.

1.6 CONSTRUCTION PROGRESS SCHEDULE

.1 Submit construction schedule in accordance with Section 01 32 16 – Construction Progress Schedule.

1.7 SHOP DRAWINGS AND PRODUCT DATA

.1 Refer to CCDC 4 Unit Price Contract.

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

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

.4 Allow 14 days for Consultant's review of each submission.

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

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

.7 All Submittals should include:

.1 Date and revision dates.

.2 Project title and number.

.3 Name and address of:

.1 Subcontractor.

.2 Supplier.

.3 Manufacturer.

.4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.

.5 Details of appropriate portions of Work as applicable:

.1 Fabrication.

.2 Layout, showing dimensions, including identified field dimensions, and clearances.

.3 Setting or erection details.

.4 Capacities.

.5 Performance characteristics.

.6 Standards.

.7 Operating weight.

.8 Wiring diagrams.

.9 Single line and schematic diagrams.

.10 Relationship to adjacent work.

.8 After Consultant's review, distribute copies.

.9 Submit electronic or 4 printed copies of product data sheets or brochures for requirements requested in specification Sections and as requested by Consultant where shop drawings will not be prepared due to standardized manufacture of product.

.10 Submit electronic or 4 printed copies of test reports for requirements requested in specification Sections and as requested by Consultant.

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

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

.13 Submit electronic or 4 printed copies of certificates for requirements requested in specification Sections and as requested by Consultant.

.14 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.

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

.16 Submit electronic or 4 printed copies of manufacturer’s instructions for requirements requested in specification Sections and as requested by Consultant.

.17 Submit electronic or 4 printed copies of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by Consultant.

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

.19 Submit electronic or 4 printed copies of Operation and Maintenance Data for requirements requested in specification Sections and as requested by Consultant.

.20 Delete information not applicable to project.

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

1.8 SHOP DRAWING REVIEW STAMP

.1 Shop drawings reviewed by the Consultant will be stamped with a shop drawing review stamp. This stamp will be noted with the results of this review as follows:

.1 **Reviewed.** - indicates that the information submitted describes material or equipment which apparently satisfies the intent of the contract documents and, that if the Contractor has satisfied himself that the equipment or material is satisfactory, the Consultant would have no objection to it being produced or procured.

.2 **Reviewed as modified.** - is identical to .1 above, except that the Consultant has noted discrepancies in the information submitted. The discrepancies in the information require correction and resubmission of wholly correct information.

.3 **Revise and resubmit.** - indicates that the Consultant has noted discrepancies in the information submitted. These discrepancies, in his opinion, indicate that the material or equipment described do not fully meet the intent of the contract documents and are of a sufficiently significant nature that production or procurement of the equipment or material is not acceptable.

.4 **Not reviewed** - indicates that the information submitted is not required under the requirements of the contract documents, or is unsatisfactory, and therefore has not been and will not be reviewed by the Consultant.

.2 Use only those shop drawings on the work that bear the "reviewed" notation.

.3 Do not revise shop drawings marked "reviewed" unless resubmitted to the Consultant for further review.

.4 Where more than one type of shop drawing has been specified for one item, e.g. wiring diagrams, layout details, and dimensional drawings, the shop drawings shall be submitted together, to enable the Consultant to review the drawings as a package.

.5 Catalogue pages or drawings applicable to an entire family or range of equipment will not be accepted as shop drawings unless they are clearly marked to show the pertinent data for the particular product.

.6 When assigned in the contract documents - tag numbers of instruments, valves or any other equipment are to be clearly indicated on the shop drawings submitted for them. These drawings must clearly show the features and details specifically applicable to the item being supplied.

.7 Determine which shop drawings have, in addition to those drawings specifically mentioned in the contract, design elements requiring the seal of a professional Consultant registered in the province or territory where the work is located, in accordance with the applicable provincial or federal Consulting acts or other governing legislation. Seal such drawings before submitting them for review. Submit for review Consultant calculations signed by the registered professional Consultant responsible for the shop drawing design elements.

.8 The Owner may deduct from payments due to the Contractor any costs of additional Consulting work incurred if corrected shop drawings are not submitted after initial review by the Consultant.

.9 Review by the Consultant is for the sole purpose of ascertaining conformance with the general design concept. This review does not mean that the Consultant approves the detailed design inherent in the shop drawings. Responsibility for this remains with the Contractor and such review does not relieve the Contractor of his responsibility for errors or omissions in the shop drawings or, of his responsibility for meeting all requirements of the contract documents. The Contractor is responsible for dimensions to be confirmed and correlated at the job-site, for information that pertains solely to fabrication processes or to techniques of construction and installation, and for coordination of the work of all sub-trades.

1.9 SAMPLES

.1 Promptly submit for review samples in duplicate as requested in respective specification Sections. Label samples with origin and intended use.

.2 Deliver samples prepaid to Consultant's business address.

.3 Notify Consultant in writing, at time of submission of deviations in samples from requirements of Contract Documents.

.4 Where colour, pattern or texture is criterion, submit full range of samples.

.5 Adjustments made on samples by Consultant are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Consultant prior to proceeding with Work.

.6 Make changes in samples which Consultant 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.

1.10 PRE-CONTRACT SUBMITTALS

.1 Within 14 days of notice of award of Contract, the Contractor shall submit the following Pre-Contract Submittals:

.2 Certificate of Good Standing from Provincial Workers' Compensation Board.

.3 Certificate of insurance verifying insurance coverage.

.4 Safety documentation.

.5 Performance Bond in the amount of 50% of the total amount payable by Owner.

.6 Labour and Material Bond in the amount of 50% of the total amount payable by Owner.

1.11 TEMPORARY UTILITIES

.1 Temporary Utilities: Submit reports of tests, inspections, meter readings and similar procedures performed on temporary utilities.

.2 Implementation and Termination Schedule: Submit a schedule indicating implementation and termination of each temporary utility within 14 days of the receipt of Notice to Proceed. At the earliest feasible time, when acceptable to the Consultant and Owner, change over from use of temporary service to use of the permanent service.

.3 Contractor shall pay for, or reimburse Owner, for use of temporary and permanent utility service until occupancy by the Owner.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

PART 4 MEASUREMENT AND PAYMENT

.1 No separate payment will be made for work under this Section.

END OF SECTION

PART 1 GENERAL

1.1 SCOPE OF WORK

.1 Develop a written Site-specific Health and Safety Plan prior to commencing any on Site work and continue to implement, maintain, and enforce the plan until final demobilization from the Site.

1.2 SECTION INCLUDES

.1 Related Requirements.

.2 Reference Standards.

.3 Action and Informational Submittals.

.4 Filing of Notice.

.5 Safety Assessment.

.6 Meetings.

.7 General Requirements.

.8 Responsibility.

.9 Compliance Requirements.

.10 Site Characterization.

.11 Unforeseen Hazards.

.12 Health and Safety Coordinator.

.13 Posting of Documents.

.14 Correction of Non-Compliance.

.15 Work Stoppage.

.16 Measurement and Payment.

1.3 RELATED REQUIREMENTS

.1 Section 01 33 00 - Submittal Procedures

.2 Section 01 29 00 – Payment Procedures

1.4 REFERENCE STANDARDS

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

.2 Province of British Columbia

.1 Workers Compensation Act, Occupational Health and Safety Regulation, B.C. Reg 223.

1.5 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Submit site-specific Health and Safety Plan: Within 7 days after date of Notice to Proceed and prior to commencement of Work. Health and Safety Plan must include:

.1 Results of site-specific safety hazard assessment.

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

.3 Consultant will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor within 5 days after receipt of plan. Revise plan as appropriate and resubmit plan to Consultant within 5 days after receipt of comments from Consultant.

.4 Consultant’s review of Contractor's final Health and Safety plan should not be construed as approval and does not reduce the Contractor's overall responsibility for construction Health and Safety.

1.6 FILING OF NOTICE

.1 File notice of project with Provincial authorities prior to beginning of Work.

1.7 SAFETY ASSESSMENT

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

1.8 MEETINGS

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

1.9 GENERAL REQUIREMENTS

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

Consultant may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns.

1.10 RESPONSIBILITY

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

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

1.11 COMPLIANCE REQUIREMENTS

.1 Comply with British Columbia Occupational Health and Safety Act.

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

1.12 SITE CHARACTERIZATION

.1 Work at the Site may involve contact with solid waste and associated contaminants including but not limited to landfill gas and condensate.

.2 Landfill Gas:

.1 Landfill gas may be present in the landfill gas system.

.2 Landfill gas results from the decomposition of refuse and is primarily composed of approximately 50 percent methane and 50 percent carbon dioxide, with trace gases including mercaptans, hydrocarbons, solvents, water vapor, and hydrogen sulfide.

.3 Methane is explosive in concentrations between 5 and 15 percent by volume in air.

.4 Methane, carbon dioxide, and nitrogen are simple asphyxiants.

.5 Trace gases in landfill gas may be toxic and odorous. Odorous gases cause nausea in some persons. Toxic gases may also be present at concentrations above or below the levels deemed safe for human exposure; there is always a potential for levels to be sufficient to cause permanent and irreversible damage and even death.

.3 Landfill Gas Condensate / Leachate:

.1 Landfill Gas Condensate / Leachate is wastewater containing organic and inorganic compounds that is produced when water and other liquids seep through the landfilled waste. Landfill leachate characteristics and rate of production vary based on waste type and climate.

.2 Landfill Gas Condensate may be present in all existing Landfill Gas collection system pipe works. General safety considerations used for handling non-hazardous wastes should be used where there is the potential to come into contact with landfill gas condensate.

.3 Landfill leachate may be present in all excavations within, and immediately adjacent to, the landfilled waste. General safety considerations used for handling non-hazardous wastes should be used where there is the potential to come into contact with landfill leachate.

1.13 UNFORESEEN HAZARDS

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

.2 When unforeseen or peculiar safety-related factor, hazard, or condition occur during performance of Work, advise Health and Safety Coordinator and follow procedures in accordance with Provincial Acts and Regulations and advise Consultant verbally and in writing.

1.14 HEALTH AND SAFETY COORDINATOR

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

.1 Have site-related working experience specific to activities associated with building construction and earthworks.

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

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

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

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

1.15 POSTING OF DOCUMENTS

.1 Ensure applicable items, articles, notices and orders are posted in conspicuous location on site in accordance with Acts and Regulations of British Columbia, and in consultation with Consultant.

1.16 CORRECTION OF NON-COMPLIANCE

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

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

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

1.17 WORK STOPPAGE

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

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

PART 4 MEASUREMENT AND PAYMENT

4.1 GENERAL

.1 Refer to Section 01 29 00 – Payment Procedures.

4.2 HEALTH AND SAFETY PLAN

.1 Schedule of Prices Item No. 01 35 29/01

.2 Payment Basis: Lump sum price. Includes development, submittal, and implementation of Health and Safety Plan.

END OF SECTION

Part 1 General

1.1 Latest Editions

.1 All references to specifications, standards, or methods of technical associations refer to the latest adopted revision, including all amendments, in effect on the date of submission of bids, except where a date or issue is specifically noted.

1.2 Abbreviations

AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
AFBMA	Antifriction Bearing Manufacturers Association
AGA	American Gas Association
AGMA	American Gear Manufacturers Association
AISC	American Institute of Steel Construction
AMCA	Air Moving and Conditioning Association
ANSI	American National Standards Institute
API	American Petroleum Institute
ARI	Air Conditioning and Refrigeration Institute
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWMAC	Architectural Woodworkers Manufacturers Association of Canada
AWPA	American Wood Preservers Association
AWS	American Welding Society
AWWA	American Water Works Association
CAN	Canadian National Standard
CBM	Certified Ballast Manufacturers
CBTIC	Clay Brick and Tile Institute of Canada
CEC	Canadian Electrical Code
CEMA	Canadian Electrical Manufacturers Association
CGA	Canadian Gas Association
CGRA	Canadian Good Roads Association
CGSB	Canadian General Standards Board
CISC	Canadian Institute of Steel Construction
CITC	Canadian Institute of Timber Construction
CLA	Canadian Lumbermen Association
CMAA	Crane Manufacturers Association of America

CMHC	Canada Mortgage and Housing Corporation
CPCA	Canadian Painting Contractors Association
CPCI	Canadian Prestressed Concrete Institute
CRCA	Canadian Roofing Contractors Association
CRSI	Concrete Reinforcing Steel Institute
CSA	Canadian Standards Association
CSSBI	Canadian Sheet Steel Building Institute
CUA	Canadian Underwriters Association
CWB	Canadian Welding Bureau
CWC	Canadian Wood Council
CSPI	Corrugated Steel Pipe Institute
EEI	Edison Electric Institute
EEMAC	Electrical and Electronic Manufacturers of Canada
FFPC	Federal Fire Prevention Committee
FM	Factory Mutual Engineering Corporation
IAO	Insurers' Advisory Organization
IBRM	Institute of Boiler and Radiator Manufacturers
IEC	International Electrotechnical Commission
IEE	Institution of Electrical Engineers (U.K.)
IEEE	Institute of Electrical and Electronics Engineers
IES	Illuminating Engineering Society
IGMAC	Insulated Glass Manufacturers Association of Canada
IPCEA	Insulated Power Cable Engineers Association
ISA	Instrument Society of America
ISO	International Standardization Organization
LEMA	Lighting Equipment Manufacturers Association
LTIC	Laminated Timber Institute of Canada
MMA	Millwork Manufacturers Association
NAAMM	National Association of Architectural Metal Manufacturers
NACE	National Association of Corrosion Engineers
NBC	National Building Code of Canada
NEC	National Electrical Code
NESC	National Electric Safety Code
NFPA	National Fire Protection Association
NLGA	National Lumber Grade Authority
NSF	National Sanitation Foundation
OECI	Overhead Electrical Crane Institute
OH & S	Occupational Health and Safety
PCA	Portland Cement Association

PCI	Prestressed Concrete Institute
RLM	RLM Standards Institute
RTAC	Road and Transportation Association of Canada
SAE	Society of Automotive Engineers
SBI	Steel Boilers Institute
SEA	Saskatchewan Employment Act
SJI	Steel Joist Institute
SSPC	Steel Structures Painting Council
TTMAC	Terrazzo, Tile and Marble Association of Canada
ULC	Underwriters' Laboratories of Canada
USFG	United States Federal Government
WCB	Workers' Compensation Board

1.3 Conformance

.1 Conform to these standards, in whole or in part as specifically requested in the specifications.

.2 If there is question as to whether any product or system is in conformance with applicable standards, the Consultant reserves the right to have such products or systems tested to prove or disprove conformance.

.3 The Owner will bear testing costs where the results of testing confirm conformance. In the event of determination of non-conformance, the Contractor will be required to bear all costs.

Part 2 Products

2.1 Not Used

.1 Not Used

Part 3 Execution

3.1 Not Used

.1 Not Used

Part 4 Measurement and Payment

.1 No separate payment will be made for work under this Section.

END OF SECTION

Part 1 GENERAL

1.1 SCOPE

.1 This Section covers general procedures and requirements for transportation, storage, handling, protection, installation and execution of common products not covered in the general detailed or manufacturer's specifications.

1.2 SECTION INCLUDES

.1 Related Requirements.

.2 Reference Standards.

.3 Title to Product.

.4 Quality.

.5 Availability.

.6 Product Substitution.

.7 Storage, Handling and Protection.

.8 Transportation.

.9 Manufacturer's Instruction.

.10 Quality of Work.

.11 Coordination.

.12 Concealment.

.13 Remedial Work.

.14 Location of Fixtures.

.15 Fastenings.

.16 Protection of Work in Progress.

.17 Existing Utilities.

1.3 RELATED REQUIREMENTS

.1 Section 01 42 19 – Reference Standards

1.4 REFERENCE STANDARDS

.1 Within text of each specifications section, reference may be made to reference standards. List of standards reference writing organizations is contained in Section 01 42 19 – Reference Standards.

.2 Conform to these reference standards, in whole or in part as specifically requested in specifications.

.3 If there is question as to whether products or systems are in conformance with applicable standards, Consultant reserves right to have such products or systems tested to prove or disprove conformance.

.4 Cost for such testing will be born by Owner in event of conformance with Contract Documents or by Contractor in event of non-conformance.

1.5 TITLE TO PRODUCT

.1 Title to all Product shall, unless otherwise agreed in writing, vest to the Owner absolutely upon its delivery to the Place of Work or upon payment therefore, whichever occurs first. Title to Product which the Consultant rejects or orders removed from the Place of Work immediately reverts to the Contractor upon issuance of notice of rejection or order for removal.

.2 Bear full responsibility for the care and custody of all Product delivered to the Place of Work

1.6 QUALITY

.1 Refer to CCDC 4 Unit Price Contract.

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

.3 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.

.4 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.

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

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

.7 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.

1.7 AVAILABILITY

.1 Immediately upon signing Contract, review product delivery requirements and identify foreseeable supply delays for products. Notify Consultant of such, in order that substitutions or other remedial action may be authorized to prevent delay in performance of Work.

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

1.8 PRODUCT SUBSTITUTION

.1 Document each request with complete data substantiating compliance of proposed substitution with the Contract Documents.

.2 A request for substitution constitutes a representation that Contractor:

.1 Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product.

.2 Will provide the same warranty for the substitution as for the specified product.

.3 Will coordinate installation and make changes to other Works which may be required for the Works to be complete at Contractor's expense and at no additional cost to Owner.

.4 Waives claims for additional costs or time extension which may subsequently become apparent.

.3 Substitutions will not be considered when they are indicated or implied on Shop Drawings or product data submittals without separate written request.

1.9 STORAGE, HANDLING AND PROTECTION

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

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

.3 Provide secure storage which will reasonably prevent damage from vandalism or loss by theft and maintain ambient conditions necessary to prevent damage due to freezing, condensation or exposure to the elements.

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

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

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

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

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

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

1.10 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 Owner. Unload, handle and store such products.

1.11 MANUFACTURER'S INSTRUCTIONS

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

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

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

1.12 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 Consultant if required Work is such as to make it impractical to produce required results.

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

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

1.13 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.

1.14 CONCEALMENT

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

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

1.15 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.

1.16 LOCATION OF FIXTURES

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

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

1.17 FASTENINGS

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

.2 Prevent electrolytic action between dissimilar metals and materials.

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

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

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

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

1.18 FASTENINGS - EQUIPMENT

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

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

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

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

1.19 PROTECTION OF WORK IN PROGRESS

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

1.20 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 (NOT USED)

Part 3 EXECUTION (NOT USED)

Part 4 MEASUREMENT AND PAYMENT

.1 No separate payment will be made for work under this Section.

END OF SECTION

PART 1 GENERAL

.1 This Section specifies the requirements for installing Owner supplied products, including miscellaneous items and accessories for a complete and functioning installation.

.2 Includes general description of Contractor responsibilities for the installation of Owner supplied equipment and materials required to complete the Work.

1.2 SECTION INCLUDES

.1 Product Handling.

.2 Owner Supplied/Contractor Installed Products.

.3 Owner Supplied/Contractor Installed Product Requirements.

1.3 DEFINITIONS

.1 OSCI – Owner Supplied/Contractor Installed.

1.4 PRODUCT HANDLING

.1 Protection: Contractor shall use means necessary to protect Owner supplied materials and equipment before, during, and after installation, and to protect completed Work, including products installed by others.

.2 Replacement: In the event of damage by the Contractor, the Contractor shall immediately repair all damaged Work to the satisfaction of the Engineer at no charge to the Owner.

PART 2 PRODUCTS

2.1 OWNER SUPPLIED / CONTRACTOR INSTALLED PRODUCTS

.1 Products identified as Owner Supplied, with Contractor responsible for Installation:

.1 Contractor shall verify mounting and utility requirements for accepted products.

.2 Contractor shall provide mounting and utility rough-ins for Owner Supplied/Contractor Installed products.

.2 For items designated to be Owner Supplied: the Owner or its vendor will furnish manufacturer’s literature or information, shop drawings, or appropriate in formation for the installation of equipment or materials.

.3 Electrical Components: Contractor shall comply with requirements in Division 26 – Electrical, including the Canadian Electrical Code.

2.2 OWNER SUPPLIED / CONTRACTOR INSTALLED PRODUCT REQUIREMENTS

.1 Products furnished by Owner and installed by Contractor:

.1 Contractor shall coordinate delivery of Owner Supplied/Contractor Installed products.

.2 Contractor shall:

.1 Give written receipt of product at time of delivery, noting visible defects and omissions; if such declaration is not given, the Contractor shall assume responsibility for such defects and omissions.

.2 Store products until ready for installation and protect form loss and damage.

.3 Uncrate, assemble, and set products in place.

.4 Install products in accordance with manufacturer's recommendations, instructions and shop drawings, under the supervision of manufacturer's representative where specified, supplying labor and material required and making mechanical, electrical, and plumbing connections necessary to operate equipment.

.5 Treat all Owner supplied products with the same care as all Contractor furnished items.

2.2 OWNER SUPPLIED PRODUCTS

.1 Flare:

.1 Varec 244W flare, flare base and pilot valve and regulator assembly (stand mounted).

.2 Actuated Condensate Drip Trap (TCV-234).

.2 Electric Actuated Isolation Valves (XV-101 and XV-140).

.1 Quantity: 2

PART 3 EXECUTION

3.1 SURFACE CONDITIONS

.1 Inspection:

.1 Prior to commencing Work, Contractor shall verify that the Work specified in other Sections has been properly completed and installed as specified to allow for installation of all materials and methods required in this Section.

.2 Contractor shall verify that conditions and Owner Supplied/Contractor Installed products are satisfactory for installation. If unsatisfactory conditions exist, do not commence the installation until such conditions have been corrected.

.2 Discrepancies:

.1 In the event of discrepancy, Contractor shall immediately notify the Engineer.

.2 Contractor shall not proceed with installation in areas of discrepancy until all such discrepancies have been resolved.

3.2 INSTALLATION

.1 Contractor shall install Owner supplied products in accordance with reviewed shop drawings and manufacturer's printed instructions, as applicable.

3.3 ADJUSTING, CLEANING, AND PROTECTION

.1 Contractor shall adjust products as necessary for installation of Work.

.2 Contractor shall clean all Owner Supplied/Contractor Installed products.

.3 Contractor shall protect Owner Supplied/Contractor Installed products from damage until Contract Completion.

PART 4 MEASUREMENT AND PAYMENT

4.1 GENERAL

.1 No separate payment will be made for Work under this Section.

END OF SECTION

Part 1 GENERAL

1.1 SCOPE

.1 Scope of work includes utility locations, establishing survey control points, and layout.

1.2 SECTION INCLUDES

.1 Related Requirements.

.2 Reference Standards.

.3 Action and Informational Submittals.

.4 Existing Services.

.5 Location of Equipment and Fixtures.

.6 Records.

.7 Subsurface Conditions.

.8 Measurement and Payment.

1.3 RELATED REQUIREMENTS

.1 Section 01 71 13 – Mobilization and Startup

.2 Section 01 73 00 – Execution

1.4 REFERENCE STANDARDS

.1 Canadian Construction Documents Committee (CCDC)

.1 CCDC 4, Unit Price Contract.

.2 Owner's identification of existing survey control points and property limits.

1.5 EXISTING SERVICES

.1 Before commencing work, establish location and extent of service lines in area of Work and notify Consultant of findings.

.2 Remove abandoned service lines within 2m of structures. Cap or otherwise seal lines at cut-off points as directed by Consultant.

1.6 LOCATION OF EQUIPMENT AND FIXTURES

.1 Location of equipment, fixtures and outlets indicated or specified are to be considered as approximate.

.2 Locate equipment, fixtures and distribution systems to provide minimum interference and maximum usable space and in accordance with manufacturer's recommendations for safety, access and maintenance.

.3 Inform Consultant of impending installation and obtain approval for actual location.

.4 Submit field drawings to indicate relative position of various services and equipment when required by Consultant.

1.7 RECORDS

.1 The Contractor shall record all changes made during construction and provide record drawings to the Consultant upon completion of the Work.

.2 Maintain a complete, accurate log of control and survey work as it progresses.

.3 On completion of foundations and major site improvements, prepare a certified survey showing dimensions, locations, angles and elevations of Work.

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

1.8 SUBSURFACE CONDITIONS

.1 Promptly notify Consultant in writing if subsurface conditions at Place of Work differ materially from those indicated in Contract Documents, or a reasonable assumption of probable conditions based thereon.

.2 After prompt investigation, should Consultant determine that conditions do differ materially, instructions will be issued for changes in Work as provided in Changes and Change Orders.

Part 2 PRODUCTS

2.1 NOT USED

.1 Not Used.

Part 3 EXECUTION

3.1 NOT USED

.1 Not Used.

Part 4 MEASUREMENT AND PAYMENT

.1 No separate payment will be made for work under this Section.

END OF SECTION

PART 1 GENERAL

1.1 SCOPE

.1 Contractor shall be responsible for all preparatory work and operations required prior to beginning Work.

1.2 SECTION INCLUDES

.1 Mobilization and Startup.

.2 Measurement and Payment.

1.3 RELATED REQUIREMENTS

.1 Section 01 29 00 – Payment Procedures

.2 Section 01 33 00 – Submittal Procedures

.3 Section 01 71 00 – Examination and Preparation

.4 Section 01 77 00 – Closeout Procedures

1.4 MOBILIZATION AND STARTUP

.1 Contractor shall not mobilize to the Site without the Consultant's written authorization.

.2 Mobilization shall include, but not limited to, the following:

.1 Performance of planning and scheduling activities necessary for the performance of the Works.

.2 Purchase of materials and mobilize equipment, supplies, and incidentals to the Site.

.3 Movement of personnel, tools, equipment, materials, supplies, and incidentals to the Project site and all preparatory work

.4 Establishment of all necessary facilities, including acquisition of easements for the Contractor's convenience.

.5 Obtaining permits necessary for the execution of the Work.

.6 Providing required bonds, workers' compensation board status, and proof of insurance.

.3 Permits. The Contractor shall obtain the following permits associated with constructing the Works:

.1 Electrical Permit; and

.2 Gas Permit.

.4 CSA B149.3 Field Approval Application for flare device shall be filed by the Owner. The Contractor shall coordinate electrical and gas inspections with Owner and assist in facilitating the CSA B149.3 field approval.

.5 Startup shall include, but not limited to the following:

.1 Establish site access and haul roads necessary to construct the Works and transport materials to and from temporary stockpile locations.

.2 Establish Site temporary utilities and facilities in areas designated by Consultant.

.3 Coordinate scheduling, submittals, and work of the various Sections of the Project Specifications.

.4 Undertake utility locations for the contract area. Mark all buried utilities and conduits within the contract area.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

PART 4 MEASUREMENT AND PAYMENT

4.1 GENERAL

.1 Refer to Section 01 29 00 Payment Procedures: Requirements for measurement and payment.

4.2 MOBILIZATION AND STARTUP

.1 Mobilization

.1 Schedule of Prices Item No. 01 71 13/01.

.2 Payment Basis: Lump sum price. Includes furnishing and maintaining insurance required by the Contract Documents; bonds; mobilization; and procuring necessary permits.

.2 Startup

.1 Schedule of Prices Item No. 01 71 13/02.

.2 Payment Basis: Lump sum price. Includes permits, utility locations, resource and material procurement activities.

END OF SECTION

PART 1 GENERAL

1.1 SCOPE

.1 Scope includes general execution requirements for constructing the Works.

1.2 SECTION INCLUDES

.1 Related Requirements.

.2 Action and Informational Submittals.

.3 Materials.

.4 Preparation.

.5 Execution.

.6 Cleanup

.7 Measurement and Payment.

1.3 RELATED REQUIREMENTS

.1 Section 01 33 00 – Submittal Procedures.

.2 Section 01 71 00 – Examination and Preparation.

.3 Section 01 71 13 – Mobilization and Startup.

1.4 SUBMITTALS

.1 Submittals: In accordance with Section 01 33 00 – Submittal Procedures.

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

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

.3 Include in request:

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

1.5 MATERIALS

.1 Required for original installation.

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

1.6 PREPARATION

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

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

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

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

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

Part 2 PRODUCTS (NOT USED)

Part 3 EXECUTION

3.1 GENERAL

.1 Execute cutting, fitting, and patching including excavation and fill, to complete Work.

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

.3 Uncover Work to install ill-timed Work.

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

.5 Remove samples of installed Work for testing.

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

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

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

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

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

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

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

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

3.2 NITROGEN PURGING – CONTROL PLANT

.1 Notify Consultant five (5) working days prior to commencing nitrogen purging of control plant pipe works located downstream of the control plant isolation valve (XV-101), including all pipe works between the isolation valve and the existing flare.

.2 Contractor to supply nitrogen, regulator, hoses, connections, and labour to undertake nitrogen purging of pipe works prior to dismantling existing pipe works or removing existing flare.

.3 Consultant and Owner to coordinate and assist contractor with purging activities, including determining purge points and the monitoring of gas composition.

.4 Coordinate isolate all Control Plant valves with Consultant and Owner prior to commencing nitrogen purge.

.5 The Contractor will purge the existing control plant pipe works with three volumes of nitrogen (1,600 litres at standard atmospheric conditions) until the methane concentration in the pipe works is less than 0.1 percent (volumetric basis) or 2 percent of the lower explosive limit.

.6 Nitrogen shall be added to the landfill gas piping through the isolation valve sample ports at a pressure not to exceed the 20 kPA and flow rate adequate to reduce mixing with air.

3.3 CONTROL PLANT PIPING INSPECTION

.1 Notify Consultant five (5) working days prior to commencing nitrogen purging of control plant pipe works located downstream of the control plant isolation valve, including all pipe works between the isolation valve and the existing flare.

.2 Notify and coordinate the pipe inspection with Technical Safety BC.

3.4 PROTECTION OF INSTALLED WORK

.1 Protect installed work and provide special protection where specified in individual Sections.

.2 Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.

.3 Prohibit traffic upon landscaped areas.

3.5 CLEAN UP

.1 Remove construction debris, waste materials, packaging material from work site daily.

.2 Clean dirt or mud tracked onto paved or surfaced roadways.

.3 Store materials resulting from demolition activities that are salvageable.

.4 Stack stored new or salvaged material not in construction facilities.

Part 4 MEASUREMENT AND PAYMENT

4.1 GENERAL

.1 Refer to Section 01 29 00 Payment Procedures: Requirements for measurement and payment.

4.2 NITROGEN PURGING – CONTROL PLANT

.1 Schedule of Prices Item No. 01 73 00/01.

.2 Payment Basis: Lump sum price. Includes supply of nitrogen, equipment and labour to undertake well field nitrogen purging activities.

END OF SECTION

PART 1 GENERAL

1.1 SCOPE

.1 Scope includes final closeout and submittal requirements including final cleaning and surveying, and warranties.

1.2 SECTION INCLUDES

.1 Related Requirements.

.2 Administrative Requirements.

.3 Final Cleaning.

1.3 RELATED REQUIREMENTS

.1 Section 01 71 00 – Examination and Preparation

.2 Section 01 73 00 – Execution

1.4 REFERENCE STANDARDS

.1 Canadian Construction Documents Committee (CCDC)

.1 CCDC 4, Unit Price Contract.

1.5 ADMINISTRATIVE REQUIREMENTS

.1 Acceptance of Work Procedures:

.1 Contractor's Inspection:

.2 Contractor to conduct inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.

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

.2 Consultant’s inspection.

.3 Consultant's Inspection:

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

.2 Contractor to correct Work as directed.

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

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

.2 Defects: corrected and deficiencies completed.

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

.4 Certificates required by Technical Safety BC submitted.

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

.5 Final Inspection:

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

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

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

.7 Commencement of Warranty Periods: date of Owner's acceptance of submitted declaration of Substantial Performance to be date for commencement for warranty period.

.8 Final Payment:

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

.2 Refer to CCDC 4: when Work deemed incomplete by Consultant, complete outstanding items and request re-inspection.

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

1.6 RESTORATION

.1 As a minimum, restoration shall mean replacement, repairs, or reconstruction to a condition at least as good as or better than the condition prior to commencement of the Works.

.2 Except where specifically required otherwise by other Sections, restore areas of the Works and areas affected by the performance of the Works to conditions that existed prior to commencement of the Works and to match condition of similar adjacent, undisturbed areas.

.3 Ensure that restored areas match existing grade and surface drainage characteristics, except as otherwise specified, and ensure a smooth transition from restored surfaces to existing surfaces.

.4 Do not alter original conditions without prior written approval from Consultant.

.5 Without limiting the generality of the foregoing or other requirements of the Contract Documents, preserve and protect existing features encountered at the Site during the performance of the Works.

.6 Remove from the Site material not approved for reuse.

1.7 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 Waste Management: separate waste materials for recycling and/or reuse.

.4 Remove waste materials and debris from site at regularly scheduled times or dispose of as directed by Consultant. Do not burn waste materials on site.

.5 Clean debris from drainage and storm water management systems.

.6 Repair pavement, roads, sod, and all other areas affected by construction operations and restore them to original condition or to minimum condition specified.

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

.8 Sweep and wash clean paved areas and rake clean landscaped surfaces.

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

.10 Remove dirt and other disfiguration from exterior surfaces.

.11 Clean and sweep roofs, gutters, downspouts, areaways, drainage systems and sunken wells.

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

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

1.8 SUBMITTALS

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

1.9 FORMAT

.1 Organize data as instructional manual.

.2 Binders: vinyl, hard covered, 3 'D' ring, loose leaf with spine and face pockets.

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

.1 Identify contents of each binder on spine.

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

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

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

.7 Drawings: provide with reinforced punched binder tab.

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

1.10 CONTENTS – PROJECT RECORD DOCUMENTS

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

.1 Date of submission; names.

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

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

.2 For each product or system:

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

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

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

1.11 RECORDING INFORMATION ON PROJECT RECORD DOCUMENTS

.1 Record information on set of drawings provided by Engineer.

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

.3 Record information concurrently with construction progress.

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

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

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

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

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

.4 Field changes of dimension and detail.

.5 Changes made by change orders.

.6 Details not on original Contract Drawings.

.7 Referenced Standards to related shop drawings and modifications.

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

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

.2 Changes made by Addenda and change orders.

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

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

1.12 WARRANTIES AND BONDS

.1 Provide Warranties and Bonds fully executed and notarized.

.2 Execute transition of Performance and Labour and Materials Payment Bond to Warranty Period requirements.

1.13 EQUIPMENT AND SYSTEMS

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

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

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

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

.3 Include installed colour coded wiring diagrams.

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

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

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

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

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

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

.8 Include sequence of operation by controls manufacturer.

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

.10 Provide installed control diagrams by controls manufacturer.

.11 Provide Contactor’s co-ordination drawings, with installed colour coded piping diagrams.

.12 Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.

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

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

PART 4 MEASUREMENT AND PAYMENT

4.1 GENERAL

.1 Refer to Section 01 29 00 – Payment Procedures: Requirements for measurement and payment.

4.2 DEMOBILIZATION AND CLOSEOUT

.1 Schedule of Prices Item No. 01 77 00/01.

.2 Payment Basis: Lump sum price. Includes final cleaning of equipment, construction facilities, and materials to be removed from the Site; removal of temporary construction and support facilities provided by Contractor; final Site cleanup, final grading, adjusting, restoration, record documents, warranties and bonds.

END OF SECTION

Part 1 GENERAL

1.1 SECTION INCLUDES

.1 Description.

.2 Quality assurance.

.3 Co-ordination.

.4 Pre-commissioning meeting.

.5 Equipment checkout, startup and adjusting.

.6 Controls and instrumentation.

.7 Flare commissioning.

.8 Training and Control System Manual.

.9 Measurement and Payment.

1.2 RELATED SECTIONS

.1 Section 01 29 00 – Payment Procedures

.2 Section 01 33 00 – Submittal Procedures

.3 Section 01 78 00 – Closeout Submittals

.4 Section 23 05 14 – Variable Frequency Drive

.5 Section 23 05 26 – Process Valves

.6 Section 23 52 39 – Flare

.7 Section 25 30 00 – General Requirements for Instrumentation and Control

.8 Section 25 30 01 – PLC Control Panel

.9 Section 25 30 03 – Process Control System Development and Programming

.10 Section 25 30 05 – Process Instrumentation and Control System Testing

.11 Section 25 90 00 – LFG Extraction Plant Operation Description

.12 Section 26 00 00 – Summary of Electrical Work

.13 Section 26 00 10 – Electrical General Requirements

.14 Section 26 08 10 – Electrical Testing

.15 Section 26 08 20 – Electrical Testing by Contractor

1.3 REFERENCES

.1 Canadian Standards Association (CSA):

.2 CSA B149.1(20) - Natural Gas and Propane Installation Code.

.3 CSA B149.3(20) - Code for the Field Approval of Fuel-Burning Appliances and Equipment.

.4 CSA B149.6(20) - Code for Digester Gas and Landfill Gas Installations.

1.4 DEFINITIONS

.1 Variable Frequency Drive – VFD.

.2 Programmable Logic Controller – PLC.

.3 Human Machine Interface or Graphical Operator Interface – HMI.

.4 Systems Integrator: Refer to Section 25 30 00.

.5 Process Instrumentation and Control System – PICS

.6 The term “Instrumentation” covers field and panel instruments, analyzers, primary sensing elements, transmitters, power supplies, network equipment, and monitoring devices.

.7 The term “Facility” shall include the landfill gas well field, extraction plant, flare and associated works.

1.5 DESCRIPTION

.1 This section specifies requirements for the Contractor’s performance during the commissioning of the flare, PLC, SCADA system, instrumentation, equipment, and systems constructed and installed during the course of the Contract.

.2 All commissioning, as described in this section, shall be performed by the Contractor, subcontractors, major equipment suppliers, and the Systems Integrator.

.3 Start-up refers to equipment checks, startup, adjusting, and instructions to Owner’s operation and maintenance personnel including:

.1 Demonstration of operation of systems, subsystems, and equipment.

.2 Training in operation and maintenance of systems, and equipment.

1.6 QUALITY ASSURANCE

.1 COMMISSIONING TEAM

.1 The Contractor shall assemble a commissioning team under the direction of an individual duly authorized to commit the Contractor’s personnel and resources to respond to requests for assistance on the part of the Consultant or Owner for the purpose of commissioning the works.

.2 The commissioning team shall include, at minimum, representatives from the PLC panel shop, Systems Integrator, electrical Contractor, and mechanical Contractor.

.3 The commissioning team shall be available at the site of the work during normal working hours for the duration of the commissioning phase.

.4 The commissioning team shall at all times for the duration of the commissioning phase be equipped and ready to provide repairs, adjustments, and corrections to the equipment and systems installed as part of this contract.

.2 COMMISSIONING DURATION

.1 The Contractor shall provide startup personnel and resources, including the commissioning team for a period no less than three (3) continuous days.

Part 2 PRODUCTS (Not Used)

Part 3 EXECUTION

3.1 GENERAL

.1 After completion of the equipment and system performance and operational testing referenced in Section 25 30 05, final inspections, and approval by Consultant that the systems meet all test requirements, commissioning will begin.

.2 The commissioning period shall be a period of 14 days of continuous operation.

.3 The Owner's operations personnel will be responsible for operation of the systems to be commissioned. The works to be commissioned shall be fully operational, performing all functions for which it was designed.

.4 The Contractor shall be available at all times during the commissioning period to provide assistance in case of failure of any portion of the system being constructed.

.5 At the end of the commissioning period and when all corrections required by the Consultant to assure a reliable and completely operational facility are complete, the Consultant shall issue the certificate of substantial completion.

.6 During the commissioning period, the Owner shall be responsible for all normal operating costs and the Contractor shall bear the costs of all necessary repairs, equipment replacements, and adjustments, including labor and materials, required to keep the works being commissioned operational.

.7 In the event that the commissioning period has to be extended due to control system programming error, equipment malfunction or other problems resulting from Contractor installation or configuration, the Contractor shall be responsible for all costs arising out of any extension to the commissioning period at no expense to the Owner.

.8 The Contractor shall notify and inform all subcontractors and suppliers of the requirements of this specification. The Contractor shall be responsible for assuring that all costs arising from the commissioning of the Works are included in the Contract Price.

3.2 COORDINATION

.1 Coordinate startup and instruction schedule with Owner's operations and maintenance personnel.

.2 Provide at least 15 days advance notification of dates and equipment for startup and training.

3.3 PRE-COMMISSIONING MEETING

.1 A Pre-Commissioning Meeting shall be undertaken prior to commencing the work specified in this specification.

.2 The Pre-Commissioning Meeting shall be attended by, at a minimum, the Owner, Consultant, Contractor, and System Integrator.

3.4 EQUIPMENT CHECKOUT, STARTUP, AND ADJUSTING

.1 Remove shipping, packing, tags, and stops from instruments before starting with procedures specified. Contractor shall have instruction manuals available, and shall install miscellaneous components.

.2 Follow manufacturer's printed recommendations for calibrating or checking calibration of instruments.

.3 Following installation, check-out and final adjustment of all equipment, instruments, monitoring, and control devices, a performance check shall be made. All status and alarm switches, as well as all monitoring and control functions shall be checked. Each device on the loop diagrams and instrument tables must be signed off by the Consultant as being acceptable. Testing shall be done from the signal source to the final element or device including all field wiring.

.4 Inspect field assembled components and equipment installation to verify proper installation. Correct any improper installations.

.5 Provide initial field servicing of equipment and components where required, including lubrication of blower bearings.

.6 Start equipment and operating components to confirm proper operation. Remove malfunctioning units and replace with new units, and retest.

.7 Adjust equipment and operating components for proper function.

.8 Test each piece of equipment to verify proper operation. Test and adjust controls and safety interfaces. Replace damaged and malfunctioning controls and equipment.

.9 Provide start-up services by a factory-authorized service representative, inspections, procedures, and related actions required to ensure that all installations comply with design, performance and warranty requirements.

.10 The factory-authorized representative shall remain on-site and/or provide as many site trips as are necessary to demonstrate to the Consultant's satisfaction that all equipment is operating as specified and the equipment complies with design, performance and warranty requirements.

3.5 CONTROLS AND INSTRUMENTATION

.1 Check all controls and instrumentation prior to start-up to assure performance of all systems is in accordance with design, performance and warranty requirements.

.2 Verify that control valve seats are free of foreign material and properly positioned for intended service.

.3 Test procedures:

.1 Check control wiring for proper operation of pushbuttons, hand switches, and other control devices.

.2 Provide necessary labour to make final equipment adjustments necessary to make the installed Works in good operating condition and furnish labour to resolve instrument or control problems.

.3 Valves and Operators:

.1 Valve action: Check valve action in conformance to specifications.

.2 Valve positioner: Check for conformance to specification relative to spring action and input range, valve action, and length of stroke.

3.6 FLARE COMMISSIONING

.1 The commissioning of the flare, flare control panel, and pilot ignition system shall be undertaken by Contractor.

.2 The flare control panel set points shall be configured and tested.

.3 Spark ignition system shall be tested and commissioned in accordance with the flare manufacturer's specifications and instructions.

.4 The propane pilot ignition system shall be purged, pressure regulators adjusted and ignition system tested to confirm operation of the igniter to the satisfaction of the Consultant.

.5 Pilot and main flame thermocouple signals shall be tested at the flare control panel.

3.7 TRAINING, AND CONTROL SYSTEM MANUAL

.1 Where specified, the Contractor and/or qualified representative of the equipment supplier shall conduct training for the Owner's operation and maintenance personnel to instruct the staff on proper operation, care, maintenance of the equipment and systems installed under this Contract. The Consultant shall be present for all training conducted by Contractor.

.2 Upon completion of start-up and commissioning of the Works, the Contractor shall demonstrate the operation of all Facility components, instrumentation, and control systems.

.3 The Contractor / Systems Integrator shall provide a PLC Manual which shall include the following elements:

.1 Overview of Control System.

.2 HMI screen overview and description.

.3 Operational Mode Description.

.4 Default set point summary.

.5 Remote PC Function and Data Historian.

.6 Operation instructions, including start and stop procedures.

.7 Alarms (Critical and Non-critical).

.8 Control Loop Narratives.

.9 Instrumentation maintenance and calibration schedule.

.10 Data Export.

.11 Data Archive and backup.

.12 Control Panel as-built drawings and wiring diagrams.

Part 4 MEASUREMENT AND PAYMENT

4.1 GENERAL

.1 Section 01 29 00 - Payment Procedures: Requirements for measurement and payment.

4.2 START-UP, COMMISSIONING AND TRAINING

.1 Schedule of Prices Item No. 01 91 13/01.

.2 Payment Basis: Lump Sum. Includes pre-commissioning meeting; system start-up, equipment check-out and testing; testing, start-up and commissioning; attendance of commissioning team, Systems Integrator and sub-contractors during commissioning period; training and control system manual.

END OF SECTION