



Public Works and Government Services Canada

Requisition No. _____

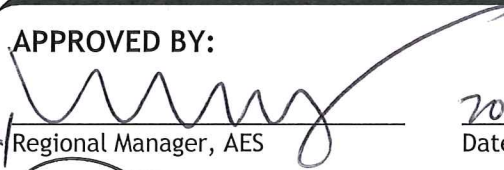
DRAWINGS & SPECIFICATIONS
for

Pleasant Camp Port of Entry, BC
Residential Pathway

R.083767.001

September 2018

APPROVED BY:


Regional Manager, AES

2018-10-02
Date


Construction Safety Coordinator

2018-09-29
Date

TENDER:


Project Manager

2018-09-28
Date

CONSULTANTS – SEAL & SIGNATURE

Discipline

Seal / Signature / Date

Electrical



Civil



END OF SECTION

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Part 1 General

1.1 CODES

- .1 Perform work to current Codes, Construction Standards and Bylaws, including Amendments up to the TENDER closing date .

1.2 DESCRIPTION OF WORK

- .1 Work of this Contract covers the construction of a new compacted gravel pedestrian pathway and pole mounted street lighting at Pleasant Camp, British Columbia as indicated on the drawings and specifications.
- .2 Canada Border Services Agency (CBSA) in its mandate under the Customs Act operates the Pleasant Camp Port of Entry to provide integrated border services including the processing of travellers into and out of Canada. The Port including the existing Port of Entry Buildings, staff housing and electrical, fuel, water and other facilities must remain fully operational throughout the project duration, unless otherwise indicated.
- .3 It is imperative that the station operation including all ancillary services such as staff housing, water system, power, communication system remain in operation at all times during this construction.
- .4 Due to potential elevated noise levels during construction, schedule and coordinate work and interface with existing facilities with Departmental Representative. Contractor may be instructed to periodically to stop or reschedule work should construction activities impact CBSA operations.
- .5 The Contractor will be responsible for clearing snow on site if required to complete the Work and maintaining a safe and clean worksite

1.3 BACKGROUND INFORMATION

- .1 Pleasant Camp Port of Entry
 - .1 The Pleasant Camp Port of Entry is a Canada - US border crossing station located on the Haines Highway near the Canadian border at the Northwest corner of British Columbia in the Stikine region. Latitude and longitude coordinates are: 59deg 27min N, 136deg 22min W. The station elevation is 274.3 metres above sea level.
 - .2 The nearest large community is Whitehorse, Yukon which is located 330 km NE of Pleasant Camp (approximately 4.5 hrs distance by road). Haines Alaska is located about 65km south of the site. The Pleasant Camp station includes four (4) duplex staff accommodation buildings and staff live and work at the site year round. The Port operates from 0800hr to 24:00hrs.
 - .3 The site is considered remote. There is no lodging or food at site.

1.4 SPECIAL PROCEDURES - TRAFFIC CONTROL

- .1 Provide appropriate signage and traffic cones to delineate the work area and not encroach on and impede traffic flow on the Haines Highway.
- .2 Use a flag person when moving vehicles on Site or when temporarily impeding traffic flow.

1.5 CONTRACT DOCUMENTS

- .1 The Contract documents, drawings and specifications are intended to complement each other, and to provide for and include everything necessary for the completion of the work
- .2 Drawings are, in general, diagrammatic and are intended to indicate the scope and general arrangement of the work.

1.6 OTHER CONTRACTS

- .1 Further Contracts may be awarded while this Contract is in progress.

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- .2 Cooperate with other Contractors in carrying out their respective works and carry out instructions from Departmental Representative.
 - .3 Coordinate work with that of other Contractors. If any part of work under this Contract depends for its proper execution or result upon work of another Contractor, report promptly to Departmental Representative, in writing, any defects which may interfere with proper execution of this Work.

1.7 DIVISION OF SPECIFICATIONS

- .1 The specifications are subdivided in accordance with the current 6-digit National Master Specifications System.
- .2 A division may consist of the work of more than 1 subcontractor. Responsibility for determining which subcontractor provides the labour, material, equipment and services required to complete the work rests solely with the Contractor.
- .3 In the event of discrepancies or conflicts when interpreting the drawings and specifications, the specifications govern.

1.8 TIME OF COMPLETION

- .1 Work to be initiated immediately upon Contract Award.
- .2 Work shall be substantially complete within 20 weeks after Contract Award or March 31, 2019 whichever comes first.

1.9 HOURS OF WORK

- .1 Obey British Columbia Worksafe Regulations.
- .2 Duration of work day will be limited to 7am to 7pm unless otherwise approved in advance.
- .3 Work that may impact on CBSA Operations or the travelling public including work activities generating elevated noise levels shall be approved in advance and carried out during hours as directed.
- .4 Under no circumstances will work be allowed between 10PM and 7AM if noise level exceeds 40dBA at any residences.
- .5 Notify Departmental Representative of all after hours work, including weekends and holidays.

1.10 WORK SCHEDULE

- .1 Carry on work as follows:
 - .1 Within 10 working days after Contract award, provide a "schedule gantt bar chart" showing anticipated progress stages and final completion of the work within the time period required by the Contract documents. Indicate the following:
 - .1 Submission of shop drawings, product data, MSDS sheets and samples.
 - .2 Commencement and completion of work of each section of the specifications or trade for each phase as outlined.
 - .3 Work initiation and final completion date within the time period required by the Contract documents.
 - .4 Take into consideration, amongst others;
 - .1 Restrictions due to continued operation of the Port of Entry facilities.
 - .2 Expected seasonal inclement weather and its effect on the Work.
 - .3 If required, plan and pay for any facilities and procedures to expedite sequence of work to meet the completion date.

- .2 Do not change approved Schedule - without notifying Departmental Representative
- .3 Interim reviews of work progress based on work schedule will be conducted as decided by Departmental Representative and schedule updated by Contractor in conjunction with and to approval of Departmental Representative.

.2 After Hours Work:

- .1 After hours work: at least 5 Working Days prior to commencing after hours work Submit a schedule showing requested dates, times, and reasons for after hours work. Approval will only be granted for reasons valid in the opinion of the Departmental Representative and if request can be reasonably accommodated by other contracts.

1.11 COST BREAKDOWN

- .1 Before submitting the first progress claim, submit a detailed breakdown for the Work that shows the Contract lump sum prices in detail as directed by the Departmental Representative and aggregating Contract price.

1.12 CODES, BYLAWS, STANDARDS

- .1 Perform work in accordance with the latest edition of the National Building Code of Canada (NBC), the National Fire Code of Canada (NFC), the Canadian Electrical Code of Canada (CEC), the National Plumbing Code of Canada (NPCC) and other indicated Codes, Construction Standards and/or any other Code or Bylaw of local application.
- .2 Comply with applicable local bylaws, rules and regulations enforced at the location concerned. These include:
 - .1 Pollution, waste, or garbage restrictions.
 - .2 Truck, traffic, and road access restrictions.
 - .3 Water, stormwater, and sewer restrictions.
 - .4 Noise restrictions.
 - .5 Signage, fencing, hoarding restrictions.
 - .6 Fire prevention restrictions
 - .7 Fuel equipment and storage restrictions.
- .3 Meet or exceed requirements of Contract documents, specified standards, codes and referenced documents.
- .4 Obtain amendments to existing permits as required to complete the Work from authority having jurisdiction at no increase to the Contract Amount and no increase to Extension of Time for completion of the Work.
- .5 In any case of conflict or discrepancy, the most stringent requirements will apply.

1.13 DOCUMENTS REQUIRED

- .1 Maintain 1 copy each of the following at the job site:
 - .1 General Conditions.
 - .2 Contract drawings.
 - .3 Contract specifications.
 - .4 Addenda to Contract documents.
 - .5 Copy of approved work schedule.
 - .6 Reviewed/approved shop drawings.

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- .7 Change Orders.
 - .8 Other modifications to Contract.
 - .9 Field and laboratory test reports.
 - .10 Reviewed/approved samples.
 - .11 Manufacturers' installation and application instructions.
 - .12 One set of record drawings and specifications for "as-built" purposes.
 - .13 Field and laboratory test reports.
 - .14 Reviewed and accepted Submissions.
 - .15 National Building Code of Canada and National Fire Code of Canada.
 - .16 Current construction Standards of workmanship listed in technical Sections.
 - .17 Building Safety Plan.
 - .18 Health and Safety documents, including all daily toolbox meetings, Notice of Project, and utility clearances.
 - .19 Environmental Protection Plan.
 - .20 Quality Management Plan.
 - .21 Final Meeting Minutes, Agendas and associated attachments.
 - .22 Permits and other approvals.

1.14 REGULATORY REQUIREMENTS

- .1 Obtain and pay for Building Permit, Certificates, Licenses and other permit required by regulatory municipal, provincial or federal authorities to complete the work.
- .2 Provide inspection authorities with plans and information required for issue of acceptance certificates.
- .3 Furnish inspection certificates in evidence that the work installed conforms with the requirements of the authority having jurisdiction.

1.15 CONTRACTOR'S USE OF SITE

- .1 Use of site:
 - .1 Exclusive and complete for execution of work, in work areas indicated but not including CBSA operational areas.
 - .2 Assume responsibility for assigned premises for performance of this work.
 - .3 Be responsible for coordination of all work activities on site, including the work of other contractors engaged by the Departmental Representative.
- .2 Perform work in accordance with Contract documents. Ensure work is carried out as required to ensure continued operation of the site.
- .3 Do not unreasonably encumber site with material or equipment.
- .4 Accept liability for damage, safety of equipment and overloading of existing equipment.

1.16 EXAMINATION

- .1 Examine site and be familiar and conversant with existing conditions likely to affect work.
- .2 Provide photographs of surrounding properties, objects and structures liable to be damaged or be the subject of subsequent claims.

1.17 EXISTING SERVICES

- .1 Notify Departmental Representative and Utility companies of intended interruption of services and obtain required permission.
- .2 Where Work involves breaking into or connecting to existing services, give departmental representative 72 hours notice for necessary interruption of mechanical or electrical service throughout course of work. Minimize duration of interruptions. Carry out work at times as directed by governing authorities with minimum disturbance to vehicular traffic.
- .3 Provide alternative routes for personnel, pedestrian, and vehicular traffic.
- .4 Establish location and extent of service lines in area of work before starting Work. Notify departmental representative of findings.
- .5 Submit schedule to and obtain approval from departmental representative for any shut-down or closure of active service or facility including power and communications services. Adhere to approved schedule and provide notice to affected parties.
- .6 Provide temporary services when directed by departmental representative to maintain critical building and tenant systems.
- .7 Provide adequate bridging over trenches which cross sidewalks or roads to permit normal traffic.
- .8 Where unknown services are encountered, immediately advise departmental representative and confirm findings in writing.
- .9 Protect, relocate or maintain existing active services. When inactive services are encountered, cap off in manner approved by department representative and/or authorities having jurisdiction.
- .10 Record locations of maintained, re-routed and abandoned service lines.
- .11 Construct barriers in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.

1.18 LOCATION OF EQUIPMENT AND FIXTURES

- .1 Location of equipment and fixtures indicated or specified are to be considered as approximate.
- .2 Inform Departmental Representative of impending installation and obtain his approval for actual locations.
- .3 Submit field drawings or shop drawings to indicate the relative position of various services and equipment when required by the Departmental Representative.

1.19 SETTING OUT OF WORK

- .1 Assume full responsibility for and execute complete layout of work to locations, lines and elevations indicated.
- .2 Provide devices needed to lay out and construct work.
- .3 Supply such devices as templates required to facilitate Departmental Representative's inspection of work.

1.20 ACCEPTANCE OF SUBSTRATES

- .1 Each trade shall examine surfaces prepared by others and job conditions which may affect his work, and shall report defects to the Departmental Representative. Commencement of work shall imply acceptance of prepared work or substrate surfaces.

1.21 QUALITY OF WORK

- .1 Ensure that quality workmanship is performed through use of skilled tradesmen, under supervision of qualified journeyman or Qualified Professional.
- .2 The workmanship, erection methods and procedures to meet minimum standards set out in the National Building Code of Canada and Construction Standards, as applicable for workmanship,

erection methods and procedures.

- .3 In cases of dispute, decisions as to standard or quality of work rest solely with the Departmental Representative, whose decision is final.

1.22 QUALITY MANAGEMENT

- .1 Be responsible for all Quality Assurance and Quality Control during the performance of the Work.
- .2 Quality Assurance and Quality Control includes monitoring, inspecting, testing, documenting and reporting the means, methods, materials, workmanship, processes, and products of all aspects of the Work, including design, construction, and management as necessary to ensure conformance with the Contract.
- .3 Assist Departmental Representative in quality audit inspections and submit all indicated information within 5 Working Days of collection or as instructed.

1.23 INSPECTION AND TESTING

- .1 Contractor will appoint and pay for the services of testing agency or testing laboratory as specified, and where required for the following:
- .1 Inspection and testing required by laws, ordinances, rules, regulations or orders of public authorities.
 - .2 Inspection and testing performed exclusively for Contractor's convenience.
- .2 Contractor will organize and pay for material testing required by BC MoTI Subdivision Road Specifications and Standard Specifications for Highway Construction (Section 201 and 202), or Yukon Department of Highways and Public Works requirements.
- .3 Where laboratory tests or inspections of imported fill reveal Work is not in accordance with the Contract requirements, Contractor will pay costs for additional tests or inspections as the Departmental Representative may require to verify acceptability of correct Work.
- .4 Contractor will furnish labour and facilities to:
- .1 Notify Departmental Representative in advance of planned testing.
- .5 Where materials are specified to be tested, deliver representative samples in required quantity to testing laboratory.
- .6 Pay costs for uncovering and making good Work that is covered before required inspection or testing is completed and reviewed for acceptance by Departmental Representative.
- .7 The Departmental Representative may require, and pay for, additional inspection and testing services not included above.
- .8 Provide Departmental Representative with 2 copies of testing laboratory reports as soon as they are available.

1.24 WORKS COORDINATION

- .1 Coordinate work of subtrades
- .1 Designate one person to be responsible for review of contract documents and shop drawings and managing coordination of Work.
- .2 Convene meetings between subcontractors whose work interfaces and ensure awareness of areas and extent of interface required.
- .1 Provide each subcontractor with complete plans and specifications for Contract, to assist them in planning and carrying out their respective work.
 - .2 Develop coordination drawings when required, illustrating potential interference between work of various trades and distribute to affected parties.

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- .3 Facilitate meeting and review coordination drawings. Ensure subcontractors agree and sign off on drawings.
 - .4 Publish minutes of each meeting.
 - .5 Plan and coordinate work in such a way to minimize quantity of service line offsets.
 - .6 Submit copy of coordination drawings and meeting minutes to Departmental Representative for information purposes.
- .3 Submit shop drawings and order of prefabricated equipment or rebuilt components only after coordination meeting for such items has taken place.
- .4 Work coordination:
- .1 Ensure cooperation between trades in order to facilitate general progress of Work and avoid situations of spatial interference.
 - .2 Ensure that each trade provides all other trades reasonable opportunity for completion of Work and in such a way as to prevent unnecessary delays, cutting, patching and removal or replacement of completed work.
 - .3 Ensure disputes between subcontractors are resolved.
- .5 Failure to coordinate Work is responsibility of Contractor.
- .6 Departmental Representative is not responsible for, or accountable for extra costs incurred as a result of Contractor's failure to coordinate Work.

1.25 APPROVAL OF SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

- .1 In accordance with Section 01 33 00, submit the requested shop drawings, product data, MSDS sheets and samples indicated in each of the technical Sections.
- .2 Allow sufficient time for the following:
 - .1 Review of product data.
 - .2 Approval of shop drawings.
 - .3 Review of re-submission.
 - .4 Ordering of approved material and/or products - refer to Sections of Division 26.

1.26 RELICS AND ANTIQUITIES

- .1 Relics and antiquities and items of historical or scientific interest shall remain property of Department. Protect such articles and request directives from Departmental Representative.
- .2 Give immediate notice to Departmental Representative if evidence of archeological finds are encountered during excavation/construction, and await Departmental Representative's written instructions before proceeding with work in this area.

1.27 SECURITY CLEARANCES

- .1 Contractor shall be fully responsible for securing the premises and its contents throughout the construction period.

1.28 PROJECT MEETINGS

- .1 Departmental Representative will arrange project meetings and assume responsibility for setting times and recording and distributing minutes.

1.29 AS-BUILT DOCUMENTS

- .1 The Departmental Representative will provide 1 copy of the original AutoCAD files for "as-built" purposes.

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- .2 Contractor shall make available two (2) sets of drawings and specifications on site to document as-built conditions.
 - .3 As work progresses, maintain accurate records to show all deviations from the Contract documents. Note on as-built specifications, drawings and shop drawings as changes occur.
 - .4 Provide one (1) digital copy of Record Drawings in CAD format and PDF format at completion.

1.30 RECORD KEEPING

- .1 On Site Notifications: All correspondence from Contractor to the Departmental Representative, including submittals, quotes, and extension of time on contracts, must be as a sequentially numbered On Site Notifications. Include cross references to applicable On Site Instructions. The status of the Contractor, including the function of Prime Contractor, must not change by reason of any On Site Notifications.
- .2 On Site Instructions: All correspondence from the Departmental Representative to the Contractor, including Contemplated Change Notices, Change Orders, and Extension of Time on Contracts, will be as sequentially numbered On Site Instructions. Include cross references to applicable On Site Notifications. The status of the Contractor, including the function of Prime Contractor, must not change by reason of any On Site Instructions.
- .3 Maintain adequate records to support information provided to Departmental Representative.
- .4 Maintain asbestos waste shipment records or other Hazardous Waste Manifests for minimum of 3 years from date of shipment or longer period required by applicable law or regulation.
- .5 Maintain bills of ladings for minimum of 300 days from date of shipment or longer period required by applicable law or regulation.

1.31 CHANGE DOCUMENTS

- .1 Change Documents do not relieve Contractor of any obligation.
- .2 Change Documents do not change the Contractor's responsibility for sequencing, methods and means.
- .3 Change Documents do not change by any reason the status of the Contractor, including the function of Prime Contractor or as supervisor.

1.32 CLEANING

- .1 Daily conduct cleaning and disposal operations. Comply with local ordinances and anti-pollution laws.
- .2 Maintain cleanliness of Work and surrounding Site to comply with federal, provincial, and municipal fire and safety laws, ordinances, codes, and regulations applicable to the performance of the Work.
- .3 Coordinate cleaning operations with disposal operations to prevent accumulation of dust, dirt, debris, rubbish, and waste materials.
- .4 Ensure cleanup of the work areas each day after completion of work.
- .5 Ensure cleanup of roadways as needed or as directed by Departmental Representative.
- .6 In preparation for interim and final inspections:
 - .1 Examine all sight-exposed interior and exterior surface and concealed spaces.
 - .2 Remove grease, dust, dirt, stains, labels, fingerprints, and other foreign materials from sight-exposed interior and exterior finished surfaces, including glass and other polished surfaces.
- .7 Use cleaning materials and methods in accordance with instructions of the manufacturer of the surface to be cleaned.

1.33 DUST CONTROL

- .1 Prevent fugitive dust from the Site from interfering with onsite and offsite uses.

1.34 PUBLIC WAY CONSTRUCTION

- .1 Design, erect and maintain hoarding and covered pedestrian walkways to support all loads including windloads and provide protection, complete with signs and electrical lighting as required by authority having jurisdiction.

1.35 ENVIRONMENTAL PROTECTION

- .1 Prevent extraneous materials from contaminating air beyond construction area, by providing temporary enclosures during work.
- .2 Do not dispose of waste or volatile materials into water courses, storm or sanitary sewers.
- .3 Ensure proper disposal procedures in accordance with all applicable territorial regulations.

1.36 MAINTENACE MATERIALS, SPECIAL TOOLS AND SPARE PARTS

- .1 Specific requirements for maintenance materials, tools and spare parts are specified in individual sections of Division 26.

1.37 ADDITIONAL DRAWINGS

- .1 The Departmental Representative may furnish additional drawings for clarification. These additional drawings have the same meaning and intent as if they were included with plans referred to in the Contract documents.
- .2 The Contractor shall include print their own drawings and specifications.

1.38 SMOKING ENVIRONMENT

- .1 Smoking within the building is not permitted.
- .2 Smoking on the Site is not permitted.

1.39 SYSTEM OF MEASUREMENT

- .1 The metric system of measurement (SI) will be employed on this Contract.

1.40 FAMILIARIZATION WITH SITE

- .1 Before submitting tender, visit site - as indicated in tender documents and become familiar with all conditions likely to affect the cost of the work.
- .2 No claims or change orders will be considered by the Departmental Representative in regard to existing conditions due to the Contractor's lack of familiarity with the Site.

1.41 SUBMISSION OF TENDER

- .1 Submission of a tender is deemed to be confirmation of the fact that the Tenderer has analyzed the Contract documents and inspected the site, and is fully conversant with all conditions.

1.42 WORK CONSTRAINTS

- .1 It is absolutely crucial that the work does not impact on the normal day to day operation of the Port of Entry site.
- .2 Existing services cannot be interrupted except for short periods of time and only when scheduled in advance. Interruption of any service including power, water, heat, communications, fire alarm, sanitary, gate control, YTG/CBSA radio, site lighting must be coordinated with, and approved by, the Departmental Representative.
- .3 The site is very constrained. There is limited space for crew accomodations, parking, laydown, and/or equipment parking/storage on site.

Part 2	Product
2.1	NOT USED
.1	Not used.
Part 3	Execution
3.1	NOT USED
.1	Not used.

END OF SECTION

Part 1 General

1.1 ADMINISTRATIVE

- .1 Schedule and administer regular bi-monthly project meetings throughout the progress of the work and/or at the call of Departmental Representative.
- .2 Prepare agenda for meetings.
- .3 Distribute written notice of each meeting four days in advance of meeting date to Departmental Representative.
- .4 Provide physical space and make arrangements for the meetings.
- .5 The Departmental Representative will chair the meetings.
- .6 Record the meeting minutes. Include significant proceedings and decisions. Identify actions by parties.
- .7 Reproduce and distribute copies of minutes within five days after meetings and transmit to meeting participants.
- .8 Representative of Contractor, Subcontractor and suppliers attending meetings will be qualified and authorized to act on behalf of party each represents.

1.2 PRECONSTRUCTION MEETING

- .1 Within 5 days after award of Contract, request a meeting of parties in contract to discuss and resolve administrative procedures and responsibilities.
- .2 Departmental Representative, Contractor, major Subcontractors, field inspectors and supervisors will be in attendance.
- .3 Establish time and location of meeting and notify parties concerned minimum 5 days before meeting.
- .4 Agenda to include:
 - .1 Appointment of official representative of participants in the Work.
 - .2 Schedule of Work: in accordance with Section 01 32 00 - Construction Progress Documentation.
 - .3 Schedule of submission of shop drawings, samples, colour chips. Submit submittals in accordance with Section 01 33 00 - Submittal Procedures.
 - .4 Requirements for temporary facilities, site sign, offices, storage sheds, utilities, fences in accordance with Section 01 52 00 - Construction Facilities.
 - .5 Delivery schedule of specified equipment.
 - .6 Site security in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.
 - .7 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, administrative requirements.
 - .8 Owner provided products.
 - .9 Record drawings in accordance with Section 01 33 00 - Submittal Procedures.
 - .10 Maintenance manuals in accordance with Section 01 78 00 - Closeout Submittals.
 - .11 Take-over procedures, acceptance, warranties in accordance with Section 01 78 00 - Closeout Submittals.
 - .12 Monthly progress claims, administrative procedures, photographs, hold backs.
 - .13 Appointment of inspection and testing agencies or firms.

.14 Insurances, transcript of policies.

1.3 PROGRESS MEETINGS

- .1 During course of Work and until project completion, schedule progress meetings every two weeks by teleconference.
- .2 Contractor, Superintendent, major Subcontractors involved in Work, Departmental Representative, CBSA representative, are to be in attendance.
- .3 Notify parties minimum five (5) days prior to meetings.
- .4 Record minutes of meetings and circulate to attending parties and affected parties not in attendance within five (5) days after meeting.
- .5 Agenda to include the following:
 - .1 Review, approval of minutes of previous meeting.
 - .2 Review of Work progress since previous meeting.
 - .3 Field observations, problems, conflicts.
 - .4 Problems which impede construction schedule.
 - .5 Review of off-site fabrication delivery schedules.
 - .6 Corrective measures and procedures to regain projected schedule.
 - .7 Revision to construction schedule.
 - .8 Progress schedule, during succeeding work period.
 - .9 Review submittal schedules: expedite as required.
 - .10 Maintenance of quality standards.
 - .11 Review proposed changes for affect on construction schedule and on completion date.
 - .12 Other business.

1.4 TAILGATE MEETINGS

- .1 During the course of the work daily tailgate meetings at the start of each work shift. Multiple meetings will be required if the Contractor intends to work multiple shifts within a 24-hour period.
- .2 All construction workers to attend, including Contractor, Superintendent, major Subcontractors, and environmental consultants. Departmental Representative may attend.
- .3 Agenda to include:
 - .1 Planned Work activities and environmental considerations for that shift.
 - .2 Coordination activities required between Contractor, Subcontractors, Departmental Representative, and other contractors including environmental consultant.
 - .3 Health and Safety items as identified or otherwise required.

1.5 FINAL SITE INSPECTION

- .1 Within 5 Working Days of completion of Site Works and Demobilization, request a meeting on Site to review the Site.
- .2 Departmental Representative, Contractor, Superintendent, major Subcontractor(s), field inspectors and supervisors to be in attendance.
- .3 Establish time and location of meeting subject to approval by Departmental Representative and notify parties concerned at least 3 Working Days before meeting.

- .4 Agenda to include:
 - .1 Inspect removal of all temporary equipment, materials, supplies, and facilities.
 - .2 Inspect final surface grades.
 - .3 Inspect final vegetation.
 - .4 Inspect permanent facilities for performance and damage.
 - .5 Document all damage, deficiencies, missing items, and non-conformance.
- .5 If required, and in the opinion of the Departmental Representative, perform another Final Site Inspection after resolving all documented damage, deficiencies, missing items, and non-conformance.

Part 2 Product

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

- .1 Schedules, form, content, submission.
- .2 Critical path scheduling.
- .3 Progress photographs.
- .4 Submittals schedule.

1.2 RELATED SECTIONS

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

1.3 CONSTRUCTION PROGRESS SCHEDULING

- .1 Submit initial schedule in duplicate within fifteen (15) days after date of Owner-Contractor Agreement.
- .2 Revise and resubmit as required.
- .3 Submit revised schedules with each Application for Payment, identifying changes since previous version.
- .4 Submit a horizontal bar chart with separate line for each major portion of Work or operation, identifying first work day of each week.
- .5 Show complete sequence of construction by activity, identifying Work of separate stages and other logically grouped activities. Indicate the early and late start, early and late finish, float dates, and duration.
- .6 Indicate estimated percentage of completion for each item of Work at each submission.
- .7 Indicate submittal dates required for shop drawings, product data, samples, and product delivery dates, including those furnished by Owner and required by Allowances.
- .8 Include dates for commencement and completion of each major element of construction as follows.
 - .1 Site clearing.
 - .2 Site utilities.
 - .3 Foundation Work.
 - .4 Equipment Installations.
 - .5 Finishes.
 - .6 Commissioning.
 - .7 Finish
 - .8 Estimated date of Turn-over
- .9 Indicate projected percentage of completion of each item as of first day of month.
- .10 Indicate progress of each activity to date of submission schedule.
- .11 Indicate changes occurring since previous submission of schedule:
 - .1 Major changes in scope.
 - .2 Activities modified since previous submission.
 - .3 Revised projections of progress and completion.

- .4 Other identifiable changes.
- .12 Provide a narrative report to define:
 - .1 Problem areas, anticipated delays, and impact on schedule.
 - .2 Corrective action recommended and its effect.
 - .3 Effect of changes on schedules of other prime contractors.

1.4 PROGRESS PHOTOGRAPHS

- .1 Digital Photography:
 - .1 Submit electronic and hard copy of colour digital photography in *.jpg format, minimum 4 megapixel resolution.
 - .2 Identification: Name and number of project and date of exposure indicated.
- .2 Number of Viewpoints: Contractor to take sufficient number of photos to adequately identify:
 - .1 Existing conditions before start of Work.
 - .2 Progress of Work.
 - .3 Completion of Work.
- .3 Frequency: Monthly with progress statement.
- .4 Frequency: Every day or as directed by Departmental REpresentative.

1.5 SUBMITTALS SCHEDULE

- .1 Include schedule for submitting shop drawings, product data, samples .
- .2 Indicate dates for submitting, review time, resubmission time, and last date for meeting fabrication schedule.
- .3 Include dates when delivery will be required for Owner-furnished products.
- .4 Include dates when reviewed submittals will be required from Departmental Representative.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section Section 01 11 55 - General Requirements.

1.2 GENERAL

- .1 This Section specifies general requirements and procedures for the Contractor's submissions of shop drawings, product data, samples and other requested submittals to Departmental Representative for review. Additional specific requirements for submissions are specified in individual technical sections.
- .2 Present shop drawings, product data, samples and mock-ups in SI Metric units.
- .3 Where items or information is not produced in SI Metric units, converted values are acceptable.
- .4 Submit to Departmental Representative submittals listed for review. Submit promptly and in orderly sequence to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.
- .5 Contractor's responsibility for errors and omissions in submission is not relieved by Departmental Representative's review of submittals.
- .6 Notify Departmental Representative, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
- .7 Contractor's responsibility for deviations in submission from requirements of Contract documents is not relieved by Departmental Representative's review of submission unless Departmental Representative gives written acceptance of specific deviations.
- .8 Make any changes in submissions which Departmental Representative may require consistent with Contract documents and resubmit as directed by Departmental Representative.
- .9 Do not proceed with Work affected by submittal until review is complete.
- .10 Review submittals prior to submission to Departmental Representative. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and co-ordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.
- .11 Verify field measurements and affected adjacent Work are co-ordinated.
- .12 Adjustments made on submittals by Departmental Representative are not intended to change Contract price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with Work
- .13 Keep one reviewed copy of each submission on site.

1.3 SHOP DRAWINGS AND PRODUCT DATA

- .1 The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.
- .2 Submit drawings stamped and signed by professional engineer registered or licensed in Province of British Columbia.
- .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 ten (10) days for Departmental Representative's review of each submission.
- .5 Adjustments made on shop drawings by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with Work.
- .6 Make changes in shop drawings as Departmental Representative may require, consistent with Contract Documents. When resubmitting, notify Departmental Representative in writing of revisions other than those requested.
- .7 Accompany submissions with transmittal letter, in duplicate, containing:
 - .1 Date.
 - .2 Project title and number.
 - .3 Contractor's name and address.
 - .4 Identification and quantity of each shop drawing, product data and sample.
 - .5 Other pertinent data.
- .8 Submissions shall include:
 - .1 Date and revision dates.
 - .2 Project title and number.
 - .3 Name and address of:
 - .1 Subcontractor.
 - .2 Supplier.
 - .3 Manufacturer.
 - .4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
 - .5 Details of appropriate portions of Work as applicable:
 - .1 Fabrication.
 - .2 Layout, showing dimensions, including identified field dimensions, and clearances.
 - .3 Setting or erection details.
 - .4 Capacities.
 - .5 Performance characteristics.
 - .6 Standards.
 - .7 Operating weight.
 - .8 Wiring diagrams.
 - .9 Single line and schematic diagrams.
 - .10 Relationship to adjacent work.
- .9 After Departmental Representative's review, distribute copies.

1.4 DOCUMENT SUBMISSION PROCEDURES

- .1 Coordinate each submission with the requirements of the Work and the Contract Documents.

Individual submissions will not be reviewed until:

- .1 Submissions are complete.
- .2 All related information is available.
- .2 Documents specified to be submitted to the Departmental Representative shall be transmitted via email or an approved FTP method for files too large to email.
- .3 Each submission together with its covering letter shall be contained in one pdf file unless otherwise directed.
- .4 Each file shall be named in accordance with format as directed by the Departmental Representative.
- .5 The Departmental Representative will transmit reviewed submissions via email or FTP.
- .6 Refer to other sections of these Specifications for further requirements of submissions.

1.5 SHOP DRAWINGS

- .1 Shop drawings: original drawings or modified standard drawings provided by Contractor to illustrate details of portion of work which are specific to project requirements.
- .2 Maximum sheet size: 850 x 1050 mm.
- .3 Cross-reference shop drawing information to applicable portions of the Contract documents.
- .4 Submit electronic copies of product data sheets or brochures for requirements requested in specification Sections and as requested by Departmental Representative where shop drawings will not be prepared due to standardized manufacture of product.
- .5 Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.
- .6 Delete information not applicable to project.
- .7 Supplement standard information to provide details applicable to project.

1.6 SHOP DRAWING REVIEW

- .1 The review of shop drawings by the Department Representative is for sole purpose of ascertaining conformance with general concept.
- .2 This review shall not mean that the Departmental Representative approves detail design inherent in shop drawings, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting requirements of construction and Contract Documents.
- .3 This review shall not relieve the Contractor of responsibility for errors or omissions in the shop drawings or of responsibility for meeting all requirements of the construction and Contract documents.
- .4 Any proposed changes to the Contract requirements shall be explicitly communicated to the Departmental Representative using a "Request for Information". No changes shall be incorporated unless approved as a Change Order.
- .5 Without restricting generality of foregoing, Contractor is responsible for:
 - .1 Dimensions to be confirmed and correlated at job site,
 - .2 Information that pertains solely to fabrication processes or to techniques of construction and installation, and
 - .3 Co-ordination of the Work of all sub-trades.

1.7 PRODUCT DATA

-
- .1 Product data: manufacturers' catalogue sheets, MSDS sheets, brochures, literature, performance charts and diagrams, used to illustrate standard manufactured products or any other specified information.
 - .2 Delete information not applicable to project.
 - .3 Supplement standard information to provide details applicable to project.
 - .4 Cross-reference product data information to applicable portions of Contract documents.

1.8 SAMPLES

- .1 For all imported material to be used for backfill, collect samples and send them for analysis at an accredited laboratory prior to material arriving onsite.
 - .1 Collect samples in clean 125mL glass soil sample jars.
 - .2 Request testing for the following parameters:
 - .1 Sieve analytical results for grain-size distribution.
 - .2 Chemical analysis, including: CCME BTEX/F1, CCME hydrocarbons F2-F4; extractable petroleum hydrocarbons; polycyclic aromatic hydrocarbons (PAHs); total metals, and tests suitable for confirming Acid Rock Drainage and Metals Leaching potential.
- .2 For all imported material to be used for road construction, collect sufficient material and request testing of aggregate required by the BC MoTI Standard Specifications for Highway Construction (Section 201 and 202), or Yukon Department of Highways and Public Works requirements.
- .3 Provide the results of analysis to the Departmental Representative and import material only with approval from the Departmental Representative.
- .4 Departmental Representative will inspect imported material, and will not allow import of material that varies from provided samples.

1.9 PROGRESS SCHDEULE

- .1 Submit work schedule and cost breakdown as required in Section 01 11 55.

1.10 TEST RESULTS AND INSPECTION REPORTS

- .1 Submit in duplicate test results and inspection reports required by Contract specifications.

Part 2 Product

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 SCOPE

- .1 The work involves working immediately adjacent to the Haines Highway (Hwy No. 3) at the Pleasant Camp Port of Entry border crossing site. There is abundant north-bound and south-bound traffic throughout the year that peaks during the summer tourist months.
- .2 The Contractor shall limit activities that impede traffic flow.

1.2 REFERENCES

- .1 British Columbia Ministry of Transportation
 - .1 Traffic Control Manual for Work on Roadways.

1.3 PROTECTION OF PUBLIC TRAFFIC

- .1 Comply with requirements of Acts, Regulations and By-Laws in force for regulation of traffic or use of roadways upon or over which it is necessary to carry out Work or haul materials or equipment.
- .2 Comply with current version of BC Ministry of Transportation and Infrastructure Traffic Control Manual for Work on Roadways, or Yukon Department of Highways and Public Works requirements.
- .3 When working on travelled way:
 - .1 Place equipment in position to minimize interference and hazard to travelling public.
 - .2 Keep equipment units as close together as working conditions permit and preferably on same side of travelled way.
 - .3 Do not leave equipment on travelled way overnight.
- .4 Close lanes of road only after receipt of written approval from Departmental Representative.
 - .1 Extended closure will require approval from CBSA. Allow sufficient time for approval.
 - .2 Before re-routing traffic erect suitable signs and devices to Traffic Accommodation in Work Zones.
- .5 Keep travelled way graded, free from pot holes and of sufficient width for required number of lanes of traffic.
- .6 Permit from Yukon Dept of Highways and Public Works will be required for work on Haines Highway.
- .7 Provide and maintain road access and egress to property fronting Site and in other areas in accordance with the Contract, except where other means of road access exist that are accepted.

1.4 CONTROL OF PUBLIC TRAFFIC

- .1 Provide competent flag personnel, trained in accordance with, and properly equipped to, current version of BC Ministry of Transportation and Infrastructure Traffic Control Manual for Work on Roadways, or Yukon Department of Highways and Public Works requirements for situations as follows:
 - .1 When public traffic is required to pass working vehicles or equipment that block all or part of travelled roadway.
 - .2 In situations where complete protection for workers, working equipment and public traffic is not provided by other traffic control devices.
 - .3 Provide 7 m wide minimum temporary roadway for traffic in two-way sections through Work and on detours.

- .4 Provide 5 m wide minimum temporary roadway for traffic in one-way sections through Work and on detours.
- .2 Provide and maintain road access and egress to property fronting along Work under Contract and in other areas as indicated, except where other means of road access exist that meet approval of Departmental Representative.

1.5 INFORMATIONAL AND WARNING DEVICES

- .1 Provide and maintain signs, flashing warning lights and other devices required to indicate construction activities or other temporary and unusual conditions resulting from Project Work which requires road user response.
- .2 Supply and erect signs, delineators, barricades and miscellaneous warning devices to comply with current version of BC Ministry of Transportation and Infrastructure Traffic Control Manual for Work on Roadways or Yukon Department of Highways and Public Works requirements..
- .3 Place signs and other devices in locations recommended in Work Area Traffic Control Manual.
- .4 Meet with Departmental Representative prior to commencement of Work to prepare list of signs and other devices required for project. If situation on site changes, revise list to approval of Departmental Representative.
- .5 Continually maintain traffic control devices in use:
 - .1 Check signs daily for legibility, damage, suitability and location. Clean, repair or replace to ensure clarity and reflectance.
 - .2 Remove or cover signs which do not apply to conditions existing from day to day.

1.6 OPERATIONAL REQUIREMENTS

- .1 Maintain existing conditions for traffic throughout period of Contract except that, when required for construction in accordance with the Contract and when measures have been taken in accordance with the Contract and accepted by Departmental Representative to protect and control public traffic.

1.7 ACTION AND INFORMATIONAL SUBMITTALS

- .1 List of Signs and Devices: within 10 Working Days after Contract award and prior to mobilization to Site, submit a list of signs and other devices required for the project.

1.8 CONTROL OF PUBLIC TRAFFIC

- .1 Provide competent flag personnel, trained in accordance with, and properly equipped to Manual of Uniform Traffic Control Devices for Streets and Highways for situations as follows:
 - .1 When public traffic is required to pass working vehicles or equipment that block all or part of travelled roadway.
 - .2 When it is necessary to institute one-way traffic system through construction area or other blockage where traffic volumes are heavy, approach speeds are high and traffic signal system is not in use.
 - .3 When workmen or equipment are employed on travelled way over brow of hills, around sharp curves or at other locations where oncoming traffic would not otherwise have adequate warning.
 - .4 Where temporary protection is required while other traffic control devices are being erected or taken down.
 - .5 For emergency protection when other traffic control devices are not readily available.
 - .6 In situations where complete protection for workers, working equipment and public traffic is not provided by other traffic control devices.

Part 2	Product
2.1	NOT USED
.1	Not Used.
Part 3	Execution
3.1	NOT USED
.1	Not Used.

END OF SECTION

Part 1 General

PSPC Update on Asbestos Use

Effective April 1, 2016, all Public Services and Procurement Canada (PSPC) contracts for new construction and major rehabilitation will prohibit the use of asbestos-containing materials. Further information can be found at <http://www.tpsgc-pwgsc.gc.ca/comm/vedette-features/2016-04-19-00-eng.html>

1.1 REFERENCES

- .1 Government of Canada.
 - .1 Canada Labour Code - Part II
 - .2 Canada Occupational Health and Safety Regulations.
- .2 National Building Code of Canada (NBC):
 - .1 Part 8, Safety Measures at Construction and Demolition Sites.
- .3 The Canadian Electric Code (as amended)
- .4 Canadian Standards Association (CSA) as amended:
 - .1 CSA Z797-2009 Code of Practice for Access Scaffold
 - .2 CSA S269.1-1975 (R2003) Falsework for Construction Purposes
 - .3 CSA S350-M1980 (R2003) Code of Practice for Safety in Demolition of Structures
 - .4 CSA Z1006-10 Management of Work in Confined Spaces.
 - .5 CSA Z462- Workplace Electrical Safety Standard
- .5 National Fire Code of Canada 2010 (as amended)
 - .1 Part 5 – Hazardous Processes and Operations and Division B as applicable and required.
- .6 American National Standards Institute (ANSI):
 - .1 ANSI A10.3, Operations – Safety Requirements for Powder-Actuated Fastening Systems.
- .7 Province of British Columbia:
 - .1 Workers Compensation Act Part 3-Occupational Health and Safety.
 - .2 Occupational Health and Safety Regulations

1.2 RELATED SECTIONS

- .1 Refer to the following current NMS sections as required:
 - .1 Construction progress schedules: Section 01 32 18
 - .2 Submittals procedures: Section 01 33 00
 - .3 Temporary utilities: Section 01 51 00
 - .4 Temporary barriers and enclosures: Section 01 56 00

1.3 WORKERS' COMPENSATION BOARD COVERAGE

- .1 Comply fully with the Workers' Compensation Act, regulations and orders made pursuant thereto, and any amendments up to the completion of the work.
- .2 Maintain Workers' Compensation Board coverage during the term of the Contract, until and including the date that the Certificate of Final Completion is issued.

1.4 COMPLIANCE WITH REGULATIONS

- .1 PSPC may terminate the Contract without liability to PSPC where the Contractor, in the opinion of PSPC, refuses to comply with a requirement of the Workers' Compensation Act or the Occupational Health and Safety Regulations.
- .2 It is the Contractor's responsibility to ensure that all workers are qualified, competent and certified to perform the work as required by the Workers' Compensation Act or the Occupational Health and Safety Regulations.

1.5 SUBMITTALS

- .1 Submit to Departmental Representative submittals listed for review in accordance with Section 013300
- .2 Work effected by submittal shall not proceed until review is complete.
- .3 Submit the following:
 - .1 Site Specific Health and Safety Plan.
 - .2 Copies of reports or directions issued by Federal and Provincial health and safety inspectors.
 - .3 Copies of incident and accident reports.
 - .4 Complete set of current Material Safety Data Sheets (MSDS), and all other documentation required by Workplace Hazardous Materials Information System (WHMIS) requirements.
 - 5 Emergency Procedures.
- .4 The Departmental Representative will review the Contractor's Site Specific Health and Safety Plan and emergency procedures, and provide comments to the Contractor within 5 days after receipt of the plan. Revise the plan as appropriate and resubmit to Departmental Representative.
- .5 Medical surveillance: where prescribed by legislation, regulation or safety program, submit certification of medical surveillance for site personnel prior to commencement of work, and submit additional certifications for any new site personnel to Departmental Representative.
- .6 Submission of the Site Specific Health and Safety Plan, and any revised version, to the Departmental Representative is for information and reference purposes only. It shall not:

- .1 Be construed to imply approval by the Departmental Representative.
- .2 Be interpreted as a warranty of being complete, accurate and legislatively compliant.
- .3 Relieve the Contractor of his legal obligations for the provision of health and safety on the project.

1.6 RESPONSIBILITY

- .1 Assume responsibility as the Prime Contractor for work under this contract.
- .2 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.
- .3 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.

1.7 HEALTH AND SAFETY COORDINATOR

- .1 The Health and Safety Coordinator:
 - .1 Be responsible for completing all health and safety training and ensuring that personnel that do not successfully complete the required training are not permitted to enter the site to perform work.
 - .2 Be responsible for implementing, revising, daily enforcing, and monitoring the Site Specific Health and Safety Plan.
 - .3 Be on site during execution of work.

1.8 GENERAL CONDITIONS

- .1 Provide safety barricades and lights around work site as required to provide a safe working environment for workers and protection for pedestrian and vehicular traffic.
- .2 Ensure that non-authorized persons are not allowed to circulate in designated construction areas of the work site.
 - .1 Provide appropriate means by use of barricades, fences, warning signs, traffic control personnel, and temporary lighting as required.
 - .2 Secure site at night time or provide security guard as deemed necessary to protect site against entry.

1.9 PROJECT/SITE CONDITIONS

- .1 Work at site will involve contact with:
 - .1 Multi-employer work site.
 - .2 Federal employees and general public.

- .3 Energized electrical services.
- .4 Working from heights
- .5 Working in the open exposed to unpredictable weather.
- .6 High volumes of vehicular and pedestrian traffic

1.10 UTILITY CLEARANCES

- .1 The Contractor is solely responsible for all utility detection and clearances prior to starting the work.
- .2 The Contractor will not rely solely upon the Reference Drawings or other information provided for utility locations.

1.11 REGULATORY REQUIREMENTS

- .1 Comply with specified codes, acts, bylaws, standards and regulations to ensure safe operations at site.
- .2 In event of conflict between any provision of the above authorities, the most stringent provision will apply. Should a dispute arise in determining the most stringent requirement, the Departmental Representative will advise on the course of action to be followed.

1.11 WORK PERMITS

- .1 Obtain speciality permit(s) related to project before start of work.

1.12 FILING OF NOTICE

- .1 The General Contractor is to complete and submit a Notice of Project as required by Provincial authorities.
- .2 Provide copies of all notices to the Departmental Representative.

1.13 HEALTH AND SAFETY PLAN

- .1 Conduct a site-specific hazard assessment based on review of Contract documents, required work, and project site. Identify any known and potential health risks and safety hazards.
- .2 Prepare and comply with a site-specific project Health and Safety Plan based on hazard assessment, including, but not limited to, the following:
 - .1 Primary requirements:
 - .1 Contractor's safety policy.
 - .2 Identification of applicable compliance obligations.

- .3 Definition of responsibilities for project safety/organization chart for project.
 - .4 General safety rules for project.
 - .5 Job-specific safe work procedures.
 - .6 Inspection policy and procedures.
 - .7 Incident reporting and investigation policy and Procedures.
 - .8 Occupational Health and Safety Committee/Representative procedures.
 - .9 Occupational Health and Safety meetings.
 - .10 Occupational Health and Safety communications and record keeping procedures.
-
- .2 Summary of health risks and safety hazards resulting from analysis of hazard assessment, with respect to site tasks and operations which must be performed as part of the work.
 - .3 List hazardous materials to be brought on site as required by work.
 - .4 Indicate Engineering and administrative control measures to be implemented at the site for managing identified risks and hazards.
 - .5 Identify personal protective equipment (PPE) to be used by workers.
 - .6 Identify personnel and alternates responsible for site safety and health.
 - .7 Identify personnel training requirements and training plan, including site orientation for new workers.
-
- .3 Develop the plan in collaboration with all subcontractors. Ensure that work/activities of subcontractors are included in the hazard assessment and are reflected in the plan.
 - .4 Revise and update Health and Safety Plan as required, and re-submit to the Departmental Representative.
 - .5 Departmental Representative's review: the review of Site Specific Health and Safety Plan by Public Service and Procurement Canada (PSPC) shall not relieve the Contractor of responsibility for errors or omissions in final Site Specific Health and Safety Plan or of responsibility for meeting all requirements of construction and Contract documents.

1.14 EMERGENCY PROCEDURS

- .1 List standard operating procedures and measures to be taken in emergency situations. Include an evacuation plan and emergency contacts (i.e. names/telephone numbers) of:
 - .1 Designated personnel from own company.
 - .2 Regulatory agencies applicable to work and as per legislated regulations.
 - .3 Local emergency resources.
 - .4 Departmental Representative.
- .2 Include the following provisions in the emergency procedures:
 - .1 Notify workers and the first-aid attendant, of the nature and location of the emergency.

- .2 Evacuate all workers safely.
 - .3 Check and confirm the safe evacuation of all workers.
 - .4 Notify the fire department or other emergency responders.
 - .5 Notify adjacent workplaces or residences which may be affected if the risk extends beyond the workplace.
 - .6 Notify Departmental Representative.
- .3 Provide written rescue/evacuation procedures as required for, but not limited to:
- .1 Work at high angles.
 - .2 Work in confined spaces or where there is a risk of entrapment.
 - .3 Work with hazardous substances.
 - .4 Underground work.
 - .5 Work on, over, under and adjacent to water.
 - .6 Workplaces where there are persons who require physical assistance to be moved.
- .4 Design and mark emergency exit routes to provide quick and unimpeded exit.

1.15 HAZARDOUS PRODUCTS

- .1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage and disposal of hazardous materials, and regarding labelling and provision of Material Safety Data Sheets (MSDS) acceptable to the Departmental Representative and in accordance with the Canada Labour Code.
- .2 Where use of hazardous and toxic products cannot be avoided:
 - .1 Advise Departmental Representative beforehand of the product(s) intended for use. Submit applicable MSDS and WHMIS documents as per Section 01 33 00.
 - .2 In conjunction with Departmental Representative, schedule to carry out work during "off hours" when tenants have left the building.
 - .3 Provide adequate means of ventilation in accordance with Section 01 51 00.
 - .4 The contractor shall ensure that the product is applied as per manufacturers recommendations.
 - .5 The contractor shall ensure that only pre-approved products are brought onto the work site in an adequate quantity to complete the work.

1.16 ASBESTOS HAZARD

- .1 Carry out any activities involving asbestos in accordance with applicable Provincial Regulations.
- .2 Removal and handling of asbestos will be performed as indicated in NMS Sections 02 41 16 and 02 82 10 and 02 82 11 and 02 82 12.

1.17 PCB REMOVALS

- .1 Mercury-containing fluorescent tubes and ballasts which contain polychlorinated biphenyls (PCBs) are classified as hazardous waste.
- .2 Remove, handle, transport and dispose of as indicated in NMS Section 02 8 00.

1.18 REMOVAL OF LEAD CONTAINING PAINTS

- .1 All paints containing TCLP lead concentrations above 5 ppm are classified as hazardous.
- .2 Carry out demolition activities involving lead-containing paints in accordance with applicable Provincial Regulations.

1.19 ELECTRICAL SAFETY REQUIREMENTS

- .1 Comply with authorities and ensure that, when installing new facilities or modifying existing facilities, all electrical personnel are completely familiar with existing and new electrical circuits and equipment and their operation.
 - .1 Before undertaking any work, coordinate required energizing and de-energizing of new and existing circuits with Departmental Representative.
 - .2 Maintain electrical safety procedures and take necessary precautions to ensure safety of all personnel working under this Contract, as well as safety of other personnel on site.

1.20 ELECTRICAL LOCKOUT

- .1 Develop, implement and enforce use of established procedures to provide electrical lockout and to ensure the health and safety of workers for every event where work must be done on any electrical circuit or facility.
- .2 Prepare the lockout procedures in writing, listing step-by-step processes to be followed by workers, including how to prepare and issue the request/authorization form. Have procedures available for review upon request by the Departmental Representative.
- .3 Keep the documents and lockout tags at the site and list in a log book for the full duration of the Contract. Upon request, make such data available for viewing by Departmental Representative or by any authorized safety representative.

1.21 OVERLOADING

- .1 Ensure no part of work is subjected to a load which will endanger its safety or will cause permanent deformation.

1.22 FALSEWORK

- .1 Design and construct falsework in accordance with CSA S269.1- 1975 (R2003).

1.23 SCAFFOLDING

- .1 Design, construct and maintain scaffolding in a rigid, secure and safe manner, in accordance with CSA Z797-2009 and B.C. Occupational Health and Safety Regulations.

1.24 CONFINED SPACES

- .1 Carry out work in confined spaces in compliance with Provincial Regulations

1.25 POWDER-ACTUATED DEVICES

- .1 Use powder-actuated devices in accordance with ANSI A10.3 only after receipt of written permission from the Departmental Representative.

1.26 FIRE SAFETY AND HOT WORK

- .1 Obtain Departmental Representative's authorization before any welding, cutting or any other hot work operations can be carried out on site.
- .2 Hot work includes cutting/melting with use of torch, flame heating roofing kettles, or other open flame devices and grinding with equipment which produces sparks.

1.27 FIRE SAFETY REQUIREMENTS

- .1 Store oily/paint-soaked rags, waste products, empty containers and materials subject to spontaneous combustion in ULC approved, sealed containers and remove from site on a daily basis.
- .2 Handle, store, use and dispose of flammable and combustible materials in accordance with the National Fire Code of Canada.
- .3 Portable gas and diesel fuel tanks are not permitted on most federal work sites. Approval from the DR is required prior to any gas or diesel tank being brought onto the work site.

1.28 FIRE PROTECTION AND ALARM SYSTEM

- .1 Fire protection and alarm systems shall not be:
 - .1 Obstructed.
 - .2 Shut off.
 - .3 Left inactive at the end of a working day or shift.
- .2 Do not use fire hydrants, standpipes and hose systems for purposes other than firefighting.

- .3 Be responsible/liable for costs incurred from the fire department, the building owner and the tenants, resulting from false alarms.

1.29 UNFORESEEN HAZARDS

- .1 Should any unforeseen or peculiar safety-related factor, hazard or condition become evident during performance of the work, immediately stop work and advise the Departmental Representative verbally and in writing.

1.30 POSTED DOCUMENTS

- .1 Post legible versions of the following documents on site:
 - .1 Site Specific Health and Safety Plan.
 - .2 Sequence of work.
 - .3 Emergency procedures.
 - .4 Site drawing showing project layout, locations of the first-aid station, evacuation route and marshalling station, and the emergency transportation provisions.
 - .5 Notice of Project.
 - .6 Floor plans or site plans.
 - .7 Notice as to where a copy of the Workers' Compensation Act and Regulations are available on the work site for review by employees and workers.
 - .8 Workplace Hazardous Materials Information System (WHMIS) documents.
 - .9 Material Safety Data Sheets (MSDS).
 - .10 List of names of Joint Health and Safety Committee members, or Health and Safety Representative, as applicable.
- .2 Post all Material Safety Data Sheets (MSDS) on site, in a common area, visible to all workers and in locations accessible to tenants when work of this Contract includes construction activities adjacent to occupied areas.
- .3 Postings should be protected from the weather, and visible from the street or the exterior of the principal construction site shelter provided for workers and equipment, or as approved by the Departmental Representative.

1.31 MEETINGS

- .1 Attend health and safety pre-construction meeting and all subsequent meetings called by the Departmental Representative.

1.32 CORRECTION OF NON-COMPLIANCE

- .1 Immediately address health and safety non-compliance issues identified by the Departmental Representative.
- .2 Provide Departmental Representative with written report of action taken to correct non-compliance with health and safety issues identified.

- .3 The Departmental Representative may issue a "stop work order" if non-compliance of health and safety regulations is not corrected immediately or within posted time. The General Contractor/subcontractors will be responsible for any costs arising from such a "stop work order".

Part 2 Products

2.1 NOT USED

Part 3 Execution

3.1 NOT USED

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 01 74 11 - Cleaning

1.2 REFERENCES

- .1 Definitions:
 - .1 Environmental Pollution and Damage: presence of chemical, physical, biological elements or agents which adversely affect human health and welfare; unfavourably alter ecological balances of importance to human life; affect other species of importance to humans; or degrade environment aesthetically, culturally and/or historically.
 - .2 Environmental Protection: prevention/control of pollution and habitat or environment disruption during construction. Control of environmental pollution and damage requires consideration of land, water, and air; biological and cultural resources; and includes management of visual aesthetics; noise; solid, chemical, gaseous, and liquid waste; radiant energy and radioactive material as well as other pollutants.
- .2 Reference Standards:
 - .1 Canadian Environmental Protection Act (CEPA)
 - .1 CCME PN 1326-[2008], Environmental Code of Practice for Aboveground and Underground Storage Tank Systems for Petroleum Products and Allied Petroleum Products.
 - .2 U.S. Environmental Protection Agency (EPA)/Office of Water
 - .1 EPA 832/R-92-005-92, Storm Water Management for Construction Activities, Chapter 3.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets and include product characteristics, performance criteria, physical size, finish and limitations.
 - .2 Submit 2 copies of WHMIS MSDS in accordance with Section 01 35 29.06 - Health and Safety Requirements.
- .3 Before commencing construction activities or delivery of materials to site, submit Environmental Protection Plan for review and approval by Departmental Representative.
- .4 Environmental Protection Plan must include comprehensive overview of known or potential environmental issues to be addressed during construction.
- .5 Address topics at level of detail commensurate with environmental issue and required construction tasks.
- .6 Include in Environmental Protection Plan:
 - .1 Names of persons responsible for ensuring adherence to Environmental Protection Plan.
 - .2 Names and qualifications of persons responsible for manifesting hazardous waste to be removed from site.
 - .3 Names and qualifications of persons responsible for training site personnel.
 - .4 Descriptions of environmental protection personnel training program.

- .5 Erosion and sediment control plan identifying type and location of erosion and sediment controls to be provided including monitoring and reporting requirements to assure that control measures are in compliance with erosion and sediment control plan, Federal, Provincial, and Municipal laws and regulations and EPA 832/R-92-005, Chapter 3.
- .6 Drawings indicating locations of proposed temporary excavations or embankments for haul roads, stream crossings, material storage areas, structures, sanitary facilities, and stockpiles of excess or spoil materials including methods to control runoff and to contain materials on site.
- .7 Traffic Control Plans including measures to reduce erosion of temporary roadbeds by construction traffic, especially during wet weather.
 - .1 Plans to include measures to minimize amount of material transported onto paved public roads by vehicles or runoff.
- .8 Work area plan showing proposed activity in each portion of area and identifying areas of limited use or non-use.
 - .1 Plan to include measures for marking limits of use areas and methods for protection of features to be preserved within authorized work areas.
- .9 Spill Control Plan to include procedures, instructions, and reports to be used in event of unforeseen spill of regulated substance.
- .10 Non-Hazardous solid waste disposal plan identifying methods and locations for solid waste disposal including clearing debris.
- .11 Air pollution control plan detailing provisions to assure that dust, debris, materials, and trash, are contained on project site.
- .12 Contaminant Prevention Plan identifying potentially hazardous substances to be used on job site; intended actions to prevent introduction of such materials into air, water, or ground; and detailing provisions for compliance with Federal, Provincial, and Municipal laws and regulations for storage and handling of these materials.
- .13 Waste Water Management Plan identifying methods and procedures for management of discharge of waste waters which are directly derived from construction activities, such as concrete curing water, clean-up water, dewatering of ground water, disinfection water, hydrostatic test water, and water used in flushing of lines.
- .14 Historical, archaeological, cultural resources biological resources and wetlands plan that defines procedures for identifying and protecting historical, archaeological, cultural resources, biological resources and wetlands.
- .15 Pesticide treatment plan to be included and updated, as required.

1.4 FIRES

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

1.5 DRAINAGE

- .1 Provide Erosion and Sediment Control Plan identifying type and location of erosion and sediment controls provided. Ensure plan includes monitoring and reporting requirements to assure that control measures are in compliance with erosion and sediment control plan, Federal, Provincial, and Municipal laws and regulations.
 - .1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to requirements of authorities having jurisdiction, and must include silt fencing.
 - .2 Inspect, repair, and maintain erosion and sedimentation control measures during

construction until permanent vegetation has been established.

- .3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.
- .2 Provide temporary drainage and pumping required to keep excavations and site free from water.
- .3 Ensure pumped water into waterways, sewer or drainage systems is free of suspended materials.
- .4 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authority requirements.

1.6 SITE CLEARING AND PLANT PROTECTION

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

1.7 WORK ADJACENT TO WATERWAYS

- .1 Delineate a 2.5 m buffer around the work site with silt fencing or a similar barrier, in order to protect riparian vegetation, reduce transport of sediment, and reduce impacts outside of the project footprint.
- .2 Construction equipment to be operated on land only.
- .3 Do not use waterway beds for borrow material.
- .4 Waterways to be kept free of excavated fill, waste material and debris.
- .5 Do not skid logs or construction materials across waterways.

1.8 POLLUTION CONTROL

- .1 Maintain temporary erosion and pollution control features installed under this Contract.
- .2 Control emissions from equipment and plant in accordance with local authorities' emission requirements.
- .3 Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads.
- .4 Pollution includes spills or other releases from Contractor's activities that could potentially contaminate soil, sediment, water, and atmosphere from discharge of hazardous, deleterious or regulated substances, including from equipment and material handling.
- .5 The Contractor is responsible for all costs associated with a spill, leak, or other release of a deleterious substance as a result of their Work. This will include costs of spill response equipment and materials, associated sampling and analysis, and any required restoration of the impacted area.
- .6 Be prepared to intercept, cleanup, and dispose of spills or other releases that can occur whether on land or water.
- .7 Spill kits and containment are to be maintained onsite and ready for deployment in the event of spills or other releases.
- .8 Take immediate action using available resources to contain and mitigate effects on environment and persons from spill or release.

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- .9 Promptly report spills and releases potentially causing damage to environment to:
 - .1 Authority having jurisdiction or interest in spill or other release including conservation authority, water supply authorities, drainage authority, road authority, and fire department.
 - .2 Contractor emergency response team including Superintendent
 - .3 Departmental Representative and other contractor(s) and individuals as instructed by the Departmental Representative.
 - .10 Remediation of soil, sediment or water contaminated by Contractor's activities.
 - .1 Remediate all soil, sediment or water contaminated by Contractor's activities associated with the Work onsite and offsite.
 - .2 Remediation includes excavation, pumping, testing, transport, treatment and disposal as appropriate for the type of contamination incurred, in accordance with the Contract.
 - .3 Submit procedures for remediating soil, sediment or water contaminated by Contractor's activities.
 - .4 Remediate as instructed by the Departmental Representative.
 - .5 Contractor is responsible for any additional investigation, testing, and assessments required as acceptable to the Departmental Representative.

1.9 SEWAGE WASTEWATER

- .1 Store Sewage Wastewater from toilet facilities with wastewater from handbasins, and/or showers, for ultimate disposal.
- .2 Provide, operate, and maintain Sewage Wastewater storage tanks to store Sewage Wastewater.
- .3 Transport and dispose of Sewage Wastewater at a Disposal Facility, or discharge to municipal sanitary sewer system in compliance with Municipal requirements, as accepted by Departmental Representative.
- .4 Discharges: comply with applicable discharge limitations and requirements; do not discharge Sewage Wastewater to Site sewer systems that do not conform to or are in violation of such limitations or requirements; and obtain approval prior to discharge of Sewage Wastewater.

1.10 WASTEWATER CONTROL

- .1 Dewater various parts of Work including, without limitation, excavations, structures, foundations, and Work areas.
- .2 Employ construction methods, plant procedures, and precautions that ensure Work, including excavations, are stable, free from disturbance, and dry.
- .3 Direct surface waters that have not contacted potentially Contaminated Wastes to surface drainage systems.
- .4 Control surface drainage including ensuring that gutters are kept open, wastewater is not allowed across or over pavements or sidewalks except through accepted pipes or properly constructed troughs, and runoff from unstabilized areas is intercepted and diverted to suitable outlet.

1.11 NOTIFICATION

- .1 Departmental Representative will notify Contractor in writing of observed noncompliance with Federal, Provincial or Municipal environmental laws or regulations, permits, and other elements of Contractor's Environmental Protection plan.
- .2 Contractor: after receipt of such notice, inform Departmental Representative of proposed corrective action and take such action for approval by Departmental Representative.

- .1 Do not take action until after receipt of written approval by Departmental Representative.
- .3 Departmental Representative will issue stop order of work until satisfactory corrective action has been taken.
- .4 No time extensions granted or equitable adjustments allowed to Contractor for such suspensions.

Part 2 Product

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
- .2 Leave Work area clean at end of each day.
- .3 Ensure public waterways, storm and sanitary sewers remain free of waste and volatile materials disposal.
- .4 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

- .1 Inspection and testing, administrative and enforcement requirements.
- .2 Tests and mix designs.
- .3 Written and electronic reports.

1.2 REFERENCES

- .1 ISO/IEC 17025-2005 - General Requirements for the Competence of Testing and Calibration Laboratories.
- .2 SCC (Standards Council of Canada)
- .3 Compacted fill materials to ASTM D698 for Standard Proctor Density
- .4 ASTM C136, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates

1.3 REVIEW BY DEPARTMENTAL REPRESENTATIVE

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

1.4 INDEPENDENT INSPECTION AGENCIES

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

1.5 ACCESS TO WORK

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

1.6 PROCEDURES

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

1.7 REJECTED WORK

- .1 Remove defective Work, whether result of poor workmanship, use of defective products or

damage and whether incorporated in Work or not, which has been rejected by Departmental Representative as failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents.

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

1.8 REPORTS

- .1 Submit one (1) electronic copy of signed inspection and test reports to Departmental Representative.
- .2 Provide signed paper copies to manufacturer or fabricator of material being inspected or tested.

1.9 CIVIL WORK - FREQUENCY OF TESTS

- .1 Testing is required on the basis of the following or BC Ministry of Transportation "2012 Standard Specifications for Highway Construction", whichever is more stringent:
 - .1 Trench Backfill: minimum of one compaction test per 50 metres of trench per 0.5 metres of backfill depth
 - .2 Granular Road Sub-base: minimum of one compaction test per 500 square metres of roadway per lift of material
 - .3 Granular Road Base: minimum of one compaction test per 500 square metres of roadway per lift of material
 - .4 Granular Material: one sieve analysis per 1000 tonnes of material per source

1.10 TESTS AND MIX DESIGNS

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

END OF SECTION

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- Part 1 General**
- 1.1 SECTION INCLUDES**
- .1 Temporary utilities.
 - .2 Salvaging products for reuse.
- 1.2 RELATED SECTIONS**
- .1 Section 01 52 00 - Construction Facilities.
- 1.3 ACCESS AND DELIVERY**
- .1 Only the designated entrance may be used for access to Site.
 - .1 Maintain for duration of Contract.
 - .2 Make good damage resulting from Contractor's use.
 - .2 Use of the Site will be granted to the Contractor through the Departmental Representative.
- 1.4 INSTALLATION AND REMOVAL**
- .1 Provide temporary utilities controls in order to execute work expeditiously.
 - .2 Salvage and assist in recycling products for potential reuse.
 - .3 Remove temporary facilities from Site when determined by the Departmental Representative.
 - .4 This section describes requirements applicable to all Sections within Divisions 02 to 49.
- 1.5 SIGNS AND NOTICES**
- .1 Signs and notices for safety and instruction will be in both official languages or graphic symbols conforming to CAN/CSA-Z321.
 - .2 Maintain accepted signs and notices in good condition for duration of project, and dispose of offsite on completion of project or when determined by Departmental Representative.
- 1.6 FIRE PROTECTION**
- .1 Provide and maintain temporary fire protection equipment during performance of Work required by governing codes, regulations and bylaws.
- 1.7 DEWATERING**
- .1 Provide temporary drainage and pumping facilities to keep excavations and Site and soil stockpiles free from standing water.
- 1.8 STORAGE FACILITIES**
- .1 Storage space will be limited to the area of construction.
- 1.9 WATER SUPPLY**
- .1 Provide continuous supply of potable water for construction use.
 - .2 Arrange for connection and pay all costs for installation, maintenance and removal.
- 1.10 SANITARY FACILITIES**
- .1 Sanitary facilities are not available at existing Site and must be supplied at no cost.
- 1.11 TEMPORARY HEATING AND VENTILATION**
- .1 Provide temporary heating required during construction period, including attendance, maintenance and fuel.
 - .2 Maintain strict supervision of operation of temporary heating and ventilating equipment to:

- .1 Conform with applicable codes and standards.
- .2 Enforce safe practices.
- .3 Prevent abuse of services.
- .4 Prevent damage to finishes.
- .5 Vent direct-fired combustion units to outside.
- 3 Be responsible for damage to Work due to failure in providing adequate heat and protection during construction.

1.12 TEMPORARY POWER AND LIGHT

- .1 Power is not available from the Owners facilities.
- .2 Provide and pay for temporary power required to undertake and complete this work.
- .3 At Pleasant Camp, arrange for connection to existing Power transformer with appropriate utility company. Pay all costs for installation, maintenance and removal.

1.13 TEMPORARY COMMUNICATION FACILITIES

- .1 Provide and pay for temporary high speed internet and telephone hook up, line/lines equipment necessary for own use.

Part 2 PRODUCTS

2.1 Not used

Part 3 EXECUTION

3.1 Not used

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

- .1 Construction aids.
- .2 Office and sheds.
- .3 Construction Camp.
- .4 Parking.
- .5 Project identification.

1.2 RELATED SECTIONS

- .1 Section 01 51 00 - Temporary Utilities.
- .2 This section describes requirements applicable to all Sections within Divisions 02 to 49.

1.3 INSTALLATION AND REMOVAL

- .1 Provide construction facilities in order to execute work expeditiously.
- .2 Remove from site all such work after use.

1.4 SCAFFOLDING

- .1 Provide and maintain ladders, platforms and scaffolding.

1.5 HOISTING

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

1.6 CONSTRUCTION PARKING

- .1 Parking will be permitted on site provided it does not disrupt performance of Work and continuing operation of the facility.
- .2 Provide and maintain adequate access to project site.
- .3 Provide snow removal during period of Work.

1.7 OFFICES

- .1 Provide office heated to 22 degrees C, lighted 750 lx and ventilated, of sufficient size to accommodate site meetings and furnished with drawing layout table.
- .2 Subcontractors may provide their own offices as necessary. Direct location of these offices.

1.8 CONSTRUCTION CAMP

- .1 There is no accommodation at site.
- .2 If the Contractor elects to live on site, the Contractor shall be responsible for providing temporary housing, water, sanitary services, power and communication.
- .3 Reference Section 01 51 00 - Temporary Utilities. There are limited power utilities at Pleasant Camp.
- .4 If the Contractor installs a temporary camp on site, the camp must be removed off site within 2 weeks of project completion.
- .5 The proposed location of the Pleasant Camp Contractor camp is at the south end of the site as near to the trees as possible.

1.9 EQUIPMENT, TOOLS and MATERIAL STORAGE

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

1.10 SANITARY FACILITIES

- .1 Provide sanitary facilities for work force in accordance with governing regulations and ordinances.
- .2 Post notices and take such precautions as required by local health authorities.
- .3 Periodically remove wastes from Site.
- .4 Keep sanitary facilities clean and fully stocked with the necessary supplies at all times.

END OF SECTION

Part 1 General

1.1 REFERENCES

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

1.2 INSTALLATION AND REMOVAL

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

1.3 GUARD RAILS AND BARRICADES

- .1 Provide secure, rigid guard rails and barricades around deep excavations, open shafts, open stair wells, open edges of floors and roofs.
- .2 Provide as required by governing authorities.

1.4 ACCESS TO SITE

- .1 Provide and maintain access roads, sidewalk crossings, ramps and construction runways as may be required for access to Work.

1.5 PUBLIC TRAFFIC FLOW

- .1 Provide and maintain competent signal flag operators, traffic signals, barricades and flares, lights, or lanterns as required to perform Work and protect public.

1.6 FIRE ROUTES

- .1 Maintain access to property including overhead clearances for use by emergency response vehicles.

1.7 PROTECTION FOR OFF-SITE AND PUBLIC PROPERTY

- .1 Protect surrounding private and public property from damage during performance of Work.
- .2 Be responsible for damage incurred.

Part 2 Product

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

- .1 Create an erosion and sediment control plan.
- .2 Prevent loss of soil during construction by storm water runoff and wind erosion.
- .3 Prevent sedimentation of storm water and receiving streams.
- .4 Prevent pollution of the air with dust and particulate matter.

1.2 DEFINITIONS

- .1 Erosion: Deterioration, displacement, or transportation of land surface by wind or water, intensified by land-clearing practices related to construction activities.
- .2 Rain or Rain Storm: An event defined causing the pooling of water on road or other impervious surfaces.
- .3 Sediment: Particulate matter transported and deposited as a layer of solid particles within a body of water.
- .4 Snow Melt: An event in snow conditions when the temperature is above 0 degrees C or when environmental conditions causing snow on the ground to melt.

1.3 SUBMITTALS

- .1 Provide requested information in accordance with Section 01 33 00 – Submittals.
- .2 Provide within seven (7) days of date established for commencement of the Work.

Part 2 Products

2.1 SILT FENCING

- .1 Posts: Steel "T" cross section, of lengths as required.
- .2 Geotextile: Woven polypropylene filter fabric, resistant to ultra-violet degradation.

END OF SECTION

Part 1 General

1.1 PRODUCT/MATERIAL AND EQUIPMENT

- .1 Use NEW products/material and equipment unless otherwise specified. The term "products" is referred to throughout the specifications.
- .2 Use products of 1 manufacturer for material and equipment of the same type or classification unless otherwise specified .
- .3 Unless otherwise specified, comply with manufacturer's latest printed instructions for materials and installation methods.
- .4 Notify Departmental Representative in writing of any conflict between these specifications and manufacturer's instructions. Departmental Representative will designate which document is to be followed.
- .5 Provide metal fastenings and accessories in the same texture, colour and finish as base metal in which they occur.
 - .1 Prevent electrolytic action between dissimilar metals.
 - .2 Use non-corrosive fasteners, anchors and spacers for securing exterior work.
- .6 Fastenings which cause spalling or cracking are not acceptable.
- .7 Use fastenings of standard commercial sizes and patterns with material and finish suitable for service.
- .8 Use heavy hexagon heads, semi-finished unless otherwise specified.
- .9 Bolts may not project more than 1 diameter beyond nuts.
- .10 Types of washers as follows:
 - .1 Plain type washers: use on equipment and sheet metal.
 - .2 Soft gasket lock type washers: use where vibrations occur.
 - .3 Resilient washers: use with stainless steel.
- .11 Deliver, store and maintain packaged material and equipment with manufacturer's seals and labels intact.
- .12 Prevent damage, adulteration and soiling of products during delivery, handling and storage. Immediately remove rejected products from site.
- .13 Store products in accordance with suppliers' instructions.
- .14 Touch up damaged factory finished surfaces to Departmental Representative's satisfaction:
 - .1 Use primer or enamel to match original.
 - .2 Do not paint over nameplates.

1.2 QUALITY OF PRODUCTS

- .1 Products, materials and equipment (referred to as products) incorporated into work shall be new, not damaged or defective, and of the best quality (compatible with the specifications) for the purpose intended. If requested, furnish evidence as to type, source and quality of the products provided.
- .2 Defective products will be rejected regardless of previous inspections.
 - .1 Inspection does not relieve responsibility, but is precaution against oversight or error.
 - .2 Remove and replace defective products at own expense and be responsible for delays and expenses caused by rejection.

- .3 Retain purchase orders, invoices and other documents to prove that all products utilized in this Contract meet the requirements of the specifications. Produce documents when requested by the Departmental Representative.
- .4 Should disputes arise as to quality or fitness of products, decision rests strictly with DCC Representative based upon requirements of Contract Documents.
- .5 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.
- .6 Permanent labels, trademarks and nameplates on products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

1.3 AVAILABILITY OF PRODUCTS

- .1 Immediately upon signing the Contract, review product delivery requirements and anticipate foreseeable supply delays for any items.
- .2 If delays in supply of products are foreseeable, notify Departmental Representative of such in order that substitutions or other remedial action may be authorized in ample time to prevent delay in performance of the work.
- .3 In event of failure to notify Departmental Representative at the start of work and should it subsequently appear that the work may be delayed for such reason, the Departmental Representative reserves the right to substitute more readily available products of similar character, at no increase in either the Contract price or the Contract time.

1.4 MANUFACTURER'S INSTRUCTIONS

- .1 Unless otherwise indicated in specifications, install or erect products in accordance with manufacturer's instructions.
 - .1 Do not rely on labels or enclosures provided with products.
 - .2 Obtain written instructions directly from manufacturers.
- .2 Notify Departmental Representative in writing, of conflicts between specifications and manufacturer's instructions, so that Departmental Representative may establish course of action.
- .3 Improper installation or erection of products, due to failure in complying with these requirements, authorizes Departmental Representative to require removal and re-installation at no increase in Contract Price or Contract Time.

1.5 CONTRACTOR'S OPTIONS FOR SELECTION OF PRODUCTS FOR TENDERING

- .1 Products are specified by "Prescriptive" specifications: select any product meeting or exceeding specifications.
- .2 Products specified under "Acceptable Products" (used for complex Mechanical or Electrical Systems): select any one of the indicated manufacturers, or any other manufacturer meeting or exceeding the Prescriptive specifications and indicated Products.
- .3 Products specified by performance and referenced standard: select any product meeting or exceeding the referenced standard.
- .4 Products specified to meet particular design requirements or to match existing materials: use only material specified Approved Product. Alternative products may be considered provided full technical data is received in writing by Departmental Representative in accordance with "Special Instructions to Tenderers".
- .5 When products are specified by a referenced standard or by Performance specifications, upon request of Departmental Representative obtain from manufacturer and independent laboratory report showing that the product meets or exceeds the specified requirements.

1.6 SUBSTITUTION AFTER CONTRACT AWARD

- .1 No substitutions are permitted without prior written approval of the Departmental Representative.
- .2 Proposals for substitution may only be submitted after Contract award. Such request must include statements of respective costs of items originally specified and the proposed substitution.
- .3 Proposals will be considered by the Departmental Representative if:
 - .1 products selected by tenderer from those specified are not available;
 - .2 delivery date of products selected from those specified would unduly delay completion of Contract, or
 - .3 alternative product to that specified, which is brought to the attention of considered by Departmental Representative as equivalent to the product specified, and will result in a credit to the Contract amount.
- .4 Should the proposed substitution be accepted either in part or in whole, assume full responsibility and costs when substitution affects other work on the project. Pay for design or drawing changes required as result of substitution.
- .5 Amounts of all credits arising from approval of the substitutions will be determined by the Departmental Representative, and the Contract price will be reduced accordingly.

Part 2 Product

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 QUALIFICATIONS OF SURVEYOR

- .1 Qualified registered land surveyor, licensed to practice in Place of Work, acceptable to Departmental Representative.

1.2 SURVEY REFERENCE POINTS

- .1 Existing base horizontal and vertical control points are designated on drawings.
- .2 Locate, confirm and protect control points prior to starting site work. Preserve permanent reference points during construction.
- .3 Make no changes or relocations without prior written notice to Departmental Representative.
- .4 Report to Departmental Representative when reference point is lost or destroyed, or requires relocation because of necessary changes in grades or locations.
- .5 Require surveyor to replace control points in accordance with original survey control.

1.3 SURVEY REQUIREMENTS

- .1 Establish two permanent bench marks on site, referenced to established bench marks by survey control points. Record locations, with horizontal and vertical data in Project Record Documents.
- .2 Establish lines and levels, locate and lay out, by instrumentation.
- .3 Stake for grading, fill placement .
- .4 Stake slopes .
- .5 Stake batter boards for foundations.
- .6 Establish lines and levels for mechanical and electrical work.

1.4 EXISTING SERVICES

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

1.5 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 Departmental Representative 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 Departmental Representative.

1.6 RECORDS

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

Part 2 Product

2.1 NOT USED

- .1 Not Used.

Part 3	Execution
3.1	NOT USED
.1	Not Used.

END OF SECTION

Part 1 General

1.1 PROJECT CLEANLINESS

- .1 Maintain Work in tidy condition, free from accumulation of waste products and debris, other than that caused by Owner or other Contractors.
- .2 Remove waste materials from site at daily regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site.
- .3 Clear snow and ice from site, remove from site.
- .4 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .5 Provide on-site containers for collection of waste materials and debris.
- .6 Store volatile waste in covered metal containers, and remove from premises at end of each working day.
- .7 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.

1.2 FINAL CLEANING

- .1 When Work is Substantially Performed remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.
- .2 Remove waste products and debris other than that caused by others, and leave Work clean and suitable for occupancy.
- .3 Prior to final review remove surplus products, tools, construction machinery and equipment.
- .4 Remove waste products and debris other than that caused by Owner or other Contractors.
- .5 Remove waste materials from site at regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site.
- .6 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .7 Clean lighting reflectors, lenses, and other lighting surfaces.
- .8 Inspect finishes, fitments and equipment and ensure specified workmanship and operation.
- .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 Remove snow and ice from site.

Part 2 Product

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 RELATED WORK

- .1 Refer to every technical section for waste management and disposal.

1.2 STORAGE, HANDLING AND APPLICATION

- .1 Handle waste materials not re-used, salvaged, or recycled in accordance with appropriate regulations and codes.
- .2 Unless specified otherwise, materials for removal become Contractor's property.
- .3 On-site sale of salvaged/recyclable material is not permitted.

1.3 DISPOSAL OF WASTES

- .1 Do not bury rubbish or waste materials.
- .2 Do not dispose of mineral spirits into waterways, storm, or sanitary sewers.
- .3 Remove materials on-site as Work progresses.

1.4 SCHEDULING

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

Part 2 Product

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 APPLICATION

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

3.2 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

END OF SECTION

Part 1 General

1.1 SUBSTANTIAL COMPLETION MINIMUM REQUIREMENTS

- .1 In addition to the requirements of the Construction Contract General Conditions GC.1.1.4 and the requirements of Section 01 78 00, as a minimum, the following elements must be completed prior to achieving Substantial Performance at each Port of Entry location;
 - .1 Draft operation & maintenance manuals provided two weeks prior to requesting review for substantial performance.
 - .2 Record drawings provided two weeks prior to requesting review for substantial performance.
 - .3 All spare parts required by the contract delivered with signed acceptance by the Departmental Representative.
 - .4 All required training completed, with signed acceptance by the Departmental Representative.
 - .5 Final cleaning complete.
 - .6 Commissioning of all electrical systems is complete and all deficiencies have been addressed.
 - .7 Complete topographic survey of finished construction in project area, including finished grades for verification with design documents (Third order accuracy in UTM NAD 83 (CSRS) and CGVD28 vertical datum)
 - .8 Required testing completed and documentation submitted
 - .9 Pathway completed and all test data accepted by Departmental Representative.

1.2 ADMINISTRATIVE REQUIREMENTS

- .1 Acceptance of Work Procedures:
 - .1 Contractor's Inspection: Contractor: conduct inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.
 - .1 Notify Departmental Representative in writing of satisfactory completion of Contractor's inspection and submit verification that corrections have been made.
 - .2 Identify in writing to Departmental Representative remaining and/or outstanding deficiencies.
 - .3 Request Departmental Representative inspection.
 - .2 Departmental Representative Review:
 - .1 Departmental Representative and Contractor to review Work and identify defects and deficiencies.
 - .2 Contractor to correct Work as directed.
 - .3 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 and fully operational.
 - .4 Operation of systems: demonstrated to Owner's personnel.
 - .5 Work: complete and ready for final inspection.

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

1.3 FINAL CLEANING

- .1 Clean in accordance with Section 01 74 11 - Cleaning.
 - .1 Remove surplus materials, excess materials, rubbish, tools and equipment.

Part 2 Product

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 SUBMITTALS

- .1 Prepare instructions and data by personnel experienced in maintenance and operation of described products.
- .2 Revise content of documents as required before final submittal.
- .3 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .4 Phasing of Submission:
 - .1 Four weeks prior to Substantial Performance of the Work, submit to the Departmental Representative, one DRAFT copy of the Operating and Maintenance manuals in English.
 - .2 Provide FINAL copies of Operating and Maintenance manual at Substantial Performance.
- .5 Ensure spare parts, maintenance materials and special tools provided are new, neither damaged nor defective, and of same quality and manufacture as products provided in work.
- .6 Provide evidence, if requested, for type, source and quality of products supplied.
- .7 Defective products will be rejected, regardless of previous inspections. Replace products at own expense.

1.2 OPERATION AND MAINTENANCE MANUAL FORMAT

- .1 Provide an organized compilation of operating and maintenance data including detailed technical information, documents and records describing products as specified below and in individual sections. instructional manual and electronic manual.
- .2 Manuals to be 215 mm x 280 mm capacity expandable metal 3-post type Catalogue Binder, bound in heavyweight fabricords, colour to be Ontario Buckram Vellum OBV-460. Hot stamped in white lettering Front and Spine.
- .3 When multiple manuals are used, correlate data into related consistent groupings. Identify contents of each binder on spine.
- .4 Cover: Identify each manual with type or printed title 'Project Record Documents'; list title of project and identify subject matter of contents.
- .5 Arrange content by systems, under Section numbers and sequence of Table of Contents.
- .6 Provide tabbed fly leaf for each separate product and system, with typed description of product and major component parts of equipment.
- .7 Text: Manufacturer's printed data, or typewritten data.
- .8 Drawings: provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.
- .9 Provide 1:1 scaled CAD files in dxf format on compact disc (CD).
- .10 Provide digital copy of construction photos on compact disc in sleeve for each binder.
- .11 The two project sites are to be treated as two separate projects. Provide complete set of documents per project site.

1.3 CONTENTS - EACH VOLUME

- .1 Table of Contents for Each Volume: provide title of project;
 - .1 Title of Project
 - .2 Date of submission; names.

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- .3 Addresses, and telephone numbers of Consultant and Contractor with name of responsible parties.
 - .4 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.
 - .2 Product Data: mark each sheet to identify specific products and component parts, and data applicable to installation; delete inapplicable information.
 - .3 Drawings: supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.
 - .4 Typewritten Text: as required to supplement product data.
 - .5 Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions specified in Section 01 45 00 - Quality Control.
 - .6 Training: refer to Section 01 79 00 - Demonstration and Training.

1.4 AS -BUILT DOCUMENTS

- .1 Contract drawings and shop drawings: legibly mark each item to record actual construction, including:
 - .1 Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.
 - .2 Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 - .3 Field changes of dimension and detail.
 - .4 Addenda.
 - .5 Changes made by change orders and other modifications to Contract.
 - .6 Details not on original Contract drawings..
 - .7 References to related shop drawings and modifications.
 - .8 Field test records.
 - .9 Inspection certificates.
 - .10 Manufacturer's certificates.
- .2 Contract Specifications: legibly mark each item to record actual "Workmanship of Construction", including:
 - .1 Manufacturer, trade name, and catalogue number of each "Product/Material" actually installed, particularly optional items and substitute items.
 - .2 Changes made by addenda and change orders.
- .3 As-Built information
 - .1 Record changes in red ink.
 - .2 Mark on 1 set of drawings, specifications and shop drawings at completion of project and, before final inspection, neatly transfer notations to second set.
 - .3 Provide 1 set of CDs in AutoCAD and PDF file format with all as-built information on the CDs.
 - .4 Submit all sets for the Departmental Representative.

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- .4 Provide digital photos for site records.
 - .5 Store record documents and samples in field office apart from documents used for construction.
 - .6 Label record documents and file in accordance with Section number listings in List of Contents of this Project Manual.
 - .1 Label each document "PROJECT RECORD" in neat, large, printed letters.
 - .7 Maintain record documents in clean, dry and legible condition.
 - .1 Do not use record documents for construction purposes.
 - .8 Keep record documents and samples available for inspection by Departmental Representative.

1.5 FINAL SURVEY

- .1 Submit final site survey certificate in accordance with Section 01 71 00 - Examination and Preparation, certifying that elevations and locations of completed Work are in conformance, or non-conformance with Contract Documents.

1.6 EQUIPMENT AND SYSTEMS

- .1 Maintenance requirements - list routine procedures:
- .2 Include manufacturer's printed operation and maintenance instructions.
- .3 Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- .4 Additional requirements: as specified in individual specification Sections.
- .5 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.
- .6 Operating Procedures: include start-up, break-in, and routine normal operating instructions and sequences.
- .7 Maintenance Requirements: include routine procedures and guide for trouble-shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- .8 Additional requirements: as specified in individual specification sections.

1.7 MANUFACTURER'S DOCUMENTATION REPORTS

- .1 When specified in individual Sections, require manufacturer to provide authorized representative to demonstrate operation of equipment and system, instruct Departmental Representative's indicated facility's personnel, and provide detailed written report that demonstration and instructions have been completed.
- .2 Departmental Representative will provide list of personnel to receive instructions, and will coordinate their attendance at agreed-upon times.

1.8 WARRANTIES, BONDS, TEST REPORTS, INSPECTION REPORTS

- .1 Separate each Document with index tab sheets keyed to Table of Contents listing.
- .2 List subcontractor, supplier and manufacturer with name, address, and telephone number of responsible principal.
- .3 Obtain Warranties, Bonds, Test Results, Inspection Reports executed in duplicate by subcontractors, suppliers, manufacturers, and inspection agencies within 10 days after completion of the applicable item of work.
- .4 Except for items put into use with the Departmental Representative's permission, leave date of

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- beginning of time of warranty until the date of substantial performance is determined.
 - .5 Verify that documents are in proper form, contain full information, and are notarized.
 - .6 Co-execute submittals when required.
 - .7 Retain warranties and bonds until time specified for submittal.
 - .8 Except for items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial Performance is determined.
 - .9 Respond in timely manner to oral or written notification of required construction warranty repair work.
 - .10 Written verification to follow oral instructions.
 - .1 Failure to respond will be cause for the Departmental Representative to proceed with action against Contractor.

1.9 COMPLETION DOCUMENTS

- .1 Submit a written certificate that the following have been performed;
 - .1 Work has been completed and inspected for compliance with the Contract documents.
 - .2 Defects have been corrected and deficiencies have been completed.
 - .3 Equipment and systems have been tested, adjusted and balanced, and are fully operational.
 - .4 Operation of systems has been demonstrated to the personnel indicated by the Departmental Representative.
 - .5 Work is complete and ready for final inspection.
- .2 Prepare all documentation required as part of any permits or other authorizations obtained or otherwise the responsibility of the Contractor.

Part 2 Product

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

- .1 Procedures for demonstration and instruction of Products, equipment and systems to Owner's personnel.

1.2 DESCRIPTION

- .1 Demonstrate scheduled operation and maintenance of equipment to Owner's personnel two (2) weeks prior to date of final inspection.
- .2 Owner will provide list of personnel to receive instructions, and will coordinate their attendance at agreed-upon times.

1.3 COMPONENT DEMONSTRATION

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

1.4 SUBMITTALS

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

1.5 CONDITIONS FOR DEMONSTRATIONS

- .1 Provide copies of completed operation and maintenance manuals for use in demonstrations and instructions.

Part 2 Products

2.1 NOT USED

- .1 Not used.

Part 3 Execution

3.1 PREPARATION

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

3.2 PREPARATION OF AGENDAS AND OUTLINES

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

3.3 SEMINAR ORGANIZATION

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

3.4 EXPLANATION OF DESIGN STRATEGY

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

3.5 DEMONSTRATION AND INSTRUCTIONS

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

END OF SECTION

Part 1 General

1.1 GENERAL

- .1 This Section covers items common to Sections of Division 26. This section supplements requirements of Division 1.
- .2 For the proper execution of work, cooperate with other trades and contracts as needed.
- .3 To avoid installation conflicts, thoroughly examine the complete set of contract documents. Resolve conflicts with Departmental Representative prior to installation.
- .4 Prior to installation of electrical connections to equipment, examine the manufacturer's shop drawings, wiring diagrams, product data and installation instructions. Verify that the electrical characteristics detailed in the contract documents are consistent with the electrical characteristics of the actual equipment being installed. When inconsistencies occur request clarification from Departmental Representative.
- .5 Examine the entire set of contract documents to avoid conflicts with other systems. Determine exact route and installation of electrical wiring and equipment with conditions of construction.
- .6 Should the electrical documents indicate a condition conflicting with the governing codes or regulations, refrain from installing that portion of the work until clarified by Departmental Representative.
- .7 Definitions:
 - .1 Provide - To furnish and install complete and ready for intended use.
 - .2 Furnish - Supply and deliver to project site, ready for unpacking, assembly and installation.
 - .3 Install - Includes unloading, unpacking, assembling, erecting, installation, applying, finishing, protecting, cleaning and similar operation at the project site to complete items of work furnished.
- .8 All correspondence and documents shall be submitted in English. Copies in other languages shall be provided where indicated.
- .9 The entire bid package is considered related to all disciplines and shall be examined prior to bid and followed throughout construction and thereafter. Related sections listed hereinafter in this specification shall not be considered as relieving any Division from the responsibility identified herein.
- .10 Sufficiency of drawings and specifications:
 - .1 Hold the Drawings and Specifications to determine the general character and general arrangement of the Work.
 - .2 Drawings and Specifications indicate the general scope of the Project in terms of the dimensions of the Work, the type of structural, mechanical, electrical utility systems and the architectural elements of construction. The Drawings and Specifications do not necessarily indicate or describe all Work required for the full performance and completion of the requirements of the Contract Documents. On the basis of the general scope indicated, stated, described or implied, furnish all items required for the proper execution and completion of the Work.
 - .3 The Contract Documents are issued to facilitate construction by expressing the design intent. The Drawings and Specifications do not necessarily contain all of the details required to construct the project, and contractor supplied detail in the form of detailed construction documents (referred to in the Contract Documents as the Contractors supplied shop drawings, submittals, and field coordination drawings) is required for construction of the Work; all of which set out the specific and final details required for

placing and constructing the finished Work. By contrast, the Drawings and Specifications are provided to reflect the finished design of the Work. The Drawings and Specifications are not intended to be used as a set of detailed instructions on how to construct the Work. Construction means, methods, techniques, sequences, procedures, and site safety precautions are the responsibility of the Contractor.

- .4 Shop Drawings, Product Data, Samples and similar submittals provided by the Contractor are not Contract Documents. The purpose of these submittals is to demonstrate the way by which the Contractor proposes to conform to the design intent expressed in the Contract Documents.
- .5 Examine the Drawings and Specifications to satisfy yourself regarding the design intent and the extent of the proposed Work, and by personal examination of the site and surroundings make your own estimate of the facilities condition and difficulties attending the performance and completion of the Work.
- .11 Make known in writing to the Departmental Representative ten (10) days prior to the tender closing date any materials specified or is required to complete the work, which are not currently available or will not be available for use as called for herein or on drawings. Failing to do so, it will be assumed that the most expensive compliant alternate has been included in the tender price.
- .12 For the sake of clarity, electrical symbols are typically shown larger than they would be at the actual scale of the drawing. Therefore, do not scale electrical drawings. Where exact dimensions are required, refer to dimensioned architectural plans or civil drawings.
- .13 The general contractor who has a contractual relationship with the Departmental Representative shall be responsible for providing complete and workable systems as outlined on drawings and in specifications. The Departmental Representative will not recognize any sub-contractor as such, but will consider all persons engaged on the work to be under the control of General Contractor. The Departmental Representative will not under any circumstances, enter into discussions concerning the responsibility of sub-trades or the apportionment of work. No claim based on the division of work between specification sections or subtrades will be considered.

1.2 CODES AND STANDARDS

- .1 Unless otherwise indicated, all references to standards and codes throughout this specification is to the latest applicable edition at the time of bid closing.
- .2 Do complete installation in accordance with CSA C22.1, Canadian Electrical Code, Part 1. In case of a conflict between the code requirements and the contract documents, request clarification prior to proceeding with the work.
- .3 Definitions:
 - .1 Abbreviations for electrical terms: to CSA Z85 - Abbreviations for Scientific and Engineering Terms.
 - .2 Electrical and electronic terms: unless otherwise specified or indicated, terms used in these specifications, and on drawings, are those defined by IEEE SP1122 - The Authoritative Dictionary of IEEE Standards Terms.
- .4 Material and installations shall comply with the requirements of the following codes and standards, codes and standards mentioned in other sections of this specification, as well as other applicable codes and standards to the satisfaction of the Authorities Having Jurisdiction (AHJ):
 - .1 Canadian Electrical Code (CEC).
 - .2 National Building Code of Canada (NBCC)
 - .3 National Fire Code of Canada (NFCC).
- .5 Provide the site office with a current copy of the following documents, codes and standards. These documents shall remain on site throughout the duration of construction for electricians and

others reference and use. The maintenance of these codes on site may be checked at each site visit. Absence of one or more such documents will be indicated on the field review report as deficiency and non-compliance with contract requirements.

- .1 Project's electrical specifications, drawings and any addenda.
- .2 Project's up to date electrical RFIs and responses, SIs and CCNs.
- .3 Canadian Electrical Code (CEC).

1.3 QUALITY ASSURANCE

- .1 Conform to the requirements of CEC with amendments by local Authorities Having Jurisdiction (AHJ).
- .2 Conform to the requirements of the NBCC with amendments by local AHJ.
- .3 Obtain and pay for the electrical permits, plan review and inspection from local AHJ.
- .4 Conform to the requirements of the serving electric, telephone utilities.

1.4 PERMITS, FEES AND INSPECTION

- .1 Submit to Electrical Inspection Department and Supply Authority necessary number of drawings and specifications for examination and approval prior to commencement of work.
- .2 Pay associated fees.
- .3 Provide drawings and specifications required by Electrical Inspection Department and Supply Authority at no cost.
- .4 Notify Departmental Representative of changes required by Electrical Inspection Department or Supply Authority prior to making such changes.
- .5 Furnish Certificates of Acceptance from Authorities Having Jurisdiction on completion of work to Departmental Representative.

1.5 ALTERNATE PRODUCT APPROVAL

- .1 Refer to Division 1 sections for more information.
- .2 Electrical price shall be based on the equipment specified or alternate equipment that received prior approval from the Departmental Representative before tender closing.
- .3 Requests for prior approval of alternates shall be received at the Departmental Representative's office a minimum of ten (10) business days prior to the closing date for issuing the last addendum or official response by Departmental Representative.
- .4 Request for approval shall clearly indicate the specified product and the related specification section(s) as well as a comprehensive list identifying all areas where the submitted alternative does not comply with the specifications.
- .5 Notwithstanding item 4, substitution requests shall be complete with proper support documents to clearly identify the equality of the specifications of the suggested product on an item by item basis compared to the specifications listed for the specified product. Requests not meeting this requirement, will be returned as insufficient information for review.
- .6 No substitution of items specifically called for on the drawings or in these specifications with other products- even the ones listed in specifications, is allowed without timely and proper request and approval.

1.6 SHOP DRAWINGS AND PRODUCT DATA

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

- .1 Provide submittals for review for all electrical material and equipment.

1.7 CONTRACT BREAKDOWN

- .1 Provide separate material and labour breakdown for the total electrical sub-contract as indicated below. This breakdown is to meet the satisfaction of the Departmental Representative and is to be submitted within 14 days of contract award.
- .2 The breakdown will be used in computing of progress claims. Progress claims are to be itemized with separate labour and material listing against each item of the contract breakdown. Progress claims will not be reviewed if they are not presented as per the following breakdown:
 - .1 Mobilization
 - .2 Lighting and Poles
 - .3 Underground Cabling
 - .4 Trenching and Backfilling
 - .5 Training, O&M Manuals, Reports and Record Documents and Closeout

1.8 CLOSEOUT SUBMITTALS

- .1 Provide Operation and Maintenance Data and Record Drawings for electrical installations and submit in accordance with Section 01 78 00 - Closeout Submittals.

1.9 DELIVERY, STORAGE AND HANDLING

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

Part 2 Product

2.1 DESIGN REQUIREMENTS

- .1 Operating voltages: to CAN3-C235.
- .2 Motors, electric heating, control and distribution devices and equipment to operate satisfactorily at 60 Hz within normal operating limits established by above standard.
 - .1 Equipment to operate in extreme operating conditions established in above standard without damage to equipment.
- .3 Language operating requirements: provide identification labels for control items in English.

2.2 MATERIALS AND EQUIPMENT

- .1 Equipment and Material to be approved by a Certified Accreditation Body of the Standards Council of Canada. Where certified components are not available, obtain special approval from authority having jurisdiction before delivery to site and submit such approval as described in PART 1 - ACTION AND INFORMATIONAL SUBMITTALS.

2.3 WARNING SIGNS

- .1 Warning Signs: in accordance with requirements of Departmental Representative.

2.4 WIRING TERMINATIONS

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

2.5 EQUIPMENT IDENTIFICATION

- .1 Identify electrical equipment with labels as follows:
 - .1 Nameplates: plastic laminate mm melamine, black face, white core, lettering accurately aligned and engraved into core.
 - .2 Sizes as follows:

NAMEPLATE SIZES			
Size 1	10 x 50 mm	1 line	3 mm high letters
Size 2	12 x 70 mm	1 line	5 mm high letters
Size 3	12 x 70 mm	2 lines	3 mm high letters
Size 4	20 x 90 mm	1 line	8 mm high letters
Size 5	20 x 90 mm	2 lines	5 mm high letters
Size 6	25 x 100 mm	1 line	12 mm high letters
Size 7	25 x 100 mm	2 lines	6 mm high letters

- .2 Labels: embossed plastic labels with 6 mm high letters unless specified otherwise.
- .3 Wording on nameplates to be approved by Departmental Representative prior to manufacture.
- .4 Allow for minimum of twenty-five (25) letters per line.

2.6 WIRING IDENTIFICATION

- .1 Maintain phase sequence and colour coding throughout.
- .2 Colour coding: to CSA C22.1.
- .3 Use colour coded wires in communication cables, matched throughout system.

2.7 FINISHES

- .1 Clean and touch up surfaces of devices and equipment scratched or marred during shipment or installation, to match original paint.
- .2 Clean and prime exposed non-galvanized hangers, racks and fastenings to prevent rusting.

Part 3 Execution

3.1 INSTALLATION

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

3.2 CONDUIT AND CABLE INSTALLATION

- .1 Install conduit and sleeves prior to pouring of concrete.
 - .1 Sleeves through concrete: rigid galvanized steel conduit, sized for free passage of conduit, and protruding 150 mm. Notify the Departmental Representative if conduit sleeves will contain unbalanced phase conductors.

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

3.3 FIELD QUALITY CONTROL

- .1 Conduct following tests in accordance with Section 01 45 00 - Quality Control.
 - .1 Lighting and lighting control.
 - .2 Insulation resistance testing:
 - .1 Megger circuits, feeders and equipment up to 350 V with a 500 V instrument.
 - .2 Megger 350-600 V circuits, feeders and equipment with a 1000 V instrument.
 - .3 Check resistance to ground before energizing.
 - .2 Carry out tests in presence of Departmental Representative.
 - .3 Provide instruments, meters, equipment and personnel required to conduct tests during and at conclusion of project.

3.4 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

- .1 Materials and installation for wire and box connectors.

1.2 REFERENCES

- .1 Canadian Standards Association (CSA International):
 - .1 CAN/CSA-C22.2 No.18, Outlet Boxes, Conduit Boxes and Fittings.
 - .2 CAN/CSA-C22.2 No.65, Wire Connectors.
- .2 Electrical and Electronic Manufacturers' Association of Canada (EEMAC):
 - .1 EEMAC 1Y-2, Bushing Stud Connectors and Aluminum Adapters (1200 Ampere Maximum Rating).
- .3 National Electrical Manufacturers Association (NEMA)

Part 2 Product

2.1 MATERIALS

- .1 Pressure type wire connectors to: CAN/CSA-C22.2 No.65, with current carrying parts of copper sized to fit copper conductors as required.
- .2 Fixture type splicing connectors to: CAN/CSA-C22.2 No.65, with current carrying parts of copper sized to fit copper conductors 10 AWG or less.
- .3 Bushing stud connectors: to EEMAC 1Y-2 to consist of:
 - .1 Connector body and stud clamp for stranded or round solid copper conductors as required.
 - .2 Clamp for stranded or round copper conductors as required.
 - .3 Clamp for conductors.
 - .4 Stud clamp bolts.
 - .5 Bolts for copper conductors bar.
 - .6 Sized for conductors as indicated.
- .4 Clamps or connectors for armoured cable, as required to: CAN/CSA-C22.2 No.18.

Part 3 Execution

3.1 INSTALLATION

- .1 Remove insulation carefully from ends of conductors and:
 - .1 Install mechanical pressure type connectors and tighten screws with appropriate compression tool recommended by manufacturer. Installation shall meet secureness tests in accordance with CAN/CSA-C22.2 No.65.
 - .2 Install fixture type connectors and tighten to CAN/CSA-C22.2 No.65. Replace insulating cap every time the connection is removed and reinstalled.
 - .3 Install bushing stud connectors in accordance with EEMAC 1Y-2.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 CSA C22.2 No. 0.3, Test Methods for Electrical Wires and Cables.
- .2 CAN/CSA-C22.2 No. 131, Type TECK 90 Cable

1.2 PRODUCT DATA

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

Part 2 Product

2.1 TECK 90 CABLE

- .1 Cable: to CAN/CSA-C22.2 No. 131..
- .2 Conductors:
 - .1 Grounding conductor: copper.
 - .2 Circuit conductors: copper, size as indicated.
- .3 Insulation: Cross-linked polyethylene type RW90 XLPE, 600V for 120/208V system.
 - .1 Cross-linked polyethylene XLPE.
 - .2 Rating: 600 V.
- .4 Inner jacket: polyvinyl chloride material.
- .5 Armour: interlocking galvanized steel..
- .6 Overall covering: thermoplastic polyvinyl chloride, compliant to applicable Building Code classification for this project.
- .7 Fastenings:
 - .1 One hole malleable iron straps to secure surface cables 53 mm and smaller. Two hole steel straps for cables larger than 53 mm.
 - .2 Channel type supports for two or more cables at 1500 mm centers.
 - .3 Threaded rods: 6 mm diameter to support suspended channels.
- .8 Connectors:
 - .1 Dry type approved for TECK cable in indoor type 1 environments.
 - .2 Wet type approved for TECK cable where installed outdoors, or where installed above cabinets in sprinklered areas.

Part 3 Execution

3.1 GENERAL CABLE INSTALLATION

- .1 Terminate cables in accordance with Section 26 05 20 - Wire and Box Connectors - (0-1000 V).
- .2 Cable Colour Coding: to Section 26 05 00 - Common Work Results for Electrical.
- .3 Conductor length for parallel feeders to be identical.
- .4 Lace or clip groups of feeder cables at distribution centres, pull boxes, and termination points.
- .5 Branch circuit wiring for surge suppression receptacles and permanently wired computer and electronic equipment to be 2-wire circuits only, i.e. common neutrals not permitted.

3.2 INSTALLATION OF TECK CABLE (0 -1000 V)

- .1 Install cables complete with terminations, supports and fastenings.
- .2 Install cable in trenches in accordance with Section 26 05 44 Installation of Cables in Trenches and Ducts.
- .3 Terminate cables in accordance with Section 26 05 20 - Wire and Box Connectors - 0-1000 V.

END OF SECTION

Part 1 General

1.1 REFERENCES

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

1.2 LOCATION OF CONDUIT

- .1 Drawings do not indicate all conduit runs. Those indicated are diagrammatic only. Determine best routing for conduit on site, ensuring requirements of this specification are met.

Part 2 Products

2.1 CONDUIT

- .1 Rigid metal conduit: to CSA C22.2 No. 45, galvanized steel threaded.
- .2 Electrical metallic tubing (EMT): to CSA C22.2 No. 83 , with couplings.
- .3 Rigid PVC conduit: to CSA C22.2 No. 211.2.
- .4 Flexible metal conduit: to CSA C22.2 No. 56, liquid-tight flexible metal.
- .5 Flexible PVC conduit: to CAN/CSA-C22.2 No. 227.3 liquid-tight flexible conduit.

2.2 CONDUIT FASTENINGS

- .1 One hole steel straps to secure surface conduits 53 mm and smaller.
 - .1 Two hole steel straps for conduits larger than 53 mm.
- .2 Beam clamps to secure conduits to exposed steel work.
- .3 Channel type supports for two or more conduits at 1.5 m on centre.
- .4 Threaded rods, 6 mm diameter, to support suspended channels.

2.3 CONDUIT FITTINGS

- .1 Fittings: to CAN/CSA C22.2 No. 18, manufactured for use with conduit specified. Coating: same as conduit.
- .2 Ensure factory "ells" for 90 degrees bends for 35 mm and larger conduits.
- .3 EMT couplings and connectors to be dry type in type 1 environments, and watertight where installed outdoors, or as required on the drawings.
- .4 To be malleable steel. Cast fittings are not permitted.

2.4 EXPANSION FITTINGS FOR RIGID CONDUIT

- .1 Weatherproof expansion fittings with internal bonding assembly suitable for 100 linear expansion.
- .2 Watertight expansion fittings with integral bonding jumper suitable for linearexpansion and 19 mm deflection.

- .3 Weatherproof expansion fittings for linear expansion at entry to panel.

2.5 PULL CORD

- .1 Minimum 6mm stranded nylon (polypropylene) pull rope, tensile strength 5 kN. Leave pull rope in any spare conduit exceeding 3 meters in length, or 90 degrees of bend.

2.6 THREAD LUBRICANT

- .1 Make up all male conduit threads with thread lubricant prior to connection.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

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

3.2 INSTALLATION

- .1 Use rigid PVC conduit underground.
- .2 Minimum conduit size for lighting and power circuits: 21 mm.
- .3 Bend conduit cold:
 - .1 Replace conduit if kinked or flattened more than 1/10th of its original diameter.
- .4 Mechanically bend steel conduit over 19 mm diameter.
- .5 Field threads on rigid conduit must be of sufficient length to draw conduits up tight. Allow for minimum of 5 threads to be engaged.
- .6 Install pull cord in empty conduits.
- .7 Remove and replace blocked conduit sections.
 - .1 Do not use liquids to clean out conduits.
- .8 Dry conduits out before installing wire.

3.3 CONDUITS INSTALLED UNDER SLABS ON GRADE

- .1 Run conduits 35 mm and larger below slab and encase in 75 mm concrete envelope.
 - .1 Provide 50 mm of sand over concrete envelope below floor slab.

3.4 CONDUITS UNDERGROUND

- .1 Slope conduits to provide drainage.
- .2 Waterproof joints (PVC excepted) with heavy coat of bituminous paint.
- .3 Seal both ends of conduit with sealant to prevent ingress and transmission of foreign material and moisture.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 Canadian Standards Association, (CSA International)
- .2 Insulated Cable Engineers Association, Inc. (ICEA)

Part 2 Products

2.1 CABLE PROTECTION

- .1 38 x 140 mm (thickness x width) planks pressure treated with clear, copper naphthenate or 5% pentachlorophenol solution, water repellent preservative.

Part 3 Execution

3.1 DIRECT BURIAL OF CABLES

- .1 Provide offsets for thermal action and minor earth movements. Offset cables 150 mm for each 60 m run, maintaining minimum cable separation and bending radius requirements.
- .2 Make termination and splice only as indicated leaving 0.6 m of surplus cable in each direction.
- .3 Underground cable splices not acceptable.
- .4 Minimum permitted radius at cable bends for rubber, plastic or lead covered cables, 8 times diameter of cable; for metallic armoured cables, 12 times diameter of cables or in accordance with manufacturer's instructions.
- .5 Cable separation: Maintain 1 m separation between primary power feeder cables and low tension systems in parallel and perpendicular crossings.
- .6 Install continuous marker tape for each underground cable.

3.2 CABLE INSTALLATION IN DUCTS

- .1 Clean and dry ducts prior to installing conductors.
- .2 Install cables as indicated in ducts.
- .3 Install multiple cables in duct simultaneously.
- .4 Use CSA approved lubricants of type compatible with cable jacket to reduce pulling tension.
- .5 To facilitate matching of colour coded multi-conductor control cables reel off in same direction during installation.
- .6 Before pulling cable into ducts and until cables are properly terminated, seal ends of lead covered cables with wiping solder; seal ends of non-leaded cables with moisture seal tape.
- .7 After installation of cables, seal duct ends with duct sealing compound.

3.3 FIELD QUALITY CONTROL

- .1 Perform tests in accordance with Section 26 05 00 - Common Work Results for Electrical.
- .2 Perform tests using qualified personnel. Provide necessary instruments and equipment.
- .3 Check phase rotation and identify each phase conductor of each feeder.
- .4 Check each feeder for continuity, short circuits and grounds. Ensure resistance to ground of circuits is not less than 50 megohms.
- .5 Perform test in accordance with manufacturer's instructions.

- .6 Submit test results showing location at which each test was made, circuit tested and result of each test. Include a copy of test reports in the O&M manuals.
- .7 Remove and replace entire length of cable if cable fails to meet any of test criteria.
- .8 Photograph all installations prior to backfilling and include photos in the Operations and Maintenance manuals.
- .9 Call for field review by prior to backfilling trenches. Provide at least 5 business days of notice in advance.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Materials and installation for a complete, operating lighting system.

1.2 REFERENCES

- .1 American National Standards Institute/Institute of Electrical and Electronics Engineers (ANSI/IEEE)
 - .1 ANSI/IEEE C62.41, Surge Voltages in Low-Voltage AC Power Circuits.
- .2 Canadian Standards Association (CSA International)
- .3 ICES-005-07, Radio Frequency Lighting Devices.
- .4 Underwriters' Laboratories of Canada (ULC)

1.3 SHOP DRAWINGS AND PRODUCT DATA

- .1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit complete photometric data prepared by independent testing laboratory for luminaires, for review by Departmental Representative.
- .3 Product data to include: total input watts, candlepower summary, candela distribution zonal lumen summary, luminaire efficiency, CIE (International Commission on Illumination) type, coefficient of utilization, lamp type, VCP with spacing criteria, and lumen rating in accordance with IESNA testing procedures.
- .4 Provide manufacturer's printed product literature, specifications and datasheet and include product characteristics, performance criteria, physical size, finish and limitations.

1.4 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Deliver materials to site in original factory packaging, labeled with manufacturer's name, address.
- .3 Divert unused metal materials from landfill to metal recycling facility.

Part 2 Product

2.1 LED LIGHTING FIXTURES

- .1 LED Light Sources and Luminaires to: ANSI/ANSI C78.377, IESNA LM-79, IESNA LM-80, IESNA TM-21 and UL 8750.
- .2 Luminaire Efficiency. Allow for thermal and optical losses. Efficiency to be determined on a "delivered lumens per watt" basis for comparison of each luminaire using input drive current. Minimum initial delivered lumens per watt required to be verified with independent testing lab certification and in no case to be less than 70 lumens per Watt.
- .3 Depreciation:
 - .1 As a minimum, average delivered lumens over 50,000 hours of operation to be a minimum of 95% of initial delivered lumens.
 - .2 Life-span rating shall be based on L70 in units of hours as defined by IESNA standard LM-80.
- .4 Warranty: Manufacturer's warranty of a minimum of 5 years on LED's and drivers.
- .5 Manufacturer: Must have verifiable history of having been in the business of manufacturing LED

light fixtures for a minimum of 7 years.

.6 LED Drivers:

- .1 Electronic.
- .2 Input voltage tolerance of rated voltage +/- 10%.
- .3 Power factor >90% at full load.
- .4 THD <10%.
- .5 Load regulation: +/- 1% from no load to full load.
- .6 Exterior fixtures to be rated for -40 through +40 degrees Celsius ambient temperature.
- .7 Integral overheating protection.
- .8 Integral overload protection.

2.2 LUMINAIRES

- .1 Refer to Luminaire Schedule on drawings.

Part 3 Execution

3.1 INSTALLATION

- .1 Locate and install luminaires as indicated.

3.2 WIRING

- .1 Connect luminaires to lighting circuits.

3.3 LUMINAIRE ALIGNMENT

- .1 Focus and adjust all adjustable luminaires, at presence of Departmental Representative, at such time of day or night as required.
- .2 Clean paint splatters, dirt, dust, fingerprints and debris from luminaires.
- .3 Where finish of luminaire has been damaged, touch up finish per manufacturer instructions.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 CSA Group
 - .1 CSA C22.2 No.206-13, Lighting Poles.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

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

1.3 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials indoors and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store and protect roadway lighting from nicks, scratches, and blemishes.
 - .3 Replace defective or damaged materials with new.

Part 2 Product

2.1 METAL LIGHTING POLES

- .1 Type A Poles: to CSA C22.2 No.206:
 - .1 Steel pole designed for underground wiring.
 - .2 Mounting on concrete anchor base.
 - .3 Style: monotube, minimum 3.0 mm thick, tapered, octaflute.
 - .4 Designed for 1 luminaire mounting brackets.
 - .5 Terminating in single curved davit with total davit reach of 2.5m.
 - .6 Access handhole centered between 200 to 500 mm above pole base for wiring connections, with welded-on reinforcing frame and bolted-on cover.
 - .7 Overall pole height from base of pole to center of fixture mounting to be 9.0 m.
 - .8 Finish: flat hot dip galvanized.
 - .9 Bonding lug.
 - .10 Match mounting flange of pole with pole base anchor bolts and bolt pattern.
 - .11 All nuts, nut covers, levelling shims and other accessories required for complete installation.

2.2 LUMINAIRES

- .1 As described in schedule on drawings.

Part 3 Execution

3.1 EXAMINATION

- .1 Verification of Conditions: verify that existing conditions or those previously installed under other Sections or Contracts are acceptable for roadway lighting installation in accordance with manufacturer's written instructions.
 - .1 Inform Departmental Representative of unacceptable conditions immediately upon discovery.

3.2 INSTALLATION

- .1 Install poles true and plumb, complete with brackets in accordance with manufacturer's instructions.
- .2 Install luminaires on pole davits.
- .3 Check luminaire orientation, level and tilt.
- .4 Connect luminaire to lighting circuit.
- .5 Perform tests in accordance with Section 26 05 00 - Common Work Results for Electrical.

3.3 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

END OF SECTION